

Multi-country analysis of healthy life expectancy gap

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Abstract

Modern society is experiencing a progressive increase in longevity as a result of the recent advancements in medicine, nutrition and technology. However, the steady increase in life expectancy is inevitably accompanied by a higher incidence of diseases during old age ([4]). Healthy Life Expectancy (HLE) is an indicator that measures the number of years individuals are expected to live free from disease or disability.

As underlined in the latest report published by the World Health Organization (WHO), modest improvements were achieved in healthy life expectancy at birth, likely due to the growing burden of noncommunicable diseases and the consequences of COVID-19 pandemic ([4]). In particular, the need to be better prepared for future challenges was emphasized. In this perspective, forecasting HLE is fundamental to ensure the stability of health systems, the sustainability of pension systems, to plan the provision of health care for older population, and to appropriately price Long Term Care products. Moreover, HLE is linked to the effectiveness and efficiency of the healthcare system, therefore notable differences can be seen between developed and developing countries ([3]). In this paper, we propose a measure of the difference between HLE in different countries, namely the HLE Gap Ratio, considering the pertaining Global Burden of Disease database ([1]). With the aim of highlighting similarities and differences between the considered countries, we apply a functional clustering method to the multivariate time series of the HLE Gap and we carry out HLE Gap forecasting for some countries ([2]). Our results shed the light on the high value that the HLE Gap may reach in some countries, suggesting the need for appropriate interventions in the healthcare system.

Keywords

Healthy Life Expectancy, Forecasting, Functional data clustering, Machine Learning

Relevant thematic area

Quality of life in the digital age

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