

Opioid Deaths by Race in the United States, 2000–2015

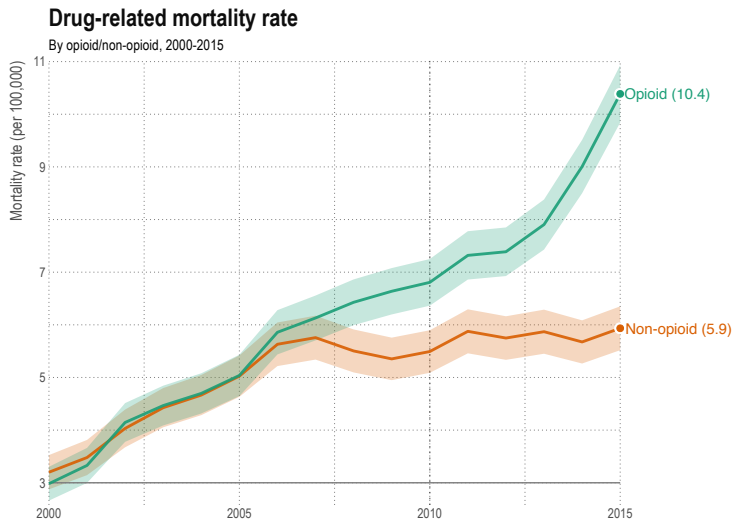
Monica Alexander Magali Barbieri Mathew Kiang

April 21, 2017

Overview

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- ▶ Aims
- ▶ Data
- ▶ Findings
- ▶ Summary
- ▶ Future work

Motivation



Motivation

HEALTH

Drug Overdoses Propel Rise in Mortality Rates of Young Whites

By GINA KOLATA and SARAH COHEN JAN. 16, 2016



PostPartisan • Opinion

The opioid epidemic: For whites only?

By Charles Lane August 18, 2016

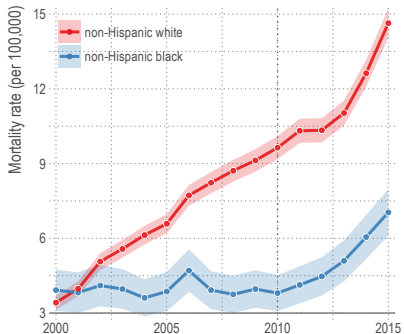
Drug Deaths Reach White America

By THE EDITORIAL BOARD JAN. 25, 2016

Motivation

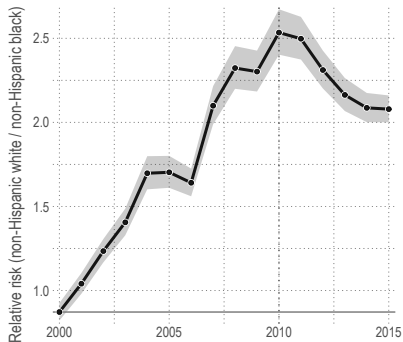
Opioid-related mortality rate

By race/ethnicity, 2000-2015



Relative risk

Opioid-related mortality, 2000-2015



Aims

Gain a better understanding how opioid deaths differ **by race** and what has contributed to the change in trends over time.

Stratify by age and look at

- ▶ Underlying cause of death
- ▶ Deaths by opioid type
- ▶ Presence of multiple opioids

Motivate future research to better target health policy and rehabilitation programs in different areas and for different subpopulations.

Data and approach

- ▶ Multiple cause of death microdata, 2000–2015
 - ▶ Deaths are coded according to ICD-10
 - ▶ Underlying cause of death and up to twenty additional contributory causes
- ▶ Restrict analysis to non-Hispanic whites and non-Hispanic black population
- ▶ Overall mortality rates are age-standardized using 10-year age groups and the 2000 Census population as a standard
- ▶ Calculation of stochastic standard errors
 - ▶ For death rates: Poisson approximation to normal
 - ▶ For proportions: Wilson method for binomial confidence intervals

Defining opioid-related deaths

Opioid poisoning T-codes:

- ▶ T400: Opium
 - ▶ T401: Heroin
 - ▶ T402: Other natural and semi-synthetic opioids
 - ▶ T403: Methadone
 - ▶ T404: Other synthetic opioids
 - ▶ T406: Unspecified
-
1. Drug overdose deaths: combination of T-codes and underlying cause of overdose: X40-44, X60-64, Y10-14, X85
 2. Mental and behavioral complications due to opioid use (F110–F119)
 3. Other deaths with an opioid T-code as contributory cause

Key findings

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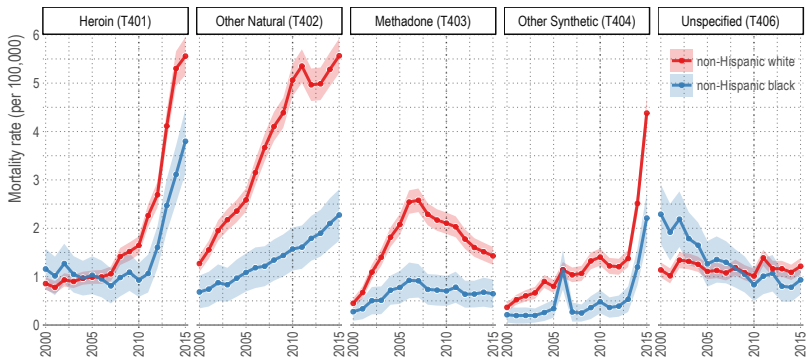
Key findings

Three key observations came out of analysis:

1. Main type of opioids underlying deaths has shifted
2. Age distribution of deaths differs by race
3. Presence of multiple opioids has increased

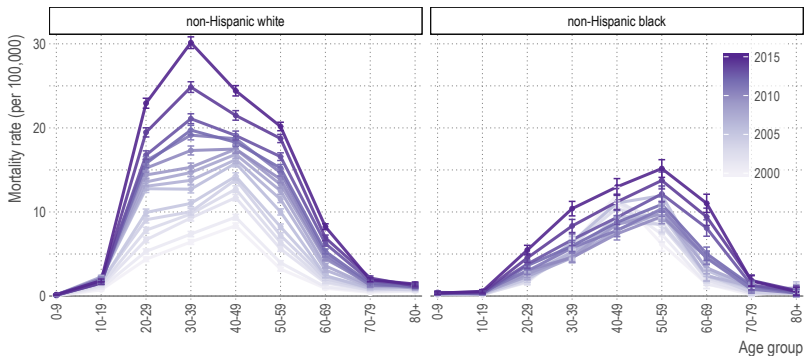
1. Type of opioids underlying deaths has shifted

Mortality rate, by race and underlying type of opioid, 2000-2015

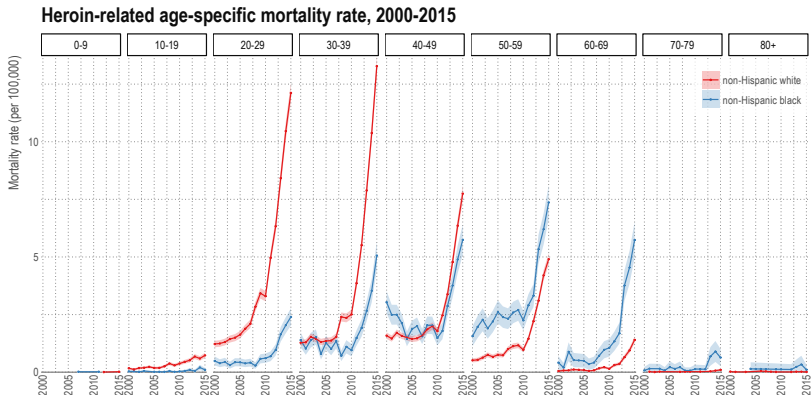


2. Age distribution of deaths differs by race

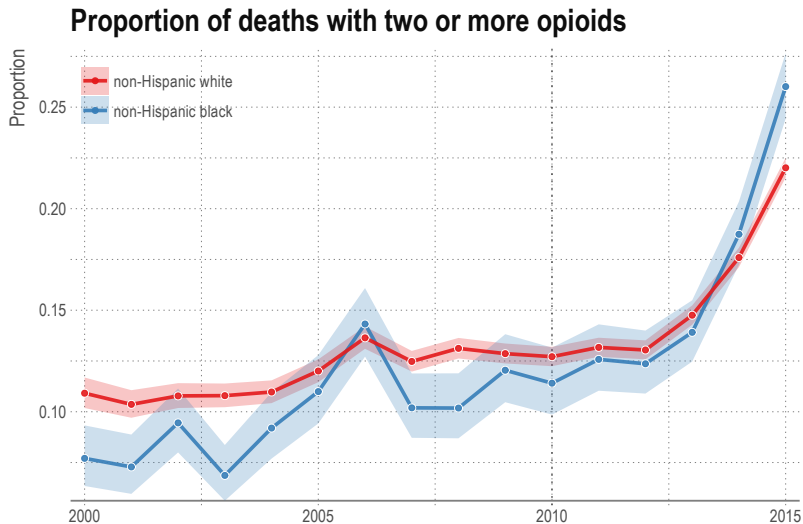
Age-specific opioid-mortality, by race and year



2. Age distribution of deaths differs by race

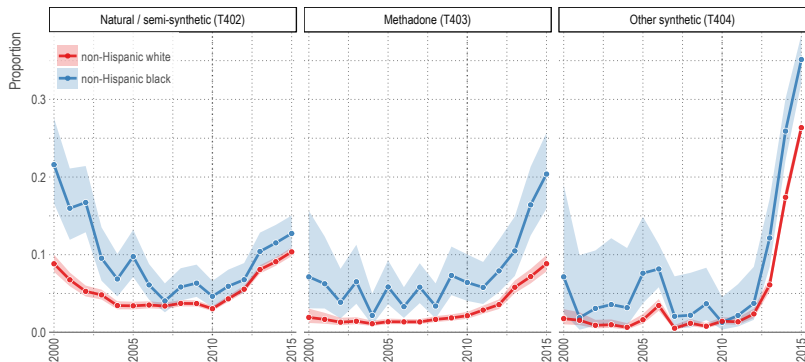


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Proportion of heroin (T401) deaths involving other opioids



Summary

1. The trend in opioid deaths since 2000 has two stages.
 - ▶ 2000–2010: increase for the white population, driven by prescription opioids
 - ▶ 2010 onwards:
 - ▶ Exhibited a higher rate of increase in the opioid deaths
 - ▶ Increases were similar for both the white and black populations
 - ▶ Heroin and fentanyl-related opioids
2. Increases in deaths due to heroin and fentanyl have occurred from deaths that involve a mixture of both drugs.
3. White population exhibiting a comparatively younger age profile.

Questions / future work

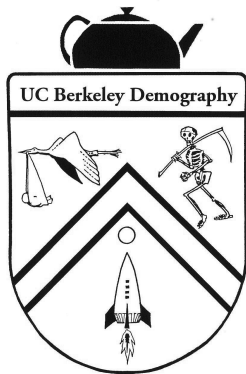
1. How much of increase in heroin mortality is due to increased use versus increased potency?
2. What is driving the differences in age by race?

Drawing on:

- ▶ More detailed multiple cause of death data with residence information
- ▶ Data on prescriptions dispensed and drug use (e.g. National Survey of Drug Use and Health)

Thanks!

All code to reproduce graphs can be found here:
<https://github.com/MJAlexander/opioid-mcd>



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