

Growing shorter: Adult health habits influence how much we shrink with age

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Even if you didn't eat your veggies or drink your milk as a child, your height is still in your hands, reveal new findings by economists from the University of Southern California, Harvard University and Peking University.

Using unique data from a new massive [longitudinal survey](#) of 17,708 adults beginning at age 45, the researchers show for the first time that lifestyle choices we make in adulthood—and not just the hand we're dealt as children—influence how tall we stand as we age.

"Had we only examined the [correlations](#) between measured height and health, we would have missed this important insight," said John Strauss, professor of economics at USC, and an investigator on a study published in the April 2013 issue of the *American Economic Journal: Applied Economics*. "The evidence shows that it is not only early-life events that are associated with how we age, but [health decisions](#) in later life as well."

While prior work has looked for the connection between height and health—both in childhood and [adulthood](#)—the researchers are the first to examine height loss as we age. They show that regardless of your maximum height, the loss of height over time is also an important indicator for other [health issues](#) as we age.

For example, the research reveals an especially strong relationship between height loss and cognitive health. Those who had lost more height were also much more likely to perform poorly on standard tests of

[cognitive health](#) such as short-term memory, ability to perform basic arithmetic and awareness of the date.

Among the [socioeconomic factors](#) that correlate to height loss, urban dwellers had much less height loss than those in [rural areas](#), the researchers found, in a country where there has been significant migration to urban areas in the last few decades. In addition, having completed primary school, rather than being illiterate, is associated with 0.9 cm less height shrinkage in men—a large difference when considering that overall average height loss for men is 3.3 cm. Completing high school meant an additional 1 cm less in shrinkage.

For women, having completed primary school was the difference in 0.6 cm of shrinkage, compared to average overall height decrease of 3.8 cm.

"Height has been recognized as an acceptable proxy for childhood health conditions, but there are complications there," says USC economist Geert Ridder, a co-investigator on the study. "Some of adult health might be determined by childhood circumstances, but people shrink differentially, and that shrinkage is also a measure of adult health conditions."

All humans go through physical changes with age, including an increase in body fat and decrease in bone mass. But a decrease in [height](#) can be further exacerbated by certain kinds of arthritis, inflammation of spine joints or osteoporosis, which other studies have shown are associated with such [lifestyle choices](#) as diet, exercise and smoking.

The researchers used new data from the China Health and Retirement Longitudinal Study, a groundbreaking sampling project led by USC economist Strauss, Yaohui Zhao of the China Center for Economic Research (CCER) at Peking University and Gonghuan Yang of the Chinese Academy of Medical Sciences and Peking Union Medical

College, that covers 150 counties randomly chosen throughout China.

The baseline for the survey was collected from June 2011 to March 2012 and includes both subjective self-reported responses to survey questions as well as objective physical measurements such as blood tests. These physical measurements and personal interviews will be followed-up with the same 17,708 people every two years—capturing, for the first time, critical data about human aging in the most populous and most rapidly aging country in the world.

For example, recent changes in social security policy and health insurance in China provide a valuable opportunity for researchers to study how health care actually affects health and aging in a large population, with insights for other developing health care systems worldwide, as well as an opportunity to identify possible under-diagnosis of various chronic conditions.

The researchers will also be able to examine the role specific historical events in China may have had on long-term health, including whether there are [health](#) and aging differences among those who were "sent-down" during the Cultural Revolution.

Provided by University of Southern California

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