

The Delta Variant sounds like the title of one of those Robert Ludlum thrillers, like *The Bourne Identity*. Actually, though, it's a lot scarier. The Delta variant of the coronavirus is rapidly becoming dominant. What are its characteristics and what can we expect from its spread?

The first thing to know is that the Delta variant is about 50% [more transmissible](#) than the Alpha variant, which itself is more transmissible than the original COVID strain. This increase in transmissibility makes a huge difference. A number called R_0 gauges the transmissibility of a disease. It's simply the average number of new people who any one victim will infect in a population with no immunity. The R_0 of the original virus was about 2.5, so any one coronavirus victim was likely to inflict 2-3 other people. Those people in turn would infect more people, and so forth. In fifth round of this process, about 100 people would be infected. If the R_0 of the Delta variant is 3.5, that means that after the fifth round, about five times as many people would be infected. This assumes perfect mixing of the population, which isn't realistic, so don't take these numbers completely literally. They do provide an indication, however, that Delta will spread very quickly once it gets into a community.

There are [several features](#) of the Delta variant that remain unclear. One is whether it causes more severe illness than earlier forms of COVID-19. It is associated with an increase in the number of hospital admissions, but we don't know yet whether that's because it causes more severe illness or is simply because there are more people getting the virus in the first place. Delta causes proportionately more cases of serious illness in younger people, but that may be because fewer have been vaccinated. We do know that complete vaccination (two jabs) is highly effective in preventing serious cases, but it's less clear whether it also blocks transmission. A single shot of the Moderna or Pfizer vaccines offers much less protection, according to [recent research](#).

Delta will amplify existing disparities in coronavirus spread. People in rural areas, especially in the South, are much less likely to be vaccinated. They have also tended to resist social distancing measures and use of masks. That means that Delta will have an open field when it reaches those communities. 'Community' here is partly defined through social networks and as the catchment areas for places where people gather - churches, Walmarts, schools, etc.

As the Delta variant invades rural areas, the death rate may be higher than in urban areas. According to [USA Today](#), "18 million people live in counties that have hospitals but no ICU, about a quarter of them 60 or older, the analysis shows. Nearly 11 million more Americans reside in counties with no hospital, some 2.7 million of them seniors." There are also higher

proportions of people who are obese or diabetic, two risk factors for COVID. The mortality rates from flu outbreaks give some indication of potential COVID-19 mortality, since the vulnerable populations are somewhat similar. According to [experts](#), flu is more deadly in very rural areas, with a 60% higher death rate from flu than major metros.

We're already beginning to see the [impact](#) of the Delta variant:

"In Missouri, Kansas, Iowa, and Connecticut, Delta represented more than 80 percent of new infections. In Missouri, where vaccination rates are relatively low and the supercharged strain makes up a whopping estimated 96 percent of daily cases, hospitals have been strained for ventilators. "We just never thought we would be back here," Erik Frederick, chief administrative officer at Mercy Hospital in Springfield, told the Associated Press."

Notably, [vaccination rates](#) are 36.8% in Missouri, 32% in Arkansas, and below 40% in Kansas, and Kansas is just below 40 percent. In contrast, about 55% of the population is fully vaccinated in states like New York and New Jersey. To be more specific, a recent [study](#) found five clusters of unvaccinated people:

"The five clusters are largely in parts of eight states, starting in the east in Georgia and stretching west to Texas and north to southern Missouri. The clusters also include parts of Alabama, Arkansas, Louisiana, Oklahoma and Tennessee, and are made up of mostly smaller counties but also cities such as Montgomery, Alabama; Shreveport, Louisiana; and Amarillo, Texas."

There are a few mid-sized cities in this group, but the bulk of the unvaccinated areas are rural. One possible effect of the urban-rural disparity may be to deepen schisms that already exist in society. The disease could potentially hinder economic recovery in rural areas, increase the desire of younger people to leave, and lead to stereotyping of rural residents as disease prone. Even in urban areas, vaccination rates are lower among communities of color, creating another set of disparities. The last thing the country needs right now is anything that would deepen our divisions.

No matter how you look at it, the Delta variant is bad news. The Epsilon variant, when it inevitably comes along, will be even worse. The only way out of this mess is to get everyone vaccinated as soon as possible. Easier said than done, however. Just like some individual patients, American society may end up suffering from "long COVID."

