

September 24th, 2021

## KEY TAKEAWAYS

- Overall case rate growth has slowed, but trends are mixed across the Commonwealth, with much of the Southwest still in "Surge".
- Virginia may be "cresting the peak" of this Delta wave, but case-rates and community transmission remain quite high.
- Though models forecast an imminent peak, followed by a slow decline in cases, masking and social distancing are still the best option for limiting short-term impacts on your community.
- Models also suggest that if transmission patterns mirror those of Fall and Winter 2020, we may see a larger peak in January.
- Vaccines remain the most effective way to reduce cases in the long-term, as well as protect against hospitalization and death.

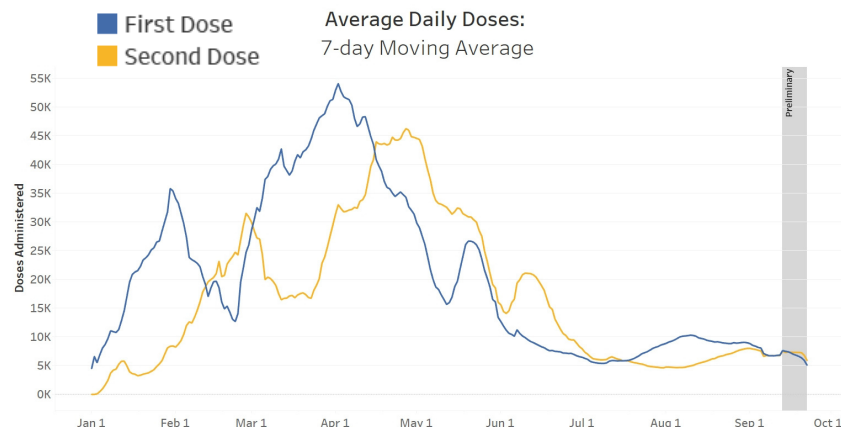
**42 per 100k**Average Daily Cases  
Week Ending Sept. 19, 2021**44 per 100k**Potential Peak Average  
Adaptive Scenario Daily  
Cases, Week Ending  
October 3, 2021**6,616**Average Daily 1st Doses  
Sept. 19, 2021**7,294**Average Daily 2nd Doses  
Sept. 19, 2021

## KEY FIGURES

Reproduction Rate  
(Based on Confirmation Date)

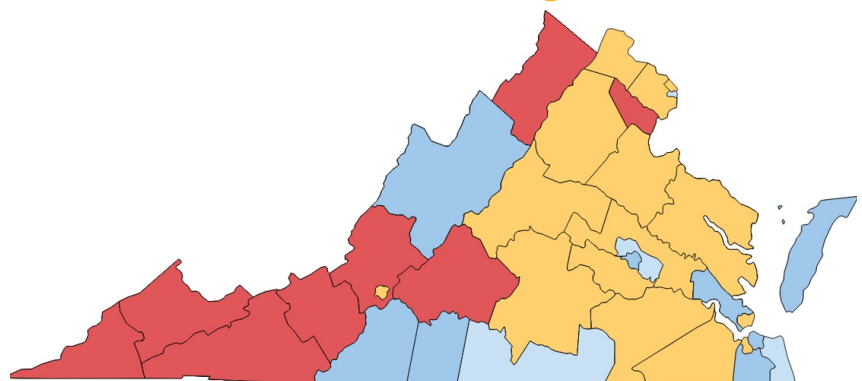
Region	$R_e$ Sept 20th	Weekly Change
<b>Statewide</b>	<b>1.047</b>	<b>-0.018</b>
Central	1.049	0.012
Eastern	1.043	0.004
Far SW	1.059	-0.061
Near SW	1.013	-0.030
Northern	1.035	-0.053
Northwest	1.070	0.017

## Vaccine Administrations



## Growth Trajectories: 8 Health Districts in Surge

Status	# Districts (prev week)
Declining	8 (12)
Plateau	4 (4)
Slow Growth	15 (7)
In Surge	8 (12)



## THE MODEL

The UVA COVID-19 Model and these weekly results are provided by the UVA Biocomplexity Institute, which has over 20 years of experience crafting and analyzing infectious disease models. It is a county-level **S**usceptible, **E**xposed, **I**nfected, **R**ecovered (SEIR) model designed to evaluate policy options and provide projections of future cases based on the current course of the pandemic. The Institute is also able to model alternative scenarios to estimate the impact of changing health behaviors and state policy.

**COVID-19 is a novel virus, and the variant mix changes constantly. The model improves as we learn more.**

## THE SCENARIOS

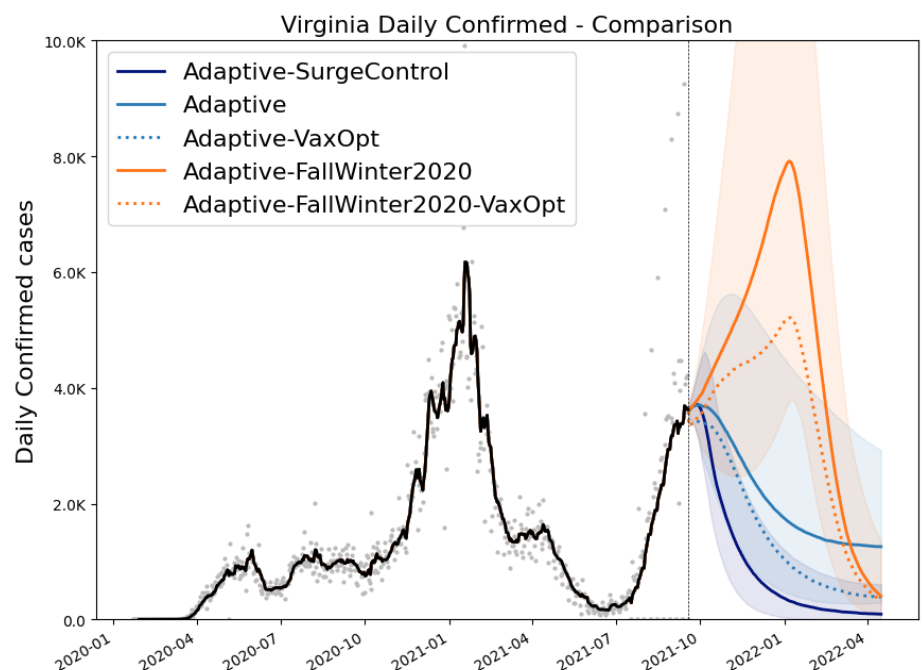
The model uses various scenarios to explore the path the pandemic is likely to take under differing conditions. The **Adaptive** scenario takes the current course of the pandemic at the county level, including the impact of the Delta variant and vaccines, and projects it forward. The **SurgeControl** scenario shows the likely impact of prevention and mitigation efforts (masking, social distancing, testing and isolating, etc.) by employing a 25% reduction in transmission rates. The new scenario for this week is called "**FallWinter2020**", and replaces last week's "SeptSurge" and "Fall" scenarios. This scenario attempts to capture the transmission drivers of the entire 2020 holiday season and project them forward. In this scenario, transmission rates from October 2021 to February 2022 are manually set to reflect the transmission rates from the same time period last year, but boosted by Delta's enhanced transmissibility.

As usual, all of these scenarios can be augmented by the **VaxOpt** (optimistic vaccine) modifier that adds to the existing scenario a hypothetical increase in vaccinations among adults and assumes vaccine eligibility for children ages 5-11 years in November. Specifically, this modifier assumes that we reach an average of 85% coverage among adults, with a minimum of 65% in each county. Note that all scenarios also include the effects of natural immunity.

## MODEL RESULTS

The Adaptive scenario (blue), our present course, shows us **peaking in the next two weeks** followed by a gradual decline. The SurgeControl scenario (indigo) shows a much faster drop-off of case rates, possibly reaching Summer 2021 lows by December. Conversely, the new modeling scenario, FallWinter2020 (shown here in orange), forecasts a continued rise in case rates possibly exceeding last January's peak.

As before, the VaxOpt (dashed lines) modified scenarios, show that in the long-run vaccinations can prevent thousands of cases. Do your part to stop the spread. Please continue to **practice good prevention**, including masking, social distancing and self-isolating when sick, and **get vaccinated** as soon as possible.



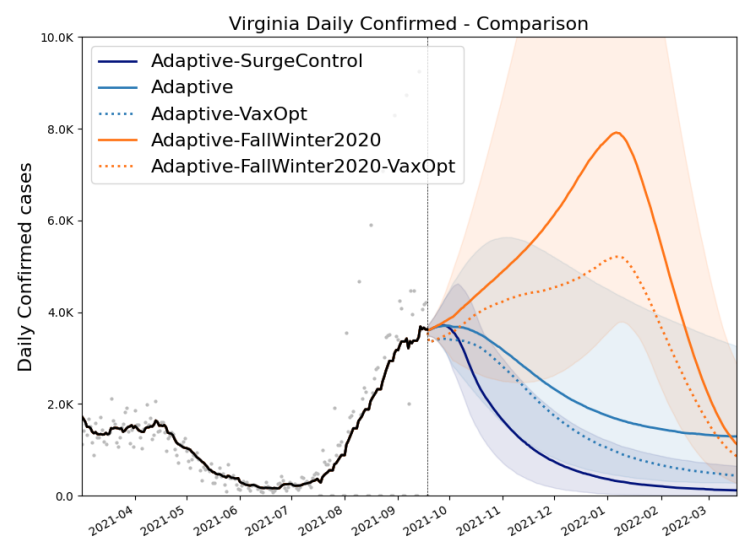
## THE ROAD NOT TAKEN

*Two roads diverged in a yellow wood, and sorry I could not travel both...* In one of his most memorable poems, Robert Frost urges us to take the road less traveled. It is timely advice, as modeling suggests that two very different paths could lay before the Commonwealth. In fact, we've already been down one of them last year.

These models cannot predict the future, but rather lay out possible outcomes given specific conditions. Epidemic forecasts are based on our current understanding of transmission dynamics of this pandemic, but they require some base assumptions. As always, the **Adaptive** scenario assumes that things will remain roughly the same: transmission rates, latency and incubation periods, infectiousness, mixing rates, etc. Nobody actually expects these parameters to remain static forever, but the Adaptive scenario shows us what could happen if nothing substantial changes. Right now, these assumptions are holding true. Virginia seems to be cresting the Delta wave. Case rates are leveling off, and we could see a significant decline in the coming weeks.

But last year was a very different story. The cause of the Fall and Winter 2020 surge is still a matter of academic debate. Perhaps it was the weather, travel, holiday gatherings, or perhaps all of the above. Whatever the case, starting in October, transmission rates in Virginia rose substantially leading to the peak of January 2021. What if we follow a similar path tomorrow? That is what the **FallWinter2020** scenario is meant to explore. The UVA team compared the seasonal transmissibility of 2020 to 2021, and found that the two are "nearly identical" if adjusted for the Delta variant's increased infectiousness. The FallWinter2020 scenario assumes the same increase will happen in 2021 and adds the effects of Delta. We have an advantage over 2020, with a partially vaccinated population and natural

immunity. But when you account for Delta's increased transmission rates, and waning immunity, this path takes us to a far higher peak than we've ever seen. Models suggest the potential January 2022 peak could reach 8,000 cases a day in Virginia.



## Choosing the Better Path

So far, statewide case rates seem to be leveling off and some health experts are optimistic about October, but hospitals remain strained, and parts of the Southwest are still struggling. No one can say for certain what the Fall and Winter holds in terms of transmission rates, but we can still influence the course of this pandemic. Vaccines offer us a path we couldn't take last year. Vaccines are very effective at reducing hospitalization and death rates. Moreover, though breakthrough cases are possible, and immunity wanes, vaccines are still effective at reducing transmission.

The VaxOpt alternate scenarios above show that regardless of a Fall and Winter surge, a statewide increase in vaccination coverage (from today's 71% to 85% of adults) could drastically **bend the curve** and save lives. Specifically, models suggest that under the FallWinter2020 scenario, improved vaccination uptake could prevent **220,000 cases** (25% of total) by March 2022. Under the current Adaptive scenario, vaccinations could still prevent **91,000 cases** (24% of total) by March 2022.

If you haven't done so already, please **get vaccinated** as soon as possible and get a booster when eligible. If you get your first dose next week, you could be fully protected before Thanksgiving. Also, please continue to **practice good prevention**, including masking, social distancing, testing and self-isolating when sick. In the short-term, this is the best way to relieve hospital congestion and protect our healthcare workers, frontline workers, and first responders.