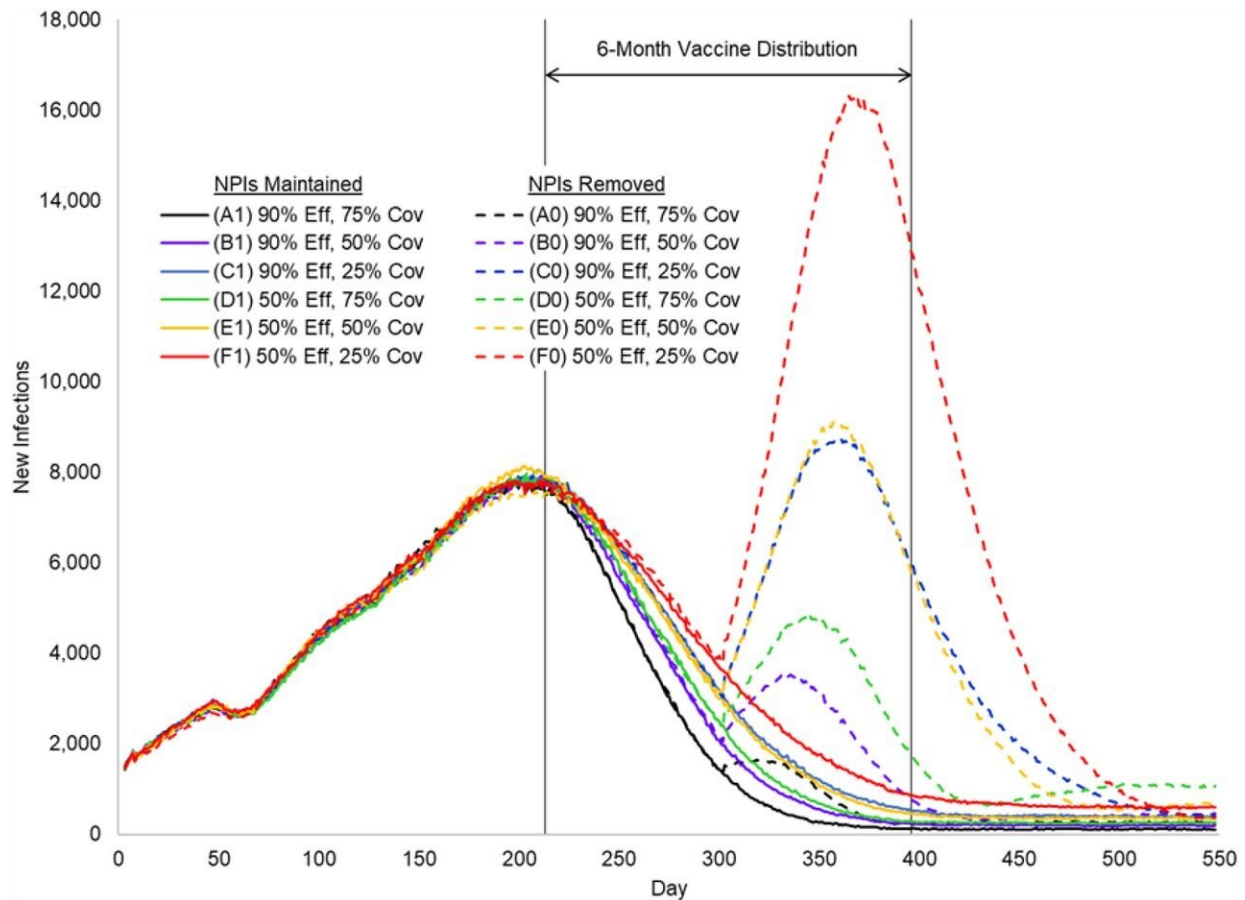


COVID-19 simulation shows importance of safety efforts during vaccine distribution

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Graphic of simulation results. Credit: UNC School of Medicine

Research published by *JAMA Network Open* shows how non-pharmaceutical interventions (NPIs) like mask wearing and physical

distancing can help prevent spikes in COVID-19 cases as populations continue to get vaccinated. The study, led by Mehul Patel, Ph.D., a clinical and population health researcher in the department of Emergency Medicine at the UNC School of Medicine, focuses on the state of North Carolina. Similar modeling studies have been used in different states, and can serve as guidance to leaders as they make decisions to relax restrictions and safety protocols.

"The computer simulation modeling allows us to look at multiple factors that play a role in decreasing the spread of COVID-19 as vaccines are distributed," Patel said. "We looked at vaccine effectiveness, percent of population vaccinated, and adherence to precautions like mask wearing and physical distancing over a set period of time."

The image above from the simulation is a model of multiple scenarios within the state of North Carolina. Knowing that the Pfizer and Moderna vaccines are more than 90% effective at preventing severe COVID-19, you can follow the black, purple and blue lines to see what could happen if non-pharmaceutical interventions (NPIs) like mask wearing and physical distancing are not followed while communities are vaccinated. Furthermore, the simulation also demonstrates how important it is for as many people as possible to get fully vaccinated.

For example, looking at scenario A1, if 75% of our population gets fully vaccinated and we continue to adhere to NPIs, we see a sustained decline down to very few new COVID cases over a six month period. In contrast, looking at scenario C0, if only 25% of our population gets fully vaccinated and does not adhere to NPIs, we could see a sustained increase in daily COVID cases, peaking around 8,000 before we see another decline. For reference, as of June 1, 2021, 38.9% of the entire North Carolina population has been fully vaccinated.

"As soon as you start relaxing mask wearing and physical distancing with

any percent of the population vaccinated, you see an increase in cases," Patel said. "Until we reach around 50% of the [population](#) vaccinated, there is more potential to have disease spread if we remove NPIs."

More information: Patel MD et al. Association of Simulated COVID-19 Vaccination and Nonpharmaceutical Interventions With Infections, Hospitalizations, and Mortality. *JAMA Network Open*, (2021). [DOI: 10.1001/jamanetworkopen.2021.10782](https://doi.org/10.1001/jamanetworkopen.2021.10782)

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