UNIVERSITY of VIRGINIA
BIOCOMPLEXITY INSTITUTE

UVA COVID-19 MODEL WEEKLY UPDATE

VDH VIRGINIA DEPARTMENT OF HEALTH

May 28th, 2021

KEY TAKEAWAYS

- Weekly cases continue to decline and remain below the national rate of 6 per 100,000
- Most district trajectories remain in decline, with one health district showing slow growth
- First vaccine doses increased when eligibility expanded to adolescents ages 12-16. However, both first and second doses are now declining.
- A majority of adolescents and adults age 16-49 are not yet fully vaccinated. Unvaccinated individuals remain at risk for contracting COVID-19.

5 per 100k
Average Daily Cases Week Ending May 23, 2021

15 per 100k
Potential Peak Average Fatigued Control Scenario Daily Cases, Week Ending August 8, 2021

22,668
Average Daily 1st Doses May 23, 2021

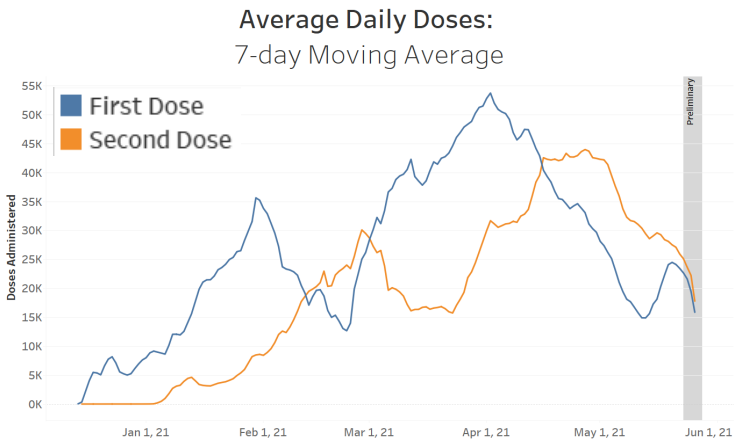
25,124
Average Daily 2nd Doses May 23, 2021

KEY FIGURES

Reproduction Rate
(Based on Confirmation Date)

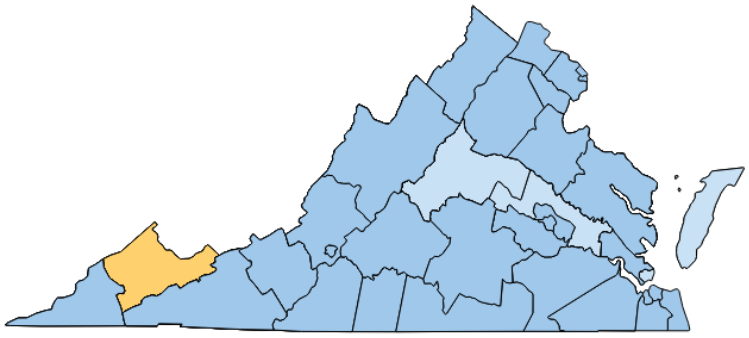
Region	R_e May 24	Weekly Change
Statewide	**0.769**	**0.072**
Central	0.821	0.019
Eastern	0.815	0.121
Far SW	0.805	0.054
Near SW	0.823	0.112
Northern	0.748	0.181
Northwest	0.688	-0.189

Vaccine Administrations



Growth Trajectories: 0 Health Districts in Surge

Status	# Districts (prev week)
Declining	30 (31)
Plateau	4 (4)
Slow Growth	1 (0)
In Surge	0 (0)



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

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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.

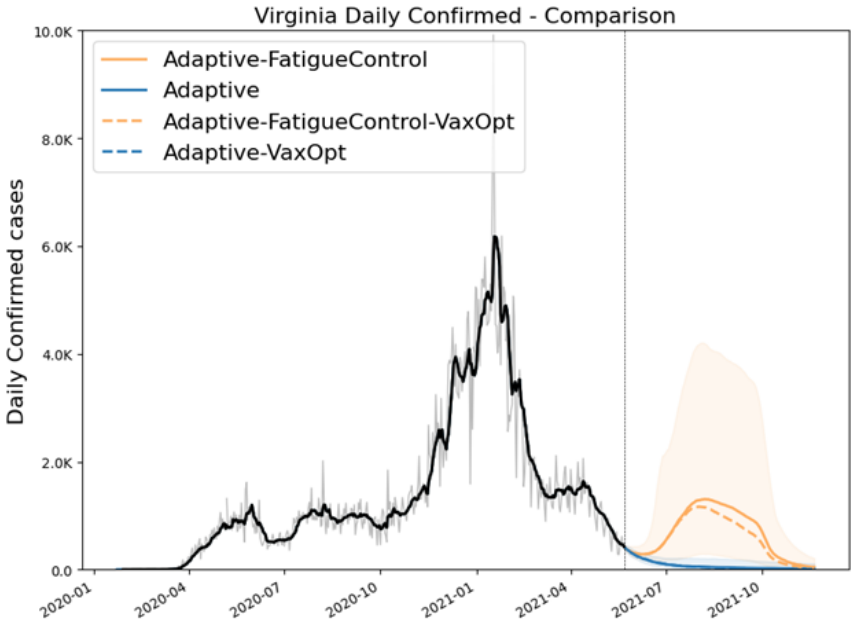
COVID-19 is a novel virus causing a global pandemic and response. The model improves as we learn more about it.

THE PROJECTIONS

The UVA team continues to improve the model weekly. The UVA model uses an "adaptive fitting" methodology, where the model traces past and current trends and uses that information to predict future cases at the local level. The model incorporates projections on the impact of vaccines, which will improve over time. Since the B.1.1.7 Variant has become dominant, the model includes increased transmission and severity associated with this Variant of Concern. The model also includes "what-if" or planning scenarios. The "Fatigued Control" scenario identifies the highest transmission rates seen during summer 2020 and projects those forward. The "VaxOpt" scenario compares the status quo vaccine acceptance levels to optimistic levels.

MODEL RESULTS

With the B.1.1.7 variant becoming predominant, the model shows a continued decline in new weekly cases along the current course, but warns of a surge in cases that could occur if Virginians relax precautions. Under the current course, model scenarios show that cases peaked at **68 average daily cases** per 100,000 residents during the week ending **January 24th**. However, under a worst case scenario, if Virginians relax their behavior for a sustained period as Variants of Concern take hold, cases could reach another smaller peak with **15 average daily cases** per 100,000 the week ending **August 8th**. To lessen the projected peak, we must give vaccines time to have an impact, especially as the B.1.1.7 variant is the predominant strain in Virginia. **Do your part to stop the spread. Continue to practice good prevention and get vaccinated when eligible.**



IMPROVING CASE RATES & DECLINING VACCINATIONS

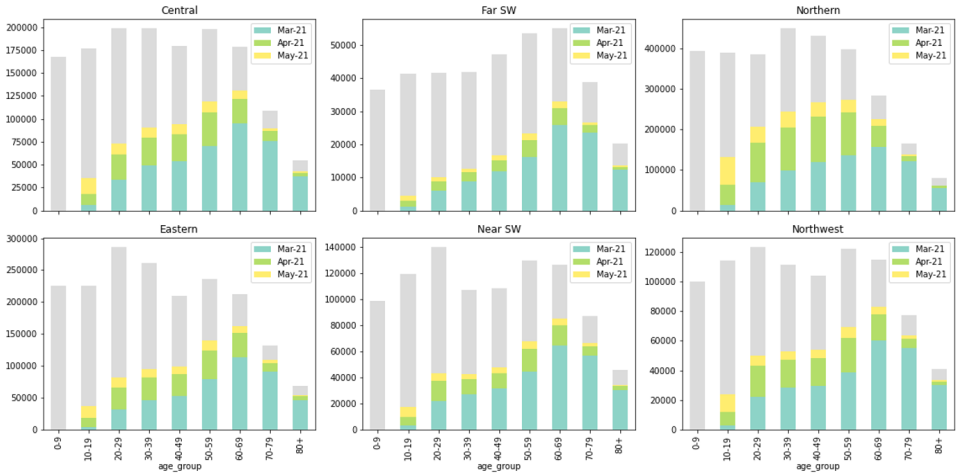
This week brings continued good news for much of Virginia. Case rates have declined to 4 per 100,000, a rate we haven't seen since early in the pandemic. Hospitalizations and deaths remain similarly low. These low rates are a result of an overall effective vaccination strategy. As we've seen for several weeks, vaccines have been, and continue to be, the key to overcoming the pandemic.

Unfortunately, despite growing vaccine eligibility, vaccination rates continue to decline. Adolescents are now eligible for the vaccine, leading to an increase in vaccination rates among those under 18. Even with this new segment of the population becoming eligible, vaccine doses are declining statewide. This means adults are no longer getting vaccinated at rates they were in April. To keep up with the improving case rates we've observed in recent weeks, vaccination uptake must continue.

Room for Improvement

Virginians over age 70 are vaccinated at high rates, with 81% of Virginians age 70-79 and 78% of Virginians age 80+ having received at least one vaccine dose. However, younger adults lag behind. The gray bars in the figure to the right show the number of Virginians in each age group who remain unvaccinated. This figure shows we still have a way to go.

Regional differences also exist. The Far Southwest has lower vaccination rates than the other Health Regions. Both the Near and Far Southwest had lower rates in May (yellow bars) compared to the rest of the state.



Vaccination rates vary considerably by age group within each health region. Gray bars show the number of Virginians in each age category who have not yet been vaccinated. While only a small percentage of Virginians in the oldest age groups remain unvaccinated, many Virginians under age 70 are still in need of a vaccine.

Two Sides of One Coin

As evidenced by declining case rates, the vaccine is highly effective in reducing COVID transmission. Risk of infection does still exist even after receiving the vaccine, but at very low rates. This week the CDC reported that 10,262 breakthrough infections occurred nationwide among vaccinated individuals since the New Year, with 10% needing hospitalization and 2% resulting in death. About one in four of these breakthrough infections were asymptomatic. While this rate (10,000 of over 100 million vaccinated individuals, or 0.01%) is very low, breakthrough infections can still occur.

Importantly, such low rates apply only to the **vaccinated population.** Much of Virginia remains unvaccinated, and among these unvaccinated pockets, the outlook really hasn't changed. Transmission rates are as high as they were in April, variants are now predominant, and restrictions are being relaxed. For the unvaccinated population, it is as important as ever to follow public health precautions such as maintaining social distancing and wearing a mask.

This weekend brings greater opportunity for virus transmission. The Memorial Day holiday is traditionally a time for social gatherings and this year, it coincides with further loosening of restrictions. Despite important successes in recent weeks, over half of Virginians are not yet fully vaccinated and are still at risk for COVID infection. Until fully vaccinated, public health precautions remain necessary.