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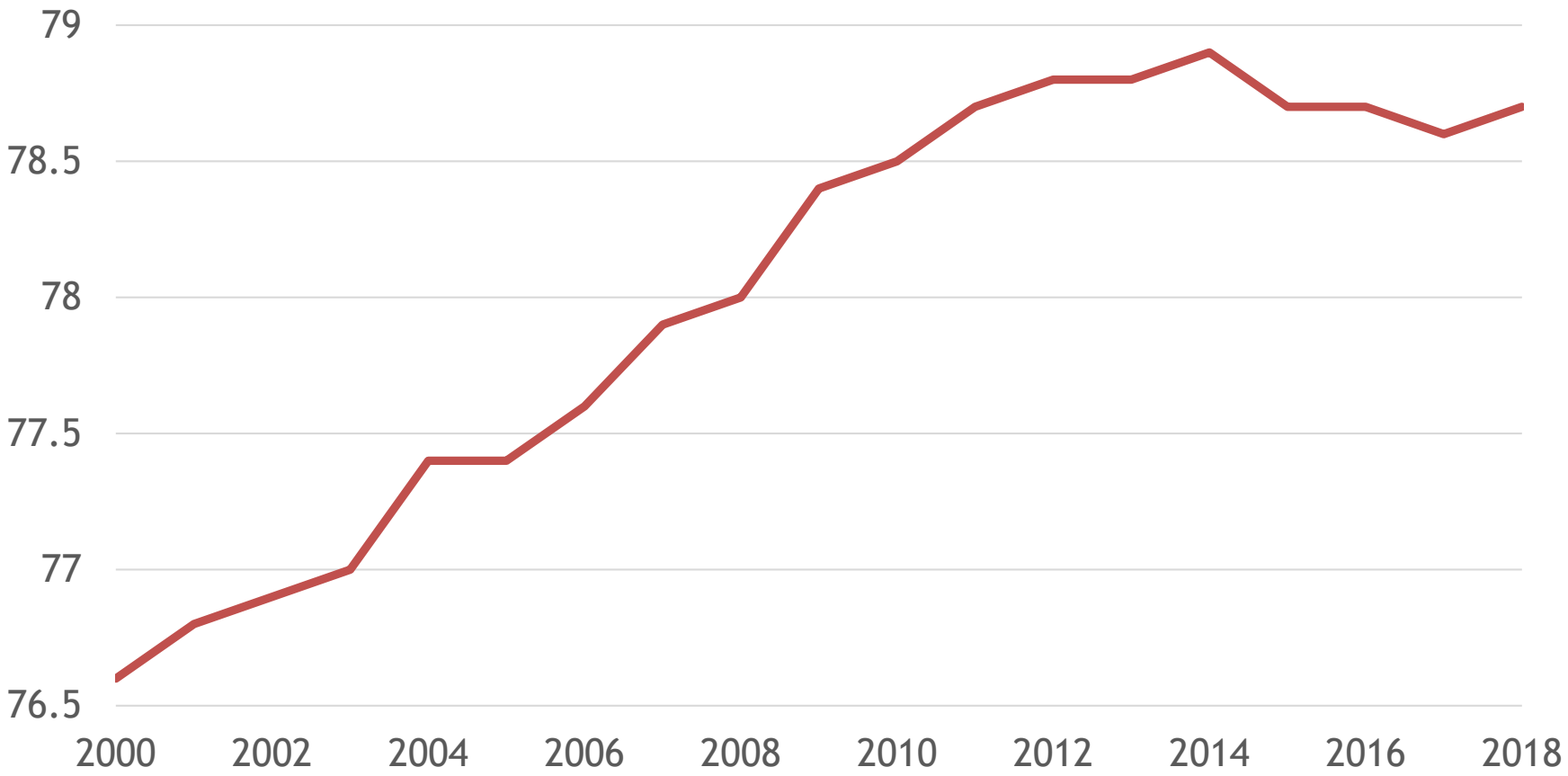
COMMITTEE ON POPULATION (CPOP) & COMMITTEE ON NATIONAL STATISTICS (CNSTAT)

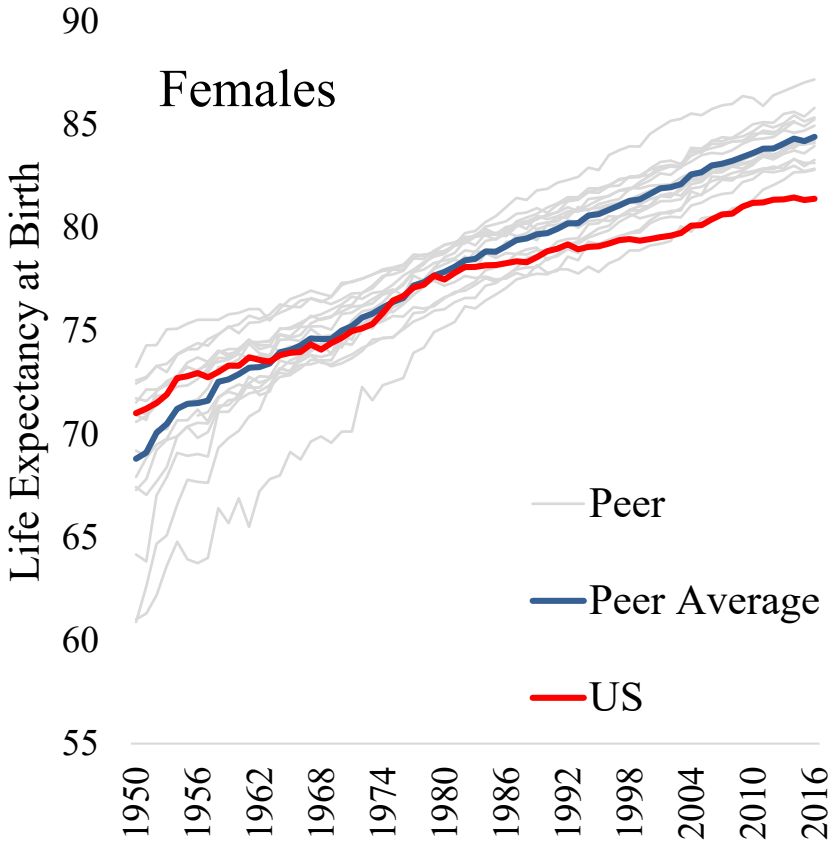
High and Rising Mortality Rates Among Working-Age Adults: Opioids, Other Drugs, and Alcohol

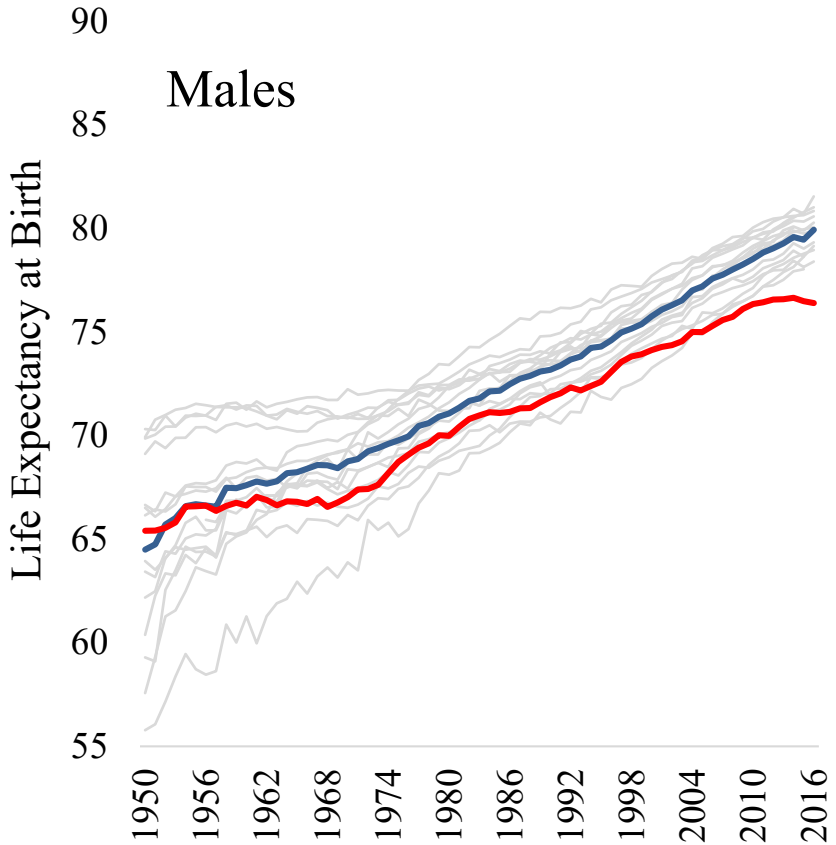
Committee on Rising Midlife Mortality Rates and Socioeconomic Disparities

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



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





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
- **DAVID M. CUTLER**, Department of Economics, Harvard University
- **ANA V. DIEZ ROUX,** Dornsife School of Public Health, Drexel University
- **IRMA T. ELO**, Department of Sociology, Population Studies Center, University of Pennsylvania
- **DARRELL J. GASKIN**, Bloomberg School of Public Health, Johns Hopkins University
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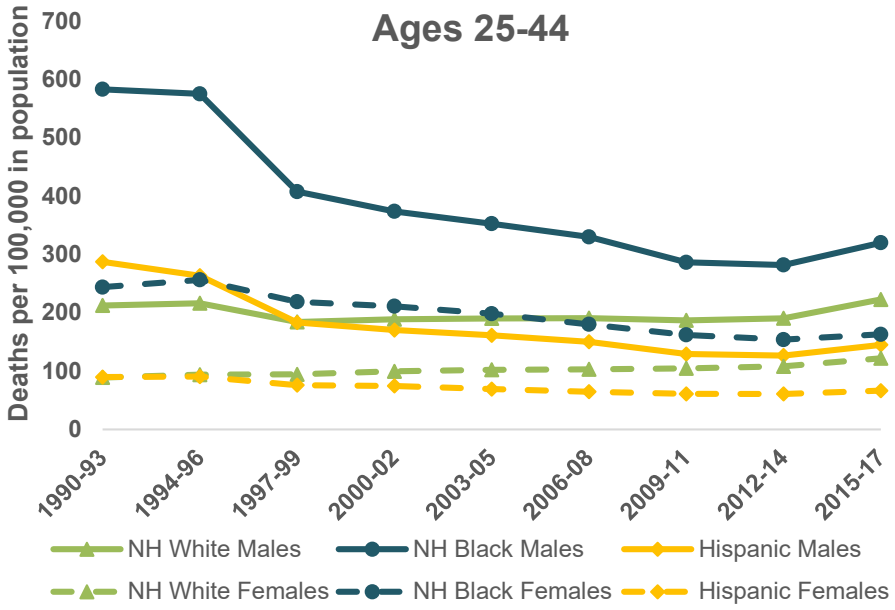
External Reviewers

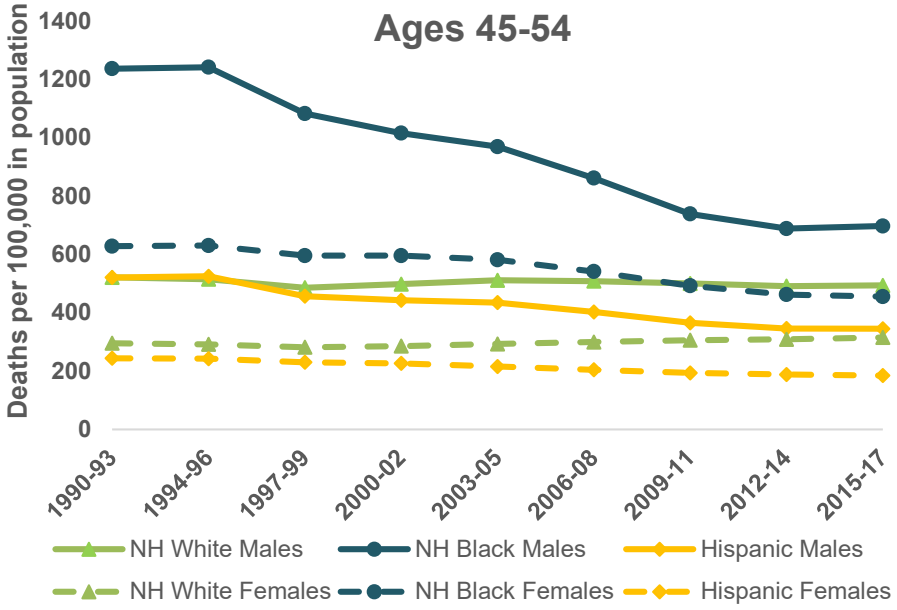
- **ANDREW J. CHERLIN**, Department of Sociology, Johns Hopkins University
- **SANDRO GALEA**, School of Public Health, Boston University
- **MARK D. HAYWARD**, Population Research Center, University of Texas at Austin
- **ICHIRO KAWACHI**, Department of Social and Behavioral Sciences, Harvard School of Public Health
- **PETER MUENNIG**, Mailman School of Public Health, Columbia University
- **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.

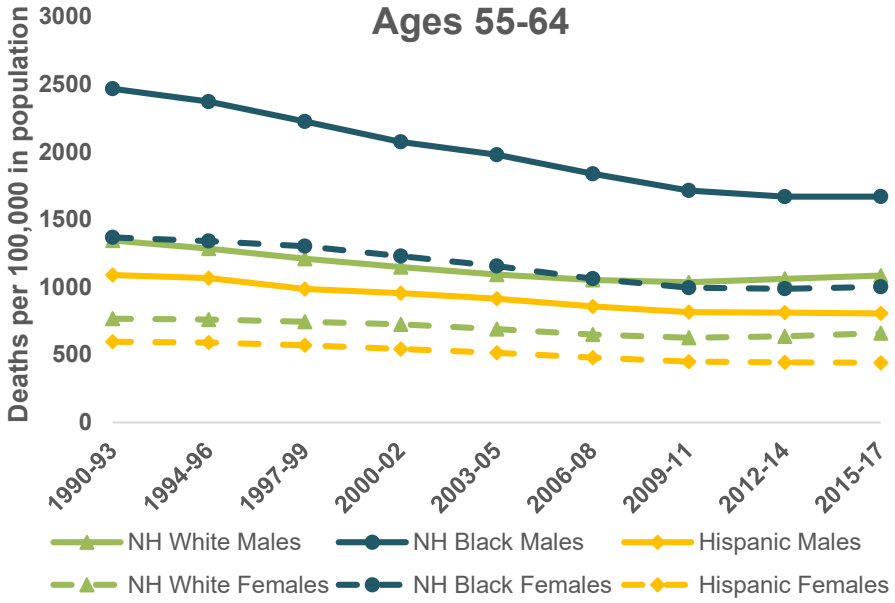
Scope of Report

- 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

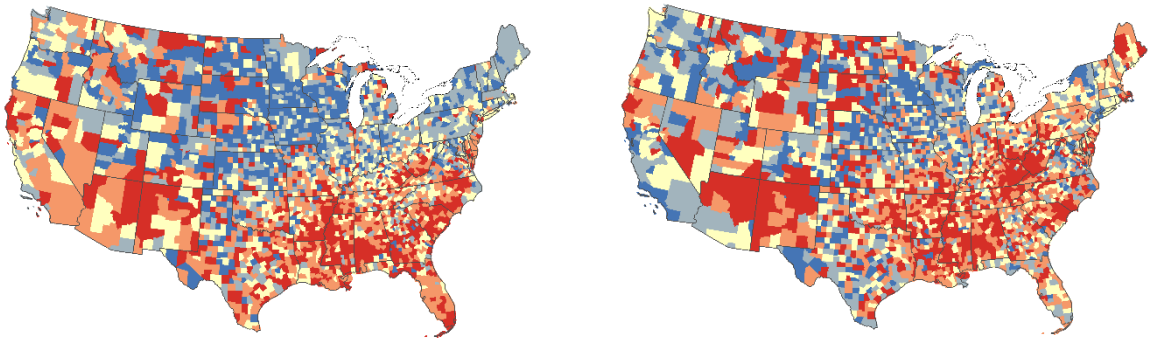
Trends in All-Cause Mortality

- Blacks and American Indians have consistently experienced much higher mortality
- Disparities in mortality by SES have widened substantially among working-age Whites, and there is a stable but persistent gap in mortality among Black adults that favors those with higher SES

Trends in All-Cause Mortality

(Males)

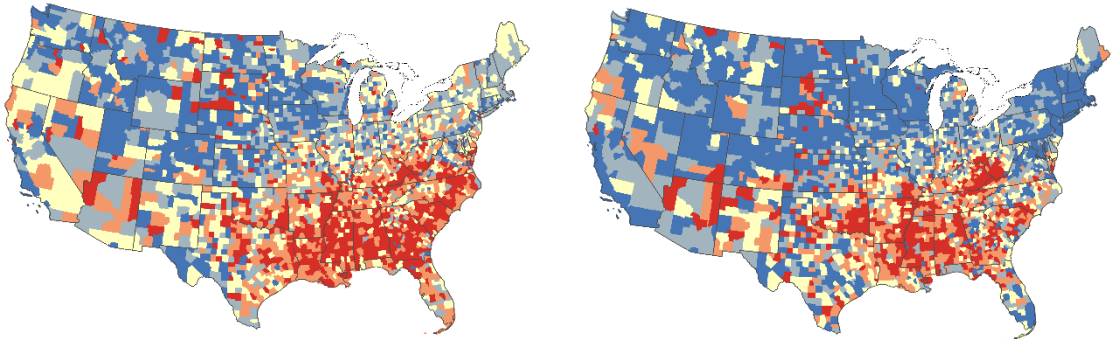
1990-1992 2015-2017



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

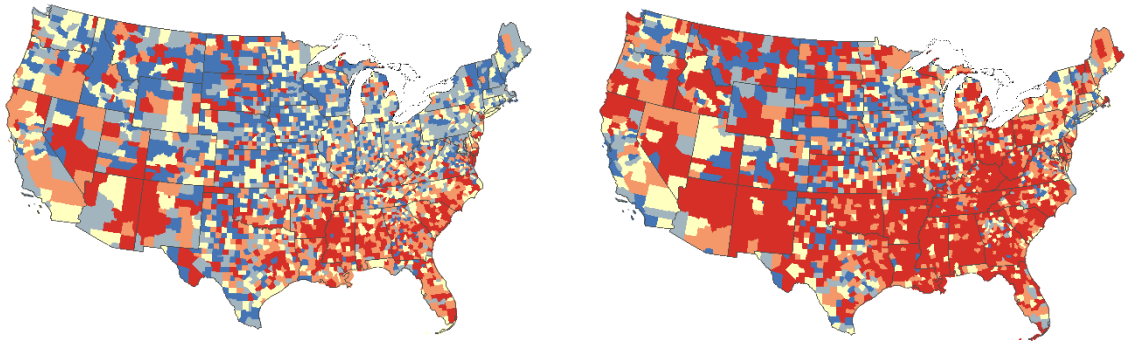
Deaths per 100,000 Population

<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)

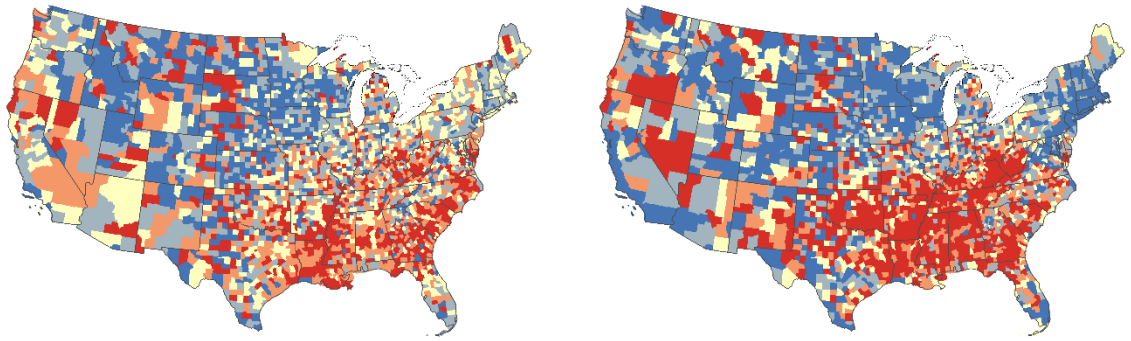
1990-1992 2015-2017



Mortality Rate Quintiles, Females 25-44

Deaths per 100,000 Population

<72.0	72.0 to <93.1	93.1 to <113.6	113.6 to <143.6	>143.6



Mortality Rate Quintiles, Females 45-64

Deaths per 100,000 Population

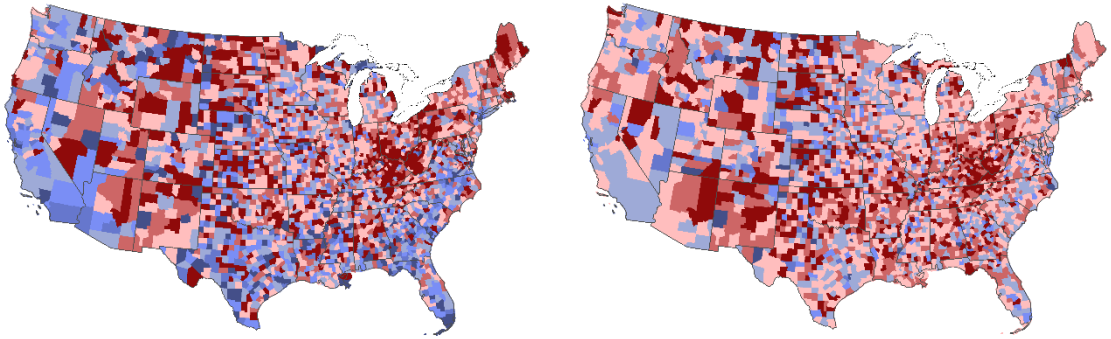
<426.6	426.6 to <500.2	500.2 to <562.7	562.7 to <650.5	>650.5

Trends in All-Cause Mortality

(Change in mortality, males and females)

Males

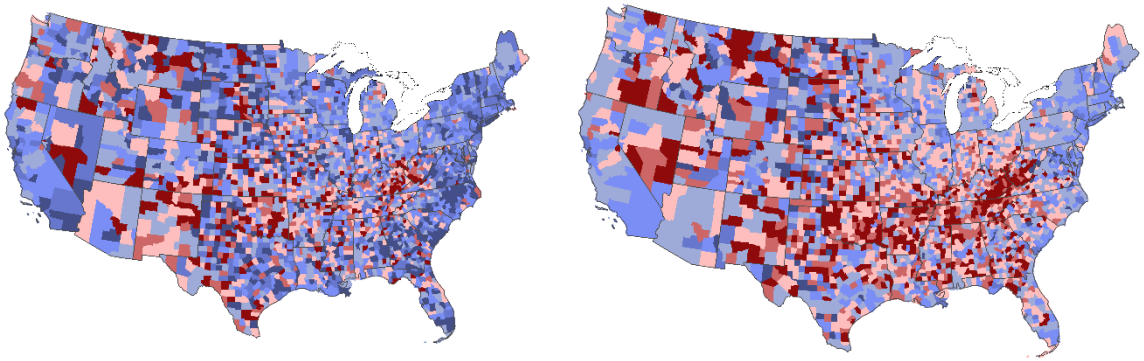
Females



Absolute Change in Mortality Rate (ages 25-44) 1990-92 to 2015-17

Deaths per 100,000 Population

<-150 | -150 to -100 | -100 to -50 | -50 to 0 | 0 to 50 | 50 to 100 | >100



Absolute Change in Mortality Rate (ages 45-64) 1990-92 to 2015-17

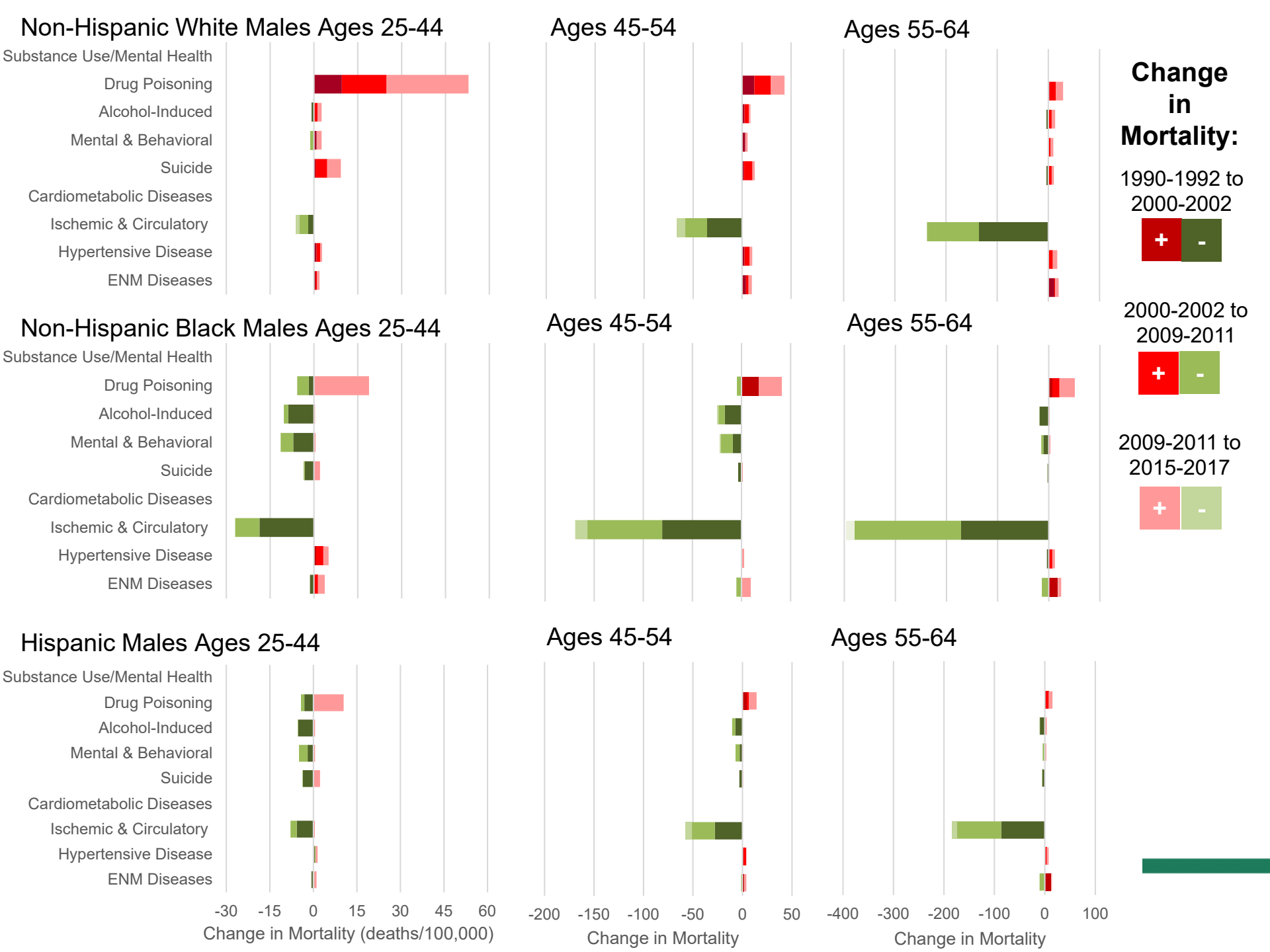
Deaths per 100,000 Population

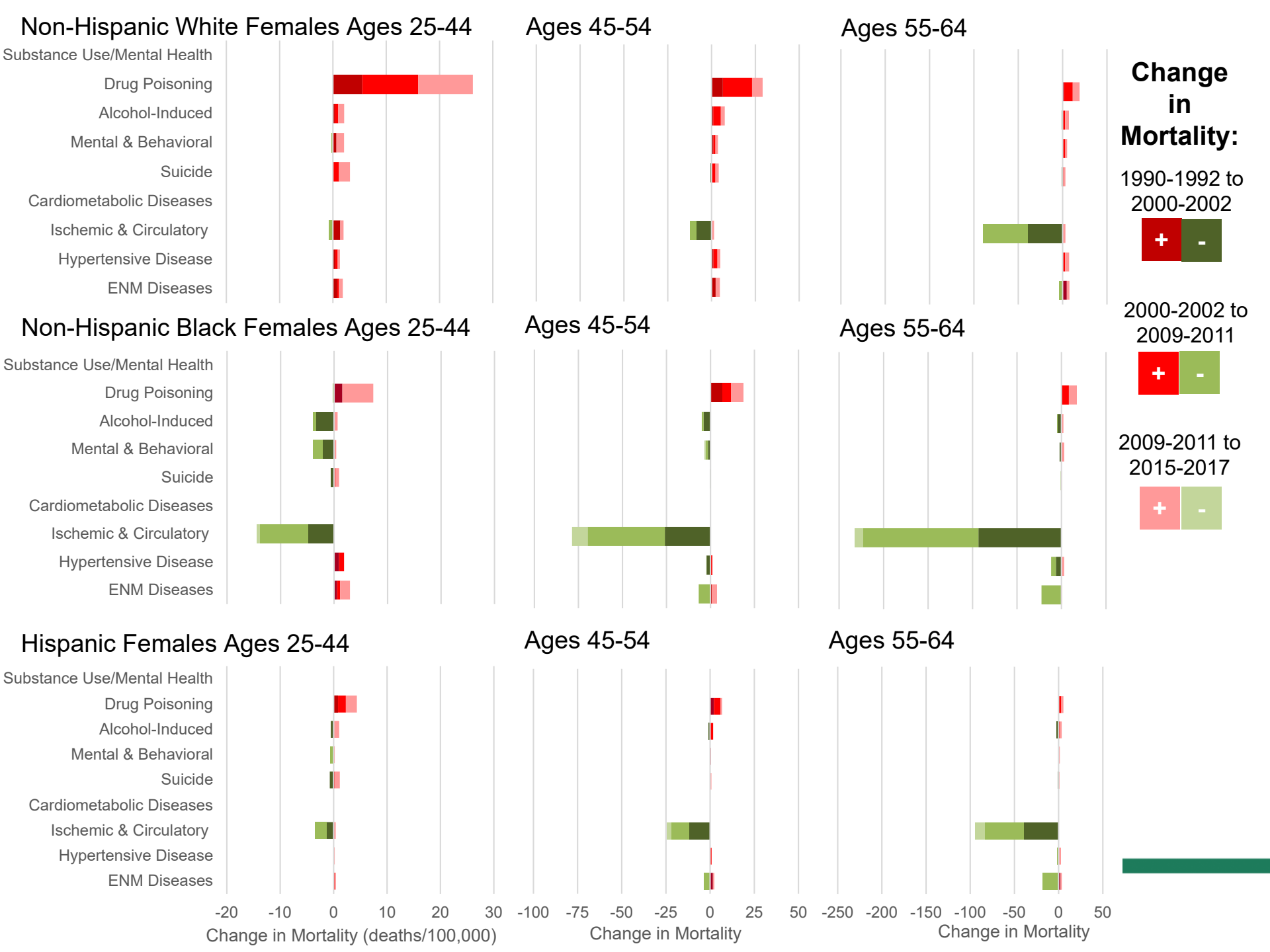
<-300 | -300 to -200 | -200 to -100 | -100 to 0 | 0 to 100 | 100 to 200 | >200

Summary of Findings: Cause Specific Mortality, 1990-2017

Main Drivers of the Rise in Working-age Mortality:

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


Non-Hispanic White Males Ages 25-44
Ages 45-54
Ages 55-64
Non-Hispanic Black Males Ages 25-44
Ages 45-54
Ages 55-64
Hispanic Males Ages 25-44
Ages 45-54
Ages 55-64
Substance Use/Mental Health
Drug Poisoning
Alcohol-Induced
Mental & Behavioral
Suicide
Cardiometabolic Diseases
Ischemic & Circulatory
Hypertensive Disease
ENM Diseases
-30 -15 0 15 30 45 60
Change in Mortality (deaths/100,000)
-200 -150 -100 -50 0 50
Change in Mortality
-400 -300 -200 -100 0 100
Change in Mortality
Change in Mortality:
1990-1992 to 2000-2002
+
-
2000-2002 to 2009-2011
+
-
2009-2011 to 2015-2017
+
-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-20 -10 0 10 20 30
-100 -75 -50 -25 0 25 50
-250 -200 -150 -100 -50 0 50
Change in Mortality (deaths/100,000)
Change in Mortality
Change in Mortality
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1990-1992 to 2000-2002
+
-
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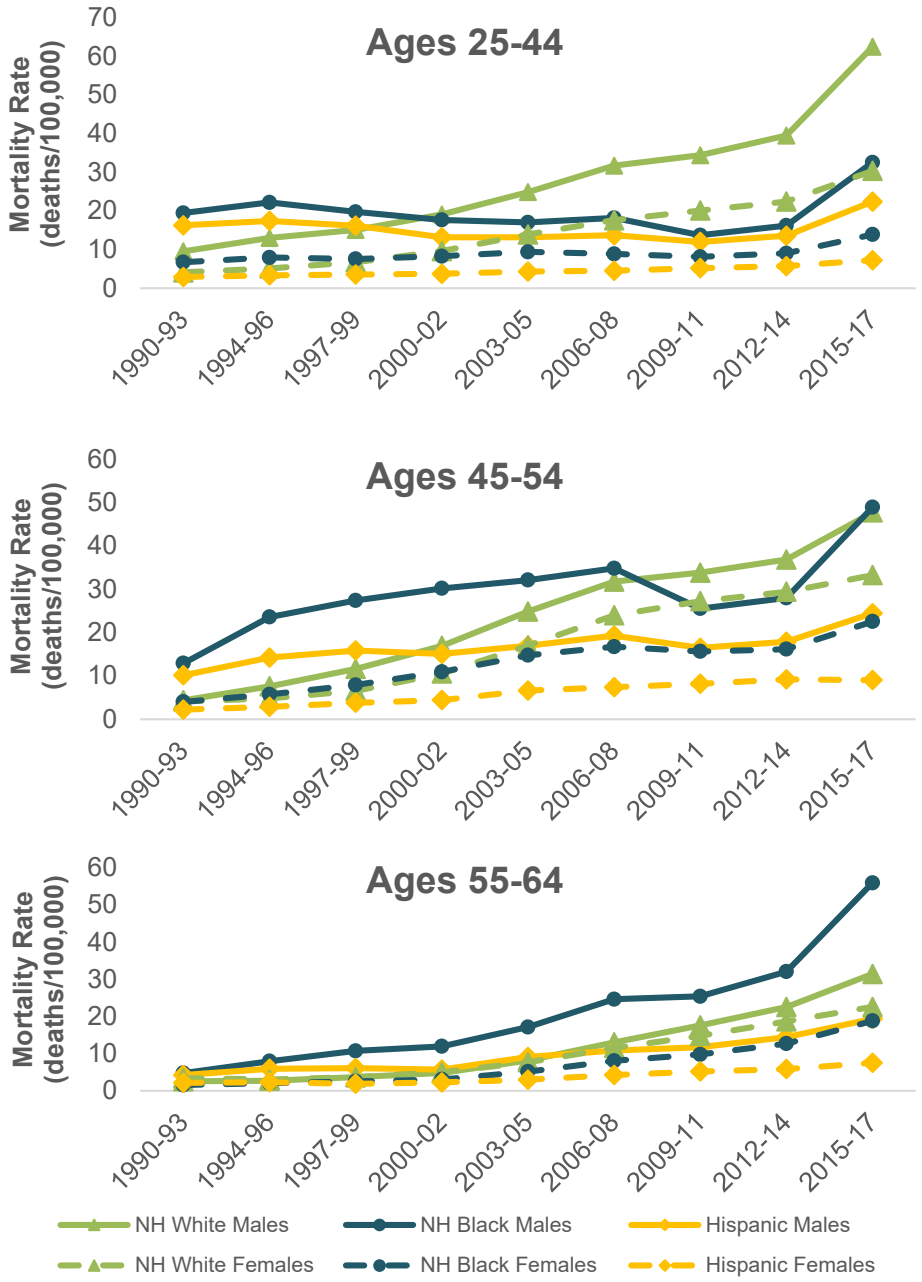
+
-

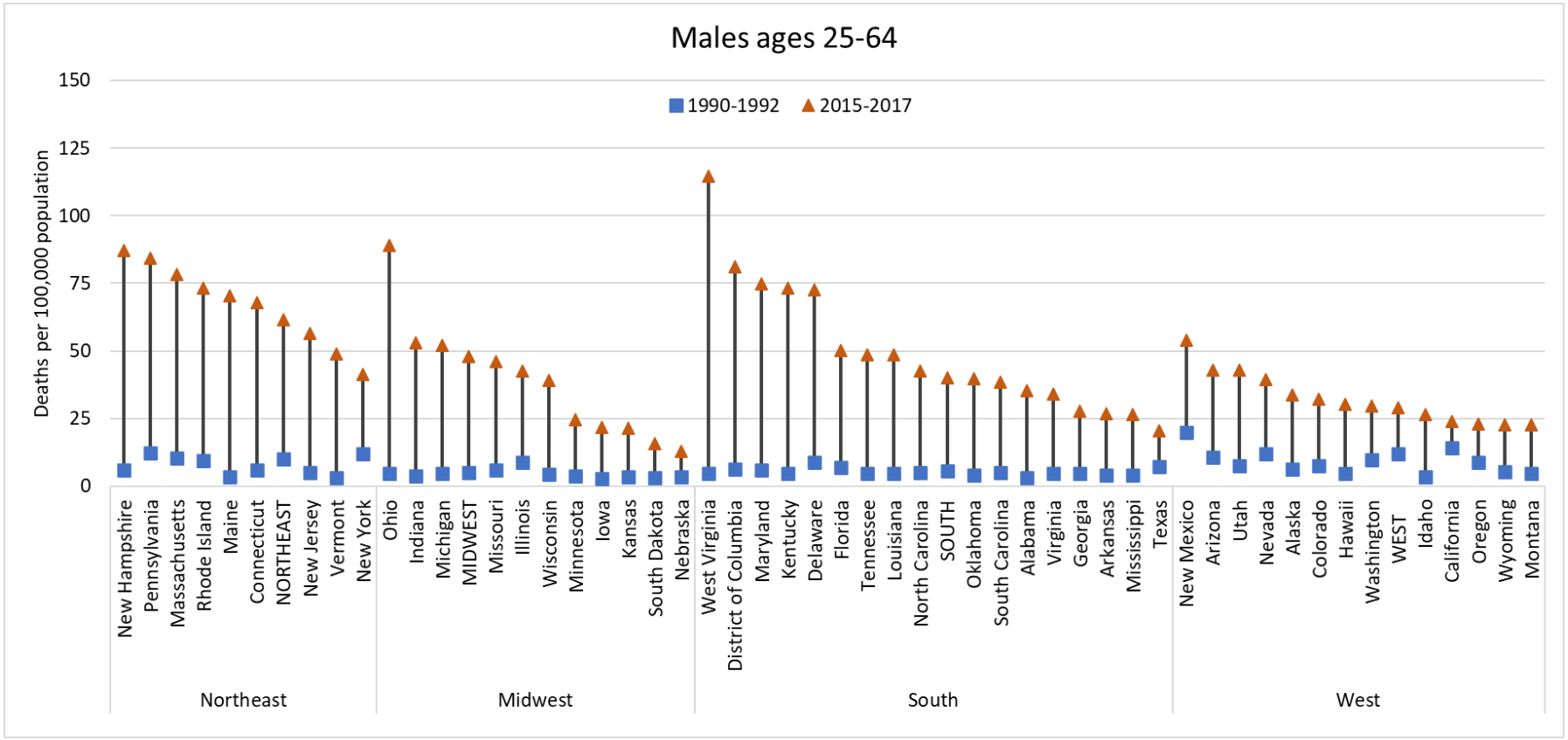
The Role of Opioids, other Drugs, and Alcohol in Shaping Mortality Trends

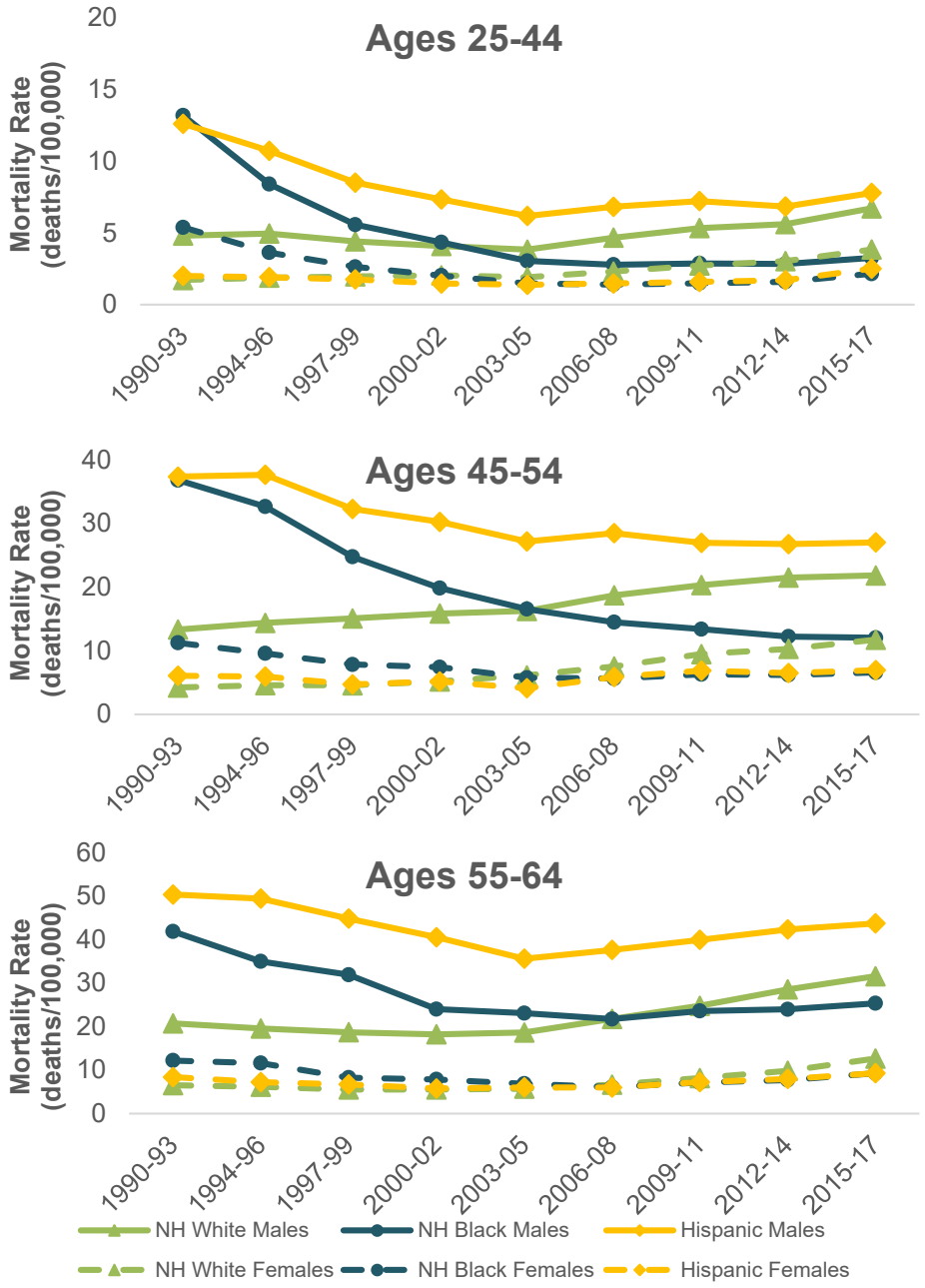


Drug Poisoning Mortality

- 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

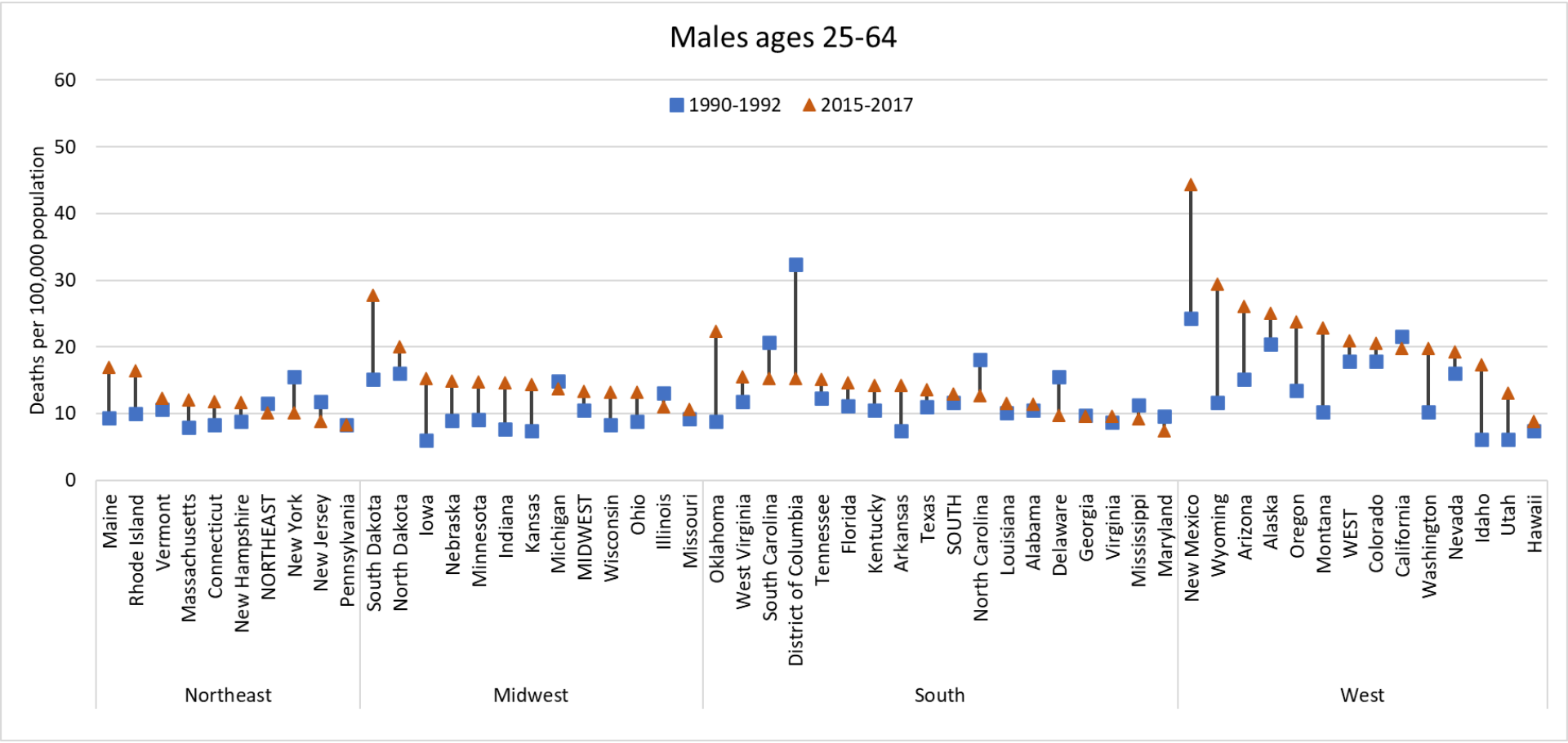




Alcohol-Induced Mortality

- 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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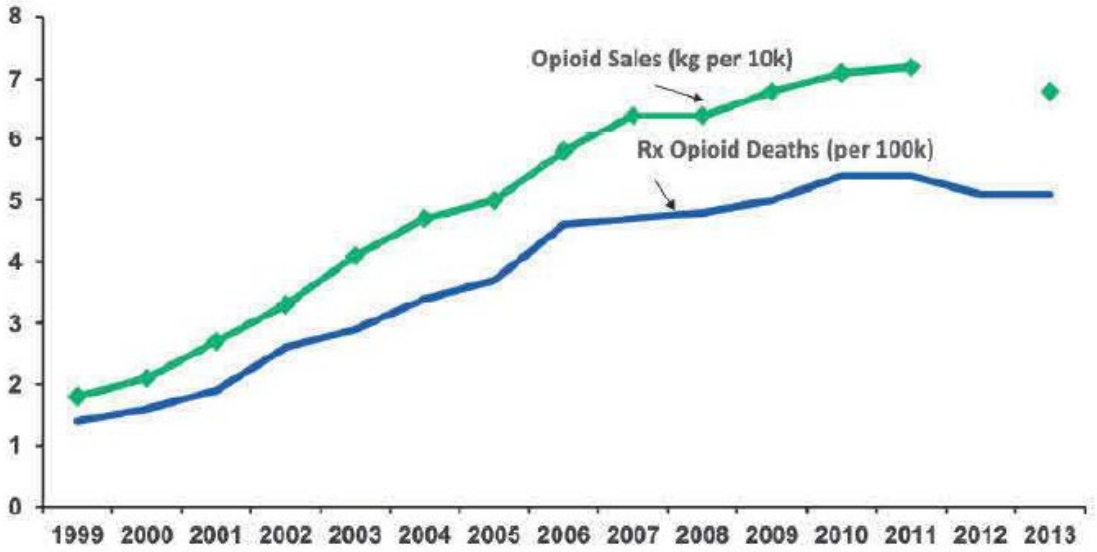

National Vital Statistics System, DEA's Automation of Reports and Consolidated Orders System.

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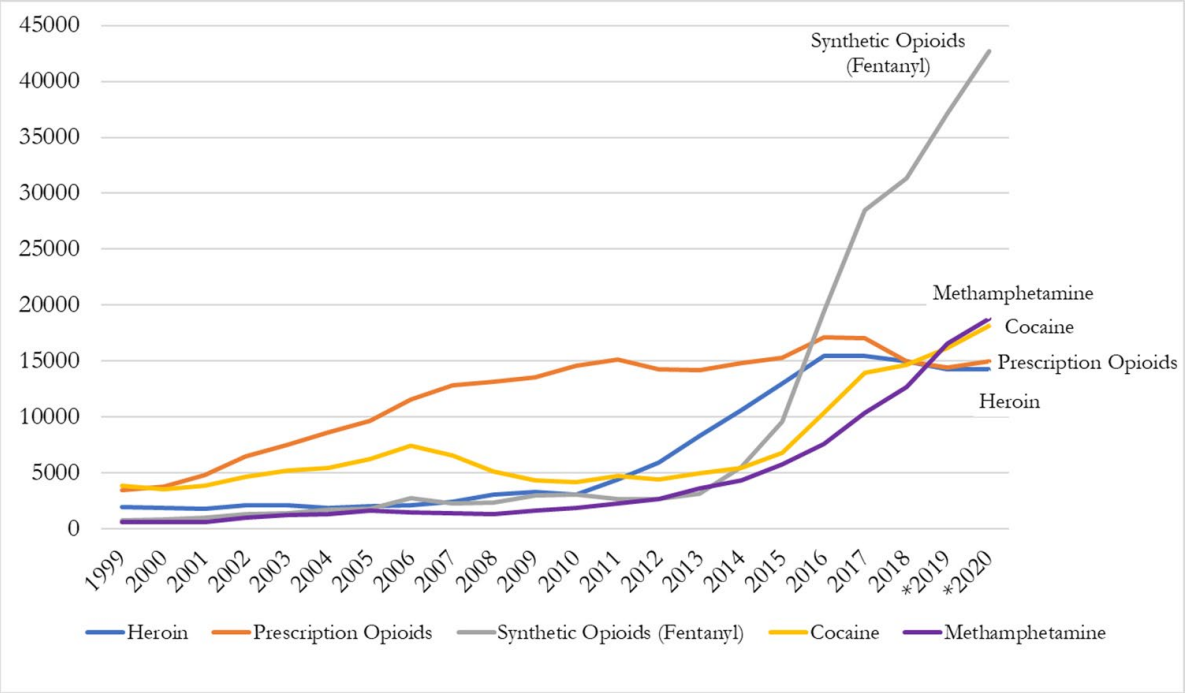

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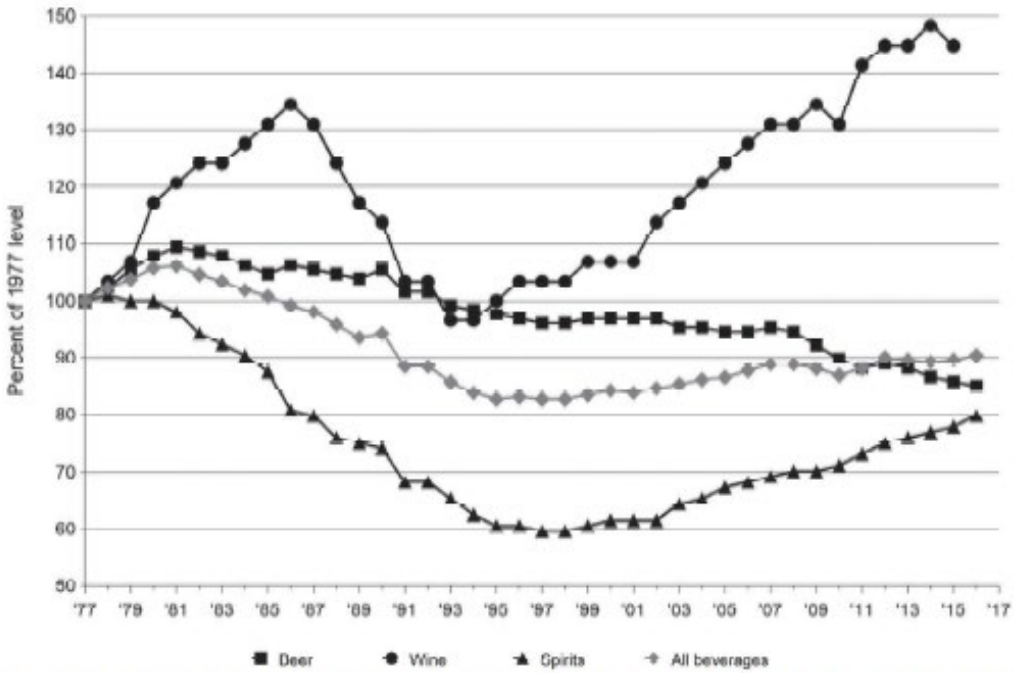

FIGURE 7-9 Percentage change in per capita ethanol consumption by beverage type, United States, 1977–2016.
NOTE: Beverage types include beer (black squares), wine (black circles), spirits (black triangles), and all beverages combined (grey triangles).
SOURCE: Data from National Institute on Alcohol Abuse and Alcoholism (https://pubs.niaaa.nih.gov/publications/surveillance110/CONS16.pdf).

- 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)

Explanations for Drug and Alcohol Mortality Trends

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

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- 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
  - Adverse childhood experiences
  - 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

Data Recommendations

- Add geographic indicators to mental health and substance use surveys [7-4]
- Conduct periodic or ongoing population surveys of important mental health conditions using common data elements, ideally linking to administrative data [7-5]
- Add questions about adverse childhood experiences to national health surveys [7-6]

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

Research Recommendations (Cross-Cutting)

- Better track physical pain and psychosocial indicators (stress, distress, despair, hopelessness, coping, resilience, grit), their sources, and their relationships to morbidity/mortality [11-2]
- Use multiple causes of death codes [11-3]
- Identify macrostructural factors (e.g., social, economic, policy) affecting mortality [11-4]
- Mixed-methods, interdisciplinary, multilevel designs [11-6]
- Cross-national research to identify why trends have unfolded differently in the U.S. [11-7]

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]

- In order to address the inequalities that drive racial/ethnic inequalities in working-age mortality, need to dismantle structural racism and discriminatory policies of exclusion [11-1]

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]

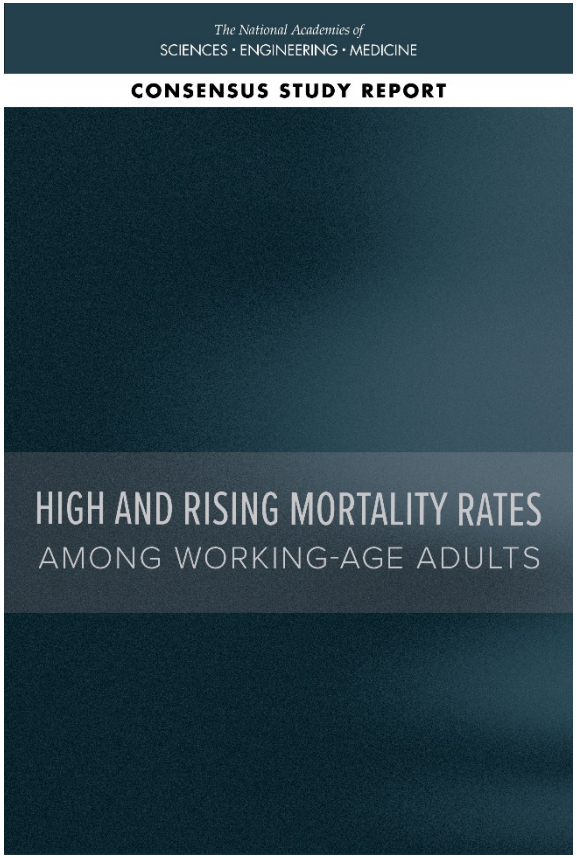
Lessons from the COVID-19 Pandemic

- Increased working-age mortality our report documents represent risk factors for COVID-19 morbidity and mortality
- Evidence that stressors of the pandemic led to an increased consumption of alcohol and drugs as a coping mechanism
- COVID-19 pandemic has reinforced the impact of existing social and economic inequalities, exacerbating disparities in working-age mortality

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
- COVID likely to exacerbate existing trends and disparites

Thank you!



For more information, please visit:

www.nationalacademies.org/RisingMortality

Staff Contacts

Malay Majmundar, Study Director
MMajmundar@nas.edu

Tara Becker, Program Officer
TBecker@nas.edu