

The primary objective of the Chair is to conduct groundbreaking demographic research in mortality and longevity, with a particular focus on multiple causes of death (MCoD), multi-morbidities, and mortality forecasting. Initially planned for nine research papers, the scope has more than doubled, with three articles published, four submitted, eight in progress, and five more to be produced within the next 20 months.

Our research on MCoD spans four key areas: data reliability, cause diversity, associations, and competing risks. Findings on MCoD reliability highlight inconsistencies in cause-of-death reporting, revealing regional disparities and shifts in coding practices over time. Our research on cause diversity shows that the distribution of causes of death has become increasingly complex, with greater diversity over time and higher levels when considering MCoD. Using advanced demographic and epidemiological modeling, our studies on cause associations explore dependencies between causes, examining how their interactions influence mortality risk. We also analyze how contributory causes act as mediators in the chain of events leading to death and demonstrate that changes in dependencies between leading cause-of-death pairs do not occur in isolation from other diseases. Additionally, we are advancing competing risk modeling by establishing a new relationship for assessing competing risks and quantifying the probability of dying from one cause before another.

Our initial research on multi-morbidities indicates that as the number of comorbidities increases, life expectancy tends to decrease. We also uncover significant insights into the interplay between comorbidities, sociodemographic factors (such as sex and socioeconomic status), and COVID-19 mortality risk.

In the area of mortality forecasting, we focus on forecasting trends following the COVID-19 pandemic. Our refined models aim to (1) improve excess mortality estimations due to the pandemic and short-term mortality forecast, (2) assess how pandemic-related mortality shocks may influence future life expectancy through harvesting effects, and (3) forecast the long-term impact of the pandemic on cohort life expectancy.

Overall, our research enhances the understanding of mortality patterns and end-of-life conditions via multi-morbidity analysis while also advancing demographic and forecasting methodologies.