

For my daughters:

May 25, 2020

The Coronavirus Pandemic

Two Uncertain Birthdays

Your mother's birthday was a few days ago, celebrated by her high school friends in a way that has come to represent our lives in this many-months-long pandemic: a drive by!



In Saint Louis, high school friendships last. There were four cars, all beeping their horns, with balloons flopping about and much hand waving.

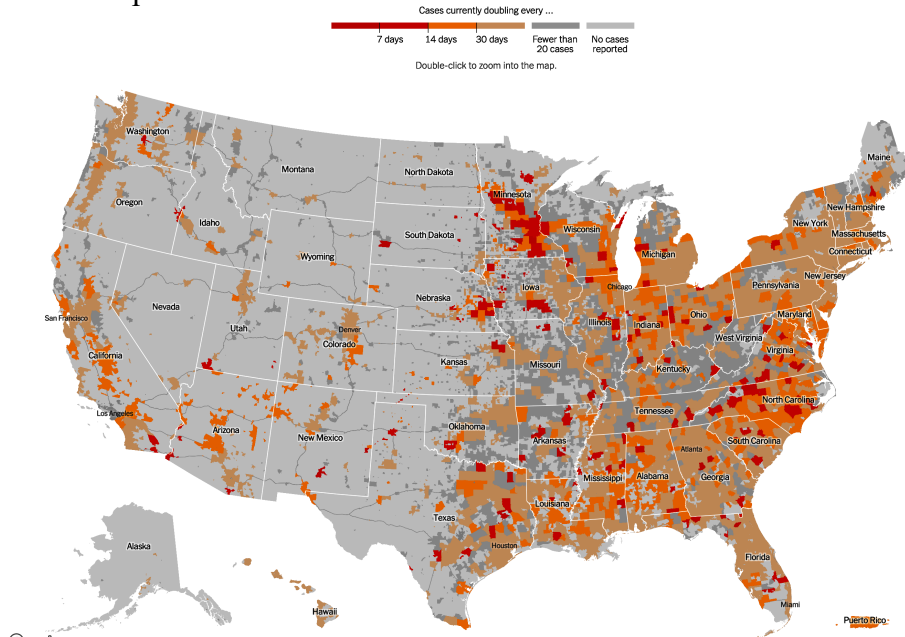
The great news this week is that “hands off” friendship like this may not be necessary very much longer. Despite passing the grim milestones of 5 million COVID-19 cases worldwide and 100,000 American deaths, the data I have been seeing for the last two weeks is encouraging. While we as a nation seem to be doing all the wrong things, summer weather may be “trumping” the abandonment of social distancing, pushing the number of daily infections not up, but down.

There is no way I can reliably read the future and tell you girls for sure that the pandemic is beginning to recede. All I can tell you as your father is that is how it *feels* to me. Next fall will be another matter, but today the sun shines a bit brighter.

What About the Bump?

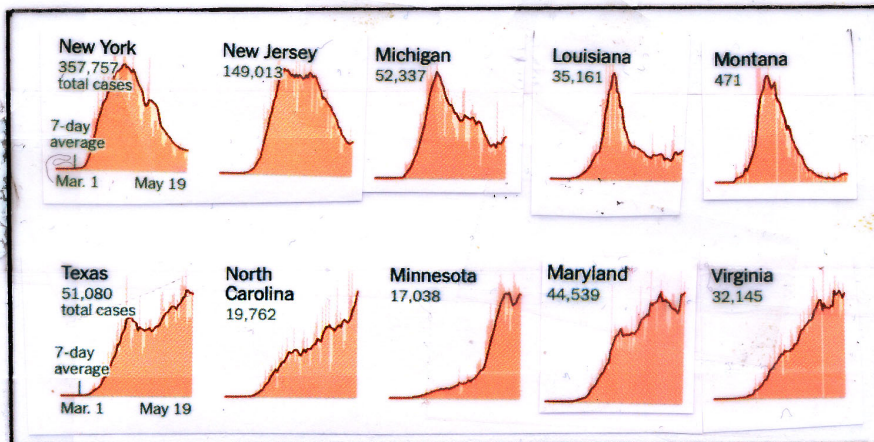
When many states began relaxing social distancing restrictions and opening up shops and restaurants for business three weeks ago, I warned that this might reignite infections and lead to an upward jolt of daily new infections. I even drew you girls a “model” showing a predicted bump up from 20,000 new cases a day to 30,000, the price I felt the relaxation would impose.

Well, the incubation period for COVID-19 infection is two weeks, and we have been relaxing for three weeks, with every state now open for business. How big is the impact of relaxation on our pandemic?

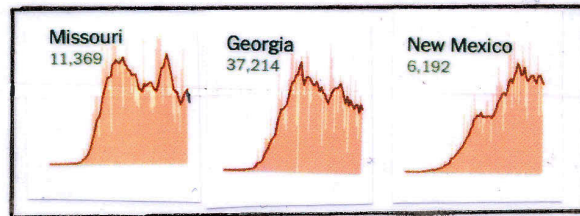


The map shows the rate at which COVID-19 infections are doubling in the last two weeks: *Open States*. The hot spots are states like Texas, North Carolina, Minnesota, Maryland and Virginia, all states that opened their economies early. *Closed States*. States like New York, New Jersey, Michigan and Louisiana remained shuttered until quite recently and even now impose fairly strict social distancing. These states show no increase in recent caseload.

The effect is even more clearly seen when we look at daily new cases. Over the last weeks, caseloads are falling in socially closed states, rising steeply in states open for business:



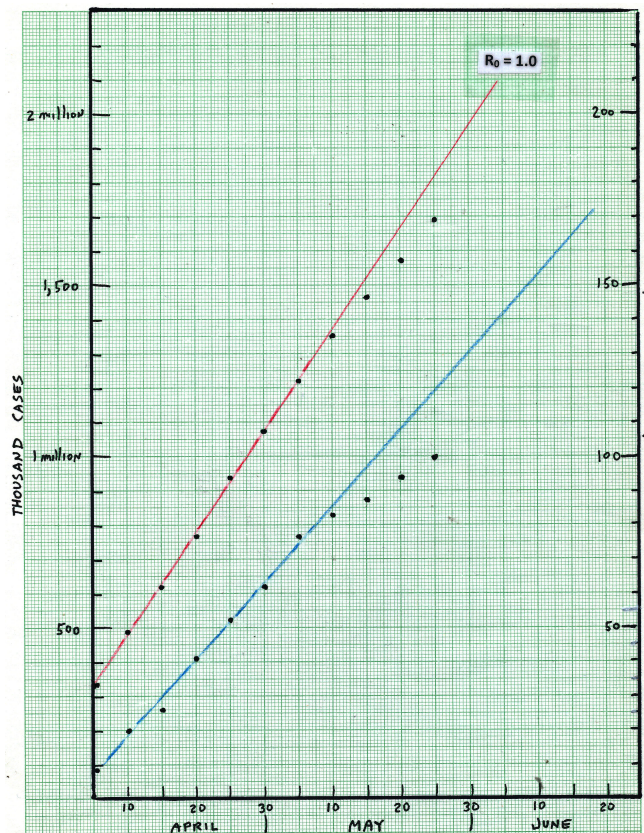
How are the states where we live doing? Like New York, trending downward in recent weeks:



Seasonality Trumps Discretion

So, was I right about the impact of relaxing social distancing? Yes and No. Yes, it increased COVID-19 caseloads in states that relaxed early. No, it has not yet ignited an increase nationwide in the rate of COVID-19 infection -- the decreases in states like New York and New Jersey has so far counterbalanced the increases in states like Texas and Virginia.

To step back and get an overview of the impact of reopening the country for business, let's look at the nationwide numbers of COVID-19 cases and COVID-19 deaths, remembering that case numbers and deaths have been tracking right on the $R_0=1.0$ lines since late March:



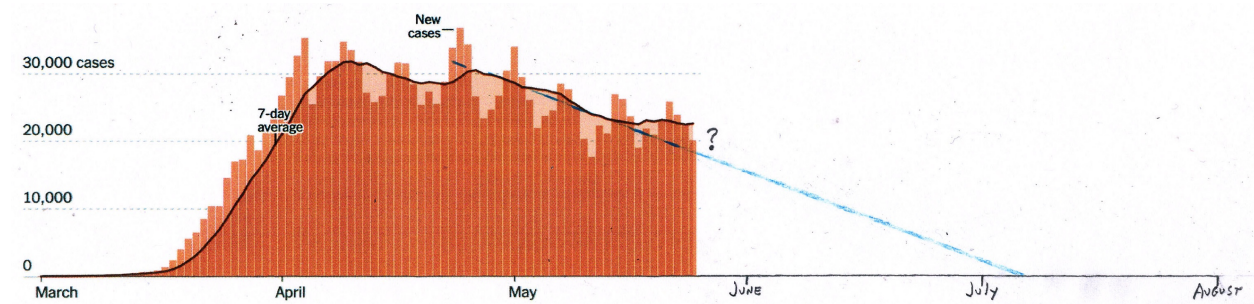
Do the numbers start to track to the left of the $R_0=1.0$ line (the red line) in May, indicating an overall increase in infection rate? Nope. Indeed, they have begun to track TO THE RIGHT of the line -- the infection rate nationwide is decreasing, and at a substantial rate! The death rate (points along the blue line) is also decreasing. This suggests coronavirus is seasonal!

When Will We Be Free?

This would be great news. With the pandemic on the wane, we could look forward to being together again. Every week there would be fewer new coronavirus cases. How long before we can relax and touch noses with each other and other loved ones? Paddington wants to know! Her fourth birthday was today, and she misses being petted by every stranger she meets.



Well, I can only guess, as no one knows HOW seasonal COVID-19 will prove to be, but lets for lack of better information assume that the slow down we are now seeing will persist at about the same clip. To guess how long until the nationwide infection rate falls below 1,000 new cases a day (a reasonable “It’s over” point), we can play our usual “line extending” game:



Perhaps July 4, some six weeks from now? Hard to say – Spring’s relaxation of social distancing seem to be extending things. This Memorial Day everyone seems to be cavorting, with few face masks to be seen. I am guessing this is why in the above graph of daily new cases of COVID-19, the last week’s numbers of new cases cease to fall, instead flat-lining.

The only certain thing is that nothing is certain. Three elements may seriously affect the July 4 suggested “We can come out now” point:

1. The uncertain seasonality of COVID-19. Coronavirus infections may drop far faster as summer progresses, shortening the time before we call the game over.
2. The possibility of reigniting the fire with clusters of COVID-19 infections from large public events like sports meetings, church services or political conventions – wrong to allow public events of more than 50 people, but quite possible, even likely, that we do. This week the White House has demanded church services be opened nationwide.
3. In the coming weeks the overall effects of opening our economy may become even more pronounced, as people-to-people contact increases nationwide. We will then see an extending plateau of daily new cases in the graph, a mesa instead of a mountain.

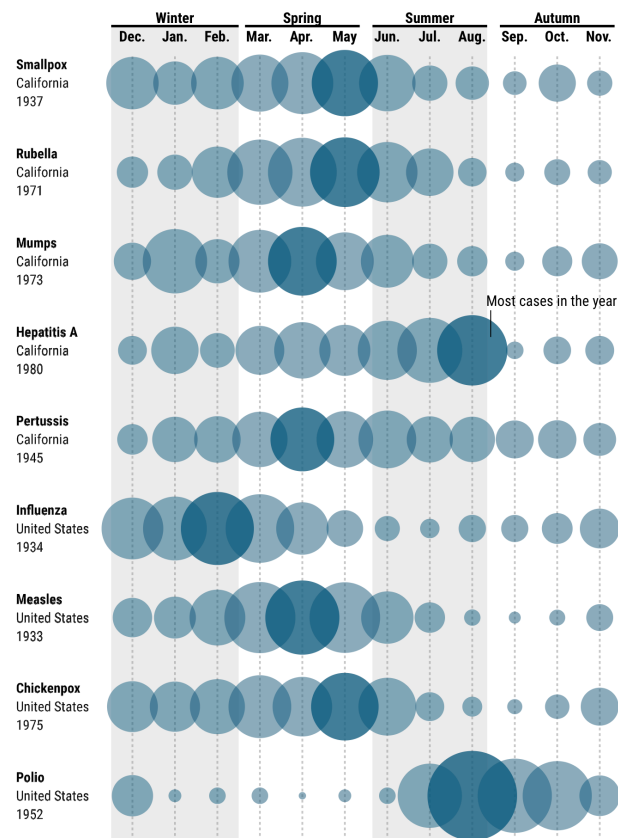
The Other Side of the Coin

The great thing about a coronavirus like COVID-19 being seasonal, if it proves to be, is that we will soon be out from under the hammer. All through the gloriously hot months of July and August we may be able to cavort. Barb, Nikki and I can drive down to Atlanta to play with baby Jed, and Caitlin fly to meet us there. I look forward very much to teaching little Jed how to quack! We have always been a family together, all through this pandemic, but it will be great to be able to hug and rub noses and go on long dog walks together.

The downside of coronaviruses like COVID-19 being seasonal is that they are seasonal. Make no mistake, the virus is coming back in the fall. I expect to see new cases arise in October, and lots of them in November. We can expect COVID-19 to act much like seasonal flu, hitting hardest in the winter. Seasonality in virus diseases is nothing unusual:

The calendar of epidemics

At least 68 infectious diseases are seasonal, according to a 2018 paper by Micaela Martinez of Columbia University. But they're not in sync, and seasonality varies by location. In this graphic, based on U.S. federal and state health records, each bubble represents the percentage of annual cases that occurred in each month. (The data are old because many diseases declined—in some cases to zero—after introduction of vaccines.)



(GRAPHIC) N. DESAI/SCIENCE, (INTERACTIVE) X. LIU/SCIENCE, (DATA) PROJECT TYCHO

Needless-to-say, we shouldn't let ourselves ignore flu in all our worries about COVID-19. Last year the CDC estimates 35.5 million Americans got sick with influenza, and 34,200 of them died. While not nearly as fatal as COVID-19, 34 thousand dead is nothing to sneeze at. Be sure and get your flu shots this fall, and get them early. There won't be a vaccine available to you for COVID-19 until next spring, well after this winter's coronavirus season, so as soon as I give a yell in the fall, the family will have to hunker down for another spell. Damn it.

Vinceremo!

So we as a family still find ourselves adrift in an uncertain sea. There is a safe shore, eighteen months or so from now, when a vaccine to protect each of us from future COVID-19 infection becomes available to us. Because the COVID-19 virus is mutating at a very low rate, there is every reason to expect the vaccines that will become available next Spring will work anywhere in the world, against every local strain of coronavirus. (This would not be true of flu, because influenza viruses mutate far more often; that's why we have different flu shots each flu season).

In the meantime, over the coming glorious summer and dangerous winter, we have each other, no small thing. Like Mousey astride her loon, we will ride this out together.



Your mother and I love each of you very, very much.

Dad