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## Impact of Legalization of Recreational Marijuana on Drug Law Violations: Evidence from US Colleges and Universities

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# Impact of Legalization of Recreational Marijuana on Drug Law Violations: Evidence from US Colleges and Universities

## Abstract

The use of various controlled and illegal substances, especially by young adults, has been a cause of much concern among policymakers, law enforcement officials, educators, and parents. State-level legalization of recreational marijuana in the United States raised concerns about potential adverse impacts on campus drug use and drug law violations. This paper combines data from three sources for 2001-02 to 2023-24, including college campus drug law violations that are collected under the Clery Act of 1990. We find that state legalization of recreational marijuana substantially reduced the arrests and disciplinary incidents for drug law violations.

## JEL classification

I21, I23, K42

## Keywords

marijuana legalization, adolescent risky behavior, higher education, campus law enforcement

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## **Introduction and Background**

States have liberalized their policies towards marijuana over the past thirty years. As more states legalize the recreational use of marijuana, knowing how the consumption of marijuana changes in response helps inform how criminal justice and addiction resources are directed.

After decades of prohibition, California became the first state to legalize marijuana for medical reasons in 1996. State-level medical marijuana laws have since expanded to 40 states and Washington, DC, as of 2025. Many states then further liberalized marijuana laws by legalizing recreational marijuana. Colorado and Washington were the first to adopt recreational marijuana legalization (RML) in 2012. As of 2025, 24 states and Washington, DC have legalized the recreational use of marijuana. RML allows legal-aged adults to purchase marijuana from a licensed dispensary for recreational use, without a medical need or a doctor's permission.

Previous research suggests that marijuana use increased post-RML (Miller et al. 2017) due to lower prices (Anderson et al. 2013), perceived safety (Moreno et al. 2016), and, even for those under legal age, likely lower legal threats (Kerr et al. 2017).

In this paper, we focus on the effects of recreational marijuana legalization on drug arrests and disciplinary actions on college campuses. About 40 percent of college students have a substance-use disorder (Arterberry et al. 2020) and about 25 percent of college students are current marijuana users (Patrick et al. 2025).

Among college students, survey evidence suggests that RML increases marijuana consumption. Evidence using the National College Health Assessment (NCHA) survey showed increased marijuana use for some groups in some early-adopting states. These include heavy alcohol users in a large Oregon institution (Kerr et al. 2017); at Washington State University, especially among Black and Hispanic students (Miller, Rosenman, and Cowan 2017); and at a variety of institutions in the first seven RML states (Bae and Kerr 2019).

College students are a mix of underage marijuana users and legal marijuana users, even in RML states. The Chronicle of Higher Education (2019) reports that 58 percent of undergraduate students and 1 percent of graduate students were aged 21 and under. Following RML, Firth et al. (2020) observed increased juvenile marijuana arrests in Oregon, but Firth et al. (2019) find decreased adult (21+) marijuana arrests in Washington.

We add to this literature through the examination of a new data set, the Campus Safety and Security Survey, to estimate the effect of RML on arrests and disciplinary incidents for druglaw violations. Our sample includes changes in RML laws in 22 states and violations at 2,018 institutions of higher education.

## Data and Methodology

We construct the dataset from three sources. We obtain institutional characteristics from the Integrated Postsecondary Education Data System (IPEDS) and RML information from the National Conference of State Legislatures (NCSL). The Clery Act requires public reporting of crime on campus; this information is provided by the Campus Safety and Security Survey and includes drug law violations and violent and property crimes.

The data covers the period between 2001 and 2023, when 23 states and DC legalized recreational marijuana, beginning in 2012. Table 1 provides the dates of legalization through 2023.

We estimate for institution  $i$ , in state  $s$ , and in year  $t$  variations of:

$$\text{Drug Violations}_{ist} = \beta \text{legal}_{st} + \alpha X_{ist} + \delta_i + \tau_t + \epsilon_{ist}, \quad (1)$$

We measured drug violations as either arrests or disciplinary actions per thousand students. Disciplinary actions are referrals by law enforcement to the institution for drug law violations that are recorded by the college or university and may be sanctioned. We either include an indicator variable for whether a state has adopted RML or event study indicators of leads and lags of the policy change.

We include year fixed effects,  $\tau_t$ , and institutional fixed effects,  $\delta_i$ . Our sample comprises 2,108 institutions, including 78 land-grant universities, 3 tribal schools, and 70 historically black institutions. More than half of the sample (1,166) are private not-for-profit institutions; about 11 percent are institutions whose highest degree granted is an Associate's. Institutional fixed effects capture these fixed characteristics.

The vector  $X_{ist}$  are time-varying control variables: logged total student enrollment, the percentage of student applicants admitted, yield rate (percentage of admitted students matriculating), percentage of female students, percentage of full-time students, per-student campus violent crimes, and per-student campus property crimes. We include these controls in some specifications. The time-varying controls may be affected by the treatment; we include the controls as robustness checks. Standard errors are clustered by state.

Table 2 provides descriptive statistics of key variables. Disciplinary incidents are much more common than arrests.

We estimate the above using Two Way Fixed Effects (TWFE), but also a wide range of newer difference-in-differences methods that account for the staggered adoption of RML and potential heterogeneous effects.

## Results

Table 3 presents estimates without and with time-varying controls in the odd and even columns. Columns (1) and (2) contain two-way fixed effects estimates; Columns (3) and (4) present Callaway and Sant’Anna (2021) average treatment on the treated (ATT) estimates. Columns (5) and (6) present difference-in-differences estimates using the Mundlak approach as recommended by Wooldridge (2023). A consistent pattern emerges for the drug law violations: post-RML, arrests and disciplinary incidents decline. Figure 1 presents event-study estimates of drug-law arrests using Sun and Abraham (2021) that display the same decline in arrests, at least in the years immediately following RML.

The magnitude of the effects is relatively large. A 0.6 decrease in arrests per thousand students reflects a 38 percent decline at the mean; a 2.3 decrease in disciplinary incidents per thousand students is a 50 percent decline at the mean.

Table 4 provides Wooldridge (2023) ATT estimates for a variety of robustness checks. These specifications do not include the time-varying controls to avoid any contamination with the treatment post-adoption. We split the sample by above and below median violent crime rates in the first year of the sample (Columns (1) and (2)) and then by property crime rates (Columns (3) and (4)). We observe larger declines post-RML in institutions with higher crime rates. Similarly, the results are robust to omitting the first year of the sample (2001) (Column 5) and to ending the sample in 2019, pre-Covid-19 (Column 6).

We also separately estimated the ATT for public universities and for private universities (Columns (7) and (8)). The decline in arrests for drug laws is larger for private institutions than the decrease in the full sample of institutions. The decline is not statistically significant for public institutions. Similarly, the post-RML decline in disciplinary incidents is larger for private institutions than for public institutions. Columns (9) and (10) provide ATT estimates for two-year institutions and four-year and higher institutions. We find that four-year and higher institutions experience a larger decline in both arrests and disciplinary incidents after RML than the decrease across all institutions. The ATT estimates for two-year institutions are not statistically significant. These results are likely because four-year and higher institutions are more likely to be residential campuses, compared to two-year institutions.

## Conclusion

The state-level legalizations of recreational marijuana have presented many concerns about its effect on youth and the college-age population. Using data reported by college campuses, we

observe that arrests and disciplinary incidents for drug law violations decreased following the legalization of recreational marijuana.

The decreases in arrests after legalization are especially steep at public institutions, four-year institutions, and higher-crime-rate institutions. Additional research exploring these differences could shed light on underlying changes in police employment and focus.

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Figure 1: Sun-Abraham Event-Study Graph of Effects of RML on Drug Violation Arrests and Disciplinary Actions

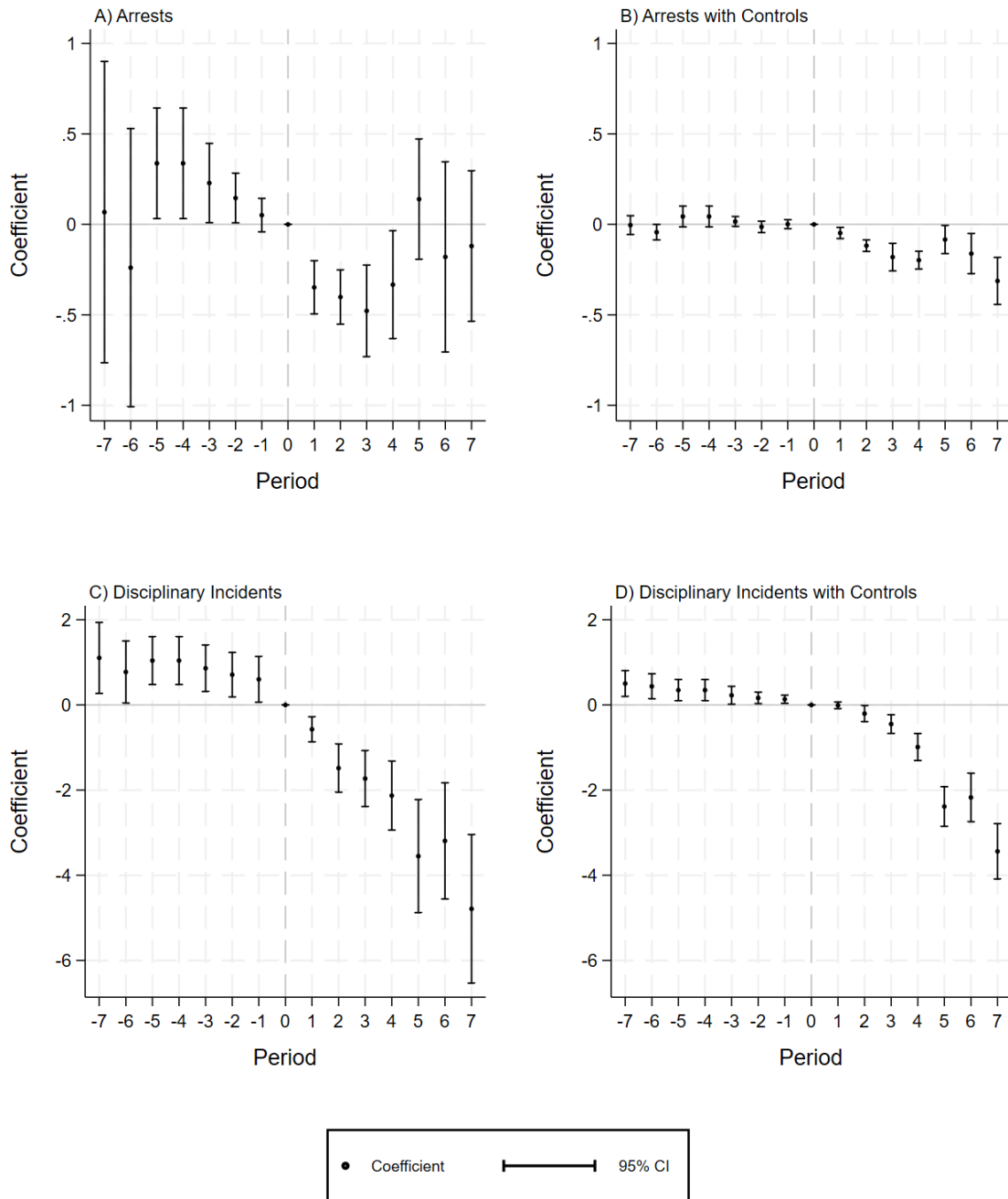


Table 1: RML by US States

Year	States
2012	Colorado, Washington
2014	Oregon
2015	DC
2016	California, Massachusetts, Maine, Nevada
2018	Michigan
2020	Arizona, Illinois, Montana, New Jersey, Vermont
2021	Connecticut, New Mexico, New York, Virginia
2022	Maryland, Missouri, Rhode Island
2023	Delaware, Minnesota, Ohio

Notes: Legalization was passed in DC in November 2014, but the effective year of legalization was 2015. In Illinois, the law was enacted in 2019, but recreational legalization began in 2020.

Table 2: Summary Statistics  
(N = 38,145)

Variable	Mean	Std. dev.	Min	Max
Per-Student Drug Arrests	1.58	14.49	0	2000
Per-Student Drug Disciplinary Incidents	4.57	12.41	0	1367.2
Logged Student Enrollment	7.77	1.50	1.10	12.12
Percent Female Students	1.41	1.15	1	121
Percent Full Time Students	0.79	0.18	0.01	1
Percent Admitted	0.69	0.21	0.02	1
Percent Yield	0.42	0.25	0	1
Campus Violent Crime Per Student	1.19	23.00	0	3044.87
Campus Property Crime Per Student	4.50	73.83	0	9907.05

Table 3: Drug Law Violations and RML, 2001-2023

	(1)	(2)	(3)	(4)	(5)	(6)
	Two-way fixed effects		Callaway-Sant'Anna		Wooldridge	
<i>Panel A: Drug Law Violation Arrests</i>						
RML	-0.575** (0.218)	-0.550** (0.233)	-0.411* (0.211)	-0.268 (0.259)	-0.682*** (0.237)	-0.917*** (0.125)
Controls?	no	yes	no	yes	no	yes
R-squared	0.002	0.151				
<i>Panel B: Drug Law Violation Disciplinary Incidents</i>						
RML	-2.409*** (0.745)	-2.429*** (0.707)	-2.486*** (0.585)	-2.281*** (0.605)	-2.369*** (0.531)	-2.781*** (0.596)
Controls?	no	yes	no	yes	no	yes
R-squared	0.020	0.161				

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . There are 38,145 observations. Standard errors clustered by state in parentheses. Controls in columns (2) and (4) include logged enrollment, percent female students, percent full-time students, percent admitted, percent yield, and violent and property crime rates. All specifications include year and institution fixed effects.

Table 4: Sample Robustness Checks Using Wooldridge (2023)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	By Violent Crime		By Property Crime							Four Year and
	Above	Below	Above	Below	2002-2023	2001-2019	Public	Private	Two	and
	median	median	median	median					year	Above
<i>Panel A: Drug Law Violation Arrests</i>										
RML	-0.849**	-0.391	-0.760*	-0.515**	-0.746***	-0.671***	-0.475	-0.844***	1.499	-0.790***
	(0.382)	(0.244)	(0.399)	(0.245)	(0.184)	(0.256)	(0.487)	(0.275)	(2.613)	(0.183)
N	16,495	15,680	16,387	15,788	36,643	31,451	11,999	26,146	2,548	35,597
<i>Panel B: Drug Law Violation Disciplinary Incidents</i>										
RML	-3.148***	-1.698***	-3.038***	-1.862***	-2.519***	-1.460**	-1.486***	-2.766***	2.401	-2.604***
	(0.688)	(0.453)	(0.867)	(0.3)	(0.534)	(0.697)	(0.528)	(0.707)	(2.439)	(0.541)
N	16,495	15,680	16,387	15,788	36,643	31,451	11,999	26,146	2,548	35,597

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Standard errors clustered by state in parentheses. All specifications include year and institution fixed effects.