\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 inverse relationship between lifespan variation and life expectancy. More recently, research has found that this association weakens, and even reverses, when mortality does not improve equally over age. However, to date no study has comprehensively explored the behaviour of lifespan variation in times of significant mortality increase. Analysing three historical epidemics and two famines in Europe from the XVIII to the XX century, we find that during these events, relative lifespan variation increases, while absolute variation declines. Using decomposition techniques, we show that absolute and relative indicators diverge because mortality at older ages drives change in the former, but not in the latter. Moreover, female lifespan variation is less affected by the crises than the males', a discrepancy mostly explained by the higher impact of infant and child mortality among males. This paper offers insights into the effect of mortality crises, showing strong, but nuanced and short-lived consequences on lifespan variation Contrary to what is often asserted, we show that the choice of lifespan variation indicator is not always inconsequential, namely in times of mortality crisis.

\section{Contributions}

JMA and SV conceived designed the study and carried out the analyses and coding. IP contributed with comments on the implementation of the analysis and VZ provided access to Meslé and Vallin’s data. SV wrote the paper with helpful comments and critical revisions from JMA, IP and VZ.

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