

Lowered birth rates one reason why women outlive men

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Using unique demographic records on 140,600 reproducing individuals from the Utah Population Database, a research team led from Uppsala University has come to the conclusion that lowered birth rates are one reason why women outlive men in today's societies. The study is published in *Scientific Reports*.

The causes underpinning [sex differences in lifespan](#) are hotly debated. While [women](#) commonly outlive men, this is generally less pronounced in societies before the demographic transition to low mortality and fertility rates.

Using unique longitudinal demographic records on 140,600 reproducing individuals from the Utah Population Database, USA, the research team shows that men who were born in the early to mid-1800s lived on average two years longer than women. This reversed over time and women born in the early 1900s outlived men by four years.

During this period, fertility in the population decreased from an average of 8.5 in the early 1800s to an average of 4.2 children per woman in the early 1900s. Female lifespan increased, while

male lifespan remained largely stable, supporting the theory that differential costs of reproduction in the two sexes result in the shifting patterns of sex differences in lifespan across human populations.

The data shows that only women paid a cost of reproduction in terms of shortened remaining lifespan after the end of the reproductive period. Women who gave birth to 15 children or more lived on average 6 years shorter than women who only had one child. There was no relationship between number of children fathered and lifespan in men.

Life-history theory states that each individual has limited resources that can be invested into reproduction on the one hand and repair of the body on the other hand. This suggests that reduced reproduction should benefit female lifespan when females pay higher costs of reproduction than males.

'This illustrates the importance of considering biological factors when elucidating the causes of shifting mortality patterns in [human populations](#). Our results have implications for demographic forecasts, because fertility patterns and expected lifespans are continuously changing throughout the world. For example, the results suggest that as more and more countries throughout the world go through the [demographic transition](#), the overall sex differences in lifespan may increase,' says Elisabeth Bolund, postdoctoral research fellow at Department of Ecology and Genetics, Uppsala University, who headed the study.

More information: Elisabeth Bolund et al. Reduced costs of reproduction in females mediate a shift from a male-biased to a female-biased lifespan in humans, *Scientific Reports* (2016). [DOI: 10.1038/srep24672](https://doi.org/10.1038/srep24672)

Provided by Uppsala University

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