UVA COVID-19 MODEL WEEKLY UPDATE

March 4th, 2022

KEY TAKEAWAYS

- Cases continue to decline statewide. All of Virginia's local health districts are in declining trajectories.
- At the current rate, the BA.2 subvariant of Omicron is unlikely to stem declines, even if it becomes dominant in Virginia.
- According to new CDC guidance, community levels are high in much of the state. Community levels include measures of transmission and burden on local health systems.
- Vaccination and (to a lesser extent) exposure mitigate but do not eliminate the risk of severe disease and the impact on health systems from new variants.
- Vaccination is the best tool to control individual and community risks from COVID-19.

20 per 100k
Average Daily Cases Week Ending Feb. 27, 2022

(187 per 100k)
*Adaptive Scenario Forecast Average Daily Cases, **Already Peaked** on Jan. 16, 2022*

1,501 / 2,115
Average Daily 1st / 2nd Doses Feb. 26, 2022

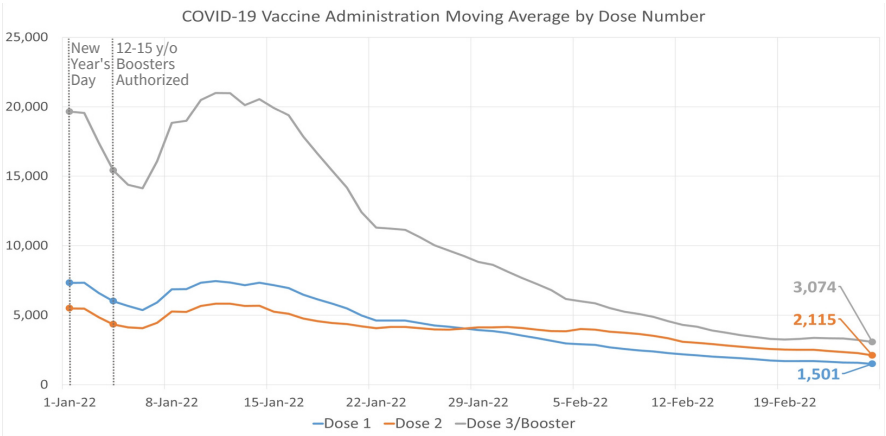
3,074
Average Daily Boosters Feb. 26, 2022

KEY FIGURES

Reproduction Rate
(Based on Confirmation Date)

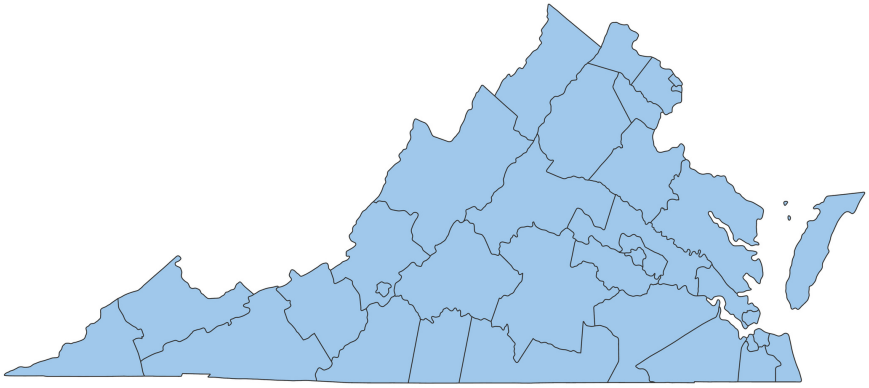
Region	R_e Feb. 28th	Weekly Change
Statewide	**0.645**	**-0.060**
Central	0.836	0.126
Eastern	0.752	0.018
Far SW	0.497	-0.178
Near SW	0.767	0.074
Northern	0.638	-0.186
Northwest	0.558	-0.158

Vaccine Administrations



Growth Trajectories: 0 Health Districts in Surge

Status	# Districts (prev week)
Declining	35 (34)
Plateau	0 (0)
Slow Growth	0 (1)
In Surge	0 (0)



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 periodically. The model improves as we learn more.

THE SCENARIOS

Unchanged: The models use various scenarios to explore the path the pandemic is likely to take under differing conditions. As the CDC now estimates that the Omicron variant represents >99% of all new cases in Virginia, all prior Delta variant scenarios have been retired. All current scenarios are based on the immune escape and transmission profiles of the Omicron variant. As before, models use COVIDcast surveys to estimate county-level vaccine uptake. They then assume that vaccinations increase steadily in each county until this value is reached and 40% of vaccinated individuals receive a booster.

The new "**Adaptive**" scenario assumes that Omicron is as transmissible as Delta but adds an immune escape of 80%. This represents the current course of the pandemic and assumes that there will be no significant changes in interventions or transmission rates in the near future. Note that this scenario was called "Adaptive-Omicron" until January 21st.

The "**Adaptive-Spring**" scenario is meant to approximate the epidemic trajectory seen in the Spring of 2021. In this scenario, transmission rates from now until mid-March are manually set to reflect the falling transmission rates from the same time last year, then boosted by Omicron's enhanced transmissibility and immune escape. The "**Adaptive-DecreaseControl**" scenario explores the effects of a hypothetical increase in transmission rates. It is meant to demonstrate that continuing preventive measures are important despite Omicron's milder illness. The "**Adaptive-VariantBA2**" scenario adjusts for the new Omicron BA.2 subvariant's enhanced transmissibility, and assumes it will reach 95% prevalence by April 1st.

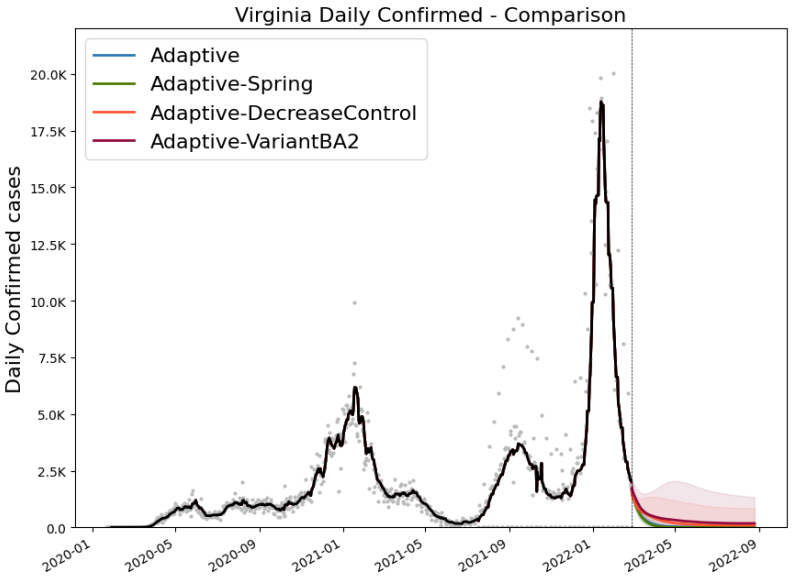
MODEL RESULTS

Updated: The current course "**Adaptive**" scenario (blue) shows a continued decline in case rates, with Virginia reaching fewer than 500 daily cases by February 20th. The "**Adaptive-Spring**" scenario (green) is nearly identical, but the quicker decline in case rates results in 1,000 fewer cases by April.

The "**Adaptive-DecreaseControl**" (shown here in orange) is also very similar to Adaptive, but with larger uncertainty bounds. It forecasts an additional 5,000 cases by April and keeps Virginia above 500 daily cases until late March.

The "**Adaptive-VariantBA2**" (maroon) projects a slower decline with even more uncertainty. It keeps Virginia above 500 daily cases until April.

Please do your part to drive down cases. Practice good prevention, including indoor masking, social distancing, self-isolating when sick, and get vaccinated and boosted as soon as possible.



Date of Latest Model Run: 2022-03-02

RHYTHMS

As we look forward to spring, the old adage "history does not repeat itself, but it does rhyme" comes to mind. The Omicron surge was eerily similar to the holiday surge last year - including record case peaks (within the same January week) followed by rapid declines. However,much differs as well. Last March, Virginia's vaccination campaign was just beginning. This March, over 80% of Virginia's residents have received at least one dose. Last March we were warily eyeing several new Variants of Concern, including the yet unnamed Alpha variant. This March, the BA.2 subvariant of Omicron is the only VoC on the horizon. Last year's holiday surge created records in cases, hospitalizations and deaths. This year's Omicron surge blew through case records, creating three times the number of cases. Hospitalizations and deaths, were high, but closer to peaks seen last year.

Decreased severity appears to be a characteristic of the Omicron variant. However, that may not be due to Omicron itself, but to Virginia's high vaccination rate. Omicron was largely (though not completely) able to evade the first layer of defense induced by up to dat vaccines, allowing it to cause infections. But second and third layers of defense held up, largely preventing serious illness and death. Among unvaccinated individuals, previous infection also likely had an impact. However, there is wide variation in the protection provided by previous infection. A mild infection may activate the first line of defense but not the second or third, leaving the unvaccinated vulnerable to new variants. COVID-19 has proven to be a wily disease and vaccination is not a panacea. But vaccination is the best and only means to control risk from COVID-19, including the potential long-term impacts.

A New Environment

From a public health perspective, the volume of protection from vaccination and previous infection means that the risk of overwhelmed health systems is reduced. (New variants still pose a risk, as they do with influenza). Additionally, most individuals are able to manage their risk, mostly through vaccination but also through other prevention measures when warranted. Not everyone, however, have all of these tools available to them, including those under five (who are not yet eligible for vaccines) and the immunocompromised. Even with reduced severity, Omicron was more deadly than seasonal flu. It is important to keep community transmission low, provide information on transmission levels so individuals can protect themselves, and adhere to prevention recommendations when transmission levels are elevated.

COVID-19 Community Levels – Use the Highest Level that Applies to Your Community

New COVID-19 Cases Per 100,000 people in the past 7 days	Indicators	Low	Medium	High
Fewer than 200	New COVID-19 admissions per 100,000 population (7-day total)	<10.0	10.0-19.9	≥20.0
	Percent of staffed inpatient beds occupied by COVID-19 patients (7-day average)	<10.0%	10.0-14.9%	≥15.0%
200 or more	New COVID-19 admissions per 100,000 population (7-day total)	NA	<10.0	≥10.0
	Percent of staffed inpatient beds occupied by COVID-19 patients (7-day average)	NA	<10.0%	≥10.0%

The COVID-19 community level is determined by the higher of the new admissions and inpatient beds metrics, based on the current level of new cases per 100,000 population in the past 7 days

New Guidance

This week, the CDC and VDH issued new guidance reflecting this new environment. In addition to community transmission these guidelines also consider severity, specifically through the impact on hospitals, and are tailored to local conditions. Hospitalizations add a new wrinkle to understanding risk. COVID-19 cases are often identified a week or more after the initial infection occurred, making cases a lagging indicator of community transmission. Hospitalizations occur even later. Local nuance, along with increased timelines, make early warnings, projections, and forecasts even more important, particularly for those at increased risk from infection.

As the environment changes and guidance becomes more nuanced our tools to manage COVID-19 remain the same. Vaccination is the best method available to mitigate risk from COVID-19. Get vaccinated and boosted when eligible. Practice basic prevention and , remain aware of COVID-19 risk in your community. Follow local public health guidance, including social distancing and masking when appropriate. As always, Virginia's health is in our hands.