UNIVERSITY of VIRGINIA
BIOCOMPLEXITY INSTITUTE

# UVA COVID-19 MODEL WEEKLY UPDATE

VDH VIRGINIA DEPARTMENT OF HEALTH

*July 17, 2020*

## KEY TAKEAWAYS

- Eight health districts in the Hampton Roads area, along with Thomas Jefferson and Pittsylvania-Danville districts, are experiencing a surge in cases.
- Model improved to more quickly identify local surges and incorporate these into projections, though uncertainty in intensity and duration remains.
- The reproduction rate is above 1.0 statewide and in two of six HPP regions. It is near 2.0 in the Eastern HPP.
- So far, projections do not anticipate hospitalizations will exceed capacity through August, however it is crucial to mitigate surges.

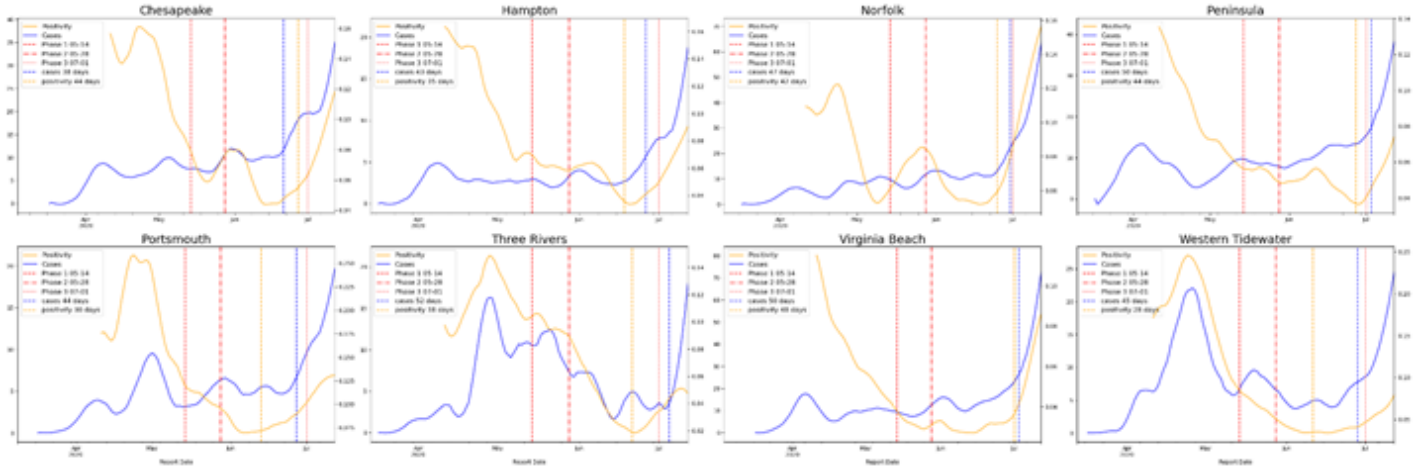
**656,034**

*Cases Avoided since May 15*

**1.137**

*Reproduction Rate*

*Based on onset date*
*7 days ending July 3rd*




Eight districts in Eastern region with surging incidence (mid-June to early July)
** Update latest run Wed AM, Thomas Jefferson & Pittsylvania-Danville tip over to surge

For a few weeks in early summer, the United States experienced a lull in the COVID-19 pandemic. While it looked like we had turned the corner, this was only true in a few places. Decisive action in the early epicenters, such as New York City and Seattle, led to strong declines in new cases. New York City, which saw over 500 deaths per day at the peak, experienced its first day with out a COVID death this week.

Other areas of the country, however, had not turned the corner. Rather, it is likely that COVID-19 had yet to arrive, at least not in all of its fury. Many states relaxed restrictions early, and now 23 states are experiencing significant surges in cases. Virginia, by contrast, took a phased approach, only entering Phase III of the Forward Virginia plan on July 1.

Despite this measured approach, Virginia is not immune to a resurgence of COVID-19, especially with cases surging in other states. Currently, 10 of Virginia's 35 Local Health Districts (LHDs) are experiencing significant surges. This includes eight LHDs in the Hampton Roads area, pictured in the charts above, along with Thomas Jefferson & Pittsylvania-Danville.

It is crucial that Virginians clamp down now to prevent these surges from growing and spreading. Governor Northam has announced increased enforcement of Phase III guidelines. But we all need to do our part to stop the spread. Cases are growing most rapidly in the 20-39 age group. Protect yourself and others by practicing social distancing and infection control. Virginia's health is in our hands.

## THE MODEL

The UVA COVID-19 Model and the 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 (S)usceptible, (E)xposed, (I)nfected, (R)ecovered epidemiologic model specifically designed to evaluate policy options. That is to say, it is NOT designed to precisely predict future numbers. It is designed to tell us that, given what we know, IF we do "x", THEN we can expect "y". It does this by modeling scenarios.

***It is designed to tell us that, given what we know, IF we do "x", THEN we can expect "y"...***

## THE SCENARIOS

The UVA team has been continuously improving the model. Previously, we presented a number of scenarios here and on the UVA COVID-19 Model Explorer. With recent improvements, we've decided to show just two: the "Current Course" and "With Surge" scenarios. These incorporate and combine nine underlying scenarios as shown on the next page. We also continue to use the "Full Rebound" scenario as the basis to estimate the affect of community mitigation and public health measures.

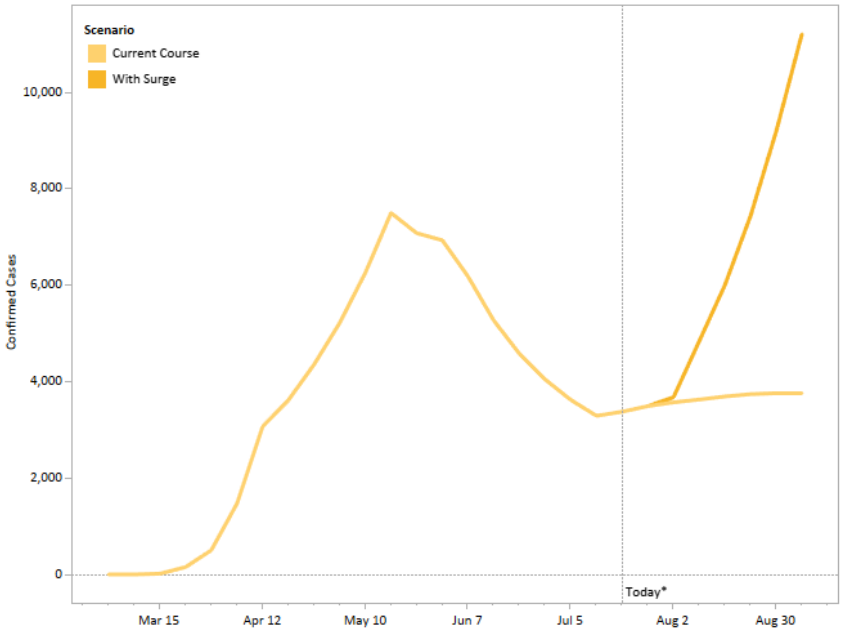
**Full Rebound:** Once public health restricitions are lifted, interactions return to 100% of pre-pandemic levels, with transmission returning to its pre-March 15 rate.

**Current Course:** The model examines the past and most recent case growth rate, along with other factors, in each of Virginia's 35 health districts to determine the strength of the rebound after May 15 in each district. It also examines whether the district has experienced a recent "surge" in cases. This information is used to model the current course of the pandemic locally.

**With Surge:** States that reopened early tended to experience a surge in case growth rates 4-6 weeks after reopening. This scenario examines anticipated cases if Virginia were to experience a surge 4 weeks after entering Phase III of the Forward Virginia plan.

## MODEL RESULTS

The model estimates that Virginia's cautious approach to reopening prevented **659,034** confirmed cases in Virginia since May 15. While cases are surging in Hampton Roads, the model does not project that hospital capacity will be overwhelmed during the projection window (through September 6. ) However, under the current course the model does project that new confirmed cases will continue to rise in Hampton Roads and Virginia through that date, even if a statewide surge is avoided. If a surge occurs 4 weeks after full reopening, as occurred in other states, growth could be rapid into the fall. Although the UVA model does not stretch into the fall, the full rebound scenario showed cases reaching as high as 178,158 new confirmed cases per week during the summer.



# Eight Scenarios for Projection

| Abbr | Rebound Intensity | Better Detection | Surge | Name |
|---|---|---|---|---|
| LR | Light | No | No | LightRebound |
| LR-S | Light | No | Yes | LightRebound-Surge |
| LR-BD | Light | Yes | No | LightRebound-BetterDetection |
| LR-BD-S | Light | Yes | Yes | LightRebound-BetterDetection-Surge |
| S | Steady | No | No | Steady |
| S-S | Steady | No | Yes | Steady-Surge |
| S-BD | Steady | Yes | No | Steady-BetterDetection |
| S-BD-S | Steady | Yes | Yes | Steady-BetterDetection-Surge |

This series of charts shows how case growth rates in Local Health Districts (LHDs) compare to scenario estimates. LHD charts are located in similar position to their location on a Virginia map. Colors of the outer boxes correspond to region. The color of the confidence interval curve (the wide swooshes) correspond to the nearest scenario. Model estimates are shown in the red dashed line, while actual case counts are in blue.