

Mortality rates improve among kids and young adults in the US, especially in poor counties

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Recent studies of mortality trends paint a gloomy picture for many middle-aged and older Americans, but a new study focused on children reveals a more optimistic future.

Death rates have declined among children and young adults in the poorest counties in the United States, according to the study published in *Science*. These children may be more likely to be healthier as they grow older, regardless of the poverty level where they live, the findings suggest.

Better health care, food and nutrition programs and less pollution are all potential contributors, the researchers say. The results should be particularly encouraging to policymakers engaged in projects aimed to promote public health, like anti-tobacco initiatives or food and nutrition programs.

"There have been tremendous improvements in the health of poor American children over the past 20 years, and yet the dominant narrative has completely ignored these improvements," said co-lead author Janet Currie, the Henry Putnam Professor of Economics and Public Affairs at Princeton University's Woodrow Wilson School of Public and International Affairs. "This is the reason we got interested in this project. It's surprising how large the reductions in mortality are for younger people, how they extend through childhood into young

adulthood, and how little anyone has paid attention to this incredible health success story."

"Our big message here is that the health of the next generation in the poorest areas of the United States has improved tremendously, likely due to social policies that helped the most disadvantaged families," said co-lead author Hannes Schwandt, an assistant professor at the University of Zurich. "It's an important message, opposing the popular narrative of 'Everything is getting worse.' It tells people that their tax money is not wasted. Going forward, we need to find out which policies were most effective and how to scale them up in order to maximize their positive impact on the lives of the poor."

Recent mortality studies have shown worsening conditions, especially for middle-aged Americans. Anne Case and Angus Deaton from Princeton published a paper in November 2015 that uncovered a "quiet epidemic" of drugs, alcohol and suicides plaguing middle-aged white Americans. Most recently, a study led by Stanford University economist Raj Chetty has shown a huge mortality gap between the rich and poor in the United States.

These mortality studies use data based on older people, who likely have cumulative health issues—making it hard to pinpoint the exact cause of death. Child [death rates](#) provide a much more "real time" measure of population health, Currie and Schwandt said, as kids respond more quickly to their external environments. Therefore, evaluating these rates can provide a powerful indicator of conditions at the time.

Currie and Schwandt focused on [mortality rates](#) at particular age groups, from infancy to old age, using data from the U.S. Census Bureau's Vital Statistics. Sifting through county-level data for 1990, 2000 and 2010, they grouped 21 million deaths into 20 groups based on the county's poverty level. Each group represented 5 percent of the overall U.S.

population. Breaking it down in this way gave the researchers an ability to compare people living in the poorest and richest counties over time.

The researchers examined age-specific mortality rates, or the probability of death at a certain age, as well as [life expectancy](#) at birth—which measures a newborn's predicted lifespan based on the age-specific mortality rates in that year. Overall, they placed more emphasis on the mortality rates because mortality rates change over time, making measures of life expectancy problematic.

"When you calculate life expectancy for a newborn, you assume that when that person turns 20, 40 or 60, he or she will face the same mortality rates that people of those ages face today," said Currie, who is also director of Princeton's Center for Health and Wellbeing and chair of Princeton's Department of Economics. "But in an era when mortality is changing, this is not a very good assumption. If we want to know how healthy current children are going to be when they are 40, we are better off looking at those children instead of at a current 40-year-old."

In terms of life expectancy at birth, the research team found a difference of six years between males living in rich and poor counties. For females, the difference was only three years. Between 1990 and 2010, life expectancy at birth increased across the entire poverty spectrum. For males, this improvement in life expectancy was similar between poor and rich counties, while the increase has been slightly stronger in rich counties for females.

But these trends in overall life expectancy at birth mask important differences in the mortality trends at different ages, the researchers note.

When turning to mortality rates, the researchers found that death rates for children declined across all county groups. The improvement was much more pronounced in the poorest counties, strongly decreasing the

inequality in mortality at these younger ages. In the richest counties, deaths in the first three years of life decreased by 4.2 per 1,000 births between 1990 and 2010. In poor counties such deaths decreased by 8 per 1,000 births in the same time period.

"Mortality at young ages is a sensitive indicator of social conditions because infants and children respond more quickly to their environments," Schwandt said. "This can tell us a lot about health in a particular region."

"There is a great deal of research showing that healthier children grow up to be healthier adults," Currie said. "This is why there has been so much emphasis on programs for pregnant women and young children."

When looking at older children and young adults, the researchers found that both male and female mortality rates decreased up to age 20, especially in poor counties. The improvements were strongest for young children between 1990 and 2000. For older children, there were also large declines in deaths between 2000 and 2010.

When evaluating even older ages, the picture starts to shift. At middle ages, improvements in mortality rates stagnated, especially for women. After age 50, death rates declined for both men and women, but these improvements were strongest in the richest counties, implying increasing inequality at these older ages.

"It is important to emphasize that our results for middle and older ages are entirely consistent with those of previous studies such as Case and Deaton, or Chetty et al.," Currie said. "What is new here and more hopeful is the investigation of what is happening to death rates at younger ages."

"We often get the sense that people believe that great economic

inequality will inevitably lead to greater inequality in health outcomes," Currie said. "While there is a strong connection between these two types of inequality, one thing we hope that people will take away from this study is a sense that differences in mortality are not inevitable but are strongly mediated by policy. Health insurance, income support, anti-tobacco initiatives, and reductions in pollution really do make a noticeable difference at the population level, especially at younger ages. So we hope the results will encourage policymakers to take measures that promote public health."

Moreover, Currie and Schwandt point out that even the rising inequality in mortality observed at older ages could be part of a positive story, linked to reductions in smoking.

"Smoking rates have decreased dramatically over the past 50 years, but the decline occurred first among the rich and only later among the poor," Schwandt said. "In cohorts who entered old age during the past 20 years, the rich had largely stopped smoking while smoking rates remained high among the poor. Hence, the increasing inequality that we're currently seeing in old-age mortality may simply be the consequence of the great reduction in smoking that occurred with some lag among the poor."

While this analysis focuses on the United States, Currie and Schwandt said similar results may be found elsewhere.

"Our hypothesis is that countries that had more robust safety net programs to start with will have seen smaller declines in inequality among the young over the period covered in our study. We are currently investigating that hypothesis but have no hard evidence yet," she said.

The paper, "Inequality in Mortality Decreased Among the Young While Increasing for Older Adults, 1990-2010," was published in *Science*.

More information: Inequality in mortality decreased among the young while increasing for older adults, 1990–2010, *Science*, [DOI: 10.1126/science.aaf1437](https://doi.org/10.1126/science.aaf1437)

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