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Uncertainty in mortality forecasting an extension to the classical Lee-Carter approach.

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Summary: Traditionally, actuaries have modeled mortality improvement using deterministic reduction factors, with little consideration of the associated uncertainty. As mortality improvement has become an increasingly significant source of financial risk, it has become important to measure the uncertainty in the forecasts. Probabilistic confidence intervals provided by the widely accepted Lee-Carter model are known to be excessively narrow, due primarily to the rigid structure of the model. In this paper, we relax the model structure by considering individual differences (heterogeneity) in each age-period cell. The proposed extension not only provides a better goodness-of-fit based on standard model selection criteria, but also ensures more conservative interval forecasts of central death rates and hence can better reflect the uncertainty entailed. We illustrate the results using US and Canadian mortality data.

MSC:

91B30 Risk theory, insurance (MSC2010)

62P05 Applications of statistics to actuarial sciences and financial mathematics

91D20 Mathematical geography and demography

Cited in **34** Documents

Full Text: [DOI](#)

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