

# Communicating Cannabis Science to Communities: Opportunities for Prevention Professionals



@cshrb\_uw

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Associate Professor  
Psychiatry & Behavioral Sciences  
Adjunct Associate Professor  
Psychology

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## Overview of this presentation

- **Special thank you to:**
  - Lindsay Price
  - Jeff Hanley
  - All of you for making the time for today's presentation

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## CANNABIS USE – onset

- **Many routes/means of use:**
  - Smoked (joints, bongs, pipes)
  - Vaped (vaporizer)
  - Ingested orally (brewed as a tea, food, edibles)
  - Concentrates (dabbing, hash oil, budder, shatter)
- **When smoked/vaped...**
  - Effects begin immediately
- **When consumed in food or drink...**
  - Effects begin 30-60 minutes

NIDA (2020). *Cannabis/marijuana research report*. Retrieved from <https://nida.nih.gov/publications/research-reports/marijuana/>

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***Norms  
(and highest  
misperceptions  
among those who  
report use)***

Wolfson, S. (2000). Students' estimates of the prevalence of drug use: Evidence for a false consensus effect. *Psychology of Addictive Behaviors, 14*(3), 295–298. <https://doi.org/10.1037/0893-164X.14.3.295>

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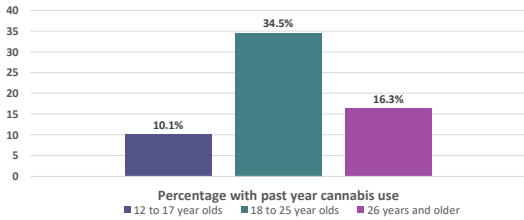
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**Past year cannabis use by age group**

Source: SAMHSA 2020 National Survey on Drug Use and Health



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***A lot of times we hear “it’s safe” or “it’s safer than alcohol”***

***The “who’s who” of cannabis researchers globally have weighed in on risks of cannabis use***

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Review  
**Lower-Risk Cannabis Use Guidelines (LRCUG) for reducing health harms from non-medical cannabis use: A comprehensive evidence and recommendations update**

Benedikt Fischer<sup>a,b,c,d</sup>, Tessa Robinson<sup>e,f</sup>, Chris Bullen<sup>g,h</sup>, Valerie Curran<sup>i,j</sup>, Didier Jutra-Aswad<sup>k</sup>, Maria Elena Medina-Mora<sup>l</sup>, Rosalie Liccardo Pacula<sup>m</sup>, Jürgen Rehm<sup>n,o</sup>, Robin Room<sup>p</sup>, Wim van den Brink<sup>q</sup>, Wayne Hall<sup>r</sup>

<sup>a</sup>School of Population Health and Services, Faculty of Medical and Health Sciences, University of Auckland, Auckland, New Zealand  
<sup>b</sup>Centre for Population Research, School of Population and Global Health, University of Western Australia, Perth, Australia  
<sup>c</sup>Department of Psychiatry, Harvard Medical School, Boston, MA, USA  
<sup>d</sup>Department of Health Services, University of California, San Francisco, CA, USA  
<sup>e</sup>Department of Health Services, University of California, San Francisco, CA, USA  
<sup>f</sup>Department of Health Services, University of California, San Francisco, CA, USA  
<sup>g</sup>Department of Health Services, University of California, San Francisco, CA, USA  
<sup>h</sup>Department of Health Services, University of California, San Francisco, CA, USA  
<sup>i</sup>Department of Health Services, University of California, San Francisco, CA, USA  
<sup>j</sup>Department of Health Services, University of California, San Francisco, CA, USA  
<sup>k</sup>Department of Health Services, University of California, San Francisco, CA, USA  
<sup>l</sup>Department of Health Services, University of California, San Francisco, CA, USA  
<sup>m</sup>Department of Health Services, University of California, San Francisco, CA, USA  
<sup>n</sup>Department of Health Services, University of California, San Francisco, CA, USA  
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<sup>p</sup>Department of Health Services, University of California, San Francisco, CA, USA  
<sup>q</sup>Department of Health Services, University of California, San Francisco, CA, USA  
<sup>r</sup>Department of Health Services, University of California, San Francisco, CA, USA

Fischer, B., Robinson, T., Bullen, C., Curran, V., Jutra-Aswad, D., Medina-Mora, M. E., Pacula, R. L., Rehm, J., Room, R., Brink, W. V. D., & Hall, W. (2022). Lower-Risk Cannabis Use Guidelines (LRCUG) for reducing health harms from non-medical cannabis use: A comprehensive evidence and recommendations update. *The International Journal on Drug Policy*, 99, 103381.

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**General Precaution A:**

***“There is no universally safe level of cannabis use; thus, the only reliable way to avoid any risk for harm from using cannabis is to abstain from its use.”***

Fischer, B., Robinson, T., Bullen, C., Curran, V., Jutra-Aswad, D., Medina-Mora, M. E., Pacula, R. L., Rehm, J., Room, R., Brink, W. V. D., & Hall, W. (2022). Lower-Risk Cannabis Use Guidelines (LRCUG) for reducing health harms from non-medical cannabis use: A comprehensive evidence and recommendations update. *The International Journal on Drug Policy*, 99, 103381.

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***Potency/concentration is at never before seen levels, so statements like “it’s just weed,” or “it’s natural,” or “I used when I was younger and I turned out fine” need to be addressed***

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# What do researchers and scientists consider "high potency" cannabis?

## Anything over 10% THC

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ElSohly, M.A., Mehmedic, Z., Foster, S., Gon, C., Chandra, S., & Church, J.C. (2016). Changes in cannabis potency over the last 2 decades (1995-2014) – Analysis of current data in the United States. *Biol Psychiatry*, 79, 613-619.

### Archival Report

#### Changes in Cannabis Potency Over the Last 2 Decades (1995–2014): Analysis of Current Data in the United States

Mahmoud A. ElSohly, Zulfikar Mehmedic, Susan Foster, Chandrabir Gon, Sumen Chandra, and James C. Church

**ABSTRACT**  
Background: Marijuana is the most widely used illicit drug in the United States and all over the world. Reports indicate that the potency of cannabis preparation has been increasing. This report examines the concentration of tetrahydrocannabinol (THC) in cannabis samples tested by the U.S. Drug Enforcement Administration over the last 2 decades, with particular emphasis on  $\Delta^9$ -tetrahydrocannabinol ( $\Delta^9$ -THC).  
**Methods:** Samples in this report were analyzed over time from samples analyzed by the Drug Enforcement Administration and processed for analysis using a validated gas chromatography-mass spectrometry method.  
**Results:** Between January 1, 1995, and December 31, 2014, 10,001 samples of cannabis preparations were analyzed and analyzed. The data shows that although the number of samples varies widely over the last 2 years, the number of samples analyzed has increased. Overall, the potency of  $\Delta^9$ -THC in cannabis (as reported) has increased over time from 1995 (mean = 4.6% to 10.0% in 2014). The percentage increase has been estimated on average from ~26% in 2001 to ~115% in 2014, resulting in a change in the rate of  $\Delta^9$ -tetrahydrocannabinol.

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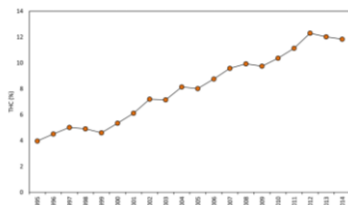
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ElSohly, M.A., Mehmedic, Z., Foster, S., Gon, C., Chandra, S., & Church, J.C. (2016). Changes in cannabis potency over the last two decades (1995-2014) – Analysis of current data in the United States. *Biol Psychiatry*, 79, 613-619.

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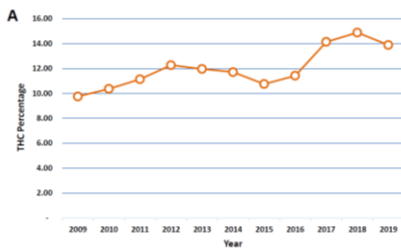
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ElSohly, M.A., Chandra, S., Radwan, M., Majumdar, C.G., Church, J.C. (2021). A comprehensive review of cannabis potency in the United States in the last decade. *Biological Psychiatry, Cognitive Neuroscience, and Neuroimaging*, 6, 603-606.

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**ADDITION** RESEARCH REPORT **SSA** SOCIETY FOR SCIENTIFIC STUDIES ON ADDICTION

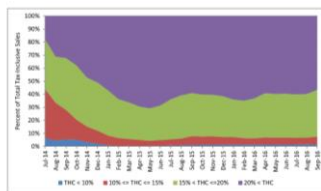
**Variation in cannabis potency and prices in a newly legal market: evidence from 30 million cannabis sales in Washington state**

Rosans Smart<sup>1</sup>, Jonathan P. Caulkins<sup>1,2</sup>, Beau Kilmer<sup>1</sup>, Steven Davenport<sup>1</sup> & Greg Midgette<sup>1</sup>  
RAND Corporation, Santa Monica, CA, USA<sup>1</sup> and Heri College, Carnegie Mellon University, Pittsburgh, PA, USA<sup>2</sup>

**ABSTRACT**

**Aims:** To (1) assess trends and variation in the market share of product types and potency sold in a legal cannabis retail market and (2) estimate how potency and purchase quantity influence price variation for cannabis flowers.  
**Design:** Secondary analysis of publicly available data from Washington State's cannabis traceability system spanning 7 July 2014 to 30 September 2016. Descriptive statistics and linear regressions assessed variation and trends in cannabis

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**Figure 3** Market shares for cannabis flower products sold, by delta-9-tetrahydrocannabinol (THC) % category. Market share is calculated as a percent of total cannabis flower expenditures (net-of-tax-includes). [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

Smart, R., Caulkins, J.P., Kilmer, B., Davenport, S., & Midgette, G. (2017). Variation in cannabis potency and prices in newly legal market: Evidence from 30 million cannabis sales in Washington state. *Addiction*, 122, 2167-2177.

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Cash, M.C., Cunnane, K., Fan, C., Romero-Sandoval, E.A. (2020). Mapping cannabis potency in medical and recreational programs in the United States. *PLoS ONE* 15(3): e0230167. <https://doi.org/10.1371/journal.pone.0230167>

PLOS ONE

RESEARCH ARTICLE  
**Mapping cannabis potency in medical and recreational programs in the United States**  
 Mary Catherine Cash<sup>1\*</sup>, Katharine Cunnane<sup>2\*</sup>, Chynia Fan<sup>1</sup>, E. Alfonso Romero-Sandoval<sup>1,2\*</sup>

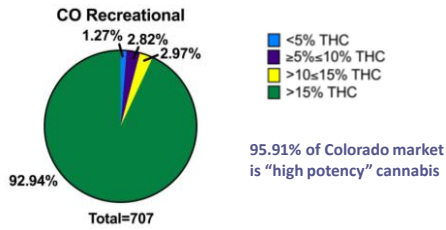
<sup>1</sup> The University of North Carolina Eastern School of Pharmacy, Chapel Hill, NC, United States of America  
<sup>2</sup> Department of Anesthesiology, Wake Forest University School of Medicine, Winston-Salem, NC, United States of America

\* These authors contributed equally to this work.  
 \* [maryc.cash@unc.edu](mailto:maryc.cash@unc.edu)

**Abstract**  
 Cannabis related online searches are associated with positive attitudes toward medical cannabis, particularly when information is obtained from dispensaries. Since pain is the main reason for medical cannabis use, information from dispensary websites has the potential to shape the attitudes of pain patients towards cannabis. This is relevant because cannabis

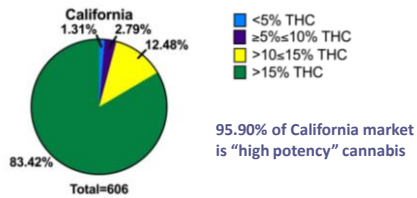
OPEN ACCESS  
 Citation: Cash MC, Cunnane K, Fan C, Romero-Sandoval EA (2020) Mapping cannabis potency in medical and recreational programs in the United States. *PLoS ONE* 15(3): e0230167. <https://doi.org/10.1371/journal.pone.0230167>

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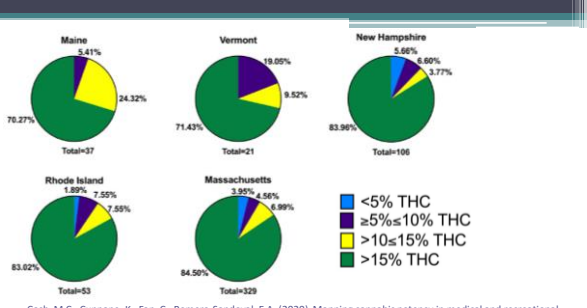
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Cash, M.C., Cunnane, K., Fan, C., Romero-Sandoval, E.A. (2020). Mapping cannabis potency in medical and recreational programs in the United States. *PLoS ONE* 15(3): e0230167. <https://doi.org/10.1371/journal.pone.0230167>

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Cash, M.C., Cunnane, K., Fan, C., Romero-Sandoval, E.A. (2020). Mapping cannabis potency in medical and recreational programs in the United States. *PLoS ONE 15*(3): e0230167. <https://doi.org/10.1371/journal.pone.0230167>

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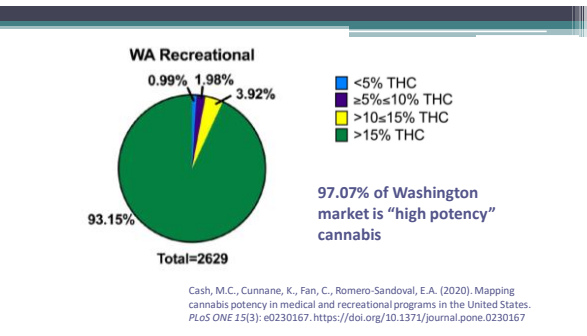
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**Why potency matters**

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DiForti, M., Quattrone, D., Freeman, T.P., Tripoli, G., et al. (2019). The contribution of cannabis use to variation in the incidence of psychotic disorder across Europe (EU-GEI): A multicenter case-control study. *Lancet Psychiatry*, 6 (5), 426-436.

Articles **Increased risk of psychosis**



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JAMA Psychiatry | Original Investigation **Association of High-Potency Cannabis Use With Mental Health and Substance Use in Adolescence**

Lindsay A. Hines, PhD, Sara P. Freeman, PhD, Suzanne H. Gage, PhD, Stanley Zammit, PhD, Matthew Horwood, PhD, Mary Cannon, PhD, Munafu M., PhD, John Macleod, PhD, John Heron, PhD

**Increased risk of addiction and generalized anxiety disorder**

**IMPORTANCE** Cannabis use is consistently linked to poorer mental health outcomes, and there is evidence that use of higher potency cannabis increases these risks. To date, no studies have described the association between cannabis potency and concurrent mental health in a general population sample or addressed confounding using longitudinal data. **OBJECTIVE** To explore the association between cannabis potency and substance use and mental health outcomes, accounting for preceding mental health and frequency of cannabis use. **DESIGN, SETTING, AND PARTICIPANTS** This cohort study used data from the Avon Longitudinal Study of Parents and Children, a UK birth cohort of participants born between April 1, 1991, and December 31, 1992. Prevalent data on outcomes and exposures were collected between June 2006 and October 2007 from 1087 participants at 24 years of age who reported recent cannabis use. **EXPOSURES** Self-reported type of cannabis most commonly used in the past year, coded to a binary measure of use of high-potency cannabis, or lower-potency cannabis.

Hines, L.A., Freeman, T.P, Gage, S.H., Zammit, S., Hickman, M., Cannon, M., Munafu, M., Macleod, J., & Heron, J. (2020). Association of high-potency cannabis use with mental health and substance use in adolescence. *JAMA Psychiatry*, 77, 1044-1051. doi: 10.1001/jamapsychiatry.2020.1035.

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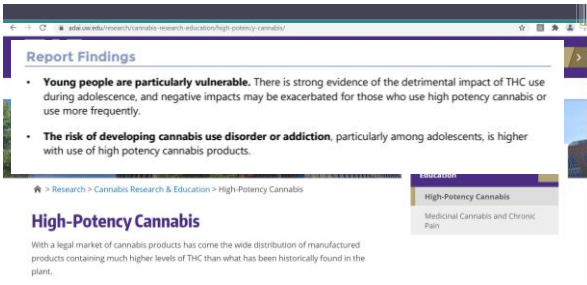


For concentrates/ extracts, more association with "problematic cannabis use, cannabis use disorder, and mental health disorders." -- Gabrys (2020)

Gabrys, R. (2020). *Clearing the Smoke on Cannabis: Edible Cannabis Products, Cannabis Extracts and Cannabis Topicals*. Canadian Centre on Substance Use and Addiction.

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https://adai.uw.edu/research/cannabis-research-education/high-potency-cannabis/

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***If student success is important and a priority, then investment in prevention also has to be important and a priority.***

***Help principals, administrators, teachers, and parents understand why prevention matters.***

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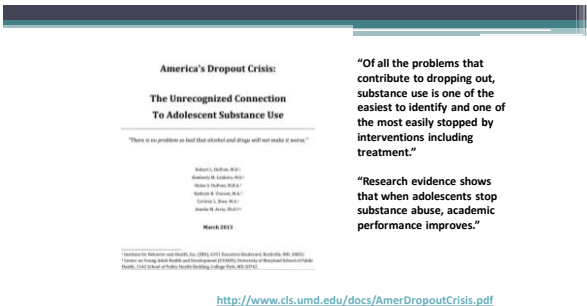
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<http://www.cls.umd.edu/docs/AmerDropoutCrisis.pdf>

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America's Dropout Crisis:  
The Unrecognized Connection  
To Adolescent Substance Use

"There is no position so bad that alcohol and drugs will not make it worse."

Robert L. DuBois, Ph.D.  
Anthony M. Sabatelli, Ph.D.  
Michael J. Smith, Ph.D.  
Richard B. Fergusson, Ph.D.  
Catherine A. Spill, Ph.D.  
Amanda A. Arias, Ph.D.

March 2013

Center for Alcohol and Health, Inc. (CAH) 1015 Research Building, Bethesda, MD 20814  
Funded in part by a grant from the National Institute on Drug Abuse (NIDA) and the National Institute on Alcohol Abuse and Alcoholism (NIAAA), 1015 Research Building, College Park, MD 20742

Students who use substances are at increased risk for academic failure, including drop out

Cannabis has stronger negative relationship to GPA and other outcomes and risk for dropout than alcohol use

"The more severe the substance use, the more likely the impact on academic performance and risk for dropout."

<http://www.cls.umd.edu/docs/AmerDropoutCrisis.pdf>

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Relationship Between Cannabis Use and Academic Success

- More frequent cannabis use associated with lower GPA, skipping more classes, less current enrollment, and being less likely to graduate on time (Arria, et al., 2013, 2015; Suerken, et al., 2016)

Arria, A.M., Caldeira, K.M., Bugbee, B.A., Vincent, K.B., O'Grady, K.E. (2015). The academic consequences of marijuana use during college. *Psychology of Addictive Behaviors, 29*, 564-575.

Arria, A.M., Caldeira, K.M., Vincent, K.B., Winick, E.R., Baron, P.A., O'Grady, K.E. (2013). Discontinuous college enrollment: Associations with substance use and mental health. *Psychiatric Services, 64*, 165-172.

Suerken, C.K., Reboussin, B.A., Egan, K.L., Sutfin, E.L., Wagoner, K.G., Spangler, J. & Wolfson, M. (2016). Marijuana use trajectories and academic outcomes among college students. *Drug and Alcohol Dependence, 162*, 137-145.

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Marijuana and cognitive abilities

- Effects on the brain
  - Hippocampus
    - Attention, concentration, and memory
  - Research with college students shows impact on these even 24 hours after last use (Pope & Yurgelun-Todd, 1996)
  - After daily use, takes 28 days for impact on attention, concentration, and memory to go away (Pope, et al., 2001)
  - Hanson et al. (2010):
    - Deficits in verbal learning (takes 2 weeks before no differences with comparison group)
    - Deficits in verbal working memory (takes 3 weeks before no difference with comparison group)
    - Deficits in attention (still present at 3 weeks)



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*There are other ways in which cannabis use could contribute to academic outcomes – we can help people connect dots they might not be connecting*

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### Student-identified barriers to academic success

n =23,600 undergraduate students from 41 colleges/universities in Fall 2021

- Of 51 possibilities, the top five student-identified factors affecting academic performance:
  - 52.3% Procrastination
  - 42.3% Stress
  - 33.7% Anxiety
  - 24.6% Depression
  - 24.3% Sleep difficulties
  
- 1.7% Cannabis use (tied for 36<sup>th</sup> of 51 factors with urinary tract infection and concussion/TBI)

*American College Health Association, 2022*

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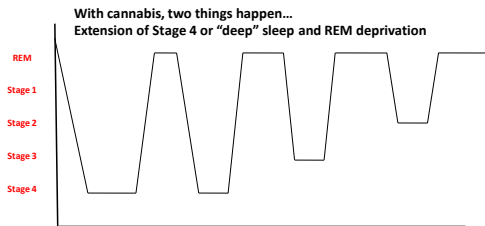
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Angarita, G.A., Emadi, N., Hodges, S., & Morgan, P.T. (2016). Sleep abnormalities associated with alcohol, cannabis, cocaine, and opiate use: A comprehensive review. *Addiction Science & Clinical Practice, 11*: 9.

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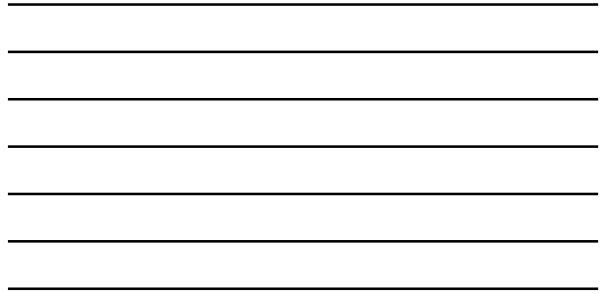
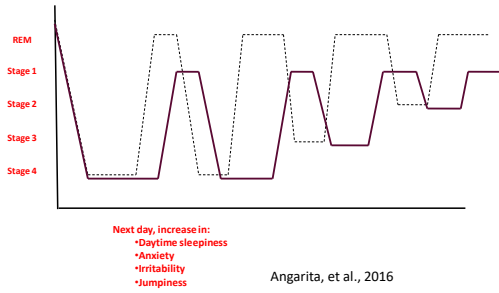
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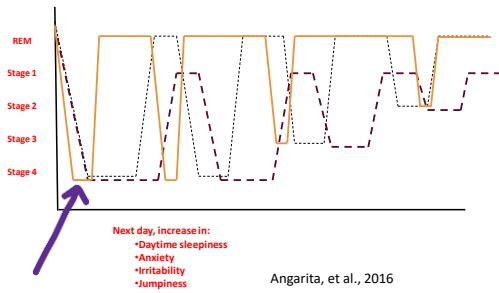
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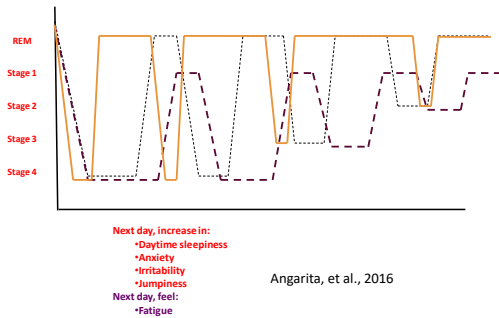
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***Cannabis is, without question, an addictive substance. Statements like “you can’t get addicted to weed” need to be addressed. For so many reasons, including validating those struggling with making a change.***

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MaCoun (2013), *Frontiers in Psychiatry*

Criterion	DSM-IV substance dependence	DSM-5 substance use disorder
Tolerance	✓	✓
Withdrawal	✓	✓
Taken more/longer than intended	✓	✓
Desire/unsuccessful efforts to quit use	✓	✓
Great deal of time taken by activities involved in use	✓	✓
Use despite knowledge of problems associated with use	✓	✓
Important activities given up because of use	✓	✓
Recurrent use resulting in a failure to fulfil important role obligations		✓
Recurrent use resulting in physically hazardous behavior (e.g., driving)		✓
Continued use despite recurrent social problems associated with use		✓
Craving for the substance		✓



DSM-5 Cannabis Use Disorder Criteria

Mild: 3-3 symptoms  
Moderate: 4-5 symptoms  
Severe: 6+ symptoms

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**Separating reported medical use from management of withdrawal**

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Motivations for Use

Motiv. Category	Proportion of participants endorsing/motiv.	Proportion of primary motives
Enjoyment/fun (e.g., be happy, get high, enjoy feeling)	52.14%	24.03%
Conformity (e.g., peer pressure, friends do it)	42.81%	16.40%
Experimentation (e.g., new experience, curiosity)	41.25%	29.36%
Social enhancement (e.g., bonding with friends, hang out)	25.71%	8.66%
Boredom (e.g., something to do, nothing better to do)	25.08%	4.15%
Relaxation (e.g., to relax, helps me sleep)	24.64%	6.97%
Coping (e.g., depressed, relieve stress)	18.14%	5.10%
Availability (e.g., easy to get, it was offered)	13.74%	2.23%
Relative low risk (e.g., low health risk, no hangover)	10.88%	0.95%
Altered perception or perspectives (e.g., to enhance experiences, make things more fun)	10.58%	1.81%
Activity enhancement (e.g., music sounds better, every day activities more interesting)	6.88%	0.80%
Rebellion (e.g., rebelling against parents, thrill of something illegal)	5.21%	0.32%
Alcohol intoxication (e.g., I was drunk)	4.42%	0.47%
Food enhancement (e.g., enjoy good food, food tastes better)	3.79%	0.00%
Anxiety reduction (e.g., be less shy, feel less insecure)	3.31%	0.00%
Image enhancement (e.g., to be cool, to feel cool)	2.85%	0.32%
Celebration (e.g., special occasion, to celebrate)	1.26%	0.16%
Medical use (e.g., alleviate physical pain, have a headache)	1.26%	0.16%
Habit (e.g., feeling was addictive, became a habit)	0.95%	0.00%

Lee, Neighbors & Woods (2007)

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<b>Image enhancement</b> (e.g., to be cool, to feel cool)	2.85%	0.32%
<b>Celebration</b> (e.g., special occasion, to celebrate)	1.26%	0.16%
Medical use (e.g., alleviate physical pain, have a headache)	1.26%	0.16%
Habit (e.g., feeling was addictive, became a habit)	0.95%	0.00%

Lee, Neighbors & Woods (2007)

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Motivations for Use

Motiv. Category	Proportion of participants endorsing/motiv.	Proportion of primary motives
Enjoyment/fun (e.g., be happy, get high, enjoy feeling)	52.14%	24.03%
Conformity (e.g., peer pressure, friends do it)	42.81%	16.40%
Experimentation (e.g., new experience, curiosity)	41.25%	29.36%
Social enhancement (e.g., bonding with friends, hang out)	25.71%	8.66%
Boredom (e.g., something to do, nothing better to do)	25.08%	4.15%
Relaxation (e.g., to relax, helps me sleep)	24.64%	6.97%
<b>Coping (includes when depressed)</b> (e.g., depressed, relieve stress)	18.14%	5.10%
Availability (e.g., easy to get, it was offered)	13.74%	2.23%
Relative low risk (e.g., low health risk, no hangover)	10.88%	0.95%
Altered perception or perspectives (e.g., to enhance experiences, make things more fun)	10.58%	1.81%
Activity enhancement (e.g., music sounds better, every day activities more interesting)	6.88%	0.80%
Rebellion (e.g., rebelling against parents, thrill of something illegal)	5.21%	0.32%
Alcohol intoxication (e.g., I was drunk)	4.42%	0.47%
Food motives (e.g., enjoy good food, food tastes better)	3.79%	0.00%
<b>Anxiety reduction</b> (e.g., be less shy, feel less insecure)	3.31%	0.00%
Image enhancement (e.g., to be cool, to feel cool)	2.85%	0.32%
Celebration (e.g., special occasion, to celebrate)	1.26%	0.16%
<b>Medical use (including pain and headache)</b> (e.g., alleviate physical pain, have a headache)	1.26%	0.16%
Habit (e.g., feeling was addictive, became a habit)	0.95%	0.00%

Lee, Neighbors & Woods (2007)

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### Withdrawal: Cannabis

**Diagnostic Criteria** **292.0 (F12.288)**

A. Cessation of cannabis use that has been heavy and prolonged (i.e., usually daily or almost daily use over a period of at least a few months).

B. Three (or more) of the following signs and symptoms develop within approximately 1 week after Criterion A:

1. Irritability, anger, or aggression.
2. Nervousness **< Anxiety**.
3. **Sleep difficulty** (e.g., insomnia, disturbing dreams).
4. **Decreased appetite** or weight loss.
5. Restlessness.
6. **Decreased interest**.

7. At least one of the following physical symptoms causing significant discomfort: abdominal pain, shakiness/tremors, sweating, fever, chills, **Headache**.

C. The signs or symptoms in Criterion B cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

D. The signs or symptoms are not attributable to another medical condition and are not better explained by another mental disorder, including intoxication or withdrawal from another substance.

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### Screening

- Screening suggestions
  - Cannabis Use Disorder Identification Test-Revised (CUDIT-R)
  - <http://www.warecoveryhelpline.org/wp-content/uploads/2018/04/CUDIT.pdf>

**The Cannabis Use Disorder Identification Test - Revised (CUDIT-R)**

Have you used any cannabis over the past six months? Yes \_\_\_\_\_ No \_\_\_\_\_

If you answered "Yes" to the previous question, please answer the following questions about your cannabis use. Circle the response that is most correct for you in relation to your cannabis use over the past six months.

**1. How often do you use cannabis?**

Never	Monthly or less	2-4 times a month	2-3 times a week	4+ times a week
0	1	2	3	4

**2. How many hours were you "stoned" on a typical day when you had been using cannabis?**

Less than 1	1 or 2	3 or 4	5 or 6	7 or more
0	1	2	3	4

**3. How often during the past 6 months did you find that you were not able to stop using cannabis once you had started?**

Never	Less than monthly	Monthly	Weekly	Daily/almost daily
0	1	2	3	4

**4. How often during the past 6 months did you fail to do what was normally expected from you because of using cannabis?**

Never	Less than monthly	Monthly	Weekly	Daily or almost daily
0	1	2	3	4

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**5. How often in the past 6 months have you devoted a great deal of your time to getting, using, or recovering from cannabis?**

Never	Less than monthly	Monthly	Weekly	Daily/almost daily
0	1	2	3	4

**6. How often in the past 6 months have you had a problem with your memory or concentration after using cannabis?**

Never	Less than monthly	Monthly	Weekly	Daily or almost daily
0	1	2	3	4

**7. How often do you use cannabis in situations that could be physically hazardous, such as driving, operating machinery, or caring for children?**

Never	Less than monthly	Monthly	Weekly	Daily/almost daily
0	1	2	3	4

**8. Have you ever thought about cutting down, or stopping, your use of cannabis?**

Never	Yes, but not in the past 6 months	Yes, during the past 6 months
0	2	4

This questionnaire was designed for self-administration and is scored by adding each of the 8 items:  
 Question 1-7 are scored on a 0-4 scale  
 Question 8 is scored 0, 2, or 4

**Score: \_\_\_\_\_**

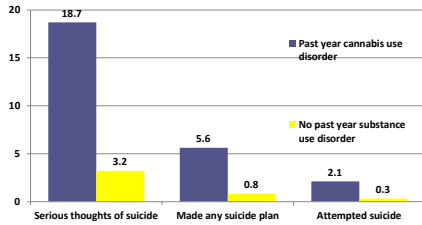
Source: Washington Recovery Helpline

Scores of 8 or more indicate hazardous cannabis use, while scores of 12 or more indicate a possible cannabis use disorder for which further intervention may be required.

Adams KE, Kay-Lambkin FI, Baker AL, Lewis TL, Thornton L, Kelly RL, and Sofman DS. (2016). An Improved Brief Measure of Cannabis Misuse: The Cannabis Use Disorder Identification Test - Revised (CUDIT-R). *Drug and Alcohol Dependence* 158:159-166.

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Percentage endorsing item as a function of having a past year cannabis use disorder or no past year substance use disorder



Source: SAMHSA, 2021, Table 8.61B

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**Based on published literature, legalizing cannabis is not a "backdoor" solution to the opiate epidemic**

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PERSPECTIVE

**Why Marijuana Will Not Fix the Opioid Epidemic**

by Kenneth Fine, MD

Currently, there is no widely available or accepted medical literature showing any benefit for pain with dispensary cannabis in common pain conditions.

Marijuana has been used for reported medical purposes for thousands of years when the plant that time had THC content of 0.1-1%.

Currently, the most common reported medical use is for pain. As of this writing there are 30 states and the District of Columbia have some form of legalized marijuana, with eight states having legalized for recreational use.

The United States is currently in the grips of an opioid epidemic which has been growing over the last 20 years and began with "pain" being termed the "5th vital sign". At the time, it was reported that people in pain did not become addicted to opioids, and the number of opioid prescriptions started to increase over time, followed by an increase in opioid overdose deaths.

There has been a lot of discussion about how the use of cannabis will help curb the opioid epidemic. It has been reported that medical cannabis has not been associated with significant lower rates of opioid use, lower rates of



prescriptions to using a medical marijuana product". It is difficult to analyze population-level studies on individual marijuana-opioid substitution, and this patient population is a rather small percentage of people who may be using opioids and/or medical marijuana. In 2013 Colorado had a record number of opioid overdose deaths from any opioid, including heroin, and Colorado has had a medical marijuana program since 2009.

In the face of the opioid crisis, the medical providers should utilize other ways for people to avoid the use of opioids. Treatments such as physical therapy, acupuncture, chiropractic, massage, and cognitive-behavioral therapies are some of the standard treatments in the management of chronic pain.

Finn K. (2018). Why marijuana will not fix the opioid epidemic. *Missouri Medicine*, 115, 191-193. PMID: 30228716; PMCID: PMC6140166.

[https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6140166/pdf/ms115\\_p0191.pdf](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6140166/pdf/ms115_p0191.pdf)

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PERSPECTIVE

### Why Marijuana Will Not Fix the Opioid Epidemic

"In 2017 Colorado had a record number of opioid overdose deaths from any opioid, including heroin and Colorado has had a medical marijuana program since 2001." (p. 191) for pain with dispensary cannabis in common pain conditions.

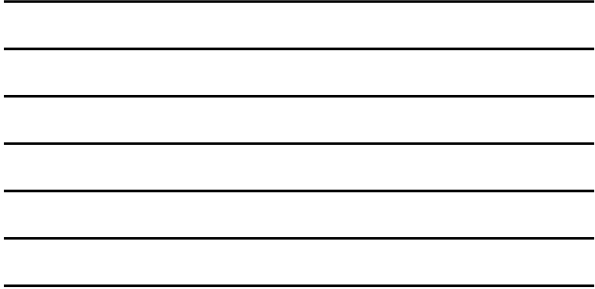
"There is currently a large and growing body of evidence showing that cannabis use increases, rather than decreases non-medical prescription opioid use and opioid use disorder, based on follow up of more than 33,000 people." (p. 192)  
Author cites: *Olson M. Cannabis Use and Risk of Prescription Opioid Use Disorder in the United States; American Journal of Psychiatry. 2018; 175(1):47-53*

"There is sufficient and expanding evidence demonstrating that medical marijuana use will not curb the opioid epidemic. There is further evidence that marijuana is a companion drug rather than substitution drug and that marijuana use may be contributing to the opioid epidemic rather than improving it. Although there are patients who have successfully weaned off of their opioids and use marijuana instead, the evidence that marijuana will replace opioids is simply not there." (p. 192)

Finn K. (2018). Why marijuana will not fix the opioid epidemic. *Missouri Medicine*, 115, 191-193. PMID: 30228716; PMCID: PMC6140166.

[https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6140166/pdf/ms115\\_p0191.pdf](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6140166/pdf/ms115_p0191.pdf)

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Research article | October 2021 | DOI: 10.1055/a-1353-6509

8 Pages

### Opioid Mortality Following Implementation of Medical Cannabis Programs in the United States

Rebecca L. Kaufman<sup>1</sup>, Nihal AM, Leppo<sup>2</sup>, Jason B. Staples<sup>3</sup>, McCall KL, Piper BJ, et al.

**Abstract**  
1. College of Medicine School of Medicine, Scranton, PA, USA  
2. University of New England, Portland, ME, USA  
3. Center for Pharmacy Innovation and Education, Kutztown, PA, USA

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**Keywords**  
Pharmacotherapy 2021; 54: 91-95  
DOI: 10.1055/a-1353-6509  
ISSN: 0739-8762  
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https://www.thieme.com/doi/10.1055/a-1353-6509  
Thieme Stuttgart, Germany

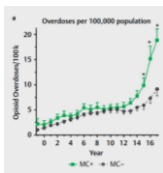
Kaufman DE, Nihal AM, Leppo JD, Staples KM, McCall KL, Piper BJ. (2021). Opioid mortality following implementation of medical cannabis programs in the United States.

*Pharmacopsychiatry*, 54, 91-95. doi: 10.1055/a-1353-6509. Epub 2021 Feb 23. PMID: 33621991.

**ABSTRACT**

**Introduction:** The United States is in the midst of an opioid overdose epidemic. Although previous empirical data suggest that medical cannabis (MC) may reduce use of opioids for pain in some individuals, little empirical research on opioid-related mortality outcomes exists. This may be due to frequent differences between observational and experimental studies.  
**Methods:** This study evaluated differences in opioid-related mortality on US opioid-related overdose deaths, controlled for confounding, from 2002-2017 using an interrupted time-series design. Comparisons to MC states were also made for the likelihood of response and the extent of response to treatment.  
**Results:** Opioid-related deaths were significantly higher in MC states from 2002-2017. Opioid-related death slopes over time increased in states with prior MC (beta=0.04, p=0.0018), prior MC and without prior MC (beta=0.04, p=0.0018), and in MC states (beta=0.04, p=0.0018).  
**Conclusion:** Opioid-related deaths were significantly higher in MC states from 2002-2017. Opioid-related death slopes over time increased in states with prior MC (beta=0.04, p=0.0018), prior MC and without prior MC (beta=0.04, p=0.0018), and in MC states (beta=0.04, p=0.0018).  
**Keywords:** Opioid overdose, medical cannabis, mortality, interrupted time-series, US.

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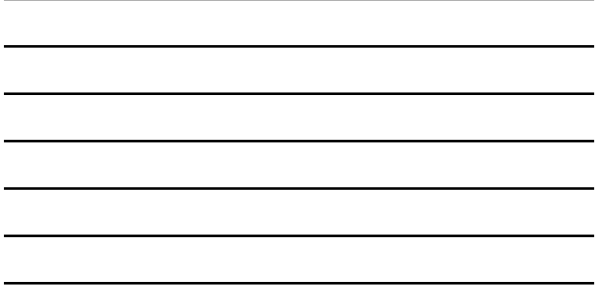


"Significant differences in overdoses per 100,000 population were identified in '02, '06, and '13 to '17 between MC+ and MC- states." (p. 93)

"...opioid overdoses did not decrease in the years subsequent to states adopting MC as compared to states that did not. In fact, states that adopted MC had significantly greater overdose slopes than those that did not." (p. 93)

"In conclusion, new empirically grounded solutions to reverse the pronounced levels of opioid overdoses in the US are urgently needed. This study tested whether the protective effects previously found in some studies of MC against opioid overdoses could be repeated with the addition of more data. States with MC had increased, not decreased as would be predicted, overdose slopes (p. 94).

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***At least in Washington, the age group that already reports the highest prevalence of cannabis use is increasing use (and use with risk of Cannabis Use Disorder) following implementation of legalization***

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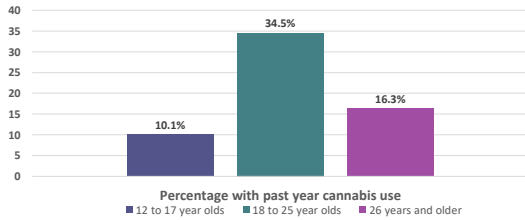
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Past year cannabis use by age group

Source: SAMHSA 2020 National Survey on Drug Use and Health



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Kilmer, J.R., Rhew, I.C., Guttmanova, K., Fleming, C.B., Hultgren, B., Gilson, M.S., Cooper, R.L., Dilley, J., & Larimer, M.E. (2022). Cannabis use among young adults in Washington State after legalization of nonmedical cannabis. *American Journal of Public Health, 112*, 638-645.

- n=12,963 young adults in Washington over 6 time points
- Included covariates for:
  - Sex assigned at birth
  - Race
  - Ethnicity
  - Geographic region of the state
  - Age
  - Attending 4 year college
  - Full time employment status
- Computed post-stratification weights to further control for distribution across the samples

**Cannabis Use Among Young Adults in Washington State After Legalization of Nonmedical Cannabis**

**OBJECTIVE:** This study examined the prevalence of cannabis use among young adults in Washington State after legalization of nonmedical cannabis. We used data from the Washington State Longitudinal Survey of Young Adults (WSLSYA) to examine the prevalence of cannabis use among young adults in Washington State after legalization of nonmedical cannabis. We used data from the WSLSYA to examine the prevalence of cannabis use among young adults in Washington State after legalization of nonmedical cannabis.

**DESIGN:** This study used data from the WSLSYA to examine the prevalence of cannabis use among young adults in Washington State after legalization of nonmedical cannabis. We used data from the WSLSYA to examine the prevalence of cannabis use among young adults in Washington State after legalization of nonmedical cannabis.

**SETTING:** This study used data from the WSLSYA to examine the prevalence of cannabis use among young adults in Washington State after legalization of nonmedical cannabis. We used data from the WSLSYA to examine the prevalence of cannabis use among young adults in Washington State after legalization of nonmedical cannabis.

**MEASUREMENTS AND MAIN RESULTS:** This study used data from the WSLSYA to examine the prevalence of cannabis use among young adults in Washington State after legalization of nonmedical cannabis. We used data from the WSLSYA to examine the prevalence of cannabis use among young adults in Washington State after legalization of nonmedical cannabis.

**CONCLUSIONS:** This study used data from the WSLSYA to examine the prevalence of cannabis use among young adults in Washington State after legalization of nonmedical cannabis. We used data from the WSLSYA to examine the prevalence of cannabis use among young adults in Washington State after legalization of nonmedical cannabis.

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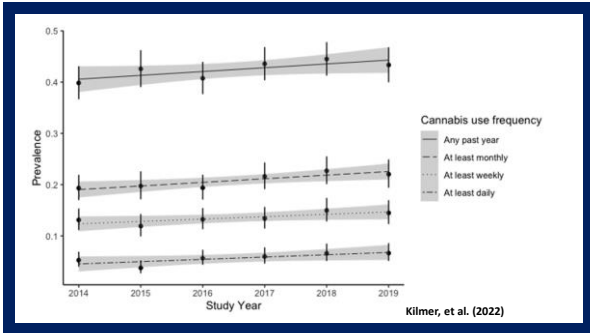
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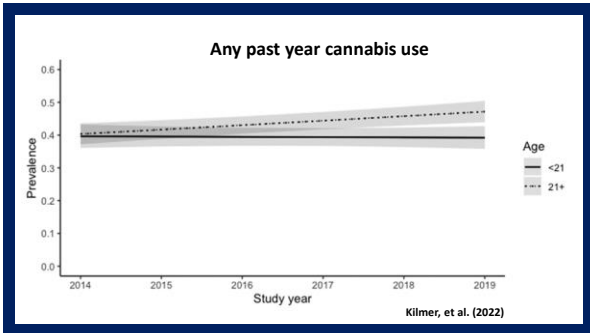
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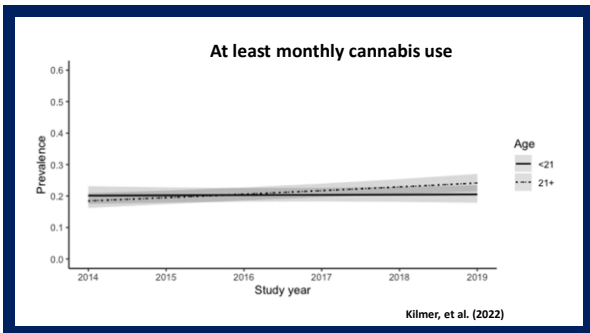
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MaCoun (2013), *Frontiers in Psychiatry*

Criterion	DSM-IV substance dependence	DSM-5 substance use disorder
Tolerance	✓	✓
Withdrawal	✓	✓
Taken more/longer than intended	✓	✓
Desire/unsuccessful efforts to quit use	✓	✓
Great deal of time taken by activities involved in use	✓	✓
Use despite knowledge of problems associated with use	✓	✓
Important activities given up because of use	✓	✓
Recurrent use resulting in a failure to fulfill important role obligations		✓
Recurrent use resulting in physically hazardous behavior (e.g., driving)		✓
Continued use despite recurrent social problems associated with use		✓
Craving for the substance		✓

**DSM-5 Cannabis Use Disorder Criteria**



Mild: 2-3 symptoms  
Moderate: 4-5 symptoms  
Severe: 6+ symptoms

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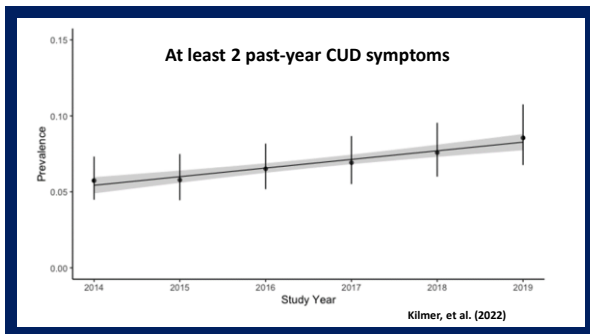
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**Perceived risk of cannabis use keeps decreasing**

- Cannabis
  - Physical risk of occasional cannabis use
  - Psychological/emotional risk of occasional cannabis use
  - Physical risk of regular cannabis use
  - Psychological/emotional risk of regular cannabis use
- Alcohol
  - Physical risk of 2 drinks every day
  - Psychological risk of 2 drinks every day
  - Physical risk of 5+ drinks every weekend
  - Psychological risk of 5+ drinks every weekend

Gilson, M.S., Kilmer, J.R., Fleming, C.B., Rhew, L.C., Calhoun, B.H., & Guttmanova, K. (in press). Substance-specific risk factors for cannabis and alcohol use among young adults following implementation of nonmedical cannabis legalization. *Prevention Science*, online ahead of print, doi: 10.1007/s11121-022-01435-8. Online ahead of print.

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There are many opportunities to communicate risks associated with impaired driving

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Horizontal lines for notes on slide 61.

Impaired driving and duration of effects

- Effects on the brain
  - Authors of I-502 set DUI at 5 ng THC/ml of blood for those over 21 (any positive value for those under 21)
  - Why 5 ng? Similarities in impairment to .08% for alcohol
  - How long does it take to drop below 5 ng?
  - Fischer and colleagues (2022) encourages waiting at least 6-8 hours after inhaling and 8-12 hours after ingesting



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Horizontal lines for notes on slide 62.

www.seattletimes.com/health/news/local/.../an-advance-pot-use-for-pd-in-fatal-crashes

**More pot use found in fatal crashes, data says**

Washington state appears to have increased on a factor in deadly crashes last year in Washington.

By Bill Young

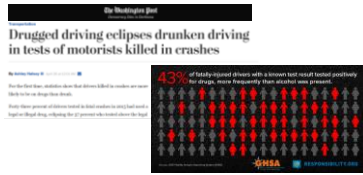
Washington state appears to have increased on a factor in deadly crashes last year in Washington.

New data from the Washington Traffic Safety Center shows the number of drivers involved in fatal crashes with THC in their body increased from 20 to 29 in 2015. About half those 29 drivers had active THC — the state's prohibition on alcohol in gas — when the fatal drug toxicity was confirmed.

Source: Seattle Times, August 20, 2015

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Horizontal lines for notes on slide 63.



Released 4/26/17: <http://www.ghsa.org/resources/drugged-driving-2017>

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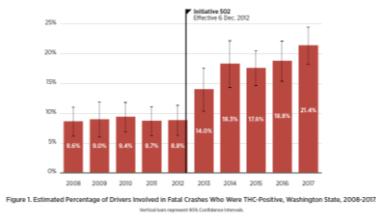


Figure 1. Estimated Percentage of Drivers Involved in Fatal Crashes Who Were THC-Positive, Washington State, 2008-2007

Taft, B. C. & Arnold, L. S. (2022). Cannabis Use Among Drivers in Fatal Crashes in Washington State Before and After Legislation (Research Brief). Washington, D.C. AAA Foundation for Traffic Safety.

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### How Can We Use This Information to Prevent & Reduce Harm from Marijuana?

- **Correct Normative Misperceptions**
  - Most people are not using
  - Most people are not driving under the influence
  - The more people use, the more they think others are using
  - Opportunity for positive community norms (e.g., Jeff Linkenbach's Montana Institute)

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Mike Graham-Squire & Neighborhood House: MostSteerClear

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Mike Graham-Squire & Neighborhood House: MostSteerClear

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**There are also opportunities to discuss cannabis and birth outcomes**

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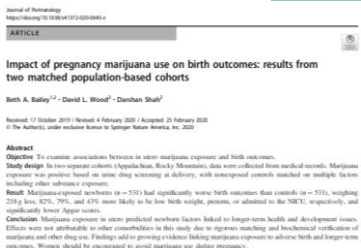


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### Coleman-Cowger, et al. (2018)

- Significant differences in:
  - 1) head circumference (marker of brain development, and smaller head circumference associated with cognitive impairment)
    - Co-use group had a 5.7 times greater odds of having a small head circumference than no-use group
  - 2) occurrence of birth defects
    - Co-use group had a 3 times greater odds of having birth defects than no-use group
  - 3) stillbirth/miscarriage
    - Cannabis only group had 12 times greater odds of a stillbirth or miscarriage compared to the no-use group

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Bailey, B.A., Wood, D.L., & Shah, D. (2020). Impact of pregnancy marijuana use on birth outcomes: results from two matched population-based cohorts. *Journal of Perinatology* (epub ahead of print, 3/5/2020, doi: 10.1038/s41372-020-0643-z)

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Table 2 Newborn outcomes by in utero marijuana exposure status.

	Non-marijuana exposed (n = 531)	Marijuana exposed (n = 531)	OR* or difference	<i>p</i> 2	<i>p</i>
Birth weight (g) (mean ± SD)	3092 ± 580	2874 ± 665	218 g	5.68	<0.001
Low birth weight (% <2500 g)	11.5%	20.9%	1.82	17.46	<0.001
Gestational age (week) (mean ± SD)	38.8 ± 2.2	38.1 ± 3.1	0.6 week	3.89	<0.001
Preterm delivery (% <37 week)	10.1%	18.1%	1.79	13.88	<0.001
Apgar score 1 min (mean ± SD)	7.8 ± 1.4	7.5 ± 1.8	0.3	2.24	0.026
Apgar score 5 min (mean ± SD)	8.8 ± 8	8.6 ± 1.4	0.2	2.90	0.004
NICU admission (% yes)	9.5%	13.6%	1.43	4.03	0.045

Groups matched on: delivery year (±1), delivery hospital (exact), maternal age (±1 year), maternal marital status (married, single), race (white, minority), parity (0, 1, 2+), medical insurance (public, private), pregnancy smoking (yes, no), alcohol use (yes, no), benzodiazepine use (yes, no), opioid use (yes, no).

\*OR = Odds Ratio reflecting increased risk of the outcome for the marijuana-exposed group compared with the non-marijuana-exposed group for low birth weight, preterm delivery, cesarean delivery, and NICU admission. Differences in mean outcomes are given for birth weight, gestational age, and Apgar scores at 1 and 5 min.

*"In the current study, marijuana exposure in utero independently predicted poorer birth outcomes across the board, especially indicators such as birth weight and preterm birth that are known to impact longer-term health and development. Effects could not be attributed to other comorbidities including other drug exposure and sociodemographic risks in this study that involved rigorous matching and biochemical verification of self-report of marijuana and other drug use...Consequently, women should continue to be encouraged to avoid marijuana use during pregnancy (p. 5 of 6) (Bailey, Wood, & Shah, 2020)"*

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**Recommendations addressing both of these previous sections are in the Fischer et al (2022) lower risk guidelines article**

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**Lower-Risk Cannabis Use Guidelines (LRCLUG) for reducing health harms from non-medical cannabis use: A comprehensive evidence and recommendations update**

Benedikt Fischer<sup>1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97,98,99,100</sup>, Tessa Robinson<sup>1,2</sup>, Chris Bullen<sup>3,4</sup>, Valerie Curran<sup>5,6</sup>, Didier Jutra-Aswad<sup>7,8</sup>, Maria Elena Medina-Mora<sup>9,10</sup>, Rosalie Liccardo Pacula<sup>11,12</sup>, Jürgen Rehm<sup>13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97,98,99,100</sup>, Robin Room<sup>13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97,98,99,100</sup>, Wim van den Brink<sup>13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97,98,99,100</sup>, Wayne Hall<sup>13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97,98,99,100</sup>

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<sup>4</sup>Department of Health Research Methods, Analysis & Impact, Faculty of Health Sciences, McMaster University, Hamilton, ON, Canada  
<sup>5</sup>National Institute for Health Innovation (NHl), The University of Auckland, Auckland, New Zealand  
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<sup>8</sup>Department of Psychiatry and Addictions, University of Montreal, Montreal, Canada  
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<sup>10</sup>Centre for Global Mental Health Research, Institute of Psychiatry, King's College London, London, United Kingdom  
<sup>11</sup>Department of Psychiatry and Mental Health, Faculty of Medicine, National Autonomous University of Mexico, Mexico City, Mexico

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**General Precaution A:**

***“There is no universally safe level of cannabis use; thus, the only reliable way to avoid any risk for harm from using cannabis is to abstain from its use.”***

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**Among other recommendations:**

- People who use cannabis should use low potency cannabis products
- “Overall, there is no categorically ‘safe’ route of use for cannabis and each route option brings some level of distinct risks that needs to be taken into account for use. “ That said, smoking is particularly risky.
- Keep use occasional (no more than 1 or 2 days a week, weekend only)
- If a person notices impacts to attention, concentration, or memory, “consider temporarily suspending or substantially reducing the intensity (e.g., frequency/potency) of their cannabis use.”
- Avoid driving while under the influence (waiting at least 6-8 hours after inhaling, 8-12 hours after use of edibles)

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**Recommendation #9: It is prudent for people who intend to procreate and for women who are pregnant or breastfeeding to abstain from cannabis use towards reducing possible risks for reproduction and of health harm to offspring, respectively.**

There is some evidence that especially intensive cannabis use may somewhat compromise reproductive abilities for women and men. Cannabis use, especially during pregnancy, may adversely affect some pre- and post-natal health outcomes in offspring. Cannabinoids may also be passed on to infants via breastmilk. The magnitude of any of these adverse effects from these exposures on conception, the fetus or infant development is likely small but it is generally prudent for those intending to reproduce, and for women who are pregnant or breastfeeding, to abstain from cannabis use during these particular periods of risk.

Fischer, et al. (2022)

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**Recommendation #11:** *Some specific groups of people are at elevated risk for cannabis use-related health problems because of biological pre-dispositions or co-morbidities. They should accordingly (and possibly on medical advice as required) avoid or adjust their cannabis use.* Higher risks for harm extend to individuals with a genetic predisposition (e.g., a first-degree family or personal history) for, or an active psychosis, mood (e.g., depressive) disorder, or substance use disorder.

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**Lessons learned:**  
***Be aware of things that can contribute to perceived norms, including media***

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## Media

Brief summary from Kilmer, J.R., Kilmer, R.P., & Grossberg, P.M.(2014). The role of media on adolescent substance use: Implications for patient visits. *AM STARs: Adolescent Medicine*, 24, 684-697.



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Potential role of media

- Impact of media exposure related to alcohol (including television, advertisements, and movie content)
  - In a review of 13 studies, 12 of the 13 showed media exposure was associated with increased likelihood of:
    - Initiating drinking among abstainers
    - Increased consumption among those already drinking

Anderson P, de Bruijn A, Angus K, Gordon R, Hastings G. (2009). Impact of alcohol advertising and media exposure on adolescent alcohol use: a systematic review of longitudinal studies. *Alcohol and Alcoholism*, 44:229-243

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Scribner et al (2011) found:

- No overall effect of a social norms campaign on 32 college campuses, but...
  - Campaign DID work on campuses with a lower alcohol outlet density
- "Neon signs, storefront advertising, and direct observation of heavy drinking may convey their own normative message to students, thereby heightening student misperceptions of peer drinking norms" (page 238).

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Realize the amazing influence parents, caregivers, and community members can have

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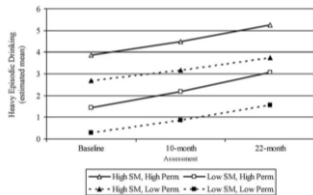
Examining role of parents and peers

- Fairlie, Wood, & Laird (2012) collected data during summer before starting college, 10 month follow-up (spring semester of first year), and 22 month follow-up (spring semester of second year)
- Looked at social modeling (e.g., # of close friends who drink heavily, perceived friend approval of drinking and getting drunk) and parental permissiveness

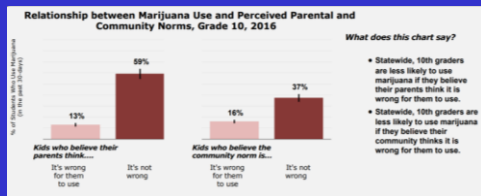


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Heavy episodic drinking as a function of high or low social modeling + high or low parental permissiveness



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Source: Healthy Youth Survey, 2016

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http://www.collegeparentsmatter.org



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esure | collegeparentsmatter.org/cannabis.html

### As a parent, what should I do?

The guidance that might be most useful for you differs by the level of involvement with cannabis.  
**How would you describe your grown child's cannabis use?**  
Click on one of the buttons below for discussion points and examples of what to say.

I'm not sure if my child is using cannabis

Click for suggestions ▼

My child uses cannabis, but I'm not sure how much or how often

Click for suggestions ▼

My child uses cannabis regularly

Click for suggestions ▼

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http://www.collegeparentsmatter.org

- 1) Don't be afraid to start the conversation
- 2) As a family member, you are allowed to disapprove of substance use. Give yourself permission to disapprove.
- 3) Banish any fear that your disapproval is naïve.
- 4) Focus on one message during the conversation.
- 5) Reject the myth that discouraging substance use is useless because everyone is doing it.
- 6) Make communication a regular activity.
- 7) Recognize the power of your influence.

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**Opportunities for Prevention Professionals**

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**(1) Consider SBIRT**

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**S**creening: Universal screening for quickly assessing use/severity/risks

**B**rief **I**ntervention: Motivational/awareness-raising intervention to prompt contemplation of or commitment to change

**R**eferral to **T**reatment: Referral to specialty care or follow-ups

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In-person, personalized feedback interventions have shown reductions in use, time spent high, and consequences (e.g., Lee, et al., 2013)

Lee, C.M., Kilmer, J.R., Neighbors, C., Atkins, D.C., Zheng, C., Walker, D.D., & Larimer, M.E. (2013). Indicated prevention for college student marijuana use: A randomized controlled trial. *Journal of Consulting and Clinical Psychology, 81*, 702-709.

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**(2) Consider event-specific prevention and/or enforcement, particularly if it's an event where there will be driving**

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**High-risk events**

**Is 4/20 an Event-Specific Marijuana Holiday? A Daily Diary Investigation of Marijuana Use and Consequences Among College Students**

ADRIAN J. BRAVO, M.S.,<sup>1,2\*</sup> MATTHEW S. PEARSON, M.S.,<sup>2</sup> BRADLEY T. CONNER, M.S.,<sup>2</sup> & JAMIE L. PARNES, M.S.<sup>2</sup>  
<sup>1</sup>Center for Alcoholism, Substance Abuse, & Behavioral Interventions of the Medical College of Virginia, Sta. Francis  
<sup>2</sup>Department of Psychology, Colorado State University, Fort Collins, Colorado

**ABSTRACT:** Marijuana is the most commonly used illicit drug in the United States (Patterson et al., 2015). It is a recent study across 11 different U.S. universities. Parnes and colleagues are present. Based on 12.7% and 18.7% of...

...one reported marijuana use on all occasions, we found that 10.0% of students reported using marijuana on 4/20, which was slightly less than their number of days used marijuana from 7/15 to 7/20 (median reported 1.4 days). Higher numbers of marijuana use occasions were associated with a 1.47x increased risk of drinking (95% CI = 1.12 to 1.92) and a 1.47x increased risk of impaired work (95% CI = 1.12 to 1.92). **CONCLUSIONS:** For many people, marijuana use on 4/20 is a high-risk occasion with increased consequences compared to other days of the year. Marijuana use on 4/20 is a high-risk occasion with increased consequences compared to other days of the year.

**Bravo et al (2017) found:**

- Compared to weekdays or weekends, on 4/20 there is:
  - More people reporting use
  - More unique sessions of use
  - Larger amount used

**RATES OF MARIJUANA USE** and cannabis use disorder in the United States (Patterson et al., 2015). It is a recent study across 11 different U.S. universities. Parnes and colleagues are present. Based on 12.7% and 18.7% of...

...one reported marijuana use on all occasions, we found that 10.0% of students reported using marijuana on 4/20, which was slightly less than their number of days used marijuana from 7/15 to 7/20 (median reported 1.4 days). Higher numbers of marijuana use occasions were associated with a 1.47x increased risk of drinking (95% CI = 1.12 to 1.92) and a 1.47x increased risk of impaired work (95% CI = 1.12 to 1.92). **CONCLUSIONS:** For many people, marijuana use on 4/20 is a high-risk occasion with increased consequences compared to other days of the year.

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April 2018

### The April 20 Cannabis Celebration and Fatal Traffic Crashes in the United States

John A. Staples, MD, MPH<sup>1,2,3</sup>, David A. Redelmeier, MD, MPH<sup>4,5,6</sup>

<sup>1</sup> Author Affiliations: <sup>1</sup> Author Information

JAMA Intern Med. 2018;178(4):549-552. doi:10.1001/jamainternmed.2017.8298

On April 20 each year, thousands of Americans celebrate the intoxicating properties of marijuana on a popular counterculture holiday known as "4/20." Legal marijuana sales surge in anticipation of the "High Holiday," and college students report increased cannabis consumption on 4/20 itself.<sup>1,2</sup> In many cities,

#### Staples & Redelmeier (2018)

- Obtained data from US NHTSA's Fatality Analysis Reporting System
- From 1992 through 2016, between 4:20 p.m. and 11:59 p.m. on 4/20 compared to same interval on 4/13 and 4/27
  - The risk of a fatal crash was significantly higher on April 20 (relative risk 1.12, p<.001)

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### (3) Correct misperceived norms

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#### • Correct Normative Misperceptions

- Most people are not using
- Most people are not driving under the influence
- The more people use, the more they think others are using
  - Personalized normative feedback
  - Personalized feedback interventions
  - Social norms campaigns

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**(4) Bring in the science on medical cannabis use (particularly if people are declining referrals for counseling or health consultations)**

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**Doctors should think twice before prescribing medical marijuana: guideline** Source: CTVNews.com

**New guideline warns pain benefits of medical cannabis overstated** Source: ScienceDaily.com  
University of Alberta led guideline warns health risks may outweigh benefits, provides guidance on when (and when not to) prescribe.

**Canadian Doctors Warn Medical Pot Is Overhyped** Source: Gizmodo.com

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Allan, G.M., Ramji, J., Perry, D., Ton, J., Beahm, N.P., Crisp, N., Dockrill, B., Dublin, R.E., Findlay, T., Kirkwood, J., Fleming, M., Makus, K., Zhu, X., Korownyk, C., Kolber, M., McCormack, J., Nickel, S., Guillemin, N., & Lindblad, A.J. (2018). Simplified guidelines for prescribing medical cannabinoids in primary care. *Canadian Family Physician, 64*, 111-120.



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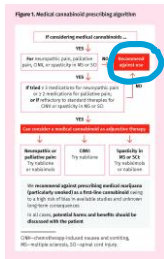
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Only are recommending for neuropathic pain, palliative and end-of-life pain, chemotherapy-induced nausea and vomiting, and spasticity due to multiple sclerosis or spinal cord injury...

AND

If tried traditional therapies/treatments first...

Allan, et al. (2018)

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Journal of Experimental Research in Cannabis and Cannabinoids

**Cannabis and Cannabinoid Research**

Open Access

**ORIGINAL RESEARCH**

**Cannabidiol Does Not Dampen Responses to Emotional Stimuli in Healthy Adults**

David L. Arndt and Marco de Wit

**Abstract**  
Introduction: Cannabidiol (CBD) is considered a component of whole-plant cannabis that has been reported to reduce anxiety-like behavior in both rodents and human laboratory studies. The two cannabinoid groups in this study have demonstrated the ability to reduce negative mood or dampen responses to negative emotional stimuli in humans. The present study tests the anxiolytic effects of CBD on responses to negative emotional stimuli, as well as its effects on general arousal and affective response.

**Results and Methods:** The study used a randomized, double-blind, placebo-controlled, within-subjects design in which 40 healthy, drug-free participants consumed oral CBD (250, 500, and 1000 mg) or placebo before completing several behavioral and self-report measures of emotional and affective responses to various emotional stimuli. Results indicate that oral CBD (250, 500, and 1000 mg) did not affect responses to negative and positive visual stimuli, although anxiolytic responses to negative visual stimuli were attenuated in the 1000 mg CBD condition. Anxiolytic effects of oral CBD were not observed in self-report measures of affective response to negative and positive visual stimuli.

"This study suggests that oral CBD does not alter responses to emotional stimuli, or produce anxiolytic-like effects in healthy human subjects. (p. 112)"

Arndt & de Wit (2017)

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JAMA Network | Open

**Effect of Medical Marijuana Card Ownership on Pain, Insomnia, and Affective Disorder Symptoms in Adults: A Randomized Clinical Trial**

Josh M. Gilman, PhD, David M. Scheuer, PhD, Ryan R. Pitzer, PhD, William Schmitt, BA, Grace Whelan, BA, Glynis M. Pichler, MS, Sarah Beckley, BSN, Megan E. Carter, PhD, Rippon Sachdev, BA, Rachel Plummer, BA, Brandon Torres-Camacho, PhD, David A. Schoenfeld, PhD, A. Eben Lewis, MS, MPH

**Abstract**

**IMPORTANCE:** Despite the legalization and widespread use of cannabis products for a variety of medical concerns in the US, there is not yet a strong clinical evidence to support such use. The risks and benefits of obtaining a medical marijuana card for common clinical outcomes are largely unknown.

**OBJECTIVE:** To evaluate the effect of obtaining a medical marijuana card on target clinical and cannabis use disorder (CUD) symptoms in adults with a chief concern of chronic pain, insomnia, or anxiety or depressive symptoms.

**DESIGN, SETTING, AND PARTICIPANTS:** This pragmatic, single-site, single-blind randomized clinical trial was conducted in the Greater Boston area from July 1, 2017, to July 31, 2020. Participants

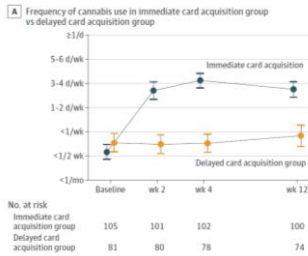
**Key Points**

**Question:** What are the risks and benefits of obtaining medical marijuana card for adults who seek medical marijuana for pain, insomnia, and anxiety or depressive symptoms?

**Findings:** In this randomized clinical trial involving 586 participants, introduction of a medical marijuana card increased the incidence and severity of cannabis use disorder (CUD) and resulted in no significant improvement

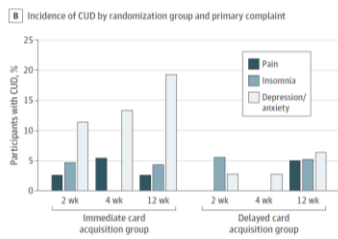
Gilman, et al. (2022) (released 3/18/2022)

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Gilman, et al. (2022) (released 3/18/2022)

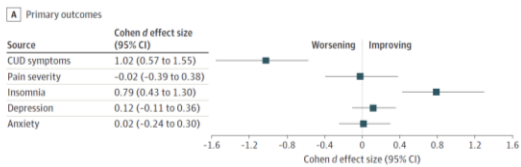
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Gilman, et al. (2022) (released 3/18/2022)

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Figure 3. Effect Sizes for Primary, Secondary, and Exploratory Outcomes



*"There were no observed benefits of obtaining a medical marijuana card for pain, anxiety, or depressive symptoms. (p. 11)"*

Gilman, et al. (2022) (released 3/18/2022)

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- Those with affective disorders have 3.9 higher odds of meeting criteria for Cannabis Use Disorder
- "These data suggest that a medical marijuana card may pose a high risk or may even be contraindicated for people with affective disorders. This finding is important to replicate because depression has been reported as the third most common reason that people seek a medical marijuana card." (page 10)

Gilman, et al. (2022) (released 3/18/2022)

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***(5) Keep collaborating – communities that get people on the same page as far a plan for prevention are the ones seeing successes***

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### **Conclusions**

- Explore ways to put science in people's hands
  - Parent meetings
  - Town hall meetings
  - Peer educators
  - SBIRT
- Work with colleges, universities, researchers, scientists (and so many other potential sources) to help translate findings to communities

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Some of the most effective strategies are carried out in the communities and states surrounding the campuses, such as enforcing the minimum legal drinking age. Campus leaders can be influential in bringing about off-campus environmental changes that protect students.

To achieve success off campus, partner with leaders and coalitions in your community and state. Building these partnerships takes time, so you may want to make it part of a long-term plan. For models of campus-community collaboration, see the Frequently Asked Questions section of the *CollegeAIM* website (see URL below).

CollegeAIM, page 6

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***(6) Put science in people’s hands***

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**“Without data, you’re just another person with an opinion...”**

**W. Edwards Deming**

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**“Without data, all we have are opinions...”**

**Data matter, and all data tell a story**

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**So, how do we translate findings to the real world?**

**Tell the story. Make the findings digestible and clear (without being too simplistic), and provide all citations/references to boost legitimacy/credibility.**

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- **Special thank you to:**
  - Lindsay Price
  - Jeff Hanley

Jason Kilmer – [jkilmer@uw.edu](mailto:jkilmer@uw.edu)  
@cshrb\_uw

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