

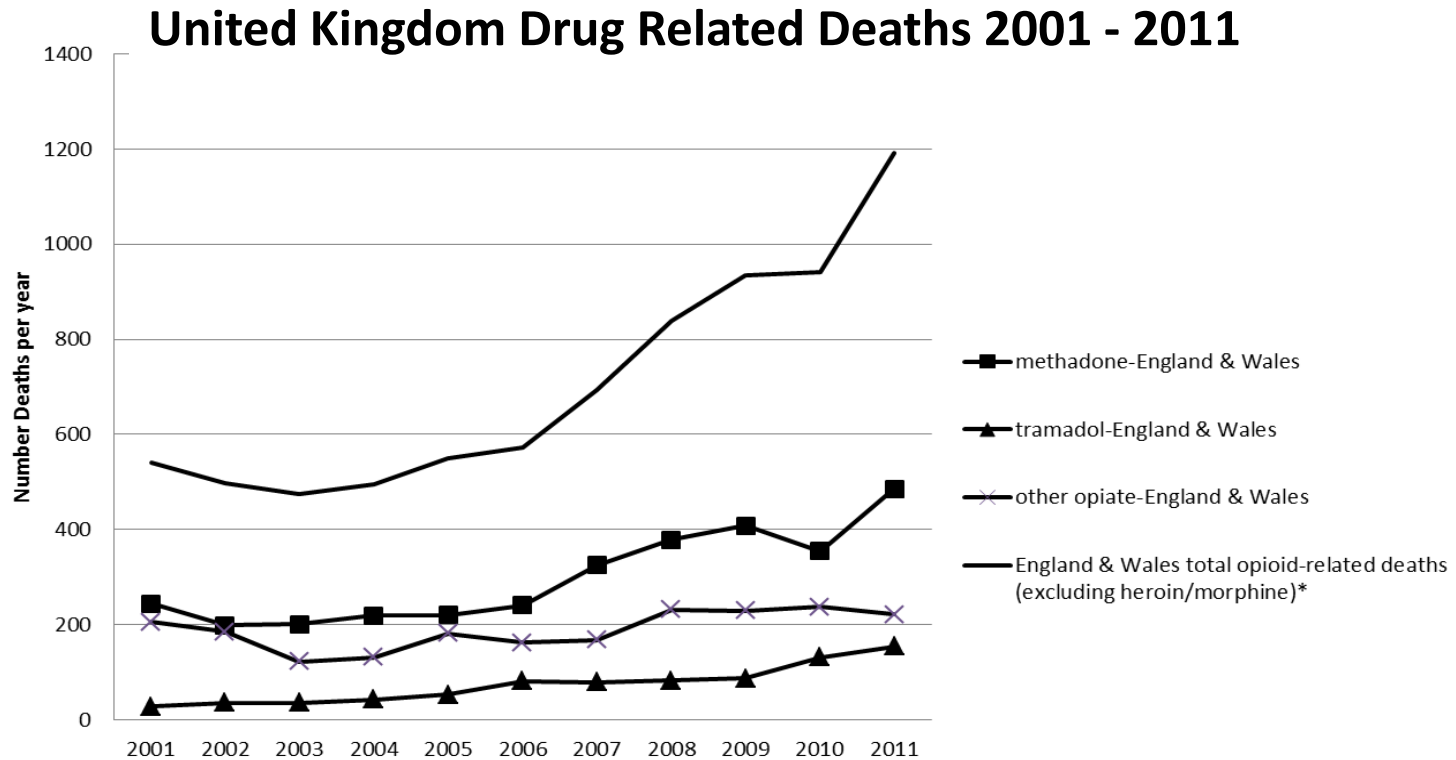
# Diversion, misuse and trafficking of methadone and buprenorphine

## Global Addiction Conference

Richard C. Dart, MD, PhD  
Professor, University of Colorado



# Prescription Opioid Deaths are Rising Internationally



\*Note: heroin and morphine are reported as one category in the data from England, Wales and Scotland; since the focus of this analysis is on prescription opioids, that category was not included in this analysis.

# What is the RADARS<sup>®</sup> System?

- History
  - 2006, Denver Health and Hospital Authority (DHHA)
  - Multiple pharmaceutical subscribers
  - Independent program
  - Denver Public Safety Net Hospital for 150 years
  - State sanctioned independent authority
- Conflict of Interest Statement
  - None, other than running system for DHHA as noted above.

# RADARS System

## Scientific Advisory Board

### Principal Investigators

- Theodore J. Cicero, PhD  
*Washington University at St. Louis*
- Richard C. Dart, MD, PhD  
*Denver Health and Hospital Authority*
- Hilary Surratt, PhD  
*Nova Southeastern University*
- Mark W. Parrino, MPA  
*American Association for the Treatment of Opioid Dependence*



### Law Enforcement

- John Burke  
*National Association of Drug Diversion Investigators*

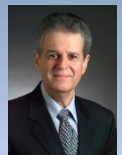
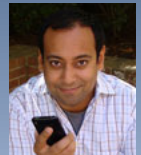
### Substance Abuse Experts

- Herbert D. Kleber, MD  
*Columbia University*
- Sidney Schnoll, MD, PhD  
*Pinney Associates*
- George E. Woody, MD  
*University of Pennsylvania*



### Epidemiology/Biostatistics

- Edgar Adams, ScD  
*Covance*
- Nabarun Dasgupta, MPH  
*Founder – Epidemico*
- Alvaro Muñoz, PhD  
*Johns Hopkins University*



# Challenges of Prescription Drug Abuse Surveillance

- Clandestine behavior
- Geographical variability
- Changes rapidly
- Multiple age groups
- Product specificity
  - 15 active pharmaceutical ingredients (API)
    - Opioids: Hydrocodone, oxycodone, hydromorphone, oxymorphone, morphine, fentanyl, tapentadol, tramadol, buprenorphine, methadone
    - Stimulants
  - Dozens of specific products (OxyContin, Opana, Suboxone, Subutex, etc.)



# RADARS System Mosaic

## Acute Events

53 Poison  
Centers  
46 States

## Drug Transactions

Criminal Justice  
280 investigator  
50 states

## Entering Treatment

OTP  
73 programs  
33 states

## Entering Treatment

SKIP  
125 practices  
50 states

## New Initiates

College Survey  
2000 students  
50 States

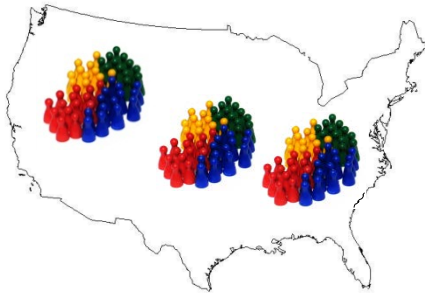
## Illicit Market Price

StreetRx.com  
Users/Buyers  
50 states



# RADARS<sup>®</sup> System Process

## A Tale of Two Denominators



**POPULATION RATE =  $\frac{\text{Event Count by Area}}{\text{Population}}$**

- Disease burden on population
- **Does not account for drug availability**



**UNIQUE RECIPIENTS OF  
DISPENSED DRUG (URDD) RATE  $\frac{\text{Event Count by Area}}{\text{URDD}}$**

- URDD = Number of unique people filling prescription for drug (refills excluded)

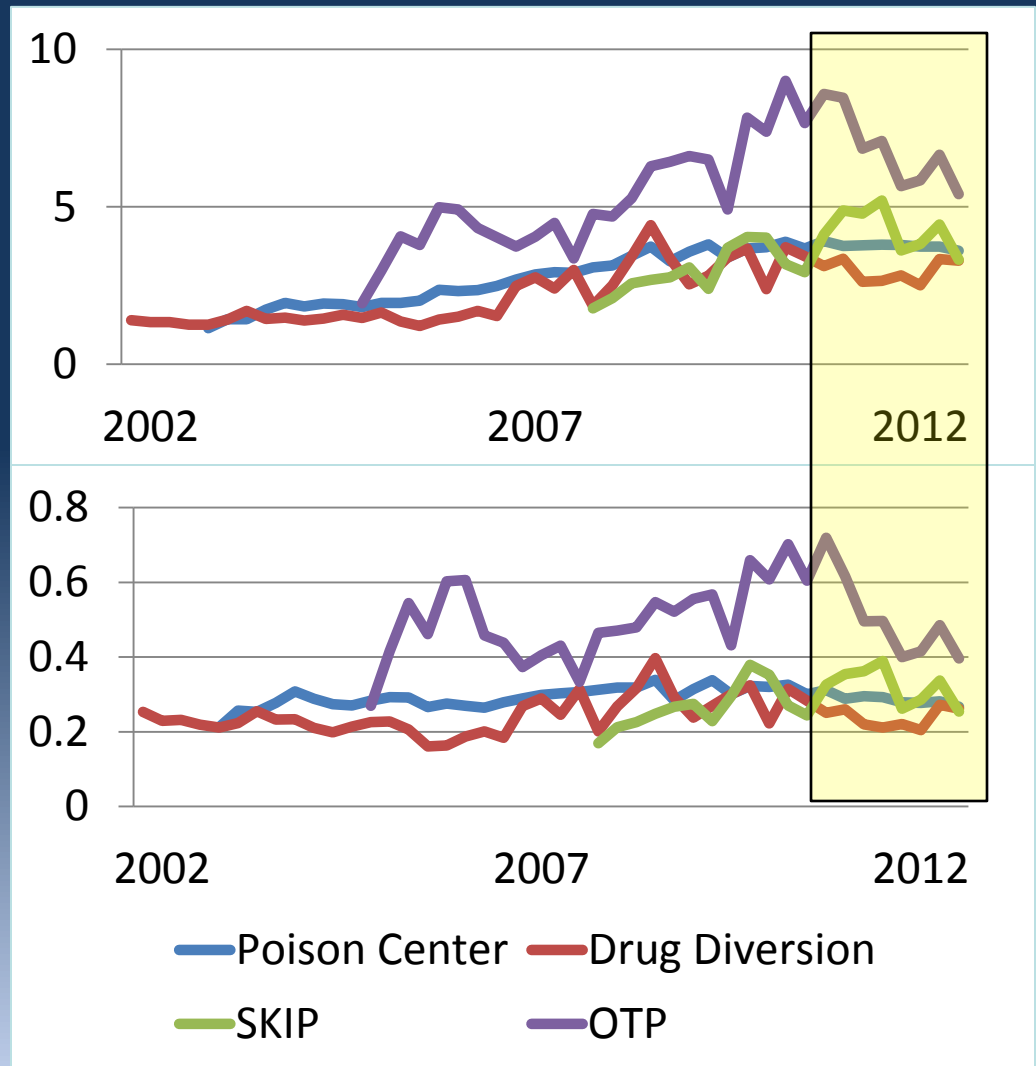
# **TRENDS IN PRESCRIPTION OPIOID ABUSE IN THE UNITED STATES**



# Overall Opioid Abuse Trends in United States

## Population Rates, 2002-2012

Population Rate



# RADARS System Opioid Abuse Trends

## URDD Rates (Ranked Highest-Lowest)

### 2012

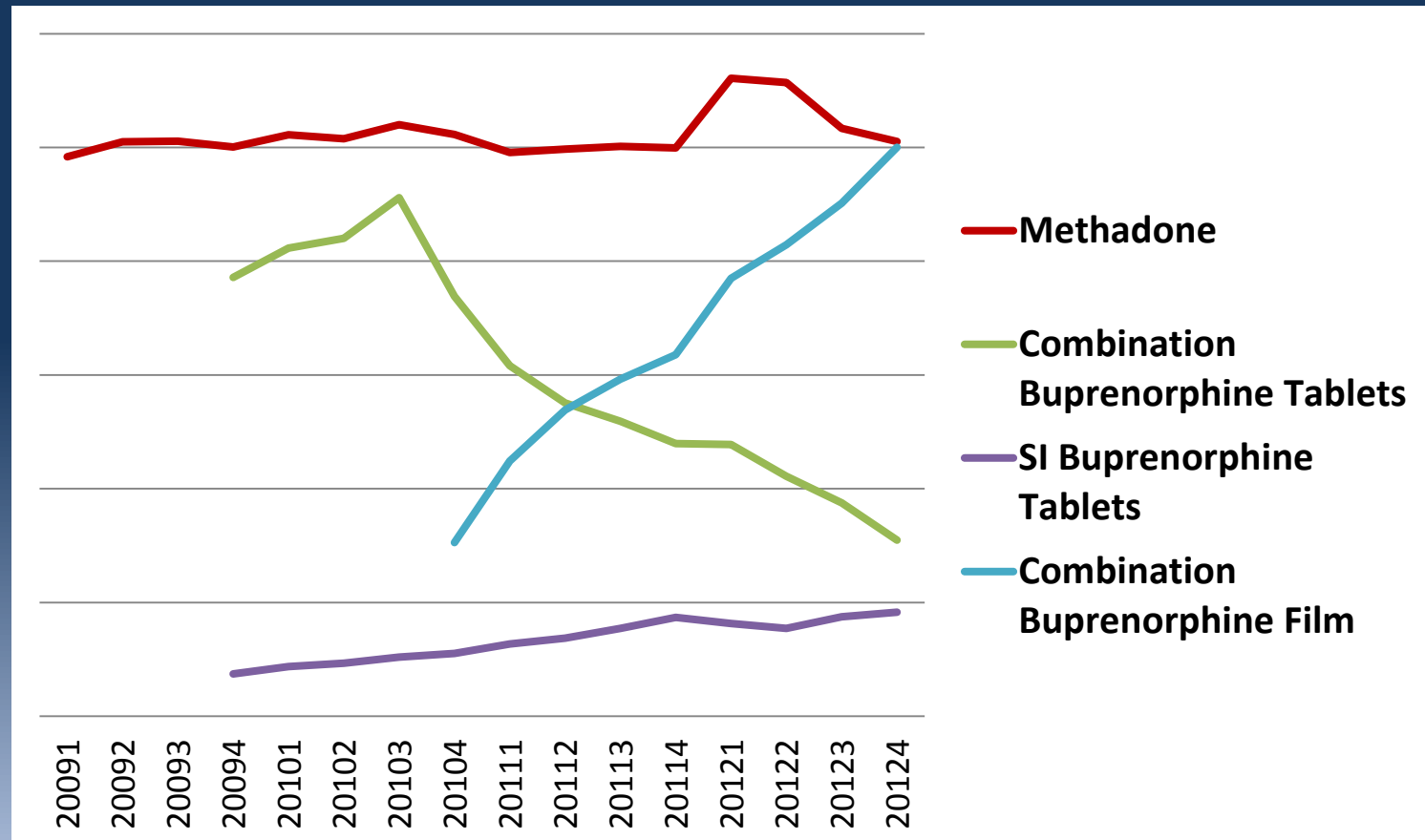
Rank	Poison Center	Opioid Treatment	Survey of Key Informant Pts	Drug Diversion
1	Methadone	Oxymorphone	Oxymorphone	Oxymorphone
2	Oxymorphone	Methadone	Hydromorphone	Hydromorphone
3	Buprenorphine	Hydromorphone	Methadone	Methadone
4	Hydromorphone	Buprenorphine	Buprenorphine	Buprenorphine
5	Morphine	Morphine	Morphine	Morphine
6	Fentanyl	Fentanyl	Fentanyl	Oxycodone
7	Tramadol	Tapentadol	Tapentadol	Fentanyl
8	Oxycodone	Oxycodone	Oxycodone	Hydrocodone
9	Tapentadol	Hydrocodone	Hydrocodone	Tramadol
10	Hydrocodone	Tramadol	Tramadol	Tapentadol

# **BUPRENORPHINE AND METHADONE ABUSE IN THE US**

# How Many Patients Fill a Prescription for Methadone?

## Unique Recipients of dispensed drug (URDD)

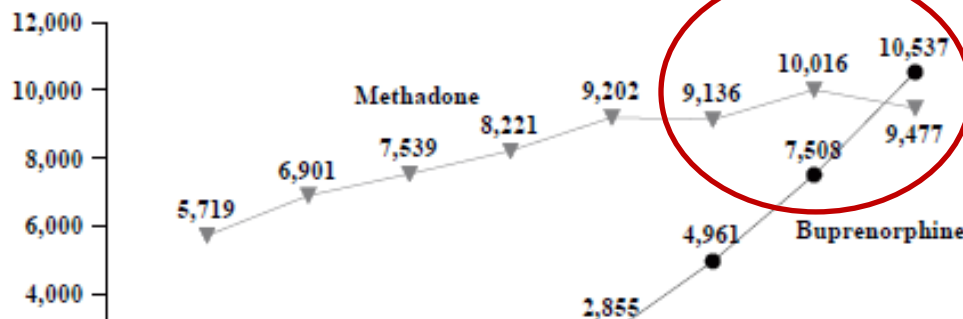
### 2009Q1 - 2012Q4



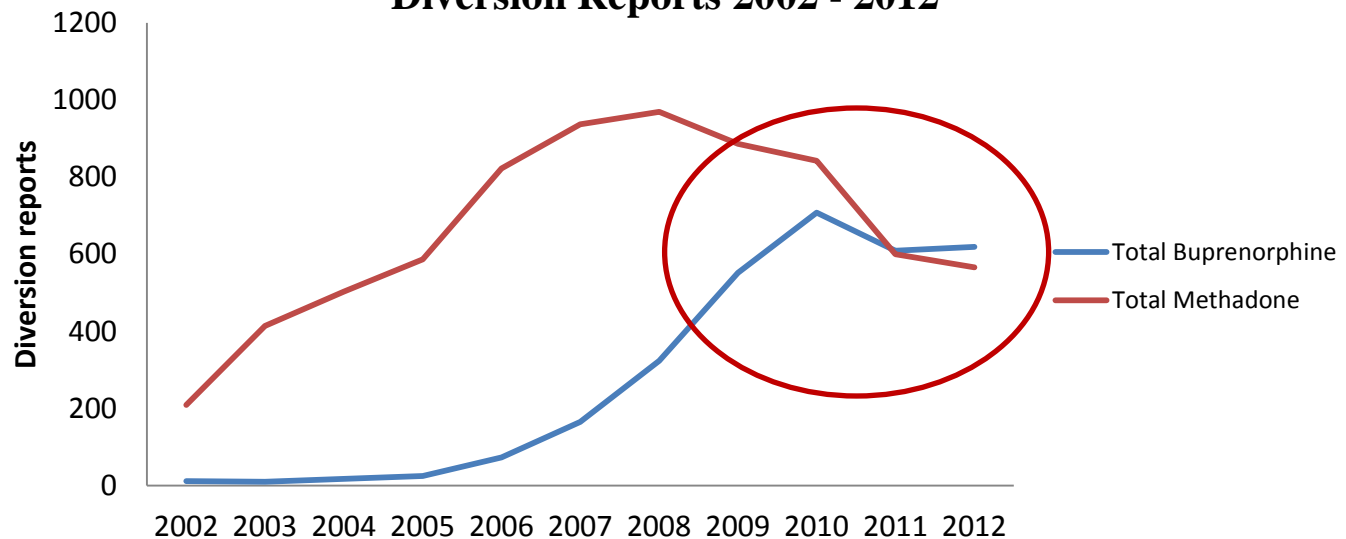
# Buprenorphine Data Comparison

## RADARS System & CESAR Fax

Estimated Number of Total Methadone and Buprenorphine Reports,  
U.S. Law Enforcement-Seized Drug Exhibits Analyzed by Forensic Laboratories, 2003-2010

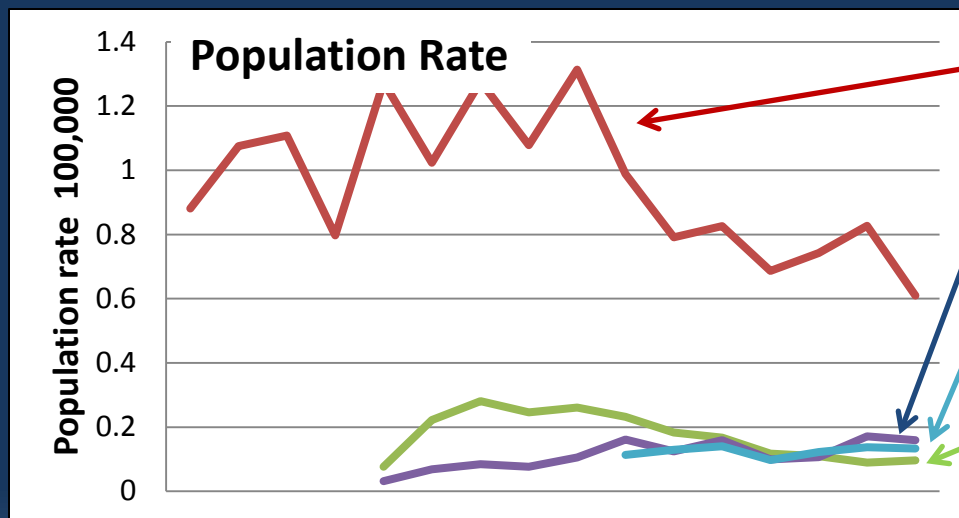


**RADARS System Drug Diversion Program**  
**Diversion Reports 2002 - 2012**



# Opioid Treatment Program

## Past 30 Day Endorsements, 2009-2012

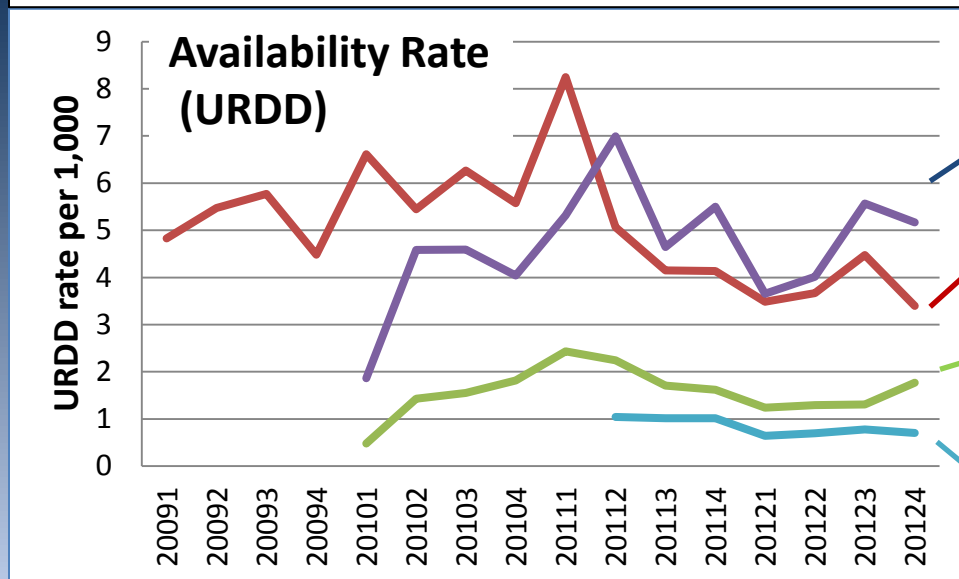


**Methadone high, but decreasing**

**Bup-Single Ingredient**  
Increasing

**Bup-Naloxone Film Strip**  
increasing slightly

**Bup-Naloxone Combination**  
Decreasing Slightly



**Bup-Single Ingredient Highest,**  
Increased, Flat

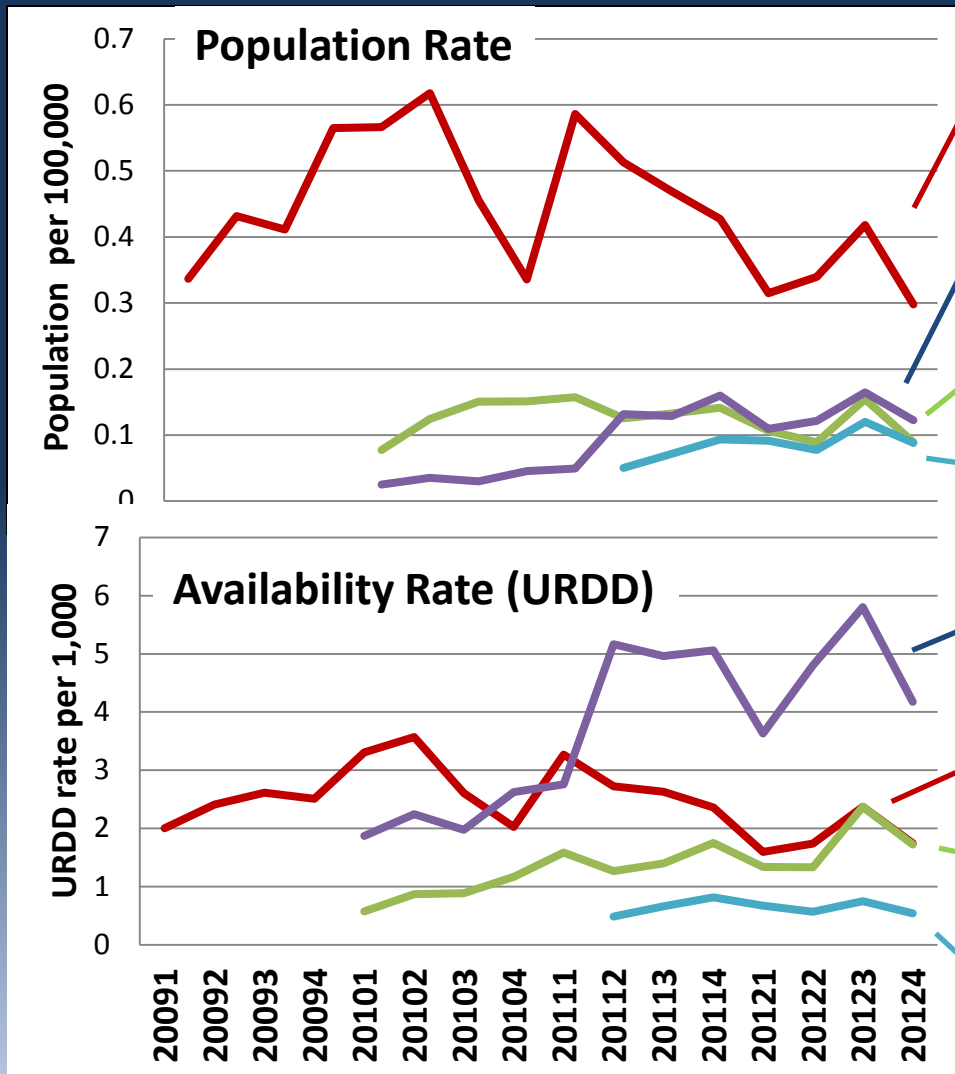
**Methadone Decreasing**

**Bup-Naloxone Combination**  
Lower, Flat

**Bup-Naloxone Film Strip**  
Lowest, Decreasing

# Survey of Key Informant Patients

## Past 30 Day Endorsements, 2009-2012



**Methadone high, but decreasing**

**Bup-*Single Ingredient* Increasing**

**Bup-Naloxone *Combination* Increasing Flat**

**Bup-Naloxone *Film Strip* Increasing slightly**

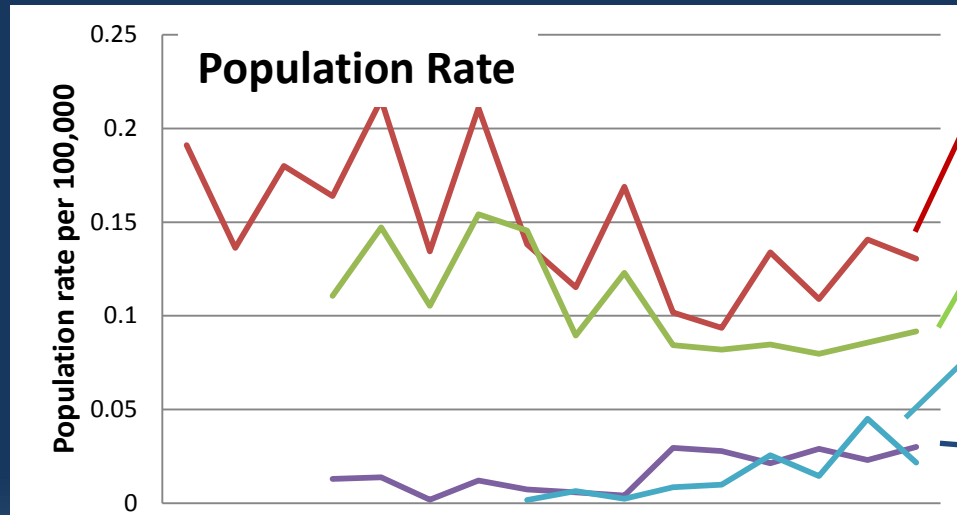
**Bup-*Single Ingredient* Increasing Dramatically**

**Methadone Slight Decrease**

**Bup-Naloxone *Combination* Increasing**

**Bup-Naloxone *Film Strip* low, flat**

# RADARS System Drug Diversion Cases 2009-2012

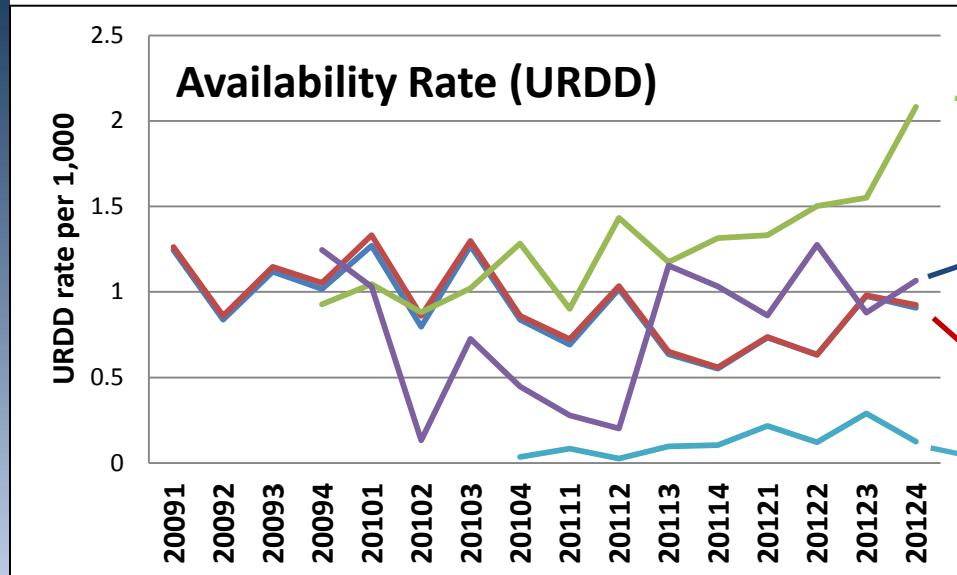


**Methadone high, but  
decreasing slightly**

**Bup-Naloxone *Combination*  
Decreasing Slightly**

**Bup-Naloxone *Film Strip*  
Increasing**

**Bup-*Single Ingredient*  
Increasing**



**Bup-Naloxone *Combination*  
Increasing Greatly**

**Bup-*Single Ingredient*  
Increasing Greatly**

**Methadone Slight Decrease**

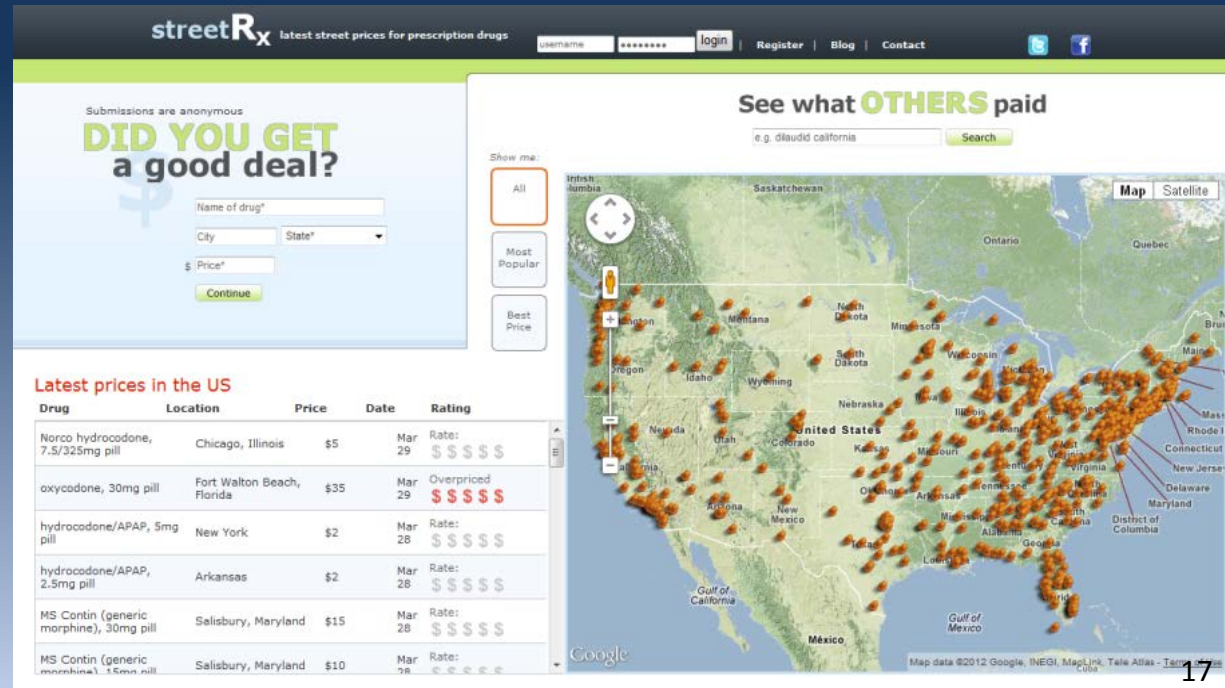
**Bup-Naloxone *Film Strip*  
increasing slightly**



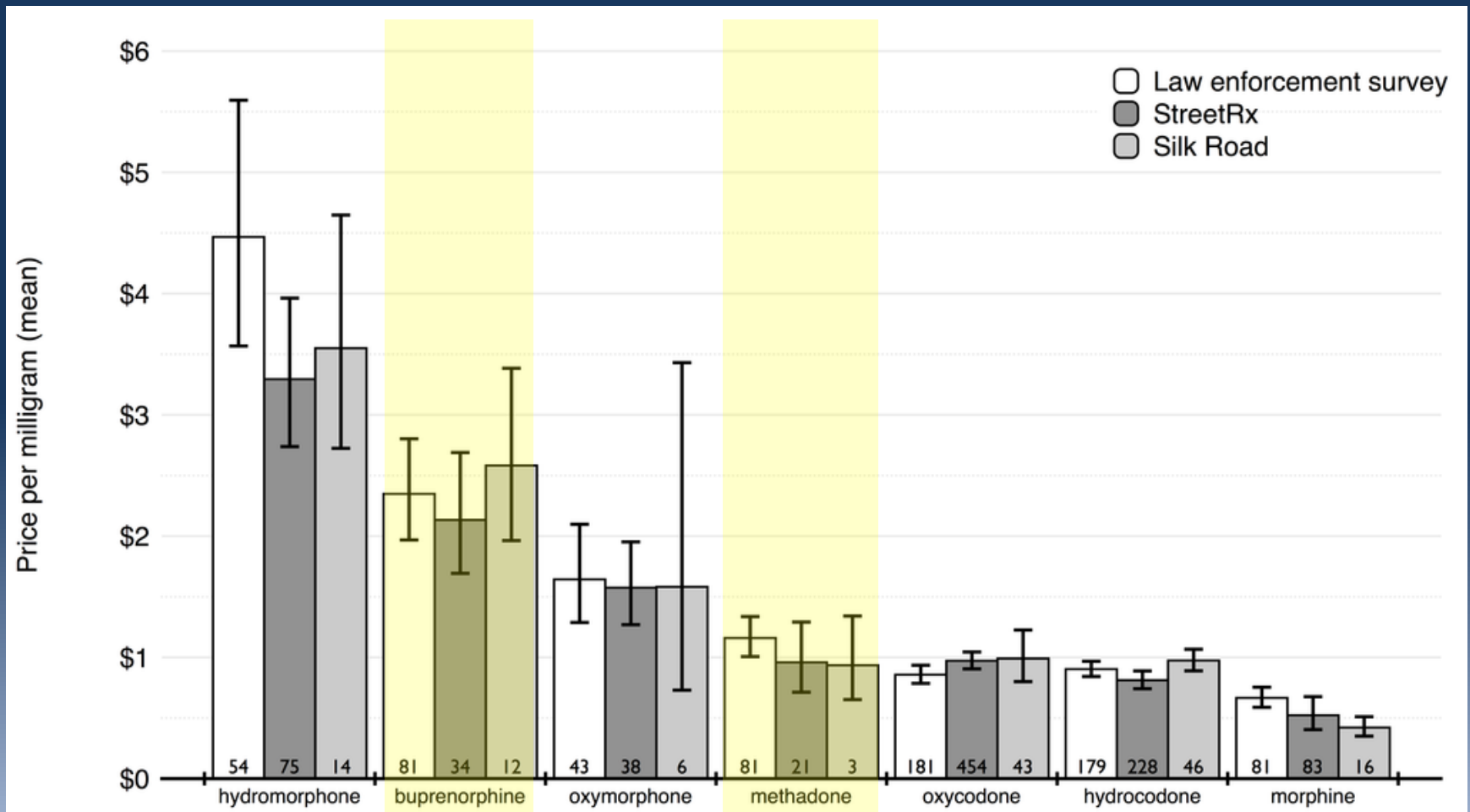
# StreetRx

[www.streetrx.com](http://www.streetrx.com)

- **Population**
  - Any person in US with access to the internet
- **Definition/Type of Cases**
  - Utilize crowdsourcing methodology to calculate average price of specific prescription drug in particular location
  - Validated by DD
- **Coverage**
  - All 50 states

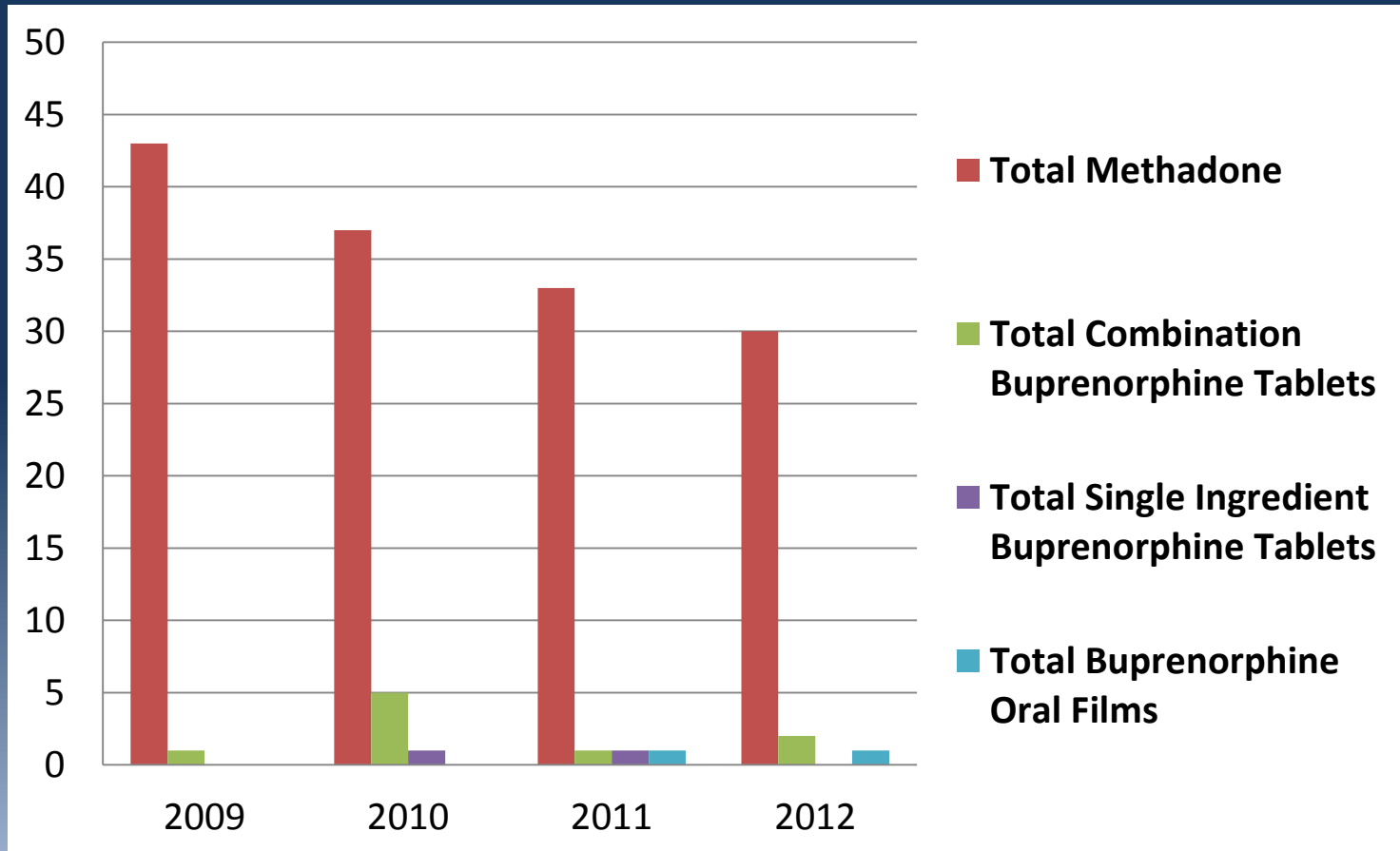


# Comparison of StreetRx, RADARS System Drug Diversion and Silk Road

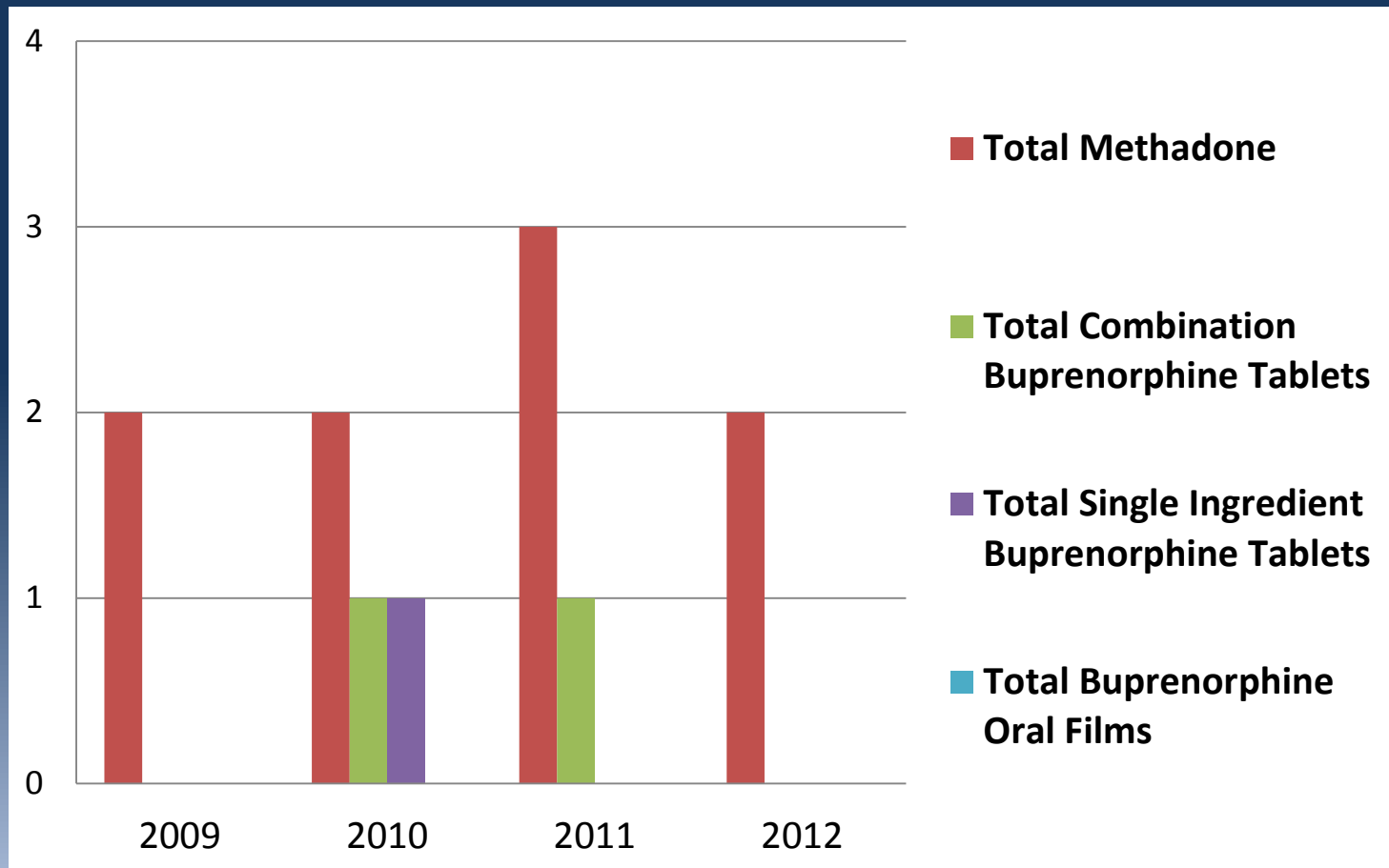


# Death Cases in Poison Center Program

## All Ages, 2009Q1 - 2012Q4



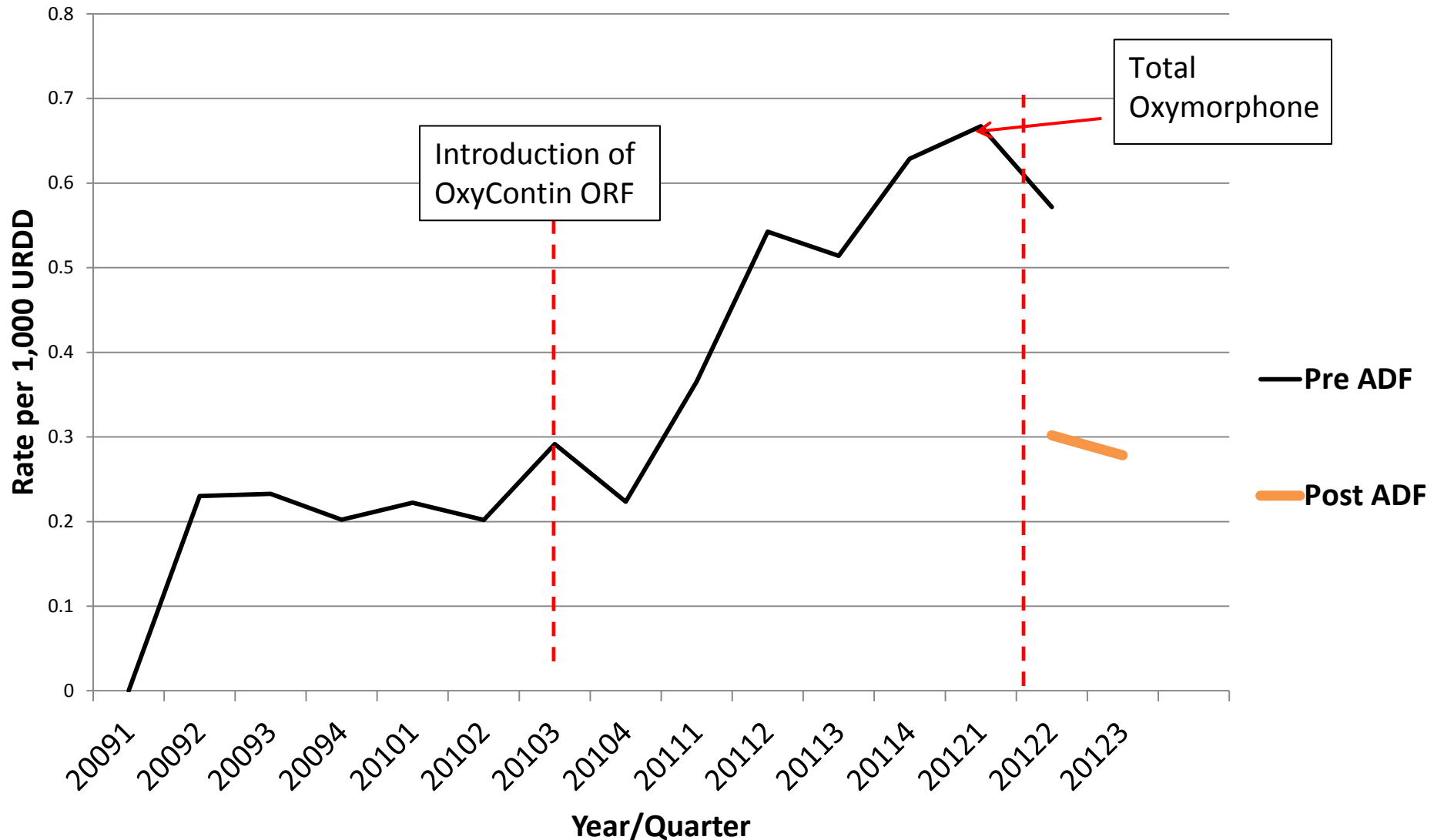
# Death Cases in Poison Center Program Ages under 12 years, 2009Q1 - 2012Q4



# Poison Center Program

## Intentional Abuse Exposures of Opana ER

### 1<sup>st</sup> Quarter 2009 through 3<sup>rd</sup> Quarter 2012



# Conclusions

- Prescription opioid abuse in the US may be plateauing, but still causes 16,000 deaths per year
- Methadone
  - Endorsements in treatment programs decreasing
  - More deaths than any other opioid
  - But most deaths involve pills (treatment of pain)
- Buprenorphine
  - Abuse is increasing quickly perhaps due to generic availability
    - Single-ingredient “Subutex”
    - Combination tablet (Bup-naloxone; “Suboxone”)
  - Exceptional safety in all groups
  - Abuse of buprenorphine strip has been very low
  - Why is the price of buprenorphine so high?

# Thank you!

