COVID-19 Forecasts: Hospitalizations

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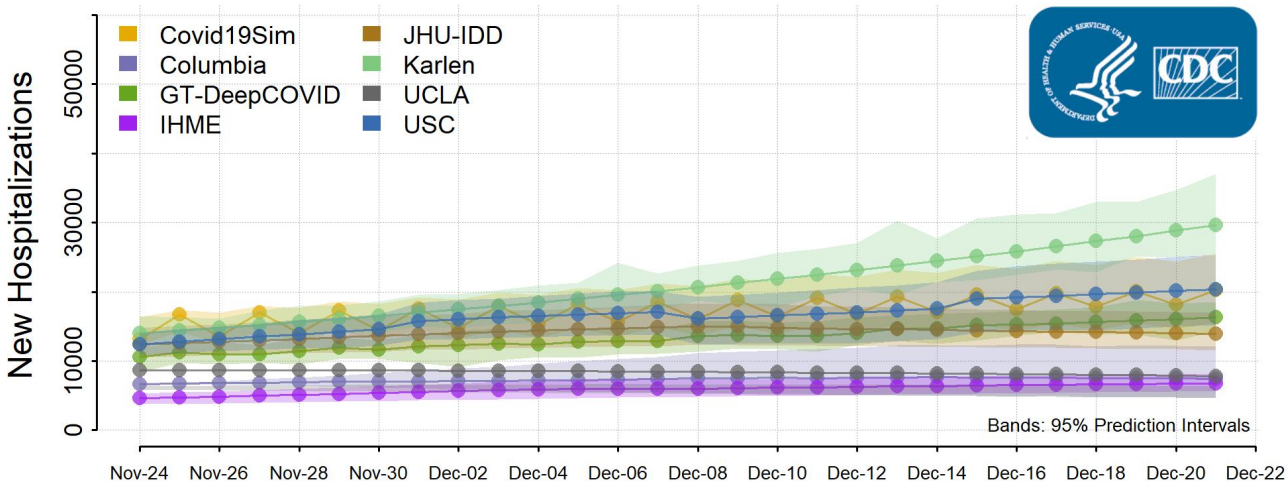
Interpretation of Forecasts of New Hospitalizations

- This week, CDC received forecasts of daily, new reported COVID-19 hospitalizations over the next 4 weeks from 12 modeling groups.
- Five national forecasts predict a likely increase in the number of new hospitalizations per day over the next 4 weeks, one forecast predicts a likely decrease, and two forecasts are uncertain about the trend or predict stable numbers. For December 21, the forecasts estimate 6,700 to 30,000 new COVID-19 hospitalizations per day.
- State-level forecasts also show a high degree of variability, which results from multiple factors. Hospitalization forecasts use different sources of data for COVID-19 cases or deaths, with different limitations, and make different assumptions about social distancing.

National Forecasts

National Forecast



- The national forecasts show the predicted number of new COVID-19 hospitalizations per day for the next 4 weeks in the United States.
- The forecasts make different assumptions about hospitalization rates and levels of social distancing and other interventions and use different methods to estimate the number of new hospitalizations.

Download national forecast data [CSV – 1 sheet]

State Forecasts

State-level forecasts show the predicted number of new COVID-19 hospitalizations per day for the next 4 weeks by state. Each state uses a different scale, due to differences in the number of new COVID-19 hospitalizations per day in each state.

Download state forecasts [PDF – 8 pages] [1]

Download all forecast data [CSV – 1 sheet]

Additional forecast data and information on forecast submission are available at the COVID-19 Forecast Hub.

Forecast Assumptions

These forecasts make different assumptions about social distancing measures and use different methods and data sets to estimate the number of new hospitalizations. Information about individual models is available here: https://github.com/cdcepi/COVID-19-Forecasts/blob/master/COVID-19_Forecast_Model_Descriptions.md.

Social distancing is incorporated into the forecasts in two different ways:

- These modeling groups make assumptions about how levels of social distancing will change in the future:
  - Columbia University (Model: Columbia)
  - Covid-19 Simulator Consortium (Model: Covid19Sim)
  - Institute of Health Metrics and Evaluation (Model: IHME)
  - Johns Hopkins University, Infectious Disease Dynamics Lab (Model: JHU-IDD)
  - University of California, Los Angeles (Model: UCLA)
- These modeling groups assume that existing social distancing measures in each jurisdiction will continue through the projected four-week time period:
  - Georgia Institute of Technology, College of Computing, (Model: GT-DeepCOVID)
  - Google and Harvard School of Public Health (Model: Google-HSPH)
  - Johns Hopkins University, Applied Physics Lab (Model: JHU-APL)
  - Karlen Working Group (Model: Karlen)
  - Los Alamos National Laboratory (Model: LANL)
  - University of California, Santa Barbara (Model: UCSB)
  - University of Southern California (Model: USC)

The rate of new hospitalizations is estimated using one of four approaches:

- These modeling groups assume that a certain fraction of infected people will be hospitalized:
  - Columbia University
  - Covid-19 Simulator Consortium
  - Google and Harvard School of Public Health

  - Johns Hopkins University, Applied Physics Lab
  - Johns Hopkins University, Infectious Disease Dynamics Lab
  - Los Alamos National Laboratory
  - University of California, Los Angeles
  - University of California, Santa Barbara
  - University of Southern California
- The Institute of Health Metrics and Evaluation estimates numbers of new hospitalizations based on numbers of forecasted deaths.
- The Georgia Institute of Technology, College of Computing, uses COVID-19 hospitalization data reported by some jurisdictions to forecast future hospitalizations.
- The Karlen Working Group uses the rate of reported infections to estimate the number of new hospitalizations in a given jurisdiction, unless the rates of reported infections and hospitalizations differ. In that case, the rate of reported hospitalizations is used to forecast new hospitalizations.

[1] The full range of the prediction intervals is not visible for all state plots. Please see the forecast data for the full range of state-specific prediction intervals.

Additional Resources

Previous COVID-19 Forecasts: Hospitalizations

FAQ: COVID-19 Data and Surveillance

CDC COVID Data Tracker

COVID-19 Mathematical Modeling

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Content source: National Center for Immunization and Respiratory Diseases (NCIRD), Division of Viral Diseases