Reducing Harms Associated with Cannabis Use by Young Adults

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Overview of this presentation

- **Special thank you Bia Carlini and Lexi Nims**

Key takeaway #1

- **Brief interventions work in reducing harms, yet it's all about what we call them in our conversations with young adults and how we assess for them**

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.

Lee, C.M., Kilmer, J.R., Neighbors, C., Cadigan, J.M., Fairlie, A.M., Patrick, M.E., Logan, D.E., Walter, T., & White, H.R. (2021). A marijuana consequences checklist for young adults with implications for brief motivational intervention research. *Prevention Science, 22,* 758-768.

Prevention Science (2021) 22:758–768
https://doi.org/10.1007/s11121-020-01171-x

A Marijuana Consequences Checklist for Young Adults with Implications for Brief Motivational Intervention Research

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Abstract
Measures assessing marijuana-related consequences or problems experienced by young adults have typically been adapted from measures assessing alcohol consequences. These measures may not fully reflect the specific unwanted or perceived "not so good" effects of marijuana that are experienced by young adults. Thus, using these measures may present a gap, which needs to be addressed, given that reports of consequences are often utilized in brief motivational personalized feedback interventions. Data from three different studies of young adults were used to (1) examine self-reported "not so good" effects or consequences of marijuana use among frequent marijuana-using college students (Study 1), (2) create a new version of a marijuana consequences list and compare it to an existing marijuana consequences measure (Study 2), and (3) assess convergent and divergent validity

Item	% sample reported 1+ times	Mean (SD)	Median	Range
Had the munchies	83.9	1.82 (1.37)	1	0–4
Experienced dry mouth	68.8	1.38 (1.34)	1	0–4
Had trouble concentrating or paying attention	62.5	1.01 (1.06)	1	0–4
Acted foolish or goofy	61.9	1.05 (1.15)	1	0–4
Had trouble remembering things	57.4	0.96 (1.11)	1	0–4
Had low motivation	46.4	0.80 (1.11)	0	0–4
Felt antisocial or intentionally avoided others	41.1	0.65 (0.96)	0	0–4
Had problems following through on things	36.0	0.59 (0.96)	0	0–4
Felt paranoid	36.0	0.46 (0.69)	0	0–4
Felt increased anxiety or worry	33.6	0.49 (0.80)	0	0–4
Developed a cough or had trouble breathing	30.7	0.47 (0.85)	0	0–4
Had trouble managing your time	30.7	0.50 (0.89)	0	0–4
Noticed a change in your personality	27.7	0.40 (0.79)	0	0–4
Felt down about yourself	26.2	0.37 (0.73)	0	0–4
Not able to do your homework, study for a test, or complete a work assignment	18.8	0.25 (0.59)	0	0–4
Felt dizzy or sick	17.9	0.20 (0.47)	0	0–3
Spent too much money on marijuana	17.6	0.30 (0.76)	0	0–4
Had trouble sleeping	15.5	0.27 (0.77)	0	0–4
Made decisions you later regretted	13.7	0.18 (0.53)	0	0–4
Worried about being addicted to marijuana	11.3	0.18 (0.61)	0	0–4

20 of 26 consequences endorsed by at least 10% of a sample of 18-23 year olds (n=336) who reported cannabis use in the past 30 days. (p. 765)

Lee, C.M., Kilmer, J.R., Neighbors, C., Cadigan, J.M., Fairlie, A.M., Patrick, M.E., Logan, D.E., Walter, T., & White, H.R. (2021). A marijuana consequences checklist for young adults with implications for brief motivational intervention research. *Prevention Science, 22*, 758-768.

Finding potential “hooks”: An Example

- “What are the good things about cannabis use for you?”
- “What are the ‘not-so-good’ things about cannabis use?”
- “What would it be like if some of those not-so-good things happened less often?”
- “What might make some of those not-so-good things happen less often?”

Sample list of “not-so-good” things generated by students from two consecutive groups

- Red eyes
- Impact on quality of sleep
- Laziness
- Paranoid
- Memory problems
- Not socially acceptable
- Groggy the next day
- Lung health
- Cost (money)
- Socially awkward
- Not saying anything in social situations
- Endurance
- Hard to quit even if you want to
- Mental addiction
- Hard to focus
- Concentration goes down
- Hard to sustain attention on one thing for long
- Coughing
- Legal risks and concerns
- How viewed by others
- Assumptions from others
- Self-conscious
- Things get weird
- Never truly satisfied (and want to get high more often)
- Less motivated
- Weight gain

Key takeaway #2

- **There may be harms/risks associated with cannabis use that young adults do not immediately see as connected**

Separating reported medical use from management of withdrawal

Motivations for Use

Motive Category	Proportion of participants endorsing motive	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, makes things more fun)	10.58%	1.81%
Activity enhancement (e.g., music sounds better, every day activities more interesting)	5.68%	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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Enjoyment/fun

Social enhancement

Boredom

Altered perception

Activity enhancement

Image enhancement

Celebration

Lee, Neighbors & Woods (2007)

Motivations for Use

Relaxation (includes helping w/sleep)

Coping (includes when depressed)

Food motives

Anxiety reduction

Medical use (including pain and headache)

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Lee, Neighbors & Woods (2007)

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 or anxiety.
3. Sleep difficulty (e.g., insomnia, disturbing dreams).
4. Decreased appetite or weight loss.
5. Restlessness.
6. Depressed mood.
7. At least one of the following physical symptoms causing significant discomfort: abdominal pain, shakiness/tremors, sweating, fever, chills, or 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.

Key takeaway #3

- **If we agree cannabis use disorder and/or cannabis withdrawal are potential risks/harms, we have to consider factors that could be associated with the onset of cannabis use disorder**

Kilmer, J.R., Rhew, I.C., Guttmannova, 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
- Applied post-stratification weights to make sample more similar to general population

AJPH RESEARCH & ANALYSIS

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

Jason R. Kilmer, PhD, Isaac C. Rhew, PhD, MPH, Katarina Guttmannova, PhD, Charles B. Fleming, MA, Brittney A. Hultgren, PhD, Michael S. Gilson, JD, PhD, Rachel L. Cooper, BA, Julia Dilley, PhD, and Mary E. Larimer, PhD

Objectives. To examine changes in prevalence of cannabis use and of cannabis use disorder symptomatology among young adults from 2014 to 2019 in Washington State, where nonmedical (or "recreational") cannabis was legalized in 2012 and retail stores opened in July 2014.

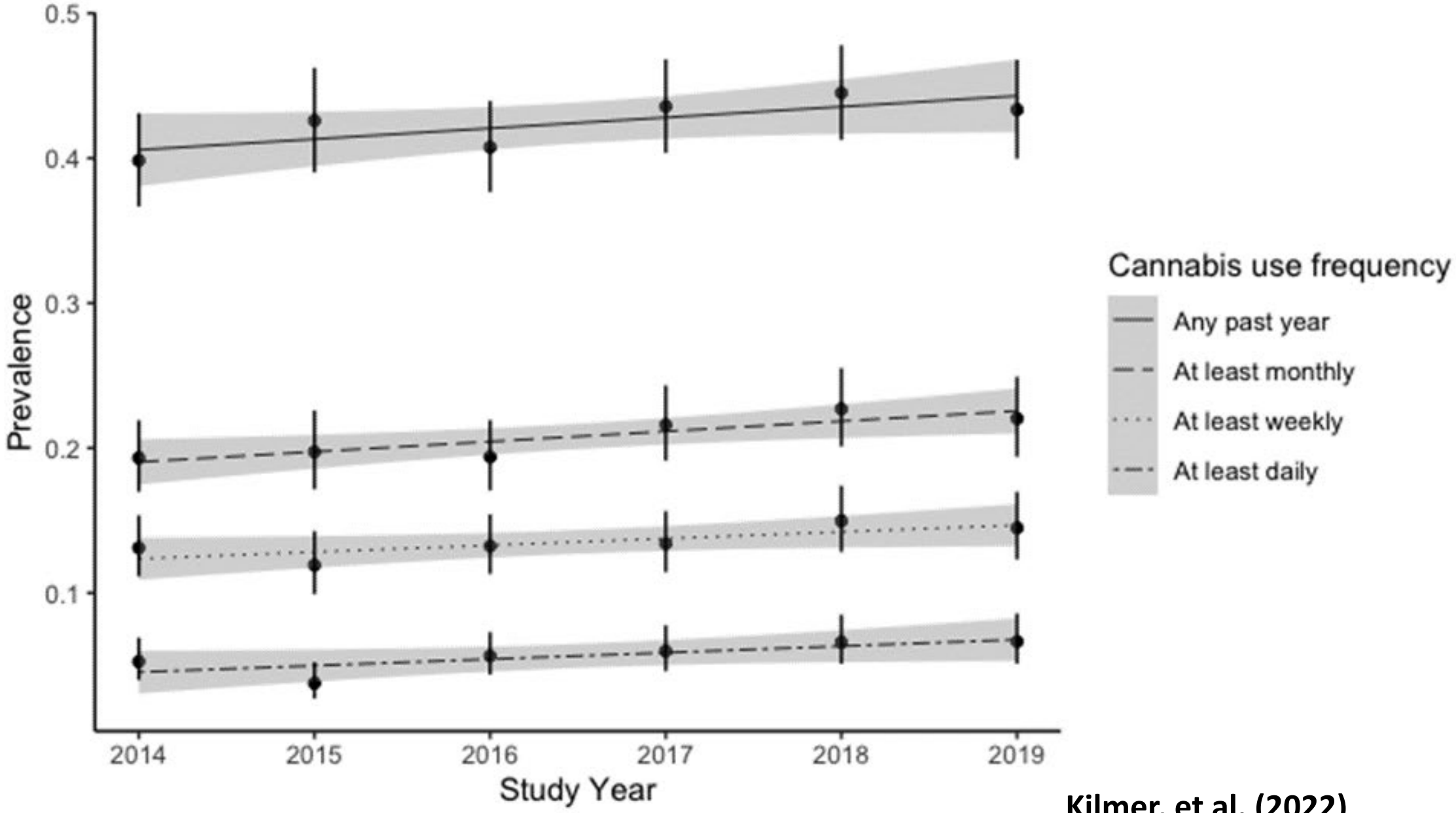
Methods. We used 6 years of cross-sectional data collected annually from 2014 (premarket opening) to 2019 from 12 963 (~2000 per year) young adults aged 18 to 25 years residing in Washington. Logistic regression models estimated yearly change in prevalence of cannabis use at different margins and related outcomes.

Results. Prevalence of past-year, at least monthly, at least weekly, and daily use of cannabis increased for young adults, although increases were driven by changes among those aged 21 to 25 years. There was also a statistically significant increase in prevalence of endorsing at least 2 of 5 possible symptoms associated with cannabis use disorder.

Conclusions. Among young adults in Washington, particularly those of legal age, prevalences of cannabis use and cannabis use disorder symptomatology have increased since legalization. This trend may require continued monitoring as the nonmedical cannabis market continues to evolve. (*Am J Public Health.* 2022;112(4):638–645. https://doi.org/10.2105/AJPH.2021.306641)

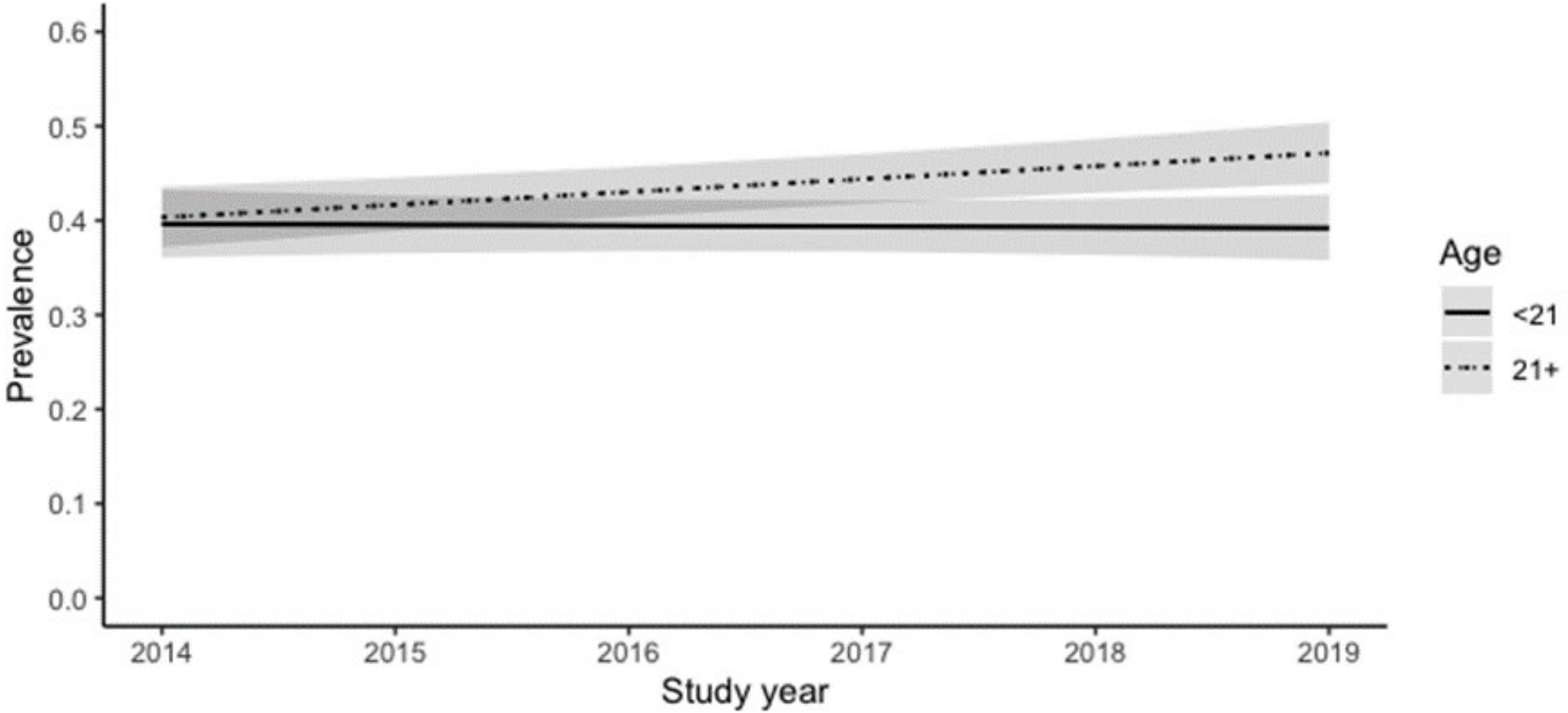
Over the past 2 decades, cannabis use prevalence has increased among young adults in the United States. Data from the National Survey on Drug Use and Health (NSDUH) showed an increase in the prevalence of any past-year cannabis use among young adults aged 18 to 25 years from 29.8% in 2002 to 35.4% in 2019.[1] This increase is concerning because cannabis use among young adults is associated with adverse short- and long-term consequences, including cognitive deficits,[2] poorer academic outcomes,[3–6] impaired driving,[7] worse mental health,[8] and addiction.[9] In 2019, 5.8% of those aged 18 to 25 years met diagnostic criteria for past-year cannabis use disorder (CUD).[9]

As of August 2021, 18 states and Washington, DC, have legalized cannabis for nonmedical (or "recreational") use, and, in November 2012, Washington State was 1 of the first 2 states to legalize it.[10] Although cannabis use and possession for people older than 21 years were permitted 30 days after the election, the first state-licensed retail cannabis stores did not open until July 2014. Thus, there was a period of 19 months when use and possession were legal, but there were no legal means of buying or selling nonmedical cannabis. In addition to the illicit market, there was access through weakly regulated medical dispensaries.[11,12] It was not until 2015 that strong state-level regulation phased out the original medical cannabis dispensaries and incorporated the medical market into the regulated system.[13] Initially, even after July 2014, the number of nonmedical (or "retail") stores was small and prices could not compete with the illegal and medical cannabis markets.[14] Prices of pretax cannabis flower in retail stores dropped, however, from as high as $30 per gram in 2014 to less than $7 per gram in late 2017.[15] Along with dropping prices, the number of retail outlets in the state increased.[13] Also, the variety



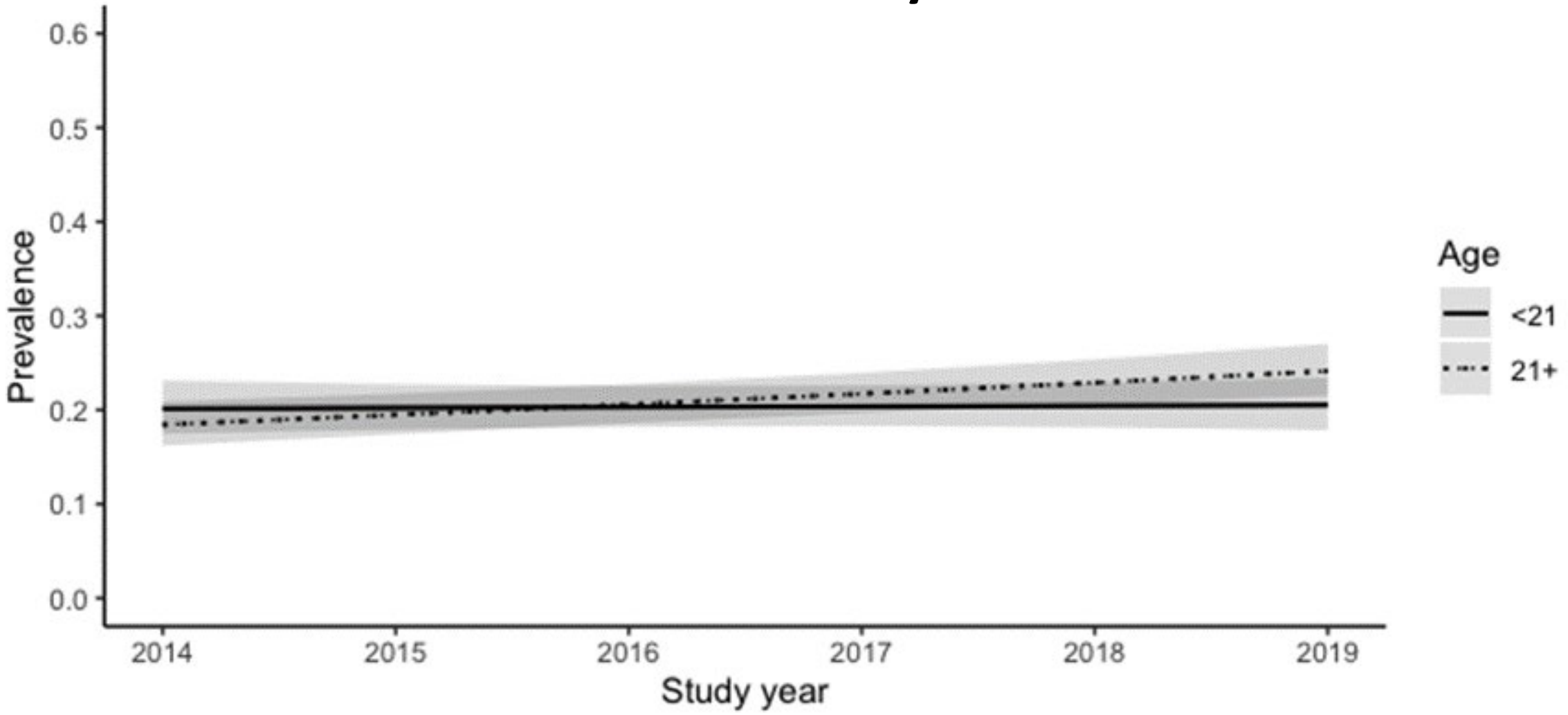
Kilmer, et al. (2022)

Any past year cannabis use



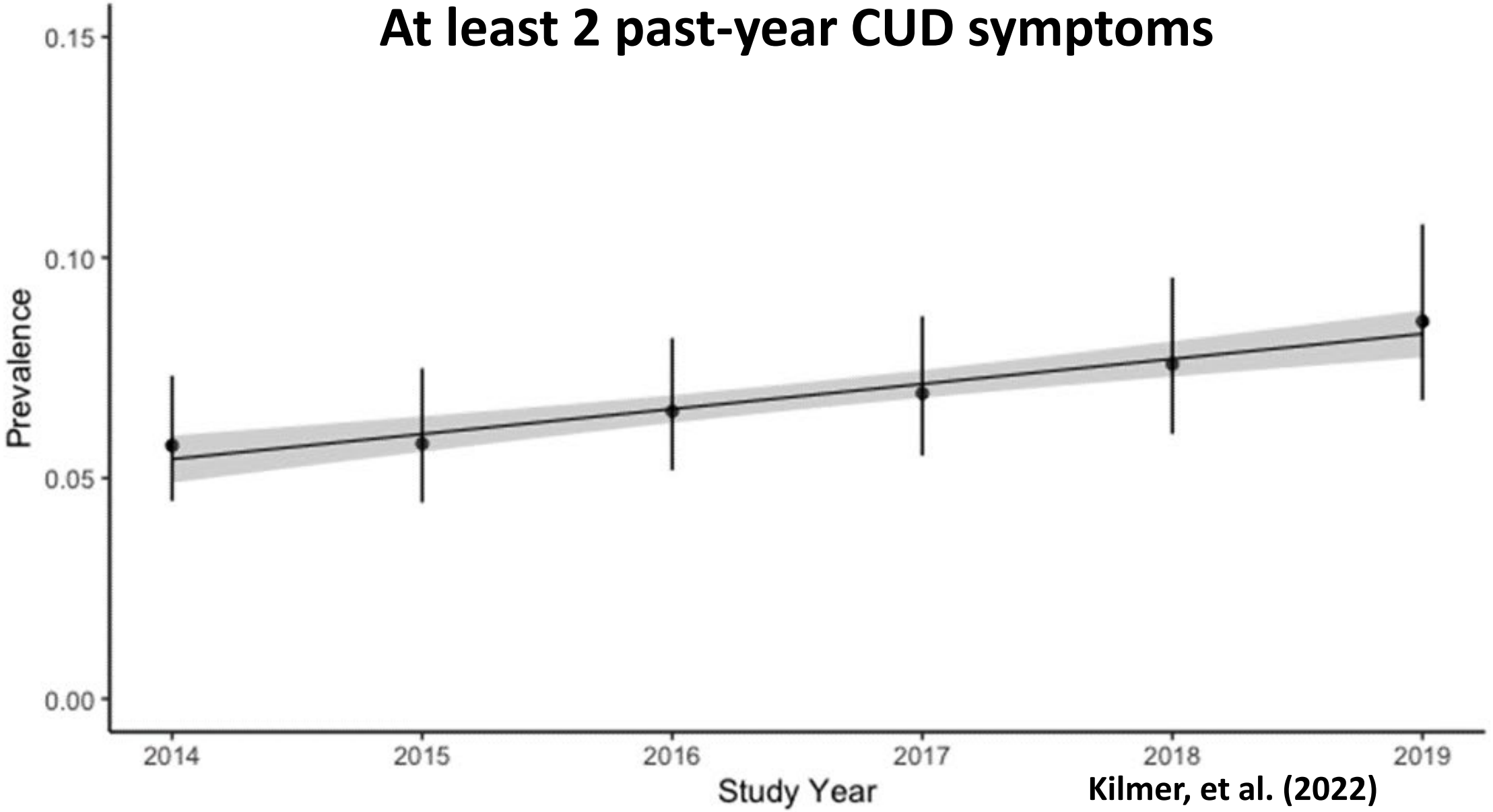
Kilmer, et al. (2022)

At least monthly cannabis use



Kilmer, et al. (2022)

At least 2 past-year CUD symptoms

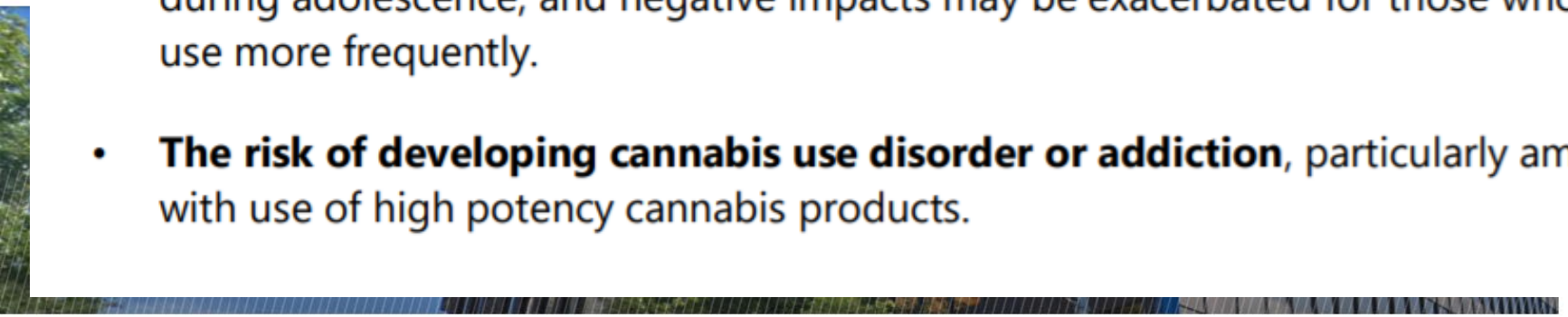


Kilmer, et al. (2022)

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

Report Findings

- **Young people are particularly vulnerable.** There is strong evidence of the detrimental impact of THC use during adolescence, and negative impacts may be exacerbated for those who use high potency cannabis or use more frequently.
- **The risk of developing cannabis use disorder or addiction**, particularly among adolescents, is higher with use of high potency cannabis products.



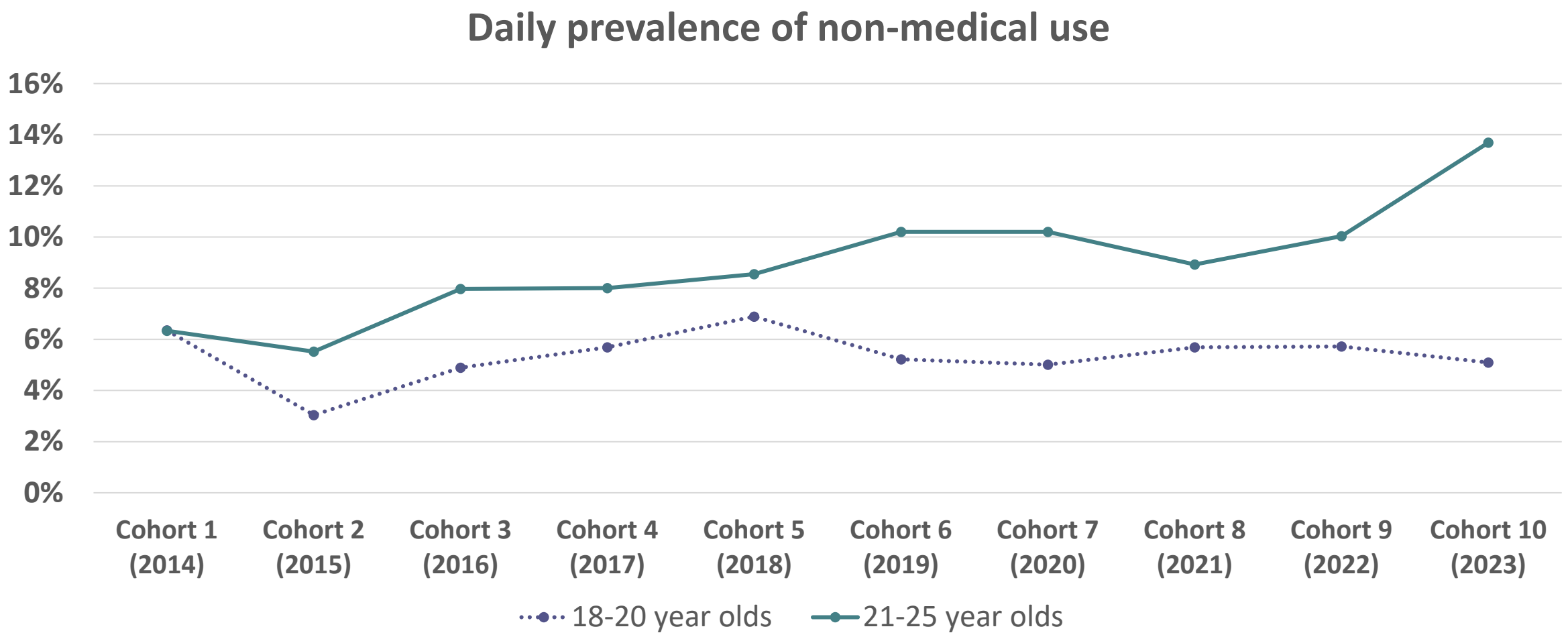
High-Potency Cannabis

With a legal market of cannabis products has come the wide distribution of manufactured products containing much higher levels of THC than what has been historically found in the plant.

https://adai.uw.edu/cerp/high-potency-cannabis/

Source: Young Adult Health Survey, Preliminary Data Report to DBHR, February 2024, Kilmer (PI)

Daily non-medical (or “recreational”) use by age group



Typical potency (among those with past 30-day use)

Typical potency in preferred method of use	18-20	21-25
1-10% THC	5.05%	8.97%
11-20% THC	6.82%	5.12%
21-30% THC	7.49%	19.35%
31-40% THC	5.67%	5.40%
41-50% THC	2.13%	2.59%
51-60% THC	0.86%	0.45%
61-70% THC	1.49%	3.17%
71-80% THC	13.36%	6.43%
81-90%+ THC	16.33%	14.02%
Don’t know	40.80%	34.51%

Source: Young Adult Health Survey, Frequency Report Split by Age provided to DBHR, May 2024, Kilmer (PI)

Wrapping up

- Brief interventions can be a part of a prevention approach
- Assessing and describing harms that young adults see as "not so good" could prompt consideration of or commitment to change
- Information-only approaches don't tend to change behavior, though information has its place within a motivational framework
- As we monitor daily use and use of products with higher potency, we can consider what to offer those experiencing cannabis use disorder or withdrawal

Thank you!

- **Jason Kilmer**
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- **Thank you to Lexi Nims and Dr. Bia Carlini**