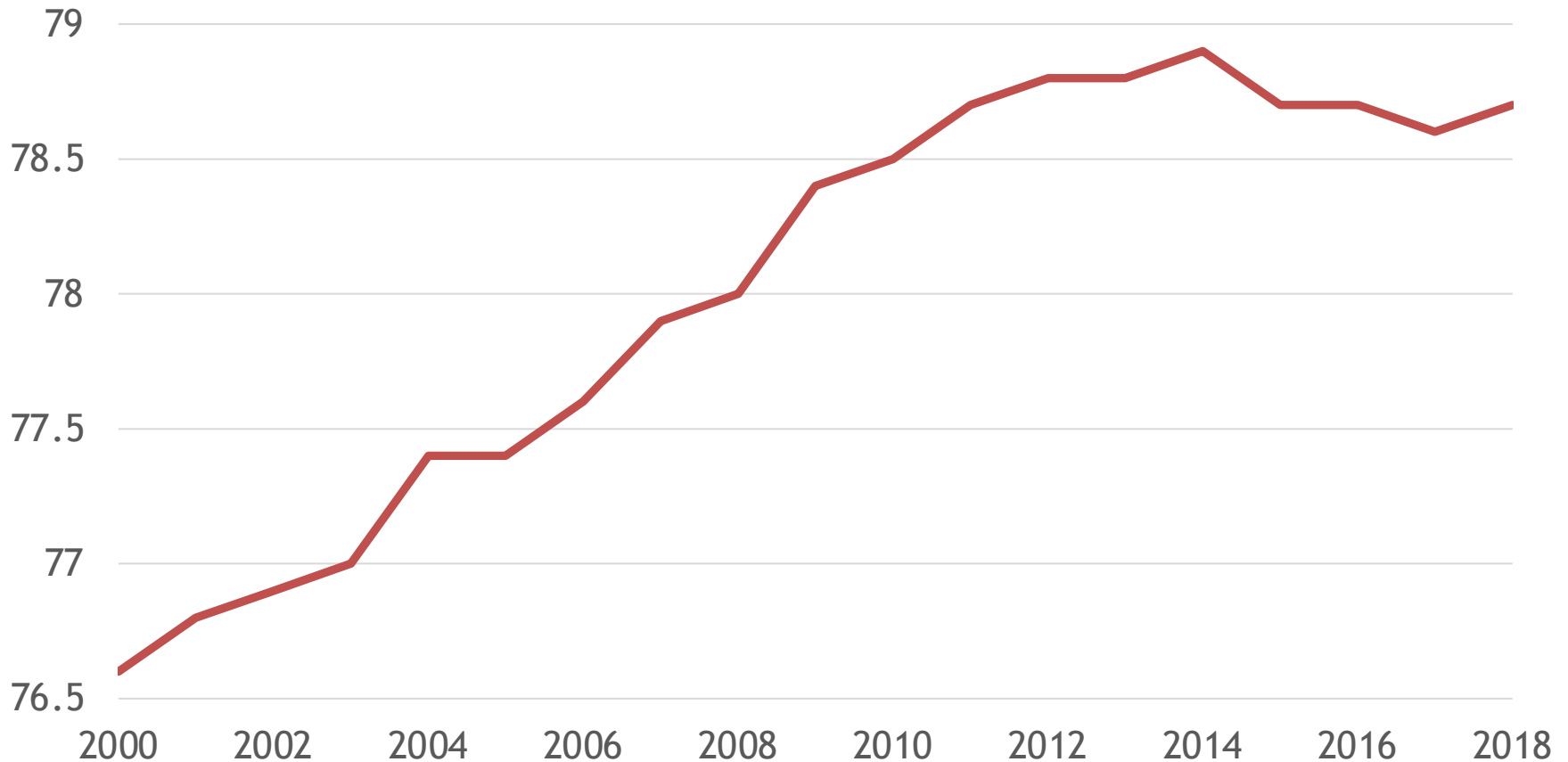


COMMITTEE ON POPULATION (CPOP) & COMMITTEE ON NATIONAL
STATISTICS (CNSTAT)

High and Rising Mortality Rates Among Working-Age Adults: Opioids, Other Drugs, and Alcohol

*Committee on Rising Midlife Mortality
Rates and Socioeconomic Disparities*

The Problem: U.S. Life Expectancy Fell Between 2014 and 2017



The Problem: U.S. Life Expectancy has Been Diverging from Peer Countries

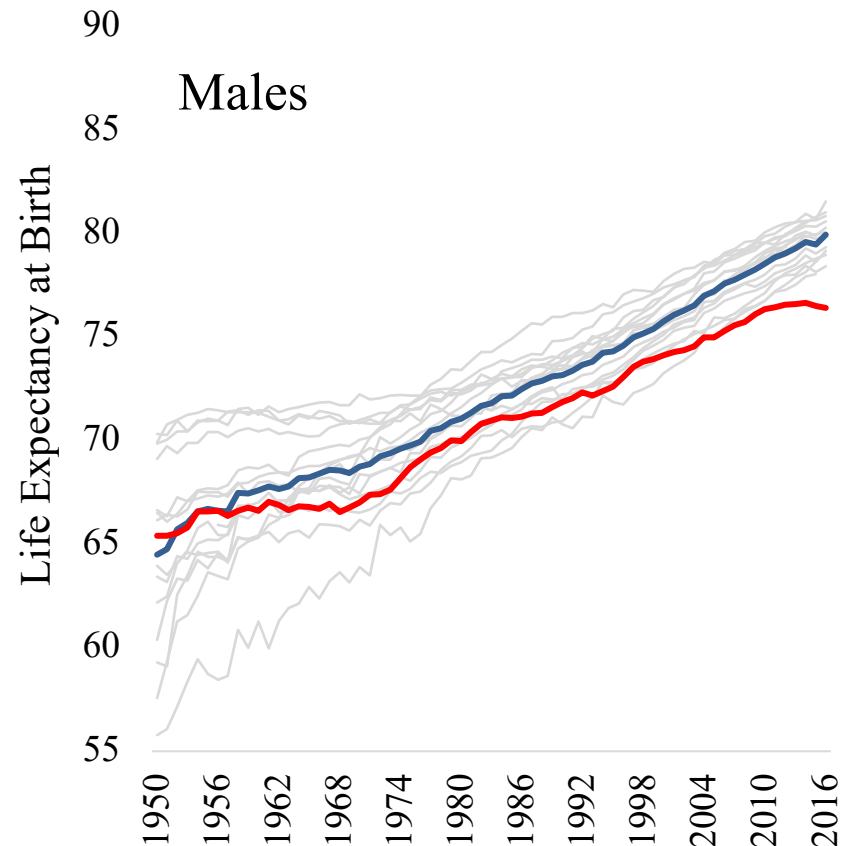
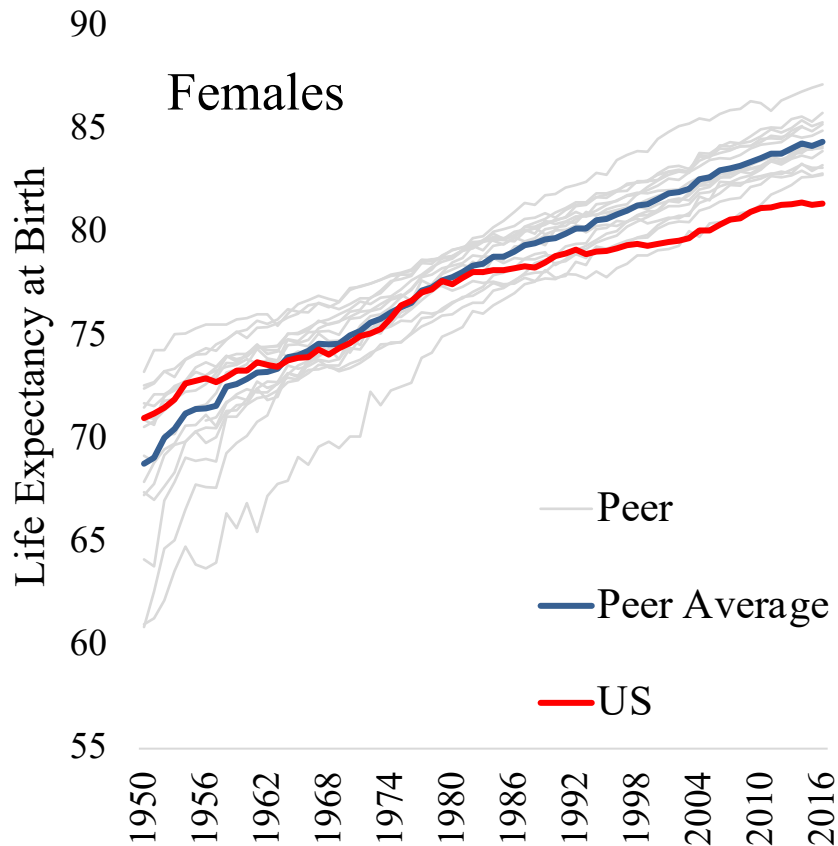
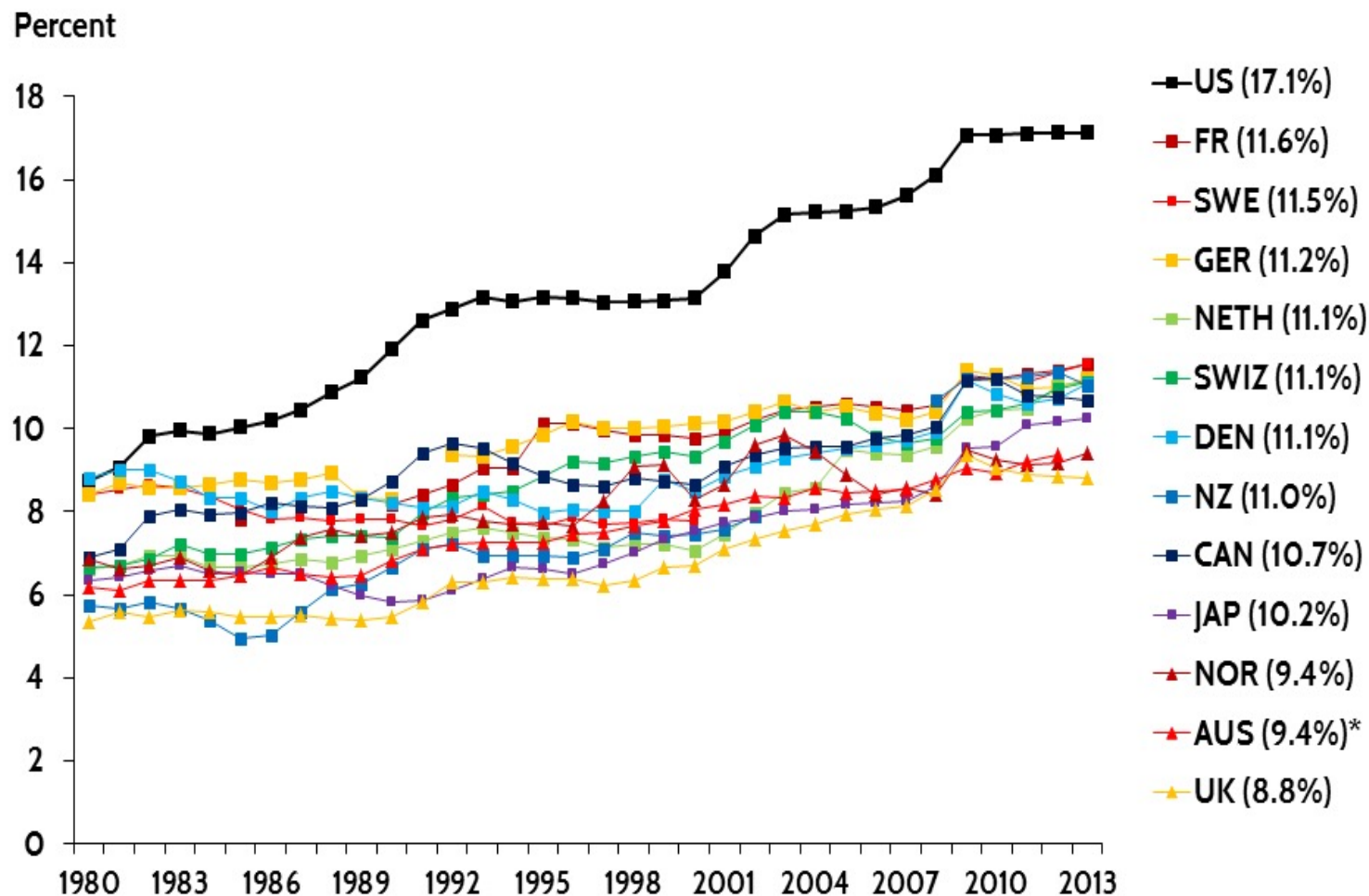


Exhibit 1. Health Care Spending as a Percentage of GDP, 1980–2013



* 2012.

Notes: GDP refers to gross domestic product. Dutch and Swiss data are for current spending only, and exclude spending on capital formation of health care providers.

Source: OECD Health Data 2015.

Study Background

- Sponsors:
 - National Institute on Aging
 - Robert Wood Johnson Foundation
- Task
 - Identify the key drivers of increasing mortality and concomitant widening social differentials
 - Identify modifiable risk factors to reduce mortality and health disparities
 - Make recommendations for future research and explore potential policy implications

Committee Members

- **KATHLEEN MULLAN HARRIS** (*Chair*), Department of Sociology, Carolina Population Center, University of North Carolina at Chapel Hill
- **MICHAEL E. CHERNEW**, Department of Health Care Policy, Harvard Medical School
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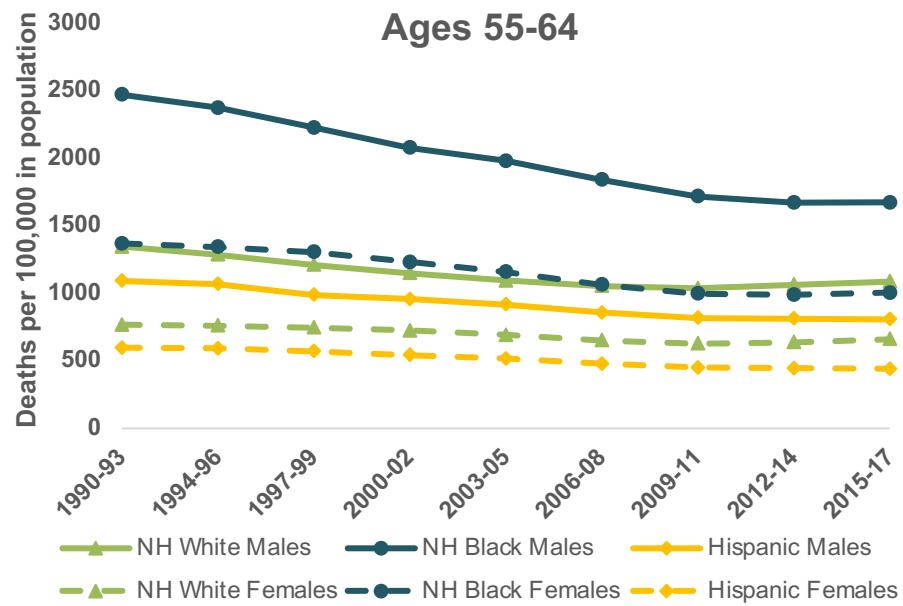
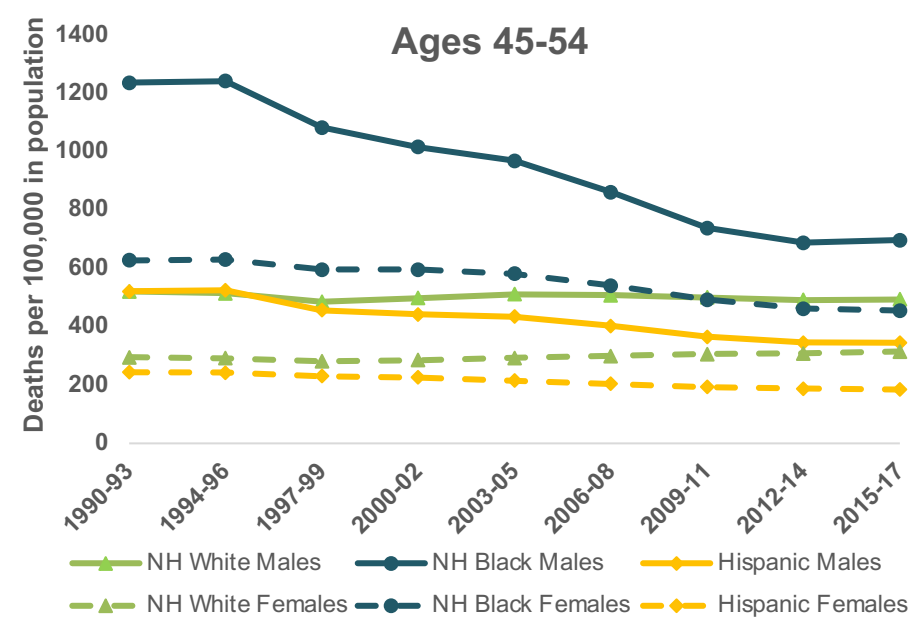
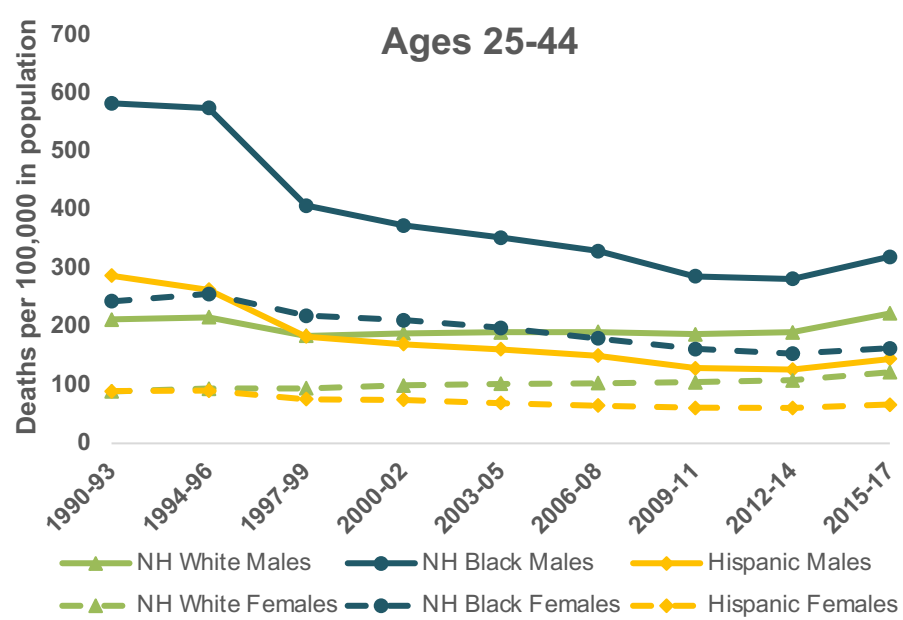
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- **ANDREW J. CHERLIN**, Department of Sociology, Johns Hopkins University
- **SANDRO GALEA**, School of Public Health, Boston University
- **MARK D. HAYWARD**, Population Research Center, University of Texas at Austin
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- **SAMUEL H. PRESTON**, Population Studies Center, University of Pennsylvania
- **ALBERT L. SIU**, Mount Sinai Medical Center
- **FRANK A. SLOAN**, Economics Department and Center for Health Policy, Law and Management, Duke University.

Scope of Report

- Examined mortality trends for working age adults (ages 25-64) by age-group, sex, race/ethnicity, geography
- Conducted independent data analysis using restricted-access National Vital Statistics death certificate data (1990-2017)
- Conducted robust review of the literature to identify explanations and implications for policy and research

Trends and Differentials in Working-Age Mortality in the U.S., 1990-2017

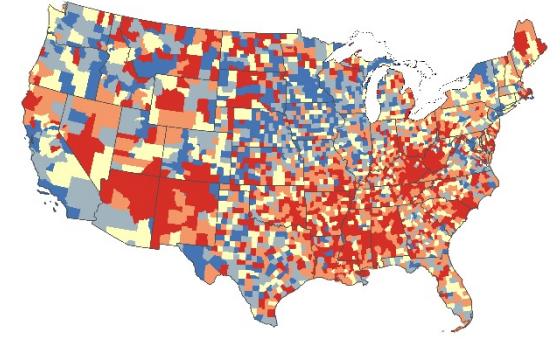
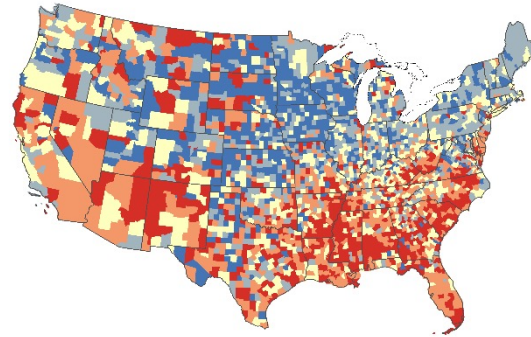


Mortality Trends: 1990-2017 by Age Group, Sex, and Race-Ethnicity

Trends in All-Cause Mortality (Males)

1990-1992

2015-2017



Mortality Rate Quintiles, Males 25-44

Deaths per 100,000 Population



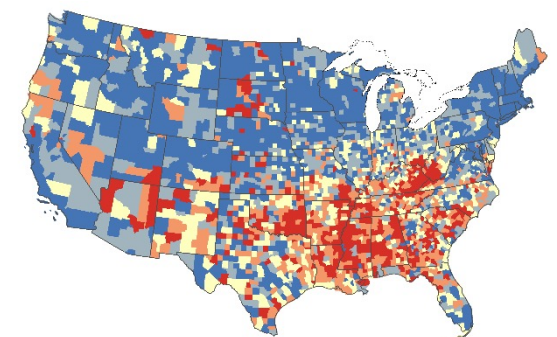
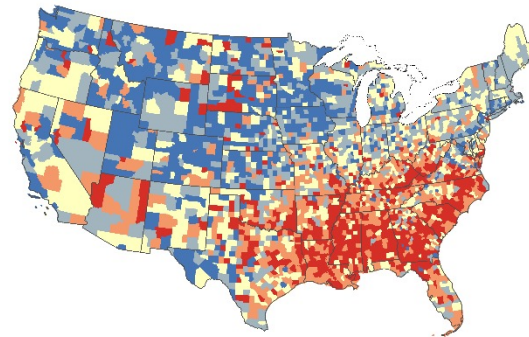
<156.2

156.2 to
<201.6

201.6 to
<245.9

245.9 to
<314.5

>314.5



Mortality Rate Quintiles, Males 45-64

Deaths per 100,000 Population



<745.4

745.4 to
<875.0

875.0 to
<1002.2

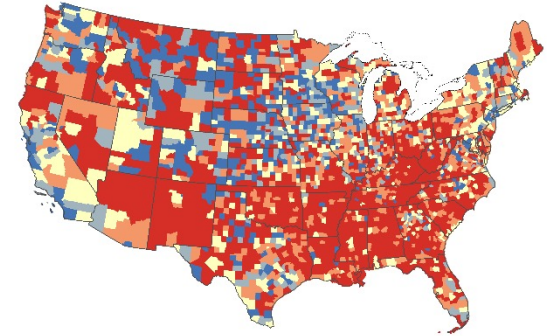
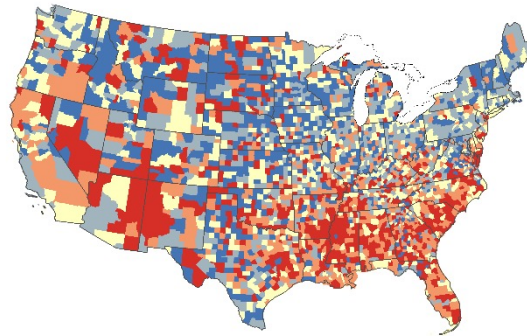
1002.2 to
<1180.2

>1180.2

Trends in All-Cause Mortality (Females)

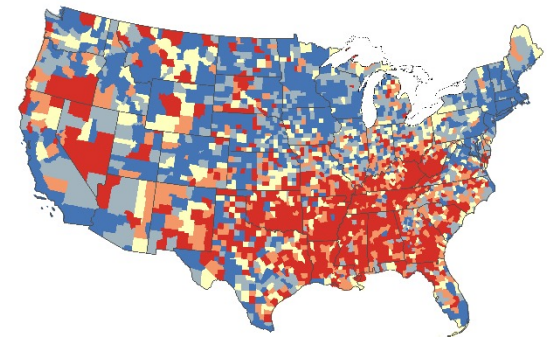
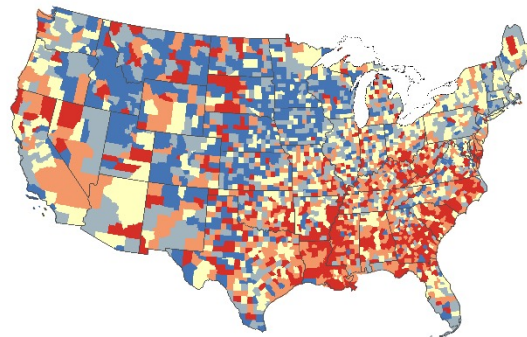
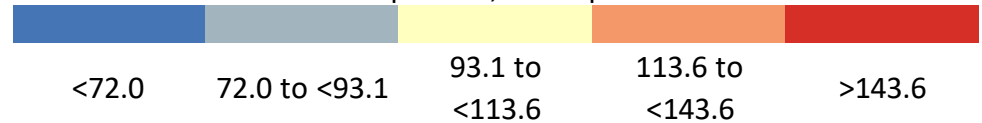
1990-1992

2015-2017



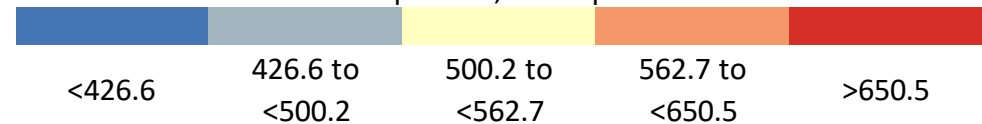
Mortality Rate Quintiles, Females 25-44

Deaths per 100,000 Population



Mortality Rate Quintiles, Females 45-64

Deaths per 100,000 Population

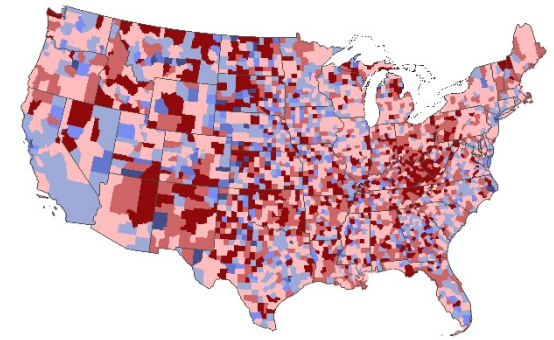
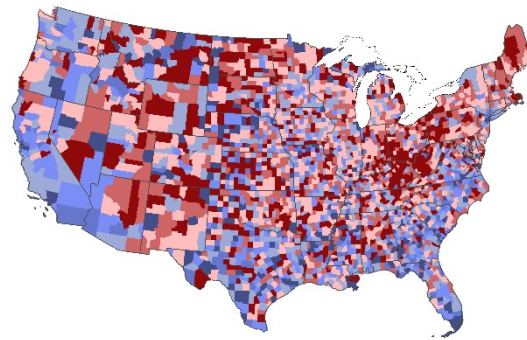


Males

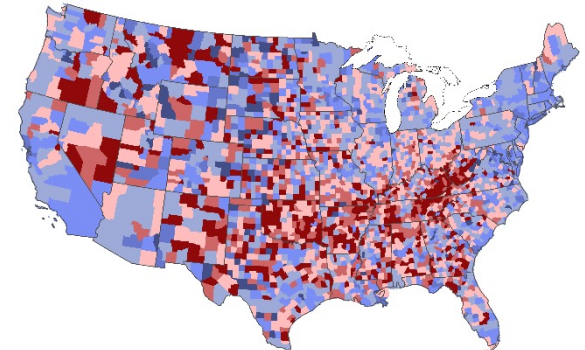
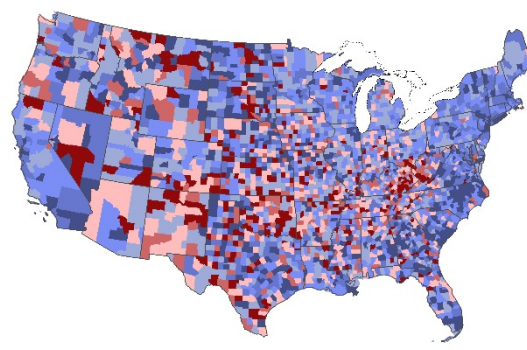
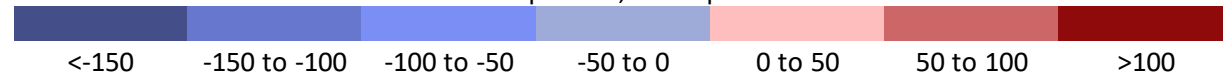
Females

Trends in All-Cause Mortality

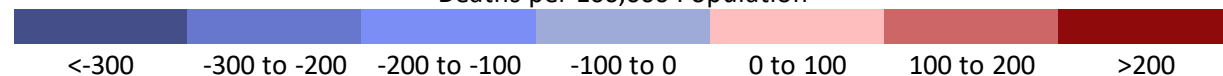
(Change in mortality, males and females)



Absolute Change in Mortality Rate (ages 25-44) 1990-92 to 2015-17
Deaths per 100,000 Population

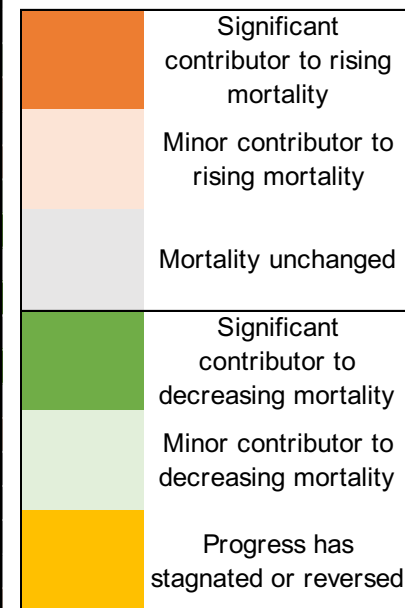


Absolute Change in Mortality Rate (ages 45-64) 1990-92 to 2015-17
Deaths per 100,000 Population



Summary of Findings: Cause Specific Mortality, 1990-2017

	Ages 25-44						Ages 45-54						Ages 55-64					
	Males			Females			Males			Females			Males			Females		
	White	Black	Hispanic	White	Black	Hispanic	White	Black	Hispanic	White	Black	Hispanic	White	Black	Hispanic	White	Black	Hispanic
<i>Infectious and Parasitic Diseases</i>																		
HIV/AIDS	Green						Green						Green					
Non-HIV/AIDS	Green						Green						Orange					
<i>Cancers</i>																		
Liver Cancer	Grey						Grey						Orange					
Lung Cancer	Green						Green						Green					
All Other Cancers	Green						Green						Green					
<i>Cardio and Metabolic Diseases</i>																		
Endocrine, Nutritional, & Metabolic	Grey						Orange						Orange					
Hypertensive Heart Disease	Grey						Grey						Orange					
Ischemic & Other Circulatory System	Green						Yellow						Yellow					
<i>Substance Use & Mental Health</i>																		
Drug Poisoning	Orange						Orange						Orange					
Alcohol-Induced	Yellow						Yellow						Yellow					
Suicide	Orange						Orange						Orange					
Mental & Behavioral Disorders	Green						Green						Green					
<i>Other Body System Diseases</i>																		
Nervous System	Grey						Grey						Orange					
Genitourinary System	Grey						Grey						Grey					
Respiratory System	Yellow						Yellow						Yellow					
Digestive System	Green						Green						Green					
<i>Other Causes of Death</i>																		
Homicide	Yellow						Yellow						Yellow					
Transport Accidents	Yellow						Yellow						Yellow					
Other External Causes	Yellow						Yellow						Yellow					
All Other Causes	Green						Green						Green					

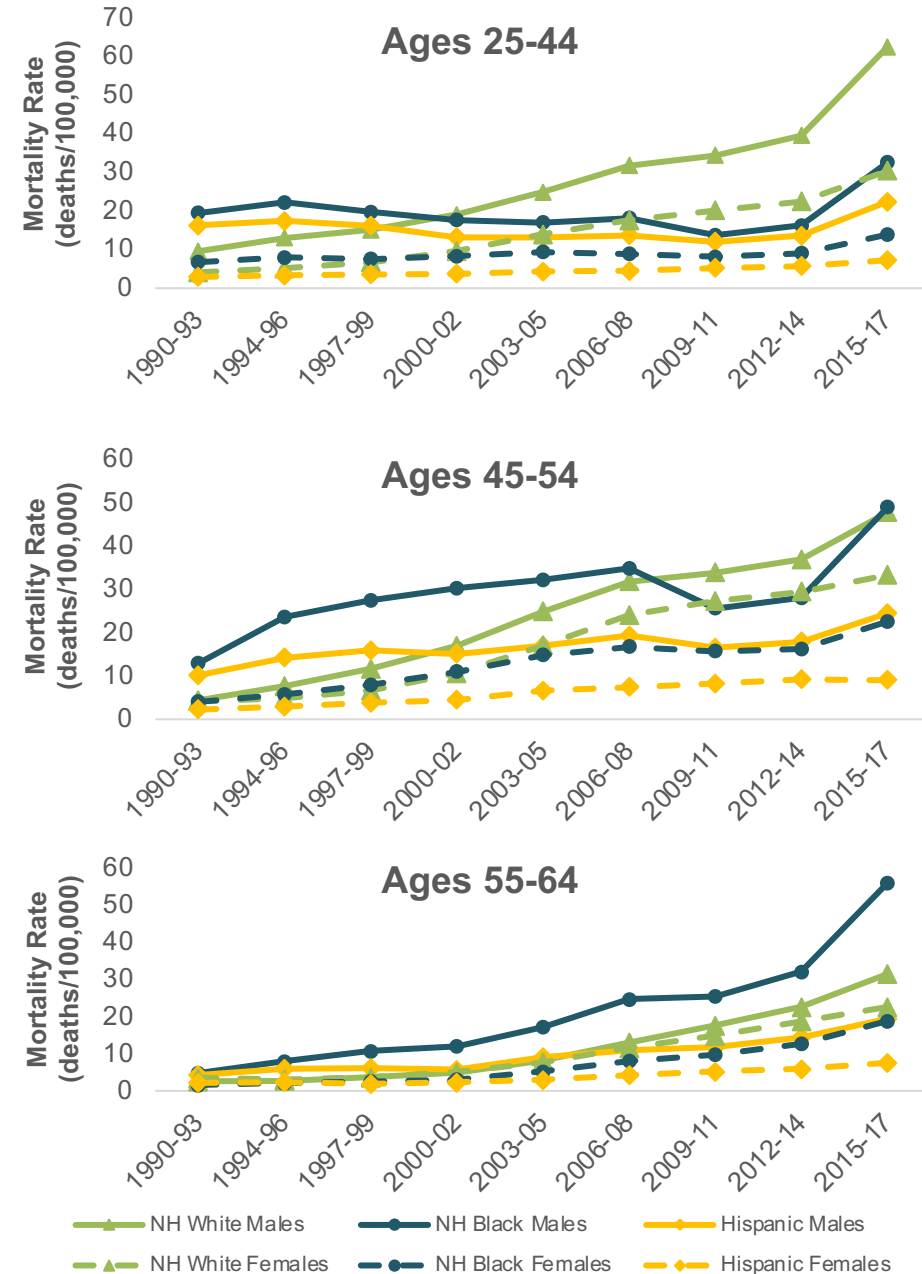


Main Drivers of the Rise in Working-age Mortality:

1. Drug poisonings and alcohol-induced causes
2. Suicide
3. Cardiometabolic diseases

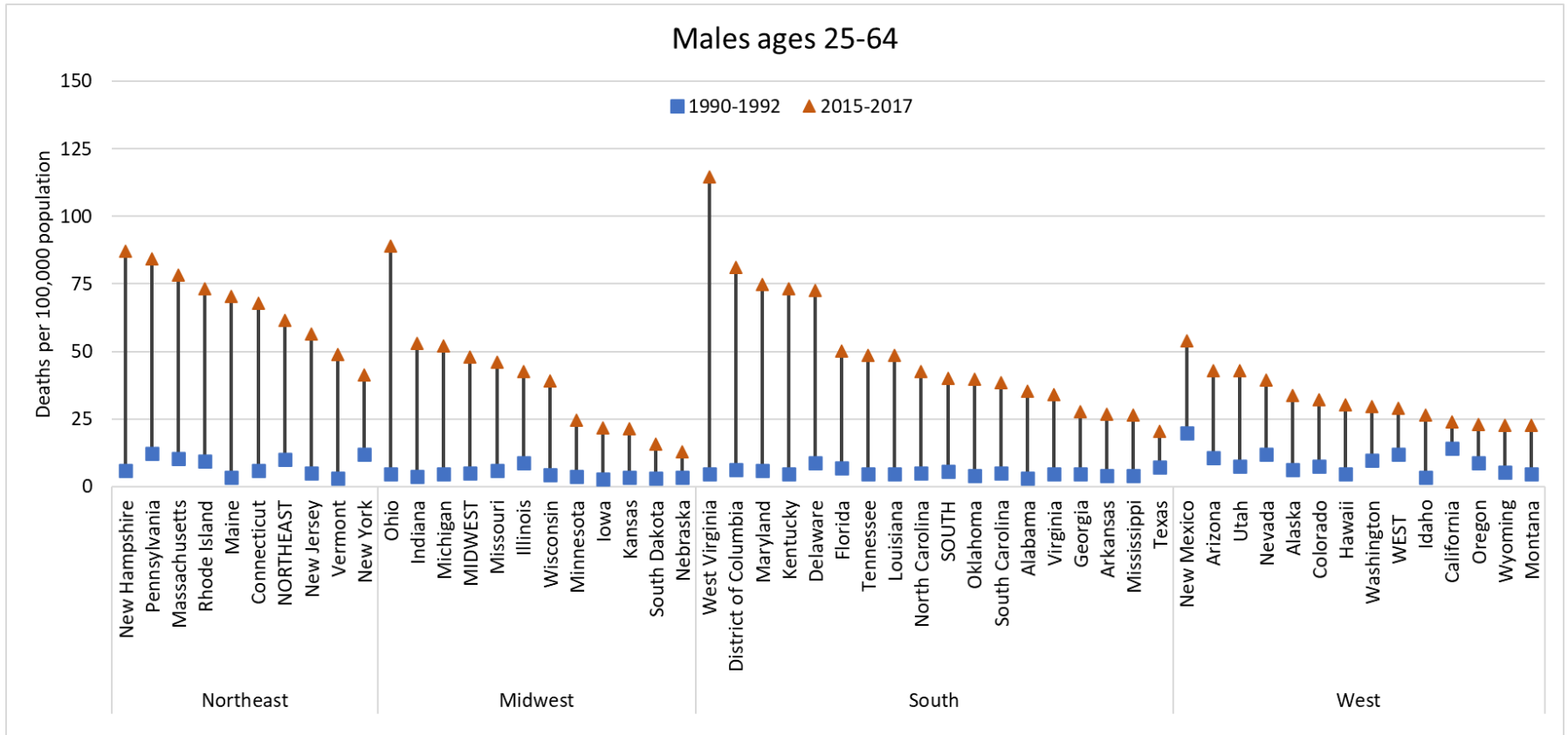
The Role of Opioids, other Drugs, and Alcohol in Shaping Mortality Trends

Drug Poisoning Mortality



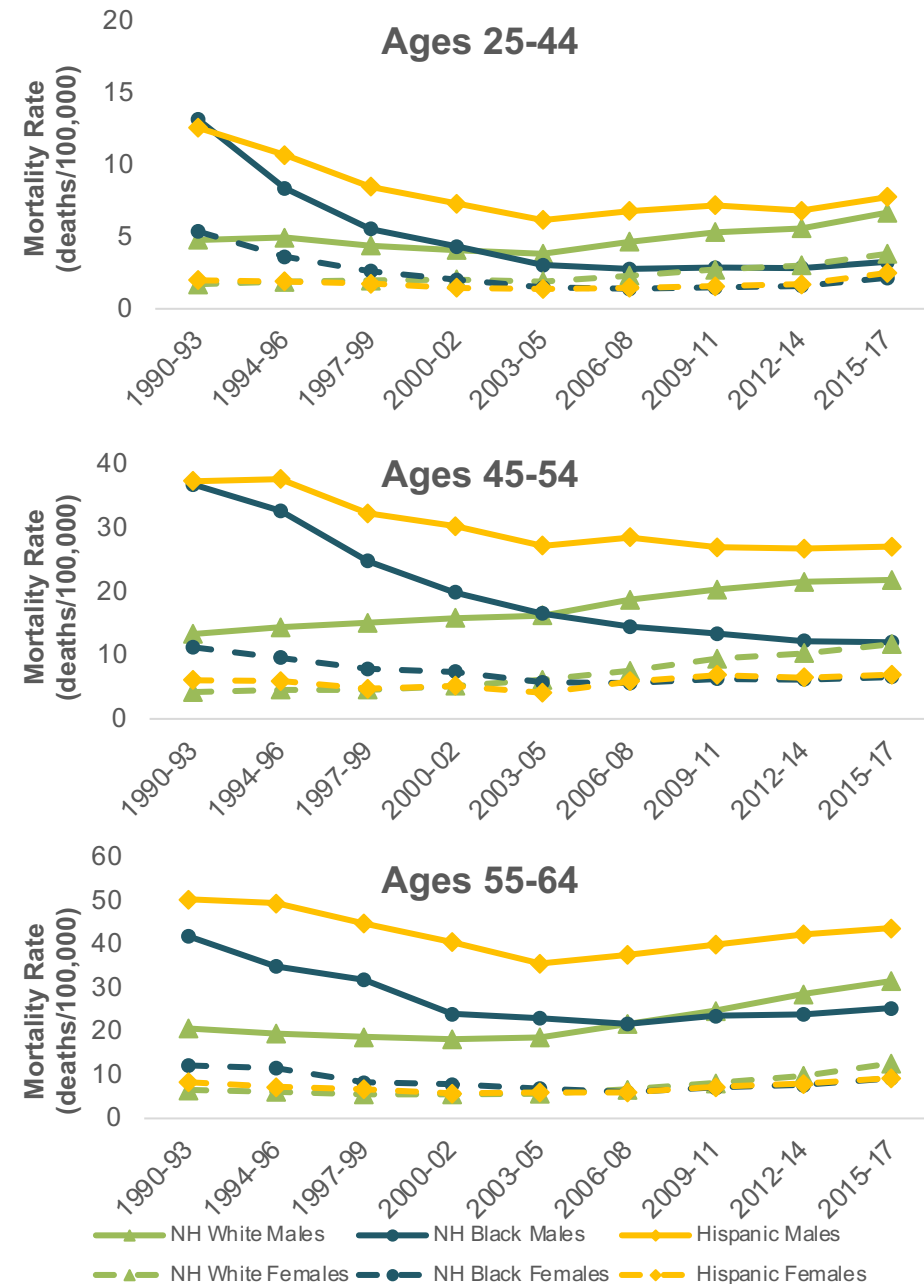
- Most important contributor to increasing mortality
- Increases accelerated in the 2010s
- Largest increases among Non-Hispanic (NH) Whites and older NH Black males

Drug Poisoning Mortality by State

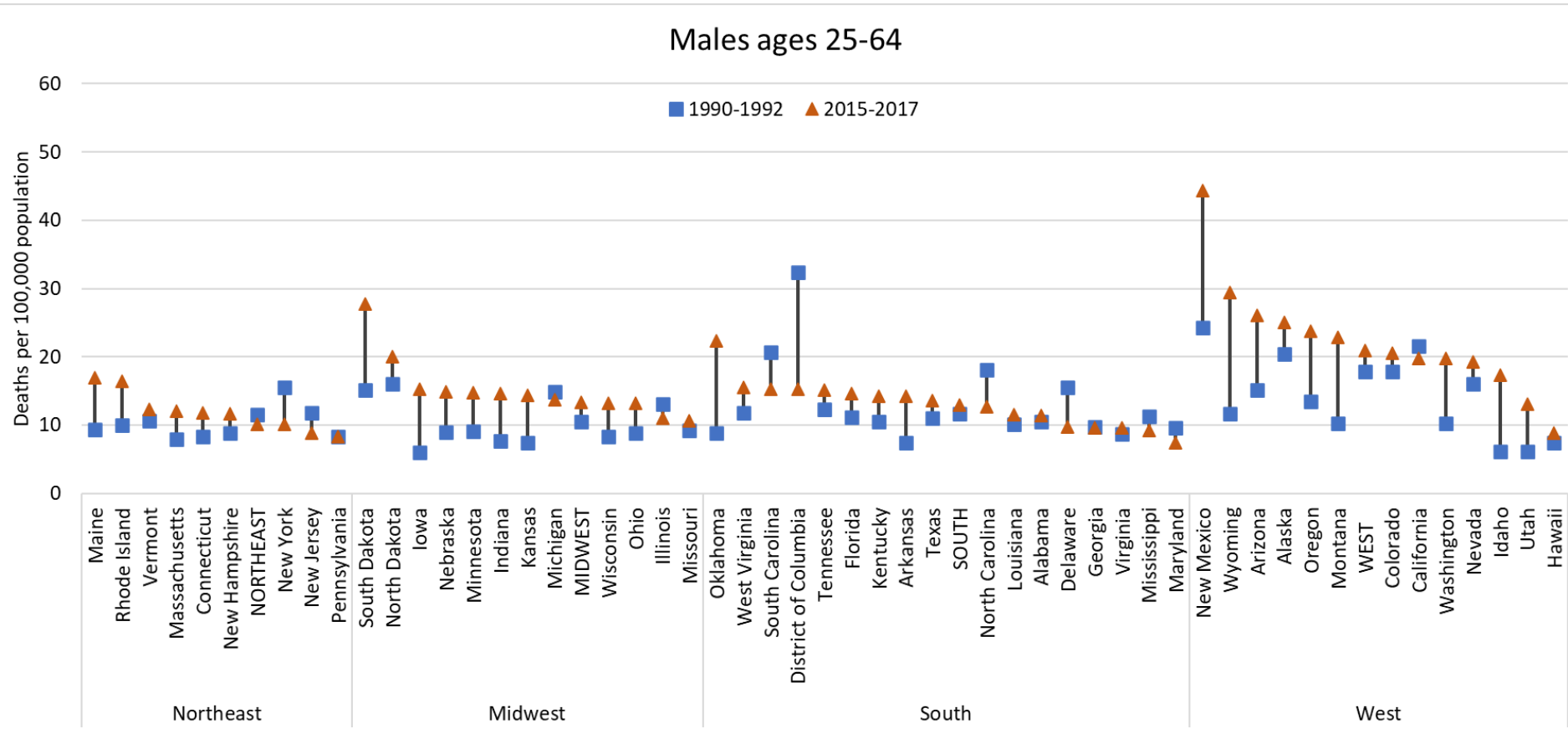


Alcohol-Induced Mortality

- Increases were largest among Whites, but rates also increased among Hispanics, with most increases occurring in late-2000s
- Rates declined among Black males early in the period but leveled off in the late-2000s



Alcohol-Induced Mortality by State

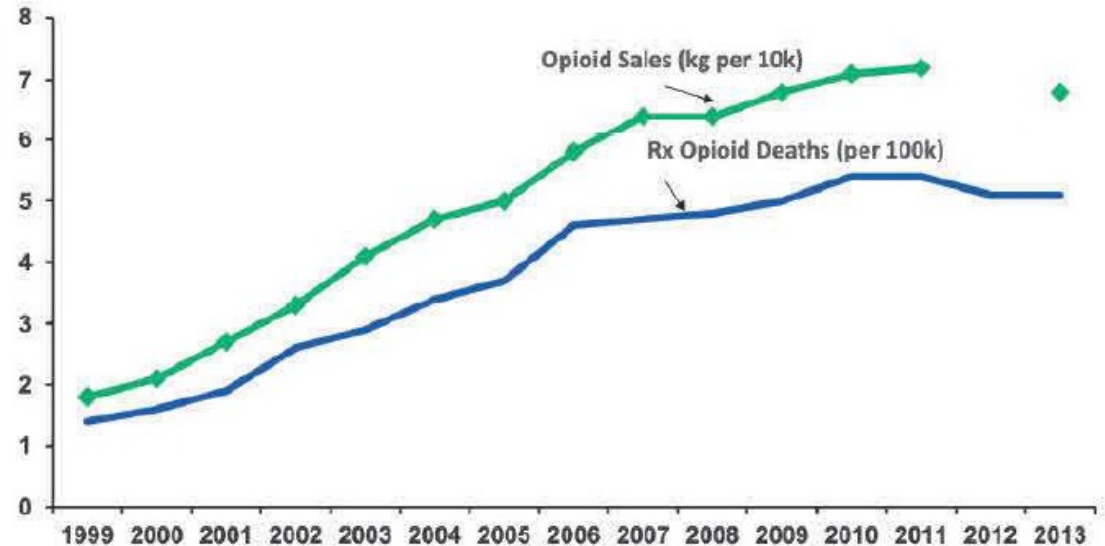


Explanations for Drug and Alcohol Mortality Trends

- Supply factors
 - Emergence of OxyContin
 - Opioid overprescribing
 - Regulatory failures
 - Heroin and fentanyl
 - Changes in alcohol supply and affordability (deregulation and privatization)

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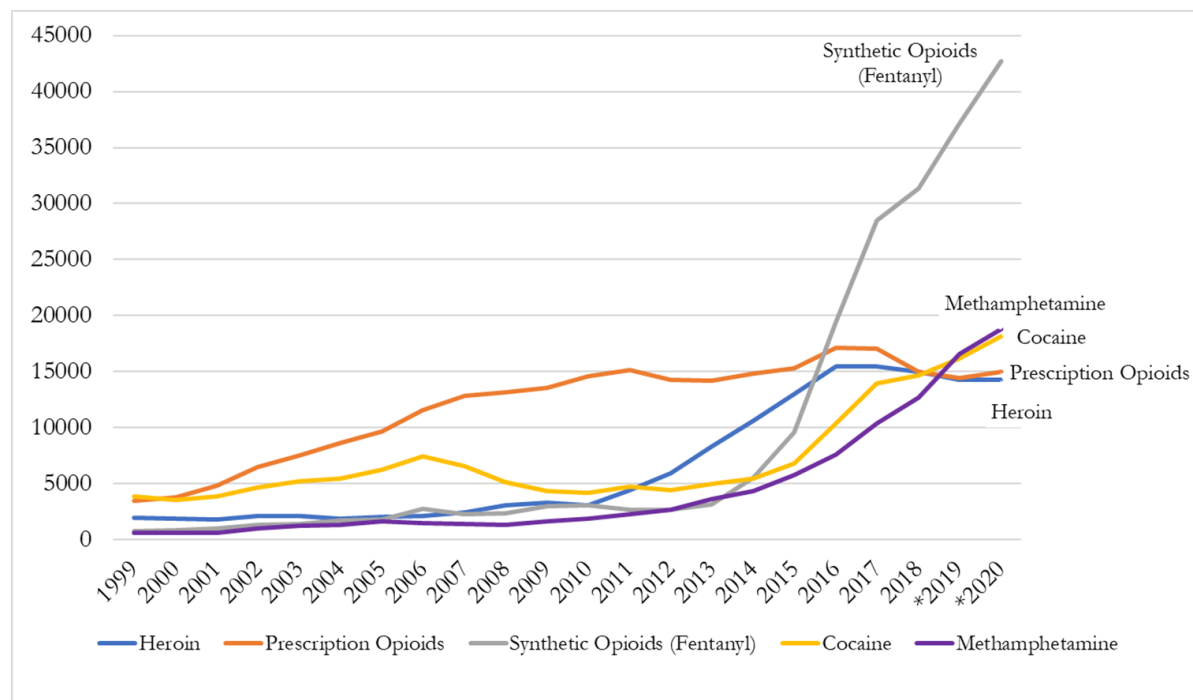


National Vital Statistics System, DEA's Automation of Reports and Consolidated Orders System.

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Explanations for Drug and Alcohol Mortality Trends

- Supply factors

- Changes in alcohol supply and affordability (deregulation and privatization)

- 22% increase in # of alcohol outlets, 2007-2017 (Nielson, 2018)

- Cost of one drink/day declined from 4.46% of U.S. mean per capita income in 1950 to 0.29% in 2011 (Kerr et al., 2013)

- Advertising on flavored alcohol beverages increased from \$27.5 million in 2000 to \$196.3 million in 2002 (Freudenberg, 2014)

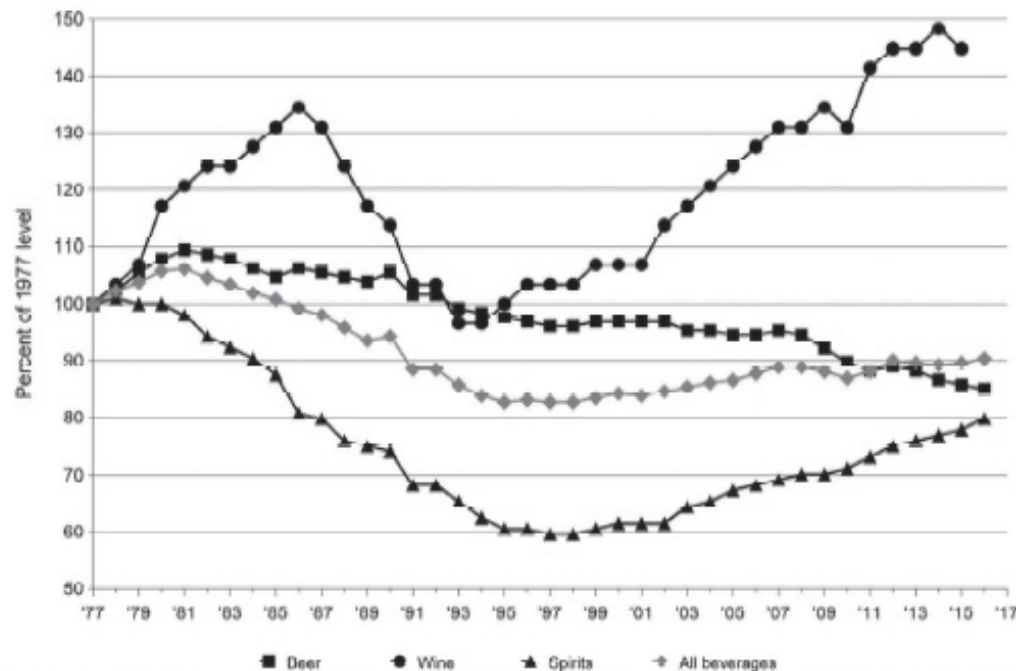


FIGURE 7-9 Percentage change in per capita ethanol consumption by beverage type, United States, 1977–2016.

NOTE: Beverage types include beer (black squares), wine (black circles), spirits (black triangles), and all beverages combined (grey triangles).

SOURCE: Data from National Institute on Alcohol Abuse and Alcoholism (<https://pubs.niaaa.nih.gov/publications/surveillance110/CONS16.pdf>).



Explanations for Drug and Alcohol Mortality Trends

- Demand factors
 - Physical pain:
Mental illness
 - Adverse childhood experiences
 - Despair
 - Macro-level economic and social change

Explanations for Drug and Alcohol Mortality Trends

- Demand factors

- Physical pain:
Mental illness
- Adverse childhood experiences
- Despair
- Macro-level economic and social change

- A 1% increase in county unemployment rate -> 3.6% increase in opioid death rate (Hollingsworth et al., 2017)
- China trade exposure -> increase in drug deaths (Pierce and Schott, 2016)
- Automotive plant closures -> increase in drug deaths (Venkataramani et al., 2020)
- Other studies find smaller causal effects, but they use short-term economic change rather than long-term change (Currie et al., 2019; Ruhm, 2018, 2019, 2020)
- Subjective measures of economic distress may be more important than objective measures (Glei and Weinstein, 2019)

Explanations for Drug and Alcohol Mortality Trends

- **Supply factors**
 - Emergence of OxyContin
 - Opioid overprescribing
 - Regulatory failures
 - Heroin and fentanyl
 - Changes in alcohol supply and affordability (deregulation and privatization)
- **Demand factors**
 - Physical pain
 - Mental illness
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 - Despair
 - Macro-level economic and social change

The U.S. drug overdose crisis is the result of a *perfect storm* resulting from the flooding of the market with highly addictive and deadly prescription and illicit drugs and the underlying and growing demand for and vulnerability to substances that people view as bringing relief to physical and psychological pain.

Economic Factors and Mortality

- Economic hardship is associated with higher mortality
- Overall impact of direct economic shocks is relatively modest, but there may be interaction effects related to
 - Sustained economic disadvantage
 - Susceptibility to adverse non-economic events and trends

Deaths of Despair vs Merchants of Death

- Supply studies are relatively strong with strong study designs and large effect sizes
- Demand studies have weaker study designs and smaller effects sizes; however, qualitative evidence is very compelling.

Research Recommendations

- Effectiveness of behavioral health interventions, mental health and substance use treatment, and harm reduction approaches [7-2]
- Underlying causes of the rise in drug and alcohol deaths [7-3]:
 - unintended responses to tighter regulations of prescriptions drugs;
 - changes in nature of alcohol consumption, advertising, cultural acceptance;
 - overlap between drug and alcohol mortality trends

Policy Conclusions and Recommendations

Like the phenomena driving the crisis, policy responses need to be multilevel, focusing on both:

- Proximal causes of death (e.g., drugs, obesity)
- Upstream “causes of the causes” (e.g., living conditions that increase vulnerability of communities, families, and individuals)

Policy Conclusions

- Economic policies are needed to address the economic and social strains that made communities vulnerable to opioids and other drugs [7-1]

Policy Recommendations

- Policymaker (e.g., FDA, DEA, pharmaceutical industry) intervention on the addiction crisis; federal, state, and local programs that focus on substance use as a public health issue [7-1]
- Medicaid expansion [11-1]

Summary

- All-cause working-age mortality has been increasing since 2010, cause-specific death rates increasing since 1990s
- Not happening in peer countries
- Working-age mortality increased across all racial/ethnic groups and in rural and urban areas (but more in rural).
- Proximal causes: drug overdoses, alcohol-related disease, suicides, and cardiometabolic diseases
- Multiple drivers at multiple levels (no single factor)
- Numerous policy, data, and research priorities

Thank you!

For more information, please visit:

www.nationalacademies.org/RisingMortality

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