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**Does Education Affects Attitudes Towards Marijuana
Legalization?**

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Research concerning marijuana has been more focused on the health and social consequences of its use. This paper presents a political and public policy approach and focuses on its legalization. This study makes an analysis of public opinion regarding marijuana legalization in the United States. The proposed hypothesis claims that high education level would be correlated with positive attitudes towards legalization. A regression model has been taking data from the General Social Survey has been developed. The model is run four times using data from four different years to verify if the relation between the dependent and the independent variables remains constant over time. The results show that a higher level of education increases the probability of people being in favor of legalization. The regression model also shows that other variables besides education are statistically significant regarding legalization.

Marijuana is the most commonly used illegal drug in the world, yet its consumption in the United States is prohibited with the exception of four states and the District of Columbia. Traditionally, federal and state governments have forbidden the consumption of this drug, yet this approach has not managed to reduce the quantity of marijuana consumed by Americans, and it is a very expensive policy to implement and maintain over time.

According to the Office of National Drug Control Policy, the budget to enforce the National Drug Control Strategy was of \$25.1 billion in 2014 (White House 2014). The strategy includes costs for law enforcement and recovery. For example, around 40,000 state and federal prison inmates have a current conviction involving marijuana crimes (Caulkins et al. 2012, 50); and according to a recent Pew Research Center study the cost per jail inmate is an average of \$30,000

per year (Pew Research Center 2014). Moreover, a report published in 2012 by the Executive Office of the President of the United States has shown that in the last decade Americans consumed nearly 5,000 metric tons of marijuana per year. Furthermore, Americans spent approximately \$36 billion per year for the purchase of such amounts. In other words, the consumed quantities have remained constant (White House 2012). This has positioned the United States as the number one country of marijuana consumption. Furthermore, approximately 50% of Americans claim that they have tried marijuana at least once (Pew Research Center 2015). Evidently, a strategy that is very expensive and is not as effective as it was supposed to be, is going to be subject of criticism. More importantly, people would want such strategy to be amended or changed for a better approach.

These facts led states to rethink the approach to deal with marijuana. One of the alternative approaches has been to legalize and regulate the commercialization and consumption of marijuana. Just a few countries in the world have legalized to some extent the production, sale, and use of marijuana. The Netherlands is a country where the sale of small quantities of marijuana is allowed, yet the production and wholesale distribution is forbidden. In the United States four states have already approved full legalization of marijuana for recreational use. Oregon, Washington, Colorado and Alaska have approved legislation that decriminalized the commercialization, consumption and possession (full legalization) of this drug in specified quantities.

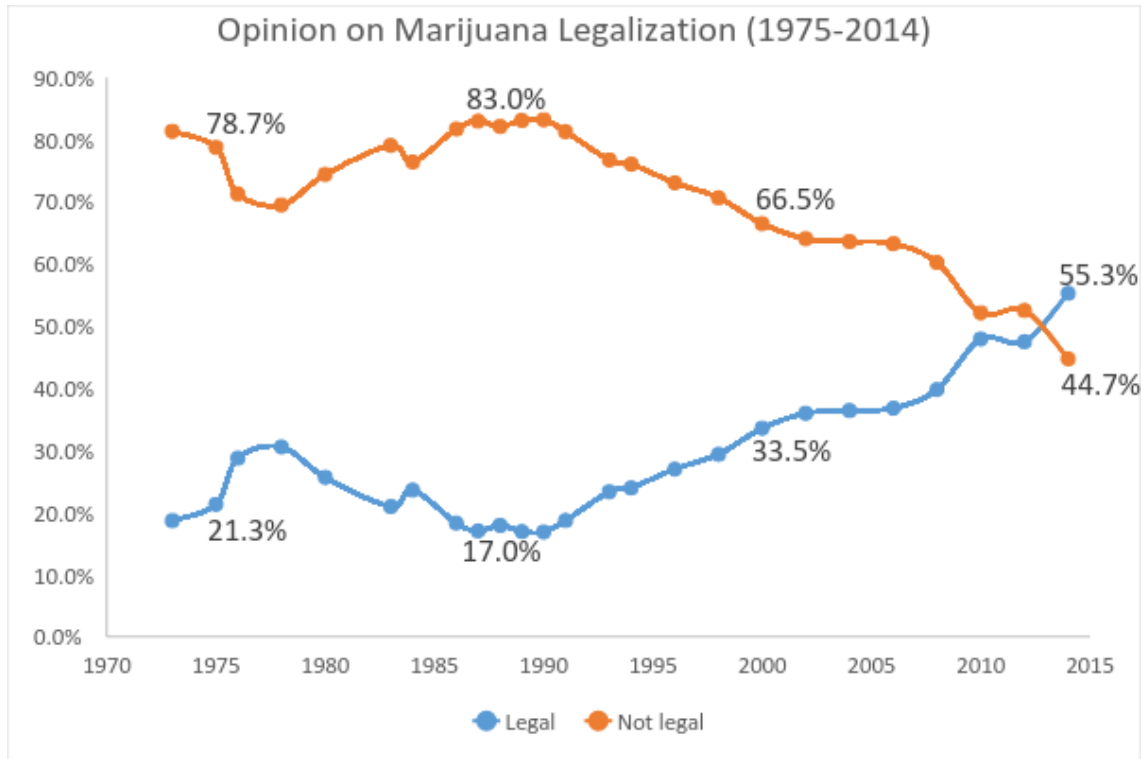
Evidently, legalization laws have caused controversy because of the social stigma that marijuana has in present times. Traditionally, marijuana consumption has been considered to be harmful for the individual and the society. However, people have started to question the supposed harms of this drug and at the same time its illegal status. For example, some have argued that alcohol is more harmful than marijuana, yet it is legal. By investigating if society's level of

education affects its opinion regarding the legalization of this drug, this study intends to analyze and expose the reasons that support or oppose marijuana's legalization in the United States.

A study of public opinion would be relevant because attitudes towards the legalization of marijuana are constantly changing. People's preferences frequently affect public policies. In a topic that receives a good deal of attention, people's opinion could even shift public policy (Page 1983, 175). In regards to marijuana, a Pew Research Center study shows that the number of people that think marijuana should be legal in the United States has been growing constantly over the years. People who oppose the legalization of marijuana have traditionally been a majority over people who support its legalization. However, in 2014 and for the first time in history, the percentage of people who supported marijuana legalization in the United States was higher than the percentage of people who opposed it. This relation has remained constant in 2015. In 2015, 53% of the people surveyed by Pew thought that marijuana should be legal while 44% thought it should be illegal (Pew Research Center 2015). Similar evidence was found by Gallup Polling. In their study, 58% of the surveyed people answered that marijuana should be legal, while 40% said it should remain illegal (Gallup 2015).

I found the same relation using data from the General Social Survey (GSS). This survey is conducted in the United States every two years and asks whether people think that marijuana should be legal or illegal. The graph below shows the trend over time using data from the GSS. It takes 1973 as the first year where this question was asked and 2014 as the last year where it was asked. Data from GSS will be later used for the quantitative and statistical analysis of this study.

Figure 1. Opinion on Marijuana Legalization



These changes in public opinion have also resulted with some changes in legislation. Several states relaxed the laws regarding marijuana sale and consumption. Some states changed legislation to categorize marijuana possession as a civil infraction instead of a misdemeanor or a felony, which included jail time. As a civil infraction people must pay a fine or a ticket for the possession of small quantities of marijuana. Other states have passed legislation approving the use of marijuana for medical purposes.

Different attitudes concerning the status of marijuana have risen the question of what factors influence people's opinion. The present study will analyze the relation between education level and the opinion about marijuana legalization. A theoretical framework that aims to explain the relation between these two variables will be provided. Then, a regression model will be run to find the statistical correlation between the two.

Theoretical Framework

The starting point of this analysis would be Ronald Inglehart and Christian Welzel's *Modernization, Cultural Change and Democracy*. In this book they explain the change of values that take place when societies pass from preindustrial to industrial, and from industrial to postindustrial. The shift from preindustrial society to industrial society brings profound changes in people's way of understanding the world. In preindustrial societies, individuals were subjects of nature. Their survival depended on favorable weather to have good crops, and on the absence of diseases and plagues that could endanger their lives. They attributed the power of nature to a supernatural entity. In this sense, religious individuals who claimed to have a connection with this supernatural entity were considered as social authorities. Industrialization increased human control over the environment where they lived. People no longer had to worry about good weather because they could use fertilizers and insecticides to potentiate their crops. Food could be manufactured in factories and packed so it could last for years. Accordingly, religious authority was replaced by secular authority. However, society was structured in strict social classes that did not allowed people to develop and express individual values. The shift from industrial to postindustrial society lead people to focus more on information, innovation, knowledge, and ideas than on producing material goods. In the postindustrial society survival needs are fulfilled, and most of the population works in jobs that involve cognitive skills. These two factors allow people to break social ties and develop self-expression values (Inglehart and Welzel 2005, 25-29).

The aforementioned information is important because this study focuses on the United States. This country was an industrial society at the beginning of the twentieth century, but after the Second World War it experienced high economic growth that led it to become a postindustrial society. For instance, almost 80% of all American jobs are in the service sector, while only 12.6%

are in the industrial production of goods (Bureau of Labor Statistics 2013). In the United States, the majority of society enjoys a welfare state, meaning that most people do not need to worry about shelter and food. According to the U.S. Department of Housing and Urban Development 2014 report to Congress, approximately only 0.18% of the population is homeless (Department of Housing and Urban Development 2014). This allowed them to reach a level of intellectual independence and to question social stigmas such as the prohibition of marijuana production, sale, and consumption. In this society individuals can reject values of communal groups such as religion or political parties and produce their own individual values in regards to marijuana.

The development of cognitive skills, creativity, and production of new ideas would generate a better understanding of both political norms and other participants in the system. Sociologist Daniel Bell maintained that formal education and job experience help people develop their potential for autonomous decision making (Bell 1976). As a result, not only does education allow people to cultivate their own ideas and actions concerning social issues, but also it permits them to express opposing ideas publically. Education will increase the willingness of people to permit the expression of ideas that they oppose. According to Sullivan et al. education should create individuals with the ability to understand the interests of others and to conceal for the best interests for the entire society. In their analysis they sustain that mass education in America will lead to a higher degree of tolerance of disliked groups (Sullivan, Piereson and Marcus 1982, 12-14). In this sense, education in the American society would lead people to understand the opinion and interests of other groups in regards to marijuana. More education would mean more openness in the society for people to freely express their position, even if this position is pledge for legalization of marijuana.

Several studies have shown that education leads to more political tolerance and the inclusion of traditionally excluded groups. The following studies have used education as the independent variable and tolerance to diverse racial groups as the dependent variable. The text by Schuman et al. develops an analysis about attitudes towards other racial groups, and it divides its sample by race. The study shows evidence that regardless of race, education leads to more tolerant attitudes and fewer prejudices towards different racial groups (Schuman et al. 1997). The same evidence was found in the study developed by Seltzer, Frazier and Ricks who argue that in the white American population there is a negative relationship between education level and hostility to least liked groups (Seltzer, Frazier, and Ricks 1995). Coenders and Scheepers carried a cross-national study to test the correlation of education attainment and ethnic exclusionism. Their study showed that on democracies that have been established a long time there is a strong negative correlation between education and exclusionism of ethnic groups. On democracies that have been recently established, the relationship was weaker but it was still significant (Coenders and Scheepers 2003).

Gibson and Bingham stated the importance of political tolerance for the assurance of civil freedoms like freedom of speech, freedom of assembly and freedom of political association. In this regard a more tolerant society allows freedoms to those who are politically different (Gibson and Bingham 1982). These studies lead to think that the same relationship would be found between education and tolerance towards groups that support marijuana legalization. Education would promote respect, tolerance, and the assurance of some liberties to groups that support marijuana legalization. These groups have traditionally been discredited and not taken seriously in the political scenario.

There have been other studies that show some tendencies among people who support marijuana legalization. The first basic and evidently needed study was if drug users, especially marijuana users, support marijuana legalization. Trevino and Richard conducted a study where they asked drug users and non-drug users their opinion about marijuana, cocaine, and heroin legalization. Their results showed that non-drug users are less likely to support any drug legalization than users. However, the most interesting and important finding was that marijuana users are more likely to support marijuana legalization, but less likely to support cocaine and heroin legalization (Trevino and Richard 2002). This study demonstrates that there is a perceived difference between marijuana and other drugs. This is important because it shows that marijuana users know that the harms of marijuana are different than the harms of other drugs such as cocaine and heroin.

Traditionally, marijuana use has been considered a risky behavior in most western societies. Peretti-Watel conducted a study in France where he measured the risk perceived by people towards drug use. He found that people who used marijuana emphasized more the risks of other illicit drugs, than non-marijuana users. They were also more likely to disapprove people using harder drugs, than non-marijuana users (Peretti-Watel 2003, 35). These findings support the idea that attitudes towards marijuana use have been changing over time. Furthermore, marijuana use is not considered as risky as the usage of other illicit drugs.

Studies undertaken in the United States showed evidence that partial or full legalization of marijuana are associated with low risk perception of marijuana use. In Colorado a study was conducted after the state decided to legalize marijuana for recreational use. This study established a positive correlation between marijuana commercialization (actual legalization) and lower risk perception of marijuana use (Schuermeyer et al. 2014). In California, after the state decided to

decriminalize possession of up to one ounce of marijuana, the perception of marijuana use as a great health risk decreased (Miech et al. 2015).

Since marijuana use has been perceived as less risky than other drugs, it has also been positively associated with legalization. A study carried out in Croatia demonstrated that less perceived risk of marijuana use has a positive correlation with attitudes supporting legalization and decriminalization of such drug (Maričić, Sučić, and Šakić 2013, 591). It would be easier to legalize an illicit substance if people feel that the use of such substance does not represent a great health risk for the individual or the society.

Various public opinion research organizations in the United States have conducted studies regarding people's attitudes towards marijuana legalization. The Pew Research Center conducted a public opinion study in March 2015 called *In Debate Over Legalizing Marijuana, Disagreement Over Drug's Dangers. In Their Own Words: Supporters and Opponents of Legalization*. This study presents how the opinion about marijuana legalization has changed since 1969. As mentioned before the percentage of people who favor marijuana legalization has been growing constantly over the years. However, in 2014 for the first time the percentage of people who thought marijuana should be legal was higher than the percentage of people who thought marijuana should be illegal.

People were asked for the reasons why they supported or opposed marijuana legalization. The most frequent reason mentioned by supporters was marijuana's medical benefits. Roughly 41% of the people who supported marijuana legalization mentioned some medical benefit of marijuana use. The second most common reason was that marijuana is not as dangerous as other drugs; 36% of people mentioned this reason. Around 27% of people mentioned that there were some benefits of regulation such as tax revenue. Approximately 12% mentioned that the current drug enforcement is not effective because it is expensive and problematic. Only 9% answered that

people should be able to use marijuana if they want to. On the other hand, people who opposed legalization mentioned that the main reasons were because it hurts the society and is bad for the individual. Nearly 43% of the people who oppose marijuana legalization mentioned these reasons. Almost 30% argued that marijuana is a dangerous and addictive drug that should not be legalized. Approximately 19% mentioned that it should be illegal and needs to be policed; 11% think that marijuana is a gateway drug to harder drugs, 8% think it is bad for young people, and 7% mentioned that the recreational use of marijuana should be illegal but the medical use should be legal.

These reasons appear to show that people who support marijuana legalization are more informed about actual harms of marijuana and the legal consequences it would bring. The awareness of medical benefits of marijuana are not only evidenced in the group that supports marijuana legalization, but also in the group that opposes marijuana legalization. One of the reasons explained by marijuana legalization opponents is simply that it should be illegal and regulated. These explanations suggest that people with a higher level of education would be more in favor of supporting marijuana legalization than people with lower education level.

Hypothesis

This study proposes that higher education would lead to more positive attitudes towards marijuana legalization. There are several factors and mechanisms that support this claim. They are closely related to the literature and theoretical review of the previous section. Nevertheless, before education, social structure, must be met.

Social structure allows people to think individually. Marijuana has often been considered as a harm for the society and for the individual. Many social groups have an opinion about marijuana, and they transmit these opinions to the individuals that identify with such groups' values. For example, most religions restrict the use of substances that would affect your judgment like alcohol, marijuana, and other drugs. Political parties also express their opinion about marijuana. In the United States the Republican Party has always been more conservative, and has been less permissive regarding the use of marijuana. When these entities do not impose a constraint in individual's decisions, the society has reached a postindustrial era where values change. Building up from the analysis of Inglehart and Welzel, the American society has reached the postindustrial period. In this period communal groups such as religion or political parties, do not play a key role on individual's decisions. In the United States, it is possible that an individual supports marijuana legalization regardless of his Christian values or his GOP identification. If this condition is not met then it would be extremely hard for people to change their opinion about marijuana legalization.

After this condition is met we can focus fully on education. A higher education level leads to people being more politically tolerant. More educated people are more tolerant with people that have different views. In other words, they respect that groups with different views have civil and political freedoms as well. A tolerance environment would allow people who support marijuana legalization to express their ideas without being catalogued as hippies or drug addicts. In this regard, a higher level of education would lead individuals to be more tolerant with people that use marijuana, in the same manner individuals who are in favor of legalizing marijuana would be able to exercise their right to freely express themselves.

Education also makes people more aware of the benefits and dangers of legalizing this drug. There is a strong relation between using marijuana and supporting marijuana legalization. Moreover, there are several studies which show that people who use marijuana are aware of the health consequences of marijuana. This means that people who support marijuana legalization are aware of the health issues of consuming marijuana by understanding that the recreational use of marijuana does not imply serious health risks and by accepting the drug's addictive nature when overdosed. Studies have shown a strong relationship between legalization of marijuana and the low-risk perception that marijuana has. This suggests that when people know that marijuana does not imply serious health issues they are more open to consider legalization as an option.

Public opinion polls also show that people who support marijuana legalization are more aware of the medical and legal benefits that marijuana has. They know that marijuana is not as dangerous as other drugs. They are conscious that marijuana legalization could bring tax revenue benefits. People who support and even a percentage of people who oppose marijuana legalization know that there are medical benefits of using marijuana. These associations could only be understood when a person has a higher degree of education.

All in all, the mechanism would be that educated people in the United States are materially secure, intellectually more autonomous, and socially more independent. They know that marijuana legalization supporters have the right to question the current marijuana approach without being stereotyped or policed. They know that marijuana does not cause serious health issues and they are aware of the legal consequences of marijuana legalization. On the contrary people who oppose marijuana legalization are not aware of these issues, meaning that they are somewhat less educated.

Methodology

First, the statistical testing this study will use will be data collected by the General Social Survey (GSS). The GSS is a survey conducted every two years in the United States with the objective of monitoring social characteristics and attitudes of the American population. The GSS is the only full-probability, personal-interview survey conducted in the United States that examines social change. This survey is conducted by the National Opinion Research Center (NORC) based in the University of Chicago. The GSS data is widely used and analyzed by studies concerning every branch of the social sciences.

Several questions asked in the GSS are going to be used as variables in this study. For the dependent variable I will use the question: Do you think the use of marijuana should be made legal? This question allows two answers: it should be legal and it should not be legal. On the other hand, to measure the independent variable which is education I will use two questions that can be translated into one. The first one is: What is the highest grade in elementary school or high school that you finished and got credit for? The second one is: Did you complete one or more years of college for credit? If yes, how many years did you complete? Both questions ask for the number of years of education. In this regard, a simple addition would give us the total number of years of education that the respondent has.

Several independent control variables are going to be included in the study. These are age, gender, race, income, political party identification, and political ideology. All these variables are also taken from questions of the GSS. Age is measured with the question: What is your age? This question allows any number higher than 17 as an answer. Gender is directly written down by the interviewer and asked only if it cannot be defined at first sight. Race is measured with the question: What is your race? This question allows three answers that are black, white, and other race. Income

is measured with the question: In which of these groups did your total family income, from all sources, fall last year before taxes? This question presents 12 categories that range from \$1000 or lower to \$25000 and higher. Political party identification is measured with the question: Generally speaking, do you usually think of yourself as a Republican, Democrat, Independent, or what? This question allows 8 categories which are: strong democrat, not strong democrat, independent near democrat, independent, independent near republican, not strong republican, republican, and other party. Finally, political ideology is measured with a scale of 7 points where 1 is extremely liberal and 7 is extremely conservative. The question asked is: Where would you place yourself on this scale? Evidently, this question allows seven categories ranging from extremely liberal to extremely conservative.

Most of these variables have been recoded to make study and the interpretation of results more accurate. Gender is recoded as a dummy variable or a variable where there are two possible options. In this type of variable we assign a value of 1 to the event happening and a value of 0 to the event not happening. In this case 1 is assigned to being female and 0 is assigned to not being female. This new variable has been labeled as female. Race has been recoded as two different dummy variables. The first one assigns 1 for being white and 0 for not being white. This variable has been labeled as white. The second one assigns 1 for being black and 0 for not being black. This variable has been labeled as black. Political party identification is recoded as three different variables. The first variable comprises strong democrat and not strong democrat, and it is labeled as democrat. The second variable comprises independent near democrat, independent, and independent near republican, and it is labeled as independent. The third variable comprises the value of strong republican and not strong republican, and it is labeled as republican. Income,

education, age and ideology have remained the same, yet they have been relabeled as ingresos, education, edad, and ideologia.

A regression model will be used to see the relation between education level and attitudes towards marijuana legalization. Since the dependent variable is a dichotomous variable I will use a logistic regression model. The logistic regression allows us to find the probability of an event happening when the value of an independent variable changes. In this case the probability of people saying that marijuana should be legal depending on the number of years of education they have. Since there are two possible options for this dependent variable I assign a value of 1 to thinking that marijuana should be legal and a value of 0 to thinking marijuana should not be legal. Linear regression is not fit for this analysis because two problems arise when the dependent variable is dichotomous. First, the line of a linear regression can extend indefinitely above 1 and below 0, yet probabilities in this study have maximum and minimum values of 1 and 0. Therefore, probabilities cannot exceed these values. There is also a statistical problem because a linear regression "assumes that in the population a normal distribution of error values around the predicted Y is associated with each X value, and that the dispersion of the error values for each X value is the same" (Pampel 2000, 9). However, when the dependent variable is dichotomous the line has a floor of 0 and a ceiling of 1. Therefore, when the line approaches 0 or 1 the variance of errors is going to be smaller, and near the middle values the variance is going to be larger. Consequently, the variance of errors is not going to be constant along the line, as a linear function would assume.

To develop a more comprehensive study, the regression model will be run four times, and each time it will use data from a different year. The dependent, independent, and control variables are going to be the same in every model. The results from each year will be compared in order to verify if the relation between education level and attitudes towards marijuana legalization is

constant over the years. The four years considered for this study are 1975, 1987, 2000, and 2014. These years have been selected for the following reasons. First, 1975 is the first year in the GSS where there are enough observations to run a good regression model with all the variables previously mentioned. Then, 1987 is a year where public opinion in favor of legalizing marijuana is at its lowest. From that year on, public opinion has increased steadily until 2014. The year 2000 is a middle point between 1987 and 2014. Finally, 2014 is the last year where the GSS was conducted, and it was the first year where the percentage of people in favor of legalizing was higher than the percentage of people against legalization. Furthermore, the period of time between each of the selected years is approximately 13 years.

Results

There are several interpretations for a logistic regression outcomes. The one used for this study is the analysis of marginal effects. A marginal effect measures the change in the probability of an outcome for a change in x , holding all other independent variables constant at specific values. Since this study is focused on finding the effect of education level on the attitudes one has about marijuana legalization, all other variables are going to remain at their mean. The model is going to show the average marginal effects. In other words, the model will compute the marginal effect of attitudes towards marijuana legalization for each observation at its observed value, and then it will compute the average of this effects (Long and Freese 2001, 239). This process was done for each of the four selected years in the study. The table below shows the marginal effects for the year 2014.

Table 1. Logistic Regression Year 2014

Average marginal effects Number of obs = 1375
 Model VCE : OIM

Expression : Pr(marij), predict()
 dy/dx w.r.t. : female white black ingresos democrat independent republican
 education edad ideologia

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          |              Delta-method
          |          dy/dx   Std. Err.      z    P>|z|    [95% Conf. Interval]
-----+-----
    female |   -0.0215083   .0254712   -0.84   0.398   -0.071431   .0284144
    white  |    0.1762688    .04175    4.22   0.000    0.0944403   .2580973
    black  |    0.1960919    .0516016    3.80   0.000    0.0949546   .2972292
 ingresos |    0.0038427    .005752    0.67   0.504   -0.0074309   .0151163
 democrat |   -0.013402    .0935854   -0.14   0.886   -0.196826   .170022
 independent | -0.0487902    .0916763   -0.53   0.595   -0.2284724   .1308921
 republican | -0.1075373    .0932946   -1.15   0.249   -0.2903913   .0753167
 education |  0.0092648    .0043733    2.12   0.034    0.0006933   .0178363
    edad  |   -0.0042586    .0007386   -5.77   0.000   -0.0057063   -0.0028109
 ideologia |  -0.0874188    .0092517   -9.45   0.000   -0.1055517   -0.0692859
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Table 1 shows that several values have an effect on the dependent variable. The model presented above shows the effect that each independent variable has over the dependent variable. The effect of being female decreases the probabilities in 0.021 points regarding attitudes towards marijuana legalization. Being white increases the probability of supporting legalization of marijuana by 0.176 points. On the other hand, being black increases the probabilities by 0.196 points. The model also shows that an increase of one unit of income increases the probability of being in favor of legalizing marijuana by 0.003 points. Regarding political identification,

identifying oneself as democrat decreases the probability of supporting marijuana legalization by 0.013 points. Identifying oneself as independent decreases the probabilities by 0.048 points, and identifying oneself as republican decreases the probabilities by 0.107 points. In regards to ideology, an increase from one unit going from extremely liberal towards extremely conservative decreases the probabilities by 0.087 points. The increase of one year of age decreases the probabilities by 0.004 points. Finally, the increase in one unit of education increases by 0.009 points the probabilities of supporting marijuana legalization. However, since each independent variable is measured differently we cannot know which one has a significant statistical effect on the dependent variable only by looking at the coefficients.

To know which variable is statistically significant we need to look at the ($P > |z|$) column. This column shows the p-value in relation to the standardized value of each variable. If this value is lower than 0.05 or the 5% we can assume that the effect is statistically significant. In this case there are several variables that have a significant effect over the attitudes towards marijuana legalization. The variables white (0.000), black (0.000), education (0.034), age (0.000), and ideology (0.000) have a statistical significant effect on the dependent variable.

As predicted in the hypothesis the model shows that education does have a significant effect on the attitudes of people towards marijuana legalization. The effect is positive, meaning that with each additional year of education the probability of being in favor of marijuana legalization increases. This happens holding every other variable at the mean. The graph below shows this relation this relation in detail.

Figure 2. Predicted probability of supporting marijuana legalization by years of education

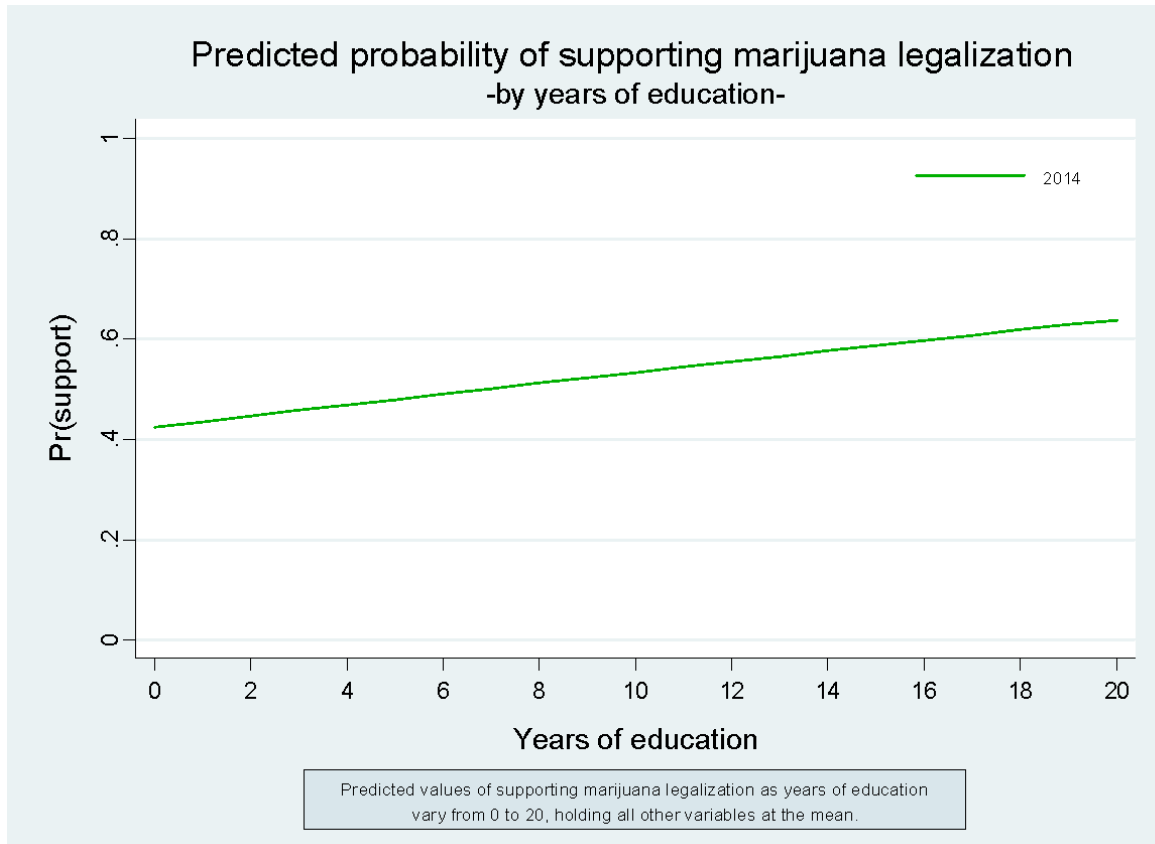


Figure 2 shows that with 0 years of education, which means not attending to school, the probability of changing from opposing to supporting marijuana legalization is approximately 0.42 points. Having 12 years of education, which means having finished high school and received a diploma, the probability of changing from opposing to supporting marijuana is approximately 0.58 points. Having 16 years of education, which means attending university and receiving a bachelor's degree, increases the probabilities to 0.6 points. Having 20 years of education, meaning a postgraduate degree (masters or PhD) increases the probabilities to 0.62 points. This relation proves the hypothesis is right and education does have a positive effect on people's attitudes towards marijuana legalization. Nonetheless, these results and this graph only show the effect of

the independent variable on the dependent variable for the year 2014, thus we cannot assume this relation is also found in other years.

For this reason and as mentioned in the methodology, this study will develop the same regression for three more years. These years are 1975, 1987, and 2000. Developing the same regression with the same variables will allow us to understand if the relation found between education and attitudes towards marijuana legalization is constant over the years or is exclusive for 2014. A similar graph that includes one line for each year will also be developed. This will increase the robustness of the study and will provide stronger conclusions. To present the results of the four years in a clearer way I will include a table that contains the four regression models. In this table the coefficients could be easily compared.

Table 2. Logistic Regression Coefficients for the 4 years

	1975	1987	2000	2014
female	-0.048 (0.225)	-0.045 (0.166)	0.055 (0.121)	-0.101 (0.120)
white	0.042 (1.291)	1.155 (0.619)	0.367 (0.232)	0.828*** (0.201)
black	0.392 (1.311)	1.108 (0.630)	-0.035 (0.280)	0.921*** (0.247)
ingresos	-0.017 (0.030)	-0.012 (0.028)	0.027 (0.028)	0.018 (0.027)
democrat	0.733 (1.157)	-0.995 (0.736)	-0.696 (0.403)	-0.063 (0.440)
independent	1.034 (1.156)	-0.832 (0.738)	-0.543 (0.398)	-0.229 (0.431)
republican	0.414 (1.166)	-1.012 (0.745)	-0.833* (0.407)	-0.505 (0.439)
education	0.244*** (0.032)	0.060* (0.027)	0.049* (0.022)	0.044* (0.021)
edad	-0.032*** (0.005)	-0.027*** (0.005)	-0.021*** (0.004)	-0.020*** (0.004)
ideologia	-0.349*** (0.060)	-0.308*** (0.054)	-0.281*** (0.044)	-0.411*** (0.048)
Observations	1261	1509	1456	1375
Pseudo R^2	0.172	0.071	0.062	0.103

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In table 2 we can see the four regression models, one for each year and we can interpret and compare the results. The four regression models have similar number of observations, approximately 1400. This allows the effect of the independent variables not to be influenced by disparities in the number of observations. Looking at the pseudo R^2 we can assume that the model

which has a larger explanatory power is the one for 1975. This model explains a 0.172 of the cases. In other words, this regression line fits 17% of the data analyzed. After the model of 1975, the one for 2014 explains the second largest number of cases (0.103), or the 10% approximately. The third one is the model for the year 1987 which explains approximately (0.071) or 7%. Finally, the model for the year 2000 fits (0,062) or 6% of the data with the regression line. The values that are statistically significant have an asterisk next to them. On the table we can see that there are some variables that are significant only on certain years. For example, variables concerning race are only significant on the model for 2014. The variable republican is statistically significant on the model for 2000, where it shows a negative correlation. The variables concerning gender, income, party identification as democrat, and party identification as independent do not show statistical significance for any of the observed years. For this reason we could assume that there is a very weak correlation between gender, income, party identification and our dependent variable which is attitudes towards marijuana legalization. On the other hand, there are certain variables that are statistically significant on every year that has been analyzed. These variables are education, age and ideology.

Age and ideology have been significant with a p-value lower than 0.001 points. In the table they are presented with three asterisks. We can see that the significance has been constant over the years for these two variables. Age presents a coefficient of -0.032, -0.027, -0.021, and -0.020 for the years 1975, 1987, 2000, and 2014 respectively. This means that in 1975 for each more year of age the probability of supporting marijuana legalization decreased in 0.032 points. The same interpretation can be done for each of the following years with the respective coefficient. We can see that even though there is a reduction of the coefficient's value over the years, it does not undermine the statistical significance of the variable. The negative value indicates that there is a

negative correlation between this variable and the dependent variable. These findings can be translated into a simple assumption that reads as follows: The older people are, the less probabilities of supporting marijuana legalization. Moreover, this relation is constant over time. The variable that measures ideology acts in a similar fashion. The coefficient of ideology started at -0.349 in 1975. Then, it decreased to -0.308 in 1987. After that, it decreased to -0.281 in the year 2000. Finally, it increased to -0.411 in 2014. This means that in 1975 for one more unit towards conservative the probability of supporting marijuana legalization decreased 0.349. The same relation applies for each of the following years with its respective coefficient. Despite of the variations, the coefficients are statistically significant in all of these years. Therefore, these findings suggest that the more conservative people are, the lower the probability of being in favor of marijuana legalization. Furthermore, this relation remains constant over the years.

The independent variable proposed in the hypothesis (education) has been significant over the years with a p-value lower than 0.001 points in 1975, and a p-value lower than 0.05 points in 1987, 2000, and 2014. This means that the statistical significance of this variable has been decreasing. We can clearly see that in 1975 the coefficient is 0.244. Then in 1987, the coefficient is 0.060. After that, in 2000 the coefficient is 0.049, and in 2014 the coefficient decreases to 0.044 points. Unlike the two previous variables analyzed, the reduction of the coefficients over the years represents a decrease in the significance of the variable. The next graph illustrates this relation. One line has been designated for each year where the regression model was run.

Figure 3. Predicted probability of supporting marijuana legalization by education for the 4 years

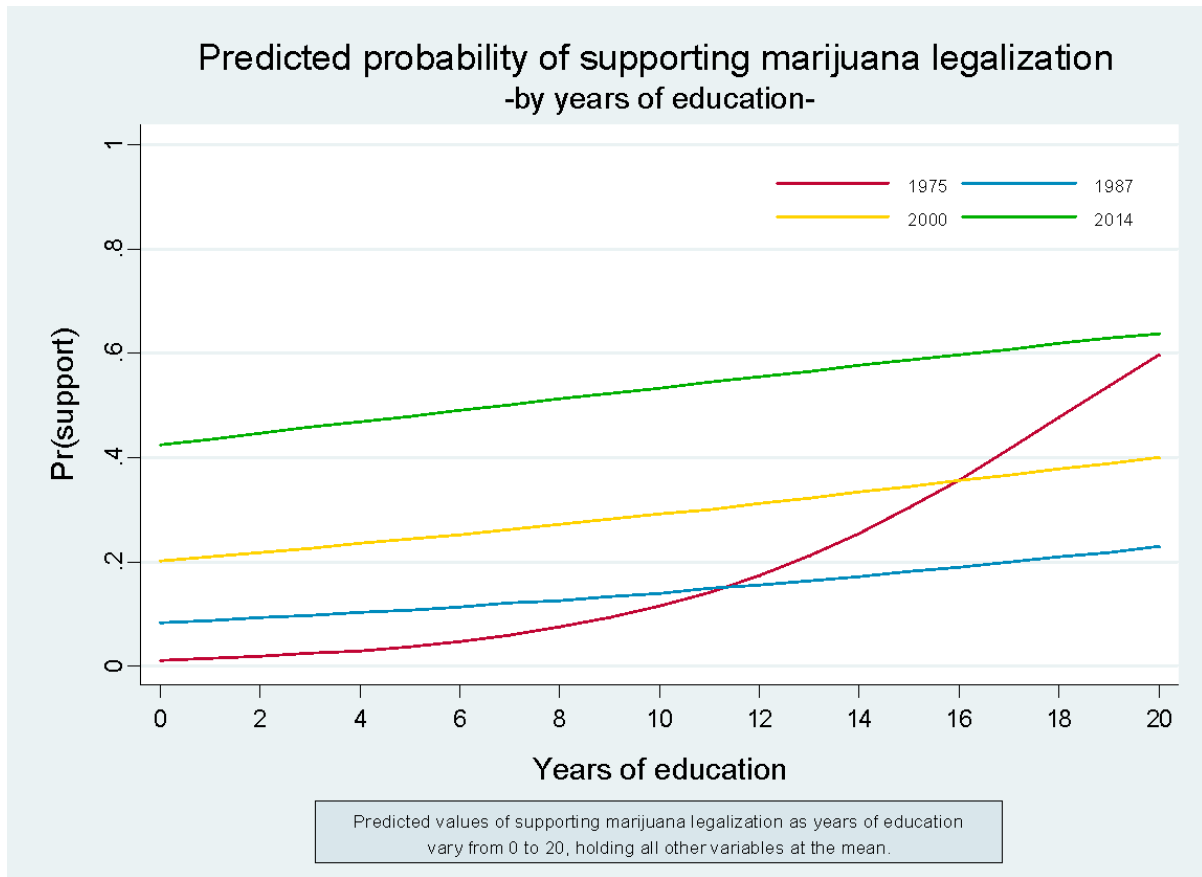


Figure 3 shows the predicted probabilities of supporting marijuana legalization depending on the years of education for the each of the years analyzed. The four years show that with more years of education there is a higher probability of supporting marijuana legalization. However, the slope and the starting point varies in each line. The year 2014 has already been explained, in such year the probability for 0 years of education is 0.42 (lowest value) and the probability increases to 0.62 (highest value) with 20 years of education. In the year 2000, the line starts in a lower point than the one for 2014. In this line the probability of supporting legalization for 0 years of education is approximately 0.2 points. For people who have 12 years of education the probability of

supporting legalization increases to roughly 0.32 points. For people who have 16 years of education, the probability increases to 0.38 points. Finally, for people who have 20 years of education, the probability increases to 0.4 points. In the year 1987, the probability of supporting legalization for 0 years of education is approximately 0.1 points. The probability increases to nearly 0.18 points for 12 years of education. Then, the probability still increases to almost 0.2 points for 16 years of education. The highest probability is approximately 0.22, for people who have 20 years of education. Finally, the line for the year 1975 is fairly interesting because of the steep increase of the probability of supporting legalization in regards to the years of education. In this line the probability of supporting legalization is slightly higher than 0 for 0 years of education. Then, for 12 years of education the probability increases to roughly 0.18 points. For 16 years of education the probability significantly increases to approximately 0.38 points. For 20 years of education the probability increases to 0.6 points. In this line the probability increases from roughly 0 to 0.6 points in twenty years which is an exceptionally sharp increase. This is the reason for the earlier explained statistical significance of education in the year 1975.

Looking at figure 3 we can confirm that at a higher level of education the probabilities of supporting marijuana legalization are higher. This claim is supported by the four years analyzed in this study. However, the graph also shows that the starting point of each probability line is higher over the years. The regression model suggests that age and ideology also have an effect on the dependent variable.

Discussion

The results explained in the previous chapter showed that there is a correlation between education level and attitudes towards marijuana legalization. When there is a higher level of education there is a higher probability of supporting legalization. Nevertheless, the results also showed that other variables are also correlated with attitudes towards marijuana legalization. Age and ideology have shown statistical significance in the regression models. Thus, this chapter provides some possible reasons why these variables might have an effect over the dependent variable.

First, a Pew Research Center study has found similar evidence regarding attitudes towards marijuana and age (Pew Research Center 2015). In this study of public opinion they divided their sample in four age groups: silent generation (born in 1928-1945), boomers (1946-1964), generation X (1965-1980), and millennials (1981-1997). The results showed that 29% from the silent generation, 50% of the boomer generation, 52% of generation X, and 68% of the millennial generation support legalization. It is clear how younger generations have a higher percentage supporting legalization. In other words, the older people get, the less support they show towards legalization.

In the theoretical framework of the present study, there is evidence which claims that marijuana users are likely to be in favor of legalizing the drug. Several studies have shown that young people are more likely users than older people (Alfonso and Dunn 2007). These assumptions are in accordance with the findings of the study carried out by Lynskey et al, which affirms that the duration of marijuana use seems to be typically short. People who regularly use marijuana usually stop in their late twenties (Lynskey et al. 2006). A similar study has demonstrated that from the early twenties to the early forties people who use marijuana experience a steep decline in

usage (Kerr et al. 2007). These ideas lead to assume that since younger people are more likely users, they are also more likely in favor of legalizing marijuana. On the other hand, as they get older they decrease their usage patterns and consequently they are less likely to support legalization.

Young people have traditionally been more adventurous and have revealed an exploratory nature that is not common in older generations (Saieva 2008). Such attributes may be due to possessing less responsibilities of work and family. Another reason could be that recent generations have been more exposed to legalization in certain states and countries, and they have seen the legal and socioeconomic effects of legalizing this drug. The other variable that showed statistical significance in the regression model was ideology. The more conservative people were, the less they supported legalization. This variable is closely related and could be explained by age. A study developed by Brown et al. has evidenced that when people get older they become more conservative as well (Brown et al. 1974).

To sum up, these are only assumptions of why age and ideology might have a significant effect on the dependent variable. A comprehensive study that includes a more extensive theoretical background could clarify the relationship between these two variables and attitudes towards legalization.

Conclusion

The purpose of this study was to find the relation between attitudes towards marijuana legalization and education level. This study is relevant because of many factors. First, marijuana is the most commonly illegal substance used in the United States. Approximately 50% of

Americans claim that they have tried marijuana at least once in their lives. This means that nearly 50% of Americans have broken the law to some degree. Second, public opinion polls have revealed that the percentage of legalization supporters has been growing over the years. Moreover, several research centers have demonstrated that in 2014 the percentage of legalization supporters was higher than the percentage of people opposing legalization. This evidence is coherent with the time series graph developed by this study and using with data from the GSS. Third, public opinion can shift public policy, therefore federal legislation that legalizes and regularizes marijuana sale and consumption could be closer than we think. For these reasons, it is important and relevant to understand what influences people to support or oppose legalization. Therefore, this paper contributes to the existing literature regarding the issue.

This study proposed that higher education level will lead to more positive attitudes towards legalization. To test this hypothesis this study comprehends two fundamental phases. It has developed a theoretical framework that supports this claim, and it has developed a regression model to verify if there is a significant correlation between the variables in question.

The theoretical framework includes the works of Inglehart and Welzel (2005) who argue that societies go through significant changes in values depending on industrial capabilities. Overall, they maintain that postindustrial societies acquire post-material values. These values allow them not to focus on increasing their material capabilities, but rather on improving their life quality. The United States falls within this category because its society has already surpassed industrialization, and it can focus on granting freedoms to different social groups. A clear example of this mechanism is the Supreme Court ruling that legalized gay marriage in the whole territory. This same mechanism could allow for marijuana to be legal in all states. Furthermore, education could lead people to increase their tolerance towards disliked groups. It also influences people to

grant civil freedoms to groups that are politically different. Several studies have demonstrated this relation with education and tolerance to diverse racial groups.

The regression model takes attitudes towards marijuana legalization as the dependent variable, and education level measured by years of education as the independent variable. It also includes several independent control variables such as income, political party identification, ideology, race, gender, and age. The results showed that people who have a higher level of education have a higher probability of supporting legalization. This does not mean that education leads to supporting legalization. There is no basis to propose that one variable causes the other. Yet, this study demonstrates that in general, people who have more education years are more likely to support legalization. Since the regression model was run for four years, we can also affirm that this relation does not change through time.

Finally, this study aims to give a different perspective on how to approach marijuana issues in the United States. It is not the intention of this study to take sides in the debate over legalization. This analysis intends to provide a different point of view in which it demonstrates that more educated people have a higher probability to eliminate the social stigma of marijuana. Besides, there might be some actual benefits of legalizing this drug. This paper does not intend to deny that marijuana could harm the individual and the society if it is overused. I believe that if federal legalization comes to reality it should come with strict regulation in relation to minors. For example, the state of Colorado is funneling tax revenue from marijuana sale to its public schools system. The money granted to several school districts is being used to hire nurses, social workers and psychologists that have the objective of preventing the substance abuse. This could be a smarter approach to marijuana. In the end, marijuana use is something that many people, may not

be in favor of. However, the task of a strong democracy is to find comprehensive approaches that benefit all members of the society and not only a certain group.

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