

September 9, 2022

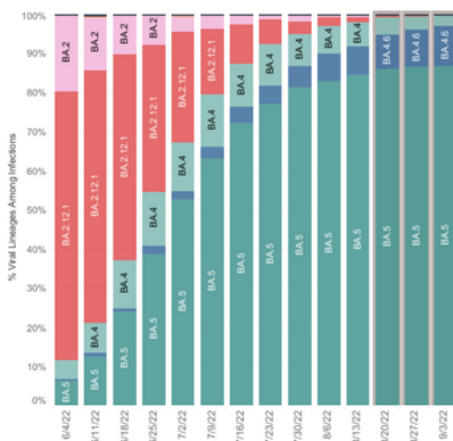
KEY TAKEAWAYS

- Models suggest that new bivalent boosters could have a significant impact on COVID-19, **potentially preventing 225,000 cases, 9,000 hospitalizations, and 850 deaths.**
- Case rates across the Commonwealth have plateaued and may be in a slow decline. The effective reproduction number (R_e) is now below 0.9 statewide and in five of Virginia's six regions. Reported cases are down almost 10% since August 15th, but progress is slow.
- Most health districts are in declining or plateaued case trajectories. Twelve are in growth trajectories, with three of these in surge. None of the major metro areas of the Commonwealth are in growth trajectories.
- Hospitalizations in Virginia have plateaued and continue to hover around 750-800. These levels have not changed significantly since the start of August. Models project this rate will decline in September but could rise again in the Fall.
- Variant proportions remain largely unchanged. BA.5 and BA.4.6 continue to dominate the landscape. There is still no evidence of significant growth by BA.2.75 or any other novel variants in the Commonwealth.

27.4 per 100kAverage Daily Cases
Week Ending Sept. 5, 2022**0.881**Statewide Reproduction
Number as of Sept. 5, 2022**52**Virginia Localities at
High CDC Community Levels
as of Sept. 8, 2022**49**Virginia Localities at
Medium CDC Community
Levels as of Sept. 8, 2022

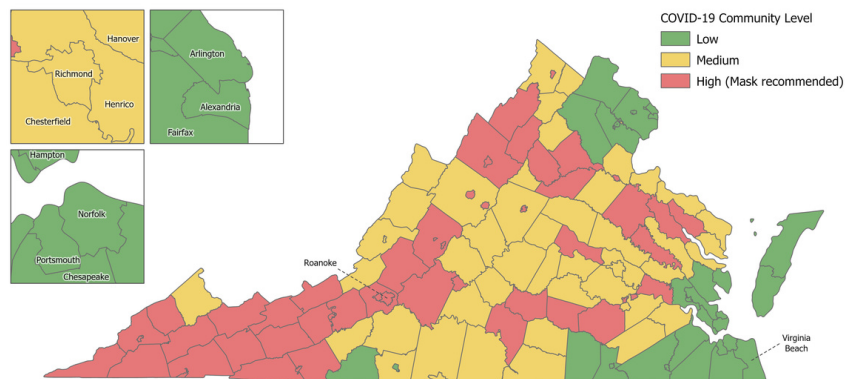
KEY FIGURES

Variant Mix – HHS Region 3



CDC Community Levels

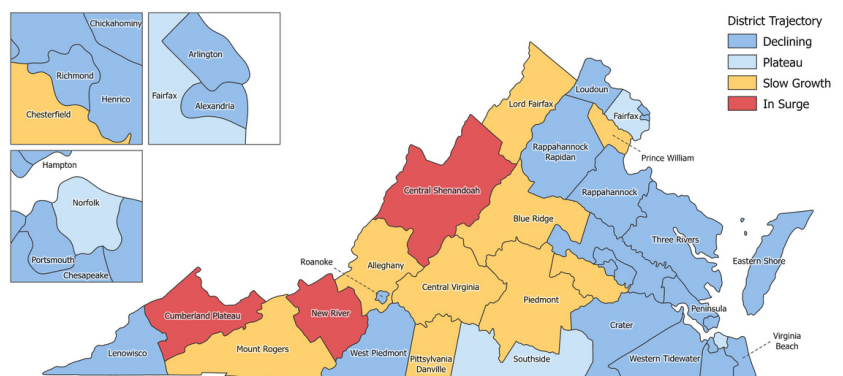
As of September 8, 2022



Click Map for Full Size Image

Growth Trajectories: Three Health Districts in Surge

Status	# Districts (prev week)
Declining	20 (17)
Plateau	3 (5)
Slow Growth	9 (9)
In Surge	3 (4)



Click Map for Full Size Image

THE MODEL

The UVA COVID-19 Model and 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 health district-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.
These models improve
as we learn more.*

THE SCENARIOS

Updated: The model uses scenarios to explore the potential paths the pandemic may take under future conditions. Model projections take a variety of factors into account, including current variants, vaccine uptake, vaccination/boosting rates, previous infection, waning immunity, weather, and behavioral responses. The **"Adaptive"** scenario represents the current course of the pandemic, projecting it forward with no major changes. The **"VariantX"** modifier explores the potential impact of a new variant emerging in the next three months. This hypothetical variant is imagined as having the same immune escape and transmissibility advantages over BA.4/5 that BA.4/5 did over the earlier BA.2. See [page three of the July 15 report](#) for details. The **"FallWinter"** modifier layers seasonal increases associated with colder weather, holiday gatherings, and travel, on top of the base scenarios. It does this by artificially adjusting transmissibility between September and January to match transmissibility from the same time last year. The new **"OptBooster"** (optimistic) and **"PessBooster"** (pessimistic) modifiers assume that a bivalent vaccine booster campaign will begin in September. The optimistic scenario assumes that 90% of those getting a Flu vaccine will also get a bivalent COVID19 booster. The pessimistic scenario assumes that 45% will.

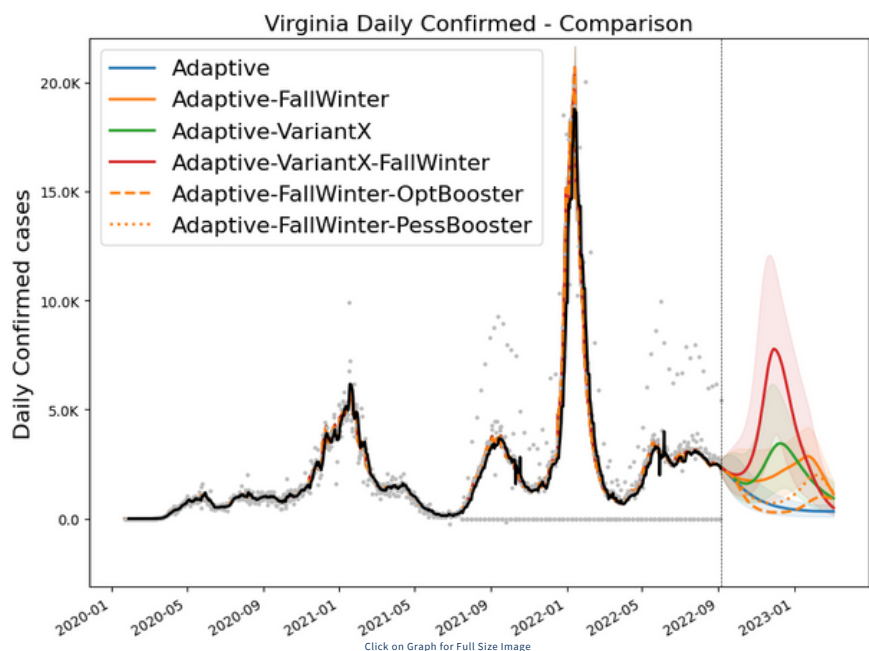
MODEL RESULTS

Updated: As always, the current course **"Adaptive"** scenario is shown in blue. This scenario projects a continued slow decline of cases. In this scenario, Virginia will fall below 1,000 daily cases by October's end.

Both the **"Adaptive-FallWinter"** (orange) and **"Adaptive-VariantX"** (shown in green) scenarios project mild surges, peaking at around 2,500 daily cases in January, and 3,500 daily cases in December, respectively.

The **"Adaptive-VariantX-FallWinter"** (red) combines both a hypothetical new variant with the seasonal forcing of Fall / Winter. The combination allows for a significant surge, peaking at almost 8,000 daily cases in early-December before quickly declining.

The **"Adaptive-FallWinter-EarlyBooster"** and **"Adaptive-FallWinter-LateBooster"** scenarios (dashed orange lines) show that even in the case of a Fall / Winter surge, a booster campaign can quickly tamp down cases. Models suggest that such campaigns could reduce hospitalizations by 60%.



Date of Latest Model Run: September 7, 2022

Date of Next Model Run: September 21, 2022

Please note: The data and projections shown here reflect reported cases. During the Omicron wave, testing shortages resulted in far fewer infections being reported as cases. This suggests fewer total infections than experienced in January. Please see [page three of the May 13th modeling report](#) for more details.

[\(Explore the model results in detail on this dashboard\)](#)

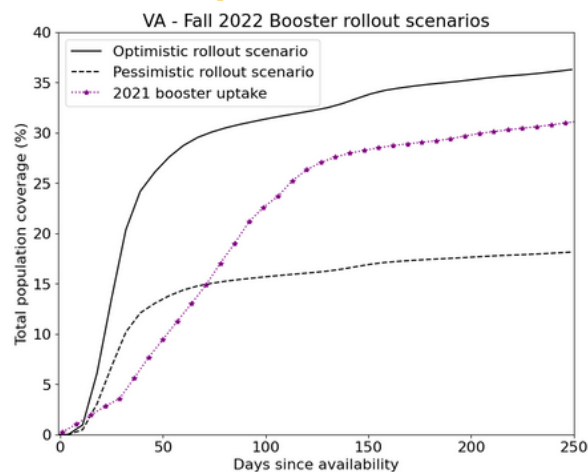
THE IMPACT OF NEW BOOSTERS

UVA model projections suggest new boosters could have a significant impact in Virginia, potentially preventing 225,000 COVID-19 cases, 9,000 hospitalizations, and 850 deaths. The new bivalent boosters target both the ancestral strain of COVID19 as well as the new BA.4/BA.5 Omicron subvariants that dominate the landscape today. In addition to fortifying your immune system against the currently circulating variants, bivalent boosters should broaden antibody response against other COVID19 variants.

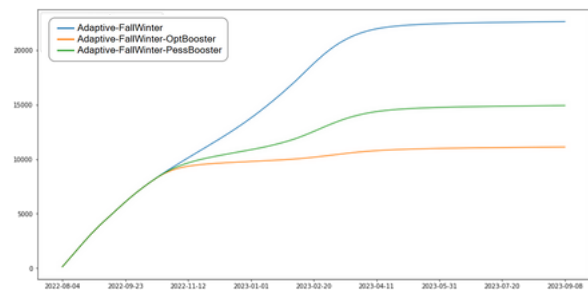
As with the initial vaccine, these boosters are not perfect. They will not stop 100% of cases. But we expect they will prevent a large number of cases. They should also reduce the duration and severity of illness for those who do get sick. The most significant benefit is in protection against hospitalization and death. In this regard, even the original vaccine formula still holds up quite well, and the bivalent boosters are expected to offer even stronger protection.

These boosters were authorized last week, and should be available at local pharmacies. Given that the flu season is also starting soon, now is the perfect time to get both vaccines. If you are already scheduling time to get a flu vaccine, please consider a COVID19 booster as well. It is safe to get both shots at the same time for adults as well as eligible children. The CDC offers a tool to determine your booster eligibility which is linked here for those who are unsure of their status.

Scenario Specifics



Vaccine coverage rate over time for Virginia's 2021 booster campaign, as well as the booster scenarios in current models.



Cumulative hospitalizations in Virginia by modeling scenario. Boosters could prevent an estimated 9,000 hospitalizations.

The UVA team has included two scenarios examining the potential impact of the new bivalent boosters. Using last season's flu shot uptake as a benchmark, the optimistic scenario assumes 90% of those getting their flu shots will also get a booster, the pessimistic assumes only 45% do. Both assume COVID-19 transmission rates will rise as they have over fall and winter in previous years.

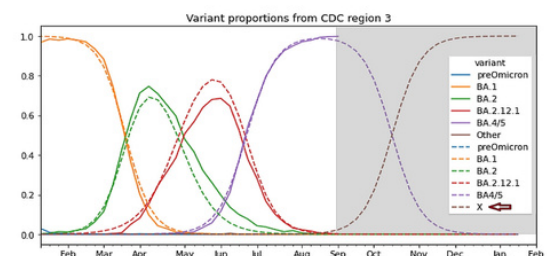
The graph to the upper-left shows the estimated vaccine coverage for the two scenarios as compared to the real-world uptake of the first booster campaign in Virginia. 2021's COVID-19 booster uptake was somewhat slower than the optimistic scenario projects, but it is achievable in the 2022 booster campaign.

The graph on the lower-left shows the most recent estimates of total hospitalizations by scenario. As shown in the optimistic scenario, boosters could prevent 225,000 cases, 9,000 hospitalizations and 850 deaths by the end of February 2023. But even the pessimistic booster scenario is encouraging, possibly preventing 135,000 cases, 6,500 hospitalizations, and 550 deaths in Virginia in that time.

It is up to every Virginian to choose which path we follow. Importantly, 72.5% of Virginians are fully vaccinated, meaning we could see far more booster uptake than even the optimistic booster scenario anticipates. This would have an even greater impact on COVID-19 infections, hospitalizations, and deaths.

Boosters and New Variants

It is difficult to predict how this new bivalent vaccine will interact with any new variants that may arise. However, the original vaccine continued to hold up against new variants, preventing some infections and having a substantial impact on hospitalizations and deaths. Bivalent boosters should provide a broadened antibody response, providing better protection from a wider range of variants. We aren't when, or even if, a new variant will arise. But if one does appear in a few months, boosters are likely to have a strong impact on cases, hospitalizations, and deaths. As always, Virginia's health is in our hands. Do your part to prevent COVID-19.



Variant proportions by date in HHS-3. Dashed lines represent prevalence models. Models expected a new variant by now.