



Full length article

Marijuana buyers in the United States, 2010–2014

Alejandro Azofeifa^{a,*}, Laura J. Sherman^a, Margaret E. Mattson^a, Rosalie L. Pacula^{b,c}^a Substance Abuse and Mental Health Services Administration (SAMHSA), Center for Behavioral Health Statistics and Quality, Division of Evaluation, Analysis and Quality, 5600 Fishers Lane, Rockville, MD, 20857, United States^b RAND Corporation, 1776 Main Street, P.O. Box 2138, Santa Monica, CA, 20407-2138, United States^c National Bureau of Economic Research, 1050 Massachusetts Ave., Cambridge, MA, 02138, United States

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ABSTRACT

Background: Obtaining or purchasing marijuana in the U.S. can be done only in certain states via a lawful market for medical or non-medical (recreational) purposes, or via an unlawful market (“black market”) by home cultivation and unlicensed vendors and individuals. Given the evolving U.S. state marijuana legislation landscape, the objective of this study is to describe individuals who report buying marijuana in the past year by selected characteristics and U.S. geographical location.

Methods: Using data from the 2010–2014 National Survey on Drug Use and Health (NSDUH), we conducted bivariate chi-square tests to examine sociodemographic and selected behavioral indicators associated with buying marijuana and analyzed these factors in a multivariable logistic regression model. NSDUH participants were the noninstitutionalized civilian population aged 12+ (approximately 62,100 individuals per year) who reported using marijuana in the past year (approximately 12,400 annual average).

Results: A weighted estimate of approximately 18.5 million individuals aged 12+ reported buying marijuana in the past year (59% of marijuana users). Overall, buyers of marijuana were more likely to be male, report using marijuana for a greater number of days, and to meet the criteria for substance use disorder and marijuana dependence. Data showed differences of proportion of marijuana buyers by state of residence.

Conclusions: Given recent changes in state laws and policies and the increased demand for marijuana products, continued monitoring of the U.S. marijuana market in coming years is important in order to understand consumption and buying patterns among at-risk segments of the population, especially youth.

1. Introduction

In 2014, an estimated 35.1 million (13.2%) Americans aged 12 or older self-reported past year marijuana use (Azofeifa et al., 2016). Under federal law, marijuana is an illegal Schedule I drug. However, since 1996, approximately 40 states have legalized or allowed the use of marijuana or cannabis for medical purposes (Association of State and Territorial Health Officials, 2017; National Conference of State Legislatures, 2017). During 2014, two states (Colorado and Washington), have legalized non-medical, retail marijuana sales for those over 21 (Association of State and Territorial Health Officials, 2017; National Conference of State Legislatures, 2017). In addition, that same year, two other states (Alaska and Oregon) and the District of Columbia approved ballot measures that legalized non-medical, retail marijuana sales for those over 21 and the personal possession of marijuana (Association of State and Territorial Health Officials, 2017; National Conference of State Legislatures, 2017). These two states and local jurisdiction legislative measures were implemented in later years. The

measures described above allow commercial production, distribution and sales of marijuana within state and local jurisdiction boundaries. It is noteworthy that state level marijuana legislation is heterogeneous and regulation of sales differs by state and local jurisdictions (Pacula and Sevigny, 2014). Drug policy experts have forecasted that state-based marijuana legalization will continue to evolve in coming years (Caulkins et al., 2016).

Nationally representative data derived from the Substance Abuse and Mental Health Services Administration’s National Survey on Drug Use and Health (NSDUH) show that marijuana use in the past month and past year, as well as daily and almost daily use, and the perception of ease in obtaining marijuana have all increased over the last 13 years, particularly among people aged 26 or older, but not among those aged 12–17 years (Azofeifa et al., 2016). Shifting perceptions of more lenient legal penalties (e.g., no penalty) and lower perceived risk from smoking marijuana, coupled with easier perceived availability to obtain marijuana may have played a role in the observed increased prevalence of use among adults in the U.S. (Azofeifa et al., 2016). To understand U.S.

* Corresponding author.

E-mail address: Alejandro.Azofeifa@samhsa.hhs.gov (A. Azofeifa).

marijuana users or consumers, a recent study using 2013 NSDUH data showed that medical and non-medical (recreational) adult marijuana users share some characteristics (Lin et al., 2016). For example, both types of users were similar in race and education and had similar prevalence of depression. However, compared to recreational marijuana users, medical marijuana users tended to have a higher prevalence of poor health and daily marijuana (cannabis) use and were less likely to meet the criteria for an alcohol use disorder or use of illicit drugs (Lin et al., 2016).

Currently, obtaining or purchasing marijuana in the U.S. can be done via a lawful market only in certain states or jurisdictions for medical or non-medical (recreational) purposes by home cultivation, licensed vendors (retail outlet); or via an unlawful market (“black market”) by home cultivation, unlicensed vendors, and individual sellers. Regardless of the intended reason (e.g., medical or non-medical) for purchasing marijuana, the actual numbers (estimates), characteristics and location of marijuana buyers in the U.S are currently unknown. This market is particularly important to monitor as state-level marijuana legislation for medical and non-medical reasons continues to evolve in coming years. While Davenport and Caulkins (2016) recently examined selected characteristics of buyers nationally in terms of their education, income and other substance use, they did not describe differences by age groups or distribution by state of residence. Thus, understanding how the marijuana buyers’ market increases or decreases at the national or state-level will be an important measure to track in coming years, especially among underage users. Therefore, this paper describes individuals who self-report buying marijuana in the past year by selected characteristics and U.S. geographical location using data from the NSDUH (2010–2014).

2. Methods

2.1. Data source: National Survey on Drug Use and Health (NSDUH)

The NSDUH is an annual survey of the civilian, noninstitutionalized U.S. population aged 12 years and older (Center for Behavioral Health Statistics and Quality (CBHSQ), 2014a). The NSDUH uses a multistage area probability sample design for each of the 50 states and the District of Columbia that allows the production of representative national and state-level estimates. NSDUH data are collected via household face-to-face interviews using computer-assisted personal interviewing methods that maximize respondents’ privacy in reporting sensitive information. Data are protected under the Confidential Information Protection and Statistical Efficiency Act of 2002, which ensures that all NSDUH data are used for statistical purposes only and cannot be used for any other purposes. Detailed information regarding NSDUH methodology and questionnaires is available elsewhere (Center for Behavioral Health Statistics and Quality (CBHSQ), 2014a; SAMHSA, no date; CBHSQ, 2014b). The present study used combined data from NSDUH’s restricted files from years 2010–2014 to produce annual average estimates.

2.2. Sample

The analytic sample includes respondents aged 12 years and older who self-reported using marijuana in the past year. From 2010–2014, NSDUH data were collected from approximately 62,100 individual respondent interviews per year (unweighted), with this analysis focusing on those who self-reported using marijuana in the past year. The analytic weighted sample of past-year marijuana users was approximately 10% aged 12–17 (3,246,000) and 90% aged 18 or older (28,097,000), and 60% male (18,954,000) and 40% female (12,389,000). Respondents with unknown information on whether they purchased marijuana in the past 12 months were excluded from the analyses (approximately 1.7%). This sample was weighted to produce national representative estimates as shown on Tables 1 and 2.

2.3. Measures

Participants reported past year use of marijuana (defined as those who reported use of marijuana within the 12 months preceding the date of interview): “How long has it been since you last used marijuana or hashish?” Among those who reported past year use of marijuana, respondents were asked: “Now think about the last time you used marijuana. How did you get this marijuana?” Response categories were: bought it, traded something else for it, got it for free or shared someone else’s, grew it yourself. Respondents that did not state they bought marijuana the last time they used it were asked a follow-up question, “During the past 12 months did you buy any marijuana?” Participants who self-reported that they bought marijuana during the last year, whether it was their most recent use or not, were considered to be “marijuana buyers” for this study.

2.4. Demographic variables

Demographic characteristics included age, sex, race/ethnicity, annual household income, current employment status, level of education, and county type. Selected behavioral characteristics included number of days the respondent used marijuana in the past year, reported symptoms of substance use disorder (SUD) based on DSM-IV criteria (also known as dependence or abuse) in the past year (which included those with SUD for marijuana and other substances), marijuana dependence, and past year major depressive episode (MDE). The full list of questions can be found elsewhere (Center for Behavioral Health Statistics and Quality (CBHSQ), 2014b).

2.5. Statistical analyses

Statistical analyses were performed using SAS version 9.4 and SUDAAN version 11.0.1 (RTI International). Population weights were calibrated through a model-based procedure to adjust for state, age group, sex, and race/ethnicity groupings, and variances were calculated accounting for the complex NSDUH survey design.

2.6. Analysis

The percentage of past-year users who self-reported buying marijuana for each response category of the selected variables was examined. Tabular distributions of the sociodemographic and selected behavioral characteristics of marijuana users were contrasted by buying status (yes/no) using chi-square tests at $\alpha = 0.05$ (Table 1). Next, all the characteristics of interest were included in a multivariable logistic regression model to identify predictors of having reported buying marijuana at least once among past year marijuana users, while controlling for the effects of other variables in the model (Table 2). We ran separate models for youth (12–17 years) and adults (18 and older). Adjusted Odds Ratios (AOR) greater than one indicated that the indicator was associated with increased likelihood of buying marijuana relative to the reference group, and an AOR less than one indicated that the indicator was associated with decreased likelihood of buying marijuana relative to the reference group. We present the 95% confidence intervals (CI) for each AOR estimate.

Lastly, we produced state estimates to quantify the percentage of all people aged 12 and older, 12–17, and 18 or older who self-reported buying marijuana in the past year among marijuana users by state of residence (Fig. 1). In the Figure, state-level estimates were compared to the U.S. national average (59%) using $\alpha = 0.05$ level as a cutoff to determine statistical significance.

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