



University of
Sheffield

Trends in mortality from alcohol, opioid, and combined alcohol and opioid poisonings in the US

Charlotte Buckley

A WORLD
TOP 100
UNIVERSITY

Conflict of interest

All authors have no conflicts of interest to declare

Research reported in this presentation was supported by the National Institute on Alcohol Abuse and Alcoholism of the National Institutes of Health under award numbers:

A microsimulation of alcohol control interventions to advance health equity and reverse the current decrease in life expectancy in the US (SIMAH) R01AA028009

The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

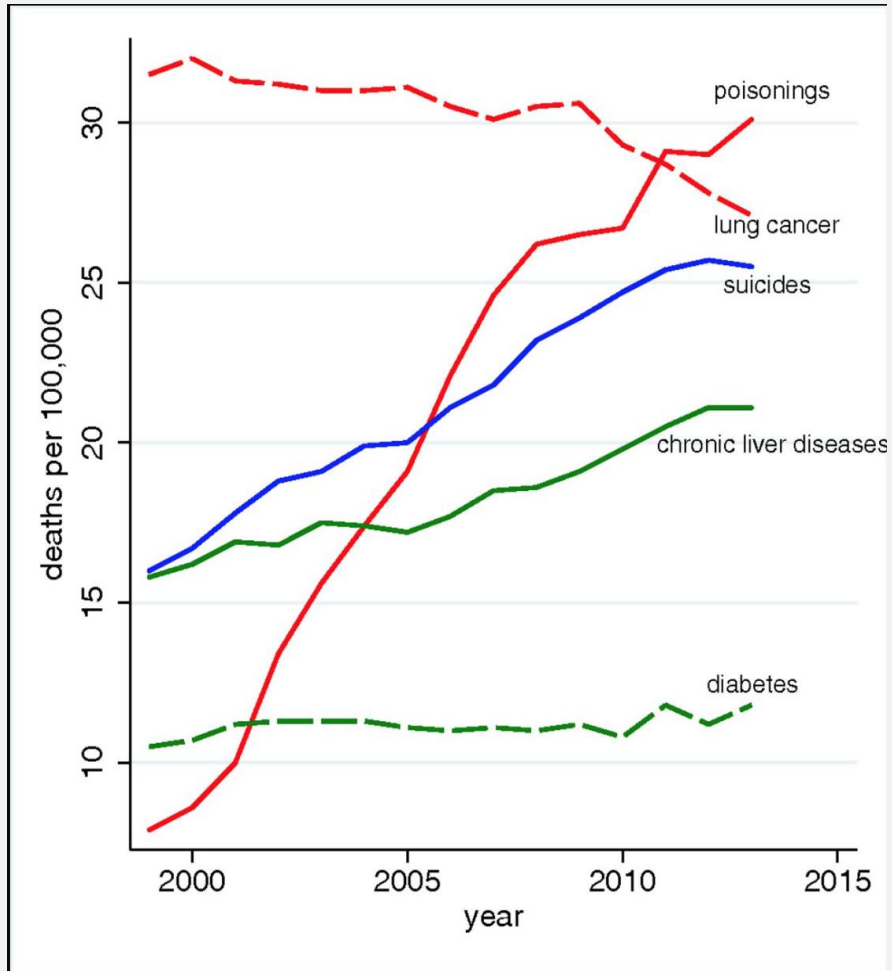
Research article | [Open Access](#) | [Published: 24 October 2022](#)

Trends in mortality from alcohol, opioid, and combined alcohol and opioid poisonings by sex, educational attainment, and race and ethnicity for the United States 2000–2019

[Charlotte Buckley](#), [Yu Ye](#), [William C. Kerr](#), [Nina Mulia](#), [Klajdi Puka](#), [Jürgen Rehm](#) & [Charlotte Probst](#) 

[BMC Medicine](#) **20**, Article number: 405 (2022) | [Cite this article](#)

Background



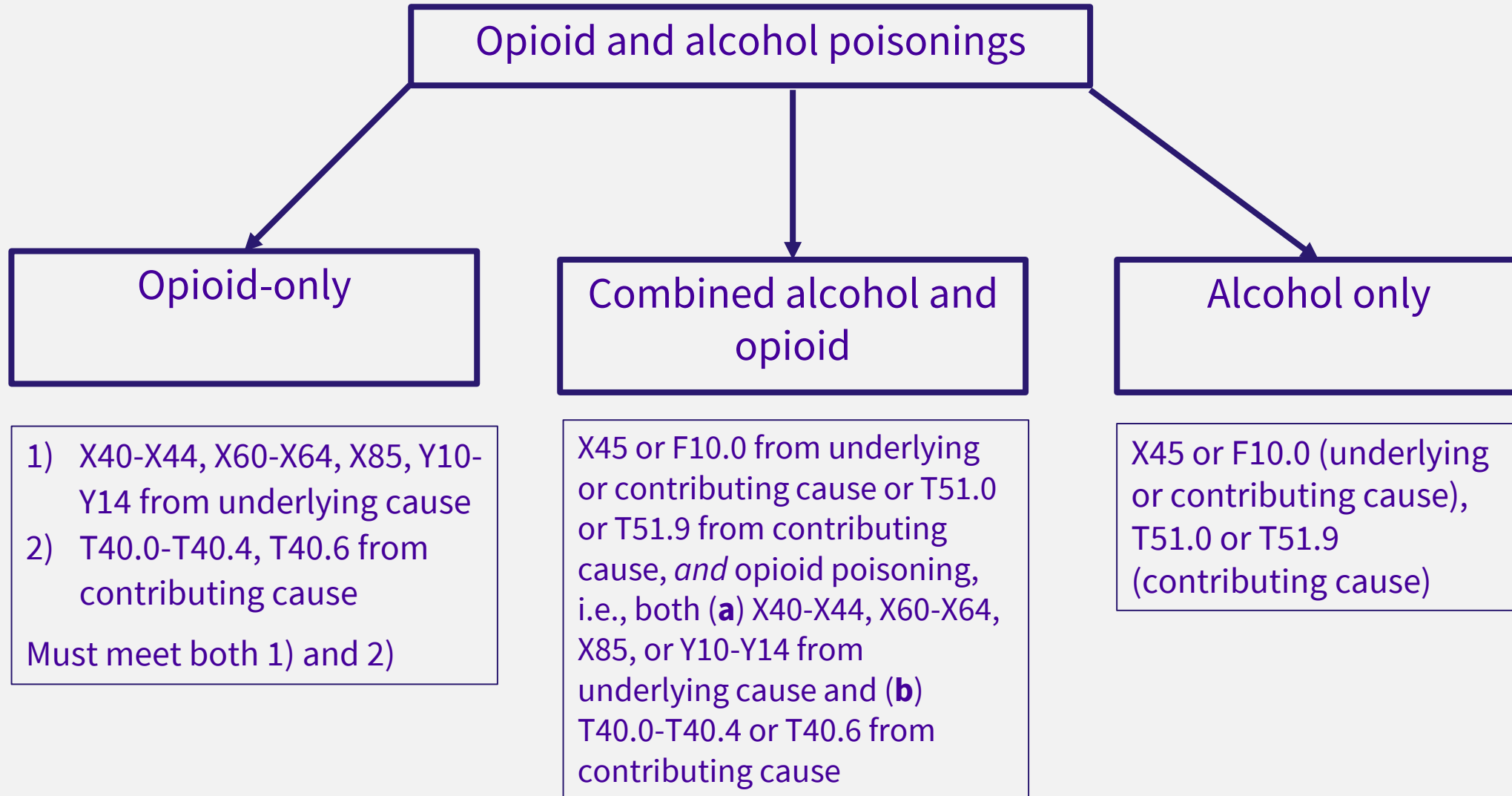
Mortality by cause, white non-Hispanics aged 45-54

- Opioid poisoning deaths increased from 8050 to 49,860 between 1999 and 2019
- Around 1 in 5 fatal opioid overdoses involved alcohol
- Alcohol poisoning deaths increased from 2486 to 12,954 between 1999 and 2017

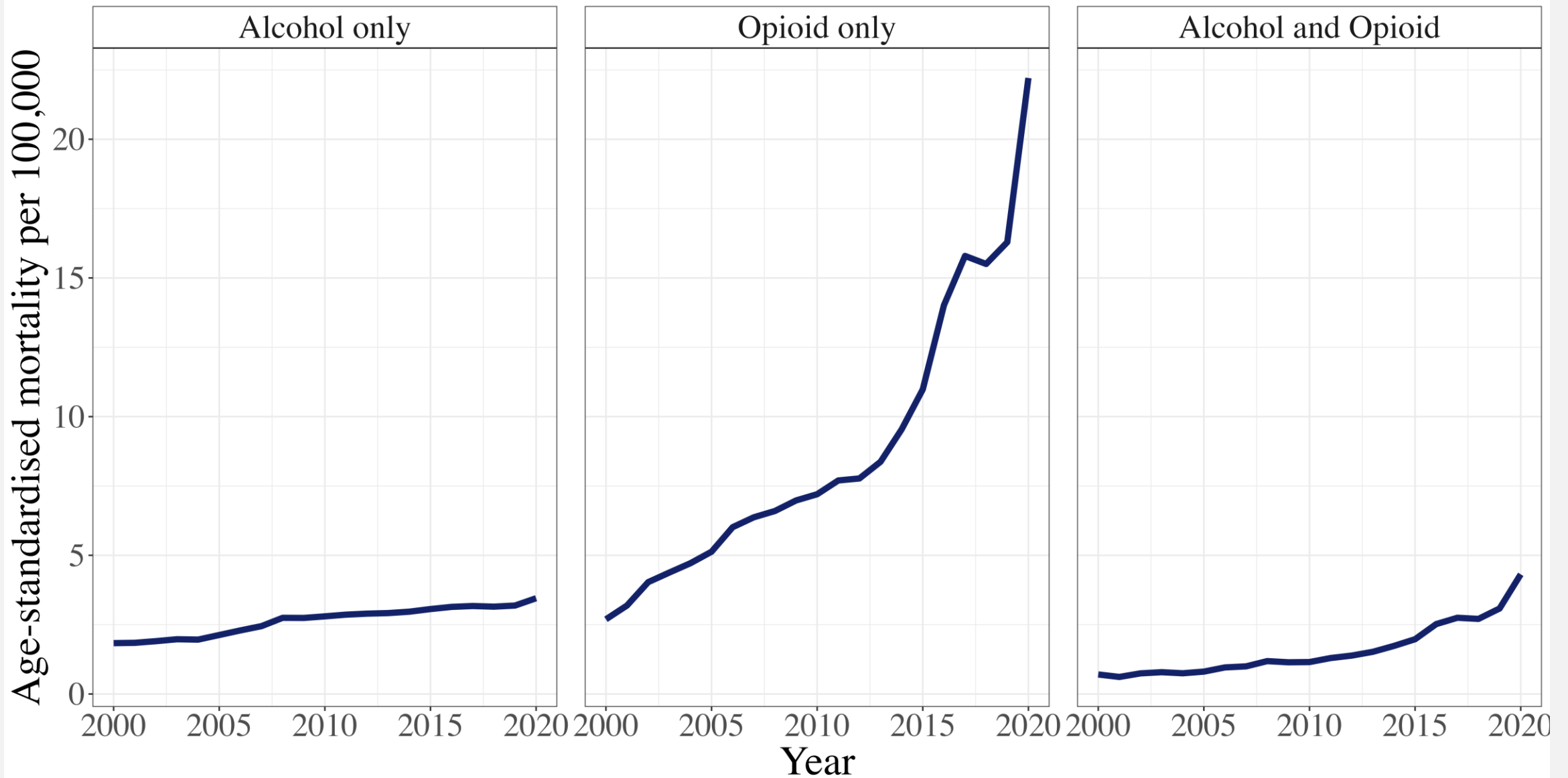
Explore the intersection of alcohol and opioid poisonings and trends by:

1. educational attainment (high school or less, college degree or more)
2. race and ethnicity (non-Hispanic Black and non-Hispanic White)
3. age, period and cohort

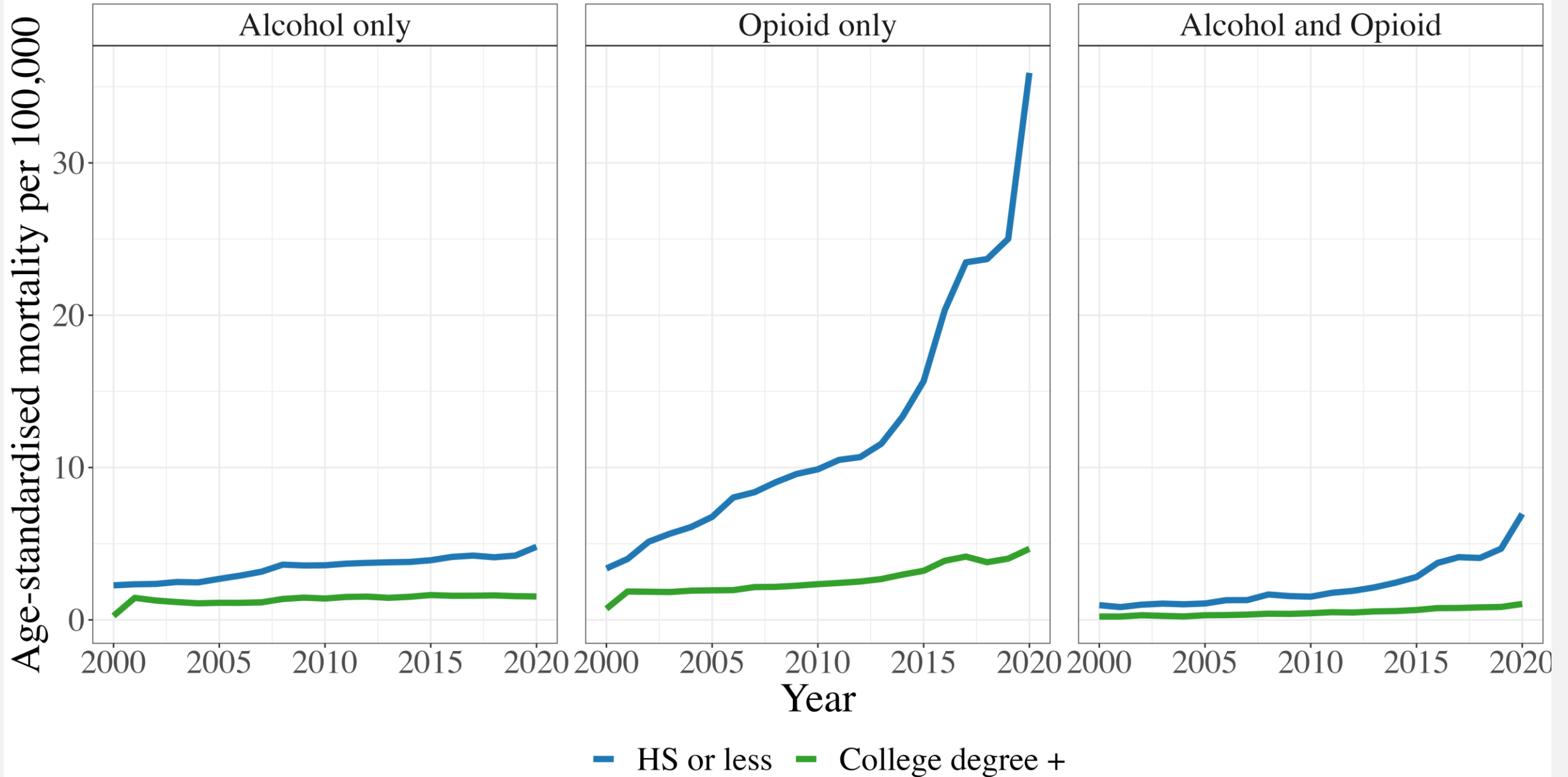
Decomposition of poisoning type



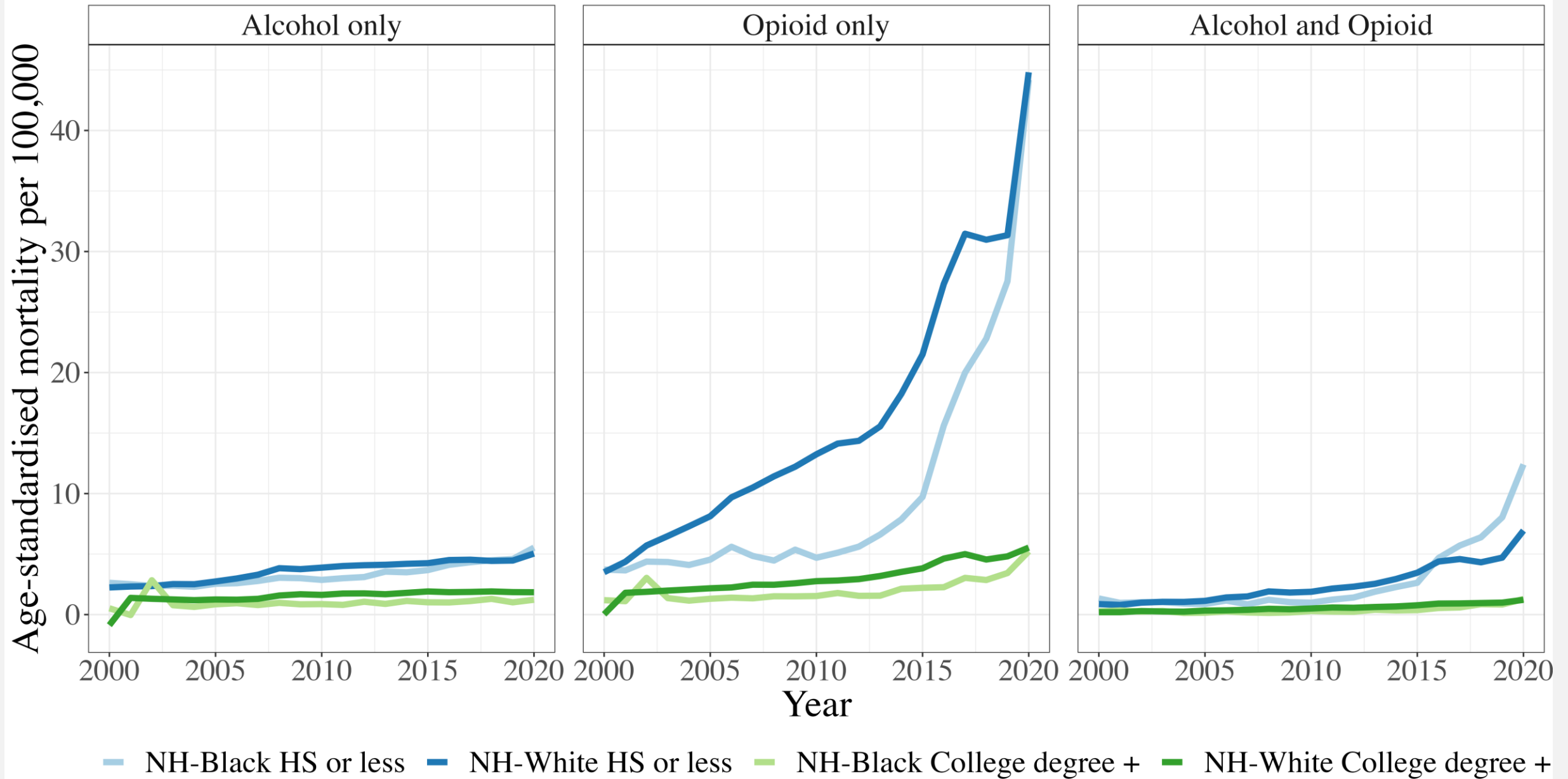
Trends in alcohol-only, opioid-only and alcohol and opioid poisonings 2000-2020



Trends in alcohol-only, opioid-only and alcohol and opioid poisonings by education 2000-2020



Trends in alcohol-only, opioid-only and alcohol and opioid poisonings by race and ethnicity and education



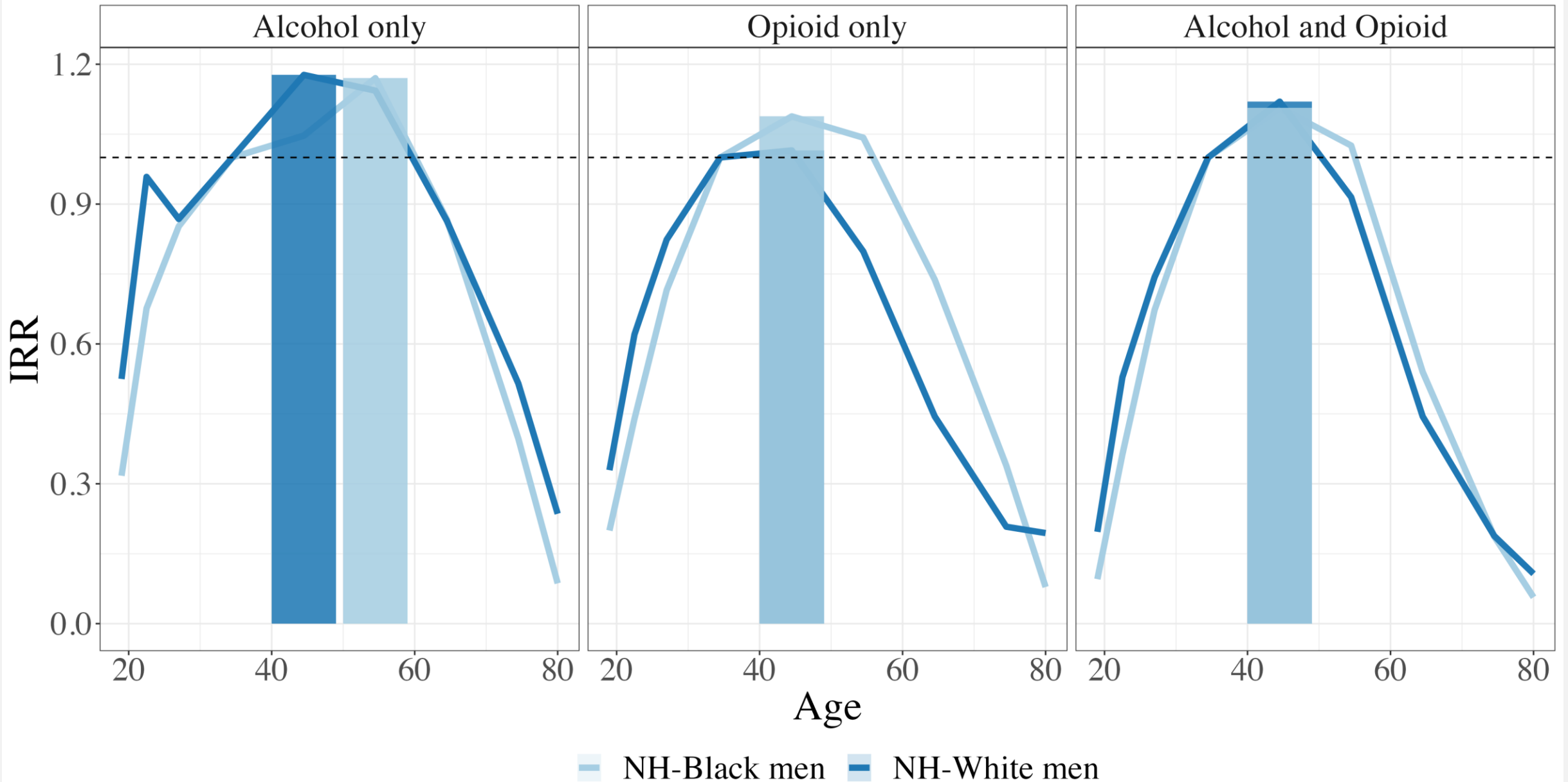
Age, period and cohort (APC) modelling

Decompose trends in alcohol-only, opioid-only and alcohol and opioid poisoning mortality into **age, period, and cohort effects** (by race and ethnicity)

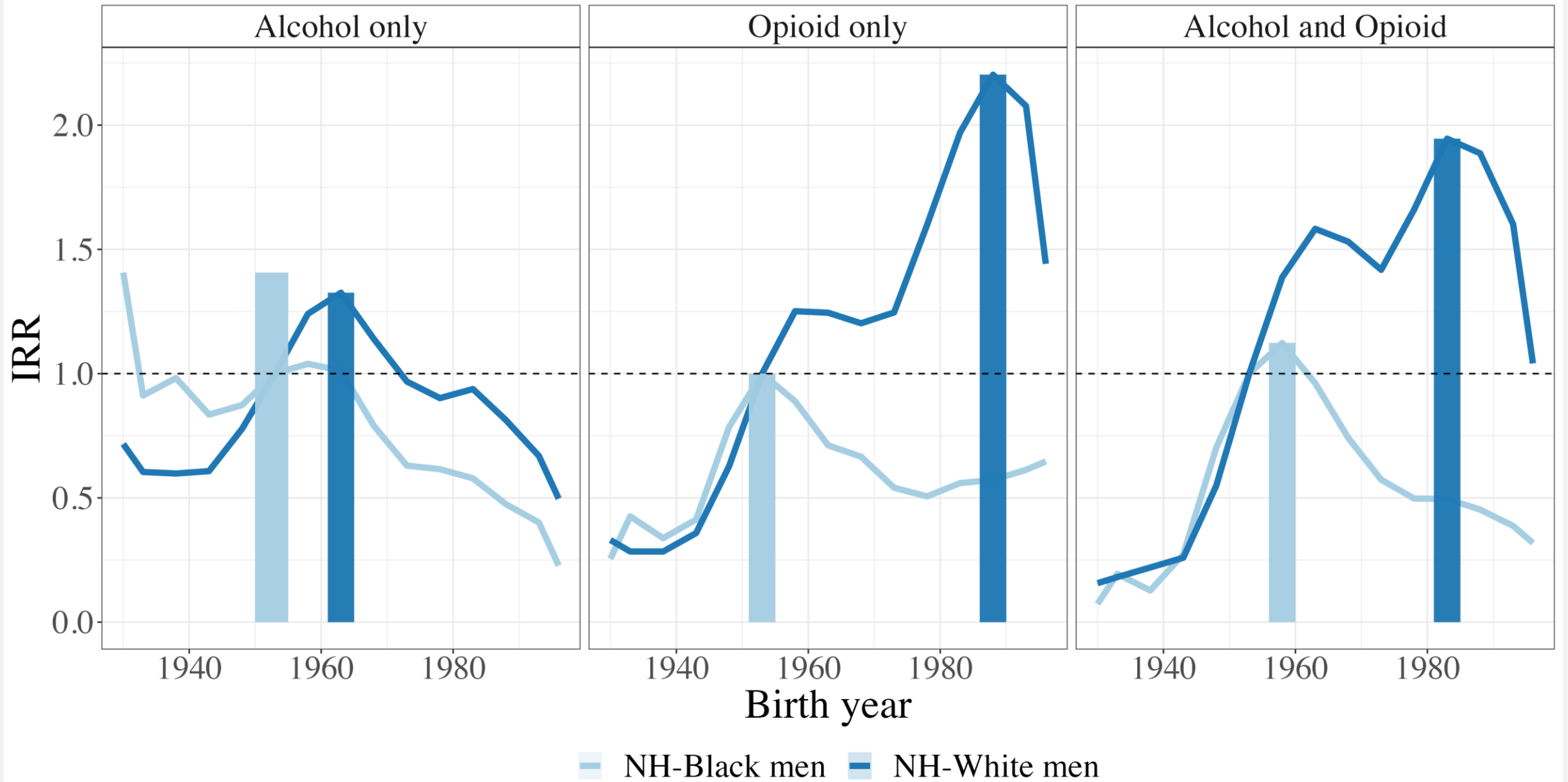
Method

- Alcohol-only, opioid-only and combined alcohol and opioid poisoning mortality rates modelled separately in Poisson regression
- Period (individual years, reference = 2010)
- Age (18-20, 21-24, 25-29, 30-39, 40-49, 50-59, 60-69, 70-79, 80+ (reference = 30-39))
- Birth cohorts in 5-year categories ≤ 1930 – ≥ 1996 (reference = 1951-1955)
- Sex stratified models, **results presented for men and Black and White groups**

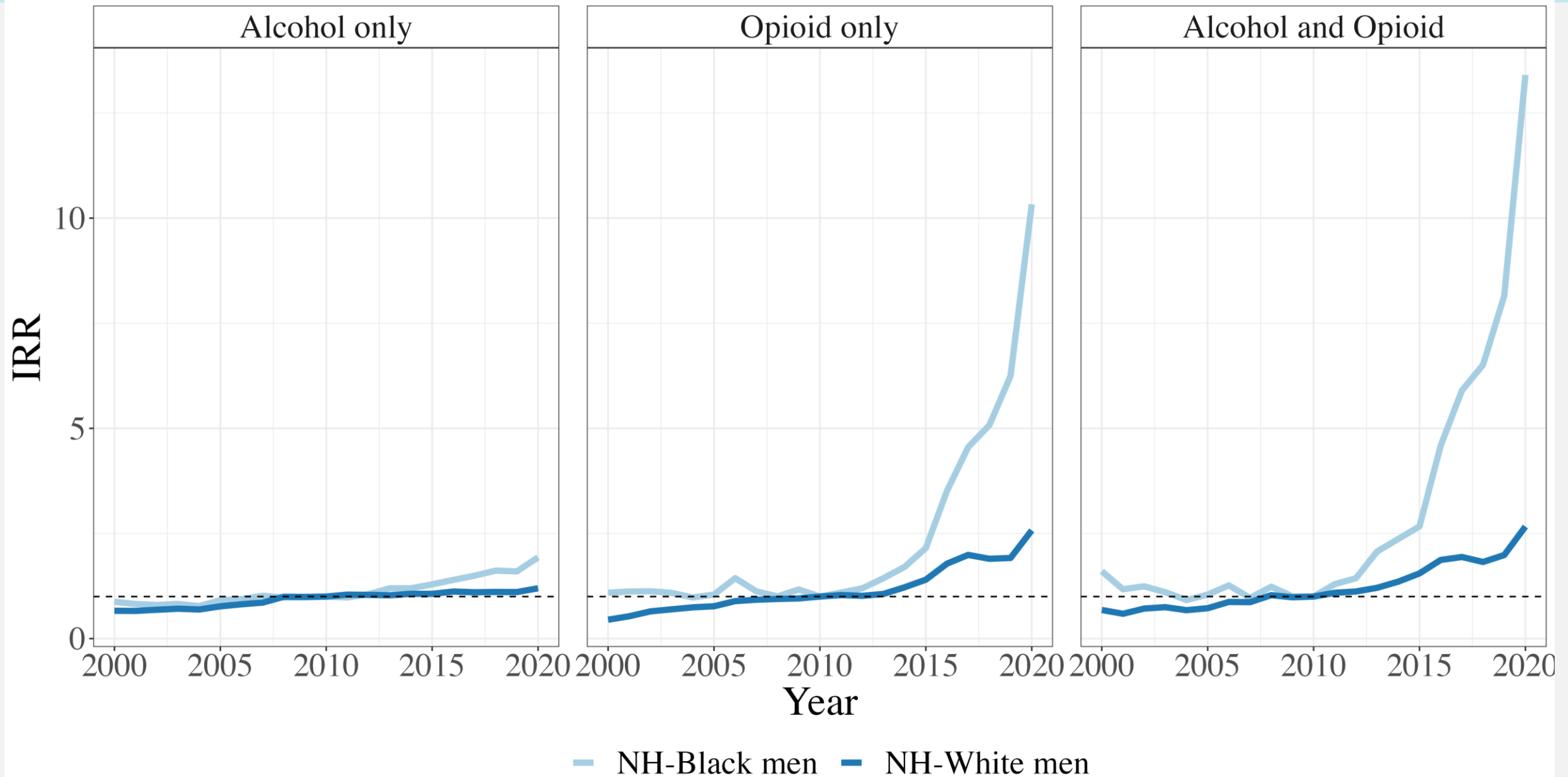
Age effects in alcohol only, opioid only and alcohol and opioid poisonings



Cohort effects in alcohol only, opioid only and alcohol and opioid poisonings



Period effects in alcohol only, opioid only and alcohol and opioid poisonings



Summary

- Gradual increases in alcohol poisonings 2000-2020, faster increases in opioid and combined alcohol and opioid poisonings (particularly since 2015)
- All poisonings most concentrated in low education groups
 - Some differences by race and ethnicity
- Age effects consistent across race and ethnicity groups
 - Peaking at ages 40-49 and 50-59 in most groups
- Period and cohort effects vary by race and ethnicity
 - Trends in White men appear to be more driven by cohort effects
 - Trends in Black men appear to be more driven by period effects (not affecting one particular age or cohort group)
- Understanding drivers of these trends is essential for informing targeted interventions to reduce poisoning mortality

Thank you

Co-authors:

Yu Ye, William Kerr, Nina Mulia (Alcohol Research Group, US)

Klajdi Puka, Jürgen Rehm, Charlotte Probst (Centre for Addiction and Mental Health (Canada)

Robin Purshouse (University of Sheffield, UK)



A microsimulation of alcohol control interventions to advance health equity and reverse the current decrease in life expectancy in the US (SIMAH) R01AA028009

Presentation (Charlotte Probst and Robin Purshouse) : Thursday 10.50 – Central square 1

Poster: Friday 13.20 – Networking zone 1