

# Impact of COVID-19 Vaccination in Thailand: Averted Deaths and Severe Infections Across Age Groups

*Chaiwat Wilasang, Pikkanet Suttirat, Dhammika Leshan Wannigama, Mohan Amarasiri, Sudarat Chadsuthi, and Charin Modchang*

---

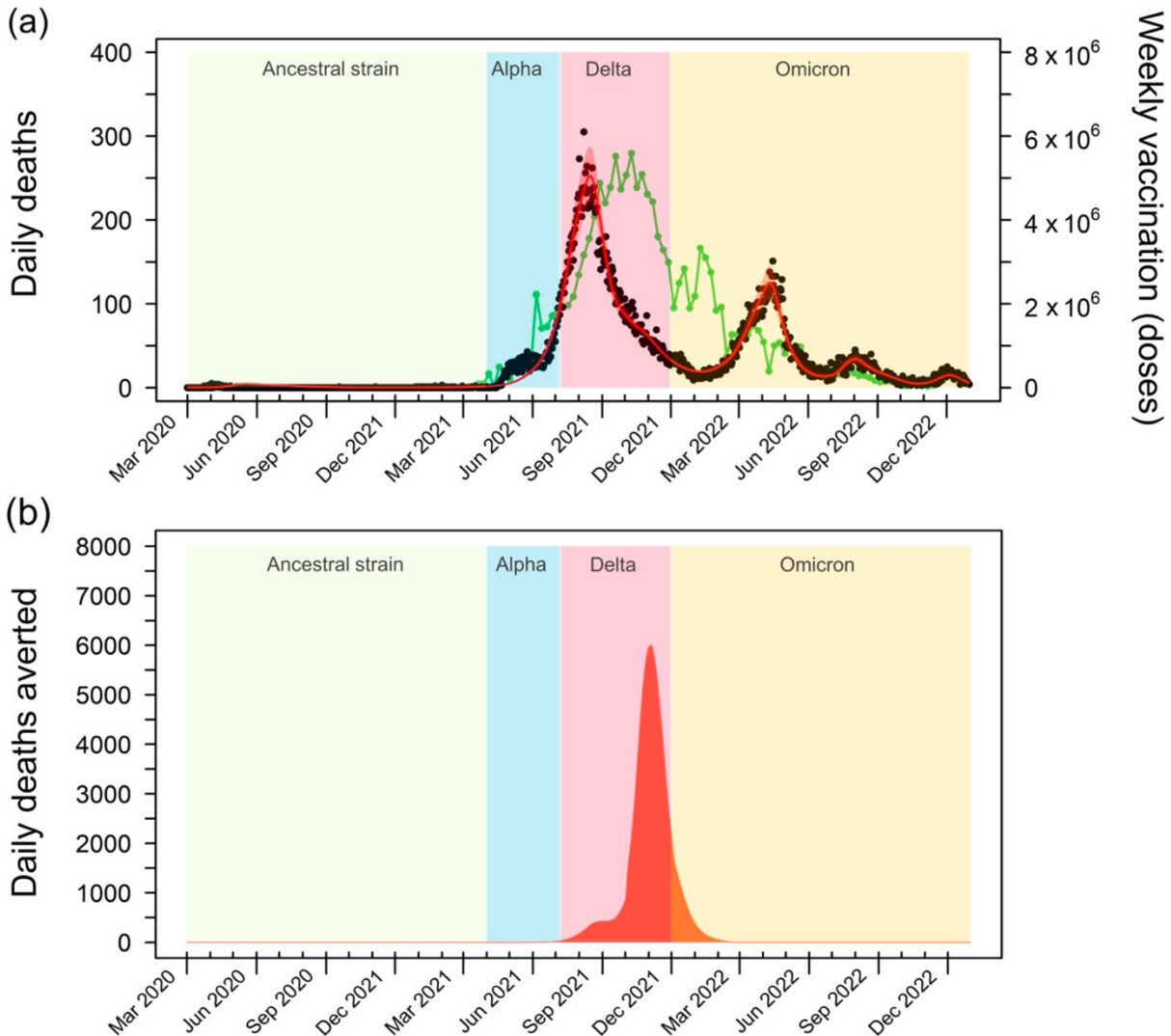
**Rationale and objective:** This study aims to quantify the impact of Thailand's COVID-19 vaccination program from March 2021 to December 2022 in terms of averted deaths and severe infections across different age groups. We employed a mathematical model to simulate the transmission dynamics of COVID-19 and compared the actual outcomes with a hypothetical no-vaccination scenario. By doing so, we sought to assess the effectiveness of vaccination efforts in reducing COVID-19 morbidity and mortality in Thailand, providing valuable insights for future public health strategies and vaccine deployment in the country and other similar settings.

**Summary:** The study revealed that Thailand's COVID-19 vaccination program played a crucial role in mitigating the pandemic's impact from March 2021 to December 2022. We estimated that vaccination efforts prevented approximately 300,234 deaths (95% CI: 295,938–304,349) and averted around 1.60 million severe COVID-19 infections (95% CI: 1.54–1.65 million). The elderly population, particularly those over 80 years old, benefited the most from vaccination, with 4.28% of this age group's lives saved. Additionally, individuals aged 70-74 years experienced the highest reduction in severe cases, with vaccination potentially preventing 8.35% of this age bracket from developing severe COVID-19.

**Outcome:** This study highlights the substantial impact of COVID-19 vaccination in saving lives and preventing severe infections in Thailand, emphasizing the importance of vaccination as a key public health measure in mitigating the devastating effects of the pandemic.

**Research grant and acknowledgement:** 1. The Thailand Center of Excellence in Physics (ThEP). 2. The Centre of Excellence in Mathematics, Thailand.

**Related SDGs goal:** 3. Good health and well-being.



**Graphical summary:** Impact of COVID-19 vaccination on mortality in Thailand. (a) The green line depicts the weekly vaccine doses administered in Thailand from 1 March 2021 to 31 December 2022. A substantial increase in vaccination rates is evident between July and November 2021, with a peak of 5.59 million doses per week in October 2021. This surge in vaccination coincides with a decline in reported daily deaths (black dots), highlighting the effectiveness of the vaccination campaign in reducing COVID-19 mortality. (b) Averted deaths due to vaccination, calculated as the difference between the projected deaths in the baseline model and a hypothetical scenario without vaccination. The graph illustrates the substantial number of lives saved by the vaccination efforts, particularly during the peak of the Delta variant's transmission. The shaded areas represent the periods of dominance for different SARS-CoV-2 variants in Thailand: the Ancestral strain (1 March 2020 to 31 March 2021), Alpha variant (1 April 2021 to 7 June 2021), Delta variant (8 June 2021 to 30 November 2021), and Omicron variant (1 December 2021 to 31 December 2022).

**Related publication:**

Wilasang C, Suttirat P, Wannigama DL, Amarasiri M, Chadsuthi S, **Modchang C**. Impact of COVID-19 Vaccination in Thailand: Averted Deaths and Severe Infections Across Age Groups. *Tropical Medicine and Infectious Disease*. 2024; 9(12):286. <https://doi.org/10.3390/tropicalmed9120286>