

Life Expectancy and Retirement Planning

by **John A. Turner, PhD** | *Pension Policy Center* and **Emily S. Andrews, PhD** | *Pension Policy Center*

Life expectancy is one of the biggest issues in retirement planning. Retirement researcher and author Wade Pfau (2024) writes, “The biggest question mark in all of our retirement plans is how long we will live.” This article analyzes that question. *Period life tables*, which are published annually by the National Center for Health Studies, have traditionally been used for many purposes. They are based on a single-year survey of mortality rates at different ages. Thus, they assume no future changes in mortality rates. Because they are easily available, period life tables are widely used by people who are not experts on life expectancy measurement, including journalists, the financial press, economists and even individuals doing their own retirement planning.

An alternative, less widely used approach is *cohort life*

tables. They take the basic data used in period life tables but project future changes—generally reductions—in mortality rates.

How long is life expectancy at birth in the United States? The artificial intelligence (AI) program ChatGPT uses period life tables, which are based on current mortality rates, and tells us that life expectancy at birth in 2021 was 76.3 years for men and 81.2 years for women. The Social Security Administration cohort life tables (Social Security Board of Trustees 2022, Table V.A5), which include projections of future mortality rates, however, indicate that life expectancy at birth in 2021 was 82 years for men and 87 years for women. Cohort life expectancy tables indicate life expectancy that is six years longer than that indicated by period life tables for both men and women. Thus, the choice between using period tables and cohort tables results in substantial differences in life expectancy at birth. This article will show that even at older ages, the difference between the two types of tables is substantial.

Financial planners and retirement plan service providers may want to consider these differences when developing projections for retirement plan participants. Defined benefit (DB) plans should consider using them for determining lump-sum payments, and defined contribution (DC) plans should consider using them when determining annuity payments.

Computation of Period and Cohort Life Tables

Age-specific mortality rates for period life tables are constructed using reported deaths at each age for a single year. By contrast, the construction of cohort life tables is

AT A GLANCE

- Period life tables are commonly used for measuring life expectancy, but they are based on current mortality rates and therefore assume no future improvement in life expectancy.
- Cohort life tables offer a generally more accurate picture of life expectancy because they incorporate estimates of future changes (generally declines) in mortality rates.
- Financial planners and retirement plan service providers may want to consider the differences between the two types of tables when developing income projections for retirement plan participants. Defined benefit (DB) plans should consider using them for determining lump-sum payments, and defined contribution (DC) plans should consider using them when determining annuity payments.

considerably more complicated, requiring assumptions on how to project future mortality rates for each current age cohort (birth-year cohort) over its remaining lifetime.

While cohort projections may vary in their complexity, the following four basic steps are used in calculating them.

1. Data on current and historic mortality rates are collected for each age cohort.
2. Mortality rate trends are analyzed to identify patterns over time.
3. Mortality rate trends are extrapolated by age-cohort group using statistical models and assumptions based on expert opinion.
4. Predicted future mortality rates are used to calculate life expectancy and construct the cohort life table.

The accuracy of forecasted cohort life-table mortality rates may be evaluated over time by comparing them with actual mortality rates when data become available.

When answering the question, “How long can we expect to live?”, the National Center for Health Statistics (Murphy, Kochanek, Xu and Arias; 2024) used period life tables. Demographers Arias, Tejada-Vera, Kochanek and Ahmad (2022) wrote, “The period life table does not represent the mortality experience of an actual birth cohort but rather presents what would happen to a hypothetical cohort if it experienced throughout its entire life the mortality conditions of a particular period.” While period life tables generally underestimate future life expectancy, they continue to be com-

monly used since they do not require additional assumptions about future trends on a cohort-by-cohort basis.

Life Tables for Retirement Planning

Life expectancy calculations are key to retirement planning. A Kiplinger (2023) publication on retirement planning that addresses the question of how much savings are needed in retirement cites that the life expectancy of a 65-year-old man is 83 (18 years) and that of a 65-year-old woman is 86 (21 years), reflecting the period life expectancy estimates of Arias and Xu (2022). But lifespans will be underestimated using period life tables because they do not take into account the likely future scenario that mortality rates will continue to fall. Thus, they ultimately reduce retirement savings below what is needed, reducing retirement income and planned inheritances below expectations. Cohort life expectancy is a better measure to use in developing financial plans for retirement.

The Office of the Chief Actuary (OCACT) of the SSA provides cohort and period life tables for the U.S. (*Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds* (Social Security trustees report)) and uses these cohort tables to project Social Security benefit payments. Differences in life expectancy based on these two types of tables are large, even at older ages. Table I shows that for men age 65 in 2020, the cohort measure of life expectancy (expected

TABLE I

Cohort and Period Life Expectancy (Expected Years of Life Remaining) by Gender for Age 65 in 2020

Life Table	Male	Female
Period	17.0 years	19.6 years
Cohort	18.9 years	21.5 years
Difference between the two measures	1.9 years	1.9 years
Percentage difference	11.2%	9.7%

Sources: *Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds* (2022) and authors' calculations.

TABLE II**Cohort and Period Life Expectancy by Gender for Age 65 in 2000**

Life Table	Male	Female
Period	15.7 years	19.1 years
Cohort	16.2 years	19.6 years
Difference between the two measures	0.5 years	0.5 years
Percentage difference between the two tables	3.1%	2.6%

Sources: Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds (2001).

years of life remaining) was 11.2% greater than the period measure; the difference was 9.7% for women. The difference is larger for 2020 than for most years because of the impact of the COVID-19 pandemic, discussed later, which raised current mortality rates but is projected to have little effect on long-term mortality rates. Life expectancy at age 65 is particularly important for Social Security financing, according to the Social Security trustees report (2000, p. 62):

“The ages for which death rates are the most critical to the future financing of the OASDI program are ages 65 and over because the vast majority of all deaths occur at these ages and because changes in mortality at these ages directly affect how long retirement benefits will be paid.”

Men age 65 would underestimate their life expectancy by more than 11% if they based their thinking on period tables, while women would underestimate their life expectancy by nearly 10%. For both men and women, the absolute difference between period and cohort life expectancy is 1.9 years. While the absolute difference between life expectancy measured by period versus cohort life tables is smaller at older ages, the percentage difference is larger (Mayo Clinic, 2023).

To assess changes over time in the difference between period and cohort life expectancy, Table II shows life expectancy at age 65 based on period and cohort tables for the year 2000, compared with Table I for 2020. Period and cohort life expectancies generally do not increase at the same rate. Between 2000 and 2020, cohort life expectancy grew faster than

period life expectancy for women and men, which reflects in part the effect of the pandemic on period life tables in 2020.

Because the accuracy of its projections is an important issue for cohort tables, we were interested in assessing the accuracy of the Bell and Miller (2005) projections for life expectancy at age 65. This study was done by two actuaries in the OCACT. Their projections of cohort life expectancy made in 2005 for the 1950 cohort table for a person age 65 in 2015 were 17.6 years for males and 20.3 years for females. According to the cohort, life expectancies for people age 65 that year provided in the Social Security trustees report (2015, p. 96), the actual figures were 19.3 years for males and 21.6 years for females. Thus, the figures in the Bell and Miller (2005) report were 1.7 years too low for males and 1.3 years too low for females. The Bell and Miller figures for life expectancy at age 65 in 2015 were off by more than a year in a ten-year projection from 2005. This result is not surprising in retrospect because the first few years had unexpectedly rapid mortality improvement.

However, the main point is that the cohort projections, though imperfect, were substantially more accurate than the period life table assumption of no future improvements in life expectancy. According to the 2005 Social Security trustees report, people who want to know how long they would live in retirement if they retired at age 65 in 2015 would find a period life expectancy of 16.2 years if male and 19.0 years if female. These period estimates are 3.1 years too low for men and 2.6 years too low for women when compared with the 2015 cohort life expectancies for persons reaching age

65 in 2015. As expected, the cohort life expectancy in 2005 for persons reaching age 65 in 2015 was more accurate than the period life expectancy. Workers planning for retirement would have underestimated their life expectancy if they did not use cohort tables.

COVID-19 and Measures of Life Expectancy

Due to COVID-19, period life tables from the National Center for Health Statistics calculated a 0.9-year fall in life expectancy in 2021 plus a 1.8-year drop in 2020. That is a total decline of 2.7 years, which was the biggest two-year reduction in period life expectancy at birth since 1921-1923 (Arias et al., 2022; National Center for Health Statistics, 2022).

The annual Social Security trustees report (2022) allows us to compare the effect of COVID-19 on period versus cohort life expectancy (Table III). Before COVID-19, period and cohort life expectancy increased between 2018 and 2019. In 2020 and 2021, however, period life expectancy declined due to COVID-19. By contrast, over the four-year period (2018-2021), cohort life expectancy increased each year for men and either increased or remained constant for women.

This analysis demonstrates another weakness of period life tables in determining life expectancy—In estimating life expectancy, they overreact to short-term changes in mortality rates. In 2019, before the pandemic, cohort life expectancy for men in the U.S. was 5.7 years greater than the period life expectancy. In 2021, the cohort life expect-

tancy for men in the U.S. was 7.9 years greater than the period life expectancy.

Measurement Issues Related to Life Expectancy

Cohort models of life expectancy project the trajectory of decreases in expected mortality rates over time. While these are often connected to improvements in health that have led to longer life, other shifts over time may have significant impacts as well. These include factors that cause reductions in life expectancy, which may continue for a couple of years or for many years, depending on the cause.

The following discusses possible issues that affect life expectancy and compares how period and cohort tables would address them.

Medical Advances

Cohort life tables incorporate expected changes in life expectancy caused by medical advances. Should a medical or health care advance affect mortality rates in the first year it was instituted, that advance would be captured in period life tables—for example, a pandemic vaccine that had an immediate impact. However, the effect of a new vaccine tends to evolve more slowly due to delayed patterns of adoption across the population. Consequently, the case for the use of period life tables is further weakened since the impact of medical advances tends to occur over time, which can be captured in cohort tables but not period tables.

TABLE III

The Effect of COVID-19 on Period and Cohort Life Expectancy at Birth

Year	Cohort Life Expectancy (Years)		Period Life Expectancy (Years)		Difference (Years)	
	Male	Female	Male	Female	Male	Female
2018	81.8	86.3	76.1	81.1	5.7	5.2
2019	81.9	86.4	76.2	81.3	5.7	5.1
2020	82.0	86.5	74.5	79.7	7.5	6.8
2021	82.1	86.5	74.2	79.5	7.9	7.0

Note: Cohort life expectancy from the intermediate assumptions of the Social Security trustees (2022). Period life expectancy based on historical data, assuming annual mortality rates persist for each age group.

Breast Cancer Mortality

Breast cancer is the second leading cause of cancer death among U.S. women. Lung cancer kills more women each year. However, breast cancer mortality rates have been decreasing steadily since 1989, with an overall decline of 43% through 2020. This decrease in mortality rates, experts believe, is the result of earlier detection through screening and improved awareness as well as better treatments (American Cancer Society, 2023). Thus, cohort life tables would, in principle, recognize the steady decline in future mortality rates due to breast cancer, while period life tables would recognize that effect only when it occurred.

Smoking Prevalence

Changes in smoking prevalence in the population have different effects on period life tables versus cohort life tables. Because the effect of smoking on mortality risk has a delay that can be up to several decades, a decrease in smoking prevalence would have little effect on current period life tables but would have a larger effect on cohort life tables. Thus, this pattern is the opposite of the effect of COVID-19.

Demographics

When life expectancy is increasing more rapidly for one group than another, period life tables underestimate the difference in life expectancy between the two groups. For example, gains in U.S. life expectancy over time have been larger for high-income, high-education groups compared with those with low income and low education. Consequently, period life tables understate the difference in life expectancy when comparing these groups, which can have various negative consequences. For example, this bias would conceal the impact that policies to increase retirement ages would have on low-income, low-education groups.

Case and Deaton (2021) found that over the years 1990 to 2018, U.S. life expectancy, measured as expected years lived between ages 25 and 75 based on current mortality rates, decreased for those without a bachelor's degree while it continued to increase for those with a bachelor's degree or higher. In this case, period life tables understated the life expectancy for people with higher education and overstated the life expectancy for those with less education. Case and Deaton found that in 2018, the gap in the expected num-

AUTHORS	
	John A. Turner, PhD, is the director of the Pension Policy Center. He has published more than 100 articles related to pensions. He received an award from <i>Journal of Risk and Insurance</i> for best article of the year and from the American College of Employee Benefits Counsel for best proposal for simplifying employee benefits law. Turner was selected by the Volunteers for Economic Growth Alliance, an umbrella organization with 100,000 volunteers, as volunteer of the year for training pension regulators in East Africa. He holds a PhD degree in economics from the University of Chicago. Turner can be reached at jaturner49@aol.com
	Emily S. Andrews, PhD, is a senior research economist, emeritus, with the Pension Policy Center. For the World Bank and as an independent consultant, she assessed the implementation of pension programs, poverty assessments, labor market studies and disability programs in Europe and Central Asia. Most recently, she managed and designed monitoring, evaluation and economic analysis strategies for the MCC in Eurasia, North Africa and Sub-Saharan Africa. Andrews' domestic experience includes research on pensions and social insurance for the federal government and the Employee Benefit Research Institute. She holds a PhD degree from the University of Pennsylvania. Andrews can be reached at emilysandrews@hotmail.com.

ber of years lived between ages 25 and 75 for those with a bachelor's degree compared with those without was 3.9 years for males, using period tables. We argue that the true gap, as measured by cohort life tables, would be larger due to the different trends in life expectancy for each group.

Conclusions

Period life tables use current mortality rates to calculate life expectancy. Cohort life tables provide more accurate estimates of life expectancy for retirement planning because they incorporate projections of the long-term reductions

in mortality rates. However, because cohort tables are more difficult to construct, requiring additional data and assumptions, they are less used.

We argue that for retirement planning, it is more appropriate to use cohort (projected) life expectancy than the traditionally used period life expectancy. Cohort life tables can be found on the OCACT website (www.ssa.gov/oact/HistEst/CohLifeTables/2024/CohLifeTables2024.html). It might be thought that at older ages, with fewer years of life remaining, the difference between period and cohort life tables would not be consequential. However, this is generally not the case. U.S. men age 65 in 2020 would underestimate their life expectancy by 11% if they base their thinking on period tables, while U.S. women would underestimate their life expectancy by 10%. While life expectancy calculations are an important component of retirement planning, if they do not take into account expected future reductions in mortality rates, they will misinform the decisions of financial advisors and individuals contemplating retirement.

Period life tables are also overly affected by short-term changes in mortality rates, such as those due to COVID-19. Simply observing declines in life expectancy as measured by period life tables will overstate the effect of temporary fluctuations. The impact of COVID-19 suggests that the underlying causes of trends in life expectancy cannot be ignored.

In summary, period tables generally underestimate life expectancy, thus underestimating the assets needed to support retirement. This result leads to the risk of premature retirement and insufficient income in later years. In addition, they overstate the effects on life expectancy of short-term changes in mortality rates, such as what occurred during the early years of COVID-19, while understating the effects of long-term changes, such as the long-term decline in mortality risk due to breast cancer. In recent years, they have also

understated the difference in life expectancy between lower and higher income individuals in the U.S. due to the different rates of change in mortality rates for those two groups. 

References

- American Cancer Society. 2023. "Key Statistics for Breast Cancer." www.cancer.org/cancer/breast-cancer/about/how-common-is-breast-cancer.
- Arias, Elizabeth, Betzaida Tejada-Vera, Kenneth D. Kochanek and Farida B. Ahmad. 2022. "Provisional Life Expectancy Estimates for 2021." Vital Statistics Rapid Release, Report No. 23. www.cdc.gov/nchs/data/vsrr/vsrr023.pdf.
- Arias, Elizabeth and Jiaquan Xu. 2022. "United States Life Tables 2019." *National Vital Statistics Reports* 70(19): 1-59. March 22, 2022. www.cdc.gov/nchs/data/nvsr/nvsr70/nvsr70-19.pdf.
- Bell, Felicitie C. and Michael L. Miller. 2005. "Life Tables for the United States Social Security Area 1900-2100." *Actuarial Study No. 120*. Office of the Chief Actuary. Social Security Administration. www.ssa.gov/oact/NOTES/as120/LifeTables_Body.html.
- Case, Anne and Angus Deaton. 2021. "Life Expectancy in Adulthood is Falling for Those Without a BA Degree, But as Educational Gaps Have Widened, Racial Gaps Have Narrowed." *Proceedings of the National Academy of Sciences* 118(11). www.pnas.org/doi/10.1073/pnas.2024777118.
- Kiplinger. 2023. "Kiplinger's Retirement Planning 2023." Winter.
- Mayo Clinic. 2023. "COVID-19: Who's at Higher Risk of Serious Symptoms?" www.mayoclinic.org/diseases-conditions/coronavirus/in-depth/coronavirus-who-is-at-risk/art-20483301.
- Murphy, Sherry L., Kenneth D. Kochanek, Jiaquan Xu and Elizabeth Arias. 2024. "Mortality in the United States, 2023." National Center for Health Statistics. www.cdc.gov/nchs/products/databriefs/db521.htm#section_1.
- National Center for Health Statistics. August, 31, 2022. "Life Expectancy in the U.S. Dropped for the Second Year in a Row in 2021." www.cdc.gov/nchs/pressroom/releases/20220831.html.
- Pfau, Wade. August 10, 2024. "Weekly Roundup." Email.
- Social Security Board of Trustees. 2000. *The 2000 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*. www.ssa.gov/oact/tr/TR00/tr00.pdf.
- Social Security Board of Trustees. 2001. *The 2001 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*. www.ssa.gov/oact/TR/TR01/tr01.pdf.
- Social Security Board of Trustees. 2005. *The 2005 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*. www.ssa.gov/OACT/TR/TR05.
- Social Security Board of Trustees. 2015. *The 2015 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*. www.ssa.gov/OACT/TR/2015.
- Social Security Board of Trustees. 2022. *The 2022 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*. www.ssa.gov/oact/tr/2022/tr2022.pdf.

International Society of Certified Employee Benefit Specialists

Reprinted from the Second Quarter 2026 issue of *BENEFITS QUARTERLY*, published by the International Society of Certified Employee Benefit Specialists. With the exception of official Society announcements, the opinions given in articles are those of the authors. The International Society of Certified Employee Benefit Specialists disclaims responsibility for views expressed and statements made in articles published. No further transmission or electronic distribution of this material is permitted without permission. Subscription information can be found at iscebs.org.

©2026 International Society of Certified Employee Benefit Specialists



pdf/626