December 15, 2018

Joshua R. Goldstein
Editor,
Formal Relationships (Demographic Research)

Dear Editor,

We are pleased to submit our paper entitled "**The threshold age of Keyfitz' entropy**" for consideration as a research article in the Formal Relationships (Demographic Research).

Keyfitz (1977) first proposed H as a life table function that measures the change in life expectancy at birth consequent on a proportional change in age-specific rates. Since then, several authors have been interested in this measure and its use (e.g. Demetrius 1979; Mitra 1978; Goldman and Lord 1986; Vaupel 1986). Keyfitz' entropy has become an appropriate indicator of lifespan variation that permits comparison of the shape of ageing across different species and over time. In this article, we uncover the mathematical regularities behind the changes over time in Keyfitz' entropy. In particular, this study contributes to the existing literature by showing that (1) Keyfitz' entropy can be decomposed as a weighted average of rates of mortality improvements and (2) that there exists a threshold age that separates positive and negative contributions of reductions in mortality over time.

We hope you see our article fitting into Demographic Research's recent history on publishing high quality studies on mathematical demography.

Sincerely,

José Manuel Aburto
Jesús Alvarez-Martínez
Francisco Villavicencio
James W. Vaupel