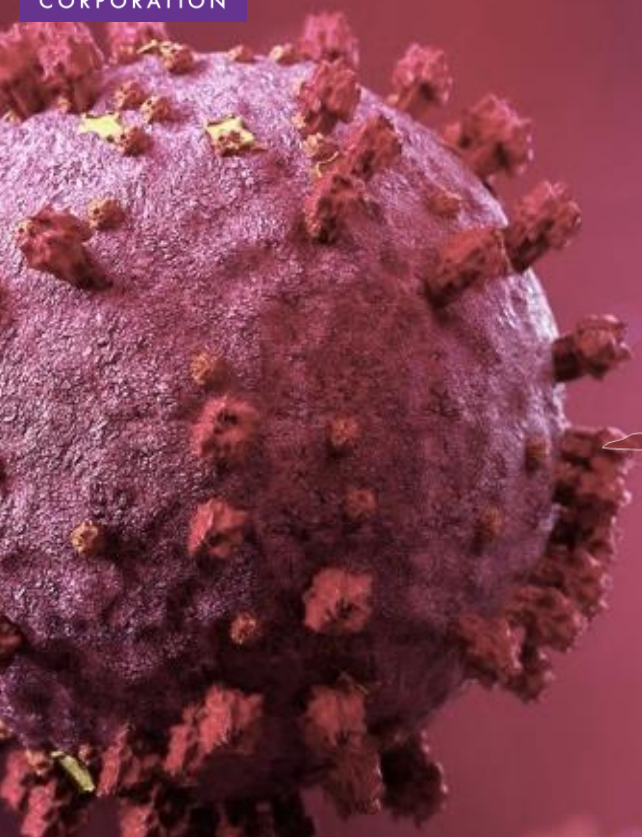
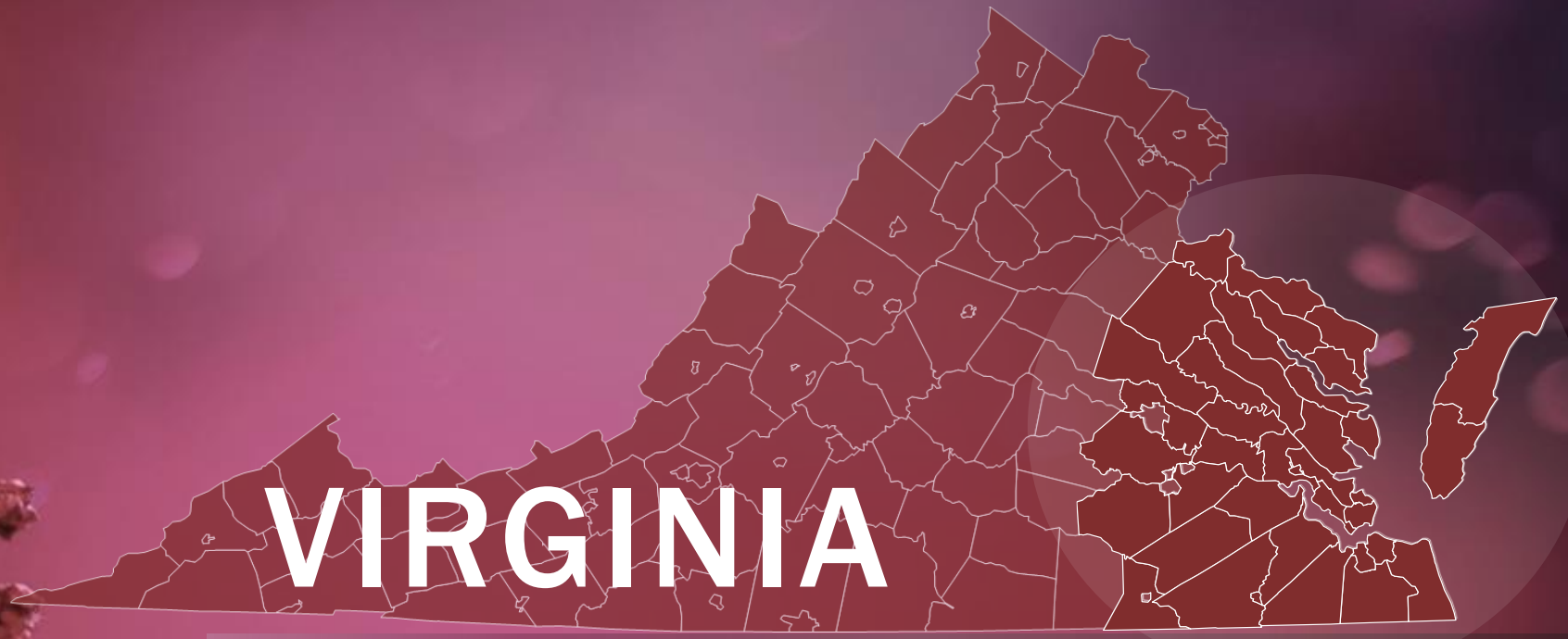




VIRGINIA

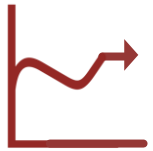
COVID-19 Update October 8th, 2020

Carter C. Price, Ph.D.

A team of RAND researchers was asked by the Commonwealth of Virginia to review available information on COVID-19 models of the commonwealth to determine the strengths and weaknesses of each model and their relevance to decisionmaking. The work of the research team will be documented in a forthcoming RAND research report. The information in this presentation is intended to keep policymakers abreast of the latest findings of the research team.

This research was sponsored by the Commonwealth of Virginia and conducted by the RAND Corporation. RAND is a research organization that develops solutions to public policy challenges to help make communities throughout the world safer and more secure, healthier and more prosperous. RAND is nonprofit, nonpartisan, and committed to the public interest. For more information, visit www.rand.org.

Bottom-Line Up Front



Virginia's total case level was roughly flat

- At the county level, the trends were mixed
- Hospitalizations have declined
- Testing has dipped in the last week

Additional triggers could lead to a rapid rise in the near term

- Seasonal changes
- Distancing fatigue
- In-person school
- Interstate travel
- Hurricane season

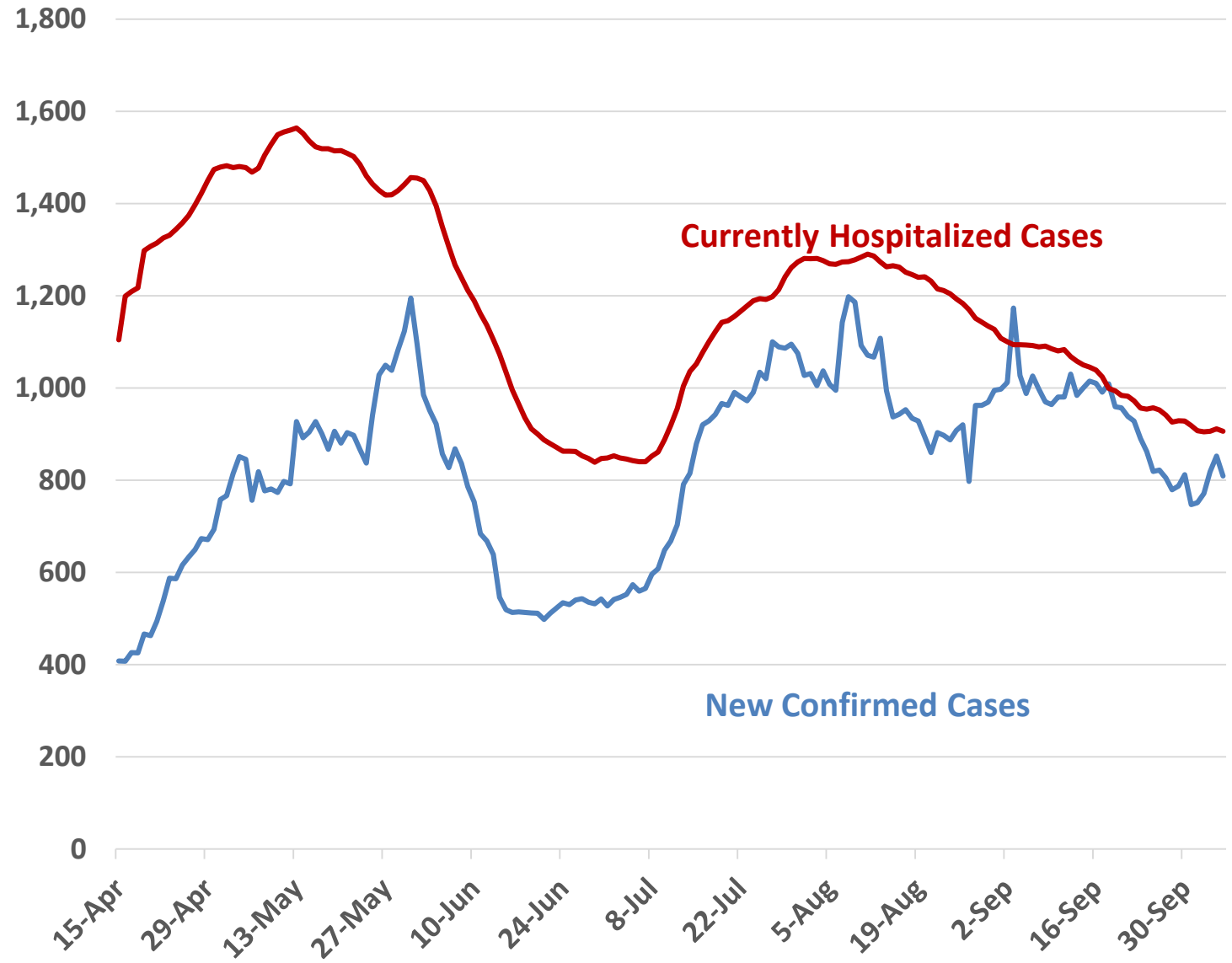
Cheaper, faster testing could reduce the spread if widely deployed

Modeling is less useful for forecasting because behavioral responses are driving current trends

- Models will continue to be very useful for comparing policies and exploring scenarios

Changes in testing practices may change data quality in ways that make it difficult to produce consistent data series

Cases flattened last week while hospitalizations declined



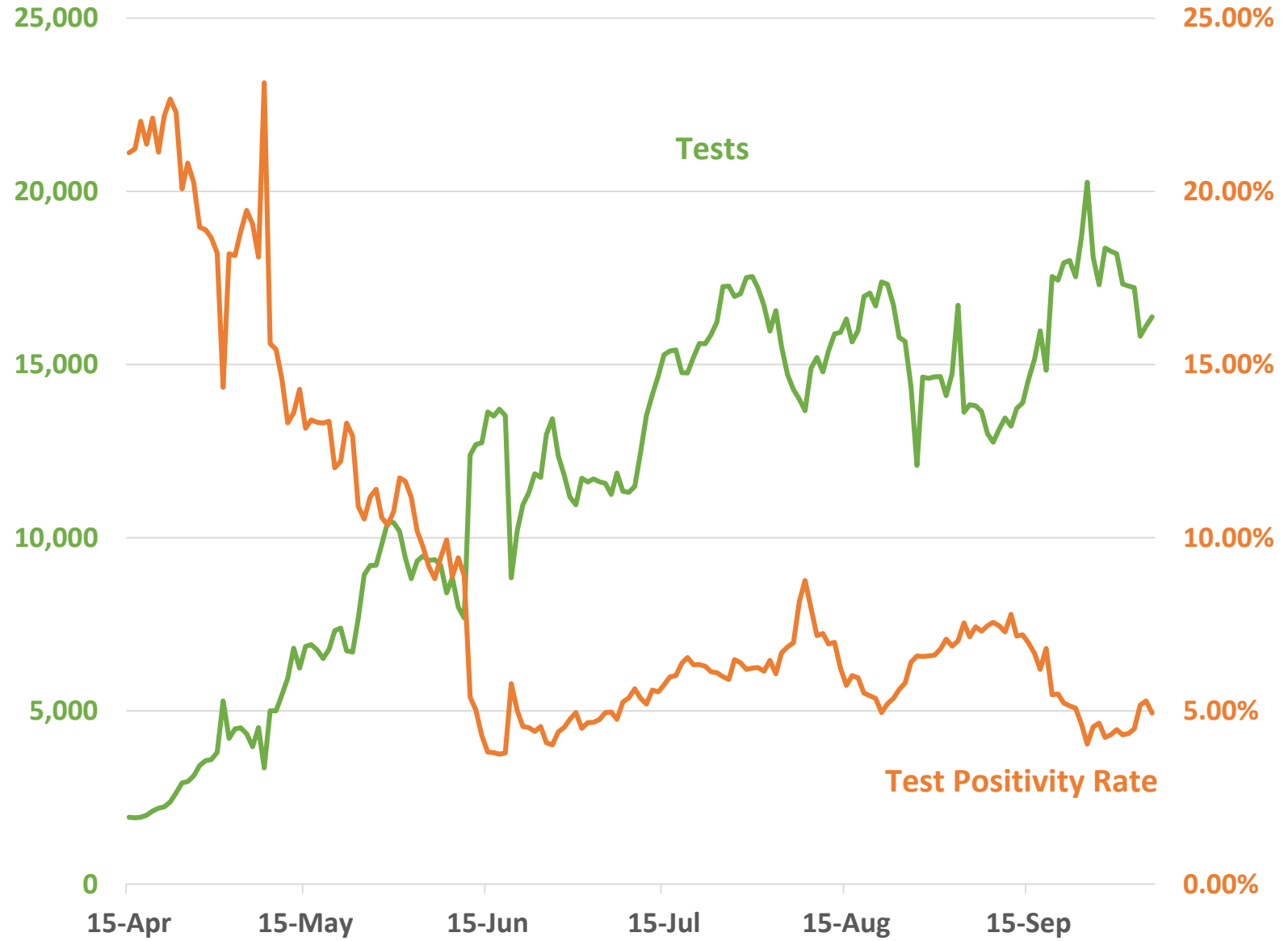
New confirmed cases flattened at the lower level from recent weeks

- The level has remained outside of the 900 to 1,100 cases/day range

Currently hospitalized cases have continued to slowly decline

- There has been a change in the demographics of the infected population (e.g., younger)
- This is a lagging indicator and so may continue to decline for the near term

Testing levels are at the target range for a test-and-trace strategy



Tests per day have dropped from recent peak

- Testing levels are appropriate for a test-and-trace strategy
- Further reopening is estimated to require four to five times more testing along with lower case rates (See Rockefeller Foundation)

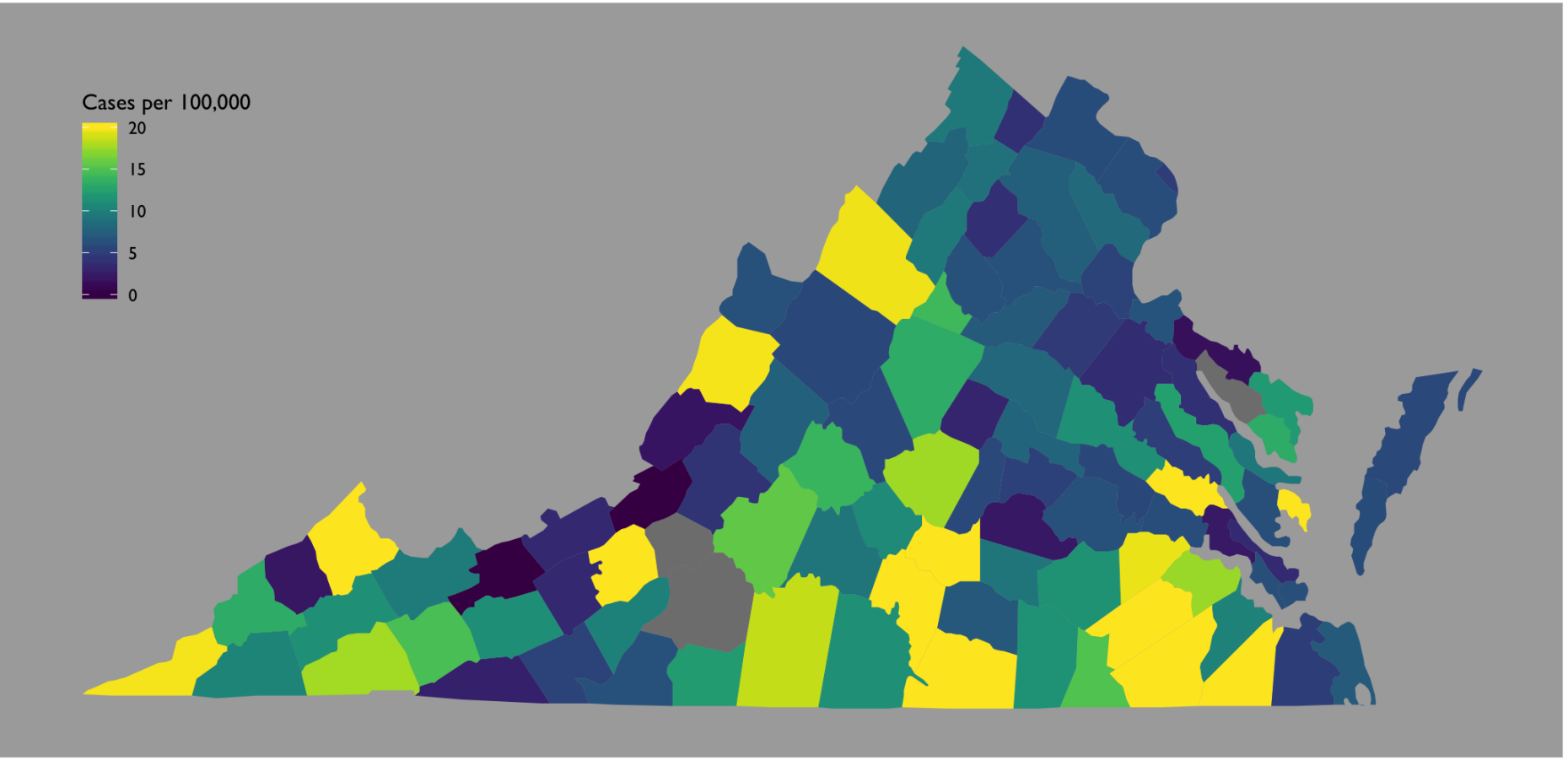
The test positivity rate has leveled off at around five percent

- Five percent is a suggested target

Areas with elevated case rates have spread across the state even as case rates stay about the same

CASE COUNT

Source: VDH



Yellow indicates at least 20 cases per 100,000

Virginia's southern and western counties are seeing high case levels

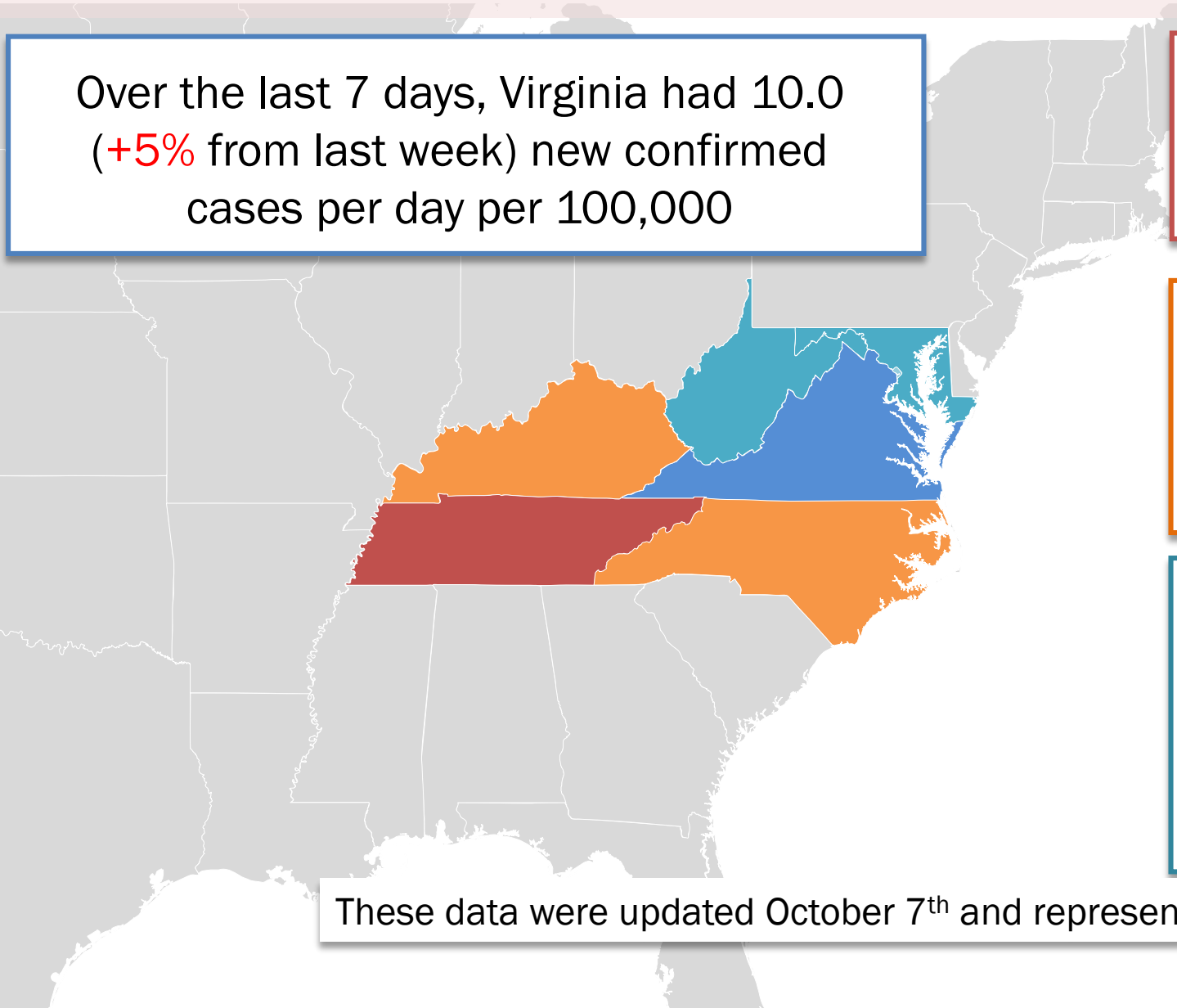
- This is partially driven by growth in low-population counties

Many of the most populous counties saw declines from last week

These data were updated October 7th and represent a seven-day average of the previous week

Case rates in neighboring states have been mixed

Over the last 7 days, Virginia had 10.0 (+5% from last week) new confirmed cases per day per 100,000



Very high case loads:

Tennessee (21.0 new cases per 100k, +4% from last week)

High case loads:

- Kentucky (19.9, +25%)
- North Carolina (15.7, -16%)

Lower case loads:

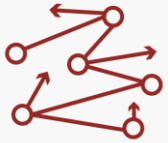
- District of Columbia (5.7, -20%)
- Maryland (9.2, +19%)
- West Virginia (9.8, -6%)

These data were updated October 7th and represent a seven-day average of the previous week

Forecasts based on current policy estimate higher case level

	Near-term Forecasts	Outcomes
Values:	**Near-term:** Cases estimated to rise around 5% per week for the foreseeable future	**Deaths:** About 400 additional COVID deaths by November 1st **Hospitalizations:** At current levels, there are 60 to 90 new hospitalized COVID cases per day, but this could grow 40 percent higher by November 1st
Notes:	A new peak is expected to occur sometime after November 1st	The exact case fatality rate varies, but, as a rule of thumb, each additional case per 100,000 results in one to three additional deaths statewide Severe cases have been shown to have longer term negative health consequences
Source:	Youyang Gu http://covid19-projections.com/us-va Accessed 10/7/2020	Youyang Gu http://covid19-projections.com/us-va John's Hopkins University https://coronavirus.jhu.edu/us-map COVID Tracking Project https://covidtracking.com/data/state/virginia Accessed 10/7/2020

We've been monitoring recent, relevant literature



Majumder and Rose describe the potential use of claims data to track the spread of COVID-19

- Claims data related to influenza-like infections have been useful in tracking CDC influenza numbers in the past and can be done at a more granular level than released by the CDC
- For COVID-19, this could provide a measure of prevalence that is less sensitive to changes in testing

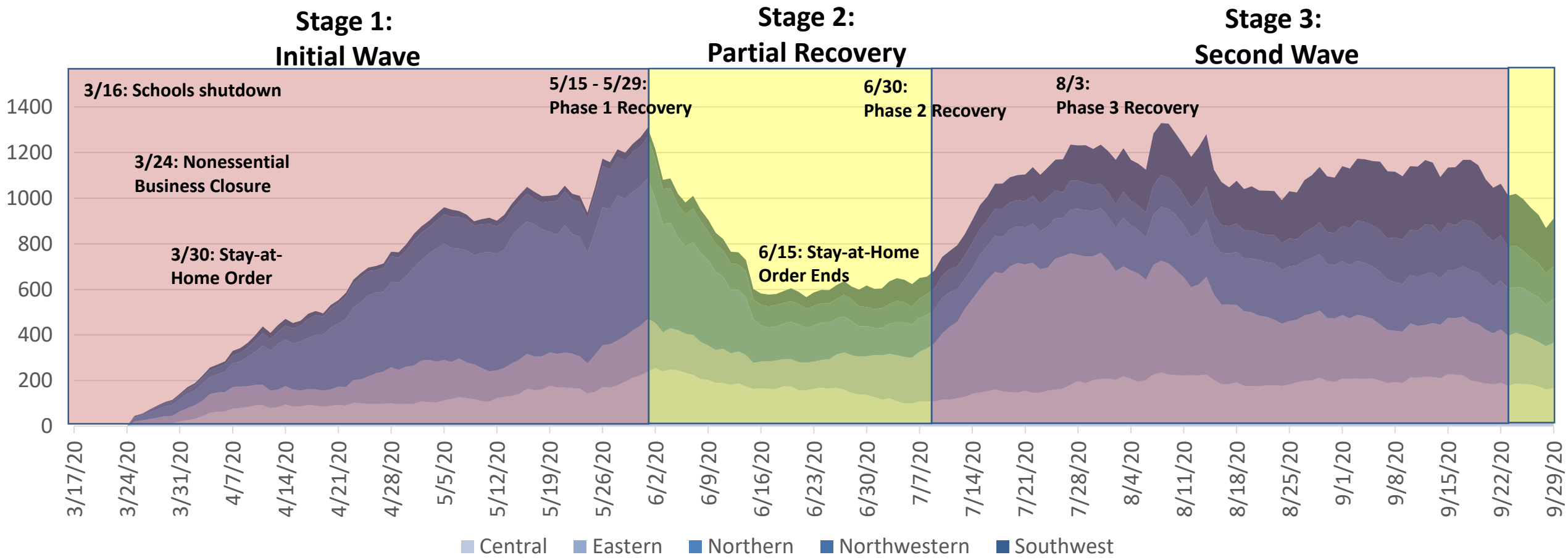
Pollard et al. used a longitudinal survey to examine alcohol usage before and during the pandemic

- The number of days women heavily drink (4 or more drinks in a couple of hours) has increased 41%
- The survey found other groups generally had increases, though smaller and with a lower confidence level
- This confirms trends of a 54% increase in alcohol sales in March 2020 compared to the previous year
- A public health campaign to increase the awareness of the negative health effects of heavy alcohol use may be needed to mitigate this and other unhealthy behaviors that have risen during the pandemic

Anand et al. studied the prevalence of COVID-19 antibodies in dialysis patients to estimate the broader prevalence by state and demographics

- This population has bloodwork done regularly, which makes them good candidates for a longitudinal study
- The results correlate with both caseload and death trends, but the share of the population testing positive for antibodies is higher than from confirmed cases
- 9.1% of sampled patients from Virginia had COVID-19 antibodies, which is about five times the confirmed case rate

The two waves were in different parts of the state



- Too little testing to know the true case load
- Cases mostly in the Northern Region

- Cases fell for the first half of June
- Cases flattened after stay-at-home order ended

- Cases spiked in July in the Eastern Region
- By August, case loads had grown substantially across Southwest Region
- In late-August/September, case rates grew across the state

There are several triggers that could lead to increased spread

Trigger	Likely effect	Timeframe
Seasonal changes	Increased transmission as people spend more time indoors and virus persists longer in cooler/less sunny settings	Increasing as the weather gets cooler
Distancing fatigue	Increased transmission as people are less rigorous about distancing	Gradual and continuous
In-person school	School reopenings could become super-spreader events or students return with COVID from out-of-state	Now
Hurricane season	Evacuees catch or spread COVID	Now to November
Increased interstate travel	People from out-of-state spread COVID	Gradual and continuous
Expanded testing	Paired with self-isolation could dramatically reduce the spread	A few months

These triggers are likely to lead to increased spread

- Some of the triggers could have an impact now and others will build up over time

Expanded testing is the primary trigger to decrease the spread

- Preparation is needed to quickly and effectively deploy enhanced capacity
- Modelling alternative testing strategies could help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