

Social factors better indicate early death risk than skin color, geography

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In a novel study of health disparities in the United States, Stanford University School of Medicine researchers have identified 22 socioeconomic and environmental variables that together are better indicators of early death than are race or geography. The findings upend long-held beliefs that where you live and the color of your skin are the best markers for how long you may live.

The innovative analysis shows that when factors related to local social conditions — including education, income and job — are controlled for, health differences based on being black or white, urban or rural, virtually disappear.

The study, which will be published online April 17 in *PLoS ONE*, examined data about the probability of survival to age 70 for every county of sufficient size in the nation, classified by sex and race. It then considered how a number of other factors affect those premature mortality results.

"Geographic and racial disparities," said first author Mark Cullen, MD, "are best understood as related to disparities in education, occupations and the like, which are strongly associated with outcomes in every county we studied, whether it was large, small, urban, rural, Southern or not."

Cullen, professor of medicine and chief of the Division of General Medical Disciplines, added: "While there is an enormous survival

difference between some counties and others, it is the social and environmental characteristics of a given county and its population that matter the most."

Large differences in [life expectancy](#) have been documented between different regions of the country. There is, for example, higher mortality in big urban areas and in the South. A 2011 study in Population Health Metrics showed that in five counties in Mississippi, men can expect to live to an average age of 66.5, which is several years less than the nationwide average.

Racial disparities in life expectancy are also well-established; adding to the evidence was a recent UCLA study in Health Services Research showing that "white males live about seven years longer on average than African-American men, and that white women live more than five years longer than their black counterparts."

For their work, Cullen and his colleagues wanted to present an alternative outcome to the commonly used life expectancy measurement and look instead at premature mortality because it more clearly focuses on factors in health during the prime of people's working lives. Using national data sources for the years 1999-2001, they examined the probability of survival to age 70 for each sex-race group by county. (They restricted the study to two races: black and white.)

Not surprisingly, the paper reports wide variation from county to county as well as "the chasmic difference between blacks and whites, true for both sexes." While confirming this racial divide, the researchers made the startling finding that the counties with the best survival numbers for blacks had rates that were only a little higher than those in the worst counties for whites. And they also found that 82 percent of white females born today could expect to live until age 70 as compared with 54 percent of black males. The latter comparison is one that hasn't been

shown before, Cullen said, and demonstrates how black men are dying so much more often in their 40s, 50s and 60s.

The researchers next examined the effect of 22 socioeconomic and environmental variables on the survival-to-age-70 figures in each race/sex group. They found that factors such as education, income, job and marital status account for most of the differences between the various groups.

Cullen explained, "Once certain factors — such as the fraction of adults in the county who finish high school, the fraction with managerial or professional jobs and the fraction of adults who live in two-parent households — are accounted for, even [geography](#), such as being in the South, is moot."

It's not where the county is located that is important. "It's the socioeconomic variables that turn out to be so predictive," Cullen said. "In a region where education status is incredibly low, jobs and family structure are terrible, and there is no wealth, people's health is not going to be good."

As a way of testing their findings, the team ran a separate analysis to see what would happen if the 22 variables were equal among black and whites — for example, if they had the same level of education and the same mix of managerial and professional jobs. "Amazingly, almost all of the projected mortality differences evaporate," said Cullen. "In this hypothetical experiment, the chances of survival until 70 would be almost identical for whites and blacks."

As for future research, Cullen said he and his colleagues want to better understand why the experience of black men in particular is so abysmal. Some of the policy changes that would benefit them, such as improvements in the education system and stronger support to keep

families together, are long-term and will take generations to fix, he said, so the team wants to identify things that could be changed in the short term.

Cullen said he is also interested in exploring the resilience of women and what it is about their biology and lifestyle that makes them so much more likely than men to live to age 70.

Provided by Stanford University Medical Center

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