



# **Methadone in Opioid Addiction**

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# Opium in San Francisco



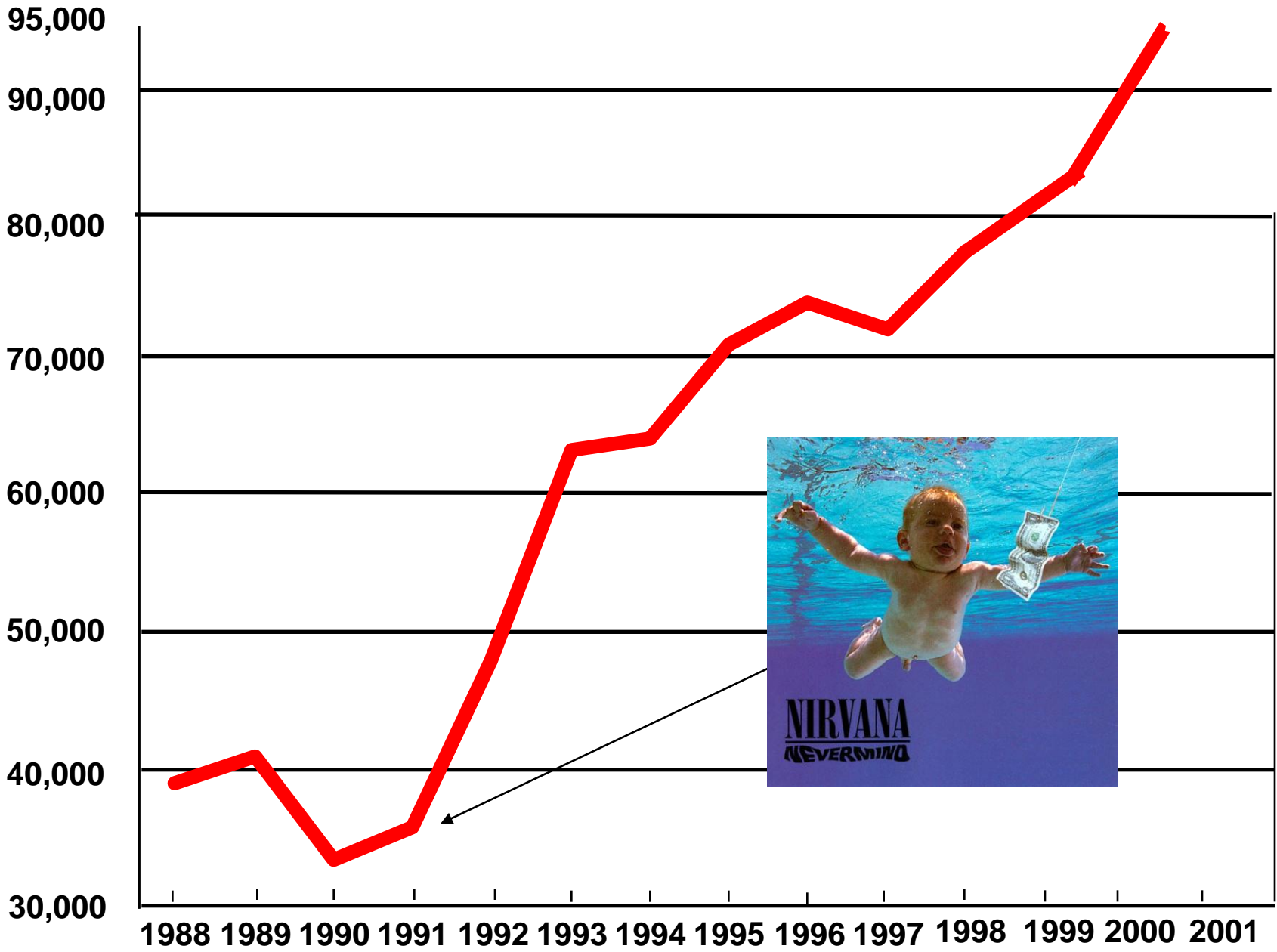
Chinese Opium Den, 614 Jackson Street, Chinatown, San Francisco; the cat has become addicted to the fumes of the drug.



# OPIATES



# Estimated Total Number of Heroin/Morphine-Related Hospital Emergency Department Visits by Year (DAWN, 2002)





# Heroin 101

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- **New production in South America**
- **High purity/potency (smokeable)**
- **Detoxification is of limited long-term efficacy**
- **Most effective treatment for chronic users is Methadone Maintenance**
- **Medications**
  - Methadone                      Opioid Agonist Therapy
  - Buprenorphine                Partial Agonist Therapy
  - Naltrexone                     Opioid Blockade



# Heroin

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- **Short acting opiate**
- **Immediate effects:**
  - Heroin crosses the blood-brain barrier
  - Heroin is converted to morphine and binds rapidly to opioid receptors
  - Causes euphoria
  - Pain relief
  - Flushing of the skin
  - Dry mouth
  - Heavy feeling in the extremities

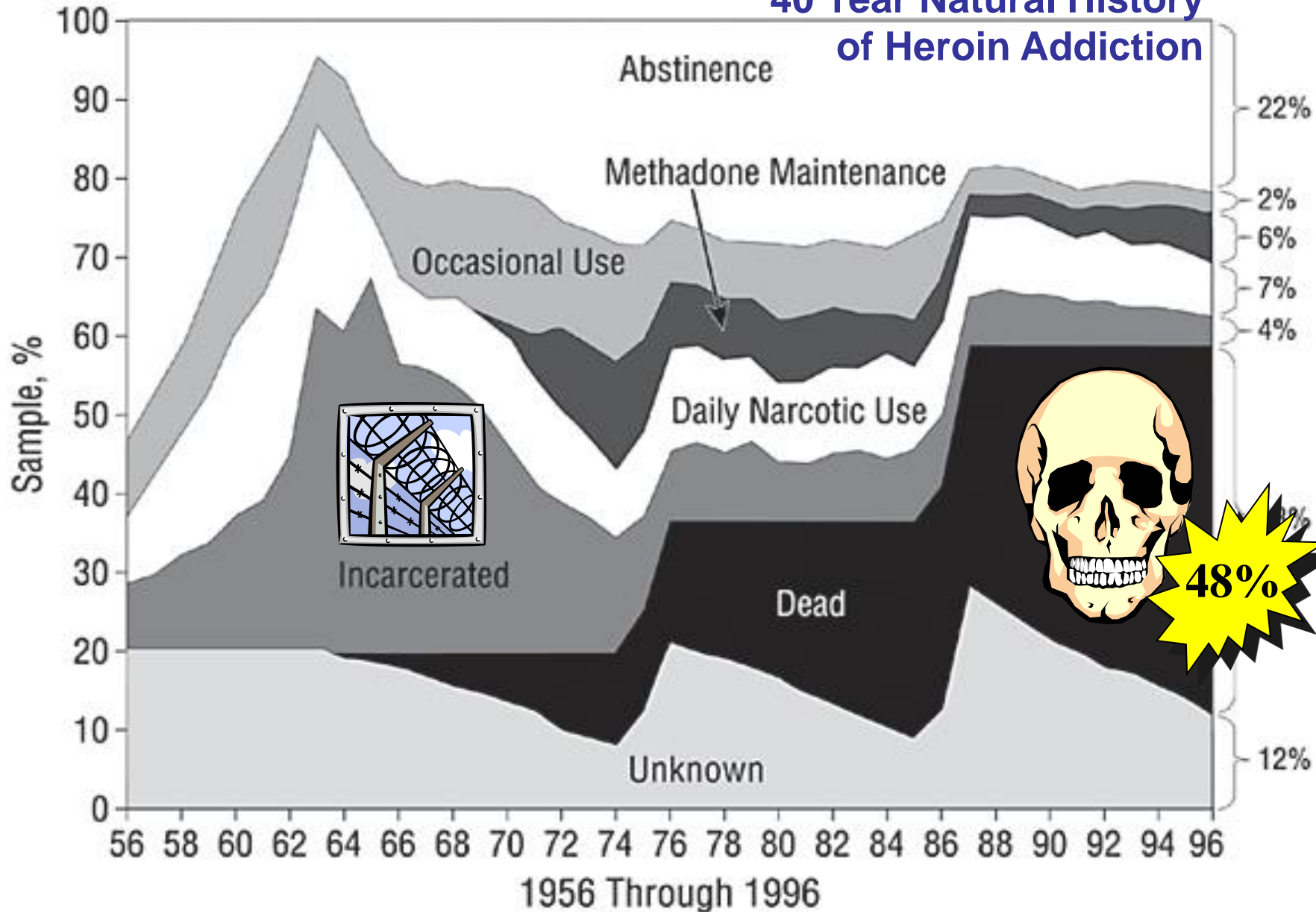


# Heroin

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- **After initial effects:**
  - Drowsy for several hours.
  - Clouded mental function
  - Slowed cardiac function
  - Slowed breathing
    - Death by respiratory failure (overdose)

# 40 Year Natural History of Heroin Addiction



The natural history of narcotics addiction among a male sample (N = 581).  
 From: Yih-Ing, et. al., 2001. A 33-Year Follow-up of Narcotics Addicts. Archives of General Psychiatry, 58:503-508)





# Opiate Addiction: Medications

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## ■ Detoxification

### ■ Opioid Substitution

- Methadone (Agonist)  
[Illegal on outpatient basis]
- Buprenorphine (Partial Agonist)  
[Requires special DEA license]

### ■ Non-Opioid Symptom Relief

- Clonidine / Lofexadine / Anti-spasmodic, anti-diarrheals / NSAIDS for bone pain and myalgia
- Sleep meds

## ■ **95%+ poor outcome**



# Naltrexone: Efficacy vs. Effectiveness

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- **High Efficacy:**

- An almost perfect, long-acting blocker of opiates

- **Limited Effectiveness:**

- Most effective in monitored treatment of medical or other professionals, executives, and individuals on probation
- Poor compliance in heroin-using population
- Poor treatment retention

# Methadone Maintenance

## The Gold Standard





# Opiate Addiction: Maintenance

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- **Methadone**

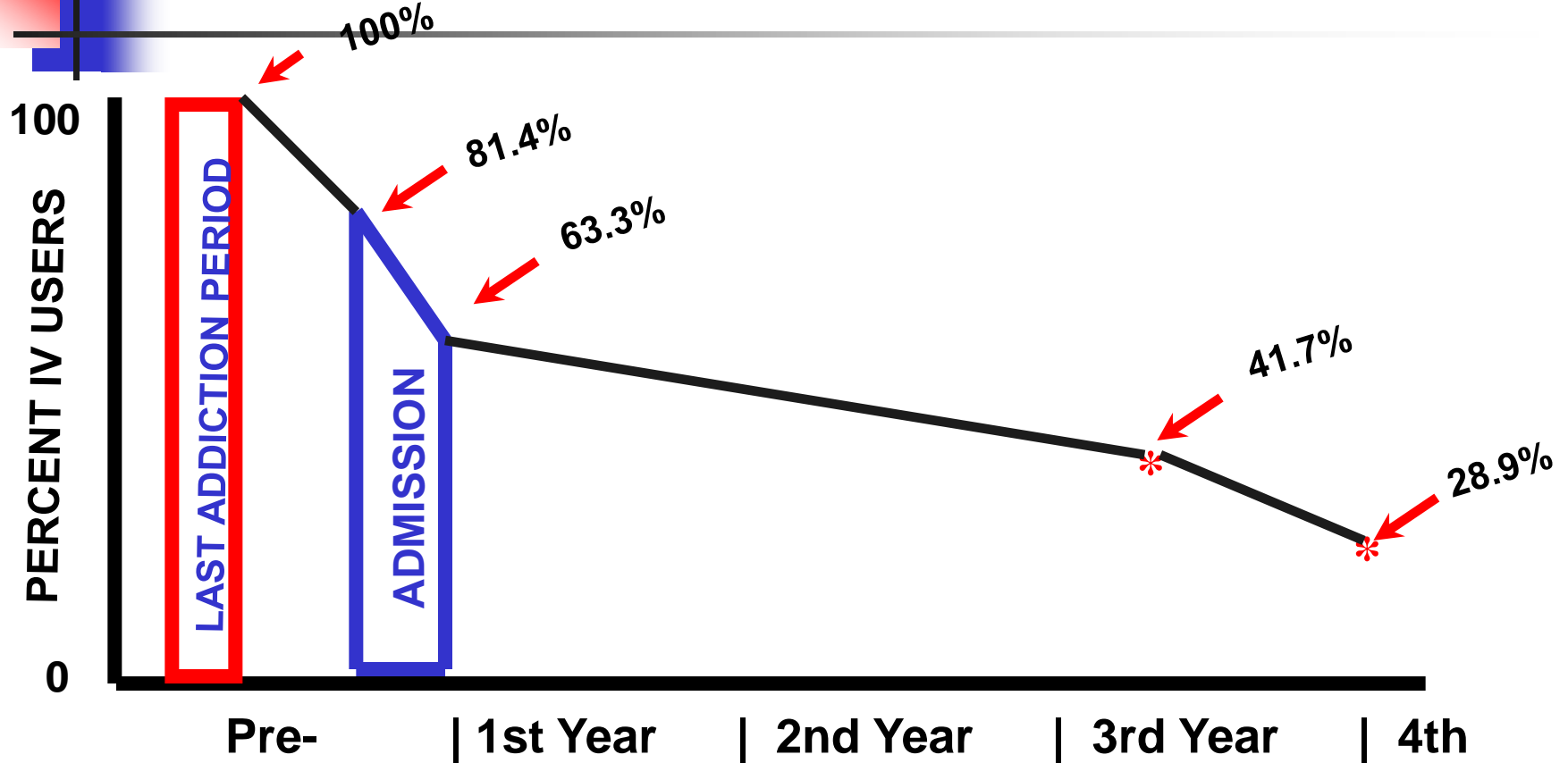
- Dole & Nyswander's opioid deficiency theory (1964).
- Daily Dosing, Blocking dose usually  $> 60$  mg qd

- **Buprenorphine**

**(formulated with or without naloxone)**

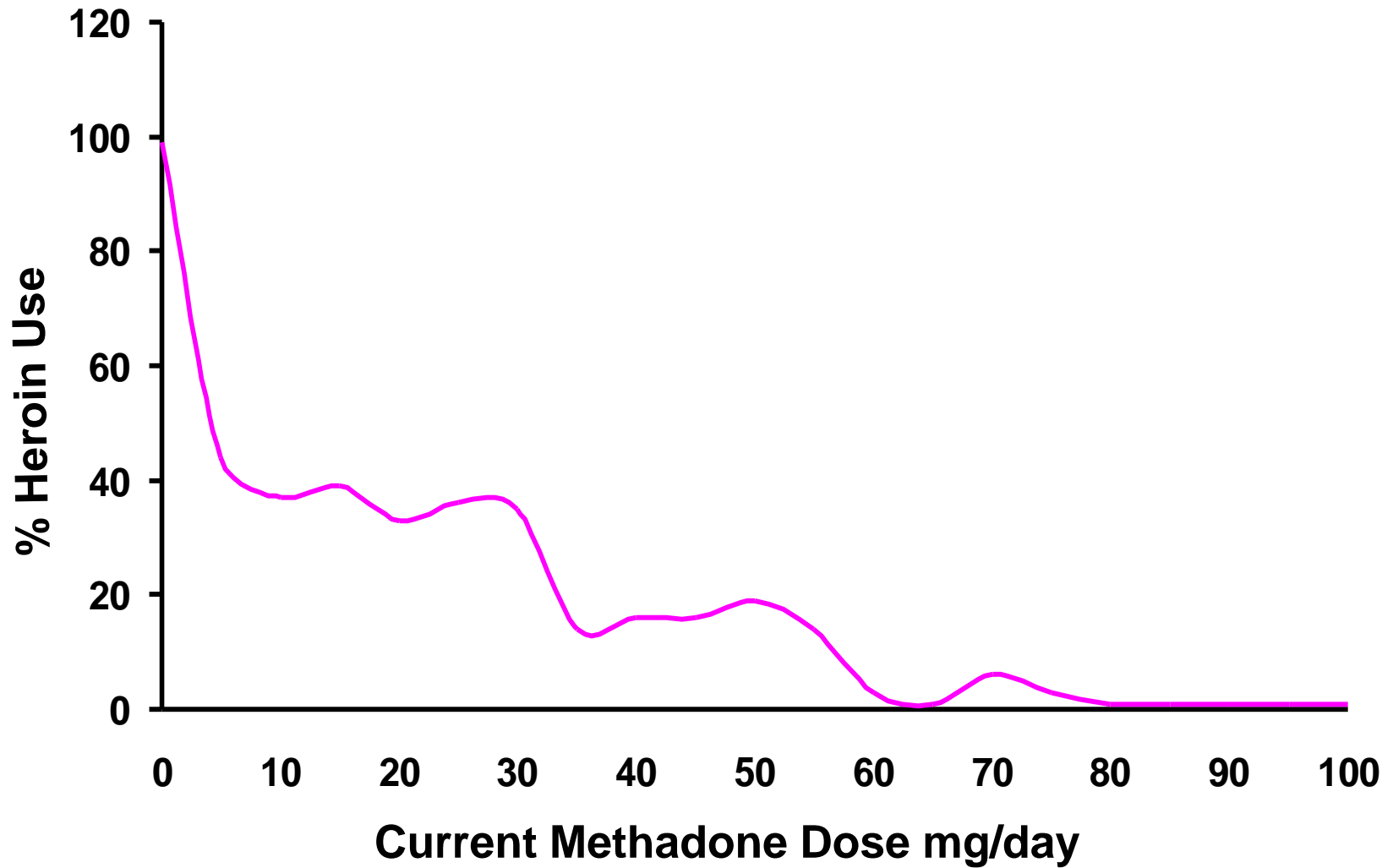
- Partial Agonist (high opiate receptor avidity but low innate activity)
- Daily dosing, 2-32 mg qd

# Impact of MMT on IV Drug Use for 388 Male MMT Patients in 6 Programs



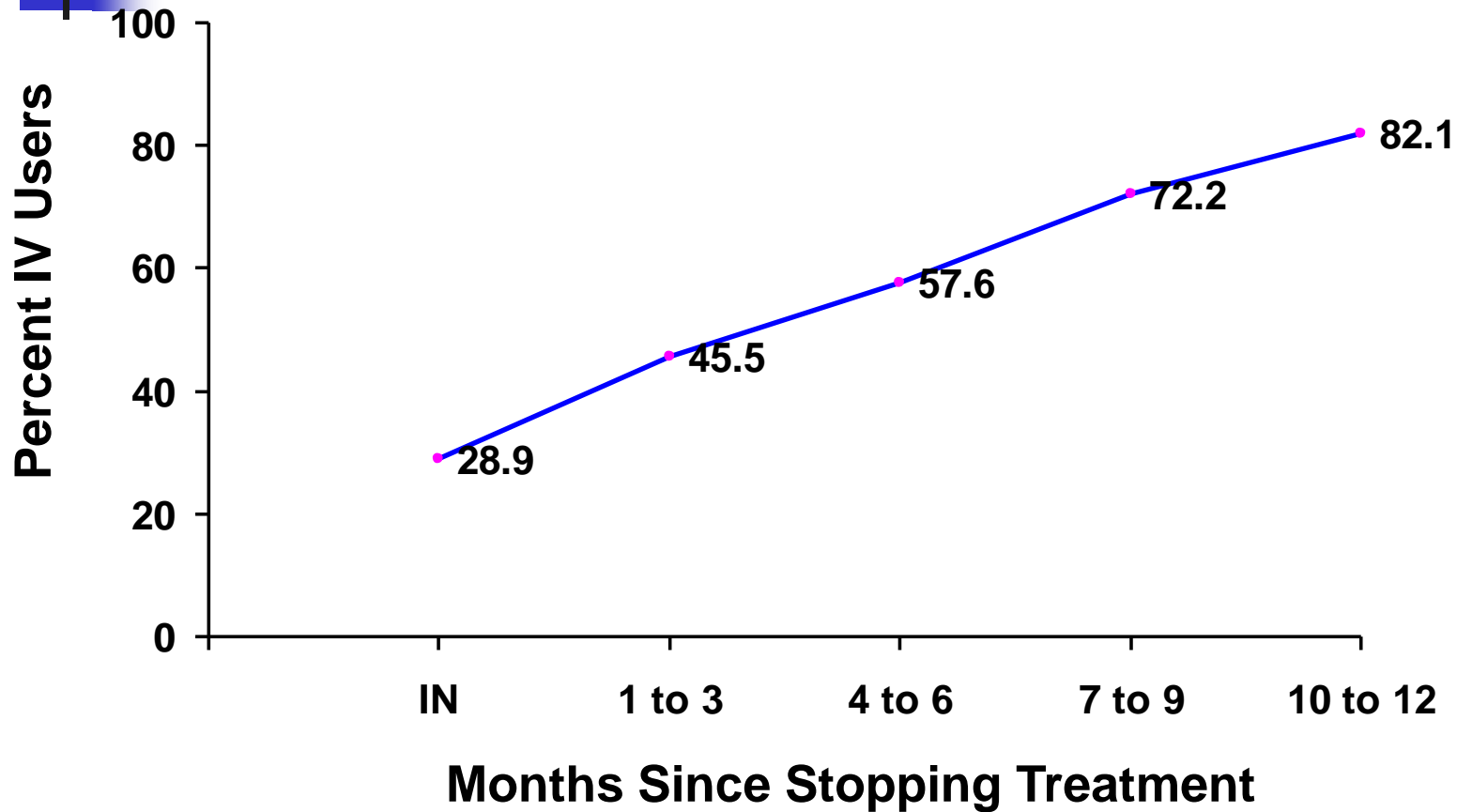
Adapted from Ball & Ross - The Effectiveness of Methadone Maintenance Treatment, 1991

# Recent Heroin Use by Current Methadone Dose



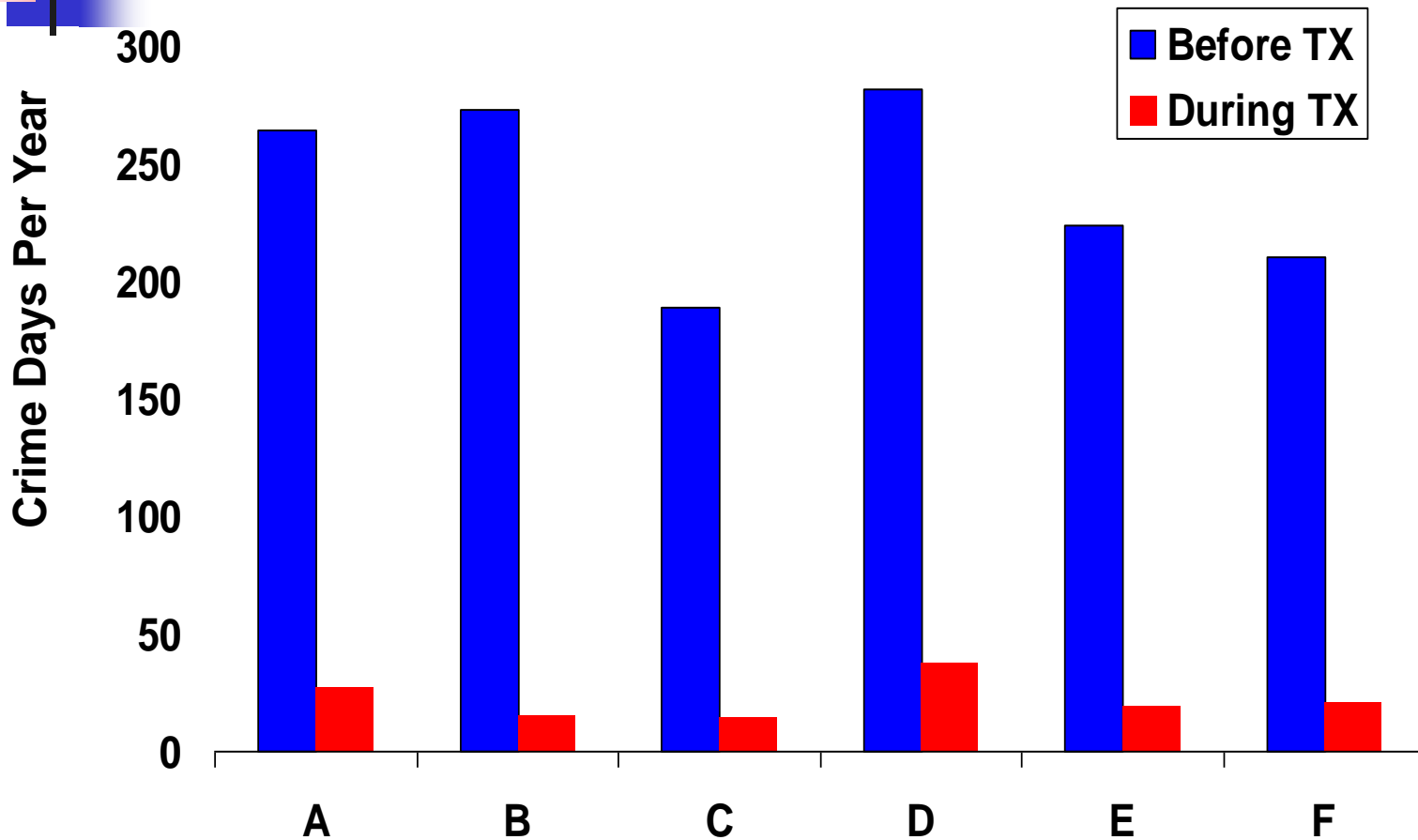
# Relapse to IV drug use after MMT

## 105 male patients who left treatment



Adapted from Ball & Ross - The Effectiveness of Methadone Maintenance Treatment, 1991

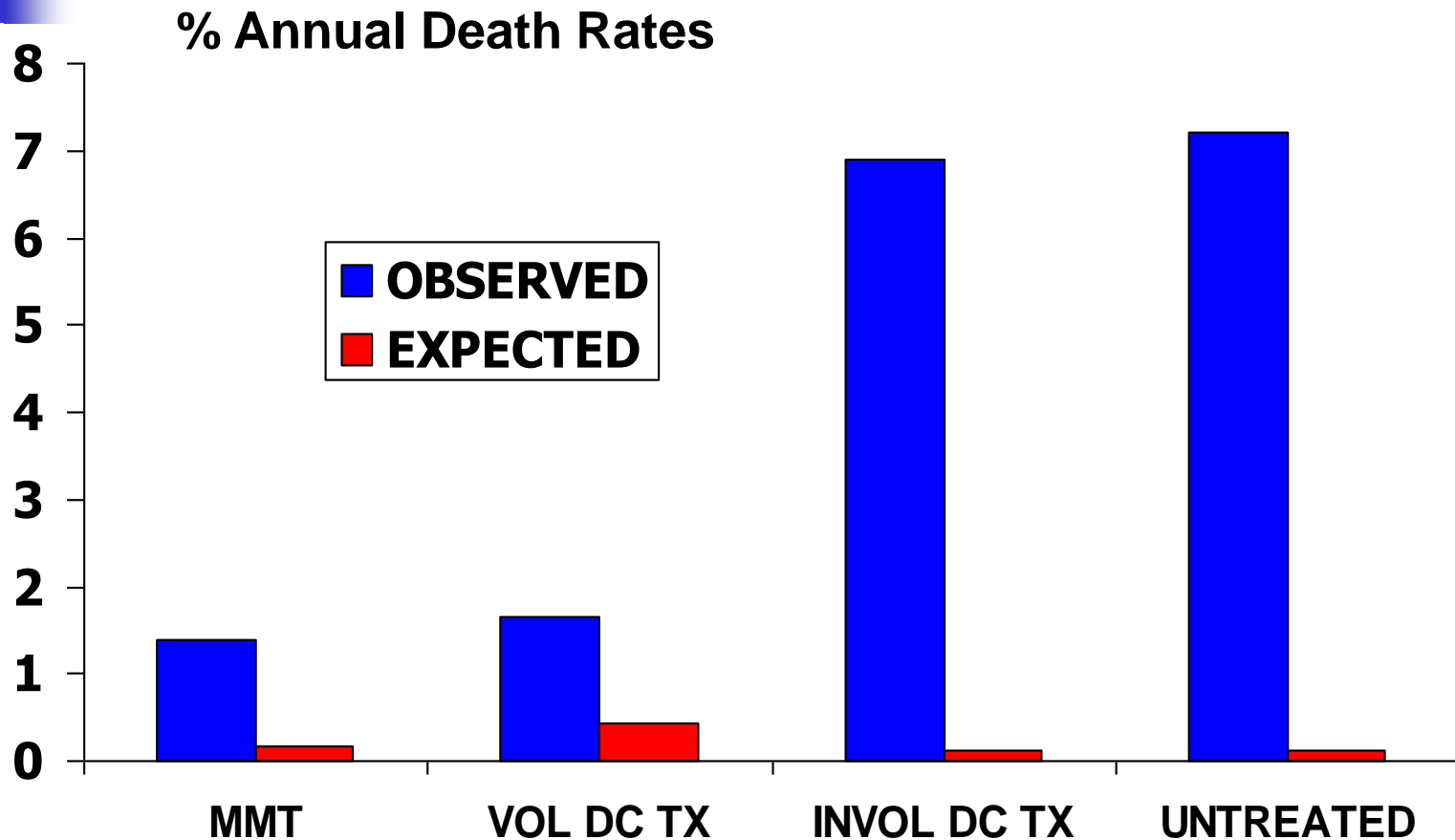
# Crime among 491 patients before and during MMT at 6 programs



Adapted from Ball & Ross - The Effectiveness of Methadone Maintenance Treatment, 1991



# Death Rates in Treated and Untreated Addicts



Slide data courtesy of Frank Vocci, MD, NIDA –

Reference: Grondblah, L. et al. Acta Pschiatr Scand, P. 223-227, 1990



# Summary of Methadone Maintenance Outcomes

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- **Gold-Standard for Opioid Treatment**
  - One of the most over-proven treatments in entire psychiatry and drug abuse literature
  - Detoxification methods succeed only < 3% of the time.
- **Outcomes Measures**
  - **Reduction of ...**
    - Death rates (8-10X reduction)
    - Drug use
    - Criminal activity
    - HIV spread
  - **Increase in ...**
    - Employment
    - Social stability
    - Retention, medication compliance, and monitoring