

December 16, 2022

## KEY TAKEAWAYS

- COVID19 case rates continue to grow across the Commonwealth. They have now risen to about 18.7 per 100k, up from 10.6 per 100k just two weeks ago. Yet, the statewide effective reproduction number ( $R_e$ ) is down slightly at 0.973. All health regions are also hovering around  $R_e \approx 1$ .
- Thirty-three of Virginia's thirty-five health districts are now in growth trajectories. Sixteen of these are in surge. Only two are not showing growth.
- Eight counties and cities are now reporting high CDC community levels. A further 60 locales are at medium community levels. Masking is recommended for all those living in high level areas, and for high-risk individuals in medium level areas.
- COVID19 hospitalizations are up again this week at 707. This is the highest level seen since early September. Influenza hospitalizations continue to be relevant as well. Together the two viruses hospitalize about 1,000 Virginians per week.
- Models suggest that Virginia may be experiencing the beginnings of a winter surge. The best way to protect yourself and your family is to practice good prevention. Also, please consider getting your flu shot and bivalent booster when possible.

**1,227,286**

Total Bivalent Booster Doses Administered by Dec. 15, 2022

**14.4% / 36.8%**

Of eligible Virginians / Seniors have received a Bivalent Booster as of Dec. 15, 2022

**30.5% / 58.0%**

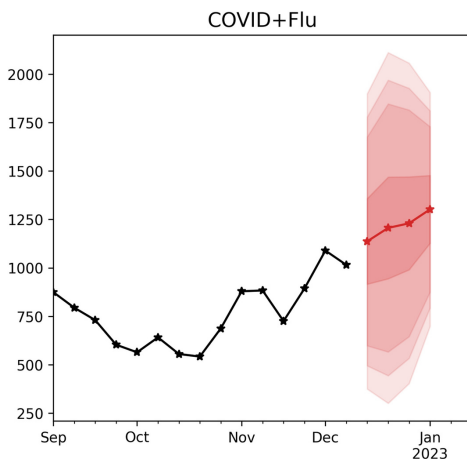
Of Virginians / Seniors have received an annual Flu shot as of December 15, 2022

**8 / 60**

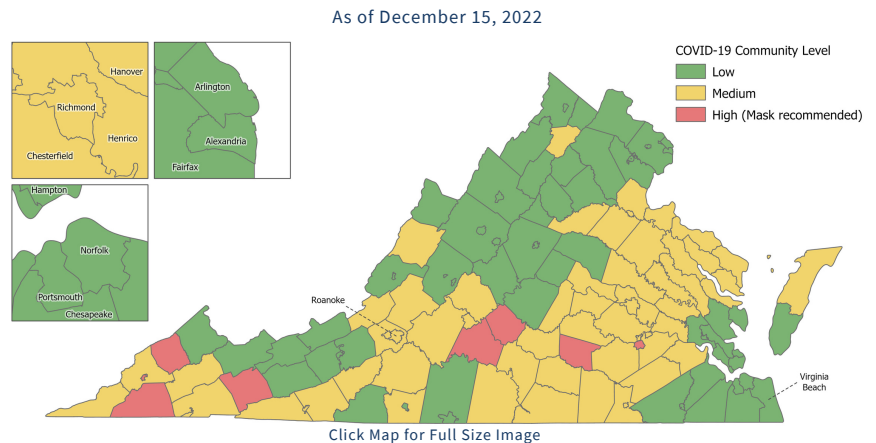
Virginia Localities at High / Medium Community Levels as of December 15, 2022

## KEY FIGURES

### COVID+Flu Hosp. Forecast



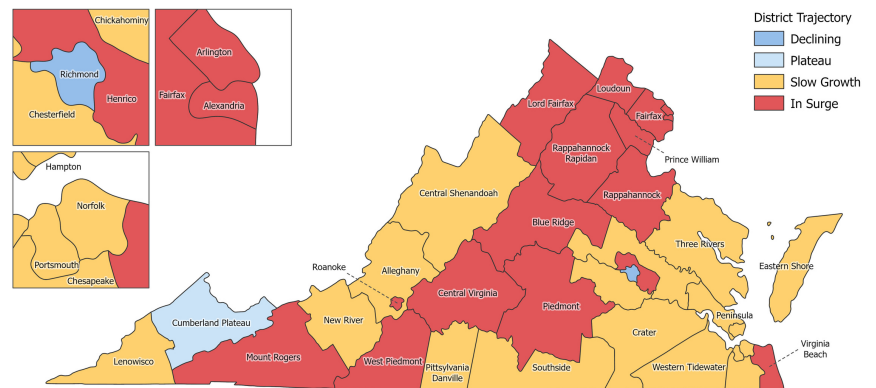
### CDC Community Levels



### Growth Trajectories: 16 Health Districts in Surge

Status	# Districts (prev week)
Declining	1 (2)
Plateau	1 (3)
Slow Growth	17 (15)
In Surge	16 (15)

Click Table for Dashboard



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

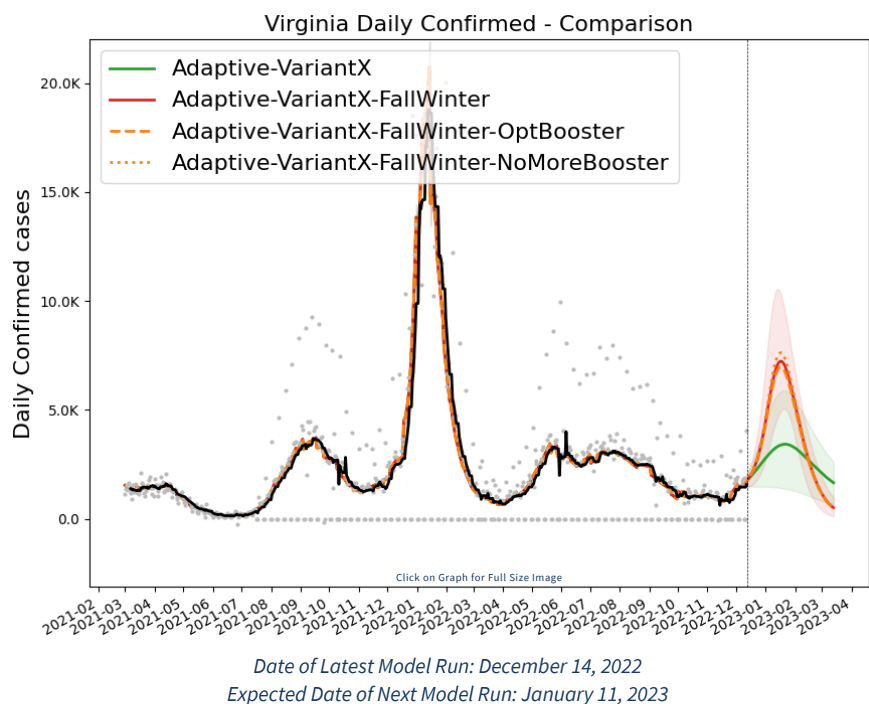
**Updated:** The model uses scenarios to explore the potential paths the pandemic may take under future conditions. Model projections take a variety of factors into account, including current variants, vaccine uptake, vaccination/boosting rates, previous infection, waning immunity, weather, and behavioral responses. All models now account for bivalent boosters. Unless otherwise specified, they assume that they will be proportional to the 3rd dose booster rollout. Given the rise of new variants, the old BA.5 "**Adaptive**" scenario has been retired. All models presented here make use of the "**VariantX**" modifier, which accounts for the dominance of new variants like BQ.1.1. It is assumed that these variants will have 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 "**OptBooster**" (optimistic) modifier assumes that bivalent booster coverage will increase *beyond* the current pace and be 25% higher than 3rd dose boosters from Fall of 2021. The new "**NoMoreBooster**" examines the impact of a reduced vaccine rollout, and assumes that boosters stop at current levels.

## MODEL RESULTS

**Updated:** The "**Adaptive-VariantX**" (green) scenario assumes that seasonal forcing will not be significant. It forecasts a slow growth towards a peak of 3,400 daily cases and 200 daily hospitalizations in late January. This is followed by a gradual decline.

The "**Adaptive-VariantX-FallWinter**" (red) combines both the effects of the new variants with the holiday seasonal forcing. The combination allows for a significant and rapid surge. It forecasts a peak of 7,100 daily cases and 415 daily hospitalizations in late January. This is followed by a rapid decline. While large, this surge is *not* expected to rival the Omicron wave of last January.

Both "**OptBooster**" and "**NoMoreBooster**" scenarios (dashed orange lines) are applied to the VariantX-FallWinter scenario. They show that improved booster uptake could prevent almost 10,000 new cases and 1,300 hospitalizations. If booster rates slow, this could instead cause an extra 12,000 cases and 1,600 hospitalizations.



**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.

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

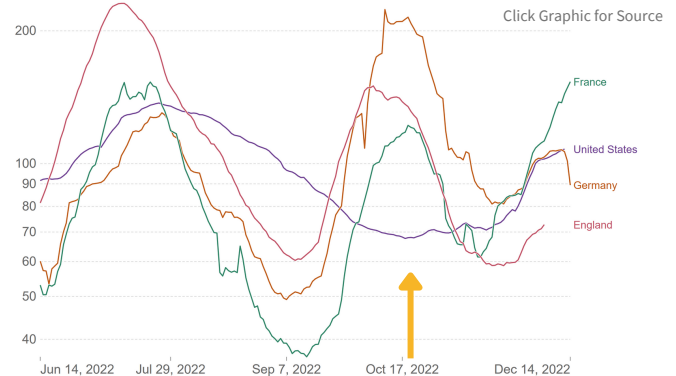
## CONDITIONS RIGHT FOR ANOTHER SURGE

For the last week or so, Virginians have been hearing about an impending ice storm. Meteorologists had been focusing on a weather system out west, and models showed it was headed in our direction. When the storm arrived on Thursday morning, a few areas of the Commonwealth had significant ice. But for many it was little more than a reason to scrape their windshields in the morning. We're in a very similar position. Like the meteorologists last week, we cannot predict exactly what will happen, but we can see that conditions are favorable for another surge.

Case rates across the Commonwealth are rising quickly. Test positivity and wastewater viral loads are also on the uptick. Models continue to forecast an impending surge, and the usual suspects are to blame: Holiday travel and gatherings, winter weather, and the arrival of new variants like BQ.1.1. Virginia experienced surges in the winter of 2020 and 2021. It now seems possible that we will experience more of the same this winter.

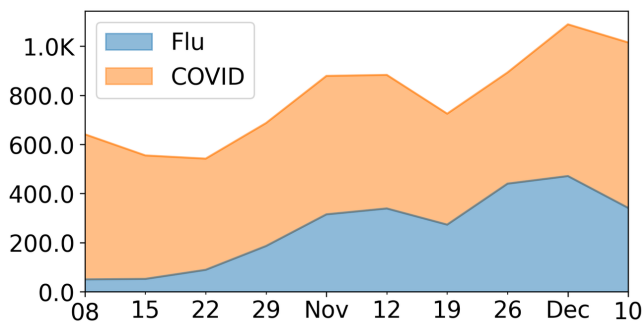
Weekly new hospital admissions for COVID-19 per million people

Weekly admissions refer to the cumulative number of new admissions over the previous week.



The US missed the surge of COVID19 cases and hospitalizations that affected other western nations in mid-October (yellow arrow). Unfortunately, we seem to be following the same trajectory as these European nations this time. Source: ourworldindata.org

## The Tripledemic Continues



Weekly flu and COVID19 hospital admissions in the Commonwealth. The two viruses together are hospitalizing about a thousand Virginians per week. RSV (not shown) is adding another hundred or more to the total.

Of all the metrics to keep an eye on, perhaps hospitalizations and deaths are the most significant. Case rate data are confounded by the use of home-test kits and underreporting. Moreover, antiviral medications and prior immunity have greatly reduced the mortality of the disease. But some COVID19 cases still need to be hospitalized, and sadly, some die. Almost 350 Virginians died from COVID19 in the last month. These figures are what concern us the most.

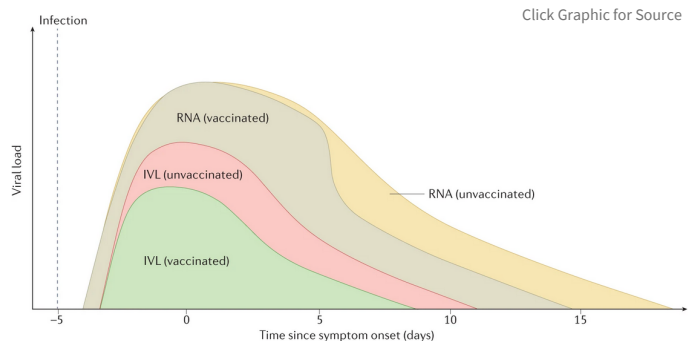
Unfortunately, the number of currently hospitalized has also risen significantly, and is up almost 40% since the end of November. The US largely missed the case and hospitalization surge that affected Europe in mid-October (above). But this time, it seems that American hospitalizations are tracking those of Western Europe and growing.

This problem is confounded by the ongoing "tripledeemic." Influenza (flu) and respiratory syncytial virus (RSV) are also causing significant disease across the United States. Though the three are different viruses, they cause similar symptoms and can cause complications requiring hospitalization. At the moment, flu hospitalizations nearly rival those of COVID19. Together the two are hospitalizing almost 1,000 new Virginians a week. Models expect this rate to grow by up to 50% in the coming weeks.

## Staying Safe this Season

Practicing good prevention can help protect you and your family this holiday season. Consider home COVID testing before big gatherings, or if you feel sick, and isolate yourself if positive. Masking in indoor public places, regular handwashing, and avoiding large indoor crowds are also effective at reducing risk.

Vaccination remains one of the best tools in our toolkit. Though they cannot prevent all cases of disease, both flu and COVID19 vaccines have been shown reduce to hospitalizations. This year's flu shot is well targeted to the flu strains currently circulating in Virginia. Moreover, research (right) has shown that COVID19 vaccination reduces both viral loads and the duration of viral shedding. This makes transmission to others less likely. If you have not already done so, please consider getting both your bivalent booster and flu shot when possible.



A study published in Nature found that vaccination is capable of reducing the infectious viral loads (IVL) of a patient. The vaccinated shed less, and for a shorter time, than the unvaccinated. This reduces the likelihood that they will infect others. Source: Puhach, O., Meyer, B., & Eckerle, I. (2022). SARS-CoV-2 viral load and shedding kinetics. Nature Reviews Microbiology, 1-15.