

More

Corona Virus Science

This blog explains some of the science related to the corona virus (COVID-19) € perspective. Most posts contain links to the underlying research.

COVID-19 Model Projections

This page contains graphs with the latest COVID-19 projections for the US from the "Data Trend Model". Previous predictions can be downloaded from Github.

Last model run

April 27, 2020 with Johns Hopkins Data from 4/26/2020.

- **Total deaths predicted by 6/25/2020: 214,836**(yesterday: 218,271 until 6/24)
- **Excluding New York & New Jersey: 157,488** (yesterday: 162,121 until 6/24)
- **Predicted daily death on 6/25/2020: 2,495** (~ 150,000 per 2 months)

Summary

In today's first model run, there was a large increase in numbers that was entirely driven by New York, where the model showed a slight upward trend. That's because the case numbers reported by New York have now gone up 5 days on a row. I believe (and hope) that this is an artifact caused by more testing being done in New York. I have therefore adjusted the model to always consider both the 7-day slope and the 15-day slope, and use the time range that uses the lower slope. Until now, if the 7-day slope was positive but the 15-day slope was negative, the model used a slope of 1/2 of the 7-day slope. While the general trend of data is downward, always using the lower slope makes more sense. This does, however, introduce a downward bias in the model. It will therefore be slower to catch a real rise in numbers, for example from "re-opening". We'll have to keep a close eye on what happens in the next couple of weeks.

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Yesterday's comments still apply:

The increased number of tests done in the last few days should result in a gradual reduction of the time-adjusted CFR. If testing would indeed capture *all* infected persons, then the time-adjusted CFR should drop down to the infection fatality rate, which is estimated to be between 0.4% and 1%. The current CFR of 7.95% reflects that so far, only about 1 of 8 to 1 of 20 infected persons has been tested in the US.

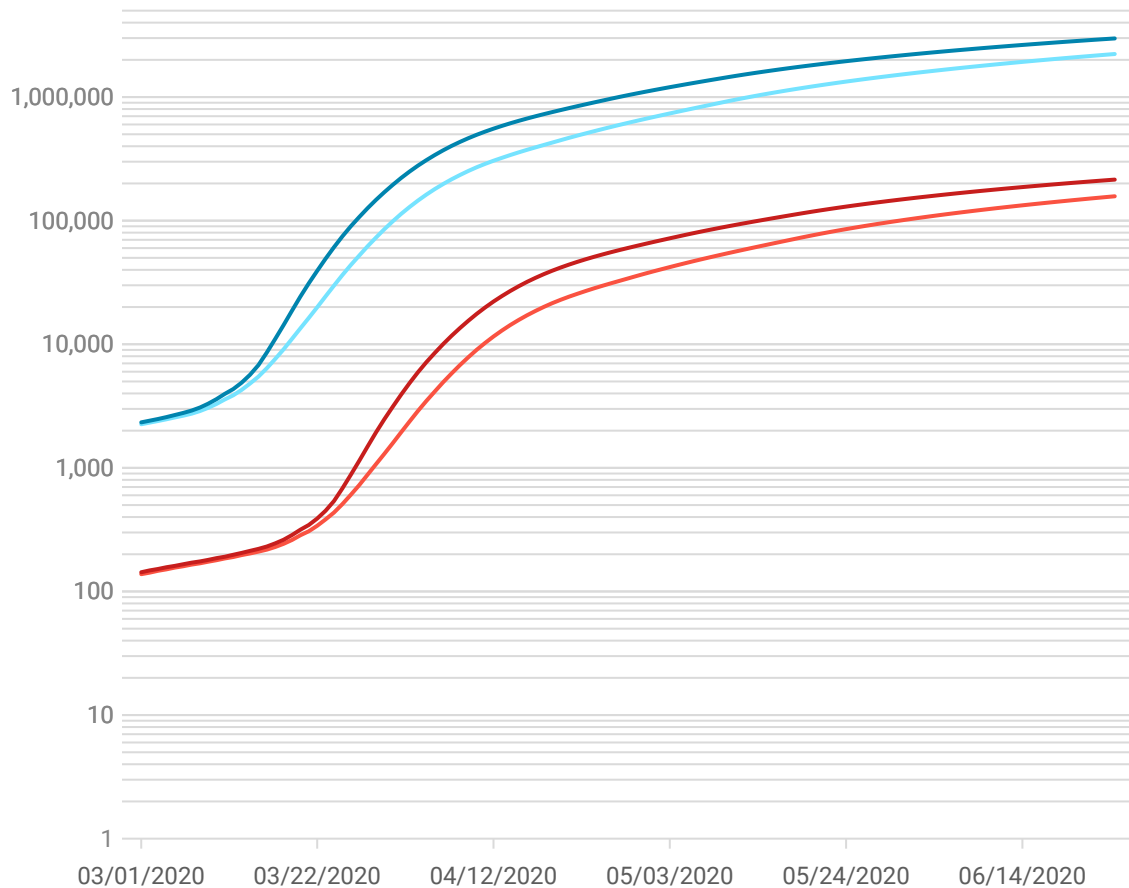
Since changes in today's predictions are large due to the model changes, I will skip the detailed discussion of observed changes in predictions today. But one note: a lot of the increase today in from **New York's** curve not decreasing as rapidly as yesterday. That reflects an uptick in new cases in the last few days. However, this uptick seems to be the **result of more testing**, rather than a real increase in the transmission rate. During the peak of the epidemic in NY, NY did about 20,000 tests per day, and had about 10,000 positives. In the last few days, NY did between 25,000 and 46,000 tests per day, and had about 6,000 to 8,000 positives. More tests will "discover" a higher percentage of the infections. This will reduce the apparent case-fatality rate (currently almost 8%) over time, bringing it closer to the infection fatality rate (probably 0.5-1%).

Other states have seen similar small upticks in confirmed cases that are *probably* due to more testing. The increase on testing means that one of the important underlying assumptions of the model is not valid: that things are basically in a steady state. **Increased testing will result in over-prediction of deaths by the model** as it is now. I plan to modify the model to take testing into account to correct for this.

Total projected COVID-19 cases and deaths

Future growth in cases per day limited to 14 days

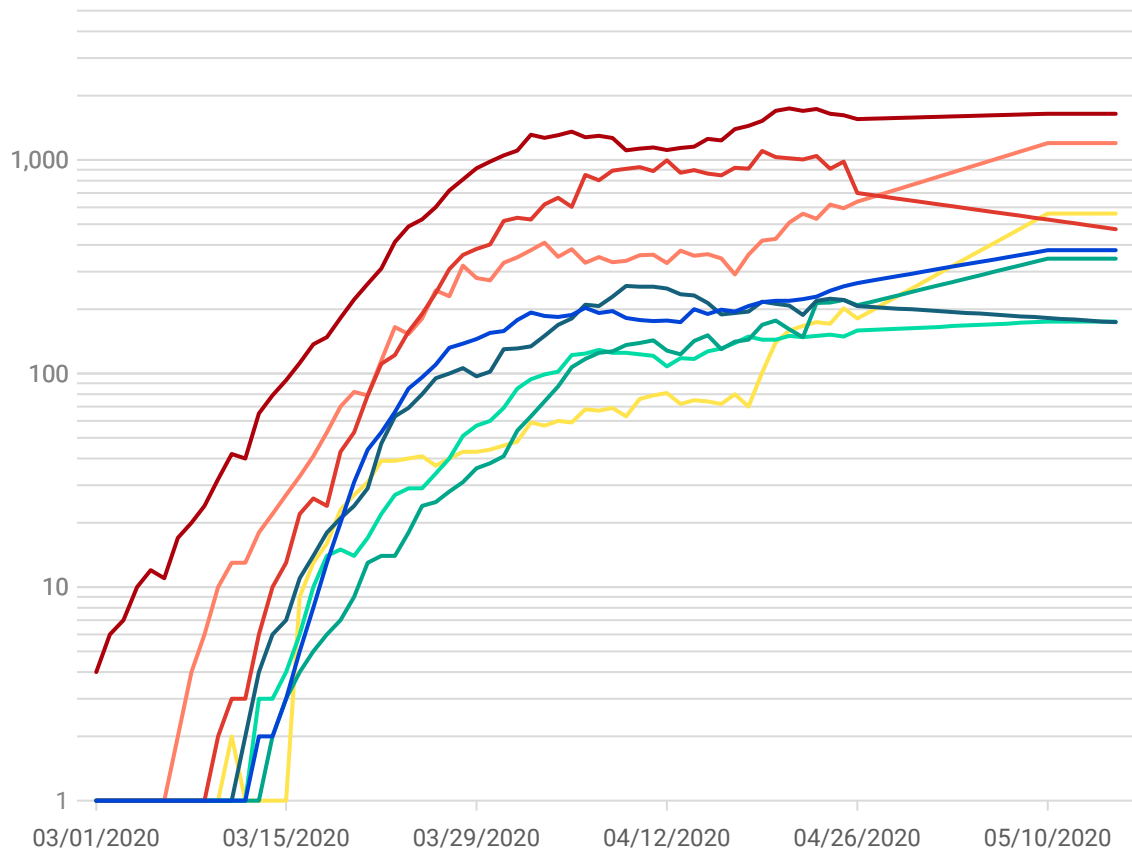
— Total cases — Cases without NJ & NY — Total deaths — Total deaths without NJ & NY



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Actual and projected daily COVID-19 cases by state (AL-DC)

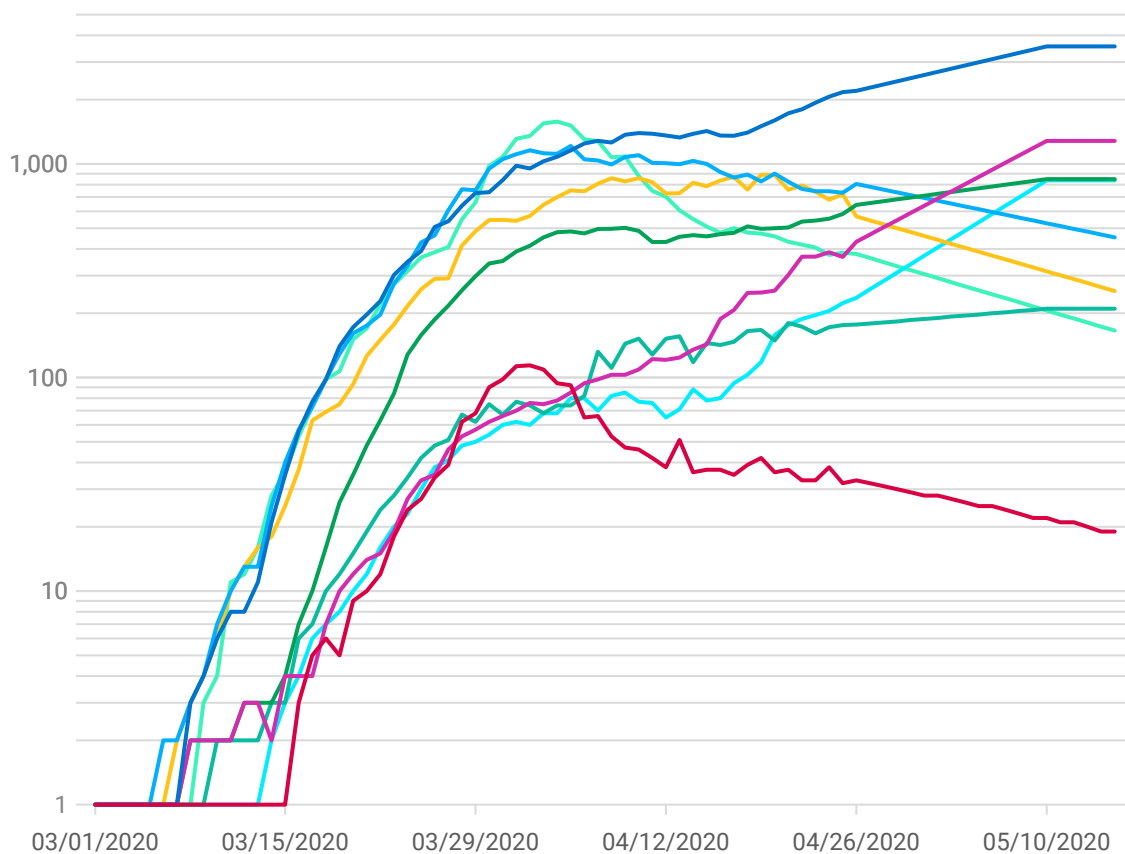
Alabama Arizona Arkansas California Colorado Connecticut Delaware
District of Columbia



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Actual and projected daily COVID-19 cases by state (FL-LA)

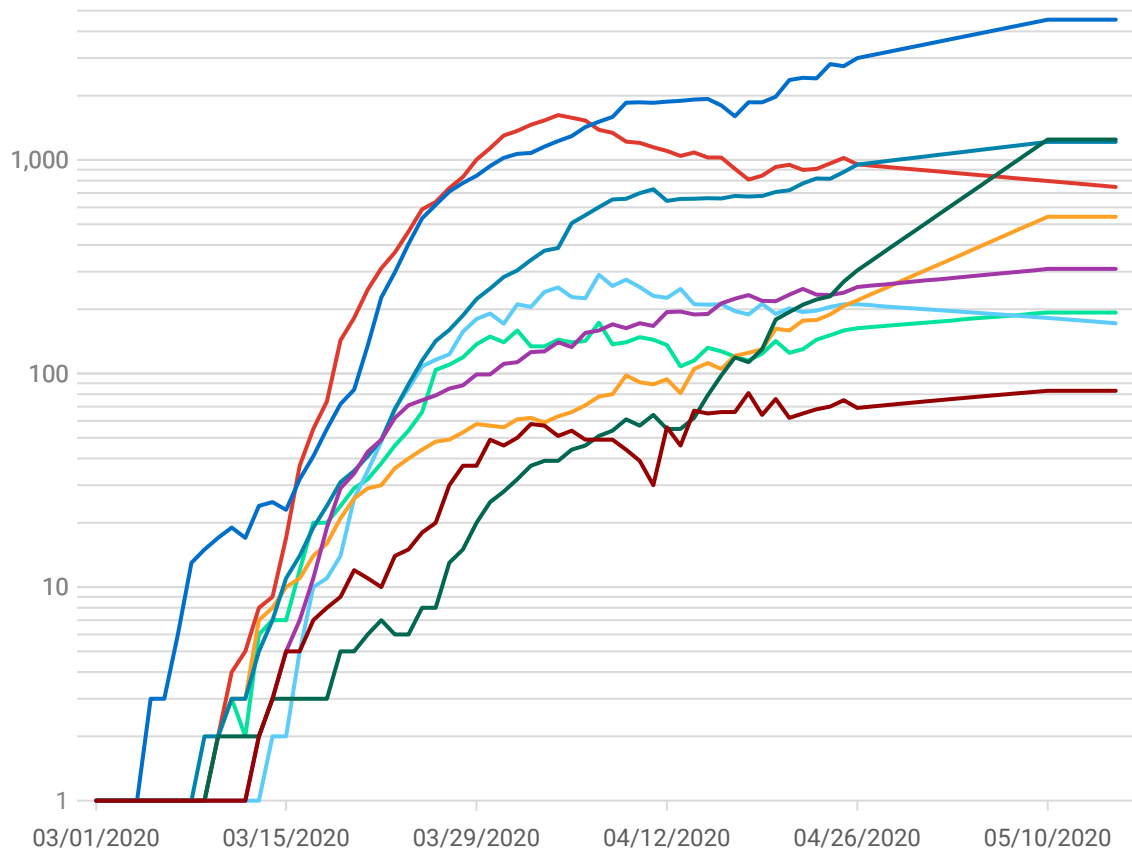
Florida Georgia Idaho Illinois Indiana Iowa Kansas Kentucky Louisiana



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Actual and projected daily COVID-19 cases by state (MD-NH)

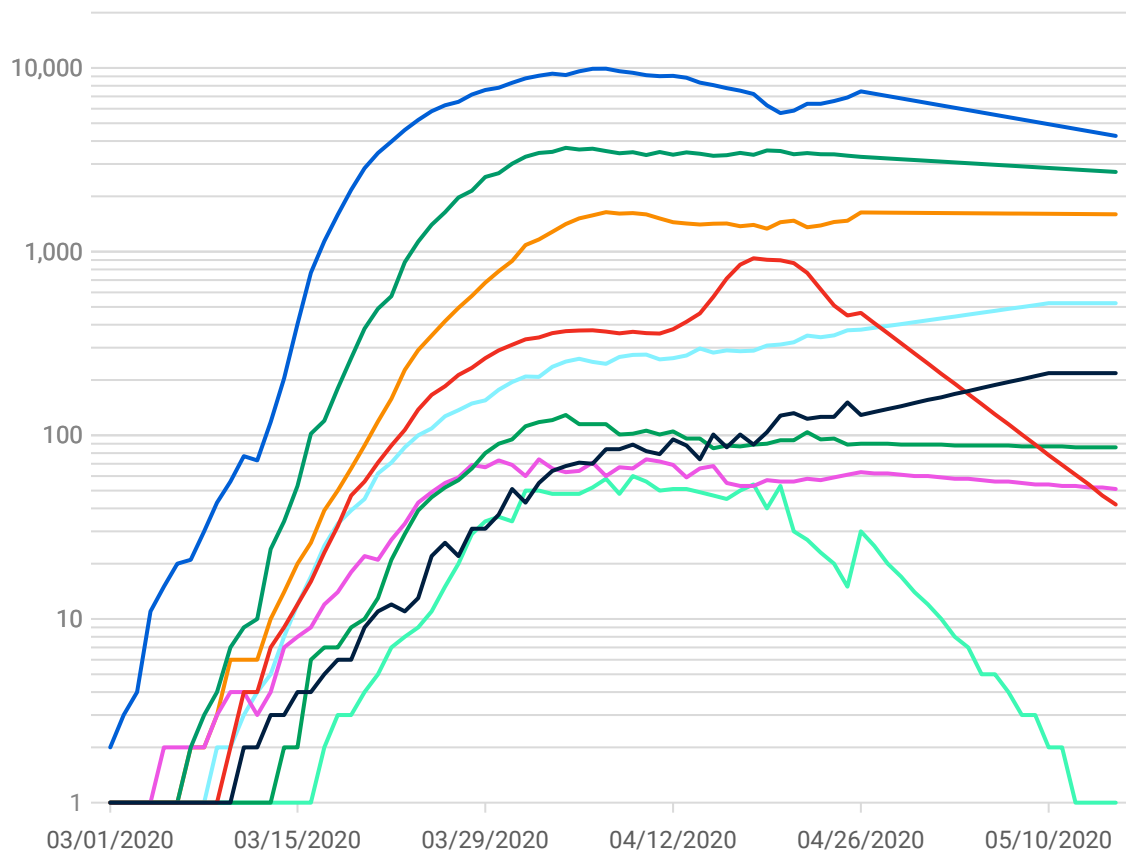
Maryland Massachusetts Michigan Minnesota Mississippi Missouri
Nebraska Nevada New Hampshire



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Actual and projected daily COVID-19 cases by state (NM-PR)

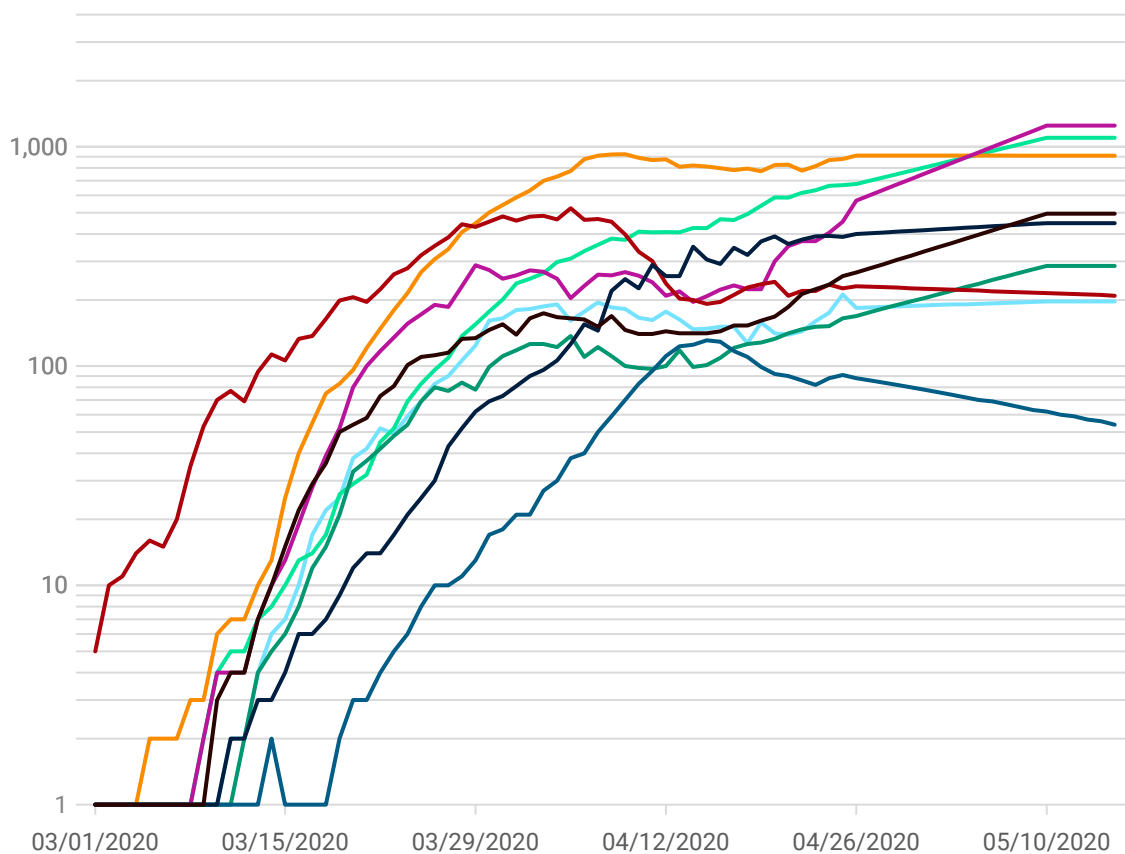
New Jersey New Mexico New York North Carolina Ohio Oklahoma Oregon
Pennsylvania Puerto Rico



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Actual and projected daily COVID-19 cases by state (RI-WI)

— Rhode Island — South Carolina — South Dakota — Tennessee — Texas — Utah — Virginia
— Washington — Wisconsin



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