

Borders Up in Smoke: Marijuana Enforcement in Nebraska After Colorado's Legalization of Medicinal Marijuana

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Abstract

With the passage of Amendments 20 (2000) and 64 (2012), Colorado legalized the medicinal and recreational use of marijuana. Nebraskan law enforcement in border counties subsequently reported increases in arrests and reductions in jail space. In response, the Nebraska state legislature passed LR-520 to study the potential increased costs incurred by criminal justice agencies in border counties. To investigate this situation, we compare trends in drug arrests and jail occupancy across three areas: border counties, those that contain Interstate 80 (I-80) as a major transportation route, and the remaining counties in the state of Nebraska from 2000 through 2013. We found that border counties, but not necessarily those along the I-80 corridor, experienced significant growth in marijuana-related arrests and jail admissions after the expansion of the medical marijuana program in Colorado. Implications for research and policy are discussed.

Keywords

drug enforcement, policy implications, research and policy, criminal justice policy

The legal status of medical marijuana is currently a matter of debate in many state legislatures. While those who support medicalization argue that it can offer therapeutic benefits for medical ailments (e.g., nausea, glaucoma, and epilepsy), alleviate some of the costs associated with prohibition, and offer a significant source of state tax revenue

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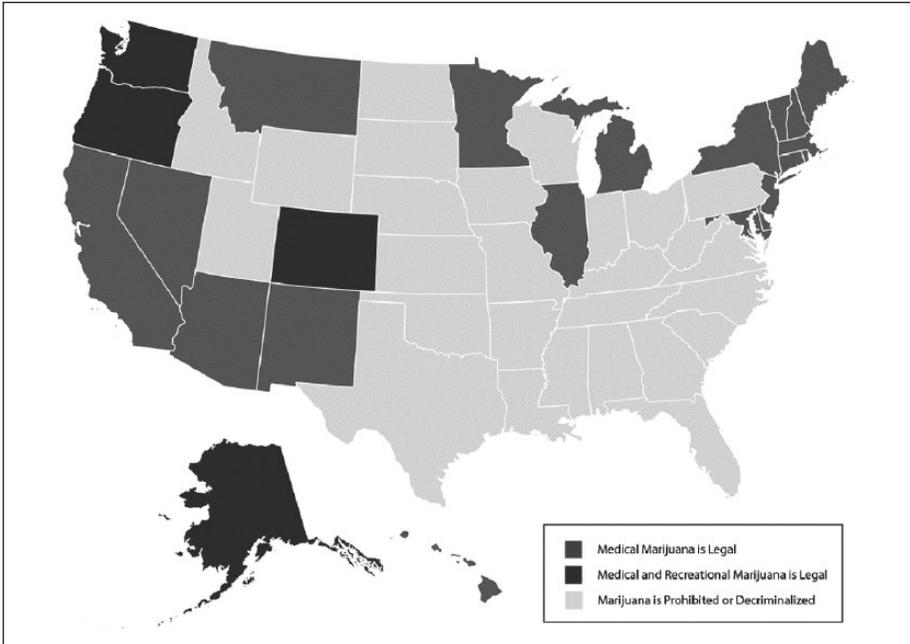


Figure 1. Legalization of marijuana in the United States (as of March 2015).

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(Caulkins, Hawken, Kilmer, & Kleiman, 2012; Caulkins et al., 2015; Earleywine, 2002; Miron, 2010), opponents argue that there are equally effective alternatives and that marijuana's therapeutic benefits are far outweighed by the social consequences (e.g., decreased productivity, driving under the influence, increased youth access) and health risks (e.g., memory loss, pulmonary and reproductive issues) that might accompany its approval (Bostwick, 2012; Caulkins et al., 2012; Cerdá, Wall, Keyes, Galea, & Hasin, 2012; Earleywine, 2002). The validity of these arguments is still up for debate, however, because the federal government, with few exceptions, has been unwilling to allow researchers to conduct experimental testing of marijuana's effects under the Controlled Substances Act (CSA) of 1970.

In the meantime, the prohibition against marijuana, both medically and recreationally, is under threat around the United States. As Figure 1 shows, a total of 23 states and the District of Columbia now have existing or planned medical marijuana programs as of March 2015, with at least 10 states enacting medicinal marijuana statutes since 2010 alone (Hanson, 2015). A recent Gallup poll also found that the majority of Americans now support legalization (Saad, 2014), and four states have legalized the commercial sale of recreational marijuana. Consequently, a policy issue has arisen wherein (a) prohibitive federal laws now stand in direct conflict with state trends and

public sentiment (Mikos, 2009) and (b) state borders now define the legal status of marijuana, both recreationally and medicinally.

In 2000 (Amendment 20) and 2013 (Amendment 64), Colorado became one of the first states to legalize medicinal and recreational marijuana. In subsequent years, criminal justice officials in western Nebraska began to notify state senators in Lincoln of a significant increase in marijuana traffic, straining comparatively small rural county budgets along the Colorado border. In addition, Nebraskan counties along Interstate 80 (I-80), which was deemed a High Intensity Drug Trafficking Area (HIDTA) by the U.S. Office of Drug Control Policy, reported more arrests, jail admissions, and court costs related to marijuana (Legislative Resolution [LR]-520 Testimonial). And recently, a 2014 Rocky Mountain HIDTA report found that a growing proportion of marijuana seizures along I-80 have originated in Colorado—about a 400% percent increase when comparing 2008 to 2013 (Rocky Mountain High Intensity Drug Trafficking Area, 2014)—leading one Nebraska senator to proclaim that “every county in Nebraska, especially the ones that are on I-80, are [Colorado] border counties now because that’s just a conduit that’s moving [marijuana] through the [state]” (LR-520 testimonial, p. 73).

In response to the aforementioned increases, the Nebraska state legislature passed LR-520, which commissioned a special committee to discuss possible solutions to the influx of marijuana reportedly being trafficked from across the border (e.g., increased state law enforcement presence and/or state funding). Given that the impetus for addressing social problems often comes from moral and community leaders with a particular vision of the issue (e.g., border county sheriffs; Rossi, Lipsey, & Freeman, 1993), we performed an examination of marijuana criminal justice activity in Nebraska in an effort to assess the validity of officials’ claims and provide the Nebraska legislature with an accurate description of the problem. To this end, we examine the *rate* of marijuana-related arrests and jail admissions during two periods from 2000 through 2013 after controlling for state and local law enforcement presence. We also estimate the costs associated with housing marijuana offenders in Nebraska’s county jail system, discuss the policy implications of our findings, and make suggestions for future research.

Marijuana Policy in the United States and Colorado

Prior to 1937, marijuana was both a legal commodity and a recognized medicinal in the United States (Bilz, 1992; Eddy, 2010). Allegations of marijuana’s harmful effects, the drug’s connection to violent crime, and failed efforts to control its distribution, however, convinced federal lawmakers to pass the Marijuana Tax Act of 1937, which required all growers, sellers, and buyers to register with the federal government and pay taxes on marijuana’s distribution and sale (Eddy, 2010). Despite staunch opposition from the legislative counsel of the American Medical Association, Dr. William C. Woodward, the Marijuana Tax Act was signed, and is recognized as federal government’s first attempt to regulate cannabis (Eddy, 2010).

In 1970, Congress passed the CSA, which regulated the manufacture, possession, and distribution of all drugs, and created five schedules (I-V), depending on the drugs' medical value, psychological and/or physical effects, and potential for abuse (Caulkins et al., 2012; Mikos, 2009). Congress placed marijuana on the most restrictive category—Schedule I—because lawmakers felt it had no recognized medical use and a high potential for abuse (Mikos, 2009).¹ The CSA also stipulated stiff penalties for minor violations depending on the nature of the offense (i.e., possession vs. sale), quantity of marijuana, and the offender's criminal history (Mikos, 2009). For example, growing a single plant is considered manufacturing marijuana, and is punishable by up to 5 years in federal prison and a US\$250,000 fine, even for first-time offenders (Eddy, 2010). Moreover, a guilty verdict can eliminate eligibility for federal student loans and/or public housing, as well as restrict future employment opportunities, all of which severely limit upward mobility post-conviction.

Until recently, the federal government has remained fairly committed to this hard-lined stance on issues relating to marijuana. For years, attempts were made to reschedule marijuana (e.g., citizens petition to the Drug Enforcement Administration [DEA] in 1995), and several congressional debates have taken place over its medicinal qualities (e.g., Hinchey–Rohrabacher Amendment, 2003-2007; Caulkins et al., 2012; Eddy, 2010). Meanwhile, in contradiction of federal law, California (1996), Washington (1998), Colorado (2000) and others passed initiatives that allowed the medicinal use of marijuana (Caulkins et al., 2012; Hanson, 2015). In response, the DEA conducted numerous raids on state approved dispensaries, which continued largely until 2009, when the U.S. Attorney's Office announced that raids against state sanctioned medical marijuana dispensaries would cease (Eddy, 2010), and that prosecution of those with a documented medical condition in possession of state approved medicinal marijuana would not be an efficient use of the federal government's resources (i.e., the Ogden memo to federal prosecutors).

The memo, in conjunction with the 2007 removal of the five-patient limit per caregiver under Amendment 20, may have provided the impetus for the rapid expansion of medical marijuana in Colorado. Although the Colorado constitution was amended in 2000 so that users with a serious diagnosed illness could purchase up to 2 ounces from state approved caregivers or possess up to six marijuana plants (Amendment 20), it was not until 2007 that caregivers could supply marijuana to an unlimited number of patients, and not until 2009 that the fear of federal prosecution ended (Caplan, 2012). Together, these policy changes may explain why researchers have found that Colorado's medical marijuana enrollment began to skyrocket around 2009 (Caplan, 2012; Salomonsen-Sautel, Min, Sakai, Thurstone, & Hopfer, 2014). Specifically, about 2,000 people were registered for medicinal marijuana as of 2007, compared with 6,369 by January 2009, and 55,469 by January 2010 (Caplan, 2012). By the end of June 2011, there were more than 125,000 registered medical marijuana users in Colorado (Colorado Department of Health and Environment, 2010; Salomonsen-Sautel et al., 2014).²

Although the availability of medical marijuana may have increased rapidly in Colorado after 2009, it is important to remember that these increases may not have necessarily caused increases in marijuana use more generally, and researchers have yet

to show that medical marijuana from one state has made its way into the illegal market across the border (e.g., Nebraska). Only one published study found that rates of marijuana use and perception of availability rose among Colorado adults (i.e., aged 26 and older) when comparing the years 2007-2008 to 2010-2011 (Schuermeyer et al., 2014). Researchers who have compared general marijuana use in medical states with non-medical states before and after the introduction of medicinal marijuana programs have found significant increases across medicinal states (Cerdá et al., 2012; Chu, 2014; Wen, Hockenberry, & Cummings, 2015), whereas others have found that there were not any significant increases (Gorman & Huber, 2007; Harper, Strumpf, & Kaufman, 2012).³ In any event, the Rocky Mountain HIDTA report (2014) concluded that adult marijuana use in Colorado increased nearly 36% since medicinal legalization expansion in 2009, and was 50% higher than the national average as of 2013, resulting in an increase in the prevalence of marijuana-related arrests in neighboring states.

Although the majority of the evidence is correlational, Cerdá and colleagues (2012) offer a number of possible explanations for why marijuana use would rise subsequent to medicinal legalization. First, it is possible that community norms more supportive of marijuana use, and in particular medicinal use, have contributed to higher rates of marijuana use generally. Passage of marijuana laws may suggest a changing of community norms, with the majority of residents in support of marijuana use, at least for medicinal uses. Second, the change in marijuana laws may reduce the perceived riskiness of use because people are no longer criminally deterred from using marijuana. Third, people may be more likely to try and continue using marijuana because the state medical community has seemingly endorsed its use. Although the medical community may not necessarily be fully supportive of the measures, the general public may believe it to be so. Finally, the greater availability and public promotion of the drug may have convinced more people to try, and continue to use marijuana. Due to the complexities of influences on human behavior, the nuances of deterrence, and the increasingly ambivalent attitude toward substance use (both licit and illicit) in general, a thorough explanation probably includes all four of these possibilities. Indeed, the increases in marijuana use may be similar to the trends in heroin use among U.S. soldiers in the Vietnam War, in which the combination of low prices, social approval, and general availability of heroin in Vietnam influenced many servicemen to try and continue to use the drug during tours of duty (Robins, Davis, & Goodwin, 1974).

Impact of Colorado's Legalization on Nebraska

Given that dispensaries now dot the urban landscape in Colorado, caregivers are unrestricted in the number of patients they may serve, and there are increasing number of medical patients who are able to carry up to two ounces, it is certainly possible that individuals with a little entrepreneurial spirit could decide to sell off what they do not use for medical reasons, particularly to people who do not have a medical prescription, or to those who live in states where marijuana is more difficult to procure (e.g., Nebraska). The 2014 Rocky Mountain HIDTA report concluded that the majority of the growth in Colorado-born marijuana seizures along I-80 have originated in three

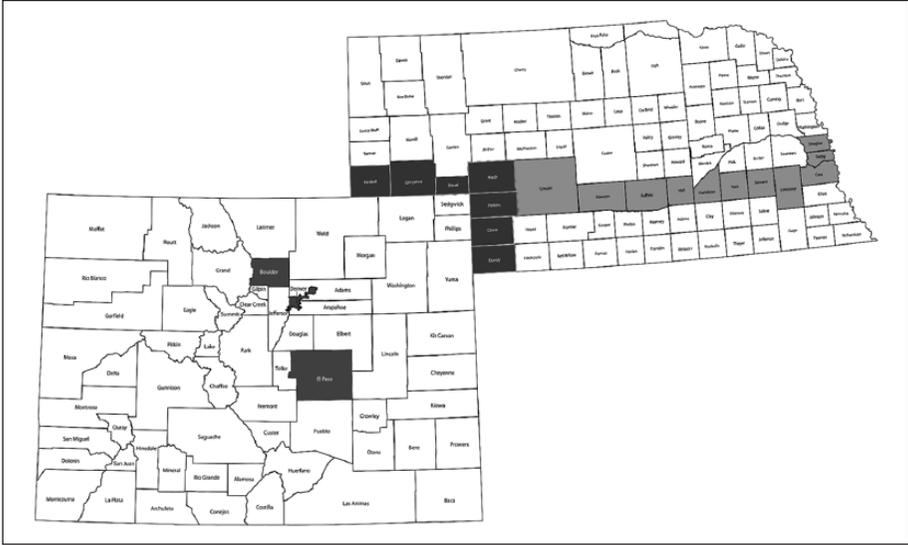


Figure 2. Maps of Colorado and Nebraska.

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Colorado counties—Denver, Boulder, and El Paso—which are all a short drive to the Nebraska border (i.e., about 3-4 hrs, see Figure 2). Given their proximity to Nebraska, a likely scenario is that marijuana originating in Denver, Boulder, and El Paso counties, whether sold by dispensary owners or indirectly through their patients, could be distributed to illegal market buyers in Nebraska.

One example of such an illicit endeavor was noted in the 2014 Rocky Mountain HIDTA report in which a Nebraska State Patrol (NSP) officer stopped a vehicle for a traffic violation, and subsequently discovered a one pound vacuum-sealed bag of marijuana. The driver admitted to transporting marijuana to Omaha (Nebraska) for US\$200 per trip and stated that a Boulder, Colorado, medical marijuana dispensary owner provided him with the marijuana and paid him for delivery. Such an example is, of course, indicative of increased marijuana traffic, not only for reasons related to recreational legalization, as most would expect, but also related to medicinal legalization. Thus, the increase in marijuana trafficking may begin much earlier (i.e., 2009) than the most recent trends related to recreational legalization. In fact, because the first recreational dispensaries did not open until January 1, 2014, any increases in marijuana activity prior to 2014 can only be attributed to the greater availability of medicinal rather than recreational marijuana.

In response to the accumulating evidence, the Nebraska state legislature passed LR-520, which commissioned a special committee to discuss state responses to a perceived increase in marijuana activity, particularly near the Colorado border (e.g., increased state law enforcement presence and/or state funding). On September 8,

2014, the committee met with criminal justice officials across the state of Nebraska to hear testimony from county law enforcement and court personnel reportedly affected by marijuana originating from Colorado. One statement, made by Scotts Bluff county Sheriff Mark Overman, reflects the general argument made by officials across Nebraska:

We believe that what Colorado has done is illegal and unconstitutional. We believe that the state of Nebraska and other states should bring legal action against Colorado. Their legalization of marijuana is in direct conflict with the Controlled Substances Act. It also conflicts with numerous other federal laws, federal law enforcement agency mandates, as well as international treaties and trade agreements signed by the United States. (LR-520 testimonial, pp. 37-38)

Sheriff Overman also testified that “we had some information about people that were going over there and buying large amounts, pounds of marijuana from these dispensaries, medical marijuana dispensaries, some of them were very unscrupulous . . . they’d sell all you wanted” (LR-520 Testimonial, p. 41). Others practitioners, including Deuel county sheriff Adam Hayward, and Cheyenne County sheriff John Jenson, testified that marijuana-related arrests and jail admissions began to rise steadily during 2010. Coincidentally, that was around the same time that the Colorado health department would make a final, albeit unsuccessful attempt to bring back the five-patient caregiver limit, and also the year following the end of federal prosecution at the behest of the U.S. Attorney’s Office, setting the stage for a massive expansion in the overall availability and prevalence of marijuana (Caplan, 2012; Salomonsen-Sautel et al., 2014).

Current Study

Given the timing of the large increases in registrants, if medical marijuana policy in Colorado was to have an effect on the prevalence of illegal marijuana in Nebraska, it is reasonable to expect this increase to occur during 2009 or thereafter. To assess the efficacy of the arguments made by Nebraskan law enforcement, and to isolate whatever changes in arrests for possession and sale of marijuana may be attributable to Colorado law, we compare the rates of marijuana-related possession arrests, sale arrests, and jail admissions in two groups of so-called “treatment counties”—the seven counties along the Colorado border and the 11 counties along the I-80 corridor—to comparable rates in the remaining 75 counties in the state of Nebraska from 2000 through 2013 ($N = 93$). These county groups can also be seen in Figure 2. We make three general predictions in this study:

1. Relative to control counties, counties on the Colorado border and counties along I-80 will experience higher rates of marijuana-related criminal justice activity during the latter part of the study period.

2. Relative to control counties, border and I-80 counties will experience significant increases in the rate of marijuana-related criminal justice activity.
3. Predictions 1 and 2 will persist in multivariate models with relevant controls.

To test these predictions, we employ a number of descriptive and multivariate techniques to assess the trends in marijuana-related arrests and jail admissions over the 14-year period. We then conduct a supplementary analysis of the increase in marijuana-related jail costs for each of these county groups, and discuss the extent to which these costs have been distributed evenly across the state. Based on our findings, we then make policy recommendations and suggest future avenues for interstate examinations of marijuana policy.

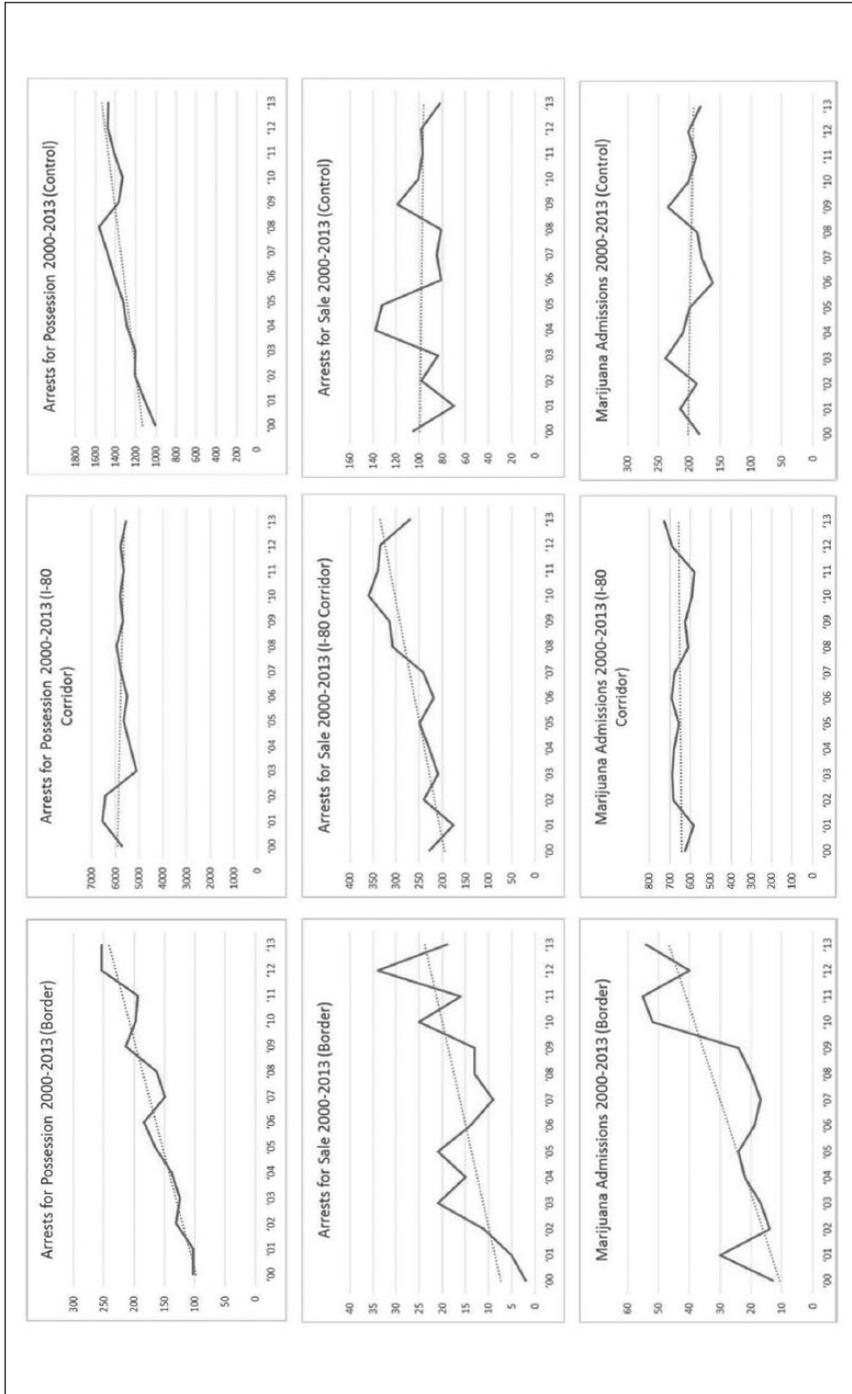
Method

We examined all marijuana-related arrests for possession and sale, as well as all marijuana-related jail admissions, per Nebraska county, from 2000 to 2013.⁴ We also examined the average annual costs, per 1,000 Nebraska taxpayers, for the incarceration of marijuana offenders in the county jail system.⁵ These data were collected from local and state agencies by the Nebraska Commission on Law Enforcement and Criminal Justice, and provided to the Nebraska Center for Justice Research for data analysis.

Figure 3 shows a number of noticeable trends over the 14-year period. Border counties, which are shown in the left column of Figure 3, have clearly experienced the most noticeable upward trend in marijuana-related arrests and jail admissions over the 14-year period. Two other noticeable trends—an increase in sale arrests in I-80 counties and an increase in possession arrests in control counties—also appear in the data. Finally, it is worth noting that marijuana sale arrests and jail admissions have actually fallen in control counties.

Yet a simple graphical analysis of raw numbers of marijuana-related arrests and jail admissions is insufficient to make firm conclusions about the effects of Colorado's marijuana policy.⁶ It is possible, for example, that the increase in marijuana arrests and jail admissions is simply due to a growing populace and/or an increased presence of law enforcement in those counties. To control for both factors, then, it was necessary that we examine rates instead of raw numbers and run multivariate models that, at a minimum, control for the presence of both state and local law enforcement.

Table 1 provides comparisons of the average rate of four outcomes—possession arrests, sale arrests, jail admissions, and jail costs—per 1,000 residents at both the beginning of the data collection period from 2000 to 2004, as well as the end of the period from 2009 to 2013. We also examined the difference in these outcomes to determine if there were significant differences between the two time periods. Border counties and those along the I-80 corridor were each dummy coded and compared with a reference category of the remainder of the counties in Nebraska. All the models, with the exception of the cost analysis, contain measures of local police officers per 1,000 residents as well as the average proportion of marijuana arrests made by the NSP



9 **Figure 3.** Trends in Marijuana-related Possession, Sale, and Jail Admissions.

Table 1. Description of the Sample.

	2000-2004		2009-2013		Change in rate 2000-2004 vs. 2009-2013	
	$\bar{\chi}$	s	$\bar{\chi}$	s	$\bar{\chi}$	s
Outcomes						
Rate of possession arrests	1.91	1.70	2.50	2.74	0.60	1.97
Rate of sale arrests	0.17	0.29	0.23	0.40	0.05	0.32
Predictors						
Border county	0.08	0.27	—	—	—	—
I-80 corridor county	0.12	0.32	—	—	—	—
Rate of officers/population	1.56	0.84	1.66	0.81	0.09	0.49
Proportion NSP arrests (possession)	0.42	0.27	0.46	0.30	0.04	0.26
Proportion NSP arrests (sale)	0.15	0.21	0.20	0.27	0.05	0.20
Proportion NSP arrests (total)	0.28	0.19	0.33	0.22	0.05	0.18
<i>n</i>		93		93		93
Outcomes						
Rate of marijuana admissions	0.29	0.45	0.37	0.51	0.07	0.34
Natural log of jail cost per taxpayer	6.12	1.54	6.54	1.36	0.21	0.17
Predictors						
Border county	0.08	0.27	—	—	—	—
I-80 corridor county	0.17	0.38	—	—	—	—
<i>n</i>		65		65		65

Note. A total of 28 counties in Nebraska did not run their own county jail or did not provide data for analysis. NSP = Nebraska State Patrol.

during the study years. All analyses were conducted using multivariate ordinary least squares (OLS) regression.

Findings

Table 1 shows that the rate of marijuana arrests and jail admissions is quite low (i.e., <2.5 arrests and admissions per 1,000 residents), and unsurprisingly, is the highest for possession arrests. It is also worth noting that, without exception, the rate of marijuana-related arrests, jail admissions, and associated costs of incarceration have increased when comparing the two 5-year intervals. Local law enforcement presence also increased, as did the proportion of arrests made by NSP. All differences were confirmed using differences of means tests ($p < .05$).

Table 2 displays the results for multivariate models of arrests, with models predicting possession along the top and those predicting the sale of marijuana along the bottom. First, with regard to possession arrests, counties on the Colorado–Nebraska border and those along the I-80 corridor had higher rates of possession arrests than did

Table 2. Models Predicting the Rate of Marijuana-Related Arrests.

	2000-2004		2009-2013		Change in rate 2000-2004 vs. 2009-2013	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Possession arrests						
Intercept	0.93	0.42	0.63	0.63	0.81	0.54
Border county	1.53***	0.58	4.57***	0.90	3.06***	0.72
I-80 corridor county	2.72***	0.46	3.14***	0.73	0.41	0.59
Rate of officers/population	0.13	0.18	0.24	0.29	0.33	0.39
Proportion NSP arrests (possession)	0.79	0.57	1.68**	0.78	0.64	0.74
<i>r</i> ²	.33		.35		.18	
Sale arrests						
Intercept	0.02	0.06	0.07	0.09	0.01	0.04
Border county	0.11	.10	0.48***	0.14	0.31**	0.12
I-80 corridor county	0.72	0.10	0.03	0.14	-0.02	0.10
Rate of officers/population	0.02	0.03	0.001	0.05	0.03	0.07
Proportion NSP arrests (sale)	0.76***	0.16	0.56***	0.17	0.34**	0.17
<i>r</i> ²	.34		.28		.12	

Note. Ordinary least squares coefficients with standard errors reported. NSP = Nebraska State Patrol.

p* < .10. *p* < .05. ****p* < .01.

the remaining counties in Nebraska during both time periods. The proportion of arrests made by the NSP predicted the rate of possession arrests from 2009 to 2013 only, while the rate of local law enforcement officers did not have a significant effect during either time period. With regard to the difference in the average rate of possession, only counties on the border exhibited a significant and positive difference after controlling for changes in law enforcement. Together, the model accounted for 33% of the existing variation in possession arrests from 2000 to 2004, 35% of the variation from 2009 to 2013, and 18% of the variation in the difference between these time periods.

Turning to the analysis of sale arrests, none of the county groups were significantly different from 2000 to 2004. Like possession arrests, the rate of local law enforcement did not have a significant effect on the rate of sale arrests during either time period. Counties with a higher proportion of NSP arrests, however, did have higher rates of sale. Contrast this with 2009 to 2013, in which the proportion of NSP arrests still had a significant and positive effect, but counties on the Colorado–Nebraska border had significantly higher rates of sale as well. Counties on the I-80 corridor, however, had a similar rate of sale compared with control counties during the latter time period. And, although it seems that the growth in the proportion of NSP arrests may have accounted for some of the increase in the rate of sale, the effect of being on the Colorado–Nebraska border remained positive and significant. That is, similar to possession arrests, border counties were the only counties to experience a positive change

Table 3. Model Predicting the Rate of Marijuana-Related Jail Admissions.

	2000-2004		2009-2013		Change in rate 2000-2004 vs. 2009-2013	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Jail admissions						
Intercept	-0.03	0.22	-0.24	0.24	-0.06	0.05
Border county	0.03	0.23	0.51**	0.23	0.54***	0.18
I-80 corridor county	0.25	0.14	0.05	0.17	-0.14	0.12
Rate of officers/population	0.10	0.12	0.26*	0.14	0.14	0.09
Proportion NSP arrests (total)	0.81**	0.35	0.77***	0.23	0.34	0.25
<i>r</i> ²	.18		.31		.21	

Note. Ordinary least squares coefficients with standard errors reported. NSP = Nebraska State Patrol.
p* < .10. *p* < .05. ****p* < .01.

in the rate of sale, after controlling for changes in state and local law enforcement. Together, the predictors in the model accounted for 34% of the variation in sale arrests from 2000 to 2004, 28% of the variation from 2009 to 2013, and 12% of the variation in the difference in the rate of sale arrests between these time periods.

Jail Admissions and Estimated Costs

Turning to the analysis of jail admissions (Table 3), and the associated costs of incarceration (Table 4), we found that counties with more NSP arrests had higher rates of marijuana-related jail admissions from 2000 to 2004, whereas border counties, those with a higher rate of local officers per population, and those with more NSP arrests had higher rates of marijuana-related jail admissions from 2009 to 2013. When we compared the difference between the two time periods, and similar to both possession arrests and sale arrests, only one variable, being located on the Colorado border, predicted increases in the rate of marijuana-related jail admissions. The rate of jail admissions in counties along the I-80 corridor, however, remained similar to that of control counties during both time periods. All told, the model accounted for 18% of the variation in jail admissions from 2000 to 2004, 31% of the variation from 2009 to 2013, and 21% of the variation in the difference in the rate of jail admissions between these time periods.

Table 4 indicates that only counties along the I-80 corridor experienced higher average costs, during both time periods, compared with control counties. Counties along the Colorado border, meanwhile, had similar costs as control counties for both periods. The change in the rate of costs between 2000-2004 and 2009-2013, although not significant, was positive for border counties and negative for I-80 counties, suggesting that only counties along the Colorado border experienced a positive change in marijuana-related incarceration costs. This is only speculative, however, given the

Table 4. Model Predicting the Rate of Dollars Spent for Incarceration.

	2000-2004		2009-2013		Change in rate 2000-2004 vs. 2009-2013	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Cost estimate						
Intercept	5.89	0.22	6.36	0.24	0.47	0.22
Border county	0.25	0.23	0.41	0.63	0.16	0.52
I-80 corridor county	1.23**	0.14	0.84*	0.45	-0.31	0.73
r^2	.09		.06		.01	

Note. Ordinary least squares coefficients with standard errors reported.

* $p < .10$. ** $p < .05$. *** $p < .01$.

insignificant effect and low sample size.⁷ The effect of being on the I-80 corridor explained about 9% of the variation in the rate of costs from 2000 to 2004 and about 6% from 2009 to 2013.

Discussion

In 2000, the state of Colorado legalized the medicinal use of marijuana. It was not until 2008 and 2009, however, that the medical marijuana program really began to rapidly expand (Caplan, 2012; Cerdá et al., 2012; Colorado Department of Health and Environment, 2010; Salomonsen-Sautel et al., 2014). At the same time as this expansion, criminal justice officials across the state of Nebraska suggested that there had been an influx of marijuana in their counties, and more specifically, in the counties along the Colorado–Nebraska border and those along I-80. As pressure to address the perceived increase in illegal marijuana traffic began to mount, the Nebraska legislature commissioned a committee to hear testimony from county officials and begin a discussion on how to formulate a response. In the interest of informing this argument, we set out to determine whether, after controlling for trends in population and local and state law enforcement, border counties and those along the I-80 corridor did indeed experience substantial growth in marijuana criminal justice activity subsequent to policy changes in Colorado. In short, we found that border counties, but not necessarily those along the I-80 corridor, experienced a significant growth in marijuana-related arrests and jail admissions after the expansion of the medical marijuana program in Colorado.

Although border counties had comparable rates of marijuana arrests and jail admissions initially, they were significantly higher than control counties during the most recent period of study (i.e., 2009–2013). The one exception to this trend was that border counties and those along the I-80 corridor had higher rates of possession arrests both before and after the influx of medical marijuana registrants in Colorado. Although counties along the I-80 corridor had higher rates of possession arrests from 2009 to 2013, we find no evidence to suggest that these counties experienced higher relative

rates of sale arrests or jail admissions from 2009 to 2013. The absence of the I-80 county effect during the later period of study may, at least in part, be due to the heavy presence of state patrol along the I-80 corridor. Consequently, once these effects are included, I-80 counties have similar rates of sale arrests and jail admissions as control counties. Supplemental analysis confirmed these suspicions, as I-80 counties were significantly higher than control counties when state patrol measures were excluded from the models presented here. Another possibility is that individuals transporting marijuana through Nebraska may be avoiding main thoroughfares such as I-80 because they assume that other routes will be less heavily patrolled, particularly by the state police, lowering the chance of a traffic stop. But given that we had no way to examine law enforcement patrols, or the perceptions of those arrested, either explanation is mere speculation. In sum, although we found strong support for the prediction that border counties would experience higher rates of marijuana-related activity from 2009 to 2013 relative to control counties, this was not necessarily true of counties along the I-80 corridor.

With regard to whether rates of marijuana-related criminal justice activity increased, we found that border counties, but not I-80 counties, experienced a significant and positive change in the rate of possession arrests, sale arrests, and jail admissions. In other words, border counties were the only counties to experience a significant increase in the rate of marijuana-related criminal justice activity after the hypothesized influx of marijuana activity in Nebraska subsequent to the expansion of medical marijuana in Colorado. In line with claims made by criminal justice officials across the state of Nebraska then, it is at least plausible to suggest that the increasing availability or low risk of use in Colorado has contributed to a surplus of marijuana that has made its way over the border to Nebraska. However, it is important to remember that this analysis does not prove that such a phenomenon is taking place, and additional research will be needed to confirm these correlational findings.

Most importantly, we discovered that these trends persist despite controls for population changes and levels of local and state law enforcement. The results clearly indicate that the activity of the NSP is perhaps the more influential of the two law enforcement controls, as counties with higher proportions of arrests made by the state patrol typically had higher rates of marijuana-related arrests and jail admissions. The presence of local law enforcement, however, seemed to have very little to do with the rate of marijuana arrests, and only influenced the rate of marijuana-related jail admissions from 2009 to 2013.

Implications for Policy

Of course, the implications of our analysis expand far beyond the situation between Nebraska and Colorado. Our results have considerable policy implications for all states located near others that legalize marijuana, though it remains far too early to estimate the most recent trends regarding recreational legalization. The obvious implication is that states such as Nebraska, as well as the federal government, may need to ultimately rethink their marijuana laws, and make decisions regarding penalty enhancements,

reductions, and/or forms of legalization. The Attorney Generals of Nebraska and Oklahoma, for example, have brought a joint lawsuit in federal court against Colorado (*States of Nebraska and Oklahoma v. State of Colorado*, 2014) alleging that under the U.S. Constitution's Supremacy Clause, Colorado's legalization of marijuana is unconstitutional because it remains illegal under federal law. Colorado's Attorney General has since filed a counterclaim, joined by the Attorney Generals of Washington and Oregon, contending that although marijuana is illegal under federal law, the DEA and the U.S. Attorney's office have decided to take a hands-off approach to the retail regulation of marijuana; thus, any lawsuit should be directed at the federal government for their lack of enforcement rather than at the states whose citizens have voted to legalize the drug. As of this writing, however, the Supreme Court of the United States had yet to decide whether it will agree to hear the case.

In the meantime, our research suggests that states where marijuana remains illegal may experience increases in marijuana-related arrests and jail commitments after medicinal legalization has taken place in states along their borders. Our research also indicates that counties along the border of medicinal states might experience these increases regardless of law enforcement presence, whereas rates along major transportation arteries may largely depend on the intensity of state patrol activities. Therefore, jurisdictions in close proximity to states that have legalized medicinal programs may be at greatest risk of experiencing increased levels of illegal marijuana, after controlling for changes in population and law enforcement presence.

Limitations and Recommendations

Although our analysis provides a meaningful contribution to the existing research on the implications of interstate marijuana policy, we acknowledge that our approach contains certain limitations. Undoubtedly, our inability to draw on a larger sample of counties, conduct a time-series analysis, or account for all of the potential covariates may ultimately limit the generalizability of our findings. In particular, our cost analyses lack estimates of expenditures incurred by state and local law enforcement and court agencies, as well as fines that may offset some of the cost of these expenditures. As a result, it is possible that the total costs incurred by the counties in our sample may be both under- as well as over-estimated. Moreover, in the absence of direct measures of actual marijuana use, possession, or sale (e.g., accurate self-reports), our analysis also relies on official measures of law enforcement and correctional activity. These measures may reflect law enforcement's reactions to true changes in illicit activities, patrol directives, and/or changes in resources and staffing. Finally, we could not assess western Nebraskans' attitudes regarding Colorado's policy shift in marijuana policy, and it is possible these trends may simply reflect changing community norms similar to what has taken place across the state border.

Therefore, we recommend that this analysis be expanded to incorporate data from states that surround not only Colorado (e.g., Kansas, Oklahoma, Wyoming), but also other states that have legalized medicinal marijuana (e.g., California). In so doing, it might be possible to determine how variation in state statutes, law enforcement practices,

and changing community norms might correspond with changes in the level of marijuana-related arrests and jail admissions. In particular, researchers should compare marijuana-related arrests, jail admissions, and associated costs between states that continue to pursue criminal action for even petty possession, versus states that treat possession as a simple violation. It might also be useful to consider whether law enforcement has actively pursued marijuana offenders (e.g., roadside checkpoints) or been more reactive (e.g., typical patrol) subsequent to legalization in neighboring states, and examine the extent to which these orientations may influence reported rates of marijuana activity.

Conclusion

This study examined marijuana-related criminal justice activity across the state of Nebraska in an effort to assess the validity of purported increases of marijuana activity, and provide the Nebraska legislature with an accurate description of the problem. Our results suggest that illegal marijuana activity in Nebraska did increase subsequent to the expansion of medical marijuana in Colorado, but this effect was mostly limited to the counties closest to the border. Although county officials along I-80 also reported similar increases, we found that, with the exception of possession arrests, these increases are primarily driven by a disproportionate amount of state patrol arrests made along the I-80 corridor. These studies will only become more important as additional states begin to legalize recreational marijuana, which has the potential to exaggerate the effects related to the availability of medical marijuana under study here. In the interest of informing the looming debate, then, researchers should continue to explore how varying degrees of legalization in one state might impact the amount of illegal marijuana across the border.

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Notes

1. To qualify as an “accepted medical treatment” under the CSA, the drug must (a) have a known and reproducible chemistry, (b) demonstrate safe and effective treatment empirically, (c) be accepted by medical experts, and (d) have widely available scientific evidence (Eddy, 2010). Due to federal restrictions on marijuana research, however, much of what is known about marijuana and its effects is largely anecdotal (Earleywine, 2002).
2. The increase in the number of registrants is the only viable indicator of the expansion of medical marijuana in Colorado because there was no local, state, or federal regulation of the industry at this time (see Kamin, 2012). As such, this is the most common measure used to illustrate the burgeoning nature of the industry.
3. Pacula, Powell, Heaton, and Sevigny (2015) speculate that researchers’ disparate findings may be due to methodological inconsistencies across studies (i.e., may be due to state-specific legal protections of dispensaries, the data used, the subpopulation examined, and specific measures and definitions of “use”).
4. An arrest is counted each time a person is taken into custody or issued a citation or summons. Although an individual may be charged with multiple crimes at the time of arrest, only the most serious charge is counted.
5. Estimated costs are calculated by multiplying the total number of marijuana admissions (per year) by the average length of stay for marijuana offenders per county (in days) by a Nebraska-specific cost per day to house an offender (Henrichson & Delaney, 2012). We then divided this total cost per year by the number of taxpayers (i.e., population 18 and older) in each county and multiplied this figure by 1,000 to get the rate of annual dollars spent per 1,000 taxpayers.
6. Although Figure 3 depicts an upward trend in “treatment” counties prior to the expansion of medicinal marijuana (i.e., 2000-2004), it is important to note that (a) this figure shows raw numbers of arrests and jail admissions not standardized by changes in population, and (b) visual inspection of the data, differences of means tests, and regression analyses showed that *yearly* differences in the rate of marijuana-related arrests and jail admissions in treatment counties were not significantly different than controls until the latter period of study (i.e., 2009-2013).
7. Many counties in Nebraska do not operate their own jails ($n = 28$); accordingly, these analyses are based on only 65 of the 93 counties that had data available for analysis, which limits the variation and statistical power of the analysis.

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