

WHITE

PAPER

# Longevity: Trends and Challenges



MOUSE  
**1,000 days**



DOG  
**5,000 days**



ELEPHANT  
**26,000 days**



HUMAN  
**29,000 days**



SEA TURTLE  
**55,000 days**



WHALE  
**77,000 days**

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DIVERSIFIED TRUST

COMPREHENSIVE WEALTH MANAGEMENT

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## “If you could live forever, would you?”

– NEIL DEGRASSE TYSON, AMERICAN ASTROPHYSICIST



BY BILL SPITZ, DIRECTOR

My white papers are typically focused on fairly narrow (and probably boring) financial concepts that are designed to help our clients understand the financial world and the actions that we take in their portfolios. But, every so often, I stray into a topic of more general interest with the hope of providing a little intellectual stimulation. I have become fascinated by the subject of life expectancy or longevity because it is of major importance to us individually and as a society. This topic is particularly interesting because it is characterized by conflicting trends and significant political and socioeconomic overtones. And finally, it is relevant to Diversified Trust and its clients because it has major implications for financial planning. Obviously, I am not qualified to opine on a good deal of this, so this discussion will only scratch the surface of a very complex set of issues. I will largely limit the focus to the U.S., although some of the trends that will be identified are prevalent in the remainder of the industrialized world as well as some emerging economies.

Between 1900 and 2014, life expectancy in the U.S. for all races at birth increased from

**47.3 years**  
**to 78.8 years**

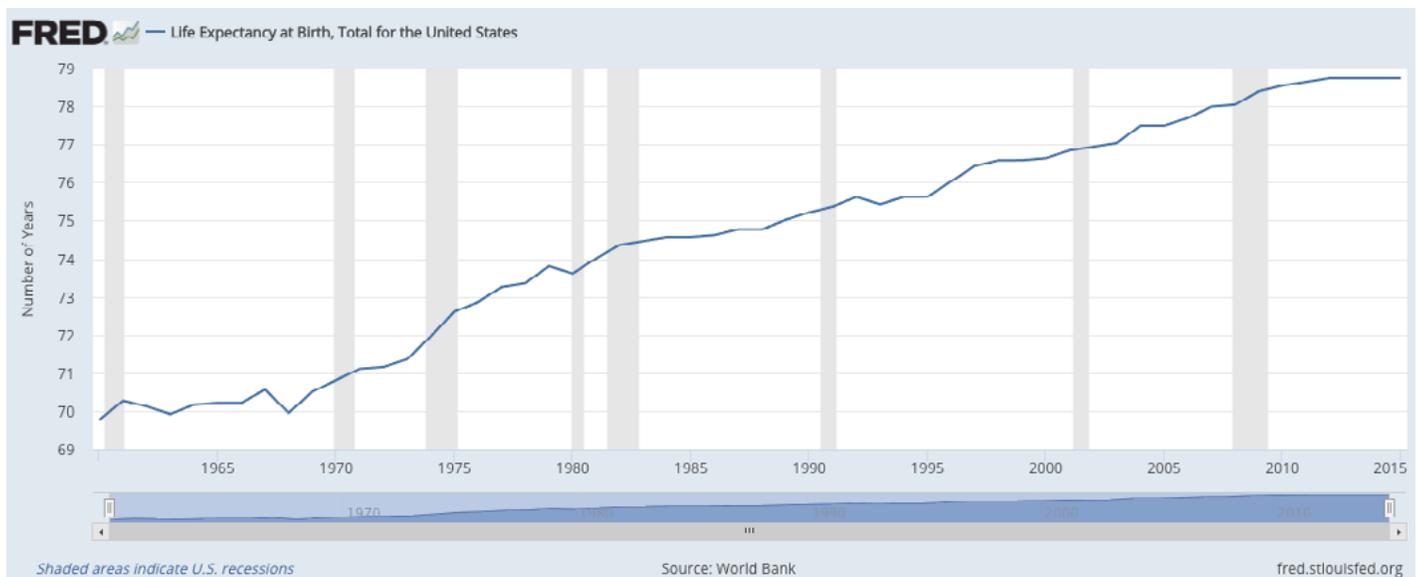
with women enjoying a slightly greater gain than men.



## Long Term Trends

First, the good news! Between 1900 and 2014, life expectancy in the U.S. for all races at birth increased from 47.3 years to 78.8 years with women enjoying a slightly greater gain than men. Overall, women can now expect to live approximately five years longer than men. Interestingly, the greatest gains over the period were experienced by African Americans for whom life expectancy increased from 33 to 75.6 years. However, their longevity still lags white Americans by 3- 4 years depending upon sex.

As depicted in the following chart, very steep gains for all races and both sexes took place from the late 1960's through roughly 2010. These gains were primarily a function of declines in mortality associated with coronary heart disease and cancer.



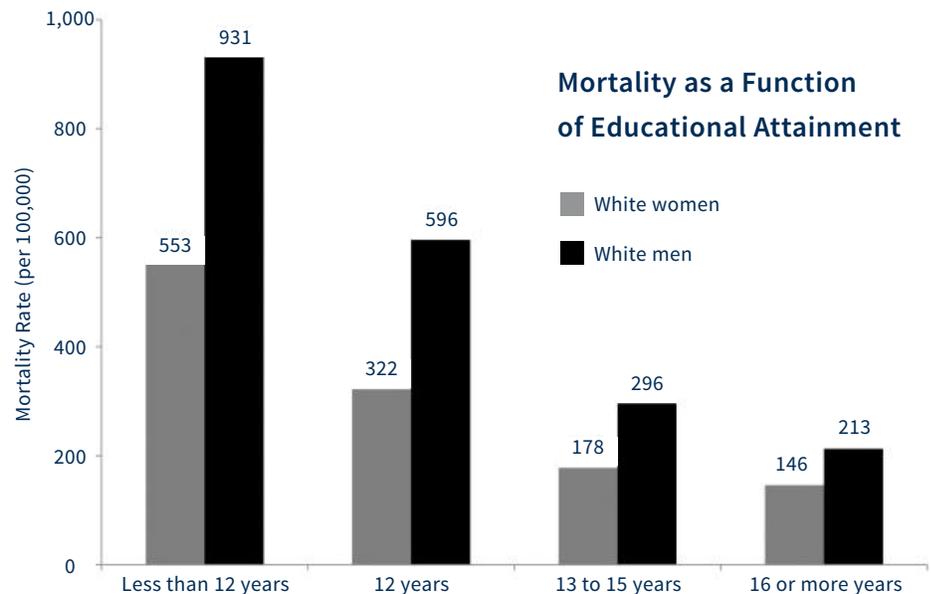
Specifically, the death rate from heart disease fell by almost 60% from 1970 through 2010 with this improvement generally attributed to a decline in smoking, awareness of the importance of exercise, and the development of statin drugs. Similarly, the 5-year survival rate for all cancers rose from 49% in the early 1970's to 62% in the last decade. Not surprisingly, the greatest gains in longevity occurred at more advanced ages with life expectancy at age 65 through 80 experiencing more than twice the percentage increase of the average improvement at birth.

## A Blip or a Trend?

Now for the bad news! As indicated in the chart above, life expectancy appears to have leveled off in recent years. In fact, it actually declined somewhat in both 2015 and 2016, and this represents the first two-year drop since 1962-1963. Of course, two years of data do not make a trend, but these statistics are nevertheless somewhat ominous. What is going on? First, it appears that the decline in mortality associated with heart disease and cancer has leveled off to some extent, and many health experts do not expect significant further improvement until there is a major medical breakthrough. At the same time, there has been a 17% increase in mortality over the last three years related to a category labeled “Unintentional Injuries” which includes drug related deaths. This is the Opioid Crisis that is currently receiving a great deal of publicity. Although smaller in size, there has also been a 19% increase in deaths attributed to Alzheimer’s disease, and health experts believe this will soon be the leading cause of death for those over eighty. These two factors more than offset the small continued improvement in mortality related to heart disease and cancer.

## Underlying Factors

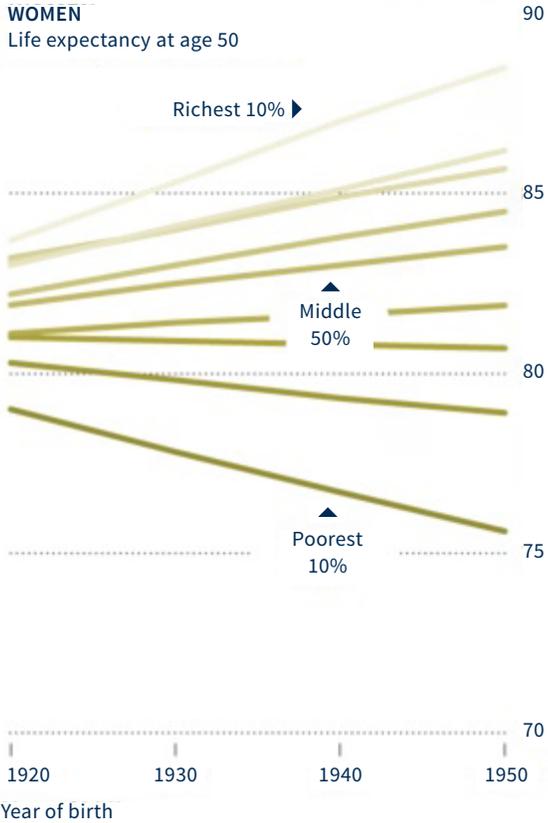
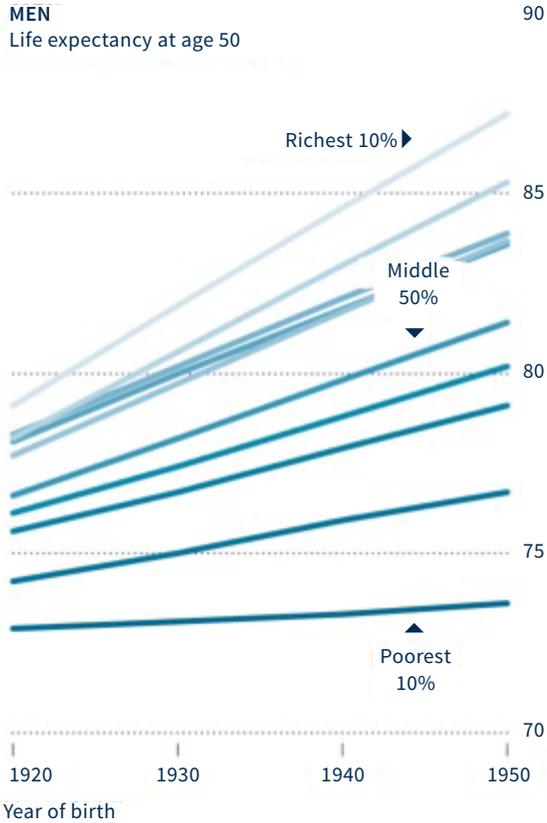
Two of the more important predictors of life expectancy are education and income. As depicted in the chart to the right, the most recent data indicates that mortality declines significantly (more than 70%) for both men and women as a function of educational level attained. The second chart indicates that the spread in life span between the richest and poorest Americans has more than doubled since the 1970’s. And, of course, income levels are correlated with education, so the two predictors are related. Simply stated, more educated and higher income individuals maintain healthier lifestyles and have better access to healthcare. These topics are politically charged, so we will only suggest that they are very sobering given the well-publicized increase in income inequality over the past twenty years.



Source: Ahmedin Jemal et al., “Widening of Socioeconomic Inequalities in US Death Rates, 1993-2001,” PLoS, mo. 3 issue 5 (2008): 1-8.

## An Expanding Longevity Gap

Wealthier Americans tend to live longer than poorer Americans. Despite advances in medicine and education, the difference in life span after age 50 between richest and poorest has more than doubled since the 1970s.



Sources: Brookings Institution; U. of Michigan Health and Retirement Study By The New York Times.

## The Future

Not surprisingly, it is extremely difficult to forecast where we go from here. On the one hand, there are many things to worry about including the aforementioned trend in income inequality, the opioid crisis, the significant increase in obesity and resulting frequency of medical conditions such as diabetes, and the possibility of pandemics. But, there are also many exciting prospects on the medical front including precision medicine, a focus on wellness rather than treatment, new drugs, devices, and therapies, and so on. To illustrate the difficulty in sorting through all of this, consider the two opposing titles of presentations that were included in a recent Society of Actuaries Webcast on Longevity: *A Possible Decline in Life Expectancy in the United States in the 21st Century?*; *A Breakthrough in Aging Science is Within Sight*.

## Sociological Questions

The significant increase in longevity over the last century has resulted in a number of societal changes, and further lengthening of life spans, should it occur, will undoubtedly lead to others. While many potential changes are exciting, others are both worrisome and controversial which has led to intense debate among ethicists. All of this is way beyond the comprehension of a financial type like me, so I have simply selected for your consideration a few themes from articles such as *Toward Immortality: The Social Burden of Longer Lives*.

- **Most people will, by both choice and necessity, have much longer working lives, and therefore, multiple careers**
- **Long tenured workers may decrease the opportunity for younger workers to enter the workforce, and may generally hinder workplace mobility. As just one example of the potential for this outcome, Congress eliminated the mandatory retirement age for higher education faculty in 1986. Many observers believe this has resulted in a material decrease in opportunities for newly minted PHD's.**
- **Institutions and corporations could stagnate as a result of very long tenured employees. Will organizations and institutions have enough new blood to ensure creativity and renewal?**
- **Similarly, politicians could enjoy unusually long tenure thereby upsetting the normal checks and balances of government**

- **Both for career and intellectual growth reasons, most people will engage in lifelong learning and continuous education which will change the nature of education. Will traditional institutions give way to online providers and other novel pedagogical models?**
- **Was marriage really designed for 30 or 40 year spans and not workable for much longer time frames? Might there be a shift from lifetime unions to 10 or 20 year term commitments? Will this result in complex, multi-generational blended families?**
- **If women live a lot longer, might their period of fertility also increase, again resulting in non-traditional family structures?**
- **Given healthcare and other costs, will the large number of elderly consume a disproportionate share of our collective resources resulting in less investment in the young? Might there be some form of generational conflict?**
- **A large population of older people may change the nature of housing, cities, transportation, and so on. Specifically, will older Americans congregate in urban areas and other “live, work, play” environments thereby rendering suburbs obsolete?**

I told you these were controversial! While some of these ideas may be farfetched and even offensive, they are also quite thought-provoking and worthy of debate.

## Finance

Having ventured into an arena in which I have no expertise, it is probably better that we return to the familiar territory of finance. Should life expectancy continue to improve, there will be important implications for our economy as a whole as well as for each of us as savers and investors. I will briefly discuss the big picture issues and then turn to specific actions that each of us can take.

Just to name a few impacts, longer life spans could:

- **Place significant strain on entitlement programs such as Medicare and Social Security (The Social Security Trust Fund is already scheduled to run out of money in 2034, and that forecast is based on longevity assumptions that some private actuaries believe are unrealistic. So, the actual outlook may be even more serious)**
- **Place strain on health care delivery (Although the demand for healthcare will likely be a source of jobs)**

- **Place considerable strain on already underfunded state and local pension systems (The average plan uses a return assumption of 7.5% which is probably unrealistically high. When a more achievable return assumption is combined with the possibility of longer life expectancy, the level of underfunding of some plans may actually be quite dire)**
- **Stress issuers of annuities and similar contracts (Small increases in longevity can materially impact the profitability of Insurance Companies)**
- **Increase the overall productivity of the economy due to the large number of highly seasoned, experienced workers (This would be good news because productivity gains generally represent the largest source of economic and personal income growth)**
- **Create demand for new products and services. For example, a large population of older Americans will certainly require significant health care services, and likely stimulate demand for new forms of housing, transportation services such as Uber and Lyft, electronics that improve quality of life, and so on.**

As usual, the picture is very mixed making it particularly difficult to discern the net effect.

But, longer life spans also create considerable challenges for us as individuals, particularly with respect to saving for retirement. Modeling the retirement saving problem requires a large number of assumptions regarding inflation, investment returns, life expectancy, desired living standard, and so on. I won't bore you with the details, but someone with a forty year working career and a normal life expectancy at the retirement age of 65 historically needed to save a little more than 7% of income in order to enjoy a comfortable retirement. And from 1959 through 1990, the average saving rate in the U.S. was about 10%. It was all good!

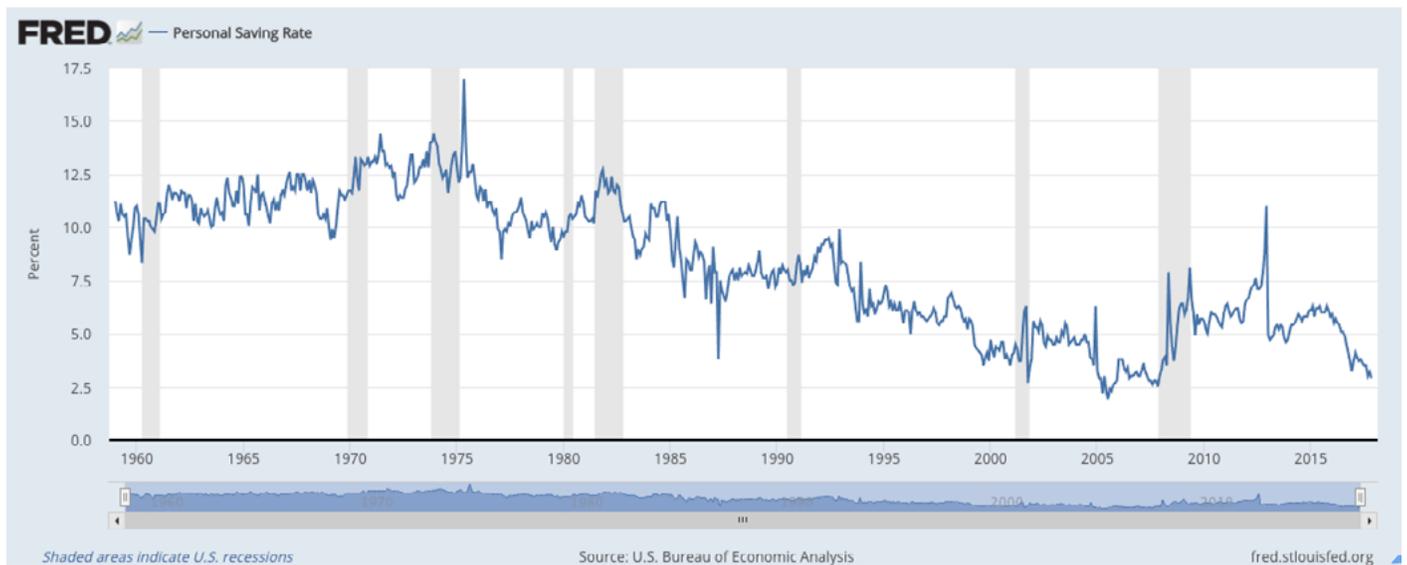
## IMPORTANT NOTES AND DISCLOSURES

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But from 1950 through today, average life expectancy at age 65 increased from 13.9 years to 19.4 years. Holding everything else constant, that increases the required savings rate to a little more than 9%. And, Millennials have roughly a 25% chance of living to 100 which requires a 13% savings rate, again assuming no change in the other parameters. Extending the retirement date from 65 to 70 would bring the required saving rate back down to the historical level of about 6%. But, here's the problem with all of these examples; as depicted in the following chart, the average American is currently only saving about 2.9% of income!

“You can’t help getting older, but you don’t have to get old.”

–GEORGE BURNS



Up to this point, this analysis has been based on the assumption that historical returns on stocks and bonds prevail in the future. If, as we believe and have discussed in other [White Papers](#), future returns will be much lower, the problem becomes really scary.

As just one example, using our return forecasts, the Millennial who works until age 75 and expects to live to 100 needs to save about 15% of income every year during her career. That is certainly daunting! And, if someone postpones saving until later in their career or wants to retire before age 75, the required savings rates get into the 20’s and 30’s.

What should one do? The first answer is to begin saving early and save like crazy! Of course, that sounds like an unwelcome lecture from your parents, but many people face the prospect of a diminished lifestyle during retirement; or even worse, the risk of running out of money. While we typically recommend annuities only sparingly, there are certain deferred annuity products that may represent a cost effective means of reducing this risk. In any case, it is critical to have a conversation with a financial planning professional regarding this topic, and immediately implement a sensible saving and investing plan. In the past couple of years, Diversified Trust Company has significantly increased its resources devoted to financial planning to ensure that these kinds of conversations take place with our clients.

## Conclusion

This is a fascinating topic that entails so many questions and contradictions. It is not clear whether life expectancy will continue to increase or not. But, assuming it does, the prospect of spending a longer, healthier life with friends and family is so appealing. Think about the joy of multiple, varied careers, the intellectual stimulation of lifetime learning, the pursuit of new hobbies and interests, the ability to witness an extended period of history, and so on! But, longer life spans would bring with them a large number of social, economic, and financial issues. There isn't much that we can do as individuals about these big picture questions. But, with respect to our own finances, we can engage in planning that uses realistic assumptions regarding life expectancy and returns, and then take appropriate steps to ensure that we have sufficient funds to enjoy our newfound longevity. L'Chaim-To Life!!

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