



NASEM CANNABIS POLICY STUDY: NIDA PRIORITIES AND UPDATES

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National Institute
on Drug Abuse



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NIH/NIDA CANNABIS RESEARCH EXPENDITURES

<https://report.nih.gov/>

RCDC Categories (\$ in millions)	NIH FY17	NIH FY18	NIH FY19	NIH FY20	NIH FY21	NIH FY22	NIDA FY17	NIDA FY18	NIDA FY19	NIDA FY20	NIDA FY21	NIDA FY22
Cannabinoid Research	\$140	\$147	\$189	\$184	\$198	\$202	\$88	\$90	\$119	\$104	\$108	\$110
Therapeutic Cannabinoid	\$36	\$37	\$46	\$54	\$65	\$70	\$16	\$20	\$25	\$22	\$27	\$31
Cannabidiol	\$15	\$19	\$31	\$29	\$36	\$43	\$11	\$14	\$22	\$14	\$20	\$25
Endo- cannabinoid System	\$63	\$63	\$73	\$71	\$70	\$75	\$30	\$28	\$34	\$27	\$24	\$27

NIDA CANNABIS SCIENCE RESEARCH AREAS



Epidemiology

- National and Local Surveys
 - Including co-occurring Mental Illness (MI) and SUD

Prevention

- Adolescent Brain Cognitive Development (ABCD) Study
- Dissemination of evidence-based programs
- Effective messaging in current legal environment

Neuroscience

- Endocannabinoid System (ECS)
- Impact of exposure/use/addiction on brain structure and function; cognition; motivation; affect; fetal and adolescent development
- HEALTHy Brain and Child Development (HBCD) Study

Medical Use: cannabis, cannabinoids, ECS modulators

- Pain
- Substance Use Disorders
- HIV

Treatment of Cannabis Use Disorder

- Medications, Devices (e.g., TMS), psychosocial (behavioral)
- Relapse prevention
- Withdrawal
- Co-Morbid conditions (e.g., psychosis, depression, sleep problems)

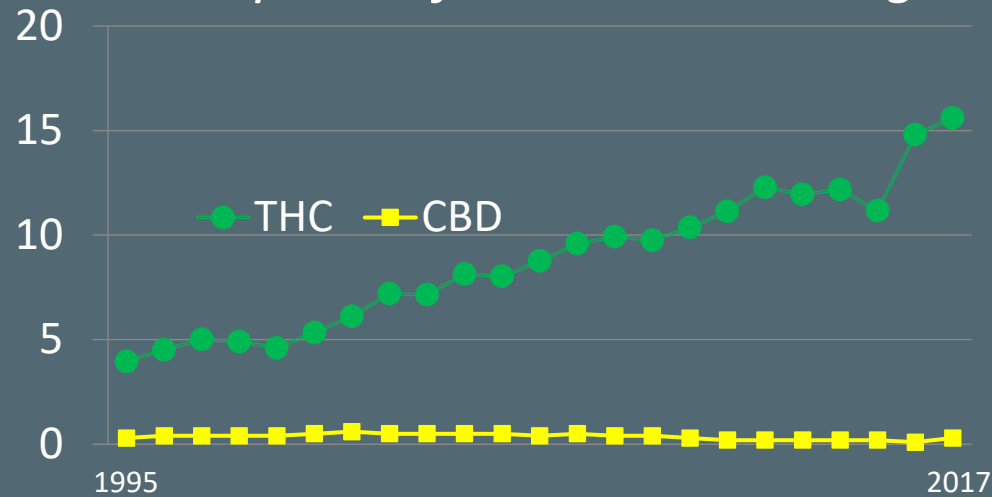
Policy

- Impact of different regulatory models, marketing, taxes, etc.
- Social, Cultural, Academic, and Health Impacts
- *Registry of medical cannabis use (Vandrey, 2023)*



WHAT IS THE IMPACT OF LEGALIZATION?

*Cannabis Potency Increasing
Perception of Harm Decreasing*



- Use, Harmful Use, Use Disorders
- Mental Health
- Other Substance Use
- Academic Achievement
- Child/Adolescent Development
- Accidents, ER Visits
- Other Health Effects (e.g., cardiac, lung)
- Secondhand Smoke
- Pregnancy Outcomes
- Productivity
- Economics (Revenue vs. Costs)
- Criminal Justice Disparities/Equity
- Benefits



ADOLESCENT BRAIN COGNITIVE DEVELOPMENT (ABCD) STUDY

NIDA, NIAAA, NCI, NIMH, NIMHD, NICHD, NINDS, NHLBI, OBSSR, ORWH, CDC, DOJ, NSF, NEA

Ten-year longitudinal study of ~12,000 children starting at ages 9-10 to assess effects of childhood experiences, including use of *cannabis* and other substances, on individual brain development trajectories through adolescence into early adulthood



Adolescent Brain Cognitive Development®

Teen Brains. Today's Science. Brighter Future.

<https://abcdstudy.org/>

Neuroimaging

Geocoded
Data

Neurocognition

Physical Health

Biospecimens



Mental Health

Culture and
Environment

Substance Use

Novel Technology

HEALTHY BRAIN AND CHILD DEVELOPMENT (HBCD) STUDY

NIDA, NIMH, NINDS, NIAAA, NICHD, NIBIB, NIEHS, NIMHD, OBSSR, ORWH, NEI, NIH HEAL Initiative

Multi-site longitudinal study (n=7500) examining individual brain development trajectories and behavior from birth through childhood (ages 9-10) including *in utero* substance exposure and effects of adverse social environments.

Pregnancy History



EEG



Biospecimens

Risk and Protective Factors



Behavioral,
neurocognitive
assessments



Wearables



MRI



STANDARD UNIT OF MEASURE: THC


ADDICTION

SSA: SOCIETY FOR THE STUDY OF ADDICTION

ADDICTION OPINION AND DEBATE

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‘Standard THC units’: a proposal to standardize dose across all cannabis products and methods of administration

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ABSTRACT

Background and Aims Cannabis products are becoming increasingly diverse, and vary considerably in concentrations of ⁹-tetrahydrocannabinol (THC) and cannabidiol (CBD). Higher doses of THC can increase the risk of harm from cannabis, while CBD may partially offset some of these effects. Lower Risk Cannabis Use Guidelines currently lack recommendations based on quantity of use, and could be improved by implementing standard units. However, there is currently no consensus on how units should be measured or standardized among different cannabis products or methods of administration.

Argument Existing proposals for standard cannabis units have been based on specific methods of administration (e.g. joints) and these may not capture other methods, including pipes, bongs, blunts, dabbing, vaporizers, vape pens, edibles and liquids. Other proposals (e.g. grams of cannabis) cannot account for heterogeneity in THC concentrations among different cannabis products. Similar to alcohol units, we argue that standard cannabis units should reflect the quantity of primary active pharmacological constituents (dose of THC). On the basis of experimental and ecological data, public health considerations and existing policy, we propose that a ‘standard THC unit’ should be fixed at 5 mg THC for all cannabis products and methods of administration. If supported by sufficient evidence in future, consumption of standard CBD units might offer an additional strategy for harm reduction.

Conclusions Standard ⁹-tetrahydrocannabinol (THC) units can potentially be applied among all cannabis products and methods of administration to guide consumers and promote safer patterns of use.

Keywords CBD, cannabis, harm reduction, safety guidelines, standard unit, THC.

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“On the basis of experimental and ecological data, public health considerations and existing policy, we propose that a standard THC unit should be fixed at 5 mg THC for all cannabis products and methods of administration.”

NIDA follow up:

- Public Request for Information: 37 responses, largely supportive
- Follow up discussions with experts
- Presentation/discussion with NIDA Advisory Council
- **Issued a Notice requiring the use of a standard THC unit (STU) of 5 mg for human studies (NIDA, NCI, NHLBI, NIMH).**
- Followed up with a funding opportunity to study the pharmacokinetics and pharmacodynamics of delta-9 THC

WHAT COULD WE DO WITH A STANDARD UNIT OF MEASUREMENT?



- Achieve comparability across research studies, including epidemiological and observational studies (ABCD/HBCD)
- Determine whether there are “safer” levels of exposure*, i.e., less likely to lead to serious adverse outcomes
- Determine what levels of exposure cause or contribute to adverse outcomes, including cannabis use disorder (CUD), mental illness, psychosocial impairments, hyperemesis....
- Identify meaningful CUD treatment outcomes—e.g., reduction-based endpoints vs. abstinence
- Determine appropriate doses/formulations for *medical* vs. *adult use*
 - Train physicians, patients, budtenders and others involved with cannabis distribution

*would not apply to women who are pregnant, children/adolescents, or those at high risk for mental illness

REGISTRY OF MEDICAL CANNABIS USE

PROBLEM: MANY PATIENTS ARE USING CANNABIS FOR MEDICAL PURPOSES

However, there is currently no systematic collection of information about the conditions, products, and outcomes for patients.

NEED: DEVELOP A MEDICAL CANNABIS REGISTRY

- important to identify evidence that exists and as it evolves
- harmonize and coordinate this information to drive medical research; inform patients and practitioners; and to influence policy

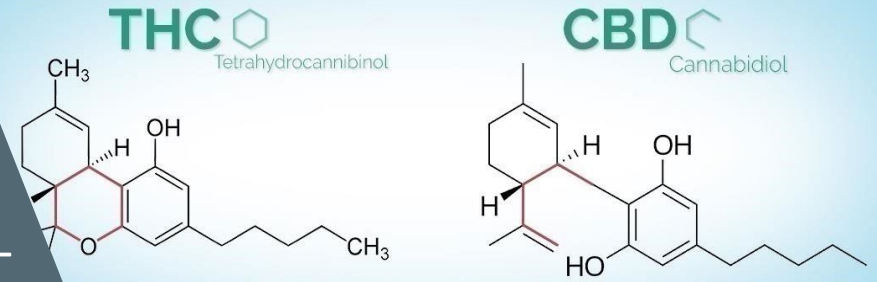
OPPORTUNITY: DEVELOP A COORDINATING CENTER TO SUPPORT:

- data acquisition strategies
 - data harmonization
 - data synthesis and analysis
 - dissemination activities
-
- Awarded to Johns Hopkins University, PI, Ryan Vandrey



WHY DON'T WE KNOW MORE?

- Plant with more than 120 cannabinoids and other constituents that have the possibility of producing medical benefits and adverse effects—on their own or in combination
- BARRIERS to RESEARCH (including conflicting Fed/State Laws)
 - Schedule I status
 - Single source of marijuana for research until recently
 - Products legally available in the states are not legal for use in research
 - Need for improved measurement across studies (Standard THC unit)
- **Should be learning from what is already happening in the states** and in other countries (e.g., patient registries; adverse outcomes; medical benefits).
- **Should be studying products that people are using** to understand full range of health consequences.
- **Need better measures of use/harmful use**, including products, potency, and frequency of use.
- Need informed consumers to report what they are using, why they are using, and how much.



RESEARCH DIRECTIONS OF INTEREST TO NIDA

- How does the **potency/composition of cannabis products** impact behavior, health outcomes, and treatment needs?
- How are cannabis policies, or specific aspects of cannabis policies, **impacting use of other substances**? (harm reduction, more smoking)
- How does cannabis use affect health across the **lifespan**?
- What are the impacts of **second-hand** cannabis exposure?
- **Drugged driving** and defining impairment (safety sensitive jobs)
- What are the **prevention** needs of youth who may have greater access and exposure to cannabis use in a family environment?
- What are the **therapeutic benefits** of cannabis?
- How does **isolation** affect the intake/consumption of cannabis?

WHY SOLICIT A NASEM REPORT NOW?

NASEM Reputation and Credibility: Provides independent, objective analysis and advice to the government and private sector to help solve complex problems and inform public policy decisions

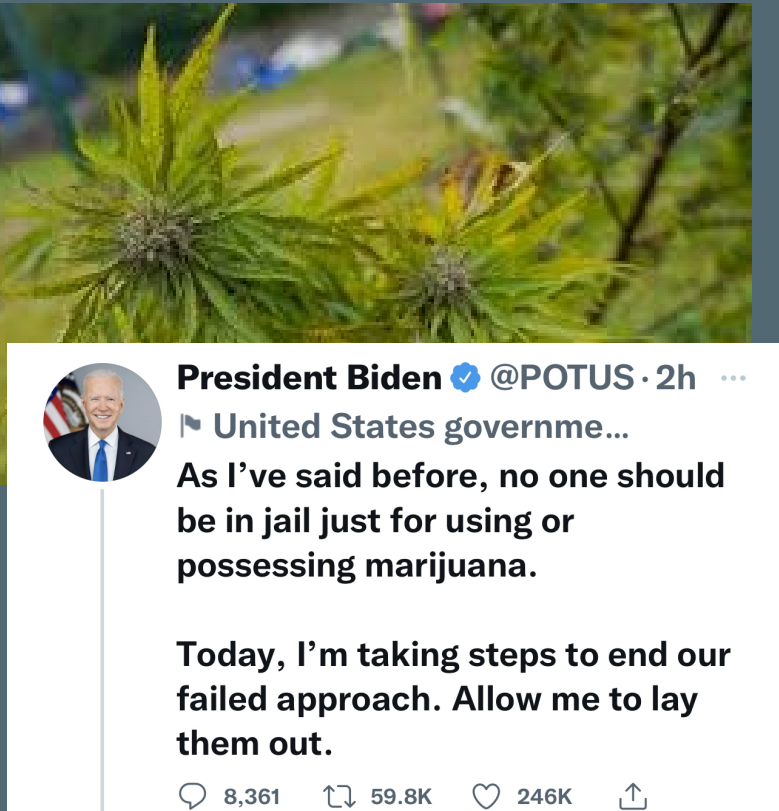
- **LEGAL ENVIRONMENT:**

- Re-consideration of Marijuana's Schedule I status (Biden, 10/6/2022; Becerra, 4/20/2023)
- Medical Marijuana and Cannabidiol Research Expansion Act signed into law (Biden, 12/2/2022)
- State legalization efforts continue to evolve (38 States and DC with broad medical laws; 23 States and DC allowing adult use)

- **EMERGING RESEARCH/ RESEARCH STRATEGIES:**

- Social media surveys
- Large longitudinal studies
- Mobile Laboratory settings to measure subjective and biological outcomes
- Patient Registries

- **DISSEMINATION OPPORTUNITIES:** Consumers/Cannabis Regulators/Healthcare Community/Policymakers (including State legislatures)/Prevention/Treatment Providers



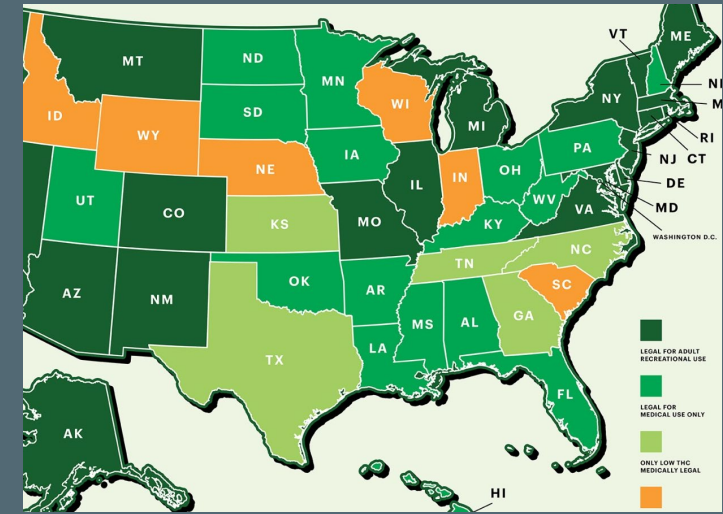
WHAT CAN NASEM CONTRIBUTE: SURVEY PRODUCT LANDSCAPE

- Describe the variety of cannabis products available in the legal state markets: constituents; potency (percentage delta-9 THC), product type (including route of administration); hemp-derived—including delta-8 and others
- How are products packaged and labeled (flower, vapes, edibles, tinctures); what are serving sizes; what kinds of quality controls (testing requirements) are in place? Who is doing the oversight?
- How are products priced and taxed; and how does this compare and compete with the illicit markets?



WHAT CAN NASEM CONTRIBUTE: EVALUATE STATE REGULATIONS—IMPACT AND EVOLUTION

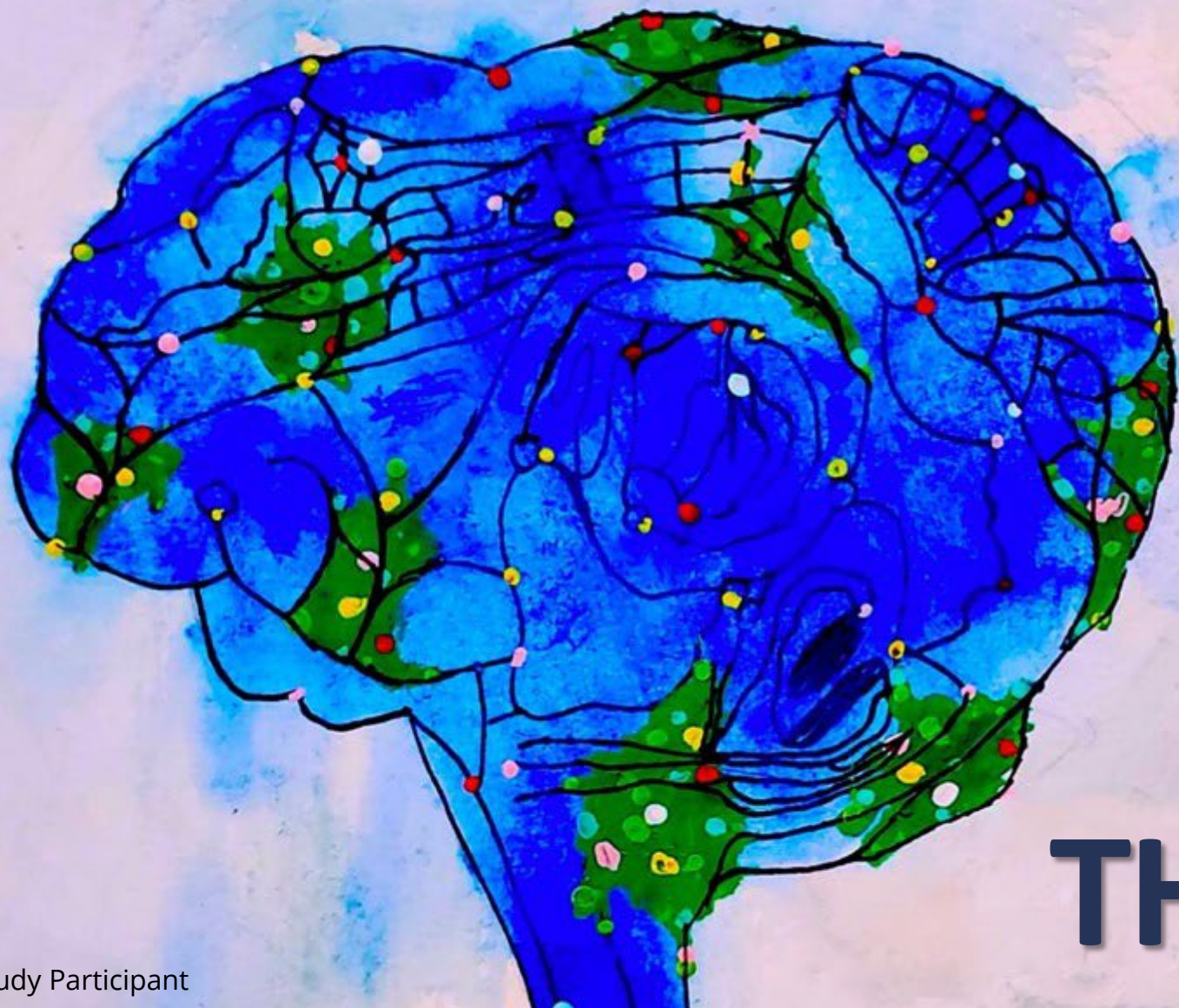
- What are the differences in regulatory models employed by the States? How do they affect public health and safety? How are these evolving over time to minimize harms/optimize benefits?
- Have lessons learned from the tobacco and alcohol industries influenced cannabis regulation, the cannabis industry, and cannabis markets? How are the States with legal cannabis markets influencing or countering the illicit markets?
- How are different States tackling criminal justice issues? Are these approaches attenuating the negative impact on populations most adversely affected by cannabis' status as an illegal substance?
- How are states approaching social equity in the cannabis industry? What, if any, business models or community investments are working or showing promise?



WHAT CAN NASEM CONTRIBUTE: SURVEILLANCE AND DISSEMINATION

- Are the current surveillance and pharmacovigilance systems sufficient to measure the full range of public health and societal outcomes: both adverse and beneficial? How do we solicit accurate information about what consumers are using, why they are using, and how much?
- How will the NASEM report and dissemination activities address key public health and education concerns?
 - For cannabis used medically: how do we ensure proper training of healthcare professionals and patients, given insufficient data and oversight and mostly non-FDA-approved products?
 - For all cannabis consumers:
 - How do we improve consumer knowledge about the products they use and associated risks?
 - How do we provide nuanced and credible messages to different consumers with different risks (e.g., pregnant people, youth, individuals with a family hx. of mental illness)?





THANK YOU!