

# Welcome

Please stand by. We will begin Shortly.

***“Big Marijuana – Lessons from Big Tobacco”***

**Thursday, February 19, 2015**

**11:00 am PST/ 2:00 pm ET**

(90 minutes)



SMOKING CESSATION  
LEADERSHIP CENTER

# Disclosure

Dr. Kimber Richter, Dr. Sharon Levy, Catherine Saucedo, and Dr. Steven Schroeder have disclosed no financial interest/arrangement or affiliation with any commercial companies who have provided products or services relating to their presentation or commercial support for this continuing medical education activity.

# Moderator



## Catherine Saucedo

- Deputy Director,  
Smoking Cessation Leadership  
Center, University of California,  
San Francisco
- **[catherine.saucedo@ucsf.edu](mailto:catherine.saucedo@ucsf.edu)**

# Thank you to our funders



Robert Wood Johnson Foundation



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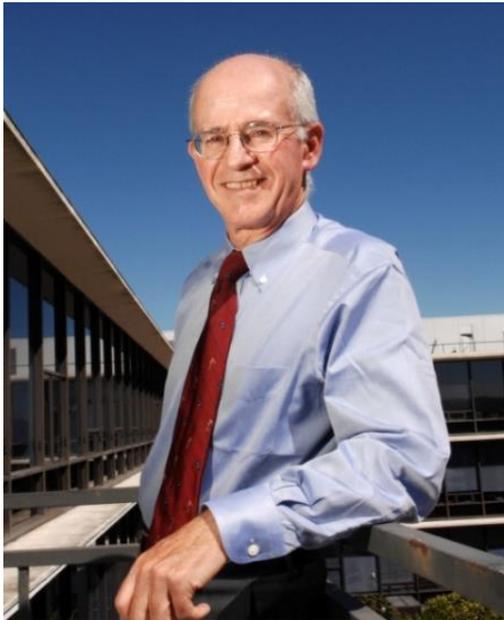


NATIONAL BEHAVIORAL  
**HEALTH NETWORK**  
FOR TOBACCO & CANCER CONTROL

# Housekeeping

- All participants will be in **listen only mode**.
- Please **make sure your speakers are on** and adjust the volume accordingly.
- If you do not have speakers, please request the dial-in via the chat box.
- **This webinar is being recorded** and will be available on SCLC's website, along with the slides.
- **Use the chat box to send questions** at any time for the presenters.

# Introduction by Dr. Schroeder



## **Steven A. Schroeder, MD**

- Director, Smoking Cessation Leadership Center
- Distinguished Professor of Health and Health Care, Department of Medicine, UCSF

# Today's Speaker



**Kimber P. Richter, PhD, MPH**  
Director of UKanQuit and Professor in  
the Department of Preventive Medicine  
and Public Health at the University of  
Kansas Medical Center

# Today's Speaker



## **Sharon J. Levy, MD, MPH**

Assistant Professor of Pediatrics at Harvard Medical School and the Director of the Adolescent Substance Abuse Program in the Division of Developmental Medicine at Boston Children's Hospital

# Big Marijuana – Lessons From Big Tobacco

Kimber Richter, PhD, MPH

Sharon Levy, MD, MPH



## Perspective

### Big Marijuana — Lessons from Big Tobacco

Kimber P. Richter, Ph.D., M.P.H., and Sharon Levy, M.D., M.P.H.

The United States is divided over the legalization of marijuana. Arguments in favor include protection of individual rights, elimination of criminal sentencing for minor offenses, collection of tax revenue,

and elimination of the black market. Counterarguments include the possible escalation of use, adverse mental and physical health effects, and potential medical and social costs.

Some steps have already been taken to reduce harsh and racially biased sentencing. There is growing support in Congress to eliminate federal mandatory minimums for drug offenses, and 19 states have either decriminalized or eliminated jail time for possession of small amounts of marijuana. Furthermore, 21 states and the District of Columbia have legalized the medical use of marijuana.

Washington State and Colorado

went further, authorizing the retail sale of marijuana and opening the door to a legal marijuana industry. Given the lessons learned from the 20th-century rise of another legal addictive substance, tobacco, we believe that such an industry could transform marijuana and its effects on public health. Like tobacco, marijuana harms health and is addictive; unlike alcohol, both tobacco and marijuana came of age after the Industrial Revolution. And although the United States has, since tobacco's rise, adopted regulatory structures designed to protect consumers, they do not apply to marijuana, in part because marijuana use

and sales remain illegal under federal law. Colorado and Washington are developing regulatory infrastructures to fill this gap, but the goals and potential effectiveness of their proposed regulations are unclear. No evidence exists regarding which regulations might minimize population harm from marijuana. The marijuana industry's trajectory could therefore repeat tobacco's.

In its current form, smoked marijuana is less deadly than tobacco. Although case-control studies have found increased mortality associated with heavy marijuana use — attributable to vehicle crashes from driving while high, suicide, respiratory cancers, and brain cancers<sup>1</sup> — the nonfatal adverse effects of marijuana use are much more prevalent. These include respiratory damage, cardiovascular disease, impaired cognitive development,

# Legalizing Marijuana

## Pros

- Individual rights
- Eliminating harsh sentencing
- Tax revenues
- Eliminate black markets

## Cons

- Health/mental health harms
- Developmental harms
- Misguided treatment
- Social costs

# Marijuana is a Moving Target

In 1970, 1 joint =.5 g weight=5 mg

- 10 joints (heavy daily use) 50 mg

	THC %
1970's	1.08
1980's	2.83
1990's	3.76
2000's	5.73



# Learning Lessons From Tobacco



**20,679\*** Physicians  
say "**LUCKIES**  
are *less irritating*"

**"It's toasted"**  
Your Throat Protection against irritation against cough

\*The figures quoted have been checked and verified in the following: 1. Telephone and personal interviews with 20,679 physicians in the United States, Canada and Mexico.



# Spit to Cigarettes

- 1880s <1% of tobacco consumed as cigarettes
- New mild strains developed
- Flue curing made tobacco inhalable
- Bonsack Machine could produce 70k cigs/day
- American Tobacco Co. created monopoly
- Tobacco tax financed Civil & Spanish-American wars
- 1900 - 1 out of 3 tobacco users smoked cigs

# Cigarettes for All

- WWI spread use of cigarettes
- 1922-cigarette smokers outnumbered other tobacco users
- 1949 – 45% of Americans smoked
- 1950s introduced asbestos-filtered cigarettes
- 50s-60s – introduced free-basing with ammonia to promote rapid absorption
- 1970s Virginia Slims/Silvas marketed to women

# Policy Efforts

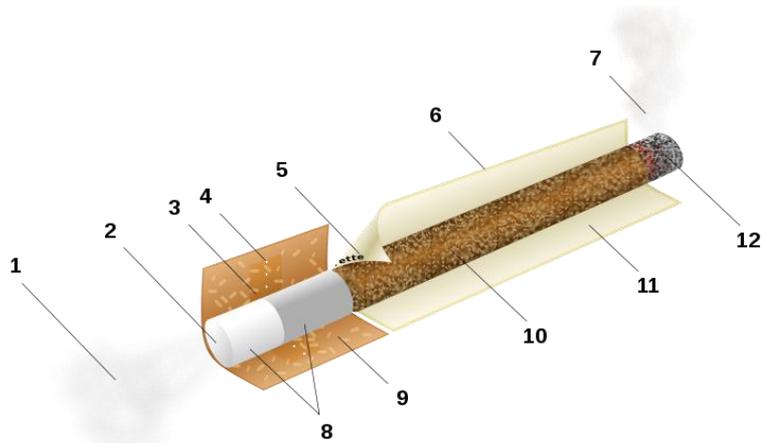
- 1900 3 states banned cigarette sales due to Lucy Gaston campaign against youth tobacco use
- 1965 Labeling act
- 1967 FCC ruling
- 1970 Hearings on advertising
- 1990s Liability claims
- 1998 Master settlement agreement
- 2009 US FDA has regulatory oversight over tobacco products

# Tobacco Industry Lobbied Against Meaningful Regulation

- 1906 Food and Drug Act
- 1966 Fair Labeling and Packaging Act
- 1970 Controlled Substance Act
- 1972 Consumer Product Safety Act
- 1976 Toxic Substances Act

Kluger, Richard. (1996). *Ashes to Ashes*. New York: Knopf

# Product, Marketing, Lobbying





# How's That Working for Us?

*“The Public Health Service feels the weight of the evidence is increasingly pointing in one direction: that excessive smoking is one of the causative factors in lung cancer.”*

*Surgeon General Leroy E. Burney July 12, 1957*



## The benefits of electronic cigarettes

- ✓ **NO** cancer causing chemicals
- ✓ **Healthy alternative** to the real thing
- ✓ Smoke in smoke free areas
- ✓ **Cheaper alternative**
- ✓ No cancer causing tobacco
- ✓ No fire therefore **not a fire risk**
- ✓ **No passive smoke** to those around
- ✓ No bitter aftertaste

[Read More...](#)

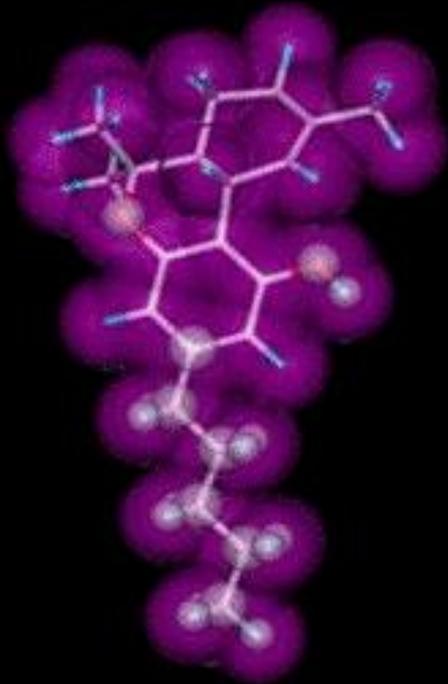
Marijuana

# Cannabinoids in Marijuana

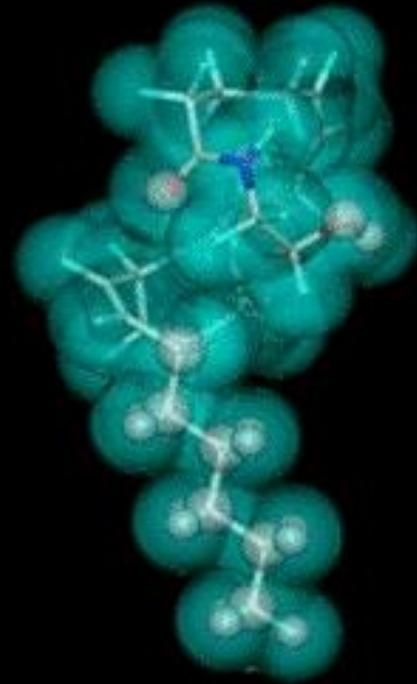
- delta-9-tetrahydrocannabinol (THC)
- delta-8-tetrahydrocannabinol
- cannabidiol
- cannabinol
- cannabichromene
- cannabigerol
- More than 100 in total

Source: Mechoulam R, Hanus L, The cannabinoid system from the point of view of a chemist. In *Marijuana and Madness*. ed. Castle, Murray. Cambridge University Press, 2004

Delta-9-  
tetrahydrocannabinol

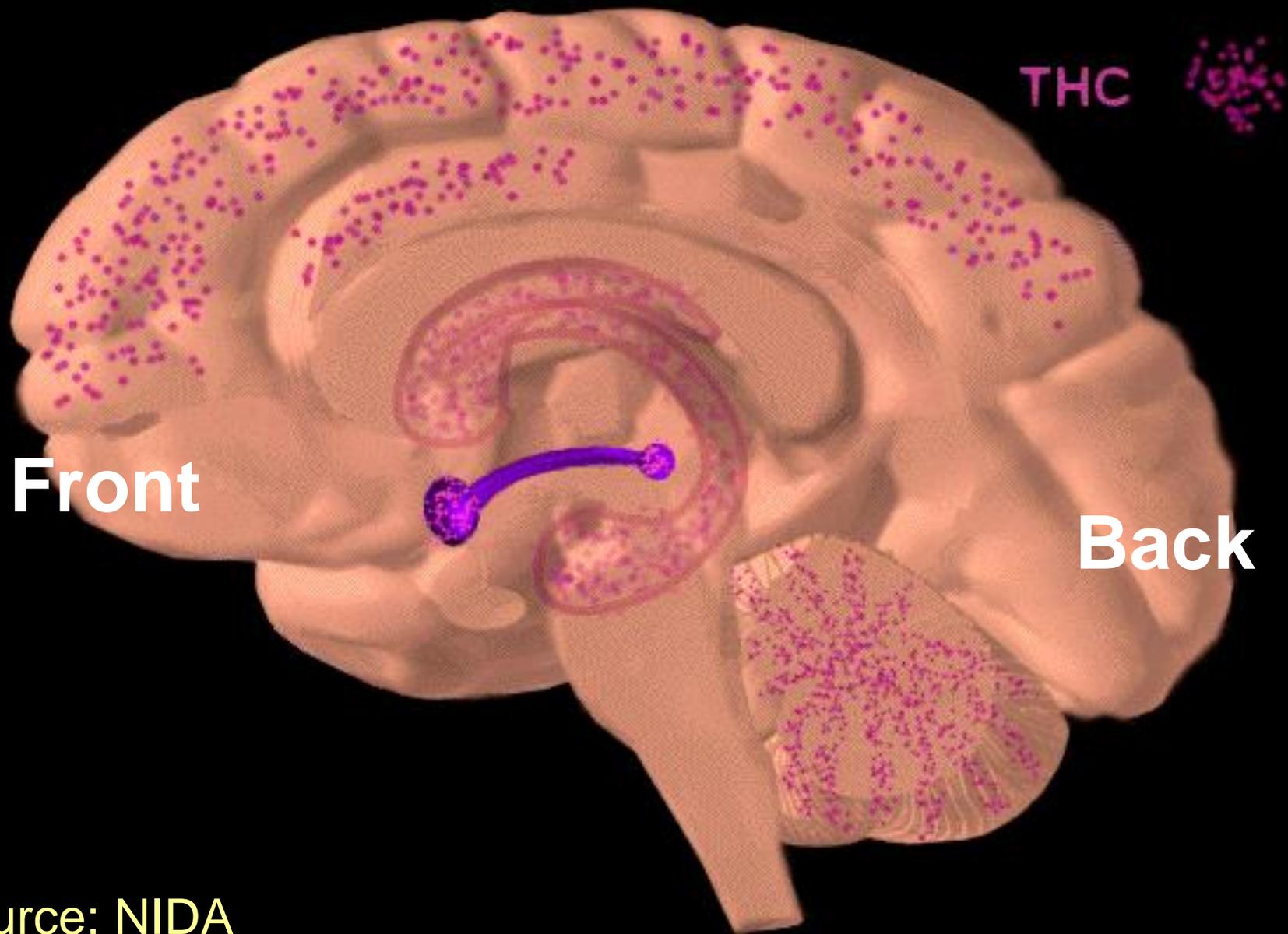


Anandamide



# THC vs. Anandamide

- Anandamide blocks the release of a number of neurotransmitters thereby reducing neuronal activity.
- THC has a **MUCH STRONGER, LONGER** effect than anandamide on brain cells.
- THC **interferes** with anandamide function hampering the innate homeostatic system in chronic marijuana users



THC

Front

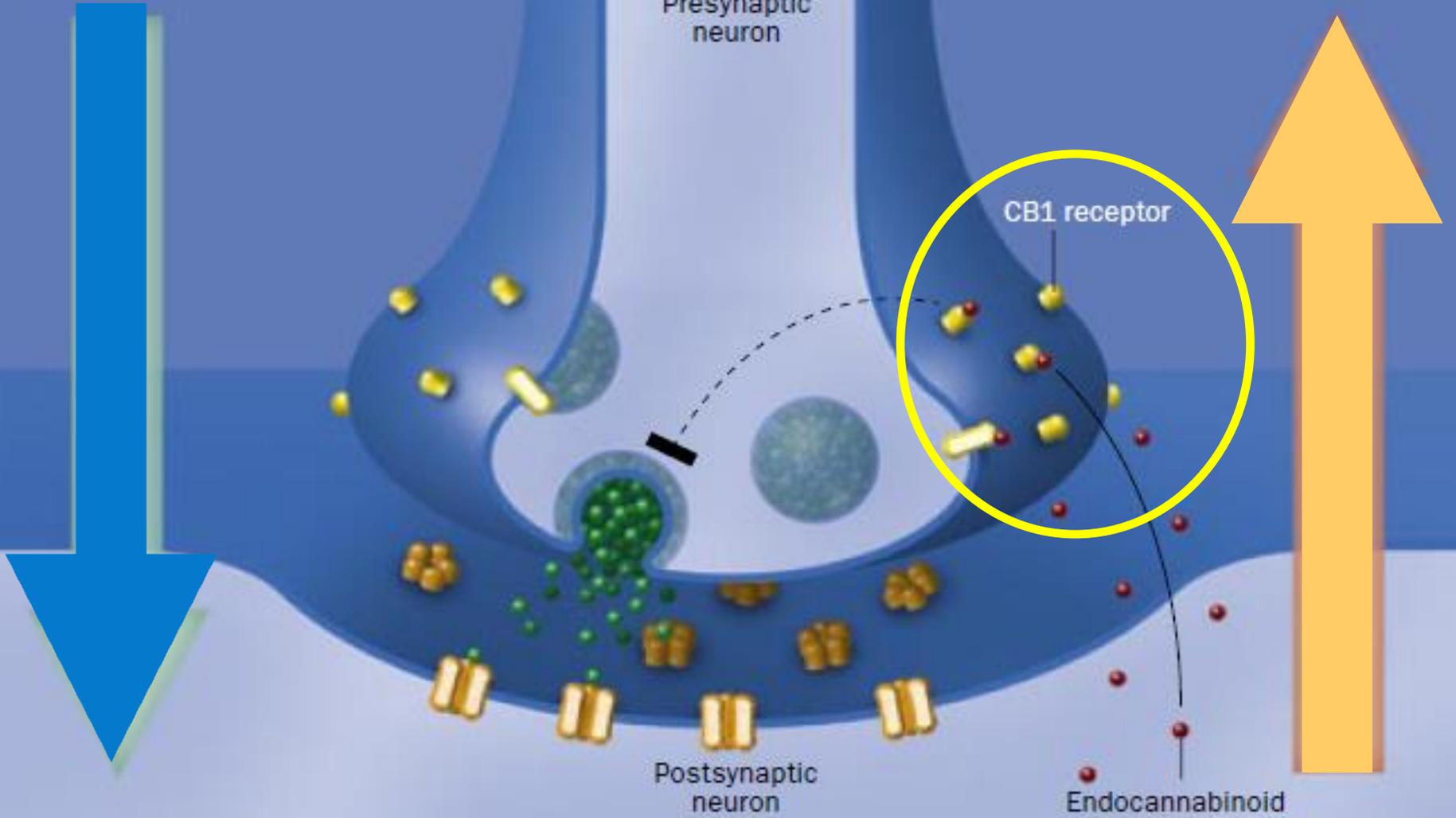
Back

Source: NIDA

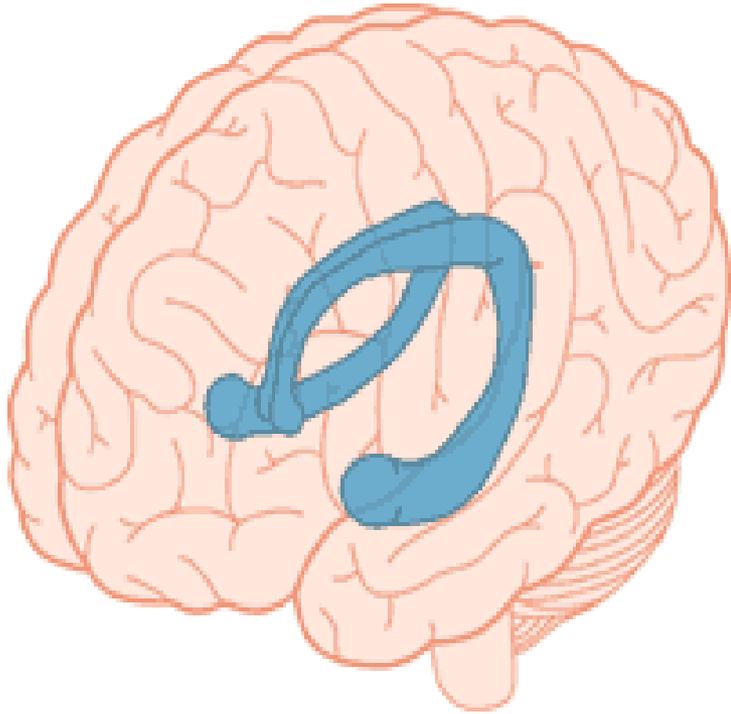
# The neuron's "volume control": dials down neuron activity when too strong

Signal direction for neurotransmitters

Signal direction for endocannabinoids







- THC reduces hippocampal neuron activation
- With chronic THC exposure, neurons **are gradually lost** due to continual suppression
- THC users have smaller hippocampuses, and poorer memory

Source: Iversen L. How cannabis works in the brain. In *Marijuana and Madness*. Ed. Castle & Murray, 2004. Oxford University Press.

# Persistent cannabis users show neuropsychological decline from childhood to midlife

Madeline H. Meier<sup>a,b,1</sup>, Avshalom Caspi<sup>a,b,c,d,e</sup>, Antony Ambler<sup>e,f</sup>, HonaLee Harrington<sup>b,c,d</sup>, Renate Houts<sup>b,c,d</sup>, Richard S. E. Keefe<sup>d</sup>, Kay McDonald<sup>f</sup>, Aimee Ward<sup>f</sup>, Richie Poulton<sup>f</sup>, and Terrie E. Moffitt<sup>a,b,c,d,e</sup>

<sup>a</sup>Duke Transdisciplinary Prevention Research Center, Center for Child and Family Policy, <sup>b</sup>Department of Psychology and Neuroscience, and <sup>c</sup>Institute for Genome Sciences and Policy, Duke University, Durham, NC 27708; <sup>d</sup>Department of Psychiatry and Behavioral Sciences, Duke University Medical Center, Durham, NC 27710; <sup>e</sup>Social, Genetic, and Developmental Psychiatry Centre, Institute of Psychiatry, King's College London, London SE5 8AF, United Kingdom; and <sup>f</sup>Dunedin Multidisciplinary Health and Development Research Unit, Department of Preventive and Social Medicine, School of Medicine, University of Otago, Dunedin 9054, New Zealand

Source: Meier et al. Proceedings of the National Academy of Sciences. 2012. Available at: [www.pnas.org/cgi/doi/10.1073/pnas.1206820109](http://www.pnas.org/cgi/doi/10.1073/pnas.1206820109)

# The Dunedin Study

## N=1,037



13 yrs  
(Pre-initiation)

18 yrs

21 yrs

32 yrs

38 yrs

1

2

3

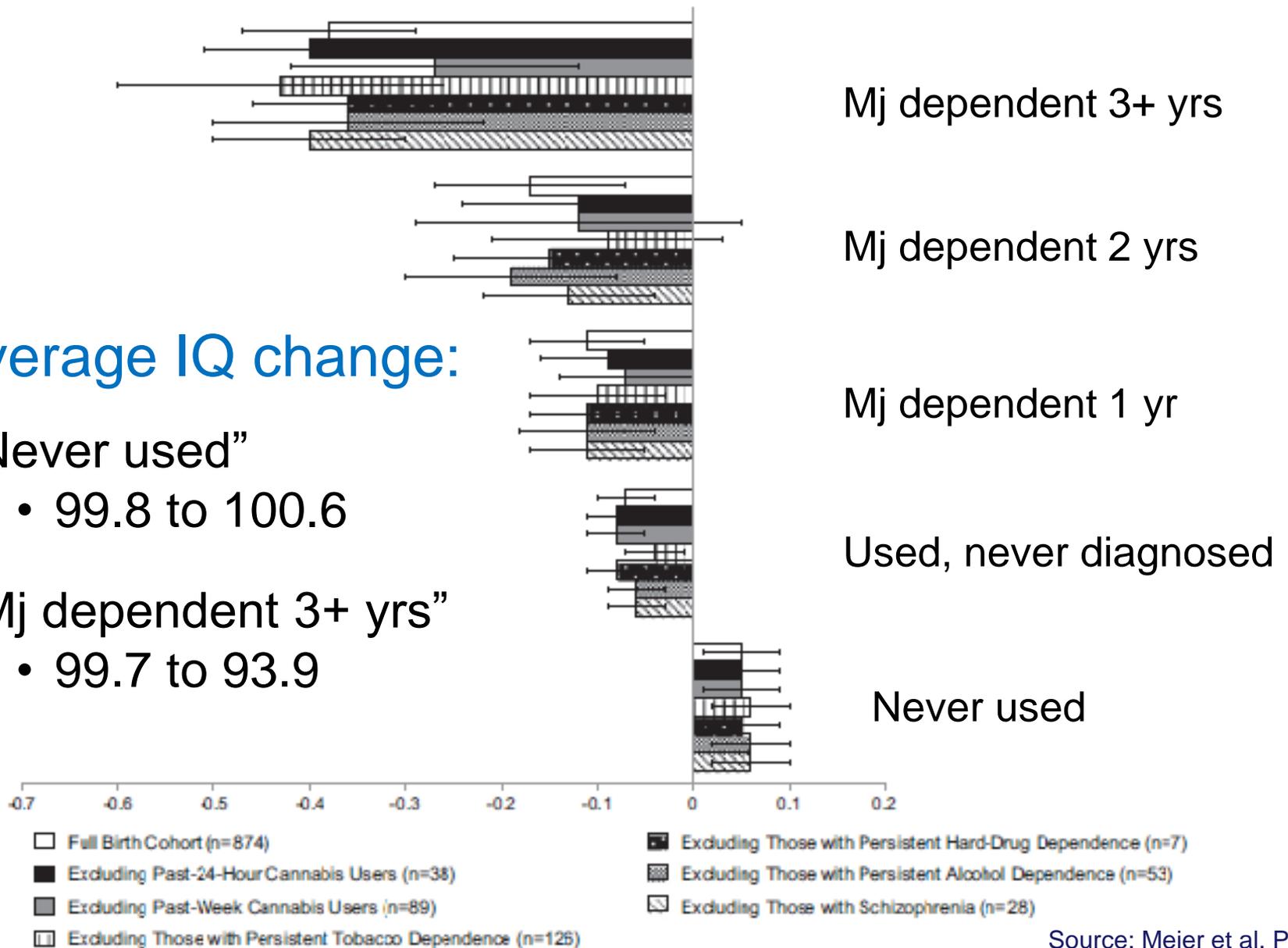
4

5

Assessment ages

## Average IQ change:

- “Never used”
  - 99.8 to 100.6
- “Mj dependent 3+ yrs”
  - 99.7 to 93.9



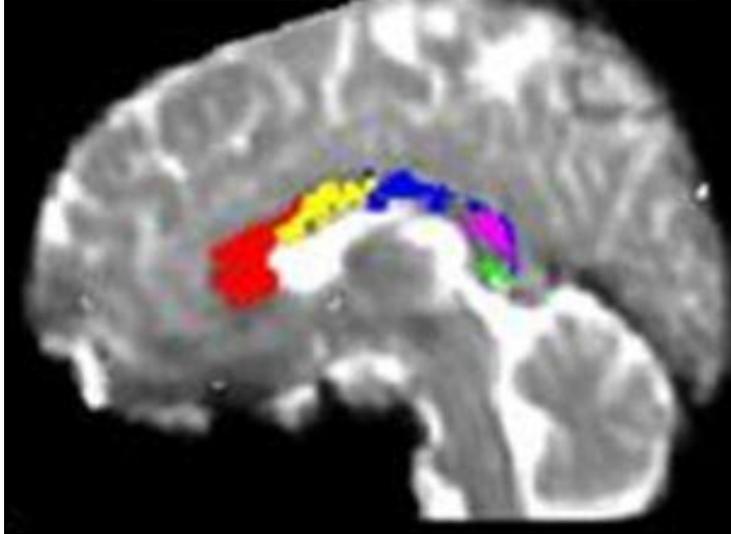
# Association between cannabis use and schizoaffective disorder

	# Exposure	# Cases	HR Crude	HR adjusted*
Never used cannabis	39,978	47	1	1
Ever used cannabis	5,109	12	2.1 (1.1-3.8)	0.8 (.2-2.9)
>50 times	855	7	7.5 (3.4- 16.7)	7.4 (1.0 – 54.3)

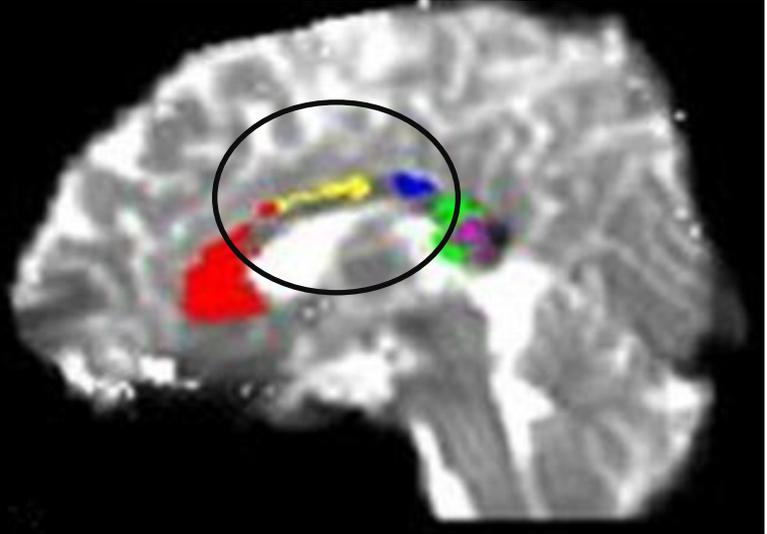
\* Adjustments for: prior personality disorders at conscription, IQ, disturbed behavior in childhood, social adjustment, risky use of alcohol, smoking, early adulthood socioeconomic position, use of other drugs, brought up in a city. The category “Ever used cannabis” includes all individuals who reported cannabis use, including those who reported “>50 times”.

Griffith-Lendering, *Addiction*, 108(4), 733-740.  
 Manrique-Garcia *BMC Psychiatry*, 12, 112.

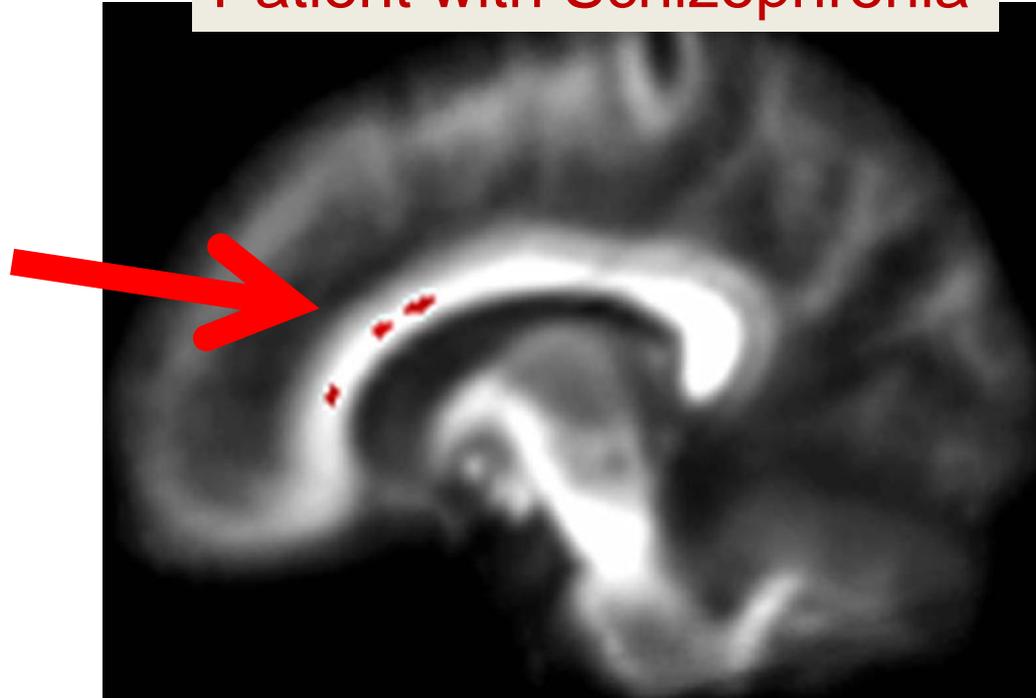
Healthy individual



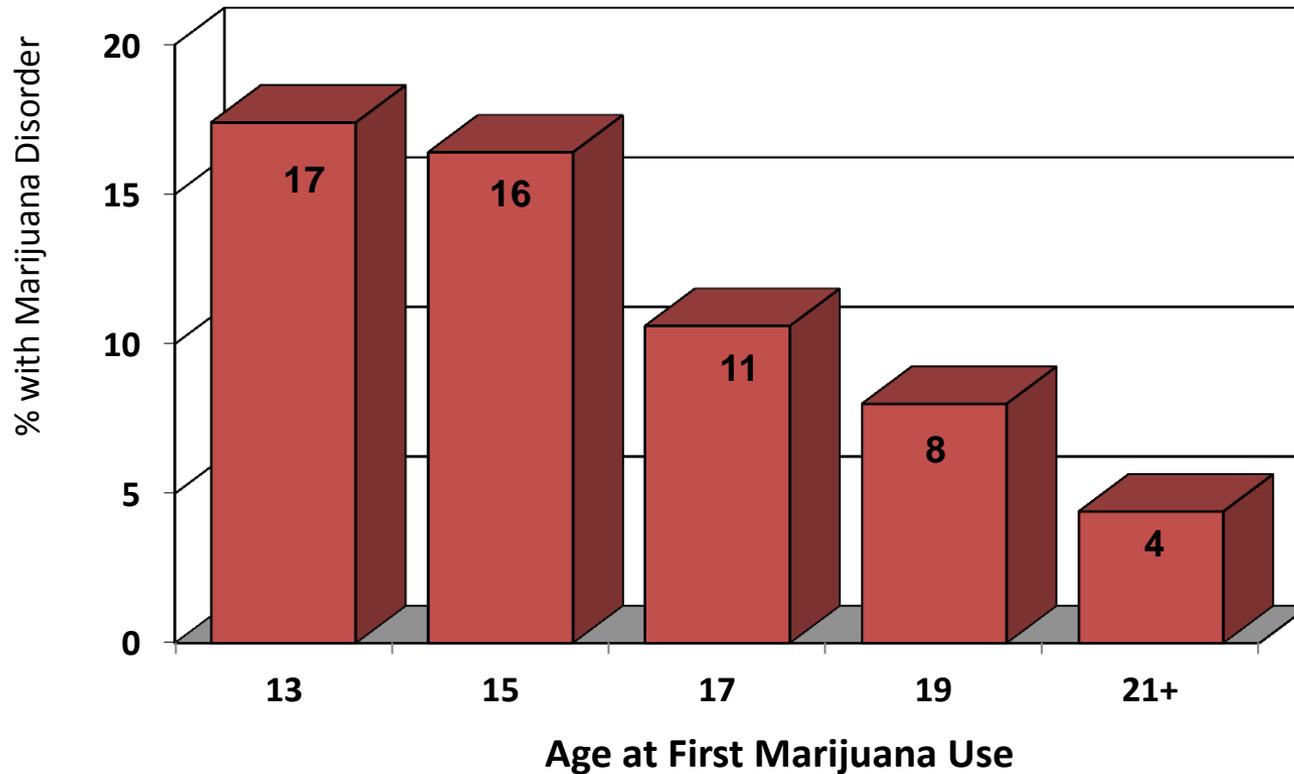
Daily marijuana user



## Patient with Schizophrenia



# Age at First Use and Later Risk of Marijuana Disorder

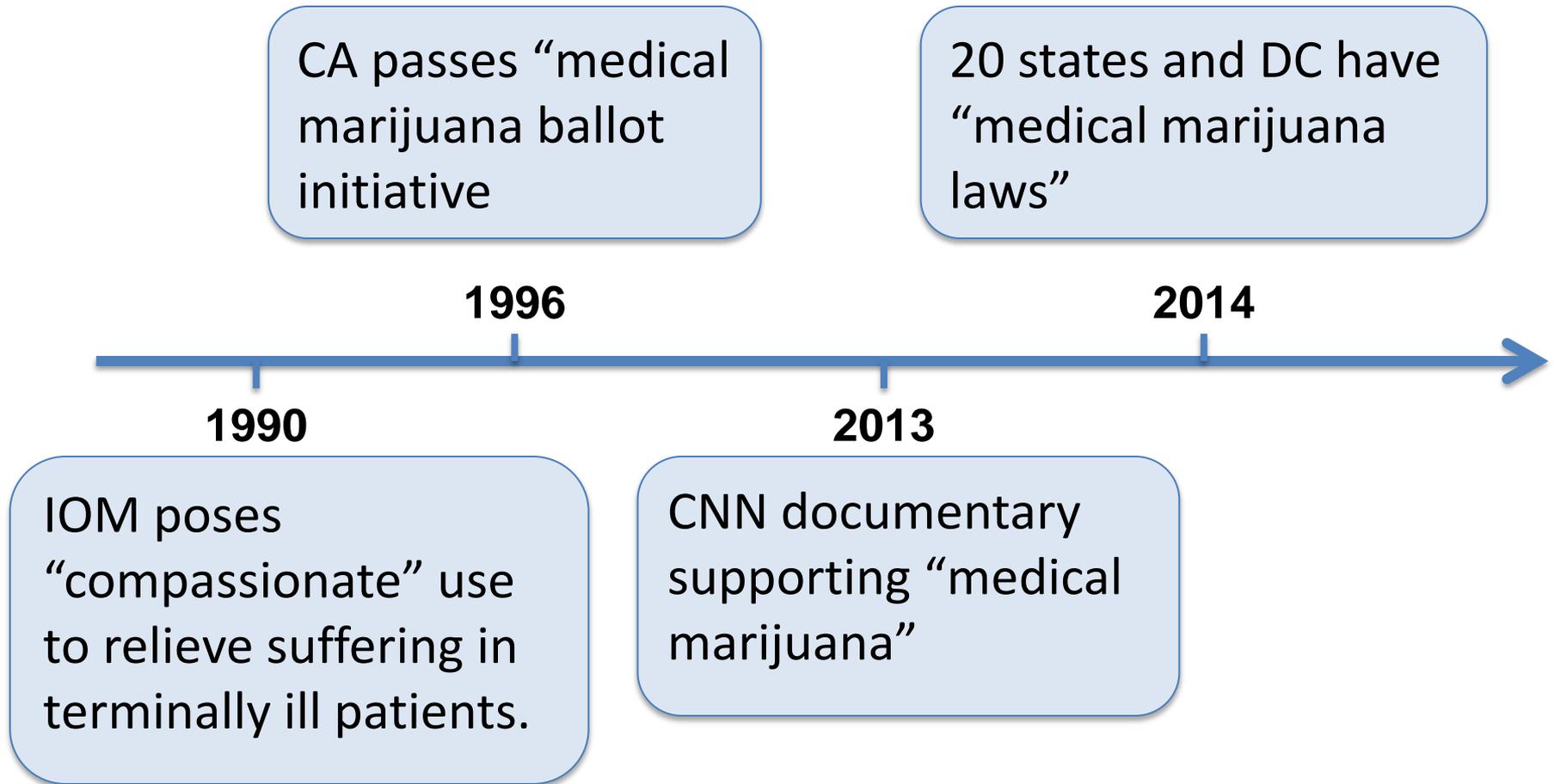


Source: Hingson RW, Heeren T, Winter MR. Age at drinking onset and alcohol dependence. *Arch Pediatr Adolesc Med.* 2006;160:739-746.

# “Medical Marijuana” v. Cannabinoids

“Medical Marijuana”	Cannabinoids
Plant species	Pharmaceutical product
Decided by popular vote in 18 states	Regulated by the FDA
Delivered by smoking or orally	Delivered by inhalation or orally
“Recommendation” by physician	Standard prescribing procedures
Efficacy poorly defined	Efficacy carefully studied

# History of “Medical Marijuana”



1990

IOM poses “compassionate” use to relieve suffering in terminally ill patients.

1996

CA passes “medical marijuana ballot initiative”

2013

CNN documentary supporting “medical marijuana”

2014

20 states and DC have “medical marijuana laws”

# “Charlotte’s Web”



Cannabinoids have pharmaceutical potential, but .....



# Marijuana is not medicine



# 1. Limited evidence of therapeutic efficacy of medical marijuana

Condition	Level of Evidence
Chemotherapy induced Nausea and Vomiting in Adults	Modest evidence <sup>1</sup>
Chronic Pain	Insufficient evidence <sup>2</sup>
HIV/Aids and Anorexia associated with Aids	Insufficient evidence <sup>3</sup>
Neurological Problems	Insufficient evidence <sup>4</sup>

**\*Not one single study has ever included children**

1. Borgelt LM, Franson KL, Nussbaum AM, Wang GS. The pharmacologic and clinical effects of medical cannabis. *Pharmacotherapy*. 2013;33(2):195–209..
2. Martín-Sánchez E, Furukawa TA, Taylor J, Martin JLR. Systematic review and meta-analysis of cannabis treatment for chronic pain.
3. Lutge EE, Gray A, Siegfried N. The medical use of cannabis for reducing morbidity and mortality in patients with HIV/AIDS. *Cochrane database Syst. Rev.*
4. Koppel BS, Brust JCM, Fife T, et al. Systematic review: efficacy and safety of medical marijuana in selected neurologic disorders: report of the Guideline Development Subcommittee of the American Academy of Neurology. *Neurology*. 2014;82(17):1556–63.

## 2. No standardization of product



## 2. No standardization of product



## 2. No standardization of product



### 3. Dispensaries are NOT pharmacies



# Dispensaries: the Colorado experience

“Medical Marijuana” was approved in Colorado in 2001.

The Colorado Medical Marijuana Code creating a **commercial** scheme for “dispensaries” went into effect July 1, 2010

## Colorado Medical Marijuana Dispensaries

The Colorado Medical Marijuana Dispensaries app displays the locations of dispensaries that provide medical marijuana to qualified patients in the state of Colorado.

Map View

Dispensaries

Help

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2ND DRAWING WILL RECEIVE A DIO STORE C

3RD DRAWING WILL RECEIVE A DIO STORE C

NAME \_\_\_\_\_

PHONE \_\_\_\_\_

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 Tangerine  
 Master Kush  
 Hindu Haze 4  
 Per a Haze  
 Millennium  
 Church

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Mozar  
 Crystal Chunk  
 Lemon Sour Biesel  
 Super Lemon Haze  
 Most Wowe  
 Blackberry Kush  
 Kik Mint  
 Sweet Tooth  
 Blue Dream

Edibles

MediPhox  
 Fantasy Drinks  
 Hash Truffles/Toffee  
 G Nutz Butter  
 Peanut Butter  
 Fudge  
 Taster Tummies  
 Lamee Caramel Oil  
 Black Oil Gummies

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 Anxiety Skunk  
 Big Bang  
 Sour Power  
 White Widow  
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 Amagoddon Skunk  
 Lime Green Skunk



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 Monday - Saturday  
 8AM-9PM  
 12-5 on Sundays

DISCLAIMER: Generally used during the day, BUBBA dominator strain provides effects described well being. These strains stimulate serotonin, a neurotransmitter, which acts in the central nervous system, mood, and sexual function.

INDICA: Best used during non-active times during the day or evening. INDICA is a sense of calm or serenity. These strains are used to relax and to relax stimulate appetite and reduce vascular pressure.

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Medical Marijuana Evaluations

**\$35**  **\$45**

For Renewals From Any Doctor

For New Patient Evaluations

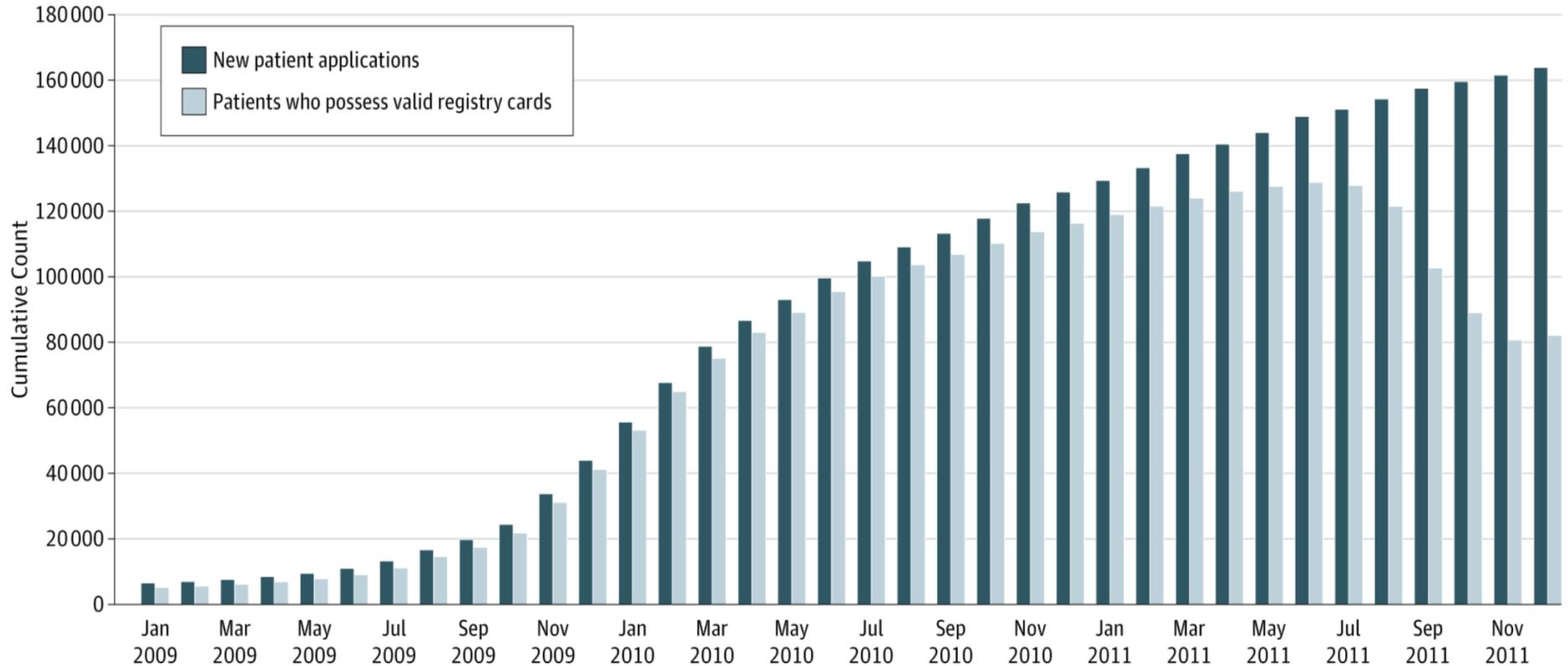
Cultivation Licenses Available

Walk-ins Welcome

Tel: 323.944.0437

# Applications for marijuana card in CO

2001- 2008: 6,369 applications    2009-2012: 161,690



Condition	# Patients	% Patients
HIV/AIDS	495	1%
Glaucoma	837	1%
Cachexia	1,137	1%
Seizures	1,329	2%
Cancer	2,217	3%
Severe Nausea	9,998	12%
Muscle Spasms	14,255	17%
Severe Pain	76,887	94%

\*CO, 2012. Patients may report >1 debilitating condition.

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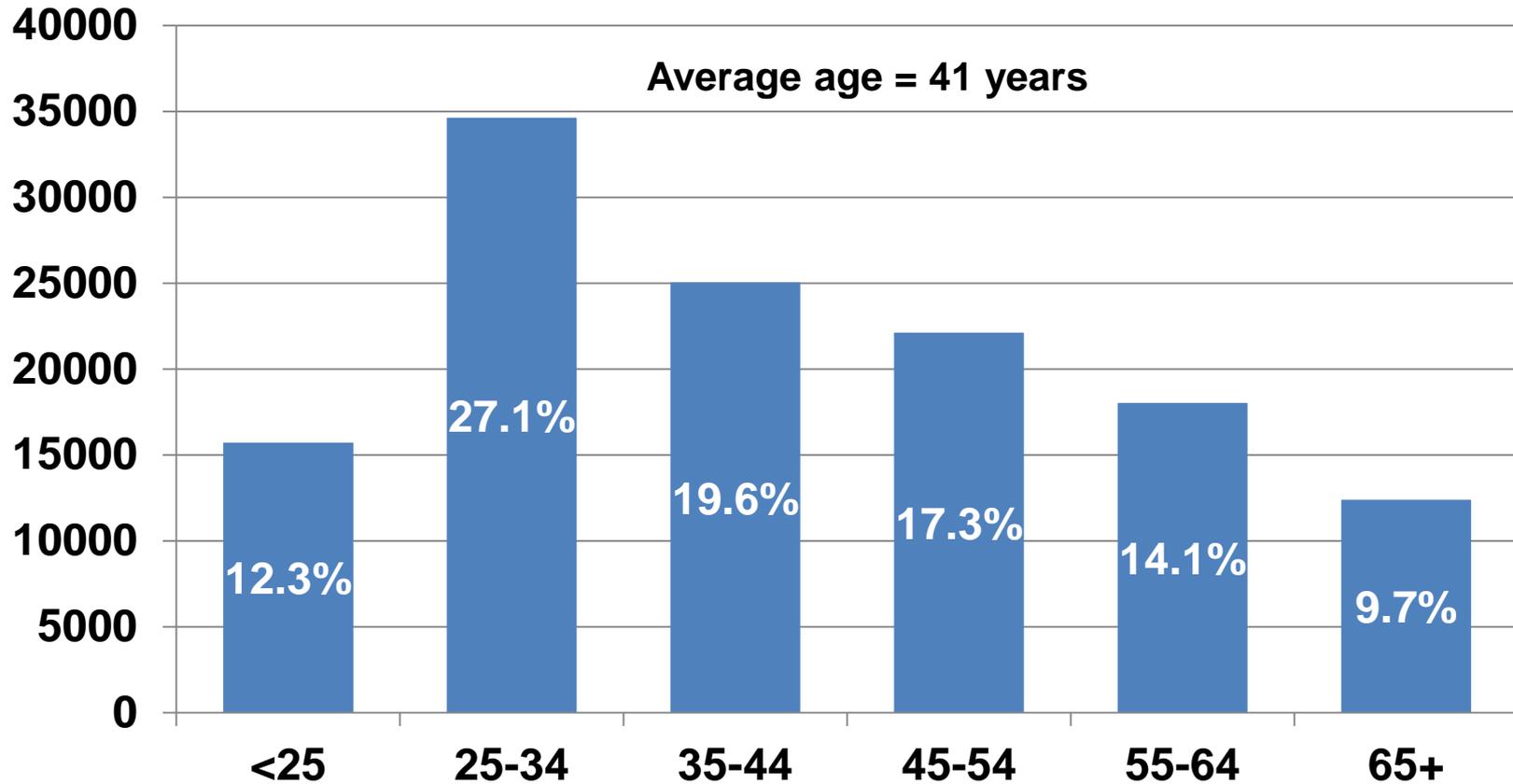
\*CO, 2012. Patients may report >1 debilitating condition.

Reported Condition	Total # Patients 1/31/2009	Total # Patients 1/31/2012
Cachexia, cancer, HIV/AIDS, glaucoma, severe nausea, seizures, muscle spasms	2829	31,258  11X increase
Just “severe pain”	1559	46,619  <b>30X increase</b>

<http://www.cdphe.state.co.us/hs/Medicalmarijuana/>

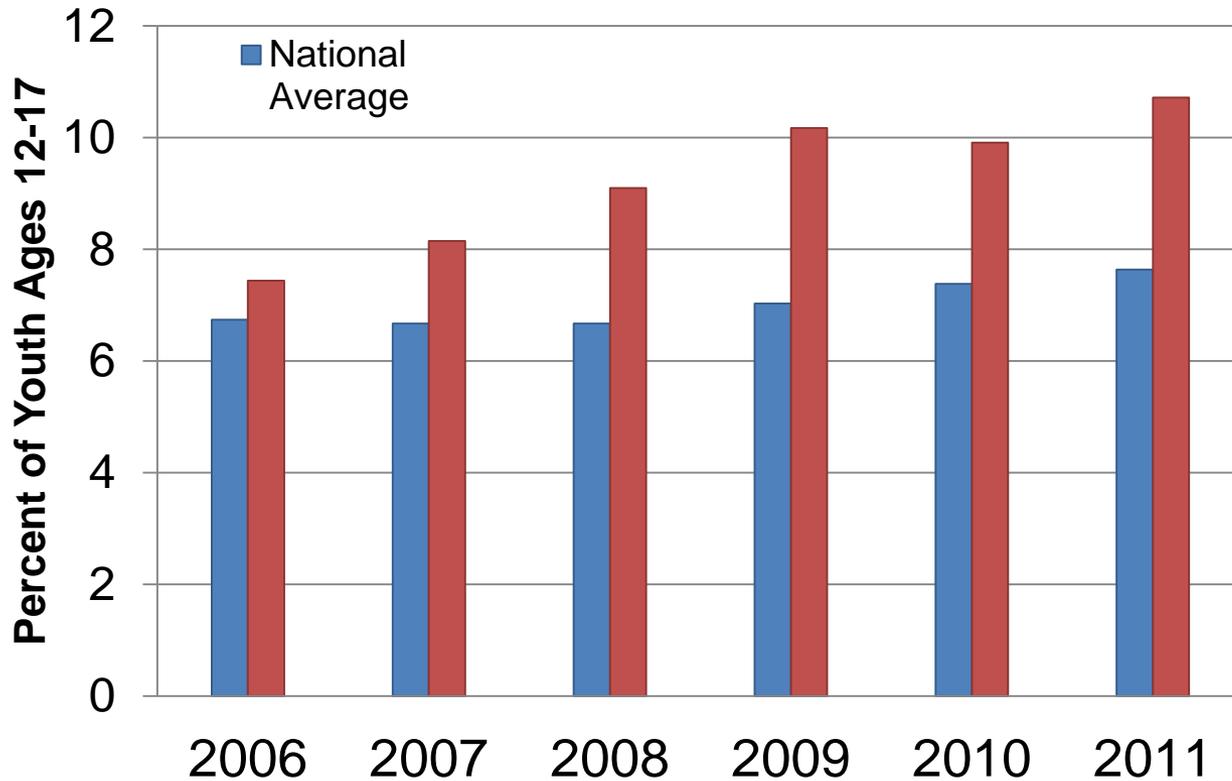
# Age of Patients Using

Total Patients = 127,816



# Teen Past Month MJ Use

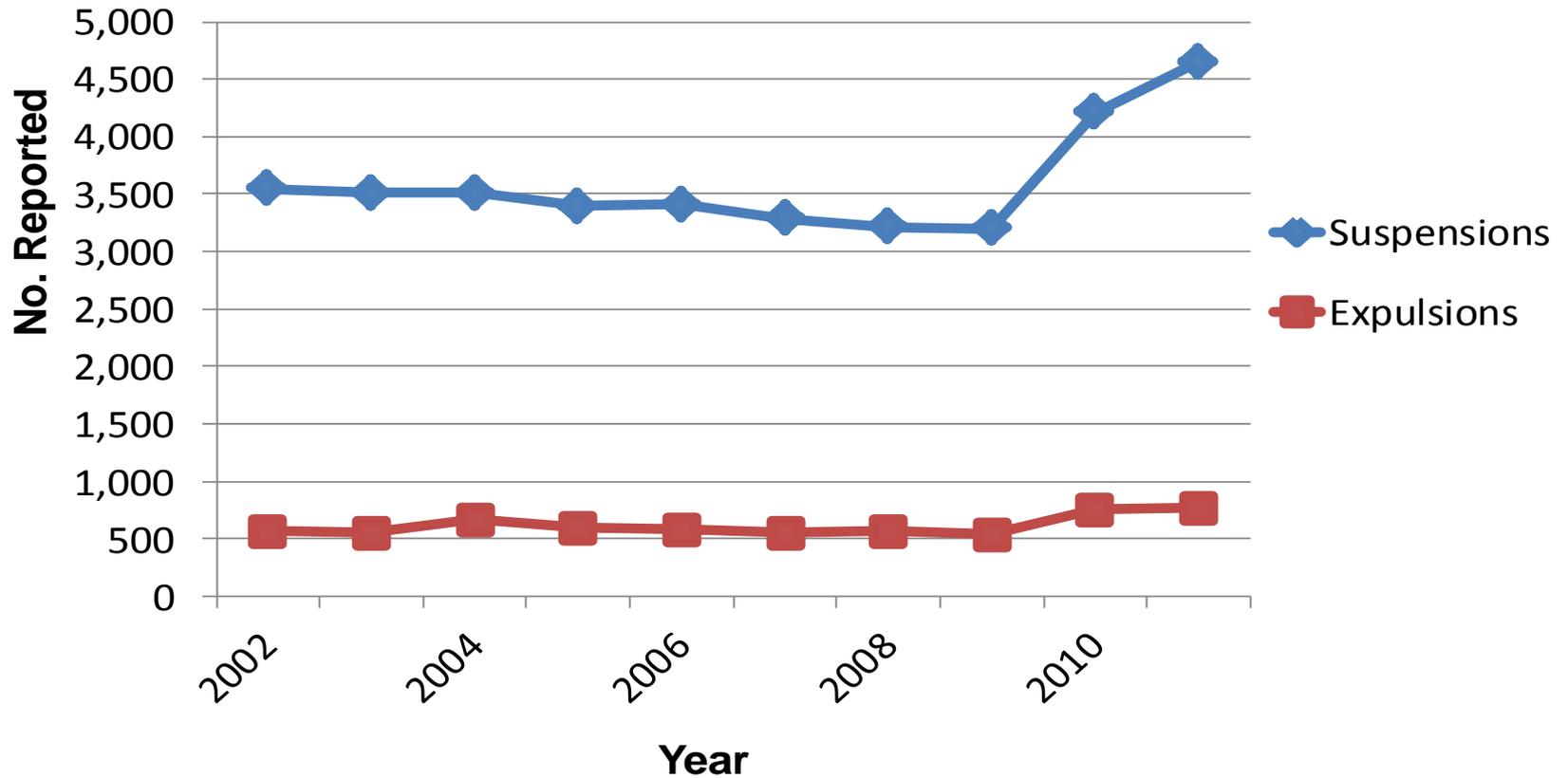
## National v. Colorado



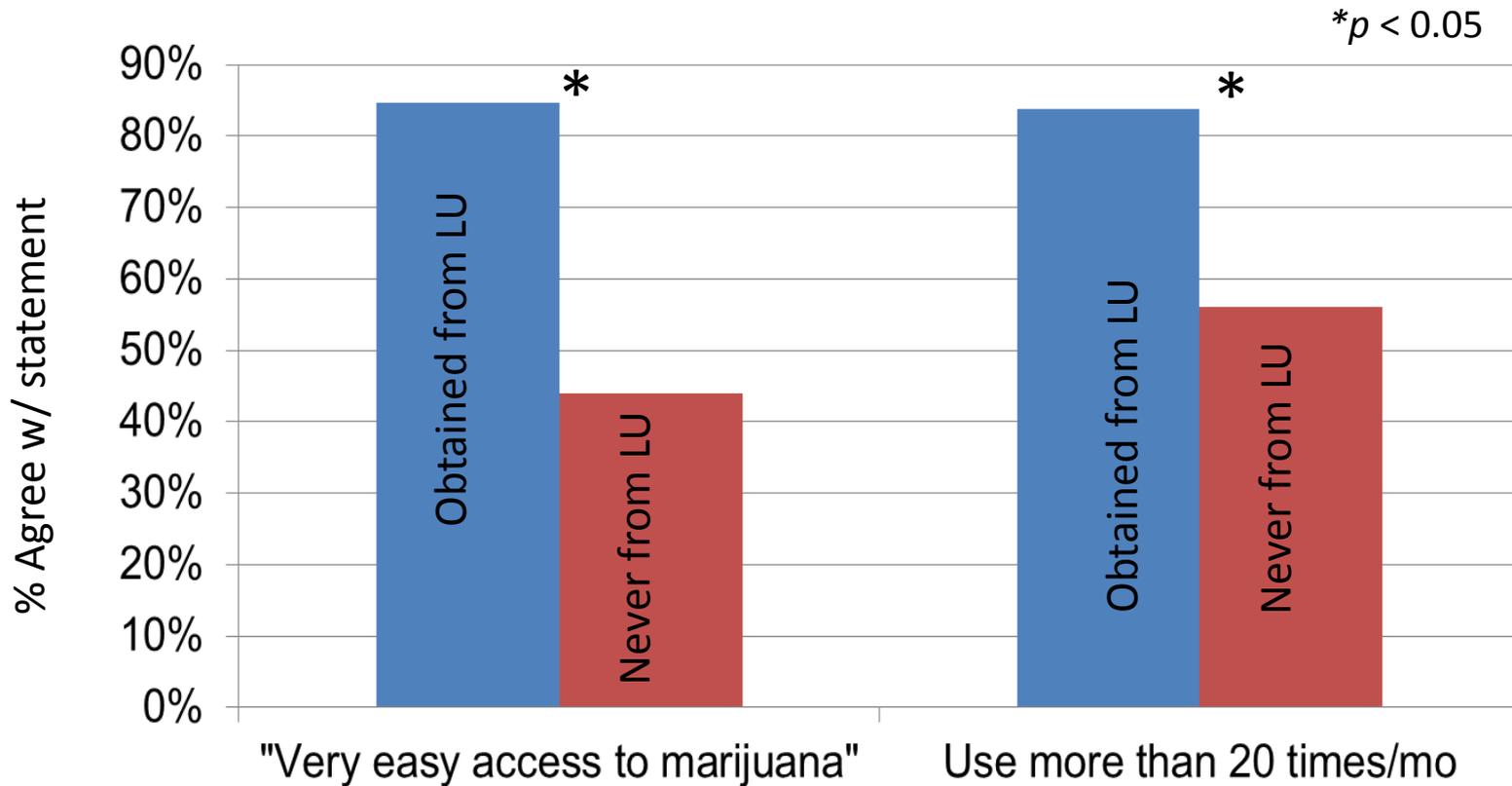
2011 National  
Average = 7.64%

2011 Colorado  
Average =  
10.72%

# Drug-related School Suspensions and Expulsions in Colorado



# Source of marijuana for adolescents entering SUD treatment program



# Decriminalization and Legalization

Decriminalization: marijuana remains illegal but punishment for possession and use are reduced to non-criminal offences.

*Intent: Discourage use, prohibit distribution.*

Legalization: marijuana becomes a legal product that adults can buy and use and companies can sell and market

*Intent: Eliminate black market, regulate sales, collect taxes.*

# Impact of Legalization: Colorado

- The city Denver has the highest rate of teen marijuana use in the country.
- The rate of car crashes with drivers testing positive for marijuana in Colorado have almost tripled between January and April 2014.





# Changing Product

The THC content of U.S. marijuana has more than **doubled** over the past 40 years.

Decade	Avg THC %
1970's	1.08
1980's	2.83
1990's	3.76
2000's	5.73

- Edible products are available for people who do not want to smoke.



- Producers are manufacturing strains that they *claim* are less addictive or less harmful to mental health.
- New vaporizer delivery systems now yield an equivalent THC dose to smoked marijuana with less throat irritation.



- Pure cannabis oils (100%) THC are now available.
- “Because they're so potent, you don't need a large amount to get high.”
  - *The Wire*, May 15, 2013
- “Reduces exposure to other toxins.”



# High potency THC

- **Increases risk of psychosis**

Br J Psychiatry. 2009 Dec;195(6):488-91

- **Decreases age of onset psychosis**

Schizophr Bull. 2014 Nov;40(6):1509-17.

- **Impairs “creative thinking”**

Psychopharmacology (Berl). 2014 Oct 7.

# ***Exclusive:** Bethenny Frankel Planning to Launch “Skinnygirl Marijuana”, a Strain of Pot That Won’t Cause the Munchies!*

CELEBRITY NEWS JAN. 15, 2015 AT 12:20PM BY SIERRA MARQUINA



**Skinnygirl**<sup>®</sup>  
COCKTAILS

**An insider close to the Skinnygirl cocktails creator, tells Us, “She read about how profitable the cannabis industry is and wants to get in on that.”**

**-US Magazine online**

# Conclusions

- Marijuana is harmful for the adolescent brain
- Marijuana is not medicine. Administering cannabinoids via marijuana is a disservice to those who receive it.
- The impact of legalization is unknown. The history of the tobacco industry should make us cautious about allowing a marijuana industry, regulated by the free market, to develop.

# Questions and Answers



- Submit questions via the **chat box**

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**SCLC has added two new recorded webinars, offering FREE CE credit, on our website:** “Tobacco Kills: Intervention and Policy Solutions in Addiction Treatment” and “Where's the Justice? Tobacco Use and the Incarcerated”. Please refer to the SCLC website for details: <http://smokingcessationleadership.ucsf.edu/webinars/cme>

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## Call us toll-free

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