A Family of Fractional Age Assumptions

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Abstract

This talk will introduce a family of fractional age assumptions and discuss its usefulness in estimating mortality rates and calculating actuarial present values. Members of the family include the familiar uniform distribution of deaths, constant force, and Balducci assumptions.

In estimating mortality rates when times of death are known, this information is used in determining an appropriate member of the family, eliminating the need for an arbitrary fractional age assumption. Use of this family also allows a different perspective in the graduation of mortality rates. One can focus on smoothing the force of mortality while staying within the family in each age interval.

In using a published life table for the purpose of actuarial calculations, a different member of the family is used at each age, producing a more intuitively reasonable force of mortality function, and more accurate actuarial present values.