July 31, 2020

KEY TAKEAWAYS

- Eleven health districts are experiencing surges, including seven in the Hampton Roads area.
- Surges in Thomas Jefferson and Three Rivers abated, while a new surge emerged in Central Virginia.
- On current course, Virginia is projected to have 13,000 weekly confirmed cases, and growing, by early September.
- On July 18, the reproduction rate dipped below 1.0 statewide, including a large drop in the Eastern Region.
- The reproduction rate has been volatile as cases have surged. Early estimates have tended to underestimate R0.

827,377

Cases Avoided since May 15

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0.960

Reproduction Rate
Based on onset date
7 days ending July 18th

KEY FIGURES

Reproduction Rate

Region	R0 July 18	Weekly Change
State-wide	**0.960**	**-0.133**
Central	0.937	-0.216
Eastern	0.999	-0.274
Far SW	1.454	0.129
Near SW	1.104	0.23
Northern	0.855	0.003
Northwest	0.795	-0.279

Case Detection

Days from Onset to Diagnosis and Test Positivity - Weekly

5.9 days   5.0 days   5.7 days
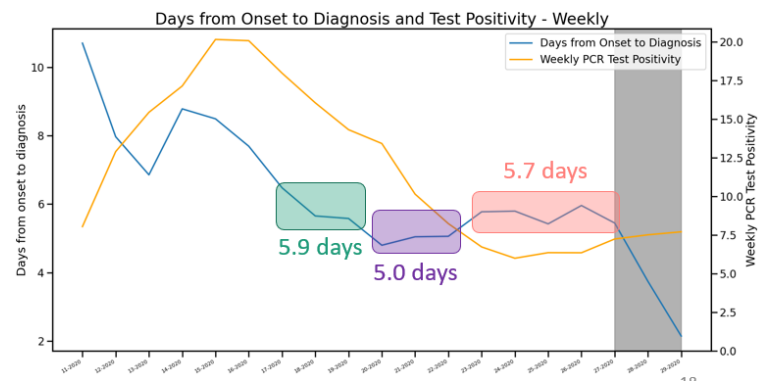
In Surge: 11 Health Districts
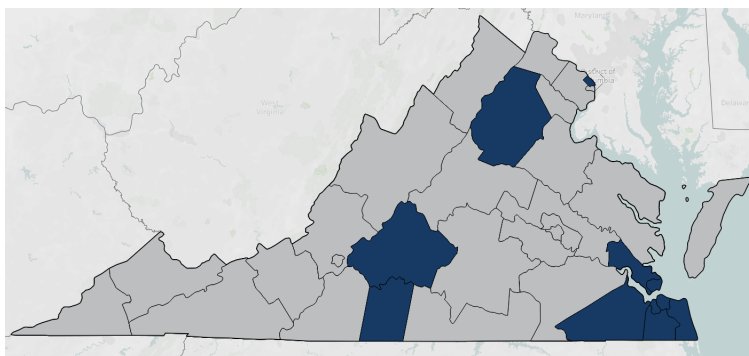
Scenarios

Scenario	Last Week	This Week
Steady, Better Detection	1	1
Steady, Better Detection, Surge	2	3
Light Rebound, Better Detection	10	15
Light Rebound, Better Detection, Surge	6	1
Steady	2	4
Steady, Surge	7	4
Light Rebound	3	3
Light Rebound, Surge	4	4

More Cases

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

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 designed to evaluate policy options and provide projections of future cases based on the current course of the pandemic.

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

THE PROJECTIONS

The UVA team has been continuously improving the model. Previously, we presented a number of scenarios. With recent improvements, we've decided to show two projections: the "Current Course" and "With Surge" scenarios. We also continue to use the "Full Rebound" scenario as the basis to estimate the affect of community mitigation and public health measures.
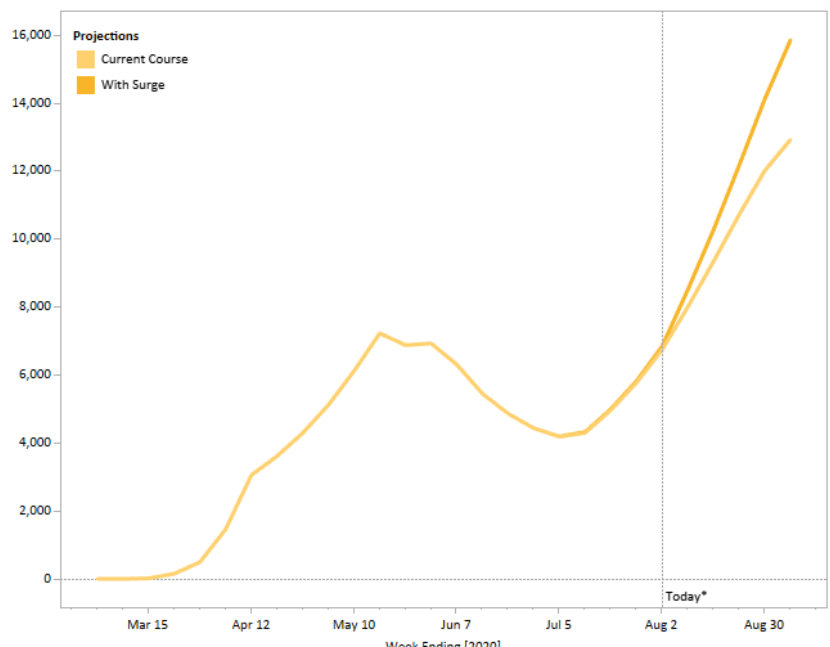
Full Rebound: Once public health restrictions are lifted, interactions return to 100% of pre-pandemic levels, with transmission returning to its pre-March 15 rate.

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 **827,377** 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, the "Current Course" scenario is tracking close to the "With Surge" scenario each week, as areas of the state match the surge scenarios. If this continues, growth could be rapid into the fall. In the Current Course projection, new weekly cases are expected peak at **12,926** (and growing) by early September. With a statewide surge, that increases to **15,858**.

Projections
— Current Course
— With Surge

Week Ending [2020]

Today*

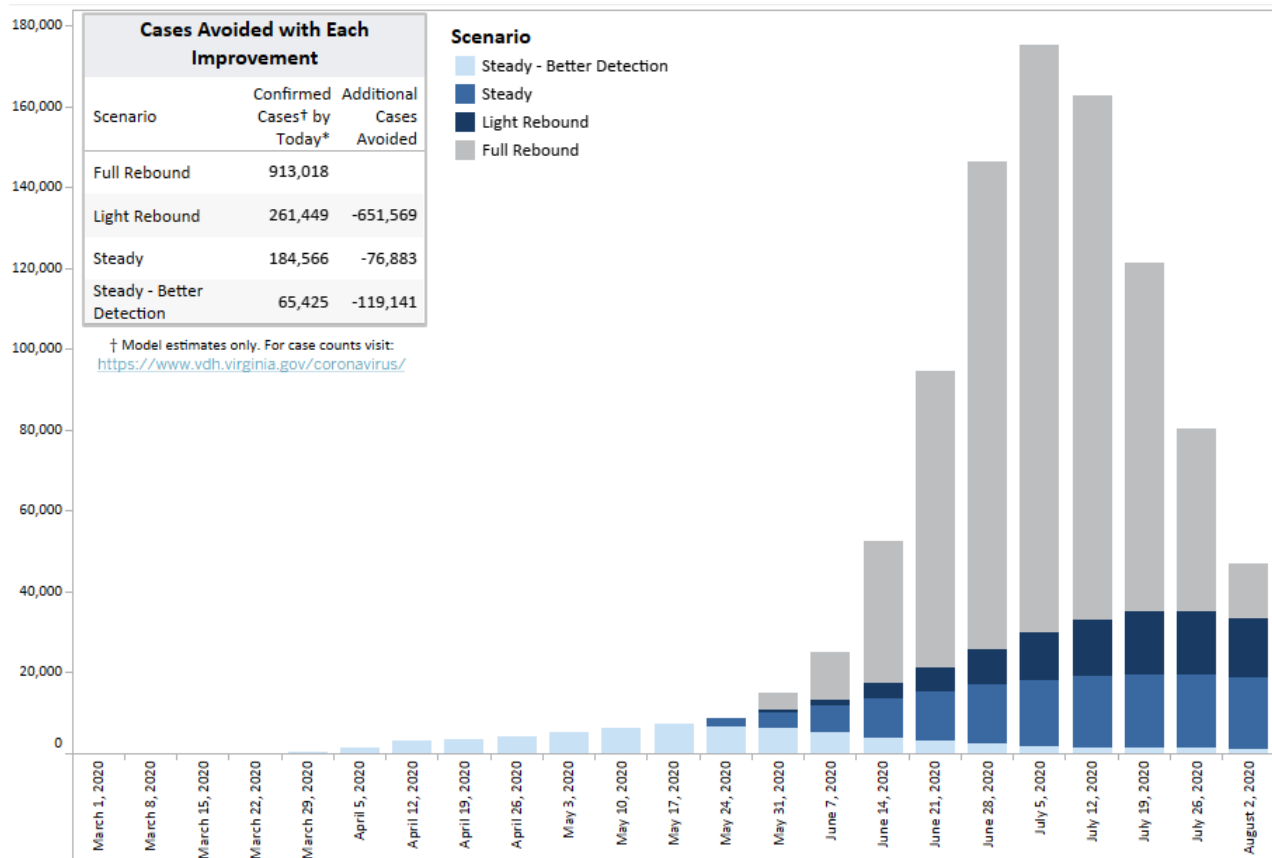VIRGINIA'S HEALTH IS IN OUR HANDS. Do your part, stop the spread.

What does the UVA COVID-19 Model tell us about stopping the spread?

The UVA Covid-19 Model is built on scenarios. You can think of scenarios as stories. In some stories, community members are responsible neighbors. They practice good social distancing and infection control such as limiting interactions, keeping distance when out in public, wearing masks, and washing hands frequently. Businesses follow guidance in the Forward Virginia plan. There are enough tests and contact tracers to quickly identify outbreaks and contain them. In other stories, people and businesses are less responsible. As a result, outbreaks occur and COVID-19 spreads rapidly. Tests take longer to process and contact tracers are unable to keep up with a growing number of outbreaks.

With fires, we know that an ounce of prevention is worth a pound of cure. Calling in the fire department is a last, often tragic, resort. And if prevention fails, firefighters may struggle to contain fires that rage out of control. The same is true for COVID-19. Prevention - social distancing and infection control - do the most to stop the spread. With good prevention, testing and contact tracing can quickly identify and contain outbreaks. Without good prevention, however, they can get overwhelmed quickly.

While just estimates, the model provides a good yardstick for measuring how effective our efforts have been. We use the Full Rebound scenario as our baseline story - the yardstick against which we measure our efforts to stop the spread. Although we do not expect it to happen, the Full Rebound scenario represents the worst story. After the start of the May 15 phased reopening, people, businesses, and their partners in government do nothing to stop the spread. As a result, COVID-19 tears through communities like wildfire. Think of it as the homes and acres that would be burned if people, businesses, and communities did not take basic fire precautions. Things like minding candles and campfires, installing fire alarms and sprinkler systems, and maintaining fire departments. The model estimates that without any prevention, in the Full Rebound scenario, Virginia could have 913,018 confirmed cases by August 1.

Cases Avoided with Each Improvement

Scenario	Confirmed Cases† by Today*	Additional Cases Avoided
Full Rebound	913,018	
Light Rebound	261,449	-651,569
Steady	184,566	-76,883
Steady - Better Detection	65,425	-119,141

† Model estimates only. For case counts visit:
https://www.vdh.virginia.gov/coronavirus/

Scenario
- Steady - Better Detection
- Steady
- Light Rebound
- Full Rebound

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Continued

Fortunately, most people are responsible citizens, even when the threat is as novel and invisible as COVID-19. This is represented by the Light Rebound scenario. We once feared a large spike in cases after restrictions were phased out on May 15, but this did not happen in Virginia - at least not right away. Rather, no regions in Virginia saw transmission rates jump significantly above 1/6 of what they were before mid-March, the beginning of the stay at home order. If all of Virginia were at the 1/6 transmission level, shown by the Light Rebound scenario, we expect we would have 261,449 confirmed cases by August 1st. By practicing basic prevention, Virginia has potentially avoided over 651,000 confirmed cases, a 70% reduction in expected cases.

However, some areas of Virginia have done even better at preventing the spread of COVID-19. In these areas, there was no rebound following the phased reopening beginning May 15 - at least not yet. Rather, transmission rates stayed at the same level as they had during the stay at home order. Essentially, people learned to live with COVID-19. Masks, hand washing, social distancing, and good business practices allow people to get on with their lives while minimizing the spread. This is represented by the Steady scenario, which avoids another 76,883 cases in Virginia before August 1. As shown by the Steady scenario, prevention done well would reduce cases by 80% when compared to the full rebound scenario, potentially avoiding almost 730,000 confirmed cases.

In public health, tests represent our fire detectors. Contact tracers and investigators are our fire fighters. Testing identifies outbreaks, and contact tracers and investigators contain and stop the spread. In the model, this is represented by the "Better Detection" scenarios, matched to both the Light Rebound and Steady scenarios. When matched to the Steady scenario, the model estimates that Better Detection would avoid an additional 119,141 confirmed cases before August 1. While not even close to the numbers avoided by prevention, 119,141 cases is nothing to shake a stick at. Not captured, however, is that these efforts prevent small outbreaks from becoming wildfires.

Altogether, the model estimates that a combination of good social distancing, infection control, testing, and contact tracing would have prevented a total of 847,593 cases before August 1. That is almost a 93% reduction in confirmed cases compared to the Full Rebound scenario. Virginia has not quite achieved that, but we have come close. As of July 29 we have had just under 88,000 cases. Still, this is far less than even the 184,566 expected statewide under the Steady scenario. You can explore the potential impact of prevention and better detection in your community by interacting with the charts in our dashboard.

We cannot rest on our laurels though. As of July 29, Virginia has recorded 2,125 lives lost due to COVID-19. Another 7,738 people have been hospitalized. In recent weeks, almost a dozen of Virginia's 35 health districts have experienced surges, breaking above the case growth rates in the Light Rebound scenario. Beating COVID-19 is a marathon, not a sprint. It requires all of us to do our part to stop the spread.