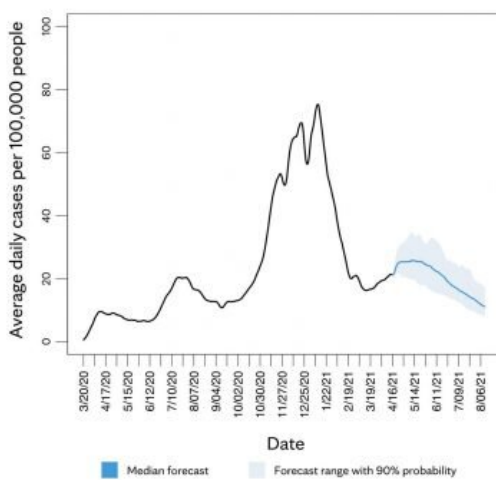


High vaccination rate is key to course of COVID-19 pandemic, modeling shows

29 April 2021

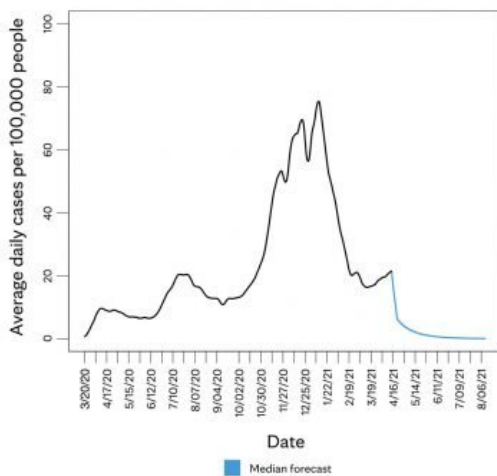
What if no further COVID-19 vaccines were given in the U.S.?

This chart shows the U.S. average daily cases per 100,000 people since March 20, 2020, with a four-month forecast of what would happen if no one else got a COVID-19 vaccine.



What if 75% of the U.S. population was vaccinated right now?

This chart shows the same data. However, the four-month forecast envisions what would happen if 75% of the population was vaccinated right now. The difference is significant.



The Mayo Clinic data scientists who developed highly accurate computer modeling to predict trends for COVID-19 cases nationwide have new research that shows how important a high rate of vaccination is to reducing case numbers and controlling the pandemic.

Vaccination is making a striking difference in Minnesota and keeping the current level of positive cases from becoming an emergency that overwhelms ICUs and leads to more illness and death, according to a study published in *Mayo Clinic Proceedings*. The study, entitled "Quantifying the Importance of COVID-19 Vaccination to Our Future Outlook," outlines how Mayo's COVID-19 predictive modeling can assess future trends based on the pace of vaccination, and how vaccination trends are crucial to the future course of the pandemic.

The Mayo researchers estimate that a peak of more than 800 patients would be in hospital ICUs in Minnesota this spring if no vaccines had been developed. The projections take into account new variants of the SARS-CoV-2 virus as well as current public health measures and masking standards.

The predicted ICU census levels would be more than double the number of Minnesota COVID-19 patients who were hospitalized in ICUs on Dec. 1, at the height of the most recent surge last year.

"It is difficult to untangle how much of this elevated rate of spread right now is due to new variants as opposed to changes in [social behavior](#)," the authors say, but "regardless of the reason, the absence of vaccinations in the current environment would have been likely to result in by far the largest surge to date."

If Minnesota had achieved vaccination of 75% of the population by early April, the study estimates that the 7-day average of cases per 100,000 residents, the number of COVID-19 patients

Credit: Mayo Clinic

hospitalized and the number in ICUs would plummet by early July. "According to the model, this level of vaccination would completely suppress the growth (even in the face of the recent elevated spread rate) and immediately drive cases and hospitalizations down to very low levels," the authors say.

The Mayo Clinic study was led by Curtis Storlie, Ph.D., and Sean Dowdy, M.D., whose team developed the computer model for forecasting COVID-19's impact on hospital usage that has helped guide Mayo's response to the pandemic. Mayo Clinic's predictive modeling also has been shared with Minnesota public health leadership to help inform critical decisions over the past year.

Mayo Clinic's forecasting of COVID-19 trends nationally is available online at the Mayo Clinic COVID-19 Resource Center. The Coronavirus Map tracking tool has county-by-county information on COVID-19 cases and trends nationwide.

When the pandemic emerged last year, Mayo Clinic data scientists developed predictive modeling to assess when and where COVID-19 hot spots would occur. The model accurately predicted the timing and magnitude of COVID-19 case and hospitalization surges, which enabled Mayo Clinic to prepare and assure it could provide the best care while keeping patients and staff safe.

More information: els-jbs-prod-cdn.jbs.elsevierh...pb/assets/raw/Health%20Advance/journals/jmcp/jmcp_ft96_4_1.pdf

Provided by Mayo Clinic

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