

Modeling of Life Table Data Sets by Applying the First Exit Time Density Theory

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Abstract. The development and application of dynamic models based on first-passage-time theory for a stochastic process expressing the human life table data is presented. An historical review is given regarding the analytic derivation of the probability density functions for the first exit time. The tangent approximation to one-sided Brownian exit densities is used. Special forms of the probability density functions are applied to mortality data. The stochastic simulation is using special forms of the Health State Functions proposed.

Keywords: First exit time, Hitting time, Stochastic modeling, First-passage-time density, Health state function, Life table data, Stochastic simulation, The tangent approximation, One-sided Brownian exit densities.

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