

Growing Disparities in Life Expectancy

Summary

In a continuation of long-term trends, life expectancy has been steadily increasing in the United States for the past several decades. Accompanying the recent increases, however, is a growing disparity in life expectancy between individuals with high and low income and between those with more and less education. The difference in life expectancy across socioeconomic groups is significantly larger now than in 1980 or 1990. A similar trend is evident in Great Britain but not in Canada, where the gap in life expectancy between high- and low-income individuals has declined.

Increasing longevity, by itself, has clear implications for Social Security and Medicare expenditures. As beneficiaries live longer, they will receive benefits for a longer period, putting additional pressure on the programs' finances.

The implications of a continued widening of the gap in life expectancy by socioeconomic status are clear for Social Security but less so for Medicare. For Social Security, a widening gap would worsen the long-term shortfall in financing and reduce the program's progressivity—the extent to which it redistributes resources from high-income to low-income beneficiaries on a lifetime basis. For Medicare, it is not clear whether a widening gap would exacerbate the cost increases that will result from increasing longevity. How the share of Medicare spending on low-income individuals would change depends on how the percentage change in life expectancy at age 65 compares for the various groups of beneficiaries.

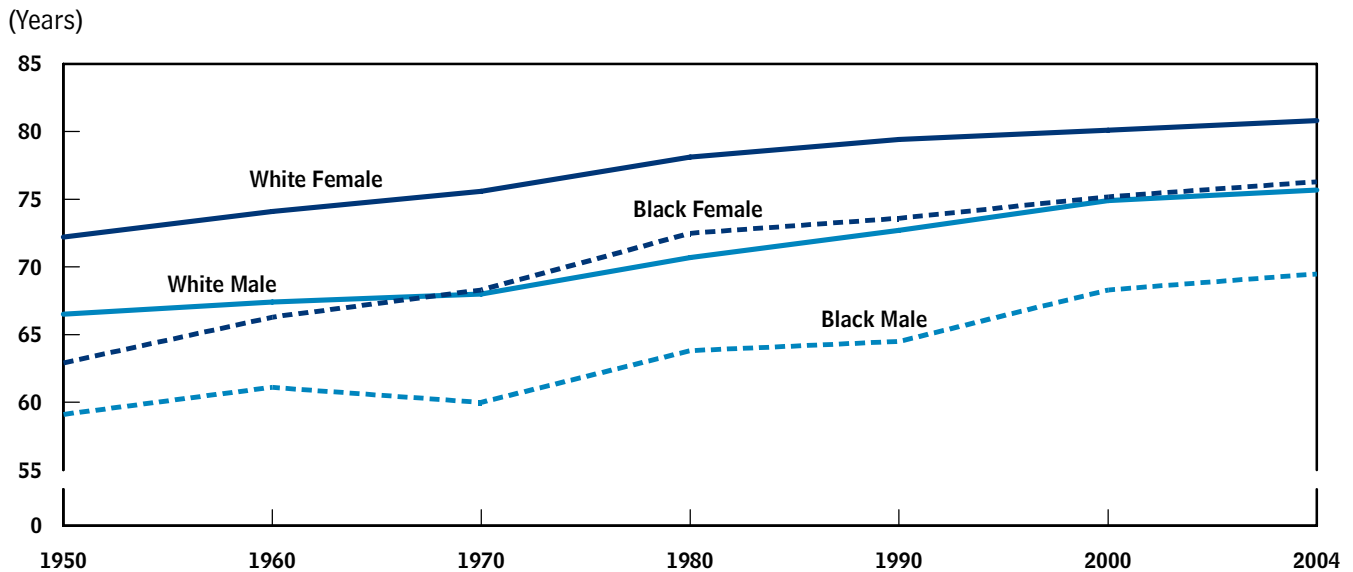
Life expectancy has been increasing in the United States in recent decades, resulting in welcome gains for individuals but higher costs for federal programs.¹ Improvements in life expectancy at birth have occurred for both men and women and across races. Life expectancy at birth for men born in 2004 was 75.2 years, almost 10 years longer than men born in 1950. Life expectancy for women born in 2004 was 80.4 years, more than 9 years greater than for women born in 1950.²

Life expectancy at birth for blacks has risen since 1950 but remains noticeably lower than that for whites.³ Life expectancy for black men has grown about as much as that for white men, but that means the six-year gap between them has been maintained (see Figure 1). By contrast, black women have experienced disproportionately large gains in life expectancy at birth over the 1950–2004 period. As a result, life expectancy has risen more for black women than for white women, halving the gap between them but still leaving a difference of more than

1. Life expectancy is the number of additional years an individual is expected to live at a given age. In this issue brief, life expectancy refers to period life expectancy, which is calculated using current death rates. Period life expectancies are generally lower than cohort life expectancies (which are calculated using projected death rates for a given cohort) because death rates generally fall over time.

2. National Center for Health Statistics, *Health, United States, 2007* (Hyattsville, Md., 2007), Table 27.

3. The life expectancy figures discussed here for blacks in 1950 are those for all nonwhite races.

Figure 1.**Life Expectancy at Birth, by Race and Sex, 1950 to 2004**

Source: Congressional Budget Office using data from National Center for Health Statistics, *Health, United States, 2007* (Hyattsville, Md., 2007), Table 27.

Note: The life expectancy figures for blacks in 1950 and 1960 are those for all nonwhite races.

four years.⁴ Black women now have a life expectancy that is about seven years greater than that of black men, compared with a difference of about four years in 1950.

The Widening Gap Across Socioeconomic Groups

Although the gaps in life expectancy between men and women and between whites and blacks have narrowed somewhat, differences by income and educational attainment have been growing. The close relationship between socioeconomic status and mortality—the flip side of longevity—has been long observed and is well documented.⁵

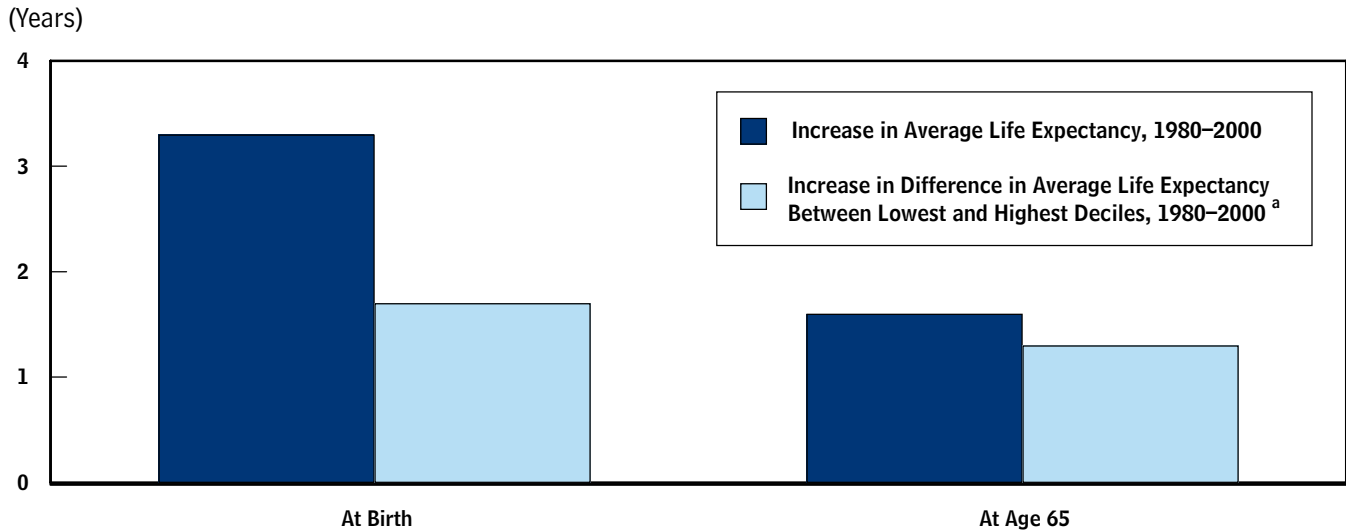
Individuals with higher lifetime earnings or more education experience lower mortality rates than those with lower lifetime earnings or less education. But in recent decades, socioeconomic status has become an even more important indicator of life expectancy, whether measured at birth or at age 65 (see Figure 2).

- In 1980, life expectancy at birth was 2.8 years more for the highest socioeconomic group than for the lowest.⁶ By 2000, that gap had risen to 4.5 years. The 1.7-year increase in the gap amounts to more than half of the increase in overall average life expectancy at birth between 1980 and 2000.
- In 1980, the difference in life expectancy at age 65 between the highest and lowest socioeconomic groups was 0.3 years. By 2000, the difference had grown to 1.6 years. That increase in the gap equals more than 80 percent of the increase in overall average life expectancy at age 65 over that period.

4. For more information on black-white differentials, see Sam Harper and others, “Trends in the Black-White Life Expectancy Gap in the United States, 1983–2003,” *Journal of the American Medical Association*, vol. 297, no. 11 (March 16, 2007), pp. 1224–1232.

5. See Evelyn M. Kitagawa and Philip M. Hauser, *Differential Mortality in the United States: A Study in Socio-economic Epidemiology* (Cambridge, Mass.: Harvard University Press, 1973); Adriana Lleras-Muney, “The Relationship Between Education and Adult Mortality in the U.S.,” *Review of Economic Studies*, vol. 72, no. 1 (January 2005), pp. 189–221; and Hilary Waldron, “Trends in Mortality Differentials and Life Expectancy for Male Social Security-Covered Workers, by Average Relative Earnings,” *Social Security Bulletin*, vol. 67, no. 3 (2007), pp. 1–28, www.ssa.gov/policy/docs/ssb/v67n3/v67n3p1.pdf.

6. See Gopal K. Singh and Mohammad Siahpush, “Widening Socioeconomic Inequalities in U.S. Life Expectancy, 1980–2000,” *International Journal of Epidemiology*, vol. 35, no. 4 (2006), pp. 969–979. Socioeconomic groups are defined using county-level indicators of education, occupation, unemployment, wealth, income, and housing conditions.

Figure 2.**Increase in Life Expectancy, and Increase in Difference in Life Expectancy by Economic Status**

Source: Congressional Budget Office using data from Gopal K. Singh and Mohammad Siahpush, "Widening Socioeconomic Inequalities in U.S. Life Expectancy, 1980–2000," *International Journal of Epidemiology*, vol. 35, no. 4 (2006), pp. 969–979; and National Center for Health Statistics, *Health, United States, 2007* (Hyattsville, Md., 2007), Table 27.

a. Socioeconomic groups are defined using county-level indicators of education, occupation, unemployment, wealth, income, and housing conditions.

Changes in life expectancy between 1990 and 2000 show a similar pattern among people with different levels of educational attainment. The gap in life expectancy at age 25 between individuals with a high school education or less and individuals with any college education increased by about 30 percent over that period. The gap widened because of increases in life expectancy for the better-educated group; life expectancy for those with less education did not increase over that period. The growing differentials by level of educational attainment have occurred for both men and women and for both blacks and whites.⁷

Differing rates of mortality from heart disease and cancers (excluding lung cancer) have been the largest contributor to the growing disparities in life expectancy by educational attainment. Two other diseases related to smoking—lung cancer and chronic obstructive pulmonary disease—add to that differential.⁸ For people in each

sex and race group, at least half of the growth in life expectancy gaps comes from people age 65 or older. Why so much of the difference appears at older ages is not entirely clear, but differences in the availability of high-quality health care before age 65 and in lifelong health habits might play an important role.

International Comparisons

In Great Britain, as in the United States, differences in life expectancy by socioeconomic group have been increasing in recent decades.⁹ By one measure, which uses occupation as a proxy for socioeconomic group, life expectancy in Great Britain increased both at birth and at age 65 for all occupational groups from the early 1970s to the early 1990s. But that increase has been largest for those in professional occupations: Men in that category gained 5.7 years at birth and 2.6 years at age 65 compared with gains of 1.7 and 0.9 years for men in unskilled

7. Ellen R. Meara, Seth Richards, and David M. Cutler, "The Gap Gets Bigger: Changes in Mortality and Life Expectancy, by Education, 1981–2000," *Health Affairs*, vol. 27, no. 2 (2008), pp. 350–360.

8. Ibid.

9. See Lin Hattersly, Office for National Statistics, "Trends in Life Expectancy by Social Class—An Update," *Health Statistics Quarterly*, vol. 2 (Summer 1999), pp. 16–24.

manual occupations. By contrast, gaps in life expectancy decreased for women across occupational groups until 1991, then started to increase. As in the United States, where the low-income and low-education groups have seen little gain in life expectancy, people in unskilled manual occupations in Great Britain have also experienced little gain in recent years.

Not all countries show widening gaps in life expectancy over time, however. In Canada, the gap between people in low- and high-income neighborhoods declined between 1971 and 1996.¹⁰ Deaths from ischemic heart disease declined the most in the poorest Canadian neighborhoods over that period. In contrast, from 1968 to 1998 deaths from such illness in the United States declined fastest in counties of higher socioeconomic status.¹¹ Differences in access to health care could be one factor behind changing mortality gaps, but it could probably not explain the disparity between Great Britain and Canada because both countries provide universal health insurance.

Why Is the Gap Increasing Across Socioeconomic Groups?

The growing differences in life expectancy in the United States are well documented, but why they are increasing is less well understood. Possible factors contributing to the increase include the following:

- *Smoking.* One study estimates that differential trends in smoking-related diseases explain at least 20 percent of the increasing gap in life expectancy between groups with different levels of education.¹²
- *Obesity.* The nationwide increase in obesity began among the less educated and could now explain part of the widening socioeconomic gap in mortality rates.¹³

10. Russell Wilkins, Jean-Marie Berthelot, and Edward Ng, "Trends in Mortality by Neighbourhood Income in Urban Canada from 1971 to 1996," *Supplement to Health Reports*, vol. 13 (Statistics Canada, Ottawa, Ontario, 2002).

11. Gopal K. Singh and Mohammad Siahpush, "Increasing Inequalities in All-Cause and Cardiovascular Mortality Among U.S. Adults Aged 25–64 Years by Area Socioeconomic Status, 1969–1998," *International Journal of Epidemiology*, vol. 31, no. 3 (2002), pp. 600–613.

12. Meara, Richards, and Cutler, "The Gap Gets Bigger."

- *Self-Management of Disease.* Adherence to medical treatments and therapies is higher among the more educated.¹⁴ The role of self-management, particularly in the case of chronic diseases, may have increased over time.
- *Healthy Lifestyles and Use of Health Care.* A balanced diet, exercise, and other healthy behaviors may be less prevalent among groups with low income and less education, and some measures suggest that the disparity is increasing over time. In addition, since the mid-1990s, the gap in health insurance coverage between low- and high-wage workers has been growing and has been accompanied by a widening gap in access to health care services as well.¹⁵

Complicating any analysis of income, education, health, and mortality is the fact that poor health itself has been shown to be a cause of lower income, either because it can inhibit educational attainment or because disabilities can limit work opportunities. If those effects have grown larger over time, that could help explain the observed relationships between socioeconomic status and mortality.

Consequences of the Widening Gap for Social Security and Medicare

Increases in average life expectancy have clear implications for the future cost of both Social Security and Medicare: As beneficiaries live longer, they will receive benefits for a longer period, thereby increasing the programs' costs.¹⁶

13. See Charles L. Baum and Christopher J. Ruhm, *Age, Socioeconomic Status and Obesity Growth*, NBER Working Paper No. 13289 (Cambridge, Mass.: National Bureau of Economic Research, August 2007).

14. Dana P. Goldman and James P. Smith, "Can Patient Self-Management Help Explain the SES Health Gradient?" *Proceedings of the National Academy of Sciences*, vol. 99, no. 16 (2002), pp. 10929–10934, www.pnas.org/cgi/content/full/99/16/10929.

15. See Sherry Glied and Adriana Lleras-Muney, "Technological Innovation and Inequality in Health," *Demography* (forthcoming); and Sherry Glied and Bisundev Mahato, "Health Insurance, Health, and Low-Wage Workers," Issue Brief (forthcoming), The Commonwealth Fund, New York.

16. There may be effects on other government programs as well, such as Medicaid or veterans' programs, but such effects are not discussed here.

The effects of a continued widening of the gap in life expectancy by socioeconomic status are clear for Social Security but less so for Medicare. For Social Security, a continued widening of the gap would reduce progressivity—that is, the redistribution of resources from high- to low-income beneficiaries on a lifetime basis when both taxes and benefits are taken into account—and worsen the long-term shortfall in financing. For Medicare, it is not clear whether a widening gap would exacerbate the cost increases that will result from increasing longevity. How the share of Medicare spending on low-income individuals would change depends on the percentage change in life expectancy at age 65 for low-income people relative to that for high-income people.

Social Security

The Social Security program provides benefits to retired workers and their survivors and to workers who have become disabled. The program is generally progressive, but shorter life expectancy among lower-income groups reduces the progressivity somewhat.¹⁷ The Social Security benefit formula is designed such that beneficiaries who have low lifetime earnings receive monthly benefits that equal a higher percentage of their lifetime average monthly earnings than do beneficiaries who have higher lifetime earnings. Social Security's tax rules, however, are largely regressive, applying a uniform tax rate to earnings below an annual cap. The progressivity of the program overall is due primarily to the Disability Insurance part of Social Security.¹⁸

The benefits paid to retired workers, which account for about three-quarters of total benefits, are also progressive, but they are less progressive than Social Security benefits overall. Progressivity in the benefit formula is partly offset by the fact that higher-earning individuals tend to live longer and thus collect more benefits. If the difference in average life expectancy between high- and low-earning individuals continued to grow over time, that would further diminish the program's progressivity.

Increasing overall life expectancy will worsen Social Security's finances because paying any amount of benefits for

more years increases costs. To the extent that an increase in life expectancy is concentrated among people with higher income, such an increase would have a larger financial effect because those people tend to receive higher monthly benefits and live longer than people with low income. Such a trend would also put additional strain on the Social Security trust funds.

Medicare

The Medicare program provides coverage for acute health care services—hospitalizations, doctors' visits, prescription drugs, and related services—for nearly all legal residents age 65 or older and for several million younger beneficiaries on the Disability Insurance program. Determining whether the Medicare program is progressive on a lifetime basis is difficult. Low-income beneficiaries, on average, have higher annual health costs—but fewer years in the Medicare program—and pay lower taxes than high-income beneficiaries over a lifetime.¹⁹ Recent studies have reached mixed conclusions about the net result. A study using neighborhood-level income measures as a proxy for lifetime socioeconomic status suggests that the Medicare program is not progressive.²⁰ However, a study that measured socioeconomic status by the educational attainment of individuals concluded that the program is progressive.²¹

How the share of Medicare spending that goes to low-income beneficiaries changes as life expectancy at age 65 rises is complicated. The nature of that change in share depends on the *percentage change* in life expectancy at age 65 for the various categories of beneficiaries. If changes in life expectancy at age 65 were of equal proportion across income groups, the share of total spending for each group would not change. If the widening gap in life expectancy means that high-income beneficiaries would experience a greater proportional change, the share of Medicare spending would increase for that group. For the share of spending on low-income beneficiaries to rise, they would have to experience greater proportional gains in life expectancy at age 65 than high-income beneficiaries; that outcome

17. Congressional Budget Office, *Is Social Security Progressive?* (December 15, 2006).

18. Disabled beneficiaries tend to have low lifetime earnings. They constituted 17 percent of all beneficiaries and 29 percent of people who were newly awarded benefits in 2005. See Social Security Administration, *Annual Statistical Supplement to the Social Security Bulletin, 2006* (2007), Tables 5.A1 and 6.A1.

19. The value of the insurance protection that Medicare provides against incurring large health care costs could also vary across socioeconomic groups.

20. See Mark McClellan and Jonathan Skinner, "The Incidence of Medicare," *Journal of Public Economics*, vol. 90, no. 1-2 (January 2006), pp. 257–276.

21. Jay Bhattacharya and Darius Lakdawalla, "Does Medicare Benefit the Poor? New Answers to an Old Question," *Journal of Public Economics*, vol. 90, no. 1-2 (January 2006), pp. 277–292.

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could occur even with a growing differential in the number of years of life expectancy.

Gains in overall life expectancy will increase Medicare spending as people use the program's services for more years. How a widening gap in life expectancy by socioeconomic status would affect total Medicare spending relative to a situation in which life expectancy gains are evenly spread is unclear. That effect would depend on how the program's costs differ across those groups and on the relative size of the longevity increases. If low-cost beneficiaries experience the bulk of the longevity gains,

Medicare spending will increase less than if high-cost beneficiaries experience most of those gains.

This brief was written by Joyce Manchester and Julie Topoleski. A related publication is the issue brief *Is Social Security Progressive?* These publications are available on the Congressional Budget Office's Web site (www.cbo.gov).



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