UNIVERSITY of VIRGINIA
BIOCOMPLEXITY INSTITUTE

UVA COVID-19 MODEL WEEKLY UPDATE

VDH VIRGINIA DEPARTMENT OF HEALTH

September 22, 2022

KEY TAKEAWAYS

- Case rates across the Commonwealth have continued their gradual decline. This week cases fell below 20 per 100,000, the lowest since the week of April 25th. The statewide reproduction number (R_e) has also been below one since late August.
- Though 11 health districts are still in growth trajectories, not one is in surge this week. Of the Commonwealth's 35 health districts, 23 are in decline.
- Hospitalizations in Virginia have declined by about 20% since August. Though the decline is slow, models project this trend will continue in the short term.
- Only 11 localities are showing high community transmission levels, down from 38 last week. This is the fewest number seen since May. A further 69 localities report medium community transmission levels.
- Models suggest the possibility of another major surge in December. Virginians could stop this surge in its tracks if they get their boosters along with their annual flu shots. Models estimate that this could prevent 100,000-160,000 cases in the by March 2023. It could also prevent 5,000-7,000 hospitalizations in that time.
- BA.5 remains the dominant variant, but BA.4.6 is continuing to slowly supplant it. On the horizon, BF.7 and/or BA.2.75.2 are raising concerns, but neither have shown significant growth in Virginia and their potential impact is unknown.

18.7 per 100k
Average Daily Cases Week Ending Sept. 19, 2022

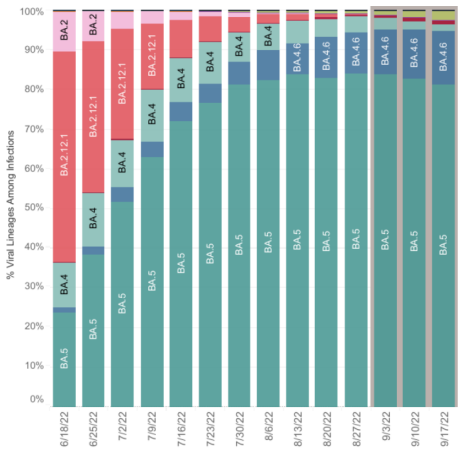
0.900
Statewide Reproduction Number as of Sept. 19, 2022

11
*Virginia Localities at **High** CDC Community Levels as of Sept. 22, 2022*

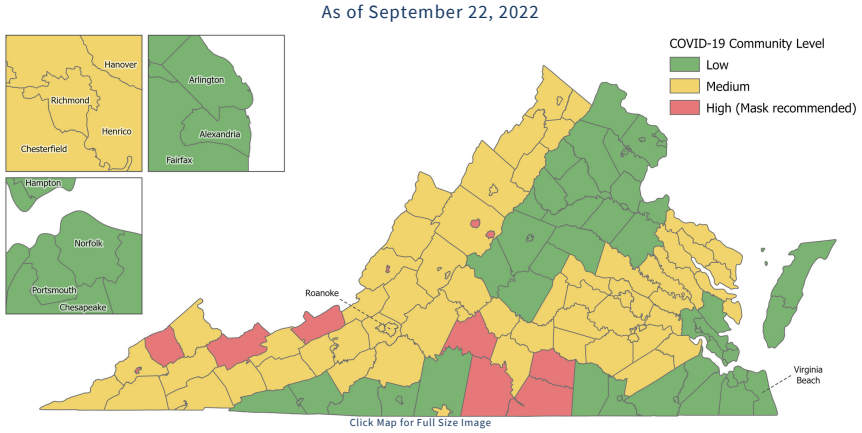
69
*Virginia Localities at **Medium** CDC Community Levels as of Sept. 22, 2022*

KEY FIGURES

Variant Mix – HHS Region 3

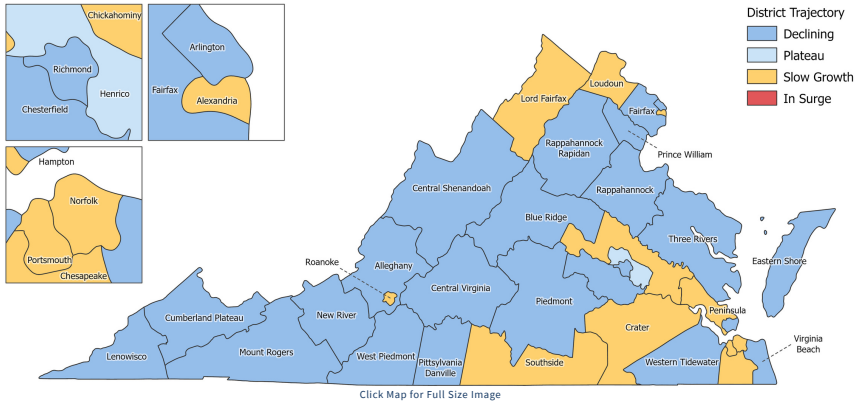


CDC Community Levels



Growth Trajectories: No Health Districts in Surge

Status	# Districts (prev week)
Declining	23 (20)
Plateau	1 (3)
Slow Growth	11 (9)
In Surge	0 (3)



UNIVERSITY of VIRGINIA
BIOCOMPLEXITY INSTITUTE

UVA COVID-19 MODEL WEEKLY UPDATE

VDH VIRGINIA DEPARTMENT OF HEALTH

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

Unchanged: 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 few 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.

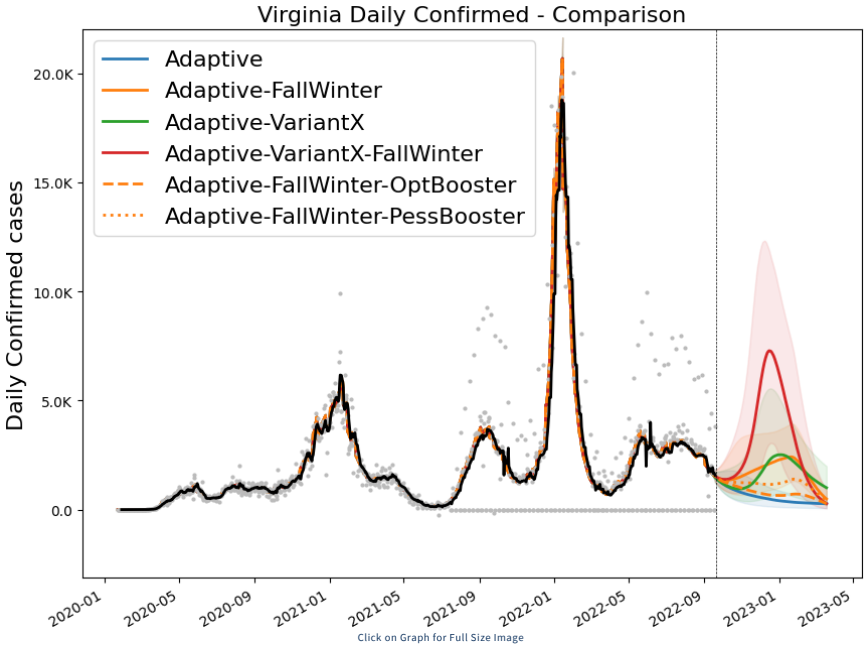
MODEL RESULTS

Updated: As always, the current course "**Adaptive**" scenario is shown in blue. This scenario projects a very gradual decline of cases. In this scenario, Virginia will fall below 1,000 daily cases by mid-October.

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

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 7,200 daily cases in mid-December before quickly declining.

The "**Adaptive-FallWinter-OptBooster**" and "**Adaptive-FallWinter-PessBooster**" scenarios (dashed orange lines) show that even in the case of a Fall / Winter surge, a booster campaign can quickly tamp down cases. The optimistic booster scenario cuts total cases by over 50% by March 2023. The pessimistic scenario cuts them by by 30%.



Date of Latest Model Run: September 21, 2022

Date of Next Model Run: October 5, 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)

CLEAR SAILING FOR NOW — CLOUDS ON THE HORIZON

It's been a good month for the Commonwealth. Case rates have continued to decline, and this week only 11 counties reported high levels of community transmission. This is the lowest number since May 19th. Even wastewater surveillance indicates significant declines in viral loads. But models continue to suggest the possibility of another winter surge. This is not surprising as we saw the same thing in 2020 and 2021, likely the result of holiday travel, gatherings, and winter weather. There is a good chance we'll see the same this year. There is also the possibility that a new variant will arise to drive cases even higher.

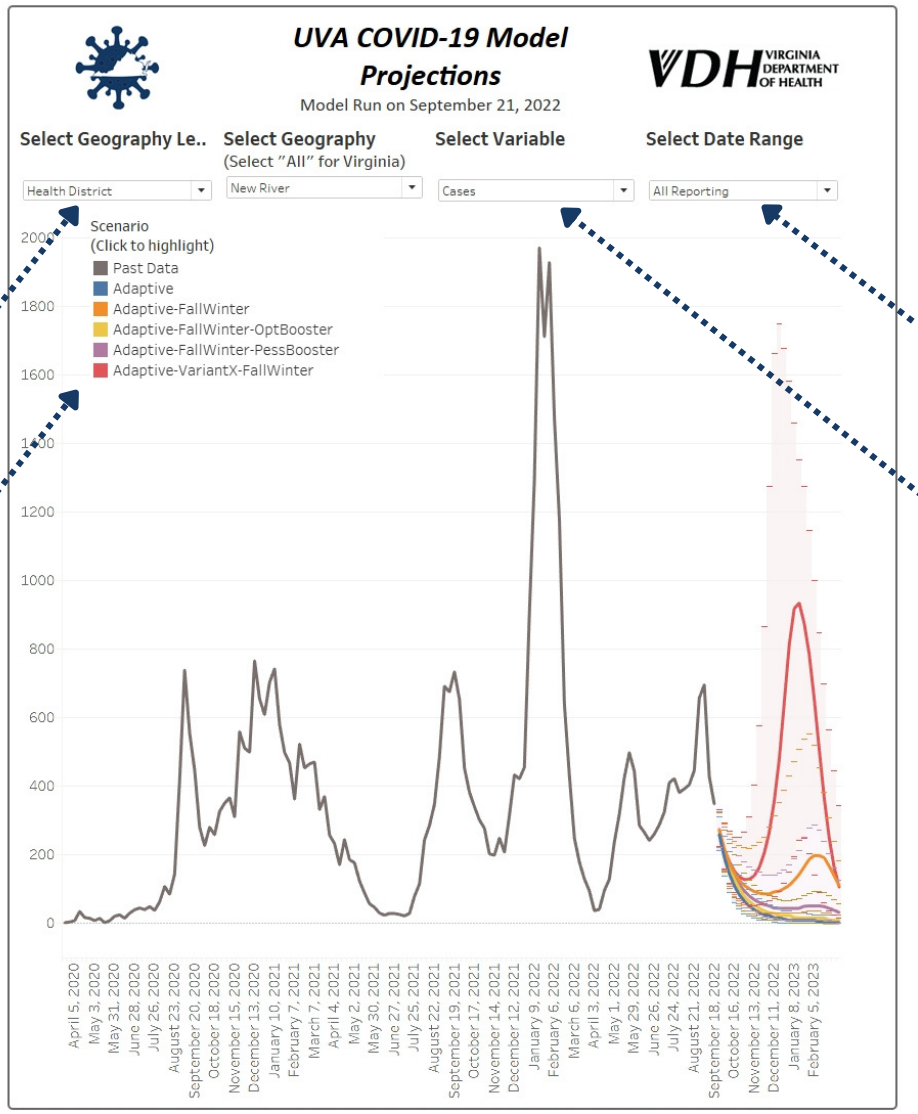
On a more positive note, models also show that bivalent boosters could cut total cases by 30-50%. They could prevent hundreds of thousands of cases and thousands of hospitalizations in Virginia. With models expecting growth to begin again in a few weeks, now is an excellent time to schedule your booster shot. Bivalent vaccines are available at your local pharmacy, and it is safe to get one at the same time as your annual flu shot. Some pharmacies even offer both as a package deal.

New Dashboards Coming to VDH

Users can view data by health district, metro area, or local hospital region.

Displays all current modeling scenarios projections at once, as well as historic data from VDH.

User can highlight just one scenario by simply clicking on the name.



Users can change the date range to cover 13 weeks, 26 weeks, one year, or entire pandemic.

Projections include cases, deaths, and hospitalizations.

Readers may notice several changes on the VDH COVID19 website today, including a **new modeling dashboard**. The new dashboard is intended to make it easier for the public to access modeling data. It allows users to view all models simultaneously in a format that matches UVA's modeling presentations. The new dashboard also adds the option to view hospitalizations and deaths in addition to cases. It allows users to adjust the time scale if they want to zoom into projections or view the history of the entire pandemic. As always, the user will be able to select their local health district or metro area, or view data for the entire Commonwealth. Hospital regions have also been added as a selectable geography. The new modeling dashboard will launch today (Friday, September 23rd). The old case trajectory ("surge map") dashboard will remain in its current form **here**.