

Analysis of the Differences between the Expected and Actual Mortality: After the Outbreak of COVID-19 until 2024

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This study aims to analyze mortality trends for all causes and specific causes of death through 2024 by estimating expected values based on mortality trends up to 2019 as model values, and then observing the differences between the expected and actual values on an annual and monthly basis, with the goal of evaluating the impact of COVID-19 on mortality patterns since 2020.

In this study, we presented a detailed assessment after the outbreak of COVID-19 on mortality trends by comparing actual and expected values for life expectancy and the number of deaths on an annual and monthly basis. In particular, by taking into account age structure —such as life expectancy, which measures the timing of death—we revealed characteristics of mortality trends that cannot be observed through the analysis of death counts alone, as is commonly done with excess mortality.

Furthermore, through the decomposition of monthly life expectancy, we clarified the differences on mortality trends during each of the 10th to 12th waves, when new COVID-19 infections increased in 2024.

Keywords: COVID-19, mortality analysis, cause of death, life tables, excess death