

Geographic Variation in Opioid Mortality by Race/Ethnicity, 1999–2016

Identifying epidemic hotspots

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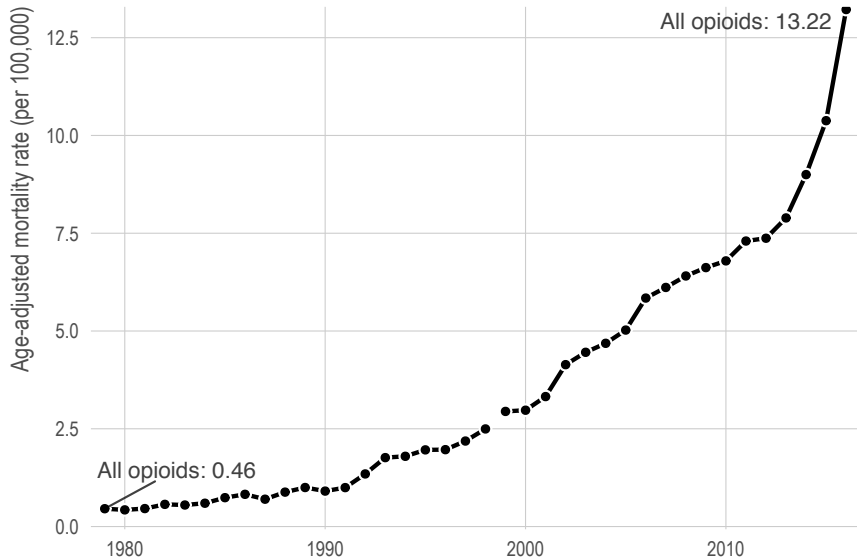
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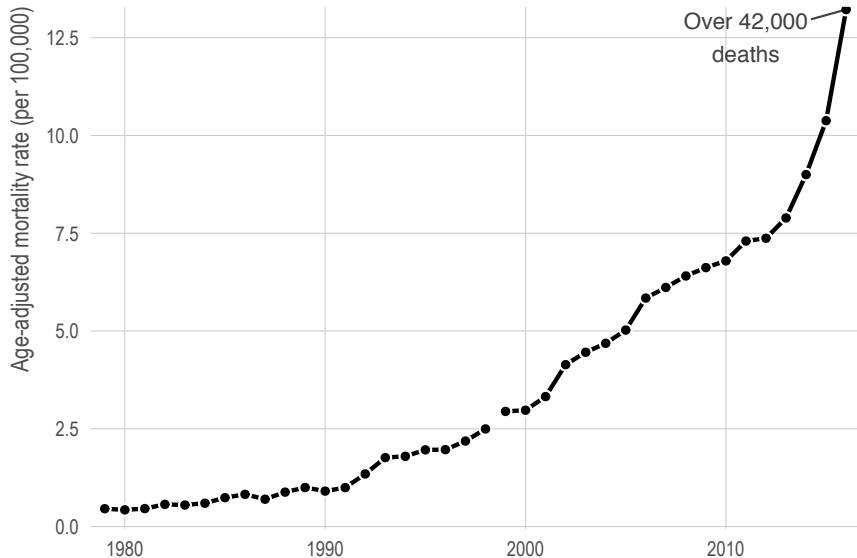
PAA 2018: Denver, CO

Overview of the opioid epidemic

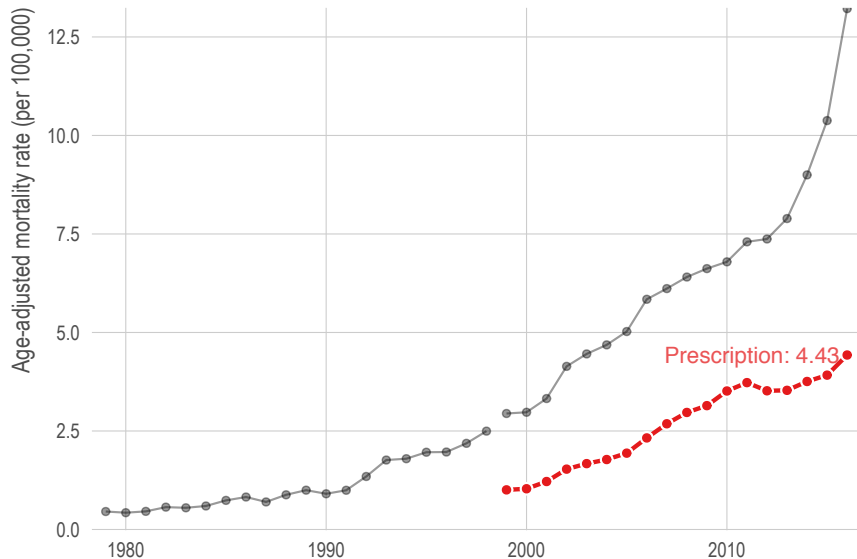
Almost 30x increase since 1980



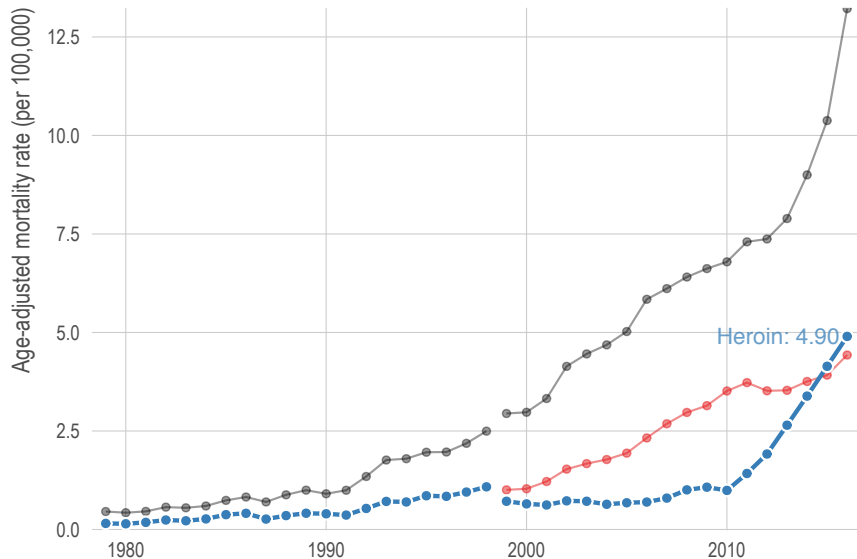
More than deaths by car accidents or guns



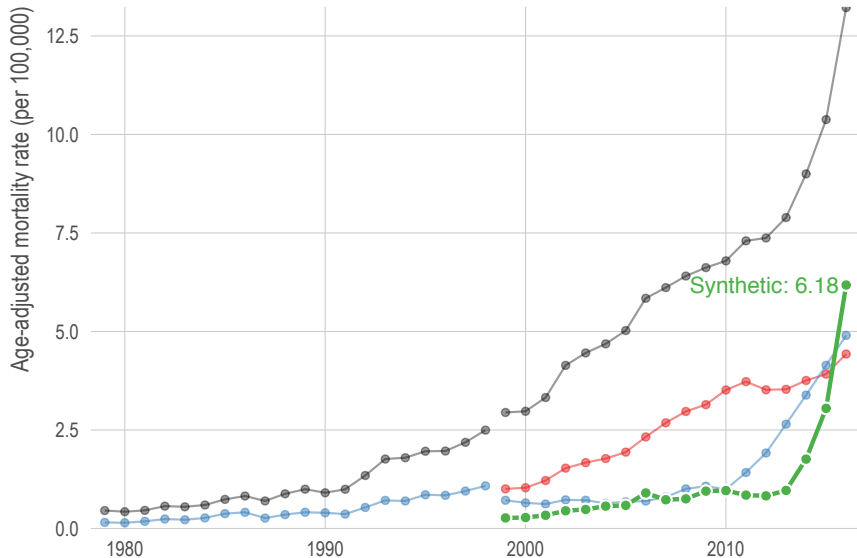
Wave 1: Prescription Opioids, 1990–2010



Wave 2: Heroin, 2010–current

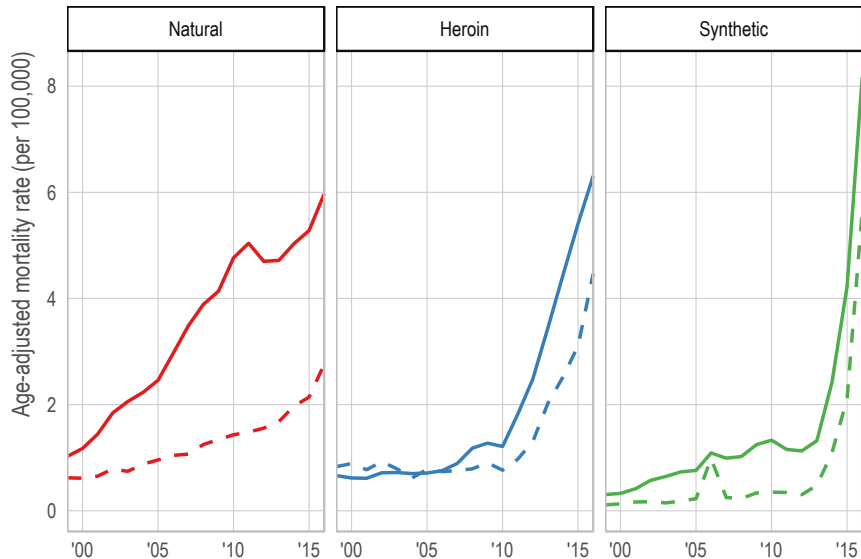


Wave 3: Synthetic Opioids, 2013–current

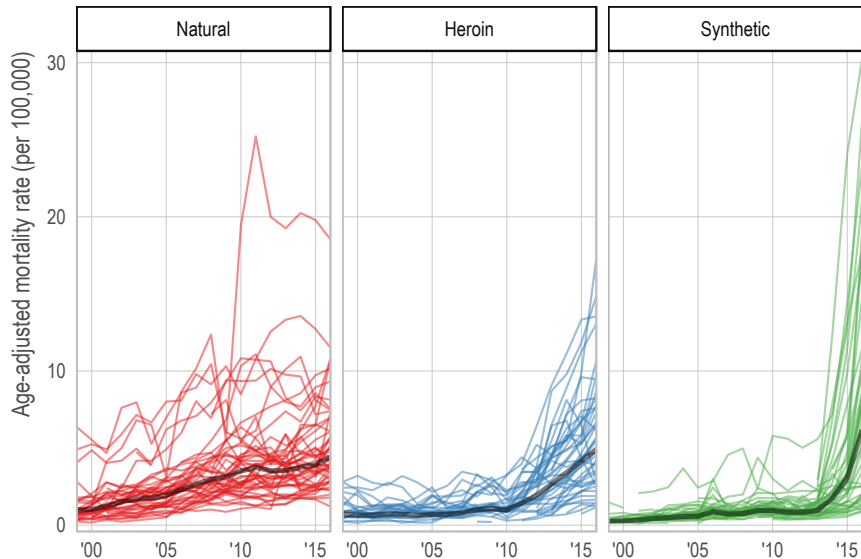


Other sources of variation

Substantial variation: By race/ethnicity



Substantial variation: By geography



Our paper

Aims of the paper

- 1 Systematically describe the opioid epidemic across geography (state), race/ethnicity, and opioid type.

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- 1 Systematically describe the opioid epidemic across geography (state), race/ethnicity, and opioid type.
 - The epidemic over time (1999–2016)
 - The *current* epidemic in terms of both mortality rate and rate of increase
- 2 Identify “epidemic hotspots” — areas with high mortality and rapid increases

- Multiple cause of death data from NCHS to calculate age-standardized rates by state, race/ethnicity, and opioid type

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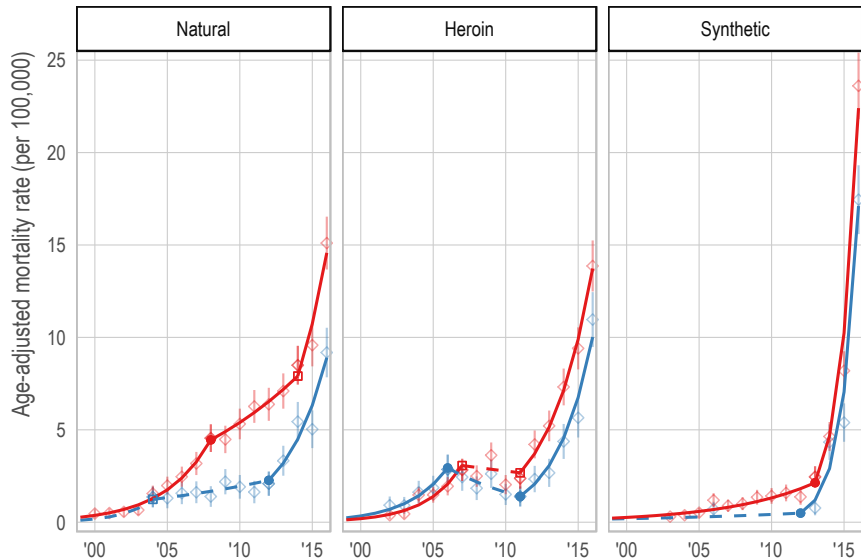
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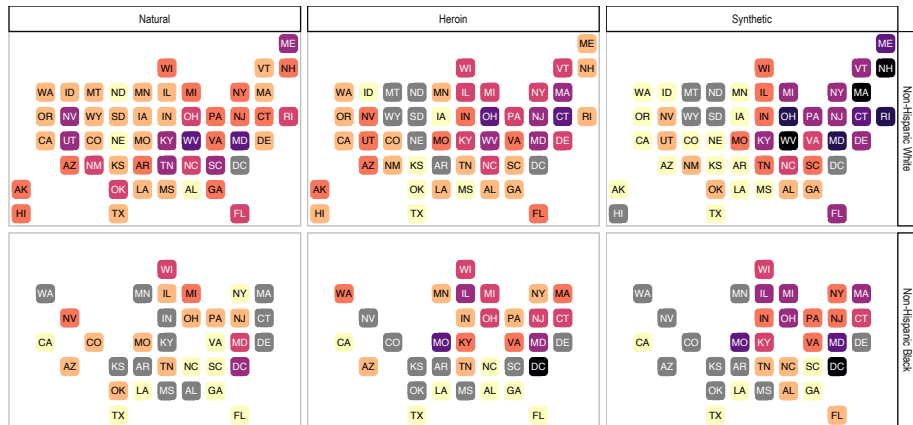
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 - Permutation test to find optimal joinpoint model
- Defined statistical significance as $P < 0.01$

Results: Current epidemic

Example Joinpoint Results: Maryland

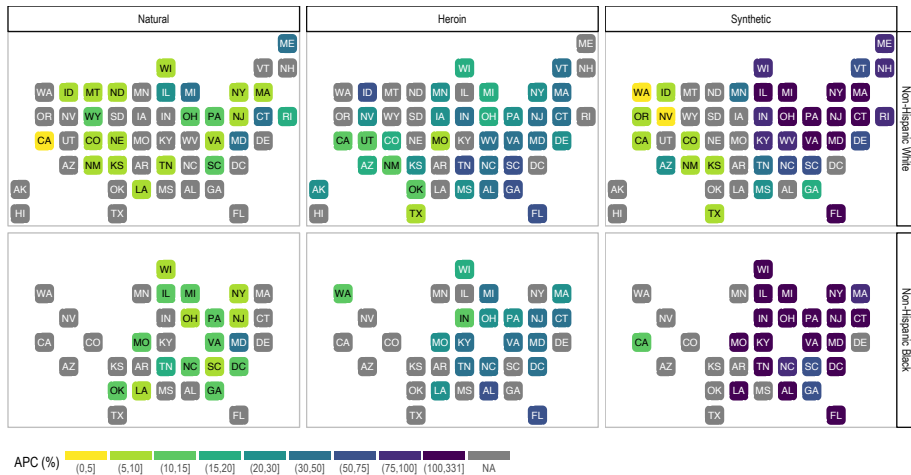


Current Mortality

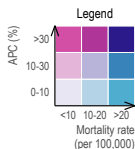
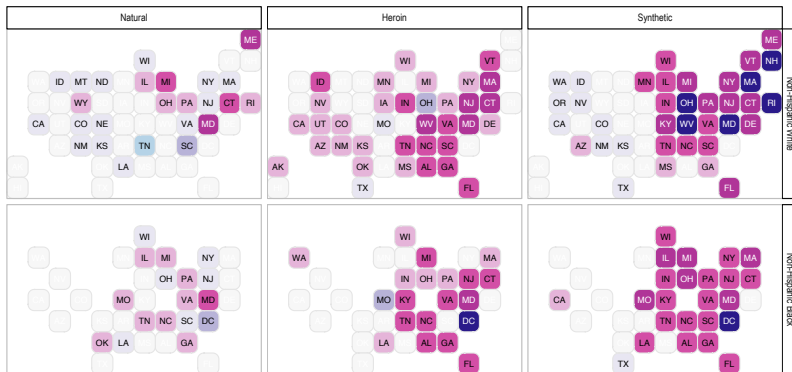


Mortality (per 100,000) [0,2.5] (2.5,5] (5,7.5] (7.5,10] (10,15] (15,20] (20,25] (25,34] NA

Current Trajectory



Epidemic Hotspots



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 - Source of heroin/synthetic opioids is important

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 - Types of drugs
 - Cost and availability

Thank you

Code and interactive results explorer:

`https://tiny.cc/paa2018`

mathewkiang.com | : mkiang | : @mathewkiang

Epidemic Hotspots



Average Annual Percent Change

