



THE OHIO STATE UNIVERSITY

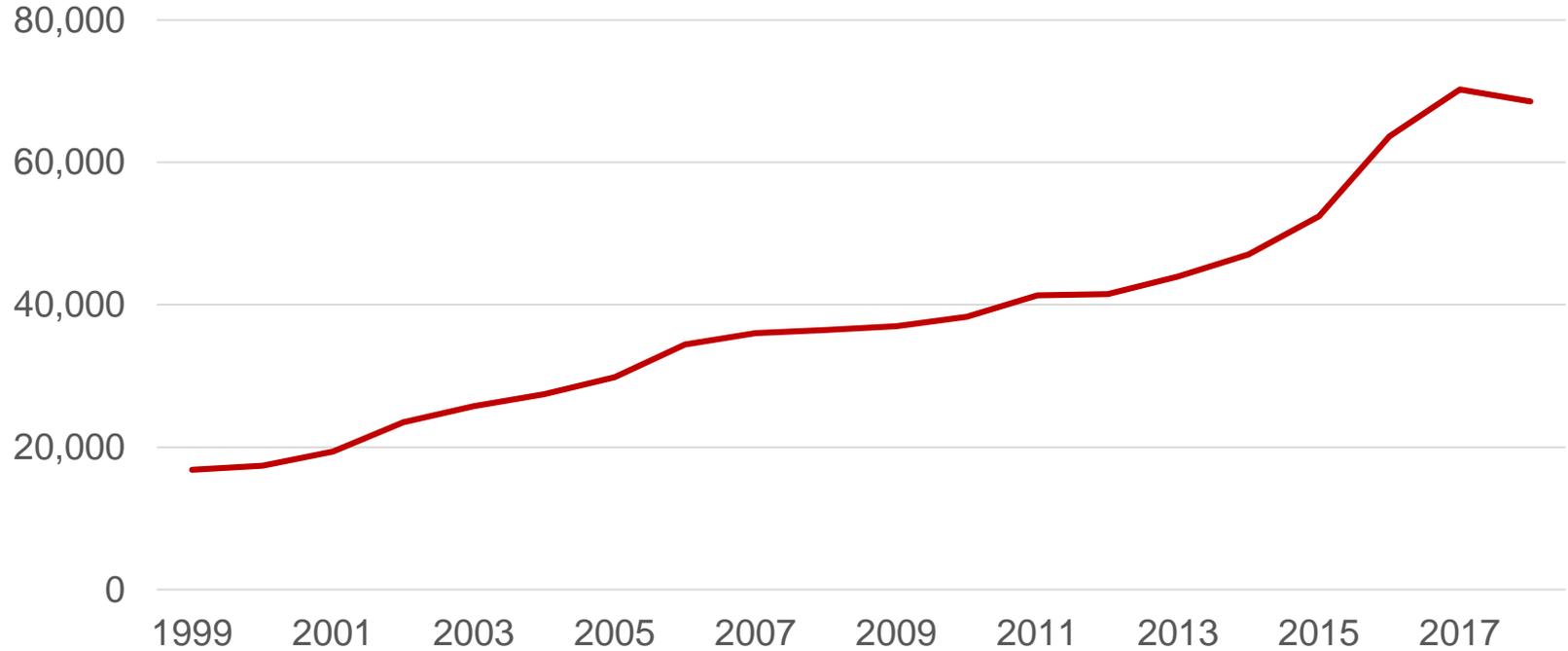
The Role of Local Economic Conditions in the Opioid Crisis

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U.S. Overdose Deaths 1999-2018



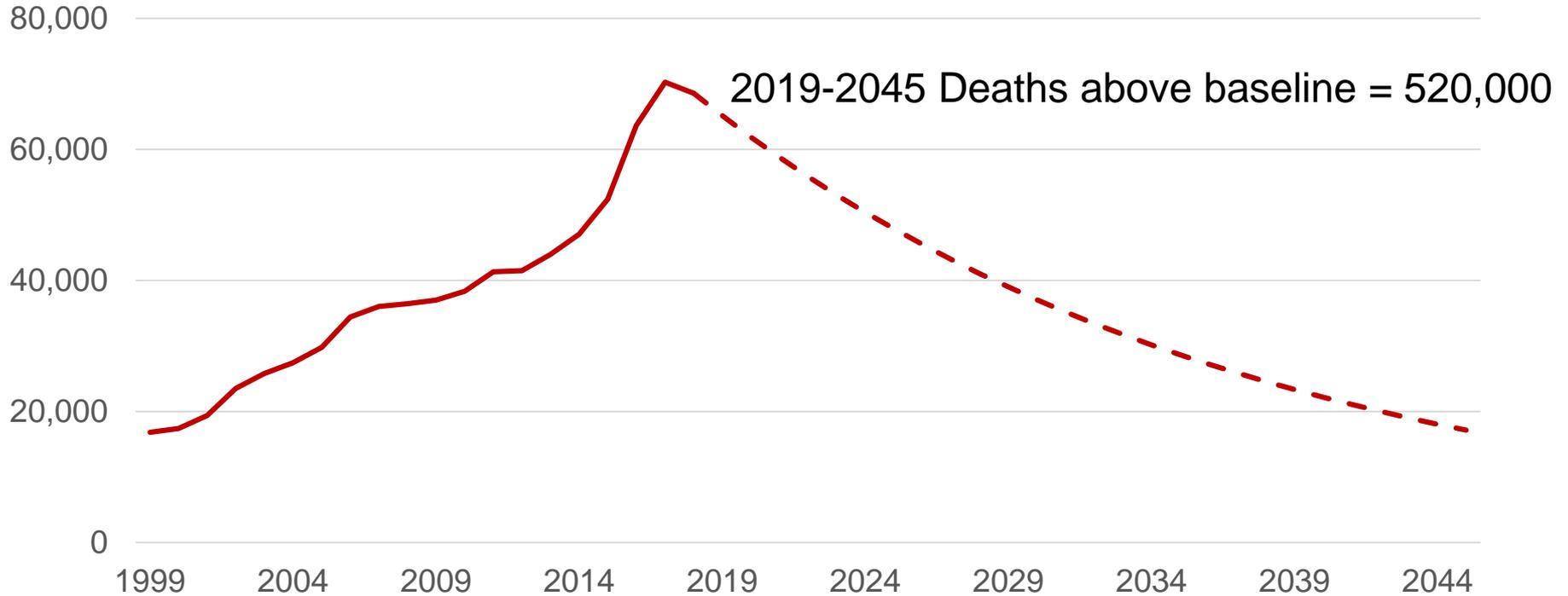


What has worked?

- **Naloxone access laws**
 - NAL reduced OD deaths by 9-10%
 - Impacts take several years
- **PDMPs**
 - Must be mandatory query
- **Treatment expansion**



U.S. Overdose Deaths 1999-2045





Virginia's situation

- Virginia ranked 31st in CDR in 2017, but...
- 390% increase since 1999
- ~15,500 deaths 1999-2018
- Geographic variation
- Small decrease (~2%) from 2017-18



Costs

- Opioid abuse cost Virginian's \$20.5 billion in 2016
 - Roughly what VA spends on education
- White House CEA (2017)
 - ~\$500 billion in 2015
- \$10.32 trillion in costs between 1999-2016 for entire US
 - ~50% of US GDP in 2017



Demand versus Supply Drivers

Supply-side drivers

- Increasing availability of powerful drugs

Demand-side drivers

- Increasing demand for deadly substances



Overview

1. Demand-side drivers
2. Supply-side drivers





Leading Causes of Death Under 55 in 2016

Cause	US
Drug overdoses	56,679
Cancer	58,740
Heart disease	49,498
Suicide	28,999
Homicide	16,970
Chronic liver disease	12,190



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Demand-side Factors

- Community economic disadvantage
- Mental health problems
- Weakening social/family ties
- Adverse Childhood Experiences (ACES)

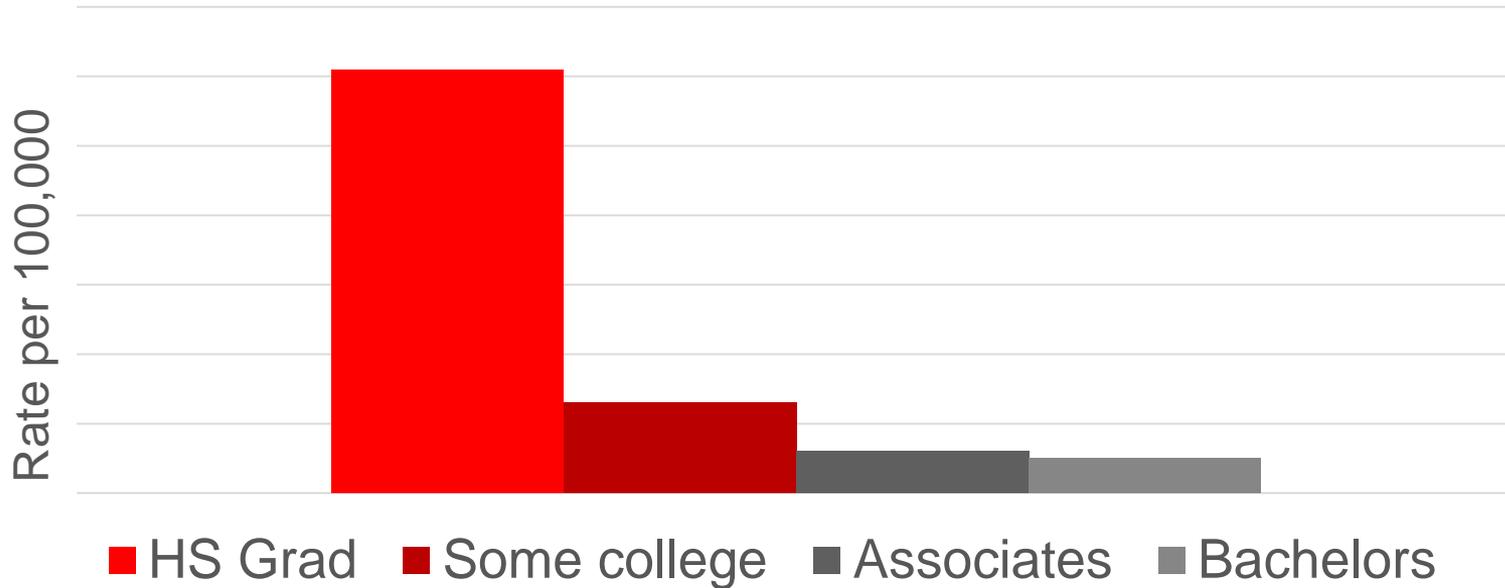


Demand-side Factors

- Community economic disadvantage
- Mental health problems
- Relational problems
- Health conditions (chronic pain, sedentary life styles, etc.)

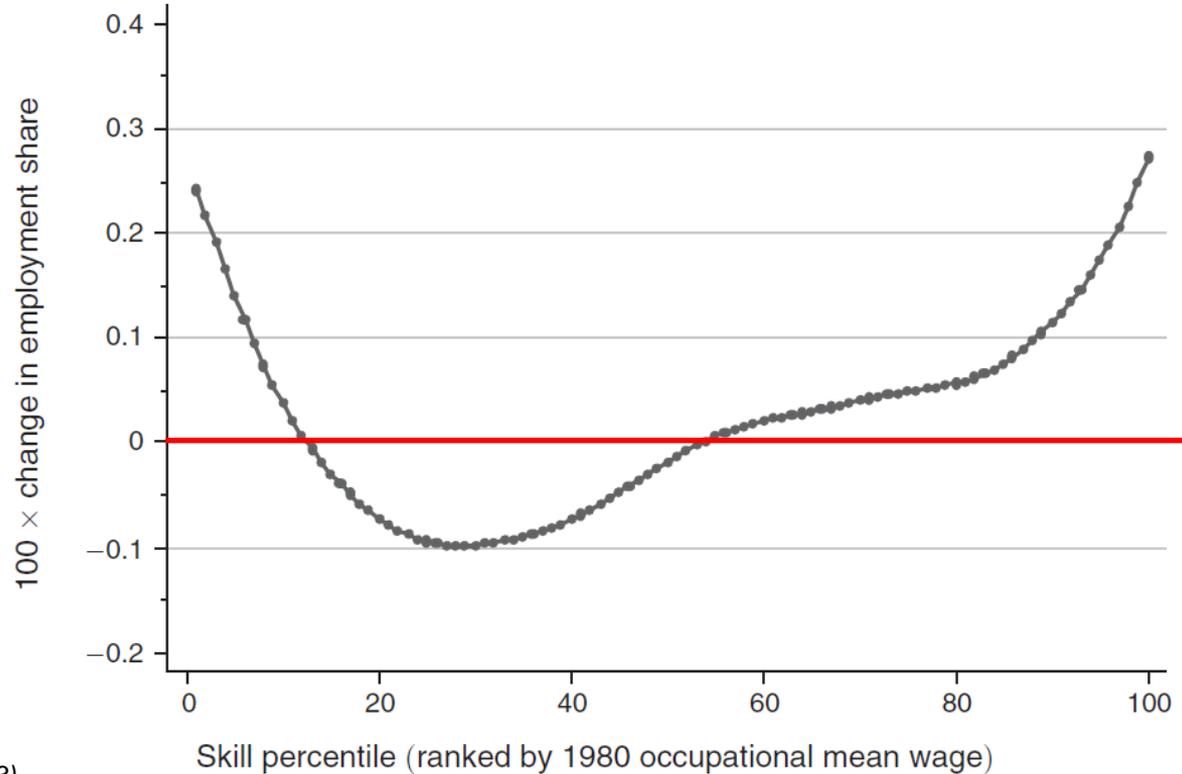


Ohio Overdose Rates by Education Level





Panel A. Smoothed changes in employment by skill percentile, 1980–2005





Twin Forces Driving Trend

1. Outsourcing
2. Technological Change/Automation



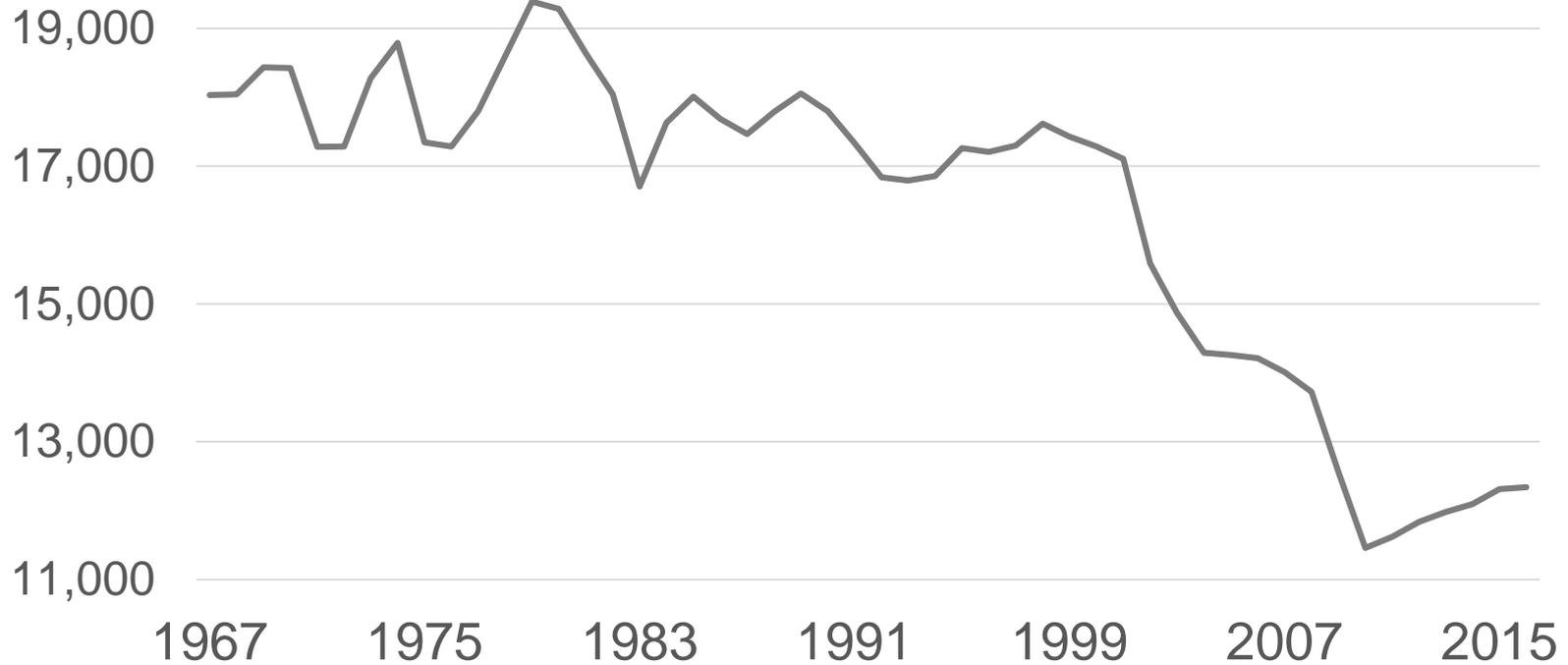
Twin Forces Driving Trend

1. Outsourcing

2. Technological Change/Automation



US Manufacturing Jobs 1967-2016







Pierce and Schott (2017)

- Counties more exposed to trade liberalization had larger manufacturing declines
- More exposed counties had higher rates of suicide and related causes of death



Koffi, Hurst, and Schwartz (2018)

- Manufacturing decline lowered incomes for prime aged workers
- State manufacturing decline increased OD rates (causal)



Twin Forces Driving Trend

1. Outsourcing

**2. Technological
Change/Automation**



"Certain inventions in machinery were introduced into the staple manufacturers of the north, which, greatly reducing the numbers of hands necessary to be employed, threw thousands out of work, and left them without legitimate means of sustaining life..."

WE PETITION NO MORE.
THAT WON'T DO - FIGHTING MUST.

LUDDITES

Being a Social Uprising in the Midlands of England between the Years of 1811 and 1813

TO PUT DOWN ALL MACHINERY HURTFUL TO COMMONALITY!

"Misery generates hate; these sufferers hated the machines which they believed took their bread from them; they hated the buildings which contained those machines; they hated the manufacturers who owned those buildings." -Charlotte Brontë, *Shirley*

CELEBRATE PEOPLE'S HISTORY

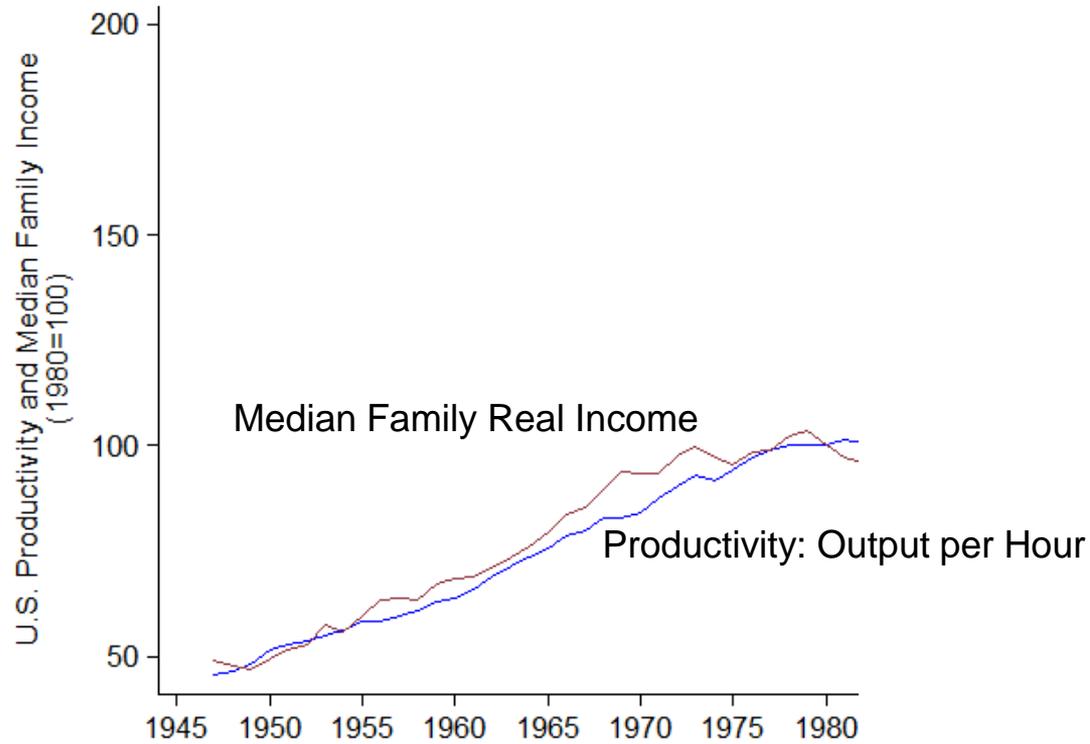


Signed by the General of the Army of Redressers
Ned Ludd, Clerk - Redressers for ever Amen.

Art: Shawn Shifey, more posters: jastorens.org, printed by Stumpgroundprinters.com, June 2014



Workmen take out their anger on the machines by [C.L. Doughty](#)



Data source: BLS, CPS



US Manufacturing Jobs 1967-2016

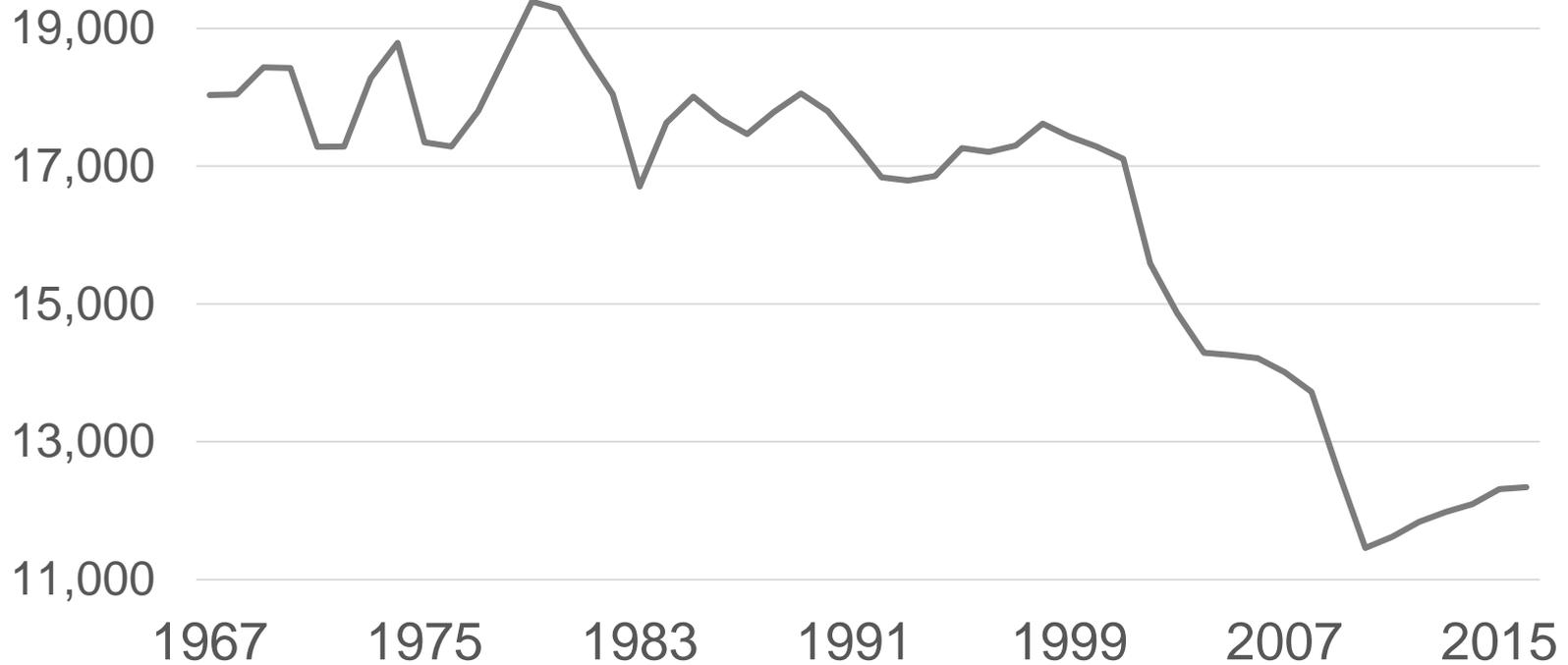
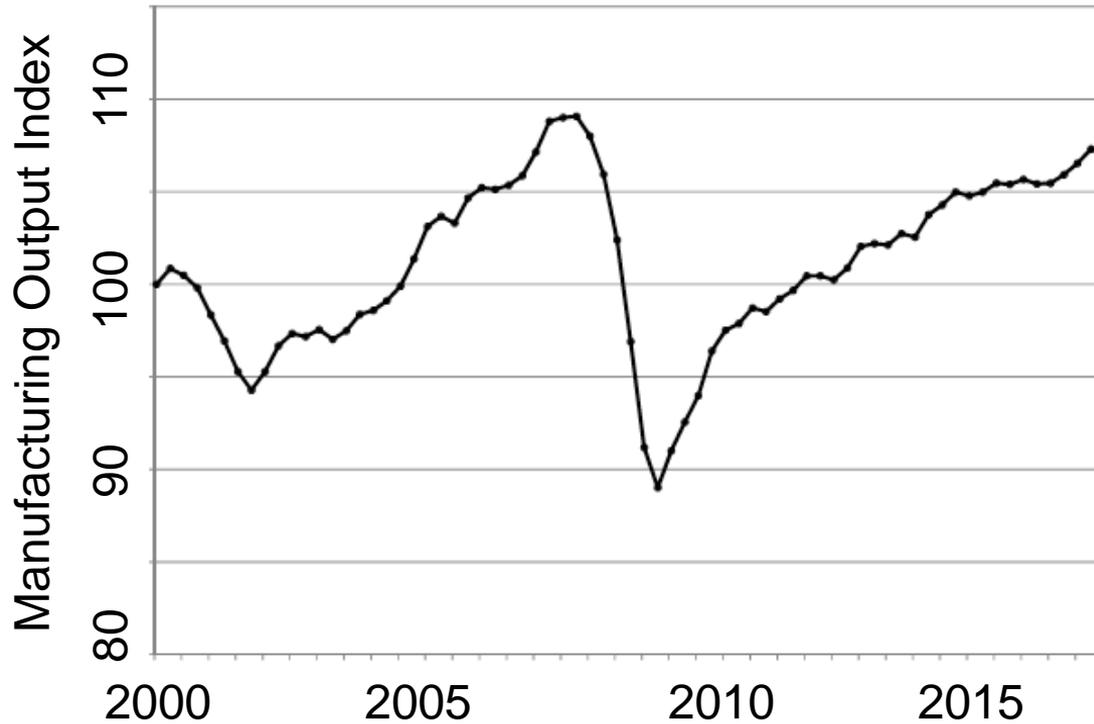
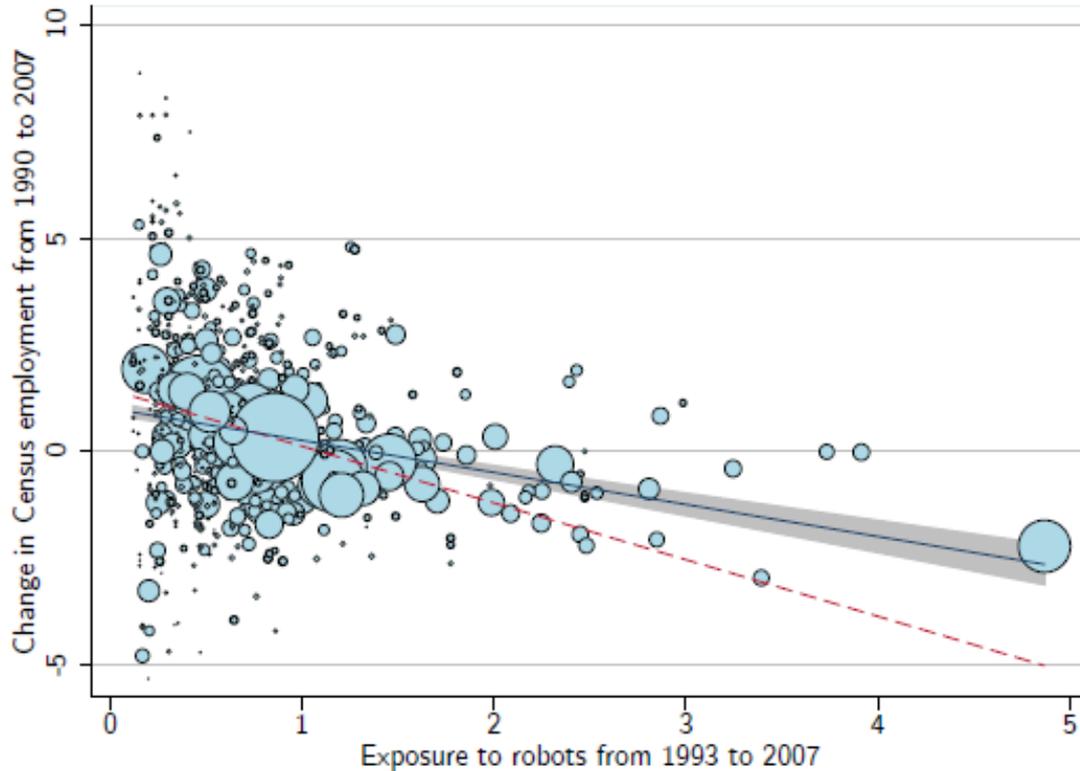




Figure 7: U.S. Quarterly Real Output Index for the Manufacturing Sector (2000Q1 = 100)





One more robot
per thousand
workers reduces
the
Employment/Pop
Ratio by about
0.18-0.24
percentage points

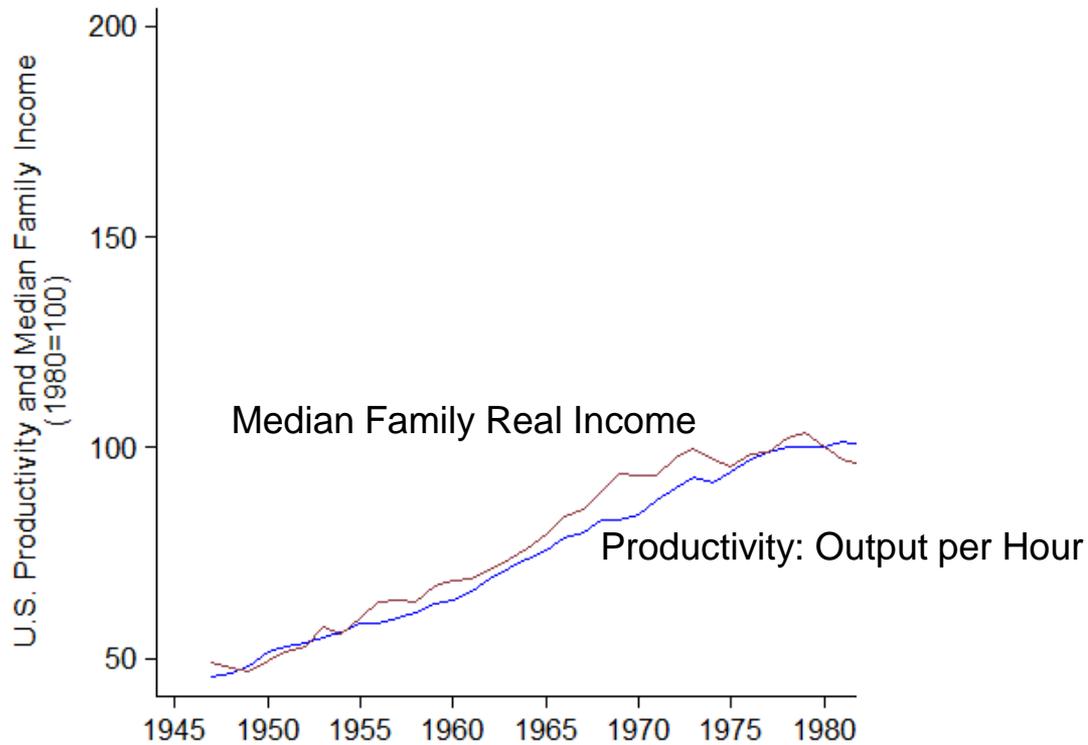


Involuntarily job displacement approximately doubled the short-term mortality rates of those displaced and reduced their life expectancy on average by 1.5 years

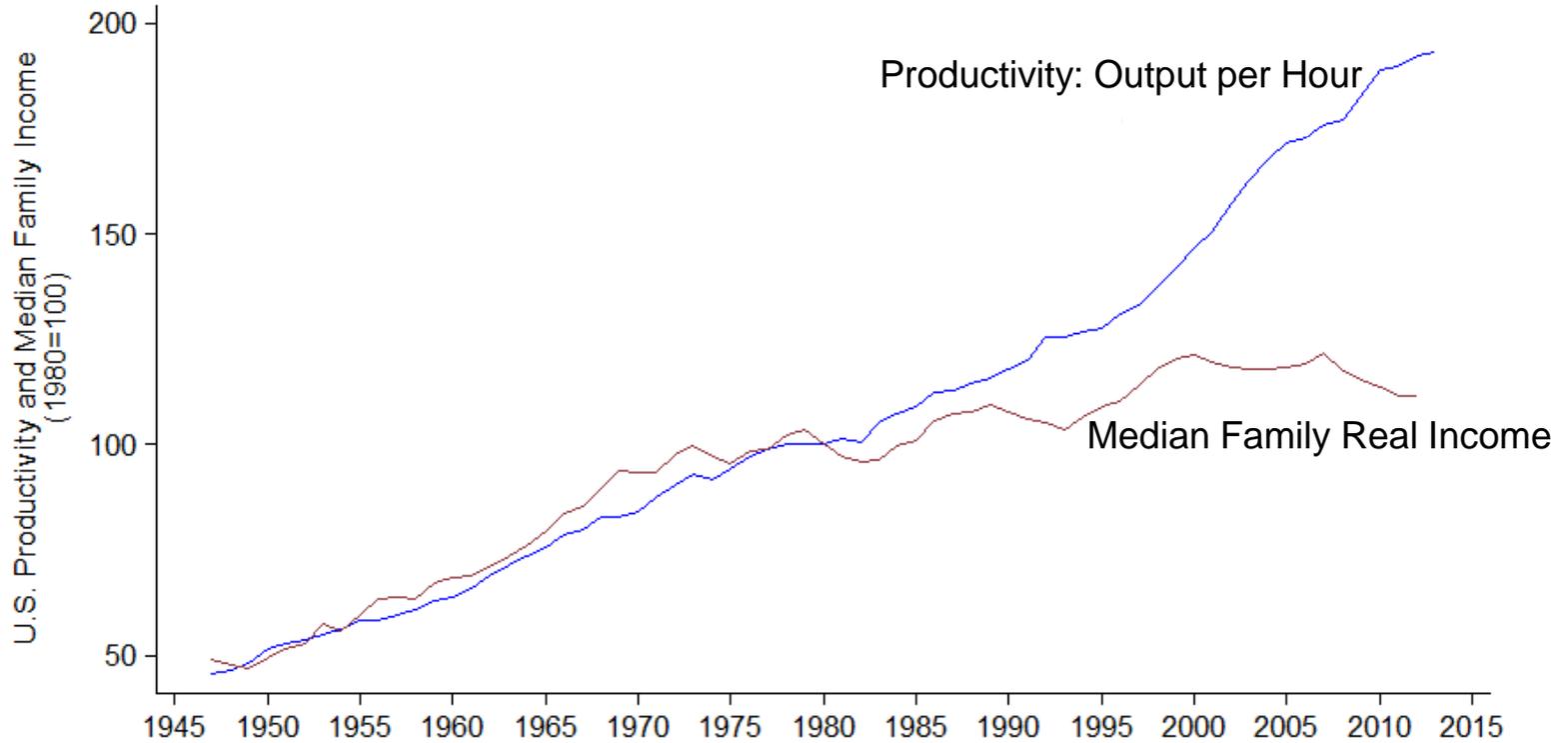
-Sullivan and von Wachter (2009)



What's the net result?



Data source: BLS, CPS

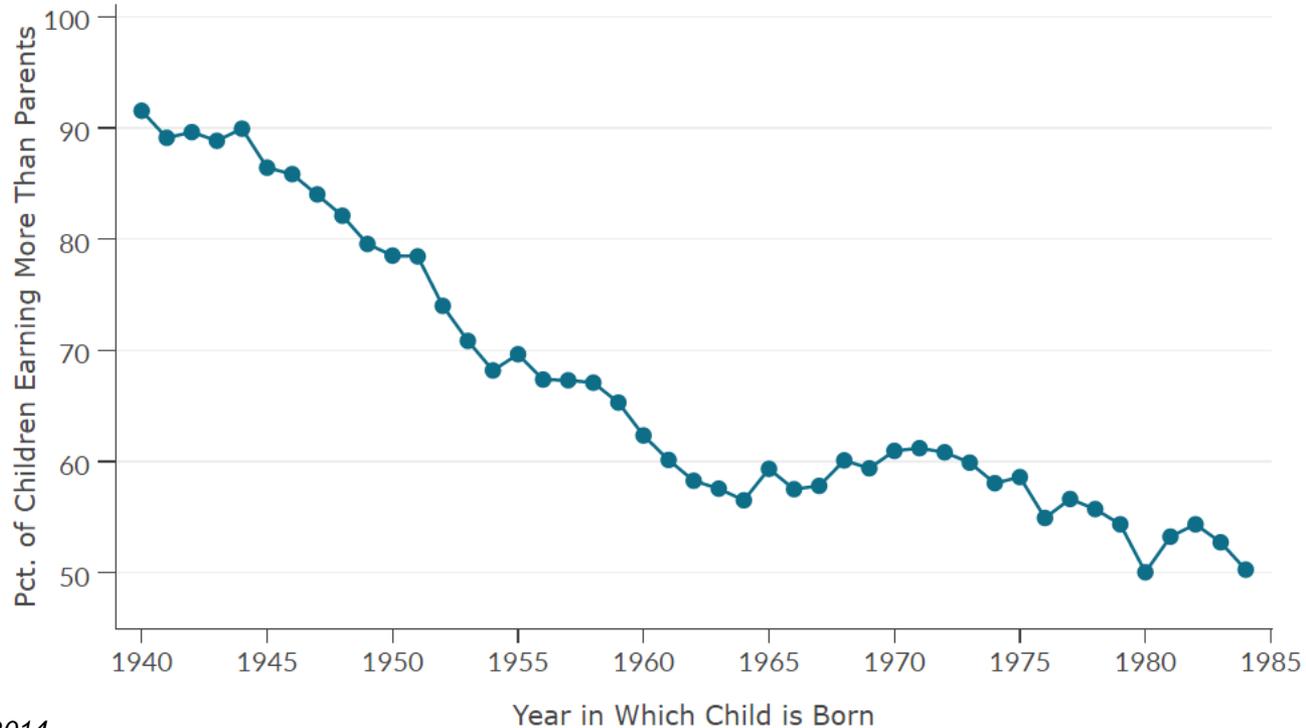


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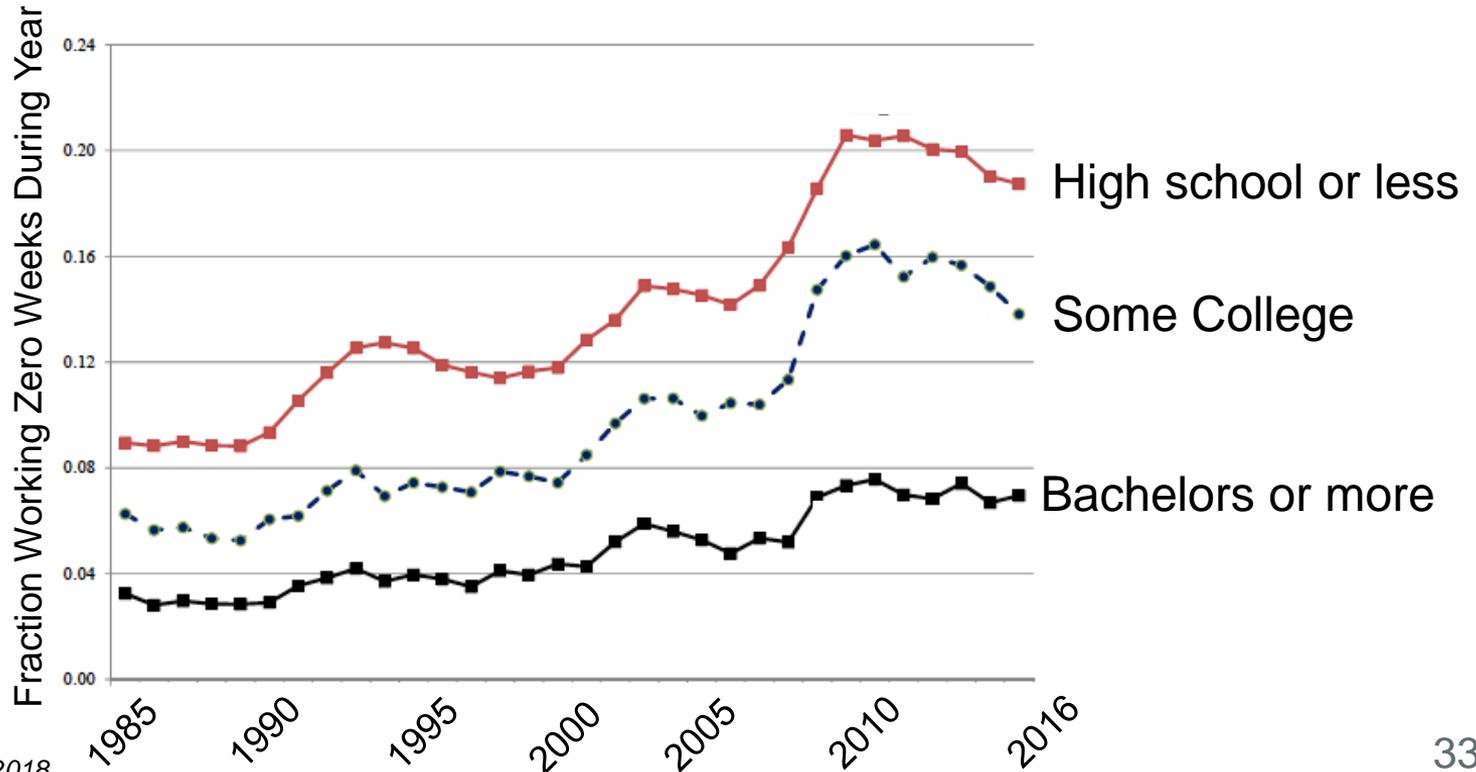
The Fading American Dream

Percent of Children Earning More than their Parents, by Year of Birth





Fraction Working Zero Weeks During the Year Males 21-55 by Education





Men NLF express much lower levels of meaning to their daily lives than LF men

- **Not so for women**

Half of prime age men NLF use daily pain medication (Krueger 2017)



When you have people who are not taking part of the economic life of the country in a meaningful way, who don't have the skills and aptitudes to play a role or who are not doing so because they're addicted to drugs or in jail, then in a sense, they are being left behind.

-Federal Reserve Chairman Jerome Powell



**But are local
economic conditions
driving the crisis?**



Academic Research

- Hollingsworth et al. 2017
 - County UR \uparrow 1pp \rightarrow OD death rate \uparrow 3.6%
- Betz and Jones 2018
 - 1 SD \uparrow Low-skill job growth \rightarrow male OD deaths \downarrow 1.8 per 100,000
 - Chesterfield county male OD rate = 29.6

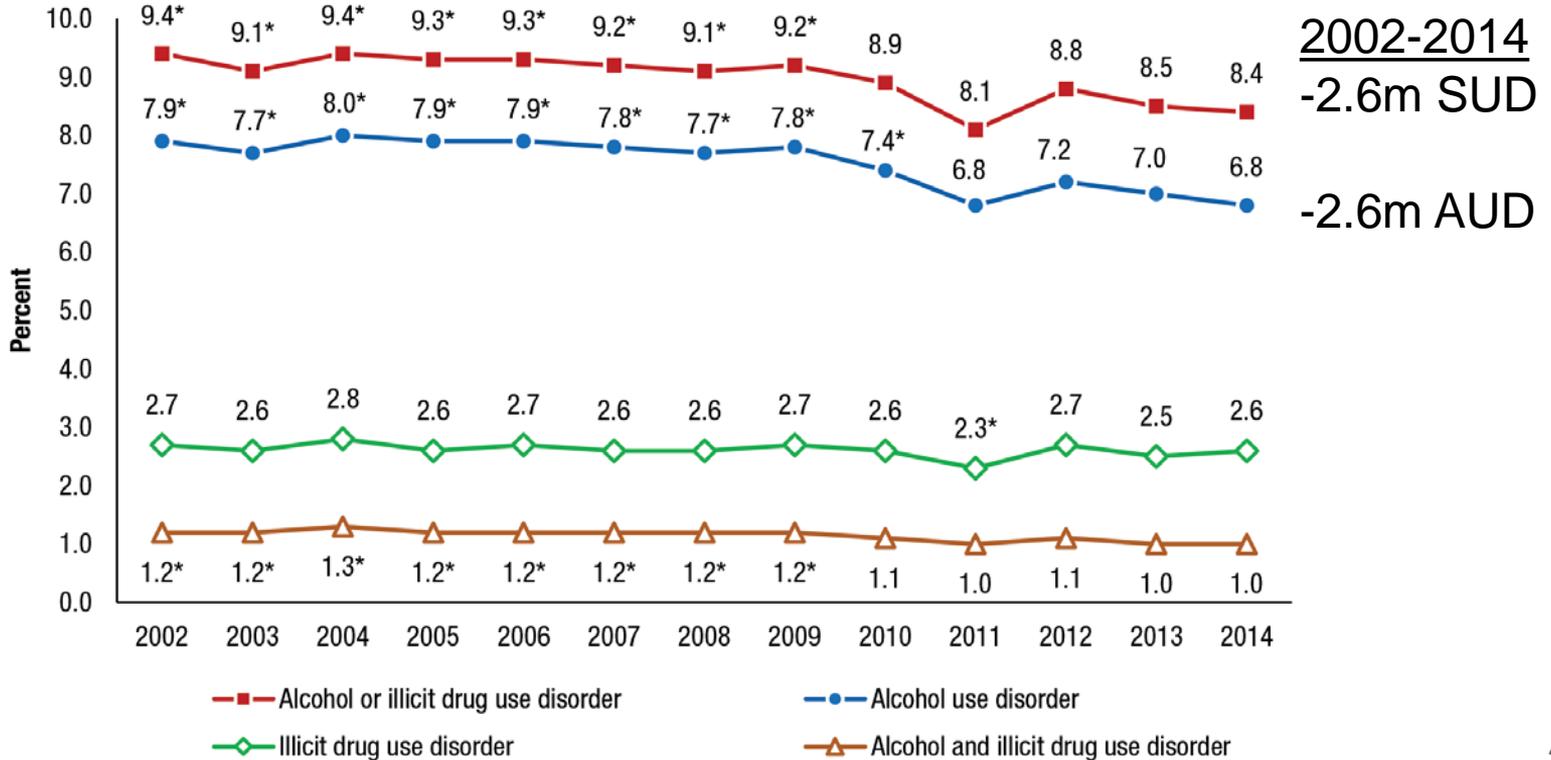


Academic Research

- Ruhm 2019
 - Economic conditions account for $< 10\%$ of rise in OD deaths
 - Changes in the drug environment was key driver

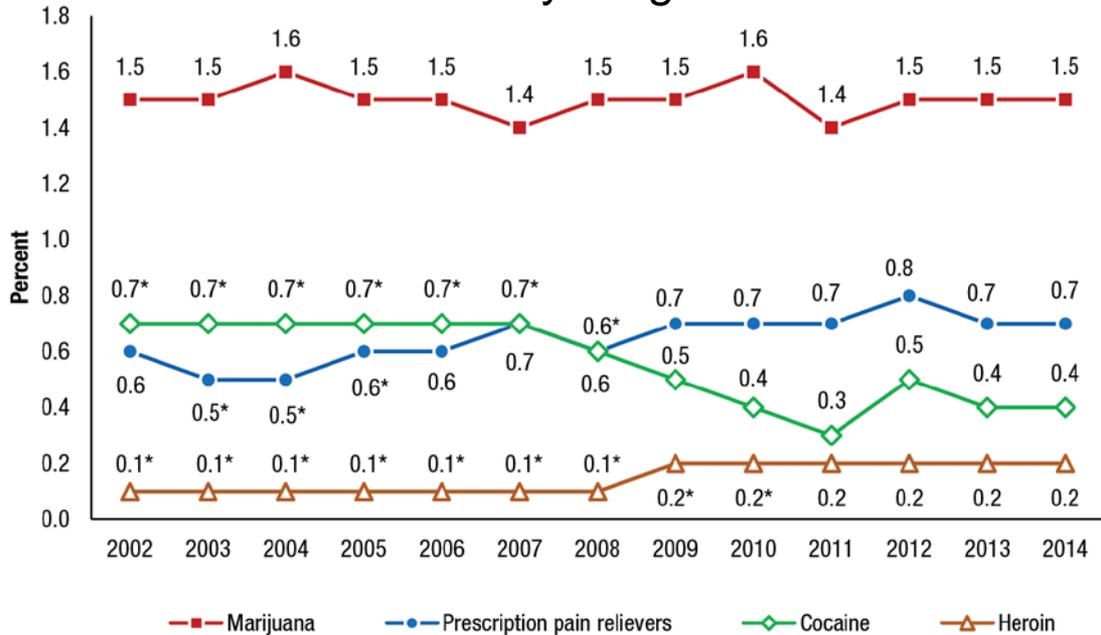


Trends in substance use disorder in the past year age 18+





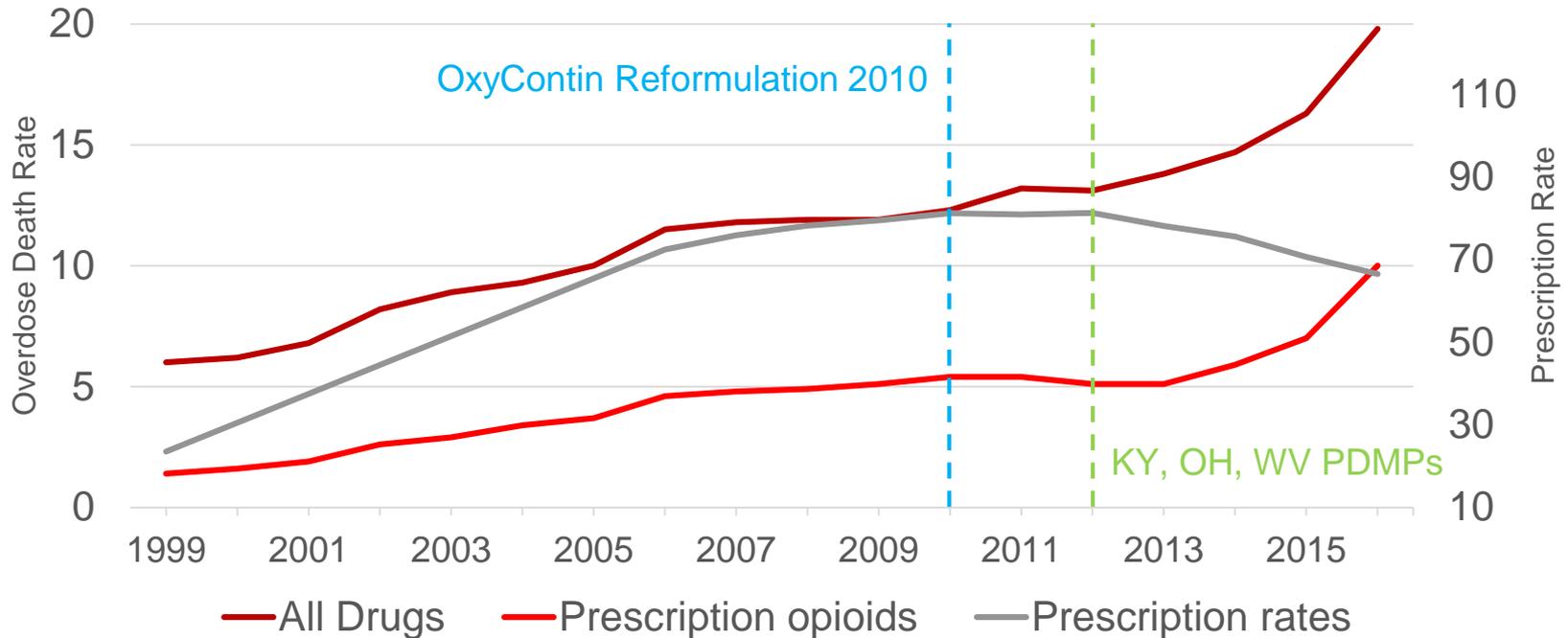
Trends in substance use disorder in the past year age 18+ by drug



+230k HUD

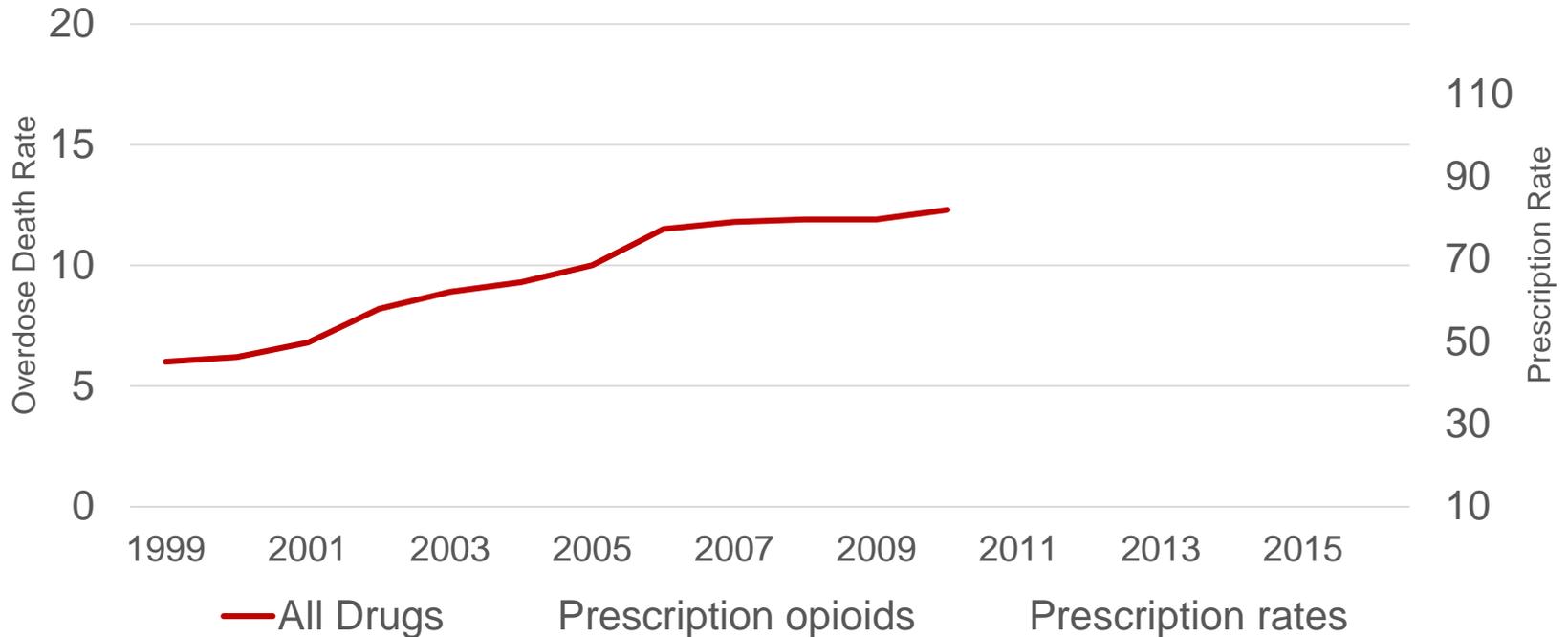


US Overdose Death and Prescription Rates 1999-2016



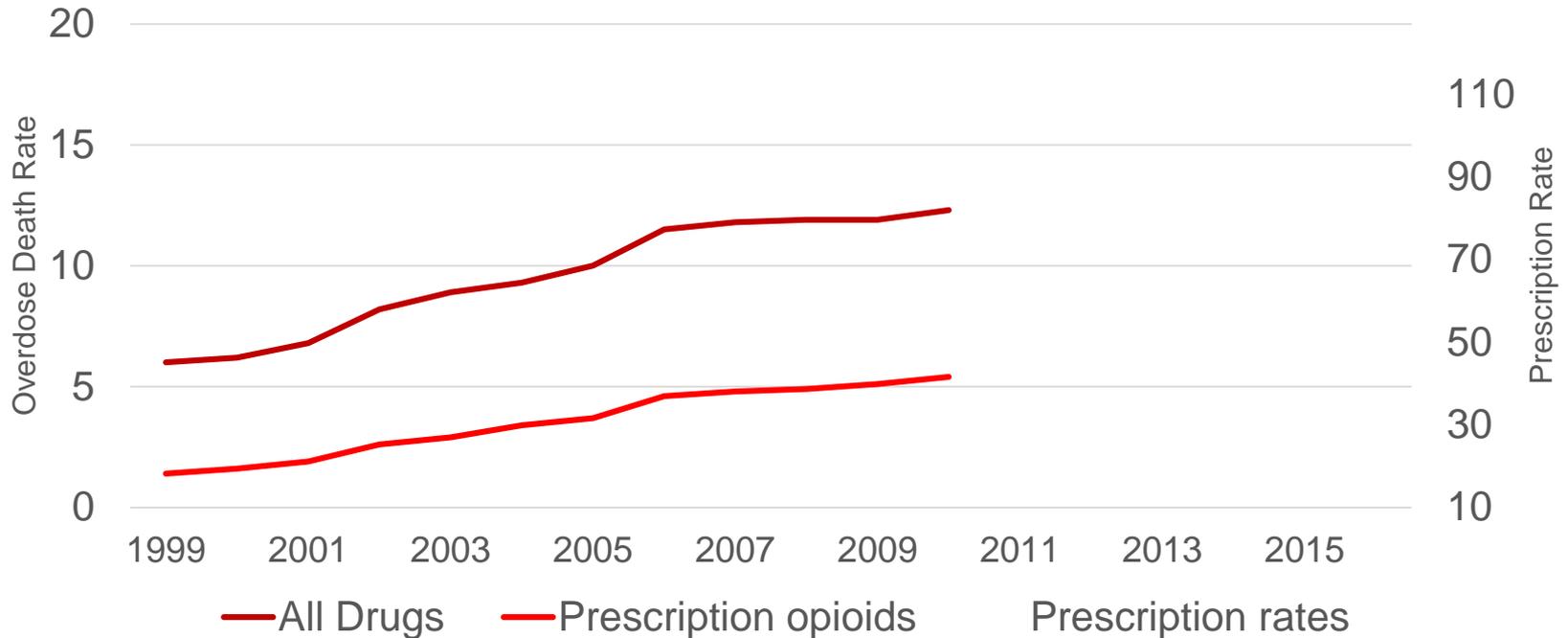


US Overdose Death and Prescription Rates 1999-2016



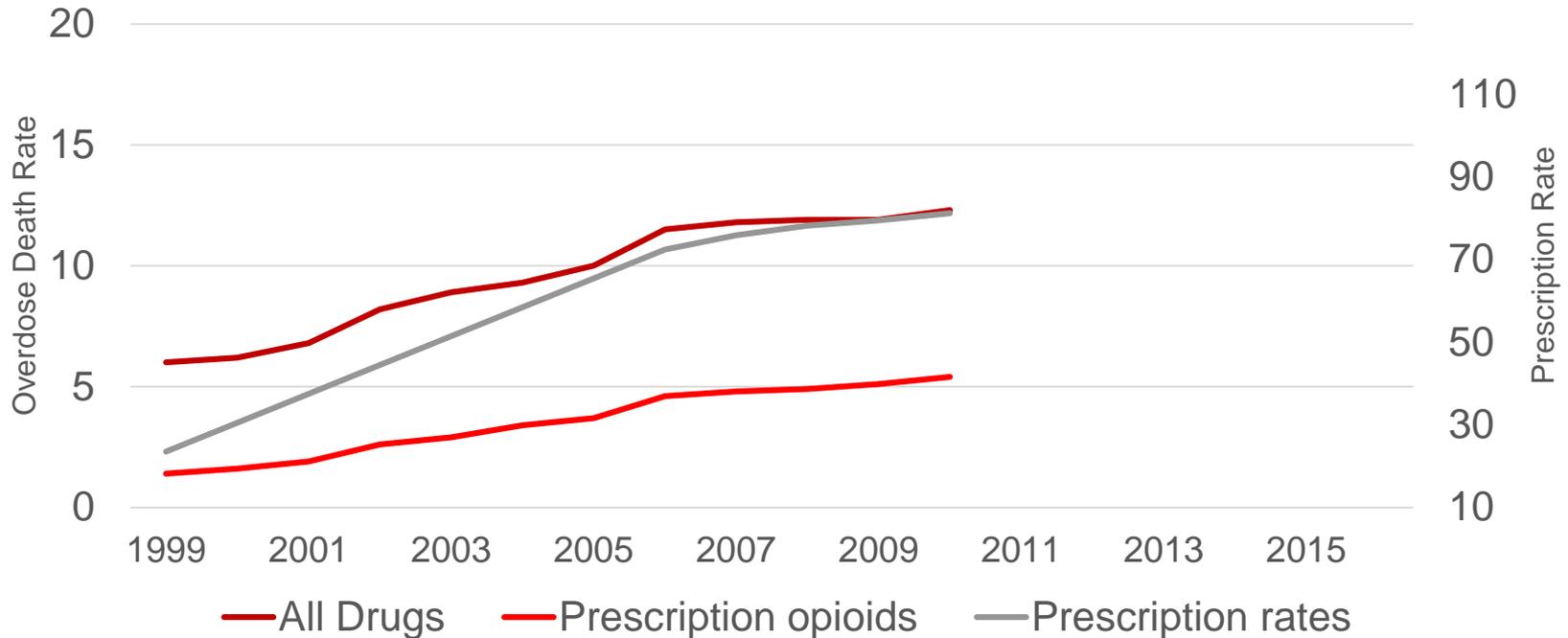


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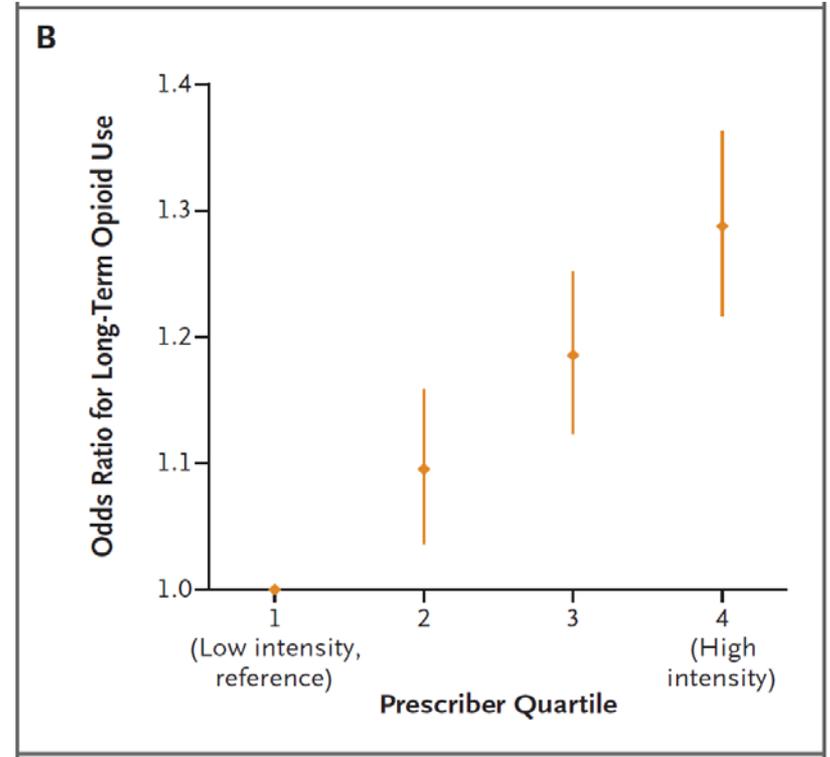
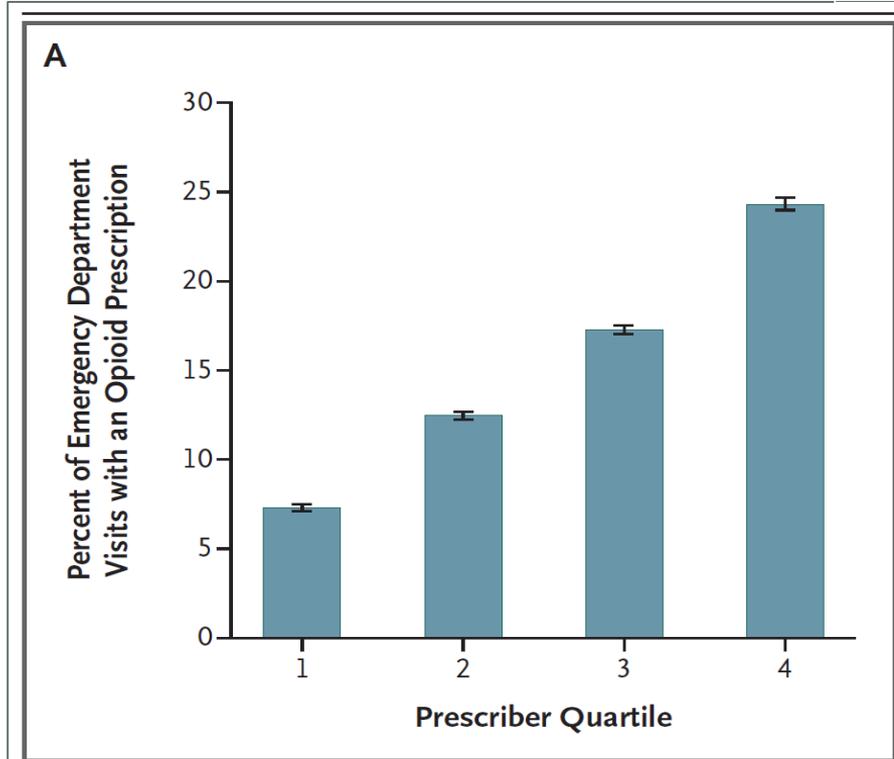


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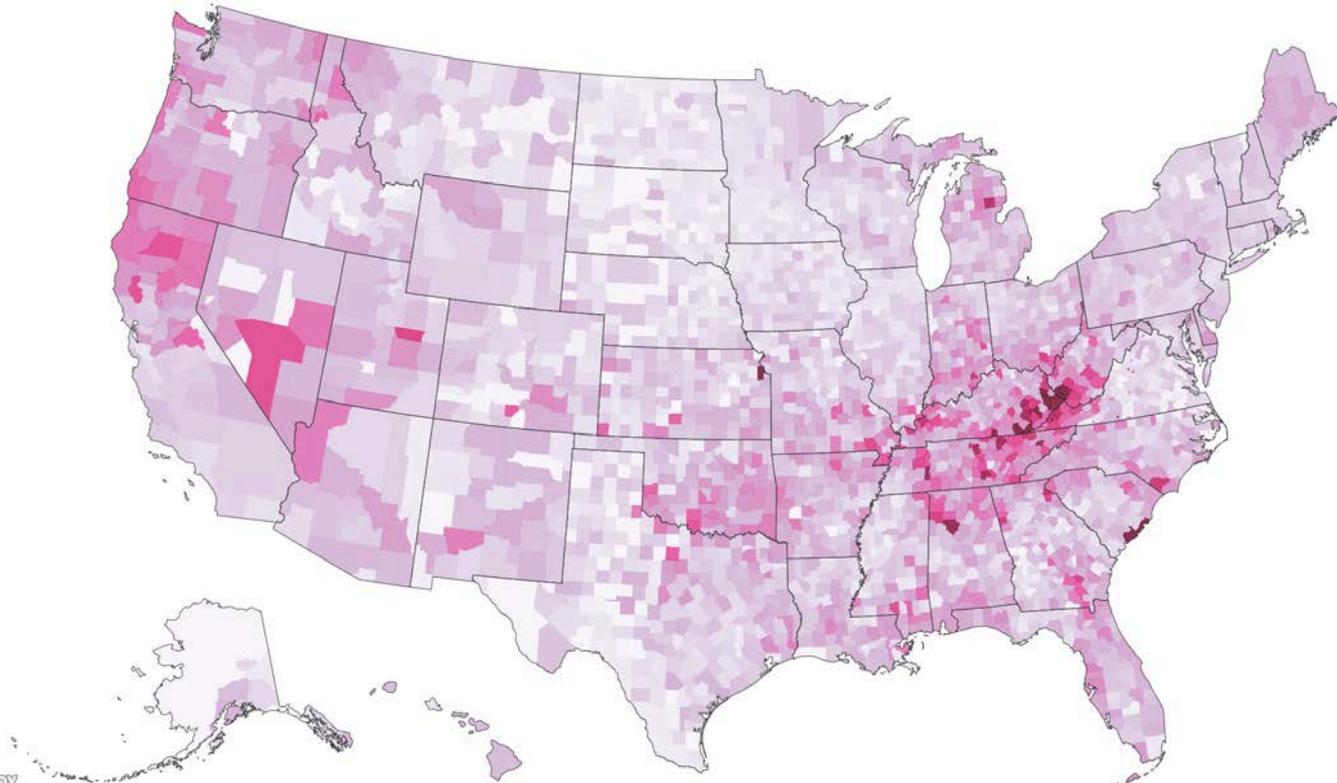
Prescriber Behavior





Number of pills distributed per person, per year

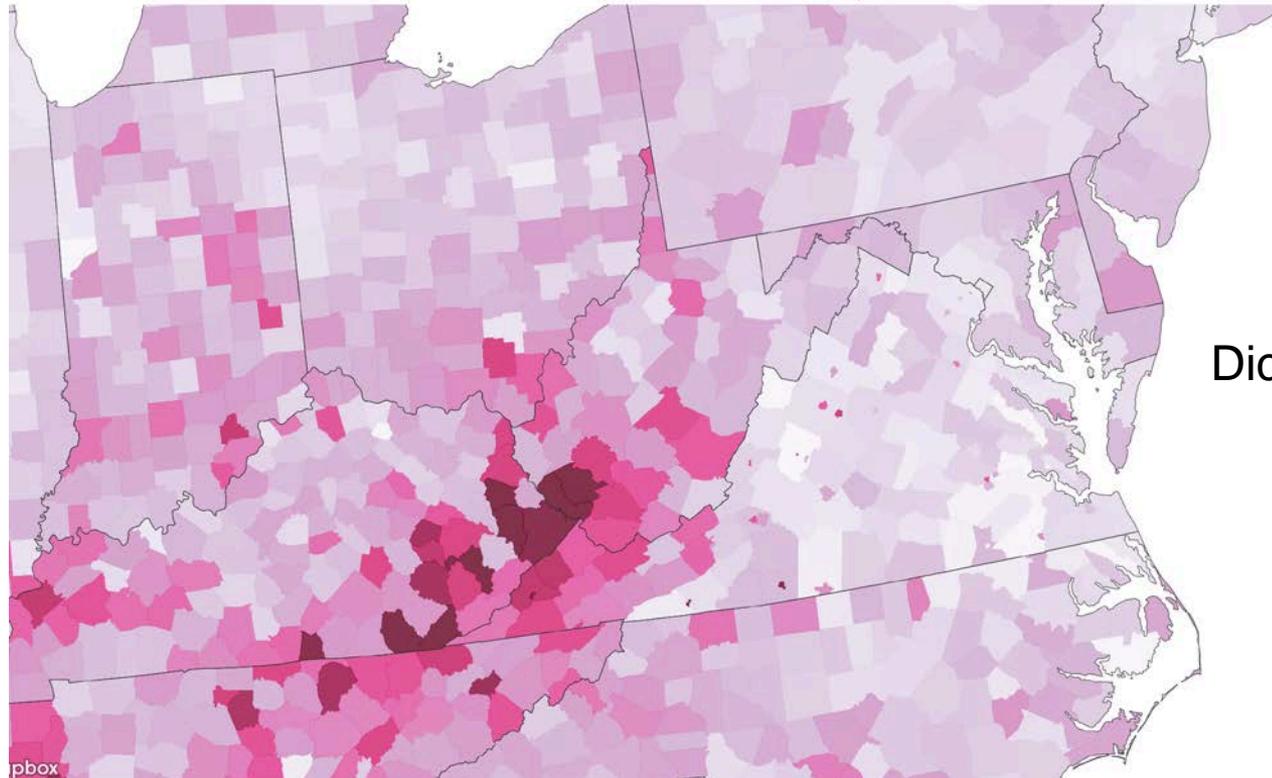
Average yearly total, by county, 2006 through 2012





Number of pills distributed per person, per year

Average yearly total, by county, 2006 through 2012



Wise: 120 pills/person

Dickenson: 120 pills/person



Drug Reformulations

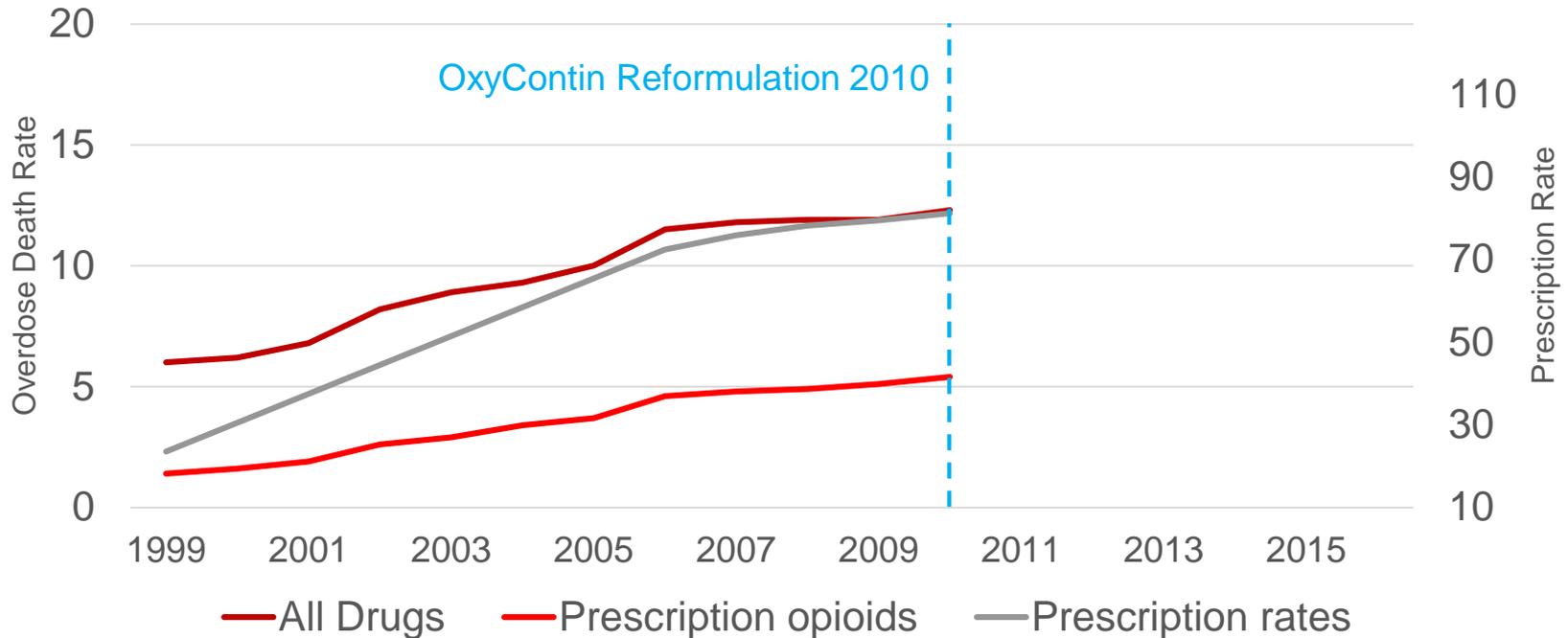
- 2010 Abuse-resistant OxyContin released

PDMPs

- 2012 Kentucky, Ohio, and West Virginia
- 2015 Pennsylvania

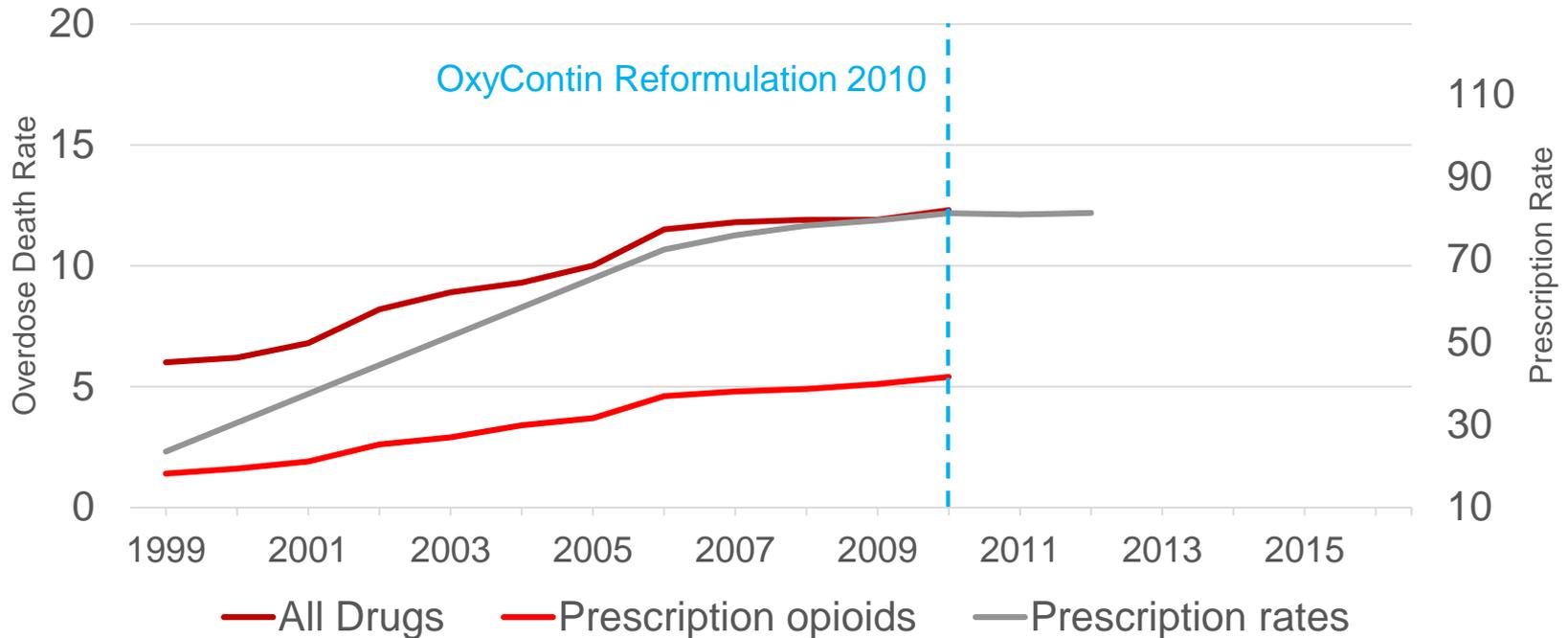


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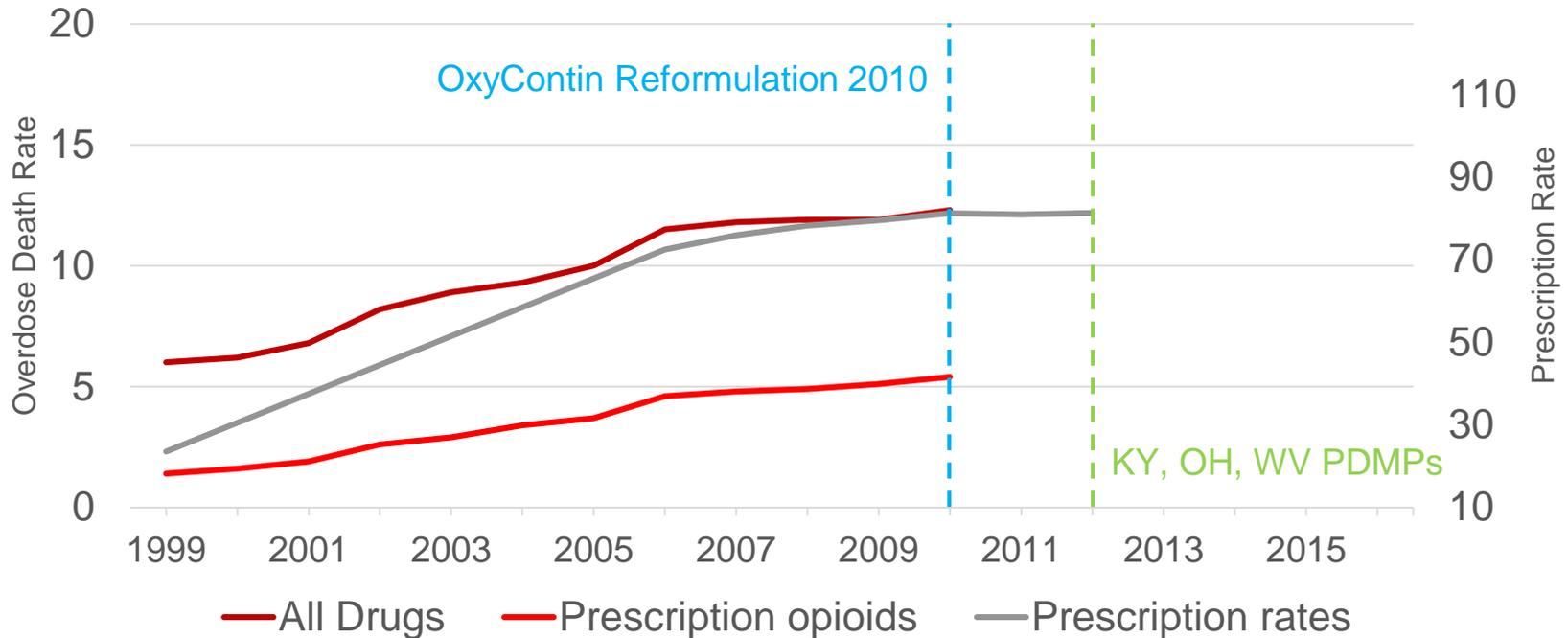


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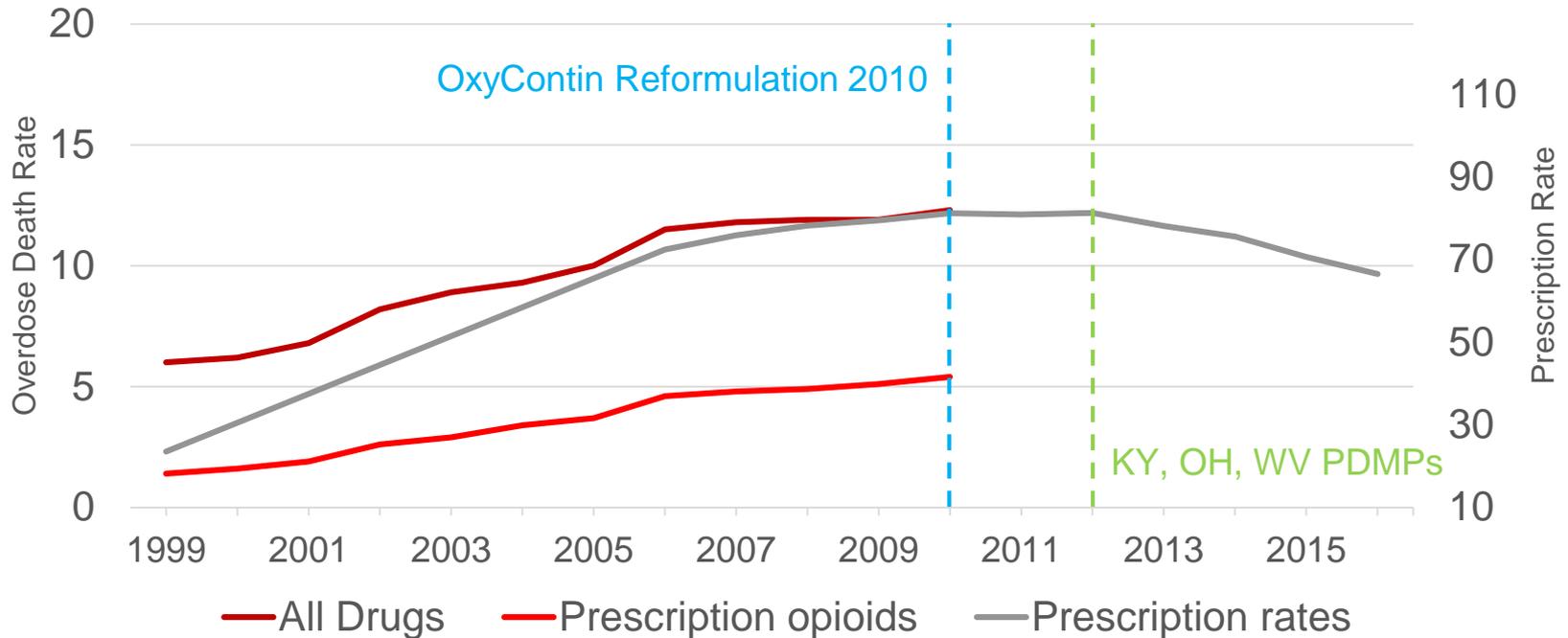


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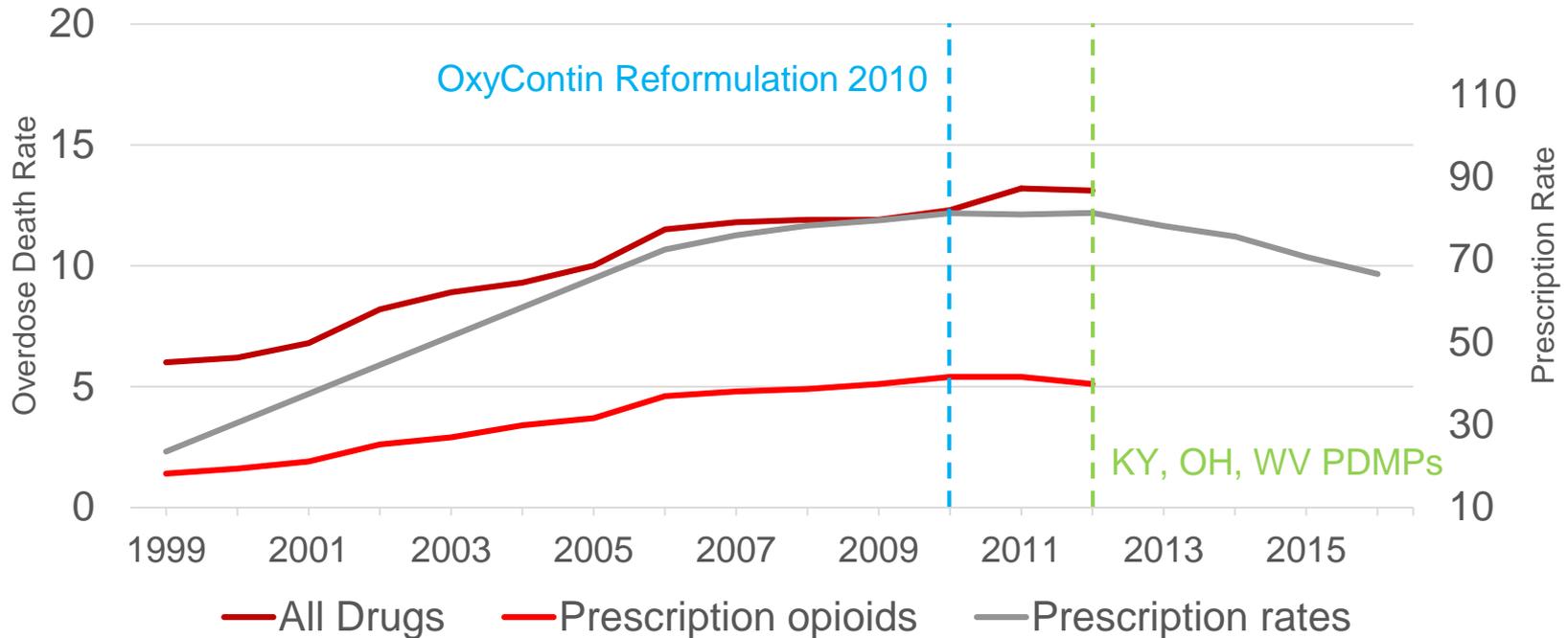


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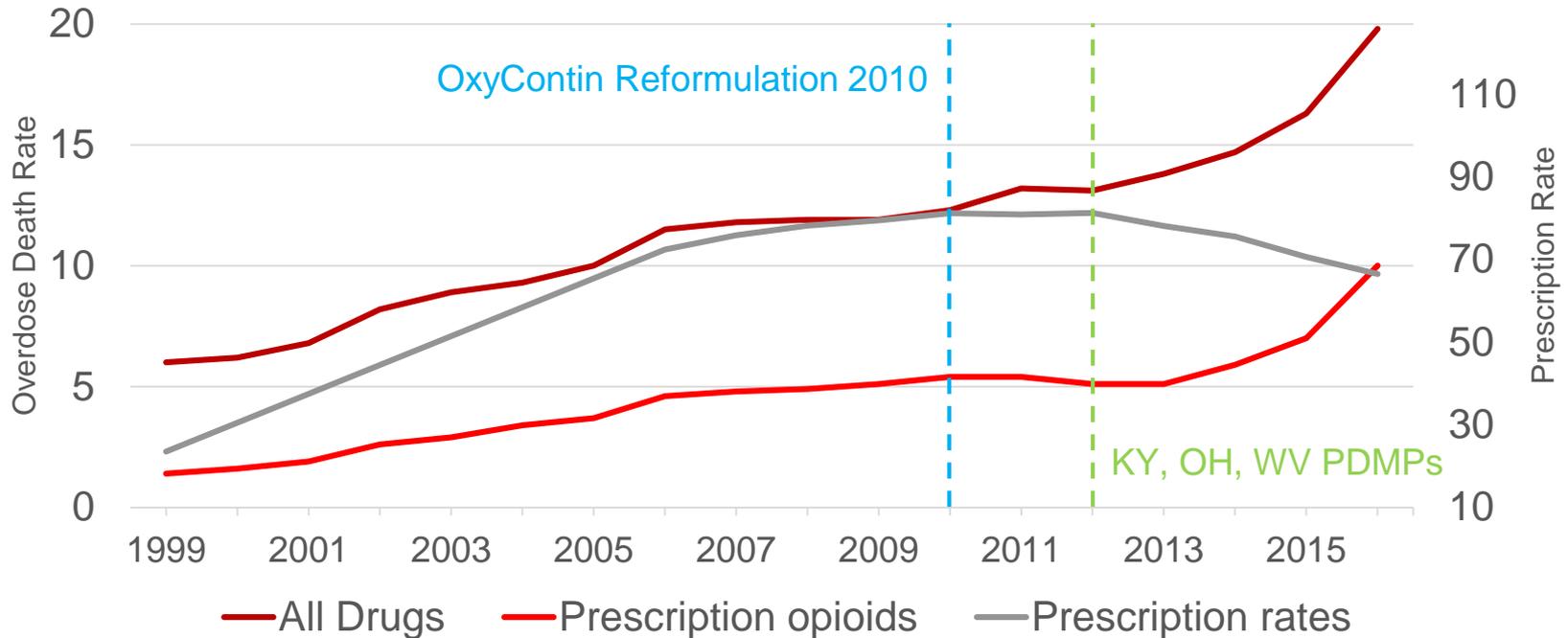


US Overdose Death and Prescription Rates 1999-2016





US Overdose Death and Prescription Rates 1999-2016





Evans et al. 2019

- Heroin deaths began rising *the month* after prescription opioid deaths flattened
- Every prescription death prevented was replaced by a heroin death



Policy recommendations

Help existing users

1. Increase availability/access of MAT
 - Eliminate Buprenorphine waiver
2. Development of long term care
3. Public health, not criminal justice approach



Policy recommendations

Prevent new users

- 1. Interrupt intergenerational transmission**
2. Reduce prescription rates back to 1995 levels
3. Restrict supply of heroin/fentanyl
4. Address the plight of the LEPAM
 - Proactive approach to automation



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Thank You!
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