CONFERENCE OF CONSULTING ACTUARIES

Cross Discipline Webinars

Post-Pandemic Mortality Trends: A Cross Discipline Discussion

Wednesday, January 22, 2025
12:30 – 1:45 pm Eastern Time

Moderator: Jamal Adora – Gabriel, Roeder, Smith & Company (GRS)

Presenters: Karen Glenn – Social Security Administration
Emily Dave – Reinsurance Group of America
Ted Law – Reinsurance Group of America

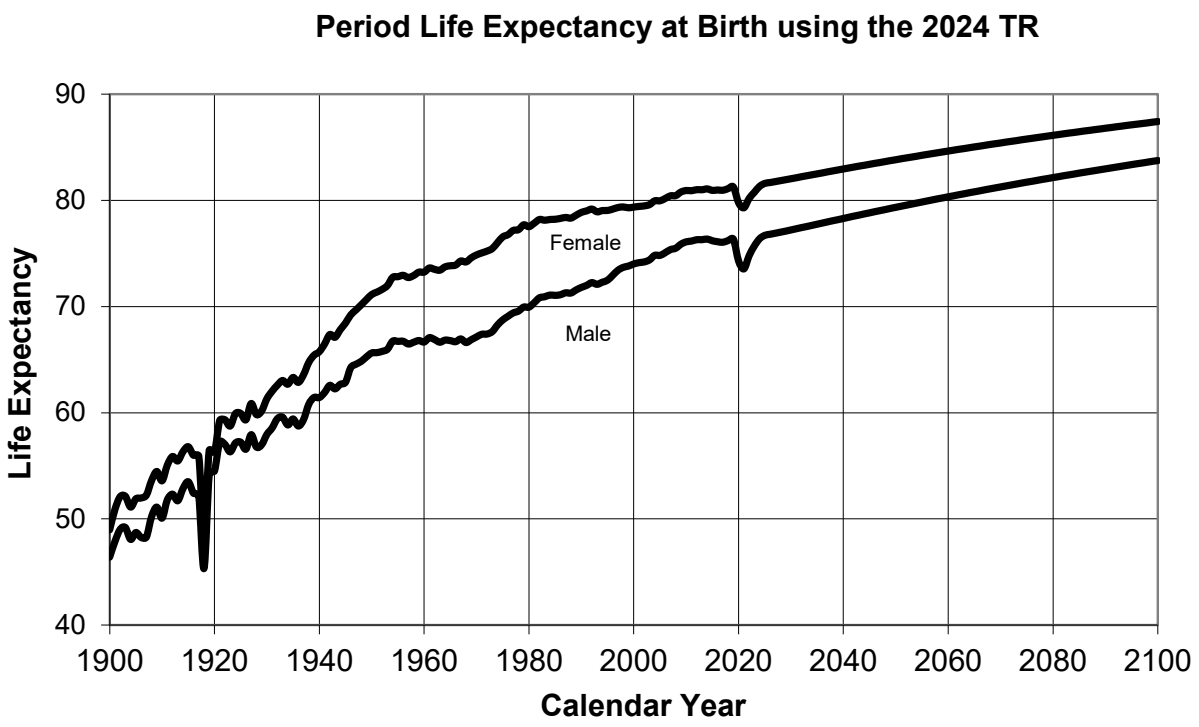
Social Security Mortality Projections

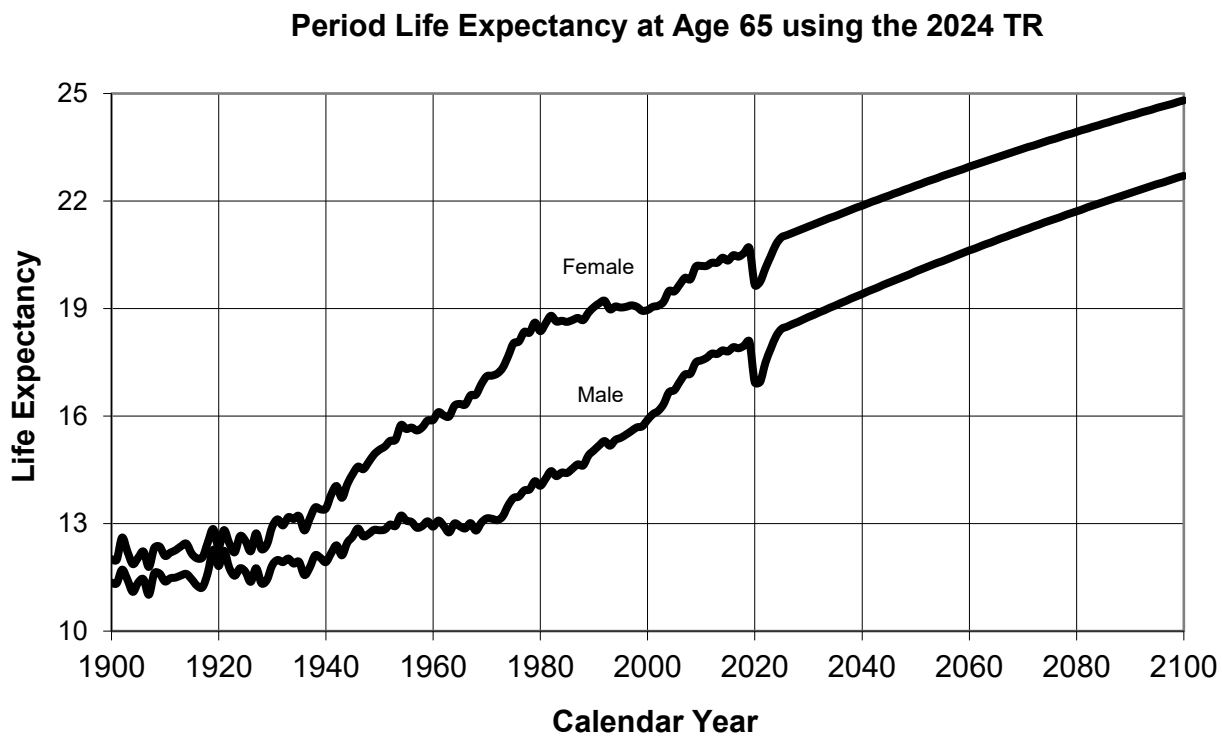
Projecting Mortality

Mortality is assumed to decline in the future—but the rate of decline is in question

- The annual Social Security Trustees Reports include three sets of deterministic projections (intermediate, low cost, and high cost)
- Stochastic projections also
- The intermediate assumptions for the 2024 Trustees Report include significant declines in death rates in the future, as shown by:
    - Calendar year life expectancy at birth
    - Calendar year life expectancy at age 65

Projecting Mortality: 2024 Trustees Report

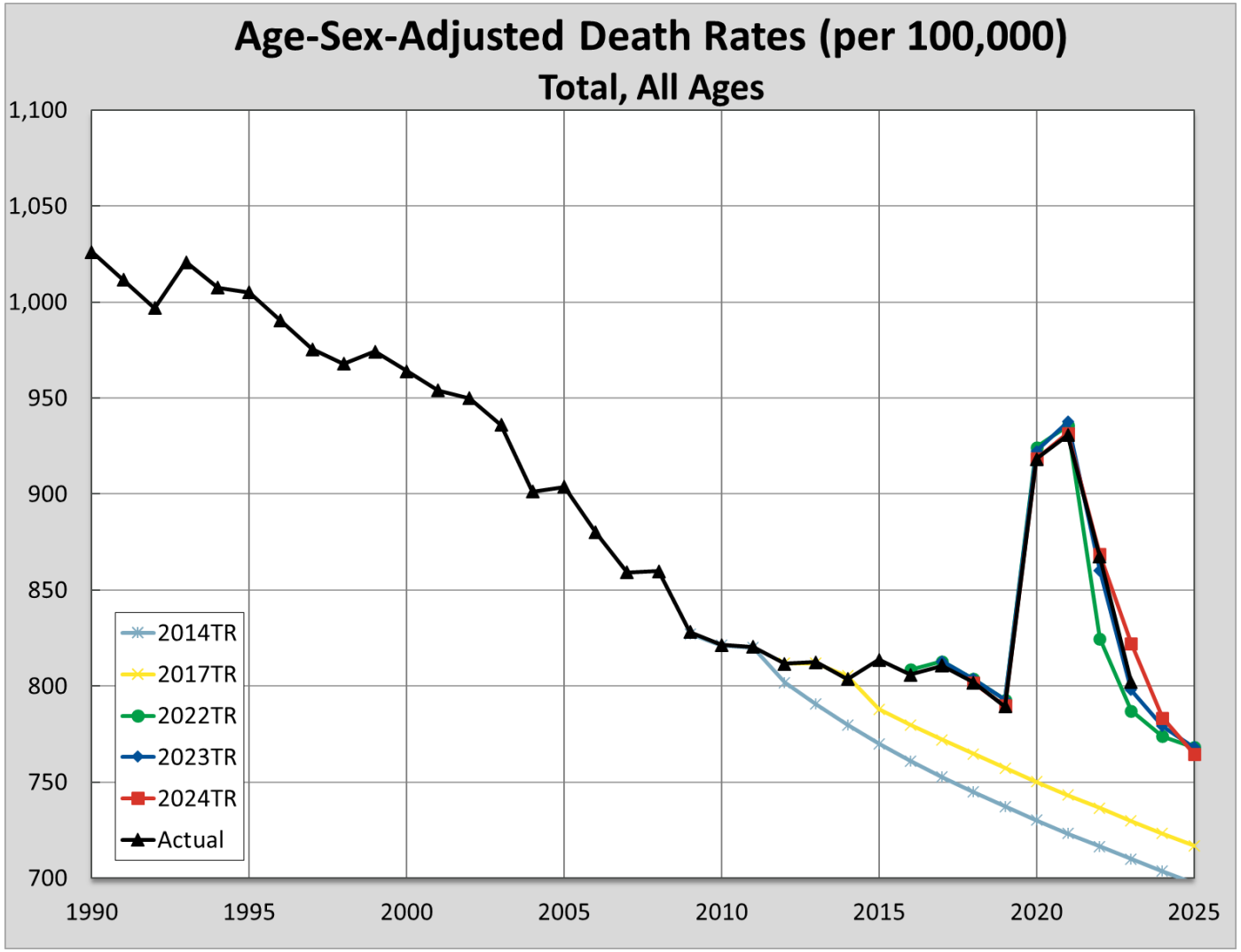




Data Sources / Methods

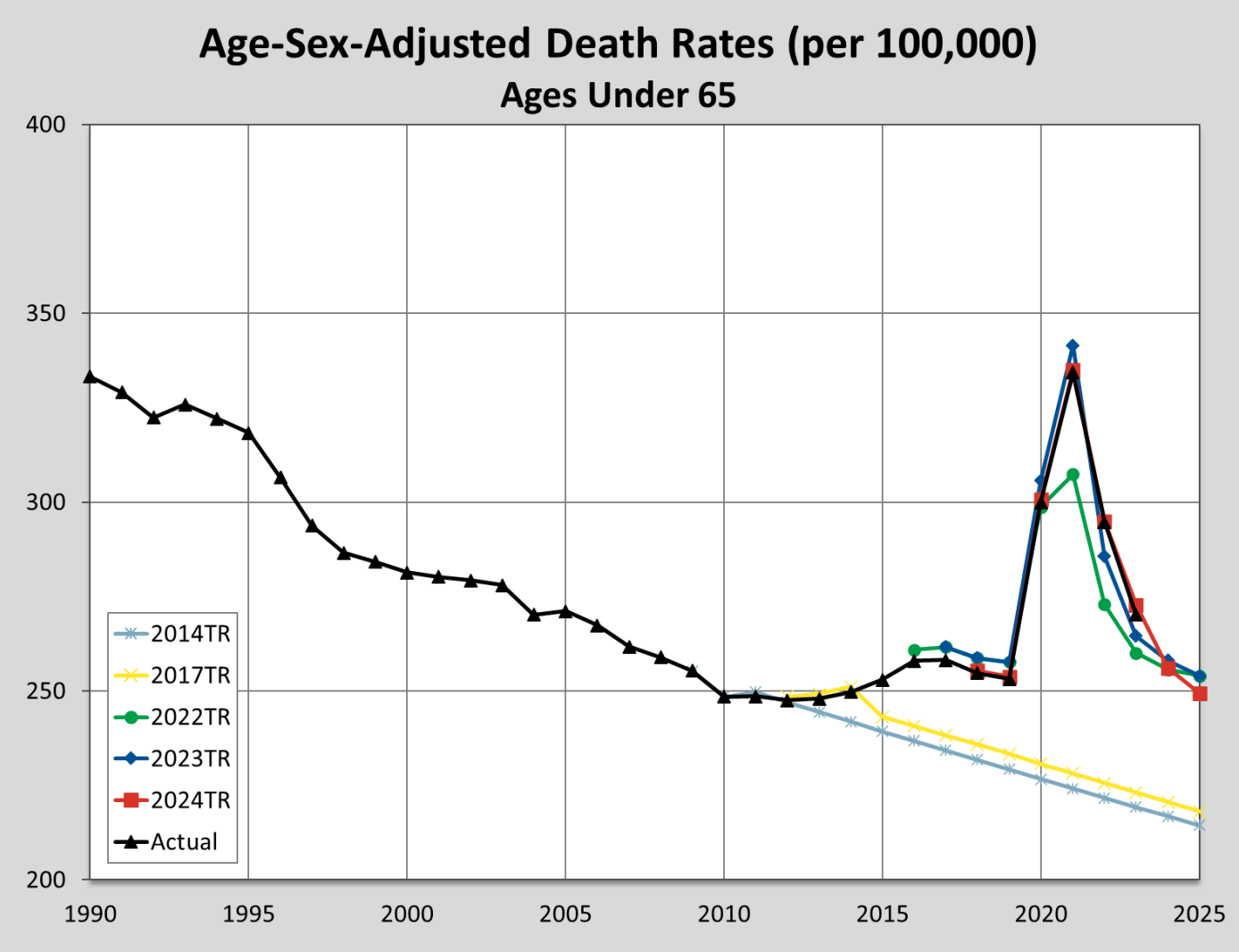
- For under age 65, we use historical deaths from the National Center for Health Statistics and historical resident population from the Census Bureau
- For ages 65 and older, we use historical deaths and enrollments of the Medicare population
- Consistency is critical
- We look at six broad causes of death: Cardiovascular Disease, Cancer, Accidents and Violence, Respiratory Disease, Dementia, and All Other
- The assumed ultimate values for percentage reductions in the central death rates are set by the Social Security Board of Trustees, and are reached in the 25th year of the 75-year projection period
- Details are available at https://www.ssa.gov/OACT/TR/2024/2024_LR_Model_Documentation.pdf (see pages 14-21 in particular)

Mortality Experience: All Ages



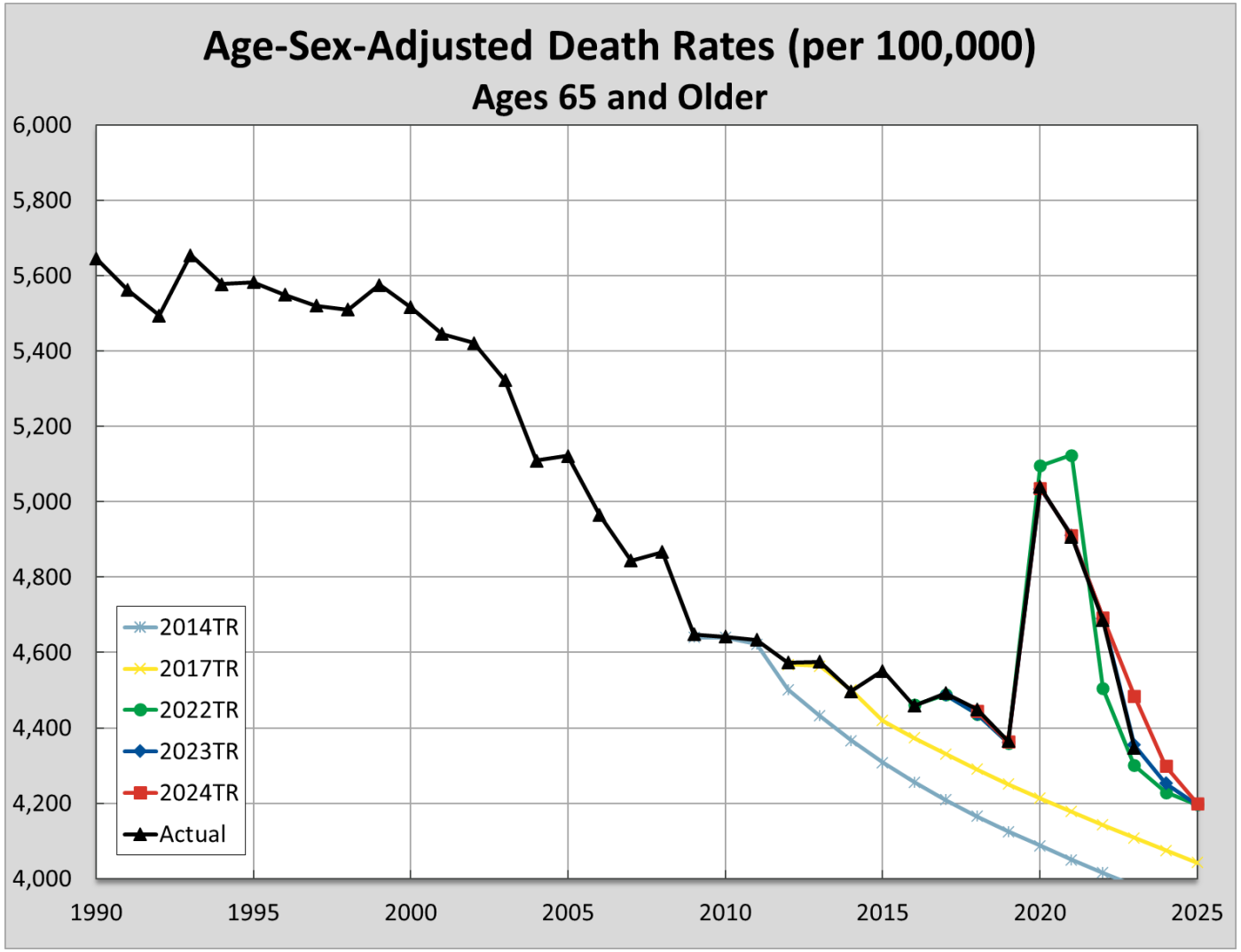
- Actual experience in 2009-19 showed less improvement than had been expected
- Increased mortality in 2020-24 reflects the effects of the pandemic

Mortality Experience: Ages Under 65



- Actual experience starting in 2010 shows generally *increasing* death rates for these ages
- Deaths of despair?

Mortality Experience: Ages 65 and Older



- What will the net effect of the pandemic be on mortality in the future?
- We assume offsetting effects for the residual population after the pandemic

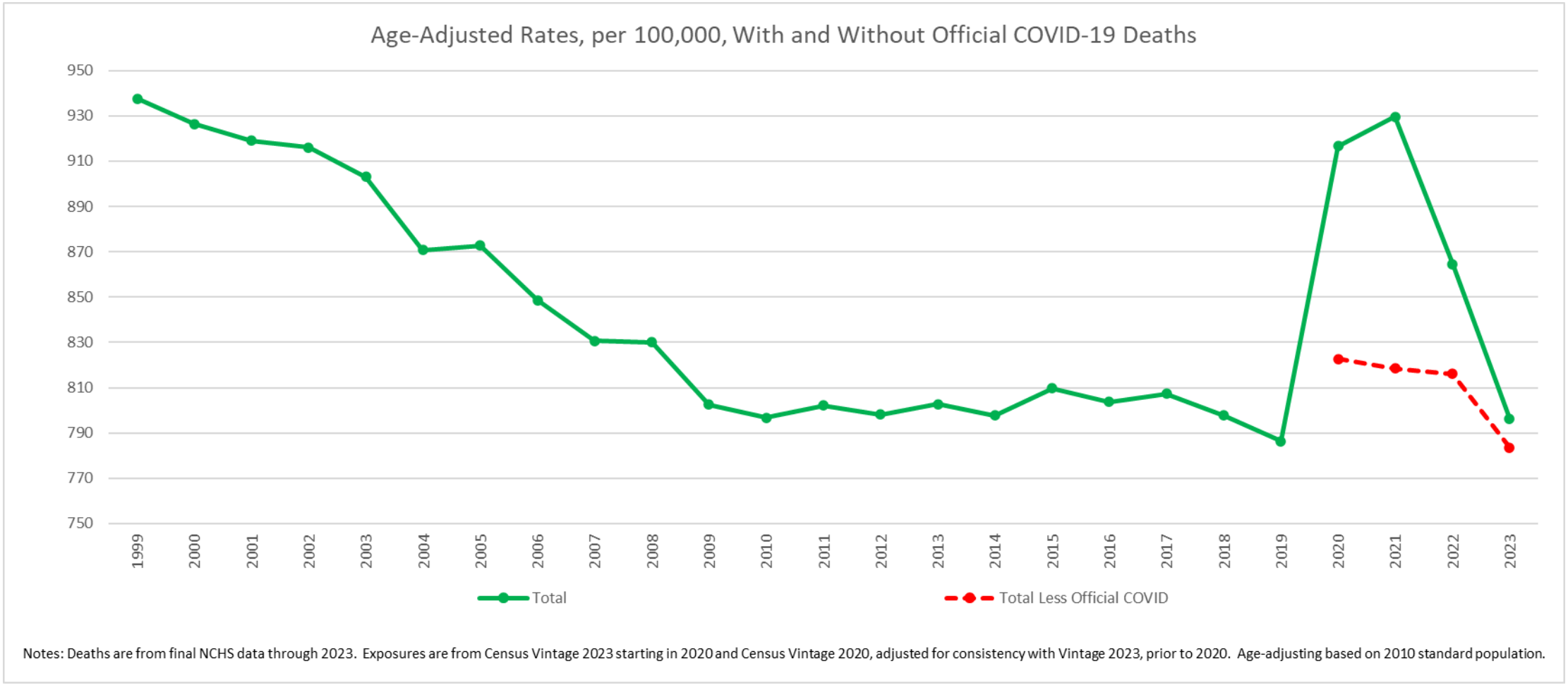
Pandemic Factors

- To account for the pandemic's effects, we apply multiplicative factors to the death probabilities that would have been assumed in the absence of the pandemic ("baseline") at the time each Trustees Report's assumptions were developed
- For the 2024 Trustees Report, we assumed death rates would return to baseline levels by 2025

Multiplicative Factors Applied to Baseline Death Probabilities[a]					
Year	2024 Trustees Report				
	Age 0	Ages 1-14	Ages 15-64	Ages 65-84	Ages 85+
2020	[b]0.99	[b]1.01	[b]1.19	[b]1.16	[b]1.14
2021	[b]1.03	[b]1.11	[b]1.32	[b]1.18	[b]1.07
2022	[b]1.03	[b]1.18	[b]1.16	[b]1.10	[b]1.07
2023	1.01	1.22	1.08	1.06	1.04
2024	1.00	1.06	1.02	1.02	1.01
2025	1.00	1.00	1.00	1.00	1.00

[a] Baseline death probabilities are the death probabilities that were estimated to have occurred in the absence of the pandemic, at the time assumptions were developed for the Trustees Report.
[b] Based on actual data.

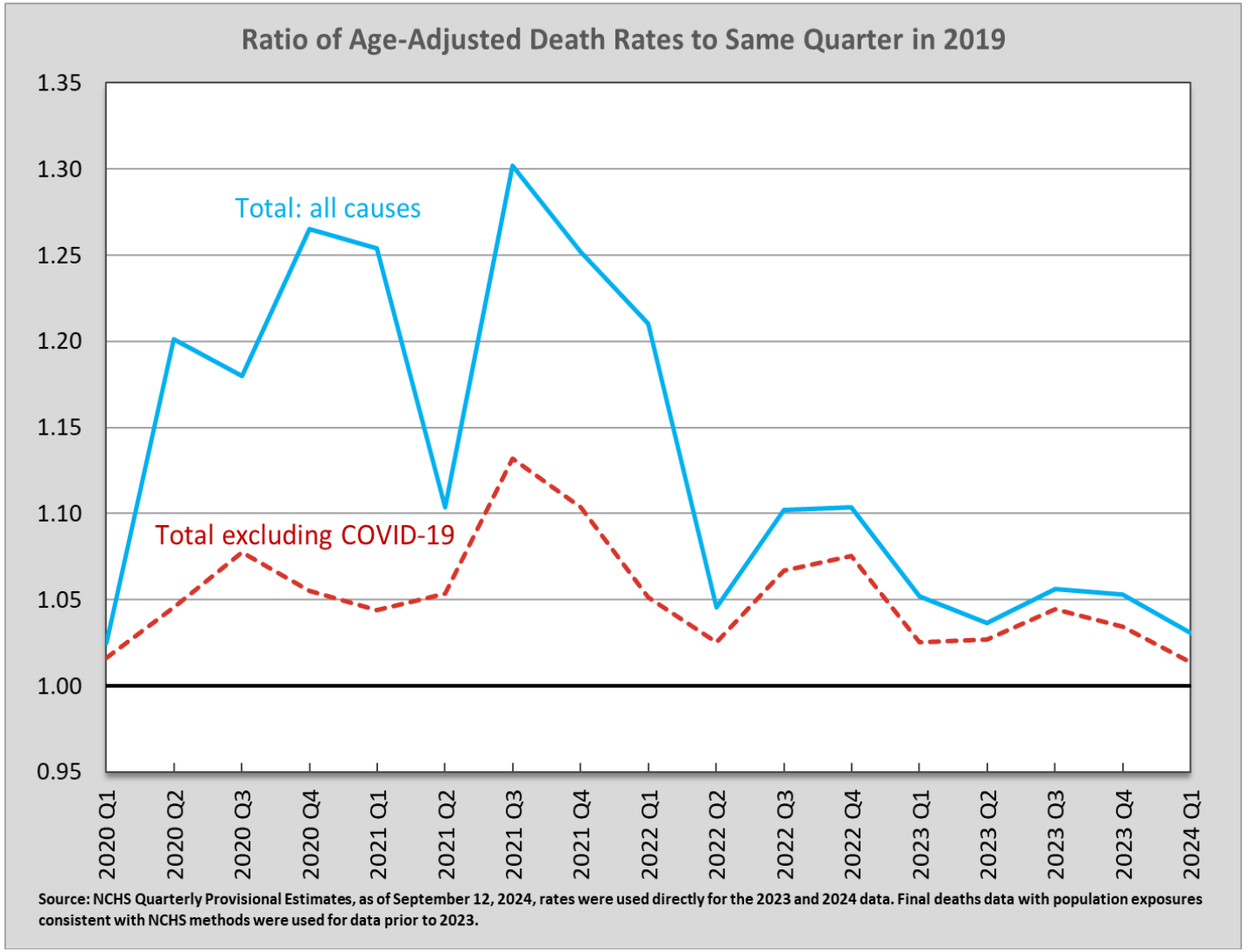
Deaths During the Pandemic vs. Those Coded as COVID-19



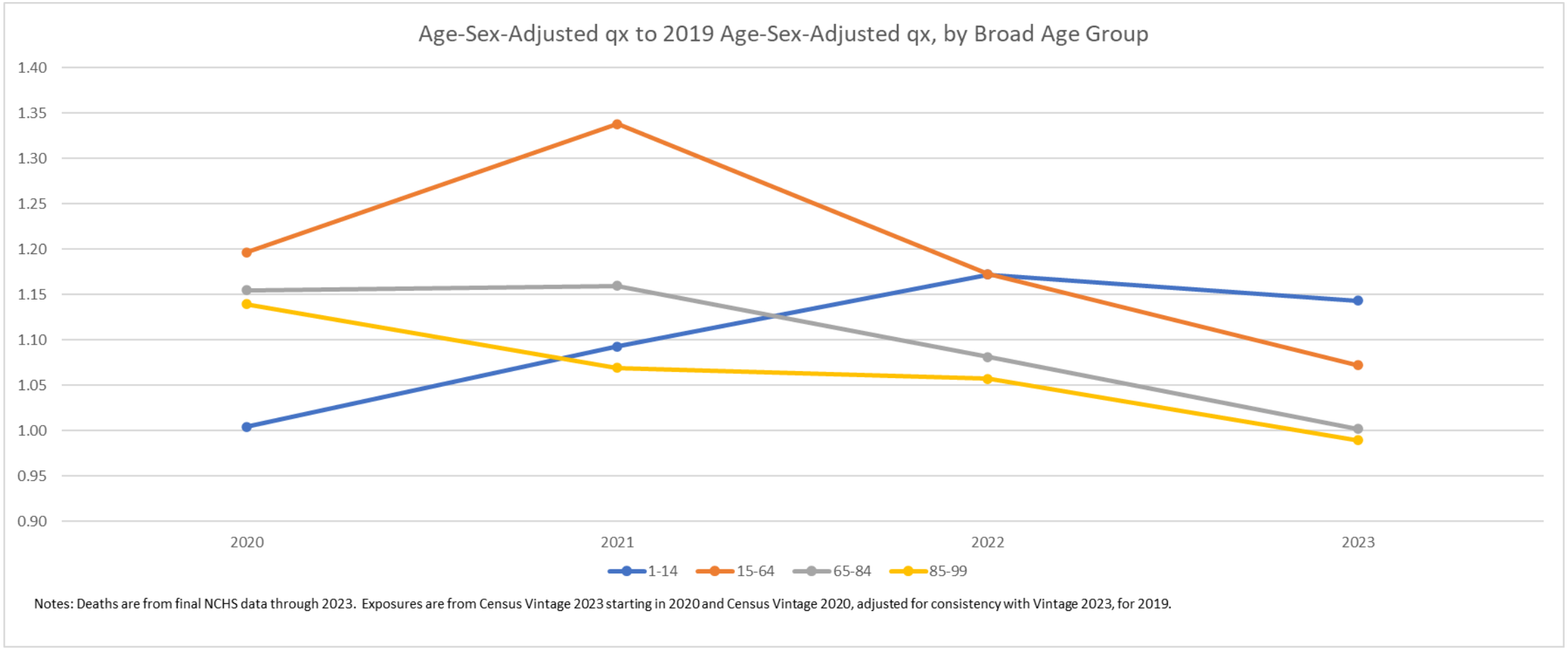
Notes: Deaths are from final NCHS data through 2023. Exposures are from Census Vintage 2023 starting in 2020 and Census Vintage 2020, adjusted for consistency with Vintage 2023, prior to 2020. Age-adjusting based on 2010 standard population.

Ratio of Age-Sex-Adjusted Death Rates to Same Quarter in 2019

- Death rates for causes other than “official” COVID were about 5 percent higher through 2022 than they were in 2019
- Approaching pre-pandemic levels in 2023 and 2024



Ratio of Age-Sex-Adjusted Death Rates (q_x) to 2019—Vary Significantly By Age Group

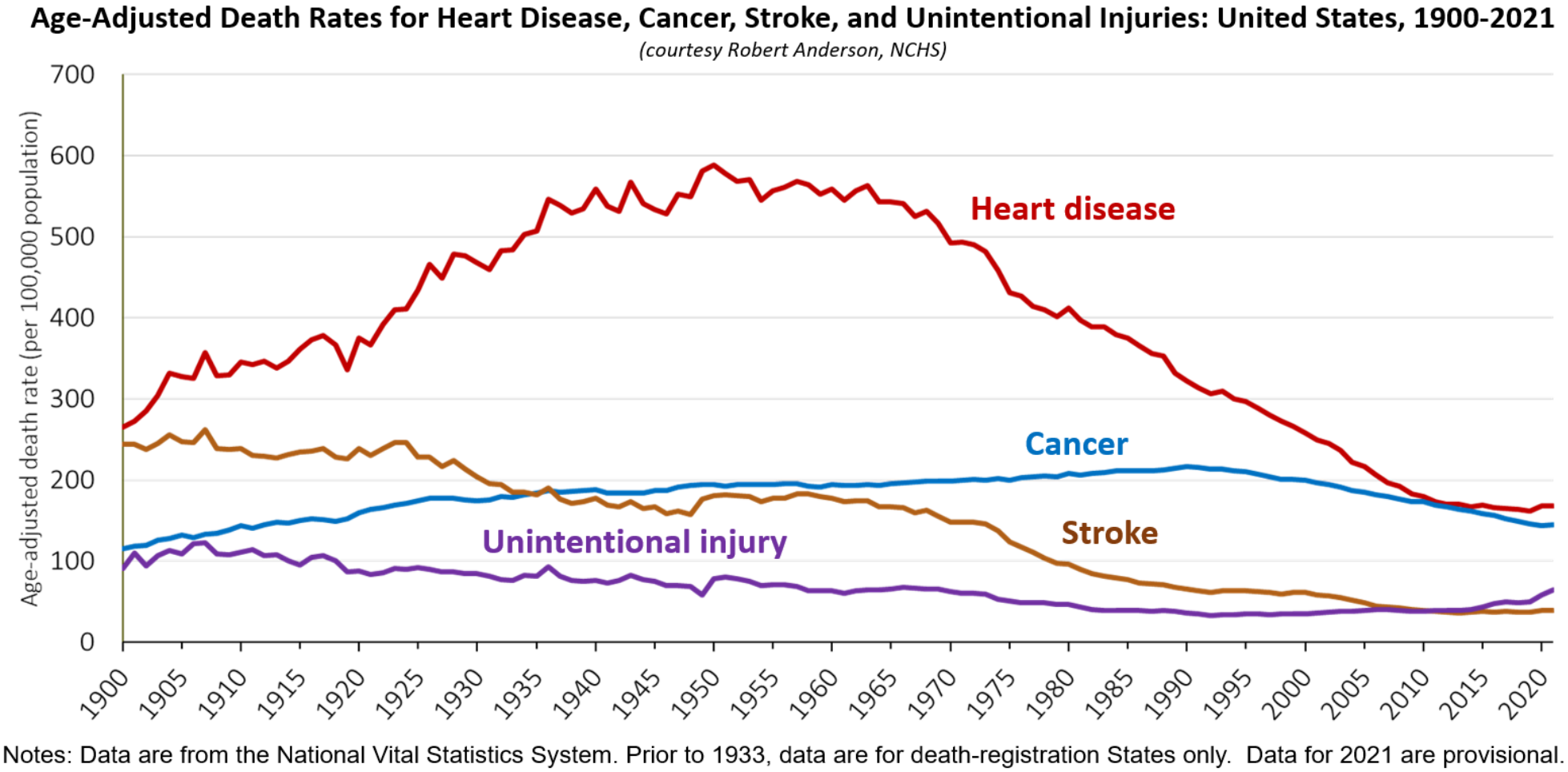


Notes: Deaths are from final NCHS data through 2023. Exposures are from Census Vintage 2023 starting in 2020 and Census Vintage 2020, adjusted for consistency with Vintage 2023, for 2019.

Future Drivers

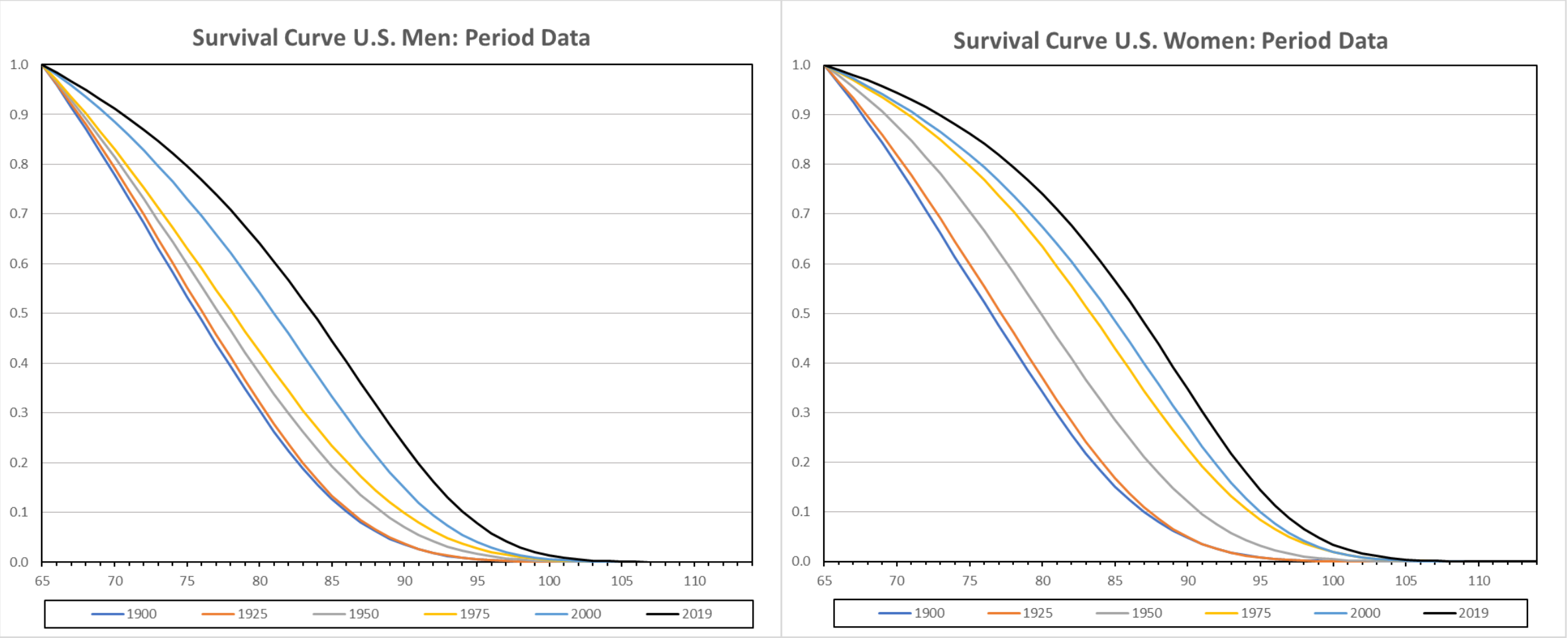
Remarkable Reduction in Mortality in Latter Half of 20th Century: Antibiotics After WW2 and Later Cardiovascular

But Declines Have Been Slowing, With Remaining Causes Harder to Address: Cancer, Violence, Dementia



Notes: Data are from the National Vital Statistics System. Prior to 1933, data are for death-registration States only. Data for 2021 are provisional.

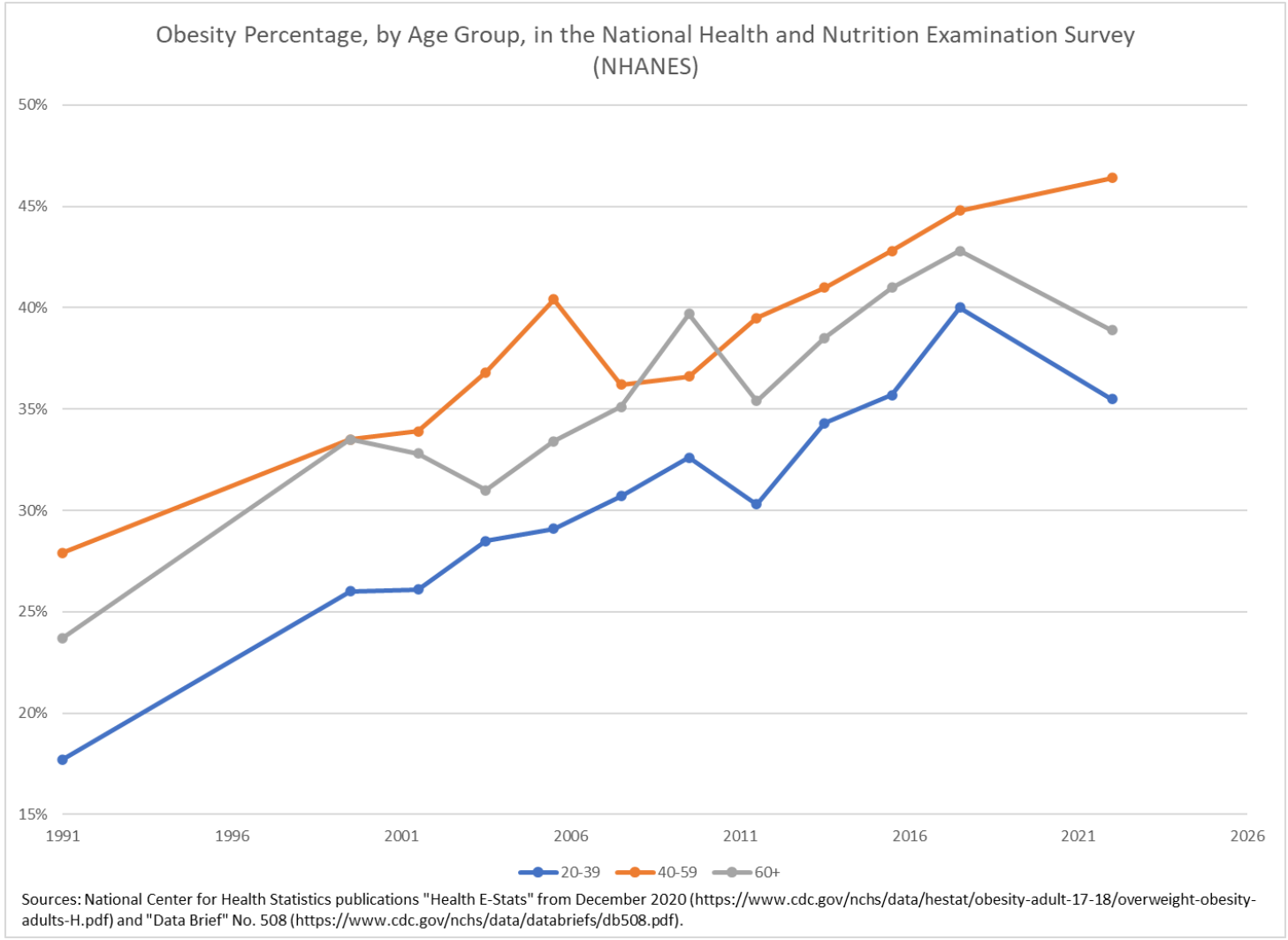
We Have Been "Rectangularizing" the Survival Curve, With Little Evidence of Advancing Maximum Lifespan



Forces That May Lessen Prospects for Mortality Improvement

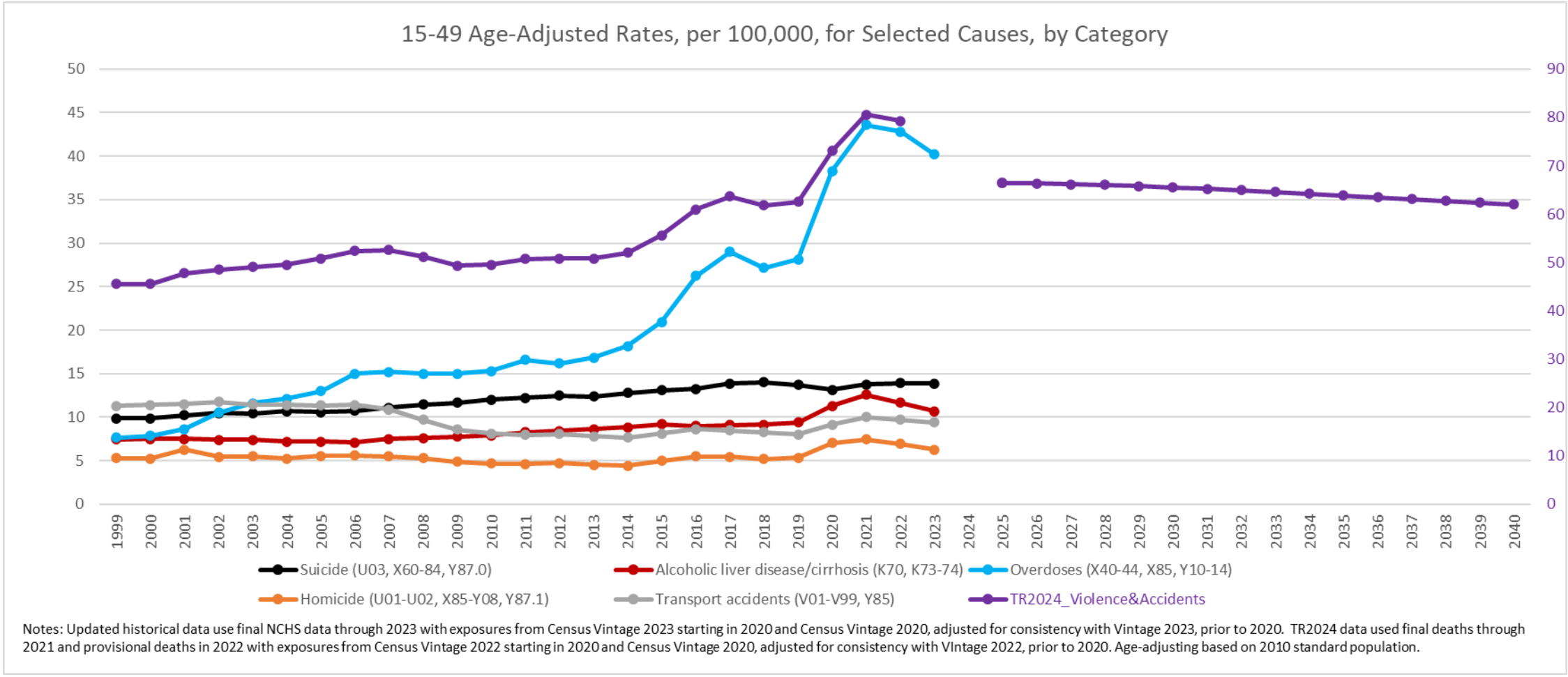
- Obesity
- Drug overdoses and other “deaths of despair”
- Differential effects by earnings level
- Lower health care spending
- Climate change

Obesity



Sources: National Center for Health Statistics publications "Health E-Stats" from December 2020 (https://www.cdc.gov/nchs/data/hestat/obesity-adult-17-18/overweight-obesity-adults-H.pdf) and "Data Brief" No. 508 (https://www.cdc.gov/nchs/data/databriefs/db508.pdf).

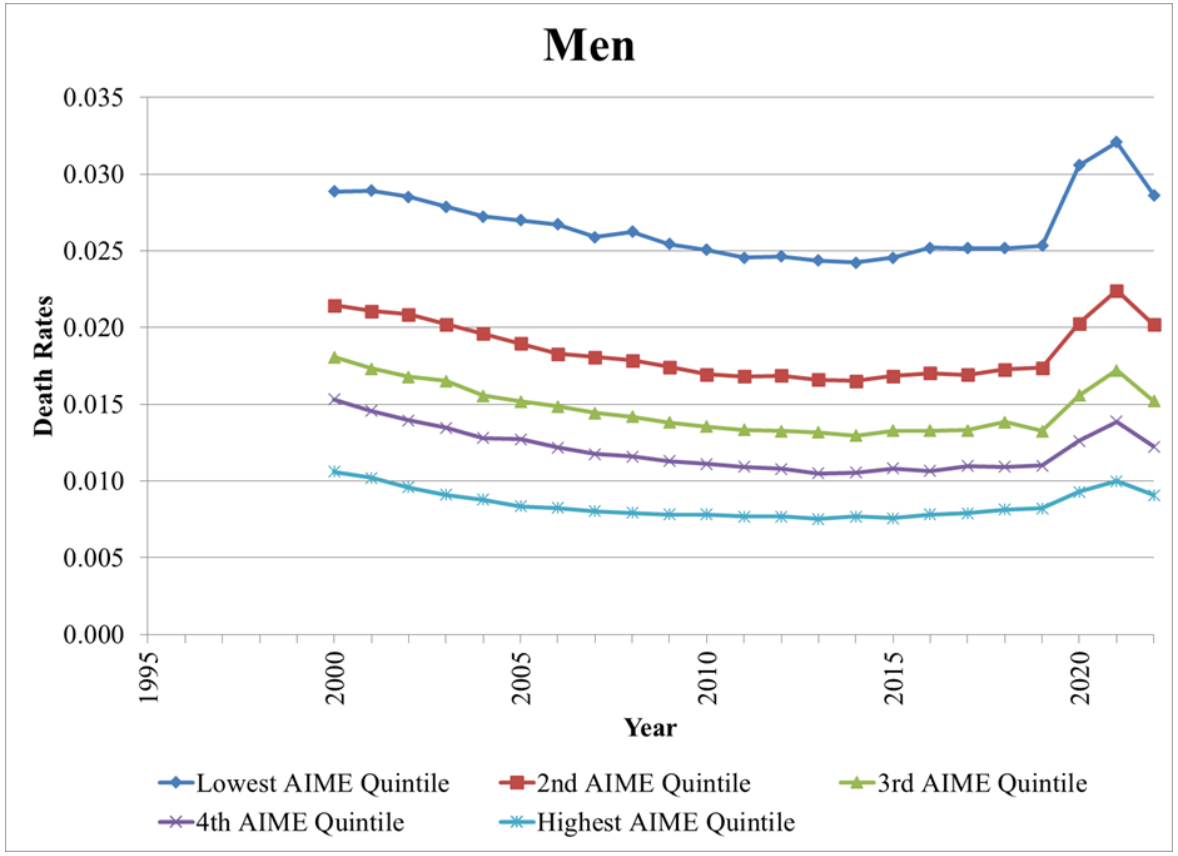
“Deaths of Despair,” Violence and Accidents

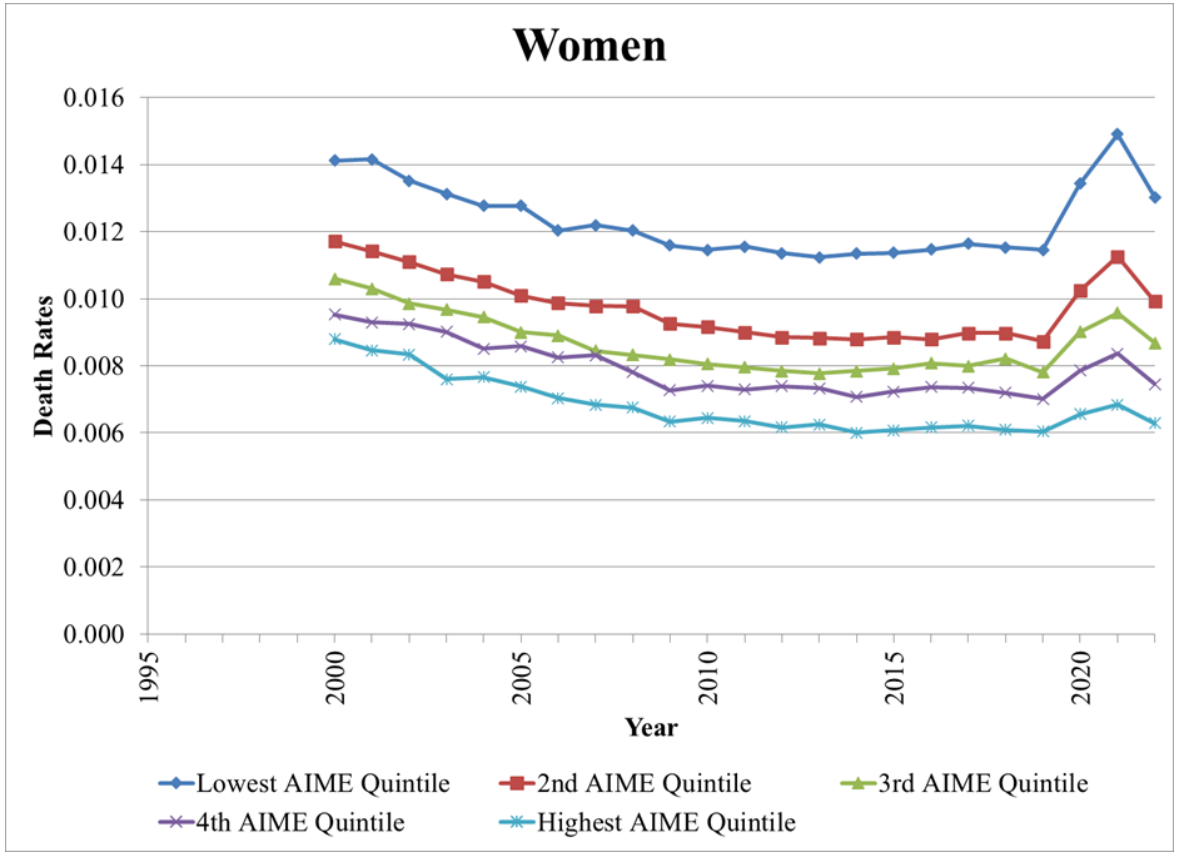


Notes: Updated historical data use final NCHS data through 2023 with exposures from Census Vintage 2023 starting in 2020 and Census Vintage 2020, adjusted for consistency with Vintage 2023, prior to 2020. TR2024 data used final deaths through 2021 and provisional deaths in 2022 with exposures from Census Vintage 2022 starting in 2020 and Census Vintage 2020, adjusted for consistency with VIntage 2022, prior to 2020. Age-adjusting based on 2010 standard population.

Differential Effects by Earnings Level—Consider Your "Block of Business"

Death rates for retired-worker beneficiaries in age group 65-69, by career average earnings (AIME) quintile, from recent study by Tiffany Bosley: https://www.ssa.gov/OACT/NOTES/pdf_studies/study129.pdf





Many Questions About the Future of Mortality…

- Can we expect major breakthroughs in cancer and dementia, and a reduction in violence?
- What will the effects be of COVID, post-COVID conditions, and other future pandemics?
- Frequency of future pandemics in a shrinking world?
- What do we expect for obesity and “deaths of despair” in the future?
- Health spending cannot continue to rise at historical rates (and has slowed down recently); what are long-term effects of deceleration?
- Effects of an aging population and climate change, straining resources?

For More Information Go to http://www.ssa.gov/oact/

There you will find:

- The 2024 and all prior Social Security Trustees Reports
- Detailed single-year tables for recent reports
- Our estimates for comprehensive proposals and individual provisions
- Actuarial notes and studies
- Extensive databases
- Congressional testimonies
- Presentations by Office of the Chief Actuary employees