



Full length article

Marijuana advertising exposure among current marijuana users in the U.S.



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ABSTRACT

Background: Little is known about marijuana advertising exposure among users in the U.S. We examined the prevalence of advertising exposure among young adult marijuana users through traditional and new media, and identified characteristics associated with seeking advertisements.

Methods: We conducted a cross-sectional survey of 18–34 year-old past-month marijuana users in the U.S. using a pre-existing online panel (N = 742). The survey queried about passively viewing and actively seeking marijuana advertisements in the past month, sources of advertisements, and marijuana use characteristics.

Results: Over half of participants were exposed to marijuana advertising in the past month (28% passively observed advertisements, 26% actively sought advertisements). Common sources for observing advertisements were digital media (i.e., social media, online, text/emails; 77%). Similarly, those actively seeking advertisements often used Internet search engines (65%) and social media (53%). Seeking advertisements was more common among those who used medically (41% medical only, 36% medical and recreational) than recreational users (18%), who used concentrates or edibles (44% and 43%) compared to those who did not (20% and 19%), and who used multiple times per day (33%) compared to those who did not (19%) (all $p < 0.01$).

Conclusions: Exposure to marijuana advertising among users is common, especially via digital media, and is associated with medical use, heavier use, and use of novel products with higher THC concentrations (i.e., concentrates) or longer intoxication duration (i.e., edibles). As the U.S. marijuana policy landscape changes, it will be important to examine potential causal associations between advertising exposure and continuation or frequency/quantity of use.

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1. Introduction

In recent years, the legalization of medical and/or recreational marijuana has rapidly spread across the U.S. Currently, over half of states in the U.S. allow the use of marijuana for medical purposes, and eight of these states have also legalized the recreational use of marijuana (Marijuana Policy Project, n.d.). More states are expected to follow suit given that the percentage of Americans who

favor marijuana legalization is the highest it has ever been (Stebbins and Comen, 2016; Pew Research Center, 2014; Jones, 2015). As a result, the marijuana industry has become one of the fastest growing industries in the U.S., with the legal marijuana market projected to be over \$7 billion in 2016 (ArcView Market Research, 2015; Sola, 2016).

As the legal marijuana industry continues to grow, so will the commercial advertising of these products. While some state regulatory agencies have implemented restrictions on marijuana advertising, these regulations vary across states. For instance, some states prohibit advertising via specific media; for example, Delaware and Oregon prohibit advertisements in specific print or broadcast media. External signage and/or outdoor advertisements are also restricted in some states (Colorado, Connecticut, District of Columbia, Hawaii, Massachusetts, New Jersey, and Washing-

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ton). False or misleading advertisements are banned in certain states (Colorado, Connecticut, New York, and Washington). Specific regulations to limit minors' exposure to advertisements are also addressed in some state policies. For example, Illinois and Washington ban billboards within 1000 feet of schools/playgrounds, several states ban the use of imagery portraying people under the legal age of consumption (Connecticut, Massachusetts, New York, Washington), Colorado and Washington ban the use of cartoon characters, and Colorado bans advertising on print, radio, and television when more than 30% of the audience is under the legal age. Online marijuana advertisements are also regulated by some states. Colorado bans online ads when more than 30% of the audience is expected to be under 21 years old and prohibits pop-up ads. Montana prohibits advertising in any medium and specifically states that this includes electronic media. Notably, several states still have no advertising regulations of any type in place (e.g., Arizona, Michigan, Minnesota, New Mexico, Rhode Island, Vermont) (Leafly, n.d.).

While it is well known that advertisements influence youth and young adults' attitudes about, initiation of, and continued or increased use of alcohol and tobacco use (Anderson et al., 2009; Choi et al., 2002; Davis et al., 2008; Evans et al., 1995; Gilpin et al., 2007; Gordon et al., 2010; Lovato et al., 2003; Smith and Foxcroft, 2009), few studies have examined exposure to marijuana advertising and/or the content of such advertisements. A study in Southern California reported that up to 30% of middle school age participants had seen a medical marijuana advertisement in the past 3 months (either in billboards, magazines, or via other sources), and there was a reciprocal cross-lagged association between this exposure and marijuana use or intentions to use in the future (D'Amico et al., 2015). Because online advertising is an increasingly important medium for advertising in the U.S. and can be used by the marijuana industry to advertise dispensaries and products (eMarketer, 2016a), we recently studied marijuana advertising practices on Weedmaps, an online directory of marijuana dispensaries (Bierut et al., 2016). Our findings indicated that many dispensaries advertised health claims of the benefits of using marijuana, some of which have not yet been scientifically substantiated. Of particular note in relation to youth, many dispensaries lacked website restrictions to verify a person's age before entering the dispensary's own website.

Similar to tobacco and alcohol advertisements, commercial advertisements for marijuana have the potential to influence marijuana perceptions and use. Furthermore, restrictions on marijuana advertising across states are inconsistent and sometimes nonexistent. Due to the dearth of studies examining marijuana advertising in the U.S., we have taken the first steps to explore the prevalence of exposure to marijuana advertisements among marijuana users across the country. Using an existing online panel of respondents, we surveyed young adult marijuana users across the U.S. about their exposures to marijuana advertisements. We aimed to determine the prevalence of marijuana users who recently viewed and sought marijuana advertisements and to determine the sources of these advertisements, including traditional media sources such as print media, radio, and television as well as new digital media sources, including online and social media platforms. We also identified demographic and marijuana use characteristics associated with viewing and seeking marijuana advertisements.

2. Material and methods

2.1. Participants

Between June and September of 2015, we conducted an online survey with members of SurveyMonkey® Audience, a proprietary panel of participants drawn from the over 30 million people who

take SurveyMonkey surveys. To recruit for this voluntary online panel, SurveyMonkey asks people who complete SurveyMonkey surveys whether they would like to be a member of the online panel. In exchange for being on the panel and taking surveys, the participant receives donations to charities or sweepstakes entries. When registering for the Audience panel, SurveyMonkey collects and stores detailed background information for each Audience member. SurveyMonkey limits the number of surveys each panel member can take per week and uses non-cash incentives to help maintain panelists who would provide high quality responses. Recent reliability tests of the U.S. SurveyMonkey Audience, which involved surveying panelists with the same survey for one week in each of three consecutive months, found that 85% of questions regarding personal or demographic characteristics, credit/debit card ownership/use, and internet use did not significantly differ across the three survey administrations (Wronski and Liu, 2016). Furthermore, benchmarking surveys are run regularly so that SurveyMonkey can ensure that the demographic characteristics of their Audience members are similar to the U.S. population; however, the sample is not nationally representative so we used weighting techniques described below.

The target sample size for our survey was approximately 3000 SurveyMonkey Audience members who were marijuana users (i.e., had reported use in the past 6 months), lived in the U.S., and were young adults between the ages of 18 and 35 years (this roughly parallels young adults as defined by the U.S. Census Bureau: 18–34 years). Because marijuana use history is not included in an Audience member's profile, SurveyMonkey could only target the age and residency eligibility requirements; thus, SurveyMonkey invited 18–35 year olds residing in the U.S. to take our survey. Eligibility items in the survey were then used to allow those who had used marijuana in the past 6 months and were among our age group of interest to take the survey. Two methods were used to recruit participants for our survey. SurveyMonkey sent a total of 101,822 email invitations to Audience members and “routed” 19,499 potential participants to our survey. “Routing” potential participants involves collecting basic demographic information for people who visit the SurveyMonkey website, clicking on a button indicating they would like to take a survey, and then sending that person to the applicable survey. Those invited to take the survey were not provided information on the topic of the survey until they clicked to enter the survey where they were then informed that the survey was about medical and recreational marijuana. To reach our desired sample size, a total of 21,156 people responded to the invitations (via email or “router” method); 3176 of these met our eligibility criteria and had usable data. Although SurveyMonkey Audience recruitment uses techniques to limit low quality respondents, we included trap questions to make sure participants were reading questions thoroughly and not rushing (i.e., “Select B as your answer choice.”, “What does 2 + 2 equal?”); a small number of participants (69/3245; 2%) were removed because they failed these trap questions. When taking our online survey, each participant read and agreed to the informed consent document online before beginning the survey. These methods were reviewed and approved by the Washington University Institutional Review Board.

Three different survey forms were used in order to collect data on a myriad of marijuana-related items while also limiting the length of the survey to minimize participant burden. The current study centers on exposure to marijuana advertisements which was only queried on one of the three survey forms. This form had 1006 participants, but we restricted our analysis to only those who used marijuana in the past month (to hone in on current, past month marijuana users) and were 18–34 years old which resulted in a sample size of 742. Because SurveyMonkey Audience is not nationally representative, we applied weights to our survey data so that marginal totals of our survey matched that of past-month

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