

## Utilizing Probit Analysis to Explain Marijuana Policy Adoption Across the Fifty States

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### Abstract

**Purpose Statement:** This study intends to explain the differences in medical policy across the 50 states using political culture and policy liberalism as indicators, explaining why some states adopt medical marijuana while others do not. **Literature:** After reviewing the literature for this study, a gap exists empirically explaining why some states adopt medical marijuana policies while others do not. **Data:** This study incorporates multiple socioeconomic and political variables to explain why some states adopt medical marijuana policies while others do not. **Methods:** This study utilizes a policy diffusion model similar to Berry and Berry's landmark work explaining lottery policy adoption across the 50 states. **Findings:** Utilizing a logistic regression model, the study found that policy liberalism is a significant factor in predicting medical marijuana policy adoption across the states. **Limitations:** Although quantitative techniques help explain general patterns of policy diffusion, to gain more in-depth knowledge of state cultural differences in medical marijuana policy adoption, especially those states with similar political cultures, future studies should incorporate qualitative techniques that could provide the breadth and depth needed to understand these differences.

The Controlled Substances Act was passed in 1970 and serves as the foundation for the federal government's fight against illegal drug use and distribution in the country. It regulates all aspects of drug distribution, importation, ownership, and use across the states (DEA, 2025). At the time of its passage, Marijuana was a Schedule 1 substance because of its ability to become addicted and abused, and there was no identified medical use for the drug (Anderson, 2013). The Controlled Substance Act, however, has recently been challenged by several states through the adoption of several state policies legalizing aspects of Marijuana. In these "laboratories of democracy" (Brandeis, 1932), states such as California began to challenge this longstanding federal policy by lessening the penalty for Marijuana possession and use at the state level of government.

In 1996, California proposed the use of medical Marijuana. Still, instead of using the legislature to address the issue, they chose to bring the issue before the people in a ballot initiative or state-level referendum. Proposition 215 was passed by California voters, approving the use of medical Marijuana in the state. This policy window sparked the opening of Marijuana legislation across the country (Vann, 2022).

One explanation for why Tennessee has yet to protect families with codified legislation regarding medical Marijuana might best be provided by John Lyon in one of his many writings on political culture.

"Political culture consists of widely held values, attitudes, and beliefs that shape political dialogue and behavior, popular expectations of government and ultimately public policy" (Lyons et al.). The South overwhelmingly influences Tennessee's political culture; Southern culture is traditionalistic. Therefore, Tennessee's political culture is traditionalistic, and its citizens strongly support traditional values and institutions. Religion has played a significant role in Tennessee's political culture. Tennessee is overwhelmingly Protestant, Baptist, Methodist, and Presbyterian. However, in rural areas of Tennessee, Fundamentalism strongly influences the political culture (Lyons et al.).<sup>1</sup>

As states continue to adopt and pass legislation attempting to codify and protect all stakeholders in the marijuana policy arena, one question comes to mind in trying to understand this social phenomenon: *Why do some states adopt and regulate marijuana policies while others do not?* Even though marijuana policies are becoming more universally accepted across the country, legislatures and politicians still do not support marijuana for various reasons. To better understand why a particular segment of the population is still opposing marijuana policies, examining this policy arena through the lens of political culture and policy liberalism may assist in understanding such legislative behavior.

Much work has been conducted to explain political culture's influence on public policy formulation and implementation. Examining the various historical and contemporary works in this area will help us understand the authors empirical model, which explains why some states support the legalization of marijuana legislation while others oppose this important recreational and medical procedure.

#### Literature Review: Historical Context of Marijuana Across the States

Currently, there are only four states in the union that have failed to decriminalize all aspects of Marijuana: South Carolina, Kansas, Idaho, and Wyoming. Another seven states only allow CBD with THC only. They are Texas, Tennessee, Georgia, Kentucky, Indiana, Wisconsin, and Iowa. Two states, North Carolina and Nebraska, have decriminalized marijuana. In contrast, the remaining states have either completely legalized all aspects of marijuana, including its use for medical procedures or decriminalized it in their respective states (DISA, 2025).

One reason some states have successfully adopted marijuana policies is the utilization of "direct democracy" initiatives instead of legislative initiatives (Vann Jr., 2022). According to Hannah and Mallison (2018), direct democracy provides a means of direct citizen participation in making a policy decision when citizens perceive the government as not correctly reflecting their personal views. These governmental actors could be at the state or federal levels of government. Legislators tend to support such ballot initiatives because it takes the controversial vote away from them so they are not penalized with defeat during the next election cycle. Therefore, ballot box initiatives are supported by all players in many of the more controversial policy arenas.

#### State Levels of Classification and Legalization

Since the passage of Proposition 215 in California, states have approached the legalization of Marijuana in various ways. Researchers have classified the states into six distinct categories of legalization in 2025. They are as follows (DISA, 2025):

1. States that have legalized all aspects of marijuana. Specifically, residents in the state can participate in recreational as well as medical marijuana, and it has been decriminalized.
2. States that have both medical and decriminalized marijuana but have yet to pass legislation that makes Marijuana a recreational drug for its citizens.
3. States with only medical Marijuana provisions and do not allow recreational use of marijuana. These states have also not decriminalized marijuana but many of the laws in these states are relaxed and are not being prosecuted.
4. States that have only decriminalized marijuana possession but do not allow for recreational or medical marijuana in the state.
5. States that have only legalized CBD with THC. CBD is cannabidiol, and it is used to assist in certain health conditions, such as improving someone's mood and/or reducing pain. It does not produce a "high". THC has the potential to cause someone to get high but is also used to relieve medical conditions such as pain, nausea, and anxiety (Holland, 2024).

6. States where marijuana is completely illegal. There are currently only four states that do not make any legal provisions for marijuana. They are South Carolina, Kansas, Idaho, and Wyoming.

### **Political Culture and Policy Liberalism**

One reason why the direct initiatives adopted by states that led to marijuana policy changes might be explained by a state's political culture. Political culture is one of the central research themes in contemporary political and policy science, but scholars remain divided on its meaning. Almond and Verba (1963) postulate that "political culture is the pattern of individual attitudes and orientations toward politics among the members of a political system. The subjective realm underlies and gives meaning to political actions."

"Political Culture" functions as a conceptual umbrella for a wide heterogeneous range of political issue areas, such as national character, the impact of collective historical experiences on national identity, and the emotional or normative dimensions of the relationship between the state and its citizenry. This includes aspects such as apathy or a sense of political efficacy, which are prominent concerns in the literature regarding political culture (Dittmer, 1977). According to Elkins & Simeon (1979), "Political culture" is a shorthand expression of a "mindset" that "has the effect of limiting attention to alternative behaviors, problems, and solutions that are logically possible." However, one of the most, if not the most, prominent scholars of political culture, Daniel Elazar, defined political culture as a "concept attempting to explain the differences in socio-demographic characteristics of the American states (Elazar, 1984).

Ira Sharkansky utilizes Elazar's classifications to create a nine-point linear scale, which enhances comparative state analysis in empirical terms. The creation of these nine points allows for both the primary and secondary cultures that may exist in a state. Sharkansky hypothesizes that certain political traits should be associated with each type of culture. Each of the 50 states is given a political culture score, which correlates with 23 variables reflecting political participation, government size, government prerequisites, and government program implementation. Sharkansky notes that two-thirds of these dependent variables demonstrate the expected relationship with Elazar's scale of political cultures. He concludes that political culture can be related to several state traits regarding politics and public service (Sharkansky, 1969).

Schiltz and Rainey conducted a secondary analysis of data from 13 states in 1968, initially conducted by the Comparative State Elections Project, to determine whether Elazar's assumptions of the existing political subcultures in the 50 states are statistically substantiated. These two authors conclude that little statistical evidence supports Elazar's classifications (Schiltz & Rainey, 1978). Robert Savage (1981), however, points out several flaws in the research analysis conducted by Schiltz and Rainey. He notes that these two authors fail to address several ambiguities found in the survey. He also argues that they form hypotheses loosely construed from Elazar's work. Savage questions their statistical analyses and the "rummage sale approach" Schiltz and Rainey utilize in their political culture study. He argues that Elazar's theory has been proven valuable to political research. Savage points out that this normative scale is "the one political measure that compares favorably with traditional socioeconomic indicators in explaining policy variations among the states."

Social class, regional diffusion, and economic disparity are other research areas concerning political culture and policy diffusion that have received attention in the academic literature. Black and Black (1987) posit that even when power and influence within the South shifted as the population of a new middle class of Southerners composed of professional, technical, managerial, clerical, and skilled workers began to outnumber the agrarian middle class, the political agenda of these states remained virtually unchanged because most members of this new middle class shared the same agrarian beliefs, values, and interests. The emerging traditionalistic and entrepreneurial individualistic cultures greatly emphasized financial self-reliance and minimal government intervention. The authors point out that the transformation of social order within the South from 1940 through 1980 has not resulted in a political culture shift. Most white residents in this region still believe in individual, as opposed to governmental, responsibility for economic wellbeing, and the policies created in these states reflect these fundamental values.

Many efforts have been made to quantify the importance of political culture debates in understanding state and federal policy diffusion. Much of this work is around the concept of policy liberalism. Wright, Erikson, and McIver (1987) provide a fascinating multilevel quantitative study utilizing regression and 2-stage least squares regression to demonstrate a liberal-conservative identification variable measuring public opinion and its relation to policy liberalism.

Their model of analysis demonstrates that ideological tendencies of state electorates and not socioeconomic variables at the state level are significant determinants of the direction of state policy adoption. They further suggest that more progressive states tend to pass more liberal policies while more conservative states tend to pass fewer policies or policies, if any. Their work is groundbreaking in this era because it was one of the first attempts to quantify socioeconomic and population demographic variables in showing the impact of political culture on policy adoption.

Gray, Hanson, and Kousser (2017) have written extensively on public policy liberalism across the American states. In what many (including myself) perceive to be one of the best textbooks ever written about public policy formulation and the influence of political culture and policy liberalism by state. They effectively include various policy experts across a diverse arena of policy scholars to demonstrate how policy liberalism and political culture are factors at all policy levels. The literature is immense and filled with quantitative and qualitative studies suggesting the importance of understanding political culture's impact on public policy formulation. These scholars provide us with concepts derived from the numerous studies conducted on policy liberalism over time to discuss as factors contributing to why some states adopt more progressive policies like marijuana. In contrast, others are still reluctant to see the importance of such policies.

The literature on policy diffusion studies is also important for this argument. Gilardi, Fabrizio and Fabio Wasserfallen (2018)<sup>2</sup> Provide an overview of how policy diffusion studies have been used to describe policy adoption studies since Berry and Berry's landmark study. Although Berry and Berry (1990) were writing about policy diffusion as it relates to lotteries, their argument can be used to model marijuana policy adoption because they demonstrate that regional diffusion, as well as political, economic, and social characteristics, serve as plausible explanations of state government policy innovations. These two authors examine state lottery adoption across the states by utilizing panel data to reveal that a state's internal political and economic characteristics will influence the probability that the state adopts a lottery. The author of this manuscript intends to utilize Berry and Berry's policy diffusion model while incorporating political culture and policy liberalism as major indicators in examining marijuana policy diffusion. Pierce and Miller's (1999) contributions about economic variables being drivers of policy adoption are also incorporated in this study. As Pierce and Miller suggested, this study uses similar socioeconomic variables as indicators.

### **Criminal Justice Implications of the Decriminalizing of Marijuana**

Past research of public policy development indicates that a robust list of studies conducted on the quantifiable variables related to political culture, policy liberalism, and policy diffusion have entered the academic journals. Various researchers have developed their own variables to measure the likelihood of legislation being passed, but none include a measure of the crime rate for each state. That task is a topic of research beyond this present paper but may be one more variable to include which may bring some clarity as a public policy variables to consider.

The many states that have contemplated or acted on a policy to decriminalize either medical or recreational use of marijuana certainly would have promoted the positive effects of such a state-wide policy, and there are many. However, there are also considerable numbers of negative aspects of such a public policy, generally known as unintended consequences. States that have adopted a legalization or decriminalization of marijuana use and/or possession policy are now experiencing these unintended consequences related to economic, health, and social issues. Other negative aspects of legalizing marijuana have a direct effect on the criminal justice system.

The positive aspects of legalizing marijuana have been examined with profundity and include these hopeful results:

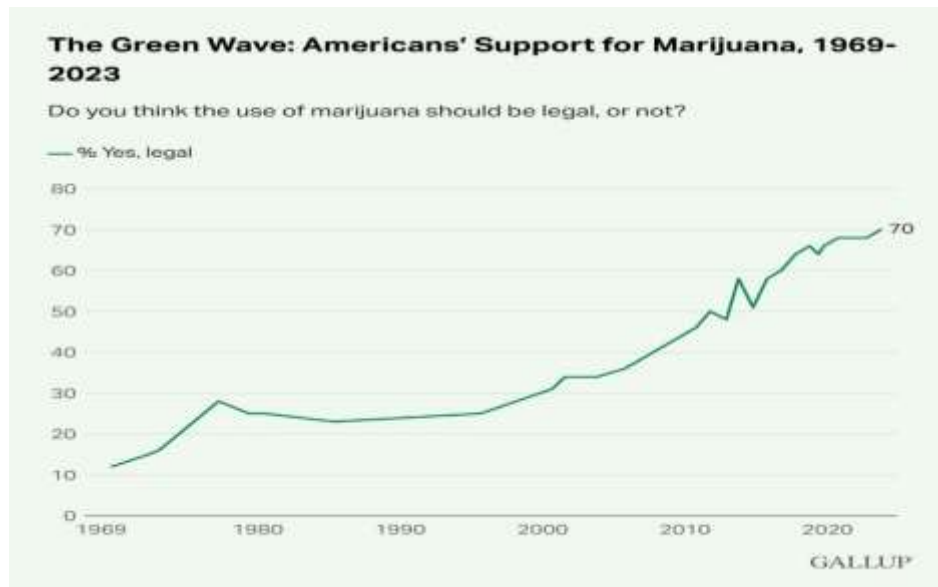
- Public polls indicate that legalizing marijuana is favorable to a majority of Americans
- An arrest for a Marijuana-related charge presents a needless impediment for current and future employment
- There exists a distinct racial disparity for arrests for marijuana-related charges
- Racial biases in arrests for marijuana ultimately affects the police-community relationship
- Arrests for drugs, and particularly marijuana, has incentivized policing for profit in the form of asset forfeiture

The potential negative provisions of legalizing Marijuana include these items:

- Marijuana causes more harm to society and the user than alcohol and tobacco
- The increased potency of marijuana is dangerous
- The addictive properties of cannabis cause abuse
- Decriminalizing marijuana sends a latent message that people should be using it
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There is a considerable and growing literature on the heavy use of marijuana affecting the rate of schizophrenia and other psychiatric conditions (Fuller, 2016). Further, the bigger the role that the government has in controlling legalized marijuana sales, the larger our government becomes. The National Institute of Drug Abuse (June, 2018) revealed in a study that marijuana is linked to getter welfare dependency and unemployment. The percentage of job applicants who fail a required drug test advanced to the highest level of failures from 2004 to 2018 (Workforce Drug Testing, 2019). These findings will be subject to repeatability over the next few years and will provide us with more accurate data. Niall Ferguson, 2019 has come to some conclusions about the positive and negative aspects of legalizing marijuana and sums up his research findings with this statement, “Whatever the moral dimensions of recreational drug use, significantly increased marijuana consumption appears to carry serious tradeoffs” (Ferguson, Summer 2019).

The Gallup polling organization has been polling the public about marijuana legalization since 1969. During those early years the below chart reveals a negligible percent of the polled populace was in favor of legalizing marijuana. Yet, for the year 2023, the populace increased their acceptance of legalizing marijuana to an astounding 70 percent. It would appear from this chart that our state legislators have been pushing what the populace prefers (Saad, L., November, 2023).



Source: Gallup, The Green Wave: Americans' Support for Marijuana, 1969 – 2023.

Incidentally, this report from Gallup shows that every social criterion studied (gender, age, race/ethnicity, education, region, party ID, and ideology [liberal – 91, conservative – 52]) indicates the American populace is acceptable of marijuana legalization.

In 2020, a large study was reported by the National Criminal Justice Reference Service (NJCRS) on the effects of the legalization of marijuana in Washington state. This was a mixed method study reporting the interviews of criminal justice personnel working in the state of Washington regarding their perceptions of the results of legalizing marijuana. Below are six recommendations elicited from the collected data of the criminal justice personnel and arrest and conviction data related to the research questions.

#### Recommendations of Washington State Marijuana Study:

**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.

**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.

**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.

**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.

**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.

**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 (Stohr, M., Willits, D. N., Makin, D. A., et al, June, 2020).

The results of this, and related studies, indicate that as more states move to legalize the use of marijuana, the law enforcement community must be advised that there will be some positive aspects of this policy change, but states need to be aware that there will also be some negative aspects for which the public ought to be advised.

Law Professor, Robert Mikos, has published a paper on why marijuana should be moved off the Schedule 1 category of drugs as it does meet the requirements of “currently accepted medical use” (CAMU). In the opinion of Professor Mikos, marijuana, which is currently (2024) a Schedule 1 drug, ought to be removed from the Schedule 1 drug category as it indeed has well-established medicinal affects (Mikos, 2024). The U.S.

Department of Health and Human Services (DHHS), under the Controlled Substances Act, has been studying this opinion to make a ruling on this question. If it can be established that marijuana does have some medicinal properties, the DHHS may move to remove marijuana from the Schedule 1 listing. If this occurs, will this open the door for more states to legislate for legalization of marijuana? The related question is, with the entrance of a conservative President in the White House, is this likely to happen?

The above positive and negative consequences of legalization of marijuana are generalizations of states who have or might legalize marijuana with no caveats, that is, for recreational uses or all uses. Some states have decided not to approve an overall use of marijuana, and instead, have approved the use of marijuana for medicinal use only. We can presume that voting legislators have given considerable thought to these policies and believe that there are medical conditions that could be treated by a prescription for marijuana. This opens the slippery slope of minors being prescribed marijuana to address certain medical maladies related to adult and youthful citizens. This section of the Literature Review will be exclusively related to the legalization of marijuana for medical purposes.

The Marijuana Policy Project, a nonprofit organization that advocates for the legalization of medical Marijuana, argues that Marijuana has proven medical benefits in treating conditions such as cancer, glaucoma, and HIV/AIDS:

There already is ample evidence that marijuana has medical uses. Even if more research was needed, patients using marijuana should not face arrest and imprisonment while waiting for the results of research that tells them what they already know: Marijuana has anti-nausea, anti-spasticity, and appetite-stimulating effects, among many others, that lead to a better quality of life for seriously or chronically ill patients (Marijuana Policy Project, 2015).”

However, according to the Foundation for a Drug-Free World (2015), a nonprofit that advocates against drug consumption, Marijuana use has a high potential for abuse and has negative effects on the heart and lungs, as well as increasing risks of schizophrenia:

Marijuana smoke contains 50% to 70% more cancer-causing substances than tobacco smoke. One major research study reported that a single cannabis joint could cause as much damage to the lungs as up to five regular cigarettes smoked one after another. Long-time joint smokers often suffer from bronchitis, an inflammation of the respiratory tract (Foundations for a Drug Free World, 2015). People, either adult or minor, often must apply to their respective states for an ID card to gain access to Marijuana for medical purposes. Applications for minors are completed by a parent, or caregiver of the minor.

Thirty-nine states, three territories, and the District of Columbia have now decriminalized some use of Marijuana for medical purposes. A common Internet source for medical information is WebMD. This source provides that medical Marijuana, across the U.S., is used for fourteen medical conditions, they discuss 8 benefits of using medical Marijuana, fifteen potential and negative side effects, 5 long-term negative aspects, and 4 categories of persons who should not use medical Marijuana, including pregnant, or breast-feeding females. One problem in determining a more factual listing of the positive and negative aspects of medical Marijuana is research is difficult to conduct as the U. S. federal government continues to view Marijuana as an illegal substance. This factor makes funding such research extremely onerous and unwieldy.

As a supplemental data analysis to this study, the authors have provided an answer to the question, is there a difference between states that have decriminalized the use of Marijuana for recreational purposes, medicinal purposes, or both, and the crime rates of these states?

This is salient to this discussion as if the crime rate of a state increases as a result of decriminalizing Marijuana for any purpose, this needs to be public information. While decriminalizing Marijuana in states that have experienced a high number of convictions, and possibly incarcerations, it makes sense that the crime rates of these states should decrease by removing all the arrests related to Marijuana. However, an argument could be made that with more Marijuana circulating in a state, related crimes may increase. These would include driving and traffic offenses, theft to pay for Marijuana, and other crimes.

A good source of data to determine which states have decriminalized recreations use, medical use, or both of Marijuana is DISA 2025 Global Solutions Inc (disa.com/Marijuana-legality-by-state). Using a data code of 0 for yes and a 1 for no, we determined which states have decriminalized recreational, medical, or both for each state as three independent variables and the use of state crime rates as the dependent variable.

### **Rationale for the Study**

After reviewing the immense literature on political culture, policy liberalism, policy diffusion and marijuana policies across the states, it is apparent that a void exists empirically explaining *why some states regulate marijuana while others do not*. The vast differences among states in examining this social phenomenon through the lens of political culture or policy liberalism is somewhat challenging because a traditionalist state would commonsensically vote down measures to approve the use of marijuana for recreational purposes while individualistic states would support such measures. This study intends to explain the differences in marijuana policy across the fifty states using political culture and policy liberalism as indicators explaining these differences. This study is important to citizens, doctors, policymakers, and those incarcerated for marijuana possession and distribution. Three null hypotheses were generated from the academic literature to answer this study’s research question.

### Null Hypotheses:

**H<sub>01</sub>:** Policy liberalism does not explain why some states adopt and legalize marijuana while others do not.

**H<sub>02</sub>:** Political culture has no impact on determining which states adopt and legalize marijuana.

**H<sub>03</sub>:** The various socioeconomic, political, regulatory, and urbanization indicators have no significant impact on determining which states adopt and legalize marijuana.

### Data and Methods

Current data was gathered across the fifty states regarding various socio-demographic variables and laws governing the use of marijuana by state. The data was a snapshot of two years, 2023 and 2024, with an N=100.  
Conceptual and Operational Definitions

Dependent Variable (DV) is the number of states that have adopted some form of legalized marijuana for either recreation or medical purposes. All states that have adopted some form of recreational or medical purpose policy for marijuana are coded 0 in the study, while four states that still classify Marijuana as illegal, South Carolina, Kansas, Idaho, and Wyoming, are coded 1 in the model. Also, the seven states that only allow CBD with THC, which are Texas, Tennessee, Georgia, Kentucky, Indiana, Wisconsin, and Iowa, are also coded 1 in the study. Finally, the two states that have only decriminalized Marijuana, North Carolina and Nebraska, also receive a code of 1 in the study.

### Independent Variables

Direct Democracy Initiatives variable is defined as those states that chose to adopt marijuana policies through a ballot initiative or referendum. These states include California, Alaska, Nevada, Oregon, Washington, Massachusetts, Maine, Colorado, Michigan, Arizona, Montana, Missouri, Maryland and Ohio. States that adopted marijuana policies through legislative bills are coded 0. States without passing Marijuana legislation were categorized as 1 in this variable.

Policy Liberalism is defined as a state's preference for the policies and restrictions it chooses to adopt and place on policy based on each state's political preferences. This concept was codified by the work of Gray, Hanson, and Kousser, who assign a quantifiable score to each state based on a set of policy preferences and restrictions on five public policy choices in each state. The policy arenas used to create this score for each state were gun control, abortion laws, TANF, tax progressivity, and state unionization laws between 2013 and 2016. The index records are on a 1 to 50 scale, with one being more progressive and 50 being more conservative. This score is incorporated as an independent variable in this study. Since policy liberalism is a new measure generated for political culture, this concept articulated by Elazar and others is ingrained in this measure.

Per Capita Income by State is used as an independent variable in the study to capture a state's wealth and population. This variable is calculated by dividing the total income of a state by its population. This will serve as an interval-level variable in the study to measure the effect of wealth and population of a state and its impact policy.

Per Pupil Expenditures is defined as the amount of revenue spent by each for each student. This measure is operationalized by dividing the total expenditures spent by each state by the number of students it serves (World Population Review, 2024)(Stanley and French, 2009).

Political Party ID variable is a dichotomous variable that stipulates party control of the state. For this study, party control of a state is the party that controls the governorship in each state. The coding scheme is 0 for states with democratic governors and 1 for republican ones. This political ID coding scheme can be found in many published works, such as the one cited for this study. In addition, an additional political variable was added to the study to capture the 2024 presidential vote. States were coded zero if they voted Democrat and one if they voted Republican in the 2024 presidential election (French and Stanley, 2004).

Presidential ID is created based on the 2024 and 2020 presidential election votes and coded as follows: states that voted Democratic in both years received a 0, and states that voted Republican received a 1 (Official 2024 Presidential General Election Results). This variable is consistent with the literature suggesting that presidential voting trends demonstrate a state's political culture and political liberalism.

Regulatory Control variable offered by Dove and Sobel provide the first empirical study of how differences in the regulatory review processes across the 50 states affect the regulatory level in a state. Inefficient and ineffective regulations significantly impact the economic growth of a state. Their initial findings suggest that sunset provisions are the most effective means political functionaries constrain state regulatory systems. Their comprehensive regulation study defines our regulatory control variable as "the number of regulatory rules per capita issued per year by each state's regulatory agencies" (Dove & Sobel, 2012). The coding scheme for this variable utilized in this report is derived from the Cicero Institute's 2024 National Regulatory Reform Progress Ranking Report.

Amount of State Urbanization is defined as how large numbers of various populations become perpetually connected and concentrated in areas that form cities. Based on the numerous studies that measure the amount of urbanization on policy diffusion, we incorporate a measure of urbanization based on the percent of urbanization by state, as recorded by Dickert (2023). This is another interval-level variable in the study to measure the amount of urbanization in a state and how it impacts marijuana policy by state.

## Methodology

The statistical method employed by this study is probit regression. Although this statistical method has various limitations associated with its use (violations of OLS assumptions), its strength is that it allows various types of categorical and interval-level variables to be used simultaneously in a study to predict a policy outcome. Since the dependent variable in this study is dichotomous (whether a state has adopted medical Marijuana, yes or no), this method is appropriate for this data set. Probit regression is chosen over logistic regression, so no extreme outliers were found in the data. If extreme outliers were present, the author would have chosen logistic regression to handle such nuisances better than probit regression. This was a concern with the per capita income and per-pupil spending variables used as socioeconomic variables in the study. Also, since multicollinearity can be an issue in regression models of all types, the concern over the variables per pupil expense and capita income displaying this nuisance in the data, the data set was subjected to a multicollinearity test to see if it was present in the model. Based on a VIF cut score of 5.6, we determined that multicollinearity was absent between these two variables or any other variables in the model.

## Findings and Discussion

Table I  
Logistic Regression Data Analysis

	Odds Ratio	Z score	P> Value	VIF
PRESIDENT	3.89	1.62	.105	2.78
Policy Liberalism	1.07	1.95	.050*	3.03
Education	.999	-.42	.671	3.15
Wealth	1.00	.80	.422	3.00
PARTY ID	1.00	.00	.999	1.95
Regulation	.810	-1.18	.237	1.17
Urban	.002	-2.19	.029*	1.70
Religiosity	1.16	2.09	.036*	1.56
constant	.000	-1.52	.128	

LR Chi<sup>2</sup> 63.67 (8 df)

Probability Chi<sup>2</sup>.001

Pseudo R<sup>2</sup> .459

Note: p<.001, \*\*\* p<.01, \*\* p<.05\*

Probit regression is the statistical method employed in this study to measure the impact of political culture and policy liberalism on states adopting various forms of marijuana policy. This statistical methodology is employed because the dependent variable regarding marijuana policy diffusion is dichotomous (0 = yes and 1 = no). Other studies, such as Furlon Ellison and Nybrotten (although examining lottery adoption), similarly utilize probit regression to the one employed by this study. Several problems can be associated with using probit regression; the most notable is multicollinearity.

A VIF (variance inflationary factor) test was conducted on the data to check for high correlations among predictor variables. The tolerance for all variables exceeded 10 exponentially for per capita income, per pupil expenditures, and urbanization, and all three variables were excluded from the study. The reported VIF statistics suggest that multicollinearity in the variables listed in the table is not a problem.

The LR Chi<sup>2</sup> goodness of fit  $p$ -value of .001 (63.67) with seven df suggests that the model fits the observed distribution of parameters. The estimates for the pseudo-R<sup>2</sup> .459 indicate that the probit regression model explains only a small amount of predictability.

The unstandardized regression coefficient (B) for policy liberalism suggests that for every unit increase in a state's level of policy liberalism, an increase of 1.07 will occur in the likelihood of a **medical marijuana** policy being adopted among states. The direction of the relationship suggests that states that are higher on the policy liberalism scale are more likely to adopt and regulate **medical marijuana**. This variable demonstrated a statistical significance score at the confidence level of .05. The odds ratio Z score represents an increase of 1.95, where policy liberalism impacts **medical marijuana** policy adoption by the state in the model. Since the significant level of policy liberalism reports a statistically significant  $p < .001$ , the findings suggest that this variable is the best predictor in the model. This statistic suggests that the likelihood of **marijuana** policy being regulated and adopted by a particular state can be understood by how liberal a state has been in prior policy adoption activities.

Additional statistical support for many of the socio-demographic variables in the regression model, include urbanization and religiosity indicators which offers some explanations as to why states adopt **marijuana** policies. For instance, the urbanization variable suggests that an inverse relationship between the level of urbanization in a state hurts **marijuana** policy adoption. In other words, the direction of the relationship suggests that states with lower amounts of urbanization are less likely to pass or adopt **medical marijuana** legislation. The variable was statistically significant at the 95% confidence level (.029). Also, the religiosity variable demonstrated statistical significance as well at the 95% confidence level with a  $p > .036$ . This means that states who define themselves as more religious, tend to not adopt or have stricter laws governing **marijuana** policies.

Therefore, the following null hypothesis was rejected in this study: H<sub>01</sub>: Generally speaking, there are no differences between states with higher scores on the policy liberalism scale and states with lower scores on the policy liberalism scale regarding the adoption of **medical marijuana**. Therefore, the null hypothesis was replaced with the alternative hypothesis that, H<sub>1</sub>: generally speaking, there is a difference in states with higher scores on the policy liberalism scale than states with lower scores on the policy liberalism scale, and they are more likely to adopt **medical marijuana**.

In addition, H<sub>03</sub>: the various socioeconomic, political, regulatory, and urbanization indicators have no significant impact on determining which states adopt and legalize **marijuana** is partially rejected in the study as well. Both the urbanization variable and the religiosity variables demonstrated statistical significance at the .05 level of confidence allowing for the rejection of the null hypotheses that urbanization and religiosity are not factors in explaining why some states adopt **marijuana** legislation while others do not. Therefore, the H<sub>3</sub>: alternative hypotheses that these two variables assist in explaining this social phenomenon is accepted.

*So why is this study important?* This study could inform policymakers about the importance of understanding cultural differences in adopting policy, even among states with similar political cultures. Just because a state might fall within a traditional culture as defined by scholars such as Elazar, it has been proven that subcultures within these more significant cultural categories are moving states away from typical voting and policy adoption patterns. As Gary and others have suggested with policy liberalism, states vary across policy arenas. For example, a state like Vermont might score overall as progressive on the policy liberalism scale. However, when it comes to policies on gun control, their policies tend to reflect more traditionalistic and conservative culture states.

## Limitations

One glaring limitation of this study is that the policy liberalism measure needs to be updated based on recent political elections and state policy adoptions. The policy liberalism scale was created using data between 2013-2016. This scale is needed to reflect more political activity regarding state policy adoption. Another study limitation was incorporating a data set with only two years of data and utilizing a probability statistical test to conclude. Although a logistic regression test is valid and can provide a snapshot of current trends and the probability of those trends occurring, a much more sophisticated model using panel data over time could provide the depth and breadth that is needed to explain in more detail what drives medical Marijuana policy in the American states. In addition, incorporating specific case studies dealing with the individual states and their perceptions of medical Marijuana would also welcome the literature on medical Marijuana policy adoption. Future studies on this topic should consider these types of studies.

In conclusion, as mentioned at the beginning of the study, several states, including Tennessee, are considering new or revisions to marijuana policies in 2025. Careful consideration of the language and provisions in drafting those policies is needed because certain aspects of culture are still prevalent in some states that may impact the adoption of these policies, such as urbanization or religiosity of a states population. Take Lyons's work, for example, on Tennessee's political culture, the role of religiosity in defining its culture, and how the Southern Baptist Convention in Tennessee passed a resolution in their conference opposing all types of marijuana policies. Recently, Tennessee passed a law restricting further use of marijuana in the state by lower THC content of all products containing marijuana. Lawmakers in states like Tennessee need to understand the demographics in each state before the attempt to adopt marijuana legislation.

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