

Letter 28: A Covid Year

March 12, 2021

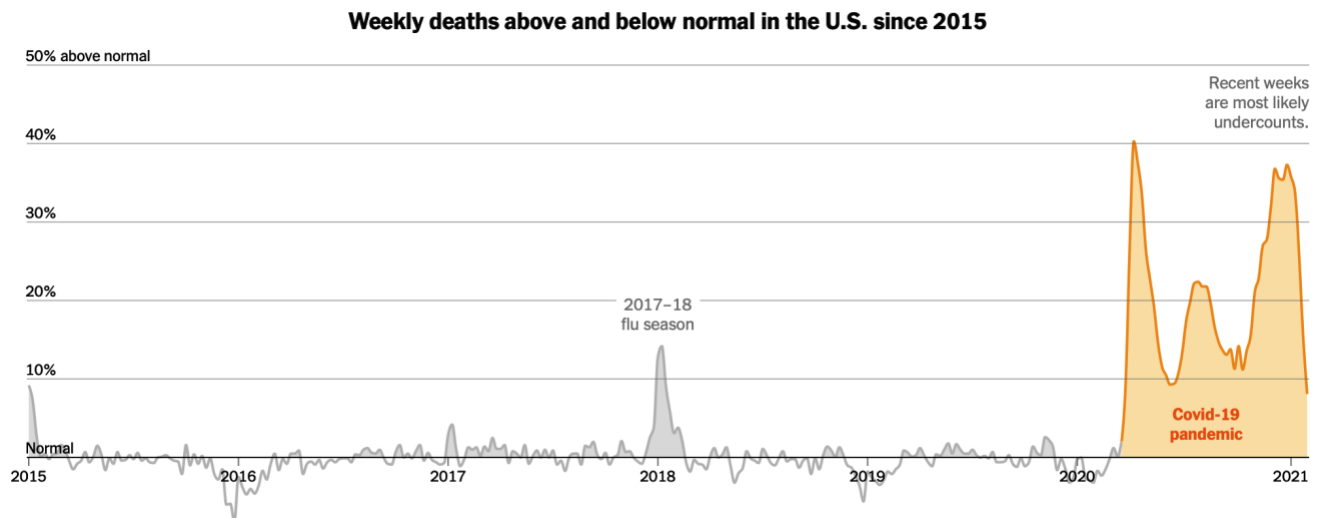
Dear daughters,

We woke to a thunderstorm this morning, a welcome sign of spring. It has been one year today since your mother and I, with bags packed and taxi ordered, cancelled our spring three-week trip to Marco Island, Florida. You three had been begging us to avoid the danger of travel, and then we heard on the evening news Dr. Fauci's warning against air travel because of the danger of COVID-19 infection.

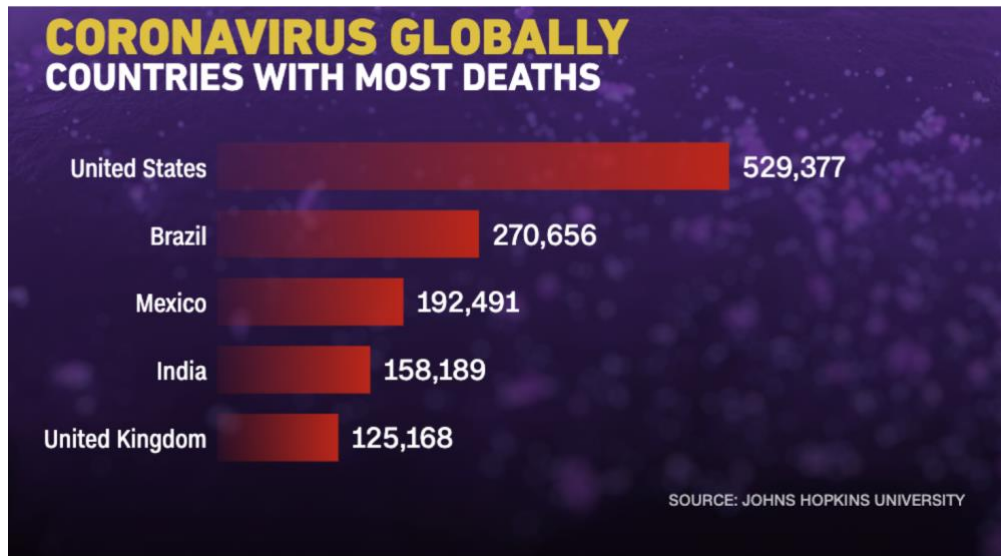
I had not taken the coronavirus threat very seriously until then. The World Health Organization had declared a pandemic a few days earlier, but I had no sense of how that would impact our family. I knew a few people had died in a nursing home in Washington State, but never imagined anyone in Saint Louis facing death. You girls were warning us to rethink the problem.

A Deadly Year

Well, we did well to stay home – and were lucky that as seniors we had that choice. In the following year fully 29,925,902 Americans were to become infected by COVID-19 (as of today's count), and 543,721 of them would die as a result:



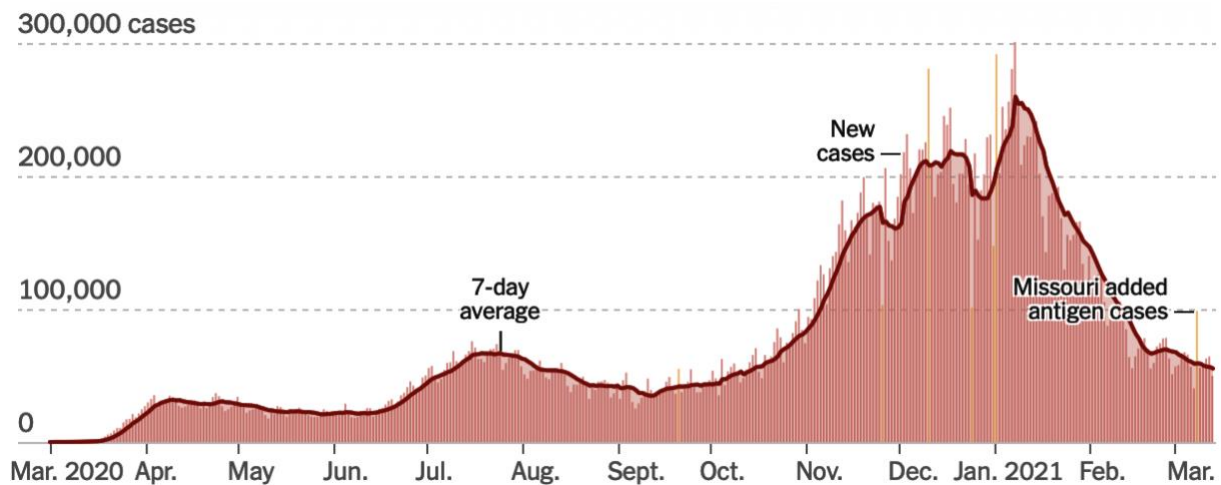
As the WHO predicted, the virus went on to infect people all over the world. While our country handled matters poorly and was the hardest hit, many other countries also took it on the chin:



A Brighter Spring

After infecting twenty-nine million Americans, the pandemic seems to be ebbing. As I pointed out to you girls last week, the reason for the steep January-February drop in cases is a bit of a mystery, but probably reflects the cumulative impact of Fauci’s face mask & social distancing.

Numbers of infections continue to drop in March, although far more slowly:



Will this drop continue?

I don't know. As I see it, three factors will determine what happens to COVID-19 infections this spring:

1. **The mystery factor.** The unknown factor (mitigation?) causing this winter's steep fall in cases may or may not continue to influence what happens. If the time of year is somehow playing a role, then next fall (the flu season) may see a significant rise in new cases, just as it did this last year.
2. **The decrease in number of people subject to infection.** 69 million Americans have received at least one dose of vaccine, which is 21% of the total population. Another 30 million have suffered through COVID-19 infection, and some 10 million more have been infected with no symptoms. That's a lot of people not subject to future COVID-19 infection – fully one third of the entire United States population. While a far cry from the 80% needed for herd immunity, it is enough to lessen r_0 quite a bit.
3. **The cancellation of mitigation.** Texas, Florida and many other states have this week elected to cease COVID-19 mitigation efforts and reopen for business. This is way too early to put away the face masks and open bars, theaters, and restaurants. We are still seeing some 50,000 new cases a day! The same collection of states made the same mistake last May, leading to a big increase in coronavirus cases in July. I expect their actions to have the same impact this time.

All three of these factors will interact to determine whether the number of new COVID-19 infections rises or falls in coming months, and I don't think anyone has any idea of how to predict what is going to happen. I sure hope infections fall further, as they seem to have plateaued at an uncomfortably high level. To pick but one example, we might look at Nikki's home, New York City. Originally the epicenter of COVID-19 infection in this country, NYC over the last year has seen 774,000 COVID-19 cases and 30,174 deaths. Although things are far better now, NYC is still far from out of the woods. Today alone the city reported 8,444 new cases, ten times the number reported for the entire state of Missouri.

Variant Fever

As more and more Americans become vaccinated, the concern about “variants” has increased.

A variant is any strain of COVID-19 other than the one that initially swept across the world last year. Variant B.1.1.7, for example, is a strain that has become common in Great Britain since January. B.1.1.7 has acquired 14 new mutations, among them one (N501Y) that makes the virus as much as 70% more transmissible. The recent rapid spread of B.1.1.7 has just caused Italy to lock down again -- for a third time.

While most mutations do not improve a virus’s success in infecting other human cells, and variants carrying them do not become common, five mutations have had a major impact. I cannot resist passing along to you girls the informal names researchers have given them (who says scientists don’t have a sense of humor):

Q667P ("Quap")

L452R ("Lester")

D614G ("Doug")

E484K ("Eeek")

N501Y ("Nelly")

The vaccines your mother and I have taken can handle variants containing four of these key mutations. Eeek, however, is another matter.

The Eeek mutation replaces a negatively-charged amino acid in the spike protein with a positively-charged one. This trade out happens right where a positively-charged amino acid of an antibody protein would usually clasp the spike. This matters, because the spike protein is the tool the virus uses to enter human cells. Vaccine antibodies are designed to bind to the spike. The Eeek mutation blocks this binding. Instead of the *positive-attracted-to-negative* that allows a vaccine’s antibodies to grab onto virus spike proteins, Eeek presents an antibody with a *positive-repulsed-by-positive* interaction, the spike pushing the antibody away.

This is why the antibodies produced by the vaccines your mother and I received do not protect us from Eeek.

Guidelines for the Vaccinated

This week the CDC issued guidelines for how fully-vaccinated people should behave around others. Without specifically mentioning Eeek, the guidelines are strongly impacted by its threat. They suggest vaccinated people limit their gatherings to family and friends. Grandparents like your mom and I are allowed to visit granddaughter Jed, but no trips to the zoo or movies. Without specifically saying so, the guidelines simply forbid us going anywhere we will likely encounter strangers. Fully-vaccinated folks like your mother and I can get together in small groups, the CDC says, but may not dine in indoor restaurants, go to the theater, or travel on airplanes. For these greater steps toward normalcy, we are going to have to wait.

The CDC guidelines do not say for how long we should continue to avoid mixing with strangers. You might suppose we will have to wait until something like herd immunity is achieved. The aggressive program of vaccination proposed by President Biden last week aims to achieve 80% vaccination by summer's end. However, with one third of Americans telling pollsters this week they do not plan to get vaccinated, such an early end to our pandemic seems unlikely.

Personally, I am not worried about your mother and I being in close contact with the unvaccinated Quaps, Lesters, Dougs, and Nellys that might populate Saint Louis in the coming months: our vaccine will deal with any virus they shed, and we pose no threat to an unvaccinated person, as we do not ourselves carry the virus.

The problem is the possibility that a stranger might carry Eeek.

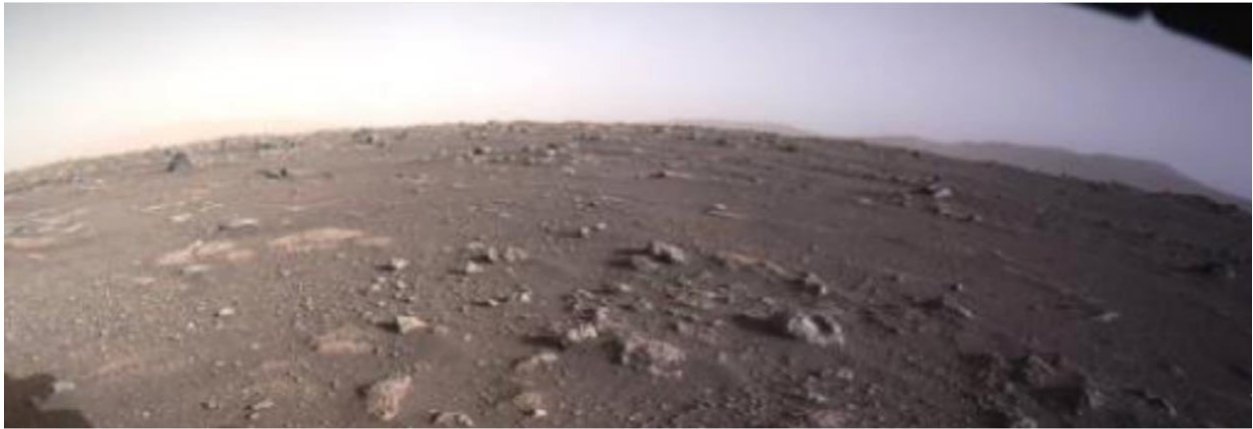
I know exactly how long I will wait before feeling comfortable mixing mask-less with strangers: until I can get a Eeek-directed vaccine booster shot (next fall?).

The key will be to greatly increase the amount of genomic surveillance being done in the United States, so we know where variants arise and how they spread. President Biden's COVID relief bill, signed into law yesterday, provides the money for a greatly increased effort. If Eeek's penetration of this country becomes extensive, I am sure the pressure to provide Americans with Eeek protection will lead to the rapid deployment of an Eeek-booster vaccine.

Look Skyward

I find myself hopeful as we enter our second pandemic year. The number of daily new cases continues to fall, the percent of Americans vaccinated continues to rise – and life goes on in other wonderful ways! Today as I write this, a weird little go-cart is motoring along the surface of Mars collecting samples to be brought back to earth. It took the picture you see below.

Thinking about this fantastic achievement makes me somehow deeply happy. As a species, we continue to seek to understand the universe in which we live. What could be more hopeful than that?



So on that note I will end this week's letter. Please keep up the face masks, hand washing, and social distancing. And look skyward.

Dad