

# Maternal Cannabis Use in Pregnancy

Mishka Terplan MD MPH FACOG DFASAM

Associate Medical Director, Friends Research Institute

Adjunct Faculty, UCSF, National Clinical Consultation Center

Deputy Chief Clinical Officer, Department Behavioral Health, DC

# Learning Objectives

- To review the epidemiology of cannabis use in pregnancy with particular attention to medical cannabis and cannabis use disorder
- To explore the relationship between cannabis legalization and population health obstetric outcomes
- To understand what a point of care urine drug test captures for cannabis

# Cannabis, Gender and Pregnancy

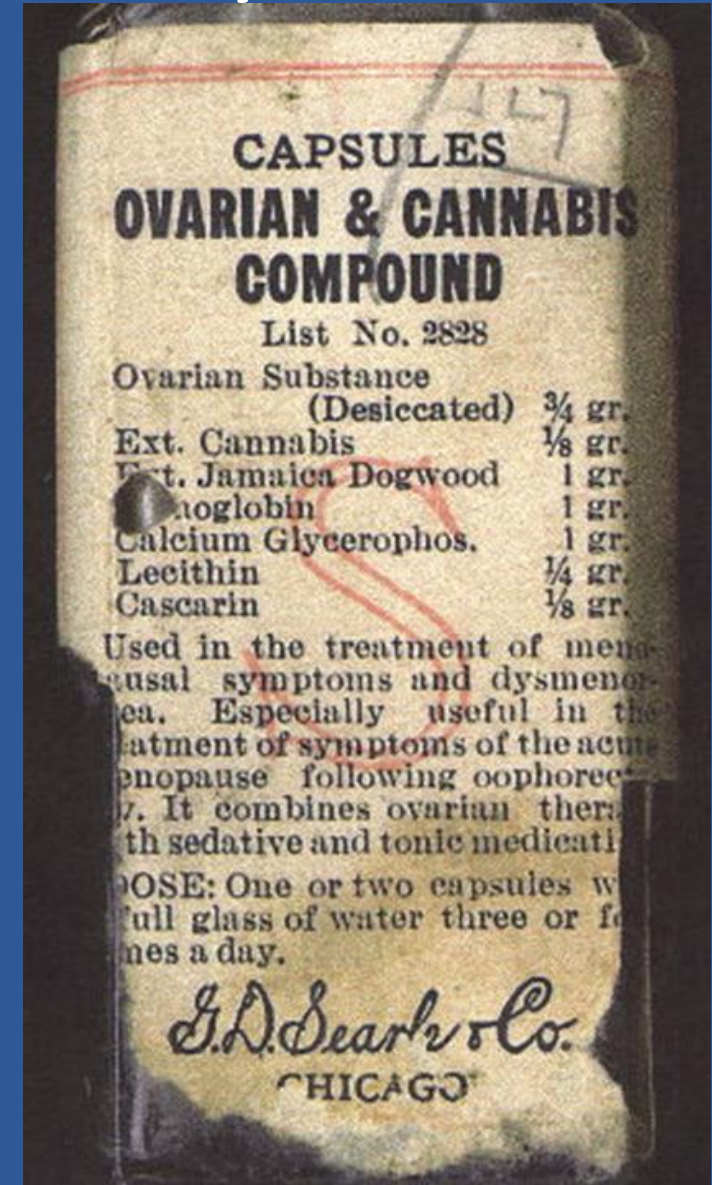
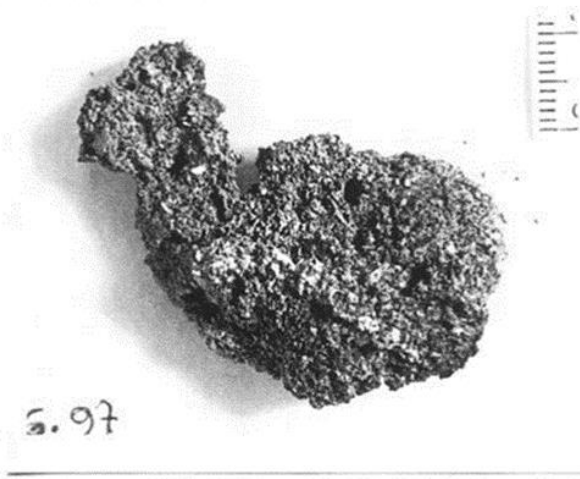
## Cannabis Treatments in Obstetrics and Gynecology: A Historical Review

Ethan Russo

**SUMMARY.** Cannabis has an ancient tradition of usage as a medicine in obstetrics and gynecology. This study presents that history in the literature to the present era, compares it to current ethnobotanical, clinical and epidemiological reports, and examines it in light of modern developments in cannabinoid research.

The author believes that cannabis extracts may represent an efficacious and safe alternative for treatment of a wide range of conditions in women including dysmenorrhea, dysuria, hyperemesis gravidarum, and menopausal symptoms. [Article copies available for a fee from The Haworth Document Delivery Service: 1-800-HAWORTH. E-mail address: <getinfo@haworthpressinc.com> Website: <<http://www.HaworthPress.com>> © 2002 by The Haworth Press, Inc. All rights reserved.]

FIGURE 1. Carbonized residue from 4th century Judea, containing phytocannabinoid elements, as a presumed obstetrical aid. (Permission Courtesy of the Israel Antiquities Authority.)





# The Era of Cannabis Extremism

Opinion

## VIEWPOINT

Nora D. Volkow, MD  
National Institute on  
Drug Abuse, National  
Institutes of Health,  
Bethesda, Maryland.

Wilson M. Compton,  
MD, MPE  
National Institute on  
Drug Abuse, National  
Institutes of Health,  
Bethesda, Maryland.

Eric M. Wargo, PhD  
National Institute on  
Drug Abuse, National  
Institutes of Health,  
Bethesda, Maryland.

Related article  
page 207

## The Risks of Marijuana Use During Pregnancy

Currently, 29 states and Washington, DC, have passed laws to legalize medical marijuana. Although evidence for the effectiveness of marijuana or its extracts for most medical indications is limited and in many cases completely lacking, there are a handful of exceptions. For example, there is increasing evidence for the efficacy of marijuana in treating some forms of pain and spasticity, and 2 cannabinoid medications (dronabinol and nabilone) are approved by the US Food and Drug Administration for alleviating nausea induced by cancer chemotherapy. A systematic review and meta-analysis by Whiting et al<sup>1</sup> found evidence, although of low quality, for the effectiveness of cannabinoid drugs in the latter indication. The anti-nausea effects of tetrahydrocannabinol (THC), the main psychoactive ingredient in marijuana, are mediated by the interactions of THC with type 1 cannabinoid (CB1) receptors in the dorsal vagal complex. Cannabidiol, another cannabinoid in marijuana, exerts antiemetic properties through other mechanisms. Nausea is a medically approved indication for marijuana in all states where medical use of this drug has been legalized.

However, some sources on the internet are touting marijuana as a solution for the nausea that commonly accompanies pregnancy, including the severe condition hyperemesis gravidarum. Although research on the prevalence of marijuana use by pregnant women is

Pregnant women and those considering becoming pregnant should be advised to avoid using marijuana or other cannabinoids either recreationally or to treat their nausea.

limited, some data suggest that this population is turn... (The eighth day of mouse gestation is roughly equivalent to the eighth day of human gestation.)

women who used marijuana during pregnancy were more likely to be anemic, and their infants were more likely to have lower birth weight and to require placement in neonatal intensive care than infants of mothers who did not use marijuana.<sup>4</sup> Studies have also shown links between prenatal marijuana exposure and impaired higher-order executive functions such as impulse control, visual memory, and attention during the school years.<sup>5</sup>

The potential for marijuana to interfere with neurodevelopment has substantial theoretical justification. The endocannabinoid system is present from the beginning of central nervous system development, around day 16 of human gestation, and is increasingly thought to play a significant role in the proper formation of neural circuitry early in brain development, including the genesis and migration of neurons, the outgrowth of their axons and dendrites, and axonal pathfinding. Substances that interfere with this system could affect fetal brain growth and structural and functional neurodevelopment. An ongoing prospective study, for example, found an association between prenatal cannabis exposure and fetal growth restriction during pregnancy and increased frontal cortical thickness among school-aged children.<sup>6</sup>

Some synthetic cannabinoids, such as those found in "K2/Spice" products, interact with cannabinoid receptors even more strongly than THC and have been shown to be teratogenic in animals. A recent study in mice found brain abnormalities, eye deformations, and facial disfigurement (cleft palate) in mouse fetuses exposed at day 8 of gestation to a potent full cannabinoid agonist, CP-55,940.<sup>7</sup> The percentage of mouse fetuses with birth defects increased in a linear fashion with dose.

(The eighth day of mouse gestation is roughly equivalent to the eighth day of human gestation.)

## U.S. Surgeon General's Advisory: Marijuana Use and the Developing Brain

Background • Use in Pregnancy • Use in Adolescence • Info for Parents • Info for Health Professionals

I, Surgeon General VADM Jerome Adams, am emphasizing the importance of protecting our Nation from the health risks of marijuana use in adolescence and during pregnancy. Recent increases in access to marijuana and in its potency, along with misperceptions of safety of marijuana endanger our most precious resource, our nation's youth.

KNOW THE RISKS. TAKE ACTION. PROTECT OUR FUTURE.



FORIA

About Find a Store Press FAQ Testimonials Contact Buy Login

ORDER ONLINE



FORIA

Foria Relief Suppositories  
(aka the "WEED TAMPON")

\$ 44.00

JOIN OUR COLLECTIVE TO PURCHASE

Twitter Pinterest Like 1.9K

★★★★★ 24 reviews

View full-size image

Email us about this product

Cannabis.net  
There once was a tree...

Home / Map Find Blog

You can now order CBD ONLINE!  
Check availability in your area now!

SHOP NOW!

Home Page > Blog > Medical > 5 Facts About Cannabis And Women's Health



CAN  
CANNABIS  
REALLY  
IMPROVE  
WOMEN'S  
HEALTH?



women's health cannabis

## 5 Facts About Cannabis And Women's Health

Can Cannabis Improve Women's Health?

Posted by DanaSmith on Wednesday Feb 7, 2018



## False Dichotomy:

Cannabis is Harmful Vs. Cannabis is Healthy

Cannabis Prohibition Vs. Cannabis Promotion

Please click the

### What is Marijuana?

When the movie "The 400 Blows" was released, it was focused on addiction and about the effects of drugs. Dr. Dager, M.D., an approximately 100-year-old man, was a National Institute of Health researcher.

### Why should I participate?

You will have access to the best medical care available. You will have access to the best medical care available. You will have access to the best medical care available.

### What should I expect?

If you participate in this study, you will be asked to provide as much information as possible about your health and lifestyle.

After you give your consent, you will be asked to complete a series of questionnaires and undergo a brain scan. You will be asked to complete a series of questionnaires and undergo a brain scan. You will be asked to complete a series of questionnaires and undergo a brain scan.

### Who can participate?

Participants must be 21-40 years of age, and must either consume marijuana frequently or not at all. There are additional eligibility requirements that will be assessed in a phone screen. If you would like to be a part of this study, please reach out to us using the button or contact information at the top of this page. If you aren't eligible or don't want to participate, you can still help by spreading the word about our study in your communities!

[Additional MRI Information](#)



Tweet



symptoms in kids? Asking for a friend from Tuskegee.

5:06 PM · 14 May 19 · [Twitter for iPhone](#)

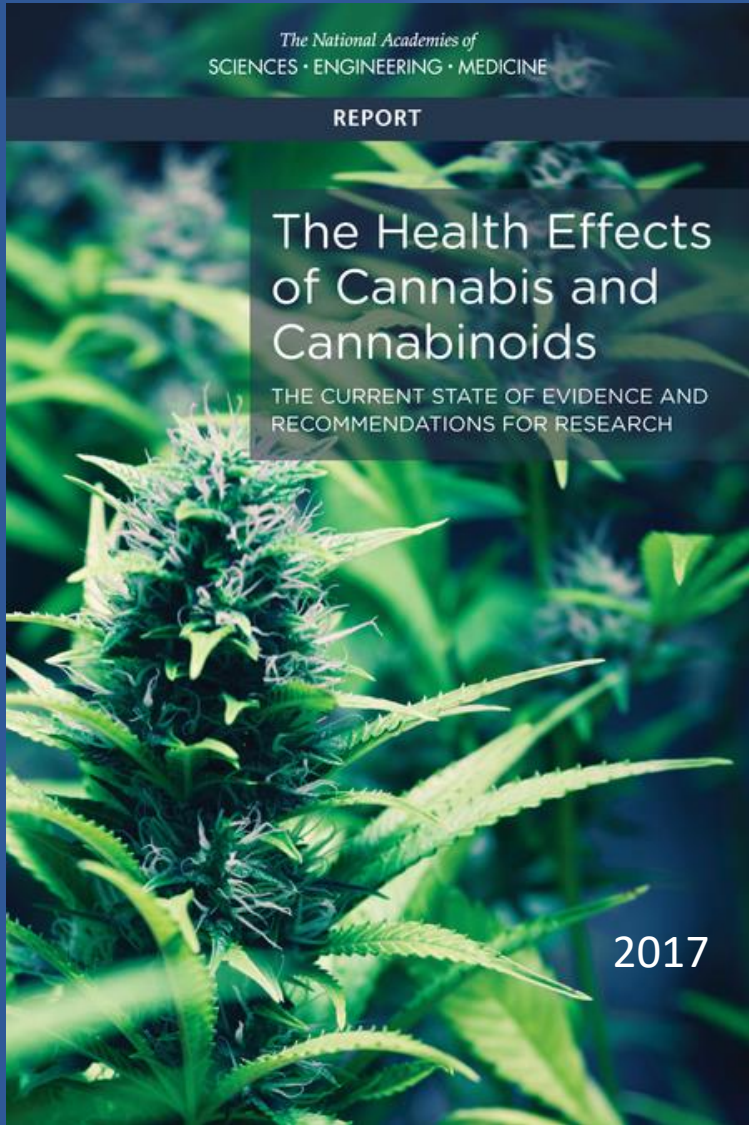
# We Need to Differentiate Use from Medical AND Any Use from Use Disorder

| NSDUH 2013-2018        | Not Pregnant | Pregnant |
|------------------------|--------------|----------|
| Past Month Cannabis    | 11.2%        | 4.7%     |
| Past Year Medical Only | 7.5%         | 14.1%    |
| Cannabis Use Disorder  | 13.0%        | 18.9%    |
| Treatment Receipt      | 9.1%         | 9.0%     |

- Pregnant people less likely to have recent use
- Pregnant people more likely to report medical use only
- Among those with recent use, pregnant people more likely to meet criteria for cannabis use disorder
- But no more likely to receive treatment

The Bulk of Current Research is on Exposure and Consequence, Not on How to Support People in Quitting/Cutting Back OR Investigating Potential Benefits of Cannabinoids OR (in the very least) Comparing Medical Cannabis to Prescribed Medications

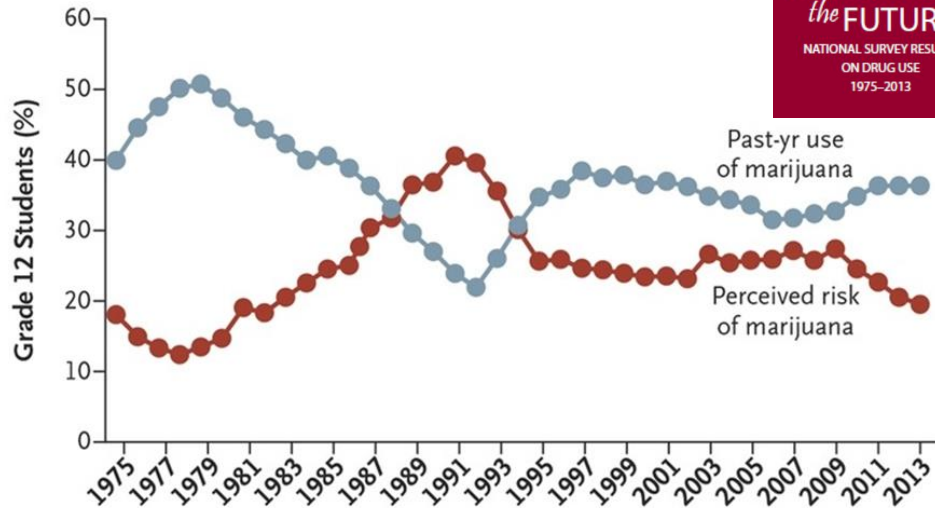




- Endorsed statistical linkage between smoking cannabis and low birth weight
- Evidence regarding other outcomes unclear
- Literature limited by
  - Lack of standardized questions about frequency and duration of use
  - Confounding from other substances, particularly tobacco and alcohol

# Will Liberalization Increase Cannabis Use?

A Correlation between Perceived Risk and Use



MONITORING  
the FUTURE  
NATIONAL SURVEY RESULTS  
ON DRUG USE  
1975-2013

## ORIGINAL RESEARCH

### Pregnant Women's Current and Intended Cannabis Use in Relation to Their Views Toward Legalization and Knowledge of Potential Harm

Katrina Mark, MD, Jan Gryczynski, PhD, Ellen Axenfeld, BS, Robert P. Schwartz, MD, and Mishka Terplan, MD, MPH

TABLE 2. Participant Views Toward Marijuana Legalization

|  | Overall<br>N (%) | Ever Used<br>Cannabis N (%) | Never Used<br>Cannabis N (%) | P      | Cannabis<br>Quitters N (%) | Cannabis<br>Continuers N (%) | P      |
|--|------------------|-----------------------------|------------------------------|--------|----------------------------|------------------------------|--------|
| Should be legal                            | 85 (31)          | 67 (45)                     | 18 (15)                      | <0.001 | 29 (48)                    | 21 (64)                      | 0.010  |
| Should be legal w/Rx                       | 76 (28)          | 41 (28)                     | 35 (29)                      |        | 12 (20)                    | 10 (30)                      |        |
| Should remain illegal                      | 110 (41)         | 41 (28)                     | 69 (57)                      |        | 20 (33)                    | 2 (6)                        |        |
| Would smoke more if legal and not pregnant |                  |                             |                              | 0.002  |                            |                              | <0.001 |
| Yes  | 75 (46)          | 75 (49)                     | 0 (0)                        |        | 35 (54)                    | 29 (91)                      |        |
| No   | 87 (54)          | 77 (51)                     | 10 (100)                     |        | 30 (46)                    | 3 (9)                        |        |
| Would smoke more if legal and pregnant     |                  |                             |                              | <0.001 |                            |                              | <0.001 |
| Yes  | 26 (10)          | 26 (17)                     | 0 (0)                        |        | 4 (6)                      | 21 (62)                      |        |
| No   | 247 (90)         | 126 (83)                    | 212 (100)                    |        | 59 (94)                    | 13 (38)                      |        |



# Cannabis Legalization: A Natural Experiment

Journal of Perinatology (2019) 39:1165–1174  
<https://doi.org/10.1038/s41372-019-0416-8>

## ARTICLE



### The association between the legalization of recreational marijuana and both small for gestational age births and NICU admissions in Colorado

Justin Lockwood<sup>1</sup> · Angela Moss<sup>2</sup> · Alyssa Beck<sup>3</sup> · Isaiah Francis<sup>3</sup> · Emma Schmoll<sup>3</sup> · Erica Wymore<sup>4</sup>

Received: 5 April 2019 / Revised: 25 April 2019 / Accepted: 10 May 2019 / Published online: 3 July 2019  
© The Author(s), under exclusive licence to Springer Nature America, Inc. 2019

#### Abstract

**Objective** To determine the association between recreational marijuana legalization and both small for gestational age (SGA) births and neonatal ICU (NICU) admissions in Colorado.

**Study Design** Using interrupted time series analysis, we compared the incidence of SGA births and NICU admissions pre-/post-recreational marijuana legalization. Secondary analysis adjusted for marijuana outlet density (MOD) in maternal county of residence.

**Results** We analyzed 269,922 mother–infant dyads. SGA birth risk dropped 7% immediately post-legalization ( $p = 0.04$ ), but there was no slope difference between cohorts. SGA birth risk for high MOD dyads was 1.4x that of dyads with no outlets ( $p < 0.001$ ) and 1.2x that of low MOD dyads ( $p = 0.002$ ). There was no immediate effect on NICU admission risk, but the slope increased 1%/month post-legalization ( $p < 0.001$ ) including a 1%/month increase for low MOD and 3%/month

### Maternal Marijuana Exposure and Birth Weight: An Observational Study Surrounding Recreational Marijuana Legalization

Heather L. Straub, MD<sup>1</sup> · Jin Mou, MD, MSc, MPH, PhD<sup>2</sup> · Kathryn J. Drennan, MD<sup>1,3</sup>  
Bethann M. Pflugeisen, MS, MEd<sup>2</sup>

<sup>1</sup>Division of Maternal-Fetal Medicine, University of Colorado, Aurora, Colorado

<sup>2</sup>MultiCare Institute for Research and Innovation, Tacoma, Washington

<sup>3</sup>Division of Maternal-Fetal Medicine, University of Rochester, Rochester, New York

Address for correspondence: Heather L. Straub, MD, University of Colorado Maternal-Fetal Medicine, Mail Stop B198-5, Academic Office 1, 12631 East 17th Avenue, Aurora, CO 80045 (e-mail: HeatherStraubMD@gmail.com).

Am J Perinatol

#### Abstract

**Objective** To study the relationship between prenatal marijuana and infant birth weight using natural cohorts established before, during and after the 20-month lapse between legalization and legal recreational sales in Washington State.

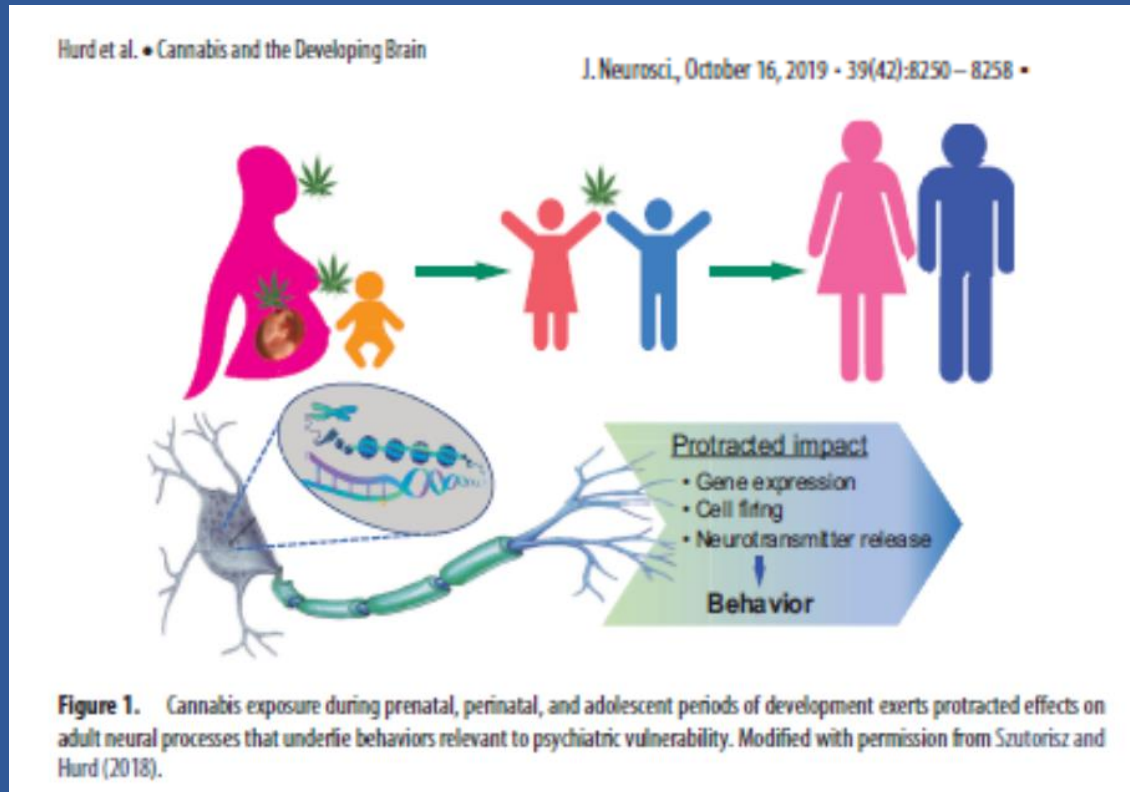
**Study Design** Over 5 years, 5,343 pregnant women with documented urine drug screen (UDS) results delivered at Tacoma General Hospital or Good Samaritan Hospital. Maternal medical data were extracted for three delivery cohorts established based on before (T1), during (T2), and after legalization (T3) of recreational marijuana and legalized availability. Univariate and multivariate models were created to study

There has been neither increase in NICU admission nor decrease in birth weight in CO and WA following legalization

► marijuana legalization

However, recreational marijuana legalization and availability did not have direct impact on newborns' risk of LBW or SGA.

# The Brain and Development



- There is linear development of the brain from fetus through childhood and into young adulthood
- Hence time of exposure in utero <<< potential time of exposure as child
- Development is about more than exposure

# Cannabis and Urine Drug Testing: Misinterpretation

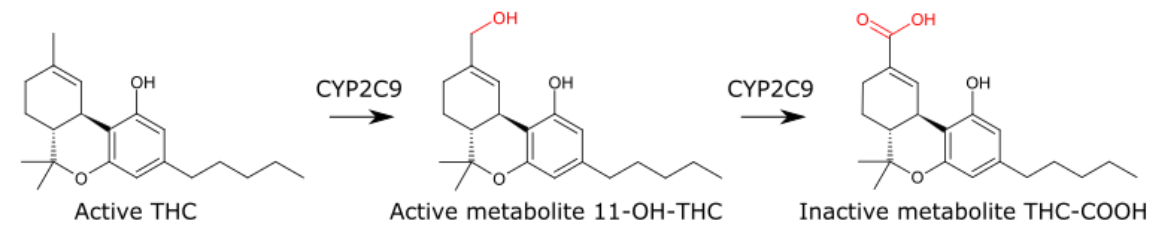
## Point of Care Drug Test Result

“THC”



“THC’ is NOT THC

It is THC-COOH – not psychoactive, highly lipophilic, remains in biologic matrix for up to 100 days following last cannabis use



“THC”



# Conclusions

- We were all socialized in racialized and punitive drug policies
- Drugs (and drug hysteria) are a diversion from structural inequities
- Let's take a step back from cannabis extremism and focus instead on supporting birthing people, their families, and their communities

Thank You

Mishka Terplan

@do\_less\_harm

mterplan@friendsresearch.org