

The Unseen Aftermath: Effects of COVID-19 Pandemic on Trends  
of Mortality and Excess Mortality in Japan

by

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## Abstract

**Background:** Amidst the COVID-19 pandemic's significant impact on global health priorities, there is a critical need to evaluate its broader effects beyond direct viral infections, particularly focusing on non-COVID diseases. This study aims to assess the pandemic's impact on mortality trends within the Japanese population, with a specific focus on the period from 2018 to 2021, to discern shifts in causes of death, accounting for Japan's aging demographic and gender differences.

**Methods:** I utilized individual mortality records from the Japanese Ministry of Health Labour and Welfare vital registration database, covering 2018 through 2021. Data were stratified by age, sex, and cause of death according to ICD-10 classifications, excluding chapters directly related to COVID-19. Quasi-Poisson Model was used in both the mortality modeling and excess mortality calculations.

**Results:** Infectious diseases saw a slight 0.1% weekly increase, primarily due to pandemic-time interactions. Metabolic causes increased weekly by 0.1% in males, whereas females experienced a 5% rise in baseline mortality and a 0.2% increase in weekly trends. Nervous system disorders showed an 8% decrease in mortality rates, with minimal pandemic impact. Circulatory causes experienced a 0.1% weekly increase in females. Both respiratory and digestive system diseases witnessed a 0.1% weekly rise, each gender-specific. A notable 12% increase in baseline mortality was observed in skin diseases among females. Musculoskeletal, connective tissue, and genitourinary system diseases each showed a 0.1% increase in trends across genders. External causes of death indicated a 0.1% increase in males and a 0.2% increase in females.

The excess mortality analysis for 2020 and 2021 highlighted gender disparities: higher excess mortality in men for circulatory (10.51%) and respiratory causes (3.35%), and in women for external causes (9.02%) and skin diseases (7.9%). Metabolic conditions and genitourinary diseases showed slightly higher rates in men and women, respectively. Cancer presented similar excess mortality percentages for both genders, with more excess deaths in men. Nervous system disorders and infections had higher excess mortality in men, while mental health conditions also showed a higher rate in men.

**Conclusion:** The study shows that some mortality trends have changed over the medium term since the COVID-19 pandemic. These findings emphasize the need for adaptive healthcare strategies to address evolving disease patterns and highlight the importance of gender-sensitive approaches in public health planning. The results serve as a guide for future global health interventions and policy development in post-pandemic scenarios.

**Keywords:** COVID-19 – Japan - Non-Communicable Diseases - Mortality Trends - Excess Mortality