2024 ImpACT SOA ANNUAL CONFERENCE

Insights into Emerging U.S. Population Mortality Issues

October 28th, 2024

Moderator:

Jean-Marc Fix, FSA, MAAA,
VP R&D-Biometric Risks, Optimum Life Re

Presenters:

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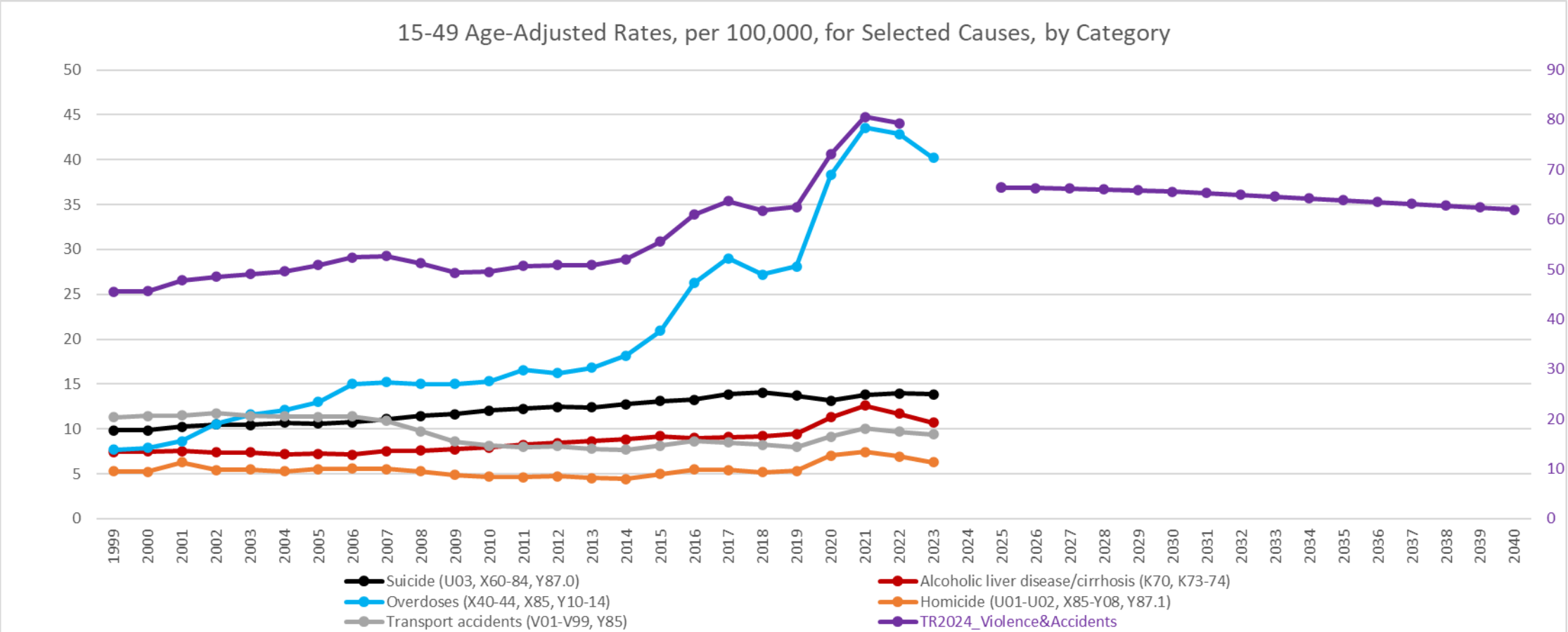
Actuary, Social Security Administration
Jean-Marc Fix, FSA, MAAA,
VP R&D-Biometric Risks, Optimum Life Re

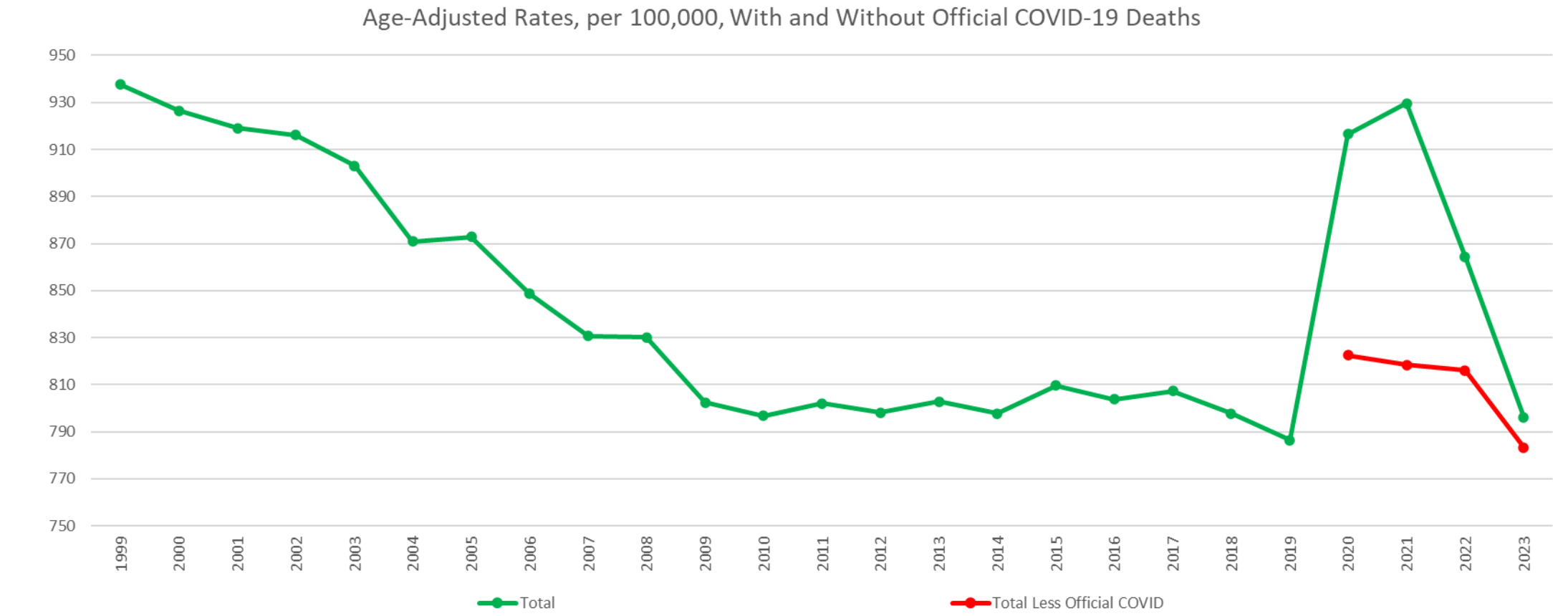
SOCIETY OF ACTUARIES | 75 YEAR ANNIVERSARY

Alcohol, Accidental, and Violence-Related Deaths



Notes: Updated historical data use final NCHS data through 2022 and provisional NCHS data as of September 1, 2024 for 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.

COVID-19



Notes: Deaths are from final NCHS data through 2022 and provisional NCHS data as of September 1, 2024 for 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.

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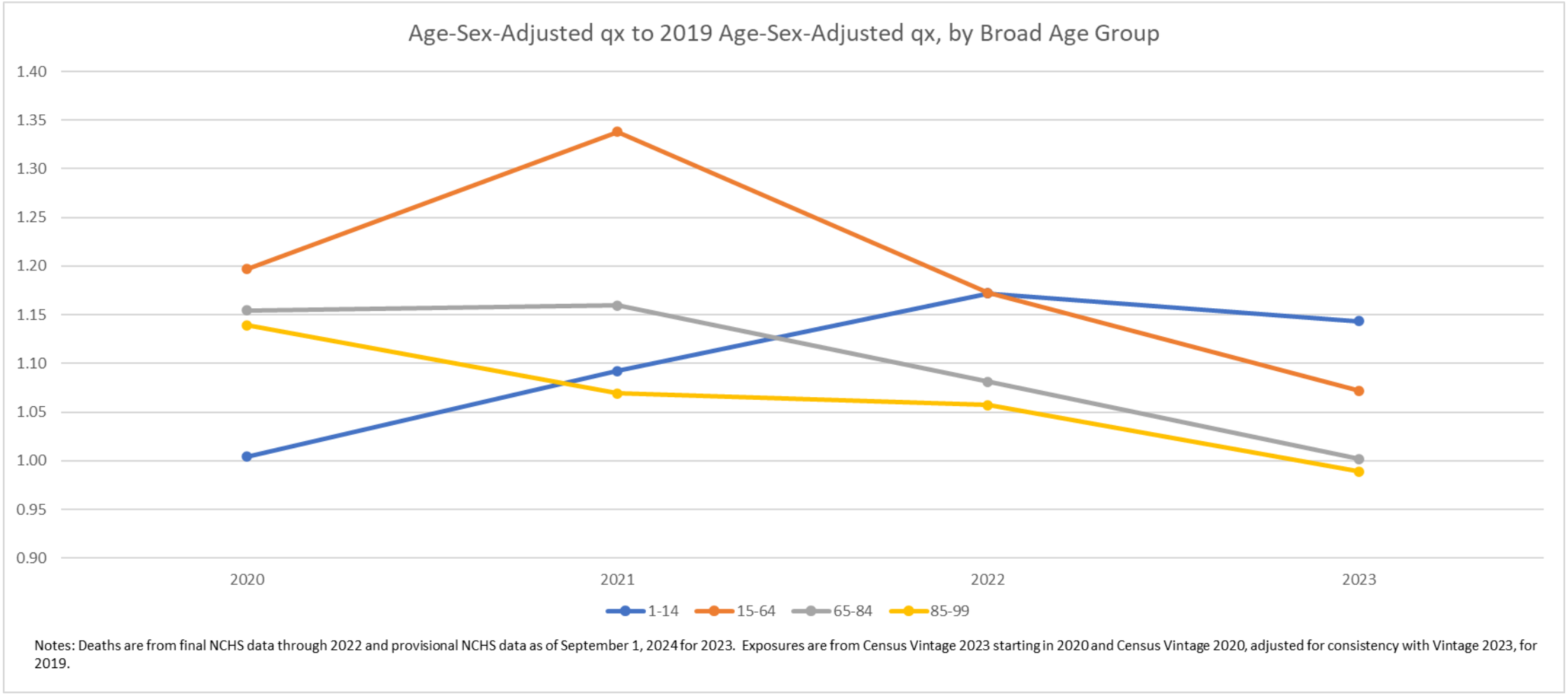

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Social Security Trustees Method of Future MI

- We look at six broad causes of death: Cardiovascular Disease, Cancer, Accidents and Violence, Respiratory Disease, Dementia, and All Other.
- We calculate m_x for each historical year by single year of age 0 – 94, 2 sexes, and 6 causes of death.
- We compute each starting value for the m_x, by single year of age, sex, and cause of death, as the exponential of the value for the most recent year falling on a weighted least square line, where the logarithm of m_x is regressed on year, over 2008-19.
- The starting values of the percentage reductions in log linear regressions of m_x, AA_x by single year of age, sex, and cause, are assumed to equal the percentage reductions in weighted average log linear regressions of m_x for the period 2008-19 when that percentage reduction is non-negative. However, if that percentage reduction is negative, then the starting values are assumed to be 75 percent of the percentage reduction.
- The assumed ultimate values for percentage reductions in the central death rates are as set by the Board of Trustees of the OASDI Trust Funds. These are assumed to be reached in the 25th year of the 75-year projection period. These ultimate values are specified by six causes of death for the following five age groups: under 15, 15-49, 50-64, 65-84, and 85 and older.
- We calculated projected AA_x values by transitioning from the starting values of AA_x to the associated Trustees' assumed ultimate values for that age.
- From the starting m_x values and the projected AA_x values above, we calculate projected m_x values.
- https://www.ssa.gov/OACT/TR/2024/2024_LR_Model_Documentation.pdf

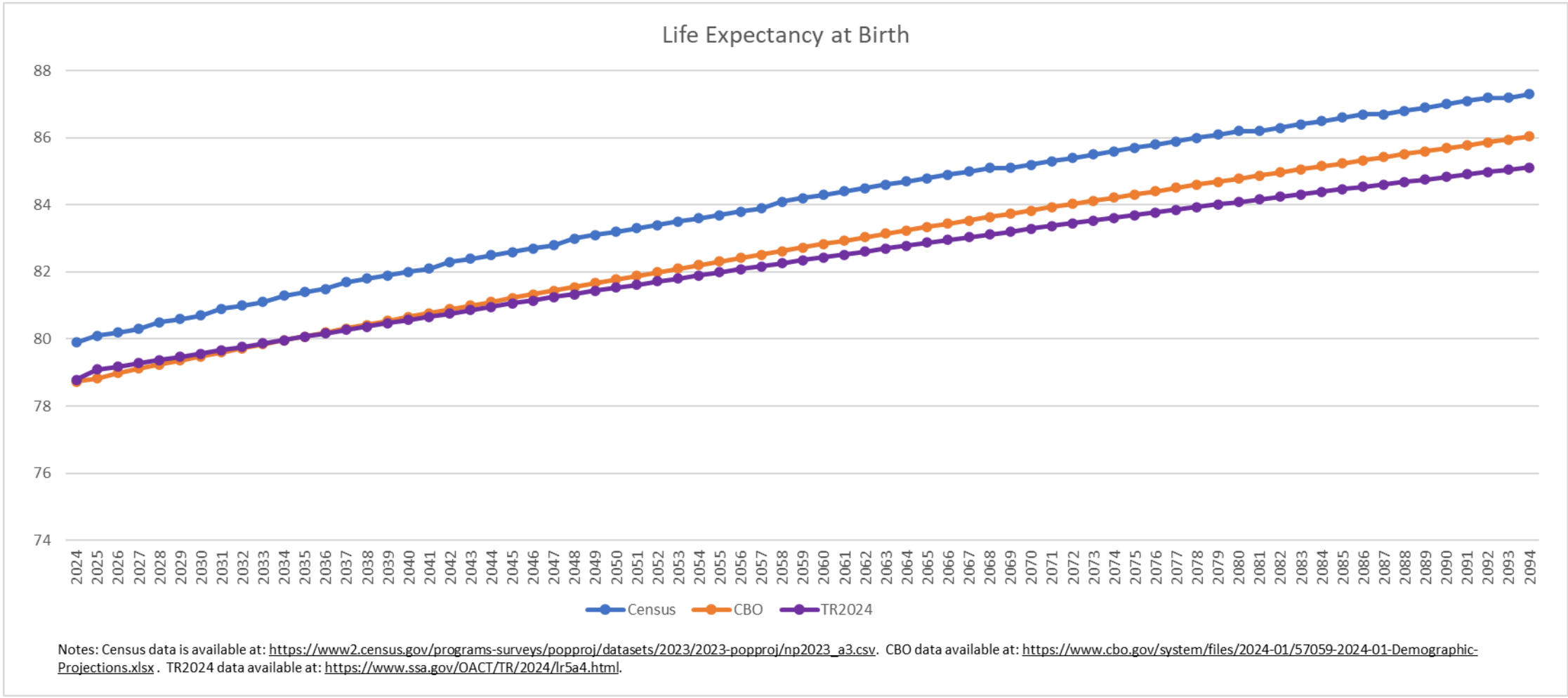
The Census Bureau Method of Future MI

- “Life expectancy at birth (e0) was projected indirectly using the log of the complement of life expectancy at birth for the years 2000 through 2019.”
- “The log of the complement of life expectancy at birth was projected to the year 2123 using linear extrapolation and was converted back to e0, giving us a life expectancy of 87 years for males and 91 years for females in 2123.”
- “Consequently, we selected the United Nations (UN) Model Life Tables with e0 of 87 years for males and 91 years for females as the ultimate targets that we would use to project mortality rates.”
- “We used the natural logs of the 2019 and target mortality rates to interpolate values for 2023 through 2100 that were then converted back to rates.”
- https://www2.census.gov/programs-surveys/popproj/technical-documentation/methodology/methodstatement23.pdf

The CBO Method of Future MI

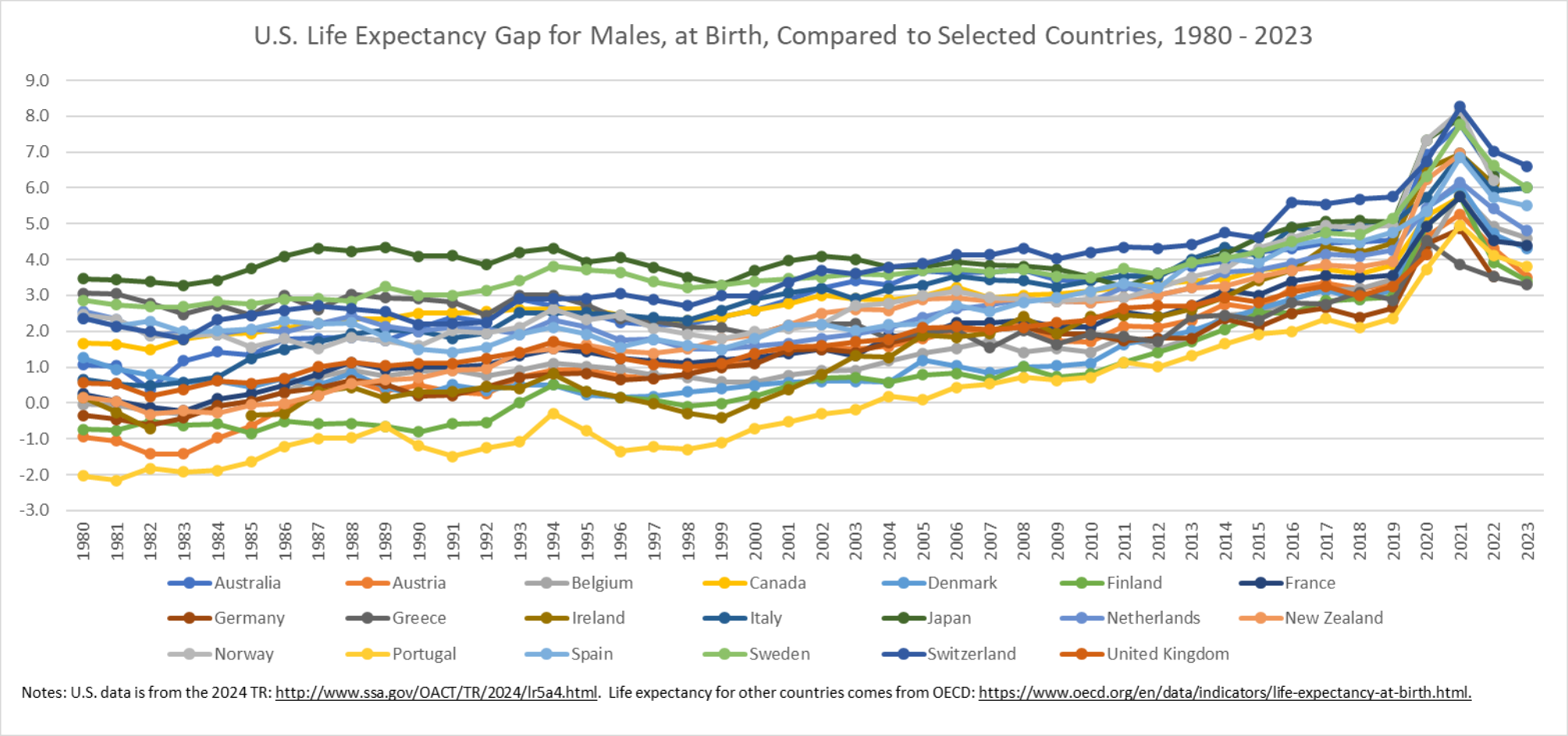
- “To account for those trends, CBO estimates that mortality rates (calculated for five-year age groups and measured before including the effects of COVID-19) will change from 2021 to 2025 at roughly the same average rate that they did for each age group from 2010 to 2019.”
- “After 2025, mortality rates decline at the average rate that they declined over the entire 1950–2019 period.”
- https://www.cbo.gov/system/files/2024-01/59697-Demographic-Outlook.pdf

CBO, Census, and SSA Life Expectancy Projections



Notes: Census data is available at: https://www2.census.gov/programs-surveys/popproj/datasets/2023/2023-popproj/np2023_a3.csv. CBO data available at: https://www.cbo.gov/system/files/2024-01/57059-2024-01-Demographic-Projections.xlsx . TR2024 data available at: https://www.ssa.gov/OACT/TR/2024/lr5a4.html.

US Mortality Evolution vs. Other Developed Countries



Notes: U.S. data is from the 2024 TR: http://www.ssa.gov/OACT/TR/2024/lr5a4.html. Life expectancy for other countries comes from OECD: https://www.oecd.org/en/data/indicators/life-expectancy-at-birth.html.

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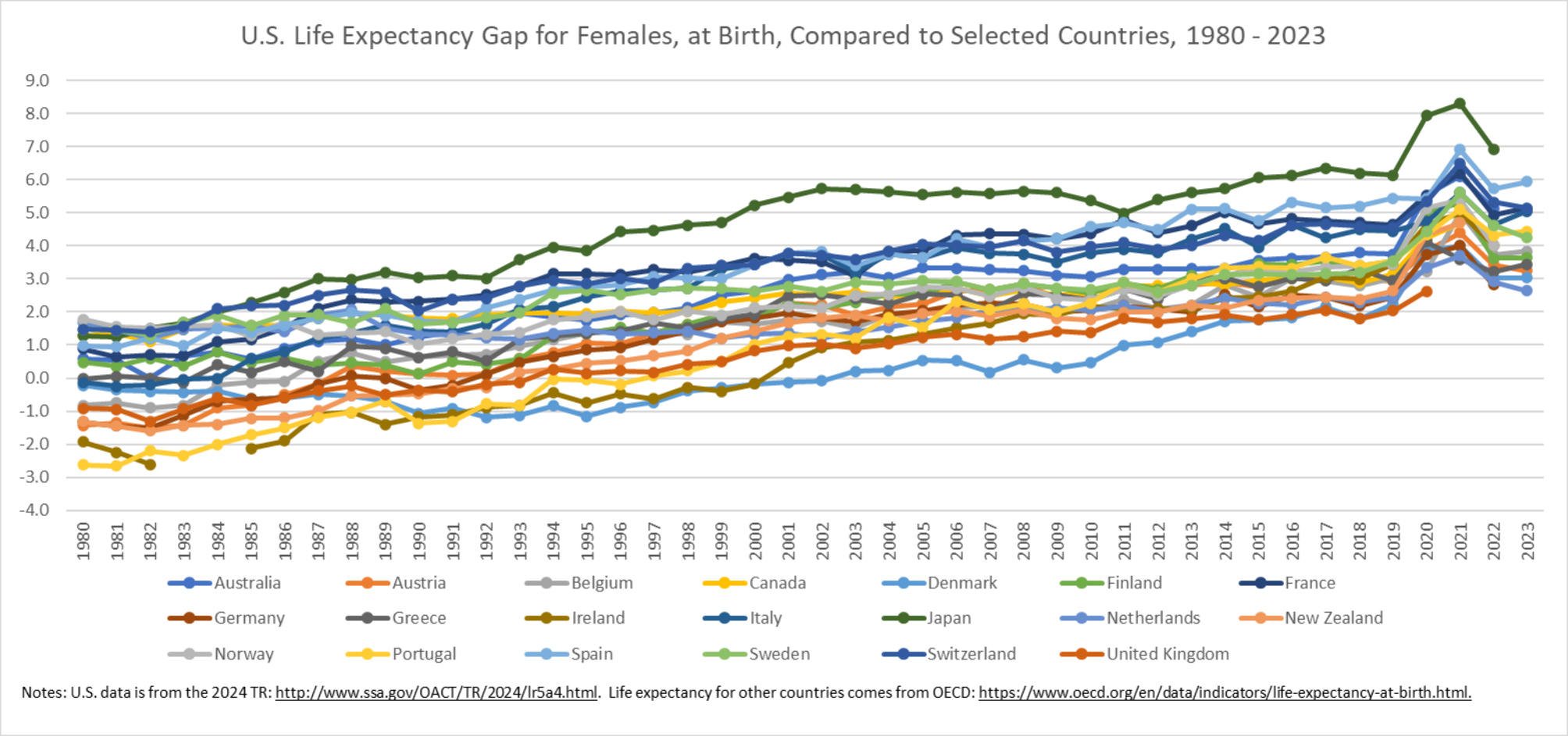

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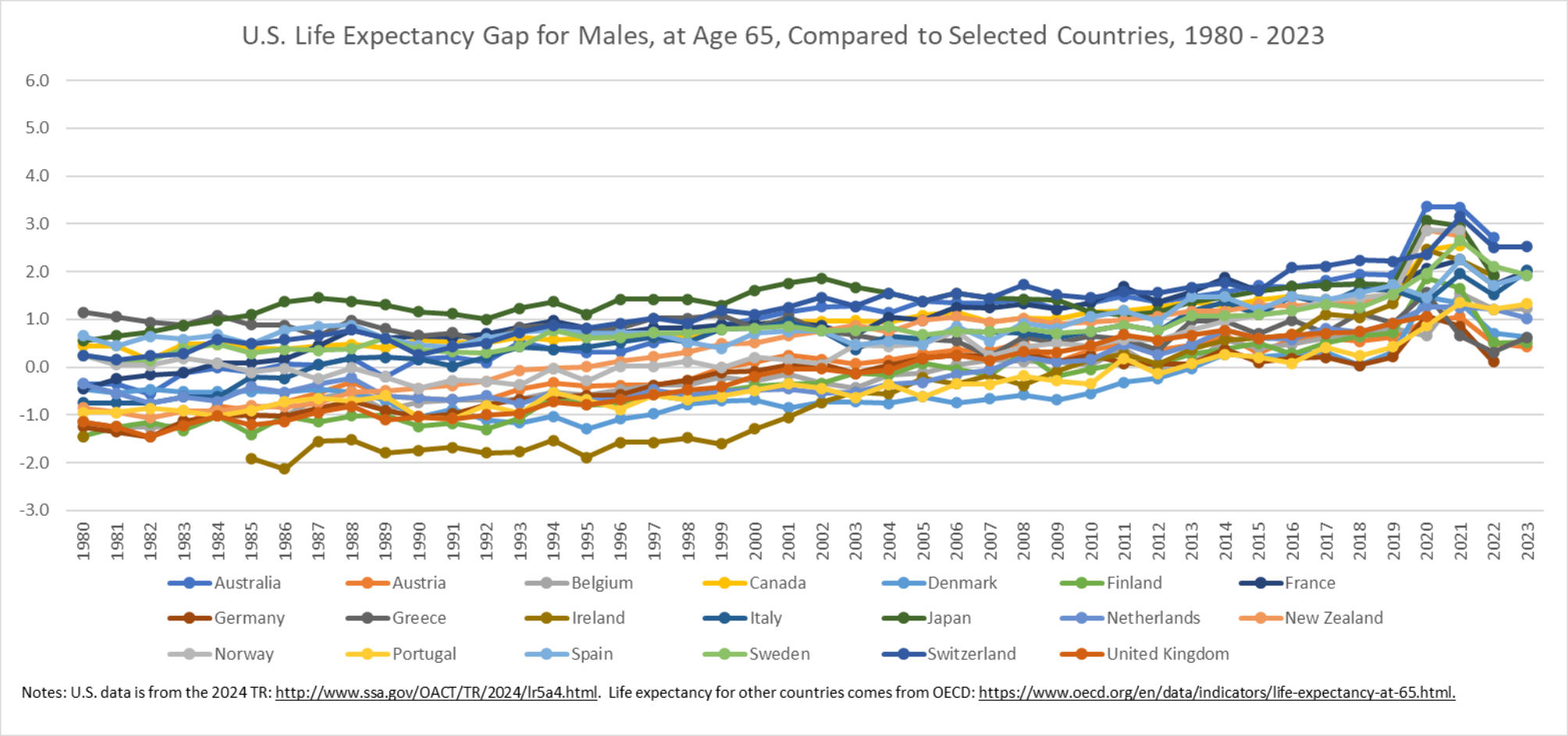

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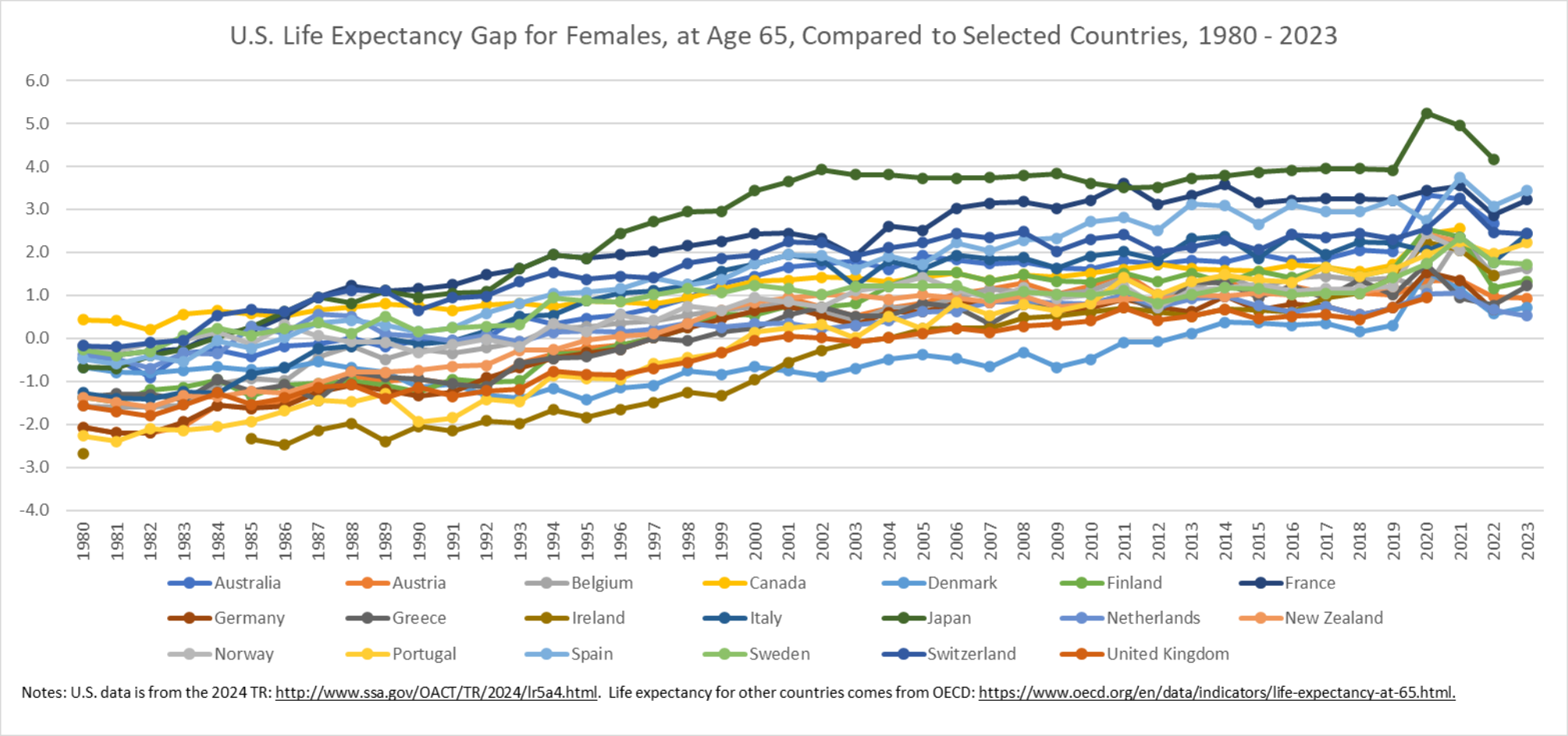

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