

Age-Sex Specific Stochastic Population Modeling with Uncertainty using Functional data of the Population of Rwanda

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Abstract

Age-sex specific population stochastic population model are derived through the population stochastic processes with the probabilistic analysis of Birth-Death-Emigration-Immigration (BDEI) processes. The work presents the development of deterministic and stochastic models for the BDEI processes to obtain a generalized stochastic population model. The development of generalized BDEI model will then be applied for specific age and sex and will entail details of the uncertainty or variability within the populations subject to catastrophes specifically the effect of 1994 genocide in Rwanda and investigate the level of perturbation on the BDEI rates. The developed models will be demonstrated using Rwanda population data since 1978 with uncertainty.
