



**SOCIETY OF  
ACTUARIES®**

Article from

**In The Public Interest**

January 2019  
Issue 18

# How is the Mortality Gap Affecting Social Security Progressivity?

By Matthew S. Rutledge

*This article was originally published by Rutledge, Matthew S. September 2018. Issue in Brief 18-16. Chestnut Hill MA: Center for Retirement Research at Boston College. It is reprinted here with permission.*

Over the last half-century, average life expectancy at age 65 in the United States has increased by six years for men and four years for women.<sup>1</sup> But these gains have been unequal across the population. While those with greater earnings and education have enjoyed substantially longer life spans, those with lower socioeconomic status (SES) have seen relatively small improvements in their late-life mortality.

The unequal increase in life expectancy works against the progressive benefit design of Social Security. The program is set up to award more generous benefits—relative to pre-retirement earnings—to lower earners. But, due to the gap in life expectancy by SES, lower earners receive their benefits for relatively fewer years than their longer-lived counterparts.

This brief reviews research by the Social Security Administration's Retirement Research Consortium and others that investigates this widening gap and examines its consequences. The discussion proceeds as follows. The first section quantifies the growing gap in life expectancy by SES. The second section reviews evidence on why the gap has widened. The third section discusses how the gap affects lifetime Social Security benefits and the progressivity of the system. The final section concludes that, over time, the increasing mortality gap has significantly reduced Social Security's progressivity.

## THE GROWING MORTALITY GAP

Numerous studies have shown that higher-SES people live longer than lower-SES people and that this gap has increased

in the last few decades, regardless of the measure of SES used.<sup>2</sup> For example, Waldron (2007) compares life expectancy at age 65 of men classified by long-term earnings. She finds that men with above-median earnings born in 1912 had a life expectancy that was 0.7 years longer than men with below-median earnings. By the 1941 cohort, that difference had increased to 5.3 years. Bound et al. (2015) define SES by education. They show that the differences, by SES, in expected years of life from ages 25 to 85 have grown across the board—for both men and women, as well as for whites and blacks—even after accounting for the increase in educational attainment seen in each group (see Figure 1).<sup>3</sup>

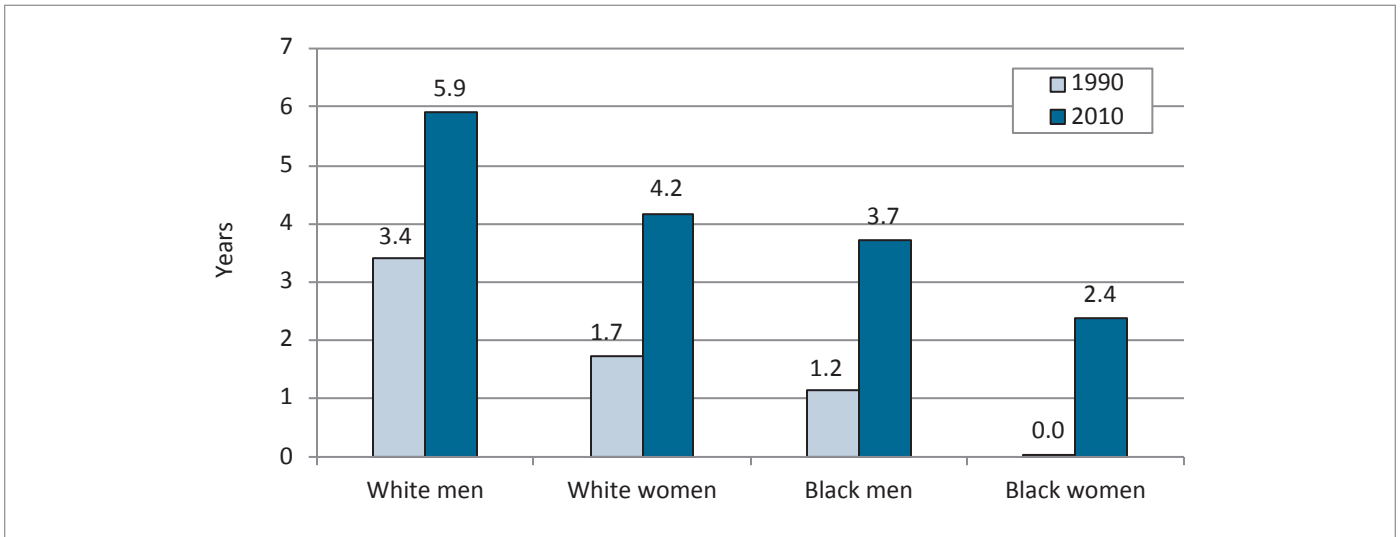
## WHY HAS THE GAP GROWN?

Most research finds that the widening gap in life expectancy by SES is driven by improved health outcomes for higher-SES people. Bosworth, Burtless, and Zhang (2015) find a significant decline in the risk of dying from cancer or heart conditions among higher-income individuals. Other research documents that higher-SES individuals have seen greater reductions in smoking and, therefore, fewer deaths from lung cancer or chronic obstructive pulmonary disease (COPD).<sup>4</sup>

Deaths from cancers, cardiovascular conditions, and lung disease only account for about one-half of the differential improvement for higher-SES people. The rest occurred in other causes of death that are harder to pin down, and controlling for behavioral differences does not seem to matter (with the important exception of smoking). It remains unclear whether these improved health outcomes are because higher-SES individuals enjoy better medical care, more improved health behaviors, or stronger underlying health status throughout their lives.

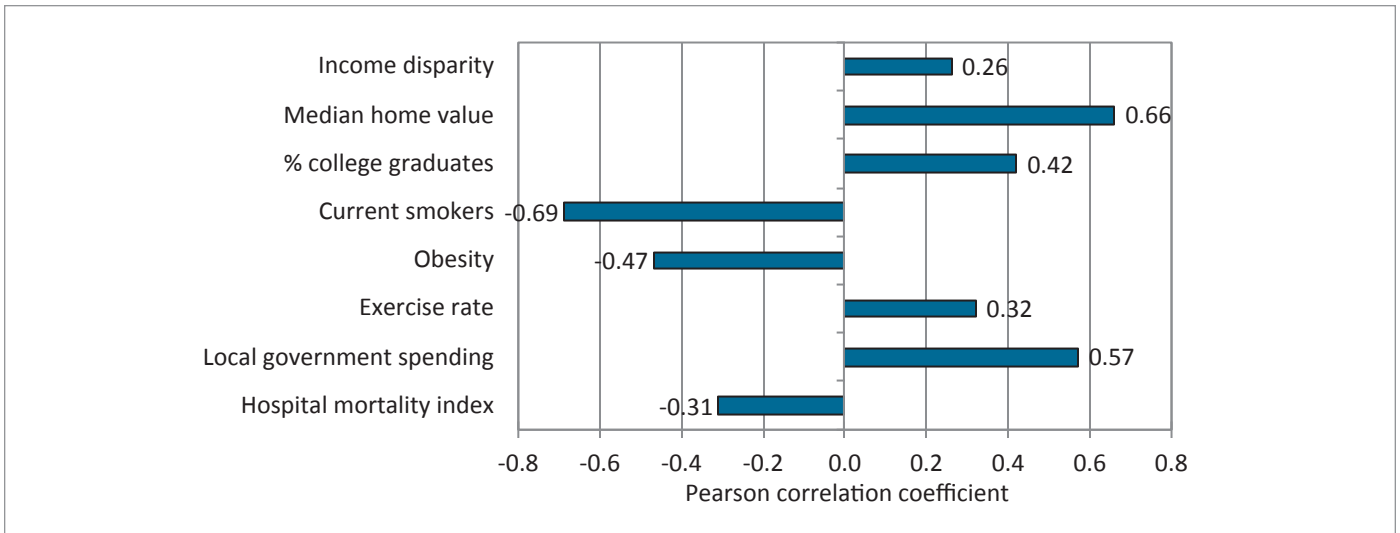
Chetty et al. (2016) shed some light on this question by examining U.S. metropolitan areas where lower-SES people do relatively well. Perhaps surprisingly, the results indicate that lower-SES individuals live longer in areas with greater income disparities and higher housing costs, as well as places with a high share of college graduates (see Figure 2). These results suggest that having more high-SES people around may exert a positive influence on those with lower SES. That positive influence could operate through behavioral norms, as lower-SES individuals live longer in areas where everyone's health behaviors are better (e.g., lower smoking rates, lower obesity, and higher exercise rates). It could also operate through a more robust tax base, enabling higher government expenditures on public health, the environment, and access to high-quality health care.

Figure 1  
Differences by Education in Expected Years of Life from Ages 25 to 85, 1990 and 2010



Source: Bound, et al. (2015). Note: The differences shown are between the least-educated quartile and the other quartiles combined. "White" refers to non-Hispanic white women and white men.

Figure 2  
Selected Correlations Between Local Area Characteristics and Life Expectancy of Bottom Income Quartile, 2001–2014



Source: Chetty, et al. (2016). Note: All results shown are statistically significant.

### HOW HAS THE GAP AFFECTED SOCIAL SECURITY'S PROGRESSIVITY?

The increasing mortality gap means that higher-SES individuals are receiving their Social Security benefits for a longer period of time than their lower-SES counterparts.

Differential mortality is, of course, only one factor in evaluating the progressivity of the Social Security system. Another factor reducing the system's progressivity is the fact that the payroll tax that funds Social Security is capped—it is not imposed on earnings over \$128,400 in 2018—which means that workers with very high earnings pay a lower average tax rate. On the other hand, the benefit formula is set to allow lower earners to replace a higher share of their average lifetime earnings.

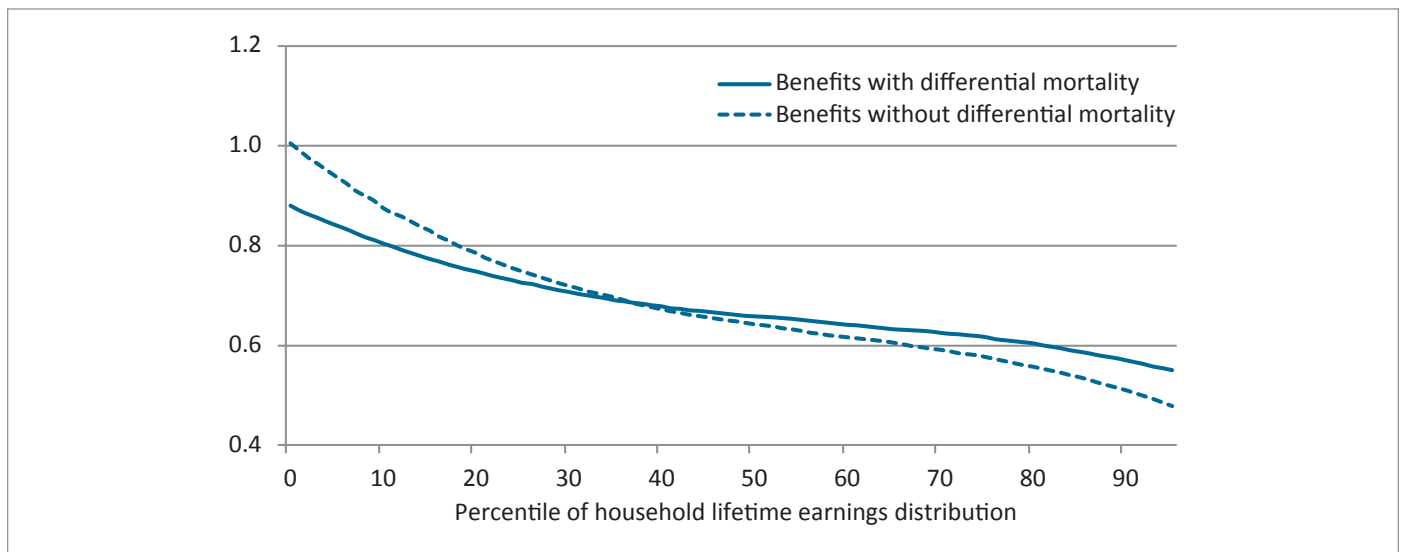
At the individual level, most studies find that, on net, the Social Security retirement program is modestly progressive. At the household level though, Gustman and Steinmeier (2001) find that the Social Security retirement program is regressive on net, because spousal benefits disproportionately benefit higher-income people. However, when Social Security's disability

insurance program is included, it improves the picture for those with lower SES, making the combined system progressive even at the household level.<sup>5</sup>

A 2006 analysis by the Congressional Budget Office demonstrates the effect of differential mortality on the system's net progressivity (see Figure 3).<sup>6</sup> The metric used here is the ratio of the lifetime retirement benefits that individuals receive to the lifetime payroll taxes that they pay. The solid line represents scheduled benefits under current law in the actual Social Security retirement system, which incorporate the effects of differential mortality. This line is downward-sloping: because of the system's modest progressivity, the benefit-to-tax ratio is somewhat higher for workers with lower career earnings, and declines as career earnings increase.

The dashed line represents a thought experiment: what if every 65-year-old had the same remaining life expectancy? In that scenario, the downward slope of the line becomes steeper, signifying an increase in progressivity. Lower earners would now live longer, and therefore collect their progressive benefits for

Figure 3  
Lifetime Social Security Retired-Worker Benefit-to-Tax Ratios for 1960s Birth Cohort, With and Without Differential Mortality



Source: Adapted from Meyerson and Sabelhaus (2006). Note: The analysis assumes that benefits are paid as scheduled under current law.

## Social Security has been providing relatively less to lower-SES individuals over time.

longer. Higher earners would now live for less time, thereby reducing their lifetime benefits.

To quantify the impact of differential mortality on Social Security's progressivity, Bosworth and Burke (2014) compare benefits against a benchmark of career earnings.<sup>7</sup> The first document that the distribution of benefits in any given year is much more equal than the distribution of career earnings, reflecting the progressive benefit formula. Their analysis of lifetime benefits, though, shows that differential mortality offsets about half of the overall system's progressivity. The offset is greater for men than women, because men have a greater disparity in life expectancy by SES at older ages.

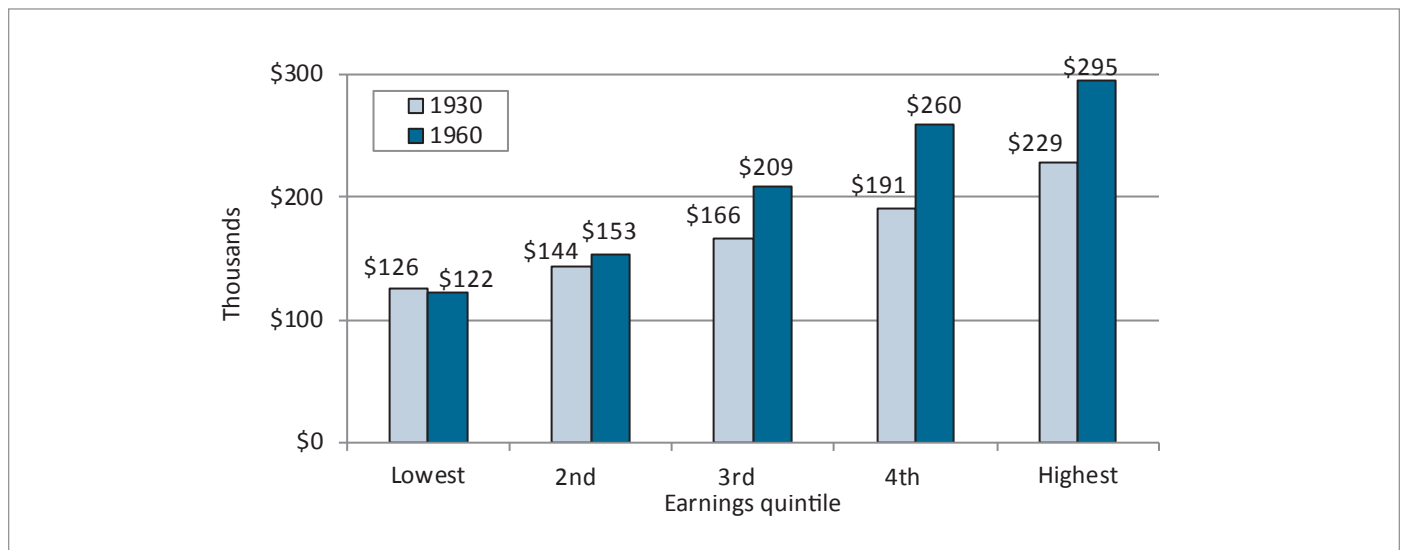
As the mortality gap has grown, therefore, Social Security has been providing relatively less to lower-SES individuals over time. In simulations comparing the 1930 and 1960 birth cohorts, a 2017 National Academy of Sciences report finds that the present value of Social Security retirement benefits increased from \$229,000 to \$295,000 for men in the highest income quintile (see Figure 4). For men in lower quintiles, who rely more on Social Security to finance their retirement consumption, lifetime benefits actually fell (for the lowest quintile) or increased only modestly (for the second-lowest quintile).<sup>8</sup>

### CONCLUSION

In recent decades, the mortality gap between higher and lower-SES individuals has widened substantially. Some part of the greater life expectancy improvement among higher-SES individuals is due more to effective medical care, better health behaviors, and stronger underlying health throughout their lives, but much remains unexplained.

As a result of the growing gap, Social Security has become less progressive. Estimates suggest that the impact has been

Figure 4  
Lifetime Social Security Benefits for 1930 and 1960 Birth Cohorts  
by Earnings Quintile, Thousands of 2009 Dollars



Source: Auerbach, et al. (2017).

substantial: lifetime benefits have greatly increased for higher-SES individuals, while falling or remaining stagnant for lower earners.

This outcome has raised concerns among some policy experts. But research has shown that lower-SES people enjoy greater life expectancy in places with better environments, more positive health behavioral norms, and greater government commitment to services such as public health. Improving these factors—and

thereby improving mortality among the lower-SES people who rely on Social Security the most—could potentially help restore some of the program’s progressivity. ■



Matthew S. Rutledge is an associate professor of the practice at Boston College’s Morrissey College of Arts and Sciences and a research fellow at the Center for Retirement Research (CRR) at Boston College. He can be reached at [rutledma@bc.edu](mailto:rutledma@bc.edu).

### ENDNOTES

- 1 U.S. Social Security Administration (2017).
- 2 The results of studies that use multiple measures of SES—such as long-term earnings and education—are generally consistent across definitions (e.g., Bosworth and Zhang 2015).
- 3 See also Sanzenbacher and Ramos-Mercado (2016); Sanzenbacher et al. (2015); and Cristia (2009).
- 4 Cutler et al. (2011) and Meara, Richards, and Cutler (2008).
- 5 For studies at the household level that include disability insurance, see Steuerle, Carasso, and Cohen (2004a); Harris and Sabelhaus (2005); Bosworth and Burke (2014); and Bosworth and Zhang (2015).
- 6 Meyerson and Sabelhaus (2006). See also Auerbach et al. (2017).
- 7 The Bosworth and Burke (2014) analysis includes SSDI.
- 8 Other studies that have looked at differential mortality include Steuerle, Carasso, and Cohen (2004b); Brown, Coronado, and Fullerton (2009); and Goda, Shoven, and Slavov (2011).

### REFERENCES

- Auerbach, Alan J., Kerwin K. Charles, Courtney C. Coile, William Gale, Dana Goldman, Ronald Lee, Charles M. Lucas, Peter R. Orszag, Louise M. Sheiner, Bryan Tysinger, David N. Weil, Justin Wolfers, and Rebeca Wong (National Academy of Sciences Committee on the Long-Run Macroeconomic Effects of the Aging U.S. Population). 2017. “How the Growing Gap in Life Expectancy May Affect Retirement Benefits and Reforms.” Working Paper 23329. Cambridge, MA: National Bureau of Economic Research.
- Bosworth, Barry P. and Kathleen Burke. 2014. “Differential Mortality and Retirement Benefits in the Health and Retirement Study.” Working Paper 2014-4. Chestnut Hill, MA: Center for Retirement Research at Boston College.
- Bosworth, Barry P., Gary Burtless, and Kan Zhang. 2015. “Sources of Increasing Differential Mortality among the Aged by Socioeconomic Status.” Working Paper 2015-10. Chestnut Hill, MA: Center for Retirement Research at Boston College.
- Bosworth, Barry P. and Kan Zhang. 2015. “Evidence of Increasing Differential Mortality: A Comparison of the HRS and SIPP.” Working Paper 2015-13. Chestnut Hill, MA: Center for Retirement Research at Boston College.
- Bound, John, Arline T. Geronimus, Javier M. Rodriguez, and Timothy A. Waidmann. 2015. “Measuring Recent Apparent Declines in Longevity: The Role of Increasing Educational Attainment.” *Health Affairs* 34(12): 2167-2173.
- Brown, Jeffrey R., Julia Lynn Coronado, and Don Fullerton. 2009. “Is Social Security Part of the Social Safety Net?” In *Tax Policy and Economy*, Volume 23, edited by Jeffrey R. Brown and James M. Poterba. Chicago, IL: University of Chicago Press.
- Chetty, Raj, Michael Stepner, Sarah Abraham, Shelby Lin, Benjamin Scuderi, Nicholas Turner, Augustin Bergeron, and David Cutler. 2016. “The Association Between Income and Life Expectancy in the United States, 2001-2014.” *Journal of the American Medical Association* 315(16): 1750-1766.
- Cristia, Julian P. 2009. “Rising Mortality and Life Expectancy Differentials by Lifetime Earnings in the United States.” *Journal of Health Economics* 28: 984-995.
- Cutler, David M., Fabian Lange, Ellen Meara, Seth Richards-Schubik, and Christopher J. Ruhm. 2011. “Rising Educational Gradients in Mortality: The Role of Behavioral Risk Factors.” *Journal of Health Economics* 30: 1174-1187.
- Goda, Gopi Shah, John B. Shoven, and Sita Nataraj Slavov. 2011. “Differential Mortality by Income and Social Security Progressivity.” In *Explorations in the Economics of Aging*, edited by David A. Wise. Chicago, IL: University of Chicago Press.
- Gustman, Alan L. and Thomas L. Steinmeier. 2001. “How Effective is Redistribution Under the Social Security Benefit Formula?” *Journal of Public Economics* 82: 1-28.
- Harris, Amy Rehder and John Sabelhaus. 2005. “How Does Differential Mortality Affect Social Security Finances and Progressivity?” Working Paper 2005-5. Washington, DC: Congressional Budget Office.
- Meara, Ellen, Seth Richards, and David M. Cutler. 2008. “The Gap Gets Bigger: Changes in Mortality and Life Expectancy, by Education, 1981-2000.” *Health Affairs* 27(2): 350-360.
- Meyerson, Noah and John Sabelhaus. 2006. “Is Social Security Progressive?” *Economic and Budget Issue Brief* (December 15). Washington, DC: Congressional Budget Office.
- Sanzenbacher, Geoffrey T. and Jorge D. Ramos-Mercado. 2016. “Calculating Expected Social Security Benefits by Race, Education, and Claiming Age.” Working Paper 2016-14. Chestnut Hill, MA: Center for Retirement Research at Boston College.
- Sanzenbacher, Geoffrey T., Anthony Webb, Candace M. Cosgrove, and Natalia S. Orlova. 2015. “Calculating Neutral Increases in Retirement Age by Socioeconomic Status.” Working Paper 2015-21. Chestnut Hill, MA: Center for Retirement Research at Boston College.
- Steuerle, C. Eugene, Adam Carasso, and Lee Cohen. 2004a. “How Progressive is Social Security When Old Age and Disability Insurance Are Treated as a Whole?” *Retirement Project Issue Brief* 38. Washington, DC: Urban Institute.
- Steuerle, C. Eugene, Adam Carasso, and Lee Cohen. 2004b. “How Progressive is Social Security and Why?” *Retirement Project Issue Brief* 37. Washington, DC: Urban Institute.
- U.S. Social Security Administration. 2017. *The Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*. Washington, DC: U.S. Government Printing Office.
- Waldron, Hilary. 2007. “Trends in Mortality Differentials and Life Expectancy for Male Social Security-Covered Workers, by Socioeconomic Status.” *Social Security Bulletin* 67(3): 1-28.