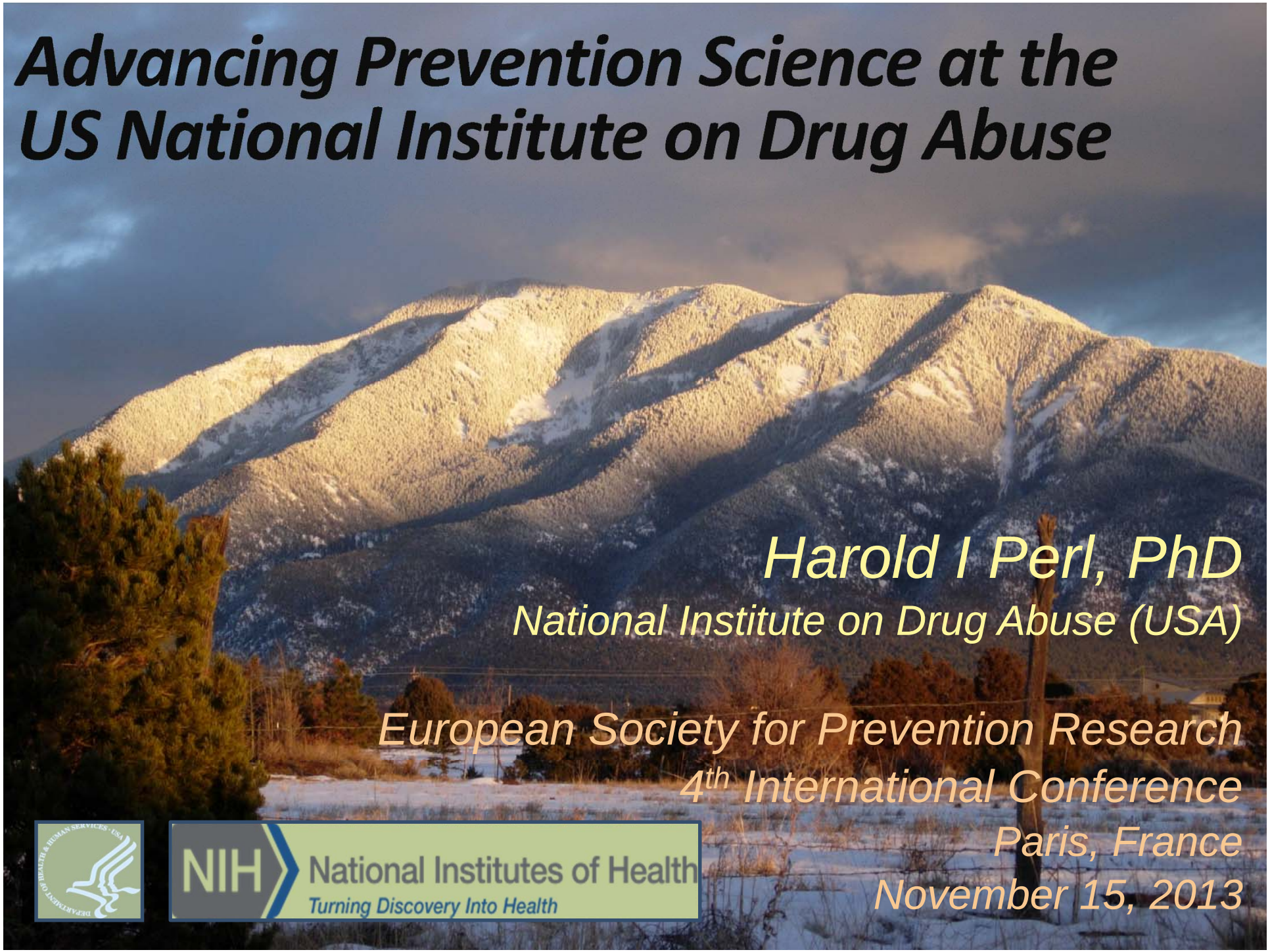
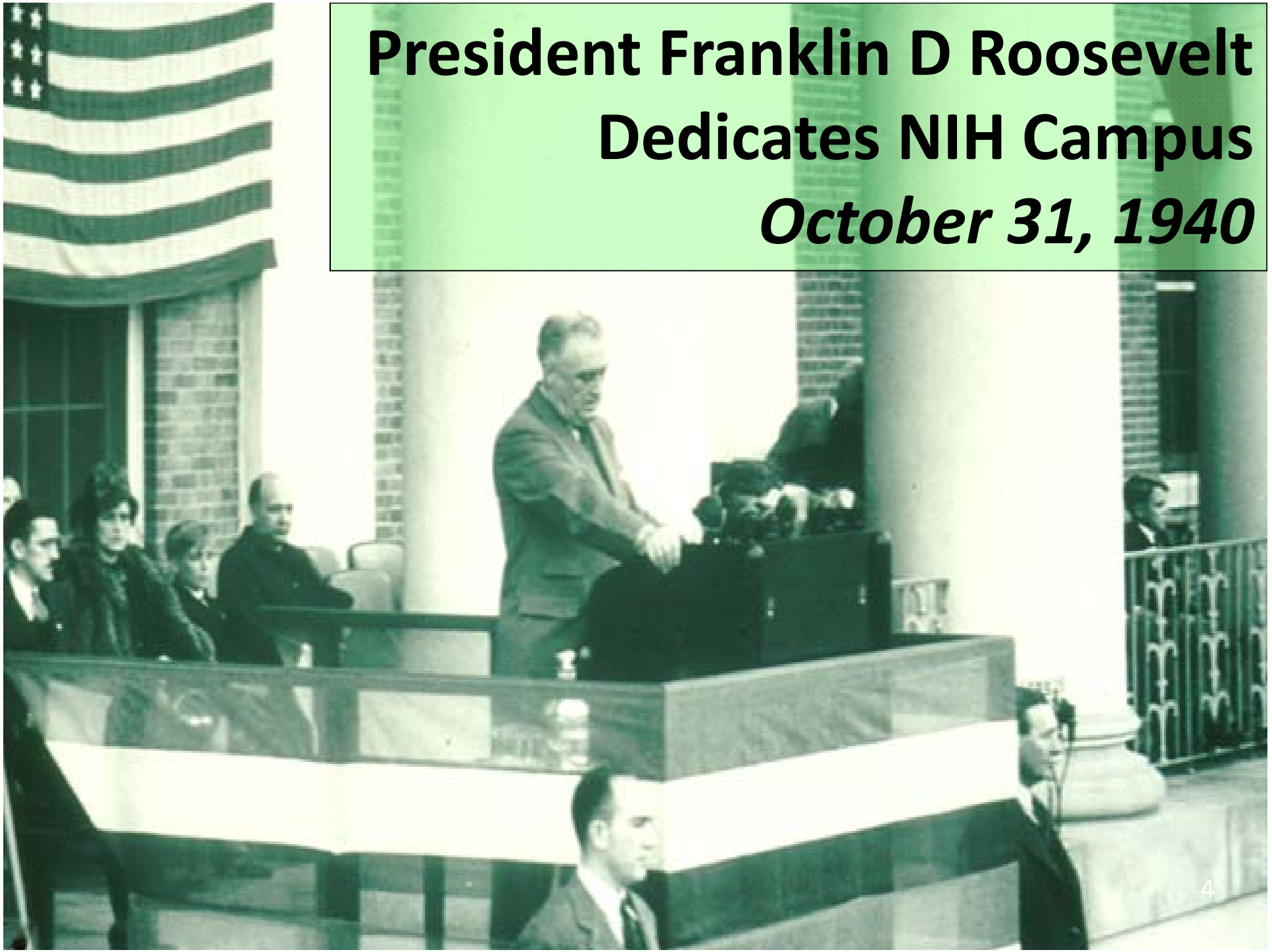

Advancing Prevention Science at the US National Institute on Drug Abuse
Harold I Perl, PhD
National Institute on Drug Abuse (USA)
European Society for Prevention Research
4th International Conference
Paris, France
November 15, 2013
NIH
National Institutes of Health
Turning Discovery Into Health

Overview

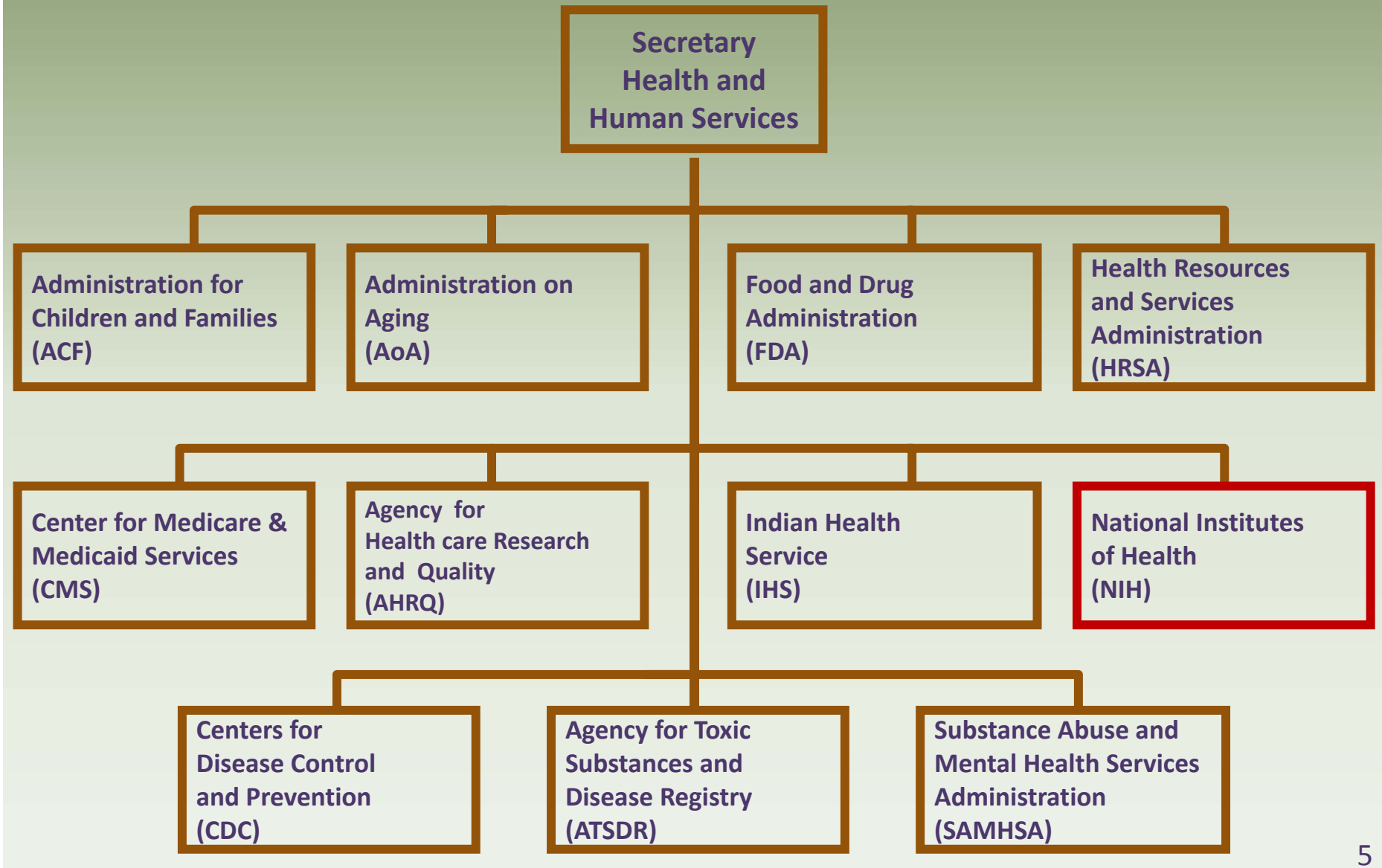
- Introduction
- A brief look at NIH & NIDA
- Emergent Drug Misuse Issues in USA
- Selected Recent Findings from NIDA Prevention Science
- Our Vision to Advance NIDA Prevention Research
- NIDA International Programs

Greetings from the NIH

President Franklin D Roosevelt Dedicates NIH Campus *October 31, 1940*



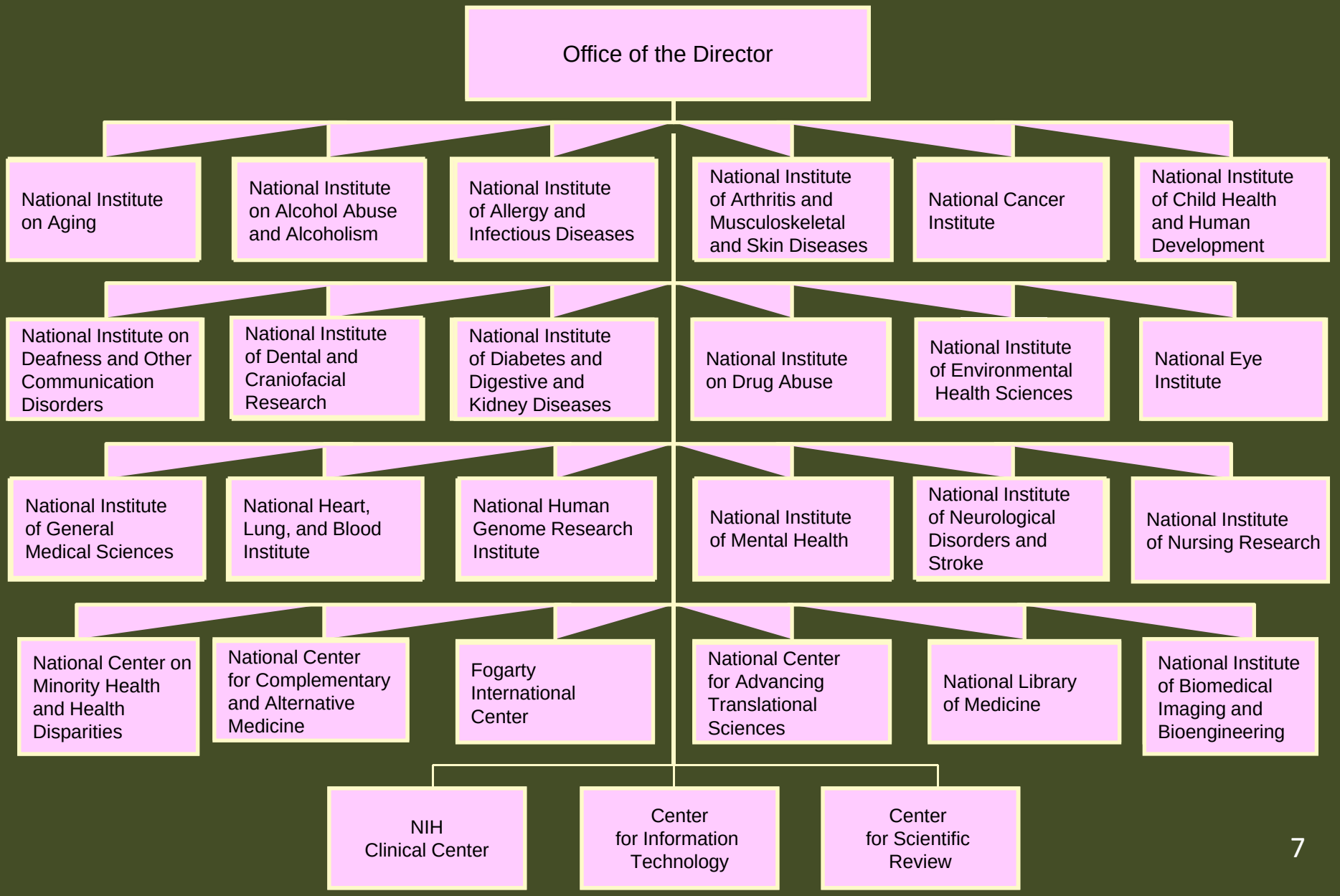
US Dep't of Health and Human Services



NIH Mission

To seek fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to enhance health, lengthen life, and reduce illness and disability

NIH Organizational Structure




En español
Researchers | Medical & Health Professionals | Patients & Families | Parents & Educators | Students & Young Adults
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News
Gene variant may predict whether a person will benefit from nicotine replacement therapies
Medication to treat marijuana addiction may be on the horizon
No added benefit from risk-reduction counseling at HIV testing
NIDA's drug abuse information for teens goes mobile
NIDA updates its consumer treatment guide in recognition of National Recovery Month
National Drug Facts Week 201 begins January 27
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Meetings and Events
A resource for patients and their families
Seeking Drug Abuse Treatment: What To Ask
Research to Improve Juvenile Justice Services
Bold New Initiative to Explore the Human Brain
2013 Intel Addiction Science winners visit NIDA
Latest Science
Study Parses Comorbidity of Cannabis Use and Social Anxiety
Dr. Marilyn Huestis Q & A: Matching Drug Effects to Drug Concentrations
Support for Basic Science
Improving Reproducibility and Transparency in Biomedical Research
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Data and Statistics
CONSEQUENCES
More young adults use pre-scription drugs nonmedically than any other age group.
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Use the SAMHSA Treatment Locator or call 1-800-662-HELP (4357).
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National Drug Abuse Treatment Clinical Trials Network
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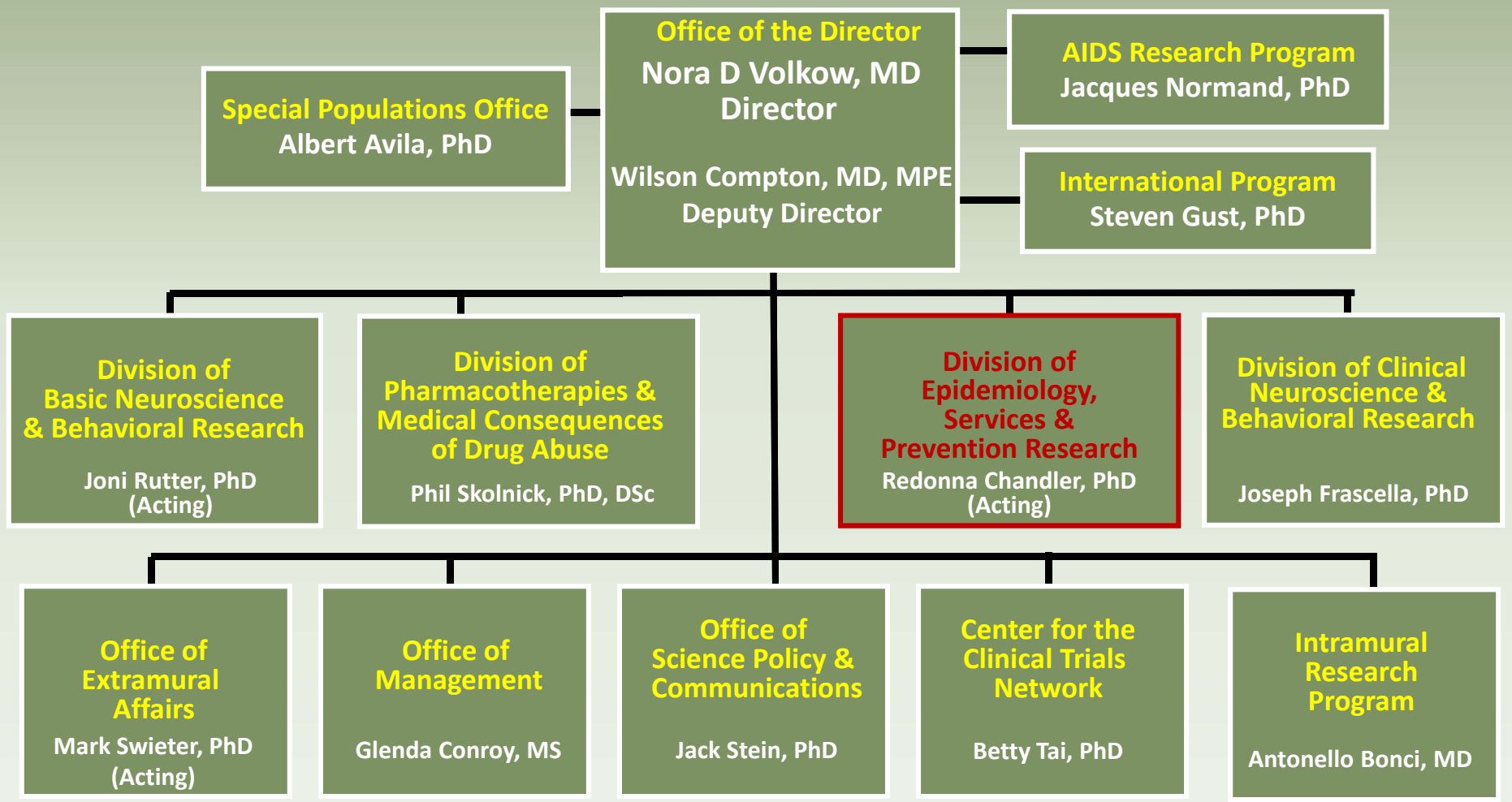
Drugabuse.gov

National Institute on Drug Abuse

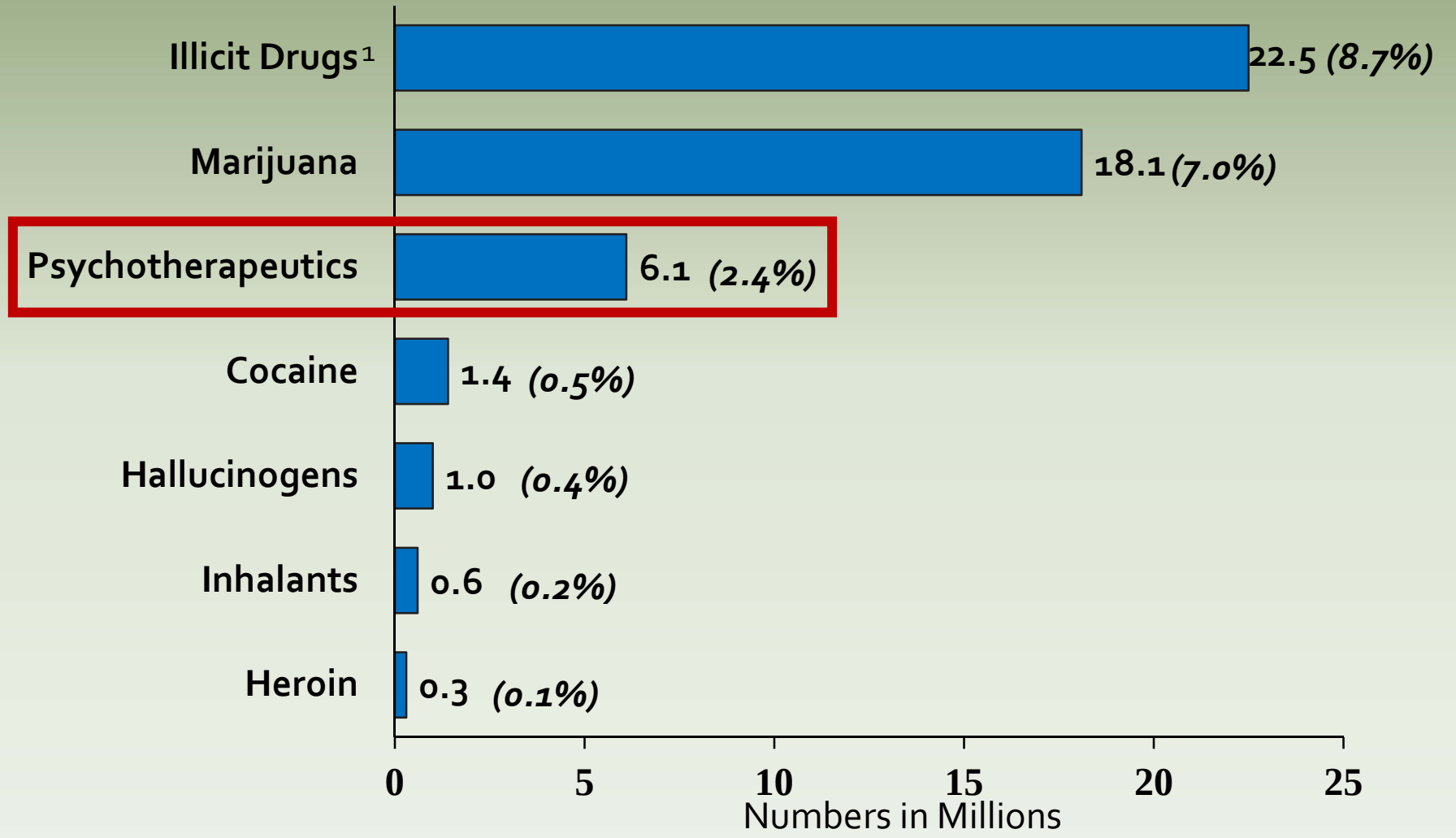


Emergent Drug Misuse Issues in the USA

Prescription Medications

Marijuana

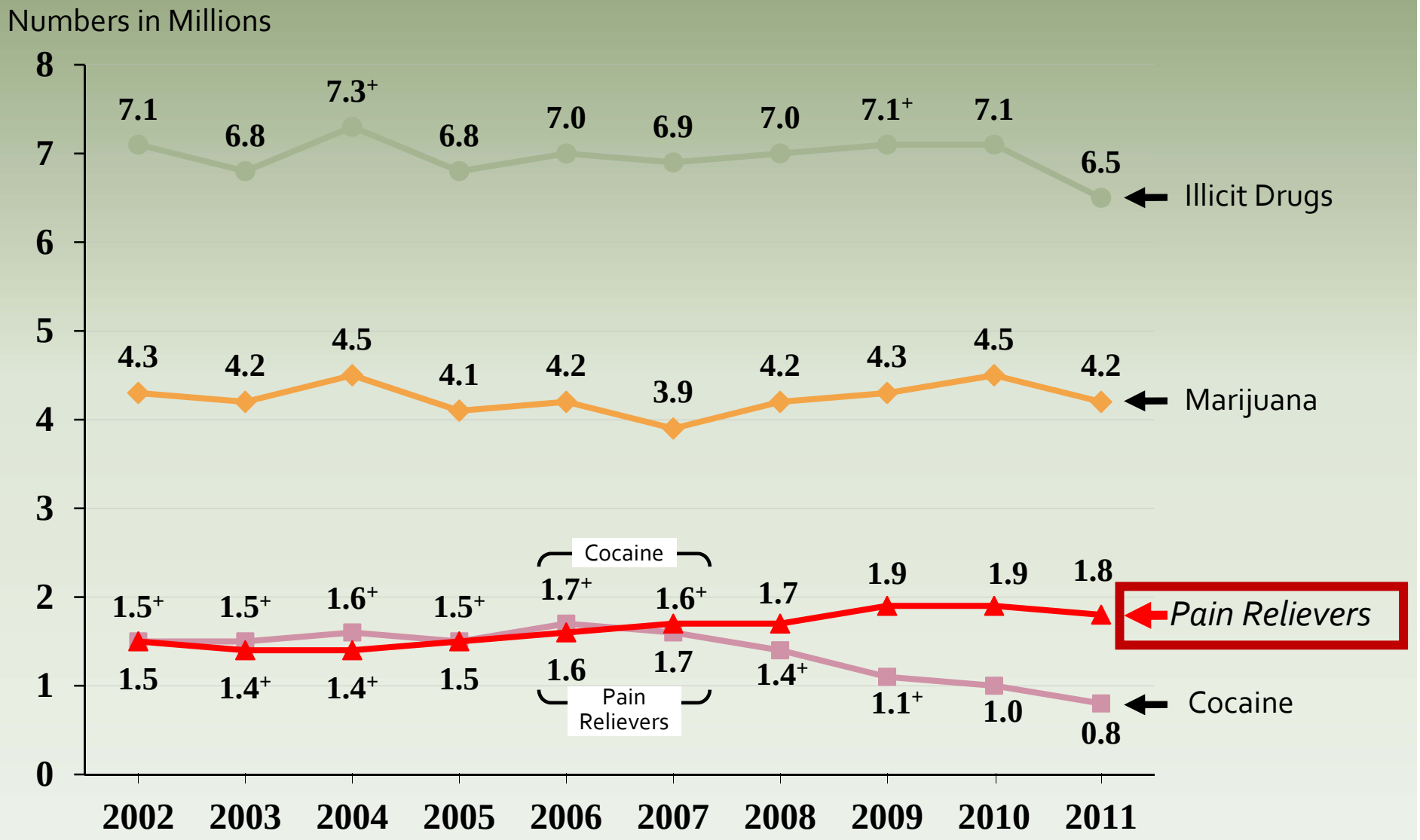
Prescription Drug Abuse is Major Problem in USA
Current Drug Use Rates in Persons Ages 12+



Source: SAMHSA, 2011 National Survey on Drug Use and Health

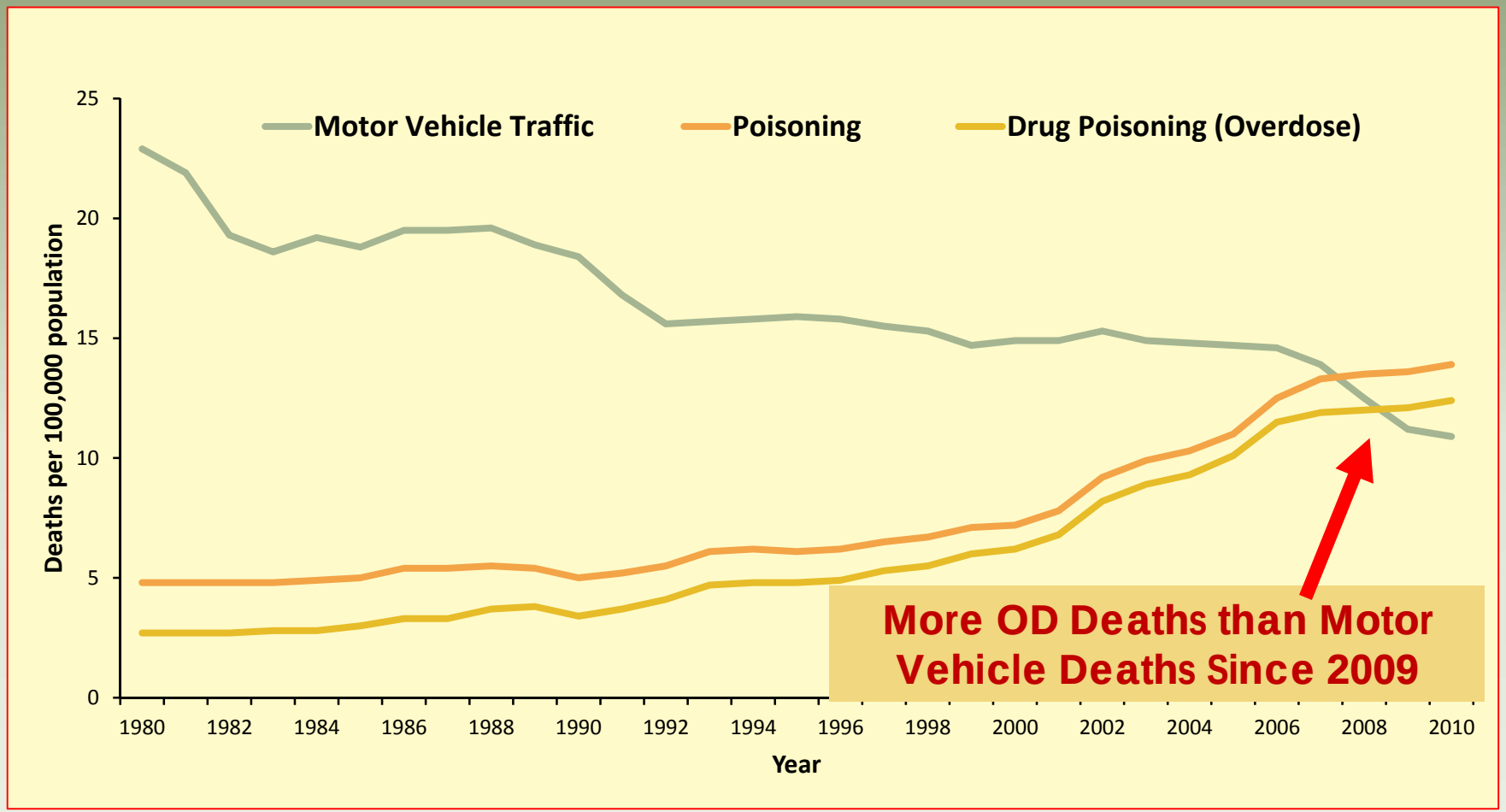
[1] Illicit Drugs include marijuana/hashish, cocaine (including crack), heroin, hallucinogens, inhalants, or prescription-type psychotherapeutics used nonmedically.

Increases in Past Year Dependence or Abuse of Pain Relievers *among Persons Aged 12 or Older: 2002-2011*



+ Difference between this estimate and the 2011 estimate is statistically significant at the .05 level.

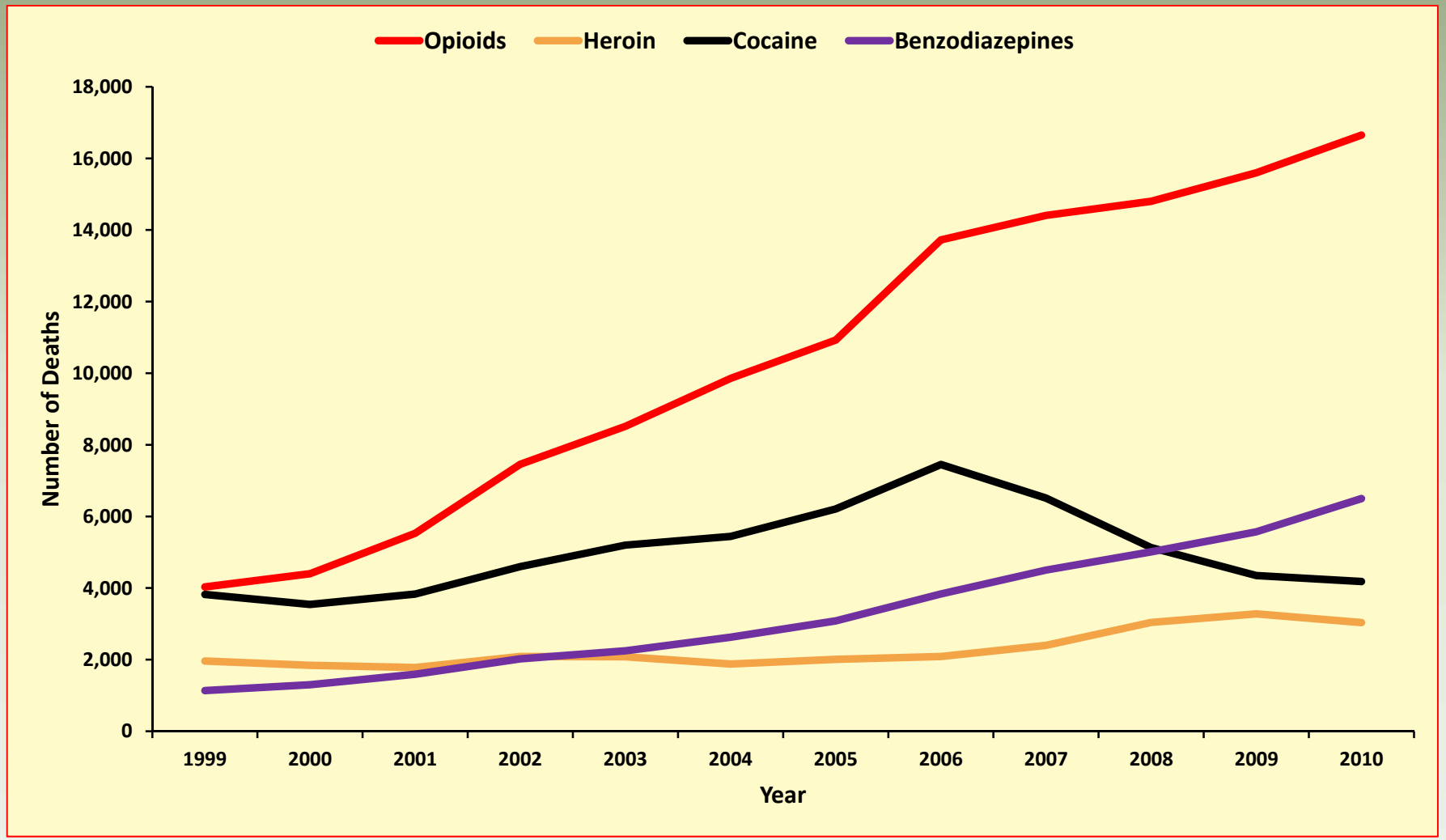
Overdose Death Rates in USA More Than Tripled Since 1990
Nearly 17,000 Died of Rx Opioid Overdose in 2010



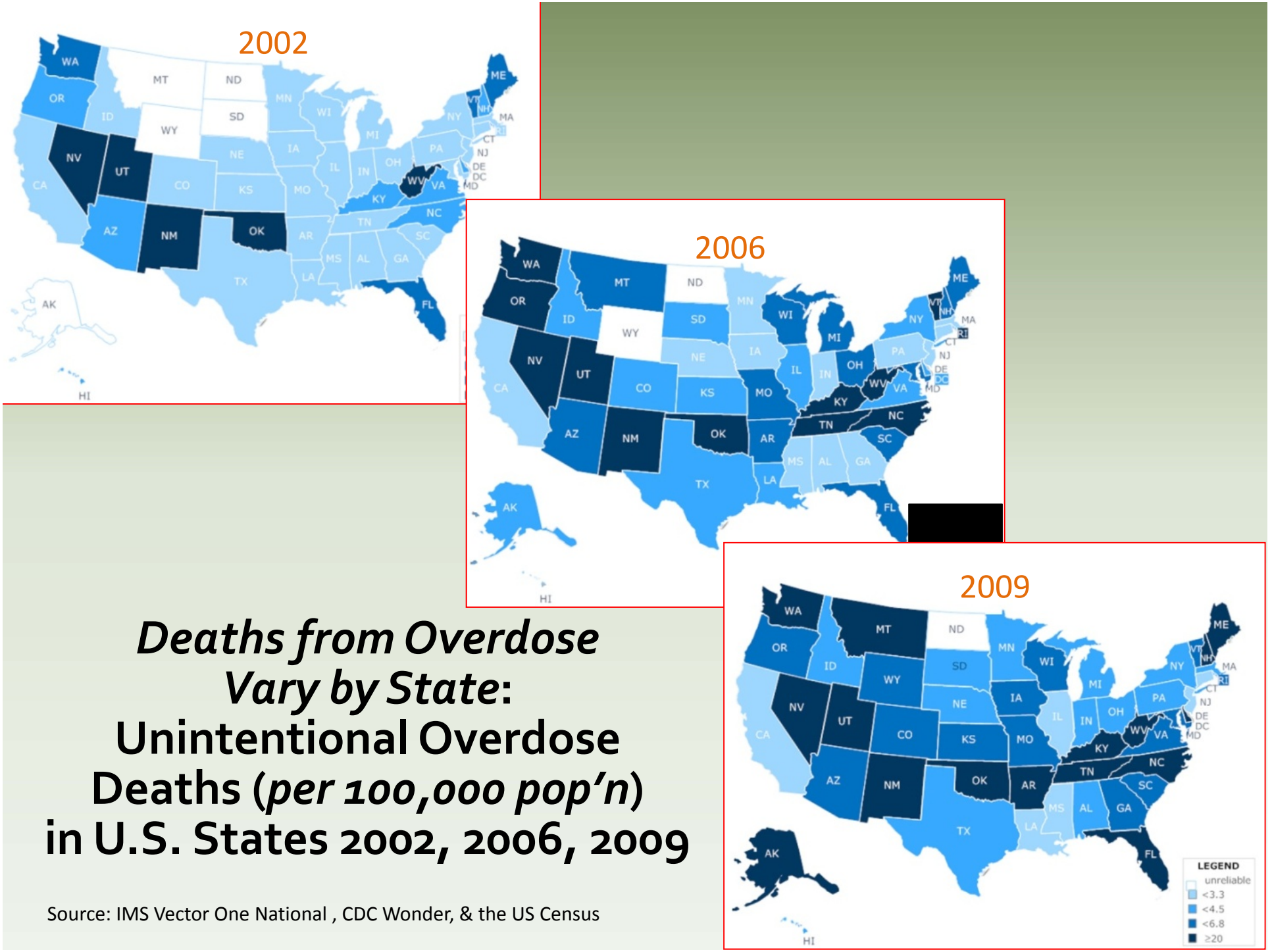
NCHS Data Brief, December, 2011, Updated with 2009 and 2010 mortality data

Motor vehicle traffic, poisoning, and drug poisoning (overdose) death rates: United States, 1980-2010

Drug overdose deaths by major drug type: USA, 1999-2010

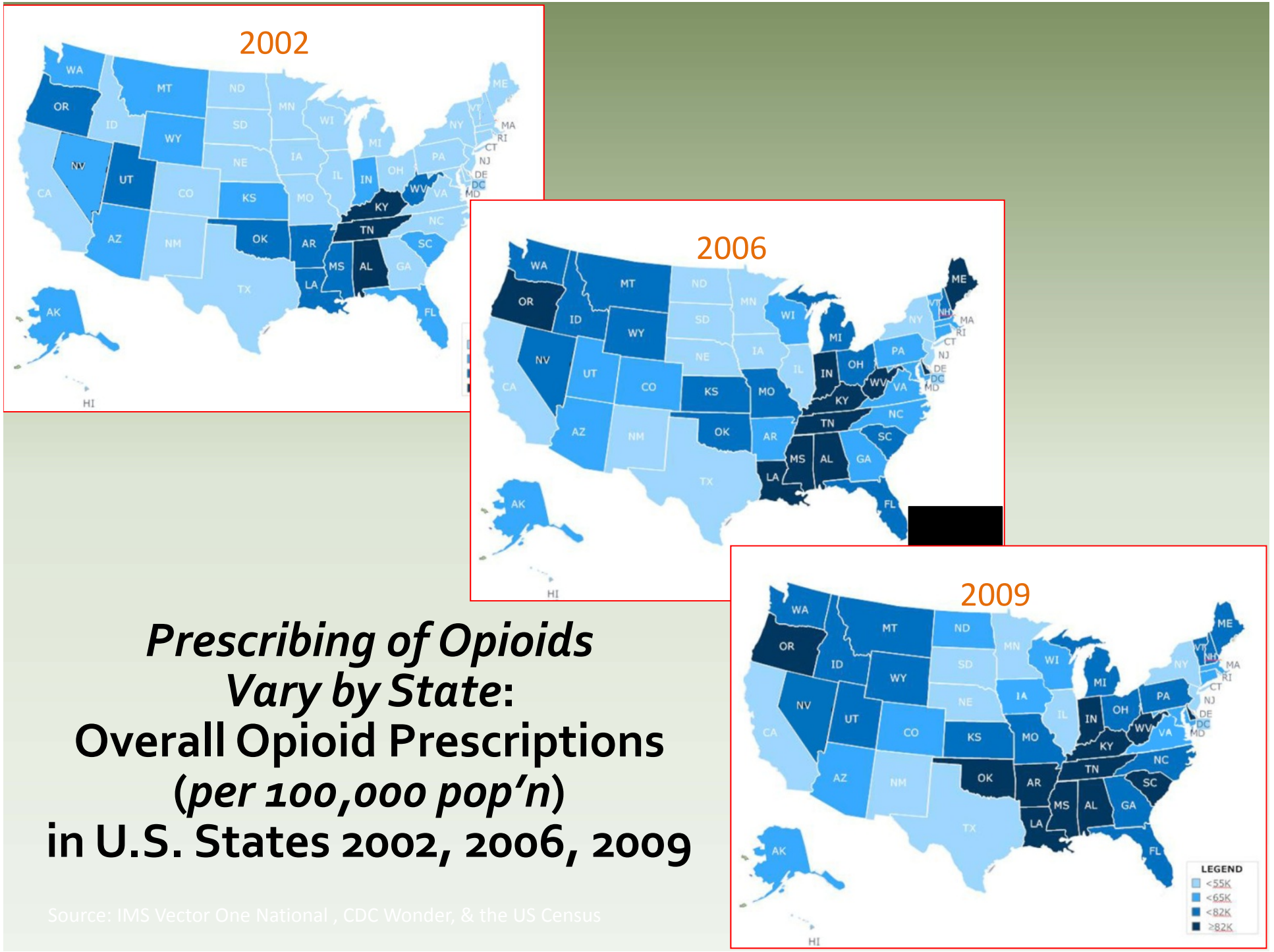


CDC/NCHS National Vital Statistics System, CDC Wonder. Updated with 2010 mortality.



Deaths from Overdose Vary by State: Unintentional Overdose Deaths (*per 100,000 pop'n*) in U.S. States 2002, 2006, 2009

Source: IMS Vector One National , CDC Wonder, & the US Census

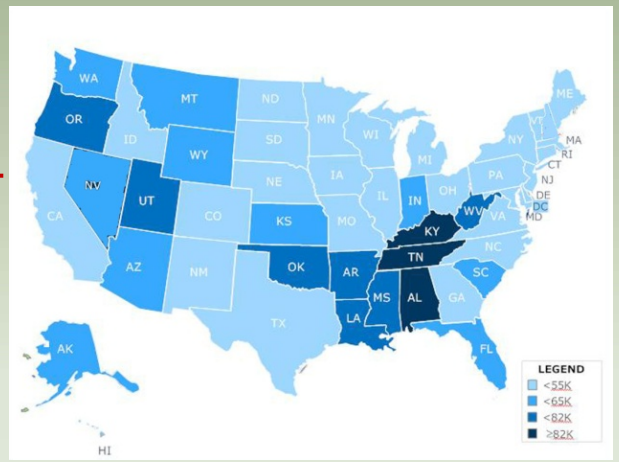


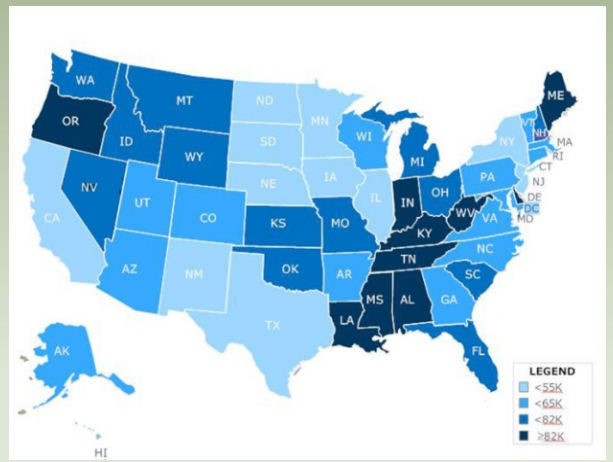
Prescribing of Opioids Vary by State: Overall Opioid Prescriptions (*per 100,000 pop'n*) in U.S. States 2002, 2006, 2009

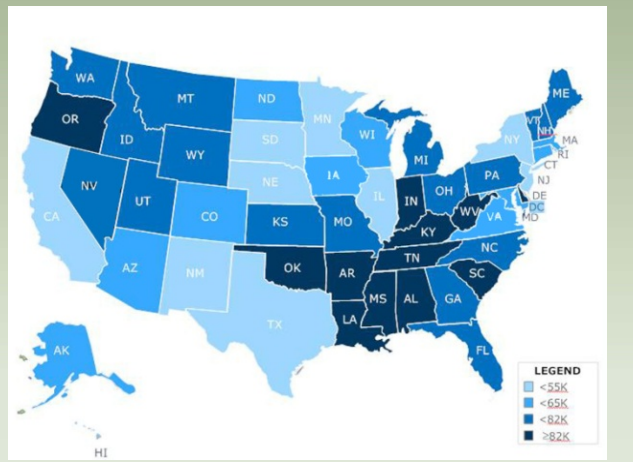
Source: IMS Vector One National , CDC Wonder, & the US Census

Dynamic relationship between rates of opioid prescriptions and rates of opioid-related overdose deaths in the US – 2002, 2006,2009

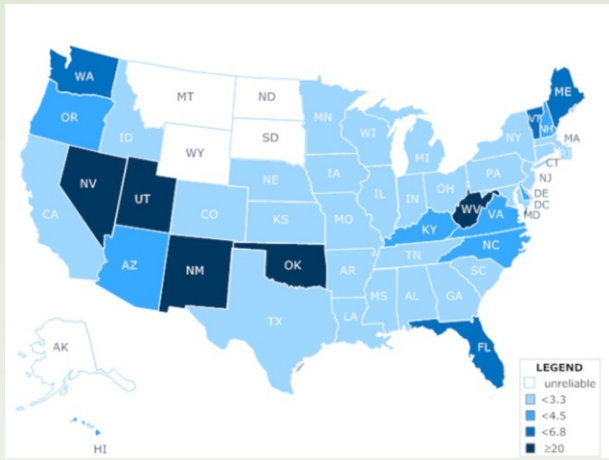
Prescriptions

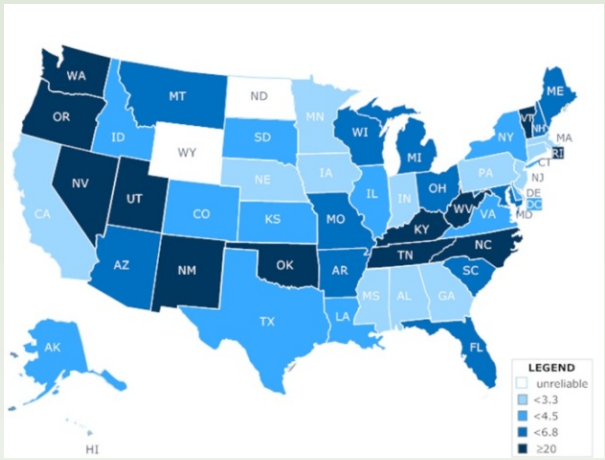


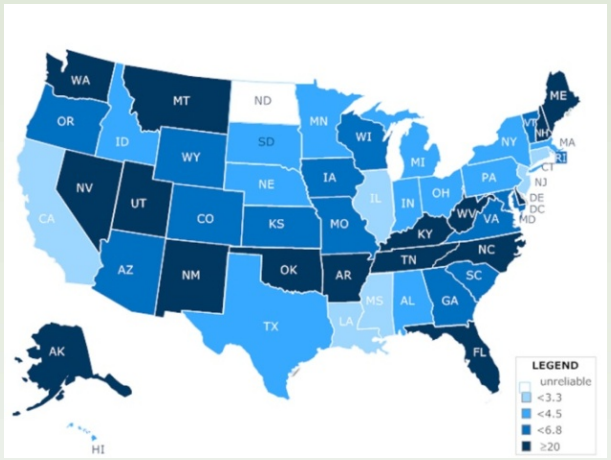




Overdose Deaths



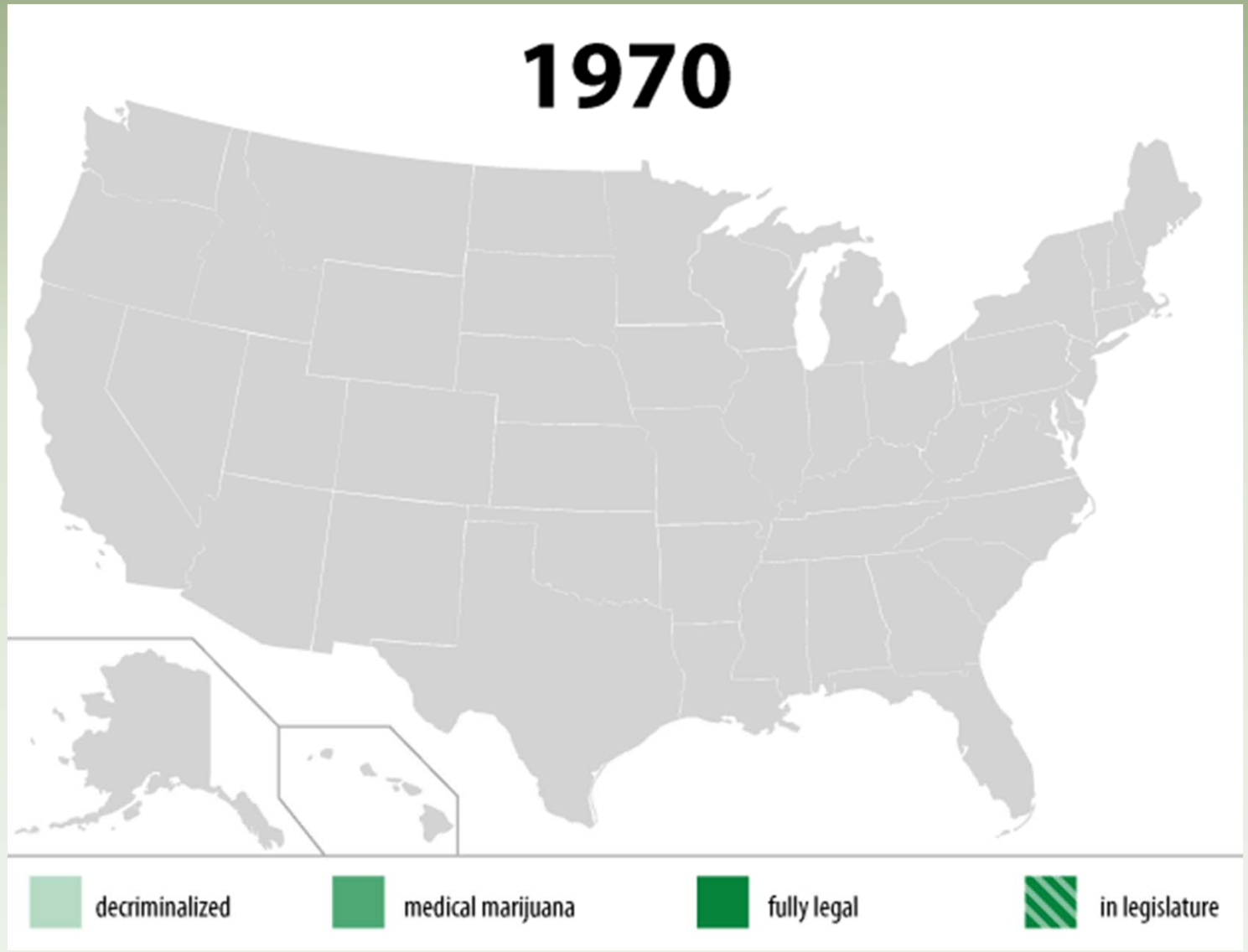




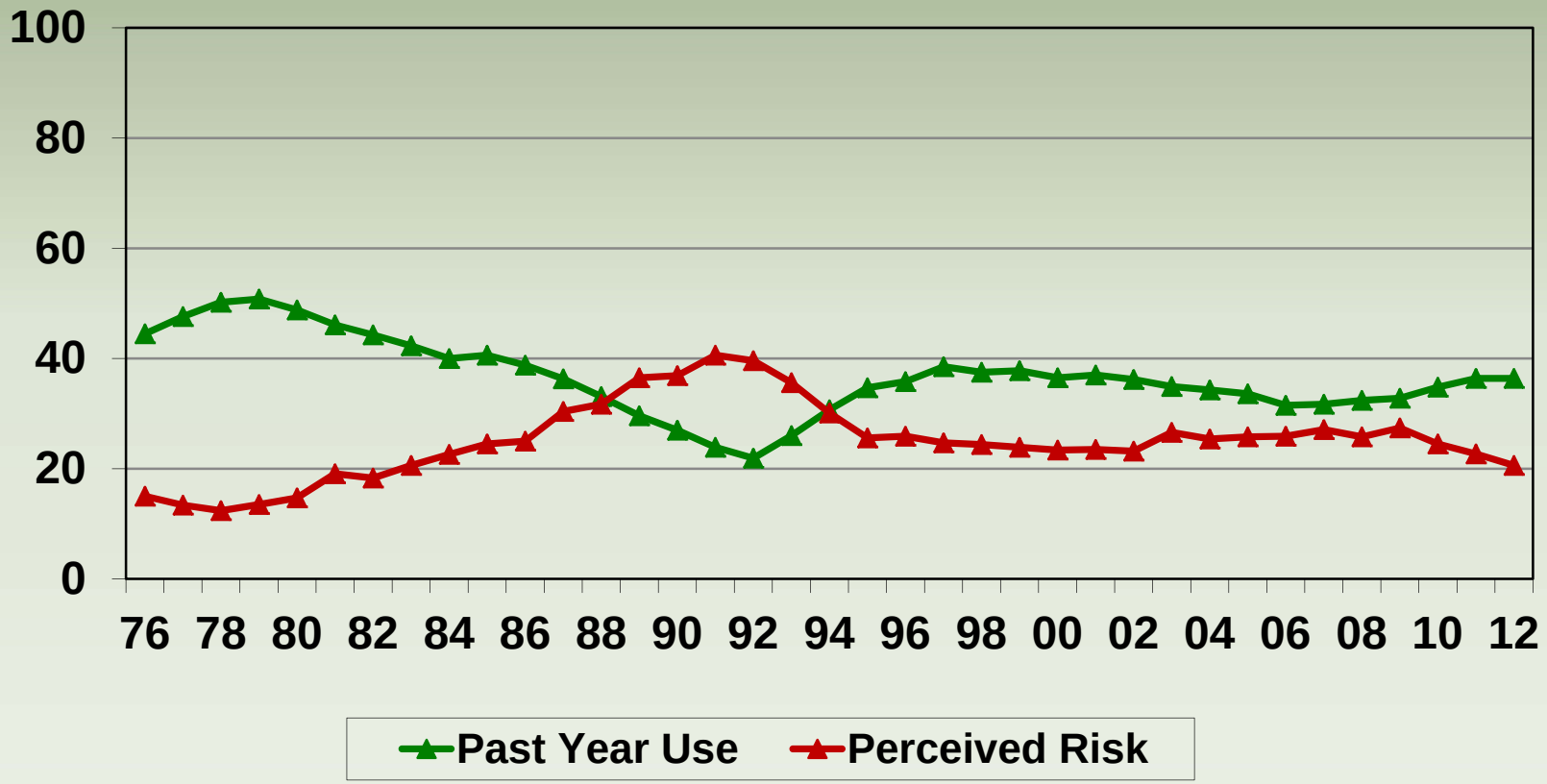
2002 2006 2009

Source: IMS Vector One National , CDC Wonder, & the US Census

Shifting landscape of Marijuana Policy in U.S.



12th Graders' Past Year Marijuana Use vs. Perceived Risk of Occasional Marijuana Use



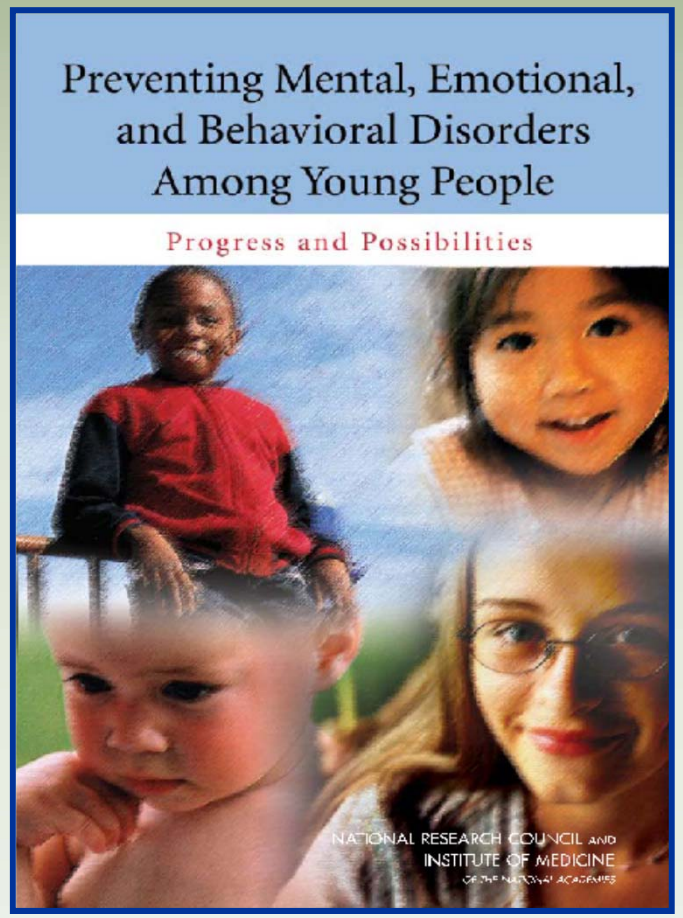
SOURCE: University of Michigan, 2012 Monitoring the Future Study

Prevention Science

We know what to do …

… But when, where, and with whom?

Institute of Medicine Report on Prevention (2009)



"The scientific foundation has been created for the nation to begin to create a society in which young people arrive at adulthood with the skills, interests, assets, and health habits needed to live healthy, happy, and productive lives in caring relationships with others."

NIDA Prevention Science

- Prevent and/or delay
  - Initiation of drug use
  - Progression of drug use to abuse
- Prevent drug-related HIV acquisition, transmission and progression
- Reduce risks and increase protective factors
- Basic, clinical, and services research across the lifespan
  - Bio-psycho-social-behavioral approach
  - Social epidemiology approach

Over the past 25 years, research has identified key principles of effective prevention practices

Updated Electronic Edition
2014

Selected Recent Findings
from NIDA-funded Research

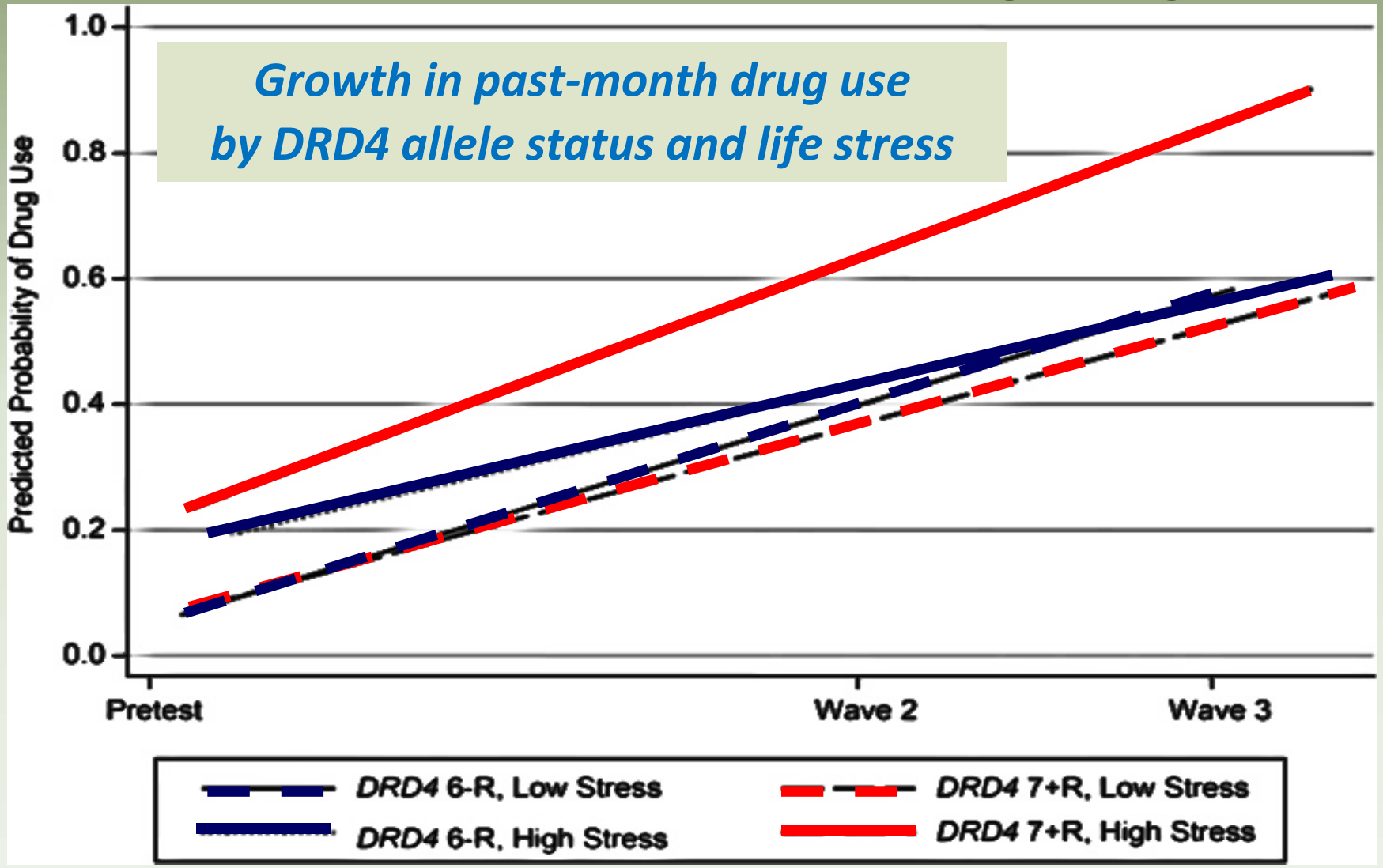
Interaction of Genotype and Environment: Impact on Drug Use

- Examines genetic status as moderator of association between life stress and increased drug use
- Draws on resilience and differential susceptibility theories
  - Genetic variations increase or decrease susceptibility to environmental risks

- Dopamine receptor D4 (DRD4)
  - Allele with 7 or more repeats (7+R)
  - Allele with 6 or fewer repeats (6-R)
  - 7+R alleles linked to D4 receptors with lower responsivity

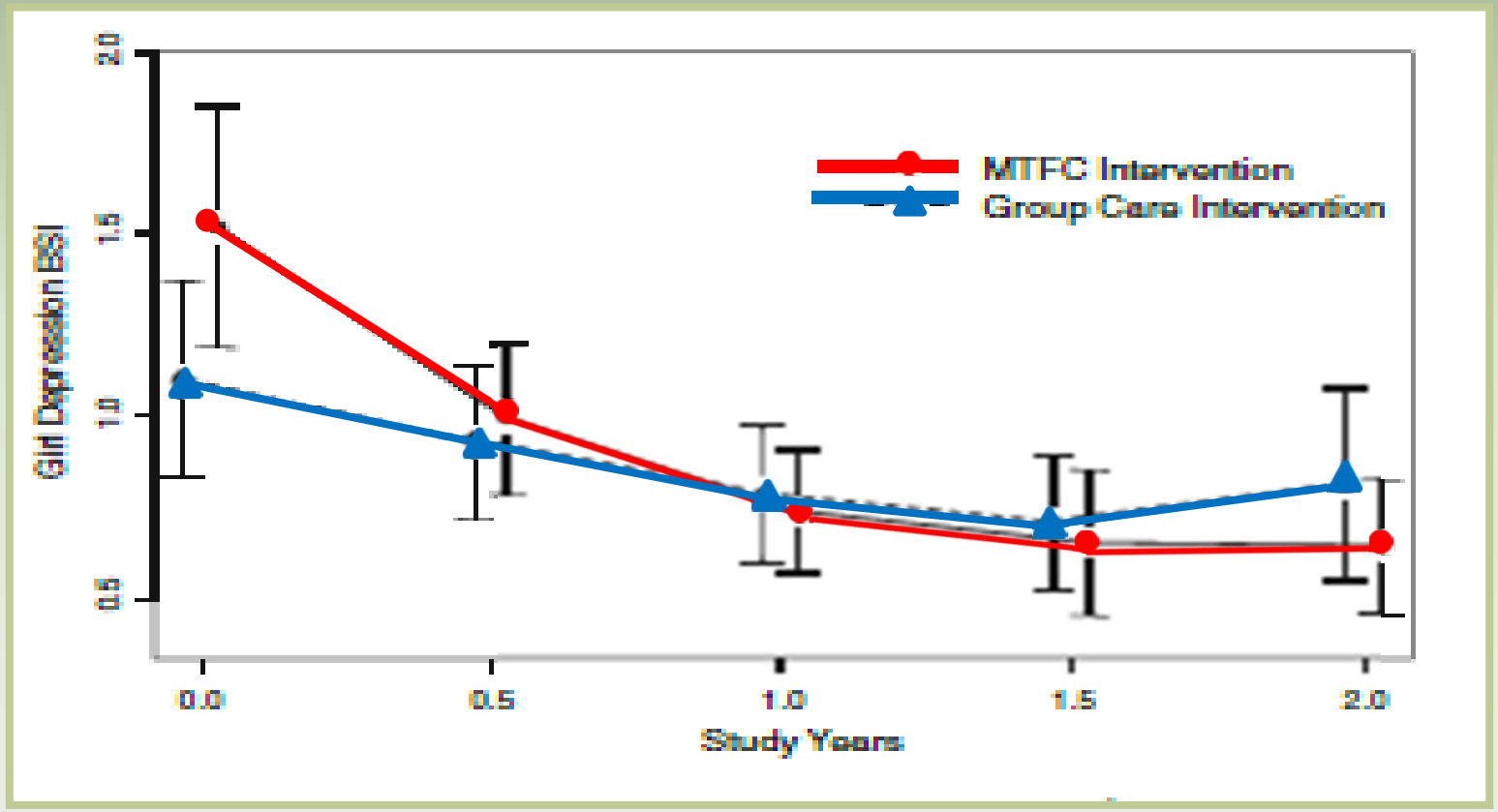
Brody, Chen, Yu, Beach, Kogan, Simons, Windle, & Philibert.
Development and Psychopathology (2012) 24: 941-951

6-R allele protects emerging adults with high levels of life stress from escalating drug use



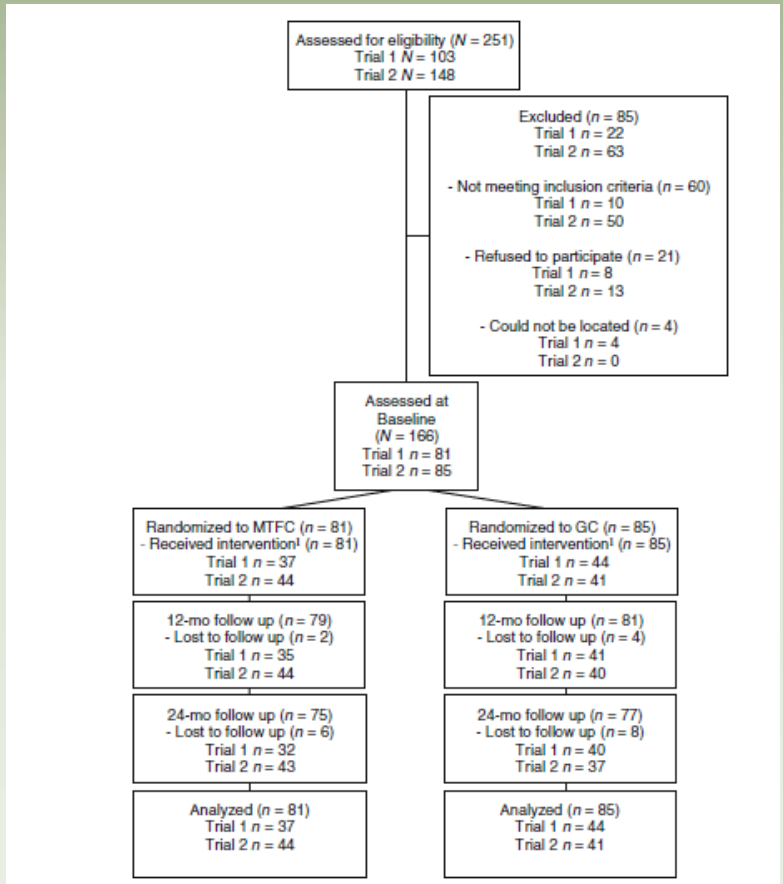
Brody, Chen, Yu, Beach, Kogan, Simons, Windle, & Philibert. *Development and Psychopathology* (2012) 24: 941-951

Multidimensional Treatment Foster Care: *Delinquency Reduction program for adolescent girls reduces depression over 2 years later*



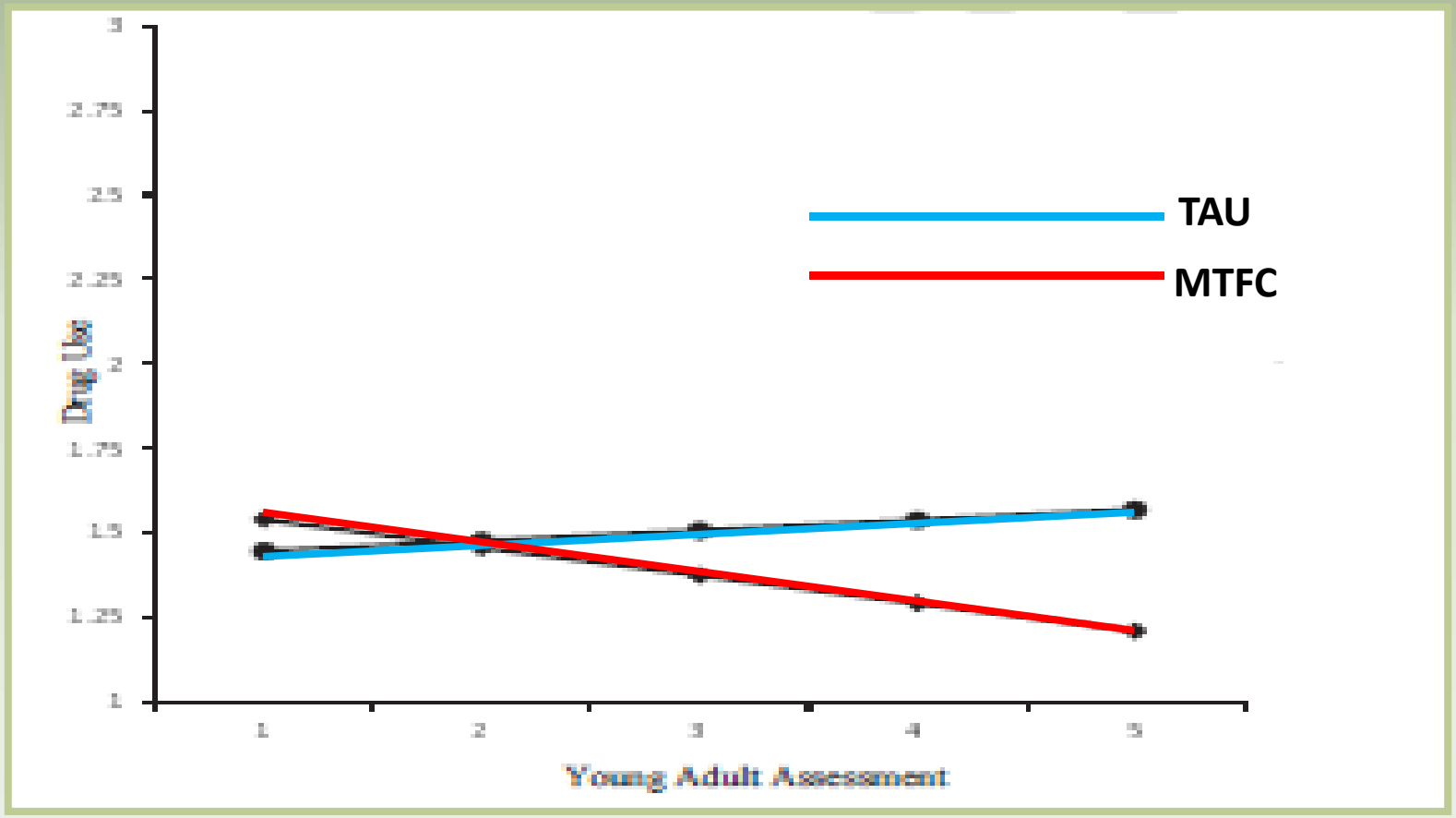
Harold et al., *Prevention Science*, 2013

Depression paper flow chart



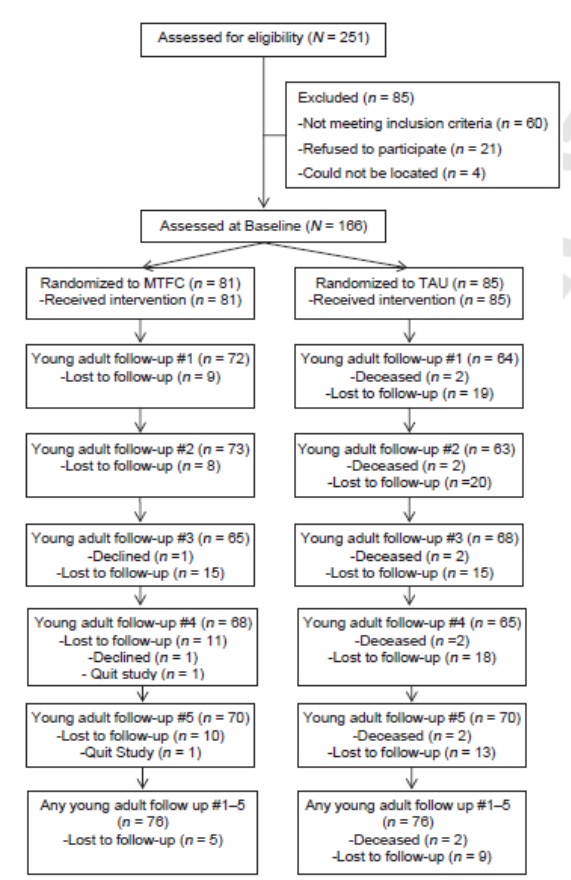
Harold et al., *Prevention Science*, 2013

Multidimensional Treatment Foster Care: *Delinquency Reduction program for adolescent girls reduces drug use 7 – 9 years later*

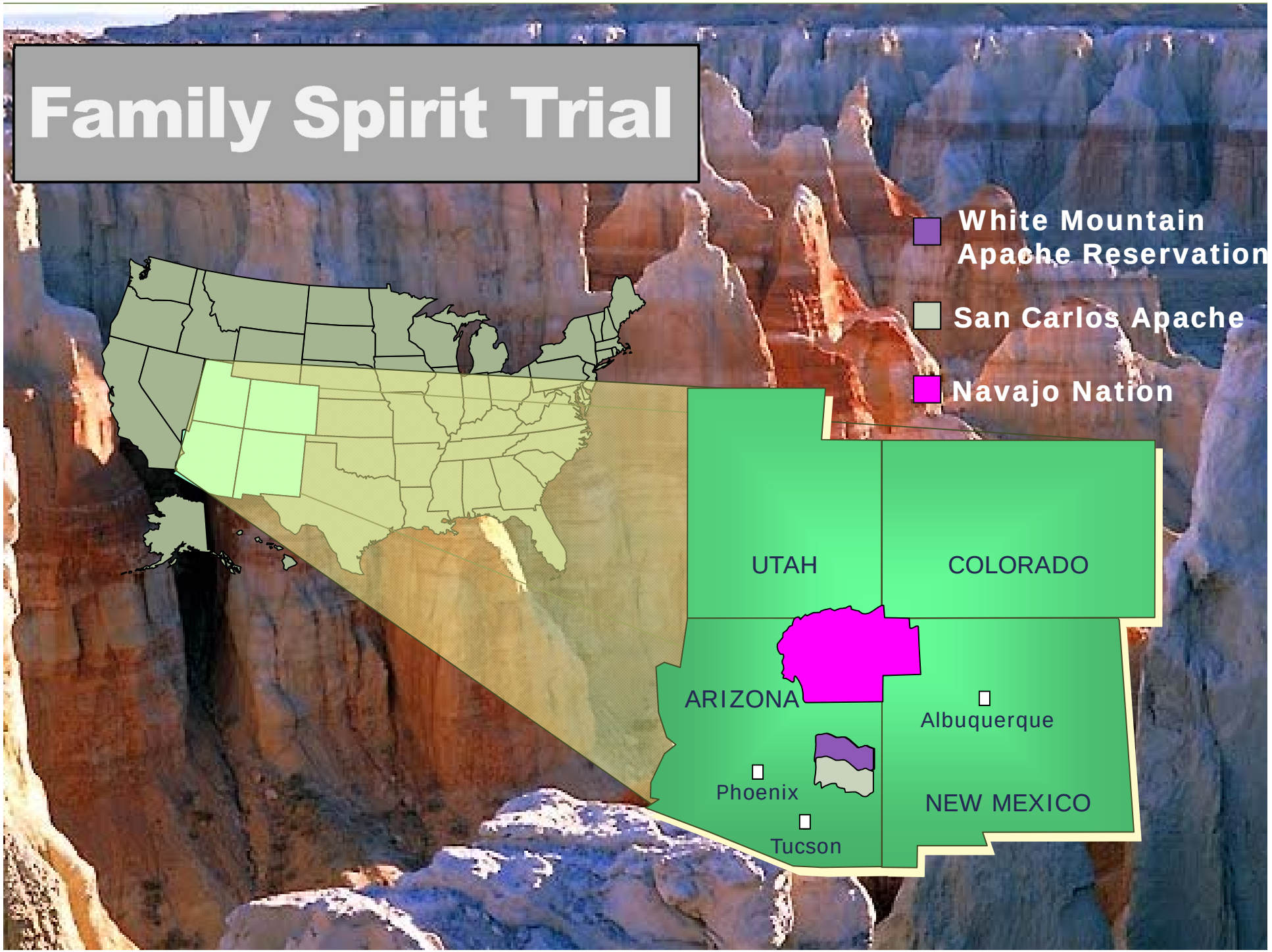


Rhoades et al., *Journal of Research on Adolescence*, in press

Drug Use paper flow chart



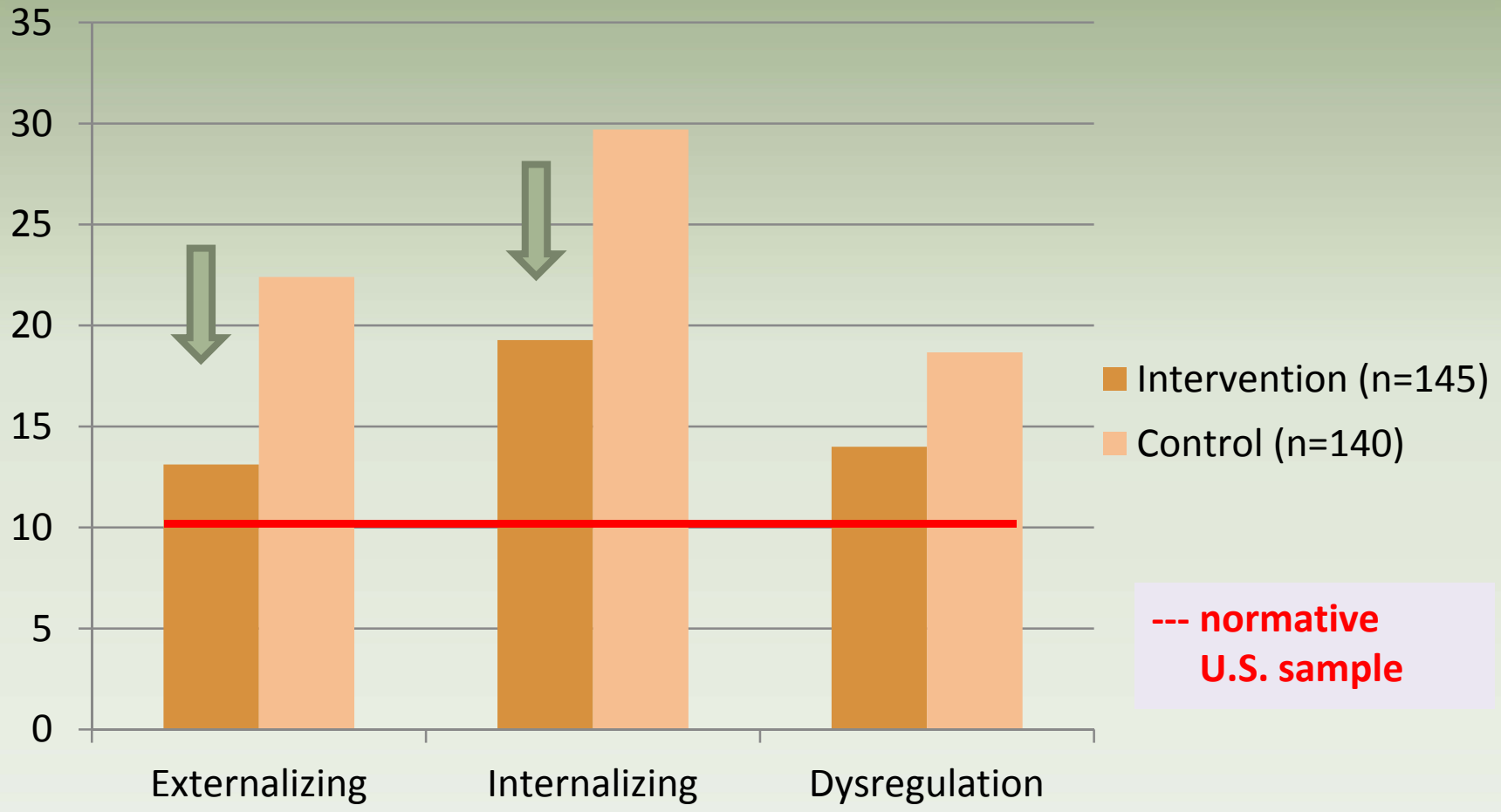
Family Spirit Trial



Home Visitation by Indigenous Paraprofessionals

Percentage of Babies Clinically At-Risk*

(12 month postpartum, substance using mothers)



**Based on scores on the on the Infant-Toddler Social and Emotional Assessment (ITSEA)*

Barlow et al., *American Journal of Psychiatry*, 2013

Mujer Mas Segura (Safer Women)

Reductions in HIV/STI Incidence and Sharing of Injection Equipment among Female Sex Workers Who Inject Drugs: Results from a Randomized Controlled Trial (2013)

Steffanie Strathdee, USA
Daniela Abramovitz, USA
Remedios Lozada, Mexico
Gustavo Martinez, Mexico
Maria Gudelia Rangel, Mexico
Alicia Vera, Mexico
Hugo Staines, Mexico
Carlos Magis-Rodriguez, Mexico
Thomas L Patterson, USA

HIV/STI incidence at 12 months: Tijuana

Injection Risk Reduction (Adj RR; 95% CI*)			
		Lecture	Interactive
Sex Risk Reduction	Lecture	Group A (Control) (n =70) 1.0 (Reference)	Group B (n =171) 1.15 (0.58-2.28)
	Interactive	Group C (n =72) 0.38 (0.16, 0.89)	Group D (n= 71) 0.37 (0.16, 0.89)

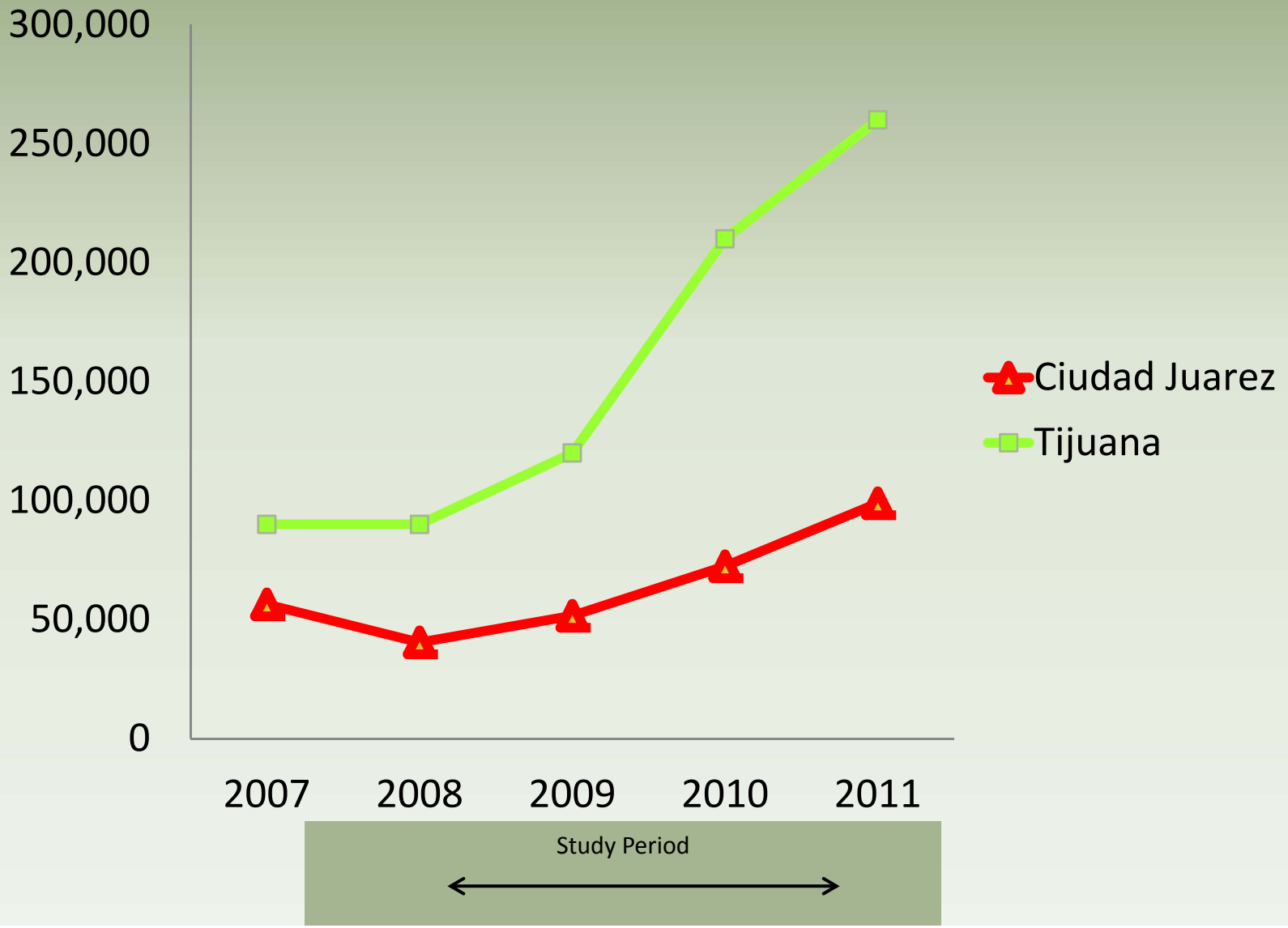
***Adjusted for** # of unprotected sex acts with non-regular clients, and arrests prior to enrollment

HIV/STI incidence at 12 months: Cd. Juarez

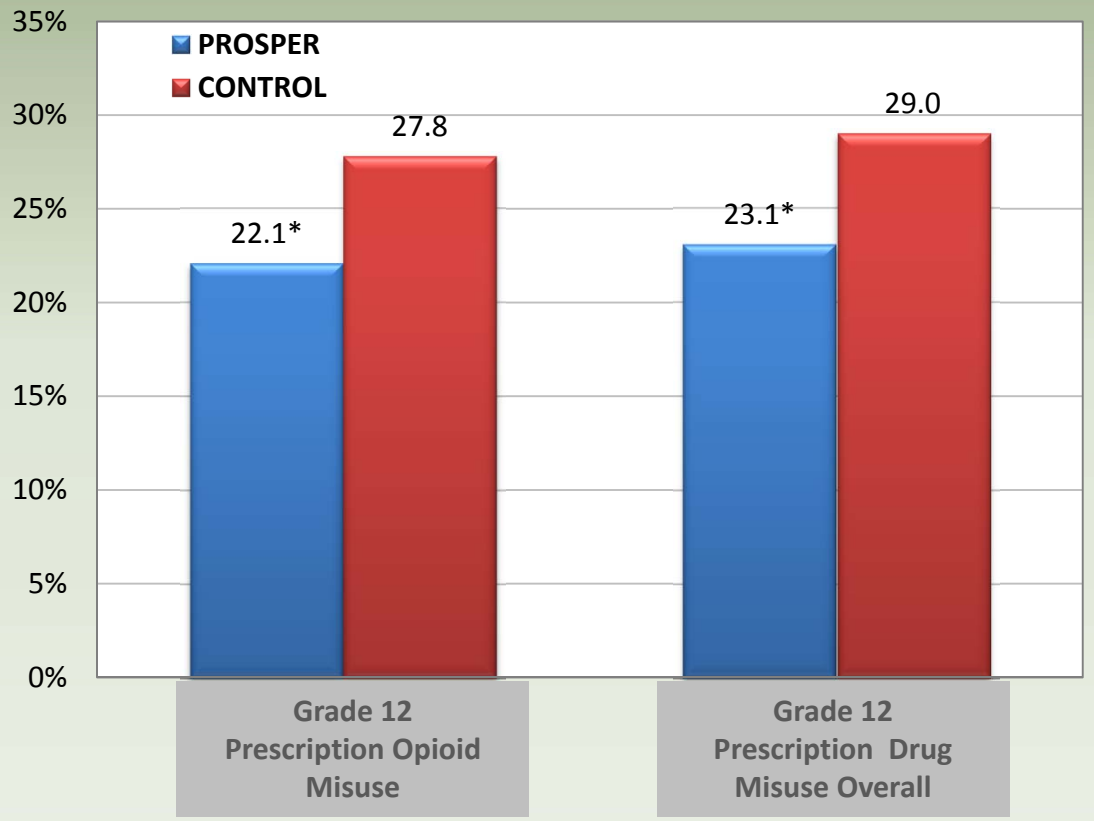
Injection Risk Reduction (Adj RR; 95% CI*)			
		Lecture	Interactive
Sex Risk Reduction	Lecture	Group A (Control) (n =74) 1.0 (Reference)	Group B (n =75) 1.15 (0.58-2.28)
	Interactive	Group C (n = 76) 0.44 (0.19, 0.99)	Group D (n =75) 1.12 (0.56, 2.25)

*Adjusted for $ earned per unprotected sex act and cocaine use in month prior to enrollment

Sterile Injection Equipment Distributed in Tijuana and Cd. Juarez: 2007-2011



PROSPER: Early Intervention Leads to Long-term Impact on Prescription Drug Misuse

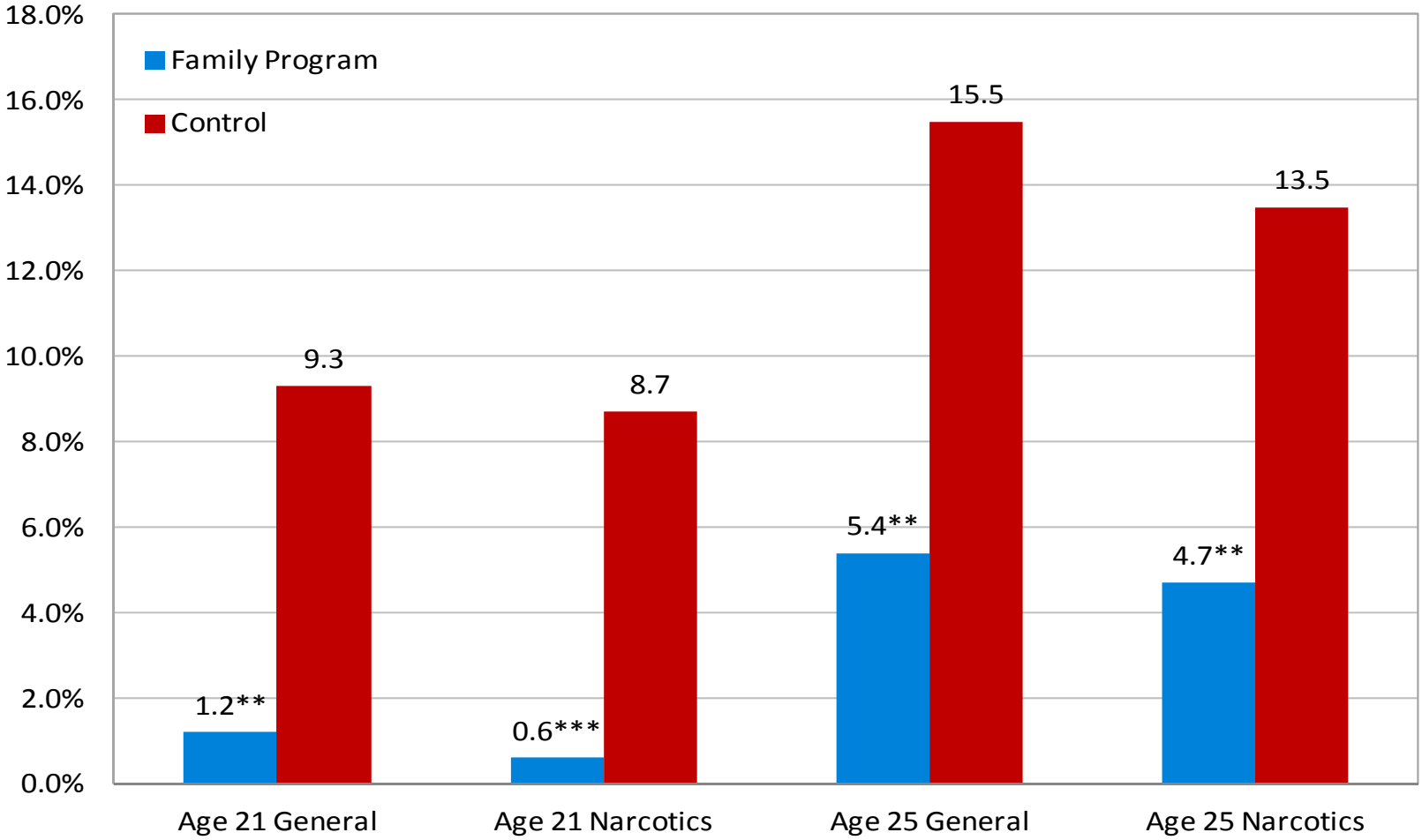


PROSPER vs. control differences are practically significant: For every 100 users in non-PROSPER communities, would have about 20 fewer in PROSPER communities.

Note: *p<.05; RRRs=20-21%

Source: Spoth, Trudeau, Shin, Ralston, Redmond, Greenberg & Feinberg (2013). Longitudinal effects of universal preventive intervention on prescription drug misuse: Three RCTs with late adolescents and young adults. *American Journal of Public Health, 103,* 665-672.

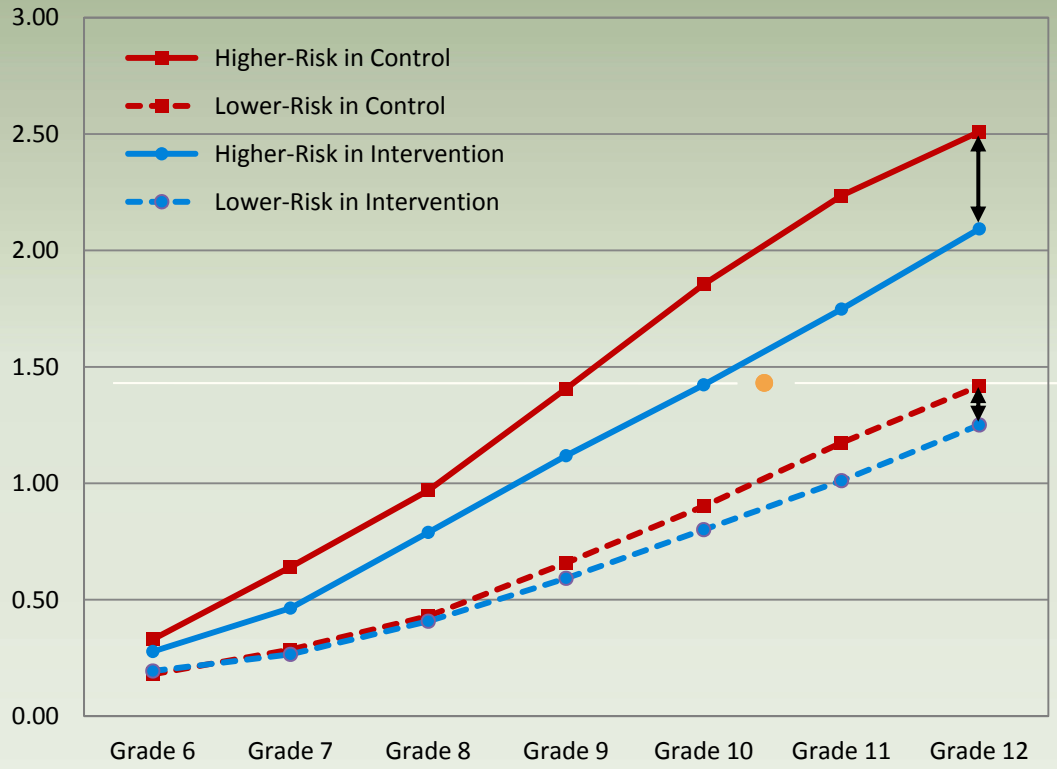
Universal Drug Abuse Prevention
Reduces Lifetime Prescription Drug Misuse



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

Notes: General = Misuse of narcotics or CNS depressants or stimulants.
Source: Spoth Trudeau, Shin et al. *American Journal of Public Health* 2013

PROSPER Positive Trajectories, Stronger for Higher-risk Subgroups*



- **PROSPER intervention effects are significantly stronger for the Higher-Risk subgroup.**
- **Illustrates how universal interventions can help those at higher risk (e.g., by modeling positive, prosocial behavior)**

See: Spoth, Redmond, Shin, Greenberg, Feinberg, Schainker (2013). PROSPER community-university partnerships delivery system effects on substance misuse through 6½ years past baseline from a cluster randomized controlled intervention trial. *Preventive Medicine, 56,* 190-196.

**** Sum of six lifetime illicit use measures (methamphetamines, Ecstasy, inhalants, Vicodin, prescription drug misuse, overall marijuana or other illicit drug use).***

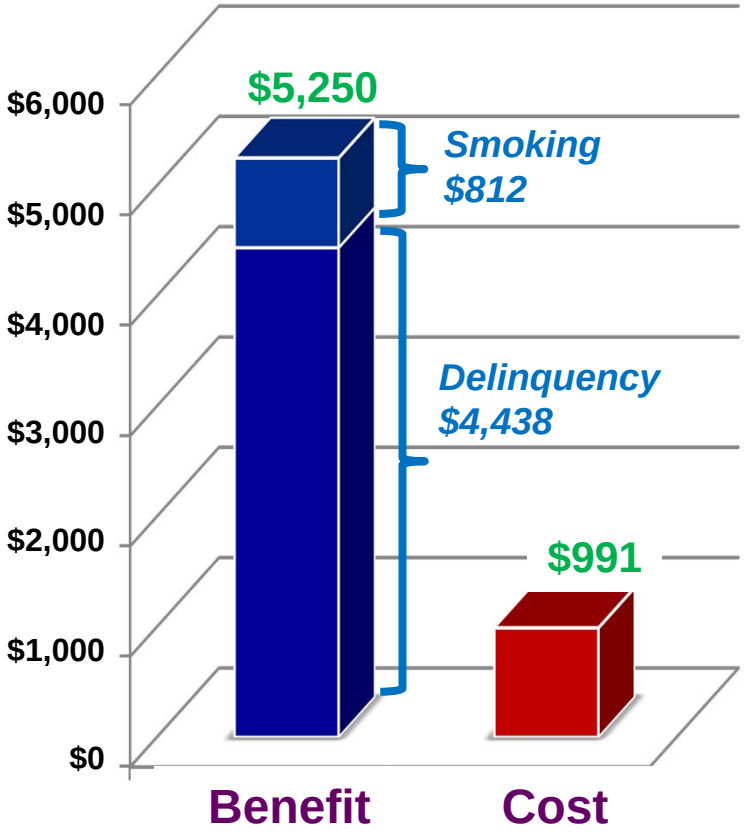
Proven Prevention Impact of Communities That Care

- Universal public health operating system to
  - reduce risk
  - enhance protection
  - for adolescent health and behavior problems
- RCT in 24 communities across 7 states
- At 8th grade CTC prevents initiation of
  - Cigarette smoking
  - Alcohol use
  - Delinquency
- ***But is it worth the cost?***

Prevention Organizing Systems May Reduce Long-Term Social Costs

Benefit-Cost Analysis of CTC System

Benefits & Costs Per Youth



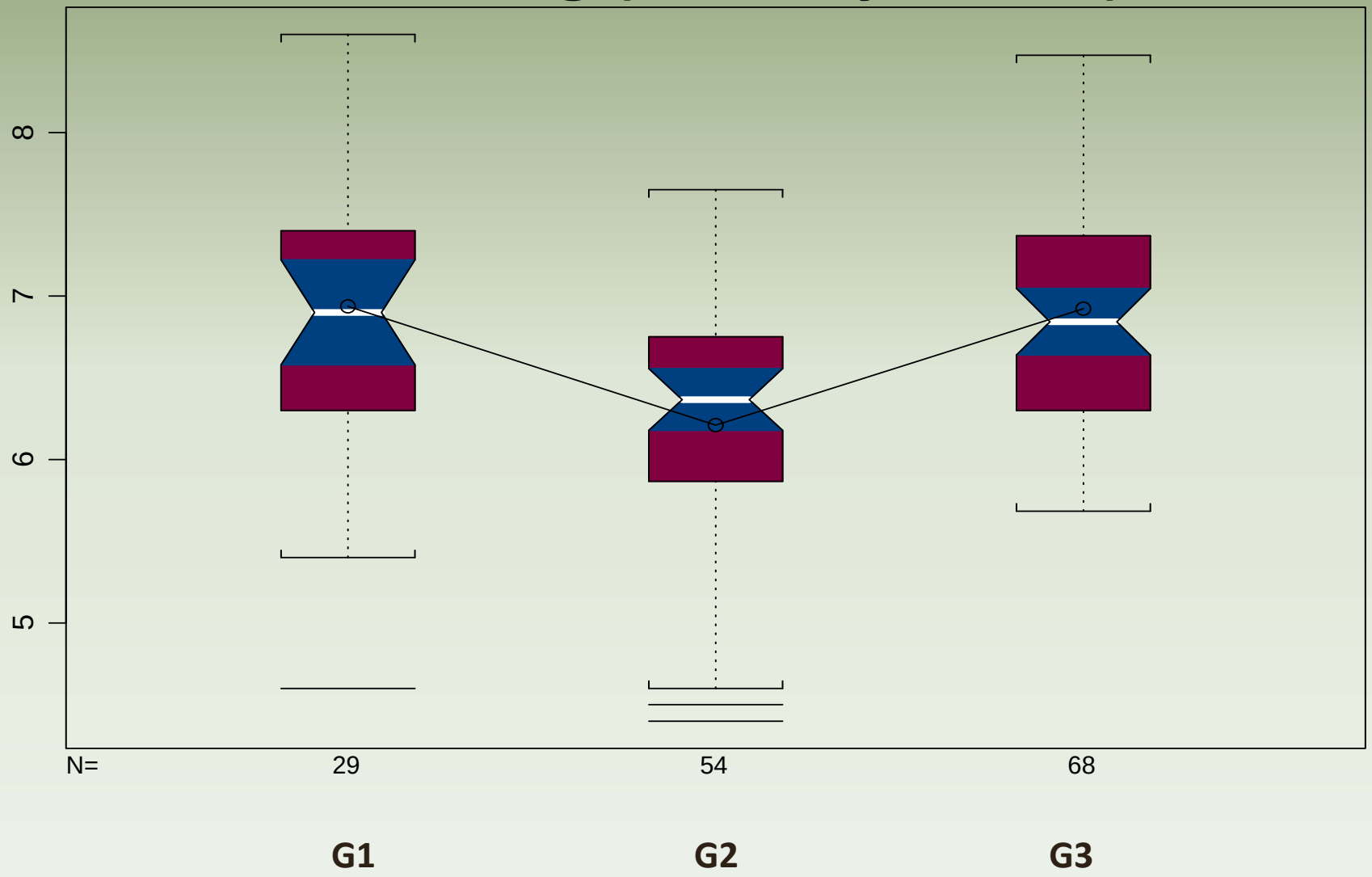
Benefit - Cost Analysis Per Youth

	Participant	*Taxpayer*	*Other*	TOTAL
Smoking	$671	$140	--	**$812**
Delinquency	--	$2,033	$2,405	**$4,438**
Total Benefits	**$671**	**$2,173**	**$2,405**	**$5,250**
Costs				**$991**
Net Present Benefit				**$4,259**
Benefit-Cost Ratio				**$5.30**

CTC returns $5.30 for every $1.00 invested.

Margaret R. Kuklinski, John S. Briney, J. David Hawkins, Richard F. Catalano. Cost-benefit analysis of Communities That Care outcomes at eighth grade. *Prevention Science* 2012 Apr;13(2):150-61.

Intervention Fidelity Across Generations of Training (Norway PMTO)

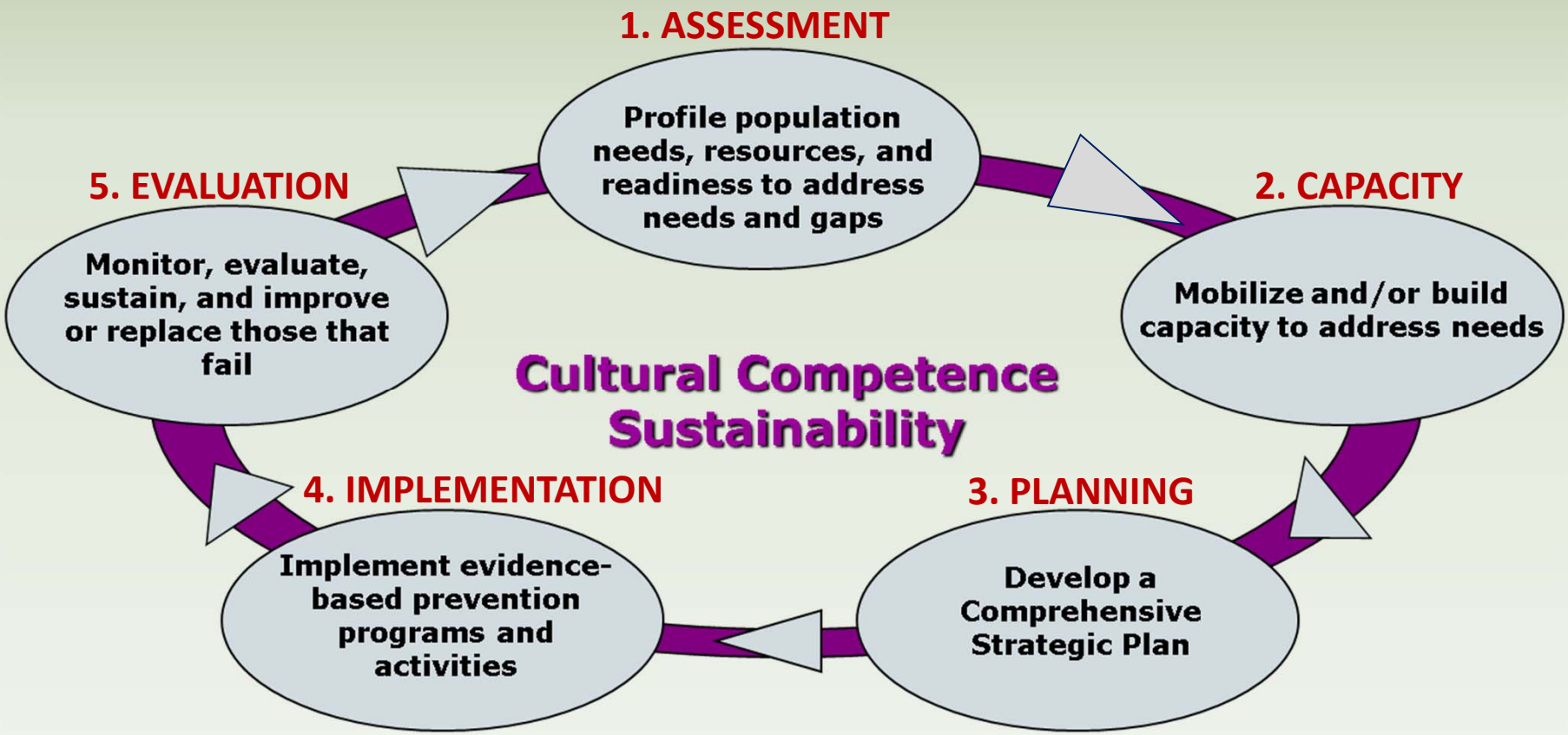


Forgatch & DeGarmo, 2011, Prevention Science, 12, 235-246.

U.S. Substance Abuse and Mental Health Services Administration (SAMHSA)

Strategic Prevention Framework (SPF)

State Incentive Grant (SIG) Program



Strategic Prevention Framework (SPF) Goals and Outcomes (1)

- Build prevention capacity and infrastructure at the state and community levels
  - State-level *implementation* data confirm that most states implemented the 5 steps with high fidelity
  - State-level *infrastructure* data confirm that most states improved their status on most infrastructure domains

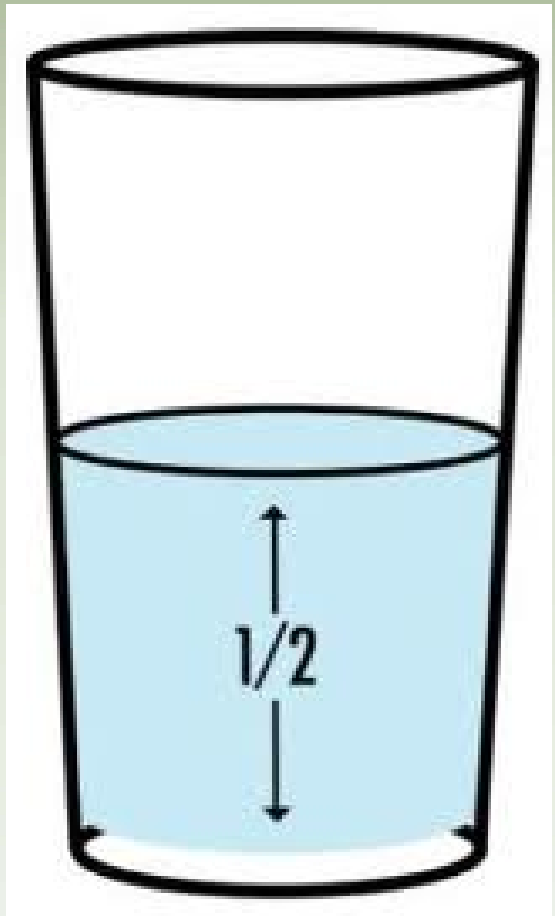
Strategic Prevention Framework (SPF) Goals and Outcomes (2)

- Reduce substance abuse-related problems in communities
- Prevent onset and reduce progression of substance abuse, including childhood and underage drinking
  - 6 out of 7 "high coverage" states had greater declines relative to U.S. level data for most of their targeted outcomes [1]
  - Findings consistent with hypothesis that SPF-SIG implementation can affect *state-level outcomes* when implemented across all or most communities in the state [2]

[1] Target outcomes all pertained to alcohol use or consequences

[2] Based on small-population states only

So What's the State of Prevention Science at NIDA and NIH?



We have made substantial investments to develop highly effective prevention interventions

- ***This will continue!***

Our expanded vision is that *Outcomes* can be further improved by:

- ***Making effective policies, practices and programs more widely available and adopted***
- ***Improving the system's ability to deliver effective policies, practices and programs***

3 Broad Domains to Advance NIDA Prevention Research

What Quoi

How Comment

Who Qui

3 Broad Domains to Advance NIDA Prevention Research

What -- How -- Who

1. **Specify research agendas to support**
   - ***WHAT needs to be done***

Key Research Agendas

- **Identify and refine core intervention components**
  - Basic prevention science retains prominent focus
  - Transform basic advances into practical interventions
- **Implementation research**
  - How interventions are implemented, scaled up, and broadly adopted
  - Keeping essential elements intact while adapting proven programs to unique local conditions
- **Integrate prevention into U.S. healthcare system**
  - *Healthcare reform!*
    - Prevention and population health key part of Affordable Care Act
    - Creates Prevention Trust Fund that will support many activities
    - Prevention now can be a covered service without co-payment

3 Broad Domains to Advance NIDA Prevention Research

What -- How -- Who

1. Specify research agendas to support
   - *WHAT needs to be done*
2. **Exploit emerging technologies and methodologies**
   - ***HOW it needs to be done***

Emerging Methodologies and Technologies

- Methodological Advances
  - Innovative uses of existing and new data
  - Exploiting “Big Data”
    - Genetic, social media, etc.
  - Innovative research designs
    - Optimization, adaptive designs, microtrials, etc.
- Emergent Technologies
  - Smartphones, personal electronic devices
  - Deliver prevention interventions
  - Collect outcome data

3 Broad Domains to Advance NIDA Prevention Research

What -- How -- Who

1. Specify research agendas to support
   - *WHAT needs to be done*
2. Exploit emerging technologies and methodologies
   - *HOW it needs to be done*
3. **Develop human capital to conduct prevention research and practice**
   - ***WHO needs to do it***

Human Capital for Prevention Research and Practice

- Train the next generations of
  - Prevention investigators
  - Prevention interventionists
- Facilitate collaborations and linkages
  - Across disciplines
    - Genetics, neuroscience, operations research, economics, organizational psychology, etc.
  - Among organizations
    - Government agencies
    - Public and private entities
    - Scientists, community stakeholders, providers of services and interventions, policy makers

NIDA
International Program

NIDA International Program Mission

- Promote international research
- Support professional development and research capacity building globally
- Communicate and disseminate information about NIDA programs and exchange science-based knowledge

international.drugabuse.gov

Research

- Grants
- Supplements
- NIH Partnerships
- Binational Agreements

Training

- Fellowships
- Virtual Seminars

Exchange

- Web site
- E-News
- Meetings
- Visitors

NIDA International Program

NIDA Supports International Research

- **Administrative Supplements**
  - Proposed by U.S. grantees
  - Related to existing grant
  - Budget limitations
  - Requires NIDA approval
- **Domestic Grants With Foreign Components**
  - Typically awarded to U.S. principal investigators
  - Propose research at U.S. and foreign sites
  - Foreign component part of original application and review process
- **Foreign Grants**
  - Awarded to non-U.S. principal investigators
  - Research conducted outside the United States
  - Scored competitively by NIH
  - Must demonstrate a special opportunity
- **Partnerships With Other NIH Institutes**
  - John E. Fogarty International Center
  - National Institute on Alcohol Abuse and Alcoholism
  - National Institute of Allergy and Infectious Diseases
  - National Institute of Diabetes and Digestive and Kidney Diseases
  - National Institute of Mental Health
  - National Institute of Neurological Disorders and Stroke

NIDA International Program

Eight Binational Agreements

- **France**
  - National Institute of Health and Medical Research (Inserm)
- **Italy**
  - Department for Anti-Drug Policies
- **Latin America**
  - Inter-American Drug Abuse Control Commission (CICAD) at the Organization of American States
- **Mexico**
  - National Council Against Addictions (CONADIC), Mexico City
- **Netherlands**
  - Health Research and Development Council (ZonMw), The Hague
  - Netherlands Organisation for Scientific Research, The Hague
- **Russia**
  - Pavlov Medical University, St. Petersburg
- **Spain**
  - National Plan on Drugs (PNSD), Madrid
  - National Institute of Drug Research and Training (INIFD), Madrid
- **Taiwan**
  - Taipei Medical University

NIDA International Program

NIDA International Research Priorities

- HIV/AIDS
  - Seek-test-treat and retain interventions
  - Medication and vaccine development
- Nicotine addiction
  - Smoking during pregnancy
  - Medication and vaccine development
- Integration and standardization of databases
  - Brain imaging
  - Genetics and associated phenotype information

NIDA International Program

NIDA International Program Fellowships

- 7 Fellowship Programs
- 414 Fellows
- 104 Countries

Fellowship	Started	Total Fellows[1]	Countries
NIDA Humphrey Fellowship	1990	284	84
INVEST	1993	65	33
DISCA/USDISCA	2000	31	20
INVEST/CTN	2007	15	13
NIDA-International AIDS Society	2009	18	13
U.S.-Mexico Drug Abuse Prevention	2011	1	1
NIDA-Inserm Binational Postdoctoral	2013		2

[1]Awarded from inception through September 6, 2013

NIDA International Program

NIDA International Forum Satellite to CPDD

June 13 – 16, 2014

San Juan, Puerto Rico

- Plenary
- Workshops
- Networking
- Poster Session

Abstract Submission Deadline: December 2, 2013

NIDA International Program

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