

# RADARS® SYSTEM 12<sup>TH</sup> ANNUAL SCIENTIFIC MEETING



## Evolution of the Opioid Overdose Epidemic

Richard C. Dart, MD, PhD  
Executive Director, RADARS® System  
Denver Health and Hospital Authority



# **RADARS System**

## **12<sup>th</sup> Annual Scientific Meeting**

### **95 Registrants**

— Government	26
— Academic	14
— Industry/Pharma	28
— Other	28

### **International Pre-Symposium**

### **International Landscape of Prescription Medication Misuse**



Betsy Nugent

# RADARS System

## Scientific Advisory Board

### Principal Investigators

**Theodore J. Cicero, PhD**

*Washington University in St Louis*



**Steven P. Kurtz, PhD**

*Nova Southeastern University*



**Mark W. Parrino, MPA**

*American Association for the Treatment  
of Drug Dependence*



**Richard C. Dart, MD, PhD**

*Rocky Mountain Poison  
& Drug Center, Denver Health*

### Substance Abuse Experts

**Herbert D. Kleber, MD**

*Columbia University*



**Sidney Schnoll, MD, PhD**

*PinneyAssociates*



**George Woody, MD**

*University of Pennsylvania*



### Epidemiology/Biostatistics

**Nabarun Dasgupta, MPH**

*Rocky Mountain Poison  
& Drug Center, Denver Health*



### Law Enforcement

**John Burke**

*Pharmaceutical Diversion Education,  
Inc.; International Health Facility  
Diversion Association*








Petty died at 66 of "cardiopulmonary arrest due to: fentanyl, oxycodone, temazepam, alprazolam, citalopram, acetylfentanyl, and despropionyl fentanyl."

*Artist: Jason Mecier*



# ARS Question

- ***Which of these celebrities died from fentanyl contained in a counterfeit medication?***
  - ***Heath Ledger***
  - ***Michael Jackson***
  - ***Tom Petty***
  - ***Whitney Houston***
  - 



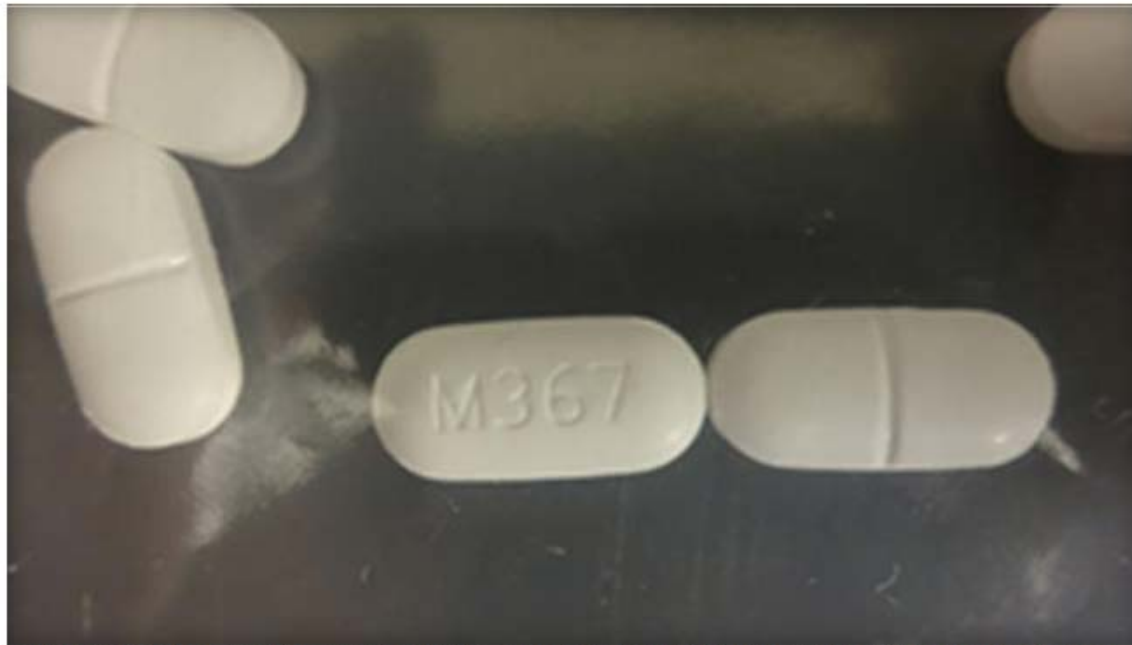




*Artist: Jason Mecier*

By DENNIS THOMPSON / HEALTHDAY / May 2, 2018, 1:30 PM

# Fentanyl deaths now outpace prescription painkiller overdoses, study finds

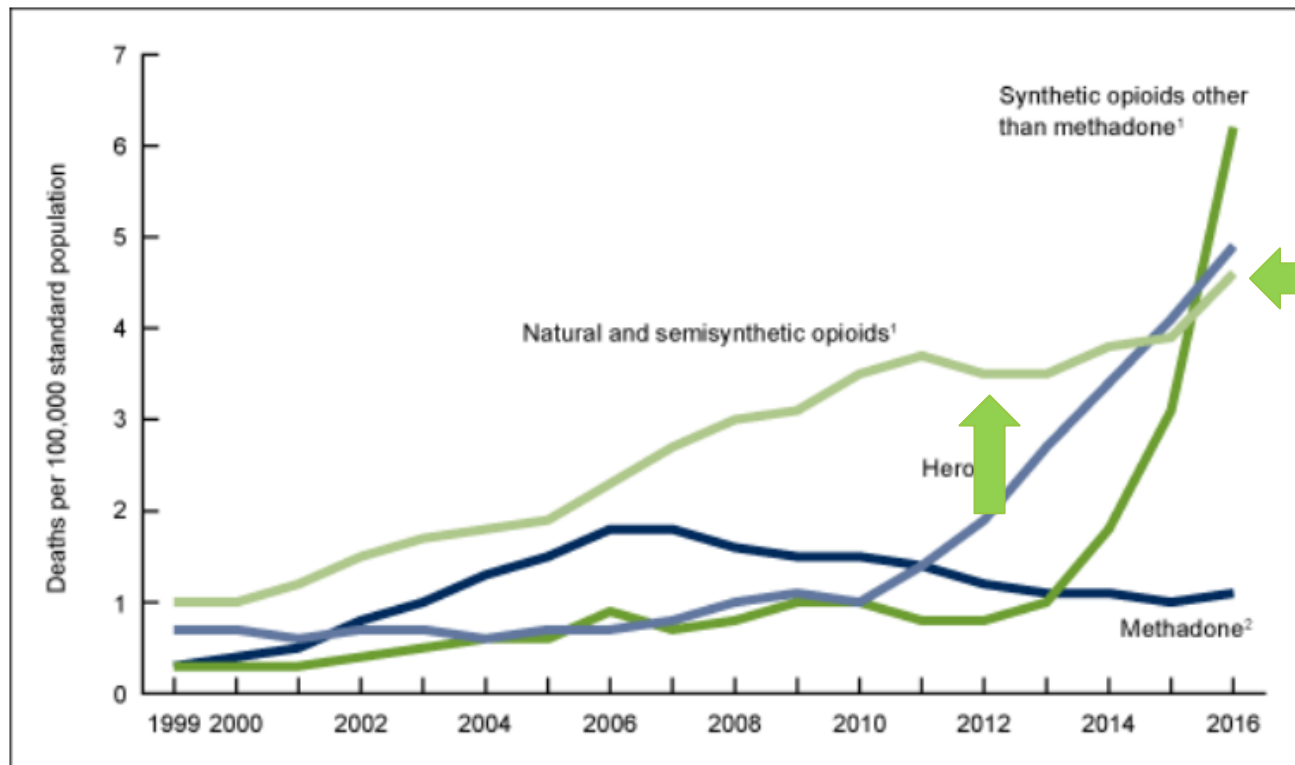


Counterfeit hydrocodone tablets seized in the investigation of a rash of fentanyl overdoses in northern California in April 2016. / **REUTERS/DRUG ENFORCEMENT ADMINISTRATION**

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# What Happened in 2017?

Figure 4. Age-adjusted drug overdose death rates, by opioid category: United States, 1999–2016

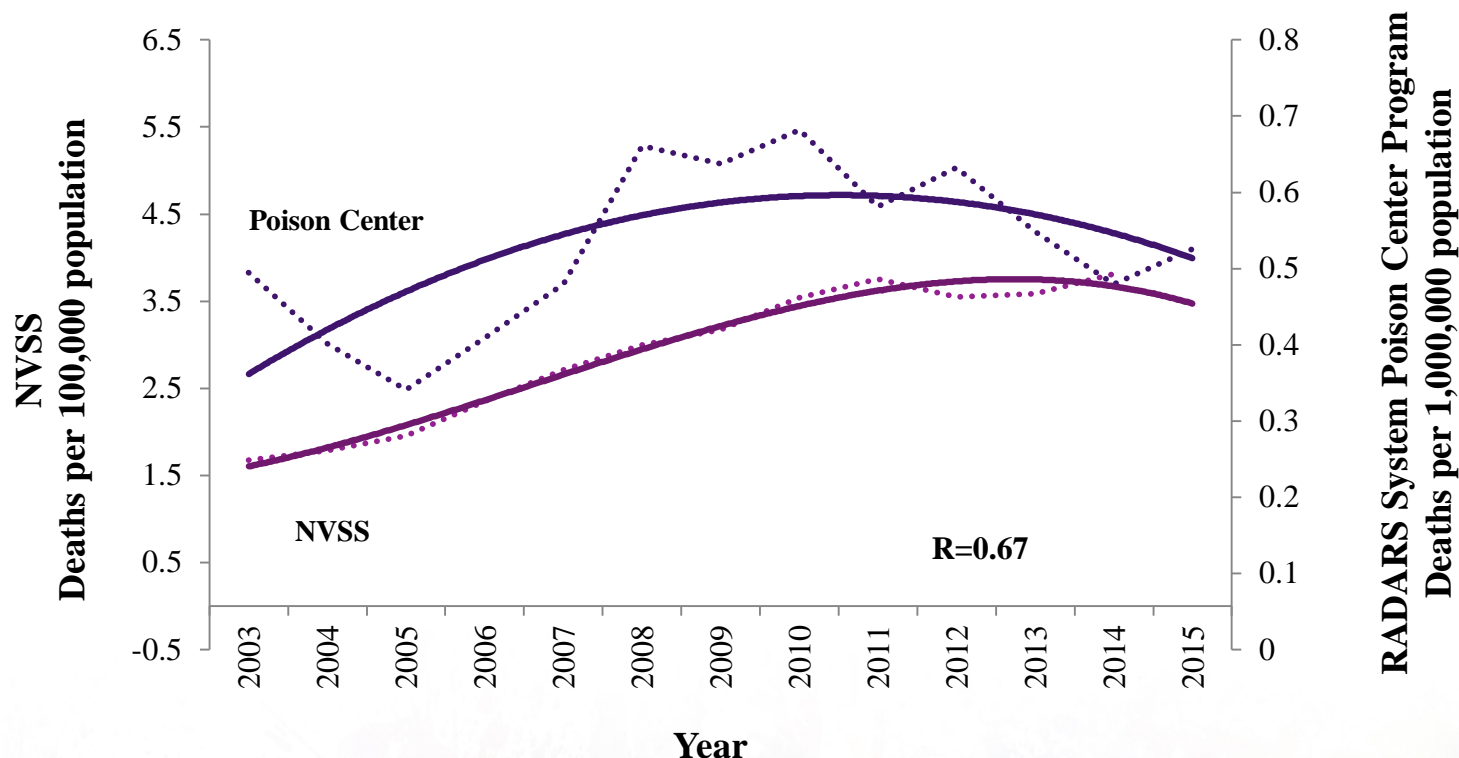




# 2016 RADARS System Annual Meeting

## Deaths from Opioid Analgesics are Decreasing

### Natural & Semisynthetic Opioids, 2003 to 2015

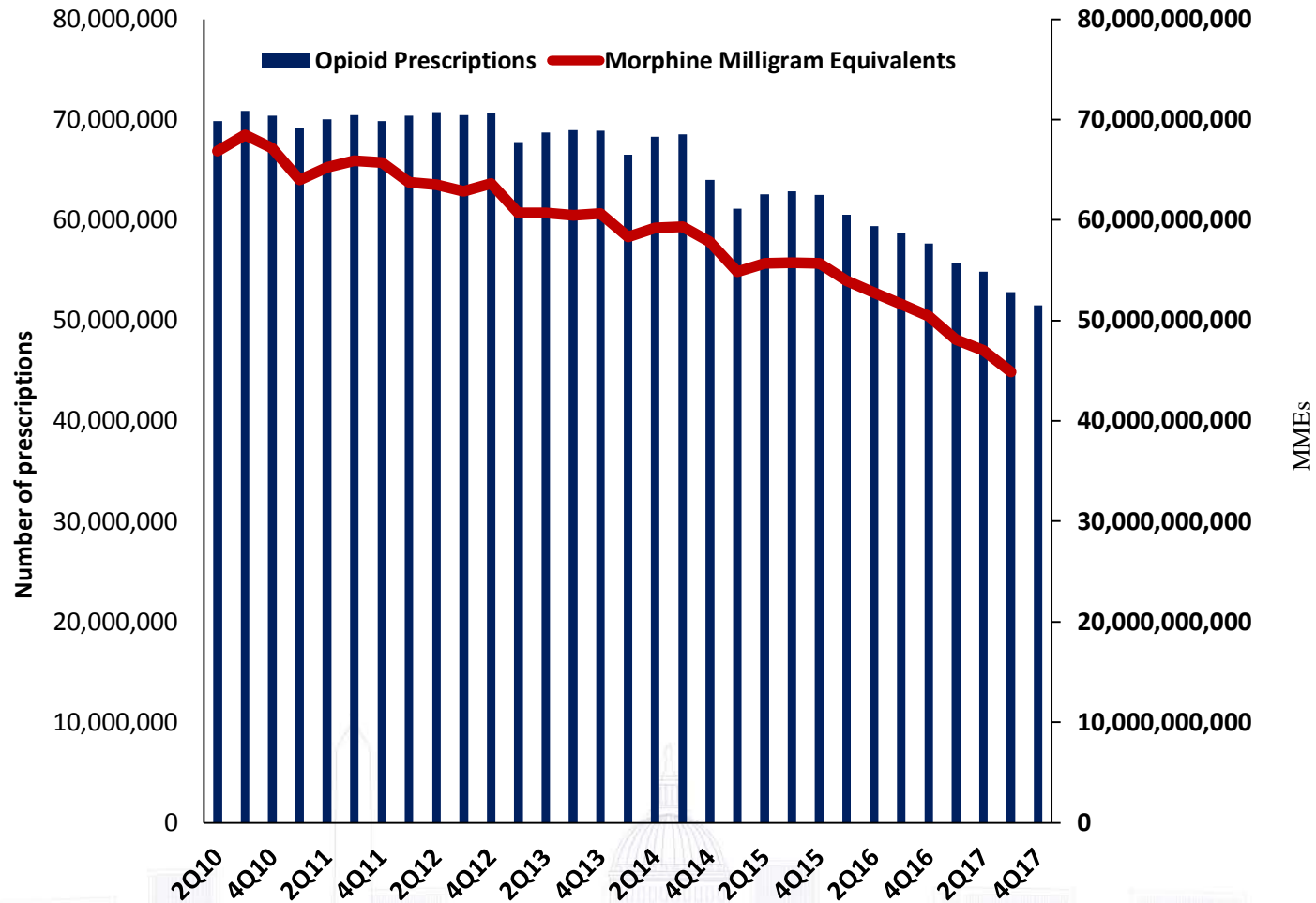


**\*\*T40.2 Natural and semisynthetic opioids: oxycodone, morphine, hydromorphone, oxymorphone, others**

**\*\*RADARS System opioids: oxycodone, hydrocodone, morphine, hydromorphone, and oxymorphone.**

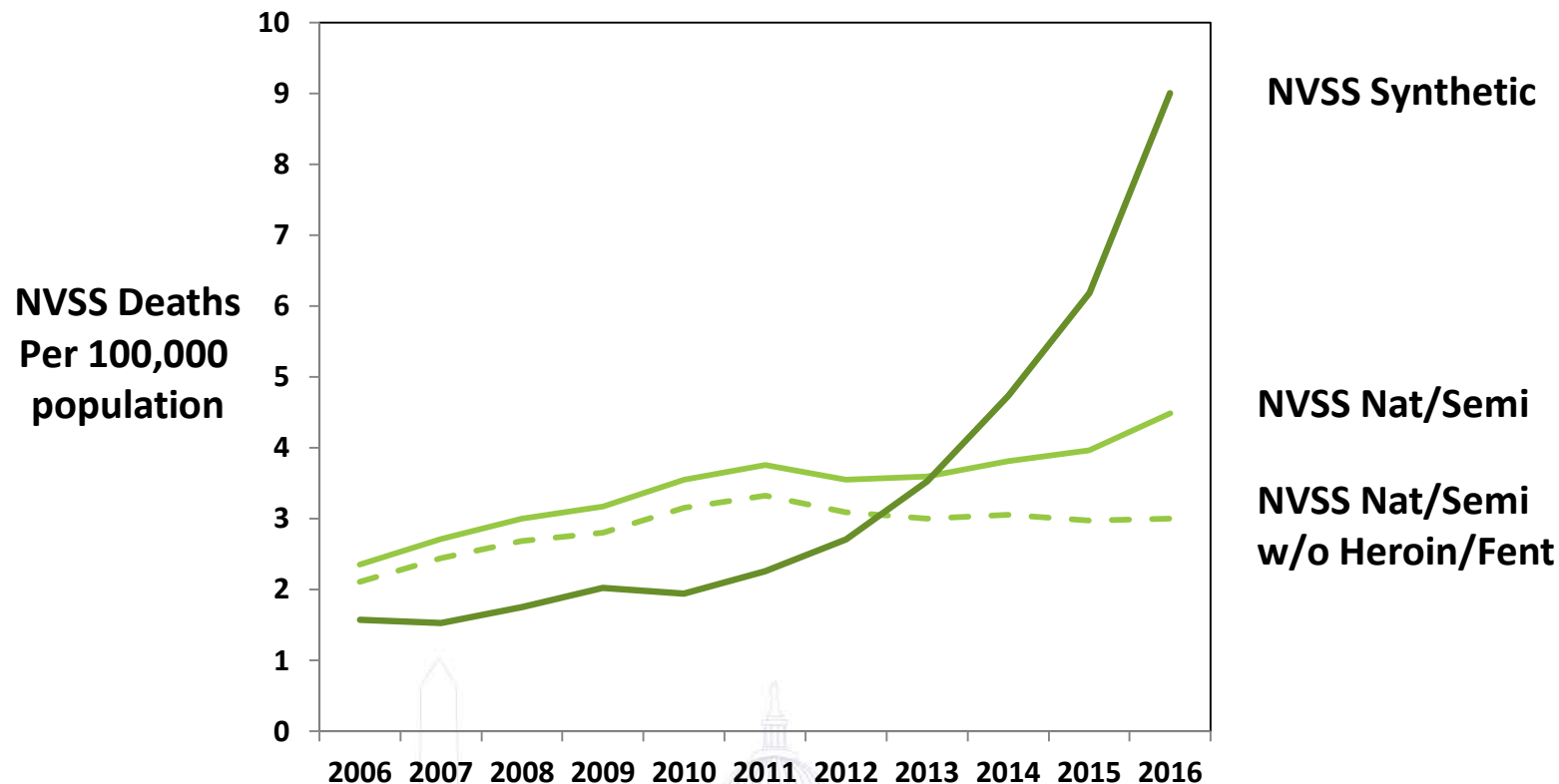
**Deaths include cases followed to a known medical outcome whose death was related to the reported**

# Opioid Prescribing Declining Since 2010



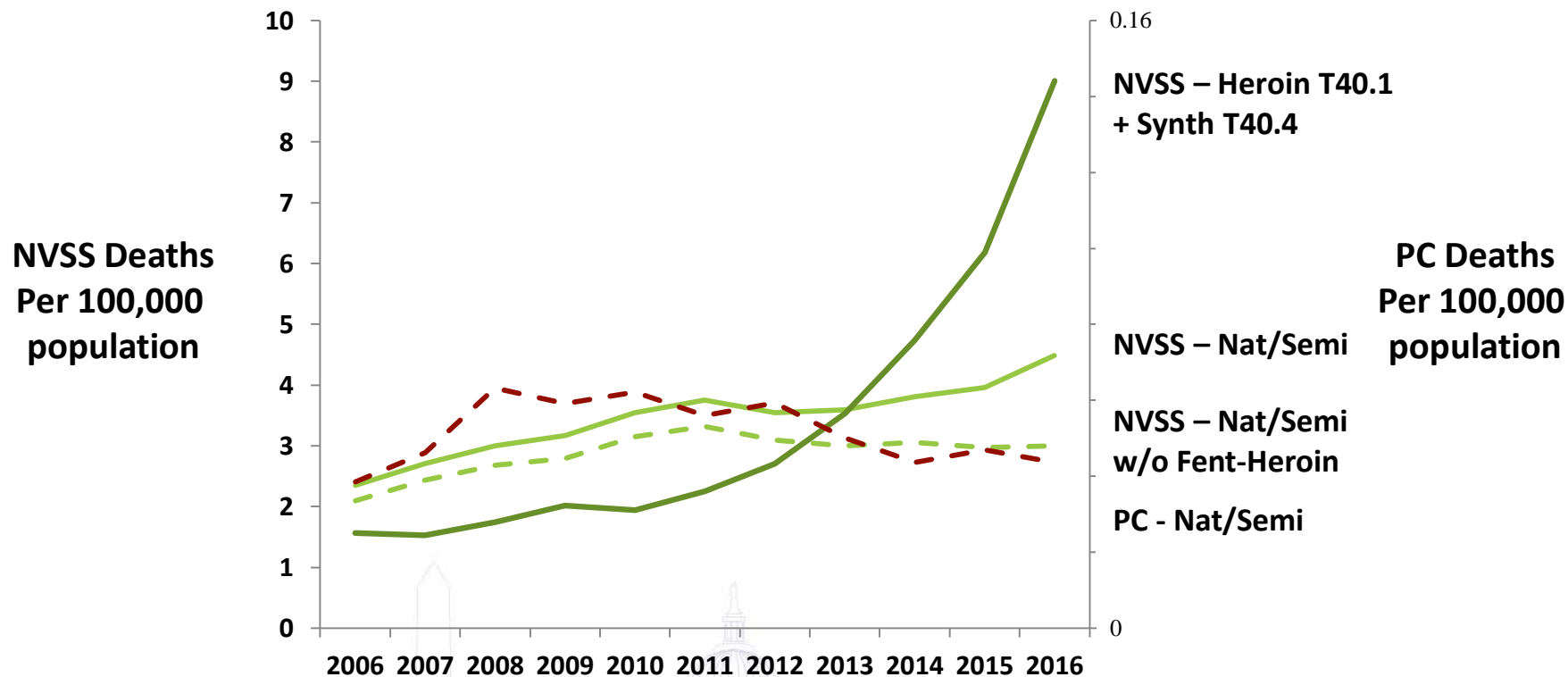
Source: IQVIA National Prescription Audit, data extracted 2016-2018

# National Vital Statistics Program, 2006 - 2016





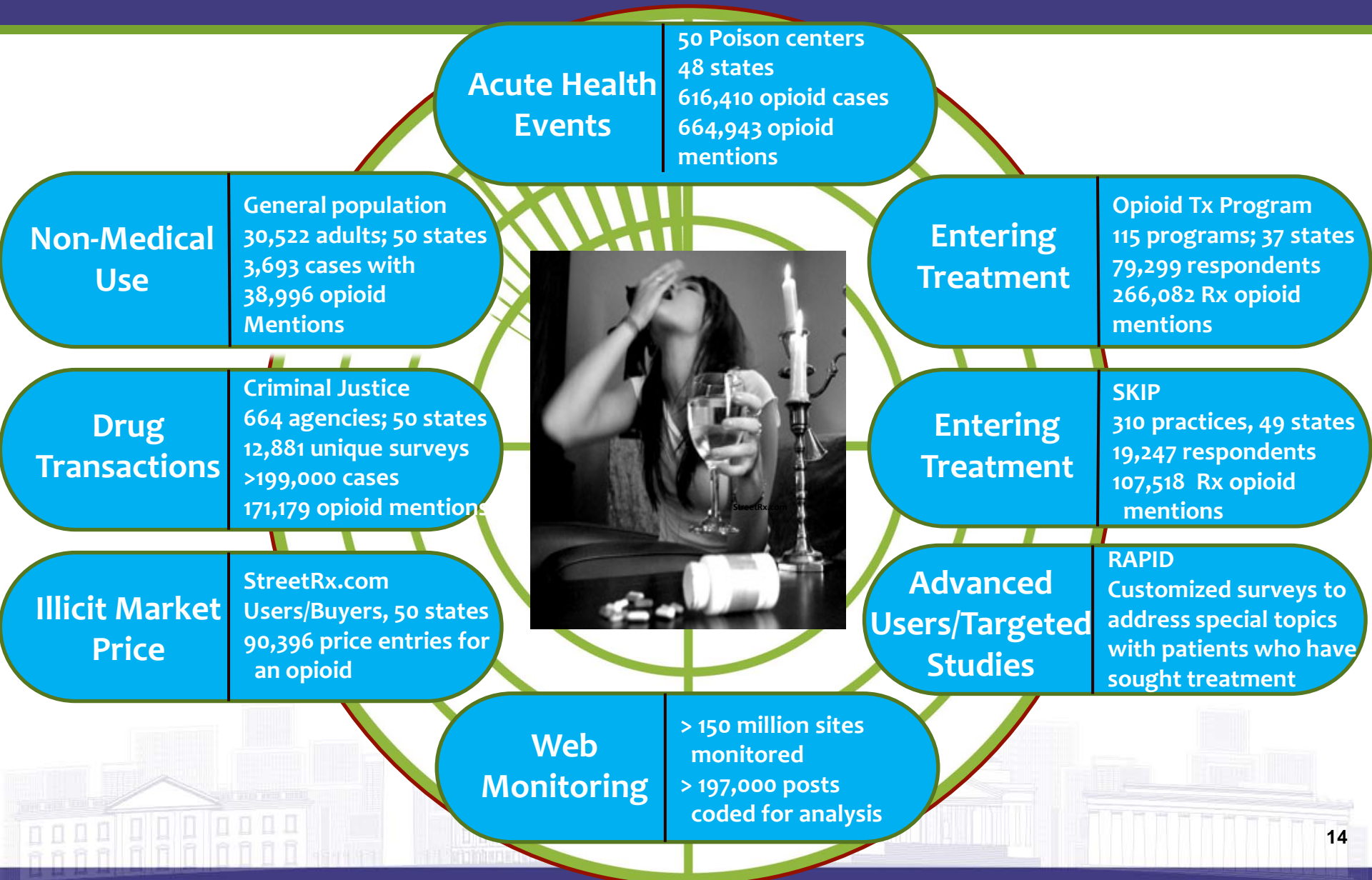
# Deaths from Prescription Opioids are Decreasing Substantially



# NEWS FROM RADARS SYSTEM



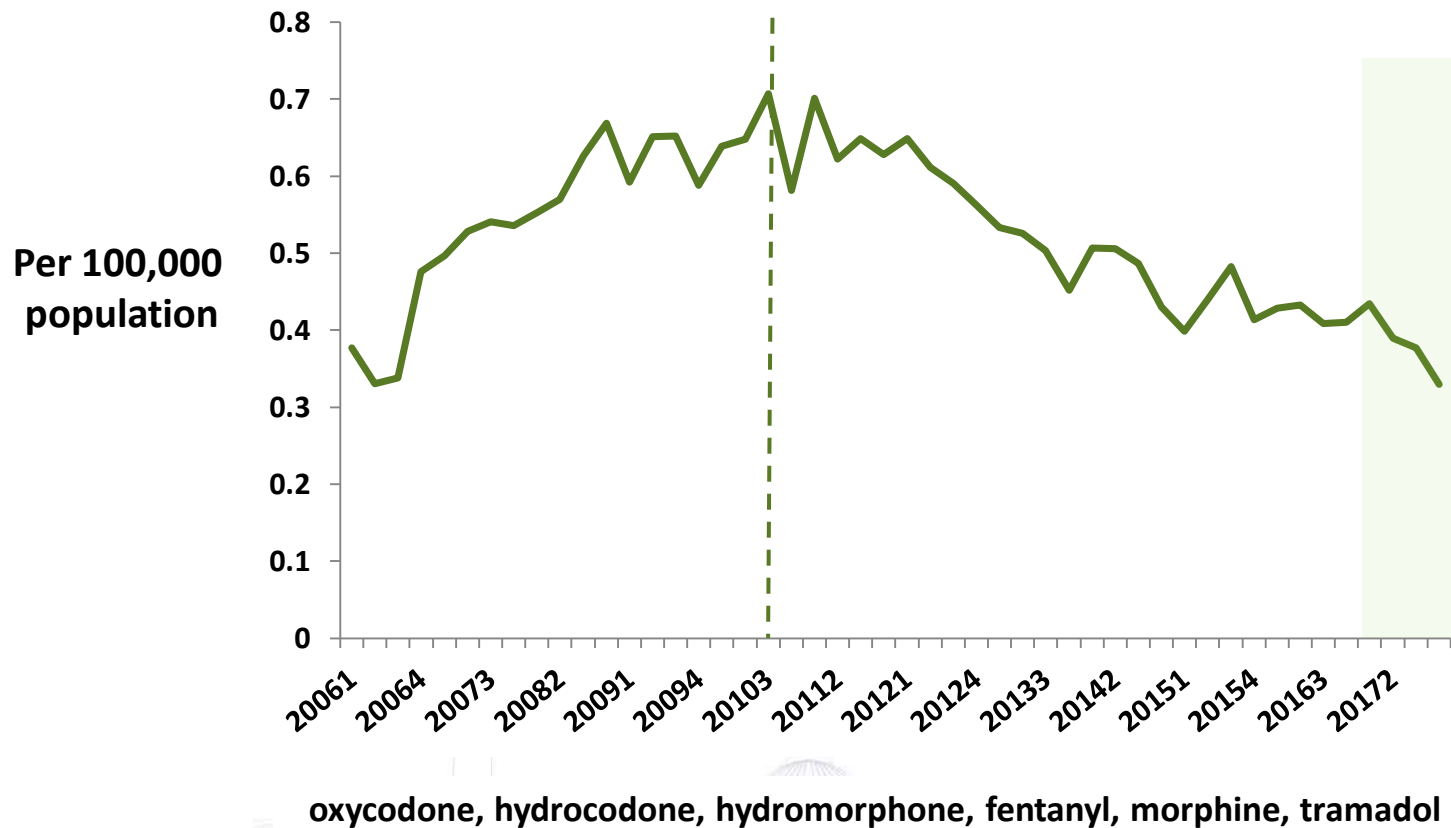
# Mosaic Surveillance of Prescription Drug Abuse





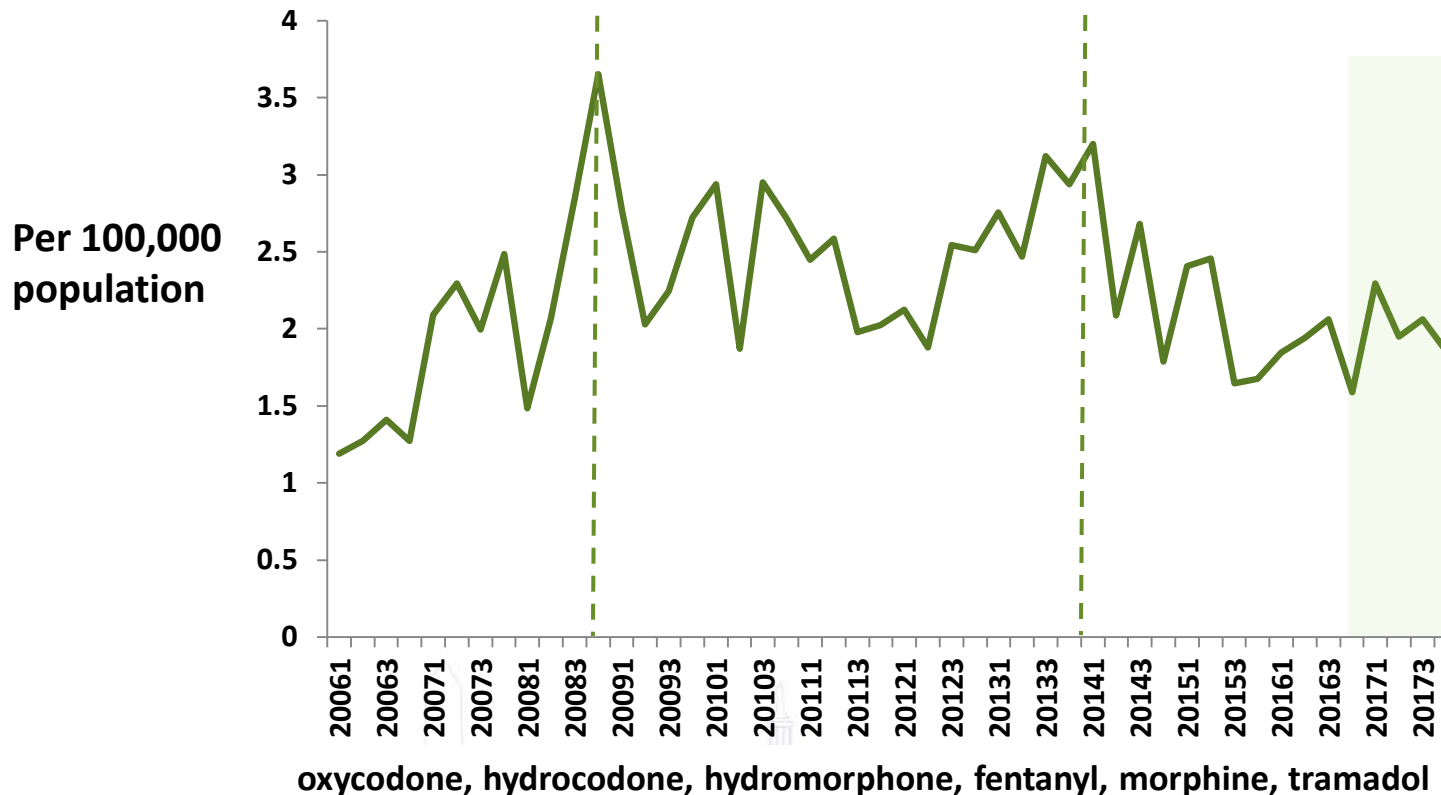
# Poison Center Program

## All Opioids, Intentional Abuse, 2006 - 2017



# Drug Diversion Program

## All Opioids, Diversion, 2006 - 2017



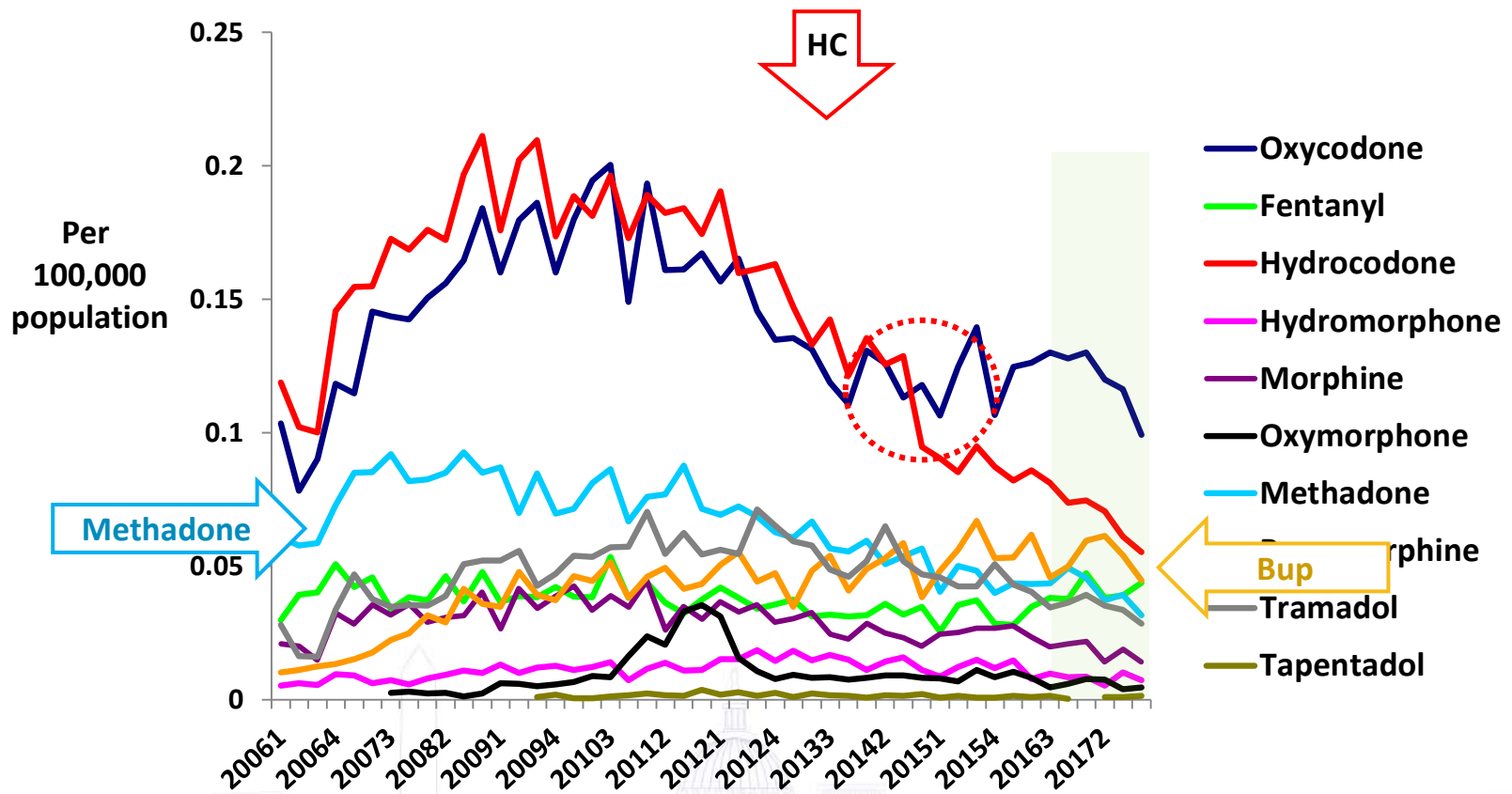
# Treatment Center Programs Combined All Opioids, Abuse, 2006 - 2017



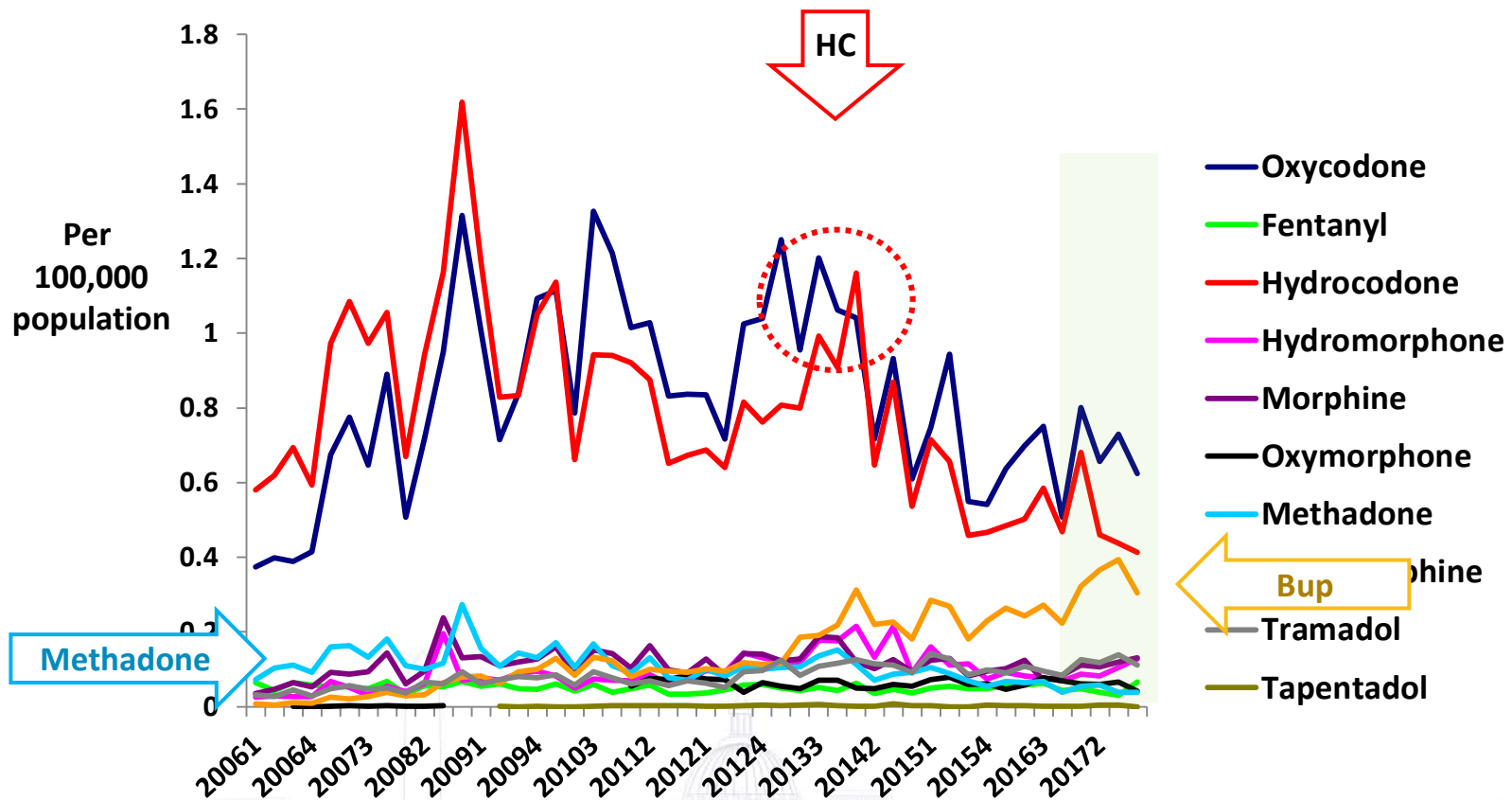
oxycodone, hydrocodone, hydromorphone, fentanyl, morphine, tramadol



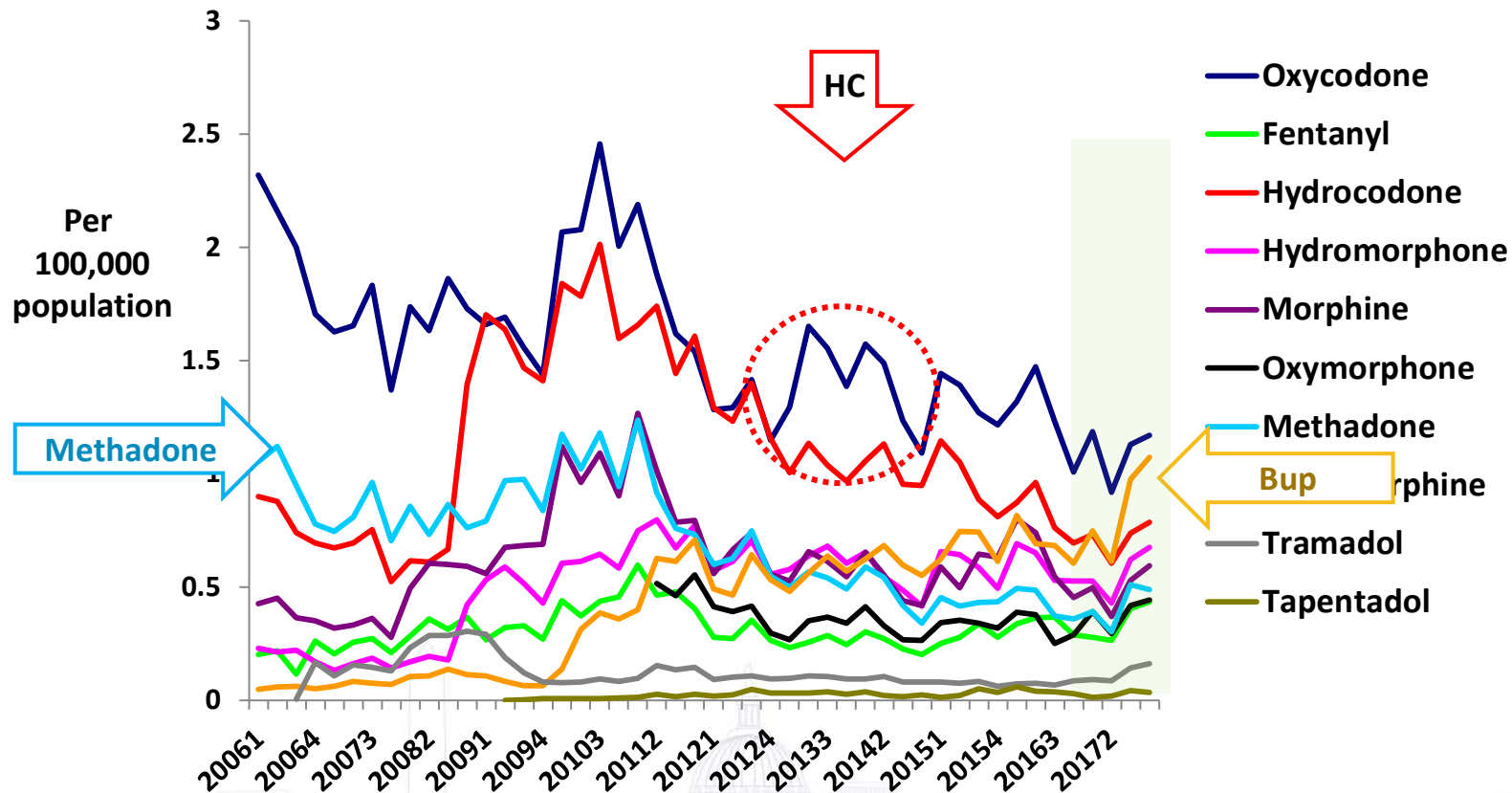
# Poison Center Program API, 2006-2017



# Drug Diversion Program API, 2006-2017



# Treatment Center Programs Combined API, 2006-2017



# Changes in Prescription Drug Abuse, 2017

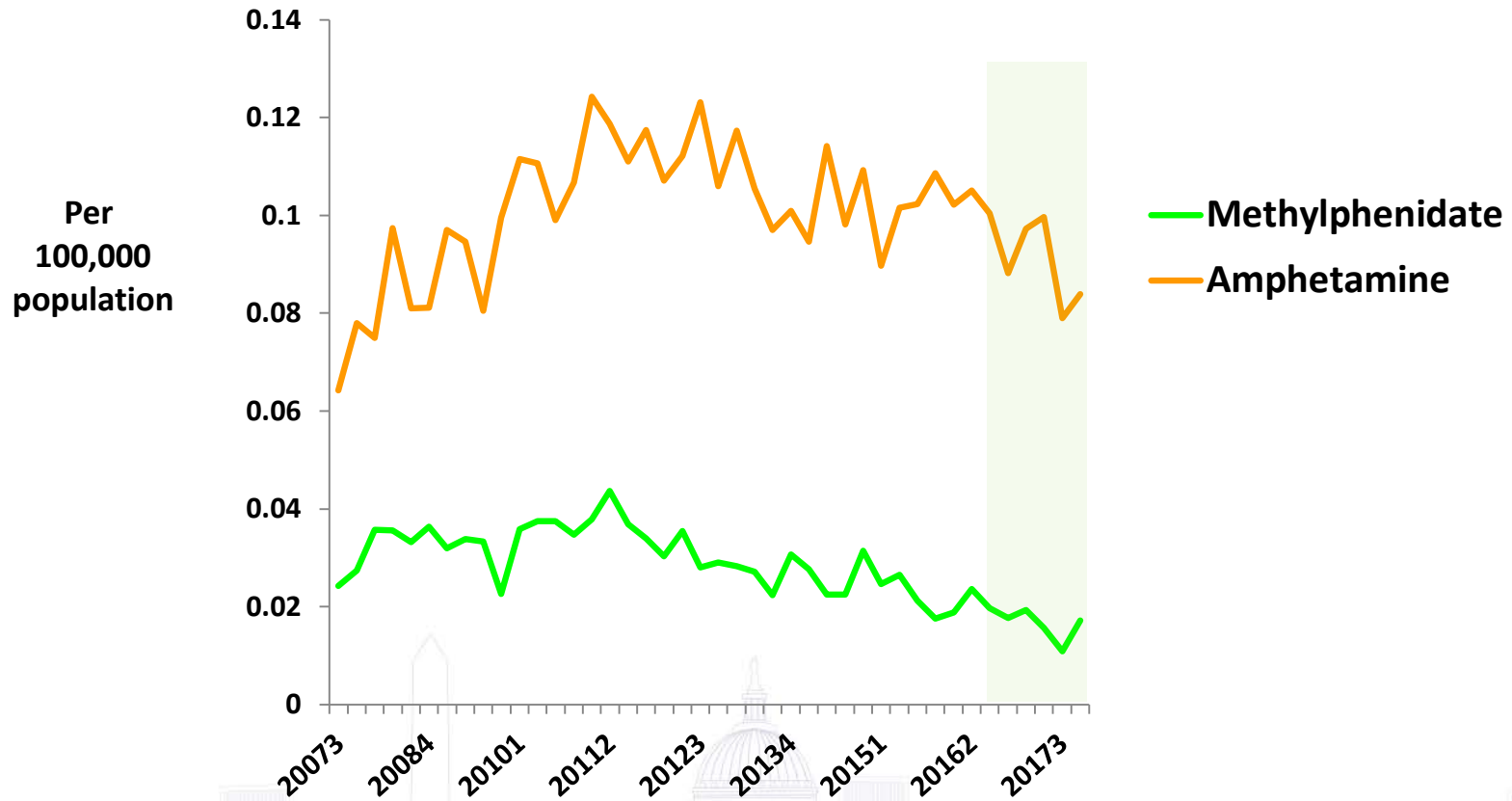
- After substantial improvement from 2010 to 2016, abuse and diversion seem to have plateaued.
  - Buprenorphine a concern?
    - Generally safer than methadone
  - Rescheduling of hydrocodone effective although seems to have affected oxycodone abuse
- Lots of room for improvement
- How do we do that without compromising the care of pain patients?





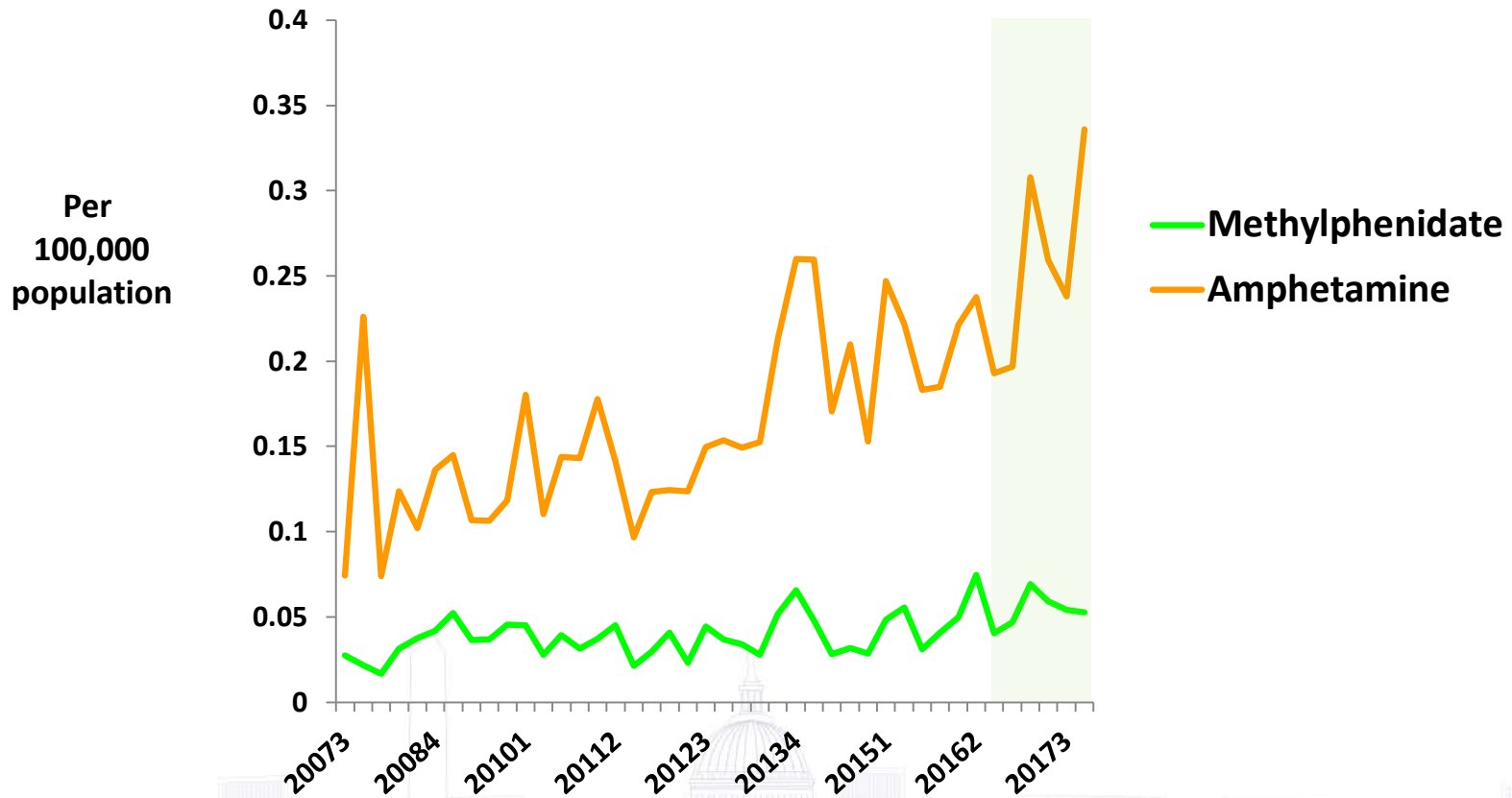
# Poison Center Program

## Prescription Stimulant Rates, 2007 - 2017



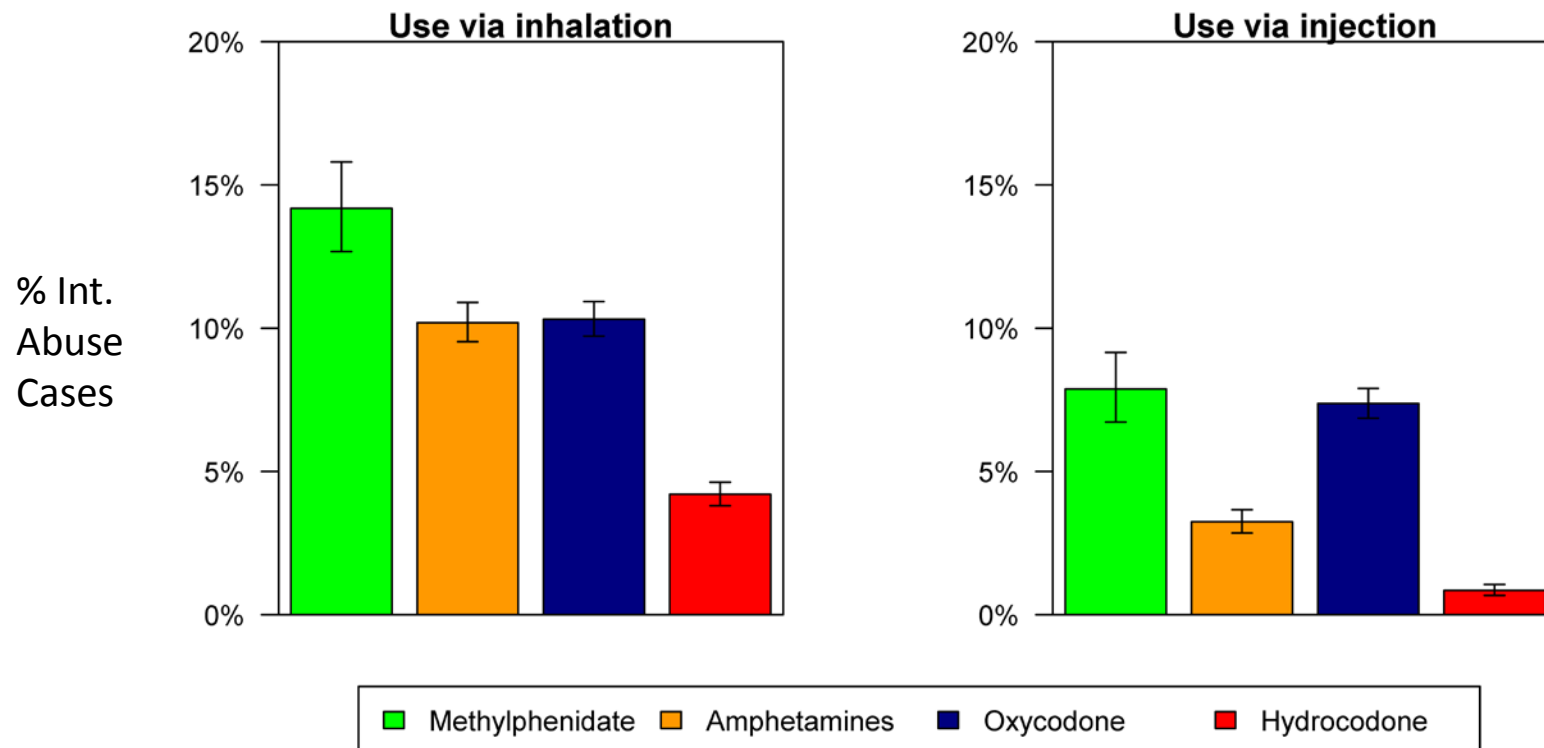
# Drug Diversion Program

## Prescription Stimulant Rates, 2007 - 2016



# Poison Center Program

## Route of Administration, 3Q 2017



# RADARS System Publications

## 2017 - 2018

1. Trends in intentional abuse or misuse of benzodiazepines and opioid analgesics and the associated mortality reported to poison centers across the United States from 2000 to 2014.
2. Comparative rates of mortality and serious adverse effects among commonly prescribed opioid analgesics. *Drug Saf.*
3. Racial/ethnic differences in prevalence trends for heroin use and non-medical use of prescription opioids among entrants to Opioid Treatment Programs, 2005-2016. *Subst Use Misuse*
4. Assessment of tapentadol API abuse liability with the RADARS System. *J Pain.*
5. Changes in misuse and abuse of prescription opioids following implementation of Extended-Release and Long-Acting Opioid Analgesic Risk Evaluation and Mitigation Strategy. *Pharmacoepidemiol Drug Saf.*
6. Understanding abuse of buprenorphine/naloxone film versus tablet products using data from ASI-MV® substance use disorder treatment centers and RADARS® System Poison Centers. *J Subst Abuse Treat.*
7. Law enforcement-derived data on gabapentin diversion and misuse, 2002-2015. *Pharmacoepidemiol Drug Saf.*
8. The demand side of the prescription opioid epidemic: does the initial source of opioids matter? *Drug Alcohol Depend.*
9. Increased use of heroin as an initiating opioid of abuse. *Addict Behav.*
10. Increases in self-reported fentanyl use among a population entering drug treatment. *Drug Alcohol Depend.*
11. Psychoactive substance use prior to the development of iatrogenic opioid abuse: analysis of opioid abusers. *Addict Behav.*
12. Relative preferences in the abuse of IR vs.ER opioids in treatment-seeking opioid abusers. *Pharmacoepidemiol Drug Saf.*
13. Do abuse deterrent opioids work? *J Opioid Manag.*
14. Patterns of prescription drug use/misuse in Spain: The European Opioid Treatment Patient Survey. *Heroin Addict Relat Clin Probl.*
15. Medical outcomes associated with prescription opioid abuse via oral and non-oral routes of administration. *Drug Alcohol Depend.*
16. Changes in drug use patterns reported on the web after the introduction of ADF OxyContin: findings from the Researched Abuse, Diversion, and Addiction-Related Surveillance (RADARS) System Web Monitoring Program. *Pharmacoepidemiol Drug Saf.*

# National Poison Data System (NPDS)

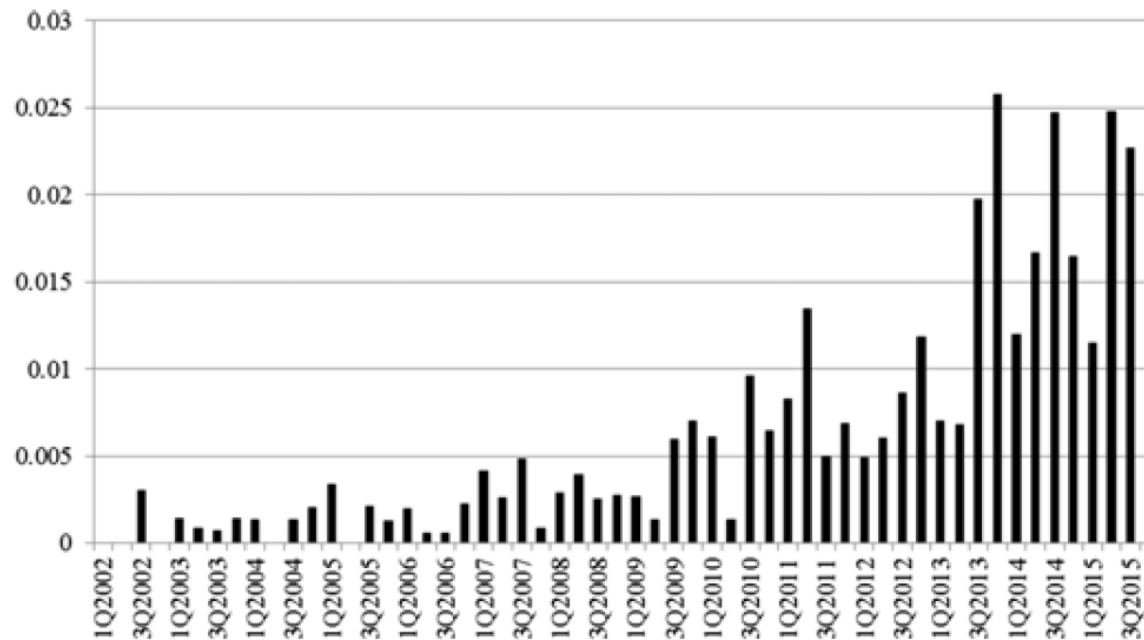
## 2007-2014

Generic Code	Intentional Abuse
Benzodiazepines	51275
Dextromethorphan	18182
Amphetamines	13833
Carisoprodol	8633
Atypical Antipsychotics	8556
Other Sedative/Hypnotic/Anti-Anxiety or Anti-Psychotic	8150
Diphenhydramine	5927
Other SSRI	5185
Other Antihistamines	5155
Methylphenidate	3662
Other Antidepressant	3173
Trazodone	3124
Other Muscle Relaxant	2989
Cyclobenzaprine	2948
Gabapentin	1373
Phenothiazines	1288
Amitriptyline	1271
Clonidine	1159



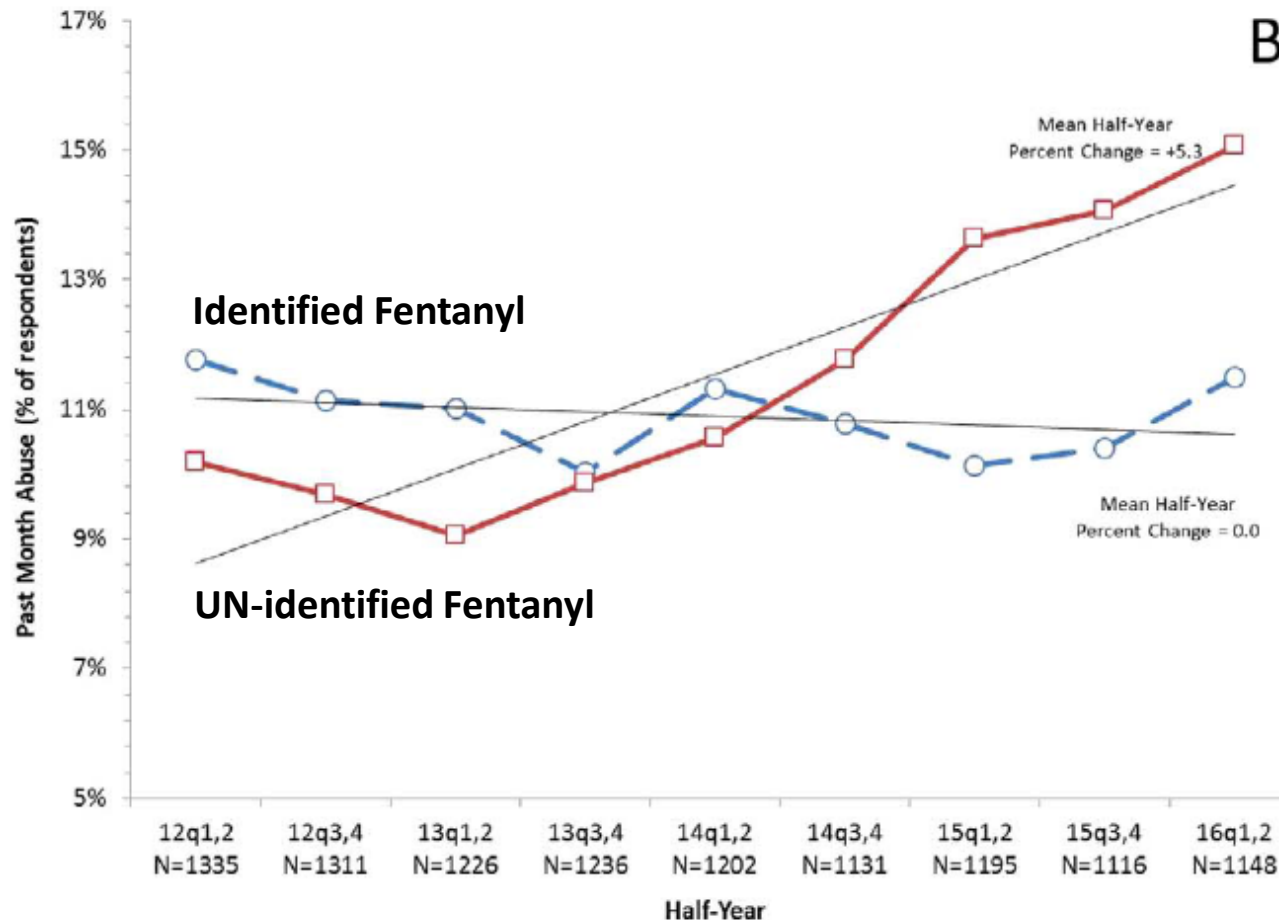
# Drug Diversion Program

## Gabapentin, 2012 - 2015



Buttram ME, Kurtz SP, Dart RC, Margolin ZR. Law enforcement-derived data on gabapentin diversion and misuse, 2002-2015. *Pharmacoepidemiol Drug Saf*

# New Fentanyl Cases are Due to Illicit Fentanyl



Cicero TJ, Ellis MS, Kasper ZA. Increases in self-reported fentanyl use among a population entering drug treatment: the need for systematic surveillance of illicitly manufactured opioids. *Drug Alcohol Depend.*

# Summary

- 1. Abuse of prescription stimulants and other non-opioid drugs may be increasing
- 2. Non-oral routes of abuse surprisingly high for prescription stimulants
- Abuse of other drugs is on the rise
- Illicit fentanyl is our biggest challenge



# Survey of Non-Medical Use of Rx Drugs (NMURx) Coverage



- UK: 3Q14
- Singapore: 3Q15
- US, Canada: 3Q16
- France, Italy: 2Q17
- Germany, Spain: 4Q17



# Survey of Non-Medical Use of Prescription Drugs (NMURx)

- An online, cross-sectional survey that assesses prescription drug use in the general adult population
- 10,000 - 30,000 unique individuals twice annually
- Same survey
  - Canada
  - United Kingdom
  - Germany
  - France
  - Spain
  - Italy





# Survey of Non-Medical Use of Prescription Drugs (NMURx) and National Survey of Drug Use and Health (NSDUH)

Characteristic	NMURx 2016	NSDUH 2015
	Weighted N=247,773,709	Weighted N=242,801,072
	% (95% CI)	% (95% CI)
18-25 yrs	13.9 (13.4-14.4)	14.4 (14.1-14.7)
26-34	16.5 (16.1-16.9)	15.8 (15.4-16.2)
35-49	24.4 (23.9-24.9)	24.9 (24.3-25.4)
50-64	25.9 (25.4-26.4)	25.7 (25.0-26.4)
65+	19.3 (18.8-19.7)	19.2 (18.6-19.9)
Gender - Female	51.3 (50.7-51.9)	51.8 (51.1-52.5)
Race/Ethnicity		
Non-Hispanic White	77.1 (76.6-77.7)	64.7 (64.1-65.4)
Non-Hispanic Black	7.2 (6.8-7.5)	11.8 (11.4-12.2)
American Indian/Alaskan Native	0.6 (0.5-0.7)	0.5 (0.4-0.6)
Non-Hispanic Asian	3.6 (3.4-3.8)	5.5 (5.1-5.9)
Hispanic	8.9 (8.5-9.2)	15.6 (15.1-16.1)
Unknown	5.9 (5.6-6.2)	NA

‡ Student enrollment is defined by NMURx as attending any type of college or university in the past 3 months; it is defined by NSUDH as any respondents currently enrolled in a college or university.

§ Substance abuse treatment is defined by NMURx as ever sought professional help for substance abuse; it is defined by NSDUH as ever received treatment or counseling designed to help reduce or stop alcohol or drug use (respondents not asked question due to skip logic were classified as no treatment).

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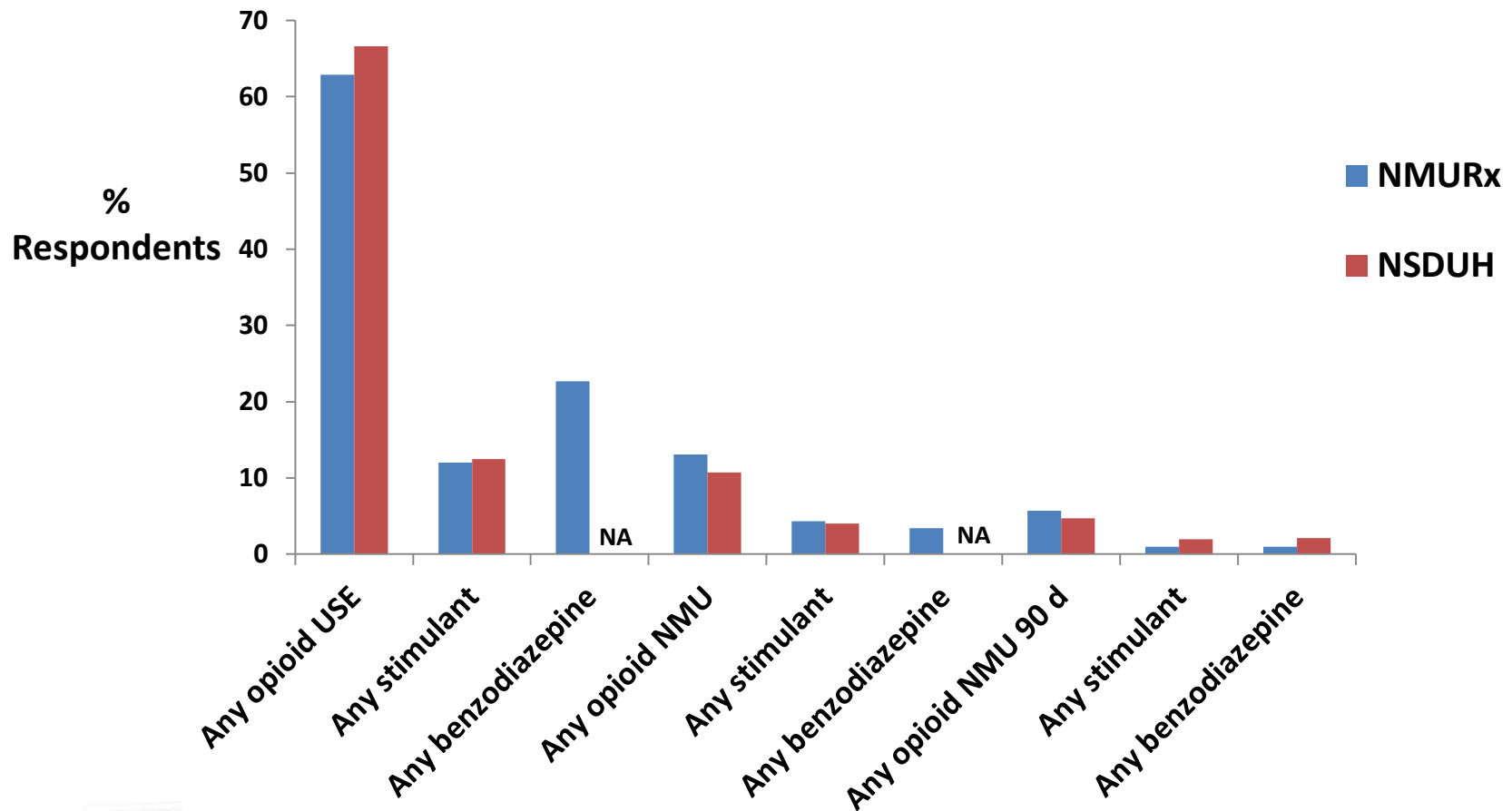
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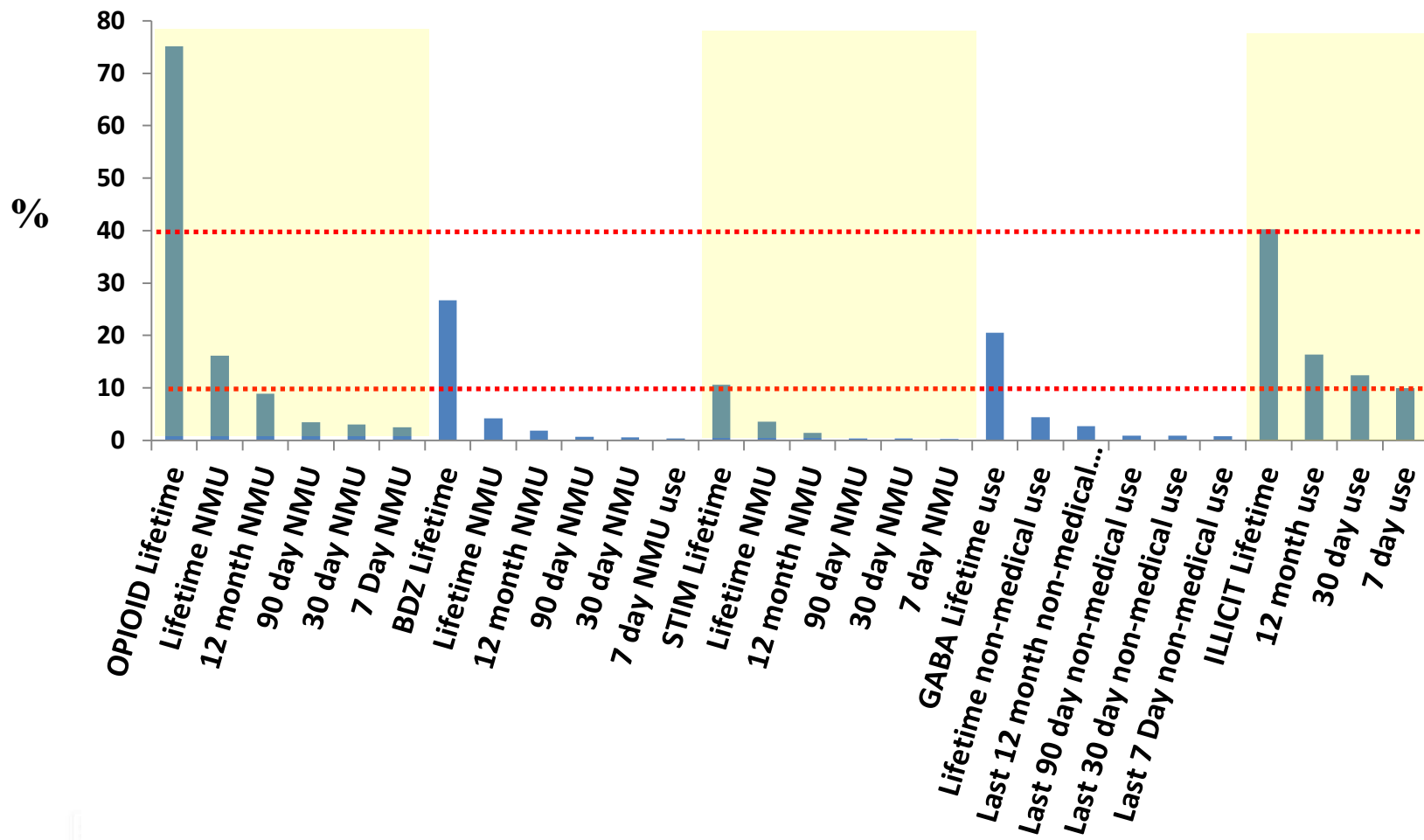
# Survey of Non-Medical Use of Prescription Drugs (NMURx) and National Survey of Drug Use and Health (NSDUH)

Residential Region	NMURx 2016	NSDUH 2015
Northeast	17.9 (17.4-18.4)	NA
Midwest	21.1 (20.6-21.6)	NA
South	37.5 (36.9-38.1)	NA
West	23.5 (23.0-24.0)	NA
Total Household Income		
< \$20,000	12.4 (12.0-12.8)	17.9 (17.3-18.4)
\$20,000-49,999	29.5 (29.0-30.1)	30.0 (29.4-30.7)
≥\$50,000	52.2 (51.6-52.8)	52.1 (51.4-52.8)
Unknown	5.9 (5.6-6.2)	NA
Student Enrollment <sup>‡</sup>	11.1 (10.7-11.6)	8.4 (8.1-8.7)
Current Healthcare Professional	5.1 (4.9-5.4)	NA
Served in Armed Forces	10.6 (10.3-10.9)	9.1 (8.7-9.6)
Lifetime Substance Abuse Treatment <sup>§</sup>	6.3 (6.0-6.6)	6.2 (5.9-6.5)

# Survey of Non-Medical Use of Prescription Drugs (NMURx) and National Survey of Drug Use and Health (NSDUH)

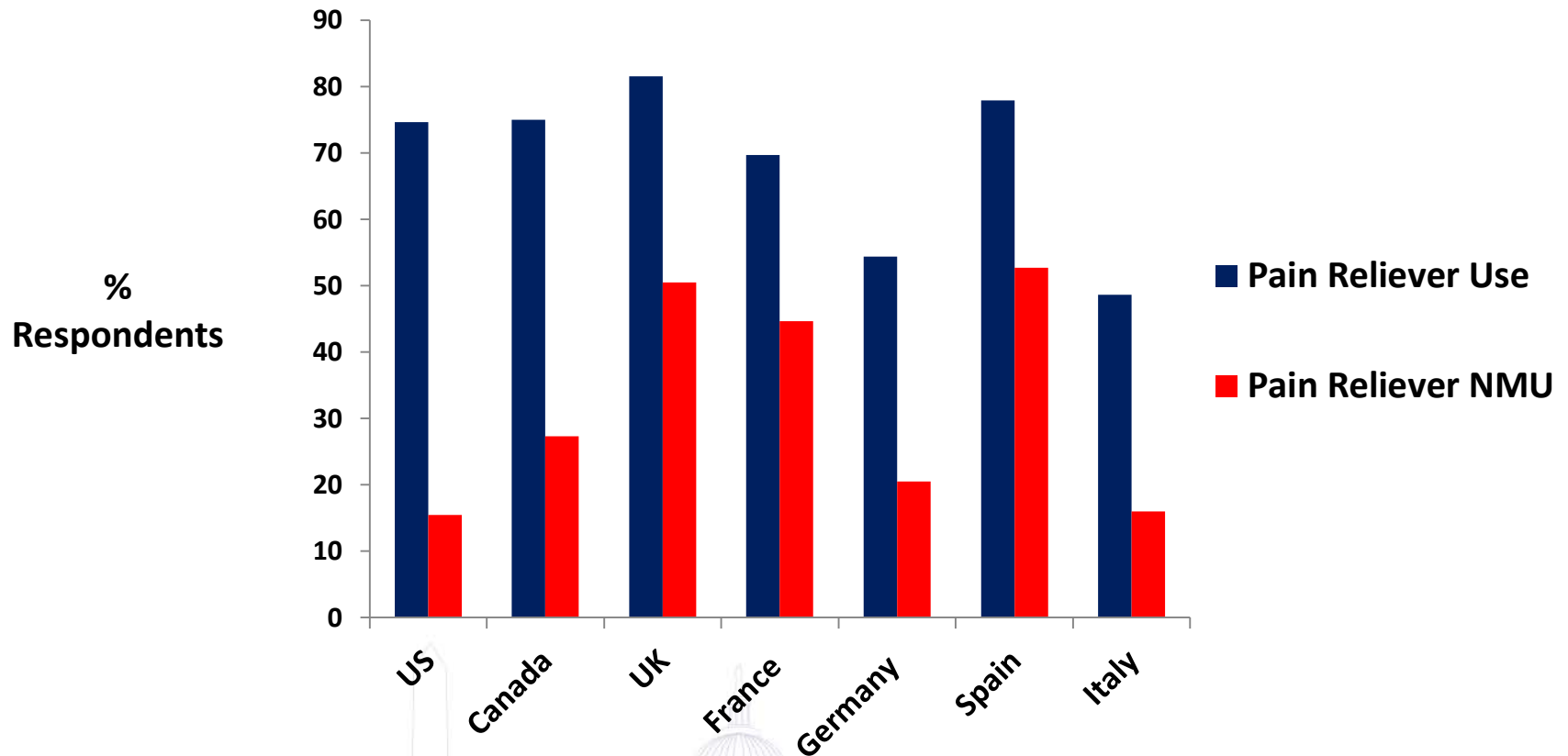


# NMURx: Opioids, BDZ, Stimulants, GABA, Illicit Drugs, 2017 Q3

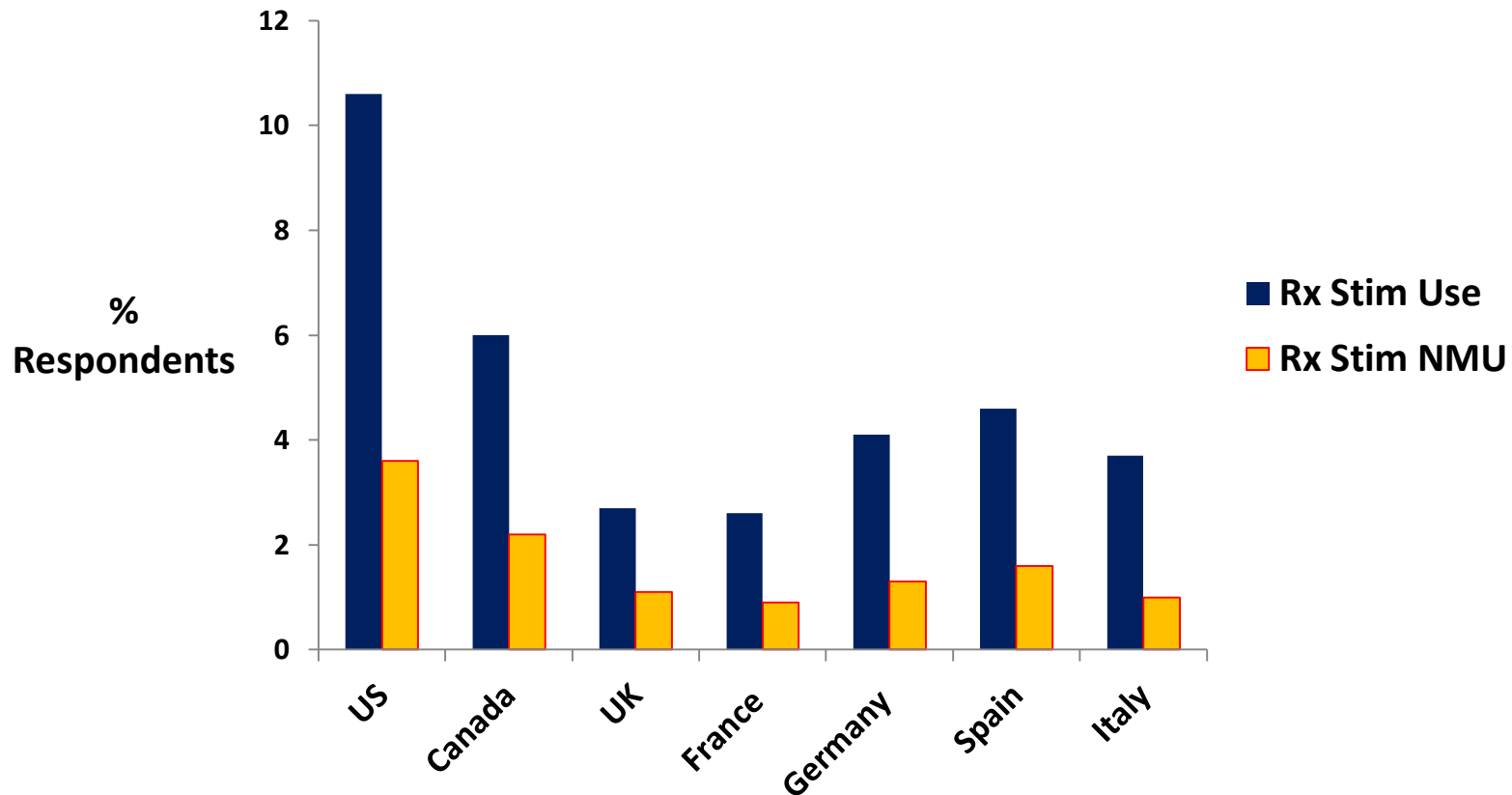




# Non-Medical Use Around the World, 2017



# Non-Medical Use Around the World, 2017



# 2017 Program

## Effectiveness of ADFs in the Real World

**Richard C. Dart, MD, PhD**

*Executive Director, RADARS System, Denver Health and Hospitals*

*Professor, University of Colorado School of Medicine*

## Abuse Deterrent Formulations of Prescription Opioid Analgesics

**Hon. Earl “Buddy” Carter**

*U.S. Representative (R-GA, 1st District)*



# 2017 Program

## Understanding Changes in the US ‘Heroin’ Market: Notes from the Field

**Dan Ciccarone MD, MPH**

*Professor of Family and Community Medicine, UCSF*

*Principal Investigator, Heroin in Transition Study (NIH/NIDA)*

## The Illicit Injection of Prescription Opioids—Risks and Rewards

**Jon E. Zibbell, PhD**

*Senior Public Health Scientist – Behavioral Health, RTI International*



# 2017 Program

## Getting to Category IV

### FDA's Current Approach to the Postmarket Evaluation of Opioid Analgesic Products with Properties Intended to Deter Abuse

**Tamra E. Meyer, PhD, MPH**

*Lead Epidemiologist, Division of Epidemiology II, Office of Surveillance and Epidemiology, Center for Drug Evaluation and Research, Food and Drug Administration*

## A Causal Approach to Understanding Abuse in the Community

**Nabarun Dasgupta, MPH, PhD**

*Senior Scientist – RADARS System, Denver Health and Hospitals*

**John Schwarz, PhD**

*Director of Biostatistics – RADARS System, Denver Health and Hospitals*<sup>1</sup>

# 2017 Program

## Thinking Outside the Opioid Box: Non-Opioid Pharmaceutical Abuse

**Janetta L. Iwanicki, MD**

*Associate Medical Director – Rocky Mountain Poison & Drug Center,  
Denver Health and Hospital Authority*

## Panel Discussion and Summary





# End

