Mortality Rates Bayesian Graduation

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Abstract

This paper presents Bayesian graduation models of mortality rates, using Markov chain Monte Carlo - MCMC techniques. Annual death probabilities graduated are estimated throughout the predictive distribution of the death number, which is assumed to follow Poisson process, considering that all individuals, in the same age class, die independently and with the same probability. The Bayesian mortality tables are accomplished throughout dynamic Bayesian models. The best mortality table is then compared with known mortality tables. Reserve calculations are exemplified, via MCMC, making use of value at risk concept, with the purpose to demonstrate how important is to use the "true" observed mortality and population to the risk to determine the survival coverage rate. **Keywords:** Bayesian graduation; Dynamic models; Predictive distribution; MCMC; Biometric mortality table; Mathematical provision; Value at risk.

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