

COVID-19: What's New for March 30, 2020

Main updates on US COVID-19 predictions since March 26, 2020

Key findings

- **The latest US estimates point to peak hospital use nationwide on April 15.** These predictions assume that currently implemented social distancing measures stay in place.
- **At this projected peak, the US could face substantial need in total and intensive care unit (ICU) beds, as well as ventilators.** An estimated need of 224,321 total beds (33,440 for ICU) and 26,753 ventilators at peak could be devastating for hospitals and health workers nationwide.
- **As of March 29, six states have COVID-19 death tolls exceeding 100: New York, Washington, New Jersey, Louisiana, Michigan, and California.** Our latest models predict that New York, New Jersey, and Vermont will have the earliest peak of hospital resource use, reaching highest demand on April 9. New York is also predicted to have the largest hospital bed shortage on April 9, with a total gap of 58,564 beds.
- **Nationwide, a total of 82,141 COVID-19 deaths (range of 39,174 to 141,995) are currently projected through the epidemic's first wave.** US COVID-19 deaths are estimated to rise through April 15, the country's projected peak of deaths per day.
 - Learn more at <https://covid19.healthdata.org/projections>.
- As of March 29, additional states have implemented statewide social distancing mandates: 45 have closed schools, 29 closed nonessential businesses, and 23 have enacted stay-at-home orders. Nonetheless, many are still defaulting to local recommendations or issuing partial orders – actions that could risk effective statewide response to the novel coronavirus.

Key changes since our last release on March 26, 2020

New data and data updates

- **More data**
 - 255 location-days of COVID-19 deaths and cases in the US have been added. *What does this mean?* All available data points on COVID-19 deaths and cases for 50 states plus D.C. from March 25–29 are now included the current estimates.

Analytic and methods updates

- **COVID-19 death models**
 - Since the March 26 release of COVID-19 projections, uncertainty (low-to-high range) around our COVID-19 estimates has decreased, partially due to the incorporation of

more COVID-19 death data, especially for several larger states like New York. A total of 1,730 deaths have been added to the model.

- A number of model improvements were implemented, including:
 - Using the smart initialization scheme for the CurveFit package ([read package documentation here](#));
 - Imposing fewer constraints on how variance is estimated within the Gaussian prior for fixed effects (in other words, the data are more directly informing the model versus parameters we set); and
 - Applying correlated location draws to generate average curves for states with fewer than five data points or deaths.

What does this mean? More data are informing the models, which allows for more precise predictions.

- **Ventilator use among US COVID-19 patients**

- At our initial release of COVID-19 projections, the team had limited data on rates of invasive mechanical ventilation for COVID-19 patients admitted to ICUs. The only data were from studies in Guan and Zhao (China), which found 54% of ICU patients with COVID-19 required invasive mechanical ventilation.
- Since March 26, we received data on ventilator use rates (specifically, invasive mechanical ventilation) among COVID-19 patients being treated in Seattle-area hospitals. These data showed that 80% of COVID-19 patients who required ICU care needed ventilators. In other words, the previous data substantially underestimated the use of invasive mechanical ventilation among US patients.
- *What does this mean?* Relative to the earlier model, results published today (March 30) reflect sizeable increases in the number of US COVID-19 patients who need ventilator support – today and over the next few weeks. At the national level, a projected 26,753 patients (with estimates ranging from 12,934 to 43,183) will require invasive mechanical ventilation at peak resource use (April 15) – an increase from our previous estimate of 19,481 (range of 9,767 to 39,674).

- **US social distancing policies**

- We made two key updates for the social distancing indicators included our models and [visualization tool](#). First, [New Zealand's government published COVID-19 Alert Levels](#), categorizing different types of social distancing measures by their intensity and type of response. To better align with these alert categories – and reflect the types of policies needed to mitigate the novel coronavirus's rapid spread – we re-reviewed every “nonessential business” closure policy currently implemented in the US. Informed by the New Zealand framework, we applied more strict criteria for what is defined as the closure of nonessential services. The model now only includes orders where all nonessential businesses were required to cease operations unless specific exceptions

were provided. This change to the model reduced the number of state-level “nonessential business” closures from 45 to 29 as of March 29, 2020.

- Second, we sought to apply more consistently the date of social distancing policy implementation for reporting, rather than the date of when the order was issued. Going forward, we will continue to make updates as new orders are issued or prior ones are amended, ensuring that we are reflecting the intent of these social distancing measures.

A note of thanks

None of these estimation efforts is possible without the tireless data collection and collation efforts of individuals throughout the US and world. Your work in hospitals, health care organizations, local health departments, state and national public health agencies, among others, is invaluable. We thank you for your dedication to fighting the coronavirus pandemic and we appreciate your willingness to share data and collaborate with the IHME COVID-19 team.

**For all COVID-19 resources at IHME, visit <http://www.healthdata.org/covid>.
Questions? Requests? Feedback? Please contact covid19@healthdata.org.**