

## The Association Between Poverty and Mortality

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### Introduction

Poverty is often associated with poor nutrition, poor health, and high mortality. But how strong is that association? Is it changing, or is it the same today as it was in the past? Mortality rates in the world have decreased considerably over the past 50 to 100 years. The crude death rate in the world—that is, the number of deaths in a year relative to the number of people alive at the start of that year—has declined, from 15 per 1,000 in 1961 to 7.6 per 1,000 in 2013.

The world's population is increasing mostly in poor countries as a result of both reduced mortality and relatively high fertility.

This decline of mortality in the world was faster than it was in the United States. The crude death rate in the U.S. was 9.3 per 1,000 in 1961, and it was 8.2 per 1,000 in 2013. Thus, the world at large has caught up with and even slightly outperformed the U.S. in terms of decreased mortality. Figure 1 illustrates this, where the *y* axis is the world's crude death rate as a percentage of the U.S. crude death rate. For example, in 1961, the world rate was 161 percent of the U.S. rate, but in 2013 it had fallen to 92 percent of the U.S. rate. This decline in relative mortality has continued unabated.

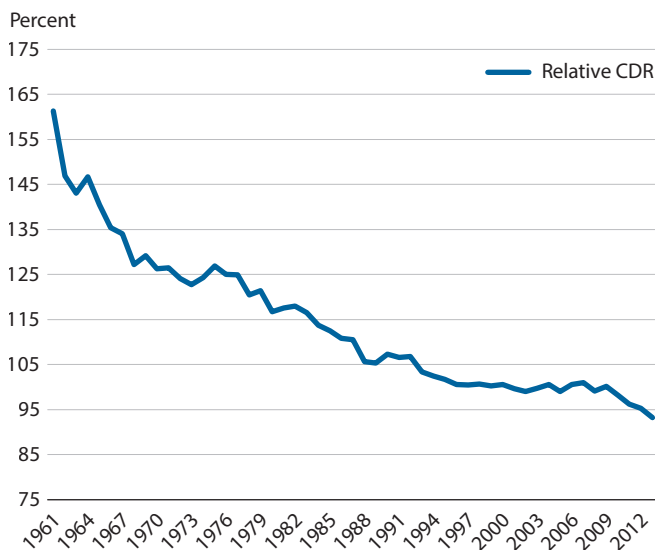
### Economic Growth

The lower line in Figure 2 represents real gross domestic product (GDP) per capita in the world relative to that in the U.S. The world at large remains consistently 80 percent poorer than the U.S. Thus, even though the world is not catching up to the U.S. in wealth, it is catching up in health. A St. Louis Fed FRED® blog and a St. Louis Fed working paper offer more detailed discussions of this observation.<sup>1</sup>

### Food Supply

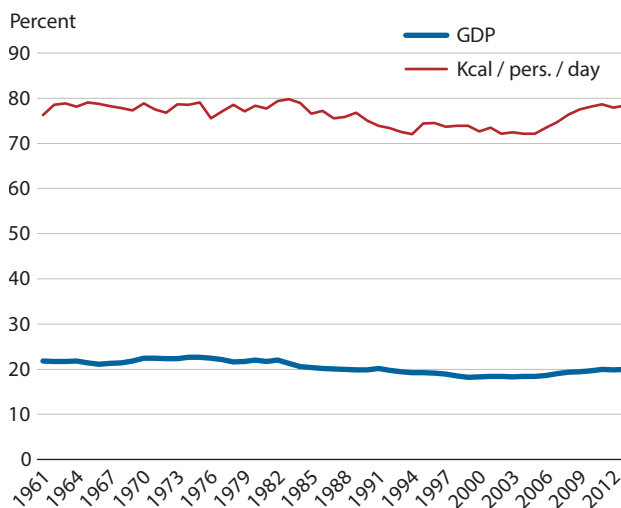
The upper line in Figure 2 represents food supply in the world relative to that in the U.S. Food supply is food remaining for human use after subtracting all non-food uses (e.g., animal feed, seed, waste, stockpiles, and exports), and it is measured in kilocalories per person, per day. The

Figure 1  
World Crude Death Rate as Percentage of U.S. Rate



SOURCE: World Bank.

Figure 2  
World Real GDP and Food Supply as Percentage of U.S. Rates



SOURCE: World Bank and Our World in Data; <https://ourworldindata.org/>.

average inhabitant of the world has access to 80 percent of the calories available to the average American. Just as for real GDP per capita, the world is neither catching up nor losing ground relative to the U.S. in calories per person.

Two remarks are worth making. First, relative food supply is not trending down. Even though the world's population more than doubled (from 3 billion to 7 billion) during this period, and the United States' share of the world's population declined (from 6 percent of the world population in 1961 to 4.4 percent in 2013), food supply has not gotten worse for the rest of the world. In 1968, Paul Ehrlich's book *The Population Bomb* famously predicted that a population increase would lead to widespread famine and increased mortality.<sup>2</sup> Figures 1 and 2 show that neither prediction was realized. This is not to say that hunger is no longer an issue. Besides the overall quantity of food available, there remains the question of food distribution.

Second, food supply is not trending up and catching up with the U.S., even while mortality in the world is declining at a faster rate than it is in the U.S. Thus, better health in the world relative to the U.S. is not due to a better availability of food. It's not clear whether it's a result of better distribution of food or other factors.

### Poverty and Mortality

What other factors could account for the remarkable decrease of mortality in the world, if it is not economic growth and better access to food? One possibility is the better ability of poor countries to fight infections at low cost. Economists Davis (1956) and Hejkal, Ravikumar, and Vandenbroucke (2021) give examples of how this can be achieved, including spraying DDT to fight malaria, boiling water to fight cholera, and wearing condoms to fight sexually transmitted diseases.<sup>3</sup> Some disease-prevention techniques made their way from rich to poor countries, and their success depended on how prevalent they became in these poor countries, given that costly improvements in health care infrastructure were not prevalent.

### Fertility

One consequence of the drop in relative mortality (Figure 1) is that the rate of natural increase (the difference between births and deaths) in poor countries is significantly higher than it is in rich countries. This is because, even

though mortality in poor countries is now similar to that in rich countries, births remain significantly higher: The world's population is increasing mostly in poor countries as a result of both reduced mortality and relatively high fertility.

The association between elevated fertility and poverty is well known; the association between poverty and low mortality, however, is a recent phenomenon. Thus, population growth in the world today is quite different from what it was 200 years ago, at the height of the industrial revolution when economic growth sparked the demographic transition in today's rich countries. At that time, both fertility and mortality decreased—the latter doing so faster than the former—implying an acceleration in population. But the growing population at that time was increasingly richer. Today, in poor countries, poverty and elevated fertility still go hand in hand and neither are declining in any significant way. But the death rates in these countries are declining, all of which means the world's population is growing and so is its share of poor. ■

### Notes

<sup>1</sup> See Vandenbroucke (2021) and Hejkal, Ravikumar, and Vandenbroucke (2021).

<sup>2</sup> See Ehrlich (1968).

<sup>3</sup> See Davis (1956) and Hejkal, Ravikumar, and Vandenbroucke (2021).

### References

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