Analysis of the Differences between the Expected and Actual Mortality Based on the Extended Monthly-based Japanese Mortality Database

ISHII Futoshi, BEPPU Motomi, SUGA Keita and IWASAWA Miho

In this study, we estimated the expected life tables based on actual data up to 2019 to evaluate the effects of COVID-19 on mortality after 2020. We then analyzed the mortality trends for all causes, as well as for specific causes of death, through 2023, comparing yearly and monthly differences between actual and expected values.

This study presents a detailed evaluation of the effects of COVID-19 on mortality, an area that has not been sufficiently examined in demography. In particular, we analyzed the differential impacts of the seventh, eighth, and ninth waves of infection, during which new cases of COVID-19 increased significantly. To achieve this, we used a decomposition of monthly life expectancy by age group and cause of death.

Moreover, our findings reveal that the impact was greater during the seventh and ninth waves than during the eighth wave when analyzed by life expectancy. In contrast, when assessed by the total number of deaths, the impact appeared greater during the eighth wave.

These results help elucidate the characteristics of mortality trends when appropriately accounting for age structure, a nuance that cannot be captured by simply observing death counts, such as those reported through commonly used ”excess deaths” measures.

Keywords: COVID-19, Mortality Analysis, Cause of Death, Life Tables, Excess Death