

For my daughters:

May 6, 2020

The Coronavirus Pandemic

Opening Up America Again

Today 1,791 Americans died of COVID-19, and 28,526 new cases were reported. The total number of us who have died in this pandemic now tops 75,000. In this grim world, I cannot help but wish it were all over. I'm sure you my daughters do too. Many of our fellow citizens feel the same way, some quite strongly. Would that it were so simple.

We're Doing Well

I know you three worry about your mom and dad in these dangerous times. Please don't. We are fine. Below is a taste of our lives these days:



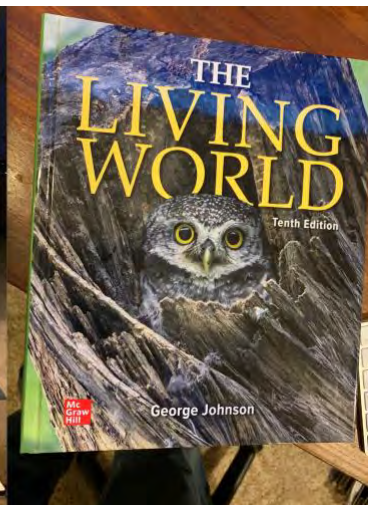
Stomping Around Forest Park



Walking the Beast



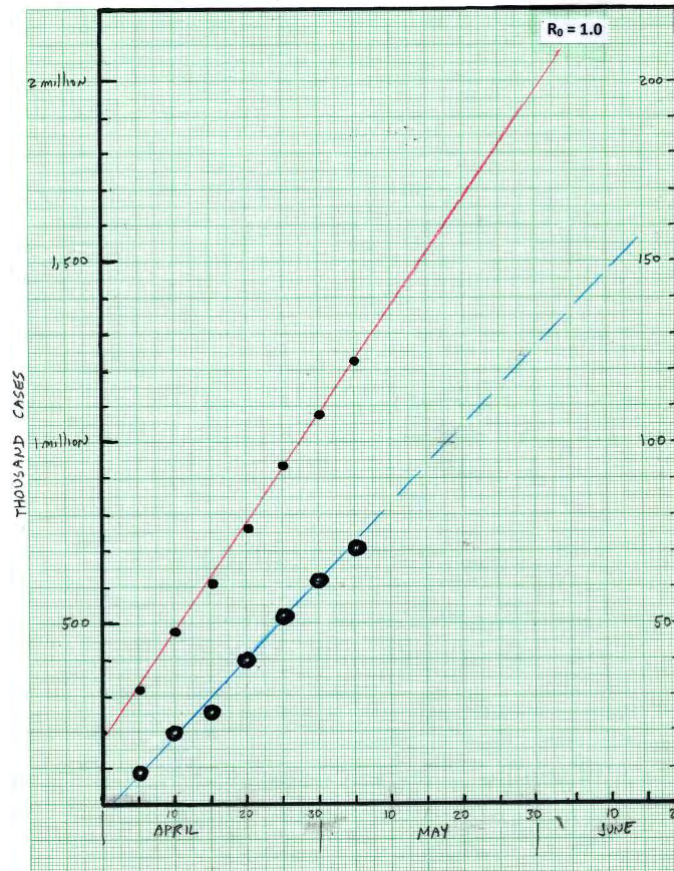
Exercising



Writing More Textbooks

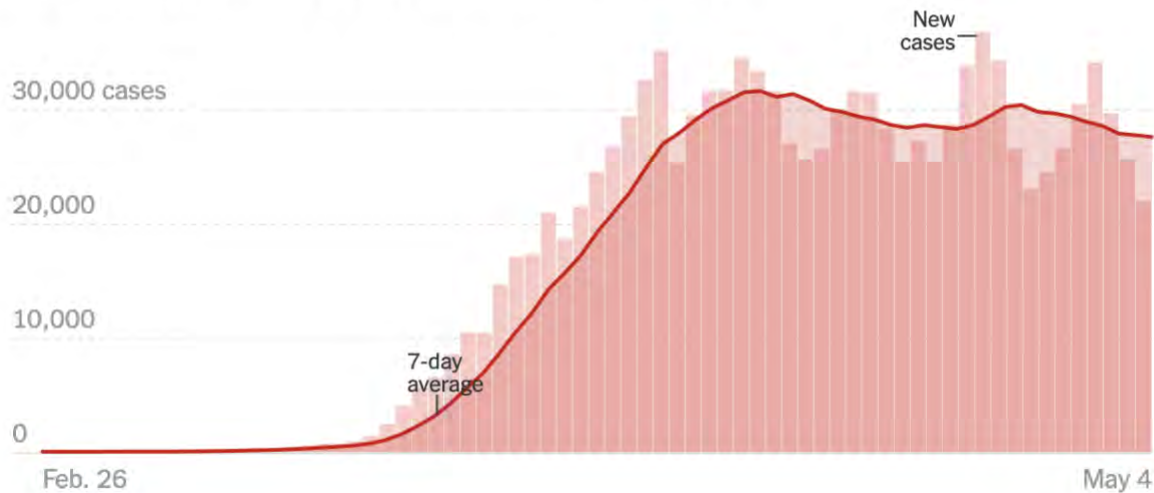
A Slow Burn

Meanwhile the Pandemic continues to roar. As you can see in the graph below, total cases of COVID-19 are still tracking right on the red $R_0=1.0$ line we have been watching for weeks. That doesn't mean that things haven't improved in some places. They certainly have in the Northeast. With stringent stay-in-place orders, New York City is seeing far fewer cases, and its hospitals no longer bulge at the seams. But this improvement has been counterbalanced by worsening in the South and the Midwest. For the first time, small towns and villages are seeing cases explode, with hospitals few and far between. So take away here, give back there, and we remain behind the eight ball:



This steady addition of about 30,000 cases each and every day has dire consequences – we will reach 2 million cases on May 30, and with a case fatality rate of 7%, that's 120,000 dead [Don't be confused by the arithmetic. To calculate the CFR, you must divide # dead by # cases 7 days earlier, so you're not counting cases that haven't had time to die yet. So today's CFR is calculated as 1,791 (today's deaths) divided by 25,737 (new cases 7 days ago), which equals 0.0696, or 7%]. Walking along the blue total deaths line, there will be 100,000 dead by May 17, 150,000 by June 11, 200,000 by July 4. Like sand dropping through an hour glass, the numbers just keep coming at you. An R_0 number of 1.0 is a bear, if allowed to persist. The damage just piles up.

New reported cases by day in the United States



Why does r_0 not decrease below 1.0, with all the social distancing we are doing? Why is the *newly-reported cases* graph above a mesa instead of a mountain peak? Why? In a nutshell, because so many Americans carry COVID-19 while showing no symptoms. Until we identify and isolate these individuals with random testing, we cannot stop the spread of the virus.

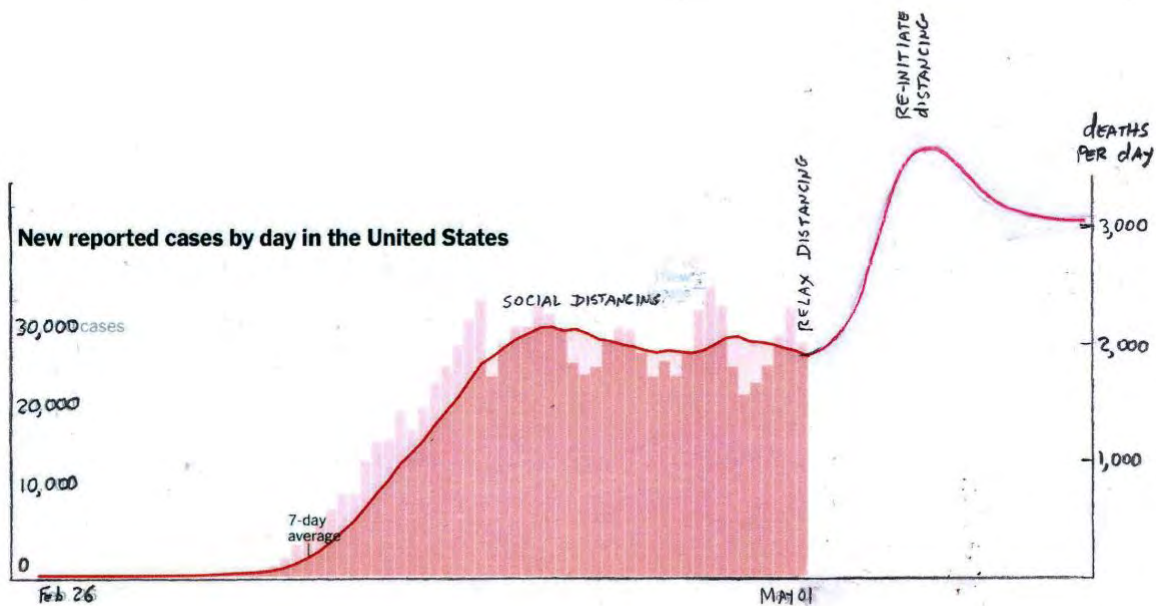
Send In the Clowns

Awful as our current situation is, it is possible to make it worse. The natural r_0 number of COVID-19 is something like 2.5, an explosive transmission rate. We were able to lower r_0 to 1.0 and keep it there by imposing severe social distancing. This meant closing our schools, shutting down the economy, wearing face masks, keeping six feet away from anyone, and sheltering in place. No fun, but it brought the growth rate of the pandemic to a screeching halt. While persistent, the virus is not increasing. We are left with the slow burn I described to you above.

How to make things worse? As I write this, there is a strong move afoot to “restart” our economy, what the White House enthusiastically calls “*Opening Up America Again.*” In essence, people all over the country are revolting against social distancing. They want to go back to an America where people had jobs, their kids went to school, and there were professional sports to argue about. All but a few states have cancelled their “stay in place” orders and reopened businesses and beaches, like the Orange County beach below on May 2.



So what is wrong with this picture? Opening our country in this way, by retreating from social distancing, will revert the COVID-19 r_0 number back to where it was in early March before social distancing -- to around $r_0 = 2.5$! Within weeks of this happening, the number of coronavirus deaths in this country will slam upwards. I have modeled this for you guys below. I have us riding the crest of the $r_0 = 1.0$ plateau until May 1, with 2,000 deaths each day. On that day in my model, State governors start to relax distancing. As you can see, deaths per day then rocket upwards. Within two weeks, by June 1, the CDC estimates that relaxing social distancing and opening up the economy as is now being done will produce 3,000 deaths a day. My model assumes State governors then wake up and reinstate distancing. If they do, r_0 reverts to 1.0 and we stay at the new plateau of 3,000 deaths per day. Indefinitely. Not 2,000 deaths a day, but 3,000. A thousand extra deaths every day, the price of Opening Up America Again too soon.



On Monday of this week, the White House announced plans to “wind down” the COVID-19 Pandemic Task Force – as if there were nothing more for it to do. In its place the White House is forming a new task force tasked with kick-starting the nation’s economic recovery. On Wednesday the White House renounced its renouncement, the president saying “I had no idea how popular the task force is.” – as if its popularity was the issue. Testing, the only bridge to a virus-free future, continues to be assigned by the White House to the individual States to carry out as they see fit. No policy could be more blind. States, their tax revenues way down because of massive unemployment, cannot afford anything like the funds that will be needed for the Abbott machines, staff, and chemicals to do widespread testing of the general population, for the many new people that would have to be hired and trained for contact tracing, and for the facilities to isolate those who test positive. The federal government should be spending a fortune developing a quick and easy COVID-19 test, so that millions could be tested daily. But the White House has turned its attention to business. We are living in a Great Depression without Roosevelt. It’s difficult to fault Sondheim’s conclusion that there is no need to send in the clowns because “*They’re already here.*”

Let's Blame China

For weeks now, the White House has been promoting the theory that COVID-19 is a laboratory virus that somehow escaped from a virus research facility located in Wuhan, China. This lab does do research on coronaviruses, the White House and Secretary of State point out -- perhaps a worker inadvertently carried the virus home one day, igniting the epidemic. Like a “just so” story from Kipling, it *might* be true, right? These forceful claims are intended, I suspect, as a distraction. There is in fact no basis in fact for this supposition. Fauci summarizes the universal opinion of the scientific community when he says *“If you look at the evolution of the virus in bats, the scientific evidence is very, very strong...this could not have been artificially or deliberately manipulated...Everything indicates that [this virus] evolved in nature and then jumped species.”* Outside of the White House, most people with any knowledge of the subject are similarly very skeptical of the narrative that the virus came out of a lab. The intelligence assessment of the Five Eyes nations (USA, United Kingdom, Canada, Australia and New Zealand) concludes it is “highly unlikely” that COVID-19 was spread as a result of an accident in a laboratory but rather originated in a Chinese market.

Can We Cure It?

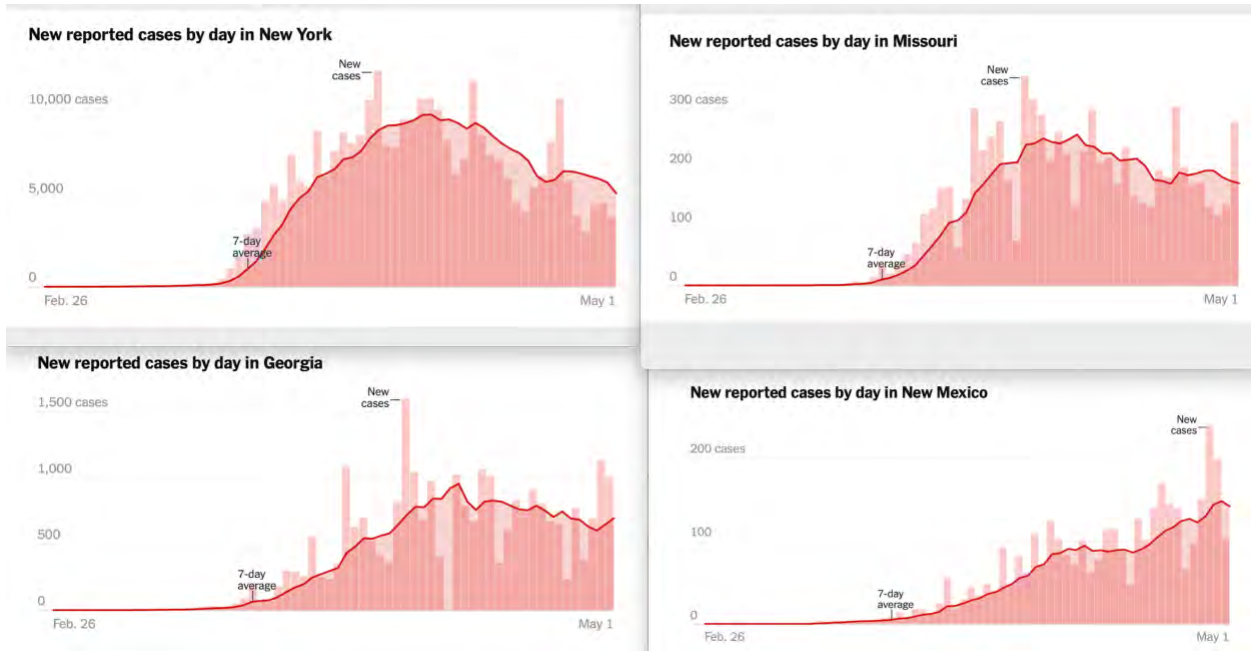
There has been much discussion in the last week of a drug called remdesivir as a possible treatment for COVID-19 infection. How does this drug work? As you know from my previous letters, coronaviruses are complex critters with lots of genes. One of them is a super-efficient copy editor, correcting any mistakes made during infection of a cell. This proofreading is the reason coronaviruses do not mutate much – only about one-twentieth as frequently as flu viruses. Remdesivir was developed as a way to dodge the proofreading system of coronaviruses, changing the virus genome in a way that does not get corrected and says “STOP” to the growing virus RNA chain during its replication. This premature termination stops the virus from multiplying, killing the infection. The drug worked great in lab animals against both SARS and MERS. Tested in actual COVID-19 patients, the results are less clear-cut. While Remdesivir does appear to shorten the hospital stay of patients who overcome COVID-19 infection, it is not clear that it significantly reduces the mortality rate of severely ill patients. Earlier tests of this drug in Chia say “No” but USA clinical trials are still being evaluated. While perhaps not the magic bullet we would pray for, this drug does seem to help patients and is certainly hopeful news.

Where Does That Leave Us?

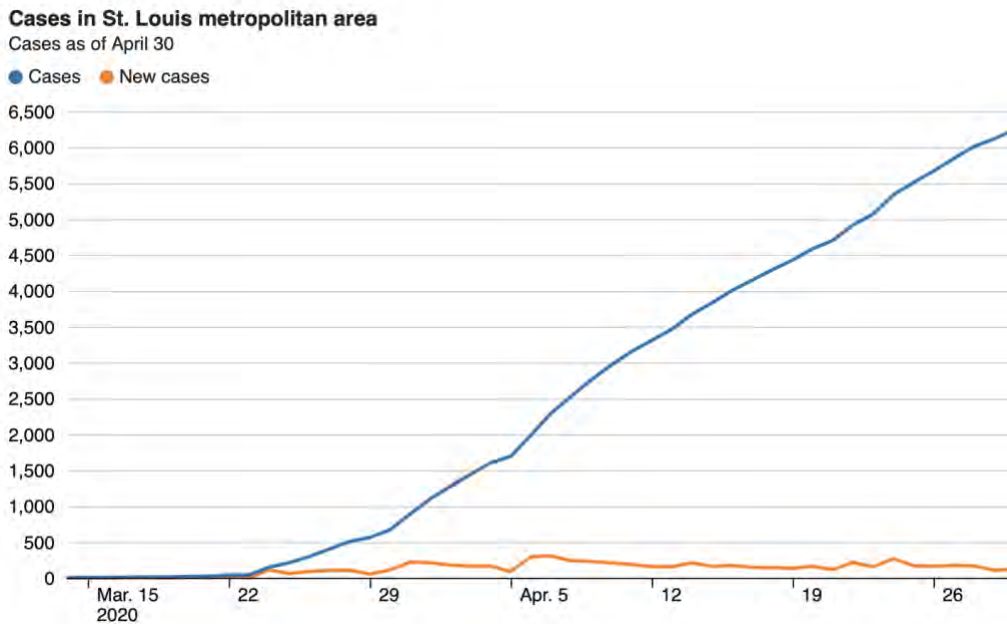
So where does all this leave our family? Still together, strengthened and not frightened. Like Fauci and Cuomo, I have three daughters, a source of great strength.



The pandemic progresses in our states much as last week, with three states abating and Caitlin’s New Mexico flaring up in the northwest (note the vertical axes of the four states are quite different in scale, so that New Mexico’s flareup would not register as a blip in the others).

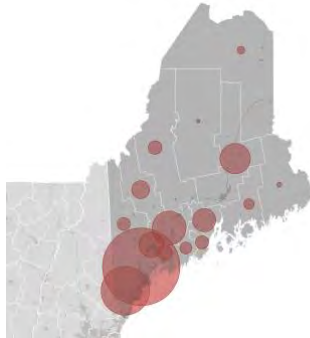


Things are not so fine in Missouri, which the governor has opened up for business as usual. The rise in COVID-19 cases in Saint Louis continues unabated, despite which the city mayor and county executive will relax their Stay Home orders on May 18th:



Into The Woods

Can we still go to Maine in September, meeting together as a family as we have long planned? I took a careful look at down-east Maine to see what COVID-19 danger might lurk there, and was very encouraged by what I saw. The pandemic is hitting the southern parts of Maine, the villages and towns near Massachusetts, like a hammer. The upper coast where we go has hardly any cases of COVID-19. The number of cases in Hancock County (Mt. Desert Island and Bar Harbor): a mere 10. That's compared to over 6,000 in St Louis County. So while we have a long hot summer ahead of us, things are looking good for our September visit.



Saying that, I will leave you with an image of our summer house:



Stay safe, ignore any federal or local government announcements of safety in public places, continue social distancing and face masks, hold onto each other tightly, even if only by zoom, and remember Sondheim's theme, sung at the end of his INTO THE WOODS: "*You are not alone. No one is alone.*" Your mother and I love you very much.

Dad