VIRGINIA'S HEALTH IS IN YOUR HANDS. Do your part, stay at home.

UVA COVID-19 MODEL WEEKLY UPDATE

VDH VIRGINIA DEPARTMENT OF HEALTH

June 19, 2020

KEY TAKEAWAYS

- Public health restrictions paused the epidemic in Virginia and bought time
- The period of transition, from community mitigation to identify and contain, is a period of uncertainty
- The model has been better calibrated to capture district-level variations, improving local area forecasts
- New scenarios reflect the effect of improved infection control on outcomes
- Impact of better detection and isolation are beginning to show but uncertainty remains

951,087

Cases Avoided so far

0.727

Reproduction Rate

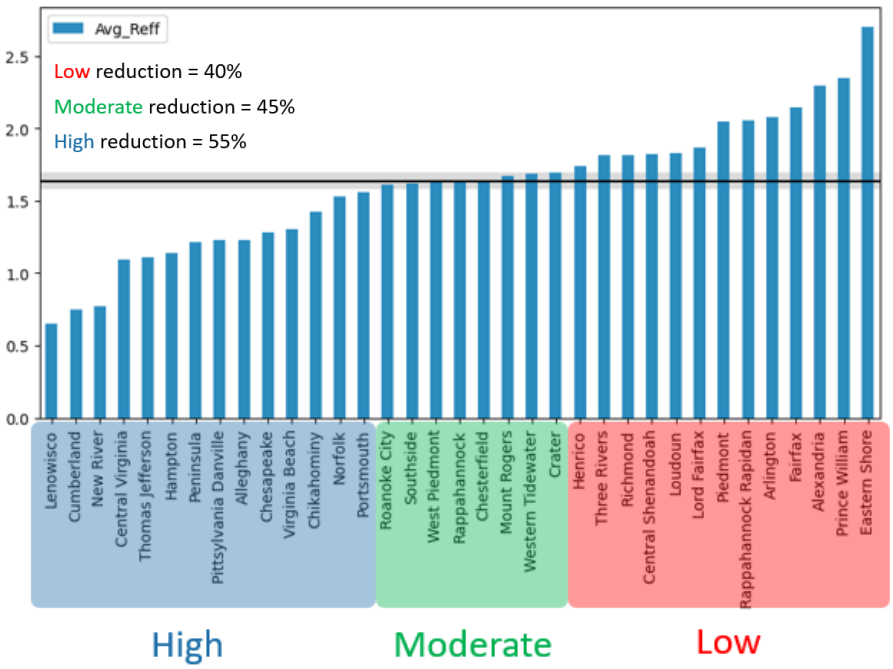
Based on onset date

7 days ending June 6

In response to the COVID-19 pandemic, Governor Northam declared a state of emergency in Virginia on March 12, followed by a series of public health restrictions culminating in a stay-at-home order on March 30. The impact of the order on transmission rates was immediate. Virginians began to change their own behavior in response to the emergency. Transmission rates eventually plateaued in mid-April, but above the 1.0 rate we associate with declines in new cases. By May, however, transmission rates were dropping again. They dropped below 1.0 by the end of the month. It is noteworthy that this second drop began before Virginia entered Phase I of the Forward Virginia plan.

What happenned to cause this second drop in transmission rates? It is difficult to say, but it has continued even as Virginia has moved from Phase I to Phase II of the Forward Virginia plan. One reason could be that Virginians themselves began to institute better infection control procedures, including wearing masks and using hand sanitizer. Businesses also instituted new procedures, following guidance from the CDC, VDH and guidance listed in the Forward Virginia plan. Simply, we may have gotten better at COVID-19. The UVA Biocomplexity Institute addressed this with a new scenario incorporating the effect of better infection control on transmission rates.

This did not happen evenly, however. Between mid-April and mid-May, some areas of the state saw transmission rates drop more than others. The rate of reduction, shown by Local Health Districts in the chart to the right, along with the transmission rate in mid-April, has a large impact on local forecasts of cases, hospitalizations and other COVID-19 outcomes. The UVA Biocomplexity team better calibrated the model using these estimates, bringing forecasts more in line with what local officials are seeing on the ground. If you been paying close attention to local forecasts, you should see an more accurate numbers this week.



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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 six scenarios, one unmitigated scenario, and five tracking the public health restrictions lifted on May 15th for most of Virginia, and two weeks later for Northern Virginia, Richmond City and Accomack County.

Unmitigated: No community mitigation measures are put in place in Virginia, and the public does not change behavior.

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 restricitions 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 30% more quickly through a combination of increased testing and contact tracing.

MODEL RESULTS

The model estimates that community mitigation strategies employed in Virginia have **prevented 951,087 confirmed cases in Virginia so far.** Most of Virginia entered *Phase I: Safer at Home* of the Forward Virginia Plan on June 5, which is a slight lift of public health restrictions. The phased approach to reopening, increased testing and tracing, and the efforts of Virginia residents and business are having an impact. If Virginia experiences better case detection and steady transmission after public health restrictions are lifted, the model estimates new confirmed cases already peaked. Standing in stark contrast to this are the estimates if we simply returned to pre-emergency declaration behaviors, and transmission rates. In this case, the model forecasts that new confirmed cases will peak at 174,907 per week during the July 4 holiday. Indeed by taking the phased approach and remaining vigilant, the model estimates that we have avoided 78,705 confirmed cases since May 15.