

# Do heat waves shave dollars off a baby's future earnings?

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(HealthDay)—Being pregnant during a heat wave may be more than

uncomfortable: New research suggests it can shave dollars off your child's potential income.

The study of over 12 million Americans found that the more often fetuses or infants were exposed to days topping 90 degrees, the less they earned as adults.

Experts said the findings offer a new factor to consider in debates over [climate change](#): More sweltering days could mean less money in people's pockets.

Past research has hinted that extreme [heat](#) during pregnancy, or the first year of life, can have harmful effects—including higher risks of [low birth weight](#) and infant mortality.

Now, the new study suggests there could be lasting effects. However, the researchers did not prove that heat waves cause someone's earning potential to plummet.

Still, that's "completely new," said Alan Barreca, an associate professor at the University of California, Los Angeles, who was not involved with the study.

"We know temperature affects health in many ways," he said. "But we haven't had an understanding of whether the effects of temperature in early life can persist into adulthood."

Barreca noted that the effects were seen at pretty extreme temperatures for the United States. When the [average temperature](#) for a given day is 90 degrees, that means the high for the day was probably around 100 degrees.

Right now, Barreca said, those sweltering conditions are infrequent in

the United States.

"The average American sees one day like that per year," he said.

But with climate change, he stressed, such days will become increasingly common.

Plus, in many parts of the world, people are already enduring searing heat—without the comforts of air-conditioning, said study co-author Maya Rossin-Slater.

Why would there be a connection between early-life heat and adulthood [income](#)?

It's not clear, said Rossin-Slater, an assistant professor at Stanford University School of Medicine. But she speculated on some possible explanations.

Fetuses and infants are more sensitive to extreme temperatures because their nervous systems and temperature-regulating systems are not fully developed, she said. So if heat waves affect their brain development, for example, that could have wide-ranging implications later in life—including job prospects.

Barreca agreed that the reasons for the findings are uncertain. But he said the study makes a convincing case that heat waves trigger some chain of events that ultimately affect adults' income.

"It's clear that temperature is the first domino," he said, "and income is the third. It's not clear what that second domino is."

The findings were based on census data for over 12 million Americans born between 1969 and 1977. That data contained information on each

person's date and place of birth, race, sex and earnings history.

The researchers used daily weather recordings to see how often people were exposed to steamy conditions in the womb or during the first year of life.

It turned out there was a correlation between early-life heat waves and people's incomes at age 30. For each day the average [temperature](#) stood at 90 degrees or more, annual income dipped by an average of \$30, Rossin-Slater said.

For any one person, she noted, that earnings decline is not a big deal. But across a large population, those lost dollars add up.

The findings also do not rule out the possibility that there could be more people with lower incomes living in the hottest regions of the country.

But, Rossin-Slater said, her team controlled for that by comparing two people of the same sex and race, born in the same county, on the same day—but in different years.

If person A was exposed to a heat wave in [early life](#), but person B wasn't, person A tended to earn less.

There was, however, a bright spot in the findings: The phenomenon did not exist in counties with high rates of household air-conditioning.

"That suggests air-conditioning is one way to potentially mitigate this," Rossin-Slater said.

If you're pregnant during a [heat wave](#), Barreca said, it's best to stay inside with the AC working.

But he cautioned against the notion that air-conditioning is a magic bullet. "People with lower incomes, who still lack access to it, will be the most vulnerable," he said.

The findings were published Dec. 4 in the *Proceedings of the National Academy of Sciences*.

**More information:** Adam Isen et al. Relationship between season of birth, temperature exposure, and later life wellbeing, *Proceedings of the National Academy of Sciences* (2017). [DOI: 10.1073/pnas.1702436114](https://doi.org/10.1073/pnas.1702436114)

The U.S. Centers for Disease Control and Prevention has more on [extreme heat](#).

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