

Changes in Mortality since 2020 and Considerations in Future Projections

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In this study, we applied the Seasonal-Trend decomposition using LOESS (STL) to the monthly mortality rates calculated by the death number and the population number since January 2020 when the COVID-19 pandemic began and examined the changes in the improvement trend and the level of the mortality rates by gender and 5-year age group. We found that excluding some age groups by gender, the recent increase in mortality rates could be within approximately 3 percent compared to the assumed level based on the improvement trend before COVID-19 and the recent trend in mortality rates could be similar to, or slightly better than before COVID-19.

Using the proposed STL-based method, we also evaluated how much the changes of the cause-specific mortality rates might affect the levels of the mortality rates. We confirmed that the proposed method enables the monitoring of the latest changes from the recent levels in mortality rates, based on the proportions of deaths by cause since 2020. Furthermore, based on the 2019 cause-specific death proportions, we found that cardiovascular and cerebrovascular diseases had a positive impact across many male age groups. Notably, senility and COVID-19 showed a significant positive impact in the elderly and very elderly of both males and females, while malignant neoplasms had a negative impact in certain age groups for both males and females. The impact of suicide is positive in those under 65 years old for both males and females, with the exception of the late-teen male age group.

We should project future mortality rates considering the aforementioned results of the improvement trend and the level of the mortality rates. The method used in this study can be used for monitoring between the current projection and the next projection and provide useful information.

Keywords: Seasonal-Trend decomposition, mortality improvement, mortality level, mortality projection, proportions of deaths by cause