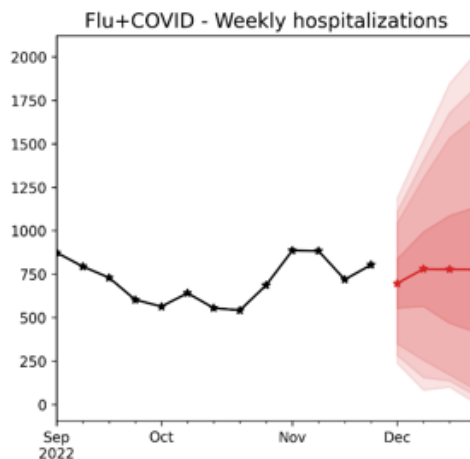*December 1, 2022*

KEY TAKEAWAYS

- Case rates and hospitalizations remain low across Virginia. Only five Virginia localities are at high CDC community levels, and 27 at medium. Masking is recommended for all in high community level areas, and for high risk individuals in medium community levels.

- Some signs suggest recent declines may be slowing. Thirteen of Virginia's 35 health districts are in slow growth trajectories, while fewer are in decline. The statewide effective reproduction number (R_e) has increased to 1.0.

- Influenza continues to be high in all regions of the state. There are now almost as many hospitalized for flu in Virginia as COVID-19. Vaccination provides the best protection from both diseases.

- Short-term forecasts expect a decrease in flu hospitalizations over the next few weeks. This is balanced by an expected increase in COVID-19 hospitalizations.

1,122,013
Total Bivalent Booster Doses Administered by Dec. 1, 2022

13% / 34%
Of eligible Virginians / Seniors have received a Bivalent Booster as of Dec. 1, 2022

28% / 55%
Of Virginians / Seniors have received an annual Flu shot as of December 1, 2022

5 / 27
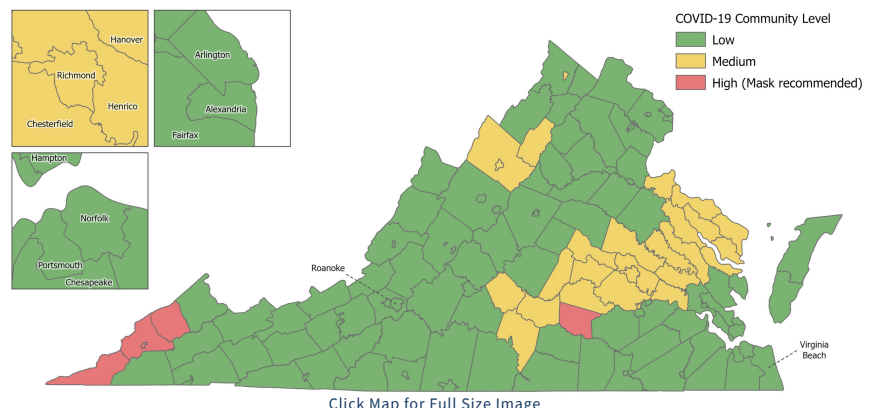*Virginia Localities at High / Medium Community Levels as of December 1, 2022*

KEY FIGURES
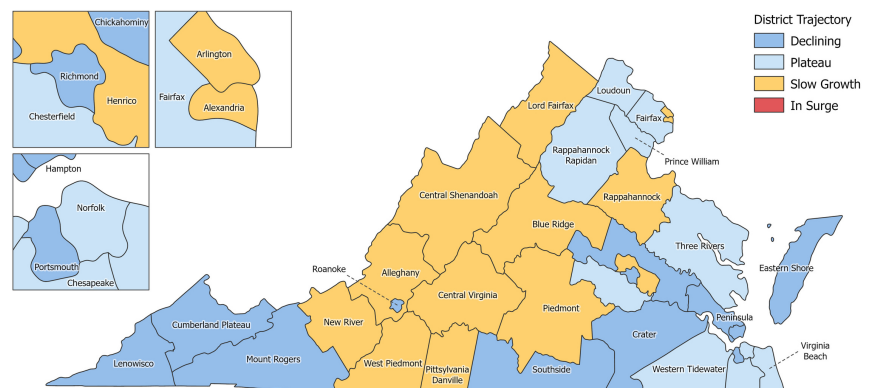
Flu+COVID Hosp Forecast

CDC Community Levels

As of December 1, 2022

Click Map for Full Size Image

Growth Trajectories: No Health Districts in Surge

Status	# Districts (prev week)
Declining	12 (22)
Plateau	10 (6)
Slow Growth	13 (7)
In Surge	0 (0)

Click Table for Dashboard

Click Map for Full Size Image

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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. All models now account for bivalent boosters. Unless otherwise specified, they assume that they will match the 3rd dose booster rollout. 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 new variants such as 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.
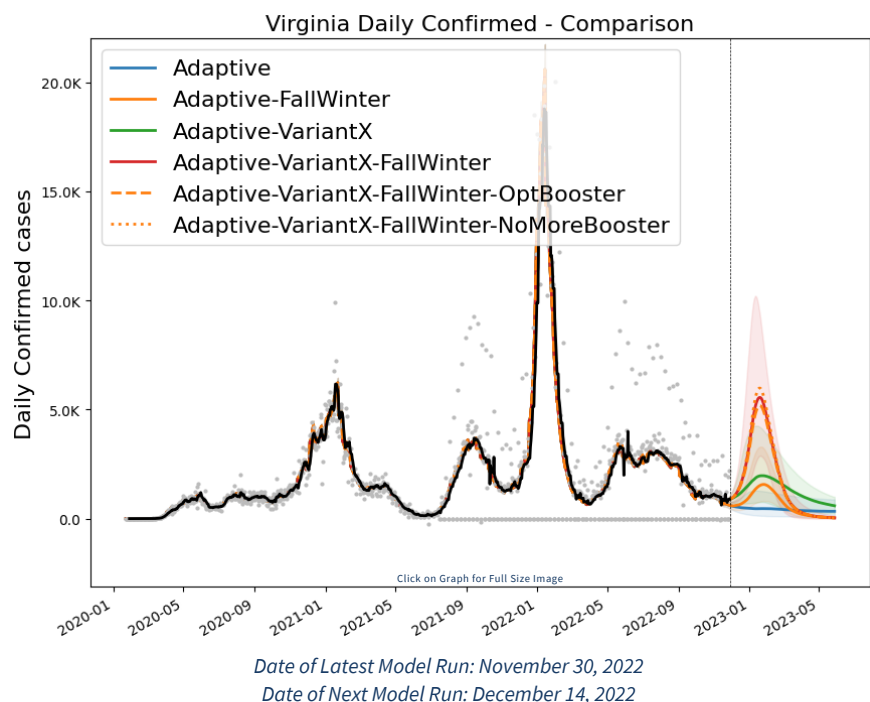
MODEL RESULTS

Updated: As always, the current course "**Adaptive**" scenario is shown in blue. This scenario projects a continued decline of cases. This scenario forecasts case rates reach about 500 per day by Christmas.

Both the "**Adaptive-FallWinter**" (orange) and "**Adaptive-VariantX**" (shown in green) scenarios project mild surges. Both peak in the last week of January, at 1,500 and 2,000 daily cases respectively.

The "**Adaptive-VariantX-FallWinter**" (red) combines both the effects of the new variants with the holiday seasonal forcing. The combination allows for a significant surge, peaking at about 5,500 daily cases in mid-late January, before steadily declining.

Both "**OptBooster**" and "**NoMoreBooster**" scenarios (dashed orange lines) are applied to the VariantX-FallWinter scenario. They show that increasing booster uptake could prevent over 16,700 cases. If booster rates slow, this could cause an extra 16,100 cases.

Virginia Daily Confirmed - Comparison

Legend:
- Adaptive
- Adaptive-FallWinter
- Adaptive-VariantX
- Adaptive-VariantX-FallWinter
- Adaptive-VariantX-FallWinter-OptBooster
- Adaptive-VariantX-FallWinter-NoMoreBooster

Date of Latest Model Run: November 30, 2022
Date of Next Model Run: December 14, 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)

WINTER OUTLOOK II

The October 21, 2022 Weekly Update discussed the potential that Virginia would experience a winter case surge similar to those seen in the first two years of the pandemic. In those years, COVID-19 cases began to rise in November, reaching surge territory by mid-December. In both years, cases peaked in mid-January, within the same week on the calendar. Although two years is too small of sample size to draw firm conclusions, evidence of COVID-19' seasonality and transmission patterns makes it reasonable to expect another case surge this winter. However, the course of the pandemic so far this fall gives us reason to be optimistic any winter surge could be mild.

A Quiet November

Several factors likely drove previous winter surges, including COVID-19's inherent seasonality, people gathering for the holidays and spending more time indoors, and the fall appearances of the Alpha and Omicron variants in 2020 and 2021 respectively. Although it is difficult to estimate the impact of each factor, behavior changes likely had a major impact in previous years. In 2022, however, public health restrictions have been lifted and guidance has become less restrictive and many Virginians have resumed normal activities. Most of the impact we would expect to see from indoor and holiday gatherings may have already occurred. Indeed, COVID-19 cases were elevated at Delta-surge levels from May through September.

Despite their expanding numbers, new variants have not made much noise this November either. While some variants have been linked to small surges in some countries, these have been relatively mild, especially for severe disease. Importantly, the variants circulating now are within the Omicron lineage. Infections from the summer wave will provide some protection from these variants, especially from severe disease. The bivalent vaccine is also effective against the variants currently circulating, providing an additional layer of personal and population immunity.

The period around Thanksgiving has been an important - and complex- time for anticipating winter cases. Historically, COVID-19 cases have begun to rise precipitously just prior to or during the Thanksgiving holiday. However, changes in testing patterns and data reporting around the holiday have led to strong swings, making trends difficult to interpret. Cases have ticked up around Thanksgiving this year, and transmission rates have edged up to right around 1.0 in most areas of the state. Wastewater and COVID-Like-Illness (CLI) data is also mixed. Data from the next week will be key to anticipating COVID-19 cases this winter.

COVID-19 & Flu Hospitalization Forecasts

Flu continues to be elevated in Virginia, and currently accounts for over 40% of respiratory disease hospitalizations reported in HHS Protect data. The UVA Biocomplexity Institute has begun providing short-term forecasts of COVID-19 and flu hospitalizations for Virginia. Currently, the forecasts show a small increase in weekly COVID-19 hospitalizations, and a small decline for flu over the next few weeks. These trends even out, and the combined hospitalization projections are flat. COVID-19 and flu hospitalizations are high, however, especially compared to prepandemic levels. Vaccination provides the best protection for both of these viruses, and you can get your COVID-19 and flu shots at the same time. To keep your family and community healthy this winter, practice good COVID-19 and flu prevention over the holidays and get vaccinated when eligible.

Virginia - UVA model forecasts as of 2022-11-28

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