COVID-19: What's New for May 10, 2020

Main updates on IHME COVID-19 predictions since May 4, 2020

Updated IHME COVID-19 projections for the US: predicting the next phase of the epidemic

Our [May 4 release](#) involved major updates to IHME's broader COVID-19 estimation framework, and thus major updates to our COVID-19 projections in the US. In addition to improving our deaths model, we introduced a transmission dynamics component to our broader modeling strategy, enabling us to quantify the rates at which individuals move from susceptible to exposed, then infected and recovered (known as SEIR). By implementing our multi-stage hybrid model for all 50 states and the District of Columbia, we then could quantify the potential effects of changing drivers of virus transmission (e.g., temperature, testing, mobility) and incorporate these statistical relationships into COVID-19 death and infection projections.

Since our last release, we have been able to include a week's worth of new data for the US – not only for daily reports of COVID-19 deaths and infections, but also for key factors in state-level epidemic trajectories such as mobility, easing or formal plans to ease social distancing policies, and testing rates. And since trends or patterns in each of these factors are evolving at a different pace by state, they are in turn having different effects on state-level COVID-19 predictions.

We summarize updated results for the US below, particularly focusing on states where identified changes have occurred in terms of their social distancing policies and/or mobility. These updated estimates can be explored further online: [https://covid19.healthdata.org/projections.](https://covid19.healthdata.org/projections) Updated projections for all currently included locations will be available next week.

At IHME, our guiding principle is to produce the best possible predictions given what we know today – and to continually improve these estimates to support further gains against COVID-19 tomorrow. We will continue to update our projections in the coming days and weeks to incorporate the world's evolving evidence base on COVID-19.

Key US findings from today's release (May 10, 2020)

- **Based the most up-to-date data, the US could have 137,184 cumulative COVID-19 deaths (estimate range of 102,783 to 223,489) by August.** These projections are somewhat higher than estimates from our May 4 release (134,475 cumulative deaths, with an estimate range of 95,092 to 242,890), though the uncertainty intervals considerably overlap. Because no updates occurred for our models since the May 4 update, these changes represent the effects of incorporating the latest data on deaths and cases, as well as state-level changes in key drivers of viral transmission dynamics.

- New York, New Jersey, Pennsylvania, Massachusetts, and Illinois are projected to have the five highest cumulative COVID-19 death tolls through August (summarized in the table below). These states have generally had the highest predicted cumulative COVID-19 tolls. Cumulative deaths in Illinois, however, now exceed those of Michigan, which had had the fifth-highest cumulative death projection in our [May 4 release](#).

Location	Predictions for cumulative COVID-19 deaths through August from our May 10 release (today)	Predictions from our May 4 release	Change of average values since the May 4 release*
US (national)	137,184 (102,783 to 223,489)	**134,475 (95,092 to 242,890)**	**↑ 2,708 deaths**
New York	31,620 (30,105 to 33,954)	32,132 (29,248 to 37,136)	↓ 511 deaths
New Jersey	14,752 (12,255 to 19,594)	16,044 (11,718 to 25,654)	↓ 1,292 deaths
Pennsylvania	10,742 (6,115 to 25,063)	8,607 (4,700 to 22,371)	↑ 2,136 deaths
Massachusetts	7,545 (6,199 to 10,420)	7,697 (5,739 to 12,809)	↓ 152 deaths
Illinois	7,395 (4,898 to 13,814)	6,353 (3,951 to 13,050)	↑ 1,042 deaths
Michigan	6,217 (5,394 to 8,036)	7,080 (5,363 to 11,241)	↓ 864 deaths
			Results as of 05/10/2020
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*Change estimates do not include uncertainty; they are only based on the average value. If prediction values' uncertainty intervals (the numbers reported in parentheses) overlap a lot across different releases, changes in these estimates are not considered substantively different.

- In addition to Pennsylvania and Illinois, the largest increases in projected cumulative deaths between our May 4 release and today's release were seen in states in the table below. The changes are a result of a combination of updated daily death and case data, recent actions to ease previously implemented social distancing measures, and steadily rising levels of mobility in many places.

Location	Predictions for cumulative COVID-19 deaths through August from our May 10 release (today)	Predictions from our May 4 release	Change of average values since the May 4 release
Arizona	2,987 (1,038 to 7,015)	1,043 (532 to 2,508)	↑ 1,944 deaths
Florida	5,440 (3,027 to 11,592)	3,971 (1,991 to 11,269)	↑ 1,468 deaths
California	6,086 (4,187 to 9,855)	4,666 (3,107 to 9,164)	↑ 1,420 deaths
Mississippi	1,236 (628 to 2,981)	483 (355 to 875)	↑ 752 deaths
Missouri	1,984 (868 to 4,899)	1,243 (550 to 4,105)	↑ 740 deaths
Connecticut	4,575 (3,745 to 6,056)	4,047 (3,241 to 5,964)	↑ 528 deaths
			Results as of 05/10/2020
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- **It is worth highlighting that more than 15 states have seen mobility increases of more than 15 percentage points since early to mid-April**, underscoring rising rates of potential human contact – and thus potential risk for viral transmission – throughout the US. Relative to baseline levels of human movement (as described more in the [May 4 estimation update](#)), most states recorded their largest reductions by early to mid-April.

  Over the last few weeks, five states have seen at least a 20 percentage point increase in mobility patterns (Montana, North Dakota, Minnesota, South Dakota, and Georgia), while an additional 13 states have experienced somewhere between a 15 and 20 percentage point rise in mobility (Alabama, Alaska, Idaho, Iowa, Kansas, Louisiana, Mississippi, Ohio, Oklahoma, South Carolina, Tennessee, Wisconsin, and Wyoming).

  While at least some of these patterns may be related to states' formal easing of social distancing policies, this upward trend in mobility began in several places well before state-level mandates started to be eased. Unless concerted efforts to accelerate testing and other key containment strategies take place (e.g., contact tracing and case-based isolation, widespread use of masks in public), there could be elevated risk for exposure to the novel coronavirus (SARS-CoV-2) and thus transmission among communities, or even resurgence of COVID-19 infections and mortality.

Data updates since our last release on May 4, 2020

Data and locations

- For all currently included locations, we have added reported data points on COVID-19 deaths, cases, and testing rates, as well as available information on social distancing policies for seven days (May 2, May 3, May 4, May 5, May 6, May 7, and May 8 at about 10:00 p.m., Pacific).

What's in the development pipeline for IHME COVID-19 predictions

Before we introduce new model components or improvements to our current analytical platform for predictions, IHME's COVID-19 development team members test these additions or changes.

Based on currently available data and model testing progress, our immediate- and medium-term priorities are:

- **Fully incorporating additional locations into the multi-stage hybrid modeling framework.** Our updated death modeling strategy has been applied to all currently included locations; we are actively transitioning locations beyond the US to include the SEIR component introduced with our [May 4 release](#).

- **Initial COVID-19 projections for additional countries**. Data collation and processing for a wider set of locations and countries worldwide are in progress. We are currently working on adapting our prediction model to countries which have experienced more than 50 total COVID-19 deaths to date. With the increasing recognition of undercounting of COVID-19 deaths in many locations

outside of EEA and North America, we are now exploring methods that can approximate excess mortality and incorporate such estimates into our COVID-19 models.

A note of thanks

None of these estimation efforts is possible without the tireless data collection and collation efforts of individuals throughout the world. Your work in hospitals, health care organizations, local health departments, and 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 us here.