October 1st, 2021

KEY TAKEAWAYS

- Statewide, the number of confirmed cases had begun to decline, and 25 local health districts are in declining or plateau trajectories. Transmission rates have also dropped statewide and in all regions.
- Ten local health districts remain in growth trajectories, including 2 in surge trajectories.
- Under the current course, the model projects cases have already peaked, however scenarios show there is still potential for a large holiday surge similar to the one experienced last year.

38 per 100k
Average Daily Cases Week Ending Sept. 26, 2021

(43 per 100k)
*Adaptive Scenario Forecast Average Daily Cases **Already Peaked** on September 19, 2021*

5,364
Average Daily 1st Doses Sept. 26, 2021

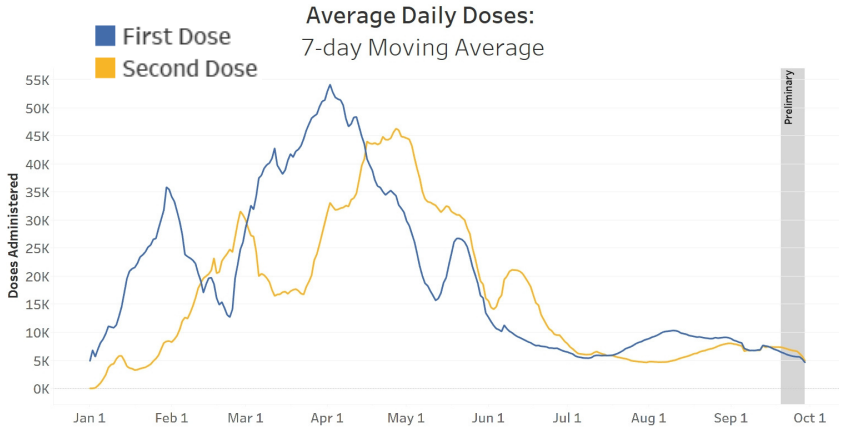
6,614
Average Daily 2nd Doses Sept. 26, 2021

KEY FIGURES

Reproduction Rate
(Based on Confirmation Date)

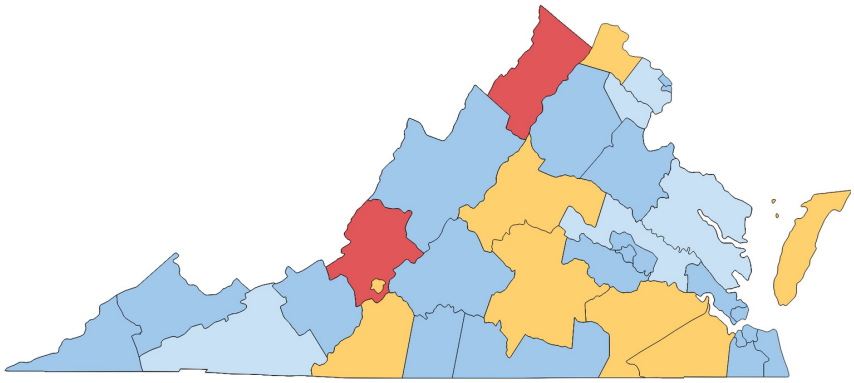
Region	R_e Sept 27th	Weekly Change
Statewide	**0.978**	**-0.069**
Central	0.978	-0.071
Eastern	0.994	-0.049
Far SW	0.965	-0.094
Near SW	0.941	-0.072
Northern	1.012	-0.024
Northwest	0.951	-0.120

Vaccine Administrations



Growth Trajectories: 2 Health Districts in Surge

Status	# Districts (prev week)
Declining	20 (8)
Plateau	5 (4)
Slow Growth	8 (15)
In Surge	2 (8)



UNIVERSITY of VIRGINIA
BIOCOMPLEXITY INSTITUTE

UVA COVID-19 MODEL WEEKLY UPDATE

VDH VIRGINIA DEPARTMENT OF HEALTH

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

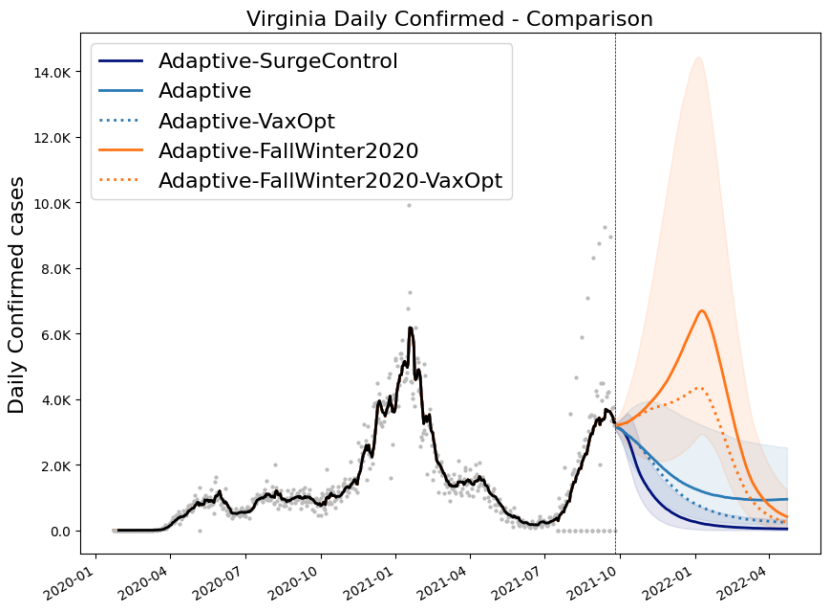
Scenarios remain unchanged from last week. The models use various scenarios to explore the path the pandemic is likely to take under differing conditions. The **Adaptive** scenario takes the current course of the pandemic at the county level, including the impact of the Delta variant and vaccines, and 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 "**FallWinter2020**" captures 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), projecting our present course, suggests that **cases have peaked and are in a gradual decline**. The SurgeControl scenario (shown in indigo) forecasts a much faster drop-off of case rates, reaching Summer 2021 lows by early December. Conversely, the FallWinter2020 (shown here in orange), continues to forecast a continued rise in case rates potentially exceeding last January's peak.

As before, the VaxOpt (dashed lines) modified scenarios, show that in the long-run vaccinations could prevent thousands of cases in any scenario. 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.



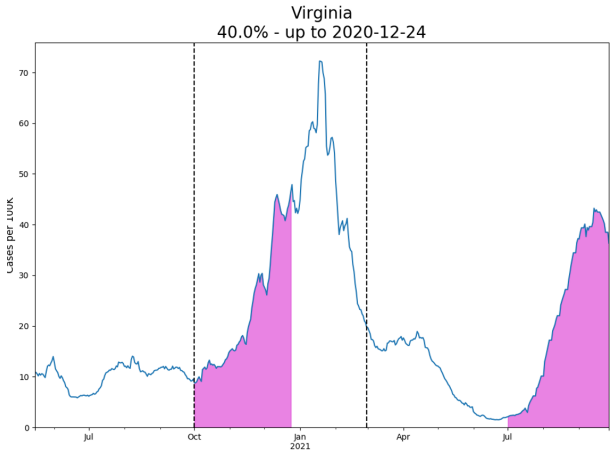
THE MORE THINGS CHANGE...

Last week, the number of COVID-19 deaths surpassed the number of deaths caused by the 1918 influenza pandemic, making COVID-19 the deadliest infectious disease in US history. Like COVID-19, the 1918 flu was a respiratory disease, and many of the same measures that prevent flu prevent COVID-19. However, it is a stretch to say the diseases are similar. The average age of death from the 1918 flu was 28, while COVID-19 deaths are concentrated among seniors thus far. Flu tends to spread by contact with droplets, while the evidence suggests aerosol transmission is important with COVID-19 . COVID-19 is occurring in a far different environment as well. In 1918, there was no vaccine or treatment available for the flu. In 2021, modern hospitals equipped with ICU units and ventilators have saved many lives, and a COVID-19 vaccine that drastically reduces the risk of infection, severe disease, and death is widely available.

More Recent Comparisons

The latest COVID-19 wave, caused by the Delta Variant is likewise different from earlier waves. Delta is far more transmissible, and, though severe outcomes are still rare, poses a greater risk to young Virginians. The environment has changed as well. Most public health restrictions, such as mask mandates, have been lifted, and 60% of Virginians are fully vaccinated.

Although it is more transmissible and dangerous, the Delta wave has caused only about 40% of the cases experienced during last winter's surge - at least so far. Right now, the Delta wave appears to have peaked. However, the sharpest growth last year occurred over the holidays, beginning around Thanksgiving.



The big question right now is whether Virginia will experience a repeat of last winter's surge, with this new variant, in this new environment. As noted last week, this largely depends on whether Virginians choose to get vaccinated, including boosters when eligible, and practice other prevention measures.

Another Winter Surge?

Models are our best tools for understanding the potential course of the pandemic, but they struggle with new variants in new environments. They struggle even more when human behavior is involved. This week's model includes the FallWinter2020 Scenarios, which show what could happen if we experience a holiday surge similar to the one experienced last winter. However, the model cannot tell us whether that scenario, or another, will play out.

To fill this gap, the Virginia Department of Health has partnered with the Metaculus forecasting platform in the Keep Virginia Safe Forecasting Tournament to help answer these questions. Although no one has a crystal ball, Metaculus leverages cutting-edge methodologies to to aggregate the forecasts of a highly engaged network of thousands of forecasters. These methods provide us with another view of the future course of the pandemic. Overall, Metaculus forecasters are optimistic that Virginia can avoid a winter surge, giving a greater than 50% chance that cases will peak prior to Thanksgiving, and a greater than 25% chance that cases have already peaked, supporting the idea the Delta wave is at or near its peak.

In addition to these forecasts, the UVA team is working with Metaculus to get advance insight into new variants, how human behavior may impact model projections, and the timing and substance of policy decisions. These will help the UVA team fill gaps as evidence builds, and to develop better scenarios. To learn more about these partnerships, and about how to participate in Metaculus forecasts, you can join us for an open panel discussion with members of the Metaculus, UVA Biocomplexity, and VDH team on Oct. 5 at 3PM.