

Diaries

After the

Lockdown¹

Why should “I” wear my mask (again) to protect “Them”?

July 30, 2021

The CDC is now recommending that even fully vaccinated persons should once again start to wear masks indoors because of the emerging highly-infectious Delta variant. David goes on a rant, reasoning, “I got the vaccine, why should I wear a mask to protect people who refuse to get vaccinated?”

David is writing this story in the first-person, “I”, because he is feeling angry, even vengeful, and he needs to own that anger. The CDC is now recommending that even fully vaccinated persons should wear masks when they are indoors in public places. This newly emerging wave of the pandemic is hitting especially hard those people who have not gotten vaccinated for one reason or another. *I* got vaccinated. Why should I now have to wear a mask (again) to protect *them*?



Figure 1: Our unvaccinated grandchildren gather with their friends at this playground at New Fadum Farm. Surely, we should be willing to wear our masks again indoors to protect them!

Dan has made some runs with Ali’s model that provide an easy-to-grasp story of what is probably going on now with the COVID-19 pandemic. That story runs something like this. In first months of the pandemic which threatened to rip through the population, potentially killing around 1% of the population (i.e., 3 million deaths in the United States), a strict government-enforced lockdown augmented by social distancing and mask-wearing, was able to turn around the first surge. When the lockdown was eased, we as a society relaxed on vigilance and the next surge came on, this time induced by human behavior (letting down our guard). The model showed that these surges could and probably would continue for a very long time. Then vaccines became available. In the main model scenario, we assumed that the

vaccine was 90% effective and 70% of the population would be willing to take it. This vaccine program brought us just about to the “herd immunity” mark and the surges died out. In the simulations, it took over a year for the surges to settle out, but eventually the pandemic settled into a steady state where infections continued to occur mainly among non-vaccinated persons, who then passed the infection on to other non-vaccinated persons. Cross-infections to the vaccinated population were very small.

Dan simulated the probable impacts of the new Delta variant by assuming that after the pandemic surges had settled out, the original virus was over a period of months by a new strain that was twice as infectious.

¹ You can access all of the “Diaries During Lockdown” [here](#). “Diaries During Lockdown” is a network of professionally trained mathematical modelers (along with some of their friends and colleagues) who are using the tools of system dynamics and systems thinking to explain many of the complex choices facing individuals, organizations, and governments as we collectively grapple with the COVID19 pandemic. The apparent voice of this story is that of David Andersen, a retired Professor of System Dynamics and Public Policy who lives on New Fadum Farm. This voice is actually the synthesis of a number of different analysts and writers.

In that simulation a new round of repeating surges erupted, primarily but not entirely among the unvaccinated population. That is, the same human behaviors that led to surges within the whole population in the first rounds of the pandemic were now causing a similar pattern of surges, primarily within the 30% of the population that was unvaccinated. These surges were large enough to cross-infect the fully vaccinated population.

This pattern, inferred from the simulation results, seems to be confirmed by epidemiological measurements. Virtually all current hospitalizations and deaths in the country are among the unvaccinated. Yesterday, the Governor of North Carolina announced that virtually all recent confirmed infections in that state were indeed caused by the Delta variant.

Now the CDC is recommending that everyone, including those of us who (wisely) chose to get vaccinated, should return to wearing masks while indoors in public places. Since we are now having difficulty getting everyone who is eligible to take the vaccine, the whole population needs to decrease contacts and contagion to prevent new surges of the now more potent strain. In short, all of “us” must mask up, reduce contacts and maintain strict hygiene practices in order to protect “them” (who are not getting vaccinated to help our “herd” attain full herd immunity). This makes me a bit angry.

On further reflection, though, I note that there is no room for anger or vengeful splitting up of our community into opposing “We” and “They” camps. The camp of the unvaccinated includes all five of my grandchildren and members of my living bubble who are at high risk because of other medical conditions. My trusted social network, those select persons with whom we now can and do gather and even share meals indoors, needs to isolate itself more fully from the new Delta variant that is driving a new upswing of the pandemic.

All the lessons that we have learned still pertain - living in safe “bubbles”, being careful about structuring our interactions within trusted social networks, thinking carefully about and using protocols for interacting with others, and, yes, wearing masks and social distancing while out in public. Annoyed or not, we need to do the right things to protect *all* of us (even if some of us haven’t realized or accepted that we are all in this together).

This Story Has a Lesson: *The COVID pandemic is still with us, and its complicated dynamics persist. Many, if not most of us, still live in bubbles that contain our children, grandchildren, and other people who are at-risk. We still interact within trusted social networks that need to isolate themselves from on-going surges in the (now unvaccinated) public. Following safety protocols while interacting with each other is still a good idea. David needs take a deep breath and let go of his anger. He should just go ahead and wear his mask while indoors in public places, give thanks that the vaccines are readily available just about anywhere in the country, and encourage everyone who can to get vaccinated.*

Technical Modeler’s Notes:

1. **Ali’s CORONA1 Model.** You can download and run Ali’s model here: [CORONA1.mdl](#). Please right-click on the file and select “Save link as ...” You will need to download a free version of the simulation software VENSIMPLE to open and run this model.

2. Professional Presentations. Ali's professional briefings with an introduction to his model and its conclusions can be found at [Spread of Corona](#) , [Waves of Corona](#) and [Policies to control Corona](#).

Read More to Dig Deeper

This technical note repeats word-for-word the same technical note that appeared 8 days ago on July 22. This is a message worth repeating...

When David returned from North Carolina, he posed several questions to Ali and Dan on the modeling team to test out his “mental simulations”. In Ali’s model, can the pandemic break out again due to the introduction of the highly infectious Delta variant? Specifically, what combinations of infectivity, vaccine effectiveness, and fraction of the population willing to vaccinated can lead to the breakout?

Here are some quick answers to these questions. Yes, in Ali’s model it is possible for the pandemic to re-emerge, and when it re-emerges, it returns to a mode of repeating surges like those seen was before the vaccination program was put in place. Figure 2 below illustrates how this happens.

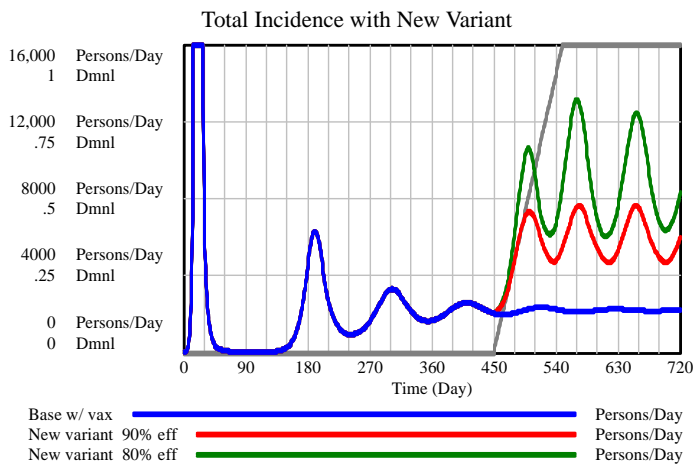


Figure 2: Simulated effects of doubling infectivity in Ali's from day 450 to 550. The simulated pandemic quickly re-erupts (mostly among the unvaccinated), and worsens if the effectiveness of the vaccine is lessened

The possible effects of a new Delta-like variant were simulated by doubling the infectivity of the virus in the model; in other words, the likelihood of the virus passing from an infected to an uninfected person through social contact is doubled. The new variant is introduced at day 450, and by day 550 it completely replaces the original virus, as shown by the grey line.

The figure shows the results of three simulations. The blue line shows the base run of the model (90% effective vaccine and 70% of the population willing to be vaccinated).

In this run, the vaccine program controls the pandemic.

The red line shows a re-emergence of the repeated surging mode of behavior when infectivity increases due to the new variant. The green line simulates the same system, except in this case the vaccine is only 80% effective against the new virus (as opposed to 90% as in the blue and red lines). While this newly emerging version of the pandemic mostly involves the unvaccinated population, there is cross-infection impacting the fully vaccinated population: the vaccinated are in contact with more infected persons and they are somewhat less protected by the vaccine they received.

We shouldn't take these results as precise predictions or forecasts, of course. They pertain only to the simulated world that exists virtually within the model. Nonetheless, they can help inform us as we decide how to live our lives in these tricky times.