Is Health Deterioration Unidirectional? Evidence from Monastic Populations in Austria and Germany (2012–2022)

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Introduction, theoretical background, and motivation for this study

A common simplification in demographic health research is the assumption that health deteriorates progressively and uniformly with age. In many approaches, health is modelled as a linear function of age, implicitly assuming a constant rate of decline. The assumption of linear health deterioration underpins much of demographic modelling, particularly in analyses of mortality, morbidity, and healthy life expectancy (Payne, 2022). Yet, longitudinal evidence suggests that health development may be characterised by non-linear trajectories, including periods of stability, recovery, and acceleration of decline. Transitions between health states are dynamic: individuals may recover from temporary limitations even in older age (Crimmins and Saito, 1993; Shen et al., 2023).

Subjective health captures how individuals integrate symptoms, expectations, and comparisons with peers. Survey questions usually collect information about subjective health status at specific points in time. However, the trajectory shape between punctual information remains unclear, as intermediate changes are rarely captured in the available response.

In this study, we analyse individuals' perceptions of age-related health deterioration over a broad time span using a unique source of data. We examine whether these perceptions are more often represented by a unidirectional rather than a non-monotonic trend. Understanding how people evaluate their health is critical for interpreting self-rated health responses and for assessing behavioural implications, such as preventive health investments, based on perceived health developments.

Data and Methods

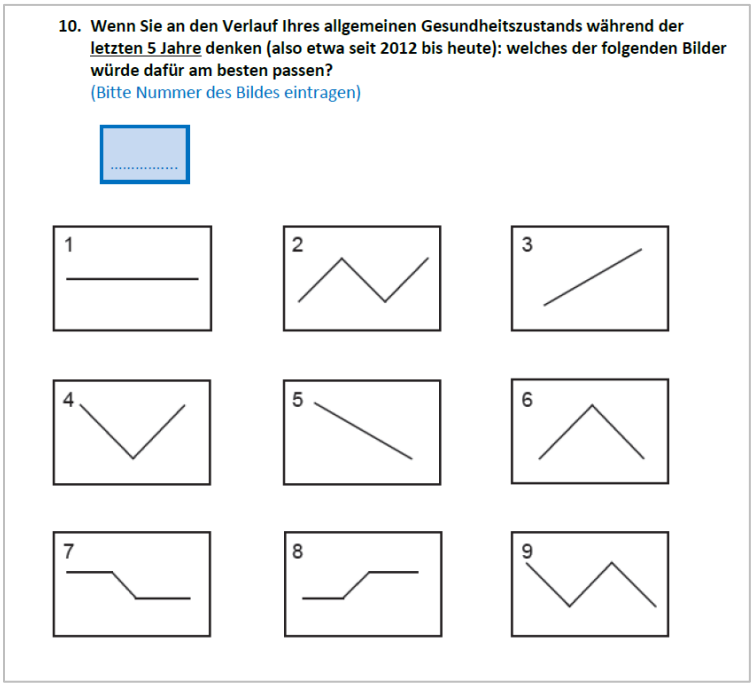
We use data from the Cloister Study, a longitudinal survey of monastic communities in Austria and Germany (Luy, 2021). We include data from the first, third and fifth waves, conducted in 2012, 2017 and 2022. Approximately 1,200 monastic individuals aged 50 and older from Catholic communities participated in the first wave. Of those, 714 were reinterviewed in 2017 and 504 in 2022, with non-interviews due to attrition, including death. Unlike other longitudinal surveys, the Cloister Study tracks both the survival status and community membership of all participants. The survey provides rich information on socio-demographic characteristics (age, gender, education, years in religious order, activity), health indicators (self-reported chronic

conditions, limitations in activities of daily living, pain, self-rated health, stress, mental health etc.), psychological traits, spirituality, lifestyle, well-being, family background.

Monastic populations constitute an ideal case for research on demographic ageing and health because of their stable and homogeneous living conditions, characterised by a shared diet, a highly structured and largely stress-free daily routine, moderate activities and consistent social support (Luy, 2021). This context minimises confounding factors such as socio-economic heterogeneity, occupational exposures, and migration, effectively creating a quasi-experimental population for studying ageing processes.

In 2017 and 2022, the survey included one question that asked respondents to illustrate the perceived development of their health over the previous five years by selecting one of nine stylised trajectory diagrams depicting change over time. Answers to the question "When you think about the course of your general health over the past five years (that is, from around … until today), which of the following pictures would best fit?" are chosen among nine different trajectories illustrated as path shapes. Of the nine trajectories, three represent a consistently linear trend (stable, consistently increasing and consistently decreasing self-perceived health). The other six exemplify unidirectional as well as non-monotonic trends: a combination of stable and decreasing or increasing health, V- or reversed-V-shape, a series of increases and decreases, as shown in Figure 1 for the 2017 question. The same question was used in 2022.

Figure 1. Response options for Question 10 in the 2017 Cloister Study wave, showing different patterns of perceived health change over the last five years.

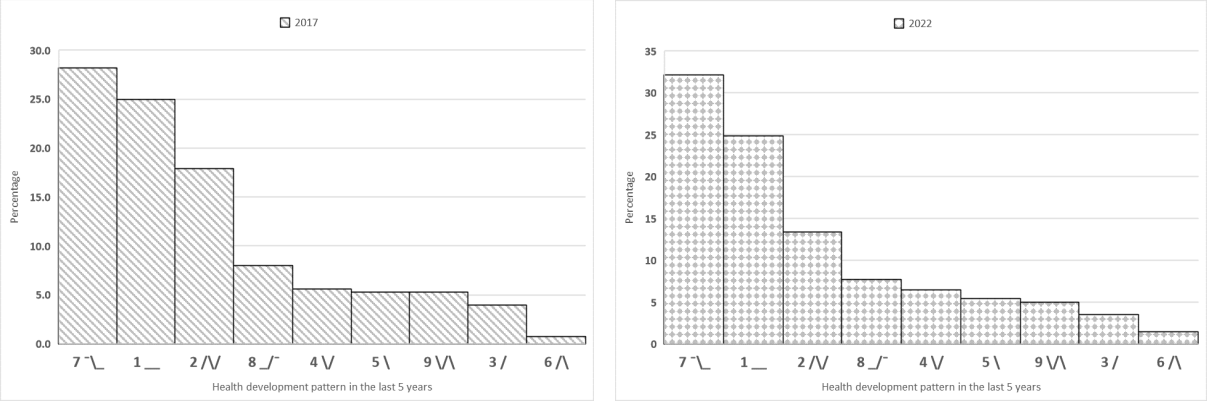


Building on this unique type of information, we can analyse:

1. to what extent does perceived health deterioration with age follow a unidirectional trajectory, showing consistent change in one direction, only occasionally interrupted by brief stable phases, or is it instead non-monotonic
2. if the pattern differs by age and other characteristics of the respondents
3. whether perceived past trends in health change correspond to the information reported in each survey wave.

Figure 2 presents preliminary and descriptive results for the first point above. The frequency order of responses in 2017 and 2022 is largely consistent, with the two most common choices representing unidirectional health trajectories. Interestingly, the third most frequent response depicts a non-monotonic pattern, suggesting that such trajectories merit further attention. Subsequent analysis will account for the longitudinal nature of the data and address potential bias arising from sample attrition.

Figure 2. Distribution of participants' responses regarding their perceived health trajectories during the past five years, for the total sample in 2017 and 2022, ordered by frequency



Source: Own elaboration based on Cloister Survey data. Trajectories 1–9 correspond to those shown in Figure 1.

Relevance and Contribution

This study contributes to existing research by empirically testing the unidirectionality of health deterioration with age, using unique microdata from the monastic populations. It bridges perceived and declared subjective health measures across ten years, providing insights into how individuals perceive their own health development in time. More interestingly, it provides this information in a graphical format, which constitutes a key element of its distinctiveness.

Our findings have implications for demographic modelling of the health dimension that is included in health expectancy measures. They also might offer new perspectives on the reliability of self-rated health measures, the perception of ageing, and the mechanisms behind the extent of the health investments over the life course.

References

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