UVA COVID-19 MODEL WEEKLY UPDATE

VIRGINIA'S HEALTH IS IN OUR HANDS. Do your part, stop the spread.

VDH VIRGINIA DEPARTMENT OF HEALTH

July 10, 2020

KEY TAKEAWAYS

- COVID-19 activity is increasing in a number of Virginia's health districts
- Several important indicators have paused or worsened over the past two weeks
- Several states bordering Virginia are seeing strong COVID-19 case growth
- The reproduction rate is above 1.0 statewide and in four of six HPP regions.
- Continued emphasis on social distancing, infection control (such as wearing a mask) and early detection remain essential

495,799

Cases Avoided since May 15

1.124

Reproduction Rate
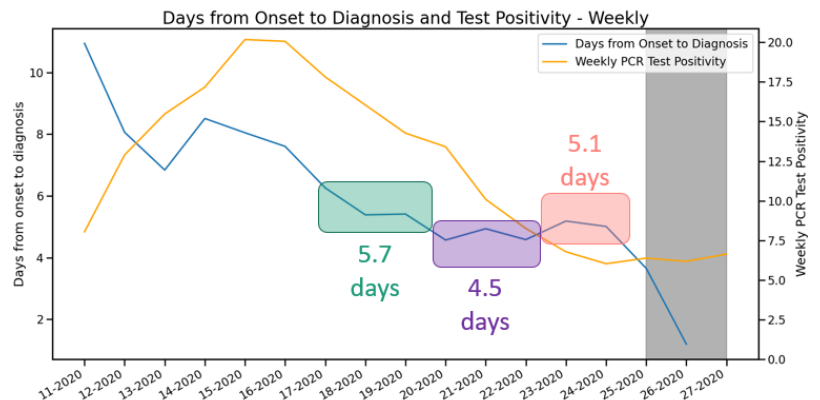*Based on onset date*
7 days ending June 27

Throughout the public health emergency, Virginia has taken a measured approach to the COVID-19 pandemic. This has paid dividends, with Virginia avoiding some of the more dire health and economic consequences seen in other states. However, COVID-19 did not disappear and Virginia is not immune from the realities of the virus. Over the past two weeks, a number of indicators have paused or worsened. The reproduction rate, which had been below 1.0 since May 25, moved above 1.0 on June 22. Percent positivity of COVID-19 tests, a key indicator of whether testing is keeping up with need, has steadied and increased slightly to just above 6%. This has corresponded with an increase in the average number of days between symptom onset and detection to just above 5 days. Hospitalizations are also beginning to creep upward, particularly outside of Northern Virginia.

Days from Onset to Diagnosis and Test Positivity - Weekly

It is difficult to identify what is driving these changes but they are widespread. States that reopened early tended to experience surges 4 to 6 weeks after reopening, corresponding with the summer vacation season and July 4 holiday. North Carolina and Tennessee both have high and growing case loads. Moreover, four of six Virginia Hospital & Healthcare Preparedness (HPP) regions have reproduction rates above 1.0. Only one, Northwest, has both a transmission rate below 1.0 and a declining rate.

With these factors in mind, it is essential that Virginia's residents and businesses remain vigilant. Proper social distancing and infection control, including wearing a mask and handwashing, are essential to keeping Virginia open. Virginia's health is in all of our hands. Do your part to stop the spread.

Region	Current R0	Weekly Change
State-wide	1.124	0.187
Central	0.911	0.089
Eastern	1.399	0.216
Far SW	1.935	1.223
Near SW	1.228	-0.422
Northern	1.103	0.313
Northwest	0.993	-0.156

THE MODEL

The UVA COVID-19 Model was developed 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.

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THE SCENARIOS

This week's model run examines seven scenarios tracking the phased reopening approach which began May 15th.
Steady: Lifting public health restrictions has no effect on transmission rates due to increased mask use, hand washing, and other effective mitigation strategies.
Light Rebound: Once community mitigation measures are lifted, interactions return to 17% of pre-pandemic levels, with a moderate increase in transmission.
**Full Rebound:** Once public health restrictions are lifted, interactions return to 100% of pre-pandemic levels, with transmission returning to its pre-March 15 rate.
Better Detection: Steady and light rebound scenarios are paired with a scenario in which new cases are identified and isolated more quickly through a combination of increased testing and contact tracing.
Best Fit: Each health district is assigned a single scenario from the above five that tracks best with its observed cases. The best fit scenario is paired with a **best fit - surge** scenario that 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 **495,799** confirmed cases in Virginia since May 15. Unlike some other states in the nation, Virginia has not experienced a recent surge in cases. Most health districts have been tracking scenarios which project COVID-19 has already peaked, the post-peak scenarios, indicating that social distancing, infection control, and identify and isolate strategies were working. However, that may not continue. Last week, 16 of Virginia's districts were tracking the "Steady - Better Detection" scenario. This week, that number decreased to 7. Mirroring this, only 10 districts were tracking pre-peak scenarios last week. This week, there are 14. As noted above, we must all do our duty to avoid a late summer surge that puts all of Virginia in a pre-peak scenario,
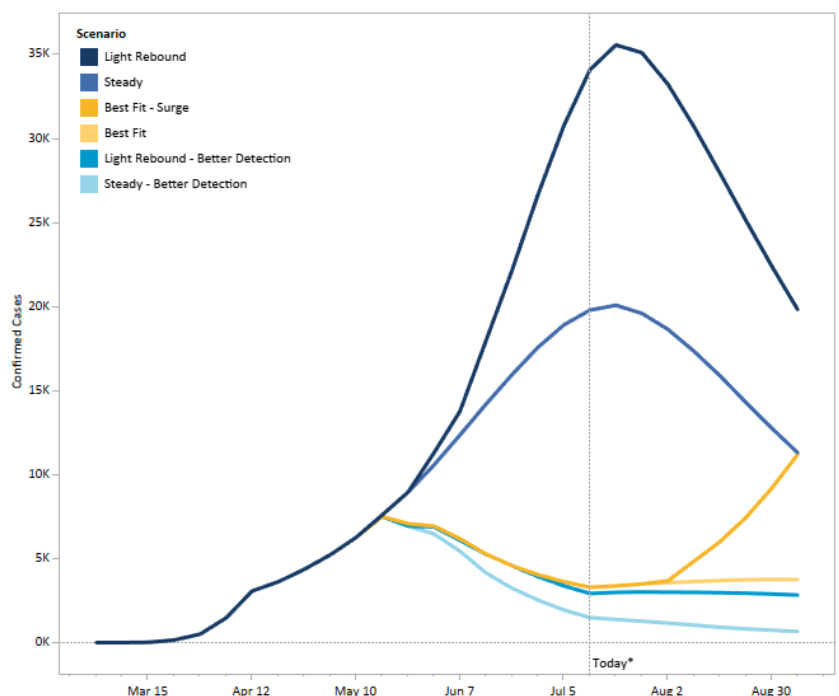
This series of charts shows how case growth rates in Local Health Districts (LHDs) compare to scenario estimates. LHD charts are located in similar position to their location on a Virginia map. Colors of the outer boxes correspond to region. The Color of the Confidence Interval curve (the wide swooshes) correspond to the nearest scenario. Model estimates are shown in the red dashed line, while actual case counts are in blue.

Name	# of Districts (last wk)
Light	2 (1)
Steady	12 (9)
Light – BetterDetection	14 (9)
Steady – BetterDetection	7 (16)
Full Rebound	0

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