

A Simulation Study of the Role of Cohort Forces in Mortality Patterns

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This study uses the micro-simulation method to investigate the role of cohort forces in age-dependent mortality pattern. We test the micro mechanisms for cohort evolution and mortality selection, and how these two biological and demographic forces may interact with epidemiologic transition to shape the cohort age-dependence of mortality pattern in both early- and later-transition countries. We show that cohort evolution is due to the declining rate of mortality acceleration at the individual level, which is associated with lower initial mortality rates but not smaller variance of frailty distribution in later birth cohorts. The steeper slope of mortality acceleration at the population level among later birth cohorts is due to mortality selection mechanism associated with smaller variance of frailty distribution but not lower initial mortality rates. These two forces jointly shape the non-crossover cohort age-dependence of mortality pattern regardless of the differential mechanisms of epidemiologic transition in early- and later-transition countries.

Keywords: cohort evolution; mortality selection; epidemiologic transition; cohort age-dependence of mortality pattern; micro-simulation