

Not Your Grandmother's Weed

Adolescent Cannabis Use & Mental Health Concerns

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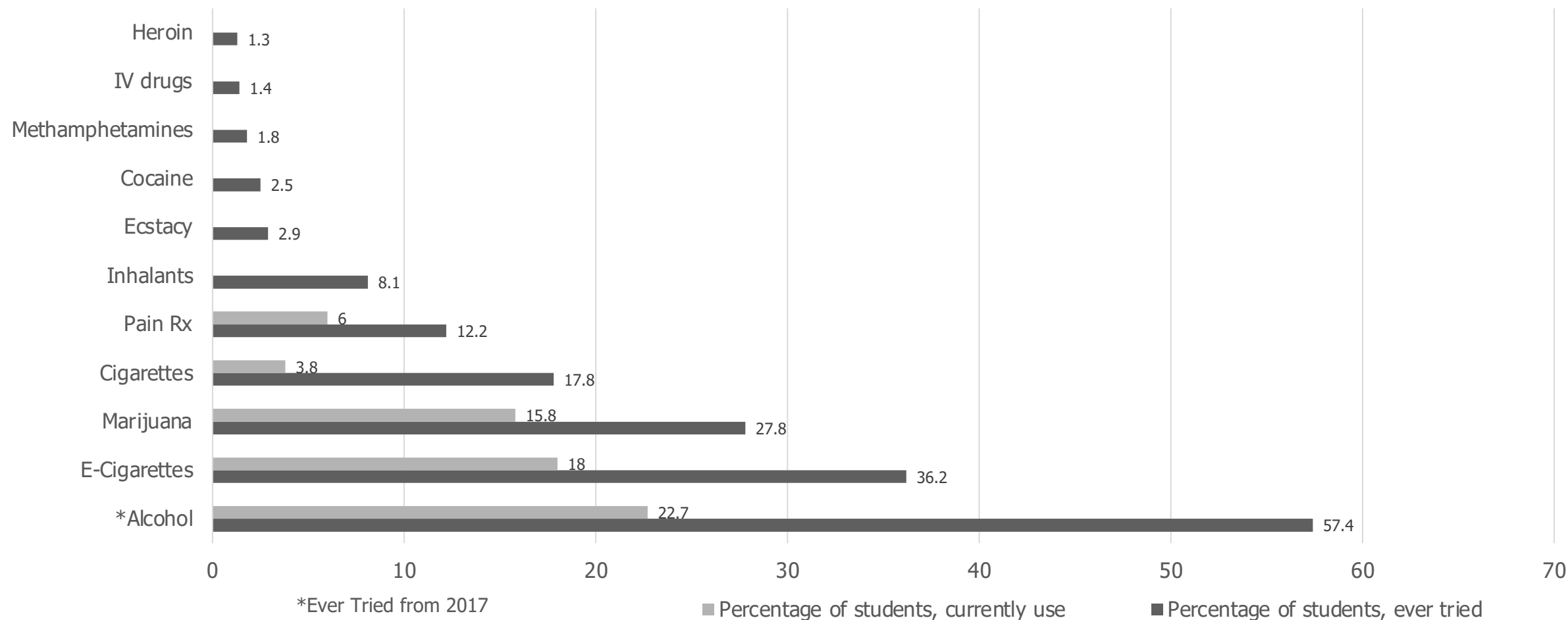
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Objectives

- By the end of this talk, participants will be able to:
 - Articulate the trends in adolescent cannabis use
 - Acknowledge the rise in potency of cannabis products
 - Discuss mental health concerns with adolescent cannabis use
- Other issues impacting youth not discussed:
 - Poison control call or ED visits for cannabis ingestions
 - Cannabinoid hyperemesis syndrome
- This is NOT an exhaustive review of the literature

Substances Tried by US High Schoolers



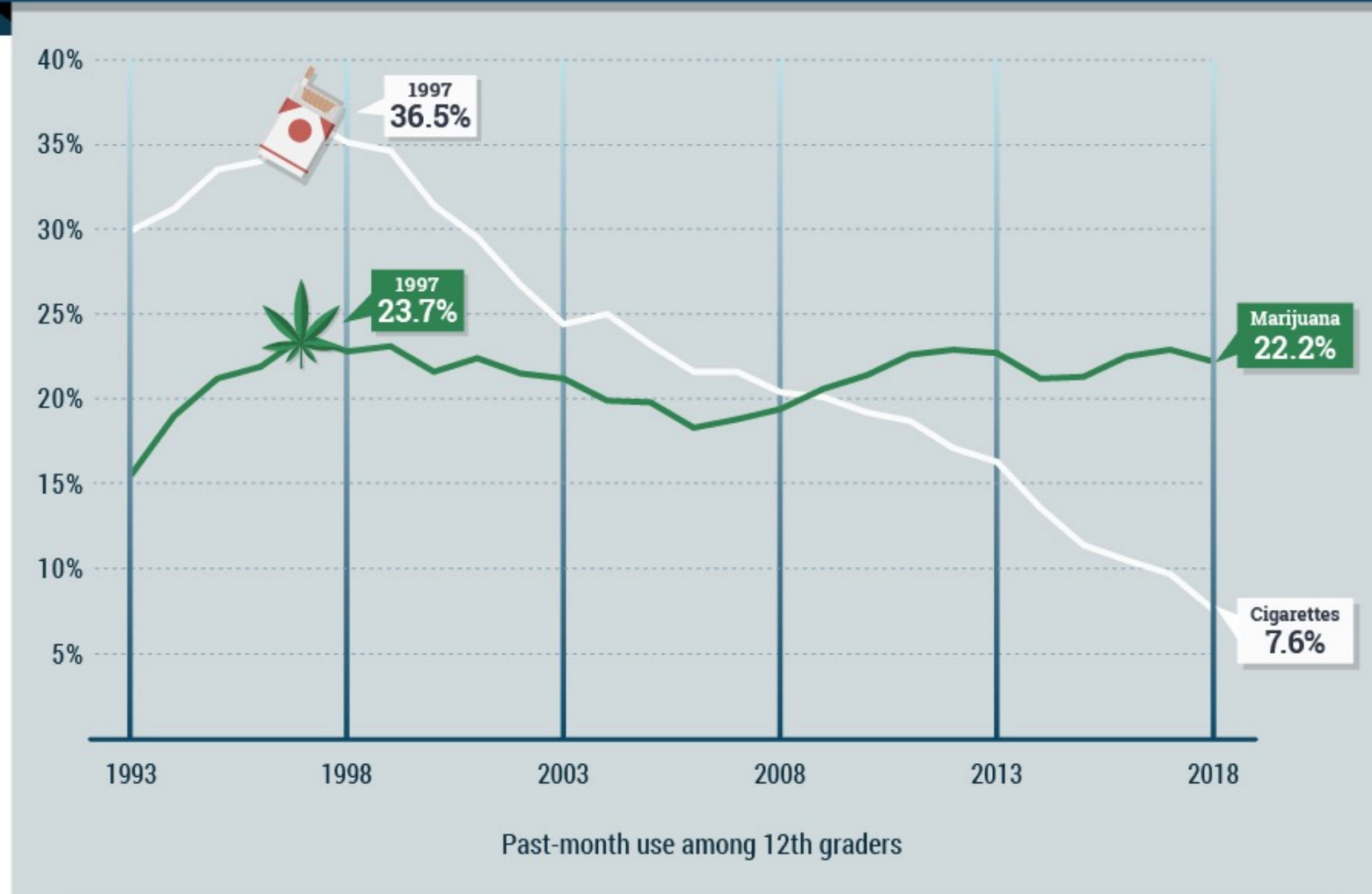
Trends in US High School Students

By 12th grade:

- 68% drank alcohol* (32.2% currently)
 - 45.6% tried e-cigarettes (24% currently)
 - **46% tried marijuana (26% currently)**
 - 22.7% smoked (5.2% currently)
 - 11.6% pain medication misuse (5.3% currently)
 - 1.4% tried heroin
 - 2% injected drugs
- *Missing youth no longer in school*
 - **from 2017 data*



TEENS MORE LIKELY TO USE MARIJUANA THAN CIGARETTES



Higher Concentrations

- ↑ concentration of tetrahydrocannabinol (THC)
- Cannabis Concentrates
 - Vaped, dabbed, Infuse into food/drink
 - *Will take time for studies to catch up on impacts...*

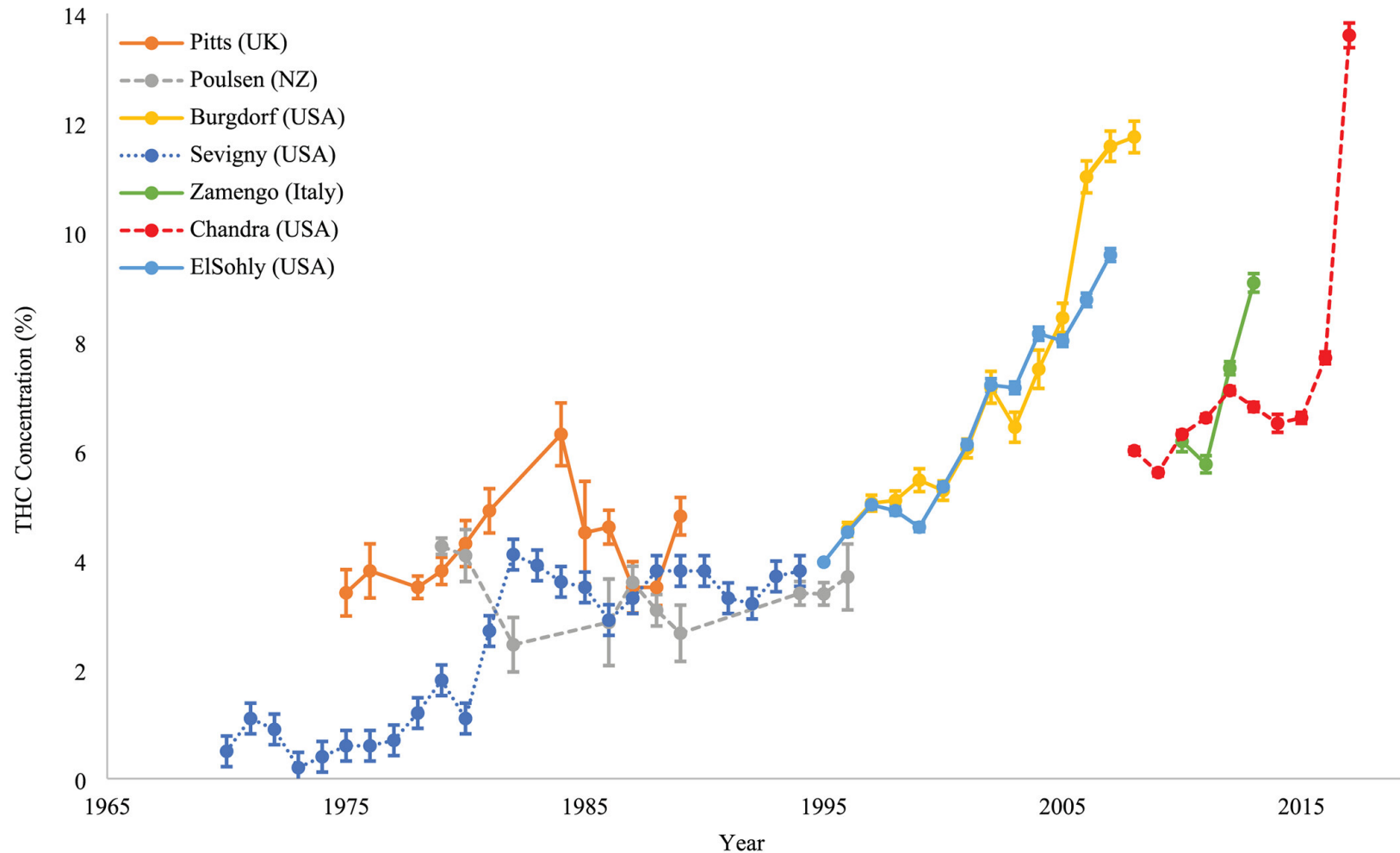
Ryan SA, Ammerman SD, AAP Committee on Substance Use and Prevention. Clinical Report: Counseling Parents and Teens About Marijuana Use in the Era of Legalization of Marijuana. *Pediatrics*. Feb 2017;139(3), e2016069

ElSohly MA, Mehmedic Z, Foster S, Gon C, Chandra S, Church JC. Changes in Cannabis Potency Over the Last 2 Decades (1995-2014): Analysis of Current Data in the United States. *Biol Psychiatry*. 2016;79(7):613-9.

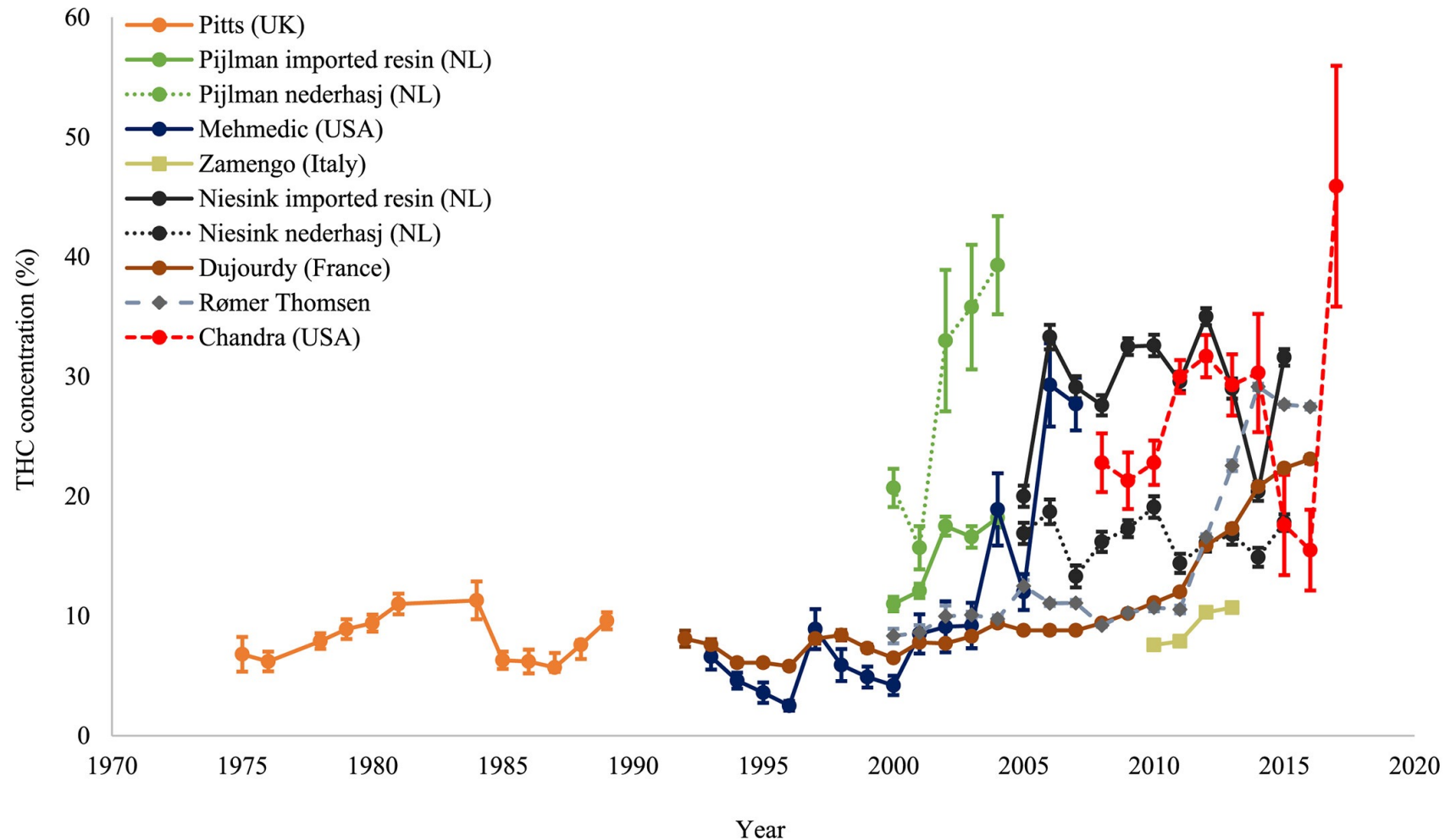
Smart, R., Caulkins, J. P., Kilmer, B., Davenport, S., & Midgette, G. (2017). Variation in cannabis potency and prices in a newly legal market: evidence from 30 million cannabis sales in Washington state. *Addiction*, 112(12), 2167-2177. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5673542/>

United States Department of Justice Drug Enforcement Administration Demand Reduction Section. What You Should Know About Marijuana Concentrates, Also Known As: THC Extractions. Dec 2014.

Mean concentrations of THC in herbal cannabis over time



Mean concentrations of THC in cannabis resin over time



Regular use & recent problems of high- vs low-potency

Table 2. Logistic Regression Analysis of the Association Between High-Potency Cannabis and Substance Use and Mental Health Outcomes^a

Outcome variable	Univariable OR (95% CI)	P value	Adjusted for childhood sociodemographic factors, AOR (95% CI)	P value	Adjusted for prospective mental health measures, AOR (95% CI)	P value	Adjusted for frequency of cannabis use, AOR (95% CI)	P value
Regular cannabis use	6.21 (4.24-9.11)	≤.001	5.81 (3.90-8.65)	≤.001	4.38 (2.89-6.63) ^b	≤.001	NA	NA
Recent cannabis use problems	13.17 (5.41-32.04)	≤.001	13.52 (5.28-34.60)	≤.001	8.45 (3.04-23.50) ^b	≤.001	4.08 (1.41-11.81)	.009
Recent use of other illicit drugs	2.47 (1.53-3.97)	≤.001	2.19 (1.35-3.56)	.002	1.50 (0.91-2.49) ^b	.11	1.29 (0.77-2.17)	.34
Tobacco dependence	3.31 (2.23-4.92)	≤.001	3.30 (2.18-4.99)	≤.001	2.05 (1.31-3.19) ^b	.002	1.42 (0.89-2.27)	.14
Alcohol use disorder	1.60 (0.94-2.73)	.08	1.49 (0.86-2.56)	.15	0.99 (0.56-1.76) ^b	.97	0.90 (0.49-1.64)	.73
Major depression (moderate or severe symptoms)	1.24 (0.70-2.18)	.46	1.61 (0.89-2.93)	.12	1.54 (0.84-2.82) ^c	.16	1.28 (0.68-2.32)	.44
Generalized anxiety disorder	1.77 (1.09-2.86)	.02	2.35 (1.41-3.92)	≤.001	2.28 (1.36-3.83) ^c	.002	1.92 (1.11-3.32)	.02
Psychotic-like experiences	1.81 (1.01-3.24)	.047	2.03 (1.10-3.73)	.02	1.86 (1.00-3.46) ^d	.05	1.29 (0.67-2.50)	.45

Abbreviations: AOR, adjusted odds ratio; NA, not applicable; OR, odds ratio.

^a All results estimated from imputed data. Multivariable model adjustment is incremental.

^b Age at onset of cannabis use.

^c Depression symptom score at 13 years of age.

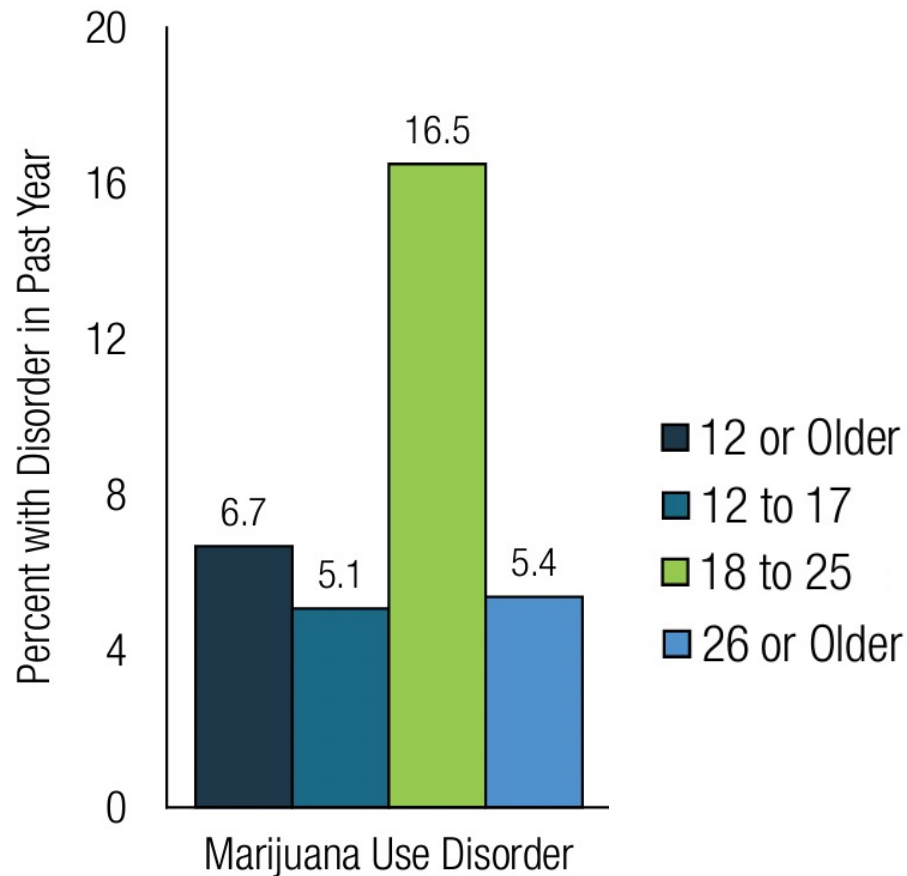
^d Number of psychotic experiences at 12 years of age.

Risks of Youth Use

- Most youth who use cannabis do not develop a substance use disorder
 - But impairments can be problematic during the period of use
 - Long-term consequences on youth are not fully clear
- Risk-taking behavior normal in teens
 - But drug experimentation can have consequences
- Younger initiation is associated with
 - Increased risk of substance use disorder as an adult
 - Higher number of substance used
- Developing brain vulnerable to effects of substances
 - DELAY, delay, delay

Cannabis Use Disorder

Marijuana Use Disorder in the Past Year: Among
People Aged 12 or Older; 2022



- 5.1% of all 12-17yo (1.3 million teens)
- 16.5% of all 18-25yo (5.7 million young adults)

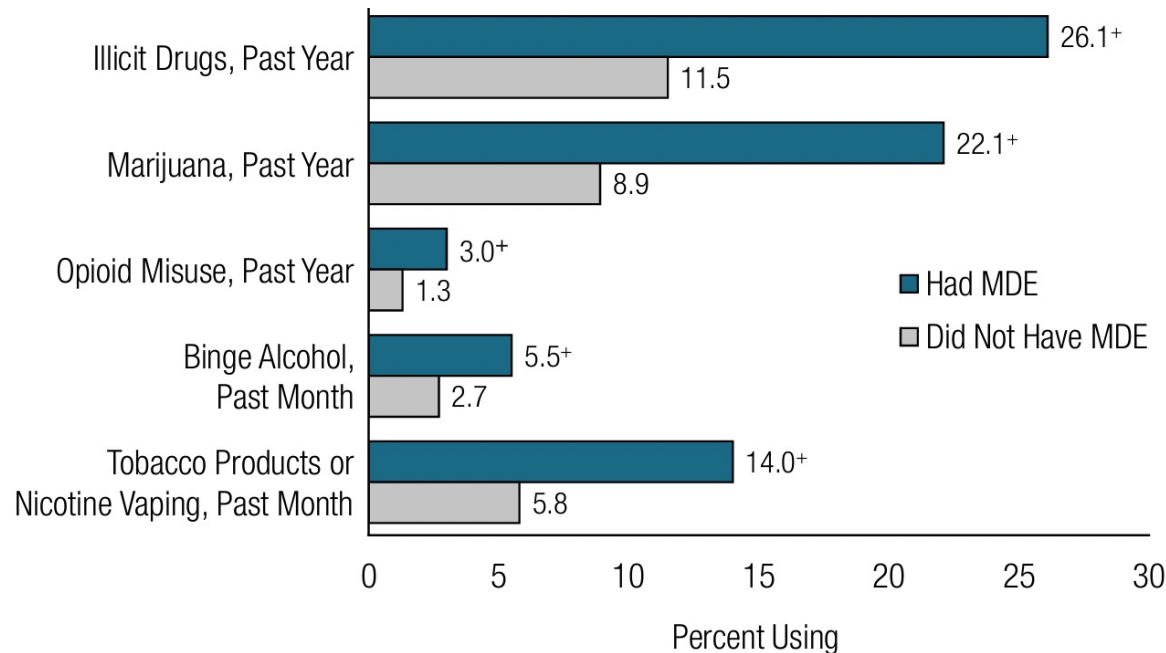
Cannabis Use Disorder

- Risk likely higher among youth who use more frequently
- Systematic review and meta-analysis of cohort studies found the risk of developing cannabis dependence was 33% (22-44%) among young people who used regularly (weekly or daily)

Co-Occurring Mental Health Conditions

- Common in adolescents (evaluate & treat together!)
- Adolescents with past-year depressive episode more likely to have used cannabis in the past year compared with adolescents without a depressive episode

Past Year or Past Month Substance Use: Among Adolescents Aged 12 to 17; by Past Year Major Depressive Episode (MDE) Status, 2022



Depression & Suicidality

- Systematic review and meta-analysis found that adolescent cannabis use was associated with increased future risk of:
 - Depression
 - Suicidality
 - (Minimal association with anxiety, c/w other SR/MA)

“estimated population attributable risk is 7.2%...translates to some 413,326 young adult cases of depression potentially attributable to cannabis exposure”

Psychosis

- Increased odds of psychotic disorder with (vs. never use):
 - Daily cannabis use
 - High-potency types of cannabis (5x increased odds)
- Thoughtful editorial around causality debate

Di Forti M, et al. The contribution of cannabis use to variation in the incidence of psychotic disorder across Europe (EU-GEI): a multicentre case-control study. *Lancet Psychiatry*. 2019 May;6(5):427-436.

Ganesh S, D'Souza DC. Cannabis and Psychosis: Recent Epidemiological Findings Continuing the "Causality Debate". *Am J Psychiatry*. 2022;179(1):8-10. doi:10.1176/appi.ajp.2021.21111126

PTSD

- Cannabis use starting in adolescence a/w PTSD symptoms in mid-thirties
 - from Harlem Longitudinal Development Study

Conclusions

- Cannabis is changing
- Still learning about effects
- Know enough to be concerned about impact of adolescent cannabis use on mental health

Questions? Discussion?

