Parental Loss: A Global Perspective

Aim

Study parental deaths for children aged less than 18 years old over the period 1950-2021, from a worldwide perspective. We could try to assess how the number and timing of parent deaths of an average child has changed over this period. Focusing on the years 1990-2019, we could estimate the number of children losing parents due to the different causes, the cause-specific bereavement probabilities, and their temporal variation in level.
Instead of focusing on broad causes, an alternative could be to focus on a set of specific causes of death (i.e. HIV, injuries, diabetes, neonatal disorders, specific neoplasms, ...).
The analyses could be performed at a country level but it might also be interesting to group them into regions for some results (see Alburez-Gutierrez, Kolk, and Zagheni (2021) for example).

Method

Formal demography approach

The kinship matrix model developed by Caswell (Caswell 2019) combining several extensions to use time-varying and sex-differentiated (only for mortality) vital rates while accounting for death from multiple causes (Caswell 2022; Caswell, Margolis, and Verdery 2023; Caswell and Song 2021). Uncertainty in dynamics could be incorporated in a Monte-Carlo simulation set-up.

Micro-simulation

(Spoiler alert: no past experience with SOCSIM)

SOCSIM (Hammel et al. 1976) setup without marriage rates: births are based on female fertility (similarly as in Alburez-Gutierrez, Mason, and Zagheni 2021). Especially interesting when looking at parental loss from all causes of death over the period 1950-2021 to complement/compare results from the kinship matrix model. Not sure SOCSIM can handle multiple causes of death, can it?

Inputs for methods

UN WPP 2022 revision

Country-level time series over 1950-2021

- Population counts by 1-year age groups and sex
- Fertility rates by 1-year age groups of mother
- Births counts
- Probability of dying/surviving by 1-year age groups and sex
- Life table l_x by 1-year age groups both sex combined

Global Burden of Disease

Country-level time series over 1990-2019

- Death counts by level 2/3 causes, 5-year age groups and sex
- Population counts by 1-year age groups and sex

References

Alburez-Gutierrez, D., Kolk, M., and Zagheni, E. (2021). Women's experience of child death over the life course: A global demographic perspective. *Demography* 58(5):1715–1735.

Alburez-Gutierrez, D., Mason, C., and Zagheni, E. (2021). The 'sandwich generation' revisited: Global demographic drivers of care time demands. *Population and Development Review* 47(4):997–1023.

Caswell, H. (2019). The formal demography of kinship. *Demographic Research* 41:679–712.

Caswell, H. (2022). The formal demography of kinship IV. *Demographic Research* 47:359–396.

Caswell, H., Margolis, R., and Verdery, A.M. (2023). The formal demography of kinship v: Kin loss, bereavement, and causes of death. *SocArXiv*. doi:10.31235/osf.io/mk64p.

Caswell, H. and Song, X. (2021). The formal demography of kinship III. *Demographic Research* 45:517–546.

Hammel, E., Hutchinson, D., Wachter, K., Lundy, R., and Deutel, R. (1976). The SOCSIM demographic-sociological microsimulation program: Operating manual. *University of California, Berkeley. Research Series*(27).