UNIVERSITY of VIRGINIA
BIOCOMPLEXITY INSTITUTE

UVA COVID-19 MODEL WEEKLY UPDATE

VDH VIRGINIA DEPARTMENT OF HEALTH

August 19, 2022

KEY TAKEAWAYS

- Case rates across the Commonwealth continue to decline slowly. The effective reproduction number (R_e) is less than one for all regions of Virginia. Reported cases are down almost 20% since the end of July.
- Most health districts are in declining case rate trajectories. Ten are in growth trajectories with three of these in surge.
- Statewide, COVID19-like visits to urgent cares and emergency rooms have plateaued in the last 11-weeks. Wastewater surveillance also suggests that cases are leveling off at the state level. Both metrics show mixed results at the regional level.
- Hospitalizations in Virginia have plateaued. Models forecast a decline in hospitalizations in the coming weeks. The severity of disease in hospitalized patients also continues to lessen.
- Variant prevalence has evolved as expected. BA.5 remains the dominant subvariant, with BA.4.6 making slight inroads. BA.2.75 has not yet been detected in a significant number of samples.

30.8 per 100k
Average Daily Cases
Week Ending August 15, 2022

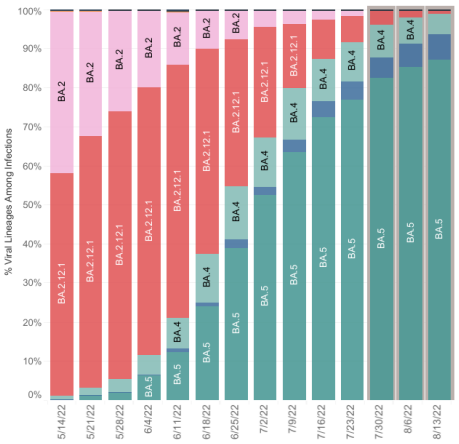
0.903
Statewide Reproduction Number as of August 15, 2022

60
*Virginia Localities at **High** CDC Community Levels as of August 18, 2022*

53
*Virginia Localities at **Medium** CDC Community Levels as of August 18, 2022*

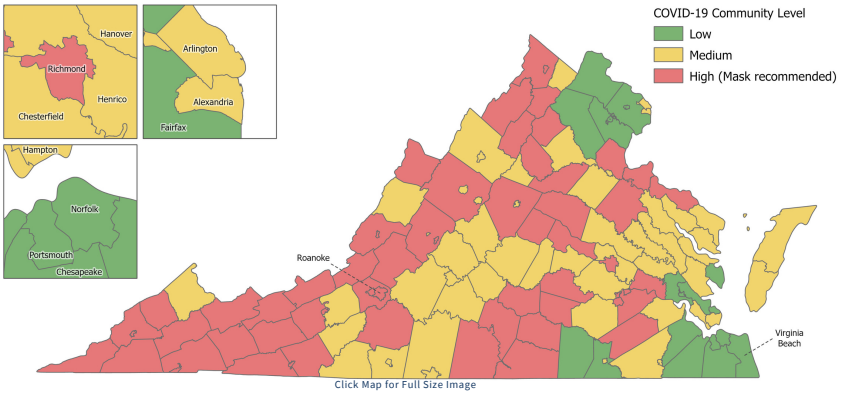
KEY FIGURES

Variant Mix – HHS Region 3



CDC Community Levels

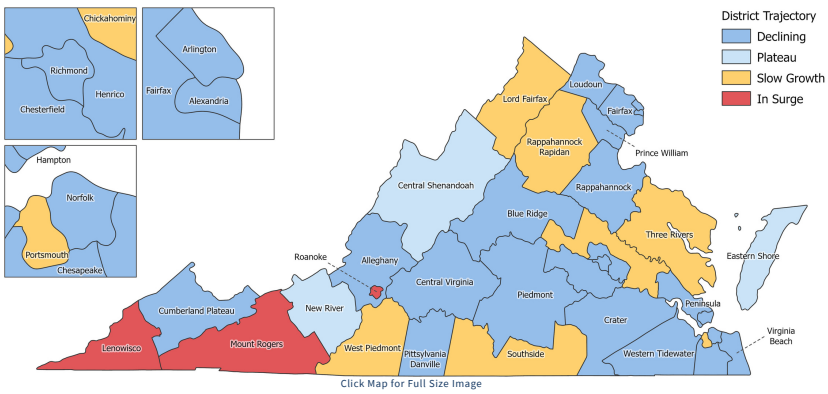
As of August 18, 2022



Click Map for Full Size Image

Growth Trajectories: Three Health Districts in Surge

Status	# Districts (prev week)
Declining	22 (15)
Plateau	3 (2)
Slow Growth	7 (15)
In Surge	3 (3)



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. 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.

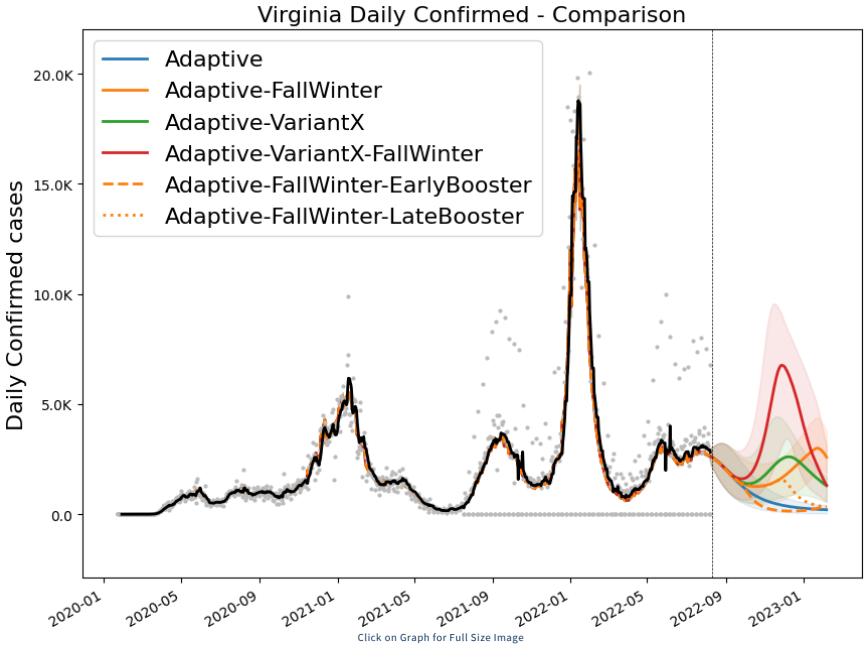
MODEL RESULTS

Unchanged: 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.