

October 16, 2020

KEY TAKEAWAYS

- Models are designed to project what **could** happen based on current trends but do not forecast what **will** happen. Behavioral responses drive changes in current trends.
- The reproduction rate has increased in all districts, and is above 1.0 statewide and in all but one region.
- Weekly incidence in Virginia (12/100K) is increasing but is still below the also increasing national average (19.6/100K).
- 5 Health Districts entered surge trajectories, and the number with declining trajectories dropped significantly.
- While early, national and global trends suggest concerns about winter case growth and schools reopening may be founded.

202,040
 Cases Expected by Thanksgiving

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1.031
 Reproduction Rate

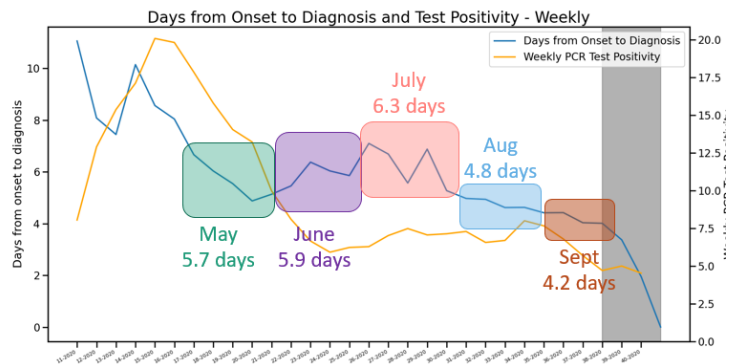
*Based on onset date
 7 days ending Oct 3*

KEY FIGURES

Reproduction Rate

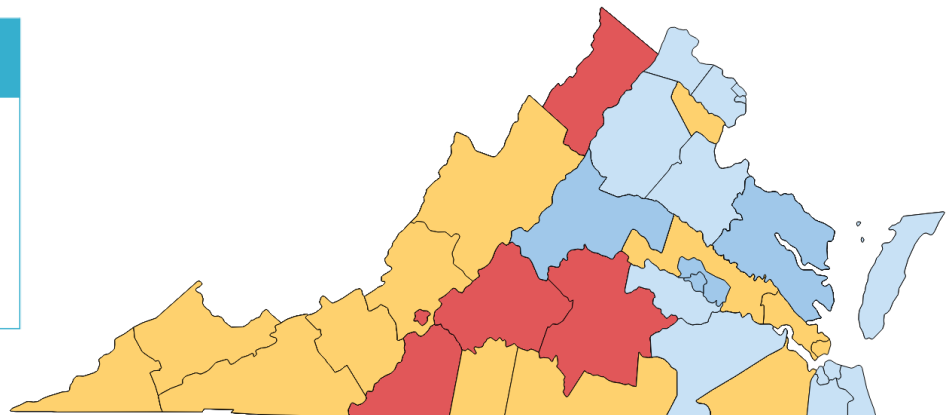
Region	R _e Oct 03	Weekly Change
State-wide	1.031	0.178
Central	1.067	0.238
Eastern	1.015	0.226
Far SW	1.155	0.157
Near SW	1.032	0.132
Northern	0.961	0.129
Northwest	1.092	0.183

Case Detection



Growth Trajectories: 5 Health Districts in Surge

Status	# Districts (last week)
Declining	4 (14)
Plateau	13 (10)
Slow Growth	13 (11)
In Surge	5 (0)



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 an unprecedented 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 now uses an "adaptive fitting" methodology, where the model precisely traces past and current trends and uses that information to predict future cases. These new projections are based on recent trends the model learns through its precise fitting of each individual county's cases.

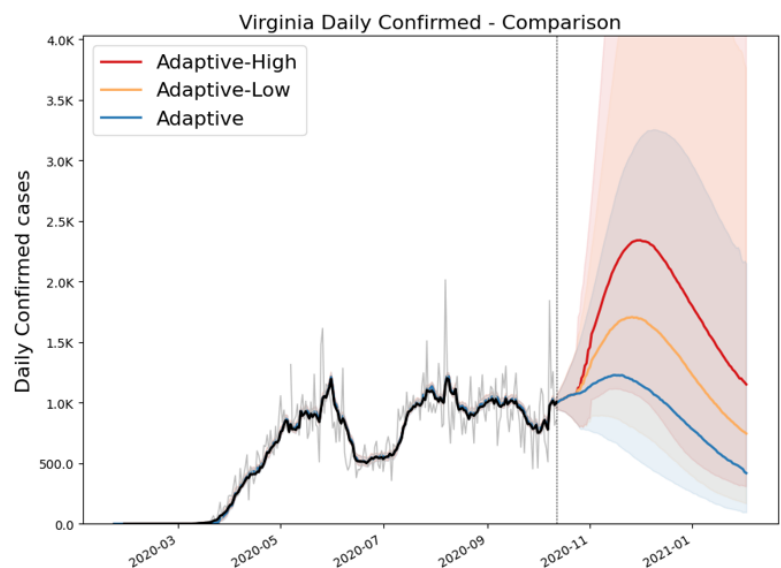
The new model also includes two "what-if" scenarios to predict what we might see if cases increase in response to seasonal effects, such as schools re-opening and changing weather patterns. These "what-if" scenarios assume a 10-20% increase in transmissibility beginning with the onset of flu season. The model will be updated regularly to incorporate new information.

Low impact of seasonal effects: 15% increase in transmission starting October 21, 2020

High impact of seasonal effects: 30% increase in transmission starting October 21, 2020

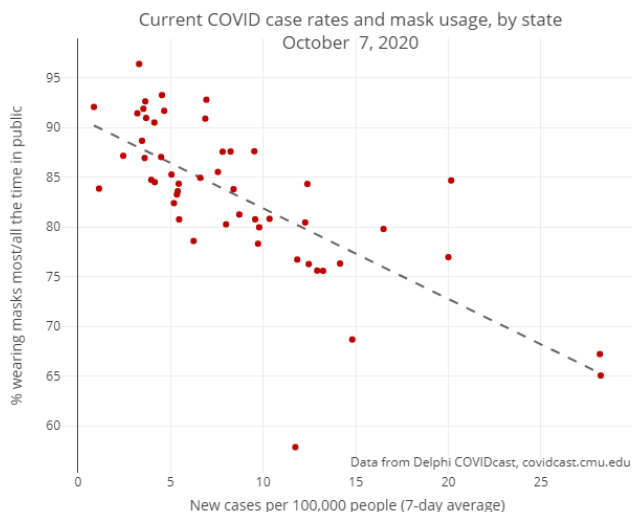
MODEL RESULTS

With the adaptive modeling approach, the current course predicts that confirmed cases will peak during the week ending **November 22** with **8,394 weekly cases**. If we continue on this trajectory, we would expect 202,040 total confirmed cases by Thanksgiving. Statewide, new case growth has increased in the past week, with reproduction rates above 1.0 in most regions. This upward trend coincides with national trends, and trends in Europe. While too early to be certain, this may suggest that concerns regarding the onset of cold weather were founded. To account for this, the modeling team moved the scenarios for seasonal effects up to October 21. Regardless, even with a 20% increase in transmission beginning next month, the model projects that hospital capacity will not be exceeded in any Virginia region through the end of the year. Virginia residents should continue with social distancing and infection control, and follow [Forward Virginia](#) guidelines.



MASK USE DATA

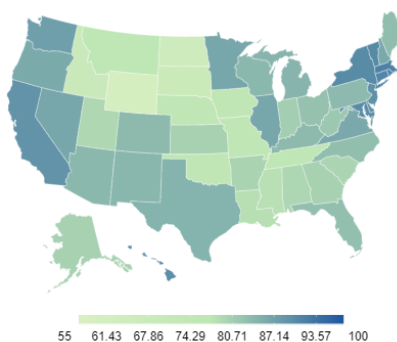
The clinical [evidence for mask-wearing is strong and growing](#), and most Americans have embraced mask-wearing as a basic hygiene practice during this pandemic. Some, however, have not. Uptake of mask-wearing appears to vary geographically. As we [discussed with schools a few weeks ago](#), this type of variation provides a natural experiment. Good data on mask-wearing has been hard to come by, however [the Delphi Group at Carnegie Mellon University](#) has partnered with Facebook to conduct [an ongoing COVID-19 survey](#), including questions about mask wearing. Although scientists and researchers will be parsing this and other data for many years to verify causation, a preliminary look at the correlation between mask-wearing and case rates at the state level appears to be strong, as shown in the scatterplot to the right.



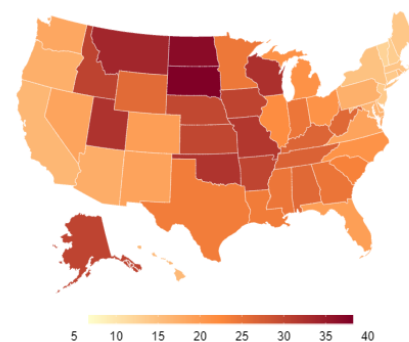
Risk and Reward

You may expect that as case rates increase people will be more likely to take preventive measures. This is because as the risk of getting infected increases, the reward from prevention (in terms of lowered risk) increases as well. This behavioral response could put a ceiling on reproduction rates, keeping surges to a minimum. (On the flip side, relaxed prevention during low case rates may create a floor.) However, this behavioral response does not appear to be occurring at the state-level. Not everyone follows case rate statistics, so the

% wearing masks in public most or all the time
October 7, 2020



% who know someone who is sick
October 7, 2020



Data from Delphi COVIDcast, covidcast.cmu.edu

Delphi Group survey includes questions about sick acquaintances, a measure which correlates with case rates and may have more salience with the public. Mask use, however, does not appear to increase with this measure. Indeed, state-level maps showing each look like photo negatives of each other. This may suggest that the opposite is happening. Instead of case rates driving up mask use, habitual mask use may lower case rates. This matches the clinical evidence, but it will take time to parse out this and other data to be certain. After all, other factors may explain differences in case rates and/or mask-wearing.

Mask use in Virginia

The UVA Biocomplexity Institute has partnered with the Delphi Group to obtain local Virginia data where available. Mask usage in Virginia has been stable over the course of the pandemic, with between 83 and 89 percent of Virginians reporting using masks all or most of the time. Mask usage does vary locally throughout Virginia, though not as much as among states. This relative consistency, along with small local sample sizes, and anomalies caused by case surges at some universities, may explain why a similar correlation was not found at the local level in Virginia. However, as above, more time and nuanced analysis may reveal a correlation. More information on Virginia mask usage is available on [the UVA Biocomplexity Institute slides](#).

RESEARCH HIGHLIGHTS FROM RAND CORPORATION

- [An examination of 767 hotspots](#) found that, in the South, hotspots tended to begin among those aged 18-24, followed 2-4 weeks later by peaks in other age groups.
- [A blended approach to opening schools](#) including periodic alternation between remote and in-person classes maximizes in-person school days. To avoid any cases, schools should not open if cases are at 0.5 per 100,000 or higher.