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Budget Model

The Increasing Mortality Gap by Education

Summary: Over the last two decades, a mortality gap has opened up across education levels. For those born after 1950, each additional level of educational attainment is associated with at least an 18 percent lower mortality rate.

Introduction

This post examines how the relationship between mortality risk and education level has changed over time. We combine CDC death records from 1996-2017 with CPS population data to construct the mortality rate of each demographic group in each year. All rates are reported as the number of deaths per 100,000 population. Besides potentially impacting well-being, differences in mortality by education (and, hence, lifetime income) reduce the progressivity of programs like Social Security and Medicare, which will be reported in future work.

Trends in Mortality

Figure 1 shows all-cause mortality for ages 60-85 over the window 1996-2017.

Figure 1. Time lapse of all-cause mortality for ages 60-85 over the window 1996-2017

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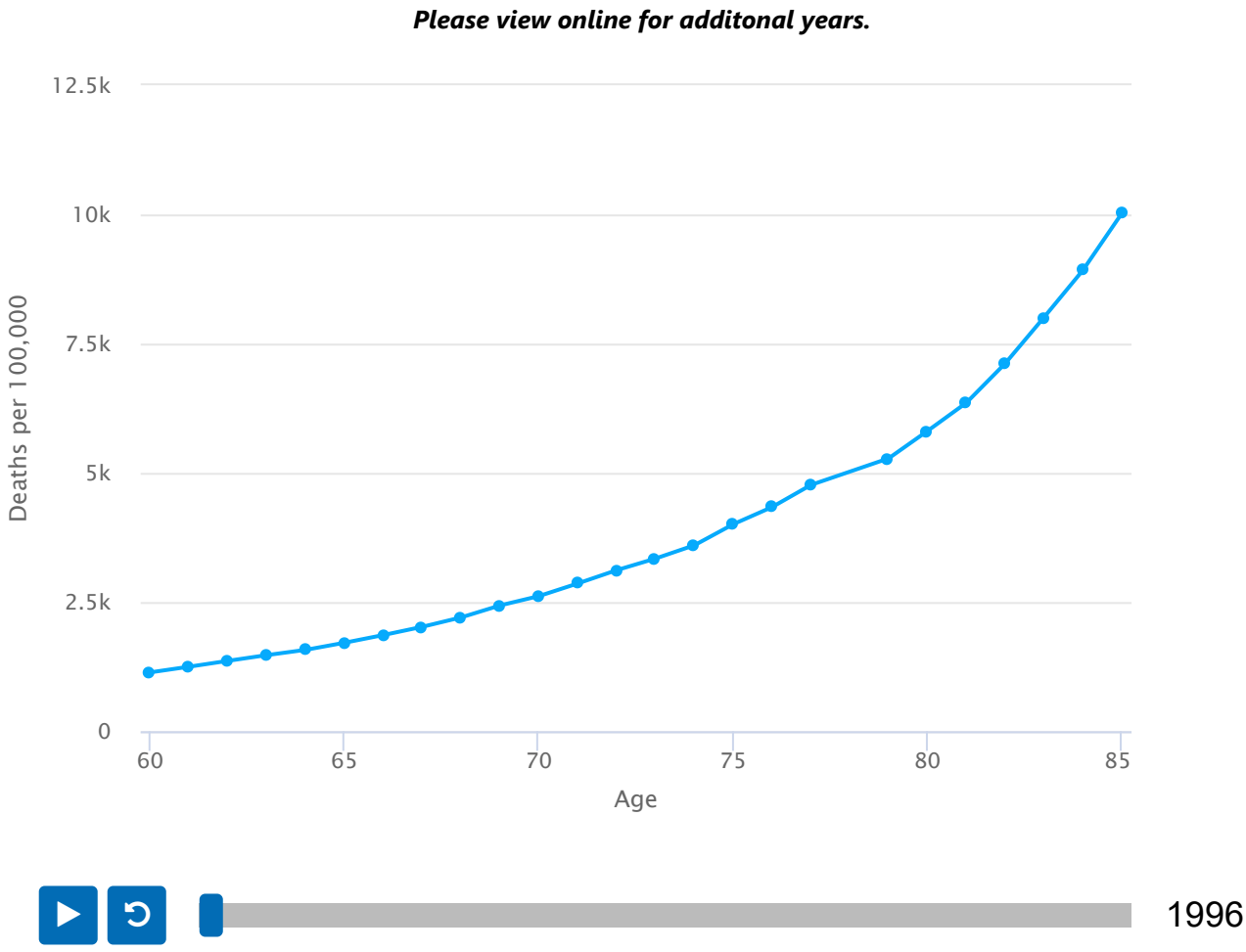

Mortality rates at each age over 60 have declined over the 20 year window. The 60+ age group saw a decline in its aggregate mortality rate of over 20 percent, from nearly 4,200 deaths per 100,000 population in 1996 to a rate of just 3,225 in 2017. As detailed in our previous work, the decline in mortality for those over 65 years of age accounts for more than two-thirds of the overall decline in mortality from 1990 to 2013.

Figure 2 shows overall mortality rates from 1996 to 2017. While aggregate mortality declined steadily over the period 1996-2010, it began rising after 2010, and by 2017 had surpassed 1996 levels. This increase can most likely be attributed to an aging population—while the percentage of the population age 65 and up remained constant between 12-13 percent from 1996 through 2010, this portion increased to 15.6 percent in 2017. The rise in aggregate mortality since 2010 is most likely a result of shifting demographics rather than reflective of an actual rise in mortality (as indicated by Figure 1, age-specific mortality rates were still in decline over the same period of observation).

Figure 2. Overall mortality, 1996-2017

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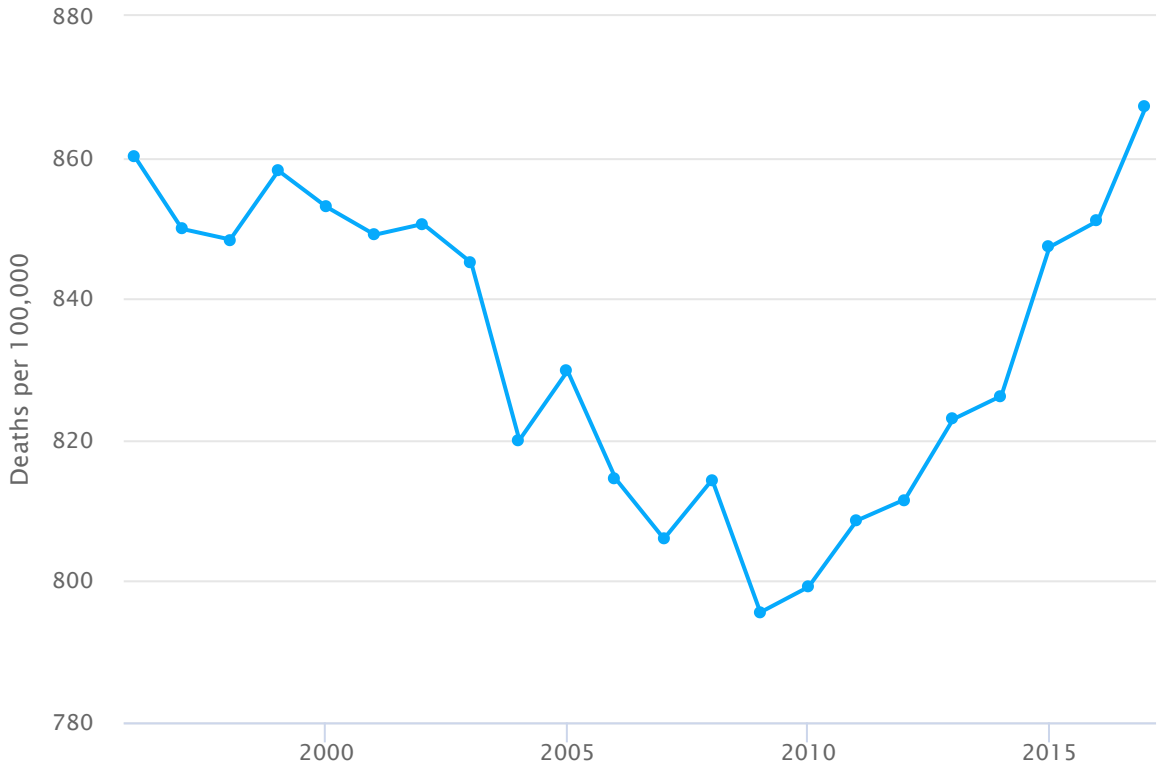

Trends in Mortality by Education Level

Educational attainment could affect life expectancy in a number of ways: each additional level of education is correlated with higher levels of income, health / "healthier lifestyles" (less likely to be smokers), better-paying / more stable jobs that provide health insurance, etc. There might also be an issue of selection, where those who engage in "riskier" behaviors or generally have poorer health end up relatively less educated.

Figure 3 shows mortality rates for ages 40-90 disaggregated into the following education levels: those with less than a high school degree, those who completed high school, those with some college (but less than a Bachelor's degree), and those with a Bachelor's degree or more.

Figure 3. Mortality rates by year and age, disaggregated by education level

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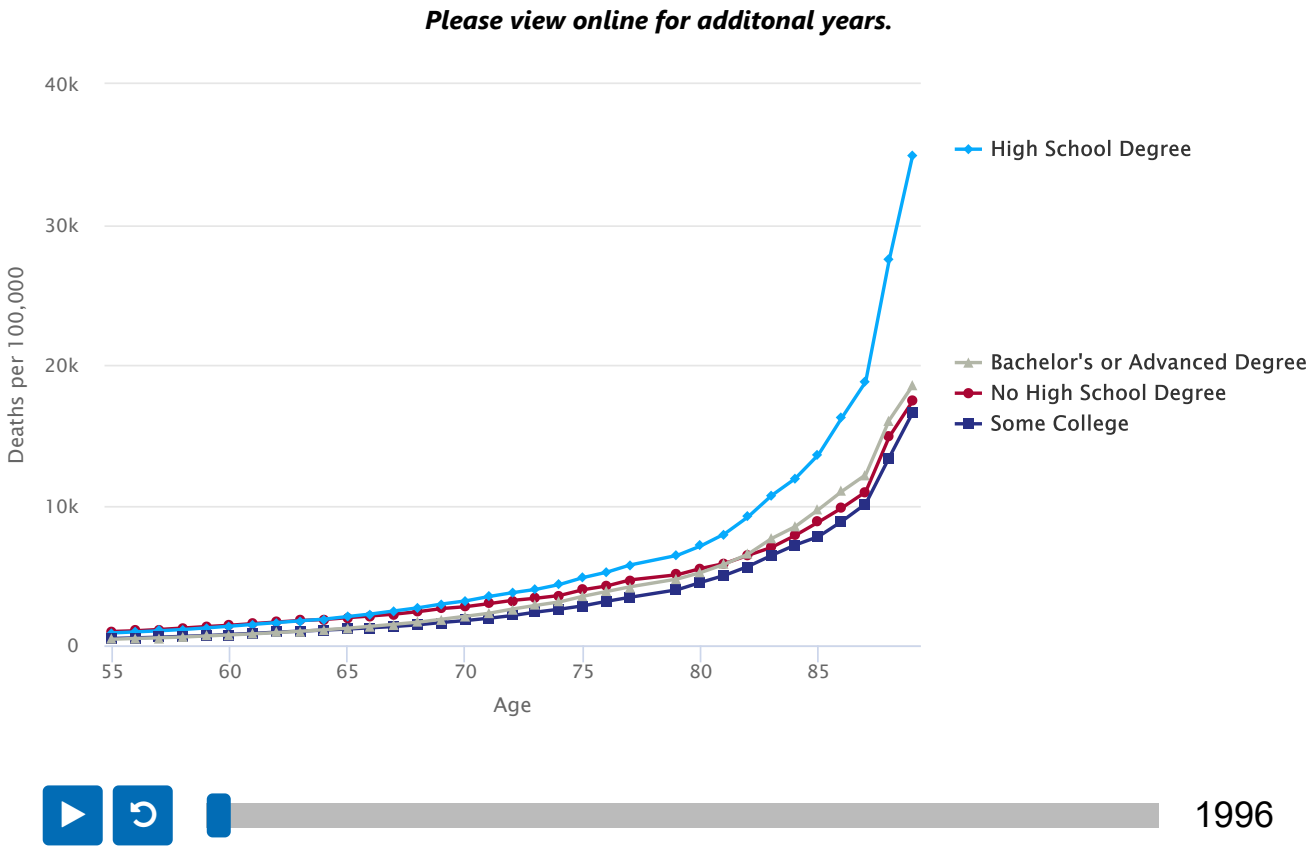

While overall mortality rates have declined over the window, this is not true for each educational group. For example, while those without a high school degree and those with at least a bachelor's degree have experienced declines in mortality, individuals with a high school degree or some college but no bachelor's degree face higher mortality rates in 2017 than they did in 1996. As documented in recent research, this effect is at least in part due to changes in educational attainment over time.

The change in the relative mortality rates by education level is also relevant: individuals beyond mid-life with a high school degree in 1996 died at a rate 40 percent higher than individuals at the same age who had not completed high school. By 2017, this gap had closed significantly, as adults over the age of 40 without a high school degree only faced a mortality rate 24 percent higher than those with a high school degree.

Mortality by Birth Cohort and Education Level

Figure 4 shows mortality trends by birth cohort, painting a clearer picture of the changing relationship between education and mortality over the years.

Figure 4. Mortality rates by birth cohort, disaggregated by education level

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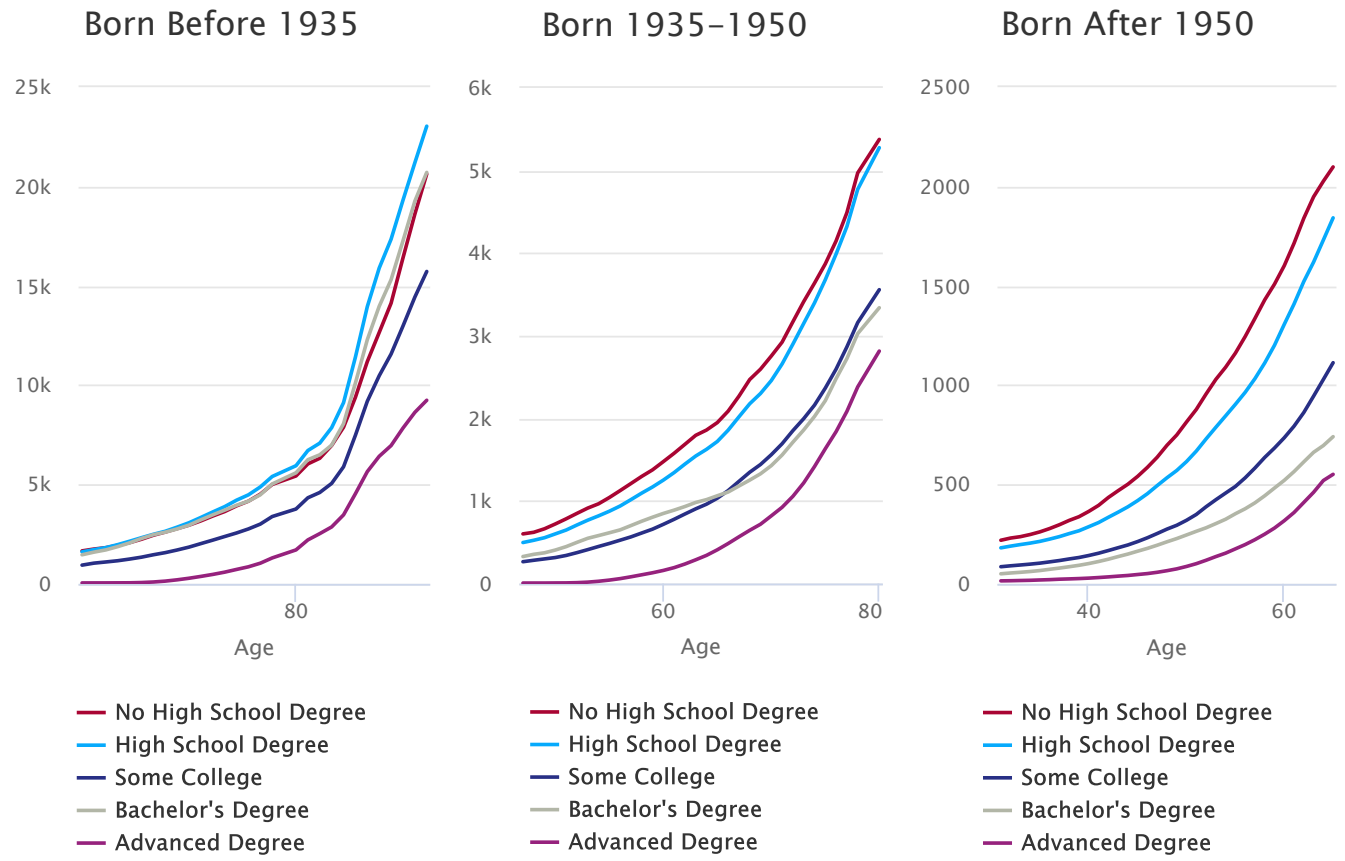

Note: The x- and y-axes are not standardized and skew according to the ages of each cohort over the window of observation (1996–2017).

For those born before 1935, it remains unclear whether each additional level of education has any meaningful association with life expectancy. While those with advanced degrees at each age die at lower rates than individuals with lower educational attainment, holding a high school diploma or even a college degree is actually associated with an aggregate mortality rate 3 percent *higher* than individuals who did not graduate from high school.

This relationship changes for those born between 1935 and 1950. For this cohort, individuals with some college but no BA and those with a college degree face similar mortality rates (970 and 1,000 deaths per 100,000, respectively) from ages 45 to 80 (where we observe them),[1] and completion of high school appears to be associated with a 13 percent reduction in mortality relative to those without a high school degree.

For those born after 1950, however, life expectancy gains among adults over 30 appear more clearly with each additional level of education. For this cohort, Figure 4 shows that those with advanced degrees have the lowest mortality rates at each observed age, those with BAs have the next-lowest mortality rates, and so on, as those without high school degrees face the highest mortality rates. Expressed as aggregate rates, completion of high school translates to an 18 percent reduction in mortality risk, attending some college reduces mortality by over 47 percent, *completion* of college is associated with death rates 30 percent lower, and

advanced degree holders in this cohort die at rates 53 percent lower than those with just a Bachelor's degree. Such clear "returns to education" were not seen for those born in cohorts before 1950.

This analysis was conducted by Victoria Osorio, under the direction of Richard Prisinzano. Prepared for the website by Mariko Paulson.

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1. Because our data only spans the window 1996-2017, each cohort is observed at a distinct age range. The cohort born before 1935 is only observed after age 61, those born from 1935-1950 are only observed from ages 46-80, and those born after 1950 cannot be observed beyond the age of 66. ↩