Drug Market Crackdowns

Zachary Porreca

CLEAN Unit
Bocconi University

Guest Lecture, Bocconi University, April 2024

Bocconi
Università Commerciale
Luigi Bocconi

Illegal Drug Use

- In USA, largest cause of mortality for individuals under 50 is drug overdoses
- Terrible labor market effects
- Drug usage is associated with other types of crime

Addressing Illegal Drug Use

- Public Health Approaches
- Legislative Approaches
- Law Enforcement Approaches

How can illegal drug markets be disrupted?

- Regulation of legal markets that support illegal drug markets
- "Up stream" law enforcement efforts to prevent illegal drugs from entering local markets
- Localized enforcement efforts aimed at disrupting existing illegal markets

Basic Logic and Problem

- Realistically impossible to remove all narcotics from the market, so interventions aim to:
  - Reduce available quantity/ Increase seller costs $\rightarrow$ Increase prices for consumers $\rightarrow$ Reduce quantity demanded by consumers (in "theory") $\rightarrow$ Desired downstream effects
- The Problem: Inelastic demand for drugs among users
  - Withdrawal and other ill effects of cessation of use- drug users want to avoid this!
  - Despite rising prices, users still demand the "high"
  - Induced substitution effects and consumer search
  - Arrests of local dealers can *increase* drug overdoses due to risky search behavior (Ray et al. 2023)

The War on Drugs: Methamphetamine, Public Health, and Crime

- Dobkin and Nicosia (2009)
- "Precursor legislation"
- Logic: Methamphetamine is produced with ephedrine and pseudo-ephedrine (then unregulated). Regulate them and costs to sellers increase $\rightarrow$ Downstream downward movement along demand curve
- 830 million tablets of precursor seized between 1994 and 1995 and a further 25 metric tons of precursor seized in 1995

The War on Drugs: Methamphetamine, Public Health, and Crime

- Approach
  - FE (county, year, month) regression of treatment indicator (post August 1995) on log hospital admissions mentioning meth
  - Use predicted hospital admissions in second stage FE regression on adverse outcomes (reported crimes, drug treatment admissions, and drug related arrests)
  - Examine California (lots of meth use there, compared to rest of USA at the time)

The War on Drugs: Methamphetamine, Public Health, and Crime

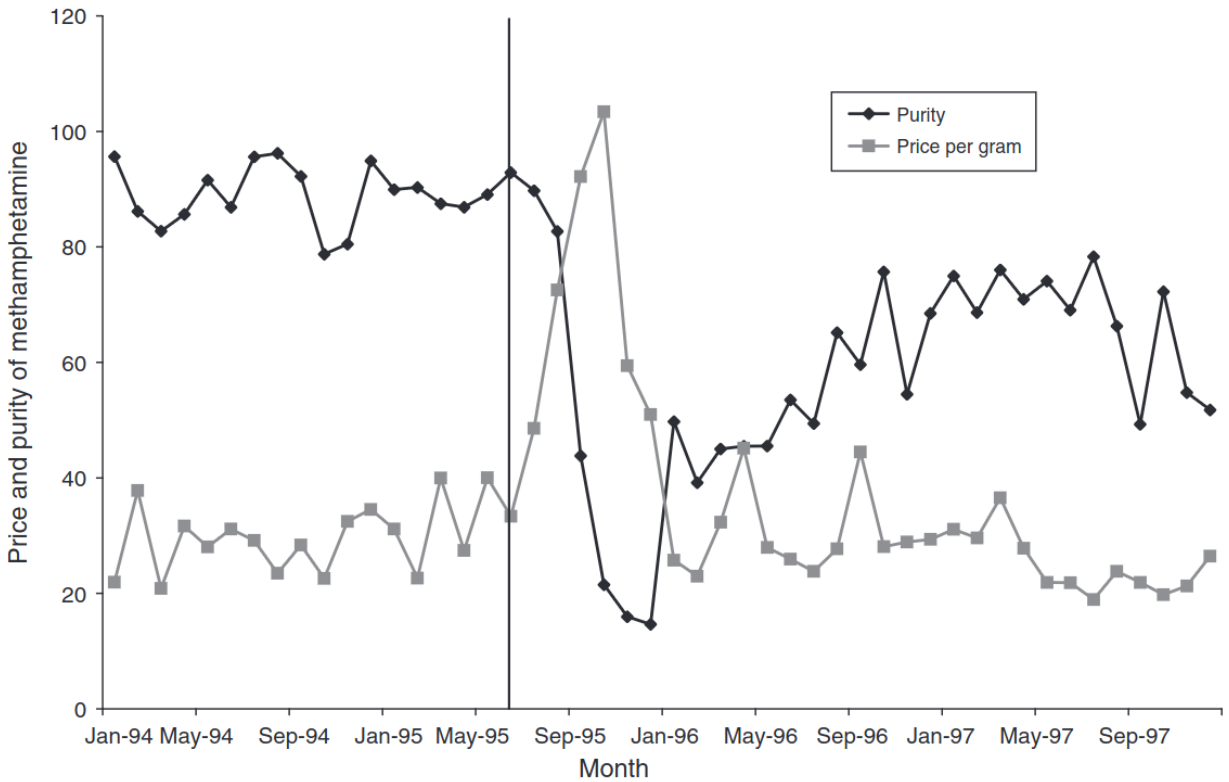


FIGURE 1. METHAMPHETAMINE PRICE AND PURITY IN CALIFORNIA

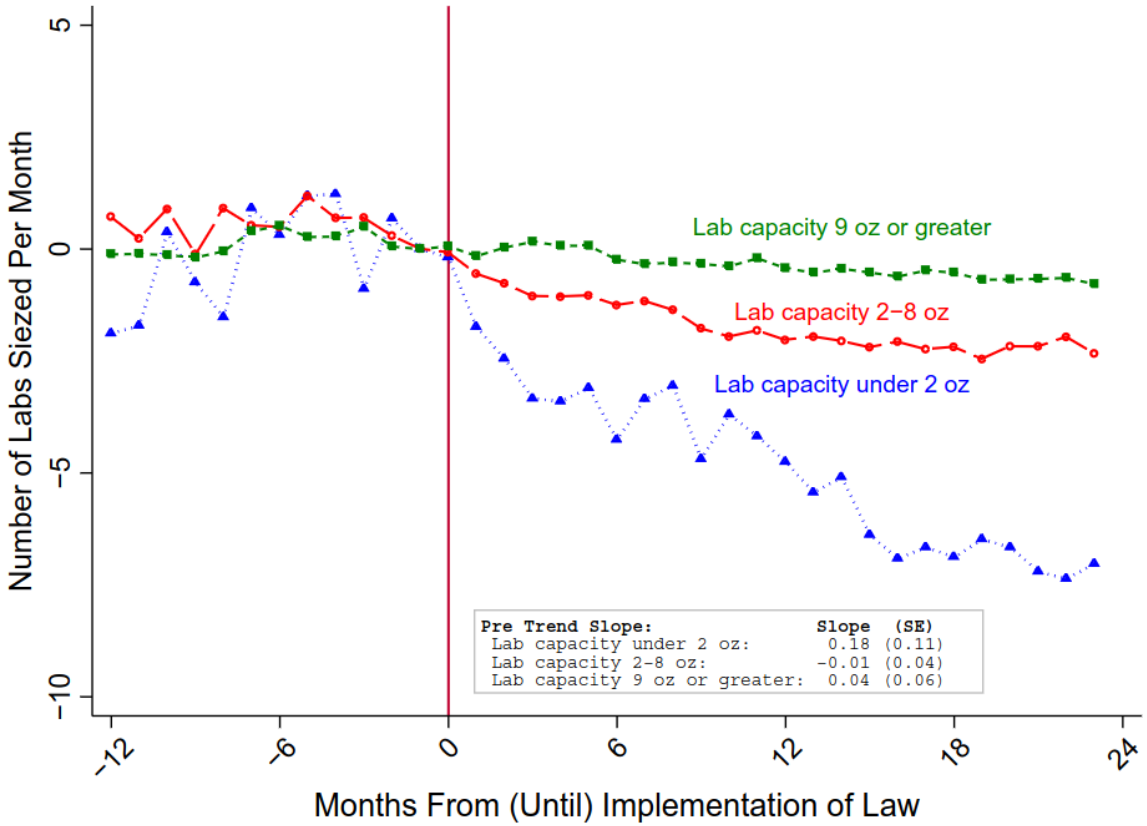
The War on Drugs: Methamphetamine, Public Health, and Crime

- Main Results
  - Decrease in hospital admissions mentioning meth
  - Increase in methamphetamine treatment admissions
  - No real crime effects, aside from reductions in possession and sale arrests
- Substitution Results
  - Increase in cocaine, opioid, and marijuana hospitalizations
  - Decrease in all other treatment admissions
- Temporary impact, but during the period drug users substituted to other drugs potentially mitigating desired effects

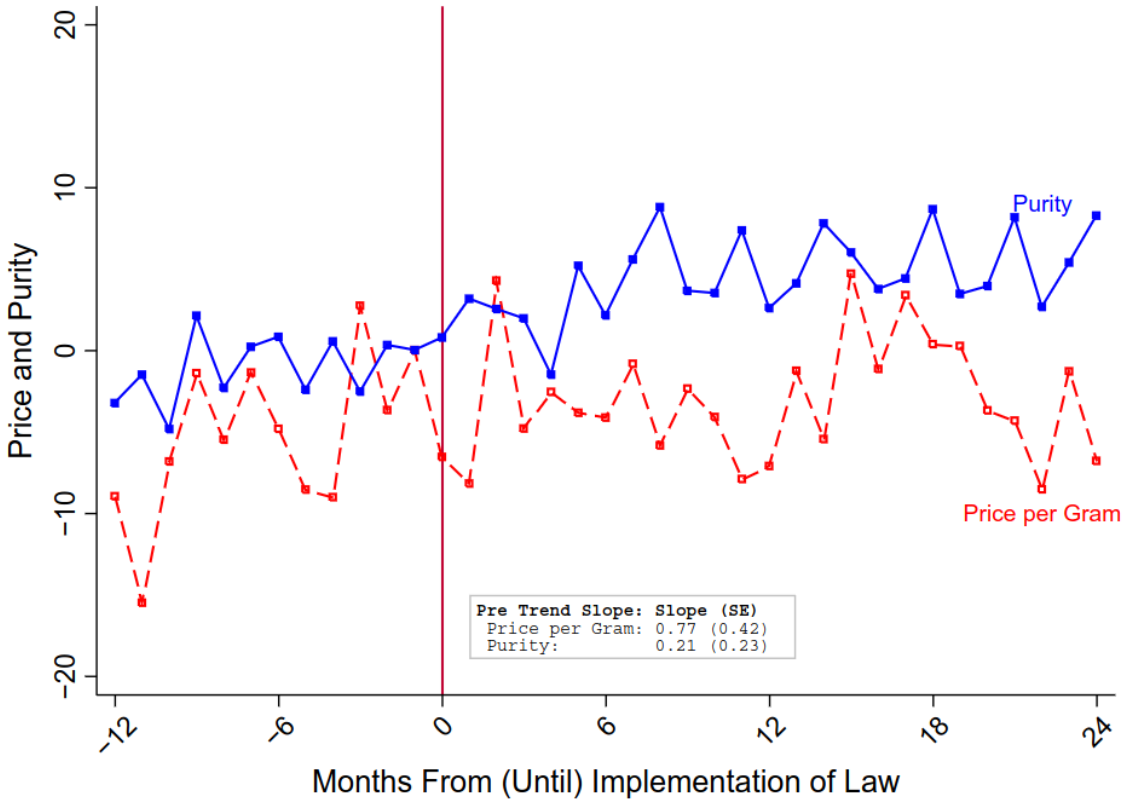
Dobkin et al. (2014)

- Dobkin et al. (2014)
- 2006 new regulation targeting methamphetamine precursors took effect in the US
- Limits to allowable precursor purchases
- Recording of purchasing habits
- Examine state level impacts of illicit manufacturing and usage

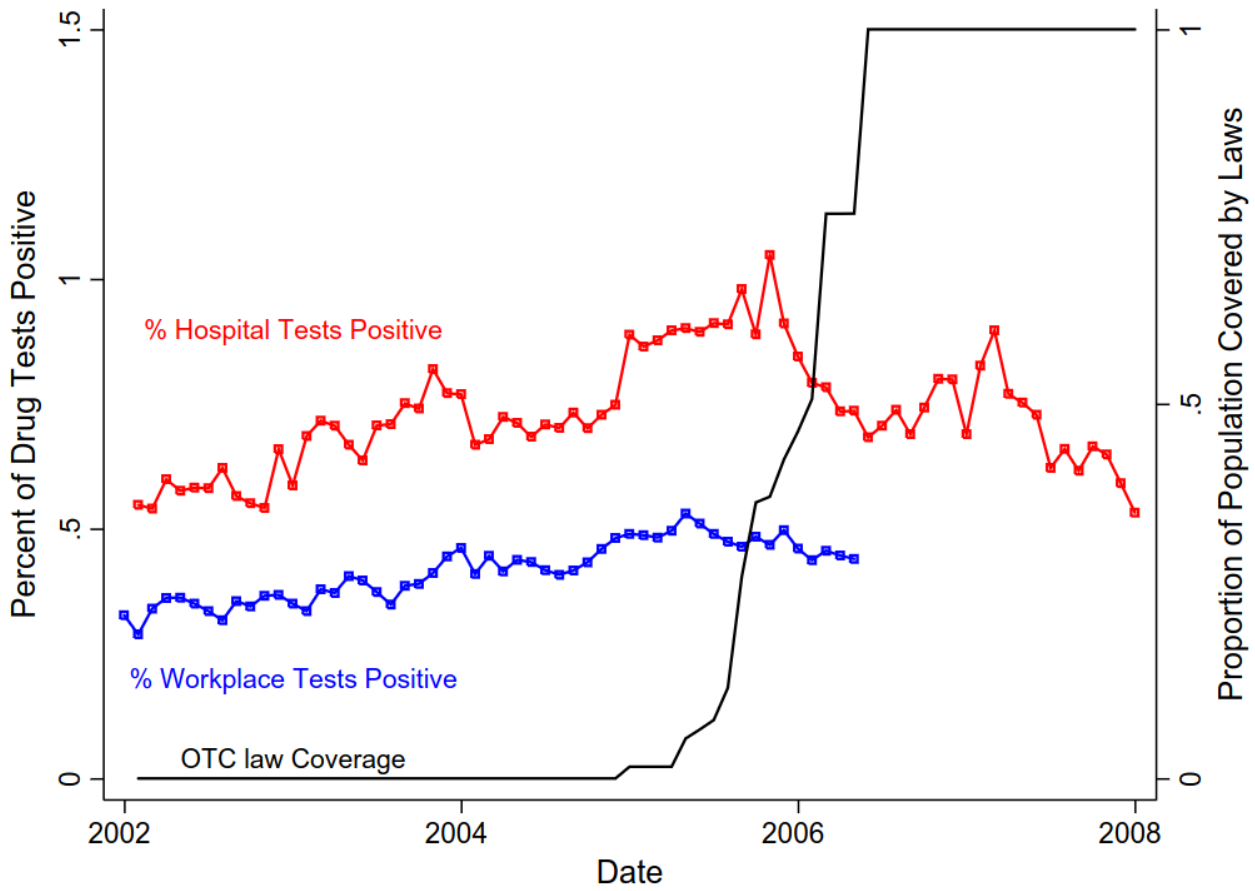
Dobkin et al. (2014)



Dobkin et al. (2014)



Dobkin et al. (2014)



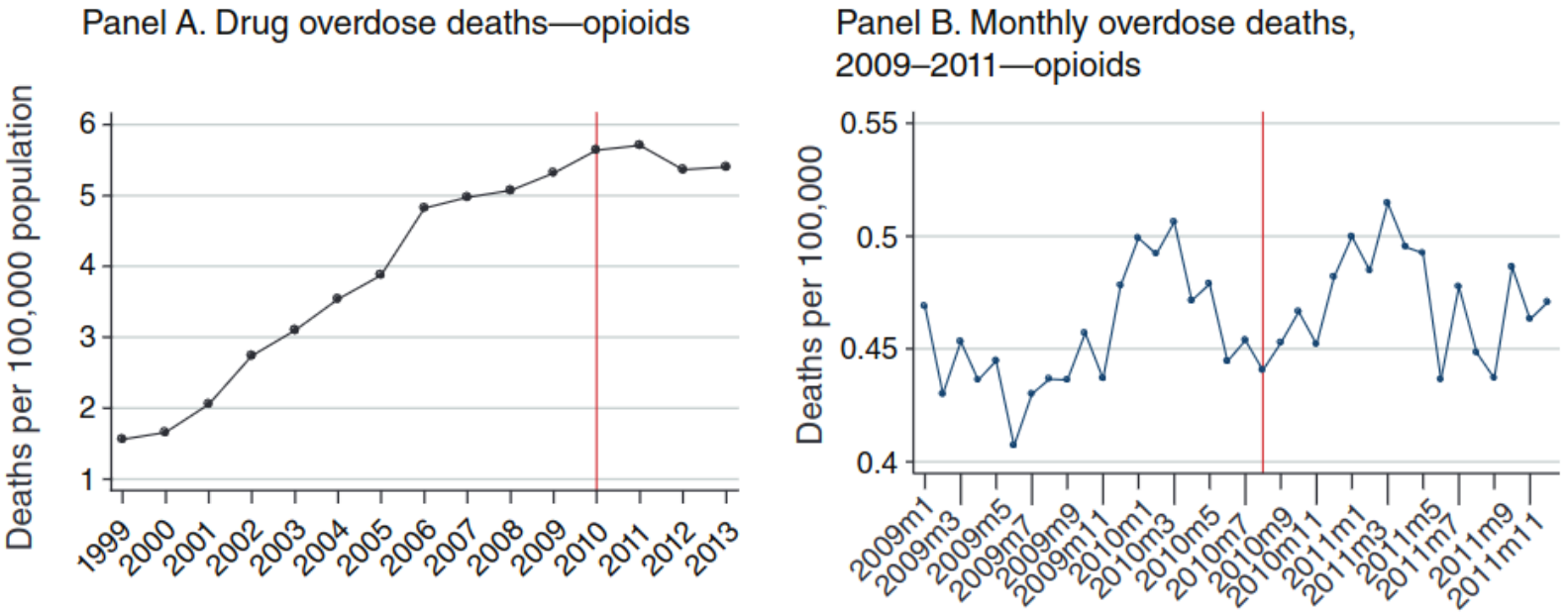
Dobkin et al. (2014)

- Why would a reduction in manufacturers not reduce usage or impact price/purity?
- Authors suspect small manufacturers were not a large factor in the market
- Regulation pushed manufacturing to larger international locations
- Supply chain substitution....

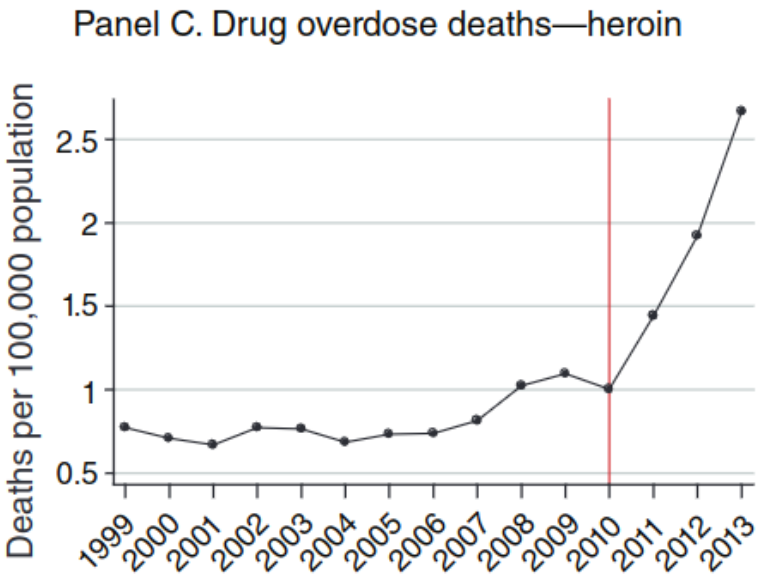
Supply-Side Drug Policy in the Presence of Substitutes: Evidence from the Introduction of Abuse-Deterrent Opioids

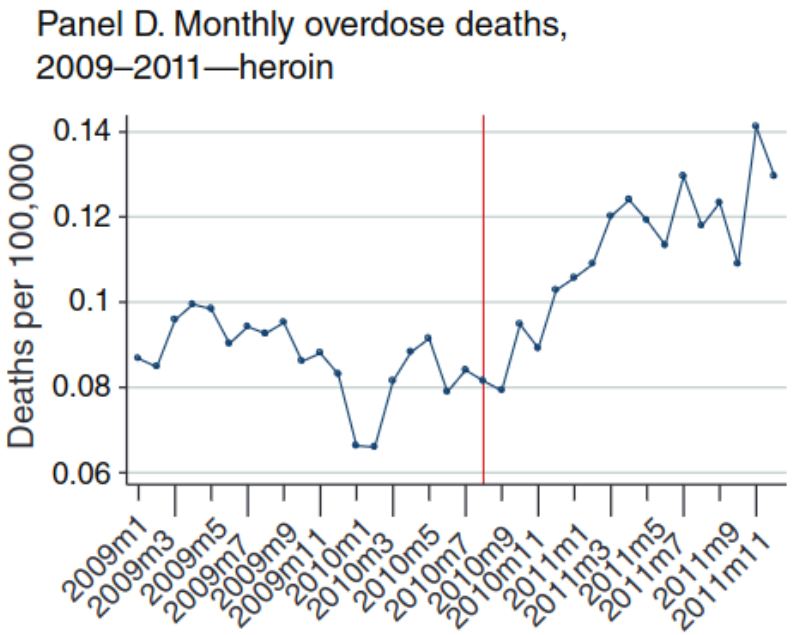
- Alpert et al. (2018)
- Lots of TV shows for background...late 90's and early 2000's USA had lots of pharmaceutical painkiller abuse (thanks Sackler family!)
- 2010 introduction of "abuse deterrent" OxyContin. (included digestible wax in the pill to prevent crushing, and force an extended release)
- Exploit differences in opioid misuse rates, drawn from a national survey, to estimate impacts of the reformulation on overdose rates

Supply-Side Drug Policy in the Presence of Substitutes: Evidence from the Introduction of Abuse-Deterrent Opioids



Supply-Side Drug Policy in the Presence of Substitutes: Evidence from the Introduction of Abuse-Deterrent Opioids





Supply-Side Drug Policy in the Presence of Substitutes: Evidence from the Introduction of Abuse-Deterrent Opioids

- We didn't even need their regressions to see the results!
- Users substituted to lower cost heroin
- Overall, no effect on opioid overdose mortality. Substitution effects mitigated reductions in pharmaceutical abuse

Breaking the Crystal Methamphetamine Economy

- d'Este (2021)
- Leverages more meth precursor regulation between 2004 and 2006
- Reduced precursor availability, led to increased costs to sellers...etc...
- Disruption of lower level domestic manufacturing (same intervention as Dobkin et al. (2014)
- Looks at impacts on crime

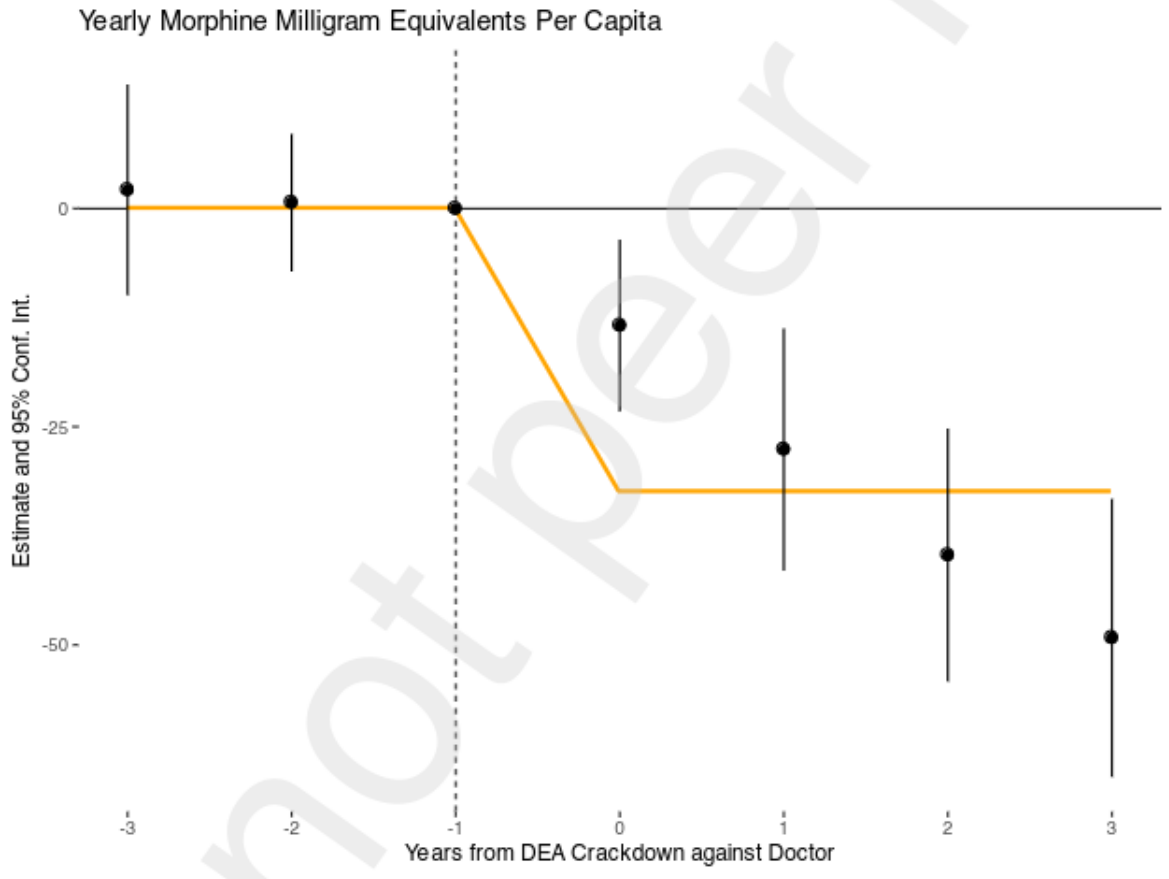
Breaking the Crystal Methamphetamine Economy

- Increases in Larceny, Burglary, Assault
- But why?
  - Author speculates increased competition between remaining producers
  - Alternatively (in line with the framework from the rest of the literature) could this have caused an increase in price? Users rather than substituting need to increase efforts to obtain the drug?

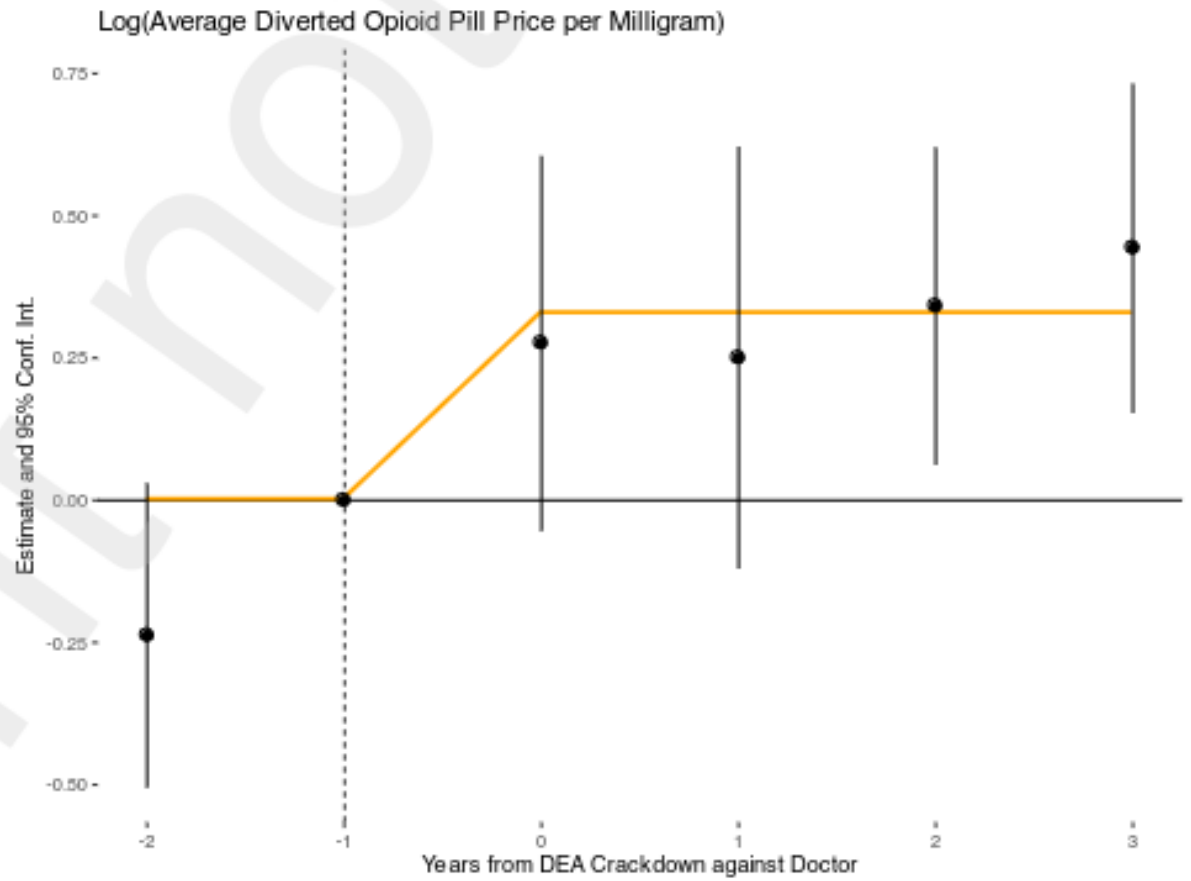
Disrupting Drug Markets:The Effects of Crackdowns on Rogue Opioid Suppliers

- Soliman (2022)
- Original "opioid crisis" was largely driven by misuse and over-prescribing of pharmaceuticals
- Law enforcement targeted specific over-prescribing doctors
- Localized impacts of removal of local source for pharmaceutical diversion

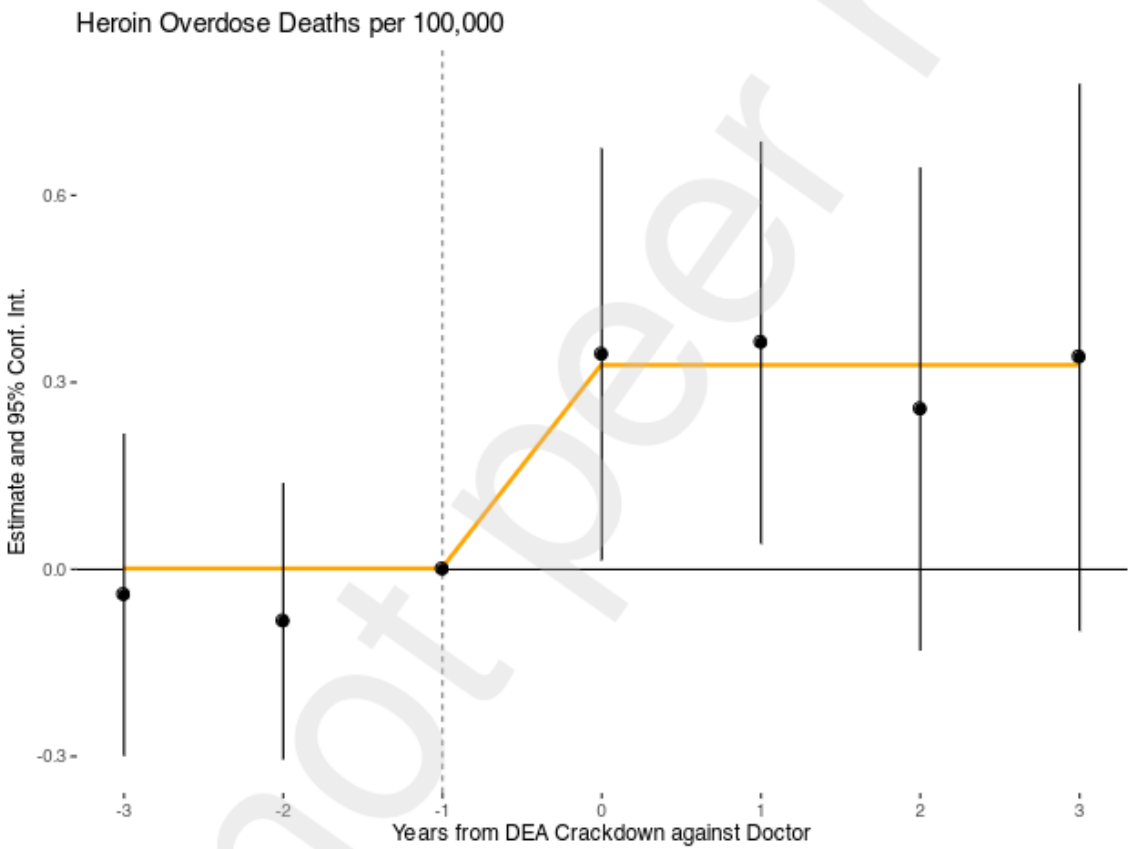
Disrupting Drug Markets:The Effects of Crackdowns on Rogue Opioid Suppliers



Disrupting Drug Markets:The Effects of Crackdowns on Rogue Opioid Suppliers



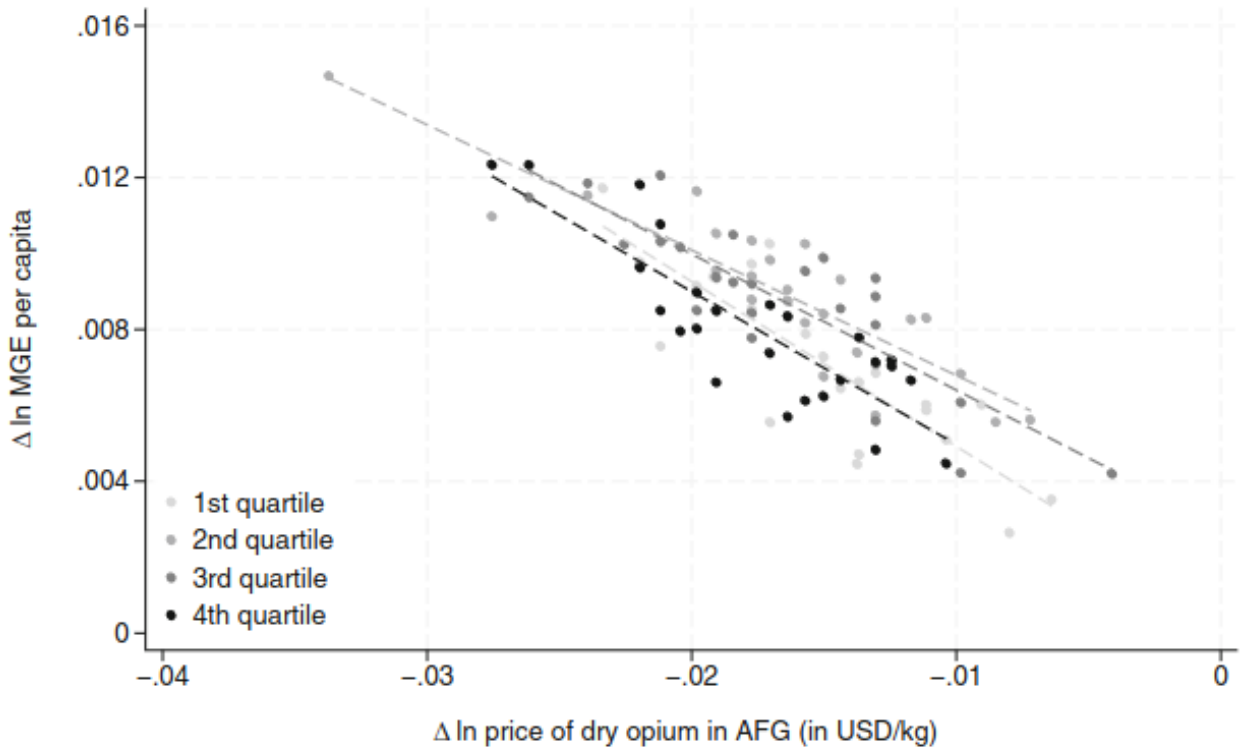
Disrupting Drug Markets:The Effects of Crackdowns on Rogue Opioid Suppliers



Opium Price Shocks and Prescription Opioids in the USA

- Deiana et al. (2020)
- Afghanistan is/was the world's largest producer of Opium
- Increases in opium price $\rightarrow$ Increased incentive to divert opium to illicit production $\rightarrow$ Increased costs to legal manufacturers $\rightarrow$ Changes in legal market? Illegal substitutes?

Opium Price Shocks and Prescription Opioids in the USA



Opium Price Shocks and Prescription Opioids in the USA

- Clear negative relationship between opium prices in Afghanistan and dispensing of opiate pharmaceuticals in the US
- No observed effect on synthetic opiates (no opium in production)
- When dispensing decreases what do we suspect is happening in the illegal markets?

Opioid Use, Mortality Risks and Crime: Insights from a Rapid Reduction in Heroin Supply

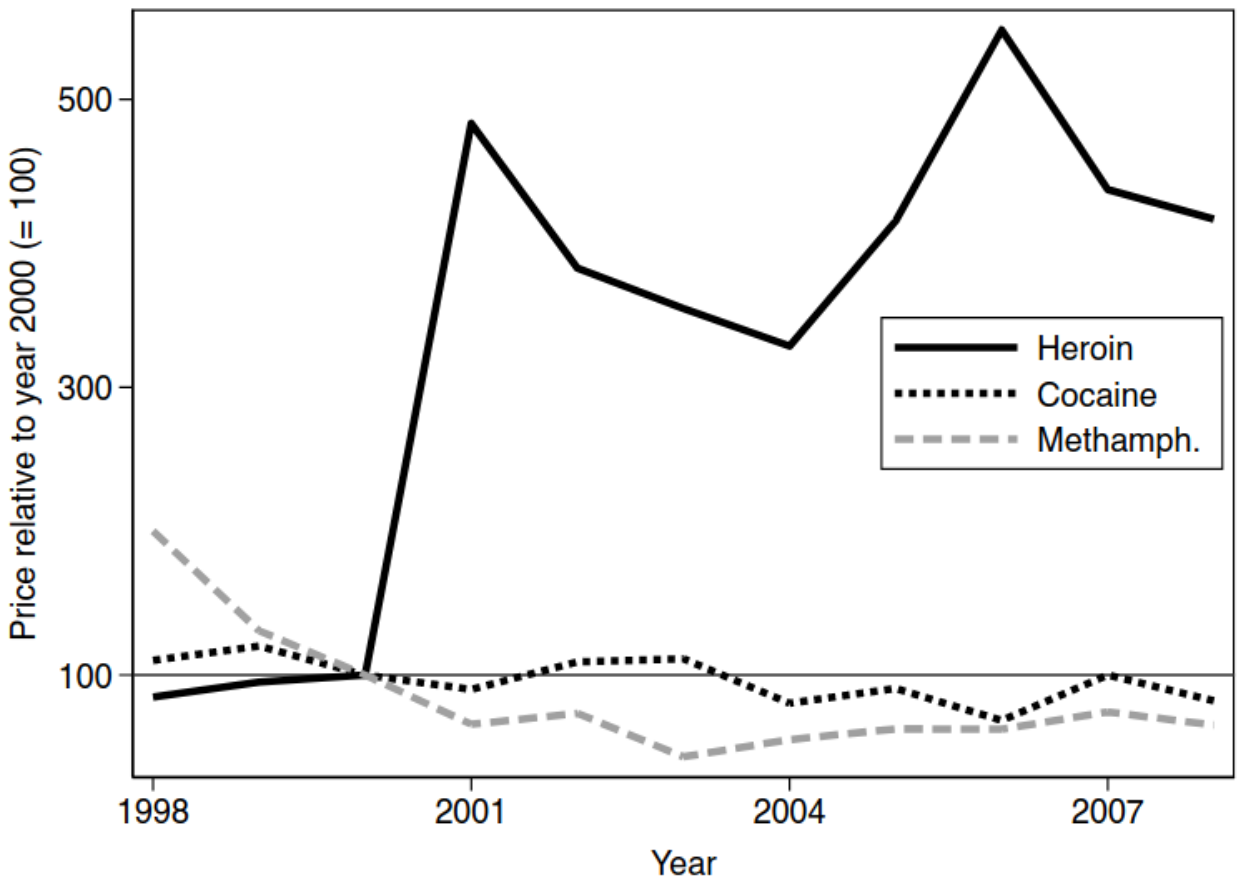
- Moore and Schnepel (2024)
- Australia is an island. Ports are more controllable than porous borders
- Increased enforcement efforts in 2000, led to a massive supply shock in 2001
- What happens to the *individuals* who use heroin?

Opioid Use, Mortality Risks and Crime: Insights from a Rapid Reduction in Heroin Supply

- Identify individuals using heroin pre-2000 (from arrest records)
- Compare outcomes for these individuals to other arrestees using non-opioid drugs
- Post-intervention massive increases in heroin price
- Let's look at some graphs to tell the story....

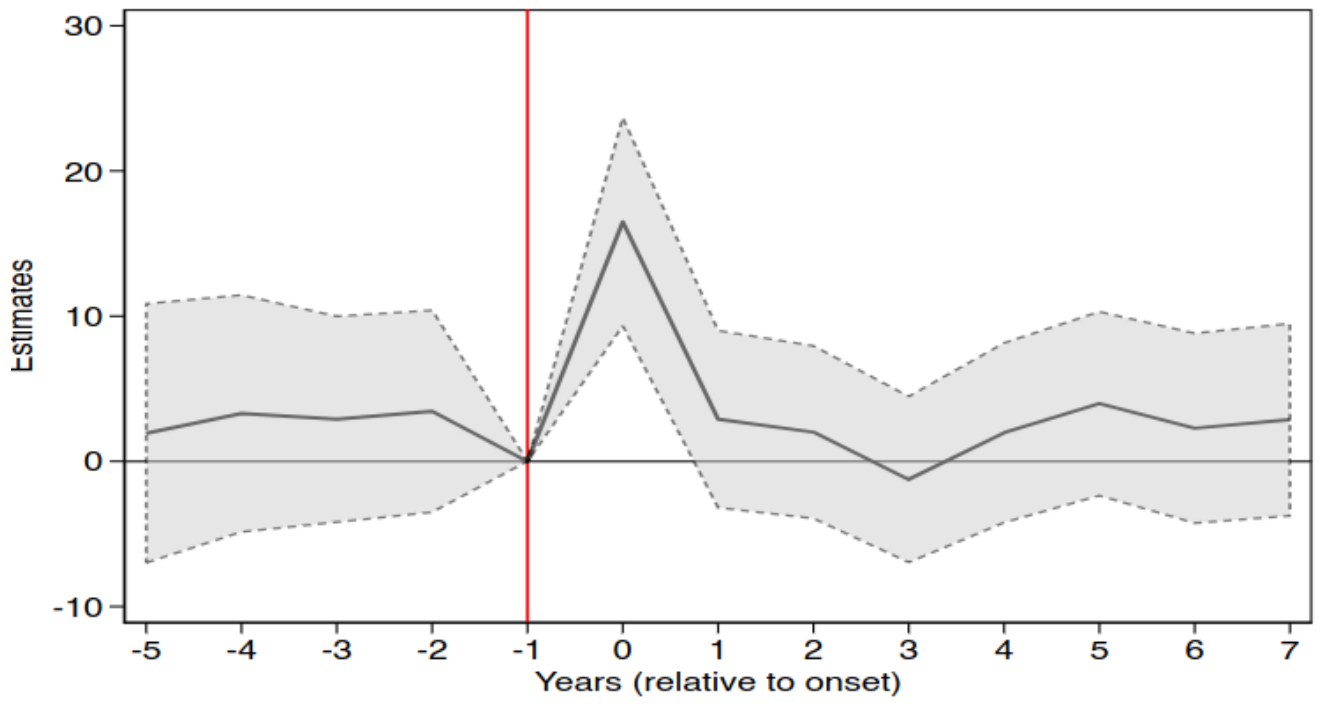
Opioid Use, Mortality Risks and Crime: Insights from a Rapid Reduction in Heroin Supply

Figure A.1: Prices of heroin, cocaine and methamphetamine, relative to year 2000



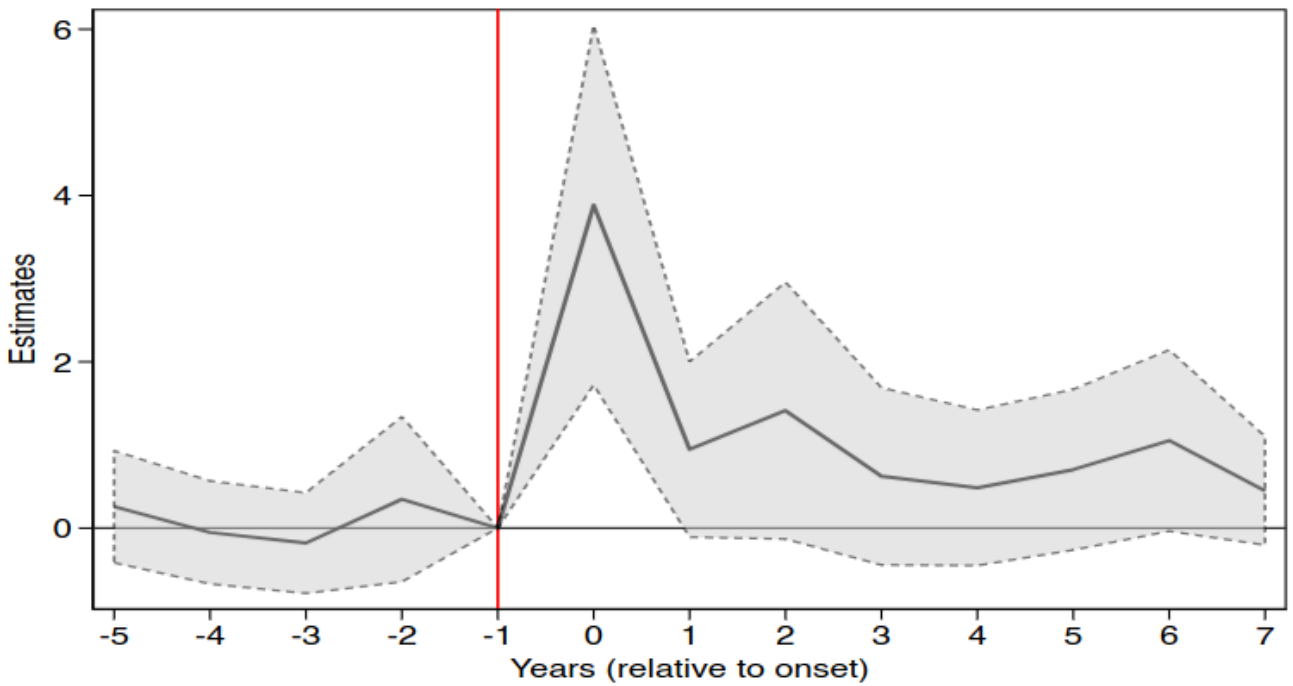
Opioid Use, Mortality Risks and Crime: Insights from a Rapid Reduction in Heroin Supply

(b) Non-opioid hard drug use/possession



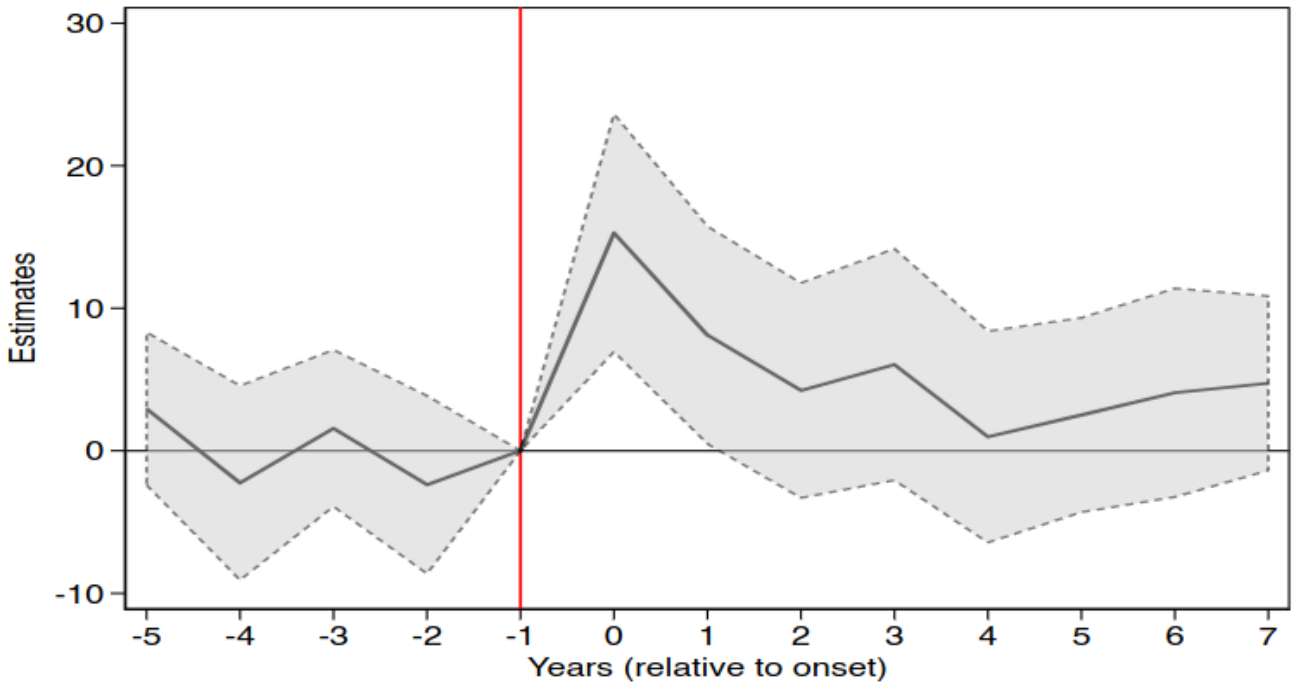
Opioid Use, Mortality Risks and Crime: Insights from a Rapid Reduction in Heroin Supply

(b) Homicide and manslaughter



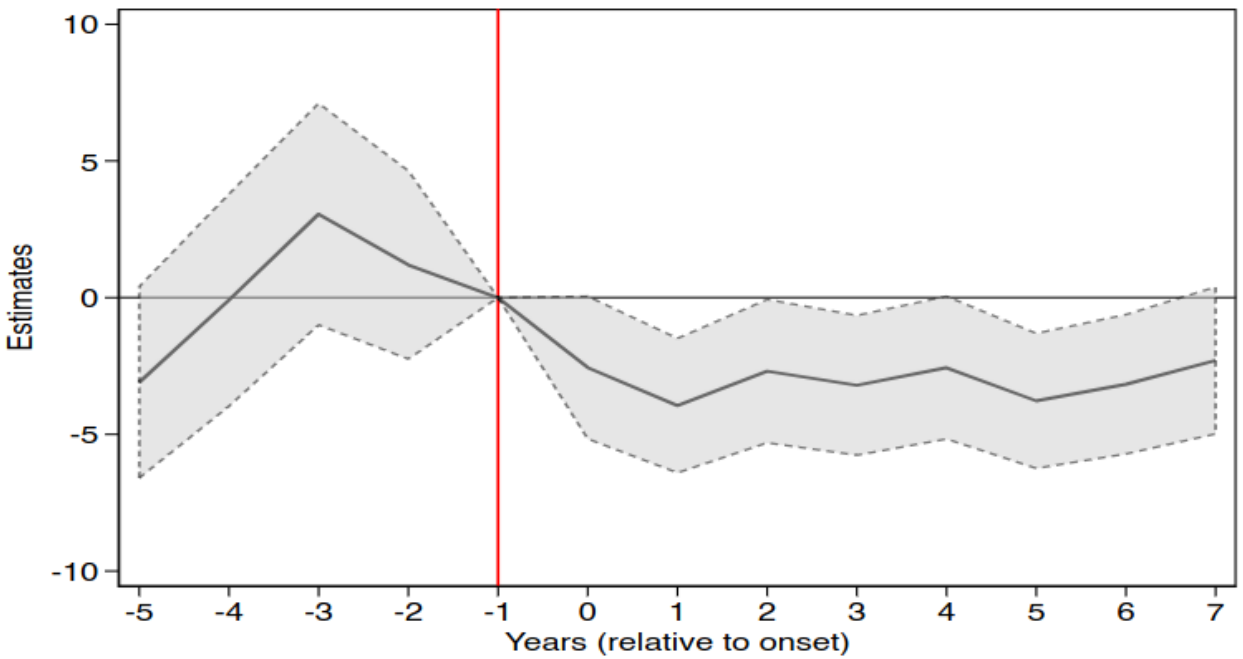
Opioid Use, Mortality Risks and Crime: Insights from a Rapid Reduction in Heroin Supply

(b) Robbery

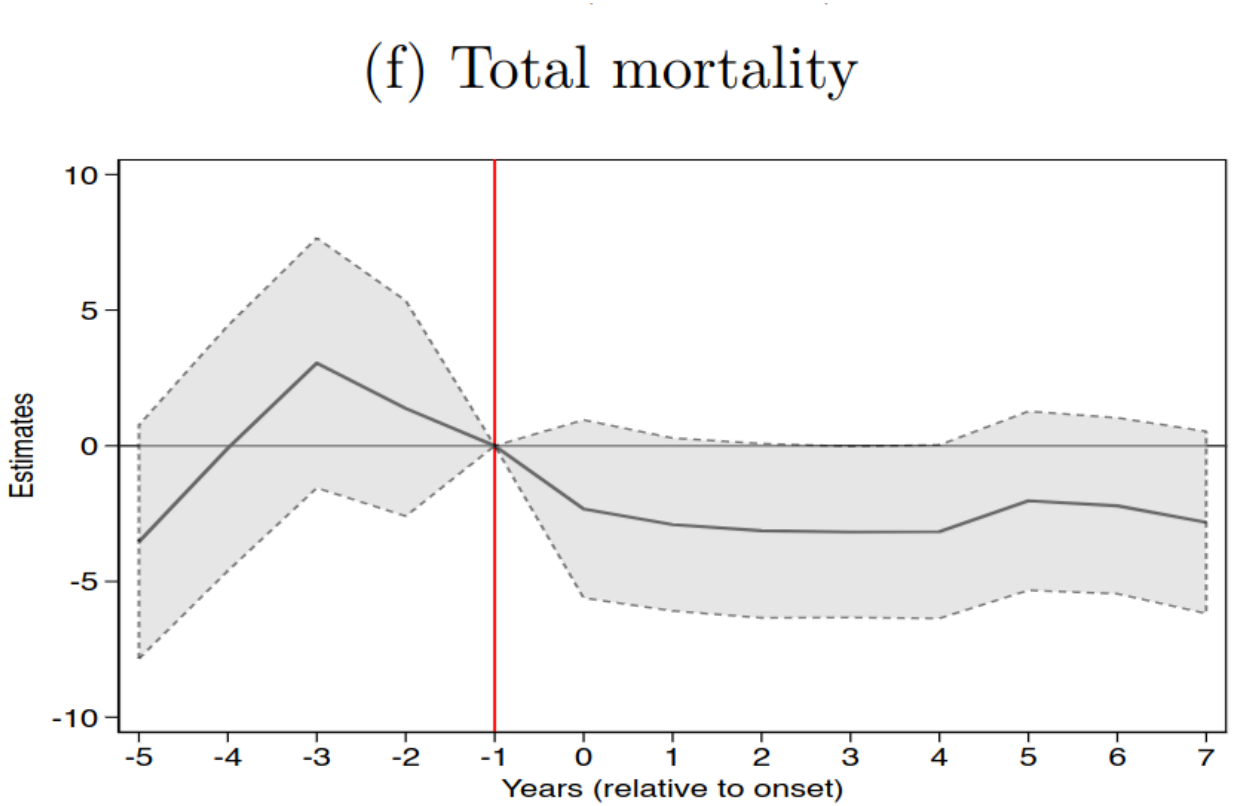


Opioid Use, Mortality Risks and Crime: Insights from a Rapid Reduction in Heroin Supply

(b) Opioid-related mortality



Opioid Use, Mortality Risks and Crime: Insights from a Rapid Reduction in Heroin Supply



Opioid Use, Mortality Risks and Crime: Insights from a Rapid Reduction in Heroin Supply

- Individuals initially substitute to alternative drugs (costly search behavior?)
- In the long run, persistent reduction in adverse outcomes
- Overall reduction in mortality risk

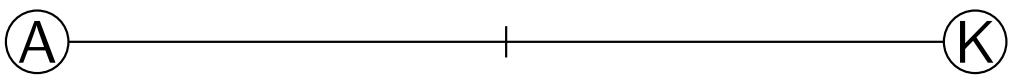
Chalfin and Porreca (2024)

- Chalfin and Porreca (2024)
- Finally maybe we have an approach that works!
- Targeted local law enforcement efforts
- Attempt to disrupt a street level market for illegal opiates

Chalfin and Porreca (2024)

Consumer

$$D_i = f(p_i, p_{-i}, \psi_i, \psi_{-i}, x_i, x_{-i})$$



$$p_a = f(D_a, c_a(e_a))$$

$$\frac{\partial c_a}{\partial e_a} > 0; \quad \frac{\partial p_a}{\partial e_a} > 0; \quad \frac{\partial D_a}{\partial e_a} < 0; \quad \frac{\partial D_a}{\partial e_k} > 0$$

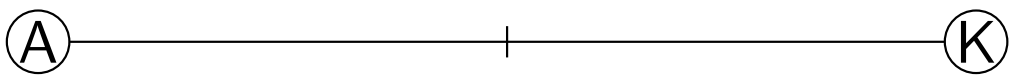
$$p_k = f(D_k, c_k(e_k))$$

$$\frac{\partial c_k}{\partial e_k} > 0; \quad \frac{\partial p_k}{\partial e_k} > 0; \quad \frac{\partial D_k}{\partial e_k} < 0; \quad \frac{\partial D_k}{\partial e_a} > 0$$

Chalfin and Porreca (2024)

Consumer

$$D_i = f(p_i, p_{-i}, \psi_i, \psi_{-i}, x_i, x_{-i})$$



$$p_a = f(D_a, c_a(e_a, e_k))$$

$$\frac{\partial c_a}{\partial e_a} > 0; \quad \frac{\partial p_a}{\partial e_a} > 0; \quad \frac{\partial D_a}{\partial e_a} < 0$$

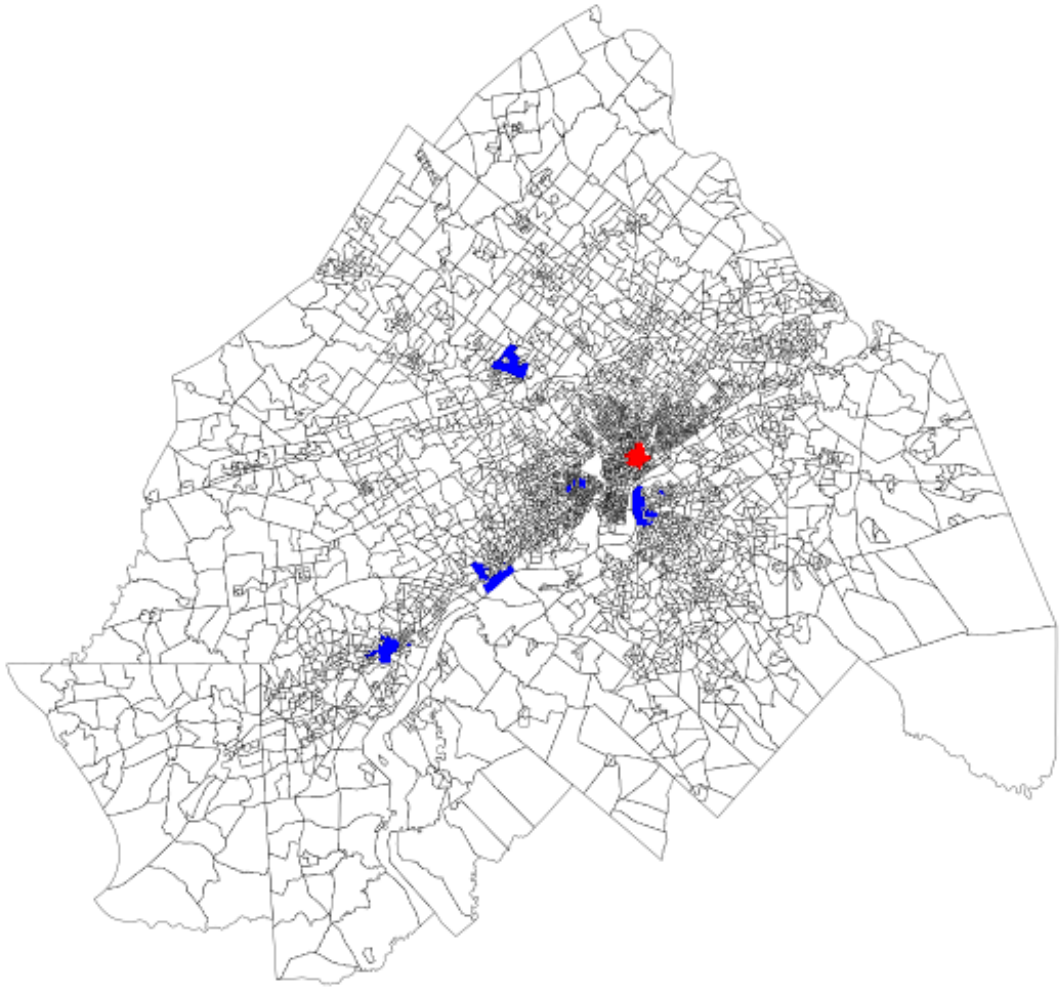
$$\frac{\partial c_a}{\partial e_k} > 0; \quad \frac{\partial p_a}{\partial e_k} > 0; \quad \frac{\partial D_a}{\partial e_k} \gtreqless 0$$

$$p_k = f(D_k, c_k(e_k))$$

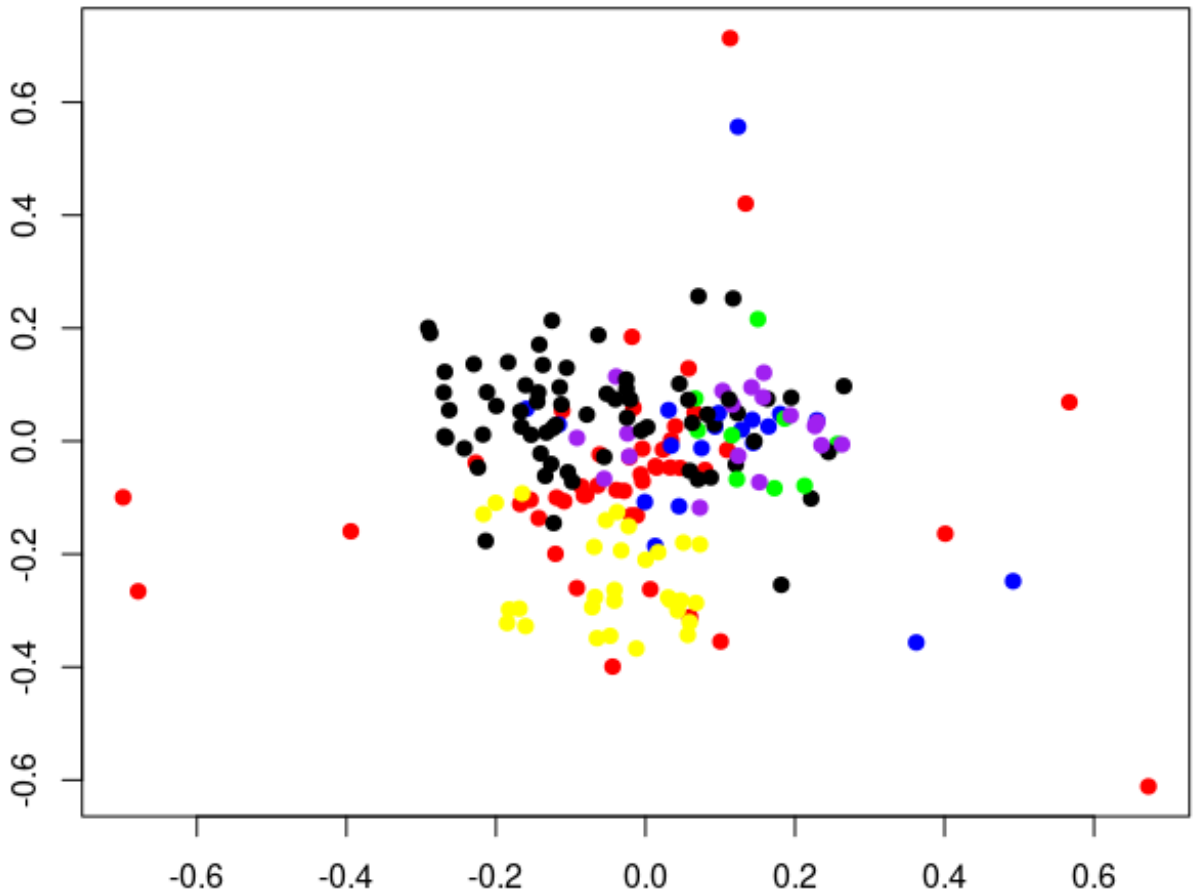
$$\frac{\partial c_k}{\partial e_k} > 0; \quad \frac{\partial p_k}{\partial e_k} > 0; \quad \frac{\partial D_k}{\partial e_k} < 0; \quad \frac{\partial D_k}{\partial e_a} > 0$$

Chalfin and Porreca (2024)

Chalfin and Porreca (2024)



Chalfin and Porreca (2024)



Chalfin and Porreca (2024)

- Reduction in visits to targeted area
- Reduction in visits to alternative markets
- Reduction in flows between targeted area and alternative markets
- Reduction in drug overdoses in the metro area
- Did targeting the hub disrupt the entire regional drug market enough to offset potential substitution and search effects?

Summary

- Demand for illegal drugs is inelastic
- Impacts of interventions are often offset by search and substitution effects
- Drug users look for alternatives
- Effective policy/disruptions need to simultaneously remove viable alternatives

Articles Referenced- Links

- Regulation of Legal Markets
  - Dobkin and Nicosia (2009)
  - Alpert et al. (2018)
  - d'Este (2021)
  - Alpert et al. (2022)
  - Soliman (2022)
- Preventing Drugs from Entering a Market
  - Deiana et al. (2020)
  - Moore and Schnepel (2024)
- Disrupting Existing Markets
  - Dobkin et al. (2014)
  - Ray et al. (2023)

Questions/ Contact Info

Thank you! Please reach out to me via email at zachary.porreca@unibocconi.it or at @zachporreca on Twitter