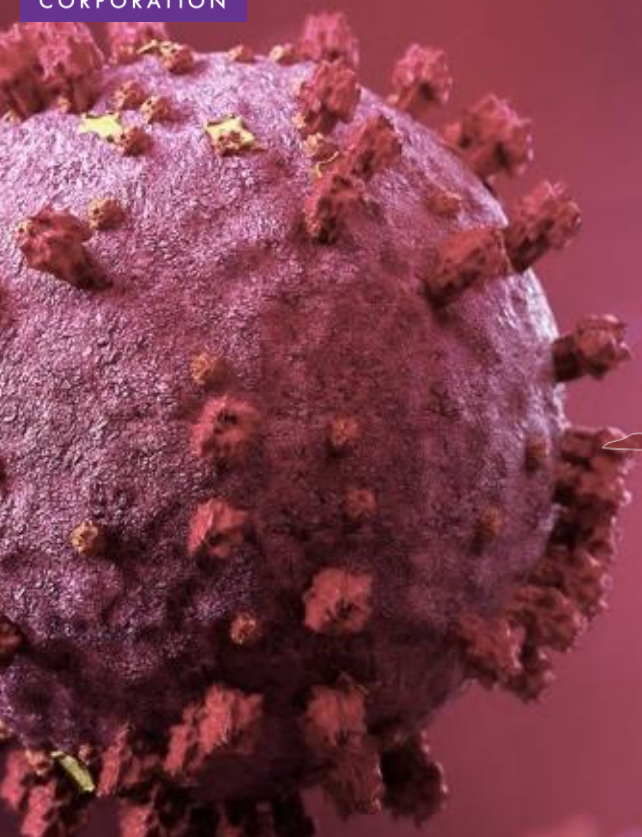
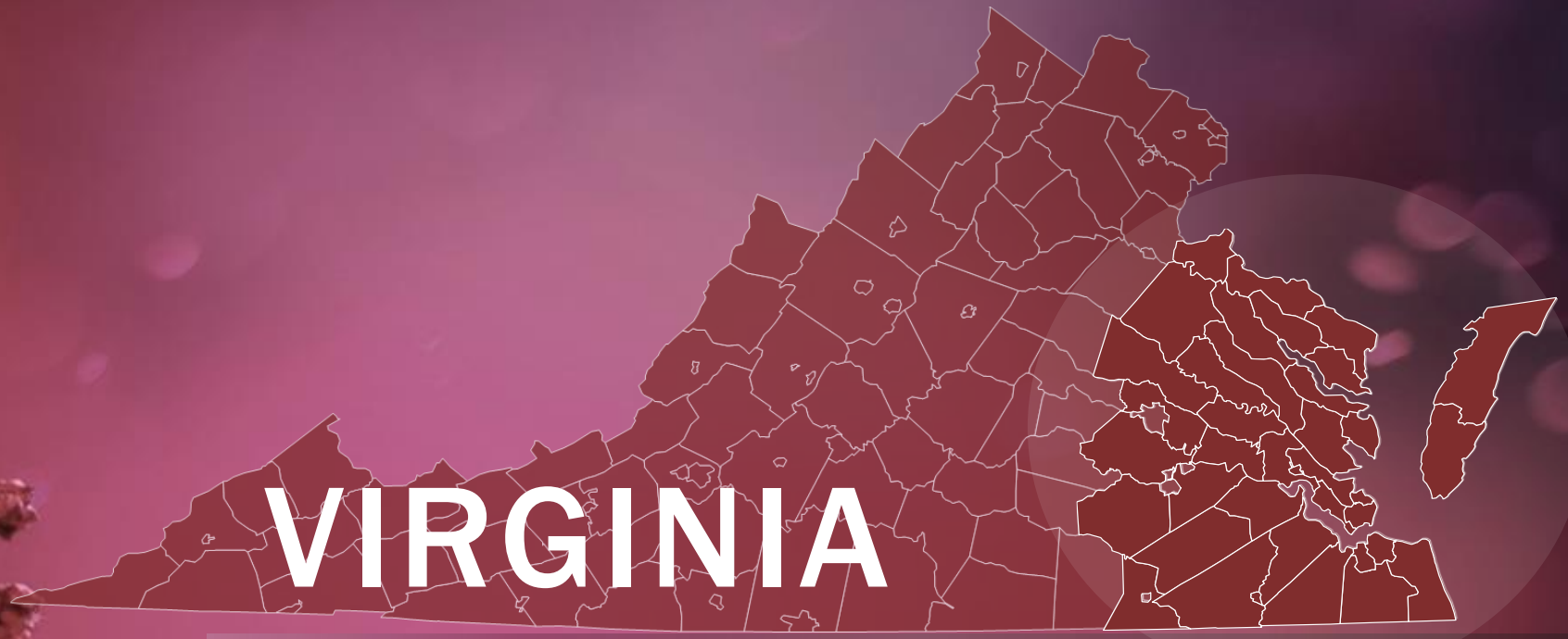




VIRGINIA

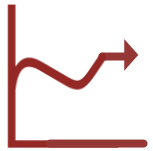
COVID-19 Update November 5th, 2020

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 levels rose substantially

- Counties in the southwest still have the highest case loads
- Hospitalizations also continued to rise slowly but are likely to spike next week
- Testing levels remain relatively high

Additional triggers could lead to a rapid rise in the coming months

- Seasonal changes
- Holiday interactions

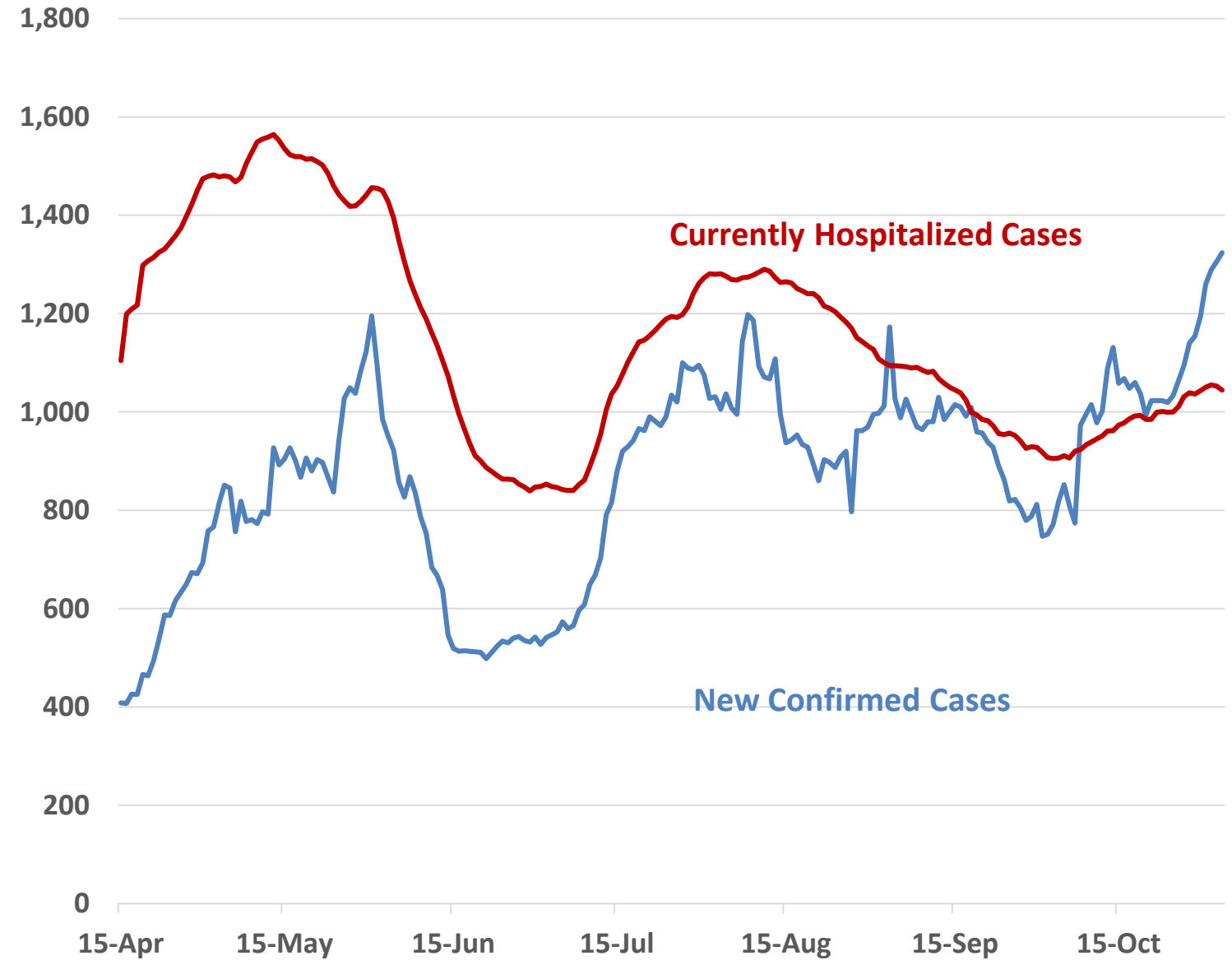
Cheaper, faster testing or a vaccine could reduce the spread if widely deployed

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 spiked last week



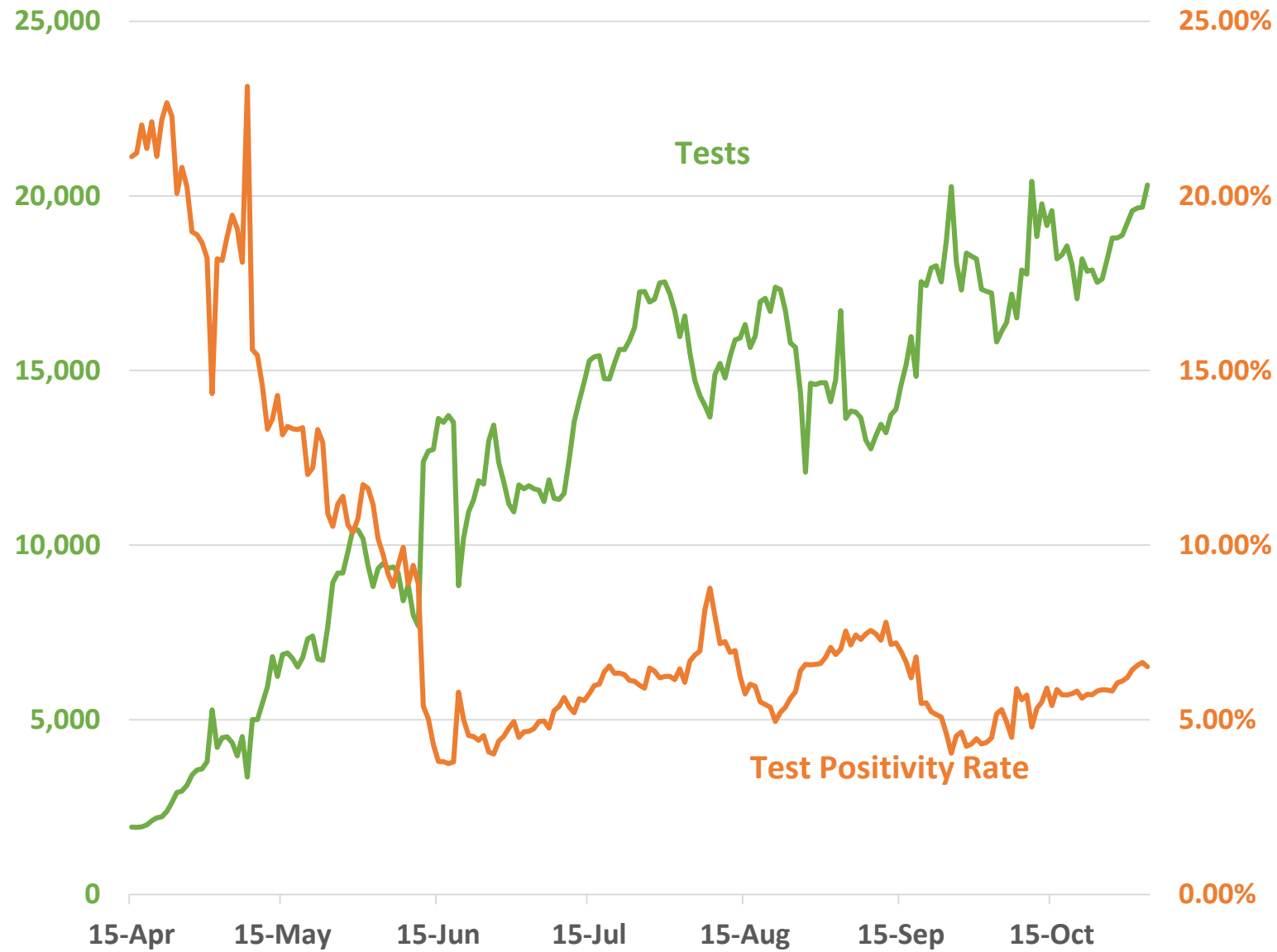
New confirmed cases spiked and have surpassed 1,300/day on average

- The range for the second wave did not surpass 1,200/day
- This current wave is likely to be significantly worse than the summer

Currently hospitalized cases have remained just over 1,000

- This is a lagging indicator
- Hospitalizations are likely to increase by a similar magnitude to the case rate (20-30%) next week

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



Tests per day are roughly 20,000

- 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 increased to 6.5 percent

- Five percent is a suggested target
- Case rates increased faster than the tests leading to this rise

Case rates have continued to grow statewide

CASE COUNT

Source: VDH

Yellow indicates at least 30 cases per 100,000

- The previous scale was capped at 20 cases per 100k

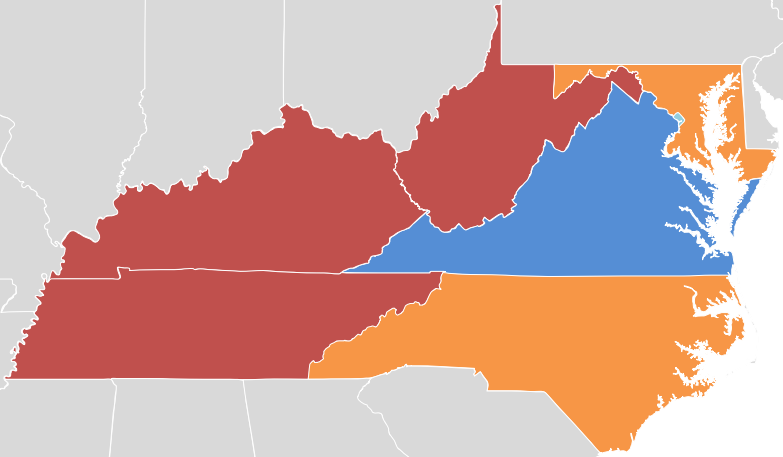
Virginia's Southwest Region counties continue to see the highest case levels

- Counties across the Commonwealth saw increases

These data were updated November 4th and represent a seven-day average of the previous week

Case rate trends in neighboring states have been mixed

Over the last 7 days, Virginia had 15.4 (+26% from last week) new confirmed cases per day per 100,000



Very high case loads:

- Kentucky (37.8 new cases per 100k, +26% from last week)
- Tennessee (31.7, -26%)
- West Virginia (24.0, +26%)

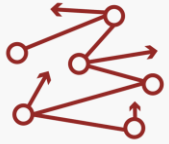
High case loads:

- North Carolina (15.6, -4%)
- Maryland (14.5, +33%)
- District of Columbia (12.7, +59%)

Lower case loads: None

These data were updated November 4th and represent a seven-day average of the previous week

We've been monitoring recent, relevant literature



Grijalva et al. looked at the transmission of COVID within households

- The authors examined the number of household infections stemming from 101 index patients in Tennessee and Wisconsin from April to September
- Overall, 53% of the index patient's household members tested positive and 75% of those tests were within five days of the index case's positive test
- The secondary infection rate when the index patient is under 18 years old was also 53%

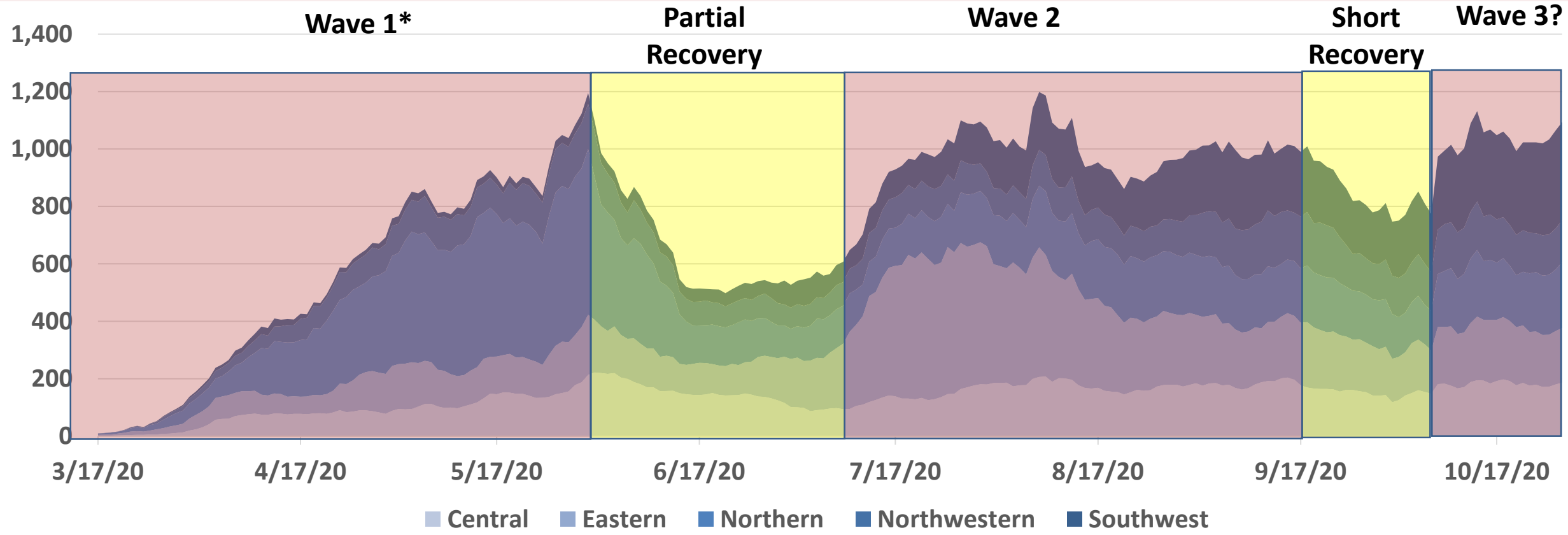
Hutchins et al. surveyed 2,000+ people to study trends in mitigation behaviors from April to June

- With the exception of wearing facemasks, people generally complied with fewer mitigation approaches (e.g., frequent handwashing and maintaining six-feet of distance in public) as time passed
- Compliance generally increased with age and the 18- to 29-year-old group had the lowest compliance

Cronin and Evans looked at the relationship between nursing home quality and mortality

- Quality, as measured by inspection ratings, does not appear to be related to the likelihood that a case occurs among staff or residents
- If there is a case, lower quality facilities have significantly higher COIVD deaths than higher quality facilities
- However, excess non-COVID deaths, particularly in areas with low rates of COVID, are higher at the higher quality facilities, which implies that some countermeasures, such as visitation limitations, are having adverse health effects
- The excess deaths are highest among patients with conditions such as Alzheimer's

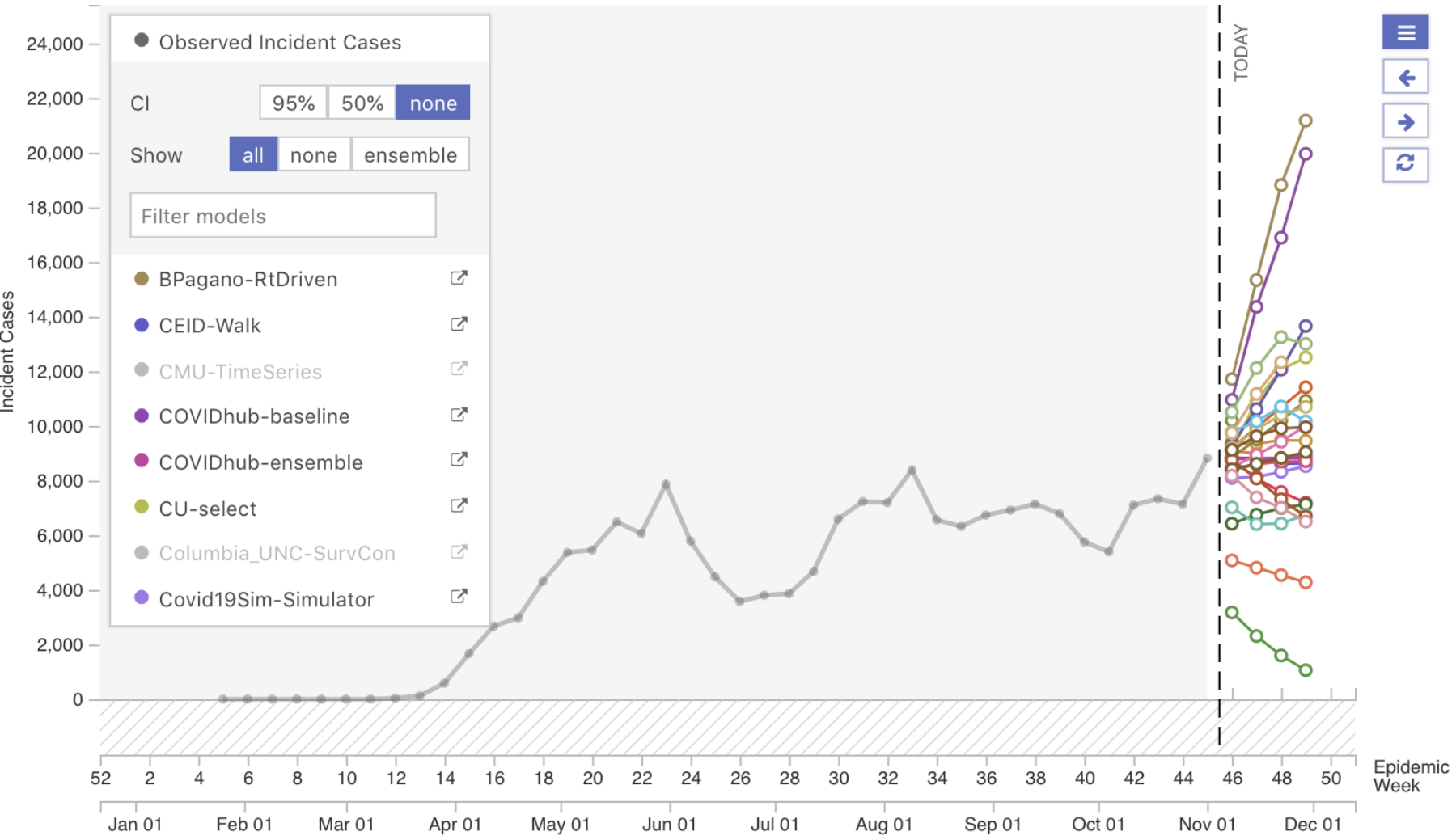
Each wave of cases has been centered in different parts of the Commonwealth



- The initial wave was concentrated in the Northern region*
- There was a partial recovery when cases in the Northern region dropped
- In mid-July, cases grew first in the Eastern region and then, beginning in August, statewide
- Statewide levels declined slightly, with a dip in the Eastern region in late September
- A new wave, concentrated in the Southwest region, may have begun at the beginning of October

*Testing was insufficient for accurate counts during the first wave

Forecasts of cases are diverging, but average to a small rise



There is substantial variation in the case forecasts

- The model "average" is a small increase for the coming weeks

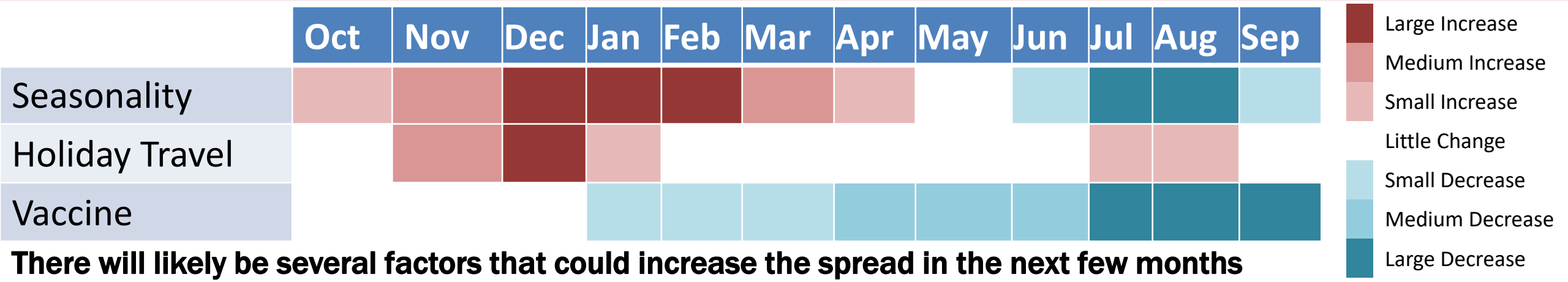
The mechanisms driving the spread at this stage are very different than in the early stage

- Initially, people did not change their behavior, so COVID spread exponentially
- Increased tele-work, changing weather, the return of In-person instruction, and other factors changed the pattern of spread
- These new patterns require the models to evolve

For short-term forecasts, assuming last week's level is a good estimate

Source: COVID-19 Forecast Hub, https://viz.covid19forecasthub.org/
Accessed November 4th

There are several triggers that could lead to increased spread



There will likely be several factors that could increase the spread in the next few months

- Seasonal effects for COVID-19 could lead to more spread during the colder months
- Holiday travel could lead to increased spread, particularly from the mixing of age cohorts

A vaccine may become available around the turn of the year

- It is unlikely that there will be sufficient supply initially to significantly reduce the spread
- The vaccine will not be completely effective and so a large share of the population will need to be inoculated
- People may scale back preventative behaviors (such as distancing and mask wearing) too soon

There are likely to be long-term repercussions that need planning and preparation to mitigate

- Mental health problems may persist, particularly among medical professionals and those directly affected
- Following the 1918 pandemic, there were higher rates of disability, mental illness, and other conditions

There are interventions that could be applied to mitigate Thanksgiving spread

Research and data indicate that the 18- to 29-year-old population can be a major source of spread

- Research has found that this population was instrumental in the early spread of COVID in the U.S.
- Studies also indicate that cases in this population peak two- to four-weeks before other age groups during many county-level outbreaks

Targeting the 18- to 29-year-old population may be an efficient way to reduce the spread

- Testing should be greatly expanded on college and university campuses prior to Thanksgiving
- Colleges and universities with elevated case levels should consider remaining open during Thanksgiving for students that have been exposed to COVID

There are also broader policy responses that could be applied

- Mandatory testing at airports and other transit points could reduce the spread from out-of-state travelers
- A shutdown of at least two weeks paired with expanded testing in mid-November could reduce levels prior to Thanksgiving
- A short shutdown may be a useful mitigation after Thanksgiving to contain spread prior to the December holidays

Discussion and Questions