

August 12, 2022

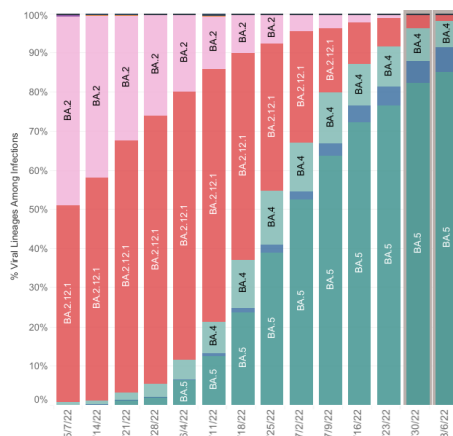
## KEY TAKEAWAYS

- Case rates have plateaued but are still high in most areas of the Commonwealth. On average, rates are over five times higher than they were in Summer of 2021. Statewide hospitalizations may have peaked last week and are showing signs of decline.
- Eighteen health districts are in growth trajectories, with three in surge. But, the effective reproduction number ( $R_e$ ) remains below one for all regions. This suggests that case rates have plateaued and may decline in the coming weeks.
- The CDC estimates that the BA.5 Omicron subvariant now accounts for over 85% of new cases in Virginia. BA.4.6 and BA.2.75 are not yet making significant inroads in the Commonwealth.
- Models suggest Virginia will experience a continued gradual decline in case rates. Seasonal forcing or a new variant could potentially cause a surge by November. Conversely, Omicron-specific boosters could tamp down such surges and prevent thousands of hospitalizations.

**33.3 per 100k**Average Daily Cases  
Week Ending August 8, 2022**0.918**Statewide Reproduction  
Number as of August 8, 2022**57**Virginia Localities at  
**High** CDC Community Levels  
as of August 11, 2022**61**Virginia Localities at  
**Medium** CDC Community  
Levels as of August 11, 2022

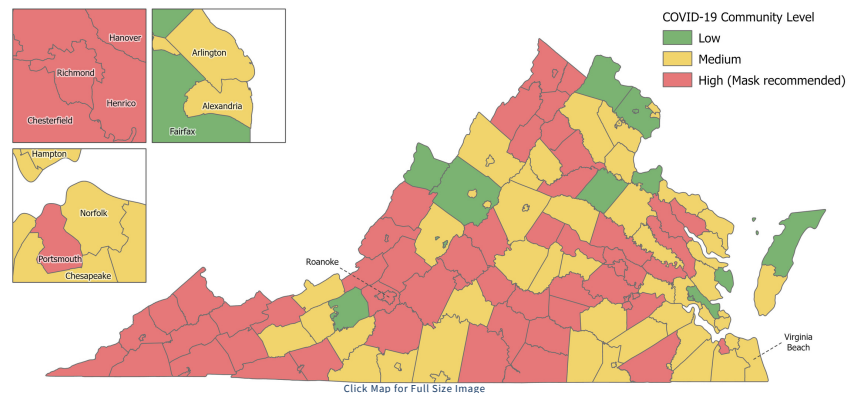
## KEY FIGURES

## Variant Mix – HHS Region 3



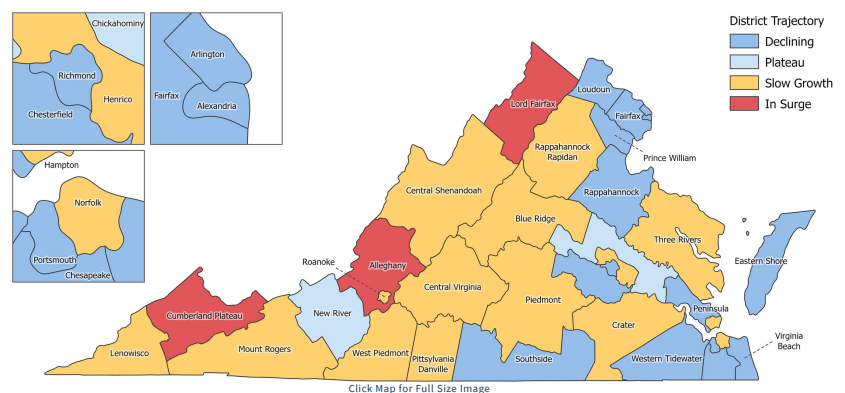
## CDC Community Levels

As of August 11, 2022



## Growth Trajectories: Three Health Districts in Surge

Status	# Districts (prev week)
Declining	15 (11)
Plateau	2 (5)
Slow Growth	15 (17)
In Surge	3 (2)



## 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 various 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, indoor gatherings, and holiday 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 **"EarlyBooster"** and **"LateBooster"** modifiers explore the impact of a vaccine booster campaign starting in mid-September or mid-November respectively. It assumes that these will be Omicron-specific vaccines, and that they will be 80% effective against symptomatic disease.

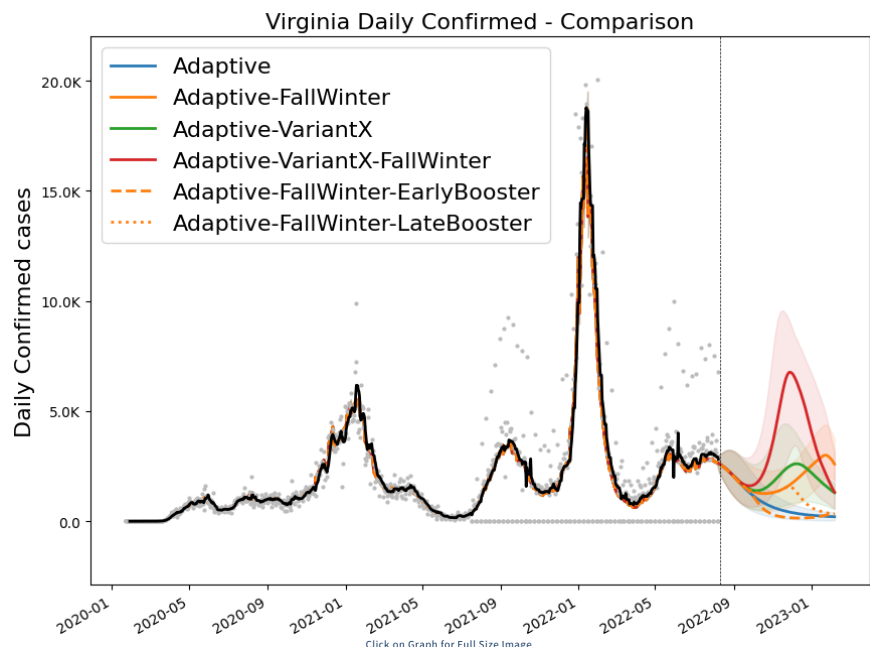
## MODEL RESULTS

**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.

Both the **"Adaptive-FallWinter"** (orange) and **"Adaptive-VariantX"** (shown in green) scenarios project mild surges peaking at fewer than 3,000 daily cases in mid-January and 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 7,000 daily cases in mid-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 such campaigns could reduce hospitalizations by 40%.



Date of Latest Model Run: August 10, 2022

Date of Next Model Run: August 24, 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.

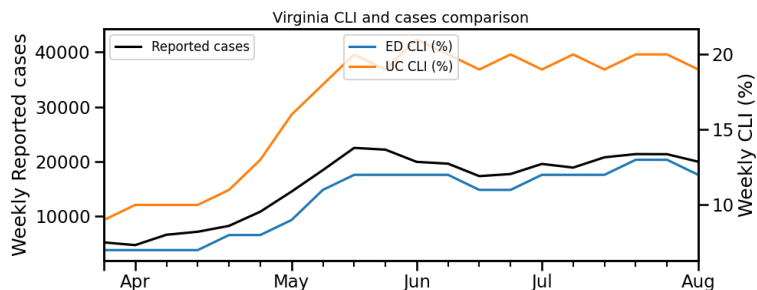
## A SURPRISING LACK OF SURPRISES

While cases have been high, in some ways, it's been a relatively "boring" summer for COVID19. Across the Commonwealth, the average county saw case rates that were 5.8 times higher than last summer's mean. This figure does not account for the increased use of home test-kits which likely increases the rate of unreported cases. With 57 localities in "High" community transmission levels and another 61 at "Medium" levels, we are certainly not in a "summer lull". But aside from these relatively high case rates, case rates have been very stable statewide.

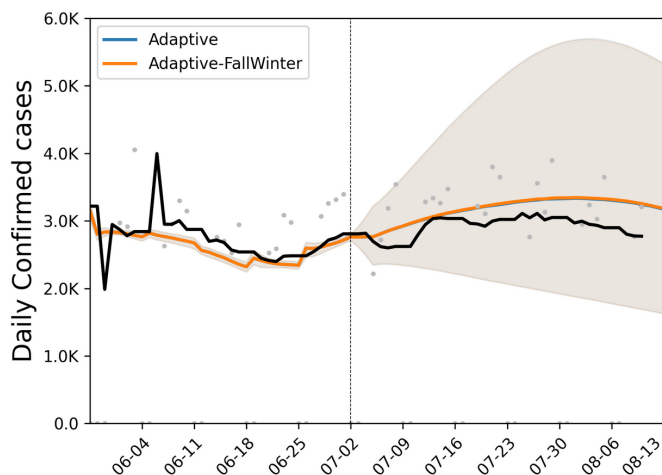
### Treading Water

The last few weeks can be described as treading water. Districts varied between surges and declines. But across the Commonwealth, case rates have remained relatively flat since about mid-May. Confirming this, the percentage of Virginian urgent care (UC) and emergency department (ED) visits in which patients complain about COVID-like illness (CLI) has been flat since May. There is some uncertainty in this metric, but the fact that both metrics are in agreement suggests we are in fact in a plateau.

A few other metrics suggest that we've just gone through a minor surge. Test positivity increased slightly from 19% in June to 23% in July. But it has been static for a month. Wastewater surveillance also suggests that we've experienced some growth in June and early July. But trends peaked around July 20th and have begun a slow decline. Total hospitalizations always lag a few weeks behind case surges and peaked just a week ago. But like our neighbors, hospitalizations in Virginia are starting to plateau. Models project this trend will continue. The bottom line is, while case rates are somewhat high, not much has changed in weeks.



This graph compares total reported cases to the percentage of ED and UC complaints that mention COVID19-like respiratory illness. All three have been static since May.



This graph compares the model output from July 2 to cases through last week.

### Modeling Surprises

These models were never intended to "predict" exact case counts on specific dates. Instead, they present possible epidemic trajectories given expected future conditions. They also allow us to explore the effects of interventions that reduce transmission rates or increase population immunity. As long as conditions remain the same, this is a reasonably straightforward task. In fact, the models run over a month ago, with data through July 2nd, predicted this week's case rates with surprising accuracy.

Modeling becomes far more difficult as conditions change and new variables arise. This is why we run numerous scenarios each week. Each one represents a realistic path for Virginia given a plausible change in local disease transmission. We cannot say which of these scenarios will best represent the true epidemic trajectory in the months to come, but we know what to look for.

### Watching for Changing Tides

What will finally break this holding pattern? A new variant is a good guess. Since last fall, a new variant has hit Virginia every few months. Each had immune-escape advantages, allowing it to out-compete and replace its predecessors. Although there are currently no signs of a new, game-changing variant, new Variants of Concern are likely to emerge. This possibility is represented by the "Variant-X" scenarios. If no new variants emerge in the short-term, Virginia may experience a significant decline in case rates before the next novel variant appears.

Seasonality is another significant concern. In the last two years, COVID-19 cases have surged in the fall and winter months due to holiday travel and cold weather. This is likely to occur again and signs may appear as early as September or October. The first warning sign will be when the "FallWinter" scenarios begin tracking case-counts better than the Adaptive scenario. Finally, on a positive note, Omicron-specific boosters may become available in the coming months. Preliminary models suggest an early booster campaign could prevent 6,000 hospitalizations in Virginia and curtail future surges.