https://doi.org/10.19052/eq.vol1.iss46.5196

Socio-Economic Factors to Consider in the Discussion of the Regulation of Cannabis Use in Colombia

Elsy Lorena Rosero-Ceballos*
Paula Andrea Meneses-Medina**

Abstract

Colombia is currently debating the regulation and production of cannabis, so it is necessary to identify some social and economic factors that may influence national marijuana use. The methodology used is quantitative, based on probability econometric modeling with data from the National Survey of Consumption of Psychoactive Substances collected by the National Administrative Department of Statistics in 2019. We found that women have the lowest share of cannabis consumption, the demographic aged 16 to 35 years old exhibits the highest levels of marijuana use in Colombia, and social sciences professionals are more likely to use this substance in the country. Findings suggest that Colombia's cannabis regulation requires an intersectional approach, considering age and gender, along with state intervention through fiscal policy to effectively regulate adult cannabis use.

Keywords:

cannabis; regulation; gender; age

JEL classification:

I12, K42, H20, C50

How to cite this article: Rosero-Ceballos, E. L., & Meneses-Medina, P. A. (2025). Socio-Economic Factors to Consider in the Discussion of the Regulation of Cannabis Use in Colombia. *Equidad y Desarrollo*, (46), https://doi.org/10.19052/eq.vol1.iss46.5196

Fecha de recepción: 9 de diciembre de 2024
Fecha de aceptación: 18 de febrero de 2025

* Professor of the Economics Program, University of Cauca, Colombia. Researcher of the Entropia Research Group, University of Cauca, Colombia. Master's in Applied Economics and Specialization in International Migration, Colegio de la Frontera Norte-México. Bachelor's in Economics, University of Cauca, Colombia. Research interests: feminist economics, labor market, economic growth and development. Email: eroseroc@unicauca.edu.co ORCID: http://orcid.org/0000-0003-0708-9223

** Professor of the Economics Program, University of Cauca, Colombia. Researcher of the GICEA Research Group and member of the Gender, Education and Conflict Smillero GEDCO, University of Cauca, Colombia. Master's in Women's and Gender Studies, University of York, United Kingdom, and University of Oviedo, Spain. Specialization in Community Education and Economist, University of Cauca, Colombia. Research interests: feminist economics, labor market, education. Email: pameneses@unicauca.edu.co ORCID: http://orcid.org/0000-0003-4334-8616

Factores socioeconómicos a considerar en el discusión sobre la regulación del consumo Cannabis en Colombia

Resumen

En Colombia se debate actualmente la regulación y la producción de cannabis, por lo que se hace necesario identificar algunos factores sociales y económicos que pueden influir en el consumo nacional de marihuana. La metodología utilizada es cuantitativa, basada en una modelación econométrica probabilística, a partir de datos de la Encuesta Nacional de Consumo de Sustancias Psicoactivas recopilados por el Departamento Nacional Administrativo Nacional de Estadística en el año 2019. De esta manera, se encuentra que las mujeres tienen la menor participación en el consumo de cannabis, así como que la población joven entre 16 y 35 años tiene el mayor consumo de marihuana en Colombia y que los profesionales relacionados con las ciencias sociales son más propensos a consumir esta sustancia en el país. Los hallazgos sugieren que la regulación del cannabis en Colombia requiere un enfoque interseccional, que considere la edad y el género, y la intervención del Estado a través de la política fiscal para regular efectivamente el consumo de cannabis en adultos.

Palabras clave:

cannabis; regularización; género; edad

Clasificación JEL:

I12, K42, H20, C50

Introduction

In 1961, the United Nations (UN) established the first convention to control the use of illicit drugs such as opium, cocaine, and marijuana, as well as regulate the practices that countries and institutions should carry out in drug policy (CLDD, 2010). This anti-drug policy gained prominence in the 1970s when U.S. President Richard Nixon declared the War on Drugs, promoting a militarized approach and advocating for a prohibitionist stance that governments should adopt toward all substances classified as illegal (Restrepo, 2013). Several countries, including Colombia, adopted certain measures such as the eradication of illicit crops, the dismantling of drug trafficking groups, the militarization of the fight against drugs, the criminalization of the internal production chain linked to drug trafficking, and the extradition of nationals to countries such as the United States (Restrepo, 2013).

Anti-drug policies focus on the elimination of recreational, ritual, experimental, and self-medication use of substances such as cocaine, opium, heroin, marijuana,

and other illicit drugs at the international level. However, most policies target the production chain, but with respect to consumption, the principles adopted leave the decriminalization of users at the discretion of each country, although their production continues to be illegal (CLDD, 2010).

In this regard, Colombia, through Law 30 of 1986, which adopts the National Narcotics Statute and establishes other provisions, provides in Article 51 that any person who carries a personal dose of any illicit drug for consumption must meet certain penalties, such as arrest for thirty days, a fine of half the current legal minimum wage or up to one year in prison (Congreso de la República, 1986). In other words, consumption, although permitted, has sanctions for consumers if they carry illegal substances. These prohibitionist measures for the consumption, carrying, and production of substances have been strongly criticized because they have not had the expected impact of ending illegal drug markets. On the contrary, the number of prohibitionist policies has led to the emergence of a black market controlled by crime, which has caused high levels of violence, forced displacement, and constant wars in the regions where the substances are produced and marketed (CLDD, 2010).

Over the years, Colombia has positioned itself as one of the main suppliers of cannabis exports, largely due to its geographic location, which allows it to have adequate climatic conditions for marijuana production during most of the year (Ramirez et al., 2023). This dynamic has considerably influenced marijuana consumption at the national level (Sáenz, 2007). Therefore, the objective of this article is to identify some social and economic factors that may induce marijuana consumption at the national level and, in this way, contribute to the debate to regulate the use and production of these substances in Colombia.

The article is divided into three main sections; the first shows a literature review on cannabis consumption worldwide. The second section provides a descriptive characterization of the profile and aspects related to consumers, adopting the National Narcotics Regulations and based on the National Survey of Consumption of Psychoactive Substances (ENCSPA, by its Spanish acronym) conducted by the National Administrative Department of Statistics (DANE, by its Spanish acronym) in 2019. In the third section, econometric modeling is carried out, using a probabilistic model to identify which aspects can increase the probability of consuming marijuana with respect to other illegal drugs.

Literature Review

Cannabis is the most consumed illicit substance on the planet because, according to the 2010 Global Report of the United Nations Office on Drugs and Crime (UNODC), between 2.9 and 4.3 % of the global population aged between 15 and 64 years use it. However, cannabis is illegal in much of Latin America, where Argentina (7.2 %), Chile (6.7 %), and Uruguay (6 %) are the countries with the highest consumption in this region (Rodríguez, 2013).

Jenkins et al. (2021) point out that legalizing moderate marijuana consumption for medicinal or recreational purposes has allowed American, Canadian, British, and Australian societies not to stigmatize those who choose to use it. Additionally, it has created a need for States to approach young people and their caregivers through educational initiatives aimed at discussing harm reduction for consumers, making it a public health priority in the aforementioned contexts.

Matthay et al. (2022), on the other hand, analyze seven policies related to the density or location of recreational cannabis outlets for 241 localities in California between 2018 and 2020. They highlight that 66 % of localities prohibit a high number of cannabis outlets near higher middle-income groups and that the majority of outlets are disproportionately located in lower middle-income groups (95 %), with Hispanic and Black residents at 5 % each.

The authors Camargo et al. (2022), meanwhile, identify a strong naturistic dynamic, which would imply that the legalization of marijuana consumption for recreational purposes in the Mexican context could, on the one hand, increase the tourist offer of Mexican destinations and contribute to improving economic problems in these environments. On the other hand, it could contribute to the reduction of organized crime around the sale, distribution, and commercialization of cannabis in Mexico.

Pettitt-Schieber (2012), from Uruguay, notes three central ideas regarding the legalization of cannabis consumption. First, Uruguay's initiative regarding the legalization of cannabis makes it a pioneering country and a reference for Latin America; second, the consumption and cultivation of the plant for personal use will contribute to respect for the freedoms of consumers because they will not be imprisoned for this action. Third, the initiative will contribute to ending violence in society, as it is expected to reduce the demand in the illegal market and, therefore, the homicides associated with it.

In Colombia, the analysis has focused mainly on identifying the prevalence and factors associated with marijuana users. Quimbaya and Olivella (2013) describe the pattern of cannabis users among students at the University of Tolima, characterizing their sociodemographic profile, knowledge, frequencies, practices, and appreciation of the health effects of consumption. Martínez et al. (2016) found that marijuana use in the population studied was high, and factors such as cigarette consumption are associated with marijuana consumption, i.e., there is a close relationship between those who smoke tobacco and those who use marijuana. Martínez et al. (2018) studied the school-age population and identified a high reported prevalence of lifetime marijuana use in 10.2% of adolescents surveyed, a considerable figure in terms of public health.

In addition, authors Herrmann et al. (2018) and Jenkins et al. (2021) state that a particular regulatory framework is required for medical and recreational cannabis use, given that the standards in each context are quite different. They also point out that national and international organizations are responsible for protecting human health and should, therefore, support research on marijuana use in order to achieve rapid and relevant advances in the formulation of cannabis regulation policies, taking into account that categories such as age and gender have a different influence on the consumption of the substance.

Cannabis use is prevalent in a large portion of the population; however, it has been noted that young adults between 18 and 25 years of age present high rates of use compared to the rest of the population (Dugas et al., 2019; Rotermann & Langlois, 2015). Although the onset of use usually occurs during adolescence, many young people stop using after they have tried it for the first time (Stevens et al., 2024). Dosage, frequency, and use vary according to psychosocial traits; some studies suggest it is not dangerous if use is small and transient (Coffey & Patton, 2016; Dugas et al., 2019). However, there is a risk that young people may suffer from marijuana use disorder (Richter et al., 2017).

Marijuana use may begin in adolescence, although its use may be more intense in adulthood (Chen & Kandel, 1995). To explain this process, the gateway theory argues that when an adolescent uses some other substance, such as tobacco or alcohol, it may lead to marijuana use at a later stage (Kandel, 1975). Nevertheless, this behavior is also associated with psychosocial factors that consumers have experienced from an early age and that may influence the increased consumption of the substance in adults, such as the arrest or incarceration of a parent at a young

age (Hayatbakhsh et al., 2007) and the change of maternal marital status when they were still children (Hayatbakhsh et al., 2006).

According to Pinazo et al. (2002), puberty is a stage in which an adaptive process with a social meaning takes place and in which friends and family play a fundamental role in the perception of oneself. Thus, the authors find that those who suffer from complicated family and friendship relationships are more likely to support themselves using inhalants and cannabis.

Quimbaya and Olivella (2013) found that the age of highest consumption at the University of Tolima is between 18 and 21 and that there is a greater probability of consumption in the case of men who live with their parents; they may even use a greater amount of cannabis than those who live alone or with friends.

On the other hand, Martínez et al. (2016), in their study of students from a public university between 18 and 25 years old in Colombia, reported that 7.1 % of students had used marijuana in the last month, and 22 % had used it at least once. In addition, regression models showed that having a smoking habit is directly related to marijuana use. Likewise, Guxens et al. (2007) found multiple factors that are related to the initiation of cannabis use, including being male, being a tobacco and alcohol consumer, having problematic relationships with parents, and having friends or relatives who use cannabis.

Although some studies point to cannabis use being higher in males than in females (Amado et al., 2019; Cranford et al., 2009; Cuttler et al., 2016; Dahl et al., 2015; Felton et al., 2015; Guxens et al., 2007; Johnson et al., 2015; Quimbaya & Olivella, 2013), Amado et al. (2019) showed that women's motivations for selling cannabis focus on earning money (58.3 %), compared to 36.2 % of men, and that men's motivations for free consumption of the product and earning money represented 40.2 % compared to 22.2 percentage points for women, based on a descriptive observational study on the analysis of gender differences in self-cultivators of cannabis in Spain.

In this regard, gender differences may be important in the design and implementation of prevention or treatment programs for marijuana use (Tu et al., 2008) because women are more susceptible to more severe withdrawal symptoms and are more likely to relapse compared to men (Craft et al., 2013). Although cannabis use disorder is more prevalent in men, women suffer from the telescoping effect, which Khan et al. (2013) describe as a cannabis use disorder that transitions more rapidly for women than for men after their first marijuana use. Thus, Bassir Nia et al. (2018) propose to analyze the menstrual cycle phases and hormonal

contraceptives in order to identify factors affecting cannabis use and treatment specifically for women.

Methods

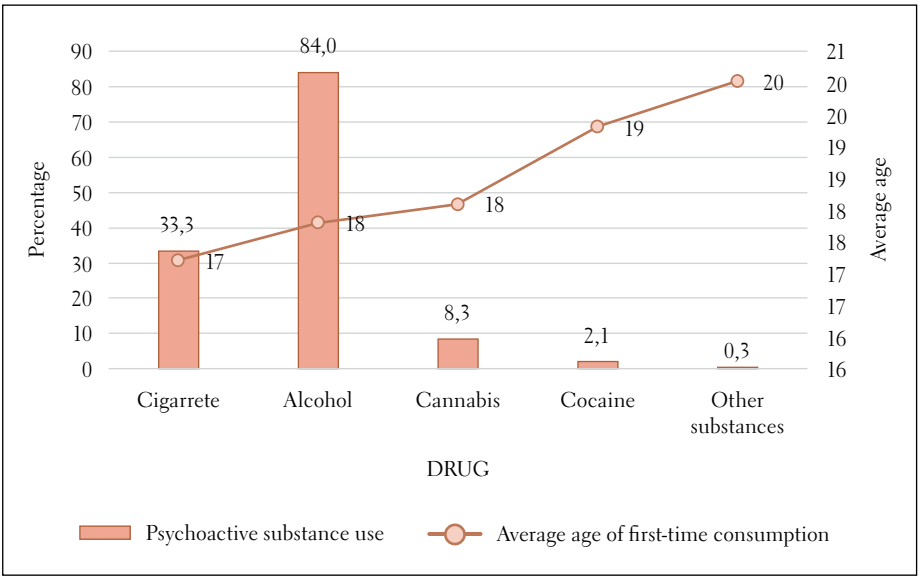
In order to quantitatively analyze the risk factors that influence the probability that the surveyed population may consume marijuana at the national level, we used microdata from the ENCSPA, which was conducted in 2019 by the DANE in agreement with the Ministry of Justice and Law. These agencies also conducted surveys in 2008 and 2013. The objective of this survey is to obtain statistical information necessary to estimate the magnitude of the consumption of psychoactive substances in Colombia among the population aged 12 to 65 years; the sample is statistically significant since it involves 49,727 observations and has a representativeness that includes the 32 Colombian departments.

Demographic Aspects Surrounding Consumers

There are different types of drugs that cause alterations in mental health to the extent that they have hallucinogenic effects almost immediately due to euphoria and mental relaxation. Graph 1 shows the percentage of people who consume different types of substances. Thus, of the total population, 84.0% use alcohol; on average, the age of onset of consumption is around 18.

After alcohol, the substance that predominates is cigarettes; 33.3% of people who have consumed cigarettes at least once started smoking at 17 years of age on average, which is the youngest age projected for substances consumed (see Graph 1). Of the total number of observations, 8.3% are classified as active users of marijuana or cannabis, who report having started smoking on average at the age of 18 (see Graph 1). The use of cocaine and other substances such as heroin and LCD is less common (see Graph 1).

Graph 1. Percentage of the Population Consuming Psychoactive Substances, National Total, 2019



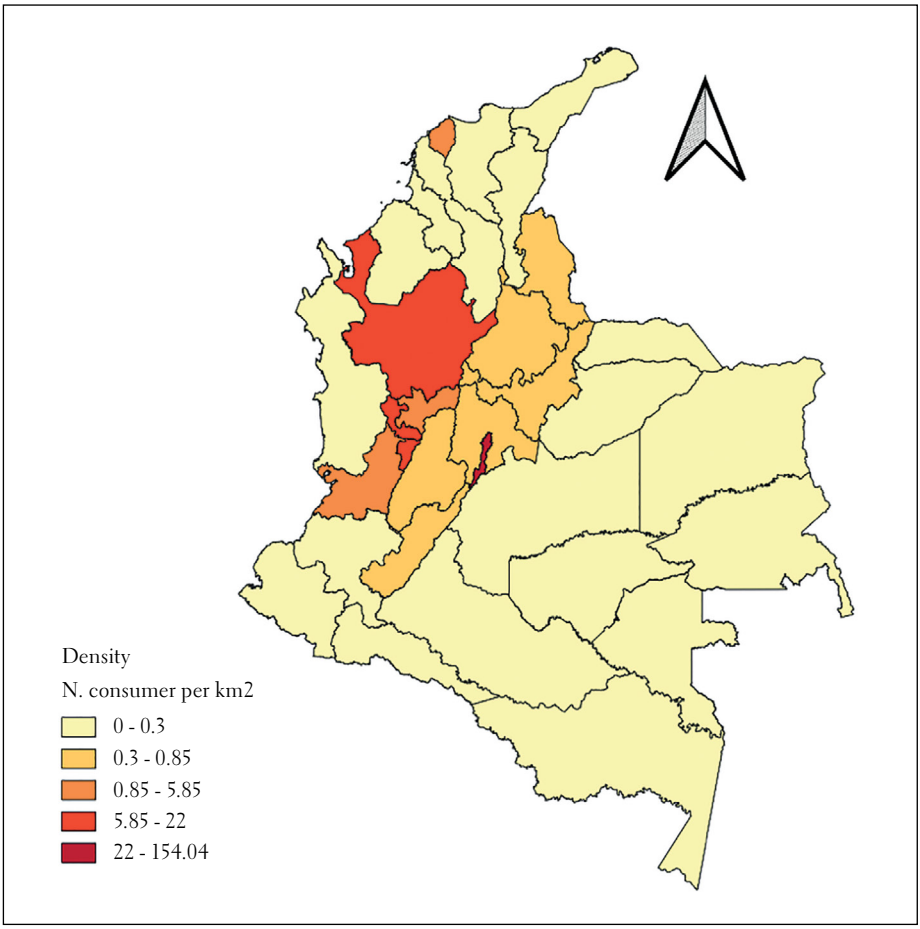
Source: Authors' calculations based on ENCSPA 2019.

With respect to marijuana use at the national level, 8% are active cannabis users. In addition, the department with the highest density of consumers is Bogotá, with 154 consumers per km^2. It is followed by the Department of Antioquia with 22 consumers per km^2; Risaralda with 8.92; Quindío with 7.72; Atlántico with 5.85; Valle del Cauca with 3.52; and Caldas with 2.21 (see Map 1). These departments are above the national average (1.73).

Graph 2 shows the consumption behavior by sex, with 28.5% of those surveyed considering themselves women and 71.5% corresponding to men. Gender is an important variable for analyzing consumption since there is a large difference between the share of women and men in the use of substances such as cannabis, with the share of men being greater in this type of consumption.

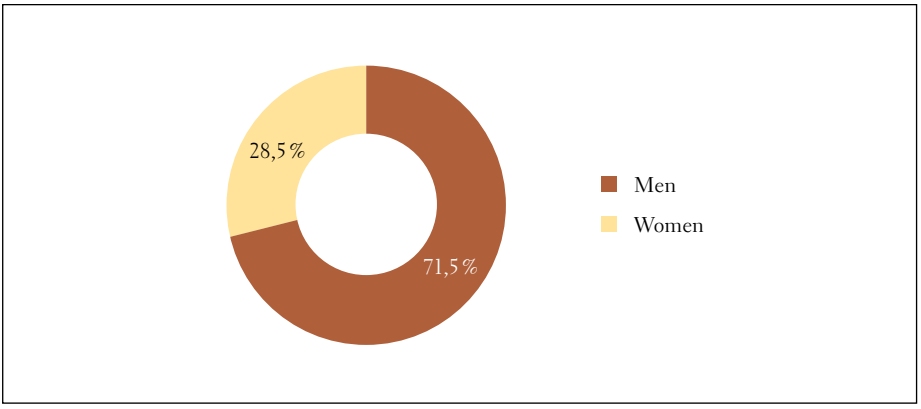
Likewise, greater consumption is observed among the population aged 16 to 35, accounting for more than 60% of the observations. It is evident that although women and men exhibit similar behavior, 21.9% of women are between 21 and 25 years of age, while the corresponding age range for men is broader since the same percentage is concentrated between 21 and 30 years of age (see Graph 3).

Map 1. Number of Cannabis Consumers per Square Kilometer by Department, 2019



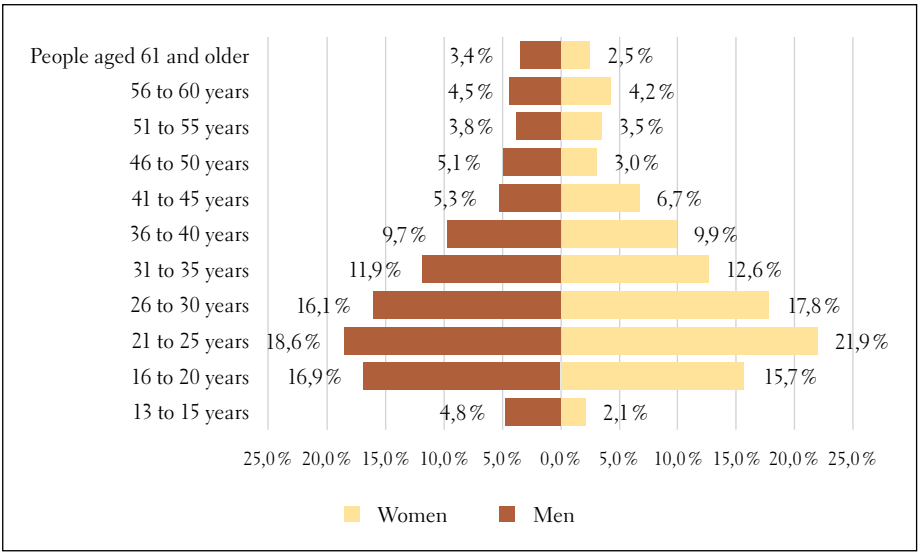
Source: Authors' calculations based on ENCSPA 2019.

Graph 2. Cannabis Consumers by Sex, 2019



Source: Authors' calculations based on ENCSPA 2019.

Graph 3. Population Pyramid of Cannabis Consumers, 2019

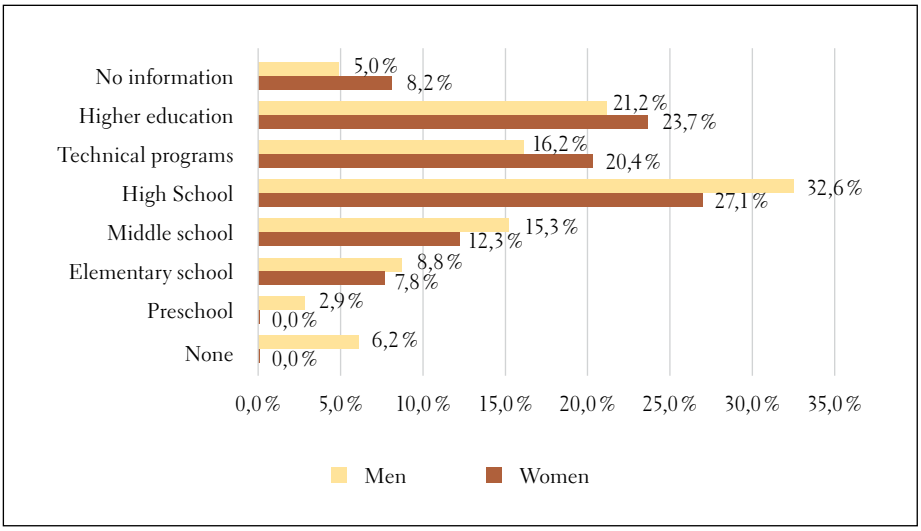


Source: Authors' calculations based on ENCSPA, 2019.

On the other hand, we found that some variables that may influence higher cannabis consumption are related to the level of education. Data from the ENCSPA

for 2019 show higher cannabis consumption for people with up to high school education, particularly among men, at 32.6%, while for women, it is 27.1% (see Graph 4). After that, 21.2% and 23.7% of male and female consumers, respectively, reported having a university education (see Graph 4). To a lesser extent, consumers with no schooling are found, mainly among women (see Graph 4).

Graph 4. Level of Education of Cannabis Consumers by Sex, 2019

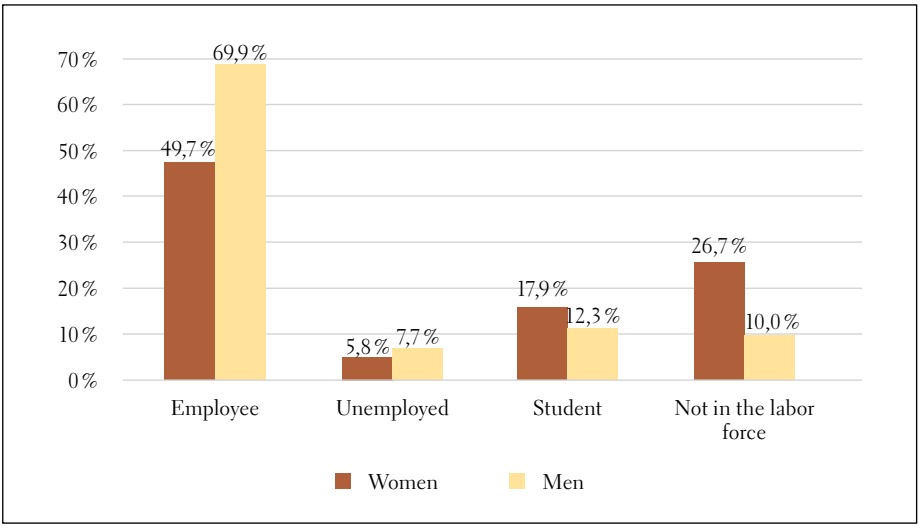


Source: Authors' calculations based on ENCSPA 2019.

The characterization and possible variables that may induce greater cannabis consumption are the job category. For both men and women, the job category with the highest number of consumers is employed, since 69.9% of male consumers are working, followed by those who are looking for a job with 12.3%. For women, although the highest percentage (49.7%) are employees, it is followed by those who are studying (17.9%) (see Graph 5).

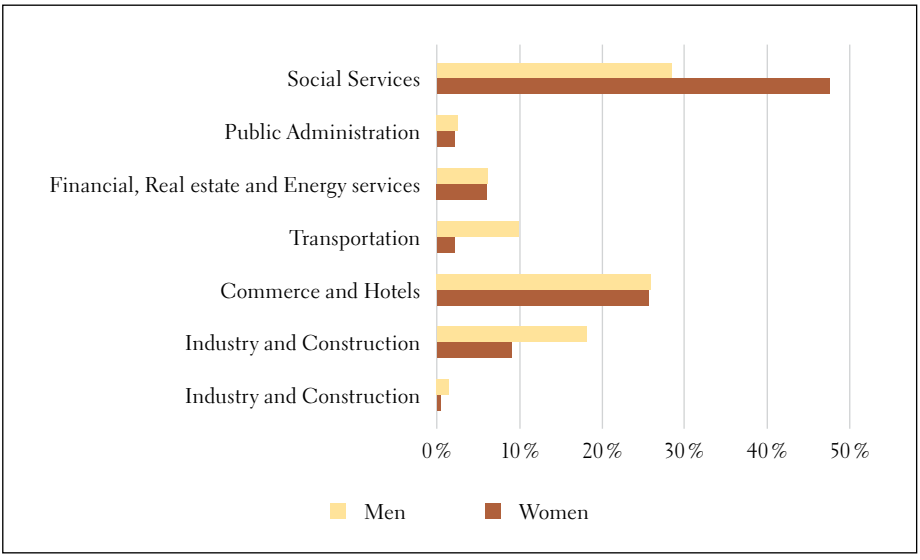
As previously noted in Graph 5, a higher percentage of consumers are working, with men averaging 49 hours per week and women averaging 45 hours per week. The field with the highest percentage for male consumers is social services (29.5%), followed by commerce and hotels (27.1%) and transportation (11.0%). Meanwhile, 48.6% of female consumers are employed in social services, followed by those working in commerce and hotels (26.8%) (see Graph 6).

Graph 5. Employment Status of Cannabis Consumers by Sex, 2019



Source: Authors' calculations based on ENCSPA 2019.

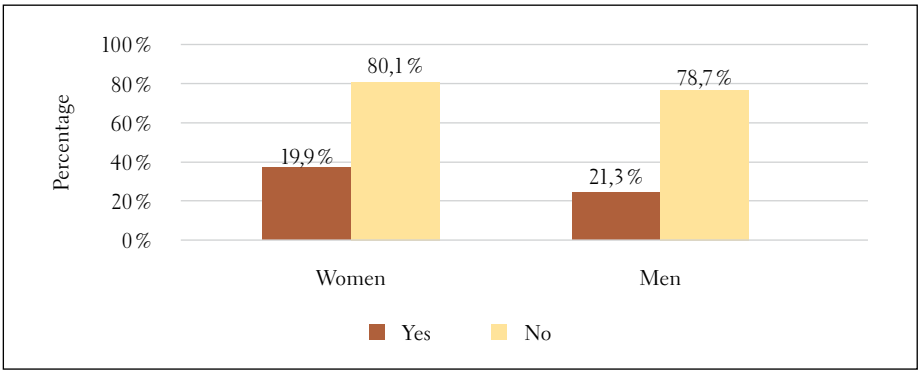
Graph 6. Job Categories of Cannabis Consumers by Sex, 2019



Source: Authors' calculations based on ENCSPA, 2019.

Furthermore, in order to analyze variables that may induce an increase in cannabis consumption, the effect of having a family member or close friend who is a cannabis consumer was considered (Barrenechea et al., 2003).

Graph 7. Friends or Relatives Who Use Cannabis by Sex, 2019.



Source: Authors' calculations based on ENCSPA 2019.

Graph 7 shows the percentage of male and female cannabis users who have family members or close friends who also use cannabis. Thus, it can be said that men have a higher percentage of relatives or friends who are users, with 21.3 % responding that they do, while the percentage for women is lower, at 19.9 %.

Results

The quantitative methodology used in the research involves the econometric probability modeling for a binary response variable, specifically a *probit* model. *Probit* models are characterized by a normal cumulative distribution function based on "utility theory, or the behavioral rational selection perspective" (Gujarati & Porter, 2010, p. 566).

Since the 1980s, the *probit* model has been more popularized among researchers by probability maximization techniques. This type of model has had several uses for topics related to finance and alternative economies, such as transportation and agriculture. For example, Escalante et al. (2013) propose a *probit* model to show how the association of producers, the surface area of production units, the level of

education, subsidies, the social characteristics of the producer, and the training that producers receive influence the possibility of accessing the credit market.

In this research, the dependent variable is a dummy variable that takes the value of one if the surveyed population reports using marijuana and zero if they consume other substances such as alcohol or tobacco. To explain this variable, some sociodemographic aspects of the population surveyed in the ECSPA for 2019 are considered. These aspects include sex, taking women as the reference category, age, educational level, and working hours, which are continuous and numerical variables. Job categories are qualitative variables and are incorporated as dummies, with social services as the reference category. Additionally, there are three dummy variables that try to identify how much the probability of consuming marijuana increases if respondents are in certain regions; this variable takes the value of one if they are in Bogotá and the Department of Antioquia and zero otherwise. Two other variables are also incorporated, one taking the value of one if the respondent has family or friends *(FF)* who consume cannabis and zero otherwise. The *Probit* model is described in Equation 1:

$$\begin{aligned}\Pr(Yi = 1) = f(&\beta_1 + \beta_2 sex_i + \beta_3 age_i + \beta_4 Schooling + \beta_5 Workinghours_i \\ &+ \beta_6 Agriculture_i + \beta_7 Industry_i + \beta_8 Commerce_i \\ &+ \beta_9 Transportation_i + \beta_{10} Finance_i + \beta_{11} Administration_i \\ &+ \beta_{12} Bogotá_i + \beta_{13} Antioquia_i + \beta_{14} FF + \varepsilon_i)\end{aligned} \quad (1)$$

The *probit* model is characterized by the fact that it is one of the models that cannot be interpreted directly, but through the marginal effects, taking into account the representative values for each variable. According to Colin and Trivedi (2010), this method can be preferred for the evaluation of the averages of the regressors; for example, "in the case of having several binary regressors, if they are equal to the sample average, they may not be significant" (p. 477). In the case of binary variables, the value of 1 was used, which is considered the attribute of interest, and for quantitative variables, the mean was used.

Table 1. Marginal Effects of the Probit Model. Factors That May Affect the Probability of Using Cannabis, 2019

Likelihood of using cannabis		
1 Consumer		
0 Not a consumer		
Factors	Marginal effects	Standard deviation
Sex	0,190	0,015***
Age	-0,004	0,000***
Schooling	0,000	0,000**
Working hours	-0,001	0,000**
Agriculture	-0,050	0,023**
Industry	0,013	0,014
Commerce	-0,009	0,010
Transportation	0,000	0,016
Finance	-0,013	0,018
Administration	-0,043	0,019**
Bogotá	0,089	0,018***
Antioquia	0,128	0,018***
Family or friends	0,338	0,024***
Number of observations		28672
LR(CHI2)14		2785,72
Prob>chi2		0
Pseudo R2		0,1582
Log-likelihood		-7412
Note: ***, **, and * mean statistically significant at the 1, 5, and 10 % levels, respectively.		

Source: Authors' calculations based on ENCSPA 2019.

With respect to the sex variable, a positive relationship was observed, i.e., men are 19.1 % more likely to consume cannabis than women. Age had a negative sign, which shows that the probability of consuming decreases by -0.4 % if you are older than 38 years on average. Similarly, working more than 48 hours per week on average decreases the probability of consuming marijuana by 0.1 %. On the other hand, the variable referring to educational level shows that if the person is in grades above eleven or high school, the probability of consuming increases by 0.01 %. Regarding the job categories, it is found that those who work in agriculture

or mining and as public administrators are 5.4% and 4.3%, respectively, less likely to consume cannabis than those who work in social and community services. In addition, being in regions such as Bogota or Antioquia also increases the probability of using cannabis by 8.9% and 12.8%, respectively, compared to other regions, mainly because they are central regions with larger populations. Finally, the results show the presence of a family member or friend who is a consumer in the vicinity.

In the field of drugs, at least cannabis is highly masculinized; cannabis use follows a patriarchal behavior since being reprobated by society, it is linked to a risky behavior more in line with the image of men and opposed to the profile of women, who is linked more associated with care and adherence to societal norms. Therefore, as a result, cities and central regions with larger populations are more likely to have higher rates of marijuana use. For example, Bogotá, the capital city of Colombia, has a high level of population concentration and greater influence on drug use due to the daily life and stress of the city itself, as well as the ease of finding certain drugs.

In turn, a greater probability of consuming cannabis is observed in places with more social sciences professionals who are responsible for studying human behavior and their environment, especially if they are under 38 years old and work fewer than 48 hours per week, since having free time increases the probability of consumption. However, it is necessary to recognize that the demand for drugs, whether cocaine or cannabis, is inelastic. This means that their consumption remains rather stable over time; even if the price is much lower or if some sociodemographic factors change, consumption will grow very little.

Discussion

The main objective of this research was to identify some social and economic factors that may induce marijuana consumption at a national level in Colombia in order to contribute to the debate on the regulation and production of this substance in the country. Econometric modeling evidenced that women consume less marijuana than men, but the literature presented in this work reflects that women assimilate this substance differently than men (Bassir Nia et al., 2018; Craft et al., 2013; Khan et al., 2013).

Furthermore, the study shows that the young population between 16 and 35 years of age, as well as those professionals in the social sciences, consume more marijuana compared to other population groups and professionals in other fields. Thus, these elements should be central to the debate around the regulation of cannabis in Colombia, as well as the crucial role of the State in this process.

Therefore, the regulation of cannabis use in Colombia requires an intersectional approach, incorporating categories such as sexual orientation, class, race, and ethnicity in their analysis (Greaves et al., 2019; Greaves & Hemsing, 2020; Haines et al., 2009; Hemsing & Greaves, 2020). In other words, it is necessary to link biological and social elements in order to address health inequities (Hankivsky et al., 2017), just as studies on the consumption and sale of cannabis require a gender perspective in Colombia. As argued by Romo-Áviles (2011), this approach allows for a better understanding of new concepts and perspectives regarding the use of men and women, particularly in marginalized female consumers (Nelson, 2021), such as Colombian women from the global south.

In addition, state intervention through fiscal policy is necessary to regulate adult cannabis consumption in Colombia because if the product implies an additional cost in public or health systems, then it should be included in taxation (Rodríguez-Llach et al., 2022). Hence, aspects such as the risks and the age of consumption of the substance must be recognized in order to intervene in regulation through tools such as taxes and public spending.

Tax revenues and public spending should be socially fair in Colombia, as stated by Rodríguez-Llach et al. (2022), i.e., they should not discriminate in order to close socioeconomic gaps. These authors state that: 1) the resulting revenues should serve to amend the discriminations and injustices of the drug prohibition policy, which are related to the stigmatization of cannabis users and the marginalized peasant population; 2) the fiscal system must be transparent, i.e., public and disaggregated information must be provided on the allocation of the proceeds from direct and indirect taxes to foster trust among the Colombian population; 3) tax revenues should also focus on protecting the health of cannabis users and the public health of the country, as well as the rural development of communities affected by drug trafficking and armed conflict; 4) cannabis products should be taxed to reduce the risk to public health, discourage consumption, and correct negative externalities for third parties, which are related to the increased cost in the healthcare system around the treatment of physical and mental illnesses linked

to marijuana consumption, mechanisms that are also used in the tobacco and alcohol markets (Pacula et al., 2014).

According to Rodríguez-Llach et al. (2022), the regulation of cannabis consumption for adult use in Colombia should focus and contribute to fiscal policy in 1) the reduction of drug trafficking networks and the illegal marijuana market, 2) the protection of public health, 3) the promotion of rural development in areas negatively affected by the illegal cannabis market, and 4) the promotion of reparation measures for victims of marijuana prohibition.

Regarding the first point, the regulation would reduce the incentives for the illegal marijuana market since the Colombian State could influence the price, varieties, and access routes to cannabis to compete with the illegal market without encouraging marijuana consumption among the Colombian population. In other words, the price should be high enough to compete with the illegal market but not so low as to encourage substance use, allowing for control through fiscal policy with a tax based on the amount of THC contained in the product.

On the second point, regulation could also protect health in Colombia by imposing age limits and place of distribution of the substance, as well as establishing certified access routes to the product and information on the content and effects of consumption, as well as applying direct taxes on the income of companies that are in any of the stages of the value chain, but could also establish indirect taxes on the sale or consumption of cannabis products, such as VAT. For the authors, this would mobilize fiscal resources that could be used to protect the health of consumers and strengthen health systems, as well as formulate comprehensive mental health policies and reduce the harm caused by cannabis consumption.

On the third point, regulation could finally reduce the socioeconomic gap in rural areas, to the extent that in this type of community's cannabis production is significant and tax revenues could be invested to attack the aforementioned gaps in contexts such as northern Cauca, mobilizing resources toward these areas, through tax revenues applied in the market, as well as supporting programs focused on the minimization and prevention of risks related to cannabis consumption, as the United States has done.

And on the fourth point, the State could use part of the proceeds from taxes on the consumption and production of cannabis to make reparations to the victims of prohibition, such as people imprisoned, criminalized, and punished for cannabis trafficking, as well as peasants because their territories were militarized in contexts of violence by armed groups.

Conclusions

In recent years, in Colombia, different draft bills have been brought before the National Congress, such as the Draft Legislative Act No. 002 of 2022 House of Representatives/033 of 2022 Senate (Losada, 2023), with the purpose of regulating the production of cannabis for recreational use. Those who have taken this initiative claim that regulating the production of cannabis could reduce the illegal market, thus reducing violence and the consequences derived from the illegality of this market. Moreover, the regulation of cannabis use requires an intersectional approach and state intervention through fiscal policy.

The research shows that women have a lower share in cannabis consumption, which is corroborated by the econometric modeling when observing a higher probability of cannabis consumption for men than for women. This derives in some way from the patriarchal system that exists in the world of drugs, a context that is clearly masculinized.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

References

Amado, B. G., Villanueva, V. J., Vidal-Infer, A., & Folgar, M. I. (2019). Diferencias de género entre autocultivadores de cannabis en España. *Adicciones*, 32(3), 181–192. https://doi.org/10.20882/adicciones.1142

Barrenechea, A., González, E., Quintana López, J. M., Bilbao González, A., Moraza Cortés, F. J., & Capelastegui Saiz, A. (2003). Prevalencia del consumo de tabaco en adolescentes. Influencia del entorno familiar.

AnAnales de Pediatría, *66*(4), 357–366. https://doi.org/10.1157/13101240

Bassir Nia, A., Mann, C., Kaur, H., & Ranganathan, M. (2018). Cannabis Use: Neurobiological, Behavioral, and Sex/Gender Considerations. *Current Behavioral Neuroscience Reports*, *5*, 271–280. https://doi.org/10.1007/s40473-018-0167-4

Chen, K., & Kandel, D. (1995). The natural history of drug use from adolescence to the mid-thirties in a general population sample. *American Journal of Public Health (AJPH)*. https://doi.org/10.2105/AJPH.85.1.41

CLDD. (2010). *Drogas y Democracia: Hacia un cambio de Paradigma*. http://www.cicad.oas.org/fortalecimiento_institucional/planesnacionales/docs/Drogas%20y%20Democracia.%20Hacia%20un%20cambio%20de%20paradigma.pdf

Coffey, C., & Patton, G. C. (2016). Cannabis Use in Adolescence and Young Adulthood. *The Canadian Journal of Psychiatry*, *61*(6), 318–327. https://doi.org/10.1177/0706743716645289

Colin, A., & Trivedi, P. (2010). *Microeconometrics using Stata* (revised ed.). Stata Press.

Congreso de la República. (1986). *LEY 30 DE 1986*. Función Pública. https://www.funcionpublica.gov.co/eva/gestornormativo/norma.php?i=2774#:~:text=ART%C3%8DCULO%2030.,pol%C3%ADticas%20que%20se%C3%B1ale%20dicho%20Consejo

Craft, R. M., Marusich, J. A., & Wiley, J. L. (2013). Sex differences in cannabinoid pharmacology: a reflection of differences in the endocannabinoid system? *Life Sciences*, *92*(8-9), 476–481. https://doi.org/10.1016/j.lfs.2012.06.009

Cranford, J. A., Eisenberg, D., & Serras, A. M. (2009). Substance use behaviors, mental health problems, and use of mental health services in a probability sample of college students. *Addictive behaviors*, *34*(2), 134–145. https://doi.org/10.1016/j.addbeh.2008.09.004

Dahl, S. L., & Sandberg, S. (2015). Female cannabis users and new masculinities: The gendering of cannabis use. *Sociology*, *49*(4), 696–711. https://doi.org/10.1177/0038038514547896

Dugas, E. N., Sylvestre, M.-P., Ewusi-Boisvert, E., Chaiton, M., Montreuil, A., & O'Loughlin, J. (2019). Early Risk Factors for Daily Cannabis Use in Young Adults. *The Canadian Journal of Psychiatry*, *64*(5), 329–337. https://doi.org/10.1177/0706743718804541

Escalante, R., Catalán, H., & Basurto, S. (2013). Determinantes del crédito en el sector agropecuario mexicano: un análisis mediante un modelo Probit. *Cuadernos de Desarrollo Rural*, *10*(71), 101–124.

Felton, J. W., Collado, A., Shadur, J. M., Lejuez, C. W., & MacPherson, L. (2015). Sex differences in self-report and behavioral measures of disinhibition predicting marijuana use across adolescence. *Experimental and clinical psychopharmacology*, *23*(4), 265. https://doi.org/10.1037/pha0000031

Greaves, L., & Hemsing, N. (2020). Sex and gender interactions on the use and impact of recreational cannabis. *International journal of environmental research and public health*, *17*(2), 509. https://doi.org/10.3390/ijerph17020509

Greaves, L., Hemsing, N., Brabete, A.C., & Poole, N. (2019). *Sex, Gender and Cannabis*. Centre of Excellence for Women's Health. https://sexgendercannabishub.ca/wp-content/uploads/2021/02/Sex-Gender-and-Cannabis-report-1.pdf

Gujarati, D., & Porter, D. (2010). *Econometría*.

Guxens, M., Nebot, M., Ariza, C., & Ochoa, D. (2007). Factores asociados al inicio del

consumo de cannabis: una revisión sistemática de estudios de cohortes. *Gaceta Sanitaria*, *21*, 252–260. https://doi.org/10.1157/13106812

Haines, R. J., Johnson, J. L., Carter, C. I., & Arora, K. (2009). "I couldn't say, I'm not a girl"–Adolescents talk about gender and marijuana use. *Social Science & Medicine*, *68*(11), 2029–2036. https://doi.org/10.1016/j.socscimed.2009.03.003

Hankivsky, O., Doyal, L., Einstein, G., Kelly, U., Shim, J., Weber, L., & Repta, R. (2017). The odd couple: using biomedical and intersectional approaches to address health inequities. *Global health action*, *10*(sup2), 1326686. https://doi.org/10.1080/16549716.2017.1326686

Hayatbakhsh, M. R., Kinner, S. A., Jamrozik, K., Najman, J. M., & Mamun, A. A. (2007). Maternal Partner Criminality and Cannabis Use in Young Adulthood: Prospective Study. *Australian & New Zealand Journal of Psychiatry*, *41*(6), 546–553. https://doi.org/10.1080/00048670701341897

Hayatbakhsh, M. R., Najman, J. M., Jamrozik, K., Mamun, A. A., Williams, G. M., & Alati, R. (2006). Changes in maternal marital status are associated with young adults' cannabis use: evidence from a 21-year follow-up of a birth cohort. *International Journal of Epidemiology*, 35(3), 673–679. https://doi.org/10.1093/ije/dyi320

Hemsing, N., & Greaves, L. (2020). Gender norms, roles and relations and cannabis-use patterns: a scoping review. *International journal of environmental research and public health*, *17*(3), 947. https://doi.org/10.3390/ijerph17030947

Herrmann, E., Jarvis, B., Sparks, A., Cohn, A., Koszowski, B., Rosenberry, Z., Coleman-Cowger, V., Pickworth, W., & Peters. E. (2018). Sweet Flowers are Slow, and Weeds Make Haste: Leveraging Methodology from Research on Tobacco, Alcohol, and Opioid Analgesics to Make Rapid and Policy-Relevant Advances in Cannabis Science. International *Review of Psychiatry, 30*(3), 238–250. https://doi.org/10.1080/09540261.2018.1465400

Jenkins, E., Dearden, T., Figueras, A., McGuinness, L., Ewert, A., & Haines-Saah, R. (2021). Cannabis Education Resources for Parents: an Environmental Scan and Critical Content Analysis in the Context of legalization. *Drugs: Education, Prevention and Policy*,1–17. https://doi.org/10.1080/09687637.2021.2002815

Johnson, R. M., Fairman, B., Gilreath, T., Xuan, Z., Rothman, E. F., Parnham, T., & Furr-Holden, C. D. M. (2015). Past 15-year trends in adolescent marijuana use: Differences by race/ethnicity and sex. *Drug and alcohol dependence*, *155*, 8–15. https://doi.org/10.1016/j.drugalcdep.2015.08.025

Kandel, D. (1975). Stages in adolescent involvement in drug use. *Stages in Adolescent Involvement in Drug Use*, 190. https://doi.org/10.1126/science.1188374

Khan, S. S., Secades-Villa, R., Okuda, M., Wang, S., Pérez-Fuentes, G., Kerridge, B. T., & Blanco, C. (2013). Gender differences in cannabis use disorders: results from the National Epidemiologic Survey of Alcohol and Related Conditions. *Drug and alcohol dependence*, *130*(1-3), 101–108. https://doi.org/10.1016/j.drugalcdep.2012.10.015

Losada, J (2023). *Proyecto de Acto Legislativo N° 002 de 2022 Cámara/033 de 2022 Senado*. https://www.camara.gov.co/sites/default/files/2023-05/aprobado%20proy%20acto%20leg%20002-2022.pdf

Martínez, J., Rangel, H., & Rivera, E. (2018). Prevalencia de vida y factores asociados al consumo de marihuana en estudiantes escolarizados de Pamplona-Colombia, durante el primer período de 2015: estudio Emtamplona. *Revista Médica de Chile*, *146*(9), 1016–1023. https://doi.org/10.4067/s0034-98872018000901016

Martínez, J., Arias, F., Rodelo, A. E., Jaraba, N. P., Meza, L. M., Contreras, M. M., Padilla, S., & Villamizar, D. J. (2016). Prevalencia y factores asociados al consumo de marihuana en estudiantes de 18 a 25 años de una universidad pública, Colombia. *Universidad y Salud*, *18*(3), 525. https://doi.org/10.22267/rus.161803.57

Matthay, E. C., Mousli, L., Ponicki, W. R., Glymour, M. M., Apollonio, D. E., Schmidt, L. A., & Gruenewald, P. (2022). A Spatiotemporal Analysis of the Association of California City and County Cannabis Policies with Cannabis Outlet Densities. *Epidemiology Mass*, 33(5), 715–725. https://doi.org/10.1097/EDE.0000000000001512

Nelson, E. U. E. (2021). Intersectional analysis of cannabis use, stigma and health among marginalized Nigerian women. *Sociology of Health & Illness*, *43*(3), 660–677. https://doi.org/10.1111/1467-9566.13244

Pacula, R. L., Kilmer, B., Wagenaar, A. C., Chaloupka, F. J., & Caulkins, J. P. (2014). Developing Public Health Regulations for Marijuana: Lessons from Alcohol and Tobacco. *American Journal of Public Health*, *104*(6), 1021–1028. https://doi.org/10.2105/AJPH.2013.301766

Pettitt-Schieber, B. (2012). El "Amanecer Verde": la legalización de la marihuana en Uruguay en el contexto del Movimiento Regional Contra la Prohibición. *Independent Study Project (ISP) Collection*, Paper 1399. http://digitalcollections.sit.edu/isp_collection/1399

Pinazo, S., Pons, J., & Carreras, A. (2002). El consumo de inhalables y cánnabis en la preadolescencia: Análisis multivariado de factores predisponentes. *Anales de Psicología*, *18*(1), 77–93. https://revistas.um.es/analesps/article/view/28621/27711

Quimbaya, J., & Olivella, M. (2013). Consumo de marihuana en estudiantes de una universidad colombiana. *Revista Salud Pública*, *15*(1), 32–43.

Restrepo, A. (2013). Guerra contra las drogas, consumidores de marihuana y legalización. *Revista Latinoamericana de Seguridad Ciudadana*, (13). https://bibliotecadigital.udea.edu.co/bitstream/10495/3774/1/RestrepoAdrian_2013_GuerraDrogasConsumidores.pdf

Richter, L., Pugh, B. S., & Ball, S. A. (2017). Assessing the risk of marijuana use disorder among adolescents and adults who use marijuana. *The American Journal of Drug and Alcohol Abuse*, *43*(3), 247–260. https://doi.org/10.3109/00952990.2016.1164711

Rodríguez, M. (2013). Desafíos que enfrenta el debate y la propuesta de la legalización del Cannabis. *Trabajos de Investigación e Políticas Públicas. Santiago*, *17*, 1–17.

Rodríguez-Llach, A., Cruz, L. F., & Pereira. I. (2022). *Principios fiscales cannábicos: elementos para el debate regulatorio en Colombia*. Editorial Dejusticia. https://doi.org/10.2307/jj.16192297

Romo-Avilés, N. (2011). Cannabis, juventud y género: nuevos patrones de consumo, nuevos modelos de intervención. *Trastornos adictivos*, *13*(3), 91–93. https://doi.org/10.1016/S1575-0973(11)70019-8

Rotermann, M., & Langlois, K. (2015). Prevalence and correlates of marijuana use in Canada, 2012. *Health Reports*, *26*(4), 10–50. https://pubmed.ncbi.nlm.nih.gov/25875158/

Sáenz, E. (2007) La "prehistoria" de la marihuana en Colombia: consumo y cultivos entre los años 30 y 60. *Cuadernos de Economía*, *26*(47), 205–222. http://www.scielo.org.co/scielo.php?pid=S0121-47722007000200008&script=sci_arttext

Stevens, E. M., Cohn, A., Ruedinger, B., Kim, N., Seo, J., Sun, F., Kim, S., & Leshner, G. (2024). Cannabis Users' and Non-Users' Differential Responses to Two Anti-Cannabis Campaigns. *Health Education & Behavior*, 52(1). https://doi.org/10.1177/10901981241267879

Tu, A. W., Ratner, P. A., & Johnson, J. L. (2008). Gender differences in the correlates of adolescents' cannabis use. *Substance Use & Misuse*, *43*(10), 1438–1463.