

# THE BEST OF THE WEEK (16 mag – 22 mag 2022)

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## **Modeling transmission of SARS-CoV-2 Omicron in China**

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### **Abstract**

Having adopted a dynamic zero-COVID strategy to respond to SARS-CoV-2 variants with higher transmissibility since August 2021, China is now considering whether and for how long this policy can remain in place. The debate has thus shifted towards the identification of mitigation strategies for minimizing disruption to the healthcare system in the case of a nationwide epidemic. To this aim, we developed an age-structured stochastic compartmental susceptible-latent-infectious-removed-susceptible (SLIRS) model of SARS-CoV-2 transmission calibrated on the initial growth phase for the 2022 Omicron outbreak in Shanghai, to project COVID-19 burden (i.e., number of cases, patients requiring hospitalization and intensive care, and deaths) under hypothetical mitigation scenarios. The model also considers age-specific vaccine coverage data, vaccine efficacy against different clinical endpoints, waning of immunity, different antiviral therapies, and non-pharmaceutical interventions. We find that the level of immunity induced by the March 2022 vaccination campaign would be insufficient to prevent an Omicron wave that would result in exceeding critical care capacity with a projected intensive care unit peak demand of 15.6-times the existing capacity and causing approximately 1.55 million deaths. However, we also estimate that protecting vulnerable individuals by ensuring accessibility to vaccines and antiviral therapies, and maintaining implementation of non-pharmaceutical interventions could be sufficient to prevent overwhelming the healthcare system, suggesting that these factors should be points of emphasis in future mitigation policies.