Cause-of-Death Mortality: What Can Be Learned From Population Dynamics?

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Abstract

This paper analyzes cause-of-death mortality changes and its impacts on the whole population evolution. The study combines cause-of-death analysis and population dynamics techniques. Our aim is to measure the impact of cause-of-death reduction on the whole population age structure. Whereas previous studies on causes of death focused on mortality indicators such as survival curves or life expectancy, our approach provides additional information by including birth patterns. As an important conclusion, our numerical results based on French data show that populations with identical life expectancies can present important differences in their age pyramid structure resulting from different cause-specific mortality reductions. To go further, we compare our first results with scenarios including migration flows and several fertility assumptions.

Keywords: Cause-of-Death Mortality, Population Dynamics, Birth and Death Process, Individual-Based Model, Age Pyramid, Age Dependency Ratio, Macroscopic Behavior