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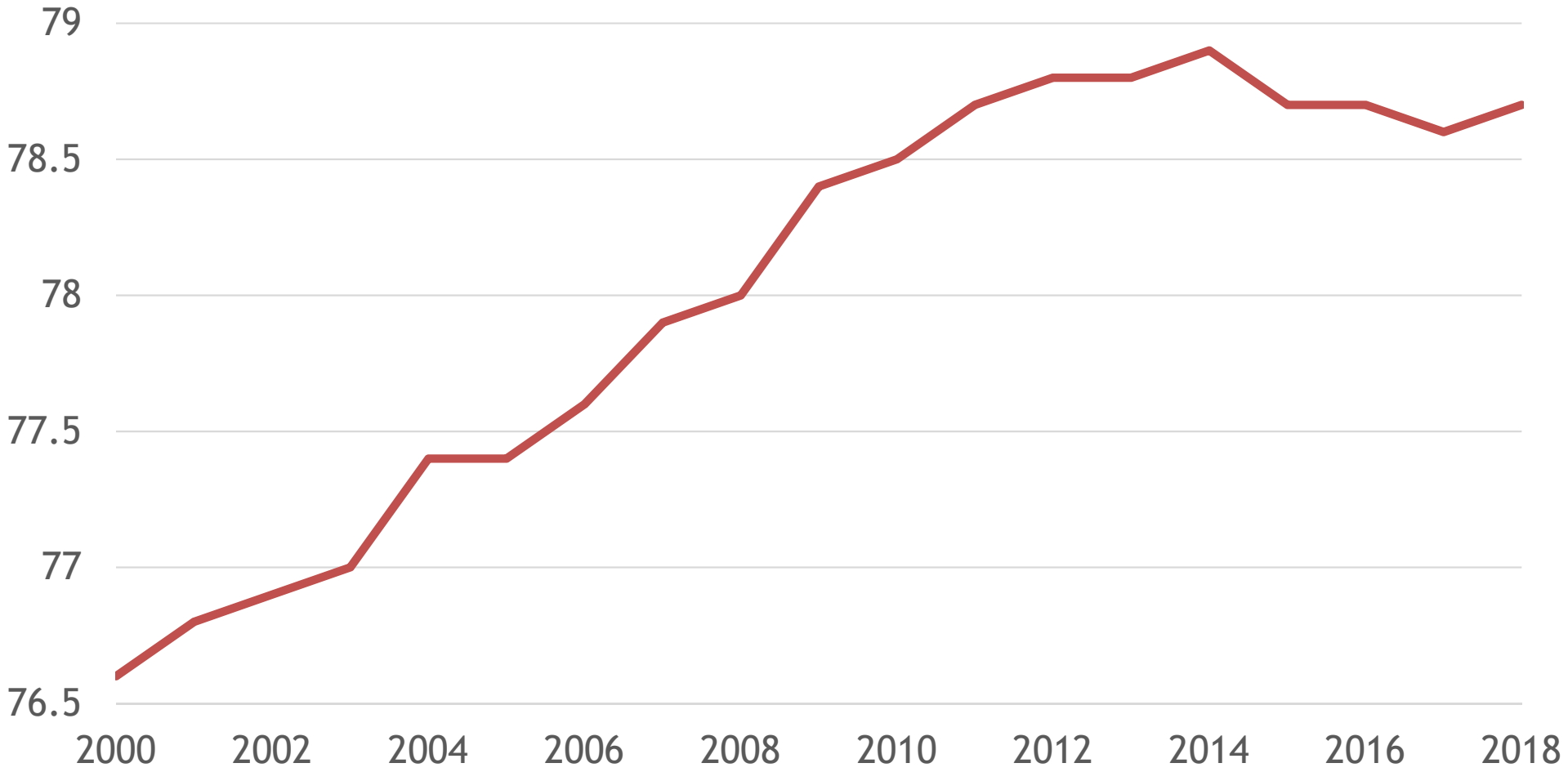
COMMITTEE ON POPULATION (CPOP) & COMMITTEE ON NATIONAL STATISTICS (CNSTAT)

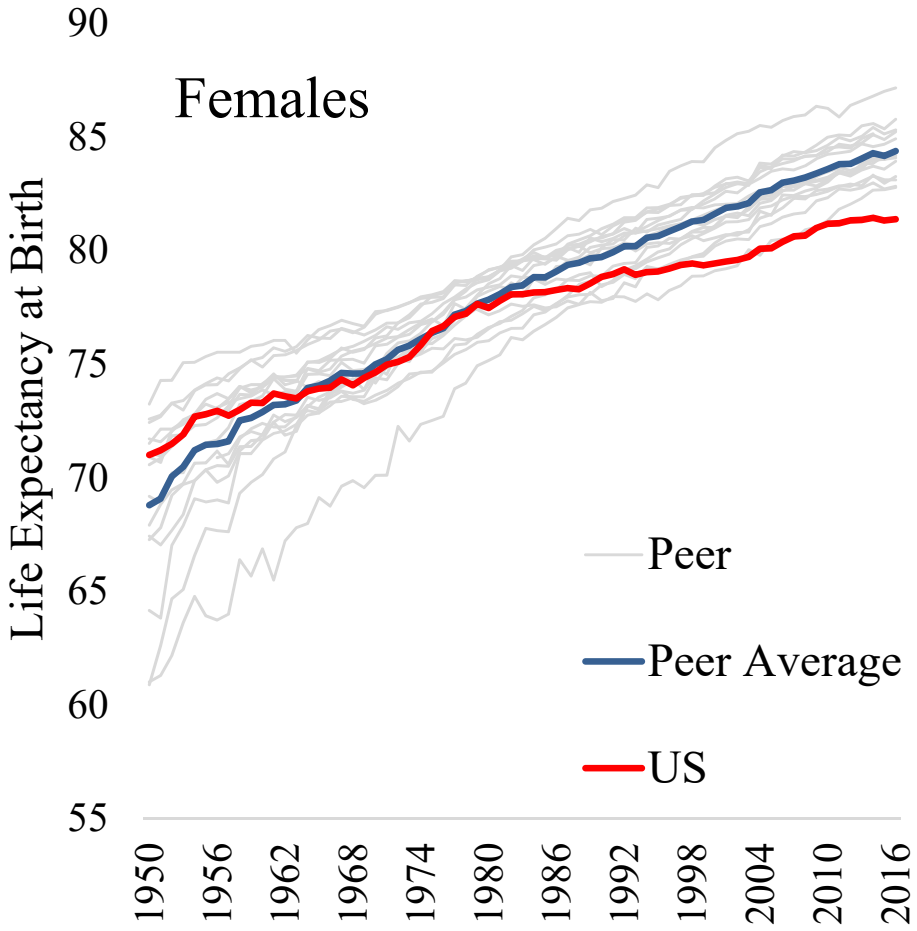
# High and Rising Mortality Rates Among Working-Age Adults

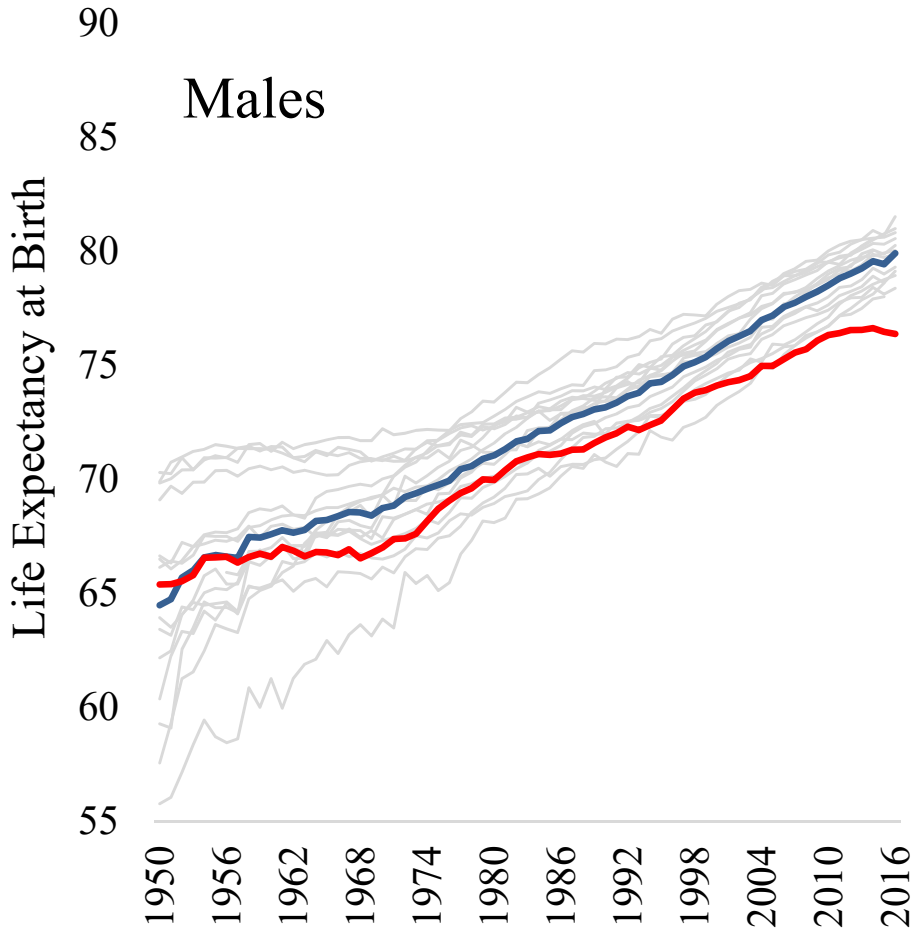
## *Committee on Rising Midlife Mortality Rates and Socioeconomic Disparities*

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

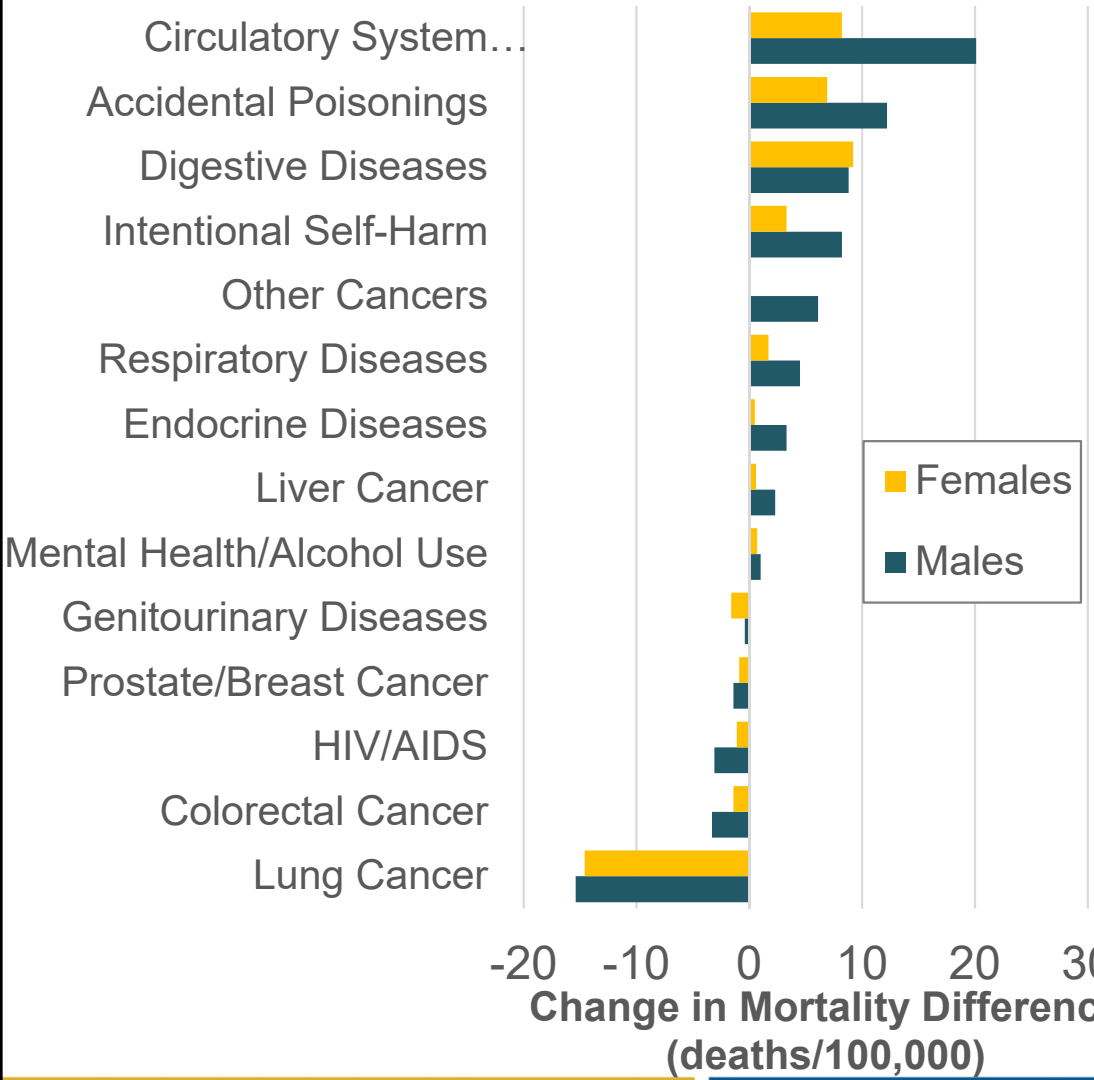


# The Problem: U.S. Life Expectancy has Been Diverging from Peer Countries



# 2000-2015 Change in the Difference in Mortality: U.S. vs Peers




- Gap between U.S. and peers growing for many causes of death
- U.S. advantage on some cancers and HIV/AIDS

# Study Background

- Sponsors: (1) National Institute on Aging
  (2) Robert Wood Johnson Foundation

- Process:
  - Study began in October 2018
  - Study committee held six in-person meetings
  - Report was peer reviewed

# 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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- **FRANK A. SLOAN**, Economics Department and Center for Health Policy, Law and Management, Duke University.

# Statement of Task

1. Identify the key drivers of increasing mid-life mortality and concomitant widening social differentials
2. Identify modifiable risk factors that might alleviate poor health in mid-life and widening health inequalities
3. Identify key knowledge gaps and make recommendations for future research and data collection
4. Explore potential policy implications

# Scope of Report

- Examined mortality within the full range of prime working ages (ages 25-64)
- Conducted independent data analysis using restricted-access National Vital Statistics death certificate data files (1990-2017)
- Disparities examined by age-group; sex; race/ethnicity; geography

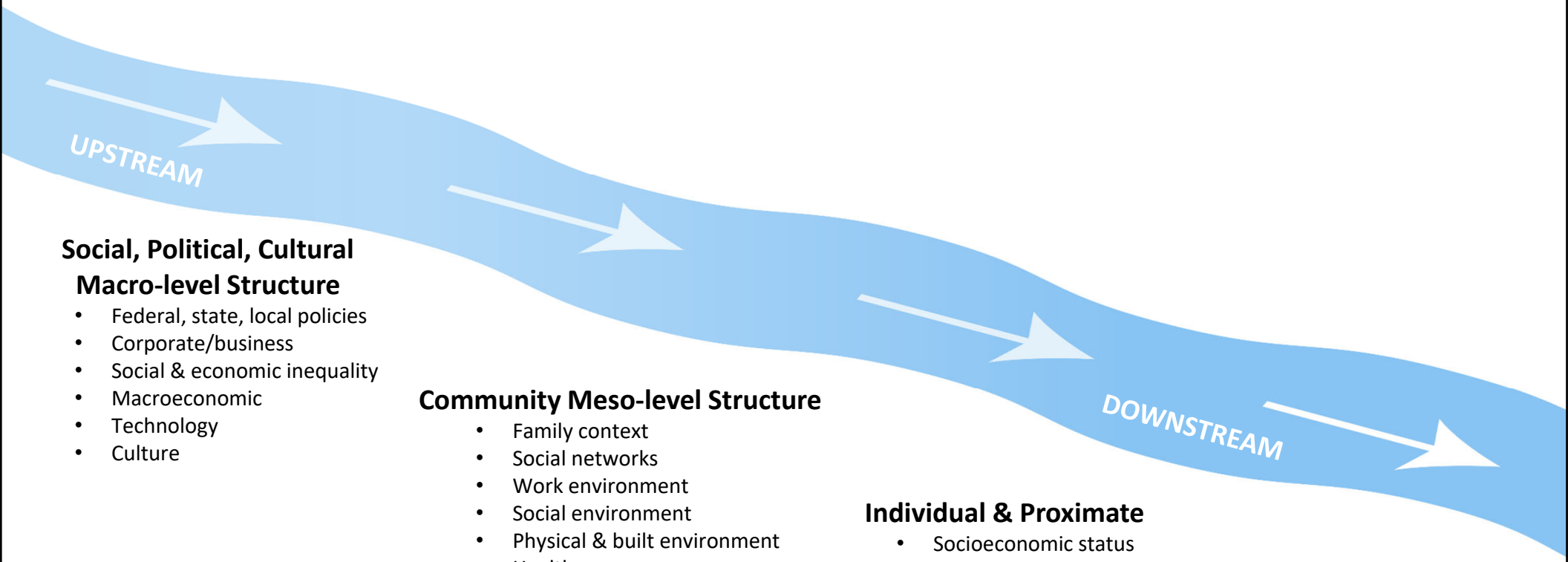
# Organization of Report

1) Part I: Trends

2) Part II: Explanations

3) Part III: Implications for Policy and Research

# Conceptual Framework: A life course multilevel model of factors involved in high and rising mortality among working-age adults




**Social, Political, Cultural Macro-level Structure**

- Federal, state, local policies
- Corporate/business
- Social & economic inequality
- Macroeconomic
- Technology
- Culture

**Community Meso-level Structure**

- Family context
- Social networks
- Work environment
- Social environment
- Physical & built environment
- Health care

**Individual & Proximate**

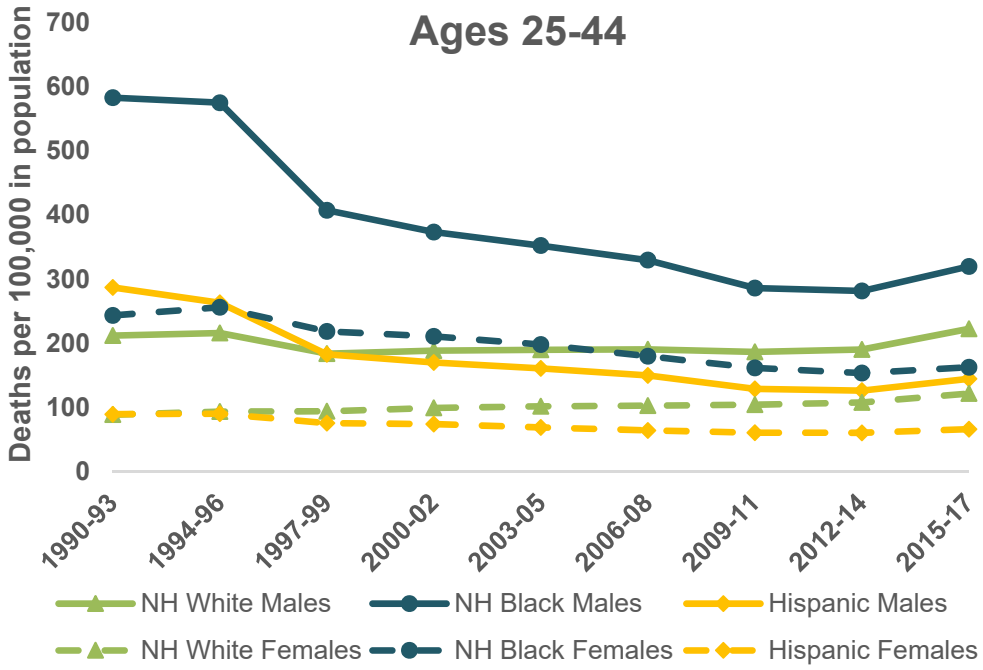
- Socioeconomic status
- Psychological factors
- Behavior
- Health care utilization
- Biology

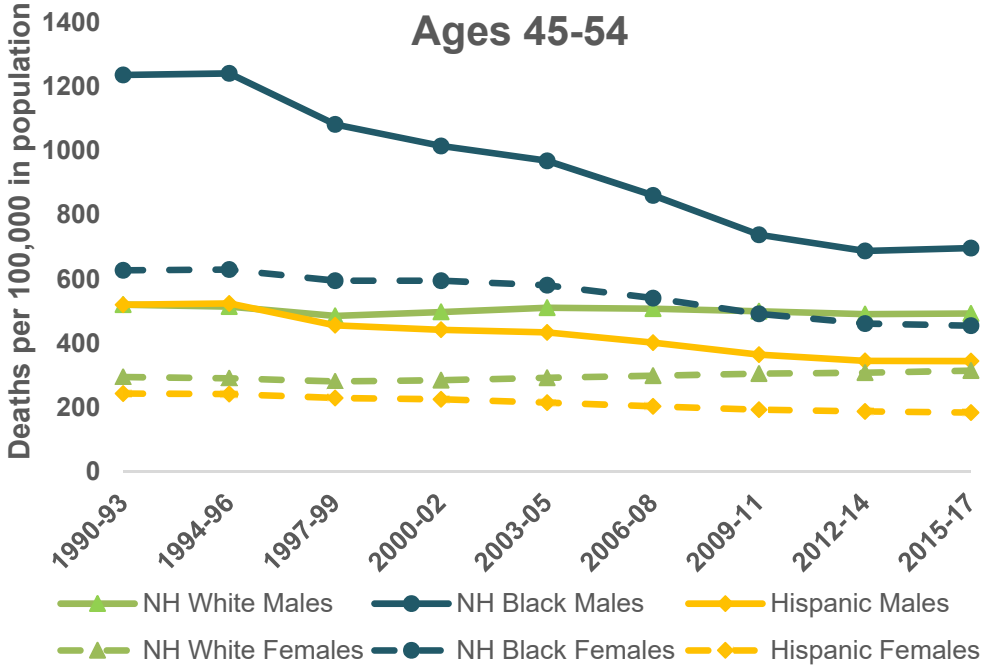
**Morbidity**

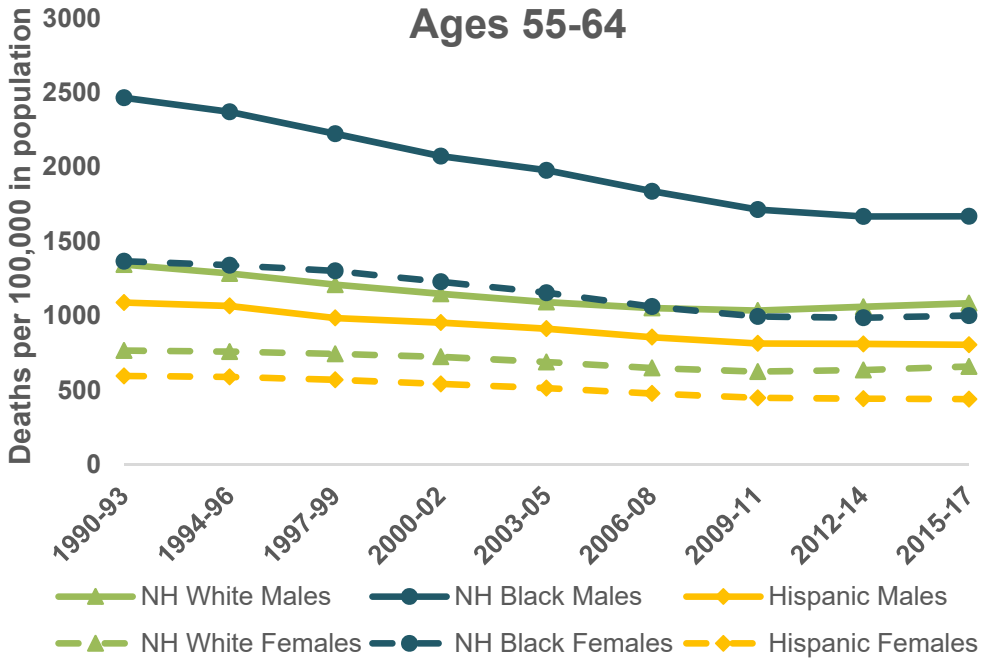
**Death**

**Age**

Within or across stages of the life course: gestation, birth, childhood, adolescence, young adulthood, middle adulthood




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

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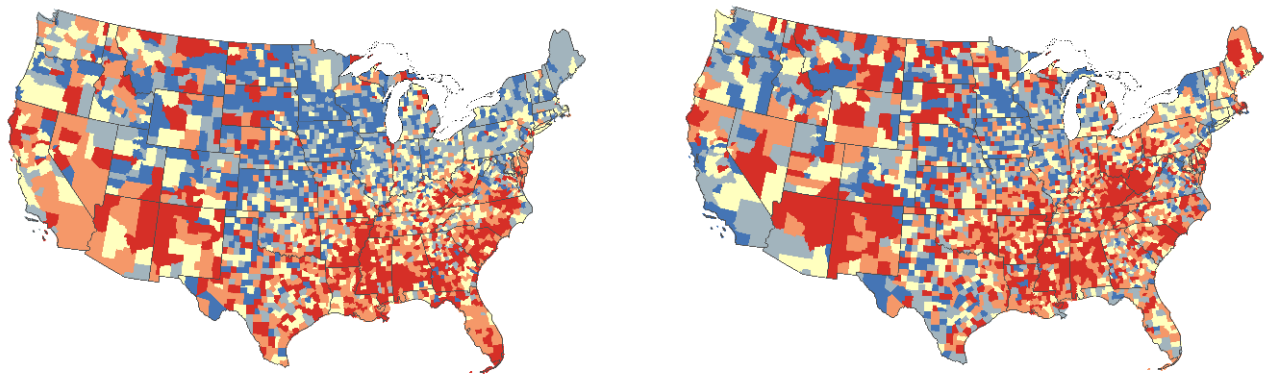
# Trends in All-Cause Mortality

- 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)

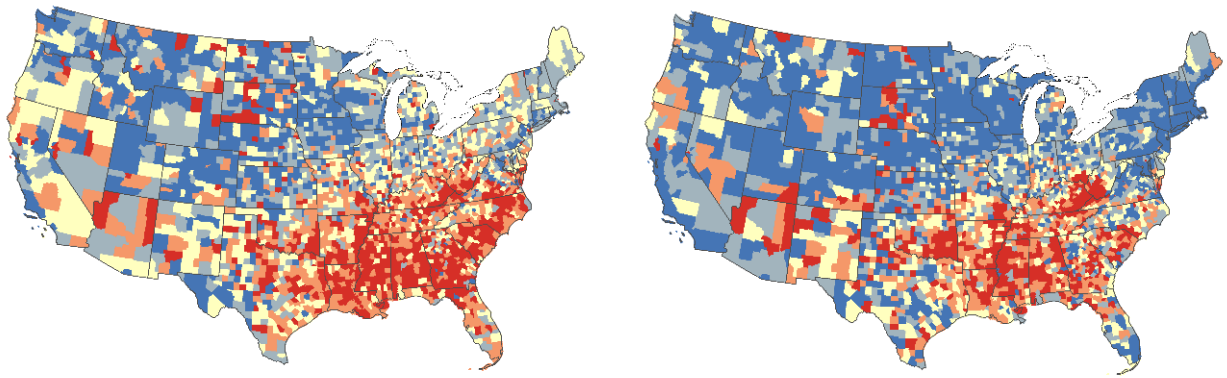
1990-1992 2015-2017



**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**

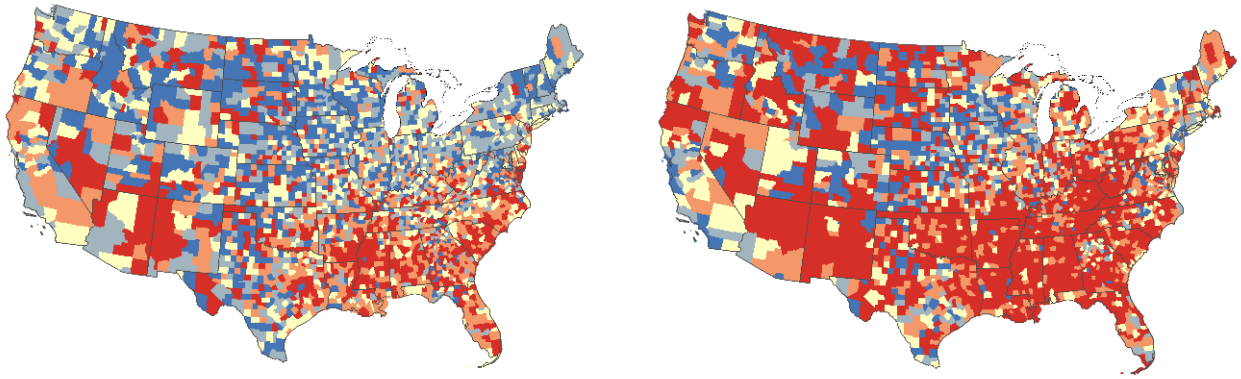
Deaths per 100,000 Population

| <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)

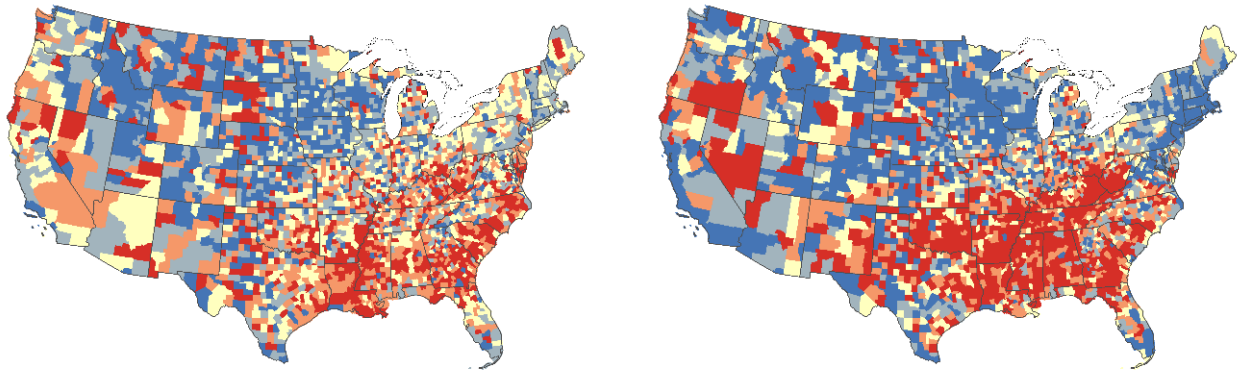
1990-1992 2015-2017



**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

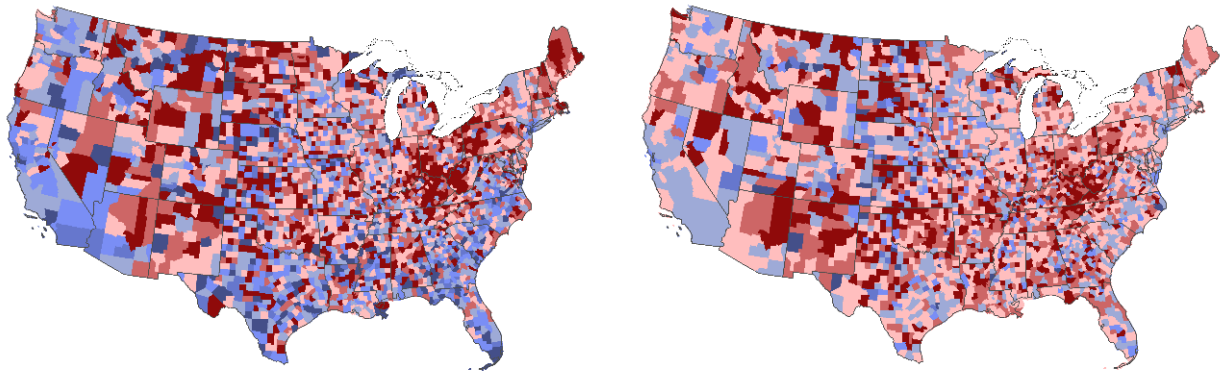
| <426.6 | 426.6 to <500.2 | 500.2 to <562.7 | 562.7 to <650.5 | >650.5 |
|---|---|---|---|---|

# Trends in All-Cause Mortality

(Change in mortality, males and females)

Males

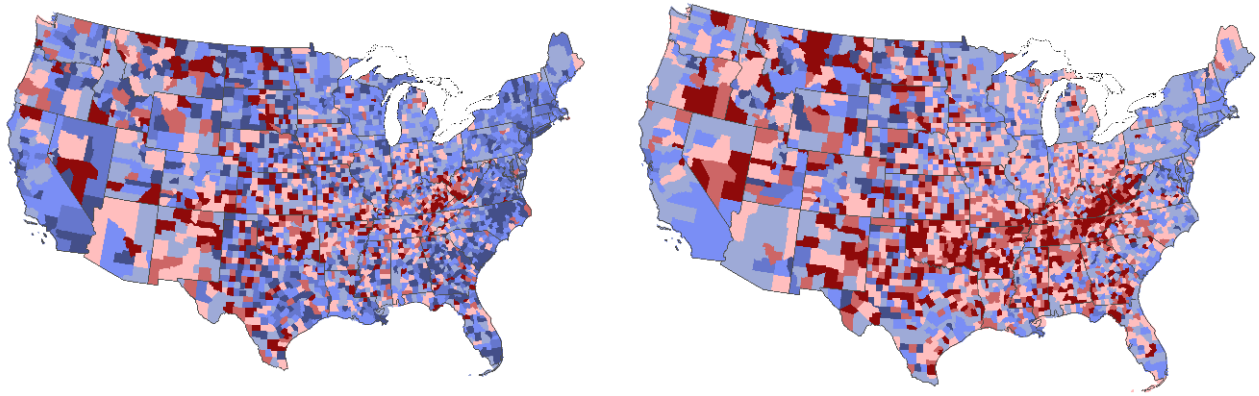
Females



**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**

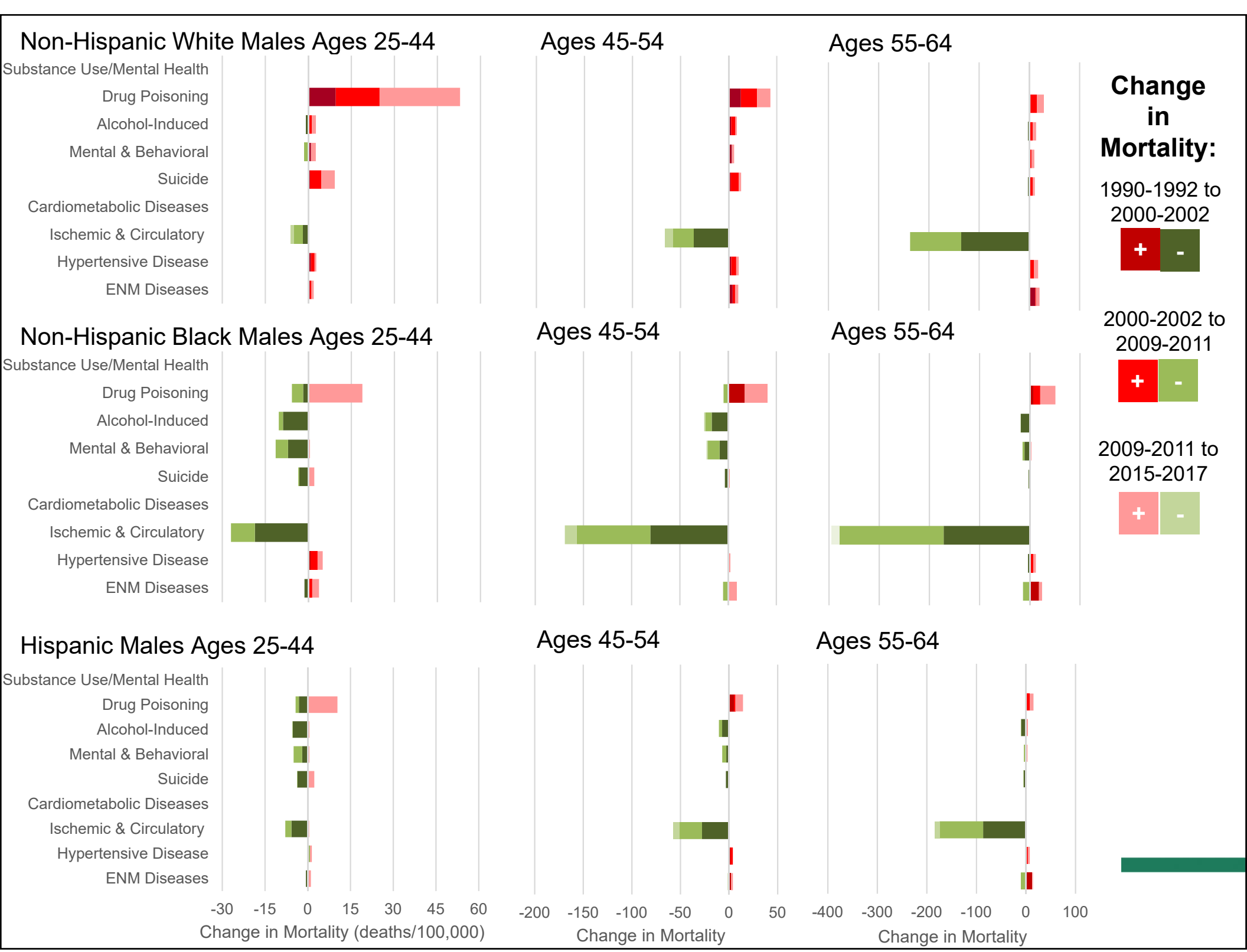
Deaths per 100,000 Population

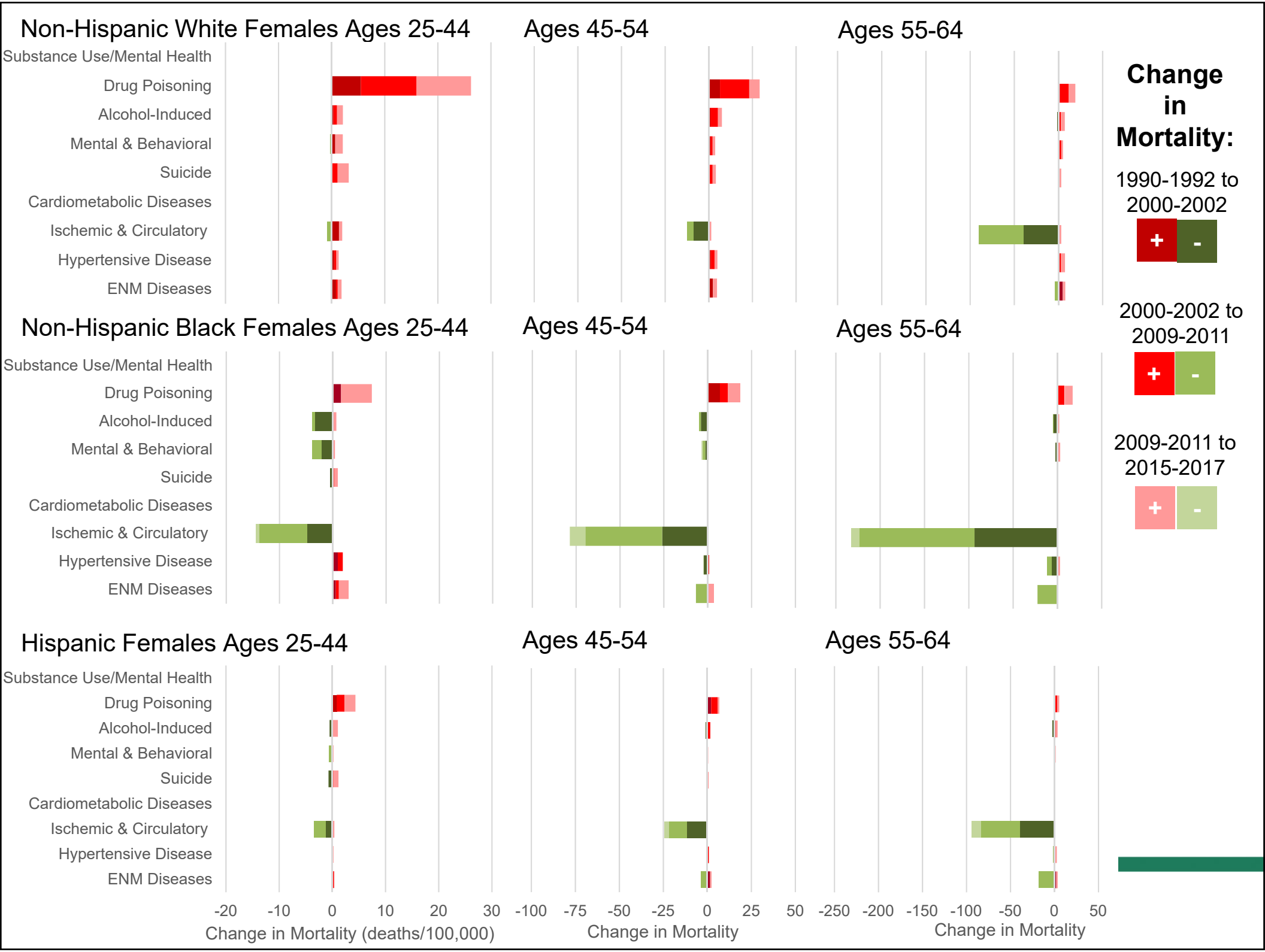
<-300 | -300 to -200 | -200 to -100 | -100 to 0 | 0 to 100 | 100 to 200 | >200

# Trends in Cause-Specific Mortality

Main drivers of 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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Substance Use/Mental Health
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Cardiometabolic Diseases
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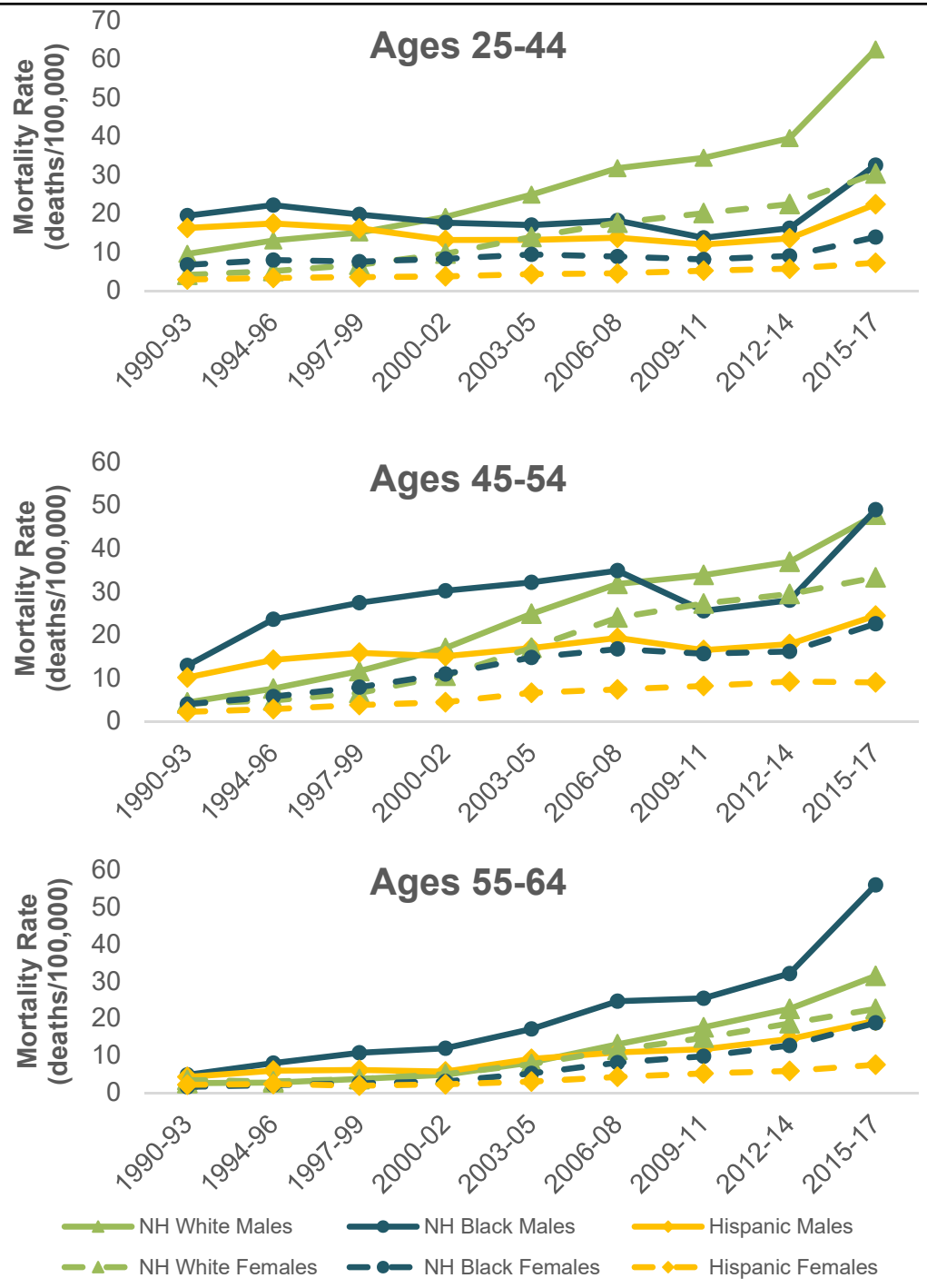
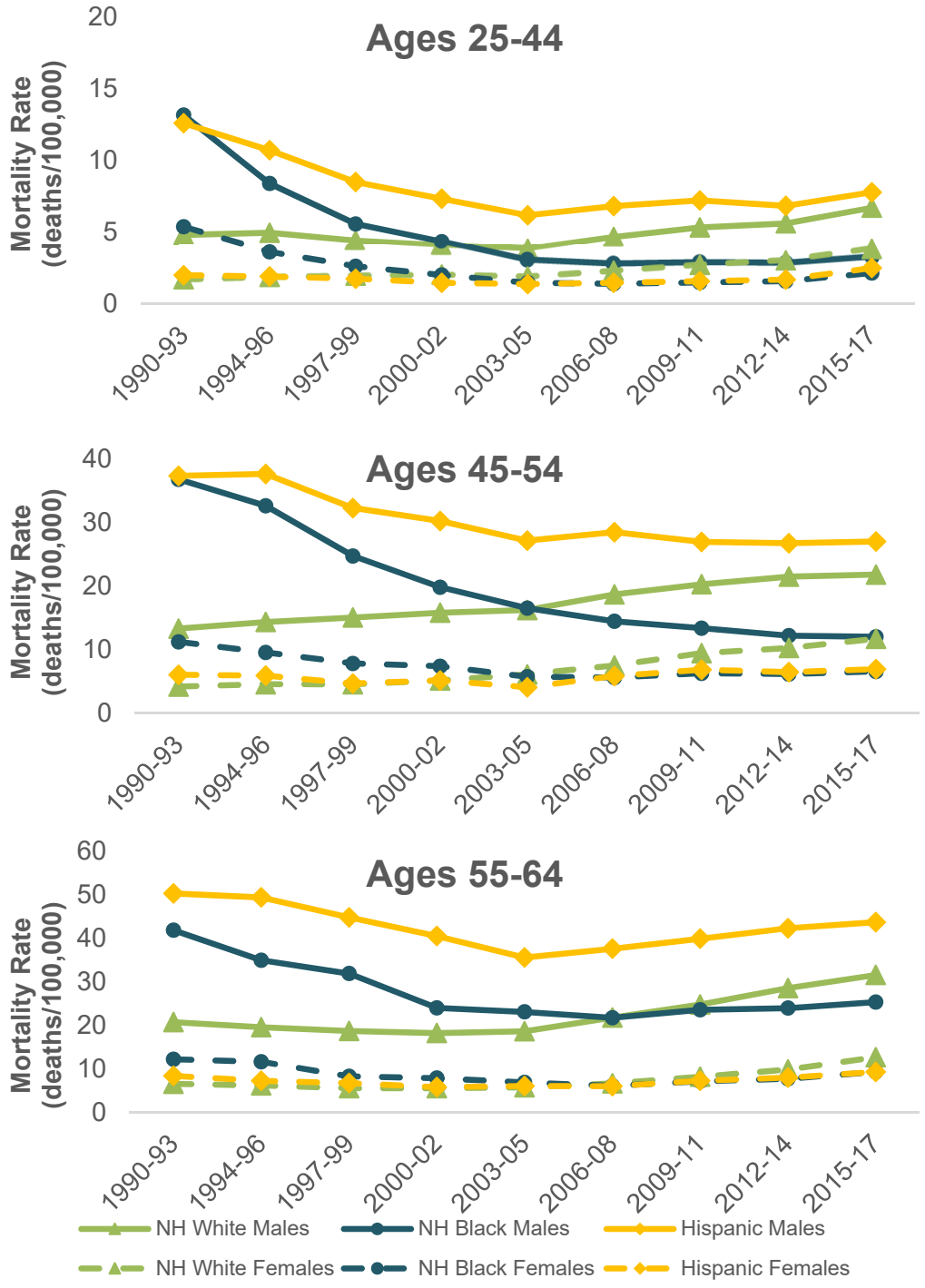
Hypertensive Disease
ENM Diseases
-20 -10 0 10 20 30
Change in Mortality (deaths/100,000)
-100 -75 -50 -25 0 25 50
Change in Mortality
-250 -200 -150 -100 -50 0 50
Change in Mortality
Change in Mortality:
1990-1992 to 2000-2002
+
-
2000-2002 to 2009-2011
+
-
2009-2011 to 2015-2017
+
-




# 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




# 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

# Explanations for Drugs and Alcohol Mortality Trends

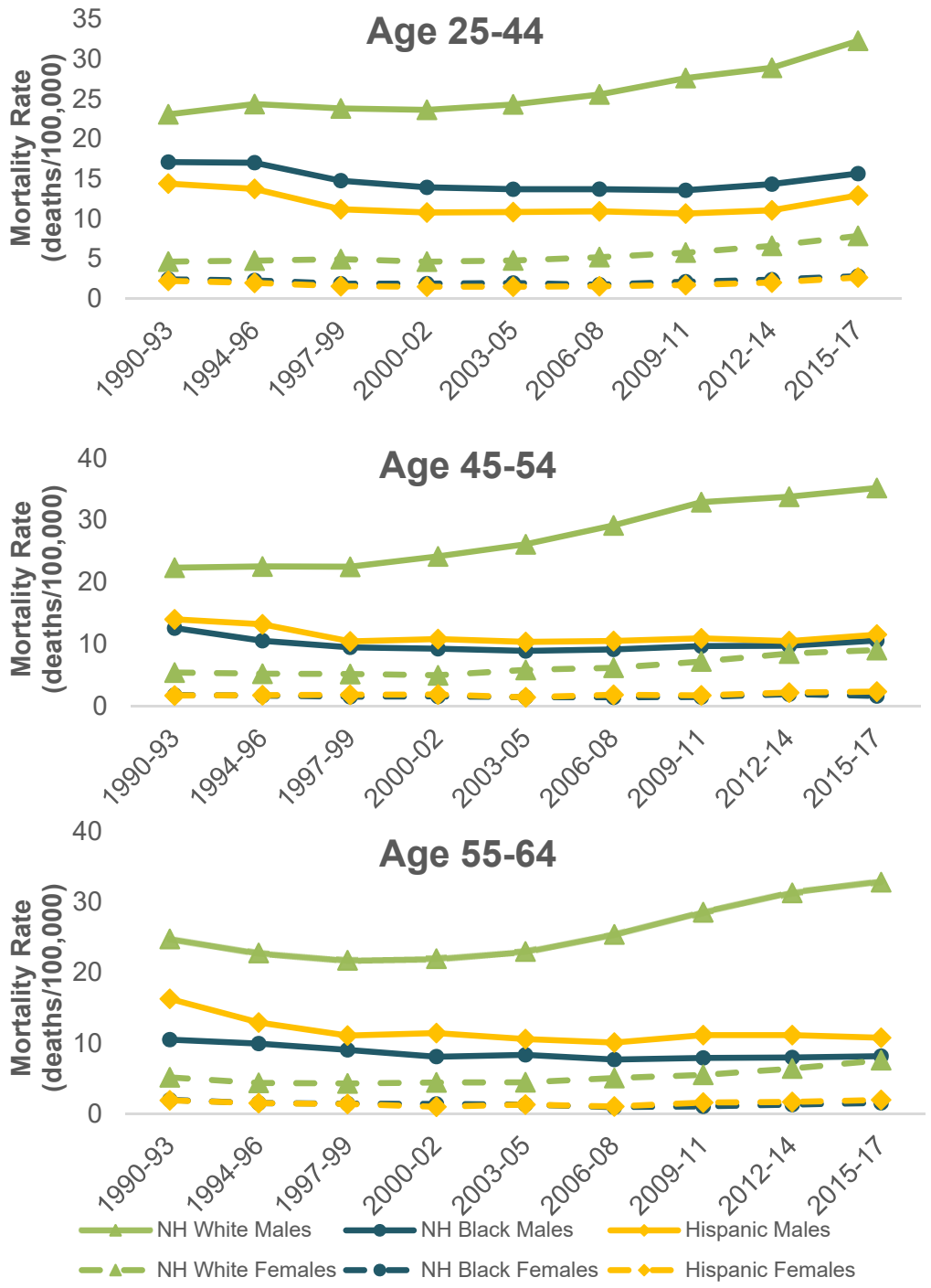
- Supply factors
  - Emergence of OxyContin
  - Opioid overprescribing
  - Regulatory failures
  - Heroin and fentanyl
  - Changes in alcohol supply and affordability (deregulation and privatization)
- Demand factors
  - Physical pain
  - Mental illness
  - Adverse childhood experiences
  - Despair
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

# Summary of Key Explanations for Drugs and Alcohol Mortality Trends

- "Perfect storm"
  - Flooding of market with highly addictive yet deadly substances
  - Underlying and growing demand and vulnerability
- Worsening psychological health of working-age adults; relationship between substance use and proxies for despair
  - *Measuring despair and determining its causal effects remain key challenges*

# Summary of Key Explanations for Drugs and Alcohol Mortality Trends

- Mixed conclusions about the causal relationship between objective (mostly short-term) economic factors and substance-related mortality
  - *Strong observational evidence on the contribution of declining opportunities for the less-educated*



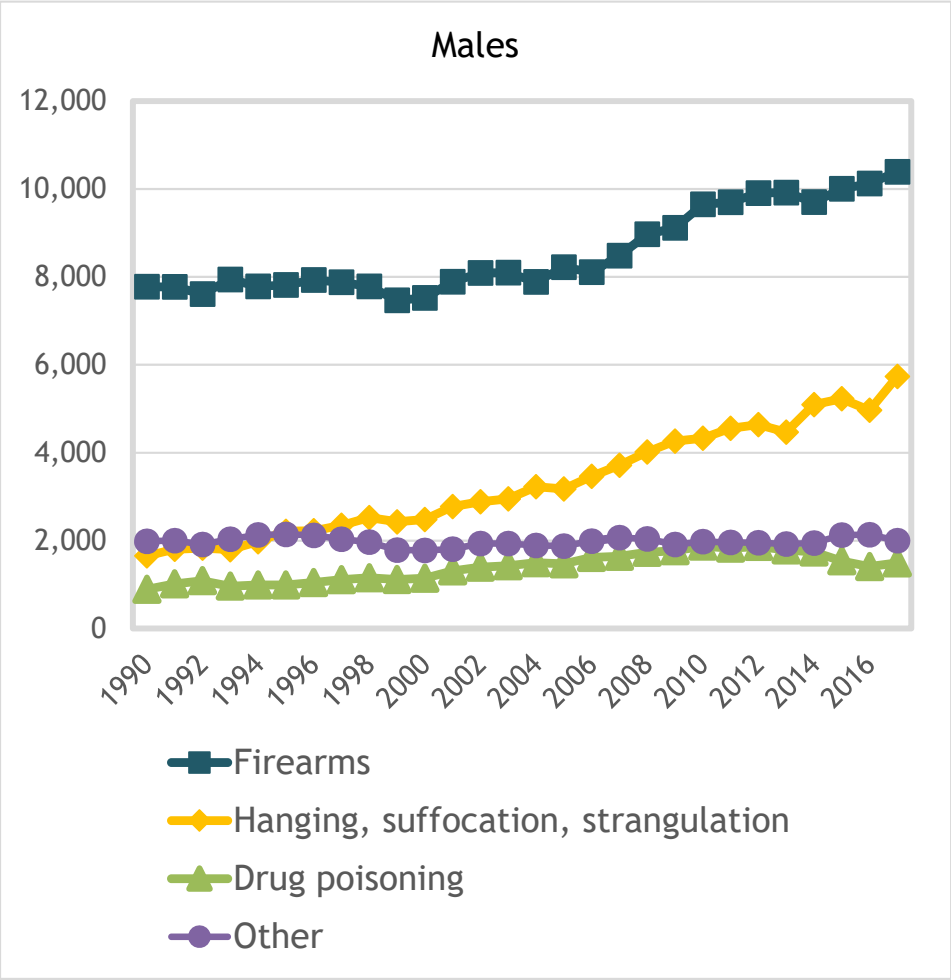

# Suicide

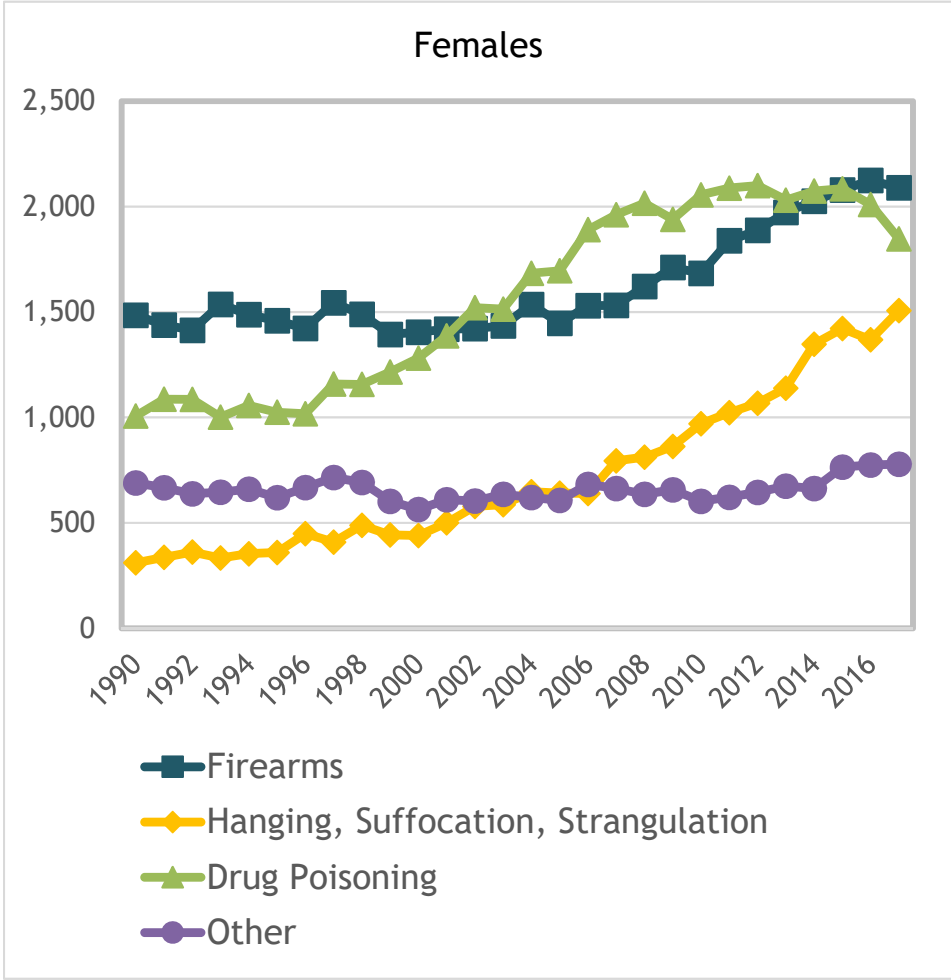
- Rates increased primarily among NH Whites, especially NH White males
- Blacks and Hispanics experienced increases after 2012-2014

# Explanations for Suicide Trends

1) Economic factors
2) Social engagement, religious participation, and social support
3) Mental, emotional, and physical health
4) Access to lethal means (e.g., firearms)

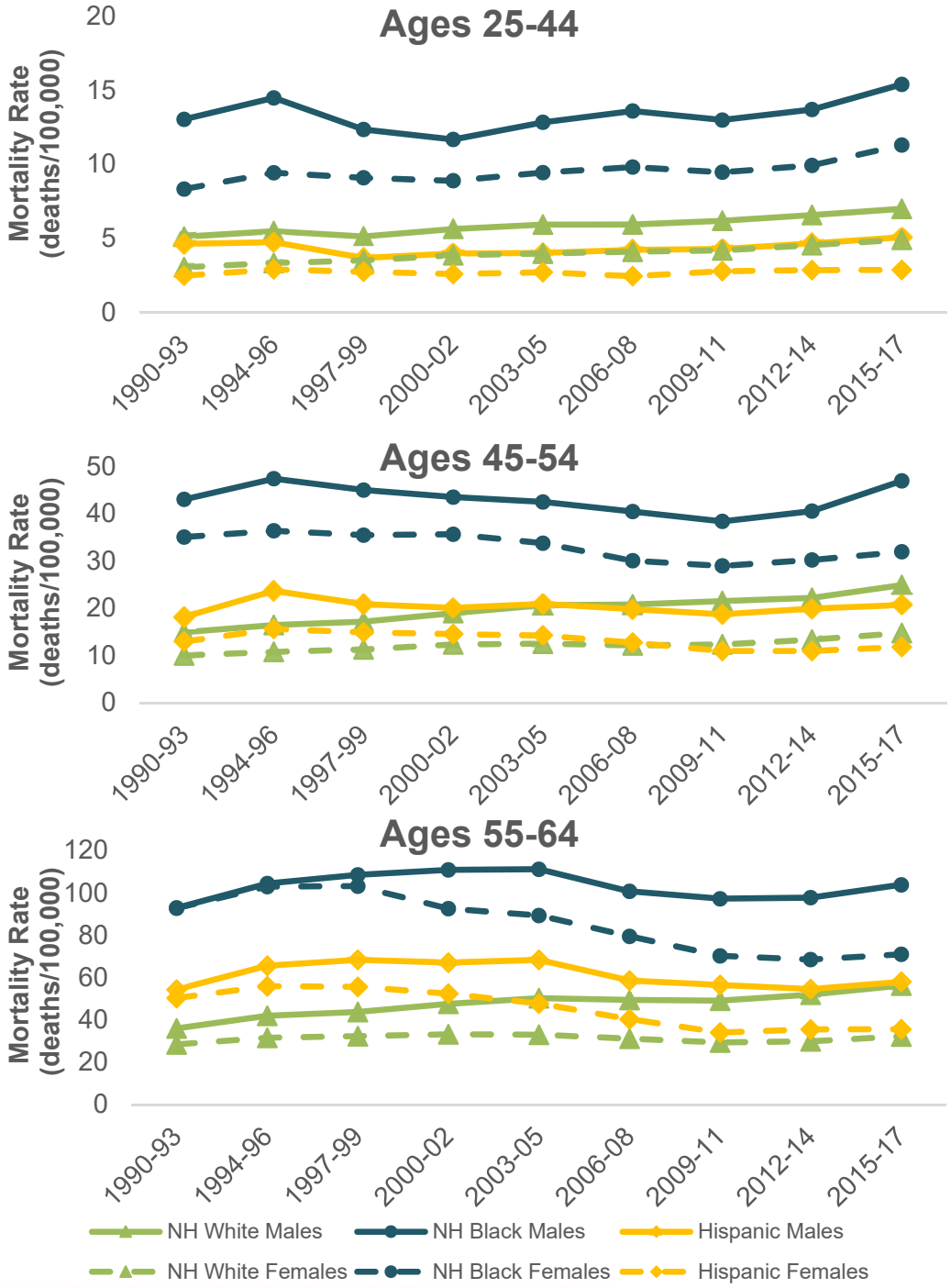
# Suicide Modalities



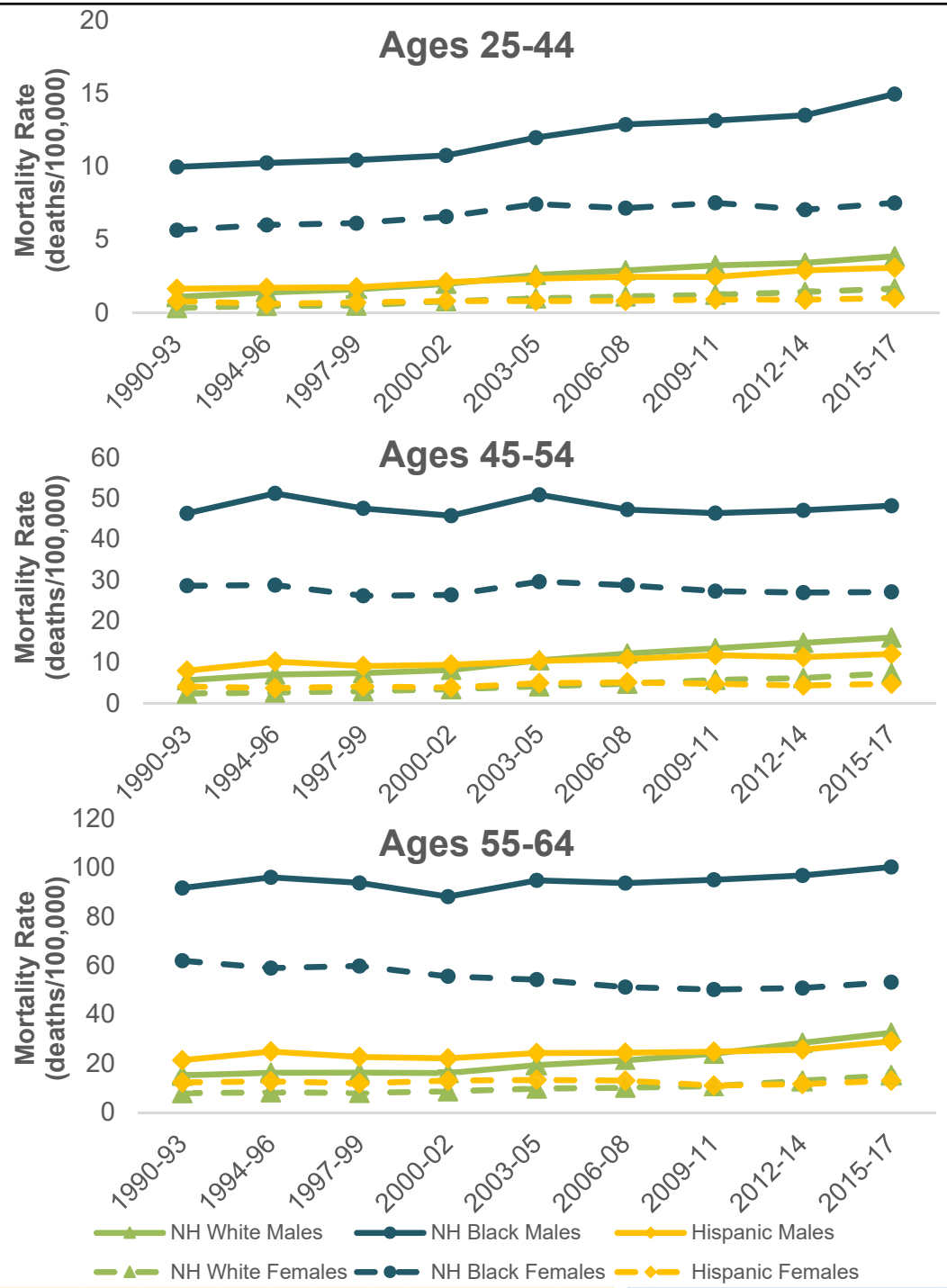
# Cardiometabolic Diseases

- Endocrine, nutritional, and metabolic diseases (ENM)
- Hypertensive heart disease
- Ischemic heart disease and other diseases of the circulatory system



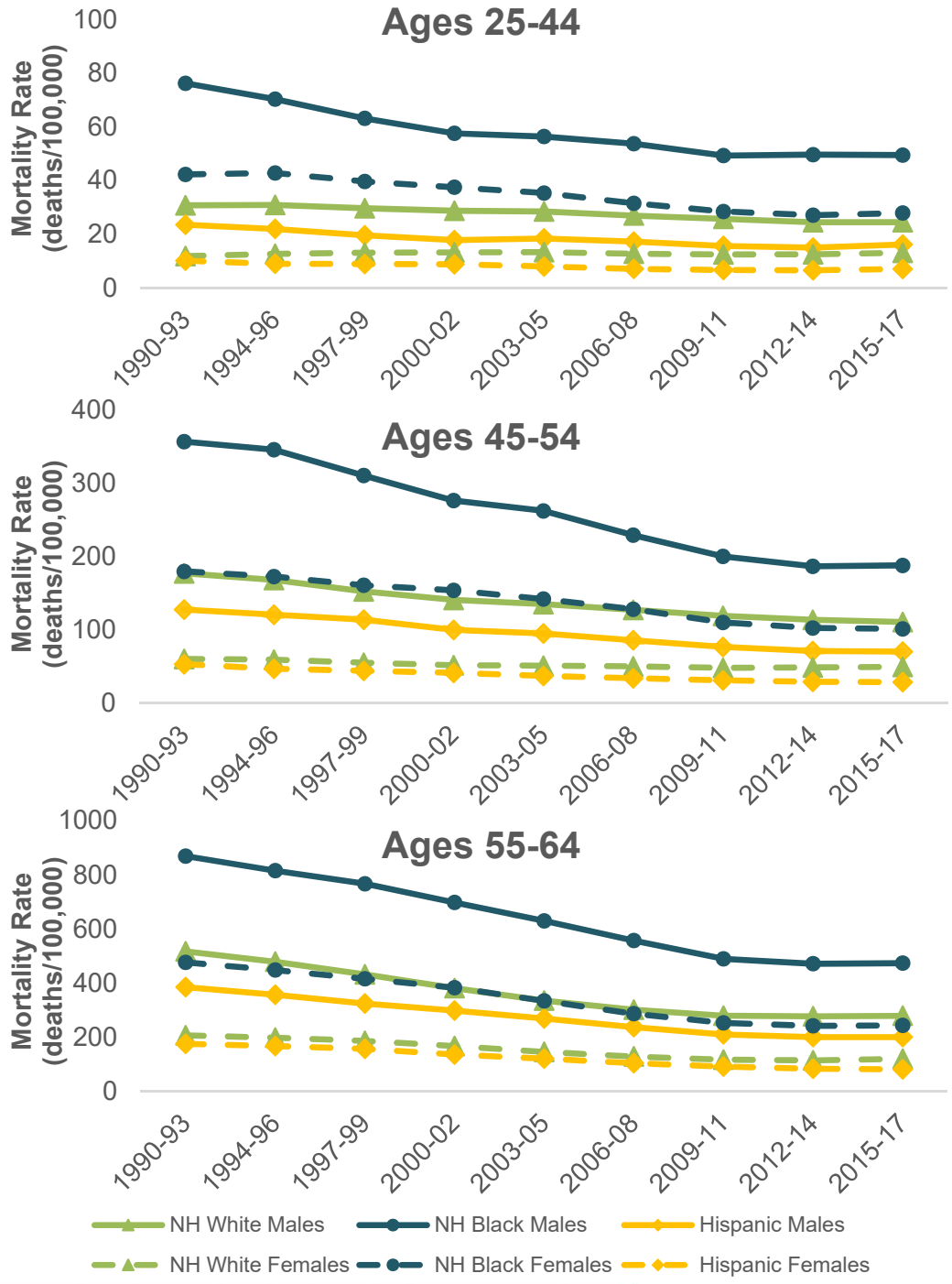

# ENM Diseases

- Rates increased after 2010
- Rates are higher among Blacks
- Whites saw increases throughout the 1990-2017 period




# Hypertensive Heart Disease

- Rates increased after 2010 among men
- Rates are higher among Blacks
- Whites saw increases throughout the 1990-2017 period




# Ischemic & Other Circulatory System Diseases

- Long-term mortality decline slowed after 2010
- Rates are higher among Blacks
- Declines offset rising mortality from ENM and hypertensive heart diseases until 2010

# Demographic Differences in Cardiometabolic Mortality Trends

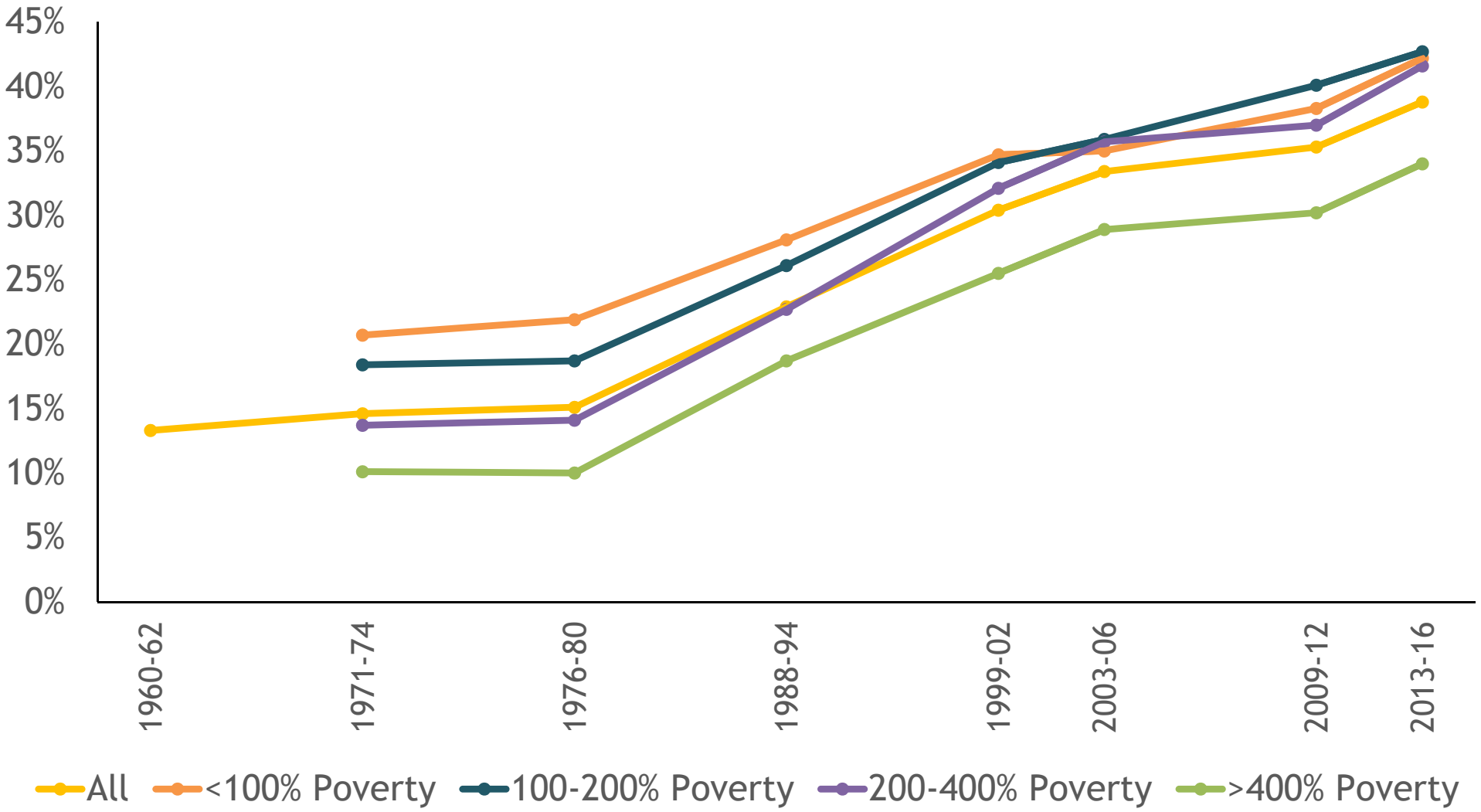
The largest increases in cardiometabolic mortality occurred among

- Young working-age adults (25-44) of all race and ethnic groups
- White men and women
- Black men in recent decades
- Those living in rural areas

# Explanations for Cardiometabolic Mortality Trends

1) Obesity epidemic
2) Diminishing returns of medical advancements
3) Social, economic, and cultural changes

# Increased Prevalence of Obesity



# Explanations for Cardiometabolic Mortality Trends

1) Obesity epidemic
2) Diminishing returns of medical advancements
3) Social, economic, and cultural changes

# 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

# Cross-Cutting Influences on Disparities

- Adverse economic trends
- Growing socioeconomic inequality
  - Secular trends
  - The role of race and racism
- Vulnerability

# Implications for Research

- Research on causes and solutions for increasing working-age mortality and disparities across populations and geography is complex, multilayered, and sparse
- The committee's research recommendations are extensive

# Data/Research Recommendations

**Data and methods**

- Accuracy of death certificates (5-1)
- Geographic variation in cause-of-death coding (5-2)
- Asian population vital statistics (5-3)
- ICD-10 coding for multiple causes of death (11-3)
- Linking surveys to National Death Index (8-2)
- Surveillance of mental health (7-5)
- Including ACEs in BRFSS and other surveys (7-6)
- Oversampling of rural populations (5-4)
- Geographic indicators in SAMHSA surveys (7-4)
- Mixed-methods, interdisciplinary, multilevel designs (11-6)

**Research priorities**

- Underlying causes of the increase in deaths from drugs, alcohol, and suicides (7-3)
- Sources of stress (11-5)
- Physical pain and psychosocial indicators (11-2)
- Changes in suicide modalities (8-1)
- Behavioral health services (7-2)
- Interventions to improve cardiometabolic health (9-1)
- Causal influences of obesogenic environment (9-2)
- Macrostructural factors (e.g., social, economic) affecting mortality (11-4)
- Cross-national research (11-7)

# Policy Implications

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 Recommendations and Conclusions

**Policy Recommendations**

- Policymaker (e.g., FDA, DEA, pharmaceutical industry) intervention on addiction crisis (7-1)
- Early-life obesity interventions (9-3)
- Barriers to uptake of cardiovascular preventive and treatment interventions (9-4)
- Medicaid expansion (11-1)

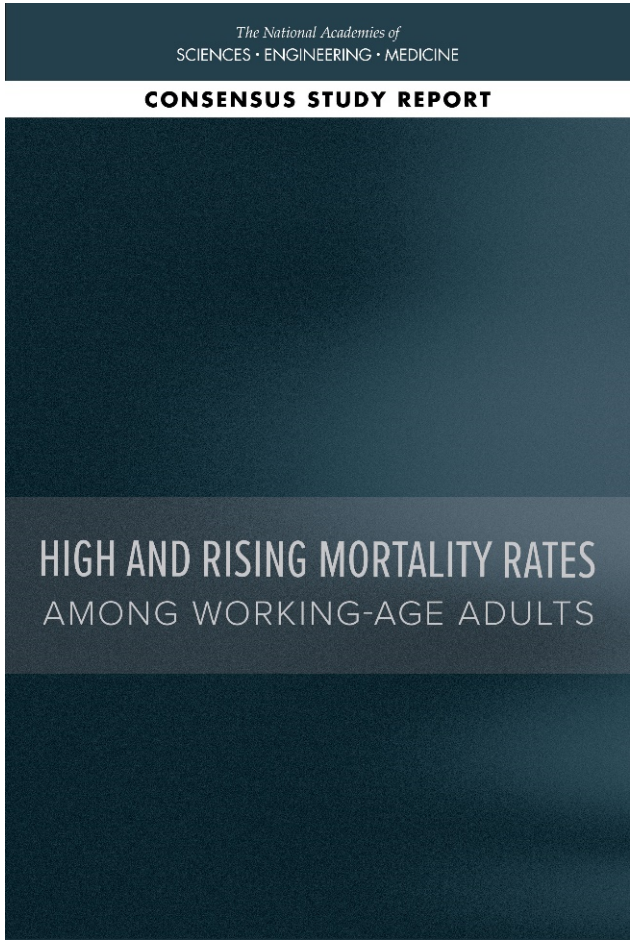
**Policy conclusions**

- Balancing rights of industry and public health imperatives (9-1)
- Economic and social strains that make communities vulnerable (7-1)
- Dismantling structural racism and policies of exclusion (11-1)

# Summary

- Working-age mortality increasing across all racial/ethnic groups, in rural and urban areas.
- All-cause mortality increasing since 2010, cause-specific death rates since 1990s.
- Not happening in peer countries.
- Profound implications for the United States.
- Proximal causes: drug overdoses, alcohol-related disease, suicides, and cardiometabolic diseases.
- Upstream causes: no single factor, backstory is complex.
- Disproportionate Black mortality persists.

# Thank you!




**For more information, please visit:**

**www.nationalacademies.org/RisingMortality**

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