

## Model Numbers

On [May 22](#) and [May 24](#) I did some nerd posts on modeling. They were pure theory. Here is one with practicality <https://covid19-projections.com/>. If it's your kind of thing you could spend the hole day there. In particular go to <https://covid19-projections.com/us-nj>. It has predictions for NJ.

Now before we start talking numbers remember a model is only a model. It is a prediction based on some methodology. Models are used all the time in engineering to help design many things.

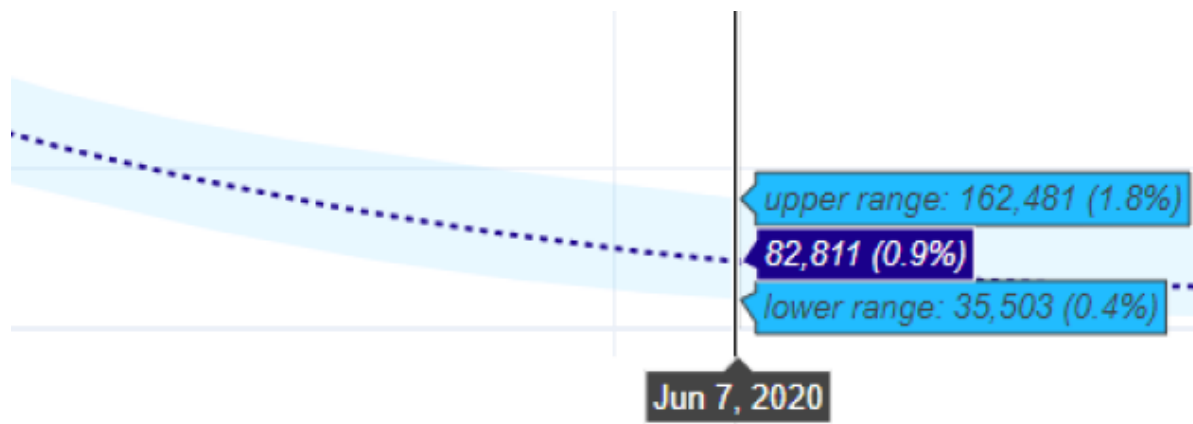
Models have their limitations, usually they are simplifications. For instance, the formula  $d=0.5 * gt^2$  tells you how far a falling object will travel over time. It, however, ignores air resistance. Other models, such as pandemic models, suffer because it is difficult to determine the effect wearing a mask has on infection rate.

Thus, models are only guesses. My friend Mike Roe is much more into modeling than I am. He likes the YYG based model over the more commonly used IHME model because

The first version of the IHME model attempted to predict USA COVID activity by blindly comparing it to the rise and fall of COVID in other countries using a technique called "curve matching", which does not attempt to understand how the disease actually works. This approach so dramatically under-projected COVID activity (a 3 month projection published on 4/27 was exceeded in ten days) that it was completely revamped on May 4 to incorporate a common contagion modeling methodology called "SEIR". While this new approach has yielded better results, it now appears to overestimate COVID activity since it is heavily influenced by people's mobility as measured by cell phone data, which is a subject of debate, and at least one critical assumption, the *Infection Fatality Rate* is under-researched and vastly overestimated. So, IHME's projections were once exceedingly low, and now they are on the higher end of the spectrum, which calls into question why this model has gained such prominence since the COVID outbreak began.

Now you know to take the model with a grain of salt.

The links above and the rest of this blog reference a YYG model. Go to <https://covid19-projections.com/us-nj> and scroll down to the fifth graph. It will say "Currently Infected" in the left margin. Move your mouse over the graph and you will see predictions of the model like below. This is the number or percentage of people predicted to be CURRENTLY infected. Everyone from asymptomatic to people in the ICU.



Here are some key dates. There is a prediction and an upper and lower range of predictions. Typically the modeler is saying there is a 95% chance the actual value will fall into the range. We see the model predicts about 1% of people are ACTIVELY infected and that will drop to 0.3% by September first.

Date	Upper Range	Prediction	Lower Range
June 7	1.8%	0.9%	0.4%
July 1	1.4%	0.6%	0.2%
Aug 1	1.3%	0.5%	0.1%
Sept 1	1.0%	0.3%	0%

That may seem like a small amount but, two points. Pre-COVID how many people did you come in contact with in a week? A lot. The other is remember this virus started with one person and now the whole world is infected. Granted that was one person living in a naïve world taking no precautions.

Below are the numbers of people in Franklin who would be infected if the NJ numbers are relevant here.

Date	Upper Range	Prediction	Lower Range
June 7	1260	630	280
July 1	980	420	140
Aug 1	910	350	70
Sept 1	700	210	0

There is the model. As Sheldon Cooper would say, "And discuss."