Copula-based graduation and simulation of mortality tables

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Graduation of mortality tables is intended to estimate probabilities of death by means of an age-dependent function based on sample information of observed death rates. In actuarial practice this problem has been solved traditionally using deterministic smoothing techniques without a statistical model to provide, in addition to a model for the trend, a quantification of the extent of variability associated with the data. But from a modern risk management point of view, it is necessary a statistical methodology that models simultaneously both the problem of graduation and that of over/under estimation. A copula-based alternative will be presented for such purpose, which in addition may be used for simulation of scenarios for mortality risk assessment, with an application to real mortality data from Mexican insurance companies.

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