

The Science of Prevention: *A Webinar for HIDTA Directors on Evidence-Based Strategies to Prevent Drug Use*



Office of National Drug Control Policy

Washington, DC

August 4, 2015

The Science of Prevention

Opening Remarks



Michael Botticelli
Director
Office of National Drug Control Policy

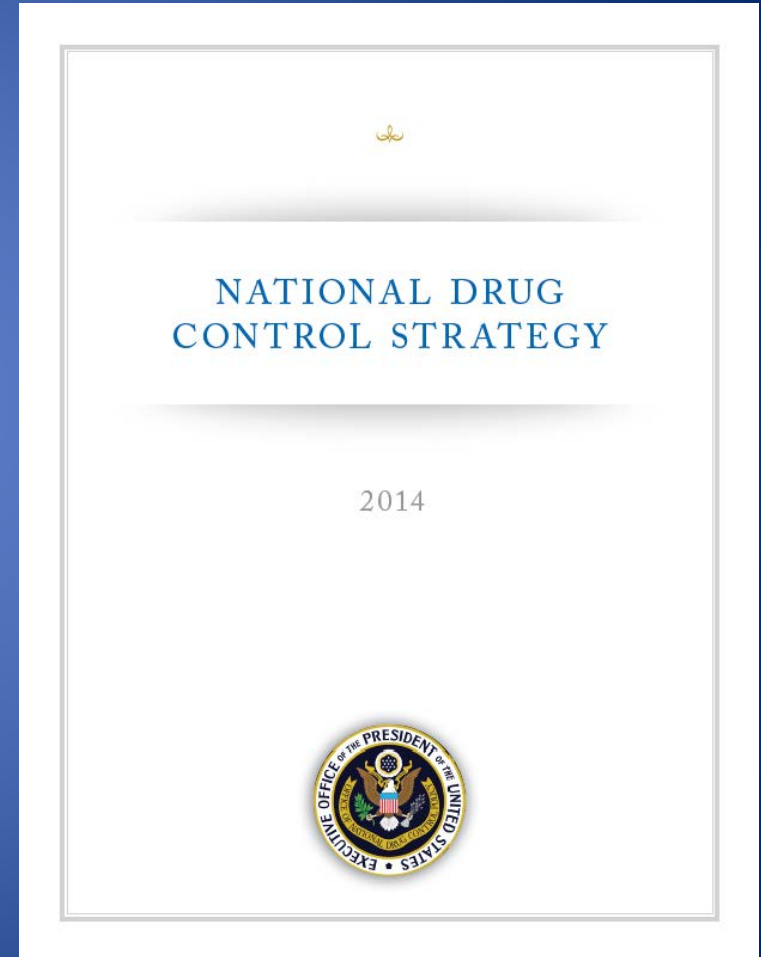
National Drug Control Strategy

- The President's science-based plan to reform drug policy:

- ➔ 1) **Prevent drug use before it ever begins through education**
- 2) Expand access to treatment for Americans struggling with addiction
- 3) Reform our criminal justice system
- 4) Support Americans in recovery

- Coordinated Federal effort on 112 action items

- Signature initiatives:
 - Prescription Drug Abuse
 - ➔ – **Prevention**
 - Drugged Driving



Effective Prevention Programs

Examples of Risk and Protective Factors

Risk Factors	Domain	Protective Factors
Early Aggressive Behavior	Individual	Self-Control
Poor Social Skills	Individual	Positive Relationships
Lack of Parental Supervision	Family	Parental Monitoring & Support
Substance Use	Peer	Academic Competence
Drug Availability	School	Anti-Drug Use Policies
Poverty	Community	Strong Neighborhood Attachment

Reduce these



Elevate these

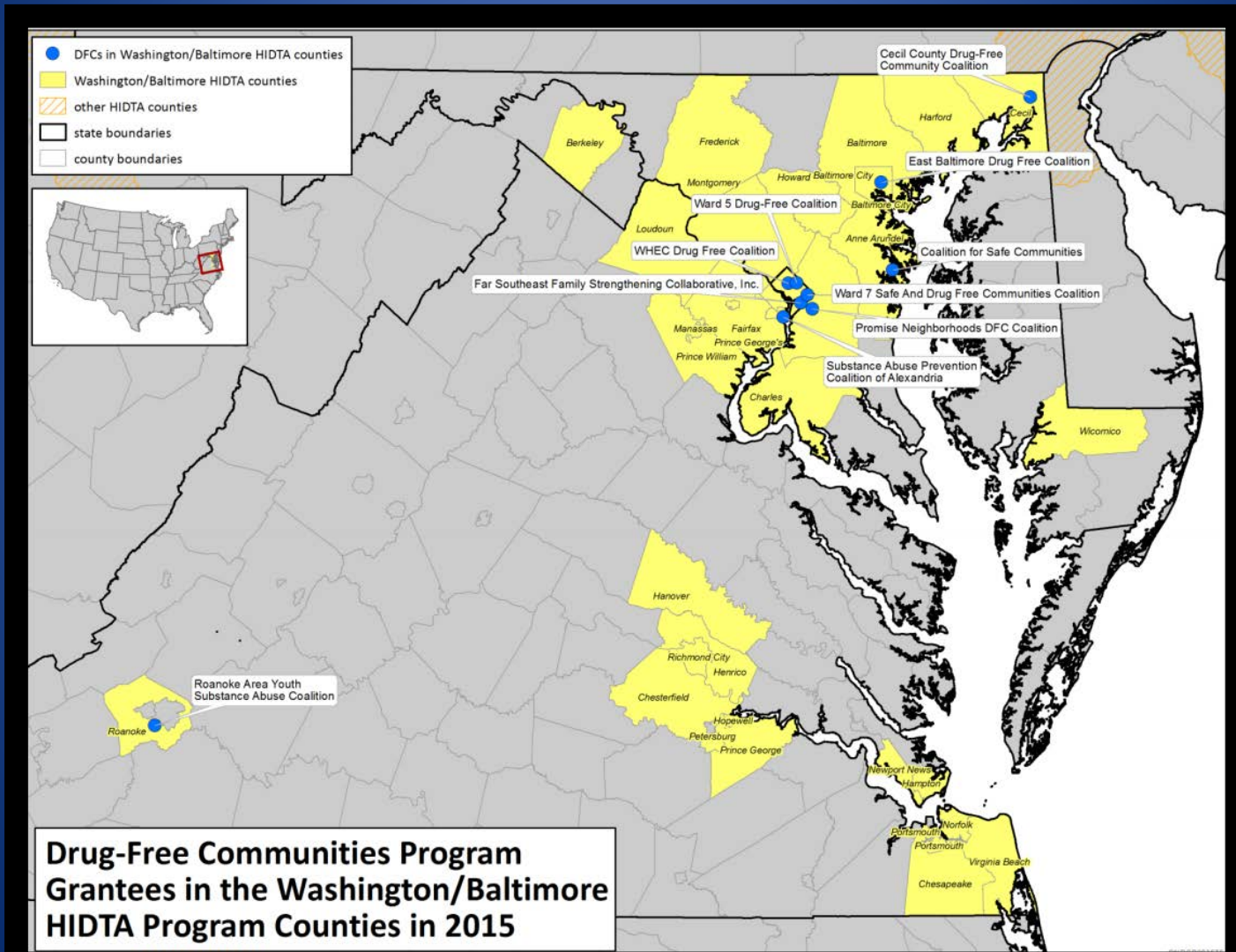


Drug-Free Communities Support Program

- Small amount of Federal funding combined with local resources and volunteer support
- Mobilize community leaders to identify and respond to the drug problems unique to their communities
- Focus on community change to prevent youth drug use



Example of 2015 HIDTA & DFC Map



The Science of Prevention: *A Webinar for HIDTA Directors*



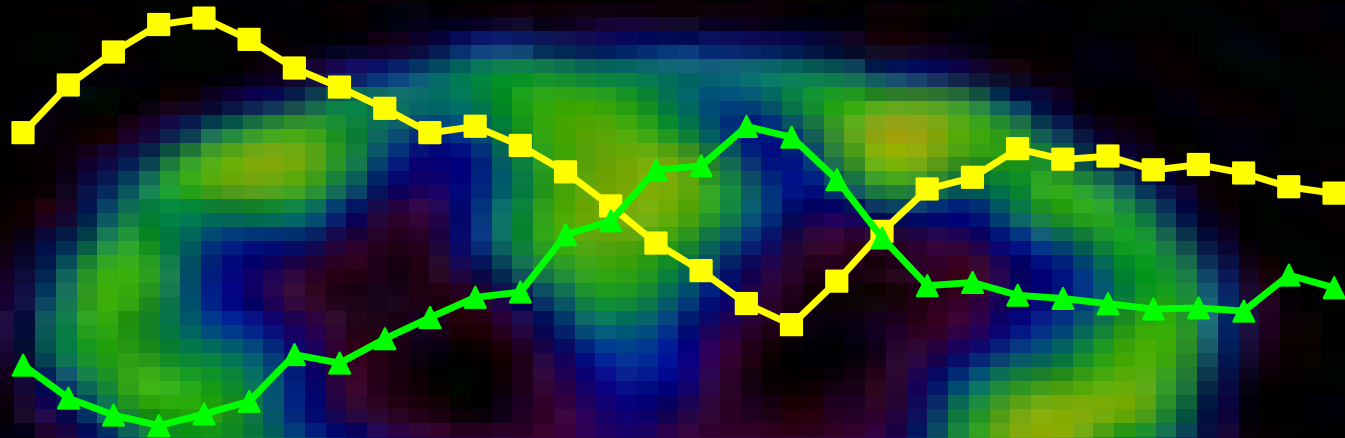
Thank you and welcome!

The Science of Prevention

Keynote Address



Dr. Wilson Compton
Deputy Director
National Institute on Drug Abuse



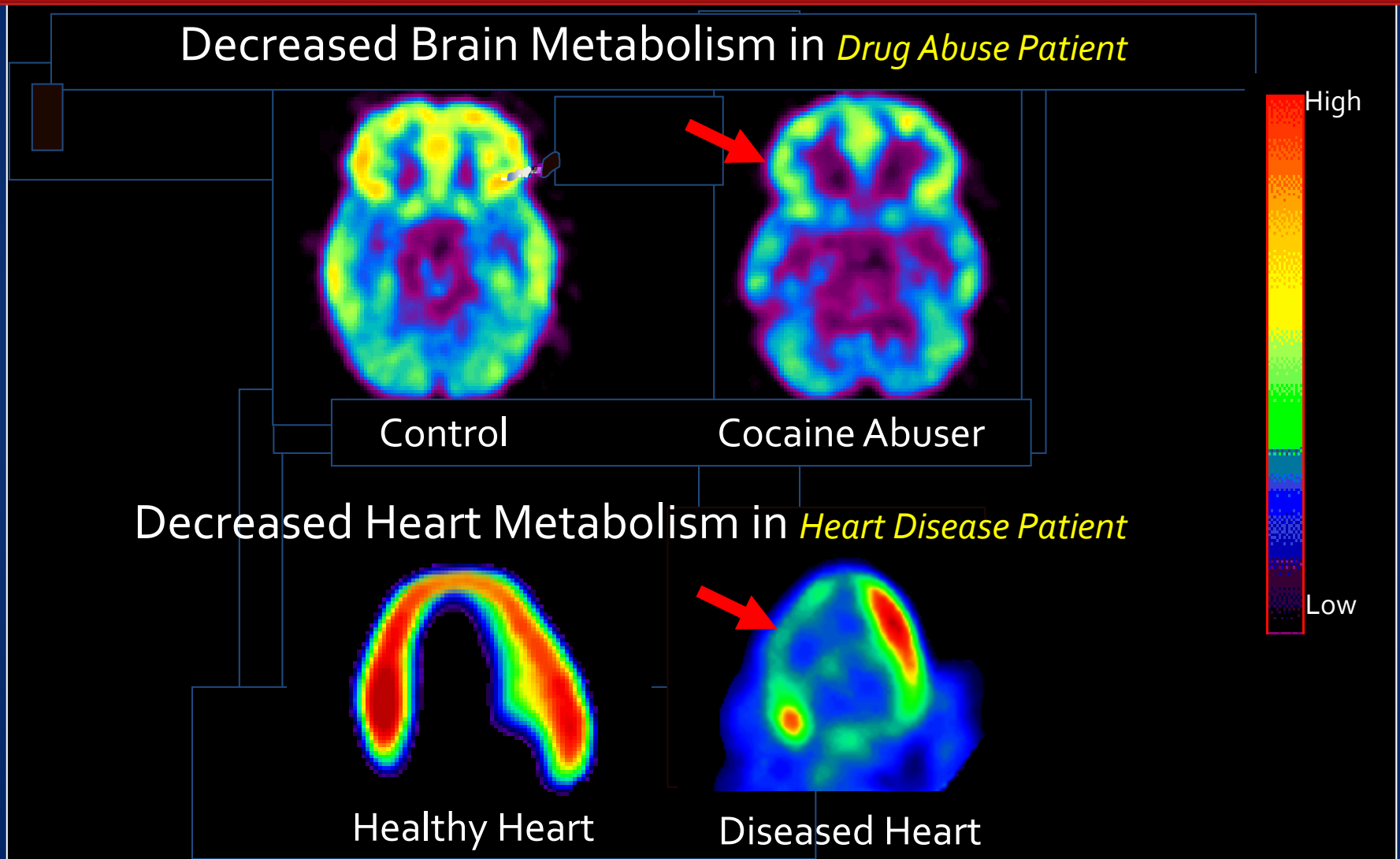
The Science of Drug Abuse Prevention

Wilson M. Compton, M.D., M.P.E.

*Deputy Director
National Institute on Drug Abuse*

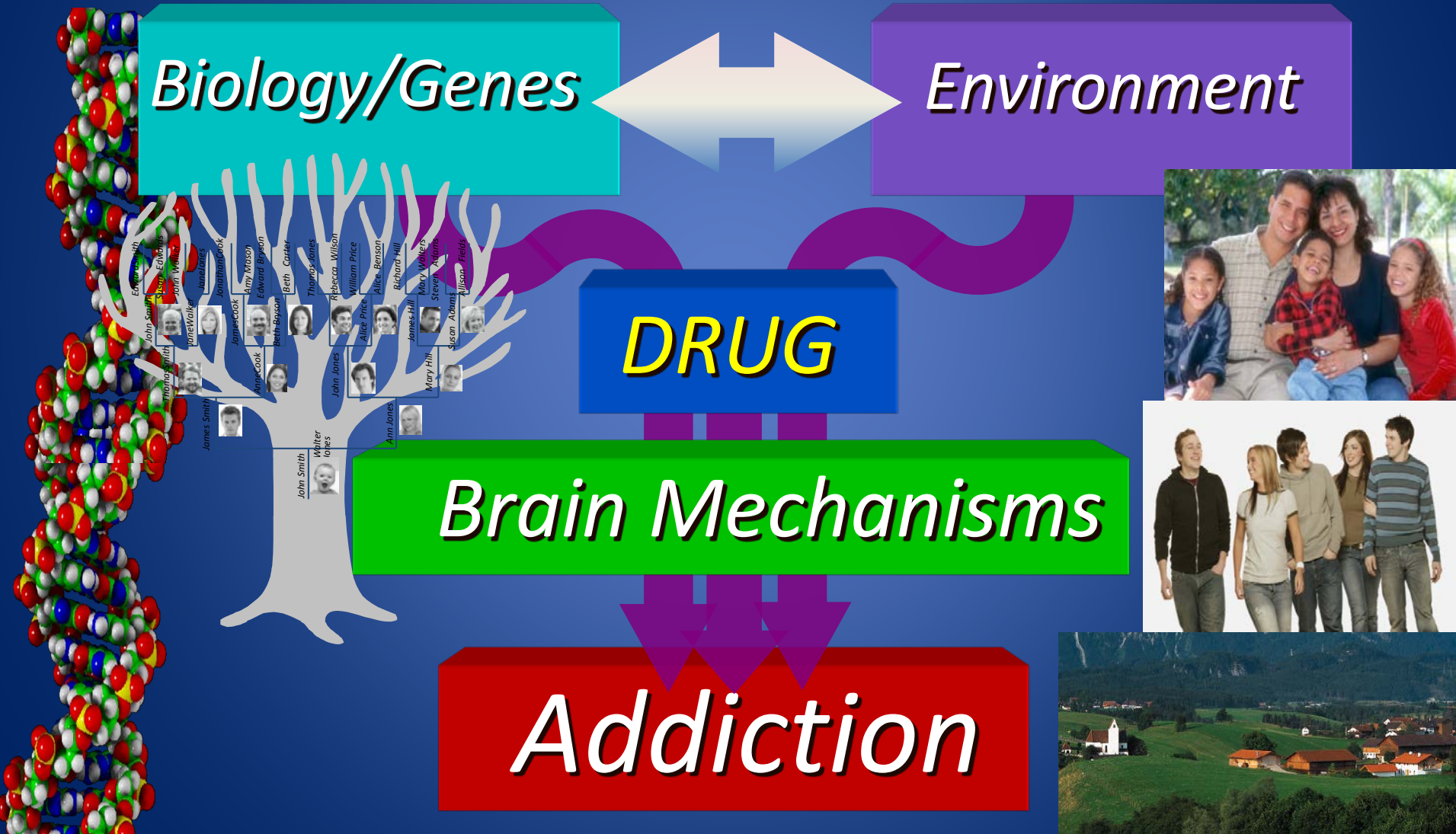


ADDICTION IS A **DISEASE OF THE BRAIN** *as other diseases it affects the tissue function*



Sources: From the laboratories of Drs. N. Volkow and H. Schelbert

Many Factors Lead to Drug Abuse and Addiction



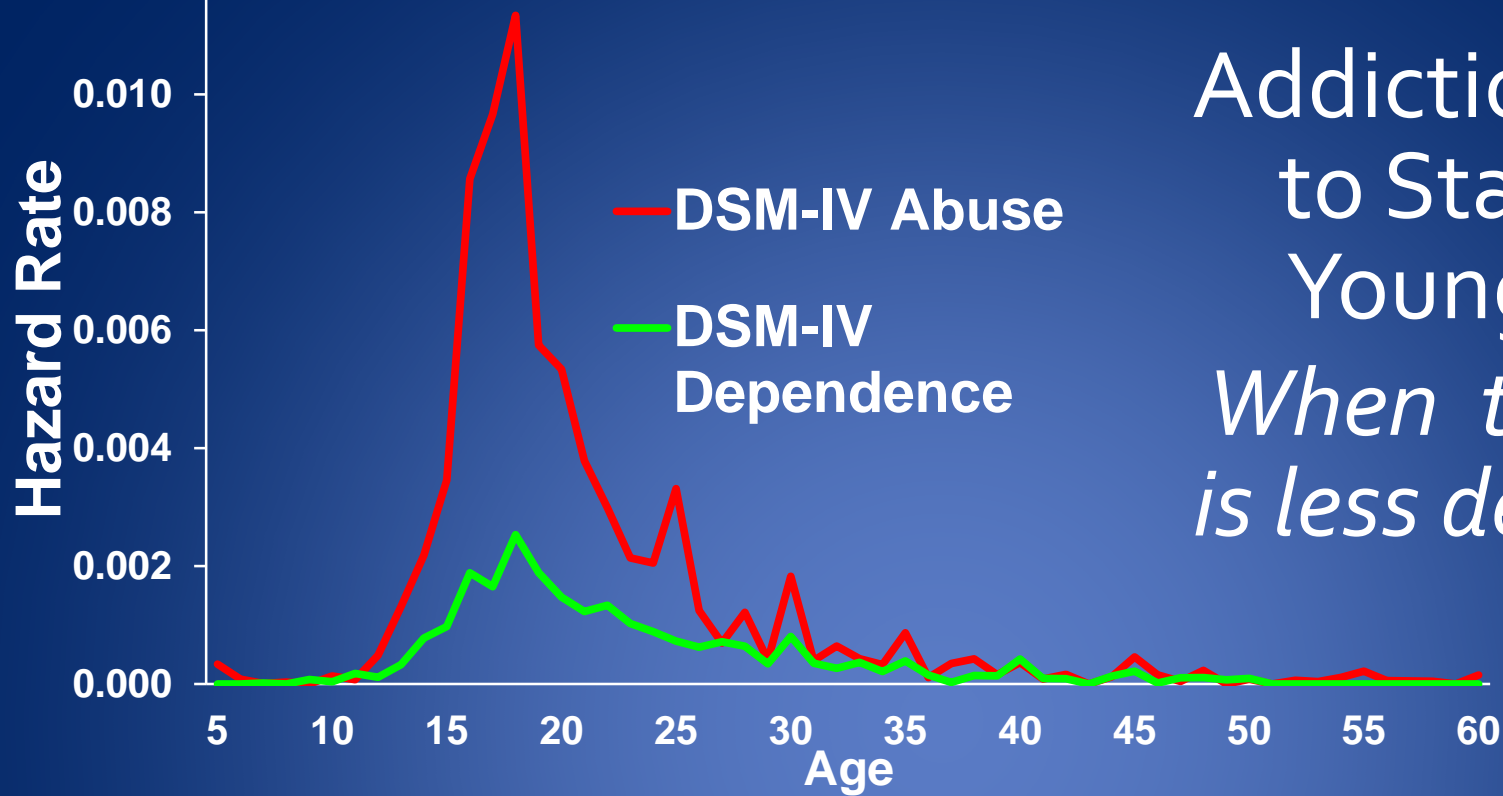
Biology/Genes

Environment

DRUG

Brain Mechanisms

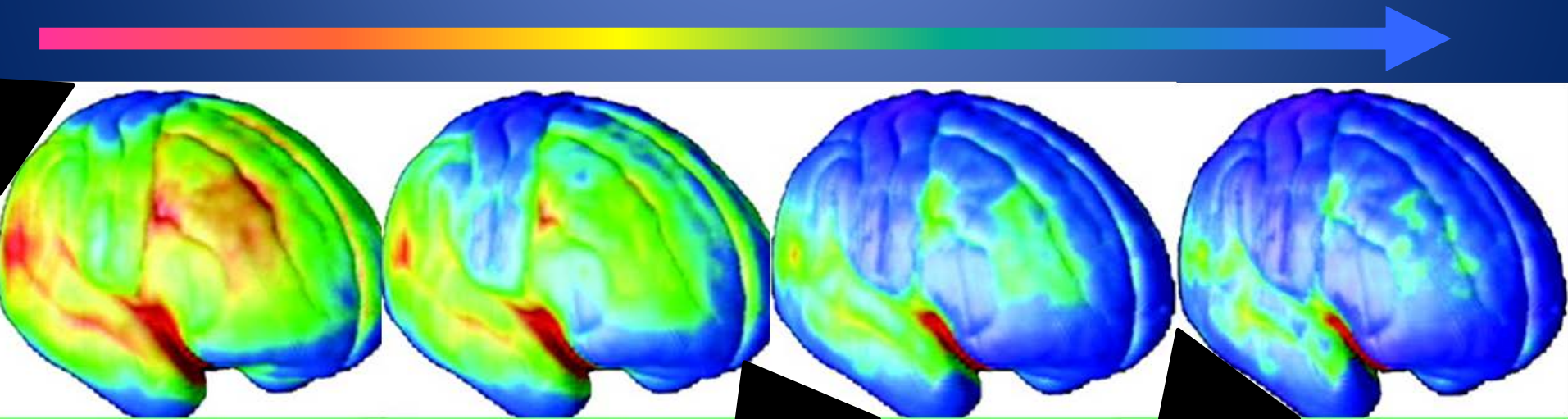
Addiction



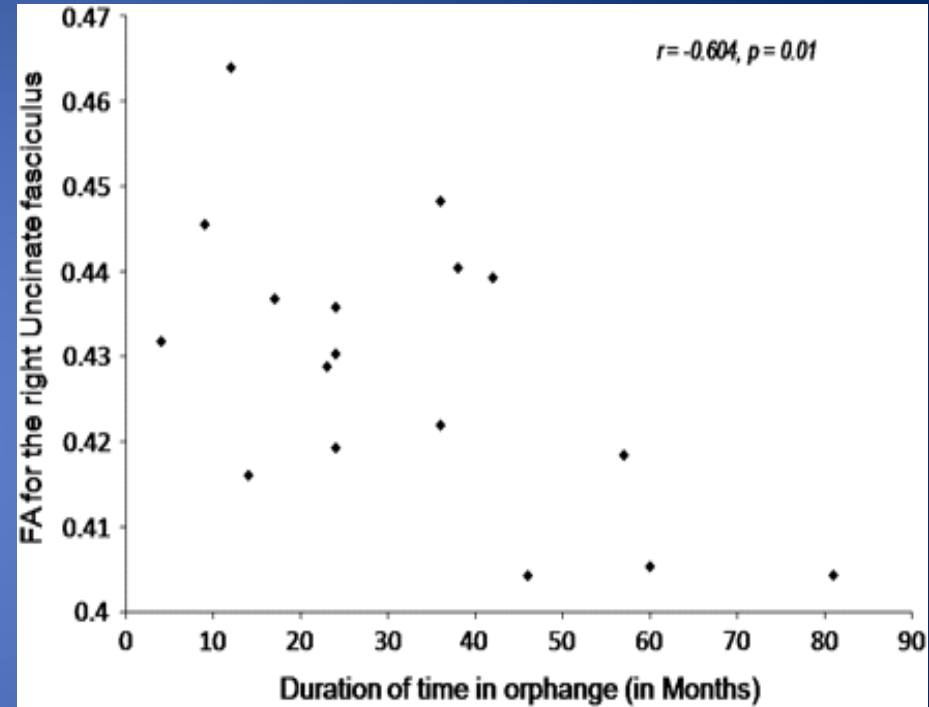
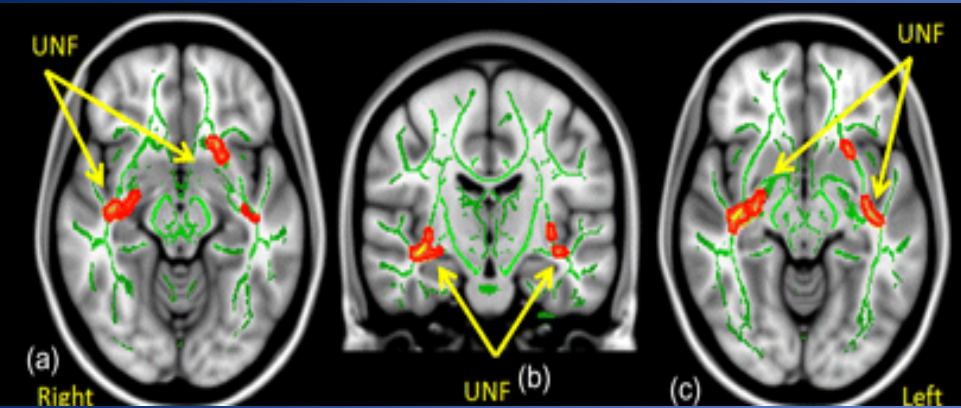
Addiction Tends to Start at a Young Age:
When the brain is less developed

Age of Onset of Drug Abuse and Dependence

Source: Compton, et al. *Archives of General Psychiatry* 2007. NESARC Study.



Social Neglect During Early Childhood Decreases Brain Connectivity

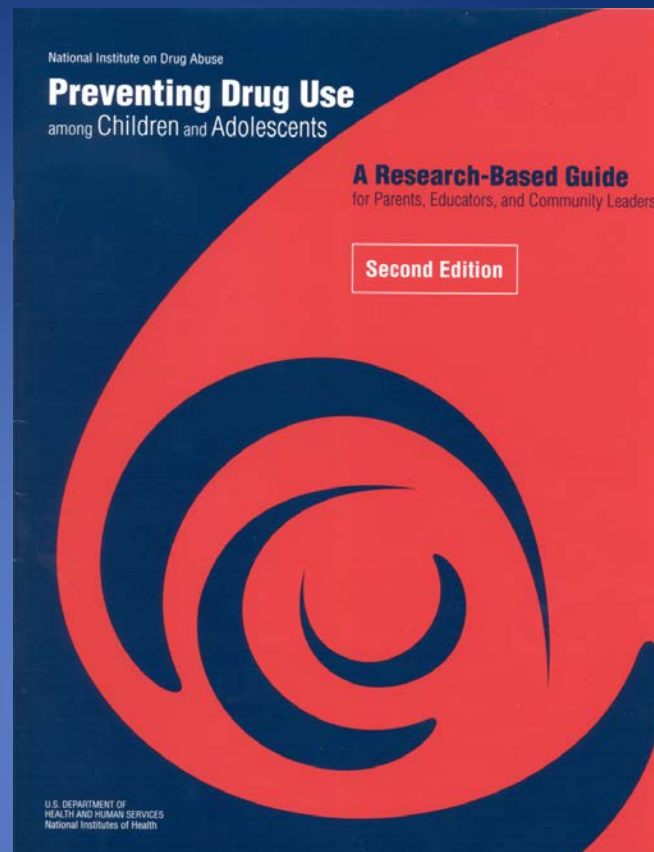


Children in an orphanage who experienced deprivation had fewer connections between the parts of brain that regulate emotions and the parts that control thinking

Adverse Childhood Experiences (ACE) Affect Illicit Drug Use



(n = 8603)



Preventive Interventions Can
Have Long-term Effects on Drug
Use and Abuse

EXAMPLES OF RISK AND PROTECTIVE FACTORS

Risk Factors	Domain	Protective Factors
Early Aggressive Behavior	Individual	Self-Control
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Reduce these

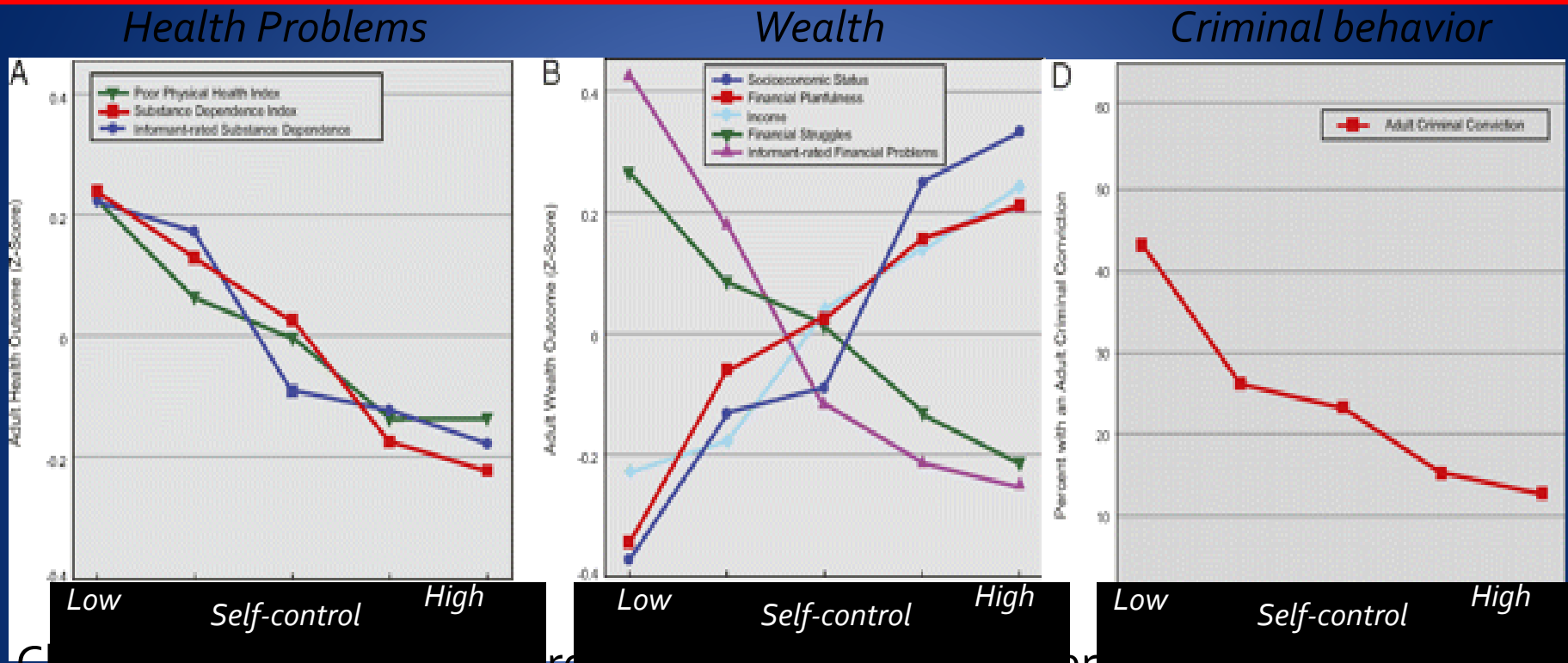


Elevate these



- **Prevention Approaches Should**
Enhance Protective Factors & Reduce Risk Factors

Risk Factors in Action: Childhood self-control predicts health, wealth, and public safety
(Dunedin Study; 1000+ children)

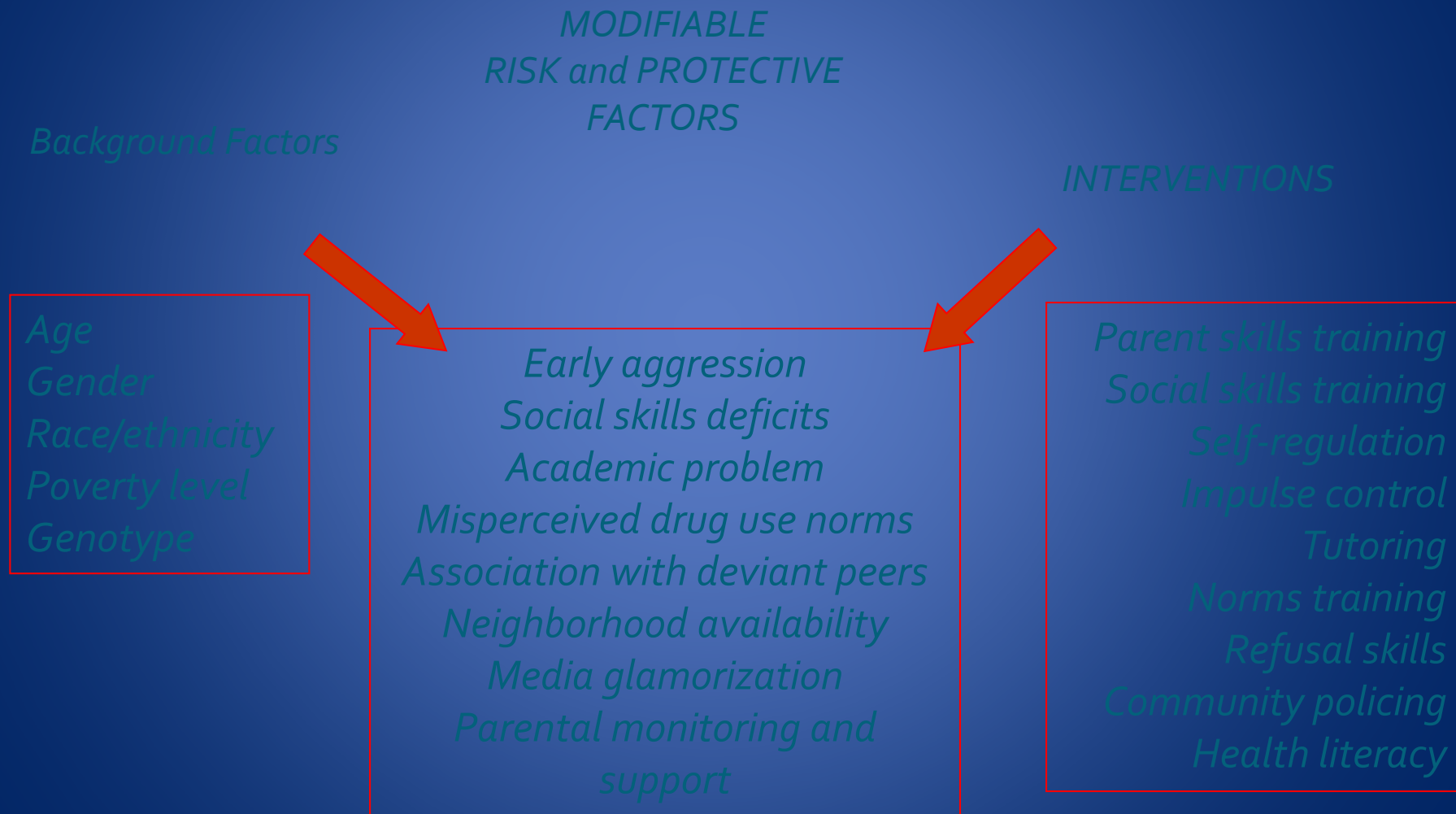


Children with low self-control had poorer health, lower incomes, more single-parenthood, and more crime convictions and drug use than those with high self-control

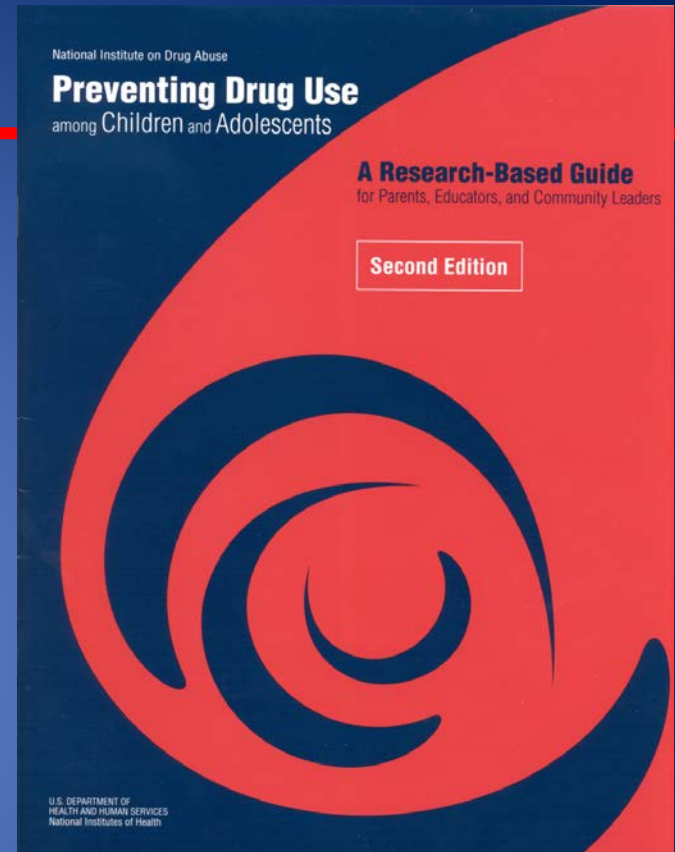
Moffitt et al., PNAS 2011

Early childhood interventions that enhance self-control are likely to bring a greater return on investment than harm reduction programs targeting adolescents alone.

How Prevention Interventions Work



We know that childhood prevention interventions can reduce the use of drugs during adolescence, but do they help in other areas, like education?



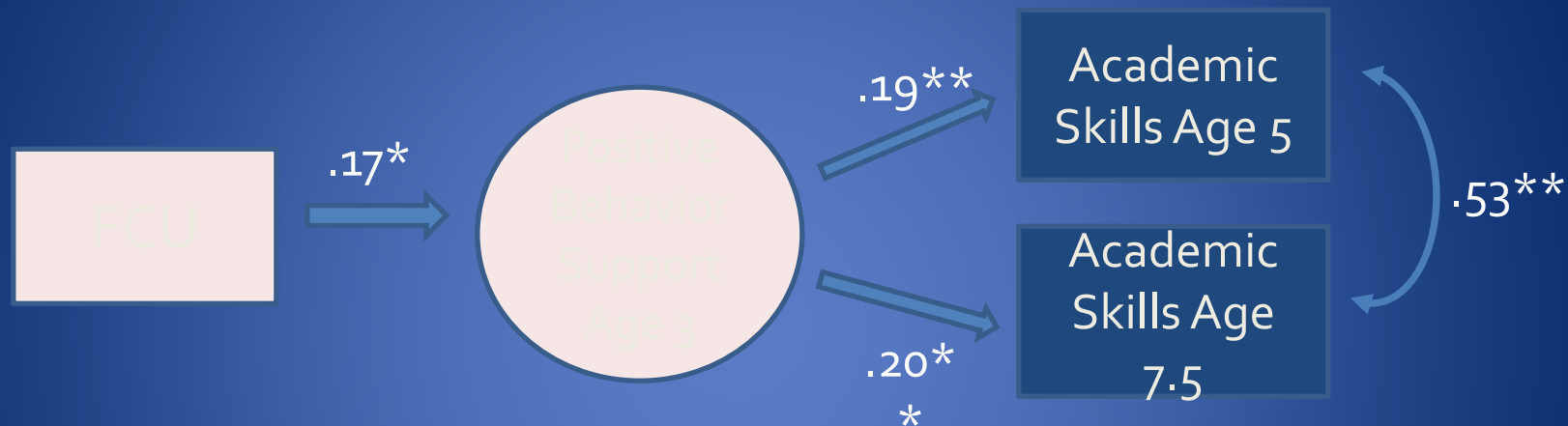
Two reasons to consider drug abuse/addiction prevention when examining ways to enhance educational outcomes:

1. Drugs can impair academic achievement
2. The very same targets that are useful for drug abuse prevention are useful for improving academic functioning

Drug Prevention Interventions and Positive Educational Outcomes: *Examples across development*

- Infancy Interventions:
 - ✓ Nurse Family Partnership
 - ✓ Family Check Up 2-3 years old
- Early grade school interventions:
 - ✓ Good Behavior Game
 - ✓ Seattle Social Development Program
- Elementary/Middle School:
 - ✓ Family Check Up
 - ✓ Strengthening Families Program 10-14
 - ✓ Positive Action Intervention

Family Check Up (FCU) at Ages 2 & 3 Leads to Higher Academic Achievement at Ages 5 & 7.5



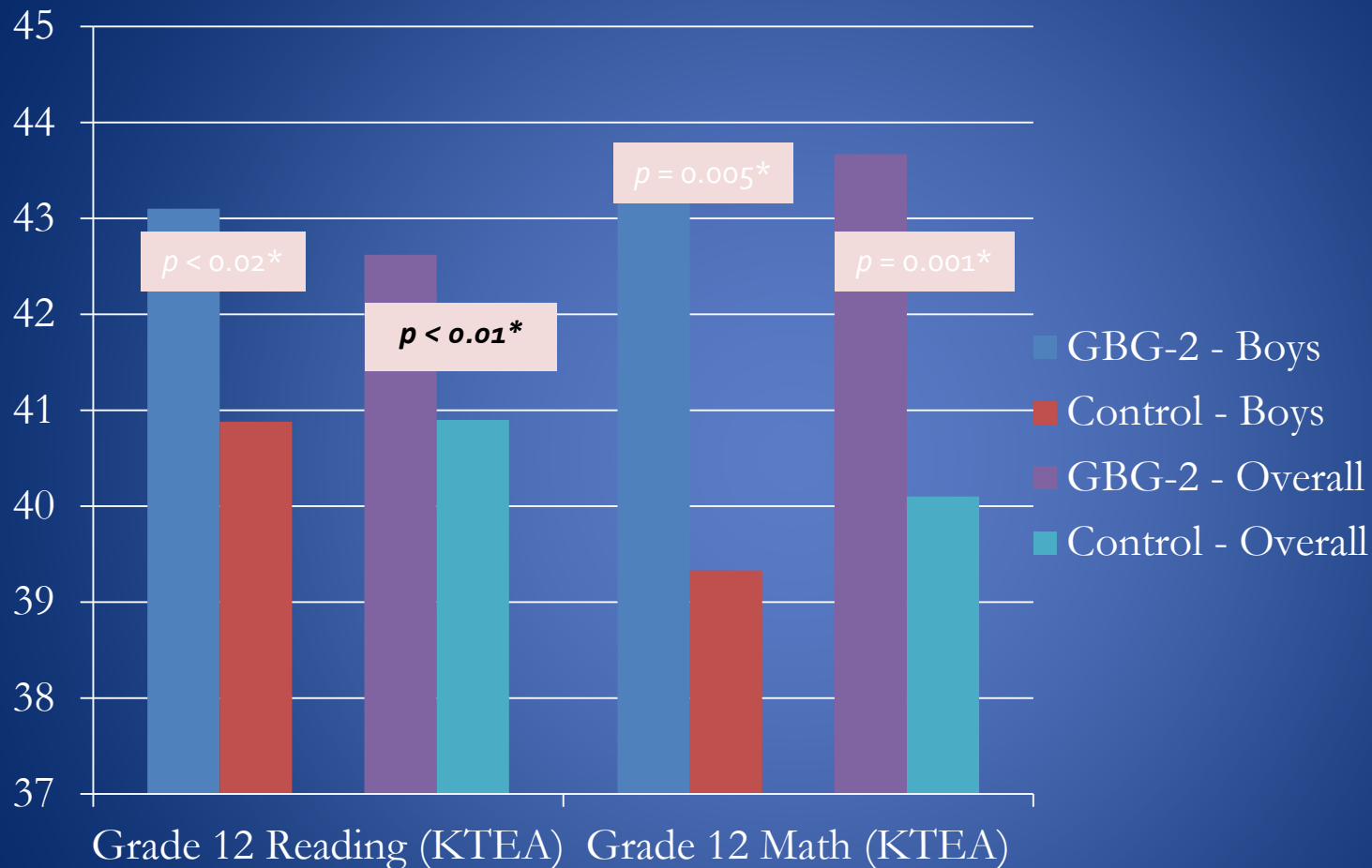
Indirect effect of FCU assignment on child academic achievement through changes in Parent's Positive Behavior Support.

* $p < .05$. ** $p < .01$

Drug Prevention Interventions and Positive Educational Outcomes: *Examples across development*

- Infancy Interventions:
 - ✓ Nurse Home Visitation
 - ✓ Family Check Up 2-3 years old
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 - ✓ Good Behavior Game
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Good Behavior Game-2 (GBG-2) Increases Grade 12 Reading/Math Achievement



GBG-2: Classroom Centered Intervention combining GBG and enhanced school curriculum

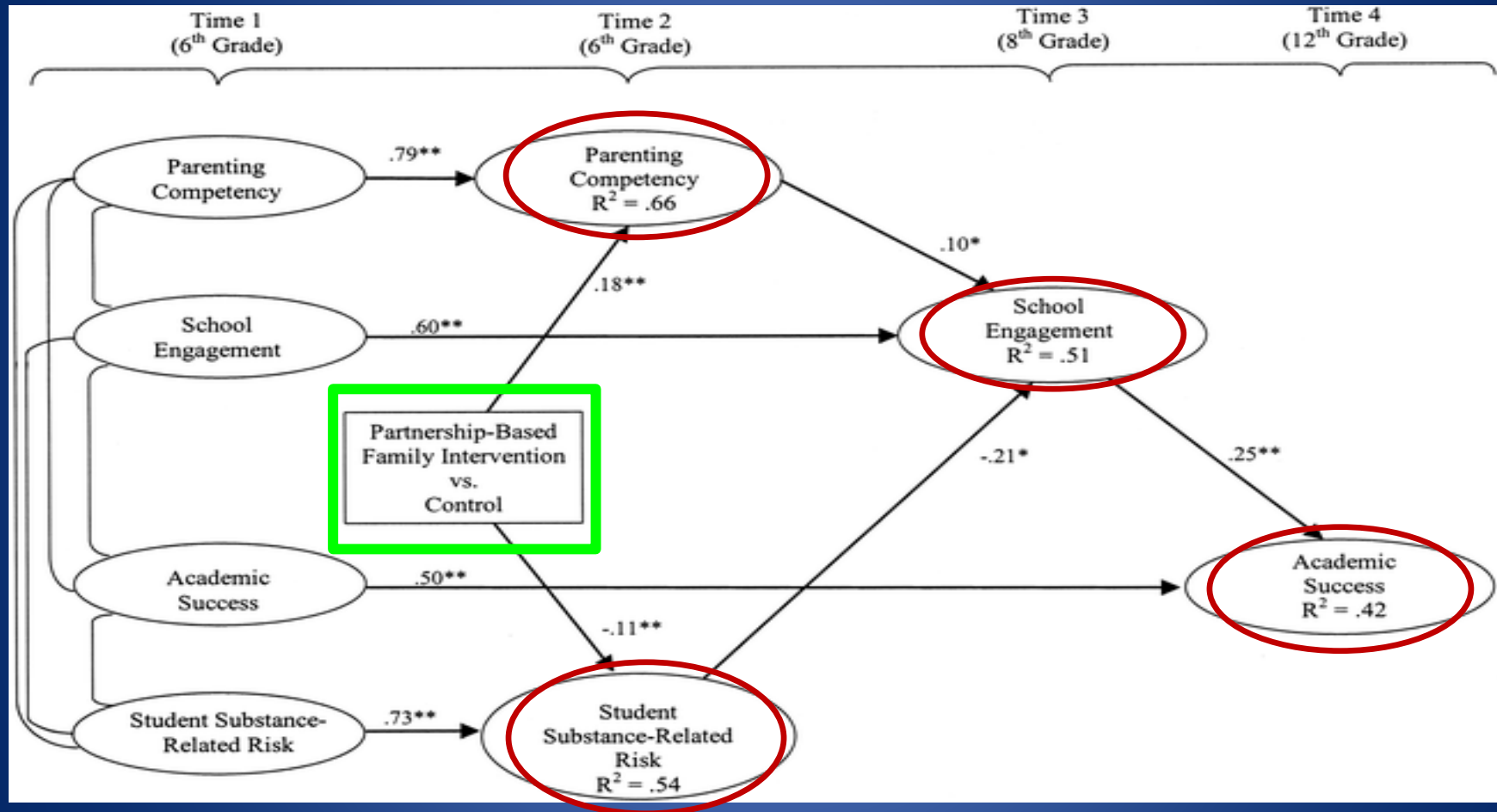
KTEA: Kaufman Test of Educational Achievement

* Significance of mixed-model regression analysis

Drug Prevention Interventions and Positive Educational Outcomes: *Examples across development*

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Strengthening Families Program 10-14 during Grade 6 Leads to Greater Academic Success in Grade 12

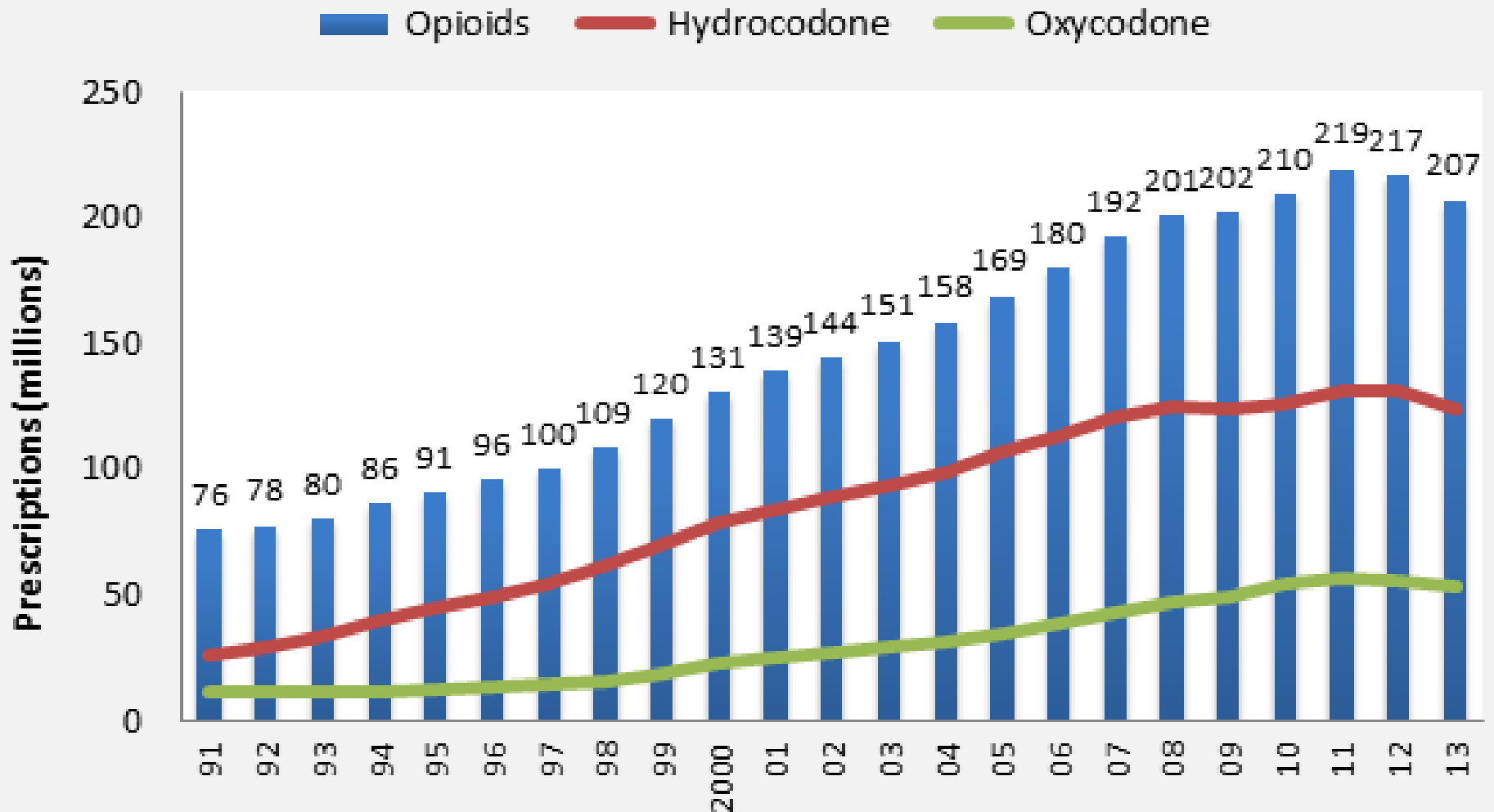


Spoth, R., Randall, G. K., & Shin, C. (2008) School Psychology Quarterly, 23(1), 70-89

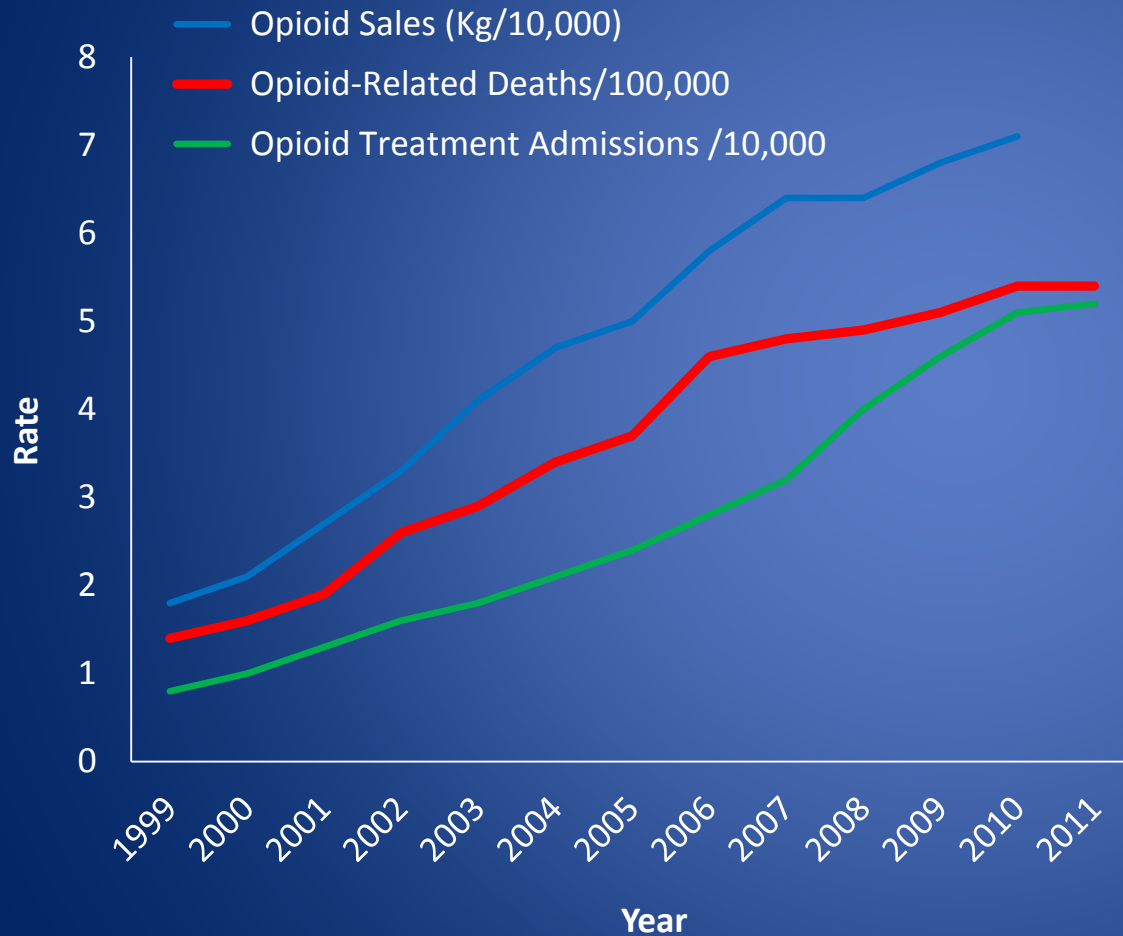
Prevention Interventions Can Have
Unintended Positive Effects on Other
Health Risking Behaviors, *including*
Emerging Drugs of Abuse

Prescription Opioid Drug Abuse

Near Tripling of Opioid Prescriptions Dispensed by U.S. Retail Pharmacies, Years 1991-2013



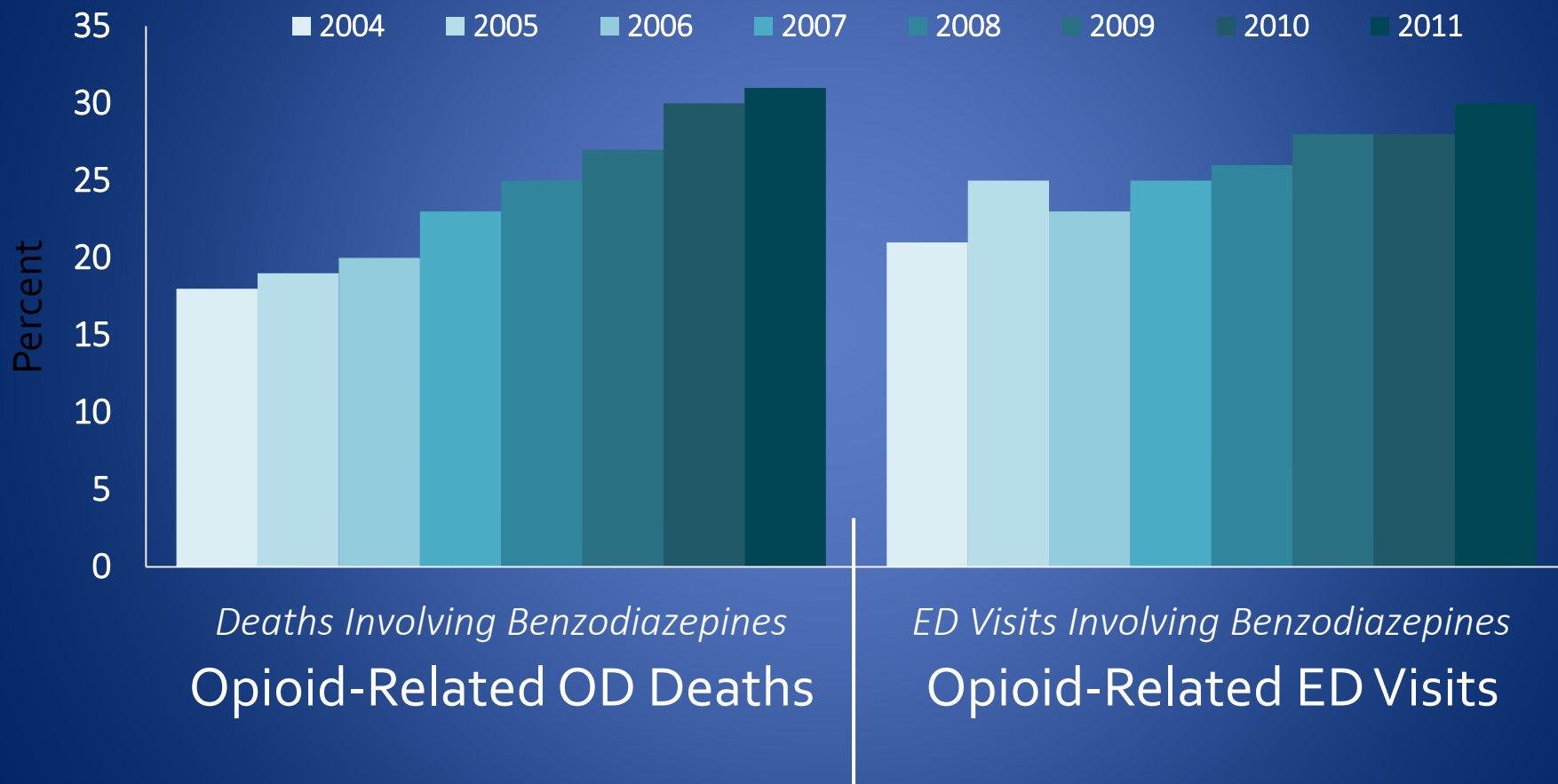
Marked Increases in Opioid-related Deaths (parallel to opioid sales and Rx opioid treatment admits), USA



2013 OD Deaths:

- 43,982 Any Drug
 - (41,3(22,810 in 2011))
- 16,235 Rx opioid
 - (16,917 in 2011)
- 8,257 Heroin
 - (4,397 in 2011)bb

It's Not Just Opioids: *Increasing Overlap of Benzodiazepines and Opioids*

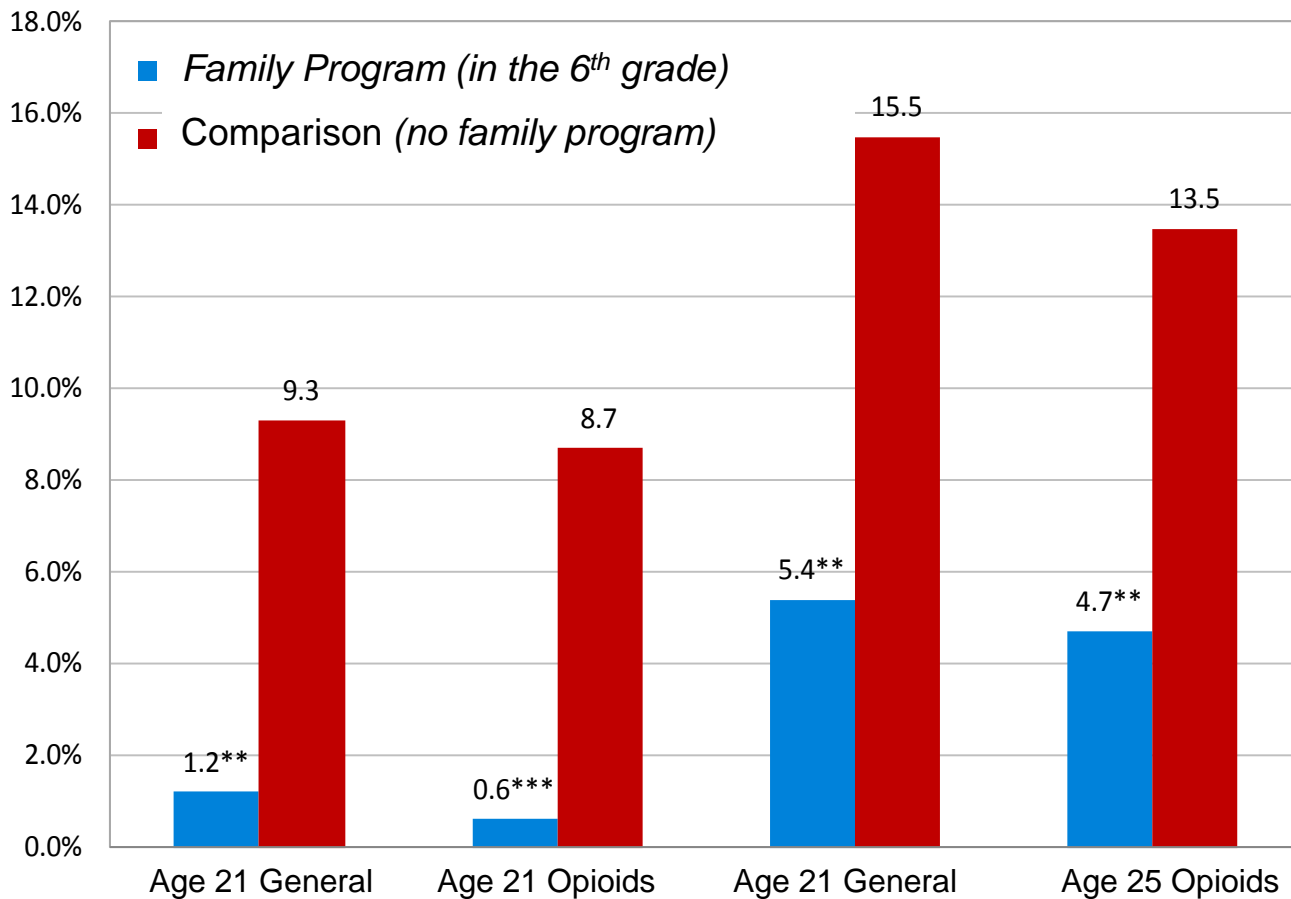


Source: CM Jones, JK Mcaninch, *American Journal of Preventive Medicine*, 2015

Universal Drug Abuse Prevention *Reduces Prescription Drug Misuse*

In this study, for 100 young adults in general population starting Rx abuse, only 35 young adults from an intervention community started.

Overall, three studies now suggest the impact of universal prevention on prescription drug abuse.



p<.01; *p<.001; Relative Reduction Rates (RRRs)= 65-93%

Note: General=Misuse of opioids, depressants or stimulants.

Source: R Spoth et al. *American Journal of Public Health* 2013

Prevention: Overdose Intervention

- **Naloxone Distribution** for opioid overdose victims. The *potential* for direct intervention to save lives.

➤ *Note the April 3, 2014 FDA approval of the naloxone auto-injector (called "Evzio")*

- **Naloxone Nasal Spray Development**

Needle-free, unit-dose, ready-to-use opioid overdose antidote.

- *NIDA STTR Grantee – AntiOp, Inc., Daniel Wermeling, CEO*
- *NIDA clinical study with Lightlake Therapeutics, Inc.*



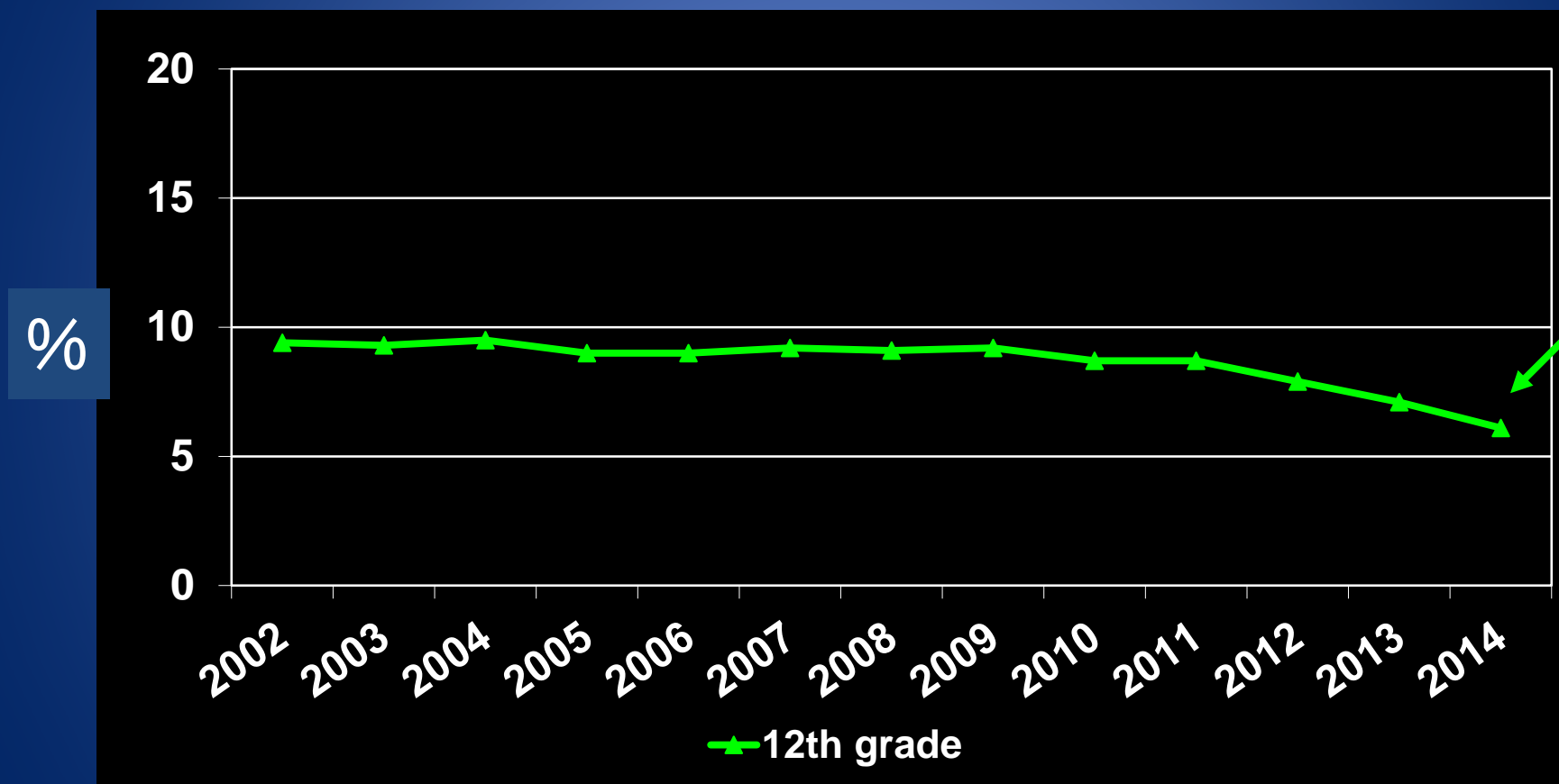
Prescription Drug Abuse:

What can be done?

- Primary Prevention
- Less abusable analgesics
- Overdose Intervention
- Better Access to Effective Addiction Treatments
(especially medications for opioid addiction)
- Public and Clinician Education



Fewer High School Seniors Reporting Use of Narcotics Other than Heroin, in USA



Denotes significant difference between 2013 and 2014

SOURCE: University of Michigan, 2014 Monitoring the Future Study

Recent Slight Reductions in Rx Opioid-Related Deaths but *Marked Increases in Heroin*

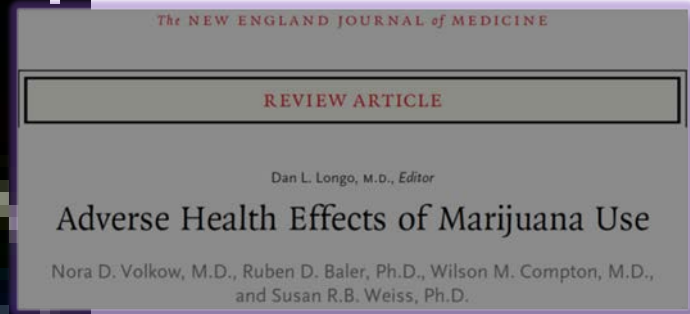
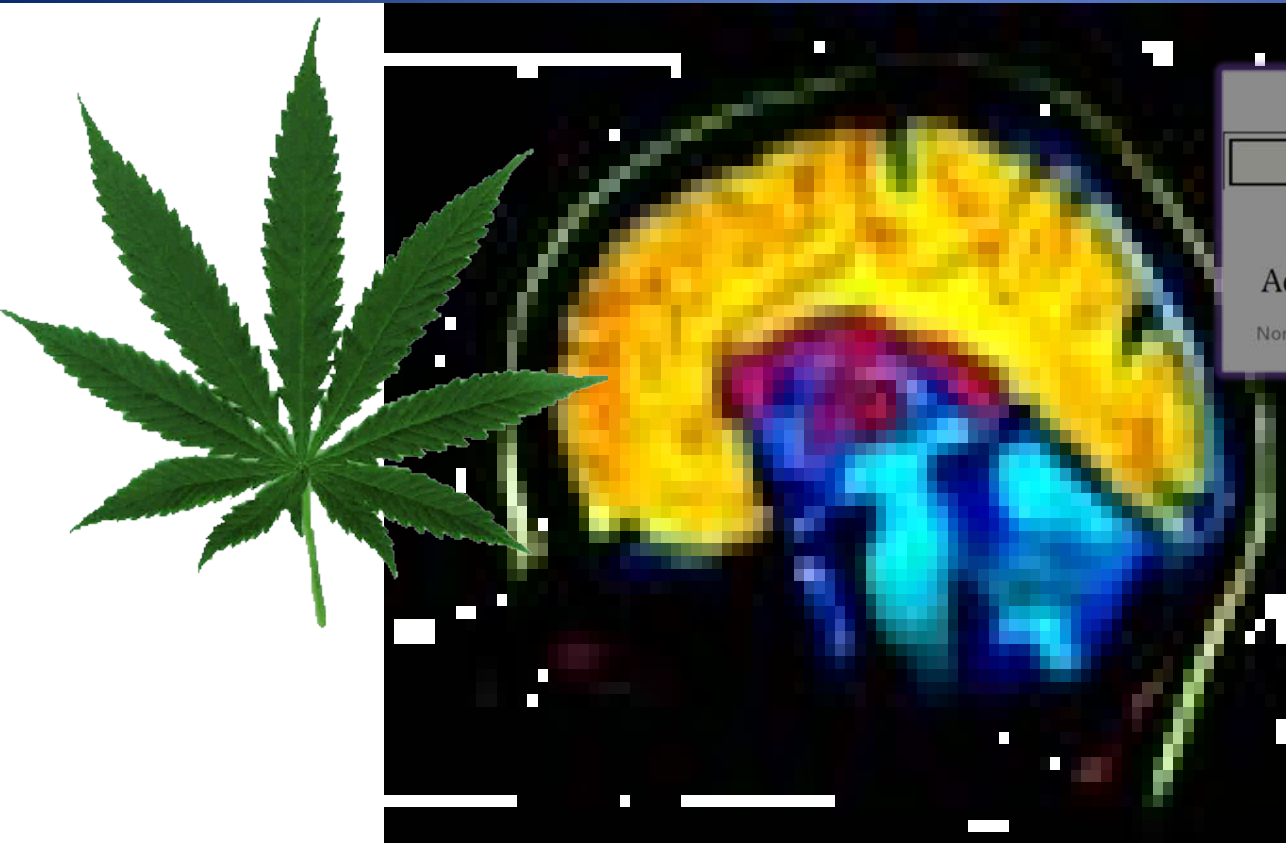
2013 OD Deaths:

- 16,235 Rx opioid
 - (16,007 in 2012 and 16,917 in 2011)
- 8,257 Heroin
 - (4,697 in 2012 and 4,397 in 2011)



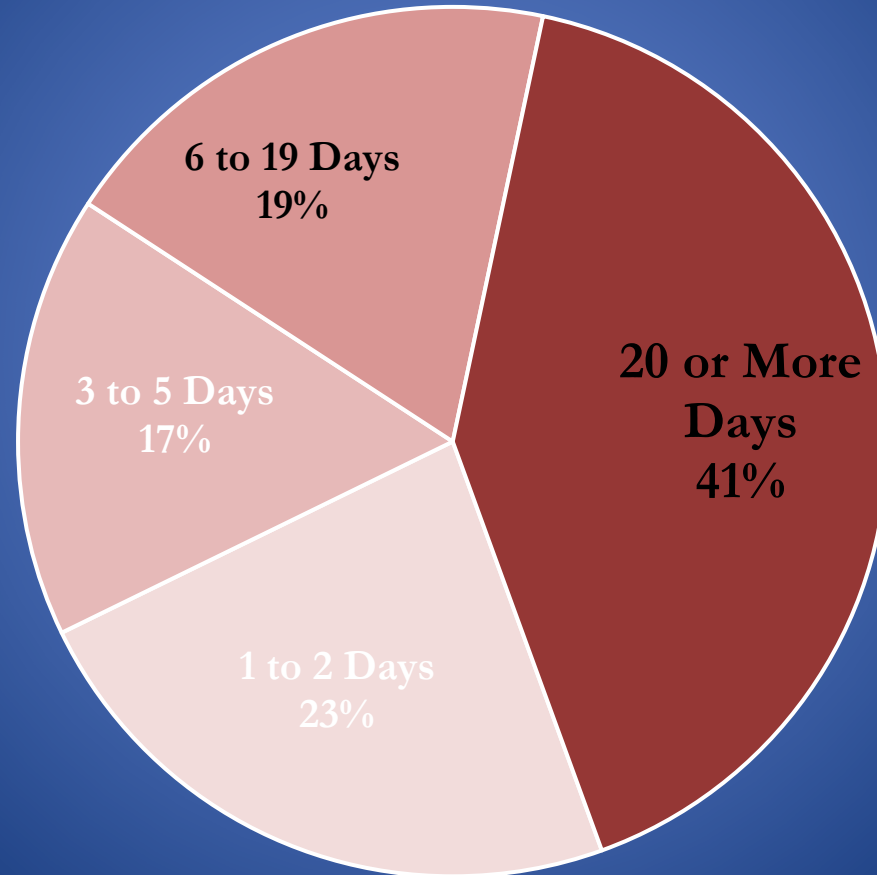
Another Key Emergent Drug Issue in the USA:

The Shifting Marijuana Legal Environment: Linking Epidemiology and Neuroscience



Among Current Marijuana Users, Two In Five Are Daily or Almost Daily Users

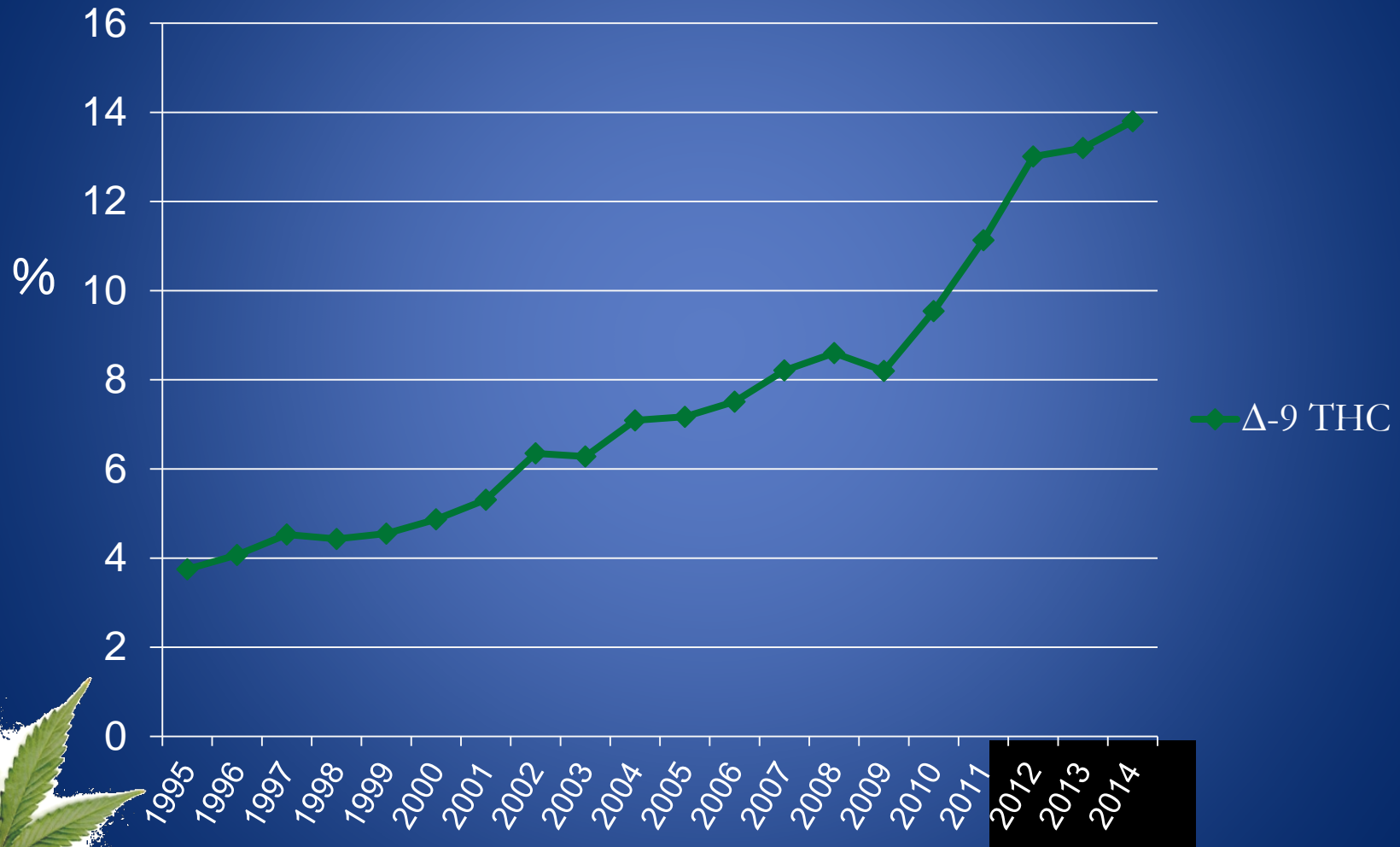
Number of Days Used Marijuana in the Past Month



19.8 Million Past Month Users of Marijuana in 2013

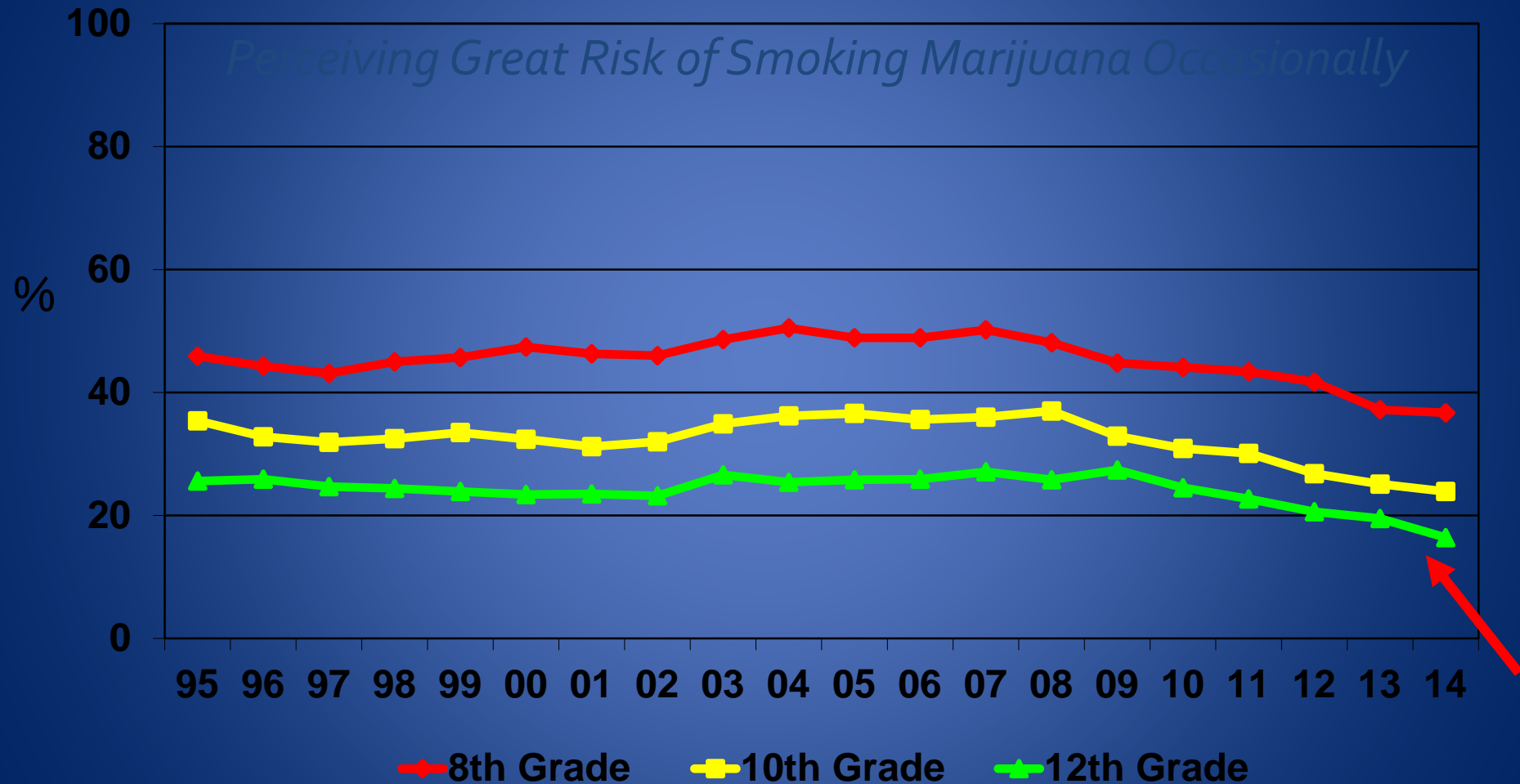
Source: SAMHSA, 2013 National Survey on Drug Use and Health (September 2014).

Increasing Potency of Marijuana (% Δ -9 THC)



SOURCE: University of Mississippi Marijuana Project

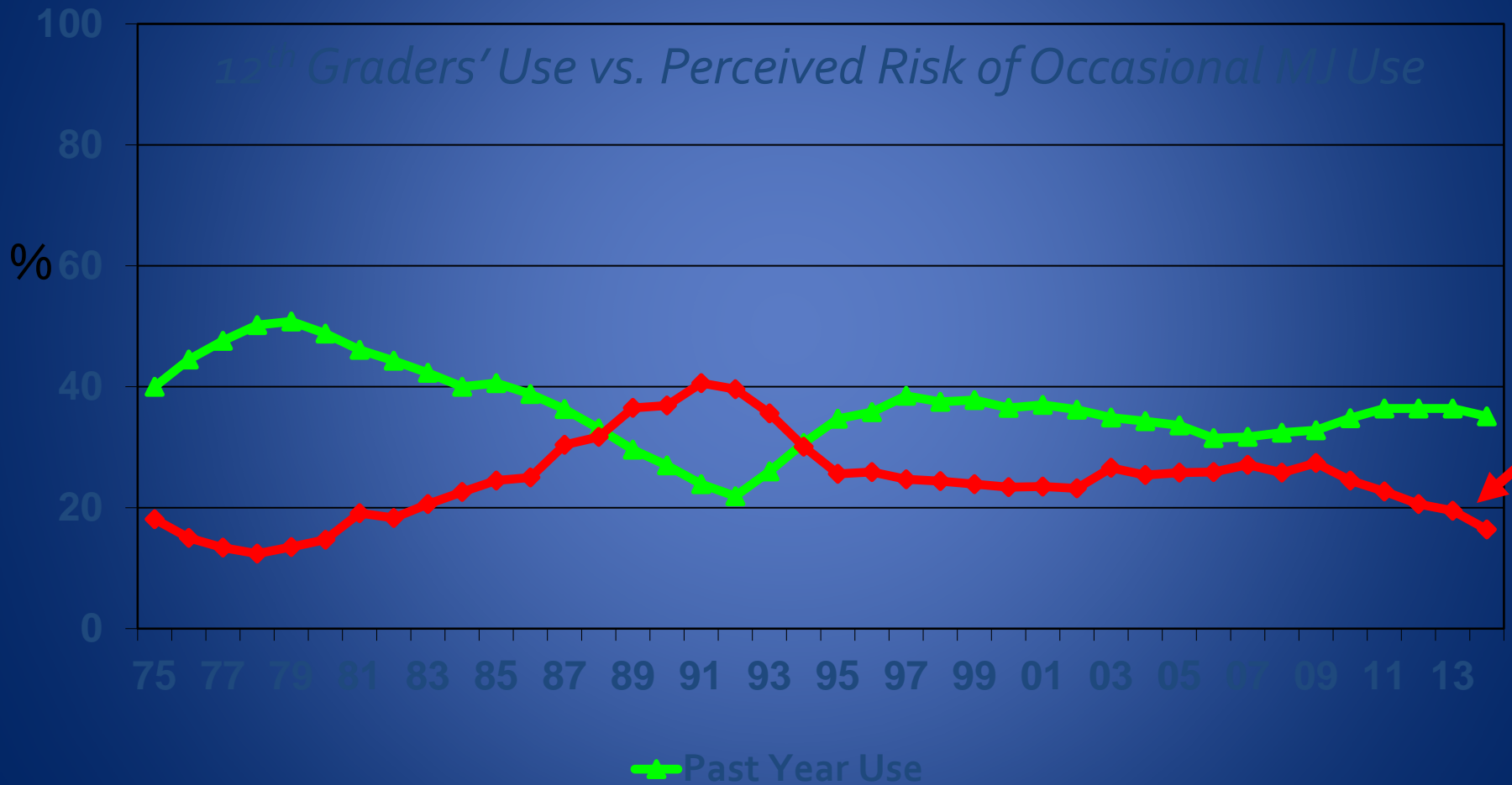
Perceived Riskiness of Smoking Marijuana has Declined



↗ Denotes significant difference between 2013 and 2014.

SOURCE: University of Michigan, 2014 Monitoring the Future Study

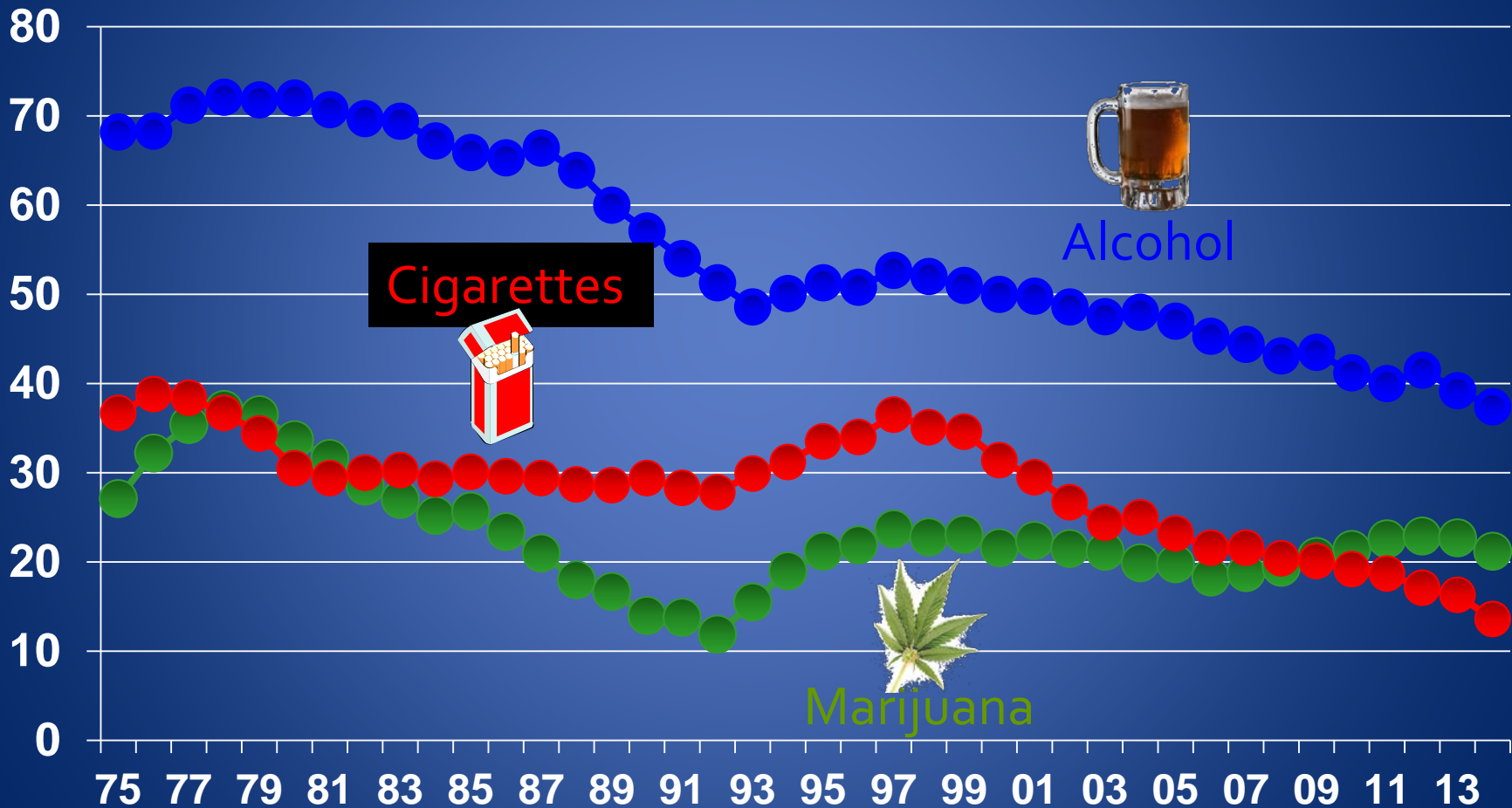
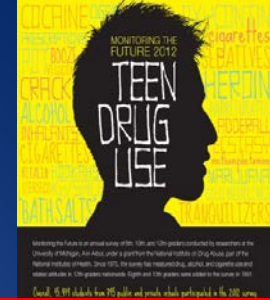
Perceived Risk is Correlated with Use of Marijuana



Denotes significant difference between 2013 and 2014.

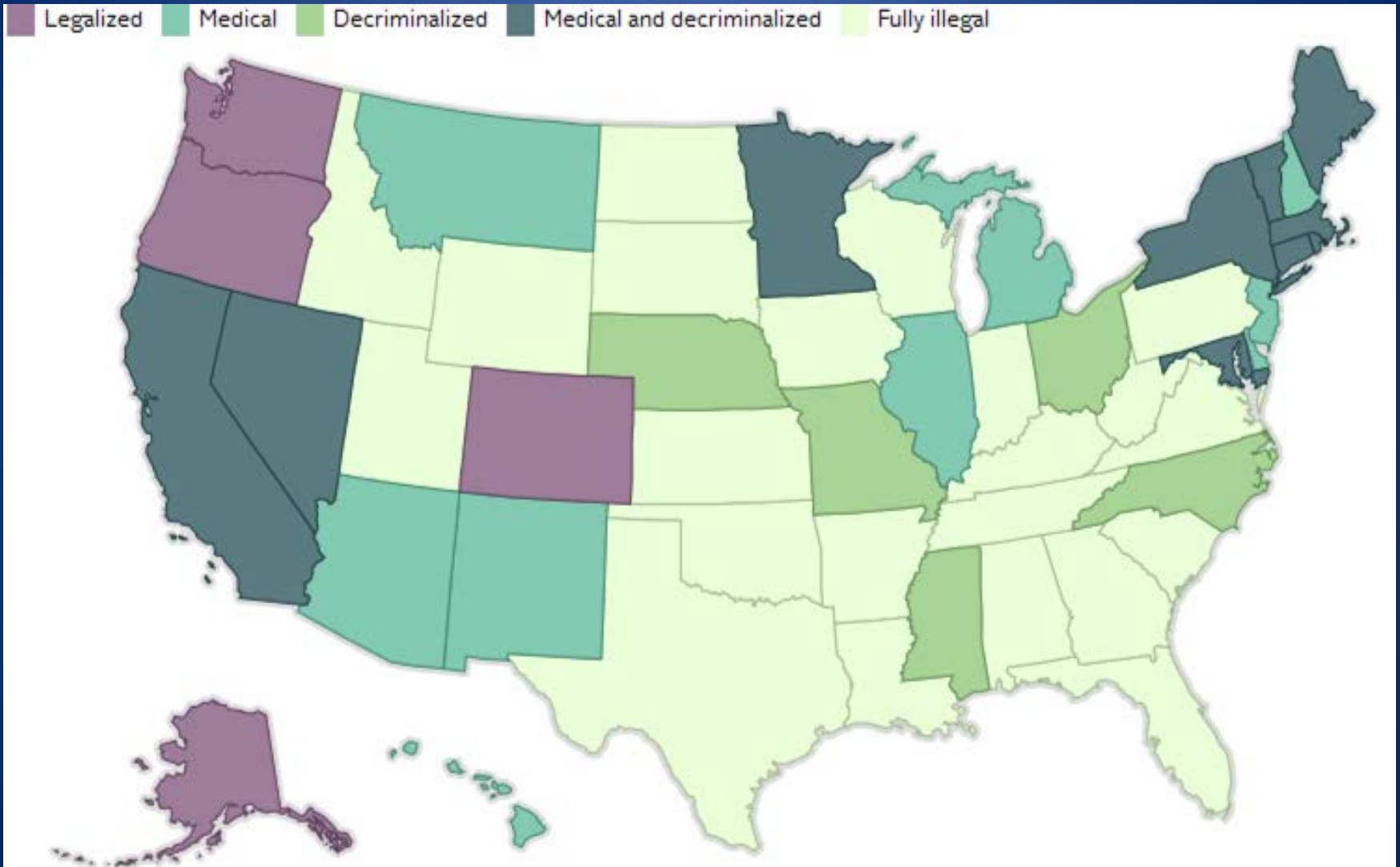
SOURCE: University of Michigan, 2014 Monitoring the Future Study

Percentage of U.S. 12th Grade Students Reporting Past Month Use of Alcohol, Cigarettes and Marijuana



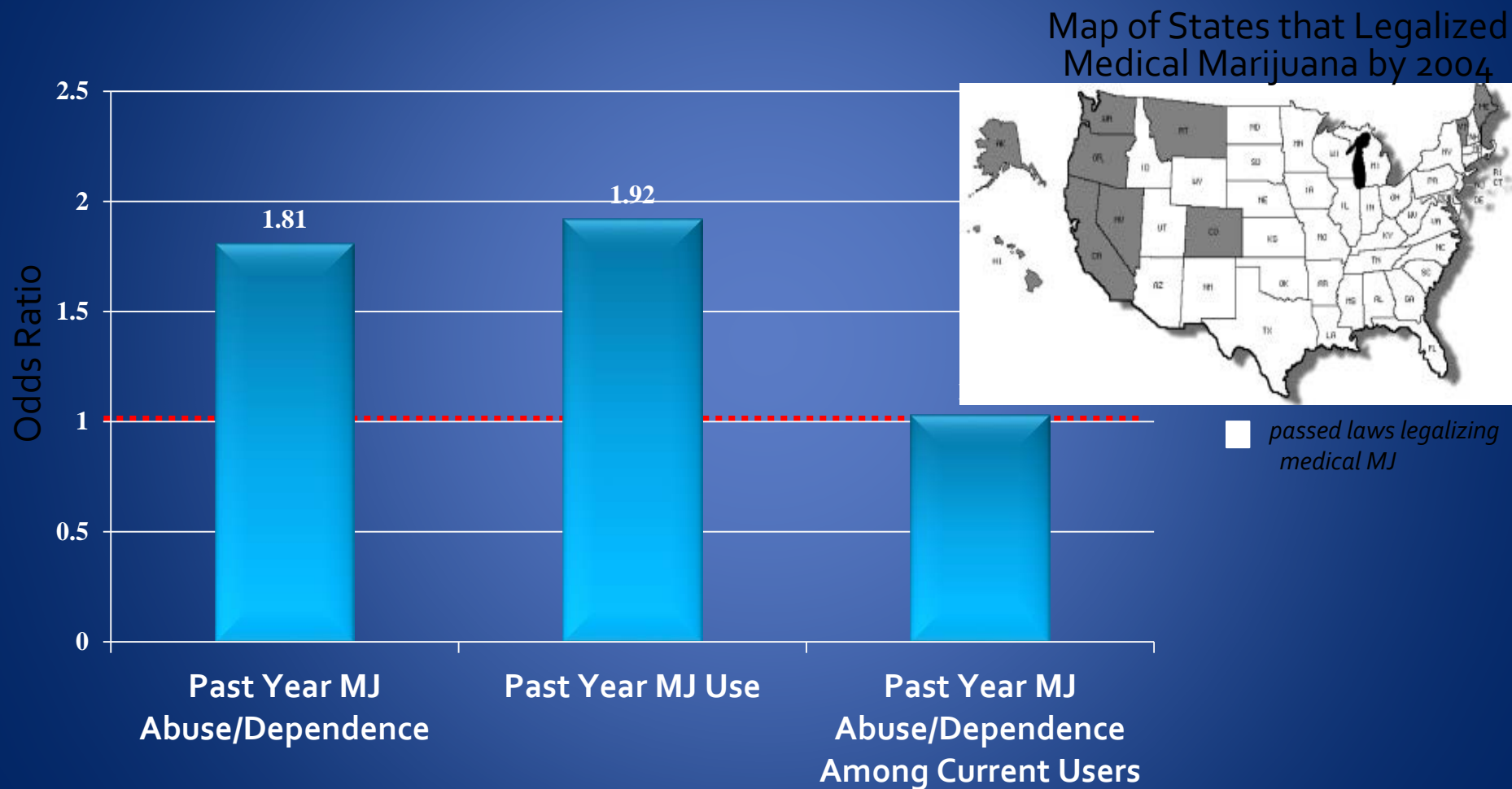
SOURCE: University of Michigan, 2014 Monitoring the Future Study.

Status of Marijuana Laws in the USA



Source: NORML, Drug Policy Alliance, and the Marijuana Policy Project

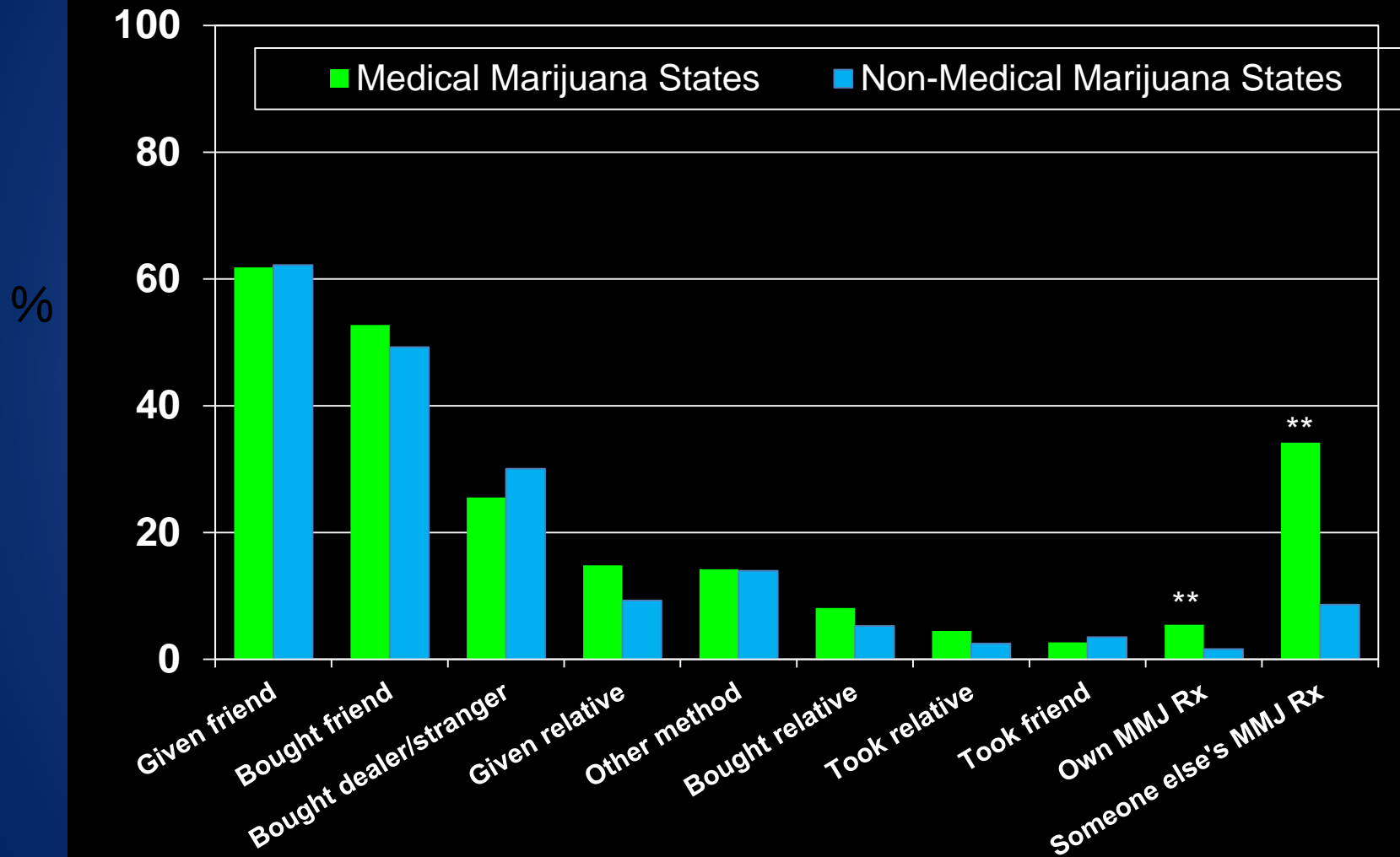
States that Legalized Marijuana Use For Medical Purposes Have Significantly Higher Rates Of Marijuana Use and of Marijuana Abuse and Dependence



NESARC: National Epidemiologic Survey on Alcohol and Related Conditions

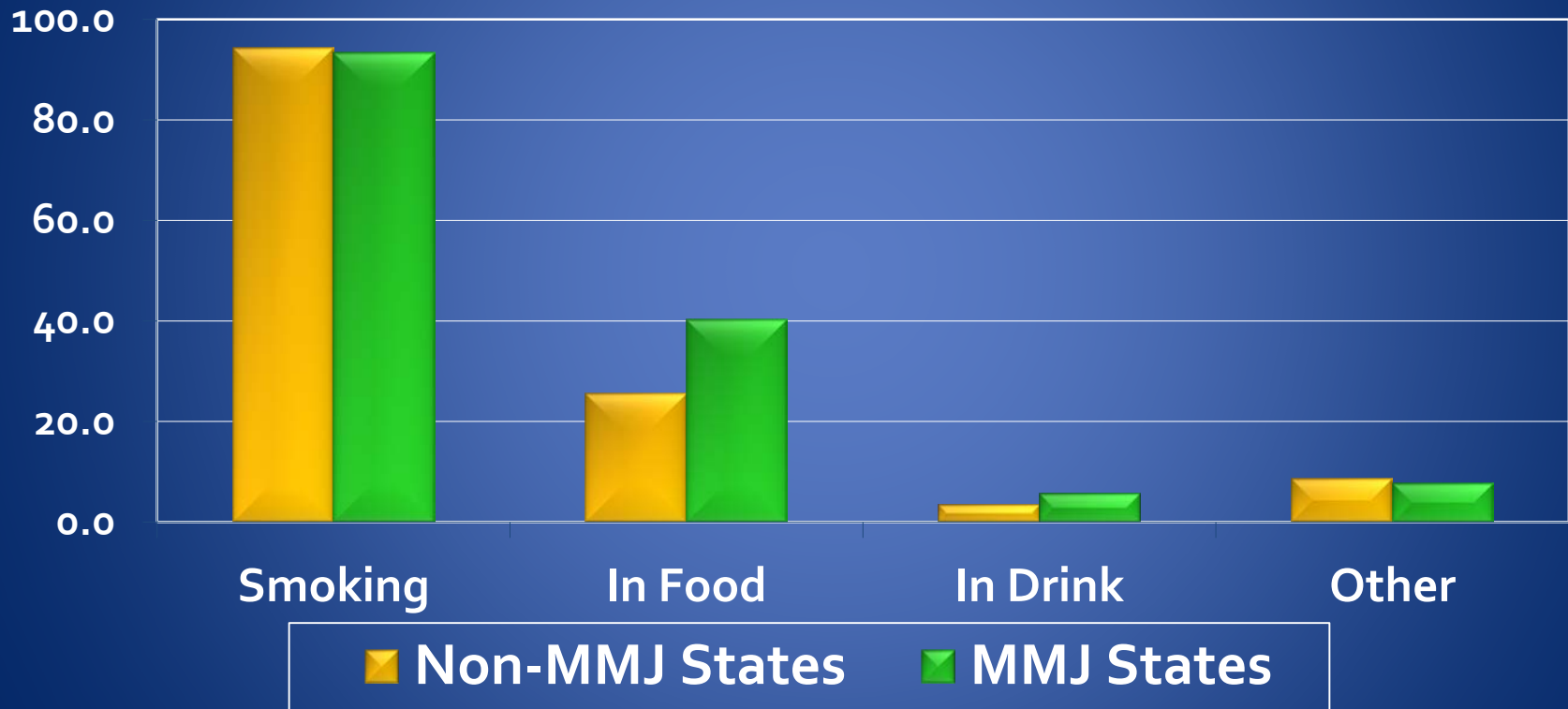
Cerda M et al. Drug and Alcohol Dependence 2012; 120: 22 – 27.

Source of Marijuana* among 12th Graders in 2012 and 2013, by State Policy



*Category
 ** Statistically significant difference

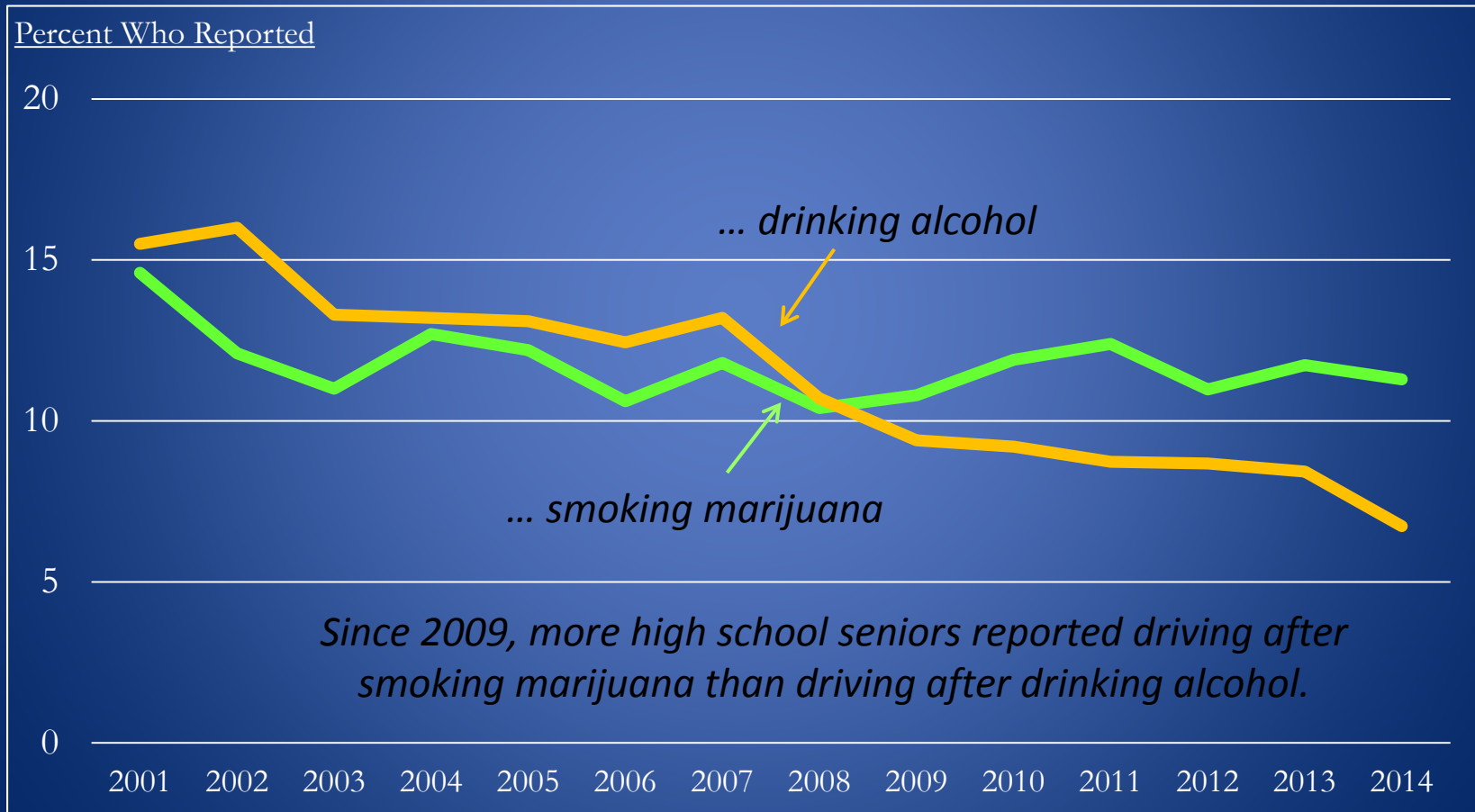
Methods of Using Marijuana Among 12th Grade Past Year Users, 2014



SOURCE: University of Michigan, 2014 Monitoring the Future Study

12th Graders Who Drove After Smoking Marijuana or Drinking Alcohol, 2001-2014

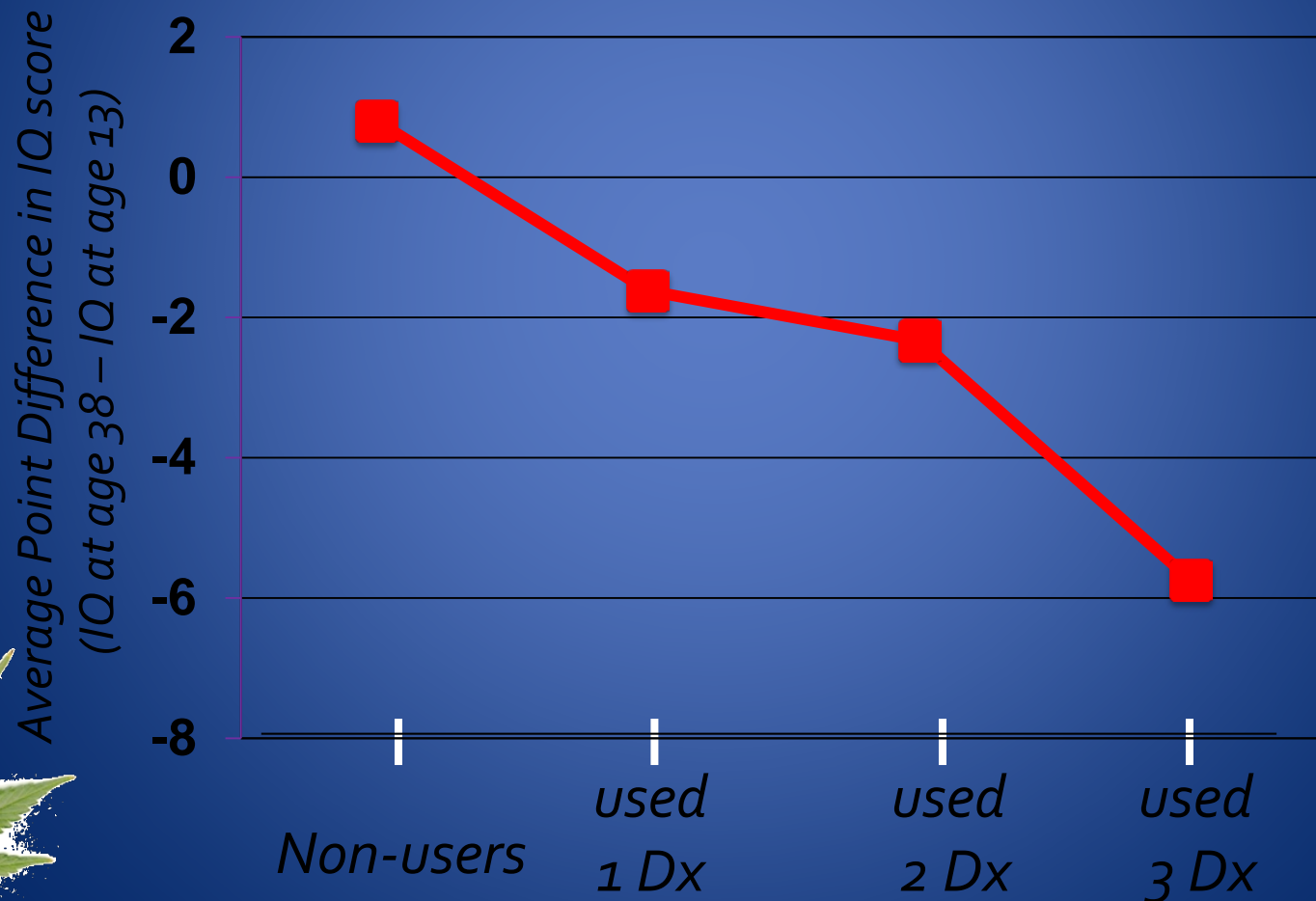
During the LAST TWO WEEKS, have you driven a car, truck, or motorcycle after ...



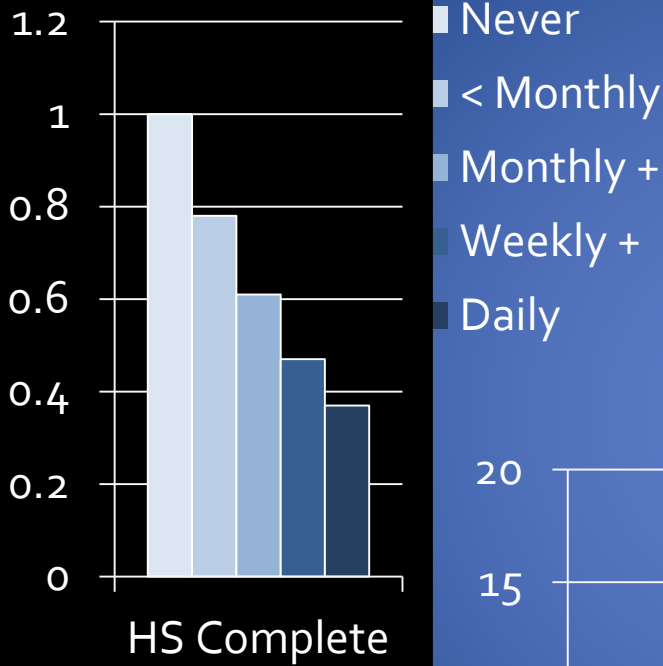
Source: University of Michigan, 2014 Monitoring the Future study, Unpublished special tabulations (December 2014).

Persistent Marijuana Users Show A Significant IQ Drop between Childhood and Midlife

Followed 1,037 individuals from birth to age 38. Tested marijuana use at 18, 21, 26, 32 and 38. Tested for IQ at ages 13 and 38



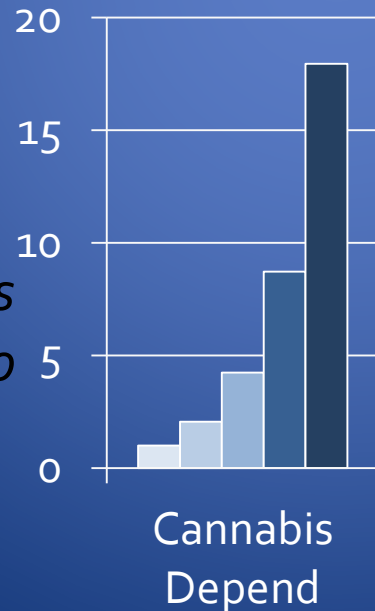
Use of Cannabis Associated with Worse Outcomes in the 20's (3 Australia/New Zealand Studies)



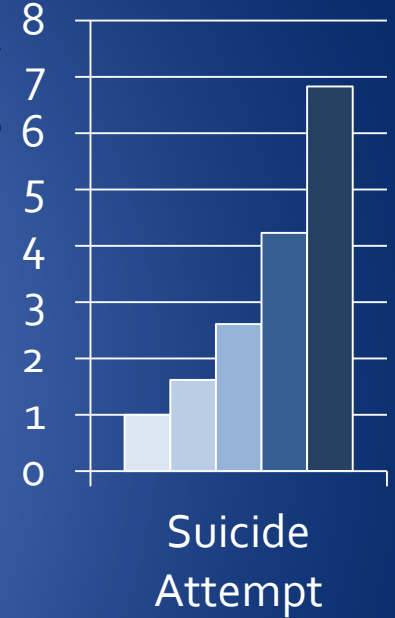
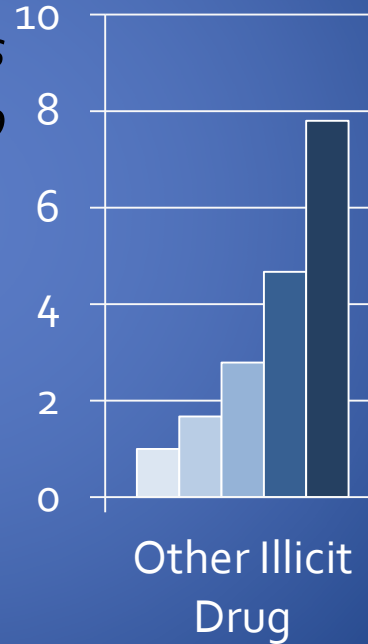
Odds Ratio

- Never
- < Monthly
- Monthly +
- Weekly +
- Daily

Odds Ratio



Odds Ratio



Adolescent Brain Cognitive Development National Longitudinal Study

NIDA, NIAAA, NCI, NICHD, NIMHD, ORWH, NIMH, NINDS, OBSSR

*Ten year longitudinal study of 10,000 children from
age 10 to 20 years to assess effects of drugs on
individual brain development trajectories*



Health Care Reforms

- **Paul Wellstone and Pete Domenici Mental Health Parity and Addiction Equity Act of 2008 (aka *Parity*)**
- **Patient Protection and Affordable Care Act of 2010 (aka *ACA*)**



The NEW ENGLAND JOURNAL of MEDICINE

Moving beyond Parity — Mental Health and Addiction Care under the ACA

Colleen L. Barry, Ph.D., and Haiden A. Huskamp, Ph.D.

AT THE INTERSECTION OF HEALTH, HEALTH CARE, AND POLICY

HealthAffairs

August 2011 Vol. 30 No. 8 healthaffairs.org

New Perspectives On Substance Abuse

Summary

- **Neuroscience reminds us of the importance of development and provides a background for prevention intervention development**
- **Current and emerging drug abuse issues require our creative and vigorous responses**
- **Health care reforms may provide new ways to support prevention**

www.drugabuse.gov

Now NIDA resources are with you wherever you go!

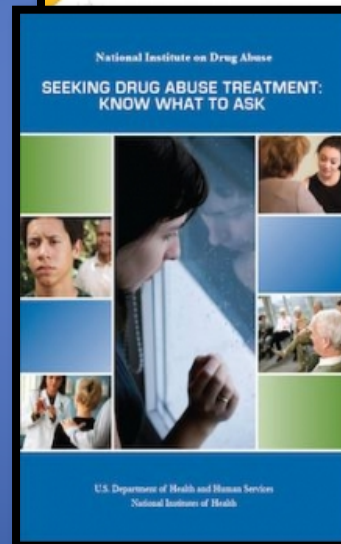
We're connecting communities with a new mobile Web site that gives you drug-related information by topic, audience, and format—when you need it, where you need it.

The new mobile site (m.drugabuse.gov) provides:

- ✓ Easy access to NIDA's resources through iPhone, Android, iPad, and other smartphones and tablets.
- ✓ A convenient way to find, view, request, and share publications—right in the palm of your hand.
- ✓ E-books of all publications to allow offline reading on all major e-readers, including Kindle and NOOK.
- ✓ New Spanish-language content on drugs of abuse and related topics.



NIDA NATIONAL INSTITUTE ON DRUG ABUSE
National Institutes of Health
U.S. Department of Health and Human Services



NIDAMED

Q & A

- Dr. Compton will now field questions.
- To alert the operator that you have a question, please press *1 on your phone; each question will be answered in the order in which it was received.
- Please state your name and organization before each question.
- Questions?

The Science of Prevention: *Closing Remarks*



Michael Gottlieb
National HIDTA Director
Office of National Drug Control Policy

Evidence-Based Prevention Resources

Preventing Drug Use Among Children and Adolescents

National Institute on Drug Abuse - “The Red Book”

http://www.drugabuse.gov/sites/default/files/redbook_0.pdf



Drug Prevention 4 Teens

Drug Enforcement Agency

<http://www.dea.gov/pr/multimedia-library/publications/prevention4teens.pdf>

Links to Resources

- **DFCs and HIDTAs**
 - **List of all 2015 DFCs**
 - <https://www.whitehouse.gov/ondcp/Drug-Free-Communities-Support-Program>
 - **Map of all 2015 DFCs within each HIDTA**
 - <https://www.whitehouse.gov/sites/default/files/ondcp/grants-content/2015-dfc-hidta-program-maps.pdf>
- **Prevention Programs:**
 - **“The Red Book”**
 - https://www.drugabuse.gov/sites/default/files/preventingdruguse_2.pdf
 - **National Drug Facts Week**
 - <http://teens.drugabuse.gov/national-drug-facts-week/order-free-materials>
 - **Marijuana Infographic**
 - <http://www.drugabuse.gov/related-topics/trends-statistics/infographics/marijuana-use-educational-outcomes>
 - **Monitoring the Future Infographic**
 - <http://www.drugabuse.gov/related-topics/trends-statistics/infographics/monitoring-future-2014-survey-results>
- **DEA**
 - **Drug Prevention for Teens Guidebook**
 - <http://www.dea.gov/pr/multimedia-library/publications/prevention4teens.pdf>
- **SAMHSA**
 - **Alcohol Abuse Infographic**
 - <https://www.stopalcoholabuse.gov/resources/infographics/share.aspx?info=6>

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Thank you!

Questions or Comments?

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For More Information

WHITEHOUSE.GOV/ONDCP

