\section\*{Abstract}

Lifespan variation has been increasingly gaining attention as a measure of population health and mortality. Many studies have analysed periods of steady mortality decline highlighting a strong correlation between lifespan variation and life expectancy. More recently, studies have found that his association weakens, and even reverses, when mortality does not improve equally over age. However, to date no study has comprehensively explore the behaviour of lifespan variation in times of significant mortality increase. Using data from five mortality crises, We found that during these events relative lifespan variation increases, while absolute variation declines. Using decomposition by age, we show that absolute and relative indicators of lifespan variation diverge because the different weight of older age mortality change. During the crises periods, female lifespan variation is less affected than the males', a discrepancy which is mostly explained by the higher impact of infant and child mortality among males. This paper offers an insight into the effect of mortality crises, showing that inequalities might be accentuated by generalised increases of mortality and underscoring the importance of young ages in determining sex differences. Moreover, by uncovering opposing trends between lifespan variation indicators, it contributes to the discussion about the implementation of this measure in public policy.

\section{Contributions}

JMA and SV conceived the study. SV and JMA designed and carried out the analyses and coding. IP contributed with comments on the implementation of the analysis.. SV wrote the paper with helpful comments and critical revisions from JMA, IP and VZ.

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