

## Letter 37: A COVID Winter Approaches

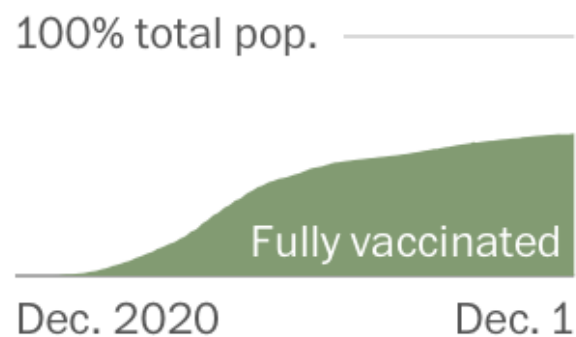
December 6, 2021

Dear Daughters,

In the month since last I wrote to update you about the pandemic, the future COVID-19 landscape has changed dramatically. In this country, federal mandates to get people vaccinated have met with unexpectedly-stiff political resistance. In Europe, the Delta variant has exploded, but not in a way I would have predicted. In South Africa, a new variant called Omicron has arisen. All of this happening just as we all settled down to Thanksgiving turkey dinner!

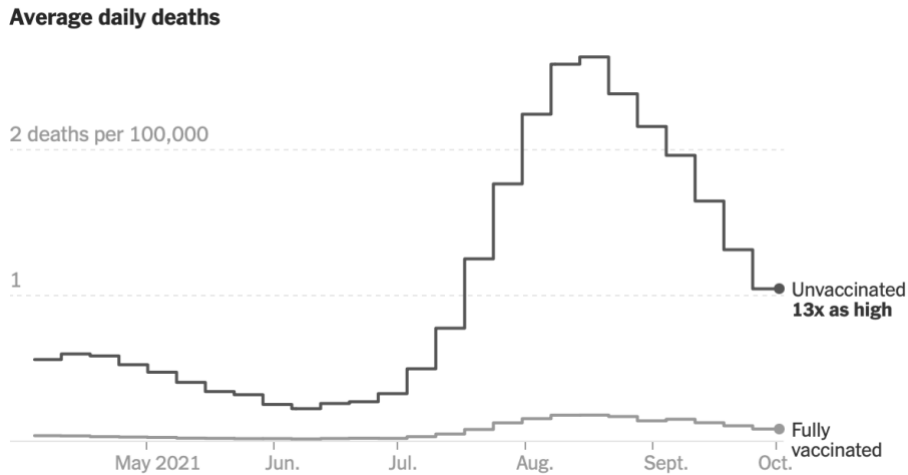
### Vaccination Resistance

Last week Texas Senator Ted Cruz voted to block funding of the government's operation (due to expire) unless the president's mandates requiring vaccination of large corporation workers was rescinded. *People should be free to make up their own minds about vaccination*, he says. Never mind about the government's obligation to promote public safety. This craziness is but one example of unexpectedly stiff resistance to COVID-19 vaccination. About 60% of the country is fully vaccinated today, which sounds good until you realize that means 132 million Americans are not. Vaccination proceeded furiously at first, but has slowed dramatically in the last six months, and unless something dramatic happens, things are not going to get much better:



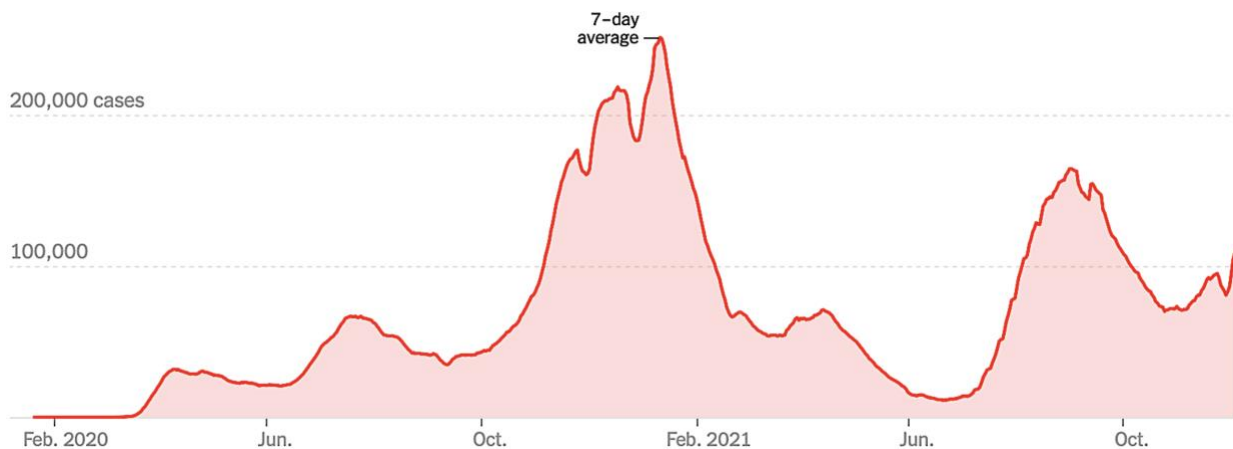
The problem is centered in a cluster of Southern states (AK, LA, TN, MS, AL, GA, WV) with a majority of folks still unvaccinated, and proud of it.

They point out, smirking, that even COVID-vaccinated people catch the virus, so what's the point? The point, as I am sure you are aware, is that unvaccinated people are far more likely to die if infected. It is true that the Delta variant can to some degree evade the antibodies with which vaccines protect us, but the Delta variant cannot evade the very effective T-cell defenses that COVID-19 vaccination activates – so vaccinated individuals rarely get seriously ill if re-infected, and almost never die.



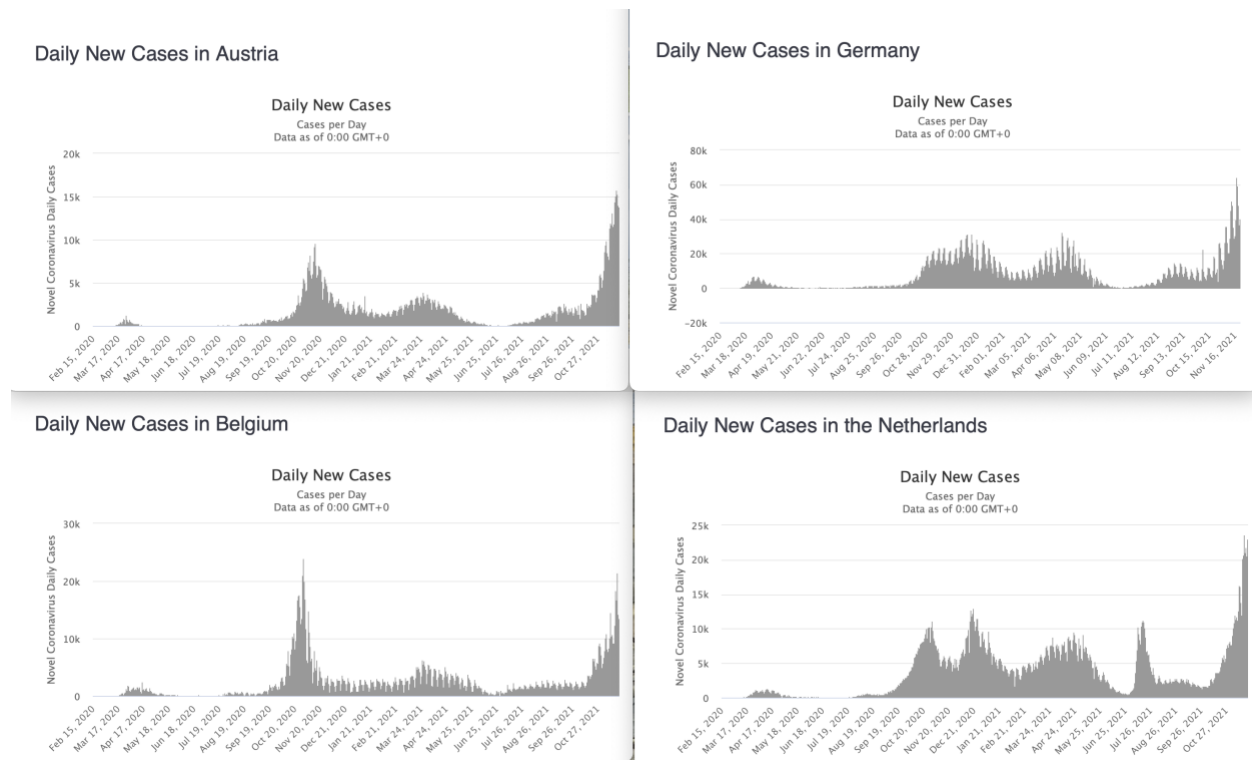
Because death is something that happens largely to the unvaccinated, and they are clustered in the Southern states, I am surprised that Trump and his acolytes like Cruz and Florida's Ron DeSantis do not loudly support mandates – it is Trump voters that are most at risk.

The bottom line? With this many unvaccinated, COVID is not going away. It is, in fact, again rising:



## Europe's Puzzling COVID Explosion

I was startled a few weeks ago when Austria went into full anti-COVID lockdown. This week Germany did too, every nonessential store closed, every school, theater, bar - any public place - locked shut. Why? An alarming spike in COVID-19 cases. In Austria the number of daily new cases was many times what it was six weeks earlier! Other countries in Europe were also reporting a rise in coronavirus infections.



In each of these countries you can see a recent major spike in infection.

Well. You know me. I can't resist a puzzle, especially if numbers are involved. Were any other European countries spiking? Might we get an idea of why, if we identified which ones? For example, if the spikes reflect the onset of winter weather driving people indoors where infection is more likely, then northern European countries might be spiking more often. Looking to see, I elected to quantify "spiking" by looking at the ratio of daily new infections now vs. six weeks

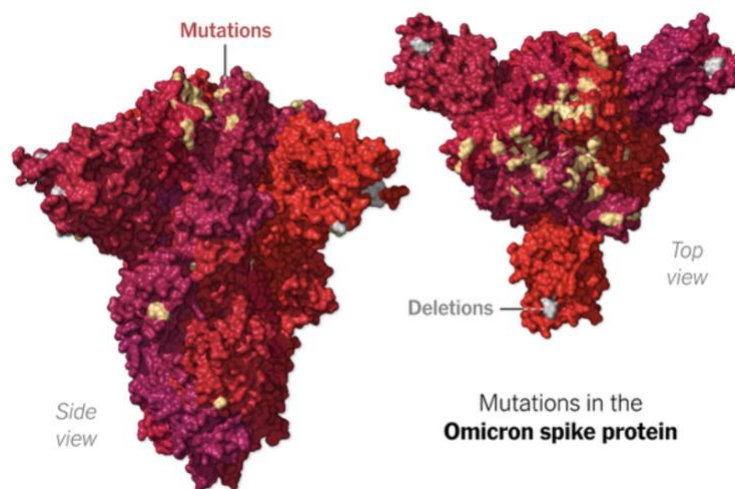


I have no idea what to make of this. There is an explosion of infection throughout central Europe (I have outlined the zone of intense infection in black), with far less severe increases of infection elsewhere. The countries of northern Europe (Scandinavia, countries west of Russia) are not spiking, so it can't be early winter onset. Countries linked to central Europe by extensive travel (France, Spain, Italy, Greece, the UK) show little or no spiking. And yet every country in the core zone is spiking severely. This is the sort of pattern you might have seen in the Middle Ages, when the bubonic plague was spread by fleas on rats.

All I can conclude is that we don't know as much about viral transmission as we think we do. Until we know more, girls, I would advise you not to travel to central Europe.

### **Omicron, The New Variant**

You would have to have been asleep this last week not to have heard of Omicron, a new variant of COVID-19 that has arisen in Southern Africa. First identified in Botswana and South Africa on November 25, it has infected over 10,000 people there in less than two weeks and, spreading quickly, has now been reported in 40 countries on six continents. When examined, the Omicron variant (named after the 15<sup>th</sup> letter in the Greek alphabet) has an alarming number of new mutations, with more than 30 in the spike protein alone. On the ACE2 receptor that creates an entry point for the virus to enter human cells, the new variant has 10 mutations. In comparison, the Delta variant has two. What is most alarming about these mutations (yellow in the drawing below) is that they seem to be clustered at points where antibody recognition occurs:



So what do we have to fear? All members of our family are fully vaccinated and boosted. Aren't we and all who have had the vaccine and been lucky enough to get the booster safe?

No. Scientists in South Africa report that many of the Omicron-infected patients they are treating are fully-vaccinated individuals. Omicron is three times as likely to cause reinfection than Delta, they claim. If true, this "immune escape" poses a direct threat to every vaccinated individual. The WHO reports that cases in South Africa are soaring despite 25% of the population being fully vaccinated, and even more having had the virus. "*We believe that previous infection does not provide them protection from infection due to Omicron,*" they state. All over the world, researchers are scrambling to sort this out, and it will be a few weeks before Omicron's ability to evade vaccines can be clearly quantified. Right now, it looks a little scary.

### **What We Need to Learn**

For now, I would advise you girls to remember that it has been less than two weeks since you first heard of Omicron. This is a very short time frame to learn about this virus. We need numbers:

1. **Infectivity.** How fast does the virus spread? Early reports suggest that Omicron spreads far more rapidly than Delta, and will be the dominant variant worldwide within a few months. Dozens of cases have already been reported scattered across the United States, including all the states where our family lives. How quickly will Omicron replace Delta in the United States? Probably quite quickly.
2. **Mortality.** How deadly is this variant? Most of the early cases seem to have been mild, but the jury is still out. As the variant spreads around the world, we will very soon have many more cases to assess. We will, within weeks, be able to tell whether an Omicron infection is more or less likely to make you seriously ill than a Delta infection. Remember, while the Omicron variant is a potential threat, the Delta variant is a real threat: as I write this, the Delta variant kills over a thousand Americans each day.
3. **Immune Escape.** This is the center of concern at the moment. How much protection against Omicron does vaccination provide? Some, for sure, but how much? We simply don't know yet. The Pfizer and Moderna vaccines our family received were directed against the Alpha variant, and while working less well against the Delta variant, still



provide protection against Delta if boosted. It seems to me likely that this booster will also provide significant protection against the Omicron variant, but that's just a guess. I keep remembering how different this variant is—those 50 mutations, 26 of them never seen before in any variant. I bet we are going to need a new booster directed specifically against the Omicron variant. As this will at best take months to develop, pass through clinical trials, and distribute, we are looking at spring for any such protection.

### **What Our Family Should Do**

So the picture looking forward to this winter is not a pretty one. The Delta variant is beginning to spread explosively in Europe as winter advances, while a new potentially dangerous variant spreads in our country and a substantial portion of our citizenry refuses to vaccinate.

The key to a safer future will be to get more Americans vaccinated, and to get more vaccine to other countries, especially Africa. The experts have been predicting for many months that new variants would arise among the unvaccinated countries of the world – just as Omicron has now done. Nor will it be the last new variant, if we cannot successfully achieve world-wide coronavirus vaccination. We will be playing Whac-A-Mole with new variants until we solve this problem.

Don't imagine I don't see the irony in this: we need to vaccinate the world, but cannot persuade one in four Americans to vaccinate themselves.

What should we do as a family? Clearly, hunker down. Wear your face masks when around others, and don't let others anywhere near you or your loved ones if they don't mask. Be careful if you must travel to stay masked and avoid contact with others. Act as if everyone you meet is infected, and you won't be. Support government efforts to mandate vaccination, and do everything you can to defeat political candidates who oppose mandates.

And keep smiling. While it seems coronavirus is going to be part of our lives from now on, the good news is that we are getting a handle on it. Within months of the outbreak in China in December 2019, an effective COVID-19 vaccine had been developed. Within two years of the outbreak, 60% of our country's citizens have been fully vaccinated against the virus, a proportion which seemed to me a year ago an impossible goal. When the new Omicron variant emerged last week, it was immediately detected by genomic surveillance and development of new vaccines initiated. A lot of great work by very smart people.

Your mother and I look ahead carefully but hopefully.



Stay safe.

Dad