Associations between religious beliefs and the residence in states with medical marijuana legalization: a weighted race-stratified analysis

Abstract

This study aims to examine the associations between religious beliefs and medical marijuana legalization (MML) in the United States, using weighted race-stratified analysis. Data from adult participants and their accompanying weights (age ≥ 18) from the 2018 and 2019 waves of the National Survey on Drug Use and Health (NSDUH) were used (n = 83,205; weighted N = 484,598,323).

In the weighted datasets, three adjusted multivariable logistic regressions found that participants who disagreed or strongly disagreed with the statements 1) "Your religious beliefs are a very important part of your life" 2) "Your religious beliefs influence how you make decisions in your life" and 3) "It is important that your friends share your religious beliefs" had higher odds of residing in a state with MML (all p-values < 0.001), compared to those who strongly agreed with those statements.

Participants who identified as Asian, Native American/Alaskan Native, Native Hawaiian/Other Pacific Islander, and more than one race were combined into one group, "other", as each of those categories had much fewer subjects, compared to whites, blacks, and Hispanics.

Weighted analysis found that white participants who disagreed or strongly disagreed with the three statements had higher odds of residing in a state with MML (all p-values < 0.001). That association wasn't as strong among black, Hispanic and other race/ethnicity participants.

More practical and policy implications are discussed based on the empirical observations.

Keywords: Medical marijuana legalization; Religious beliefs; Race; Stratified analysis; Weighted analysis

Introduction

Under the United States Drug Enforcement Administration's (DEA) Controlled Substance Act of 1970, marijuana was classified as a Schedule I drug as it was determined to have a high potential for abuse, likelihood for severe psychological dependence and addiction, and no accepted medical use (United States Drug Enforcement Administration, n.d.). The Schedule I categorization has not changed since then, and marijuana remains illegal for medical and recreational use at the federal level.

Despite its criminalization, cannabis/marijuana is the most widely used illicit drug in the world, used by 147 million people or 2.5% of the world population (World Health Organization, 2016). A 2019 Gallup poll estimates that 12% of U.S. adults smoke marijuana, and a 2021 Pew Research Center poll found that 91% of Americans surveyed supported the legalization of medical marijuana, with rates varying widely by age, race, and political ideology (Hrynowski, 2020; Green, 2021). In response to the steadily growing acceptance among voters, 36 states, 4 U.S. territories, and D.C. have at this point passed laws regulating the use of marijuana for medicinal purposes (National Conferences of State Legislatures, 2021). In almost all states that have passed medical marijuana laws (MML), those proposals were put on ballots by citizen initiatives, rather than waiting for state legislature measures (Speights, 2021). From massive campaign projects, activists gathered enough signatures to qualify MML on state ballots, and residents in each state directly voted to pass in those states (Mallinson & Hannah, 2018).

Regarding the benefits of medical marijuana, numerous randomized controlled trials have found evidence of cannabis/marijuana demonstrating efficacy at relieving chronic pain, nausea, vomiting, and seizures, as well as treating diseases such as multiple sclerosis, peripheral neuropathy, and sleeping disorders (Andrea, 2015; Devinsky et al., 2016; Devinsky et al., 2017;

Grimison et al., 2020; Karst, 2018, Lynch & Ware, 2015; Thiele et al., 2018; Todaro, 2012; Whiting et al., 2015, Zuberi et al., 2018).

When comparing residents in states with and without MML, religion appears to play a significant role in the differences. A survey by the Pew Research Center found that U.S. adults who were religiously affiliated were less likely to support legal marijuana for medical and recreational purposes compared to those who identified as atheist, agnostic, or no religious affiliation (Kramer, 2021). Among the participants who identified as religiously affiliated, those who prayed every day, attended weekly worship services, and said their religion was "very important" in their lives were less likely to support legal marijuana. This observed correlation is in line with the fact that drug use is forbidden or at least strongly discouraged among certain religions, such as Latter-Day Saints, Mormons, Jehovah's Witnesses, and Muslims and many studies have confirmed that religion acts as a protective factor against alcohol, cigarette, marijuana, and other illicit drug use (Adamczyk, 2008; Gomes et al., 2013; Hodge et al., 2001; Kulis et al, 2012; Marsiglia et al., 2005; Palamar et al., 2014).

There is a need to examine if one's religious beliefs is a factor associated with how they vote on MML. This study's purpose is to examine how religious beliefs are and other related measures might be associated with the legalization of medical marijuana. It is hypothesized that someone who deemed religion as an important part of their life was less likely to reside in a state with MML.

Materials and methods

Study Sample - The National Survey on Drug Use and Health

Data from the 2018 and 2019 waves of the National Survey on Drug Use and Health (NSDUH) were used in this study. The NSDUH is an annual, comprehensive cross-sectional interview about substance use, mental health, and receiving treatment services for mental health and/or substance use disorders. Furthermore, this is a nationally representative sample, which includes the non-institutionalized civilians in the United States. Each year, responses are collected from randomly selected participants of at least 12 years of age from all 50 states and DC. Beginning in 2014, a stratified, multistage probability sampling method was used to stratify each state into approximately equally populated regions. Only non-institutionalized people are eligible, so active military, long-term hospital residents, prisoners, and homeless people are excluded. The surveys are conducted in-person by field interviewers, and sensitive questions are answered by participants themselves on a computer.

The NSDUH, sponsored by the U.S. Department of Health and Human Services, is the federal government's primary source of national data on substance use and mental health. The NSDUH estimates the prevalence of mental illnesses and the level of alcohol, tobacco, marijuana, prescription drugs, and other substance use at the national, state, and sub-state level. That information is used for conducting evidence-based epidemiological research, guiding public health policies, and designing prevention and treatment programs. The White House Office of National Drug Control Policy, National Institute on Drug Abuse, Centers for Disease Control and Prevention, and U.S. Department of Education are among some of the many agencies that rely on NSDUH data.

Because the authors of this present research only used a publicly available and de-identified dataset, further documentations from Institutional Review Board (IRB) were not required. Participants without fully responses to the questions of interest were excluded. A total of 41,743 participants from the 2018 dataset, and 41,462 participants from the 2019 dataset of age 18 or older without any missing values were included in the analysis, bringing the total sample to 83,205 (n = 83,205).

Measurements

The main outcome variable was a binary yes/no variable of whether respondents were living in a state that had a law allowing marijuana use for medical reasons at the time of the interview.

The three explanatory variables of interest were 1) "Your religious beliefs are a very important part of your life" 2) "Your religious beliefs influence how you make decisions in your life" and 3) "It is important that your friends share your religious beliefs," henceforth shortened to "Religion is Important," "Religion Influences Decision," and "Friends Share Religion." Answers were Strongly Disagree, Disagree, Agree, or Strongly Agree.

A set of sociodemographic variables were selected, including age (18-25 years, 26-34 years, 35-49 years, 50-64 years, and 65 years or older), sex (male/female), race (White, Black, Hispanic, other), marital status (married, widowed, divorced/separated, never married), education level (high school not completed, high school diploma, some college, associate's degree, college graduate), and year of interview (2018 or 2019). Binary yes/no variables that were also included were whether the participant ever smoked a cigarette, had a drink of alcohol, or used marijuana.

Person-level analysis weights were used for weighted analysis. Each participant's sample weight is the number of sampling units in the NSDUH target population they represent.

Statistical Analysis

Weighted multivariable logistic regressions was performed for each of the three religious importance variables, adjusting for the previously listed sociodemographic variables and using "Strongly Agree" as the reference category. Odds ratios (ORs) and 95% confidence intervals (95% CI) were estimated for the likelihood of residing in a state with MML, adjusting for the previously listed sociodemographic factors (OR = 1.00 as the reference level). Prior research found that marijuana use rates vary widely by race/ethnicity, sex, age, and education level, so models that included interaction terms between the three explanatory interaction terms and sex, age group, education, and race were run (Galea et al., 2007; Meyes et al., 2017; Substance Abuse and Mental Health Services Administration, 2018; Jonson et al., 2015). Our statistical results were two-tailed with a level of significance at 0.05 ($p < 0.05$). Weighted stratified analyses were performed based on significant interaction terms. All statistical analyses were performed using the free and publicly available statistical package R (version 4.1.1).

Weighted Analysis Results

Descriptive Statistics

(Insert table 1 here)

Table 1 showed the sample characteristics of the overall weighted study sample. Among the total weighted study sample of N=484,598,323, 33.64% of the participants lived in states with no MML, while 66.36% resided in states that have passed MML. The majority of participants were female (51.65%), white (63.074%), and married (51.30%). Most participants have smoked a cigarette (60.34%), had a drink of alcohol (86.27%), and have not used marijuana (50.59%). Chi-squared tests comparing those living in states with and without MML found that there were significant group differences in the answers to the three statements, race, marital status, education, and if the participant ever smoked, drank, or used marijuana.

Associations of MML with Religious Beliefs

(Insert table 2 here)

The results for the multivariable logistic regressions are displayed in Table 2. Participants who strongly disagreed or disagreed with the three statements were more likely to reside in a state with MML, compared to those who strongly agreed (all p-values < 0.0001). Participants who agreed with religious beliefs being important and religious beliefs influencing their decisions had higher odds of residing in a state with MML, compared to those who strongly agreed (all p-values < 0.0001).

Interaction and stratified analysis

Interactions between the three explanatory variables of interest and age group, sex, and education were not significant. Interaction with race was significant in every response level of

the three explanatory variables, so weighted race-stratified analyses was conducted to examine the racial differences.

Participants who identified as Asian, Native American/Alaskan Native, Native Hawaiian/Other Pacific Islander, and more than one race were combined into one group, "other", as each of those categories had much fewer subjects, compared to White, Black, and Hispanic groups. We presented race-stratified sample characteristics in the supplemental materials.

Race-Stratified Analysis

(Insert tables 3, 4, 5, 6 here)

The results for the weighted race-stratified multivariable logistic regressions are displayed in Tables 3-6. White participants who strongly disagreed or disagreed with the three statements were more likely to reside in a state with MML, compared to those who strongly agreed (all p-values < 0.001). White participants who agreed with religious beliefs being important and religious beliefs influencing their decisions had higher odds of residing in a state with MML, compared to those who strongly agreed (all p-values < 0.05).

Black and Hispanic participants who strongly disagreed or disagreed with religious beliefs being important and religion influencing decisions were more likely to reside in a state with MML (all p-values < 0.05) Black and Hispanic participants who strongly disagreed with the importance of friends sharing religious beliefs had higher odds of residing in a state with MML, compared to those who strongly agreed (p-values = 0.0109, 0.0150). Other race/ethnicity subjects who disagreed or strongly disagreed with religious beliefs being important and religion influencing decisions had higher odds of living in a state with MML (all p-values < 0.05).

Discussion

In this present research, the associations between the importance of one's religious beliefs and MML were examined. Furthermore, a weighted race-stratified analysis was performed to investigate the potential racial differences regarding religious beliefs and MML. Weighted analysis weakened the correlations observed in each race/ethnicity group except among white participants and lowered the OR in most response categories. Despite that, in the weighted analysis, Participants who disagreed or strongly disagreed with the three statements, compared to their counterparts who strongly agreed, were more likely to reside in states with MML, which support the previously mentioned 2021 Pew Research survey findings.

In the weighted analysis, white subjects had the most positive associations between religious beliefs and MML; every single response category was correlated with MML. On the other hand, there were 4 response categories not correlated with MML in black subjects, 3 for Hispanic subjects, and 5 for all other participants. Of these positive associations seen, much higher ORs were observed in white participants. Interestingly enough, the 2021 Pew Research survey also found racial differences in the support of legal marijuana; Black Protestants were less likely to support legal medical marijuana than White Protestants.

The fact that non-white subjects in this study showed fewer positive associations between religious beliefs and MML may be explained in a large part by health and healthcare disparities among different races, which has been an important national issue in the United States for decades. Numerous studies have shown that racial minorities experience higher rates of health problems, including diabetes, hypertension, obesity, heart disease, and even COVID-19 pandemic outcomes compared to white Americans (CDC, 2021). Minorities in America face various challenges on a daily basis, and if being involved in religion in some form can provide

them with better social support, it is very reasonable to want to take part in it regardless of whether one is truly devout to the religion.

Friends sharing religious beliefs was the least effective predictor of a subject's state MML, followed by religion influencing decisions. It is difficult to assess, based on having friends of similar religious beliefs and letting religion influence decision-making, the degree of importance religion is to individuals, but it is likely that as they did not rate religious as a "very important" part of their lives that religion was much less a consideration when it came to marijuana use. For some ethnicities, the OR for Disagree was higher than Strongly Disagree with the statement about religion, but the 95% confidence interval overlapped, indicating no significant difference between the two categories.

One's worldviews are all interrelated, the only question is the matter of degree. Under a socioecological framework, subjects' opinions on drug legalization are affected by their religious views, race/ethnicity, and many other factors. As religion affects human health through various biobehavioral and psychosocial constructs, different religions could inspire action in healthcare, not just in clinical medicine (Chatters, 2000; Rozier, 2017). For example, an analysis of the 2016 NSDUH data found that adults in good health who frequently attended religious services and whose religious beliefs were important to them had lower rated of marijuana use, both medical and recreational (Burdette et al., 2018). The same study also found that religion was less of a deterrent among adults with poor health, possibly because using medical marijuana as treatment for their health conditions overrides the social costs of disobeying their religion's teachings.

Religion plays a big part in influencing each individual's decision-making of healthcare seeking behavior, and further affects public health policy implementation. When it comes to MML in different states, state-level policy makers and public health practitioners could reach out

to non-white religious individuals and provide educational materials on the benefits of medical marijuana so that they may adjust their misperceptions.

This study is not without limitations. First, because the NSDUH dataset is cross-sectional, only associations were investigated. The results cannot be interpreted as causations. Therefore, the term "impacts" or "influences" were not used to describe the potential effects. Secondly, the NSDUH questionnaire does not distinguish different religions. Some religions are completely against the use of any types of drugs, even with the use of medical marijuana, while others may not be as strict, such as Judaism. Further research efforts should attempt to distinguish different types of religion. Also, participants' peer influence on religion was not assessed in this research. We did not have the empirical evidence to explore if participants' family members, friends, and/or relatives share their religious views with them and affect their positions on MML in the long term. Last of all, the NSDUH questionnaire did not record the individuals' state of residence or ask them their political affiliation as to de-identify participants' data.

Conclusion

In spite of these limitations, this study adds to the body of literature to confirm the association between participants' religious beliefs and the residence in states with MML in the United States. Race-stratified analyses also found some interesting disparities among participants in different racial groups. As the prevalence of MML continues to increase in the United States, it is imperative for people with strong religious beliefs to clearly understand the implementation of MML and the effectiveness of medical marijuana use. More educational protocols regarding the necessity of having medical marijuana in therapeutic treatments are needed.

Table 1. Descriptive statistics of the final study sample: the National Survey on Drug Use and Health, 2018-2019 (n = 83,205)

State Medical Marijuana Law Passed	State with No MML n=26,456 (33.64%)	State with MML n=56,749 (66.36%)	Overall n=83,205 (100%)	p-value
My Religious Beliefs are Very Important				
Strongly Agree	9,509 (40.66%)	15,886 (32.31%)	25,395 (35.12%)	
Agree	8,922 (32.63%)	19,231 (33.34%)	28,153 (33.10%)	<0.0001
Disagree	3,217 (10.27%)	9,285 (14.37%)	12,502 (12.99%)	
Strongly Disagree	4,808 (16.44%)	12,347 (19.97%)	17,155 (18.78%)	
My Religion Influence My Decisions				
Strongly Agree	8,479 (37.23%)	13,783 (28.47%)	22,262 (31.42%)	
Agree	9,298 (34.91%)	19,278 (34.70%)	28,576 (34.77%)	<0.0001
Disagree	4,063 (12.91%)	10,814 (16.81%)	14,877 (15.50%)	
Strongly Disagree	4,616 (14.95%)	12,874 (20.03%)	17,490 (18.32%)	
Important That Friends Share Religious Beliefs				
Strongly Agree	2,388 (10.69%)	3,865 (7.78%)	6,253 (8.76%)	
Agree	5,815 (24.30%)	9,563 (19.19%)	15,378 (20.91%)	<0.0001
Disagree	10,322 (38.73%)	21,474 (38.09%)	31,796 (38.31%)	
Strongly Disagree	7,931 (26.29%)	21,847 (34.94%)	29,778 (32.03%)	
Age Category				
18-25 years	8,667 (14.19%)	18,350 (13.27%)	27,017 (13.58%)	
26-34 years	5,376 (15.84%)	11,449 (16.08%)	16,825 (16.00%)	0.0027
35-49 years	6,938 (25.06%)	15,191 (24.07%)	22,129 (24.40%)	
50-64 years	3,087 (24.99%)	6,484 (25.11%)	9,571 (25.07%)	
>65 years	2,388 (19.92%)	5,275 (21.46%)	7,663 (20.95%)	
Sex				
Male	12,372 (48.29%)	26,543 (48.39%)	38,915 (48.35%)	0.8408
Female	14,084 (51.71%)	30,206 (51.61%)	44,290 (51.65%)	
Race				
White	16,822 (65.66%)	33,174 (62.77%)	49,996 (63.74%)	
Black	4,138 (15.37%)	6,358 (10.10%)	10,496 (11.87%)	<0.0001
Hispanic	3,643 (13.58%)	10,789 (17.48%)	14,432 (16.17%)	
Other	1,853 (5.39%)	6,428 (9.65%)	8,281 (8.22%)	

Marital Status				
Married	11,205 (52.23%)	22,736 (50.83%)	33,941 (51.30%)	
Widowed	870 (6.38%)	1,648 (5.71%)	2,518 (5.94%)	<0.0001
Divorced/Separated	3,024 (14.49%)	5,802 (13.52%)	8,826 (13.84%)	
Never Married	11,357 (26.90%)	26,563 (29.95%)	37,920 (28.92%)	
Education				
High School Not Completed	3,290 (12.92%)	6,779 (11.26%)	10,069 (11.82%)	
High School Diploma	7,202 (25.96%)	14,666 (23.75%)	21,868 (24.49%)	<0.0001
Some College	6,705 (22.62%)	13,535 (21.20%)	20,240 (21.68%)	
Associate Degree	2,646 (9.55%)	5,184 (9.21%)	7,830 (9.32%)	
College Graduate	6,613 (28.96%)	16,585 (34.59%)	23,198 (32.69%)	
Ever Smoked a Cigarette				
No	10,844 (38.60%)	24,000 (40.20%)	34,844 (39.66%)	0.0022
Yes	15,612 (61.40%)	32,749 (59.80%)	48,361 (60.34%)	
Ever Had a Drink of Alcohol				
No	4,121 (15.04%)	7,699 (13.07%)	11,820 (13.73%)	<0.0001
Yes	22,335 (84.96%)	49,050 (86.93%)	71,385 (86.27%)	
Ever Used Marijuana				
No	13,835 (54.84%)	25,677 (48.44%)	39,512 (50.59%)	<0.0001
Yes	12,621 (45.16%)	31,072 (51.56%)	43,693 (49.41%)	
Year of Interview				
2018	13,919 (52.15%)	27,824 (48.73%)	41,743 (49.88%)	<0.0001
2019	12,537 (47.85%)	28,925 (51.27%)	41,462 (50.12%)	

* Percentages and p-values are for weighted dataset

Table 2. Multivariable logistic regression estimates for the overall weighted study sample: the National Survey on Drug Use and Health, 2018-2019.

	Religious Beliefs are Important		Religion Influences Decisions		Important that Friends Share Religious Beliefs	
	OR	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**
Strongly Agree	-	-	-	-	-	-
Agree	1.2472***	(1.1868, 1.3107)	1.2586***	(1.1924, 1.3285)	1.0596	(0.9507, 1.1811)
Disagree	1.6561***	(1.5409, 1.7798)	1.6235***	(1.5188, 1.7353)	1.3131***	(1.1903, 1.4486)
Strongly Disagree	1.4792***	(1.3895, 1.5748)	1.6976***	(1.5919, 1.8103)	1.7315***	(1.5780, 1.8999)
Age Category						
18-25 years	-	-	-	-	-	-
26-34 years	1.2093***	(1.1310, 1.2930)	1.2117***	(1.1325, 1.2965)	1.1251***	(1.1336, 1.3025)
35-49 years	1.3445***	(1.2509, 1.4452)	1.3566***	(1.2593, 1.4614)	1.3521***	(1.2569, 1.4545)
50-64 years	1.5615***	(1.4375, 1.6964)	1.5883***	(1.4601, 1.7279)	1.5681***	(1.4395, 1.7081)
>65 years	1.9694***	(1.8025, 2.1518)	2.0120***	(1.8396, 2.2006)	1.9842***	(1.8123, 2.1724)
Sex						
Male	-	-	-	-	-	-
Female	1.0574**	(1.0152, 1.1014)	1.0602**	(1.0177, 1.1044)	1.0443*	(1.0018, 1.0885)
Race						
White	-	-	-	-	-	-
Black	0.7377***	(0.6675, 0.8153)	0.7401***	(0.6696, 0.8180)	0.7316***	(0.6625, 0.8079)
Hispanic	1.5705***	(1.4470, 1.7046)	1.5617***	(1.4402, 1.6934)	1.5796***	(1.4545, 1.7155)
Other	1.9846***	(1.7589, 2.2392)	1.9643***	(1.7392, 2.2186)	2.0227***	(1.7866, 2.2900)
Marital Status						
Married	-	-	-	-	-	-
Widowed	0.9286	(0.8193, 1.0524)	0.9267	(0.8192, 1.0484)	0.9269	(0.8191, 1.0489)
Divorced/Separated	0.9708	(0.8998, 1.0475)	0.9629	(0.8924, 1.0391)	0.9758	(0.9031, 1.0544)
Never Married	1.3757***	(1.2982, 1.4580)	1.3627***	(1.2849, 1.4451)	1.3897***	(1.3099, 1.4743)
Education						
High School Not Completed	-	-	-	-	-	-

High School Diploma	1.1122*	(1.0074, 1.2279)	1.1116	(1.0060, 1.2283)	1.0901	(0.9876, 1.2033)
Some College	1.1196*	(1.0021, 1.2510)	1.1222	(1.0032, 1.2552)	1.0753	(0.9613, 1.2028)
Associate Degree	1.1554*	(1.0167, 1.3130)	1.1569	(1.0166, 1.3166)	1.1074	(0.9727, 1.2607)
College Graduate	1.3723***	(1.1973, 1.5728)	1.3780***	(1.2012, 1.5810)	1.3110***	(1.1436, 1.5029)
Ever Smoked a Cigarette						
No	-	-	-	-	-	-
Yes	0.7768***	(0.7413, 0.8140)	0.7735***	(0.7383, 0.8104)	0.7689***	(0.7336, 0.8059)
Ever Had a Drink of Alcohol						
No	-	-	-	-	-	-
Yes	1.0949*	(1.0188, 1.1767)	1.0942*	(1.0172, 1.1771)	1.0828*	(1.0057, 1.1658)
Ever Use Marijuana						
No	-	-	-	-	-	-
Yes	1.4269***	(1.3510, 1.5070)	1.4167***	(1.3422, 1.4953)	1.4095***	(1.3358, 1.4872)
Year of Interview						
2018	-	-	-	-	-	-
2019	1.1334***	(1.0767, 1.1932)	1.1340***	(1.0771, 1.1939)	1.1345***	(1.0769, 1.1951)

*p < 0.05; **p < 0.01, ***p < 0.001

Table 3. Multivariable logistic regression estimates among the weighted white study participants: the National Survey on Drug Use and Health, 2018-2019.

	Religious Beliefs are Important		Religion Influences Decisions		Important that Friends Share Religious Beliefs	
	OR	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**
Strongly Agree	-	-	-	-	-	-
Agree	1.3227***	(1.2281, 1.4245)	1.3557***	(1.2426, 1.4791)	1.1382*	(1.0123, 1.2797)
Disagree	1.8059***	(1.6518, 1.9745)	1.7805***	(1.6188, 1.9585)	1.4978***	(1.3406, 1.6736)
Strongly Disagree	1.6212***	(1.5043, 1.7473)	1.8162***	(1.6667, 1.9791)	2.0676***	(1.8624, 2.2953)
Age Category						
18-25 years	-	-	-	-	-	-
26-34 years	1.1795***	(1.0808, 1.2872)	1.1824***	(1.0832, 1.2906)	1.1958***	(1.0944, 1.3065)
35-49 years	1.3145***	(1.1877, 1.4547)	1.3265***	(1.1979, 1.4689)	1.3320***	(1.2031, 1.4747)
50-64 years	1.5241***	(1.3668, 1.6995)	1.5513***	(1.3900, 1.7312)	1.5346***	(1.3746, 1.7132)
>65 years	2.0050***	(1.7720, 2.2686)	2.0453***	(1.8084, 2.3133)	2.0264***	(1.7930, 2.2902)
Sex						
Male	-	-	-	-	-	-
Female	1.0612*	(1.0087, 1.1164)	1.0630*	(1.0100, 1.1187)	1.0480	(0.9940, 1.1049)
Marital Status						
Married	-	-	-	-	-	-
Widowed	0.9896	(0.8465, 1.1569)	0.9833	(0.8410, 1.1496)	0.9899	(0.8463, 1.1579)
Divorced/Separated	0.9607	(0.8837, 1.0444)	0.9486	(0.8725, 1.0313)	0.9685	(0.8904, 1.0534)
Never Married	1.4205***	(1.3062, 1.5448)	1.4031***	(1.2888, 1.5274)	1.4482***	(1.3313, 1.5754)
Education						
High School Not Completed	-	-	-	-	-	-
High School Diploma	1.2473***	(1.1149, 1.3954)	1.2507***	(1.1175, 1.3997)	1.2297***	(1.1001, 1.3746)
Some College	1.2198**	(1.0897, 1.3654)	1.2287***	(1.0969, 1.3763)	1.1731**	(1.0497, 1.3110)
Associate Degree	1.3218***	(1.1399, 1.5327)	1.3289***	(1.1452, 1.5420)	1.2736**	(1.0977, 1.4775)
College Graduate	1.5493***	(1.3565, 1.7695)	1.5666***	(1.3701, 1.7914)	1.4795***	(1.2973, 1.6873)
Ever Smoked a Cigarette						

No	-	-	-	-	-	-
Yes	0.7764***	(0.7271, 0.829)	0.7730***	(0.7248, 0.8245)	0.7675***	(0.7185, 0.8199)
Ever Had a Drink of Alcohol						
No	-	-	-	-	-	-
Yes	1.1814**	(1.0739, 1.2996)	1.1716**	(1.0620, 1.2926)	1.1648**	(1.0569, 1.2836)
Ever Use Marijuana						
No	-	-	-	-	-	-
Yes	1.4631***	(1.3658, 1.5673)	1.4502***	(1.3537, 1.5536)	1.4399***	(1.3464, 1.5399)
Year of Interview						
2018	-	-	-	-	-	-
2019	1.1678***	(1.0957, 1.2445)	1.1670***	(1.0950, 1.2436)	1.1681***	(1.0943, 1.2470)

*p < 0.05; **p < 0.01, ***p < 0.001

Table 4. Multivariable logistic regression estimates among the weighted black study participants: the National Survey on Drug Use and Health, 2018-2019.

	Religious Beliefs are Important		Religion Influences Decisions		Important that Friends Share Religious Beliefs	
	OR	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**
Strongly Agree	-	-	-	-	-	-
Agree	1.1185	(0.9936, 1.2591)	0.9911	(0.8651, 1.1354)	1.0375	(0.8241, 1.3061)
Disagree	1.3146**	(1.0828, 1.5960)	1.3030**	(1.0964, 1.5487)	1.1526	(0.9608, 1.3826)
Strongly Disagree	1.1639*	(1.0045, 1.3486)	1.3446**	(1.1162, 1.6197)	1.3380*	(1.0747, 1.6658)
Age Category						
18-25 years	-	-	-	-	-	-
26-34 years	1.1874*	(1.0583, 1.4441)	1.1949*	(1.0102, 1.4133)	1.1882*	(1.0064, 1.4028)
35-49 years	1.2362**	(1.1073, 1.5657)	1.2431**	(1.0636, 1.4528)	1.2350**	(1.0584, 1.441)
50-64 years	1.3167**	(1.1688, 1.8025)	1.3243**	(1.1142, 1.5741)	1.3196**	(1.1072, 1.5727)
>65 years	1.4514**	(0.9004, 1.1326)	1.4686***	(1.1862, 1.8184)	1.4727**	(1.1816, 1.8356)
Sex						
Male	-	-	-	-	-	-
Female	1.0098	(0.8917, 1.2605)	1.9115	(0.9002, 1.1365)	1.0063	(0.8962, 1.1298)
Marital Status						
Married	-	-	-	-	-	-
Widowed	0.8395	(0.8052, 1.2332)	0.8472	(0.5838, 1.2294)	0.8432	(0.5812, 1.2231)
Divorced/Separated	1.0602	(0.9333, 1.4000)	1.0591	(0.8907, 1.2594)	1.062	(0.8886, 1.2691)
Never Married	1.2952**	(0.8592, 1.5008)	1.2966**	(1.1126, 1.5111)	1.2985**	(1.1182, 1.5079)
Education						
High School Not Completed	-	-	-	-	-	-
High School Diploma	0.9965	(0.7081, 0.9349)	0.9978	(0.8064, 1.2345)	0.9874	(0.7988, 1.2206)
Some College	1.1431	(0.7996, 1.0900)	1.1460	(0.9331, 1.4075)	1.1222	(0.9137, 1.3782)
Associate Degree	1.1355	(1.1113, 1.4362)	1.1325	(0.8578, 1.4953)	1.104	(0.8329, 1.4633)
College Graduate	1.2392	(0.9137, 1.2564)	1.2442	(0.9627, 1.6079)	1.2102	(0.9344, 1.5673)
Ever Smoked a Cigarette						

No	-	-	-	-	-	-
Yes	0.8136**	(0.7081, 0.9349)	0.8094**	(0.7028, 0.9321)	0.8091**	(0.7043, 0.9294)
Ever Had a Drink of Alcohol						
No	-	-	-	-	-	-
Yes	0.9335	(0.7996, 1.0900)	0.9407	(0.8051, 1.0991)	0.9281	(0.7941, 1.0846)
Ever Use Marijuana						
No	-	-	-	-	-	-
Yes	1.2633***	(1.1113, 1.4362)	1.2715***	(1.1208, 1.4426)	1.2619***	(1.1095, 1.4352)
Year of Interview						
2018	-	-	-	-	-	-
2019	1.0715	(0.9137, 1.2564)	1.0727	(0.9144, 1.2584)	1.0715	(0.9137, 1.2566)

*p < 0.05; **p < 0.01, ***p < 0.001

Table 5. Multivariable logistic regression estimates among the weighted Hispanic study participants: the National Survey on Drug Use and Health, 2018-2019.

	Religious Beliefs are Important		Religion Influences Decisions		Important that Friends Share Religious Beliefs	
	OR	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**
Strongly Agree	-	-	-	-	-	-
Agree	1.0955	(0.9490, 1.2646)	1.1938**	(1.0469, 1.3613)	1.0018	(0.7763, 1.2927)
Disagree	1.3984***	(1.1708, 1.6703)	1.4078**	(1.1574, 1.7123)	1.2368	(0.9813, 1.5587)
Strongly Disagree	1.2208*	(1.0291, 1.4482)	1.5684***	(1.3130, 1.8736)	1.3840*	(1.0701, 1.7900)
Age Category						
18-25 years	-	-	-	-	-	-
26-34 years	1.2411**	(1.1641, 1.6376)	1.2404**	(1.0646, 1.4451)	1.2357**	(1.0611, 1.4389)
35-49 years	1.3807***	(1.2804, 2.0986)	1.3898***	(1.1692, 1.6520)	1.3766***	(1.1612, 1.6319)
50-64 years	1.6392***	(1.3842, 2.2674)	1.6602***	(1.2890, 2.1384)	1.6417***	(1.2820, 2.1024)
>65 years	1.7716***	(0.9226, 1.2426)	1.8119***	(1.4134, 2.3229)	1.7966***	(1.4040, 2.2990)
Sex						
Male	-	-	-	-	-	-
Female	1.0707	(0.7566, 1.2567)	1.0798	(0.9316, 1.2517)	1.0509	(0.9063, 1.2186)
Marital Status						
Married	-	-	-	-	-	-
Widowed	1.0682	(0.7836, 1.2448)	1.0808	(0.6797, 1.7184)	1.0743	(0.6732, 1.7143)
Divorced/Separated	0.9751	(0.7918, 1.227)	0.9709	(0.7533, 1.2514)	0.9745	(0.7586, 1.2518)
Never Married	1.3067***	(0.6598, 1.3656)	1.2848**	(1.1119, 1.4845)	1.3010***	(1.1245, 1.5051)
Education						
High School Not Completed	-	-	-	-	-	-
High School Diploma	0.9877	(0.7836, 1.2448)	0.9828	(0.7784, 1.2408)	0.9651	(0.7630, 1.2207)
Some College	0.9856	(0.7918, 1.2270)	0.9815	(0.7869, 1.2242)	0.9518	(0.7628, 1.1877)
Associate Degree	0.9493	(0.6598, 1.3656)	0.9464	(0.6562, 1.3650)	0.9084	(0.6320, 1.3056)
College Graduate	1.0199	(0.7365, 1.4125)	1.0193	(0.7371, 1.4095)	0.9799	(0.7125, 1.3478)
Ever Smoked a Cigarette						

No	-	-	-	-	-	-
Yes	0.7365***	(0.6491, 0.8358)	0.7310***	(0.6435, 0.8305)	0.7295***	(0.6423, 0.8286)
Ever Had a Drink of Alcohol						
No	-	-	-	-	-	-
Yes	1.1701	(0.9728, 1.4074)	1.1708	(0.9719, 1.4105)	1.1562	(0.9624, 1.3891)
Ever Use Marijuana						
No	-	-	-	-	-	-
Yes	1.4584***	(1.2195, 1.7441)	1.4487***	(1.2133, 1.7299)	1.4278***	(1.1903, 1.7128)
Year of Interview						
2018	-	-	-	-	-	-
2019	1.0644	(0.9045, 1.2526)	1.0641	(0.9039, 1.2526)	1.0650	(0.9045, 1.2539)

*p < 0.05; **p < 0.01, ***p < 0.001

Table 6. Multivariable logistic regression estimates among the weighted other (race/ethnicity) study participants: the National Survey on Drug Use and Health, 2018-2019.

	Religious Beliefs are Important		Religion Influences Decisions		Important that Friends Share Religious Beliefs	
	OR	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**
Strongly Agree	-	-	-	-	-	-
Agree	1.2113	(0.9217, 1.5918)	1.1494	(0.9046, 1.4605)	0.9467	(0.6717, 1.3345)
Disagree	1.4023*	(1.0153, 1.9369)	1.3518*	(1.0177, 1.7955)	0.9212	(0.6550, 1.295)
Strongly Disagree	1.3976**	(1.1127, 1.7555)	1.6475***	(1.2586, 2.1566)	1.2381	(0.6717, 1.6787)
Age Category						
18-25 years	-	-	-	-	-	-
26-34 years	1.2951*	(1.0176, 1.6482)	1.2898*	(1.0115, 1.6447)	1.2795*	(1.0026, 1.6329)
35-49 years	1.5346**	(1.1288, 2.0863)	1.5474**	(1.1371, 2.1059)	1.5181**	(1.1176, 2.0621)
50-64 years	2.2506***	(1.5322, 3.3058)	2.2914***	(1.5598, 3.3661)	2.2113***	(1.5049, 3.2493)
>65 years	3.2615***	(2.0783, 5.1180)	3.2904***	(2.1181, 5.1115)	3.2048***	(2.0588, 4.9885)
Sex						
Male	-	-	-	-	-	-
Female	1.0873	(0.9024, 1.3100)	1.0926	(0.9072, 1.3160)	1.0862	(0.9047, 1.3041)
Marital Status						
Married	-	-	-	-	-	-
Widowed	0.4421**	(0.2607, 0.7499)	0.4380**	(0.2586, 0.7417)	0.4353**	(0.2612, 0.7255)
Divorced/Separated	0.8935	(0.6006, 1.3292)	0.8975	(0.6054, 1.3306)	0.9042	(0.6091, 1.3422)
Never Married	1.4616**	(1.1441, 1.8671)	1.4685**	(1.1521, 1.8718)	1.4899**	(1.1691, 1.8986)
Education						
High School Not Completed	-	-	-	-	-	-
High School Diploma	1.3214	(0.8677, 2.0125)	1.3196	(0.8652, 2.0128)	1.3048	(0.8562, 1.9883)
Some College	1.3019	(0.8778, 1.9310)	1.2952	(0.8744, 1.9185)	1.2650	(0.8427, 1.8989)
Associate Degree	0.9832	(0.6382, 1.5147)	0.9870	(0.6416, 1.5183)	0.9734	(0.6308, 1.5019)
College Graduate	1.6228*	(1.1098, 2.3728)	1.6049*	(1.0968, 2.3484)	1.5940*	(1.0843, 2.3435)
Ever Smoked a Cigarette						

No	-	-	-	-	-	-
Yes	0.8759	(0.7401, 1.1901)	0.8731	(0.6931, 1.0997)	0.8805	(0.7000, 1.1075)
Ever Had a Drink of Alcohol						
No	-	-	-	-	-	-
Yes	0.9385	(0.7401, 1.1901)	0.9418	(0.7452, 1.1903)	0.9593	(0.7585, 1.2132)
Ever Use Marijuana						
No	-	-	-	-	-	-
Yes	1.3635**	(1.1026, 1.6861)	1.3577**	(1.0957, 1.6823)	1.3595**	(1.1044, 1.6736)
Year of Interview						
2018	-	-	-	-	-	-
2019	1.1152	(0.9099, 1.3669)	1.1169	(0.9121, 1.3677)	1.1110	(0.9098, 1.3566)

*p < 0.05; **p < 0.01, ***p < 0.001

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