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Volumes

Articles

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A system of model fertility schedules with graphically intuitive parameters

Carl Schmertmann

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- FILE II CT and QS fits to international schedules
- FILE III CT and QS fits to international schedules
- FILE IV QS fits to Swedish time series

Abstract
I propose and examine a new family of models for age-specific fertility schedules, in which three index ages determine the schedule's shape. The new system is based on constrained quadratic splines. It has easily interpretable parameters, is flexible enough to fit a variety of "noiseless" schedules well, and is inflexible enough to avoid implausible estimates from noisy data. Across a set of over two hundred contemporary ASFR schedules, the new model fits a majority better, and in some cases much better, than the Coale-Trussell model. When fit to a recent Swedish time series, model parameters exhibit simple, regular changes over time, suggesting utility in forecasting applications. In simulated small-sample data the new model produces plausible ASFR estimates, with errors similar to Coale-Trussell.

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Keywords
age-specific fertility, age-specific rates, Coale-Trussell, estimation, fertility, models, splines

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