



COMMENTARY

Marijuana use among young people in an era of policy change: what does recent evidence tell us?

Christopher P. Salas-Wright, PhD^a and Michael G. Vaughn, PhD^b

^aSchool of Social Work, Boston University, Boston, MA, USA; ^bSchool of Social Work, College for Public Health and Social Justice, Saint Louis University, St. Louis, MO, USA

Recent years have witnessed a remarkable series of changes in the perception and availability of marijuana in the United States (US). Although only one in ten (12%) Americans supported the legalization of marijuana in late 1960s, today a slim majority of American adults (53%)—and the bulk of Millennials (68%)—believe that marijuana should be legal for recreational use (1). Moreover, the overwhelming majority of Americans (85%) report that they would not be bothered by people using *Cannabis sativa* in the privacy of their own homes. Although the use and distribution of marijuana remains illegal under US Federal Law, many US states have implemented marijuana liberalization policies (2). At present, marijuana is legal for recreational use in four states (Arizona, Colorado, Oregon, and Washington), more than a dozen states have implemented decriminalization measures, and 25 states and the District of Columbia currently have medical marijuana laws (3). With several states preparing to vote on marijuana legalization initiatives in the November 2016 elections (California, Maine, Massachusetts, and Nevada), and others working toward marijuana-related ballot measures in the future, it seems this liberalizing trend is likely to continue.

Research on marijuana use and cannabis use disorder is critical as we seek to understand and make informed decisions regarding drug policy in the 21st century. Two articles in this issue of the *American Journal of Drug and Alcohol Abuse* (AJDAA), both of which employ nationally representative data from the National Survey on Drug Use and Health (NSDUH), provide a timely contribution to our understanding of marijuana use risk in the lives of adolescents (ages 12 to 17) and young adults (ages 18–25). Chen and colleagues (2016) show that, while very unlikely before the age of 11, risk of marijuana use initiation increases precipitously during the early adolescent stage before finding its peak somewhere between ages 16 and 18. Indeed, by age 21, more than 55% of American youth report having used marijuana at least once in their lives and 22% are current marijuana users. Beyond risk of marijuana use, Richter and

colleagues (2016) demonstrate quite convincingly that cannabis use disorder impacts a substantial proportion of marijuana users. Specifically, we see that, among current marijuana users, approximately one in four adolescents (26%) and one in five young adults (21–22%) meets diagnostic criteria for cannabis use disorder. The elevated prevalence of abuse/dependence among marijuana users serves to remind us that popular notions that marijuana is non-addictive and a “harmless pleasure” are simply inaccurate (4).

As noted above, the landscape of marijuana use risk in the US is changing. In light of such changes, one question that emerges is how the prevalence of marijuana use and cannabis use disorder might be impacted by the vicissitudes in marijuana-related policy and public opinion. Fortunately, a number of high-quality epidemiological trend studies have been conducted to examine precisely this question. One challenge, however, is that the findings from these trend studies cannot easily be reduced to a singular sound bite; in fact, the best available data paints a rather nuanced picture of the changes in marijuana use risk in the US. For instance, research examining national-level trends in among adolescents suggests that marijuana use actually appears to be on the decline. Indeed, evidence from multiple large-scale, nationally representative studies—including Monitoring the Future (MTF), the Youth Risk Behavior Surveillance System (YRBSS), and the NSDUH—all point to significant and substantively meaningful reductions in adolescent marijuana use in recent years (5,6,7,8). Looking at young adults, however, we see a different story. That is, the data for young adults (and adults in general) indicate that marijuana use and cannabis use disorder are on the rise compared to rates observed in the early 2000's (9,10). Indeed, evidence suggests the marijuana landscape is changing rapidly among adults. A recent Gallup poll is illustrative in this regard, finding that the number of American adults who use marijuana nearly doubled between 2013 (7%) and 2016 (13%) (11). This divergent pattern of findings between

adolescents and young adults/adults is curious and raises questions about what, if any, impact marijuana liberalization policies may possess as the current cohort of teens transitions into adulthood.

Notably, the trend studies described above are for American youth in general. That is, they do not account for potential state-level differences. Evidence from studies that have examined trends in adolescent marijuana use in states that are particularly impacted by marijuana liberalization policies adds another wrinkle to the story. For instance, while we have seen declines in adolescent marijuana use nationally, a recent trend study with high school students in Washington State—which voted to legalize medical and nonmedical marijuana for adults in 2012—found no change in the prevalence of marijuana use between 2000 and 2014 (12). This is consistent with evidence from the Healthy Kids Colorado Survey which suggests that marijuana use is neither increasing nor decreasing in the years following the Centennial State’s legalization of marijuana (13). Similarly, studies examining states with medical marijuana laws found that, while marijuana use and cannabis use disorder tend to be higher in states with medical marijuana (14), the passage and implementation of medical marijuana laws does not appear to lead to increases in adolescent marijuana use (15,16). In fact, recent evidence suggests that marijuana use may even be decreasing among younger teens in states with medical marijuana laws (17).

Several studies have also examined the degree to which the marijuana-related views of young people have changed in recent years. While not entirely uniform, overall evidence suggests that adolescents are becoming more lenient in their views on marijuana and less concerned about the risks posed by use of the drug. For instance, data from the MTF study indicate that the proportion of adolescents and young adults reporting disapproval of marijuana use has declined in recent years (6). While our recent NSDUH-based study tells a different story for adolescents (we saw increased disapproval among younger teens [ages 12 to 17] and no change among older teens [ages 15 to 17]), we did find a very similar pattern of results as the MTF study among young adults (8). Recent evidence from the MTF and NSDUH also indicates that fewer adolescents and young adults perceive marijuana to be of “great risk” to their physical/overall wellbeing (17,18). This matches up with evidence indicating that the proportion of high school students in Washington State that view marijuana use as being of little-to-no risk to one’s well-being more than doubled between 2000 (14%) and 2014 (35%) (12).

In sum, when it comes to marijuana use among young people in the US, the best available evidence indicates a number of important things. First, by the time Americans reach late adolescence and the transition into young adulthood, roughly half (55%) have tried marijuana and one in five (22%) can be described as a current user. Second, a disconcerting proportion of current adolescent (26%) and young adult (21–22%) marijuana users meet diagnostic criteria for cannabis use disorder. Third, we can state with some confidence that, even in states that have enacted marijuana liberalization policies, marijuana use among adolescents is not currently increasing. In fact, there is rather compelling evidence that adolescent marijuana use has steadily declined. Fourth, while adolescent marijuana use is declining, the best available evidence suggests that marijuana use and cannabis use disorder have increased markedly among young adults and adults in general. Finally, adolescents and young adults are becoming increasingly permissive in their views about marijuana use and the risks it poses.

And yet, there remains much that we do not know. For instance, we do not have definitive answers as to why we see a different pattern in trends between adolescents and young adults. Along the same lines, it is difficult to ascertain if the downward trend observed among adolescents will change as today’s adolescents transition into young adulthood. We have good evidence as to what is happening in the lives of young people over the last few decades, but—as the nation continues to experience rapid changes in marijuana-related policy and public opinion—it is simply uncertain what the trend line will look like between 2016 and, say, 2030. Sober voices have cautioned that it is, at present, far too soon to begin to fully assess the impact of marijuana liberalization in the US (19). What we can say with certainty is that now is a time to carefully monitor trends in marijuana use, cannabis use disorder, and marijuana-specific risk factors, particularly among the nation’s youth. And, at this critical juncture in the history of drug policy in America, now is undoubtedly a time for parents, prevention scientists, and policymakers to push for careful and judicious regulatory policies to be put in place as new marijuana laws are written (20).

Declaration of interest

The authors declare that there are no conflicts of interest associated with this manuscript.

Funding

This research was supported in part by the National Institute on Drug Abuse at the National Institutes of Health (R25 DA030310; PI: James C. Anthony).

References

1. Motel S. 6 Facts about Marijuana. Pew Research Center (February 2014), 2015. 1–59.
2. Office of National Drug Control Policy. (n.d.). Marijuana Resource Center: State Laws Related to Marijuana |The White House. Available at: <https://www.whitehouse.gov/ondcp/state-laws-related-to-marijuana>
3. National Council of State Legislatures. (n.d.). Marijuana overview. Available from: <http://www.ncsl.org/research/civil-and-criminal-justice/marijuana-overview.aspx> [last accessed 8 May, 2016].
4. Volkow ND, Baler RD, Compton WM, Weiss SRB. Adverse health effects of marijuana use. *N Engl J Med* 2014;370:2219–2227. doi:10.1056/NEJMra1402309
5. Johnson RM, Fairman B, Gilreath T, Xuan Z, Rothman EF, Parnham T, Furr-Holden CDM. Past 15-year trends in adolescent marijuana use: Differences by race/ethnicity and sex. *Drug Alcohol Depend*. 2015;155:8–15. doi:10.1016/j.drugalcdep.2015.08.025
6. Johnston LD, O'Malley PM, Miech R, Bachman J, Schulenberg JE. 2014. Monitoring the future: national survey results on drug use: 1975–2014. overview, key findings on adolescent drug use. Ann Arbor: Institute for Social Research, The University of Michigan.
7. Salas-Wright CP, Vaughn MG. The changing landscape of adolescent marijuana use risk. *J Adolesc Health*. 2016;59:246–247. doi:10.1016/j.jadohealth.2016.06.018
8. Salas-Wright CP, Vaughn MG, Todici J, Córdova D, Perron BE. Trends in the disapproval and use of marijuana among adolescents and young adults in the United States: 2002–2013. *Am J Drug Alcohol Abuse* 2015;41:392–404. doi:10.3109/00952990.2015.1049493
9. Hasin DS, Kerridge BT, Saha TD, Huang B, Pickering R, Smith SM, ... Grant BF. Prevalence and correlates of DSM-5 cannabis use disorder, 2012–2013: Findings from the national epidemiologic survey on alcohol and related conditions–III. *Am J Psychiatry* 2016;173:588–599. doi:10.1176/appi.ajp.2015.15070907
10. Hasin DS, Saha TD, Kerridge BT, Goldstein RB, Chou SP, Zhang H, ... J, Z. Prevalence of marijuana use disorders in the United States between 2001–2002 and 2012–2013. *JAMA Psychiatry* 2015;72:1235. doi:10.1001/jamapsychiatry.2015.1858
11. McCarthy J. One in Eight U.S. Adults Say They Smoke Marijuana 2016. Available at: <http://www.gallup.com/poll/194195/adults-say-smoke-marijuana.aspx>
12. Fleming CB, Guttmannova K, Cambron C, Rhew IC, Oesterle S, Miech RA, ... et al. Examination of the divergence in trends for adolescent marijuana use and marijuana-specific risk factors in Washington state. *J Adolesc Health* 2016;25–63. doi:10.1016/j.jadohealth.2016.05.008
13. Colorado Department of Public Health & Safety. (n.d.). Survey: Parents biggest influence on youth health behaviors |Department of Public Health and Environment. Retrieved from <https://www.colorado.gov/pacific/cdphe/news/HKCS2015>
14. Cerdá M, Wall M, Keyes KM, Galea S, Hasin D. Medical marijuana laws in 50 states: Investigating the relationship between state legalization of medical marijuana and marijuana use, abuse and dependence. *Drug Alcohol Depend* 2012;120:22–27. doi:10.1016/j.drugalcdep.2011.06.011
15. Hasin DS, Wall M, Keyes KM, Cerdá M, Schulenberg J, O'Malley PM ... Feng T. Medical marijuana laws and adolescent marijuana use in the USA from 1991 to 2014: results from annual, repeated cross-sectional surveys. *Lancet Psychiatry* 2015;2:601–608. doi:10.1016/S2215-0366(15)00217-5
16. Wall MM, Mauro C, Hasin DS, Keyes KM, Cerdá M, Martins SS, Feng T. Prevalence of marijuana use does not differentially increase among youth after states pass medical marijuana laws: Commentary on and reanalysis of US National Survey on Drug Use in Households data 2002–2011. *Int J Drug Policy* 2016. doi:10.1016/j.drugpo.2016.01.015
17. Keyes KM, Wall M, Cerdá M, Schulenberg J, O'Malley PM, Galea S, ... Hasin DS. How does state marijuana policy affect U.S. youth? Medical marijuana laws, marijuana use and perceived harmfulness: 1991–2014. *Addiction* 2016. doi:10.1111/add.13523
18. Lipari R, Kroutil LA, Pemberton MR. Risk and protective factors and initiation of substance use: Results from the 2014 National Survey on Drug Use and Health. *NSDUH Data Rev*. 2015. Available at: <http://www.samhsa.gov/data/sites/default/files/NSDUH-DR-FRR4-2014rev/NSDUH-DR-FRR4-2014.pdf>
19. Hall W, Lynskey ML. Why it is probably too soon to assess the public health effects of legalisation of recreational cannabis use in the USA. *Lancet Psychiatry* 2016. doi:10.1016/S2215-0366(16)30071-2
20. Pacula RL, Kilmer B, Wagenaar AC, Chaloupka FJ, Caulkins JP. Developing public health regulations for marijuana: lessons from alcohol and tobacco. *Am J Public Health* 2014;104:1021–1028. doi:10.2105/AJPH.2013.301766