

Early-Life Predictors of Exceptional Longevity in the United States: Why Centenarians are Different From Their Shorter-lived Siblings

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Abstract

Knowledge of strong predictors of mortality and longevity is very important for actuarial practice. This study presents the first results of a large project on exceptional longevity in the United States, which investigates the biological and social correlates of why some people survive to extreme old age (older than 100 years). These are important issues not only for human-mortality and population-aging demographic forecasts and the policy implications on health care and pension expenditures, but also for improving our understanding of the fundamental mechanisms of human aging and longevity. This study explores the effects of parental age at a person's birth and the month of birth on chances of survival to age 100. We have developed and analyzed a computerized database of 1,711 validated centenarians born in the United States between 1880 and 1895, as well as their shorter-lived siblings. Comparison was conducted using within-family analysis via conditional logistic regression, which allows researchers to control for unobserved shared childhood or adulthood environments and common genetic background. We found significant beneficial effects of a young maternal age at a person's birth on survival to age 100 with particularly strong positive influence at a maternal age of 20 of 24. The effect of a young mother is particularly prominent in smaller families, pertinent today because of the smaller average family size in contemporary population. We also found the season of birth has significant long-lasting effect on survival to age 100, and individuals born in September to November have the highest chance of becoming centenarians. These results support the idea of early-life programming of human aging and longevity. The study was supported by National Institute on Aging Grant AG028620.

Keywords: Human Longevity, Maternal Age, Family Histories.