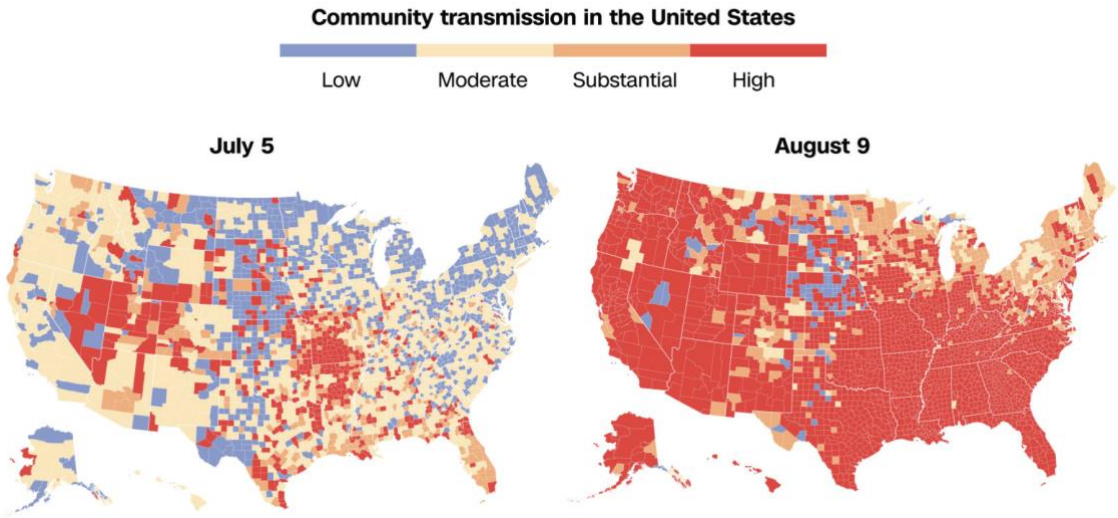
Letter 33: The Pandemic Spikes

August 17, 2021

Dear daughters,

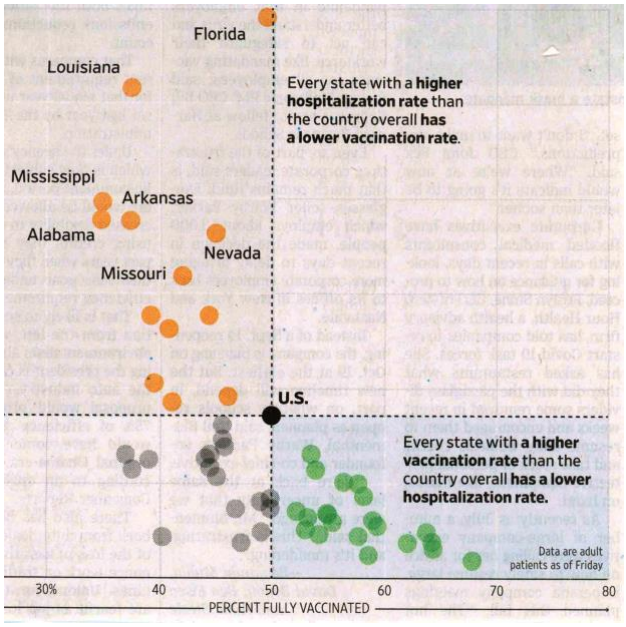
As I am sure you have been reading and hearing on the news, the number of new COVID-19 infections in this country has exploded over the last month. You know me – as a scientist, I always doubt alarming statements like this, asking for concrete numbers rather than pronouncements. In this case, the number I would want to see is the number of infections taking place among people within a community – a state, or even better a county like the one I live in, Saint Louis County. Not the people coming to Saint Louis from some other infected place – just the amount of infection passing from one person to another right here among the people I live with. Formally, public health officials call local infections " community transmission," and to estimate it they count up every infection where the source of the virus infecting someone is someone else in that infected person's community.

Well, community transmission was high a month ago only in rural Missouri, Arkansas, and the desert West. The map below illustrates how, in merely four weeks, the rate of community transmission has increased sharply in practically every county of each state of our country. As you can see in the August 9 map, the rate of community transmission is now high or substantial in every state in the union save Nebraska. This is important, as high rates of community transmission are only seen when many people in a community are infected. COVID-19's Delta variant has arrived on our shores with a vengeance.



Vaccination Still Matters

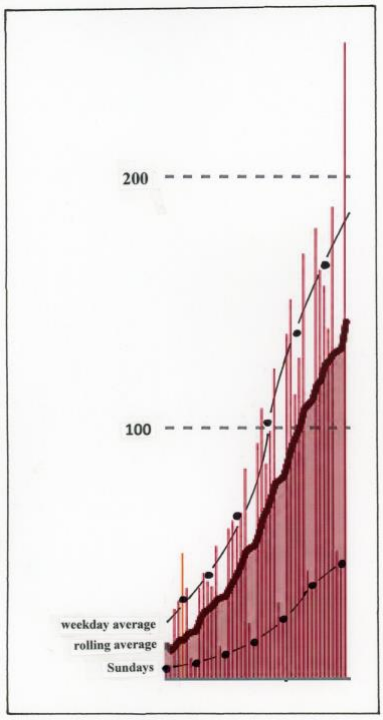
While people living in every state are becoming exposed to COVID-19, the states are not getting equally sick. Because immunized people contracting the Delta variant tend not to get seriously ill, hospitalizations due to COVID-19 are far more common in states where vaccinations are less frequent – like your home state of Missouri.



These same low-vaccination states are the ones with governors fighting the issuance of mandates requiring face masks in public schools. Should your friend's kids go to school if face masks are not required in their classroom? No. I'm sure all three of you understand the lesson these governors haven't yet learned – that it is important to use every tool at your disposal to avoid the Delta variant: vaccination, a booster shot when they become available in the fall, face masks whenever around others (indoors or outdoors), and no indoor dining, drinking, or theater yet. Fully vaccinated, you three should be safe from serious illness, but there is no sense tempting fate.

The Numbers Are Getting Grim

Delta variant infection has led to a quite rapid increase in the number of daily new COVID-19 infections in the United States:

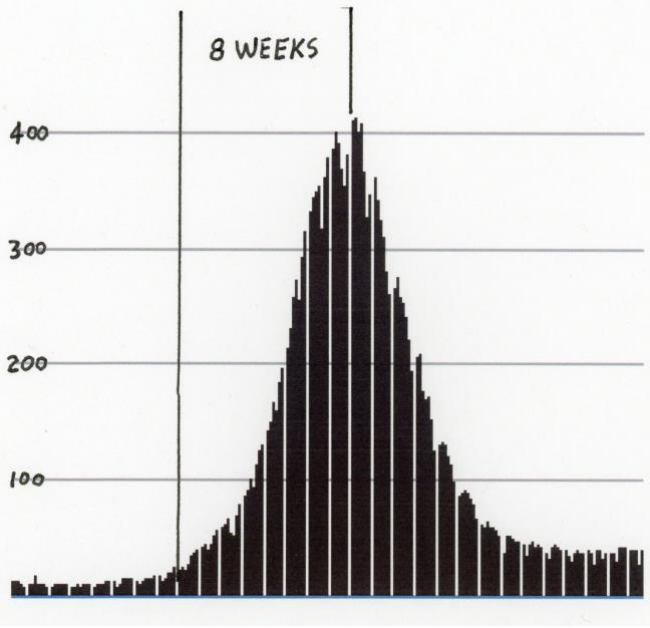


Daily numbers, climbing steeply, have now passed 250,000 a day. How high will they go? Will they then fall as rapidly as they rose – a “spike”?

I have no crystal ball, but if we look at what happened when the Delta variant swept through India, a country four times as populous as the United States, we can seek clues.

India’s Encounter With the Delta Variant

The Delta variant arose in India last December, and quickly infected the entire country, with reported daily new cases exceeding 400,000 (because reporting is very spotty in India, independent analyses by *The Economist* and by *The New York Times* both estimate the true number of Delta variant infections in India as being at least ten times that).



What can India tell us? Well, the most obvious thing is that the wave of Delta variant infection in India was indeed a spike, falling as rapidly as it rose. Why so rapid a fall?

It's not easy to explain the precipitous fall in India's caseload. I have been reading all I can find, but the scientific literature and internet are full of confusion, with many conflicting explanations being offered. Lacking any clarity or "right answer," I'll share with you what seems to me the simplest explanation: that India had a fixed and limited number of people subject to Delta variant infection. The virus burned through this available pool of people, and then with no one left to infect, subsided. I am no expert in epidemiology, and have no way of knowing if this rather simple-minded view approximates the truth. However, if my mental model of limited susceptibility is anything like what is really going on, it suggests that we may expect the same sort of "India" spike in this country. The Delta variant is also reaching every nook and cranny of our nation, and we are as likely as India to have an unidentified proportion of citizens not subject to infection.

A second thing India's experience with the Delta variant suggests to me is that the peak of our spike may be a high one. It took India eight weeks to reach its maximum rate of infection, and we, a much smaller country, are entering our seventh week. Slight decreases in the reported number of new weekday infections (the average of Monday thru Friday reports) and in the number of infections reported on Sundays both hint at a slowing in the rate of increase. However, as I look at today's number of new cases (252,369), it is difficult to be too cheerful. Things are still rising quite rapidly, and we still seem far from our peak infection rate, something likely to be nearer 300,000 new cases a day.

A Dangerous Time

A peak approaching 300,000 new cases a day is a scary high number, a pandemic surge every bit as bad as that we saw last winter. Indeed, I am hearing news reports telling that cities in the less vaccinated parts of the country have sick people overflowing their hospitals. One children hospital's director said dourly that families with COVID-19 infected children would have to wait until a child died before there would be a bed for another ill youngster.

And I fear the worst is yet to come. As the bulk of people now being hospitalized with Delta variant infections are unvaccinated, there will be many deaths among them. A rough estimate of the COVID-19 fatality rate in the United States is 1.68% (37 million cases with 622,000 deaths). For 300,000 new cases a day, that fatality rate will add 5,040 deaths A DAY.

The only grace in this harsh picture is that sometime in the coming weeks, if we follow India's experience, our infection rate will peak, followed by a rapid fall.

This is all very loosey-goosey, of course. No one really knows how the Delta variant wave of infection will play out in this country. Vaccination is the key. Happily, vaccination rates are finally begining to increase in some of our less vaccinated states. As fatalities begin to rise steeply in the coming weeks, I think many more of our doubtful fellow citizens will begin to see the light. Until that happy day, keep hunkered down and always be masked when around others.

Although the coming weeks are going to be a dangerous time for our family, I have decided to be guardedly hopeful that within a few more months we may be past the worst of the Delta variant. Having kept ourselves safe, I am hoping we will all emerge from this pandemic surge in the fall in good health, gathering together for Thanksgiving as a family!

A Parting Smile

Jed, the youngest member of our family, is cheerfully unaware of all the fuss about viruses and infections. She just putters along, exploring her world. These flowers, she thinks, are pretty neat. She has a point, one that the rest of us should keep in mind: don't forget to smell the flowers. Our lives are rich and wonderful, to be marveled at and enjoyed, even with dark clouds overhead.

Dad