

Analyzing Cause--Specific Mortality Trends using Compositional Functional Data Analysis

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We study the dynamics of cause--specific mortality rates among countries by considering them as compositions of functions. We develop a novel framework for such data structure, with particular attention to functional PCA. The application of this method to a subset of the WHO mortality database reveals the main modes of variation of cause--specific rates over years for men and women and enables us to perform clustering in the projected subspace. The results give many insights of the ongoing trends, only partially explained by past literature, that the considered countries are undergoing. We are also able to show the different evolution of cause of death undergone by men and women: for example, we can see that while lung cancer incidence is stabilizing for men, it is still increasing for women.

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