From Longevity Leader to Longevity Laggard

According to preliminary CDC data, COVID-19 reduced U.S. life expectancy by a full year in 2020. The good news is that this pandemic-related reduction in life expectancy will almost certainly prove transitory. The bad news is that the upward march of U.S. life expectancy has stalled for reasons that have nothing to do with the pandemic. In this Critical Issues, we examine why America, which was once among the rich world’s longevity leaders, has now become its longevity laggard.
About Critical Issues

Critical Issues, jointly published by The Terry Group and the Global Aging Institute (GAI), is an occasional series of issue briefs on the demographic and economic trends reshaping America and the world, and in particular the future environment for retirement and health care. Some of the issues in the series explore broad macro-level developments, while others focus on specific developments in the retirement and health-care space.

While the series is primarily U.S. focused, it often places U.S. experience in an international context and sometimes turns the spotlight on other countries. The Terry Group and GAI hope that the series will help inform policymakers, business leaders, and strategic planners as they prepare for a rapidly changing future.

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In modern, affluent societies we have become accustomed to life expectancy moving in only one direction—upward. Yet U.S. life expectancy peaked in 2014, then stalled. As of 2019, on the eve of the pandemic, it stood at 78.8, virtually unchanged from a decade before. Then along came COVID-19. According to preliminary CDC data, U.S. life expectancy fell by 1.0 years in the first half of 2020 to 77.8. When final data for all of 2020 are available, the reduction for the full year will likely turn out to be even larger.¹

The good news is that the large COVID-19 related reduction in life expectancy will almost certainly prove transitory. What the CDC did not explain when it announced that U.S. life expectancy had fallen in 2020, and what most media coverage of the story failed to make clear, is that the reduction is largely an artifact of the way that life expectancy is calculated. The tragic loss of human life due to COVID-19 is all too real. But the associated reduction in life expectancy does not mean, as many might assume, that the typical American will now live fewer years because of it.

The bad news is that the forces that were already weighing on U.S. life expectancy before the pandemic struck may continue to weigh on it after the pandemic has passed. The failure of life expectancy to increase over the past decade is mainly attributable to rising morbidity and mortality rates associated with lifestyle-related health conditions and behaviors, especially obesity and substance abuse. Unlike COVID-19, which has disproportionately afflicted the elderly, these conditions and behaviors mostly afflict young and midlife adults, who have

¹ Unless otherwise indicated, all life expectancy figures cited in this issue brief refer to unisex period life expectancy at birth. Except in international comparisons, data on U.S. life expectancy come from the National Vital Statistics System of the CDC’s National Center for Health Statistics (NCHS). Data on life expectancy in other countries come from the UN Population Division’s World Population Prospects: The 2019 Revision (New York: UNPD, 2019) or the OECD’s Health at a Glance 2019: OECD Indicators (Paris: OECD, 2019). For the provisional data on U.S. life expectancy in 2020, see Elizabeth Arias, Betzaida Tejada-Vera, and Farida Ahmad, “Provisional Life Expectancy Estimates for January 2020 through June 2020,” Vital Statistics Rapid Release no. 10 (Hyattsville, MD: NCHS, February 2021). As the publication’s title indicates, the one year reduction in life expectancy reported by the CDC refers to the first six months of 2020. Since there were roughly twice as many COVID-19 deaths in the second half of the year as in the first, the final data for all of 2020 may show a reduction in life expectancy for the full year that is roughly 50 percent larger.
more remaining years of life to lose. And unlike COVID-19, no one has developed a vaccine to counter them.

What makes all of this even more worrisome is that morbidity and mortality in America are increasingly skewed by income and educational attainment. Life expectancy is still rising for those Americans who are more affluent and better educated, while it is falling for those who are not. The United States is a nation already beset by deep divisions. Now we are adding one more to the mix.

Not so long ago, the United States was among the rich world’s longevity leaders. Today it is its longevity laggard. In this Critical Issues, we review recent trends in U.S. morbidity, mortality, and life expectancy. But first we clear up the widespread confusion about the impact of COVID-19 on life expectancy, which itself stems from widespread confusion about what life expectancy means and how it is calculated.

A CONFUSING CONCEPT
Life expectancy may seem like a simple enough concept, but it can be a confusing one. Life expectancy is, of course, an average, meaning that some people will not live as long as their life expectancy and some will live longer. The figures cited in this issue brief generally refer to combined male and female life expectancy at birth. But life expectancy differs for men and women. The age to which you can expect to live also rises as you grow older, since the longer you have lived the more risks of dying young you have survived. U.S. life expectancy at birth may have been 78.7 in 2018, the most recent year for which the CDC has published a complete life table, but sixty-five-year-olds could expect to live to 84.5 and eighty-five-year-olds could expect to live to 91.6.

It gets more complicated. All of the commonly reported life expectancy figures are “period measures,” which is where the confusion about the impact of COVID-19 arises. In calculating period life expectancy, demographers and actuaries assume that the mortality rates observed at each age in the current year will remain unchanged in all future years. In other words, they assume that when today’s twenty-year-olds turn forty twenty years from now, they will die at the same rate that today’s forty-year-olds do, that when today’s forty-year-olds turn sixty, they will die at the same rate that today’s sixty-year-olds do, and so forth. The problem is that in the real world age-specific mortality rates change over time. Every birth cohort has its own life expectancy, and none has a life expectancy equal to period life expectancy.
If period life expectancy is a purely hypothetical construct, and it is, it is fair to ask why it is routinely calculated and reported. There are three reasons. First, we cannot know with certainty what cohort life expectancy will turn out to be until the last member of the cohort in question has died, and the degree of uncertainty increases the younger the cohort is. Second, it is often more analytically convenient to look at trends in a single period value than in scores of cohort values. Finally, period life expectancy generally tracks cohort life expectancy fairly well, though in modern times it has tended to underestimate the ultimate cohort results, since ongoing improvements in nutrition, public health, and medical care have reduced mortality rates over time.

Generally tracks, however, is not the same as always tracks. Period life expectancy can become highly misleading when unusual mortality events like COVID-19 occur. Think about it. The CDC’s reported drop of one year in U.S. life expectancy in 2020, which is based on data for the first six months of the year, in effect assumes that Americans in every future year will die from COVID-19 at the same rate that they did in January to June of 2020. And not just today’s elderly, who have borne the brunt of the pandemic, but younger and midlife adults when they themselves become elderly decades hence. Needless to say, this is unlikely to be the case. Yes, COVID-19 will continue to have a significant, though diminishing, impact on mortality rates in 2021. And yes, there may also be a lingering longer-term impact on mortality rates due to health problems associated with “long COVID,” not to mention the collateral damage to Americans’ health caused by delayed or skipped tests and treatments for unrelated diseases. But by 2022 U.S. life expectancy will likely bounce back to something close to what it was before the pandemic.

To better understand how period measures of life expectancy can become misleading, it may be helpful to consider what happened to life expectancy during and after the Spanish Flu of 1918-19. It is estimated that the U.S. death toll from the Spanish Flu was about 675,000, with most of the deaths occurring in 1918, the pandemic’s peak year. In absolute numbers, the U.S. death toll from the Spanish Flu is thus comparable to the death toll from COVID-19. But because the U.S. population was then just one-third the size that it is today, and because the majority of the victims of the Spanish Flu were children and young adults, its impact on life expectancy was much greater. In fact, U.S. life expectancy fell by a staggering twelve years in 1918, from 51 to 39. Yet by the next year, life expectancy had not only recovered but risen above its pre-pandemic level.
A TALE OF TWO AMERICAS

U.S. life expectancy increased rapidly during the first half of the twentieth century as advances in public health, together with the introduction of antibiotics, led to dramatic reductions in mortality from infectious diseases that afflicted the young and old alike. As the so-called epidemiological transition unfolded, and additional gains in life expectancy came to depend increasingly on reductions in mortality from chronic diseases that disproportionately affect older adults, the pace of improvement necessarily slowed. Yet ever since the federal government began keeping comprehensive mortality statistics in 1900, U.S. life expectancy has continued to rise decade over decade—or at least it did until the 2010s, when life expectancy stalled. (See figure 1.)

The reasons for the stall in U.S. life expectancy are hardly mysterious. The main cause is the increase in lifestyle-related morbidity among young and midlife adults, which in turn is largely the result of the increase in rates of obesity and substance abuse. Along with the rising incidence of morbidity has come a rising tide of premature death. Mortality rates for young adults aged 25-44 began rising in 2011, with the increase mainly attributable to opioid overdoses, while mortality rates for midlife adults aged 45-64 began rising in 2013, with the increase attributable to a much wider range of lifestyle-
related morbidities, including heart disease, diabetes, and alcoholic liver disease.\textsuperscript{2} But since mortality rates were still falling for the elderly, U.S. life expectancy managed to keep inching upward until 2014, when it peaked at 78.9. As of 2019, on the eve of the pandemic, it stood at 78.8, no higher than it had been in 2012 and only one-tenth of a year higher than it had been in 2010 at the beginning of the decade.

When faced with adversity, Americans like to say that “we’re all in it together.” But when it comes to life expectancy, this is no longer true. How long we live is closely correlated with our socioeconomic status. A pioneering 2015 study by the National Academy of Sciences, which focused on cohort life expectancy at age 50 for Americans born in 1930 and 1960, found that there are large and widening differences by income.\textsuperscript{3} According to the study, life expectancy at age 50 for men in the 1960 birth cohort was 39 for those in the highest quintile of the income distribution, but just 26 for those in the lowest quintile, a gap of thirteen years. The corresponding life expectancy gap by income at age 50 for women in the 1960 birth cohort was fourteen years. The study also found that life expectancy at age 50 varied significantly by income for the 1930 birth cohort, but that the gaps were much smaller. For men born in 1930, the gap in life expectancy at age 50 between the highest and lowest income quintiles was just five years, less than half as great as for the 1960 cohort. For women it was just four years, less than one-third as great. (See figure 2.)

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure2.png}
\caption{U.S. Cohort Life Expectancy at Age 50, by Birth Year, Sex, and Income Quintile}
\end{figure}


A new 2021 study by Anne Case and Angus Deaton, authors of the best-selling Deaths of Despair and the Future of Capitalism, offers a more comprehensive assessment of recent trends in life expectancy by socioeconomic status. Instead of starting with mortality rates by income, which are difficult to derive, Case and Deaton start with mortality rates by educational attainment, which is a good proxy for income and is routinely reported on death certificates. They then calculate the average number of years that Americans can expect to live from age 25 to age 75, a truncated measure of life expectancy that allows them to focus on the impact of trends in mortality among young and midlife adults. According to the study, life expectancy from age 25 to age 75 was 1.9 years greater in 1990 for Americans with at least a four-year college degree than it was for those without one. By 2018, this gap had widened to 3.1 years. (See figure 3.) The life expectancy of college-educated Americans, moreover, continued to rise over the whole period from 1990 to 2018, while that of non-college-educated Americans began falling in 2010. This was true for the population as a whole, for both men and women, and for both Blacks and Whites.

The findings on trends in life expectancy by race are especially revealing. While there is still a significant gap in life expectancy between Blacks and Whites, it has narrowed

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over the past few decades. Educational attainment, moreover, has become a far better predictor of life expectancy than race. For Blacks and Whites with a four-year college degree, life expectancy has been rising and converging, while for those without one life expectancy has been falling and converging. As of 2018, the gap in life expectancy from age 25 to age 75 between Blacks and Whites with the same level of educational attainment (1.0 years for the college-educated and 1.1 years for the non-college-educated) was less than one-third of the gap in life expectancy between people of the same race with different levels of educational attainment (3.6 years for Blacks and 3.5 years for Whites).\(^5\)

It is true that COVID-19 altered the pre-pandemic trends in morbidity and mortality. Far from continuing to fall, mortality rates for the elderly rose much more in 2020 than mortality rates for young and midlife adults did. And far from continuing to narrow, differences in mortality rates by race (and ethnicity) widened. While life expectancy for non-Hispanic Whites declined by 0.8 years during the first half of 2020, for Hispanics it declined by 1.9 years and for non-Hispanic Blacks it declined by 2.7 years. The disproportionate impact of COVID-19 on the elderly appears to be explained by the higher incidence of comorbidities and frailty at older ages. The reasons for the disproportionate impact on minorities are more complex, but in addition to a higher incidence of comorbidities may include the fact that they are more likely to reside in densely populated urban areas, to live in types of households and/or have jobs where social distancing is difficult or impossible, and to have more limited access to the health-care system.

Yet as dramatic as the developments of the past year have been, there is little reason to believe they will be lasting. The most important long-term challenge was and remains reversing the ongoing decline in health expectancy and life expectancy of less affluent and less educated young and midlife adults of all races. If we continue down our current path, our national story risks becoming a tale of two Americas, one long-lived and one short-lived.

\(^5\) All of the figures cited for life expectancy by race refer to non-Hispanic Whites and non-Hispanic Blacks. The life expectancy of Hispanics is higher than that of both non-Hispanic Whites and non-Hispanic Blacks, with most of the advantage explained by significantly higher life expectancy among non-college-educated Hispanics. While the reasons for what demographers sometimes call “Hispanic exceptionalism” are not entirely clear, its existence suggests that income and education may not be all that matters in determining life expectancy. Culture can be important, too.
THE WRONG KIND OF EXCEPTIONALISM

In the early 1950s, there were only eleven countries in the world with a higher life expectancy than the United States, and only five of them, all in Northern Europe, had a life expectancy exceeding ours by two years or more. Today there are thirty-five countries, and eleven of them have a life expectancy exceeding ours by four years or more. As of 2018, U.S. life expectancy was two years lower than the OECD average—and less than life expectancy in every one of the other thirty-six member countries except Colombia, Hungary, Poland, Mexico, Slovakia, Turkey, and the three Baltic republics.

That other countries are catching up with the United States in life expectancy is a welcome and natural development. At the beginning of the postwar era, America enjoyed an enormous living standard advantage over almost every other country in the world. As incomes have risen elsewhere, so has life expectancy. What is worrisome is not that other countries are catching up, but that the United States is falling behind.

It is true that some small part of the U.S. slide in world life expectancy rankings may be due to discrepancies in the way that different countries report infant mortality. In the United States, premature infants on the cusp of viability are usually reported as live births, which means that if they die they show up in our mortality statistics, while in some countries such deaths may be reported as miscarriages. Yet almost all of the slide reflects real and growing differences in mortality rates for the adult population. A wide range of socioeconomic and policy factors have contributed to the erosion in U.S. life expectancy relative to that of other developed countries, including higher poverty rates, greater income inequality, and less equal access to the health-care system. The most important factor, however, has been the deteriorating health of the U.S. population.

To be clear, higher U.S. mortality rates are not due to worse medical treatment outcomes. U.S. survival rates for almost all chronic diseases, including cardiovascular disease and most cancers, are among the highest in the world, which should not be surprising.

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6 The country counts are based on the UN Population Division’s five-year averages for life expectancy over the periods 1950-55 and 2015-2020. The count for 1950-55 excludes the Channel Islands, which also had a higher life expectancy than the United States. The count for 2015-2020 excludes the Channel Islands, French Guyana, Guadeloupe, Guam, Hong Kong, Macau, Martinique, Mayotte, Puerto Rico, Réunion, and the U.S. Virgin Islands, all of which also had a higher life expectancy than the United States.

given how much America spends on medical research and technology. The problem is not that a larger share of sick Americans die, but that a larger share of Americans get sick. The health of the U.S. population is not only deteriorating relative to our own past experience, but also relative to the experience of other developed countries. The United States has the third highest obesity rate in the OECD (only Mexico and Chile are higher) and the third highest incidence of diabetes (only Mexico and Turkey are higher). As for substance abuse, the U.S. opioid-related death rate is not only the highest in the OECD, but is at least double that of every other member country except Canada and Estonia. Nor is it just lower-income and less-educated Americans who are dragging down the United States in the international comparisons. On many health indicators, the United States does worse than the OECD average at every socioeconomic level. In other words, some groups of Americans may be doing much better than others, but all groups of Americans are doing worse than equivalent groups in other developed countries.

All groups, that is, except the elderly. Up to now, the U.S. slide in world life expectancy rankings has been largely attributable to higher mortality rates at younger ages. Prior to the pandemic, elderly mortality rates were still declining, in large part because the current generation of elderly is less afflicted by America’s lifestyle plagues than younger generations are. As a result, the gap in life expectancy between the United States and other developed countries narrows at older ages. If we compare life expectancy at birth, America has sunk to the bottom of the developed world rankings. But if we compare life expectancy at age 80, it is still near the very top. (See figures 4 and 5.) Whether this will last, however, is doubtful, since Boomers are taking their bad habits as well as their good ones with them into old age, and Gen-Xers and Millennials may do the same.

In the last Critical Issues, we warned that declining birthrates may spell the end of what the demographer Nicholas Eberstadt has called “U.S. demographic exceptionalism.” For decades, America’s relatively high fertility rate, together with substantial net immigration,
seemed to ensure that it would remain the youngest of the major developed countries, as well as one of the few that still had a growing workforce and economy. No more. When it comes to birthrates, the United States is fast becoming a typical developed country. When it comes to life expectancy, however, it is still possible to talk about U.S. demographic exceptionalism. Unfortunately, it is the wrong kind of exceptionalism.

**ROOM FOR OPTIMISM**

In making population projections, demographers and actuaries must decide at what point a departure from a long-term trend is no longer a temporary deviation and has become the new long-term trend. In the case of U.S. life expectancy, most still assume that the setbacks of the past decade will be temporary. This optimism is reflected in the latest projections by the U.S. Census Bureau, the Social Security Administration, and the UN Population Division, all of which assume that U.S. life expectancy will soon begin rising again. According to the UN projections, it will increase to 83.1 by 2050, a gain of four years over its pre-pandemic level. Although a four-year gain would not be large enough for the United States to close the gap with other developed

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countries, in most of which the UN projects that life expectancy will be rising as fast as here, it would be sufficient to keep the United States from falling further behind.

There is certainly room for optimism. After all, the upward march of U.S. life expectancy has seemed to falter before, only to resume. Looking back over the postwar era, the decline in mortality rates was especially rapid from the late 1960s through the early 1980s, slowed from the early 1980s through the late 1990s, then sped up once more in the 2000s, only to stall over the past decade. Any number of developments could lead to a new period of more rapid mortality improvements. There could be a dramatic reduction in destructive lifestyle behaviors, as happened with smoking beginning in the 1970s and 1980s. And even if there is not, medical advances may still reduce mortality rates. Some experts claim that we are now on the verge of biomedical breakthroughs that could slow or even reverse the aging process itself, leading to enormous gains in life expectancy. But one does not have to believe these visionaries to acknowledge that even incremental progress in the diagnosis and treatment of chronic diseases could lead to significant improvements. It has happened before, and it could happen again.

That said, there is no guarantee of a turnaround, and without one the costs of recent trends in morbidity and mortality will continue to mount. There are of course the costs to individuals and their families, measured in lives cut short and loved ones lost. There are the costs to government budgets, measured in increased spending on disability and health-care programs. There are the costs to society, measured in growing polarization as some groups of Americans continue to live longer and healthier lives while others fall increasingly behind. And there are the costs to the economy, measured in lost years of work and lower productivity. As America’s population ages, maintaining economic growth will require more fully leveraging all of its human capital, and above all the human capital of older adults. Shorter life expectancy, and especially shorter healthy life expectancy, could mean a diminished living standard for everyone, old and young alike.

America is usually quick to take action in the face of obvious and imminent threats, as it did with Pearl Harbor, the 9/11 terrorist attacks, and, however imperfectly, COVID-19. It finds it harder to muster the resolve to act in the face of slow-motion crises, whose costs

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While there is room for optimism, there is no guarantee of a turnaround.

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10 Aubrey de Grey, chief science officer at the SENS Research Foundation, is perhaps the most prominent proponent of this view, while S. Jay Olshansky, a professor in the School of Public Health at the University of Illinois Chicago, is perhaps the most prominent skeptic. A recent debate between the two, which took place on May 12, 2021 as part of LSX’s “Healthspan Show” and is available at https://www.youtube.com/watch?v=tDIUCywerf8, provides a useful introduction to the topic.
only become apparent over the course of many years or decades. Yet such crises may be every bit as threatening to the nation’s future. If we fail to confront the gathering health crisis afflicting much of America, we may find out too late that stagnating or retrogressing life expectancy is indeed the new normal.
About the Global Aging Institute

The Global Aging Institute (GAI) is a nonprofit research and educational organization dedicated to improving our understanding of global aging, to informing policymakers and the public about the challenges it poses, and to encouraging timely and constructive reform. GAI’s agenda is broad, encompassing everything from retirement security to national security, and its horizons are global, extending to aging societies worldwide.

GAI was founded in 2014 and is headquartered in Alexandria, Virginia. Although GAI is relatively new, its mission is not. Before launching the institute, Richard Jackson, GAI’s president, directed a research program on global aging at the Center for Strategic and International Studies which, over a span of fifteen years, played a leading role in shaping the debate over what promises to be one of the defining challenges of the twenty-first century. GAI’s Board of Directors is chaired by Tom Terry, who is CEO of the Terry Group and past president of the International Actuarial Association and the American Academy of Actuaries. To learn more about GAI, visit us at www.GlobalAgingInstitute.org.

About The Terry Group

The Terry Group is an actuarial consulting firm whose consultants and researchers help organizations navigate the complexities of health care, pensions, investments, and employee benefits. We are actuaries, clinicians, and experts in capital markets. We build models, analyze data, and provide expert testimony, working in partnership with our clients to help solve challenging problems and achieve their goals. Our deep experience, superior technical expertise, and passion for continuous learning are central to who we are. To learn more about The Terry Group, visit us at www.terrygroup.com.