

2025 LIMRA Annual Conference

**ELEVATING**  
*tomorrow*

# Navigating Mortality Risk: Strategic Intelligence for Business Impact





**Julianne Callaway**

*VP & Senior Actuary,  
Strategic Research*

**RGA**



**Sara Goldberg**

*VP & Actuary,  
U.S. Individual Markets*

**RGA**

# Limitations and Disclosures

The information contained in this presentation is for educational purposes only, is confidential and may not be distributed, disclosed, copied or otherwise furnished to any additional party without the prior written consent of RGA. Nothing included in this presentation may be used in any filing with any public body, such as but not limited to the Securities and Exchange Commission (SEC) or state insurance department without prior written consent from RGA. Any distribution of this presentation must be in its entirety.

Statistics in this presentation rely on data provided to RGA. RGA did not perform independent audits of the data, although RGA did review the data for general reasonableness and consistency. The information used comes from a variety of companies with unique areas of practice, target markets, distribution methods, etc., and as such should not be deemed directly applicable to any single company or necessarily representative of the insurance industry as a whole. The presented information is intended to be valid as of the date it has been prepared. Its future validity depends on the further development of market events, regulations, and standards of practice.

Any results or conclusions presented in this presentation are not meant to substitute RGA's actuarial judgment for that of attendees. This presentation is not intended to contain material that represents an actuarial opinion.

RGA, its directors, officers and employees disclaim liability for any loss or damage arising or resulting from any errors or omissions in any information contained herein.



# Outline of topics



Substance use



Mental health



Emerging mortality  
topics

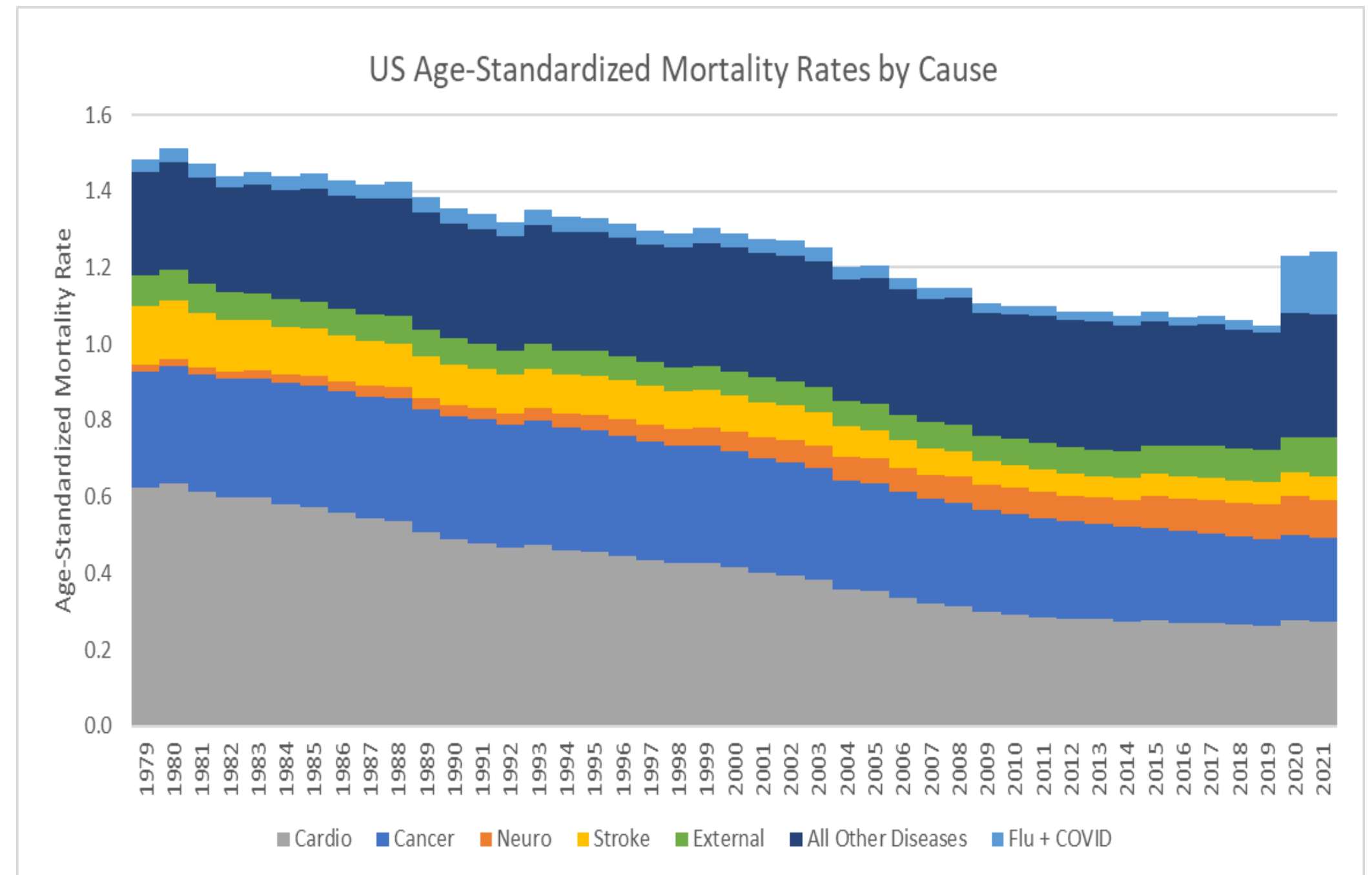
# Backdrop on mortality improvement: trends and drivers

## Recent *positive* drivers

- Advances in treatments and therapeutics
- Smoking cessation / anti-smoking efforts
- Mostly declining cancer incidence coupled with better outcomes for those diagnosed and earlier screening

## Recent *adverse* drivers

- Metabolic trends, especially type-2 diabetes
- External causes (suicides, opioids, etc.)
- ... and the COVID-19 pandemic

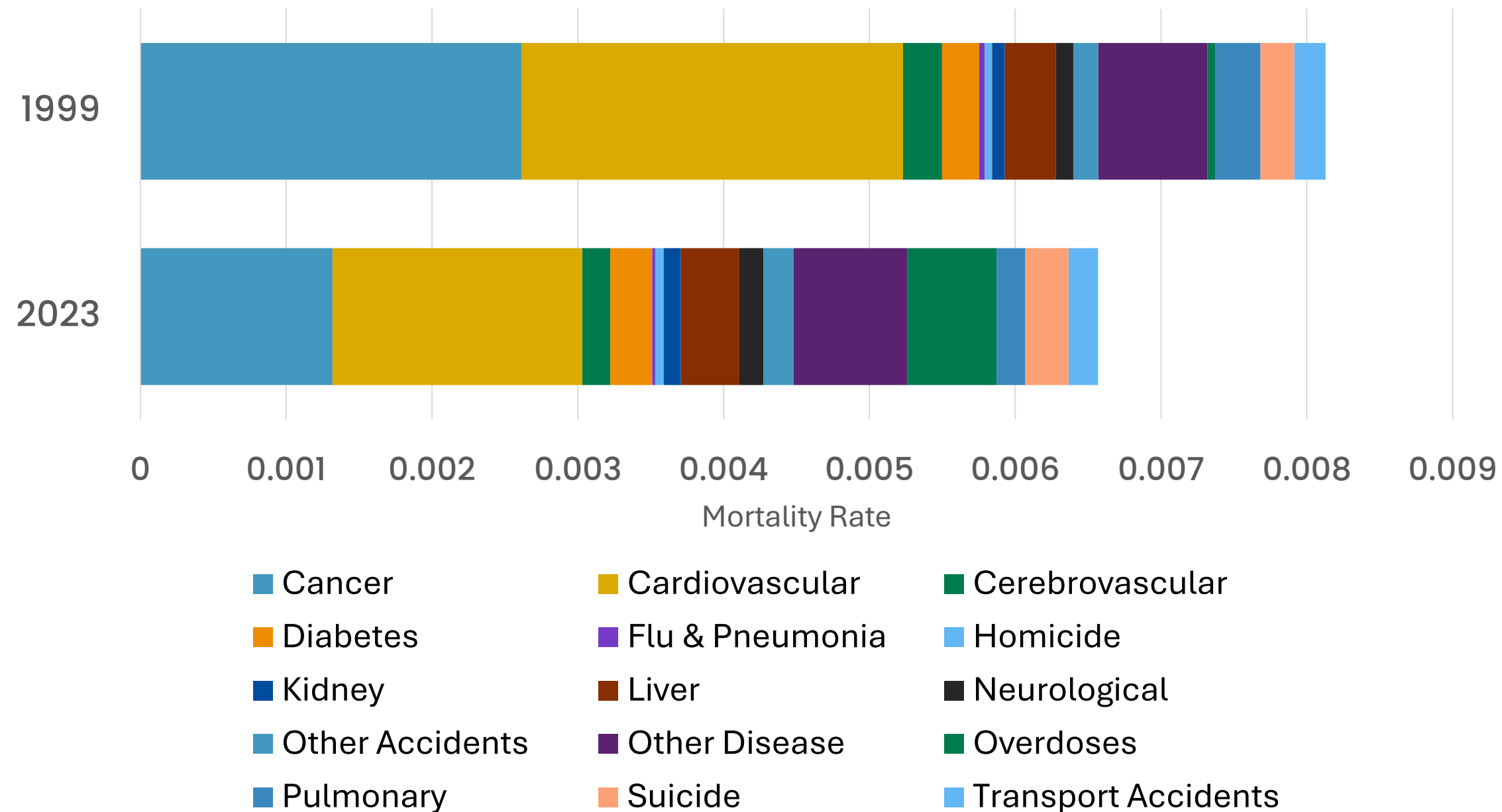




# Cause of death shifts (55-year-old male)

Major improvements from cancer and cardiovascular.

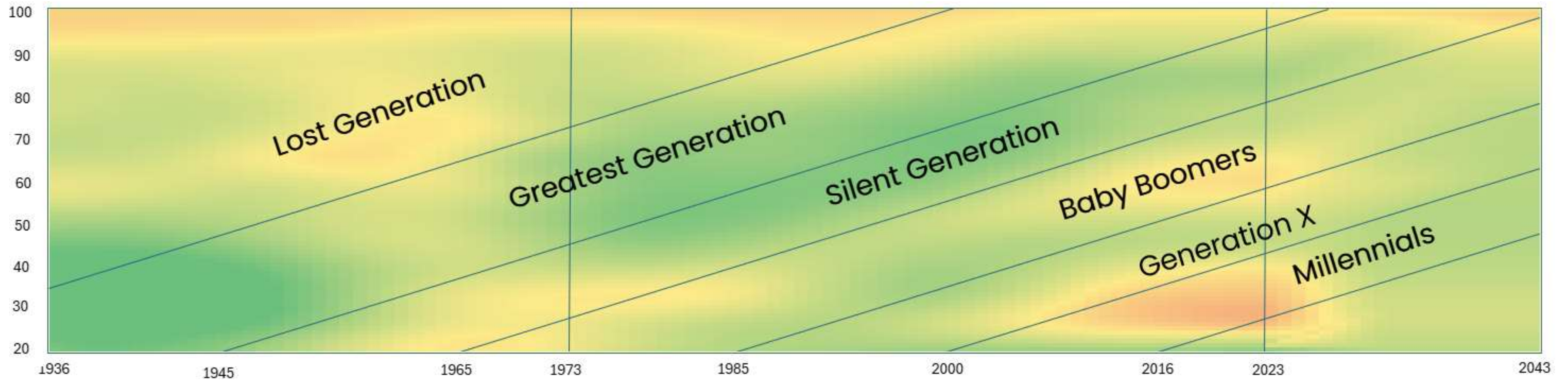
*What can we expect going forward?*



Recent years have experienced deterioration in some historically less material drivers:

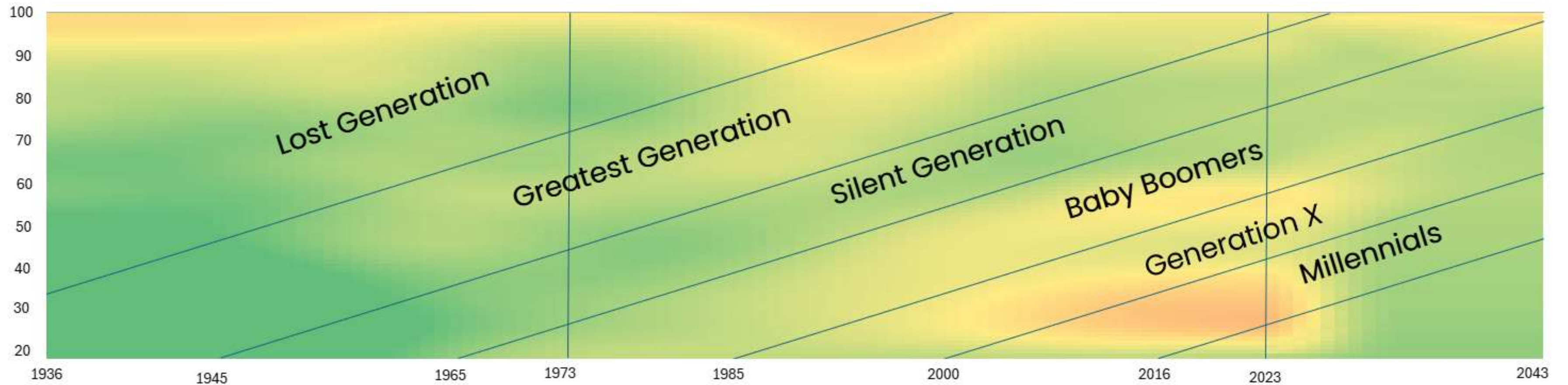
- Diabetes (-1%)
- Overdoses (-10%)
- Suicides (-1%)

# U.S. female mortality trend heatmap





# ... Strategic intelligence?





# Relevance to various stakeholders

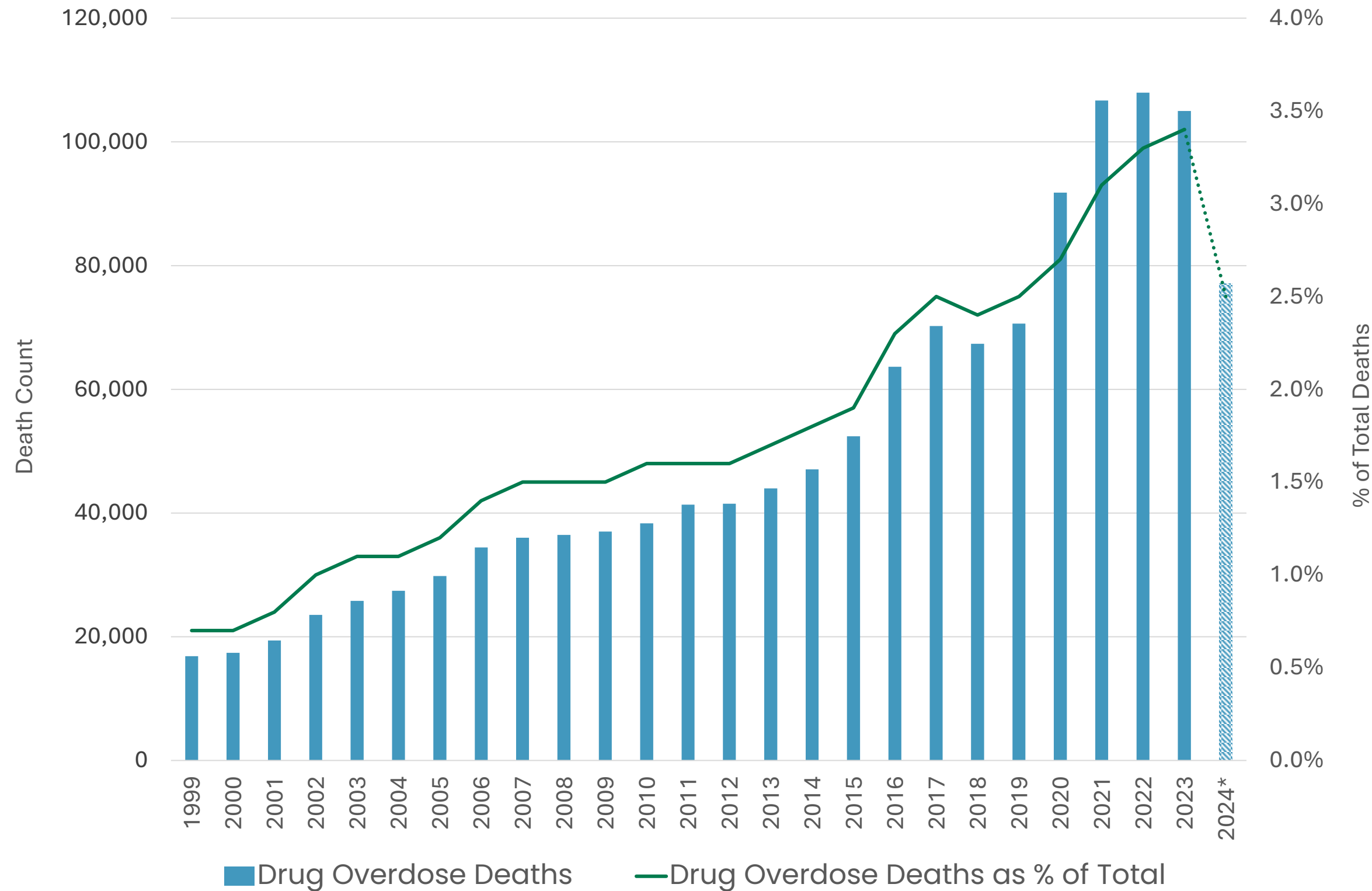
- C-suite and investors
- ERM
- Actuaries
- Underwriters
- Product development
- Claims
- Reinsurance department



# Overdose and substance use



# Drug overdose deaths were increasing until recently

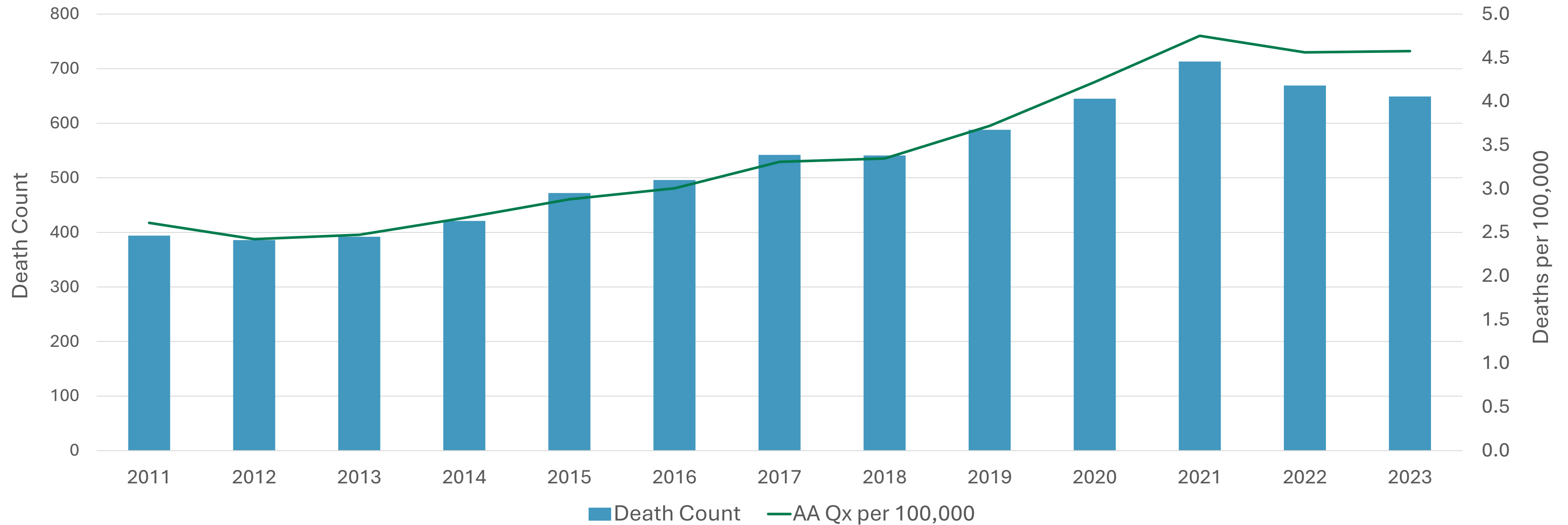


- Drug overdose deaths increased from about 30,000 in 2005 to nearly 108,000 in 2022.
- Overdose deaths began to decline beginning in 2023 through 2024 (provisional).

Source for graphs in following slides from an upcoming report from the Society of Actuaries authored by RGA, upcoming September 2025, "U.S. Drug Overdose Crisis: Past, Present, and Future"

# Insured substance-related mortality increased until 2021

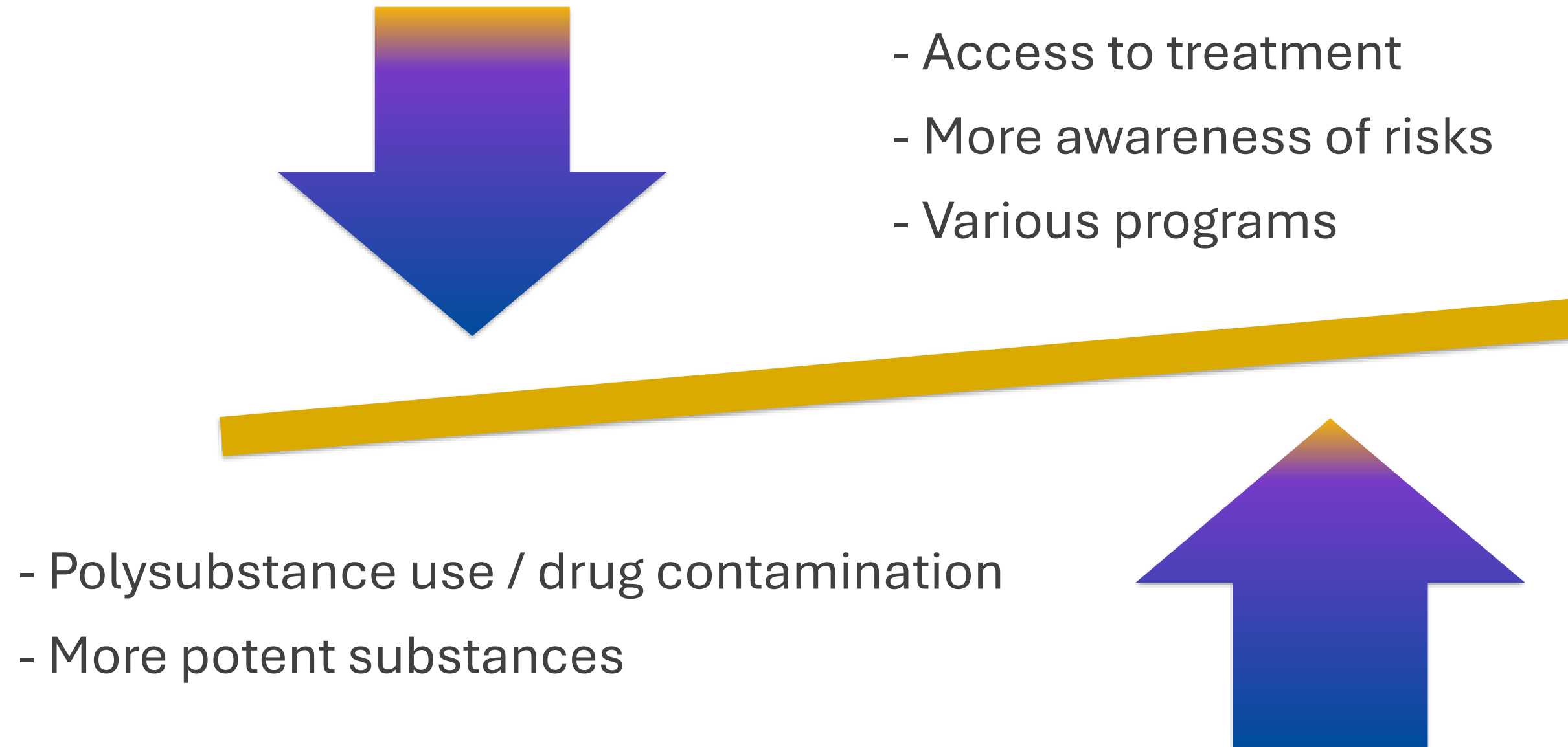
Similar to the U.S. general population, a decline began in 2022 and continued in 2023



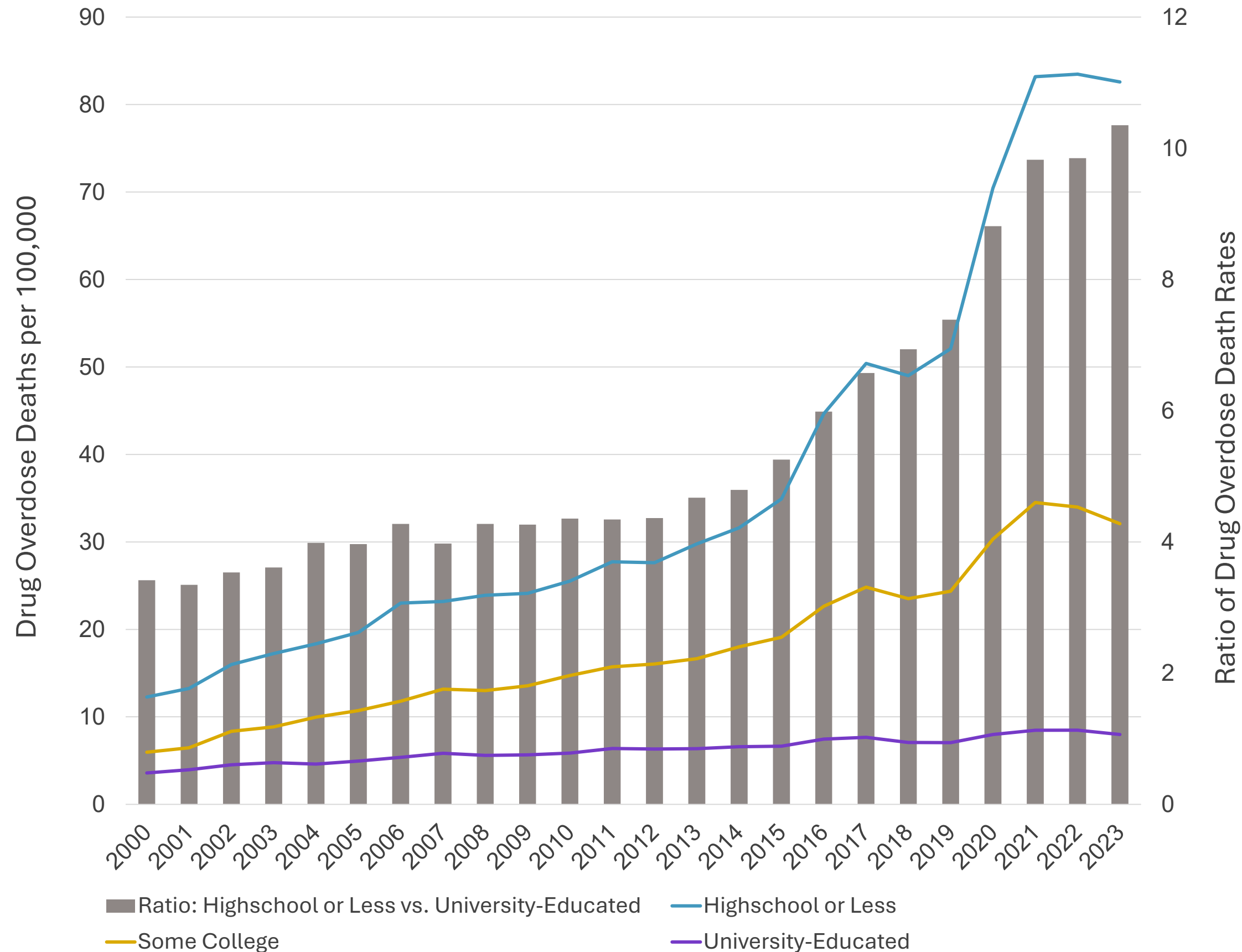


# Potential drivers

Drivers are complex and rapidly changing, making it difficult to gauge trajectory



# Drug overdose rates by educational attainment

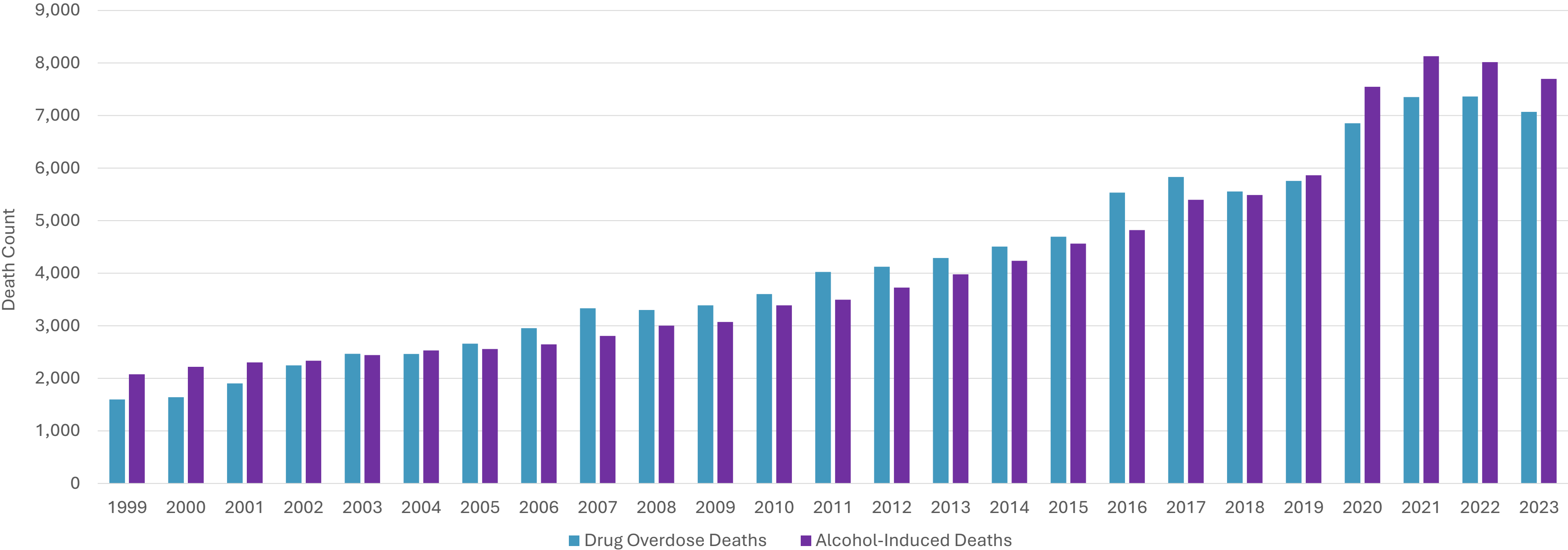


## Demographic groups with higher overdose rates

- Lower education levels
- Males
- Ages 25-64
- Never-married individuals
- Construction-related occupations

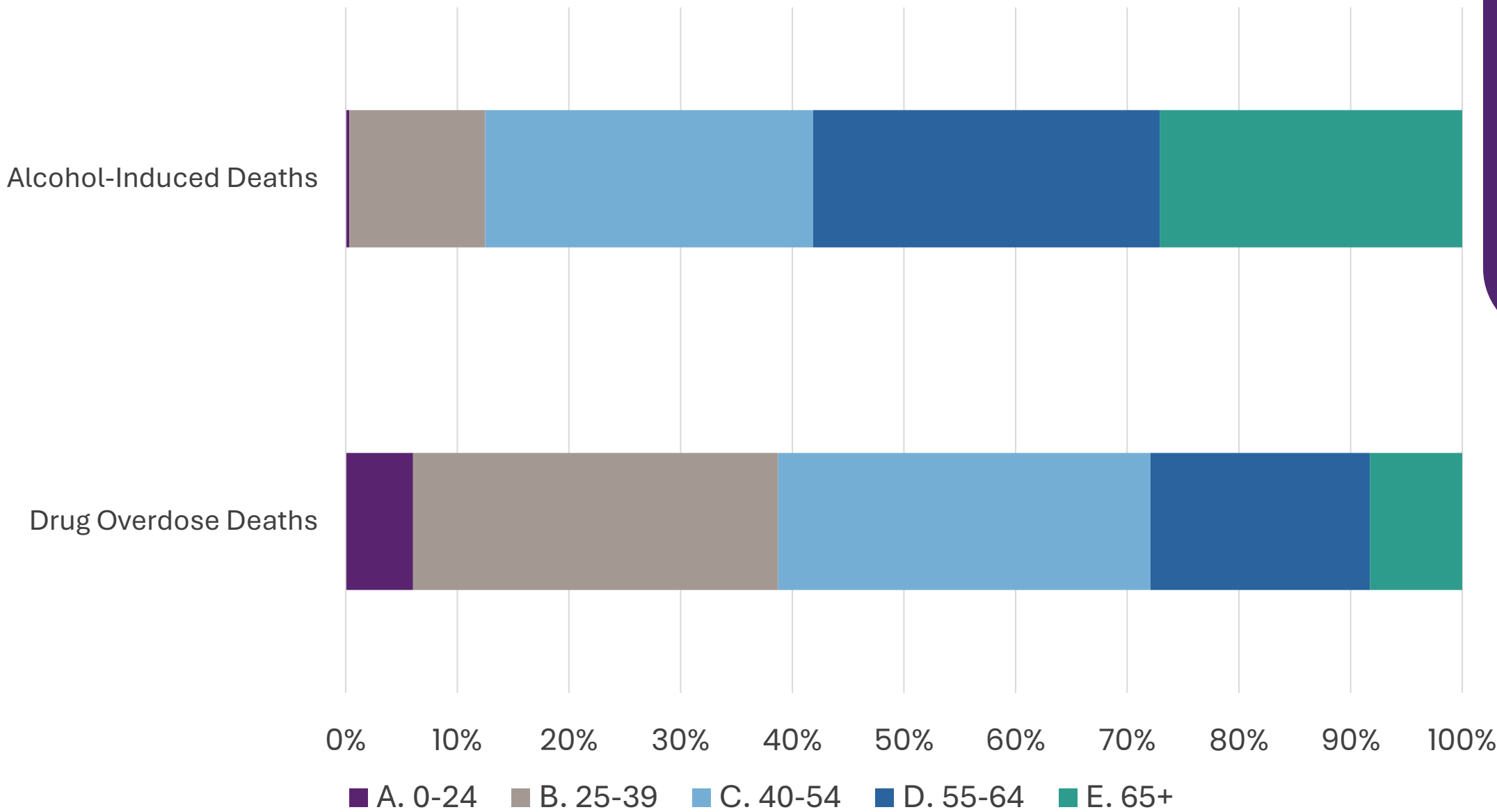


# For university-educated individuals, alcohol-induced deaths are now more prevalent than drug overdose deaths



# Alcohol-induced deaths impact older ages

~5% of annual global deaths attributed to alcohol



At the start of the COVID-19 pandemic, alcohol consumption increased up to **25%**

**Multiple diseases linked to alcohol consumption**

- Cardiovascular disease
- Liver disease
- Gastrointestinal complications
- Certain cancers, such as colon, liver, and breast



# There are many potential clues of substance use disorder

## Behavior history

- Trauma
- Mental illness
- Extended sick leave
- Accidents

## Medical records

- Hypertension
- Palpitations
- Gout
- Gastrointestinal issues
- Liver function test abnormalities

## Prescription history

- Number of prescriptions
- Number of prescribers
- Duration of prescriptions
- Frequency of renewals

*“It is important for underwriters to be trained to read between the lines and notice medical, social, and behavioral clues that may indicate a potential substance use disorder, especially given the current societal trends in drug use.”*

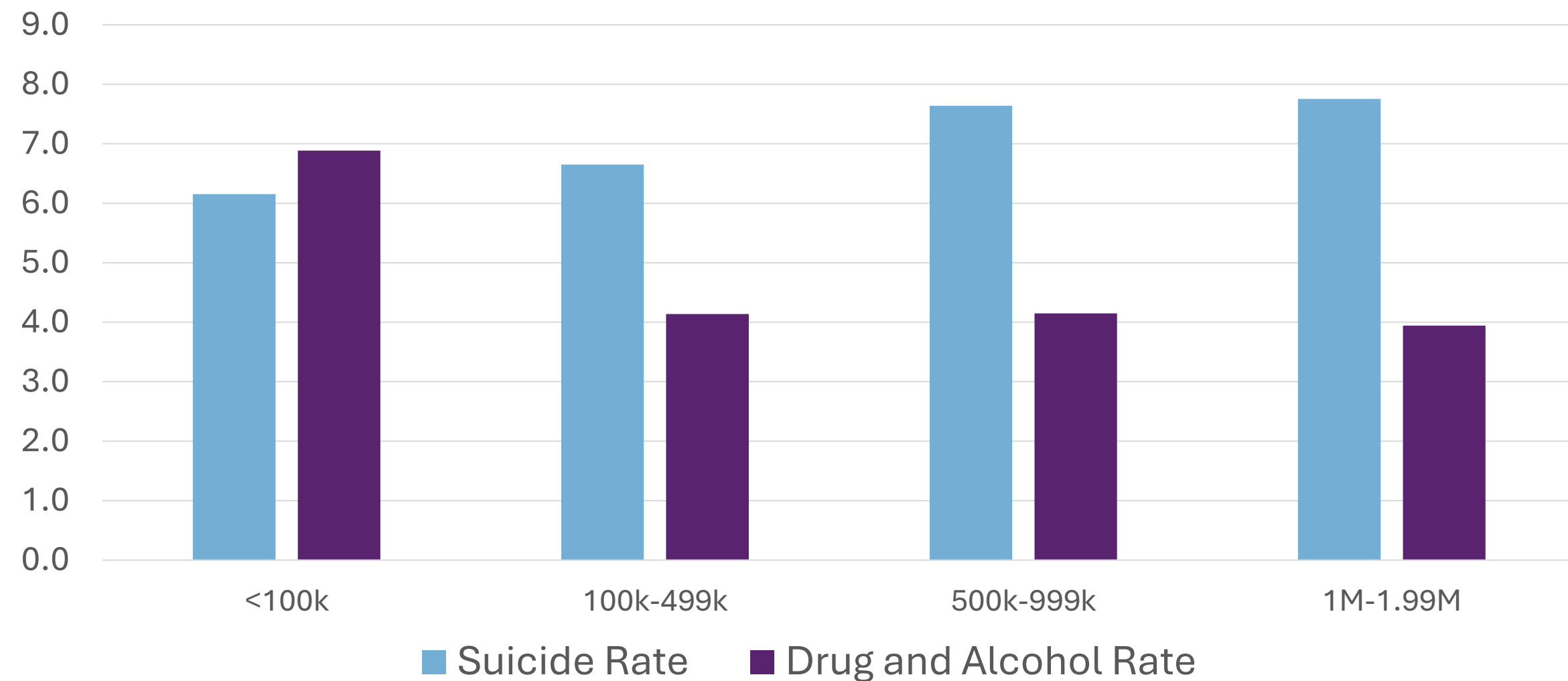
– **Dr. Georgiana Willwerth**, VP & Medical Director, RGA

# Comparison of mortality rates by face amount

Experience is different for suicide and drug and alcohol abuse

Mortality Rates by Face Amount  
2023 - Insured Population

Policies with higher face amounts have lower substance-related mortality, but higher suicide risk



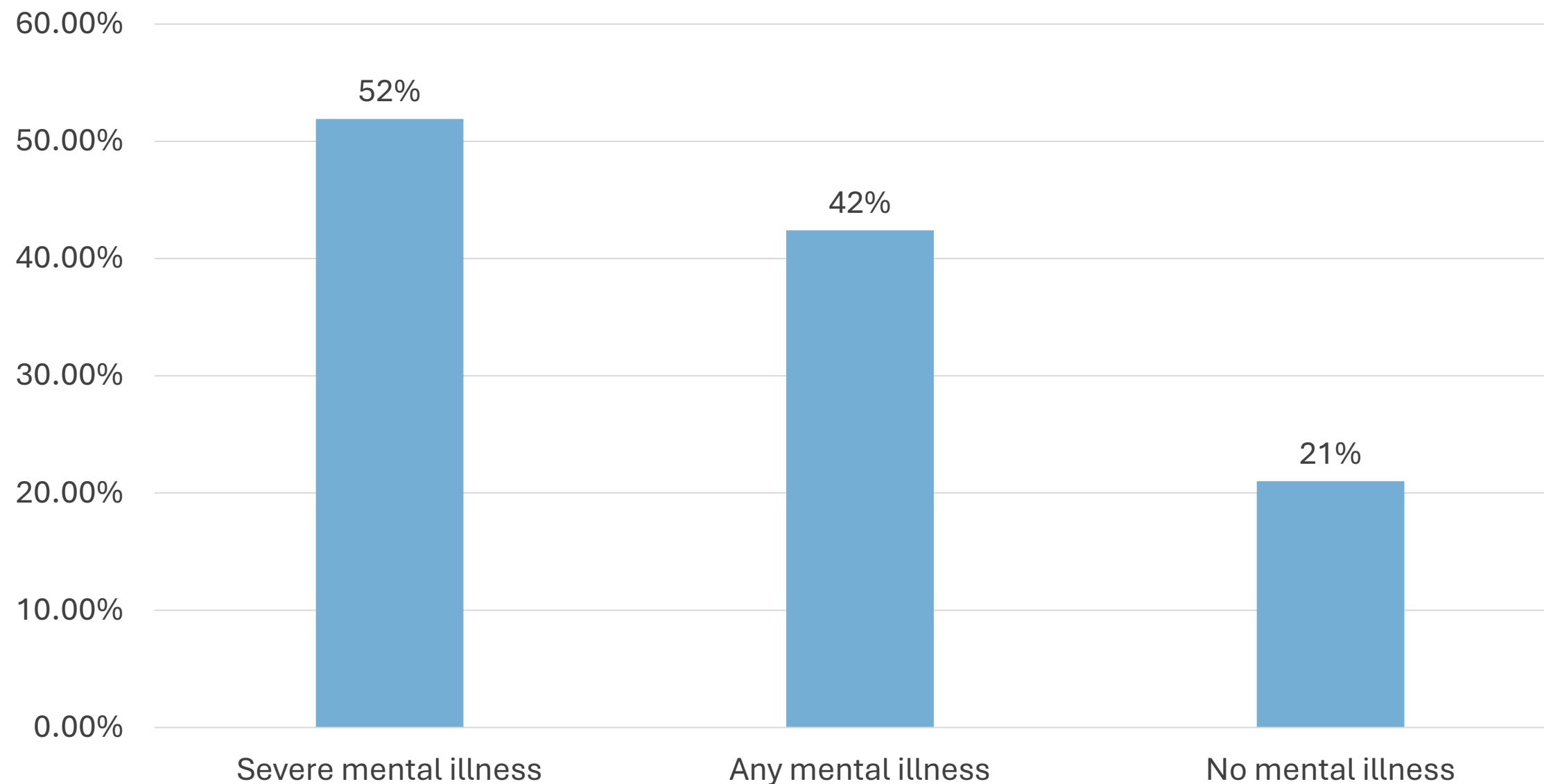
# Mental health





# Mental illness is a comorbidity with substance use disorder

% of adults with an SUD by mental illness status



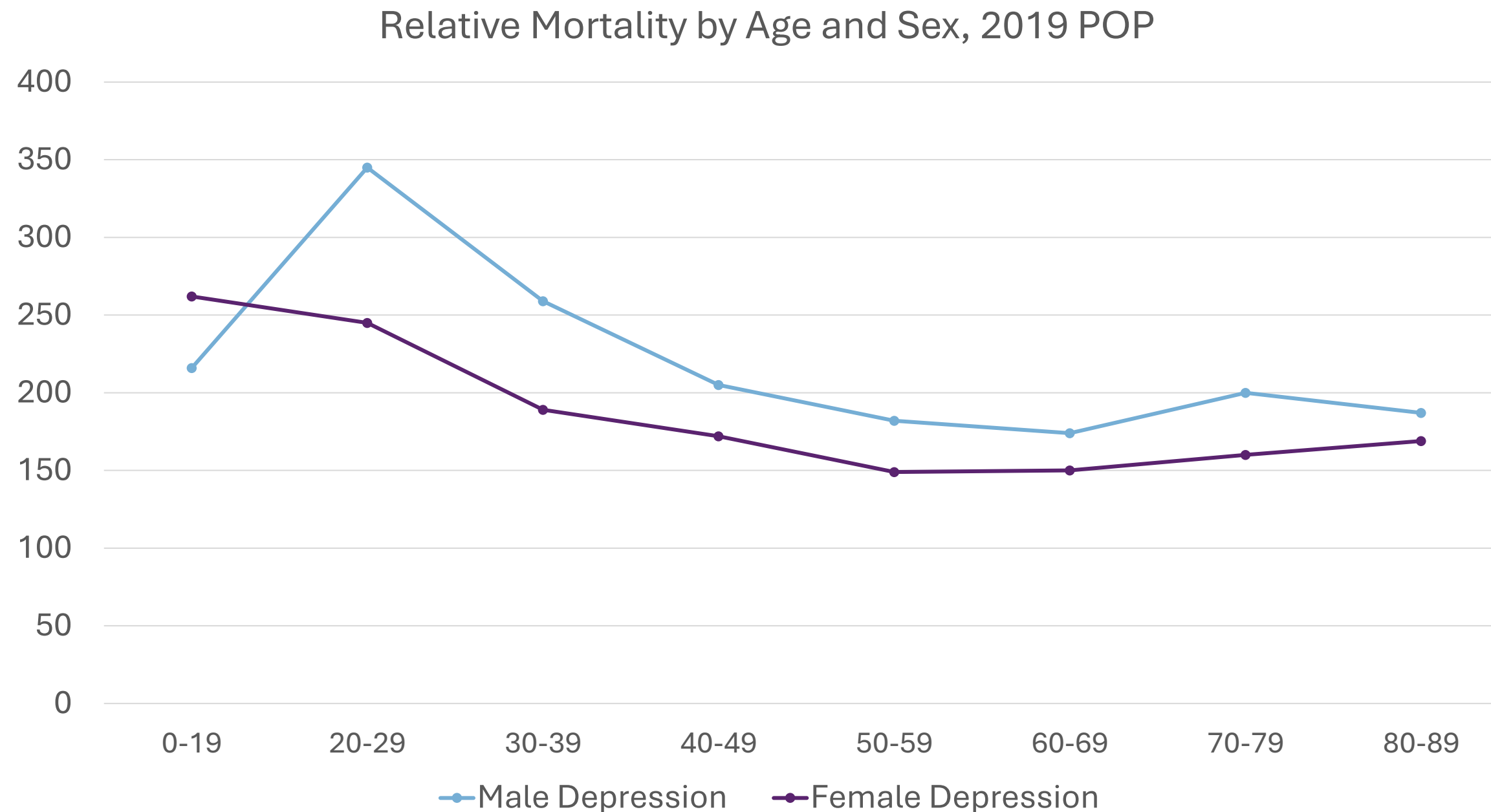
## Various potential reasons

- Common risk factors (trauma, adverse social environment, genetics)
- Mental illness can lead to drug use for symptoms
- Benzodiazepine prescription for anxiety
- Substance use can worsen mental disorders

Mental health diagnoses for ages 35-44 have increased from 31% to 45% from 2019 to 2023.

# Mortality for people with mental illness

Proprietary medical claims database to study mental health conditions



## Elevated mortality risk for mental illness

- Male relative mortality higher in most ages for depression
- We also looked at bipolar and anxiety disorders
  - Bipolar disorder has relatively higher mortality impact than depression
  - Anxiety disorder is associated with higher mortality, but not as high as depression

Source: RGA analysis of proprietary medical claims data scoring ICD codes for mortality risk

# Mental health and physical health are fundamentally linked



People with depression twice as likely to have poor health status

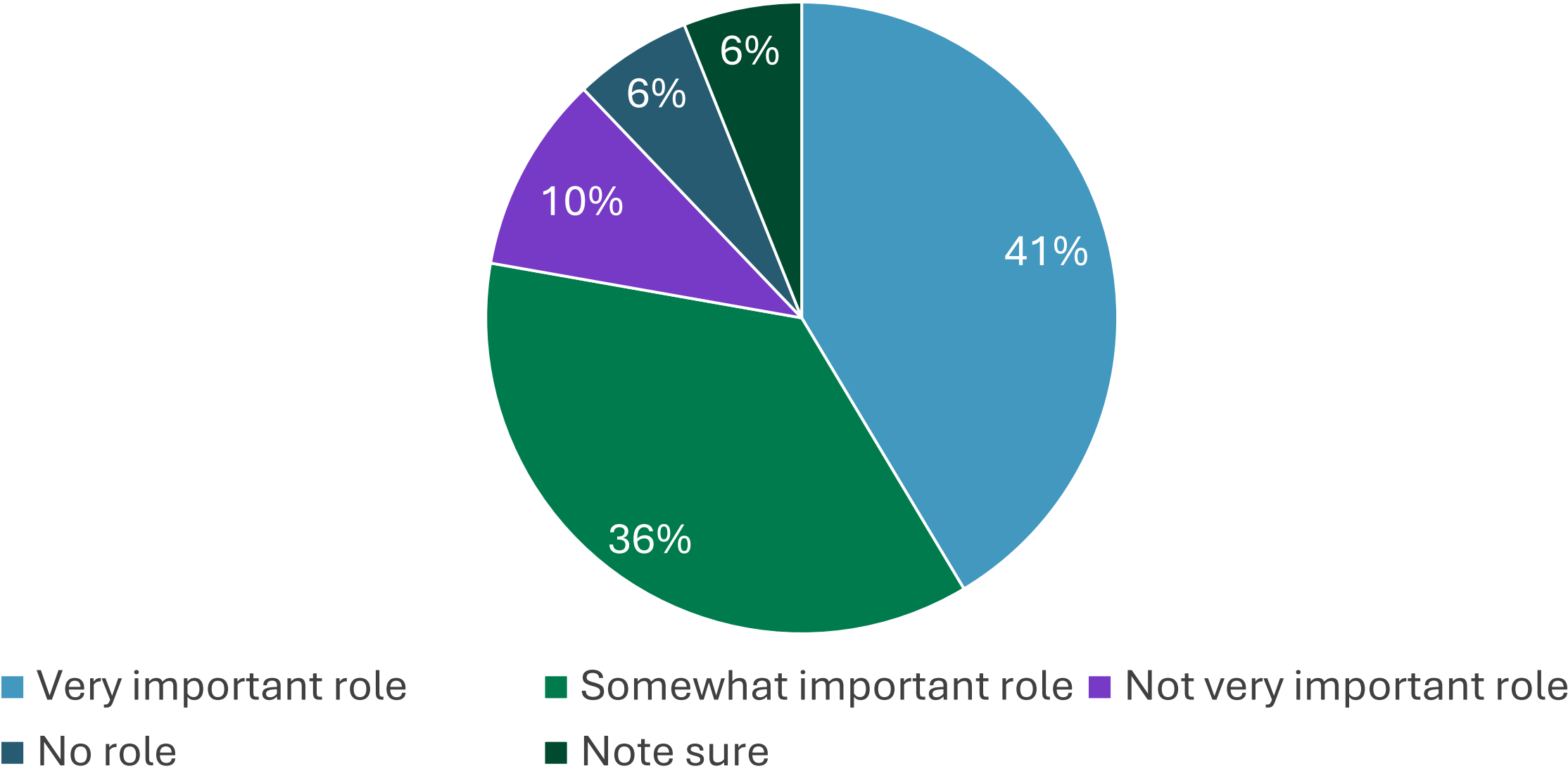
People with mood disorders are at elevated risk of developing several medical conditions

- Circulatory
- Pulmonary
- Endocrine
- Musculoskeletal
- Gastrointestinal
- Urogenital



# Mental health and obesity

Importance of Mental Health Issues on Obesity



76% of YouGov survey respondents identified mental health issues as an important contributor to obesity

**Description:** In 2023, a survey of adults in the United States revealed that lifestyle choices and the food industry were believed to have a very important role in causing obesity, with 59 and 49 percent of respondents expressing this belief, respectively. Additionally, mental health issues and genetics were also believed to have either a very or somewhat important role by the majority of respondents. This statistic depicts the distribution of U.S. adult perceptions regarding the main factors causing [...] [Read more](#)  
**Note(s):** North America, United States; From March 22 to 27, 2023; 1,000 respondents; 18 years and older  
**Source(s):** YouGov

# Growing recognition of mental healthcare needs



2023

## Global Mental Health Survey

85%

Reported mental health as a priority

57%

Reported additional demand for mental health-related products and services\*

\*in the last 2 years

**RGA is working with partners around the world to better understand the mental health landscape.**

How is the industry helping to bridge the gap in mental health?

Find out more by [downloading the report.](#)

# Emerging mortality topics

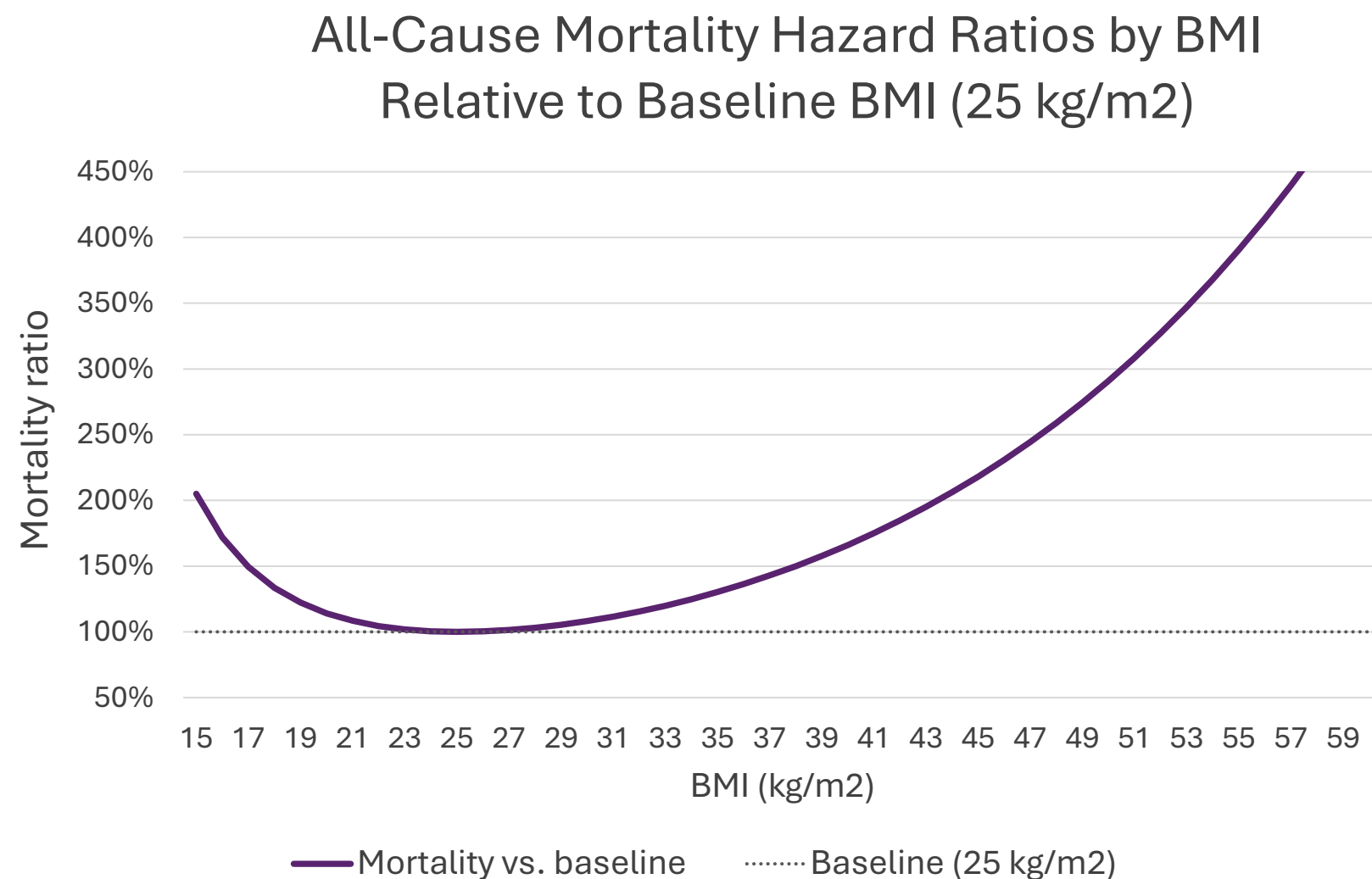




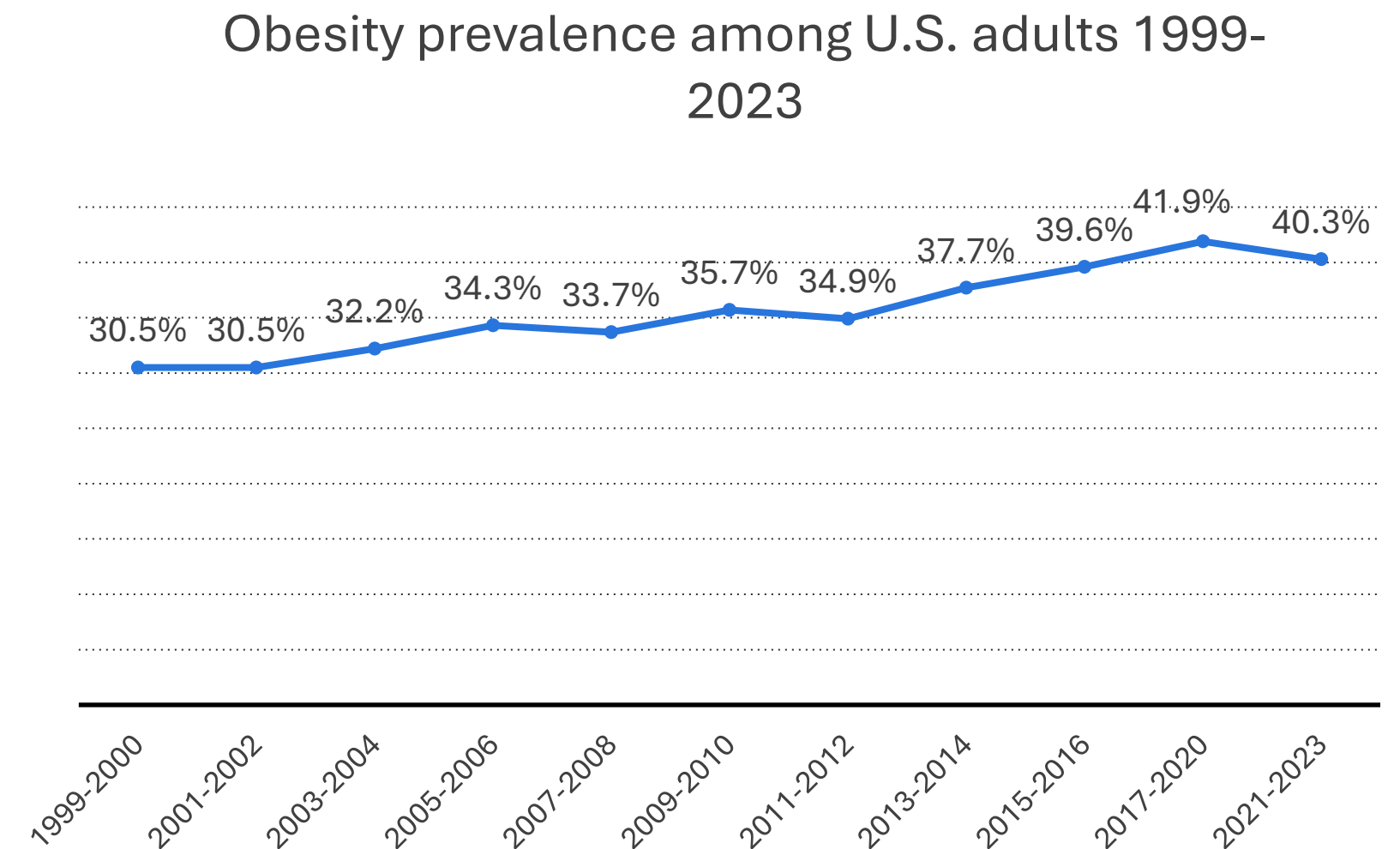
# Obesity trends

Underwriting provides protection from relatively higher all-cause mortality at higher BMIs

All-cause mortality increases as BMI increases



Steady increase in prevalence.  
Have we rounded the bend?



Source: RGA analysis of NHIS data, 1987-2015. Multivariate model adjusts for age, sex, smoking, disease history, health status and income.

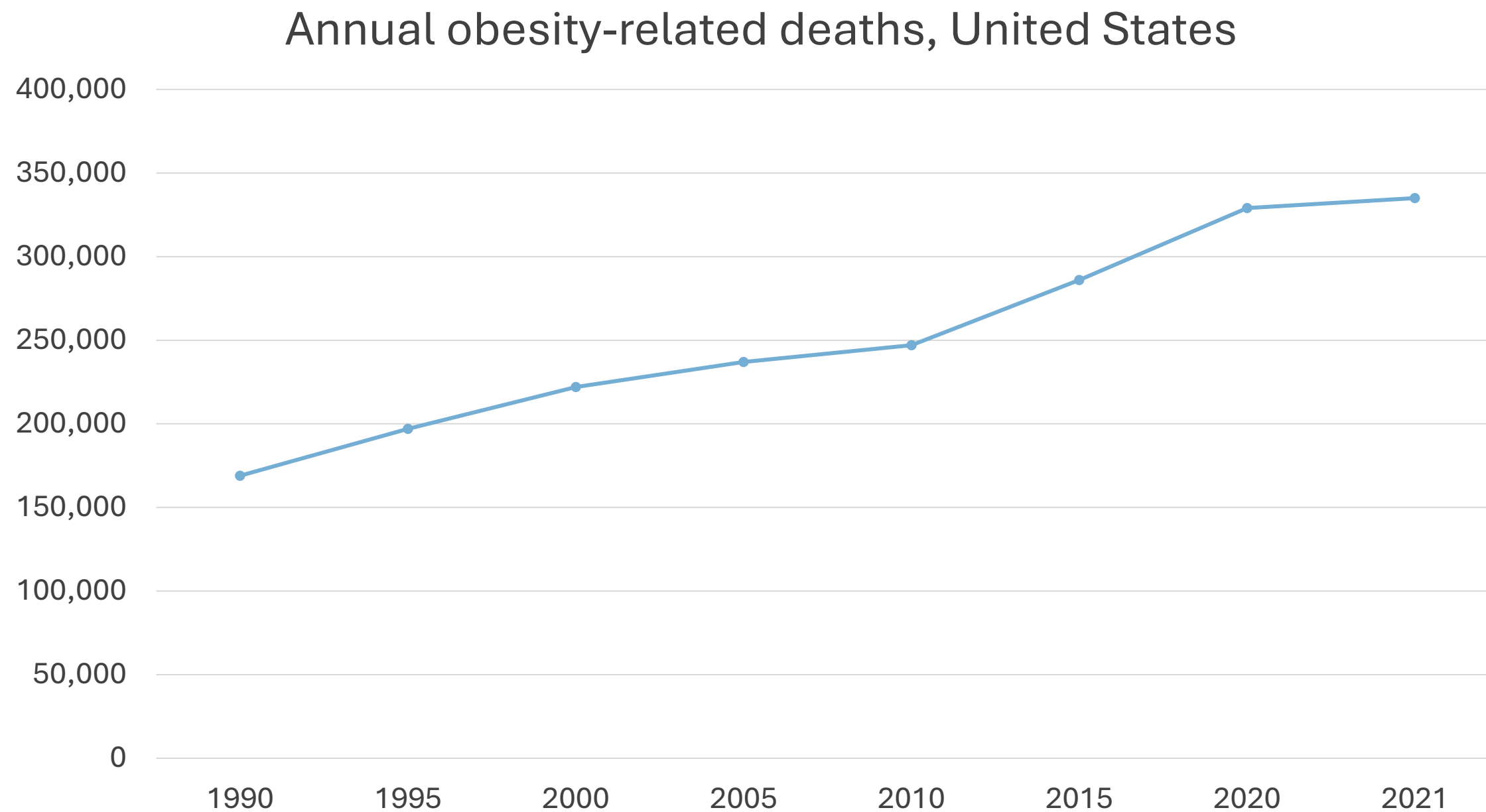
**Note(s):** United States; 20 years and older

**Source(s):** NCHS; CDC; Expert(s) (Emmerich SD, Fryar CD, Stierman B, Ogden CL);

Statista ID 1110404

# Health risks for those who are overweight / obese

Deaths related to obesity increased nearly 50% in the past 20 years



## Obesity-related diseases

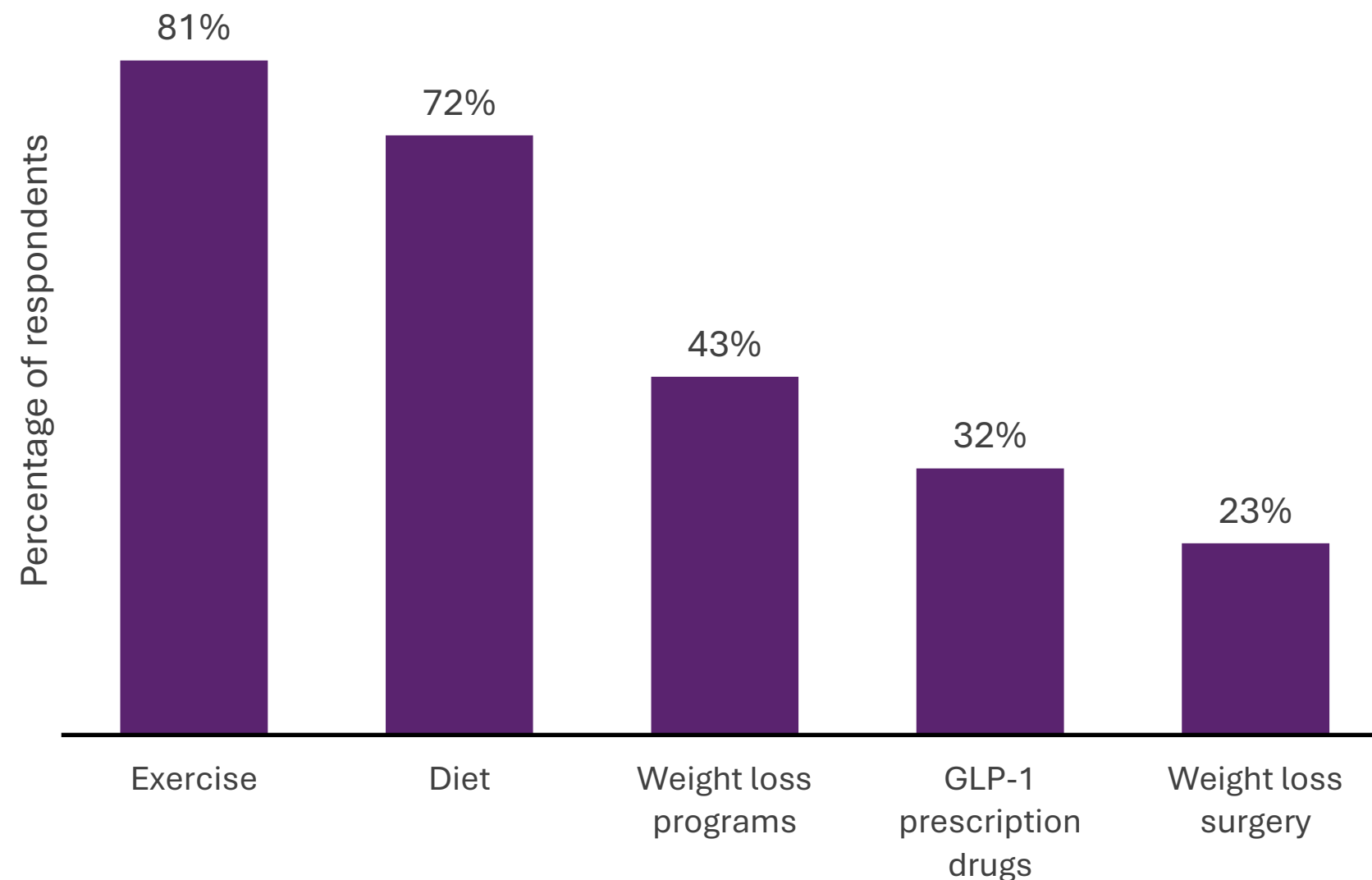
- High blood pressure
- High triglyceride levels
- Coronary heart disease
- Stroke
- Cancer
- Type-2 diabetes
- Osteoarthritis
- Sleep apnea
- Respiratory problems

Source: IHME, Global Burden of Disease (2024)

# Weight loss methods are largely unchanged

43% of American adults say they are overweight, and 55% would like to lose weight

Share of U.S. adults who were interested in select weight loss methods 2023



- 30% of U.S. adults say they have lost a significant amount of weight in the past two years.
- 4% used weight-loss medication for support.
- 25% use a fitness tracker or app.

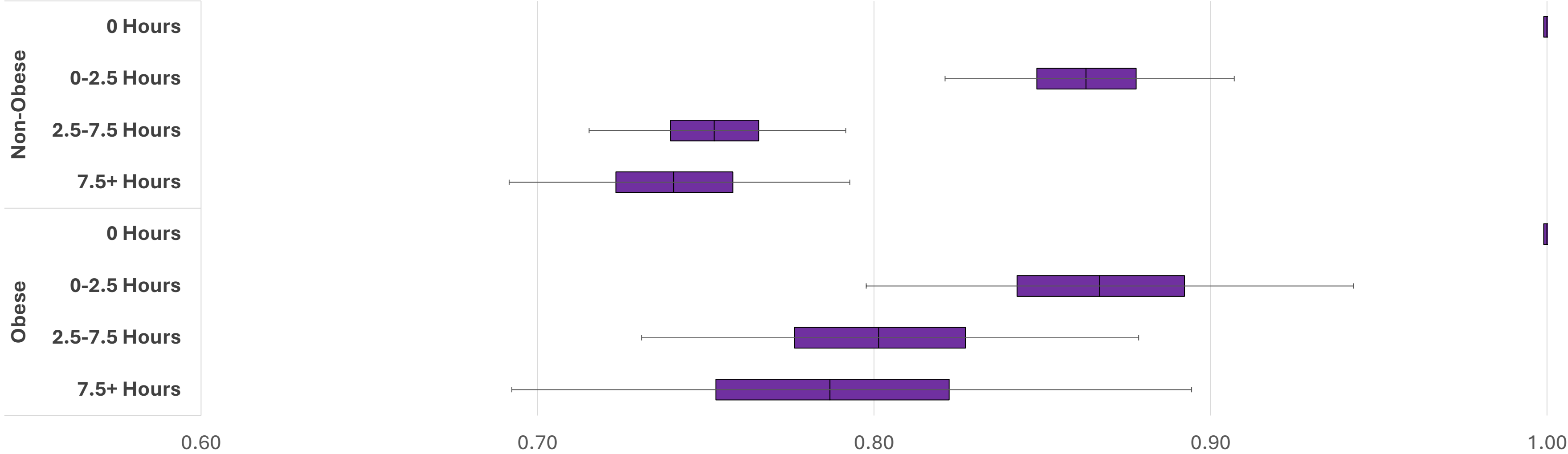
Note(s): United States; April 28 to 30, 2023; 18 years and older; 1,204 respondents  
Source(s): Morning Consult; Statista ID 1391442; Gallup, 2024



# Exercise reduces all-cause mortality

Impacts vary slightly for obese and non-obese populations

All-cause mortality hazard ratios by total weekly exercise duration, excluding those unable to exercise



Source: RGA analysis of NHIS data, 1987-2015. Multivariate model adjusts for age, sex, smoking, disease history, health status and income.

# Key findings from our study of the impact of exercise on an obese population



Exercise improves mortality experience for the obese population



Vigorous exercise shows additional mortality benefits compared to moderate exercise



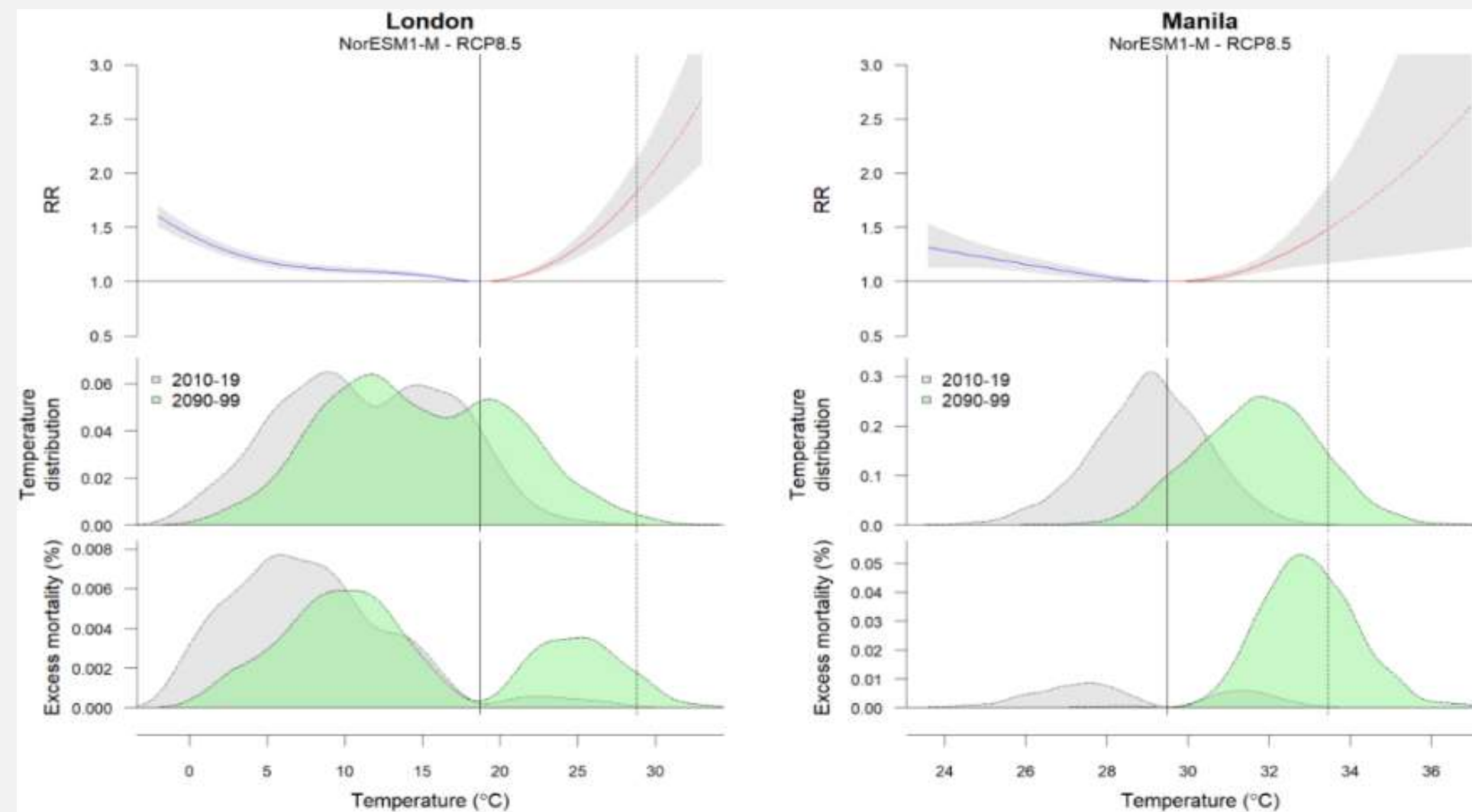
Mortality benefits of exercise are slightly smaller for the obese population than for the non-obese population



Impacts of exercise increase with age

## Average temperature

Suboptimal temperatures on both ends of the spectrum: a tale of two cities

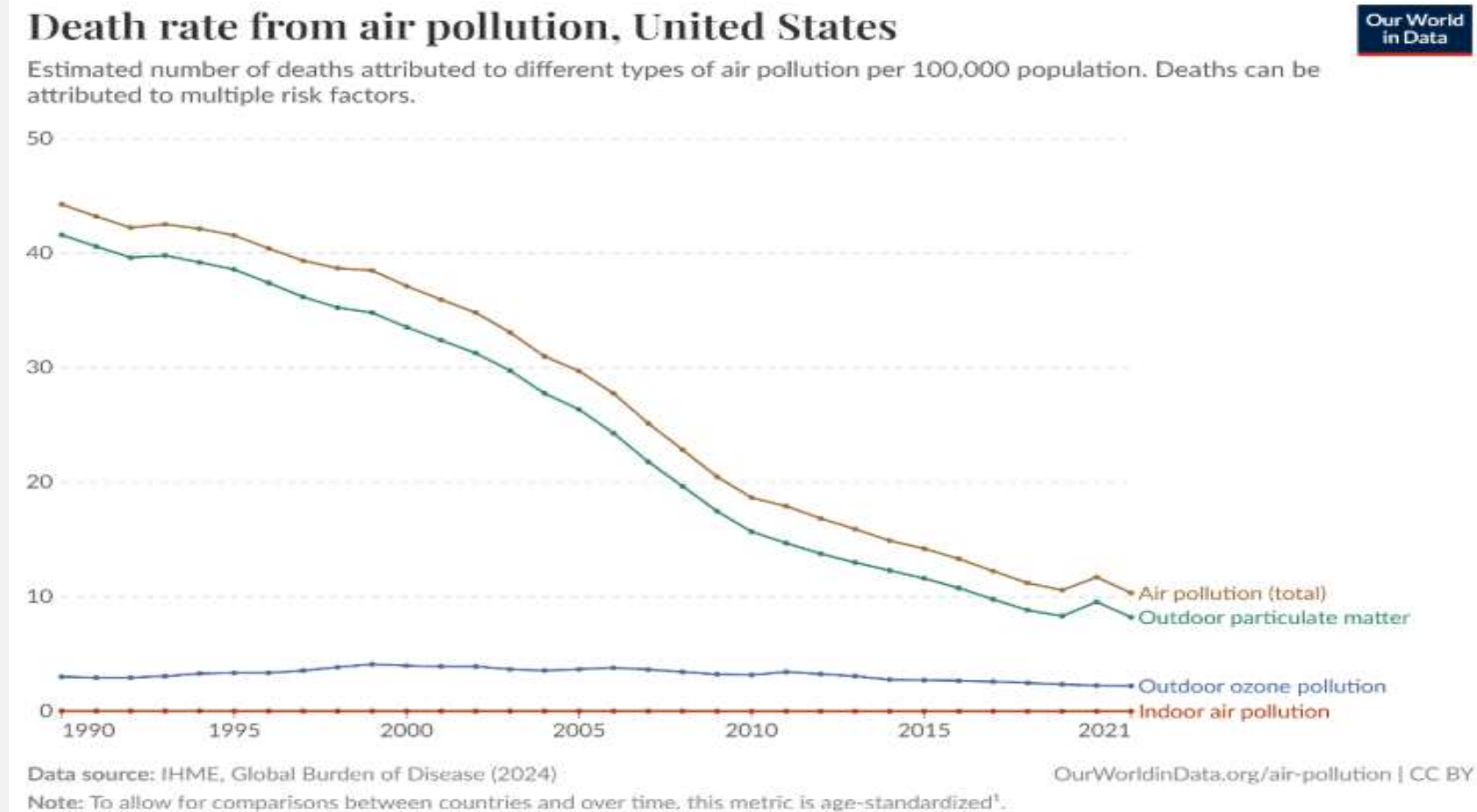


Source: [https://www.thelancet.com/journals/lanplh/article/PIIS2542-5196\(17\)30156-0/fulltext](https://www.thelancet.com/journals/lanplh/article/PIIS2542-5196(17)30156-0/fulltext)



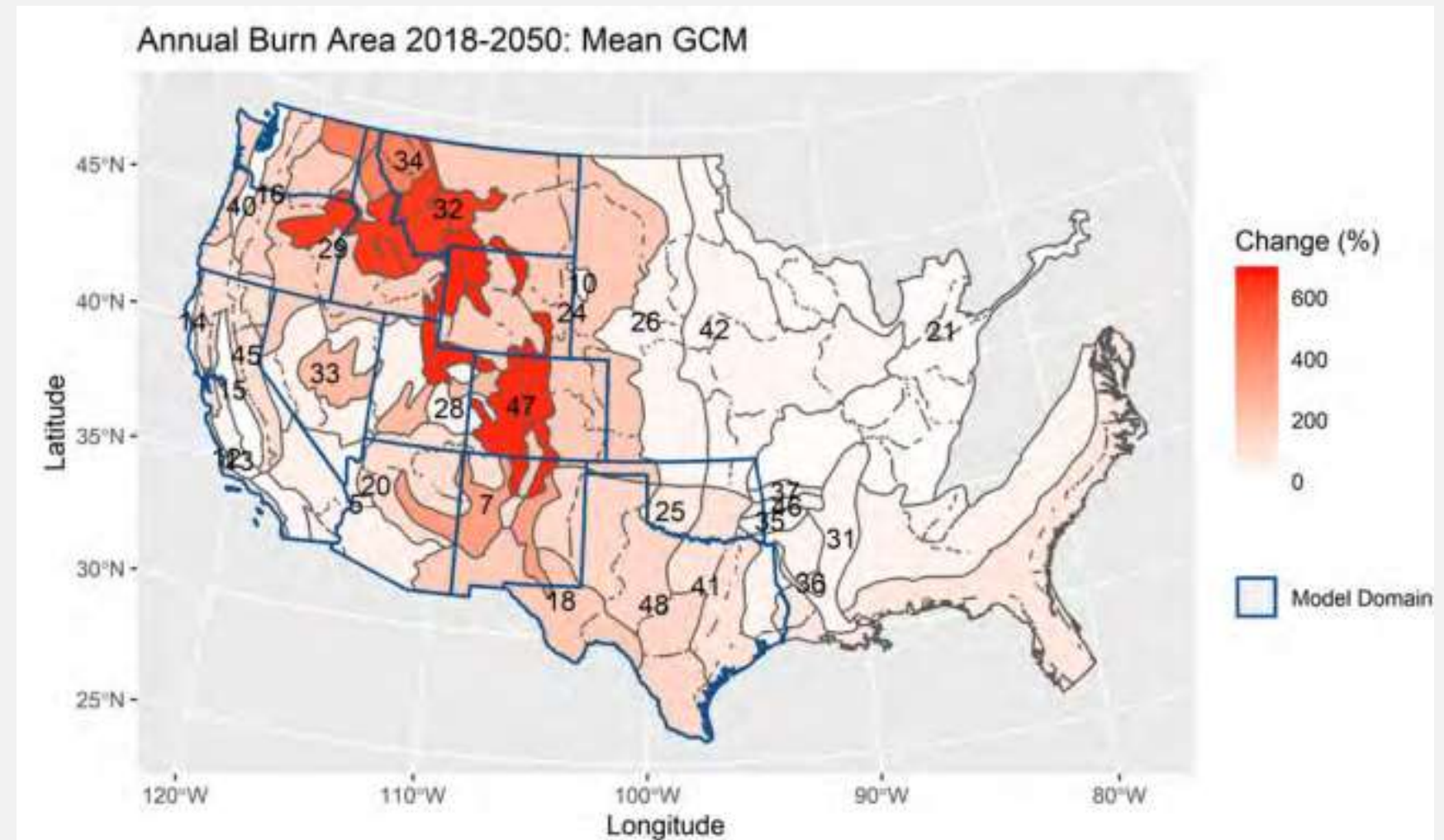
## Air pollution

- Key sources of air pollution in relation to its impact on mortality are fine particulate matter (PM2.5), nitrogen dioxide (NO2) and ozone
- The U.S. has made great strides on these since 1980. Will this continue?



## Enter wildfire risk ...

- Wildfire pollutants (PM2.5 and beyond) up to 10x more potent than chemical composition of traditional air pollutants
- Air quality knows no boundaries
- Long-term effects still emerging -> can we think of this as we have accumulated pack-years?



Cumulatively by 2050, climate change could lead to an extra 14.5 million deaths worldwide under a “middle of the road” greenhouse gas emissions scenario

# What's on the horizon?

Headwinds	Tailwinds
Slowing cardiovascular improvement	Genetics and all “-omics”
Obesity, diabetes, physical inactivity	Precision medicine – next gen CV therapies, biometric monitoring (PPG tech)
Cognitive / neurodegenerative diseases	Novel obesity and diabetes treatments – GLP-1 RA +++, reversibility of DM-2, impact on CVD
Infectious diseases	Cancer – prevention, early detection / MCED, personalized treatment, recurrence surveillance
Economics / population demographics	mRNA tech and universal vaccines including influenza
Climate change / environment	AI/GPT, machine learning - clinical medicine, research
What's the next opioid epidemic / vaping	Advanced therapeutics – AI driven drug and protein development, Alzheimer's disease prevention/treatment
Deaths of despair	Microbiome – all aspects of health
Public health and health care delivery	Regenerative medicine
Science “under the microscope”	Anti-ageing therapies – stem-cell rejuvenation and beyond



Call to action



# Call to action for various stakeholders

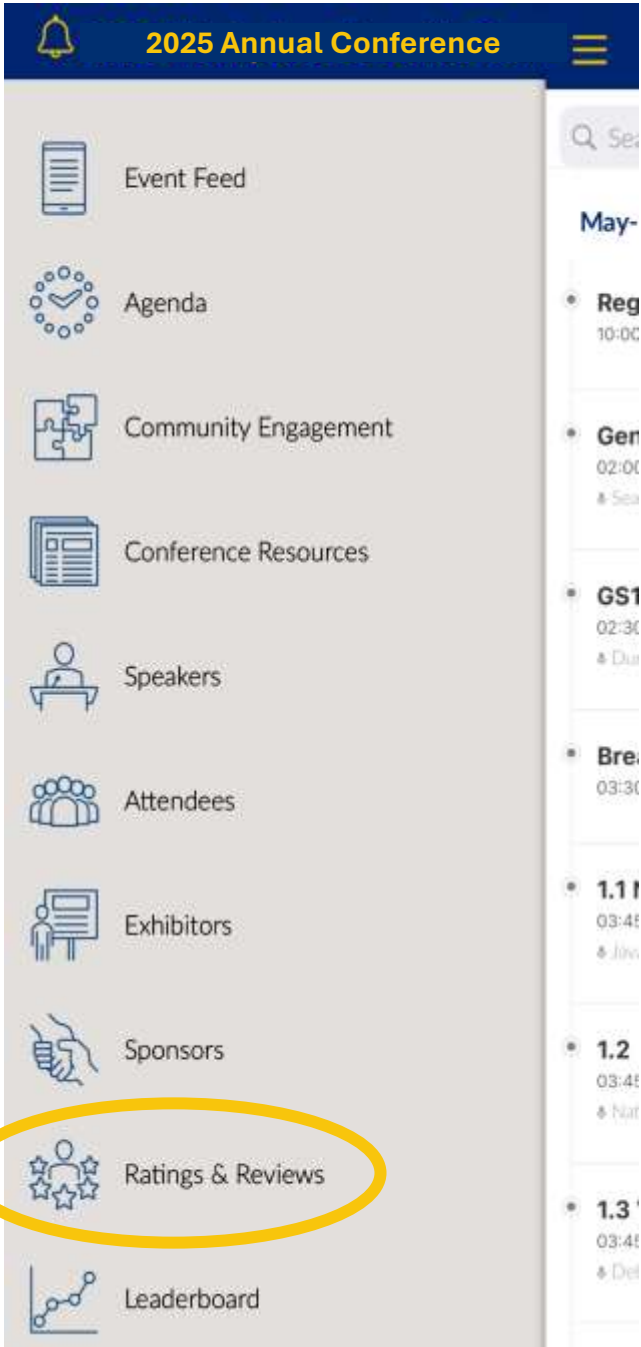
- C-suite and investors
- ERM
- Actuaries
- Underwriters
- Product development
- Claims
- Reinsurance department



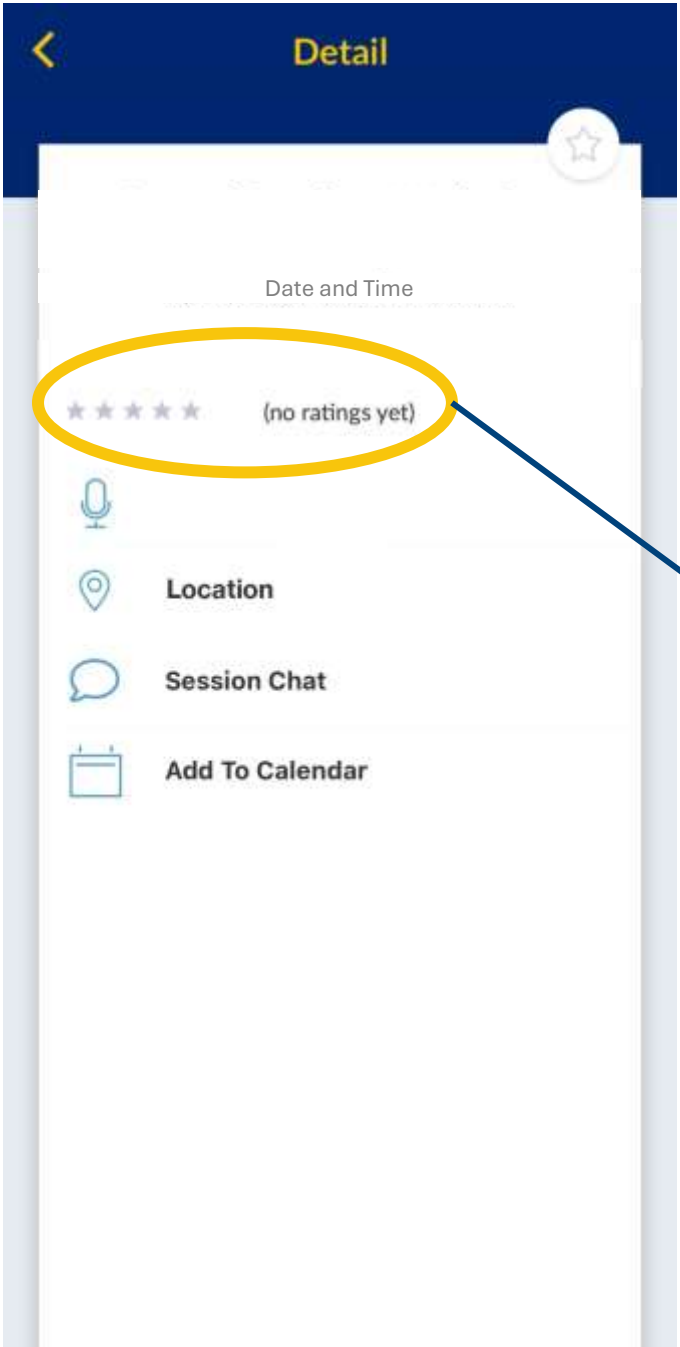


# Share your feedback in the conference app

## Module Option



## Agenda Option





# Thank You



Follow us on LinkedIn at  
[Linkedin.com/LIMRA](https://www.linkedin.com/company/limra)

