



THE OHIO STATE UNIVERSITY

The link between economic conditions and overdose deaths in OH, WV, KY, and PA

Michael Betz

Assistant Professor, Dept. of Human Sciences



Overview

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



Supply vs. Demand Side Theories





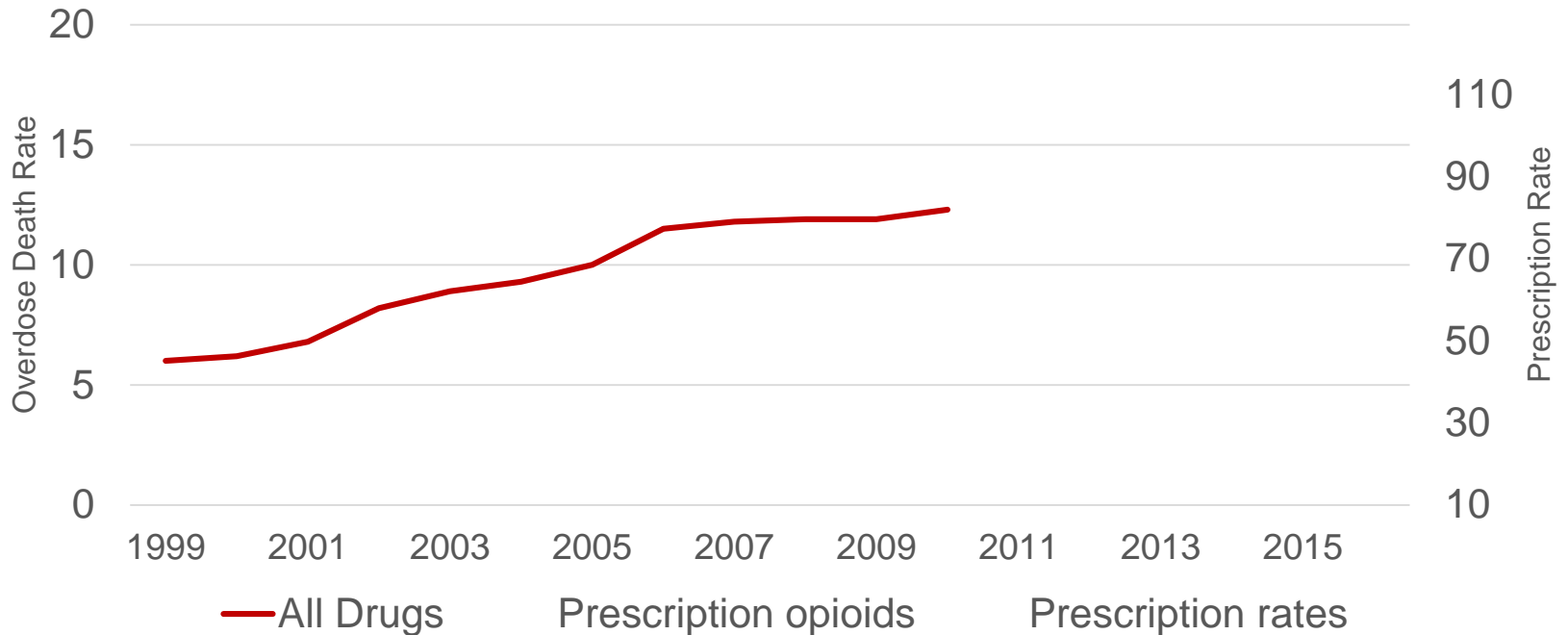
Overview

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



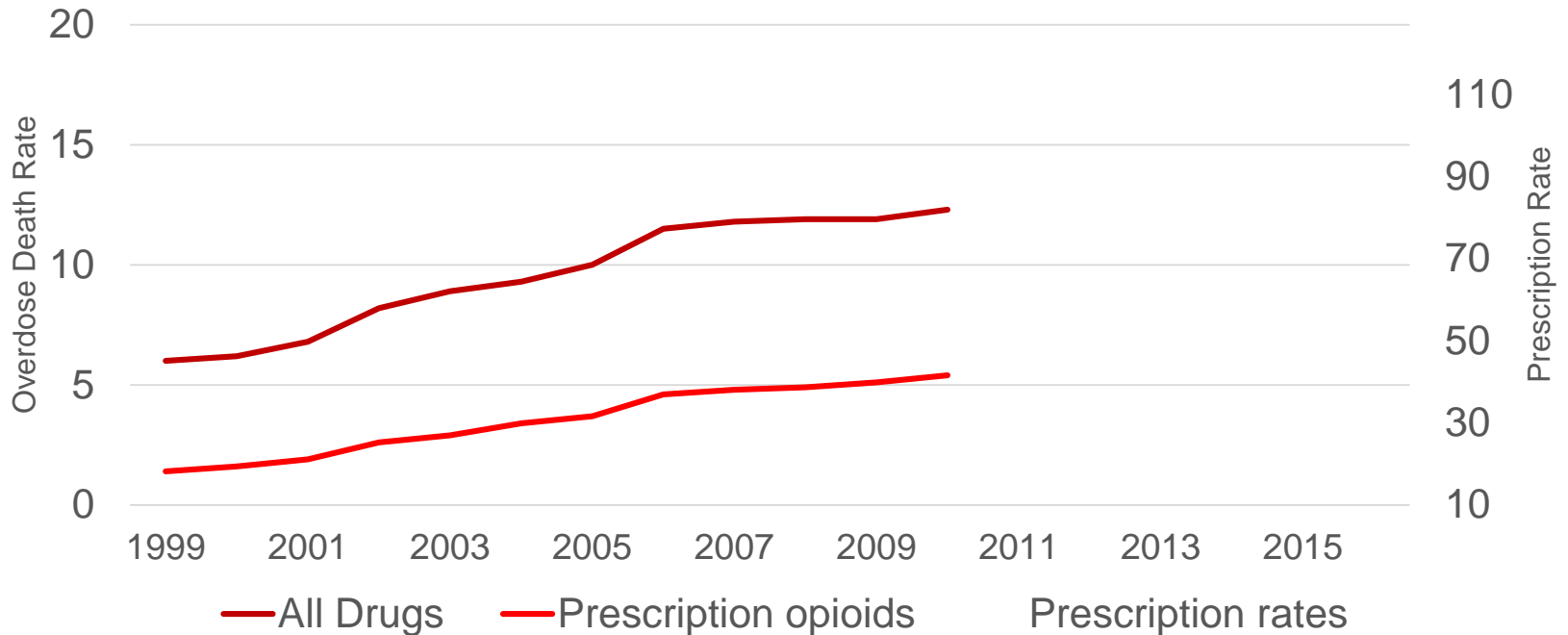


US Overdose Death and Prescription Rates 1999-2016



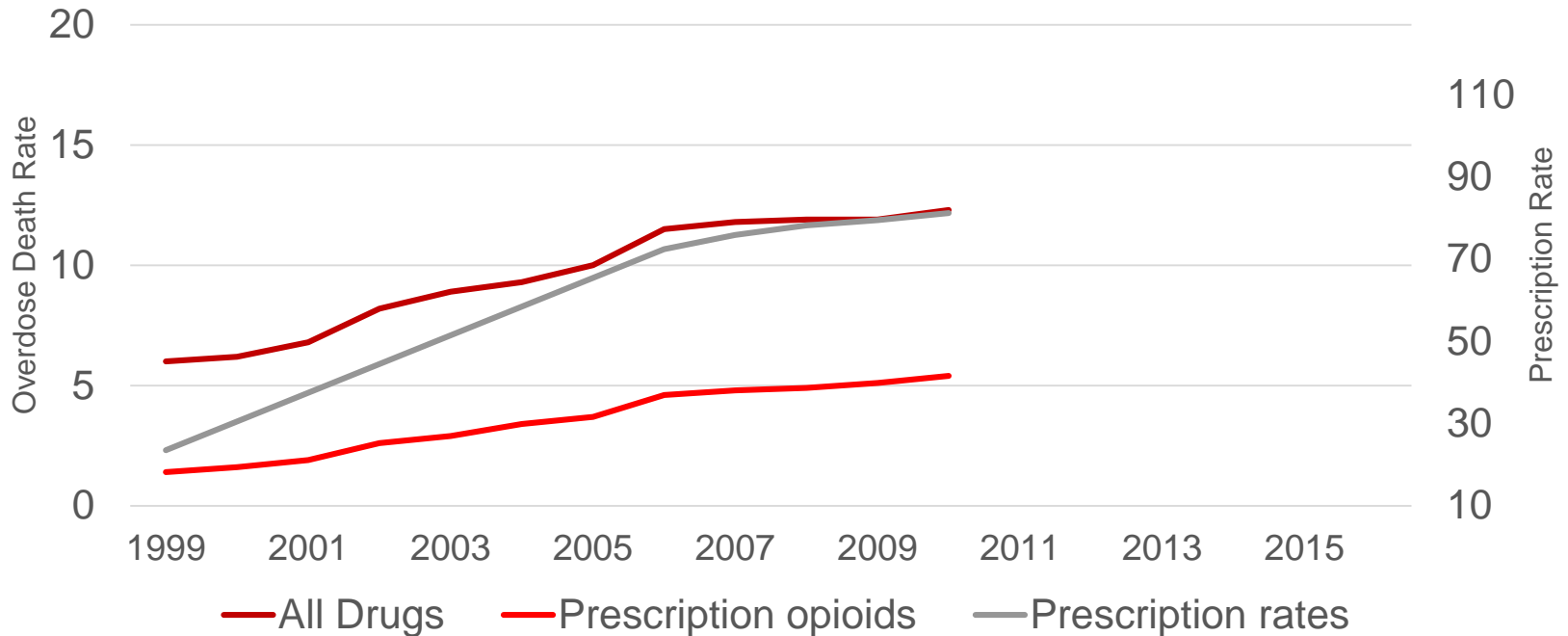


US Overdose Death and Prescription Rates 1999-2016



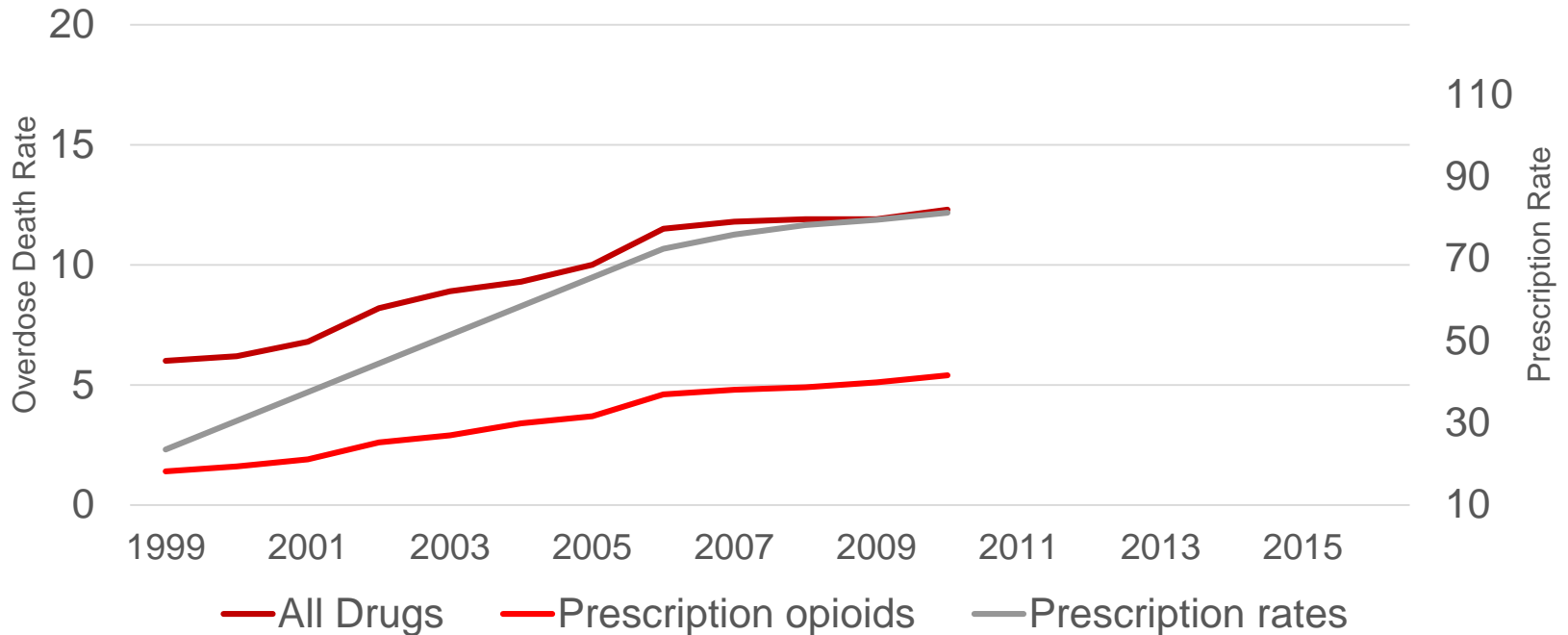


US Overdose Death and Prescription Rates 1999-2016





US Overdose Death and Prescription Rates 1999-2016





Drug Reformulations

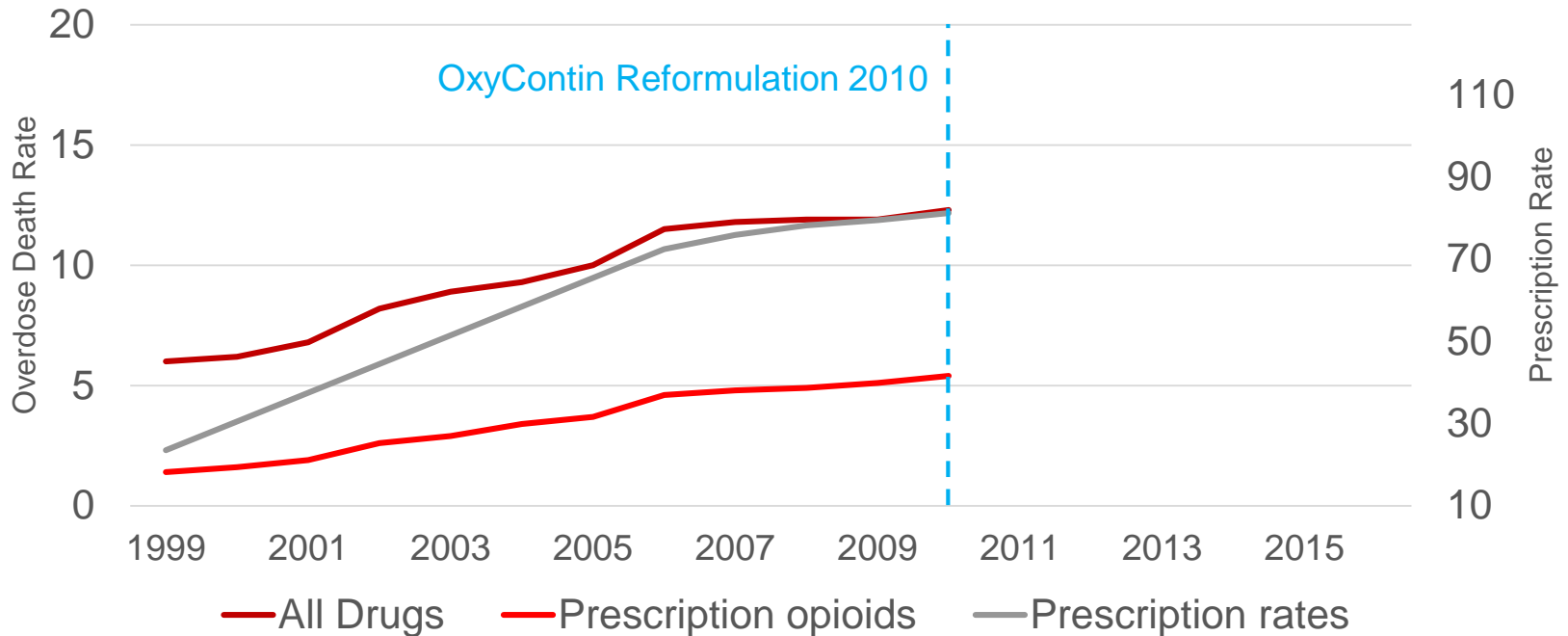
- 2010 Abuse-resistant OxyContin released

PDMPs

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

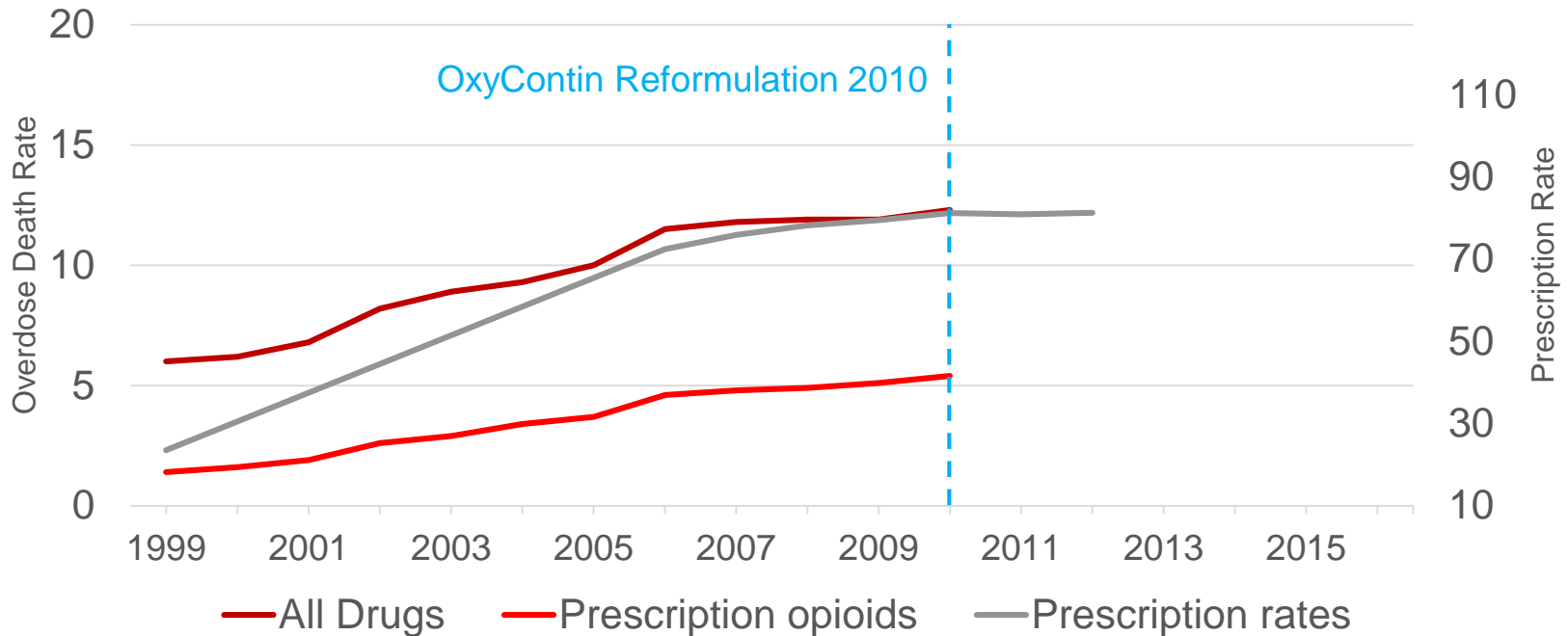


US Overdose Death and Prescription Rates 1999-2016



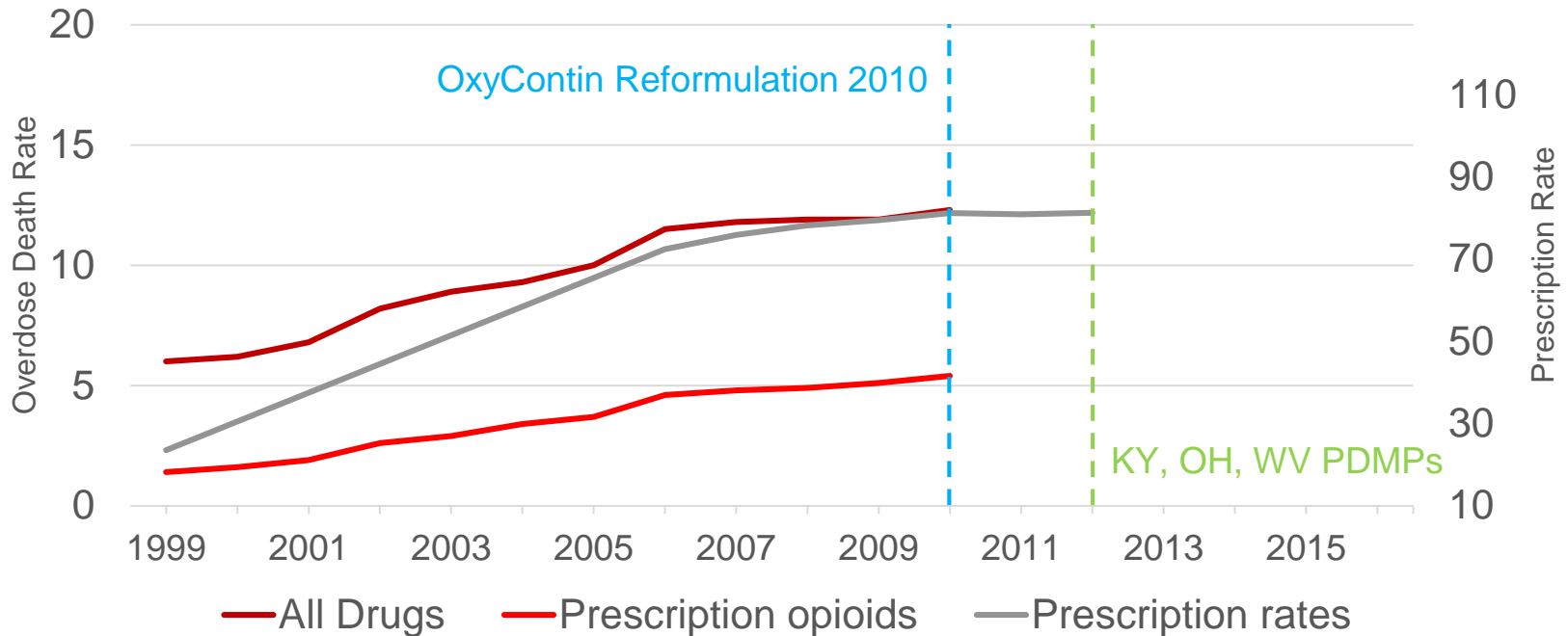


US Overdose Death and Prescription Rates 1999-2016



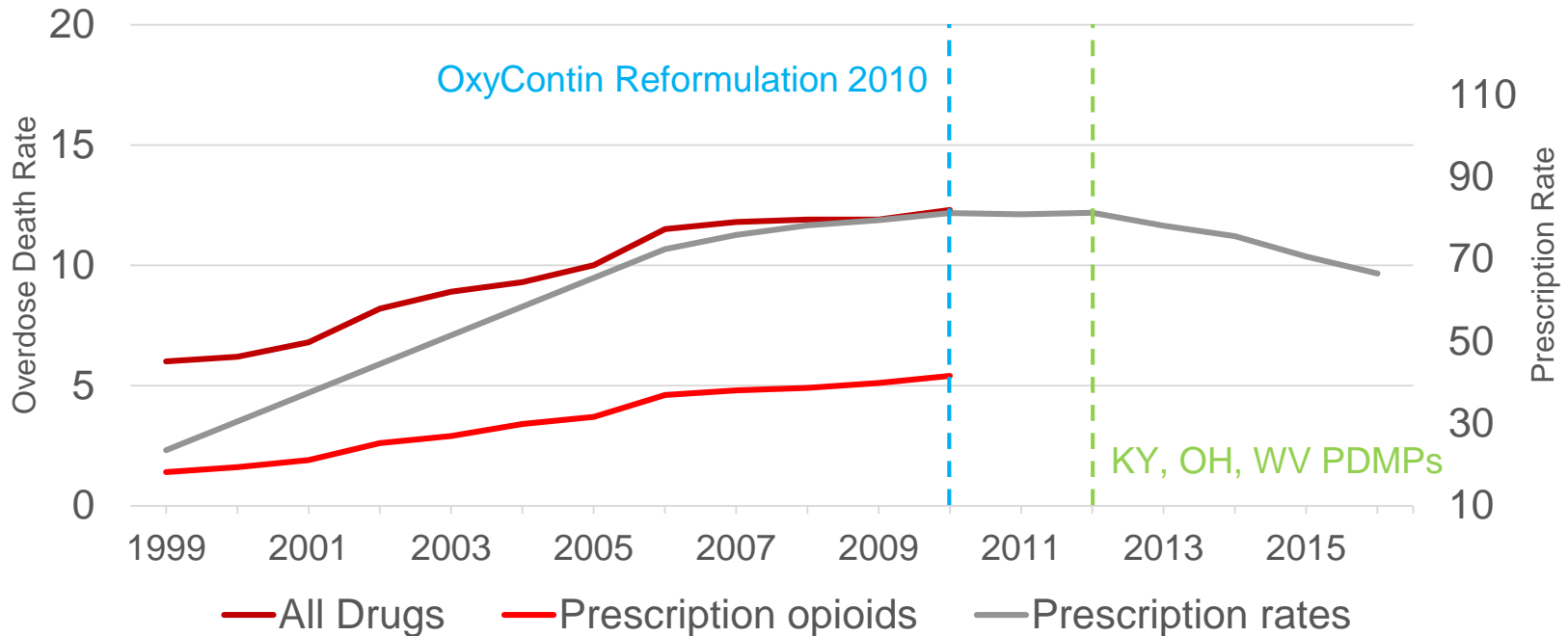


US Overdose Death and Prescription Rates 1999-2016



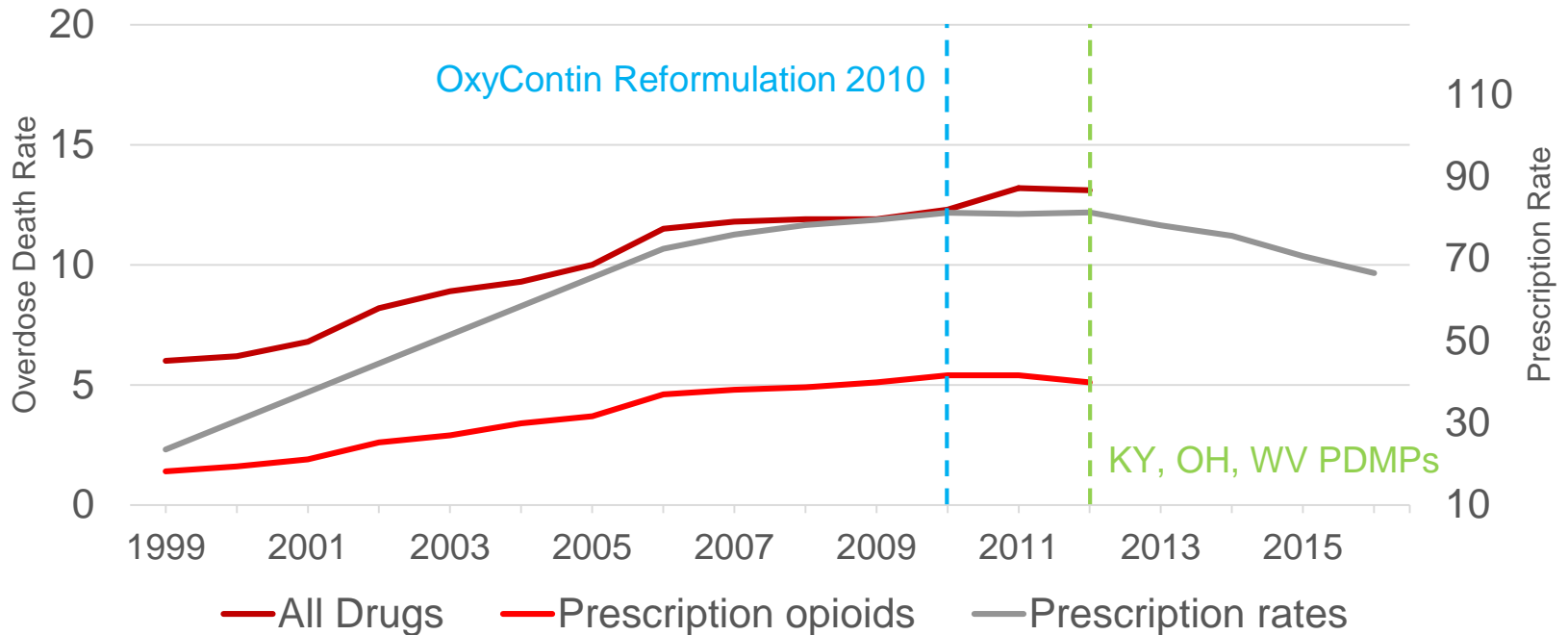


US Overdose Death and Prescription Rates 1999-2016



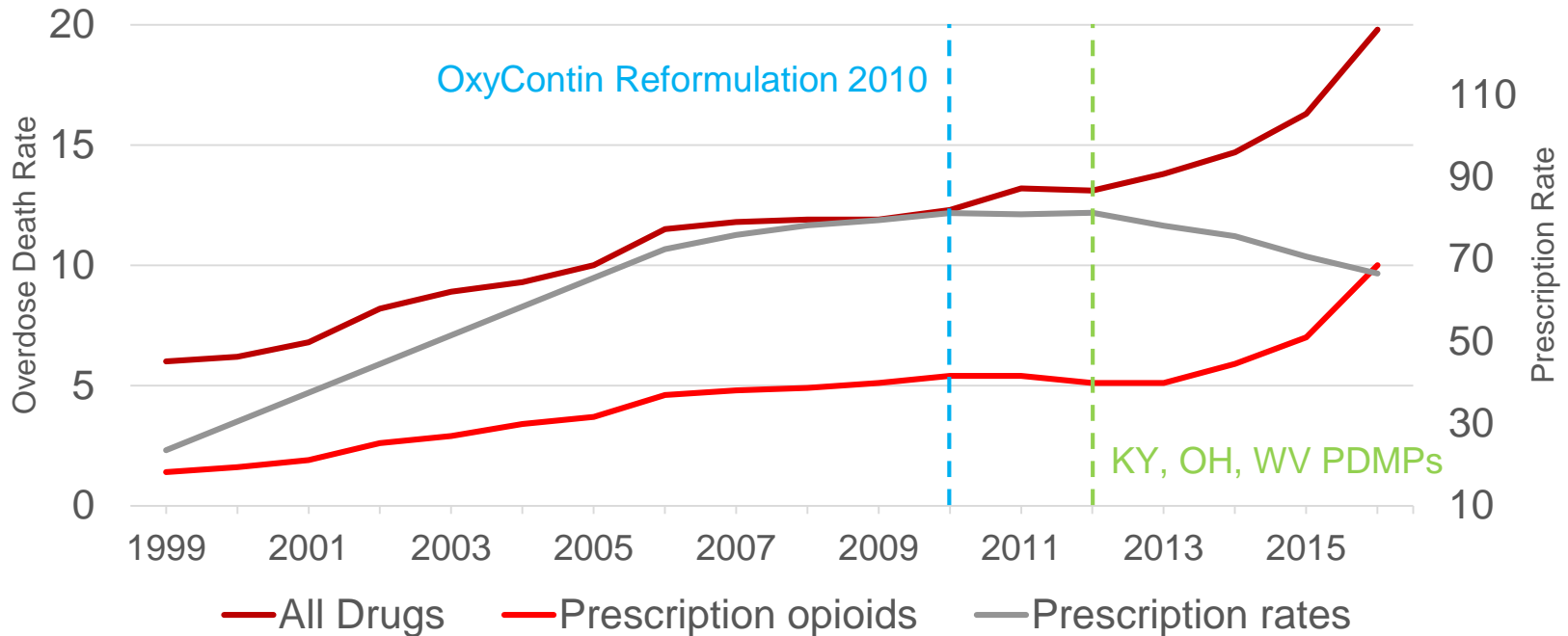


US Overdose Death and Prescription Rates 1999-2016





US Overdose Death and Prescription Rates 1999-2016





Overview

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





Leading Causes of Death Under 55 in 2016

Cause	KY, OH, PA, WV	US
Drug overdoses	10,415	56,679
Cancer	6,422	58,740
Heart disease	5,694	49,498
Suicide	3,048	28,999
Homicide	1,638	16,970
Chronic liver disease	998	12,190



Leading Causes of Death Under 55 in 2016

Cause	KY, OH, PA, WV	US
Drug overdoses	10,415	56,679
Cancer	6,422	58,740
Heart disease	5,694	49,498
Suicide	3,048	28,999
Homicide	1,638	16,970
Chronic liver disease	998	12,190



Leading Causes of Death Under 55 in 2016

Cause	KY, OH, PA, WV	US
Drug overdoses	10,415	56,679
Cancer	6,422	58,740
Heart disease	5,694	49,498
Suicide	3,048	28,999
Homicide	1,638	16,970
Chronic liver disease	998	12,190



Demand-side Factors

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



Demand-side Factors

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

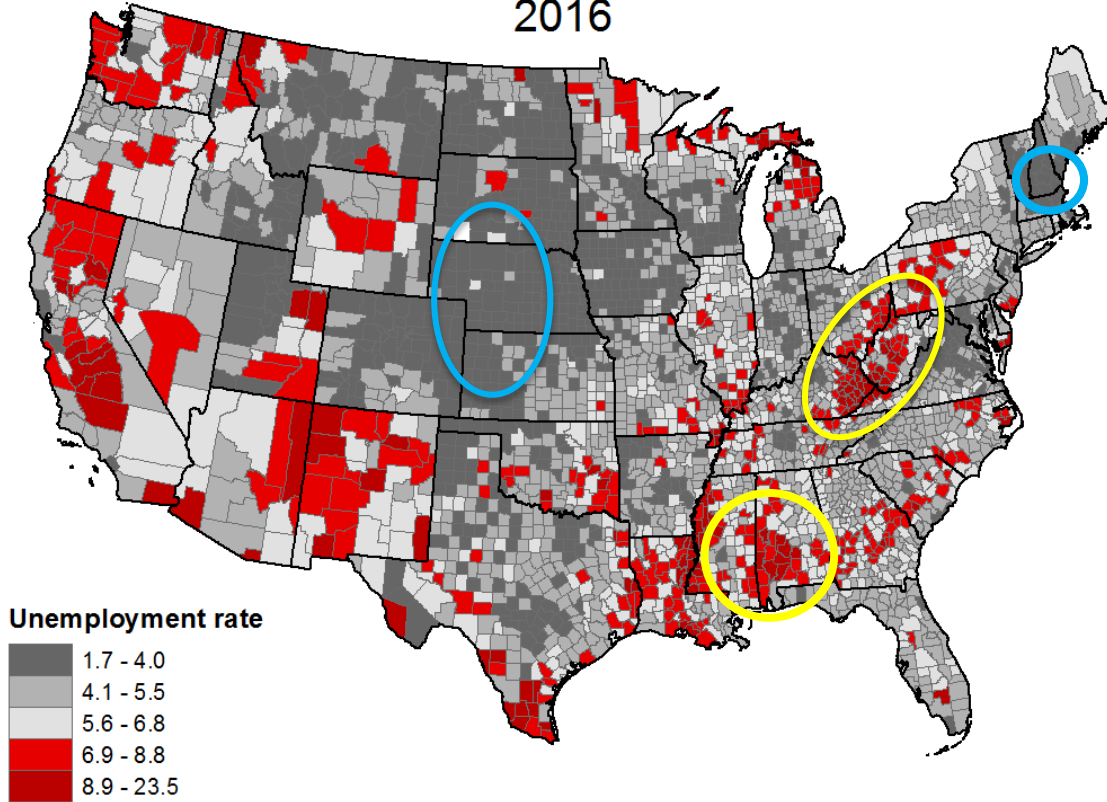


US and Ohio Unemployment Rates 2000-16



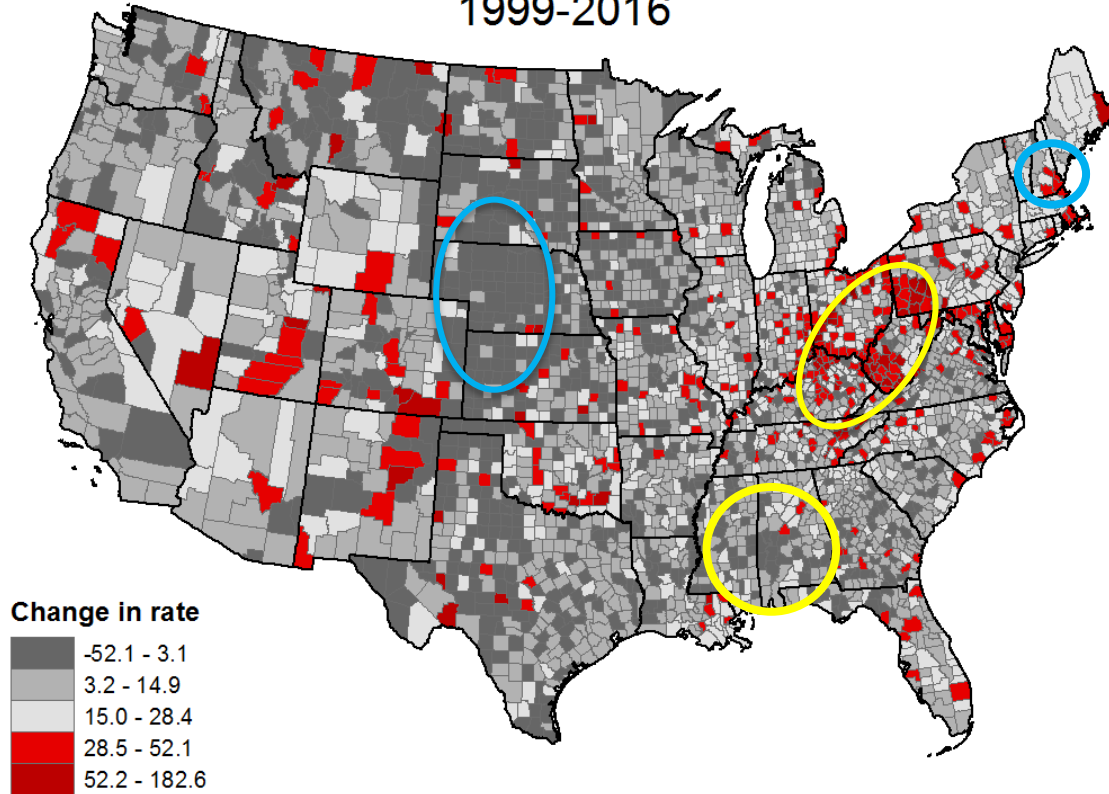


County Unemployment Rate 2016





Change in Overdose Death Rate 1999-2016



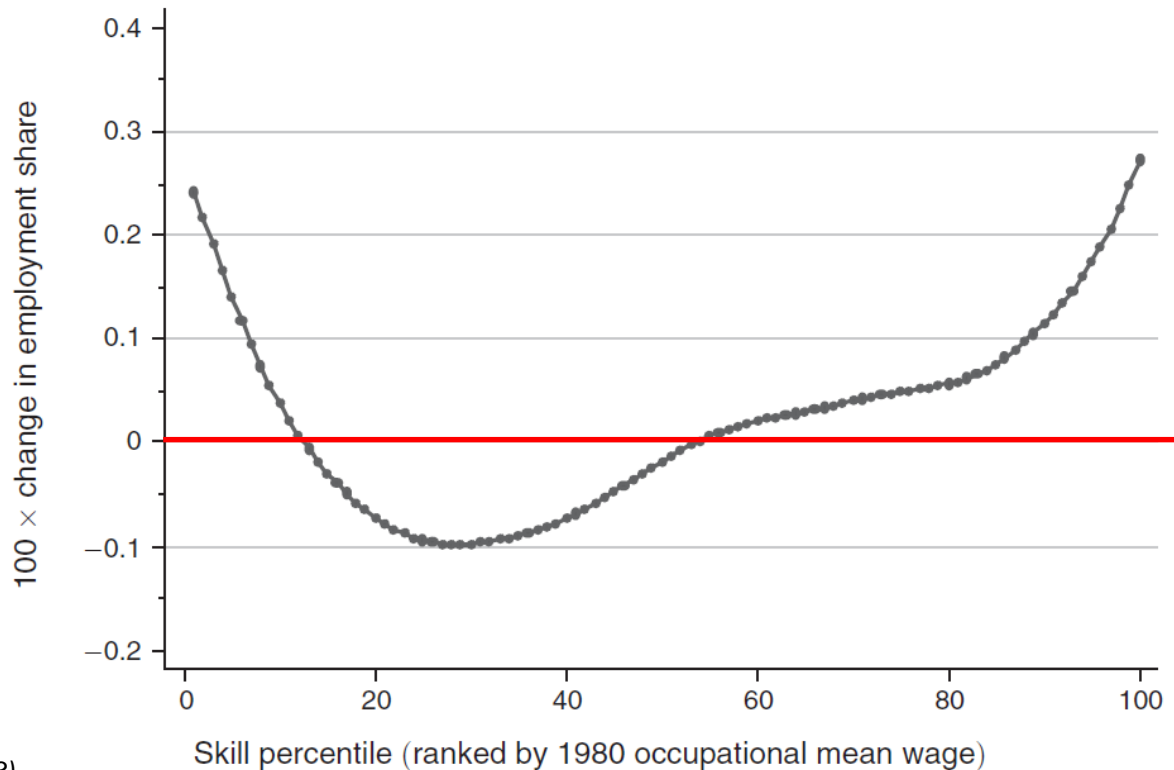


Unemployment rates

1. Mask type of job

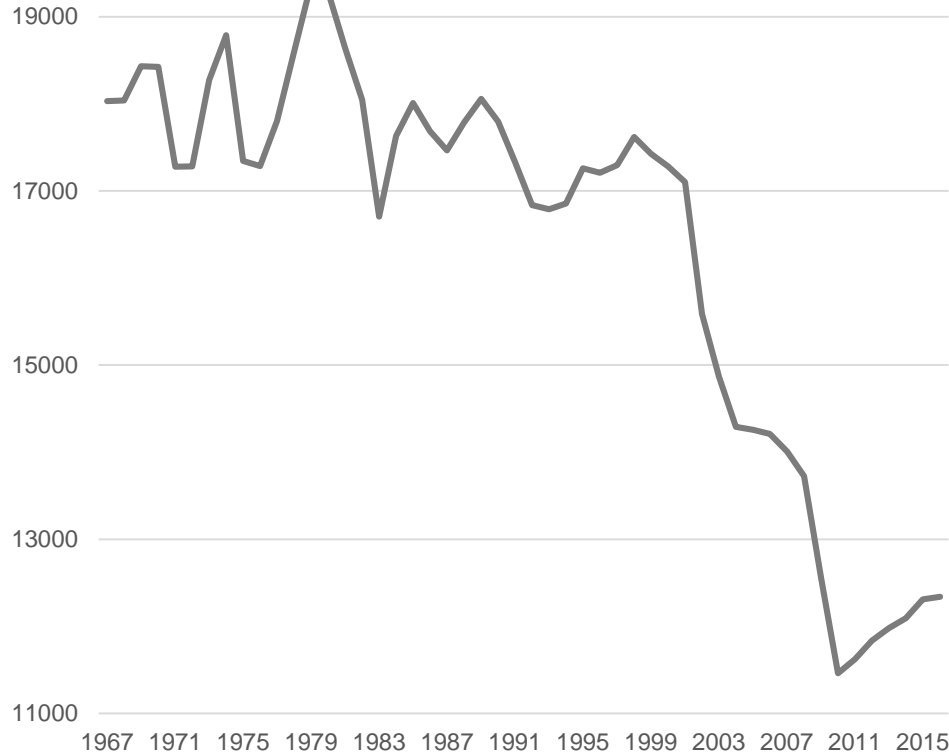


Panel A. Smoothed changes in employment by skill percentile, 1980–2005

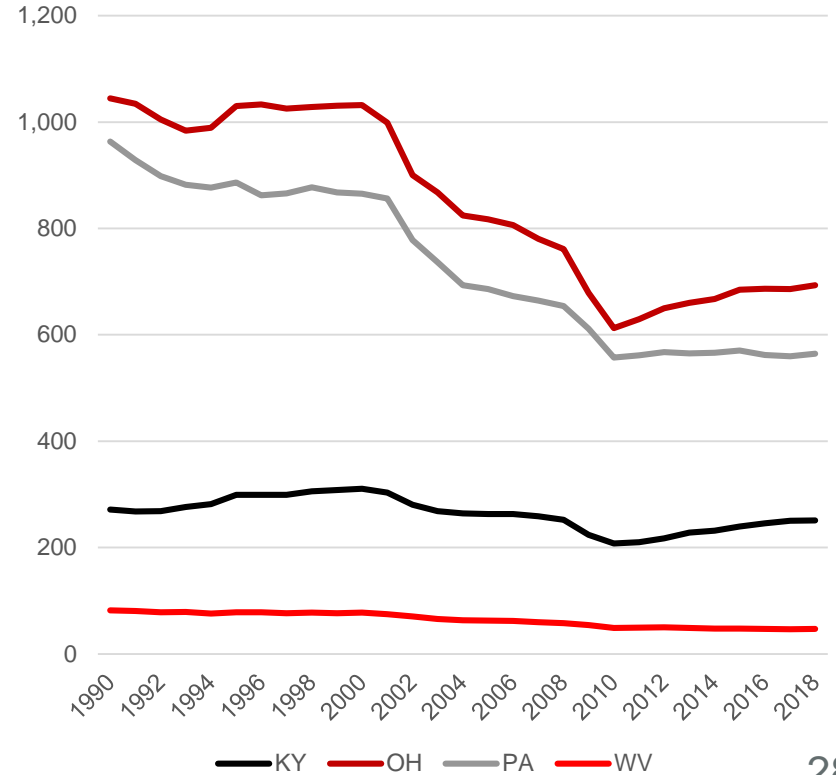




US Manufacturing Jobs 1967-2016



Manufacturing Jobs 1990-2018 KY, OH, PA, WV





1992



■ < HS ■ HS ■ 2-YEAR ■ BACHELORS

2016

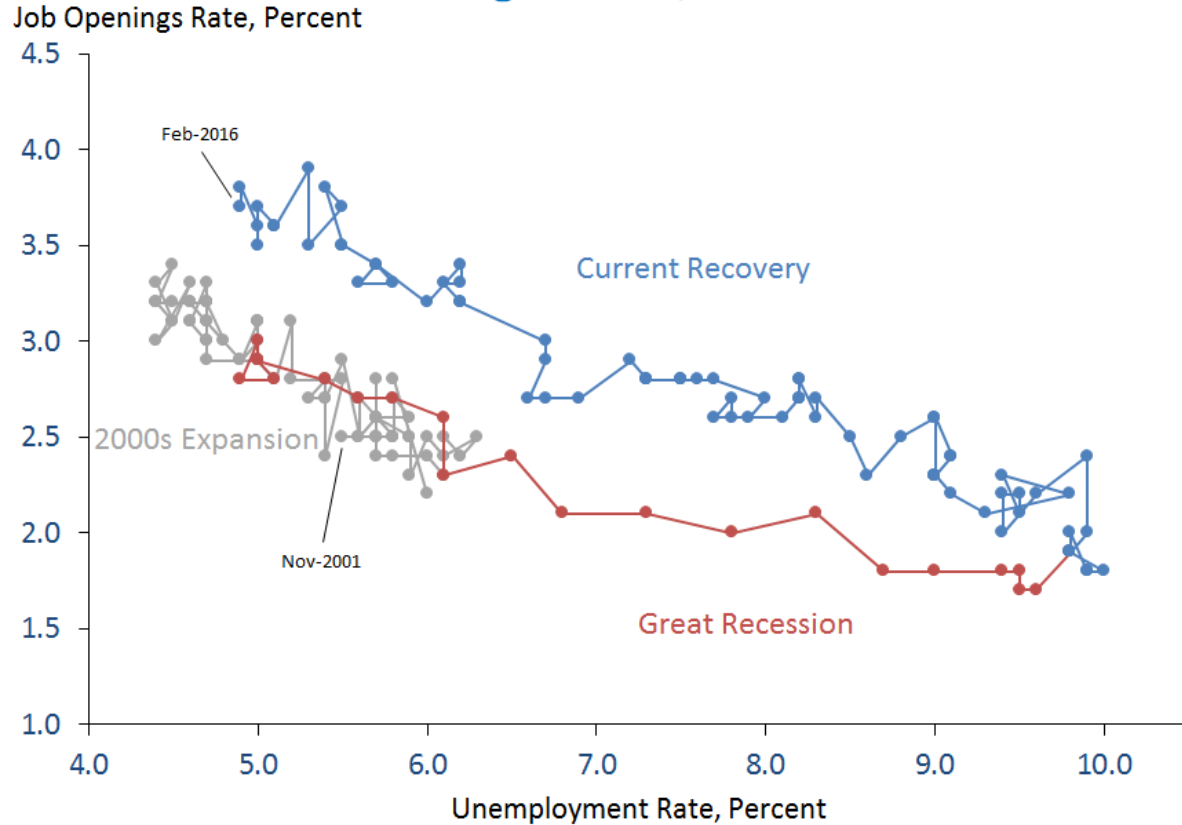


■ < HS ■ HS ■ 2-YEAR ■ BACHELORS

Ohio's Industries	2000	2015
Manufacturing	15.4	10.4
Government and government enterprises	12.1	11.5
Retail trade	11.7	10.1
Health care and social assistance	9.9	12.8
Accommodation and food services	6.4	7.2



Beveridge Curve, 2001-2016



Source: Bureau of Labor Statistics, Current Population Survey; Bureau of Labor Statistics, Job Openings and Labor Turnover Survey.



Unemployment rates

1. Mask type of job
2. Mask LF participation



Labor Force Participation 1948-2016

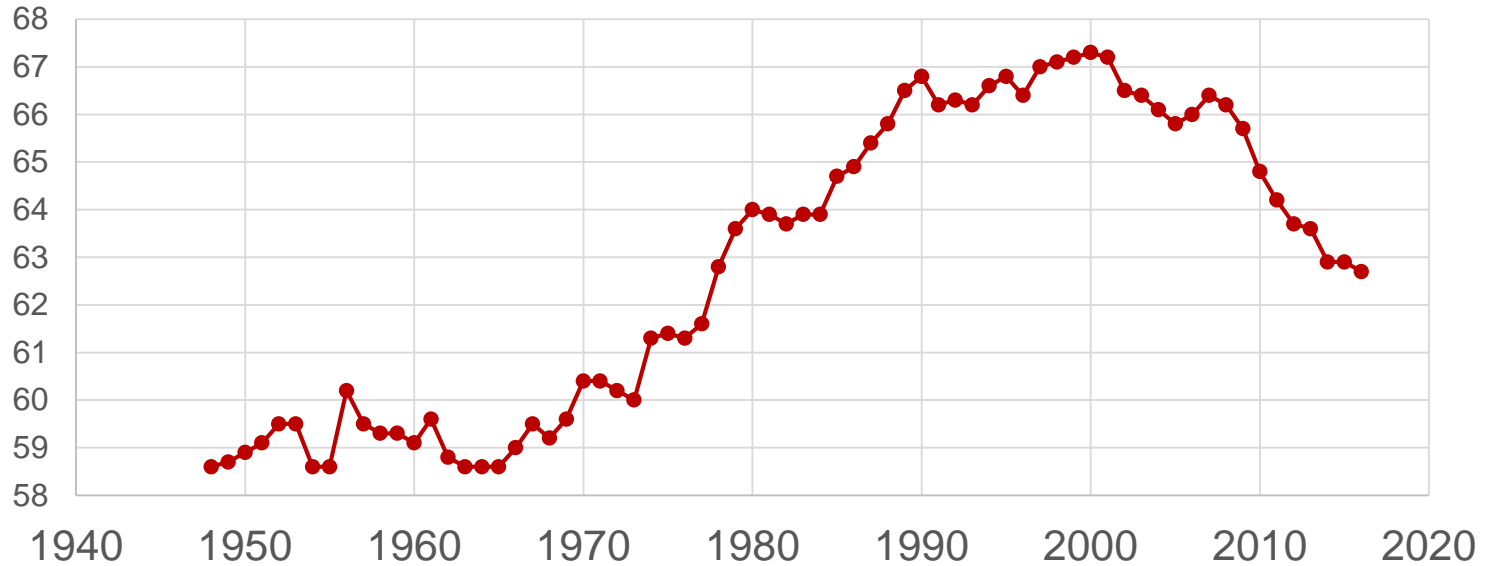




Figure 3: Fraction Working Zero Weeks During the Year, Males 21-55, By Education, CPS

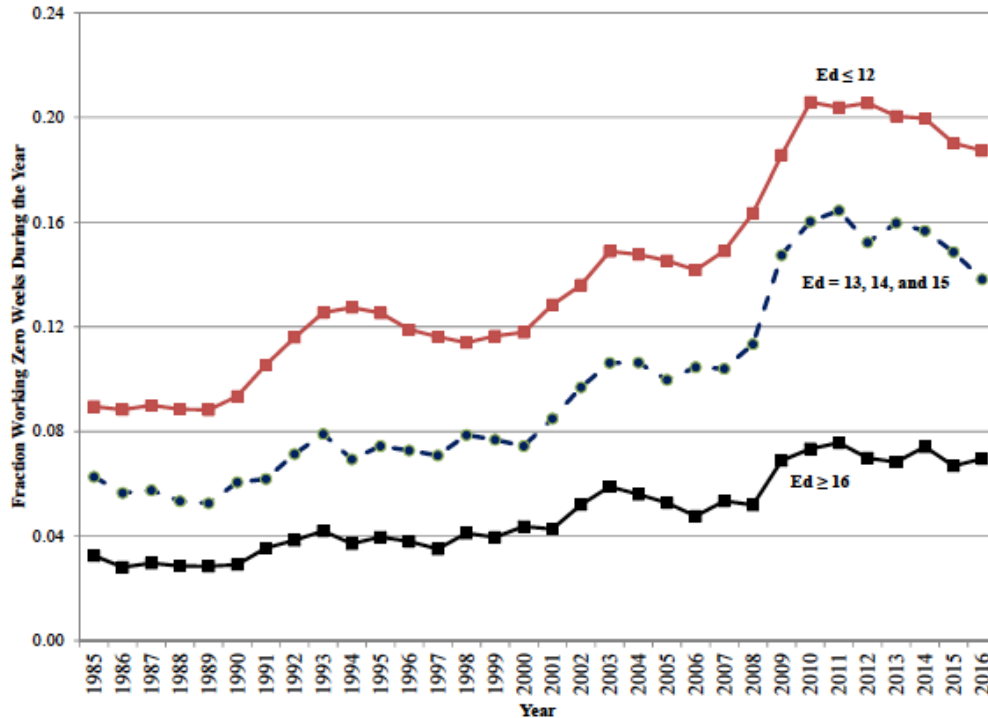
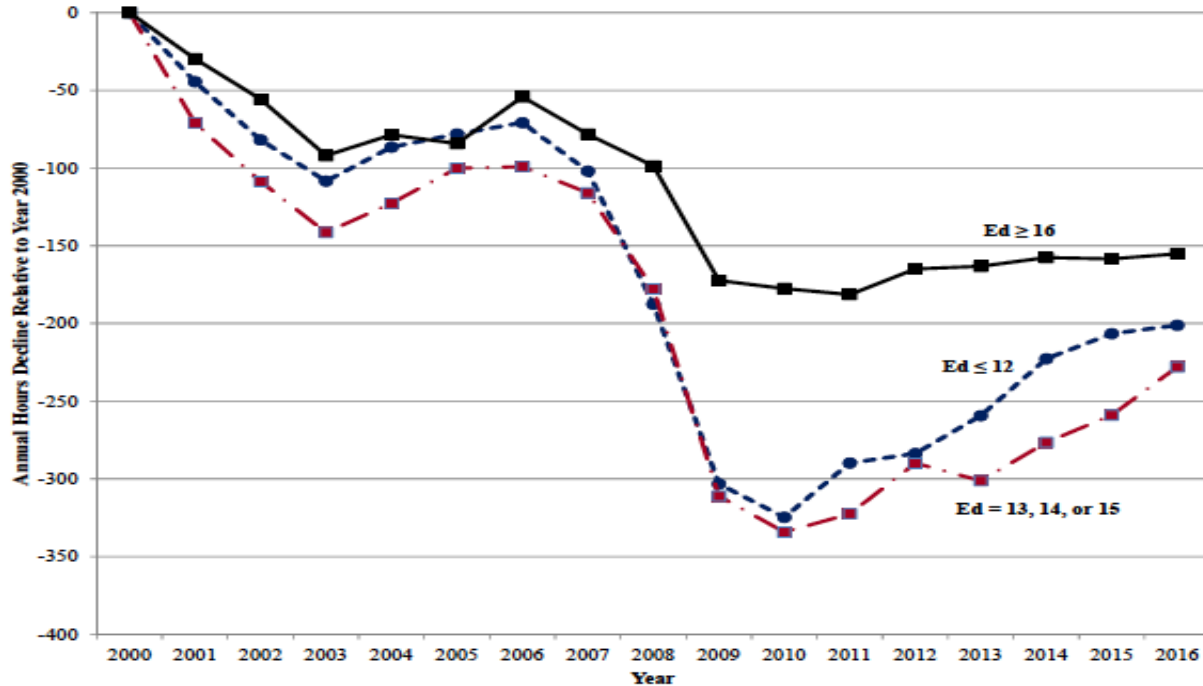




Figure 2: Annual Hours Worked, Males 21-55, By Education, CPS





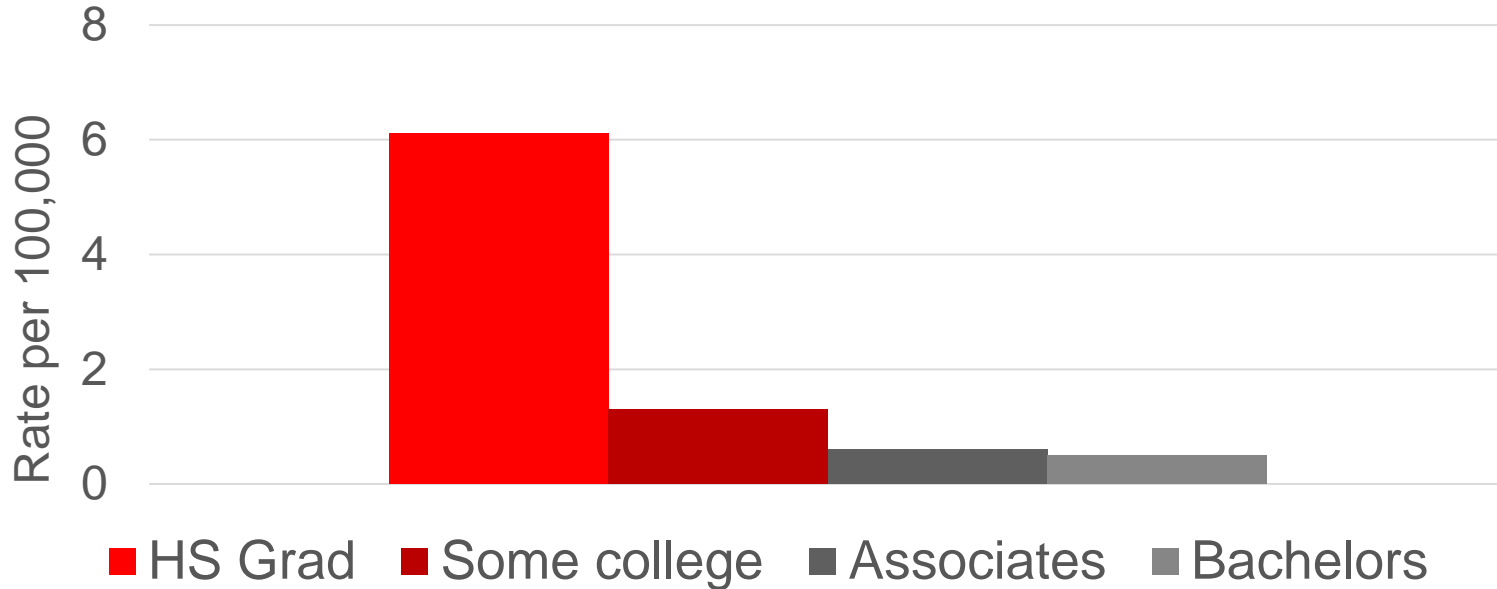
Men NLF express much lower levels of meaning to their daily lives than LF men

- **Not so for women**

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



Ohio Overdose Rates by Education Level





In 2016, ~2.1 million people with opioid use disorder

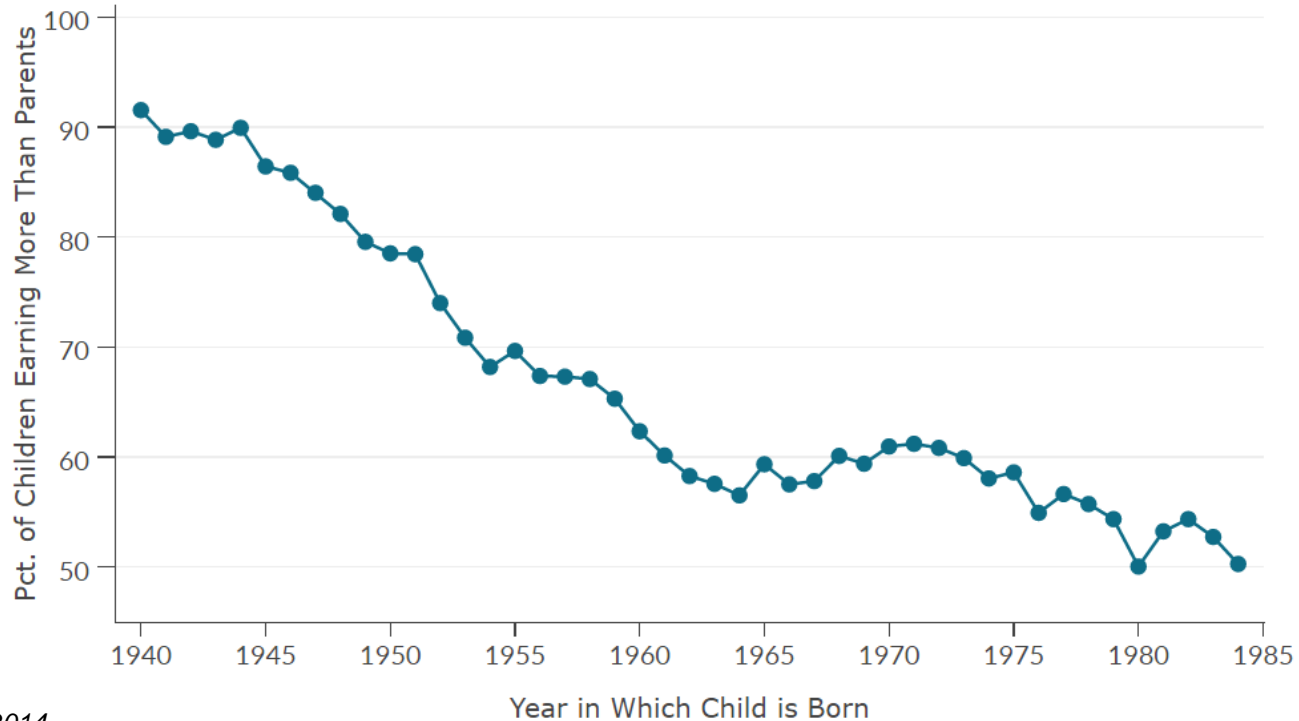
Could account for 78% of non-boomer LFP drop

Could be 100% in KY, OH, PA, WV



The Fading American Dream

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





Academic Research

- Hollingsworth et al. 2017
- Kreuger 2017
- Betz and Jones 2018
- Kofi, Hurst, Schwartz 2018
- Ruhm 2018; Currie, Jin, Schnell 2018



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

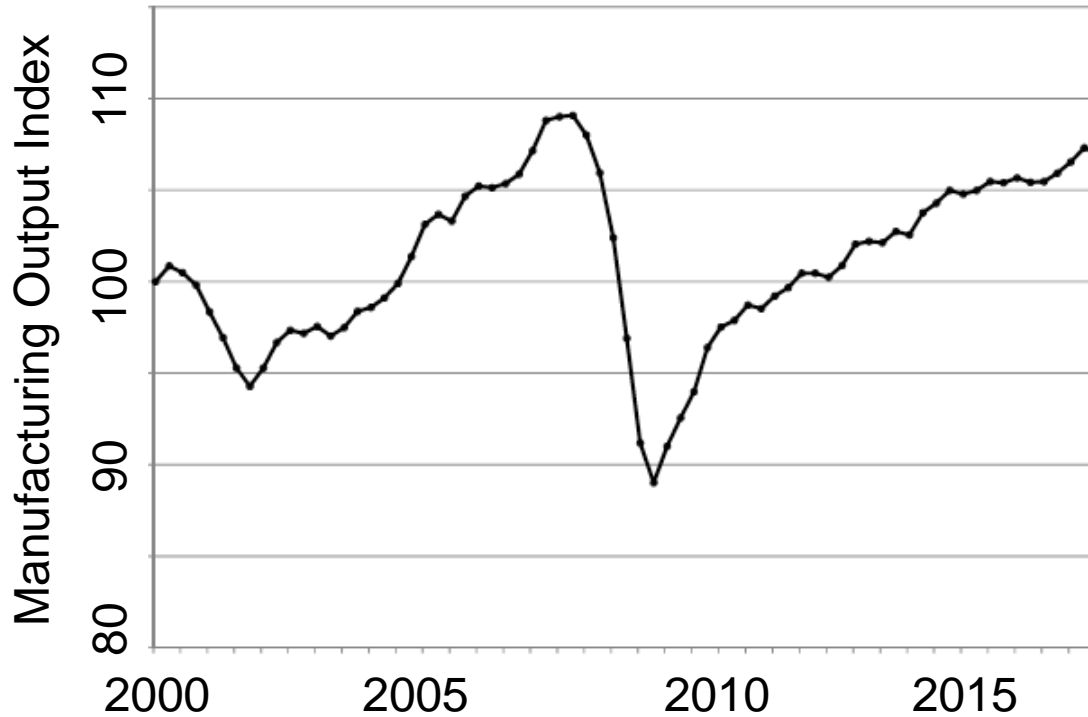
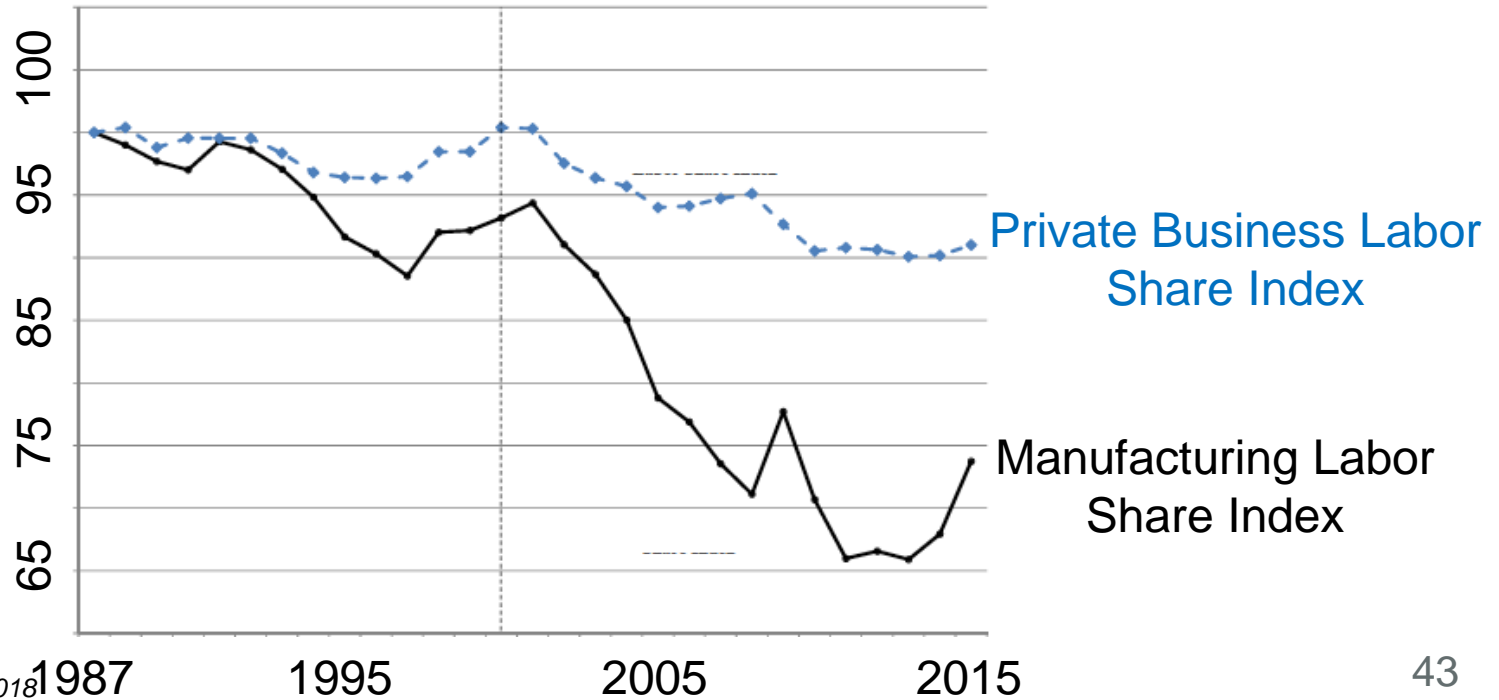
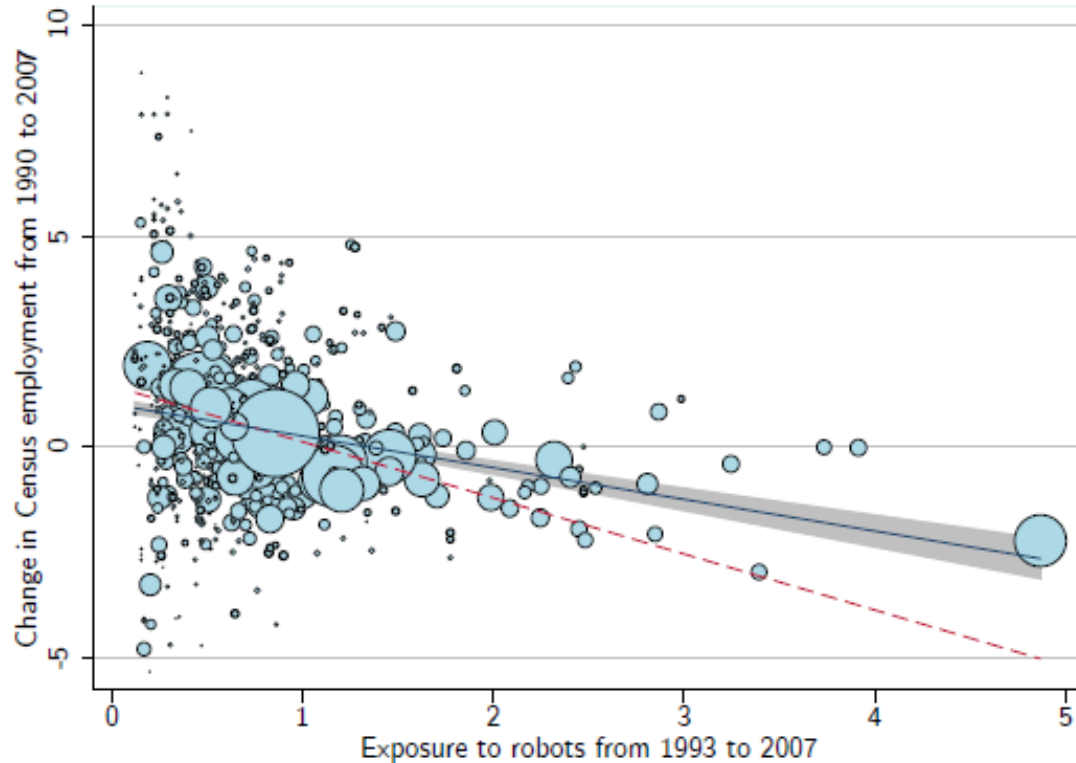




Figure 8: Labor Share Index for US Manufacturing and Private Non-Farm Business Sectors
(Year 2000 = 100)





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



Carnegie Mellon Reels After Uber Lures Away Researchers

Uber staffs new tech center with researchers poached from its collaborator on self-driving technology

Robot spending will hit \$188 billion by 2020, report predicts

Robotics and related services are expected to reach new heights, driven by an expanding market.

Amazon opens grocery store with no checkouts

January 22, 2018



Currently 47 million workers with HS degree or less

Driving: 3.4 million

Grocery store attendants: 2.4 million

Fast food counter workers: 3.7 million



Takeaways

1. US drug crisis is more than a supply problem
2. Local economic conditions influence ODs
3. Coming automation will likely exacerbate



THE OHIO STATE UNIVERSITY

Thank You!
Betz.40@osu.edu