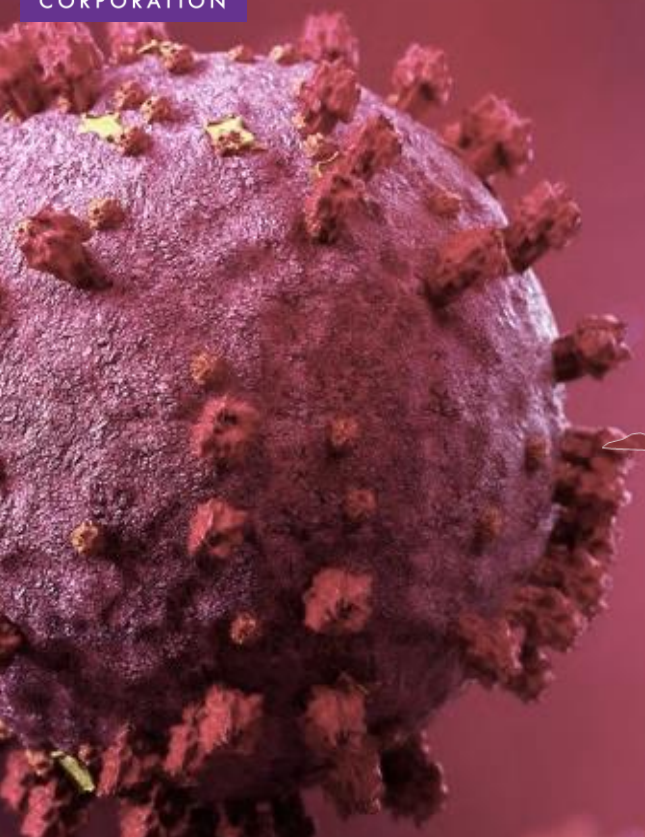


VIRGINIA

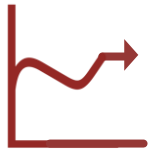
COVID-19 Update January 28th, 2021

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 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 remain very high but have declined

- Hospitalizations have started to decline but remain high
- Testing has plateaued

Vaccine administration is accelerating

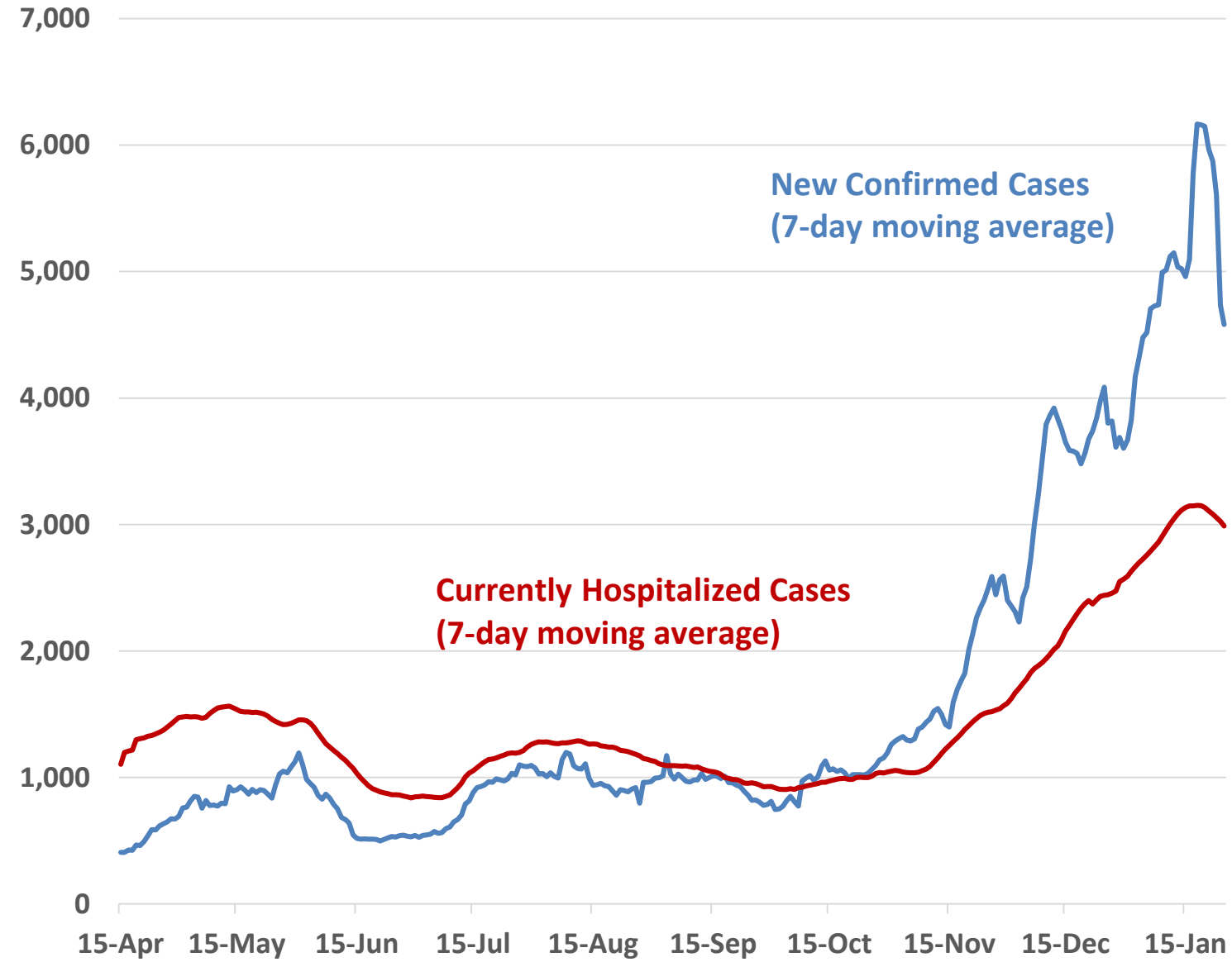
- Large stockpiles remain
- About half of doses have been delivered but not administered

New COVID variants have been detected in Virginia and could accelerate spread

Model forecasts may be less accurate because behavior is driving growth

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

Cases and hospitalizations remain high



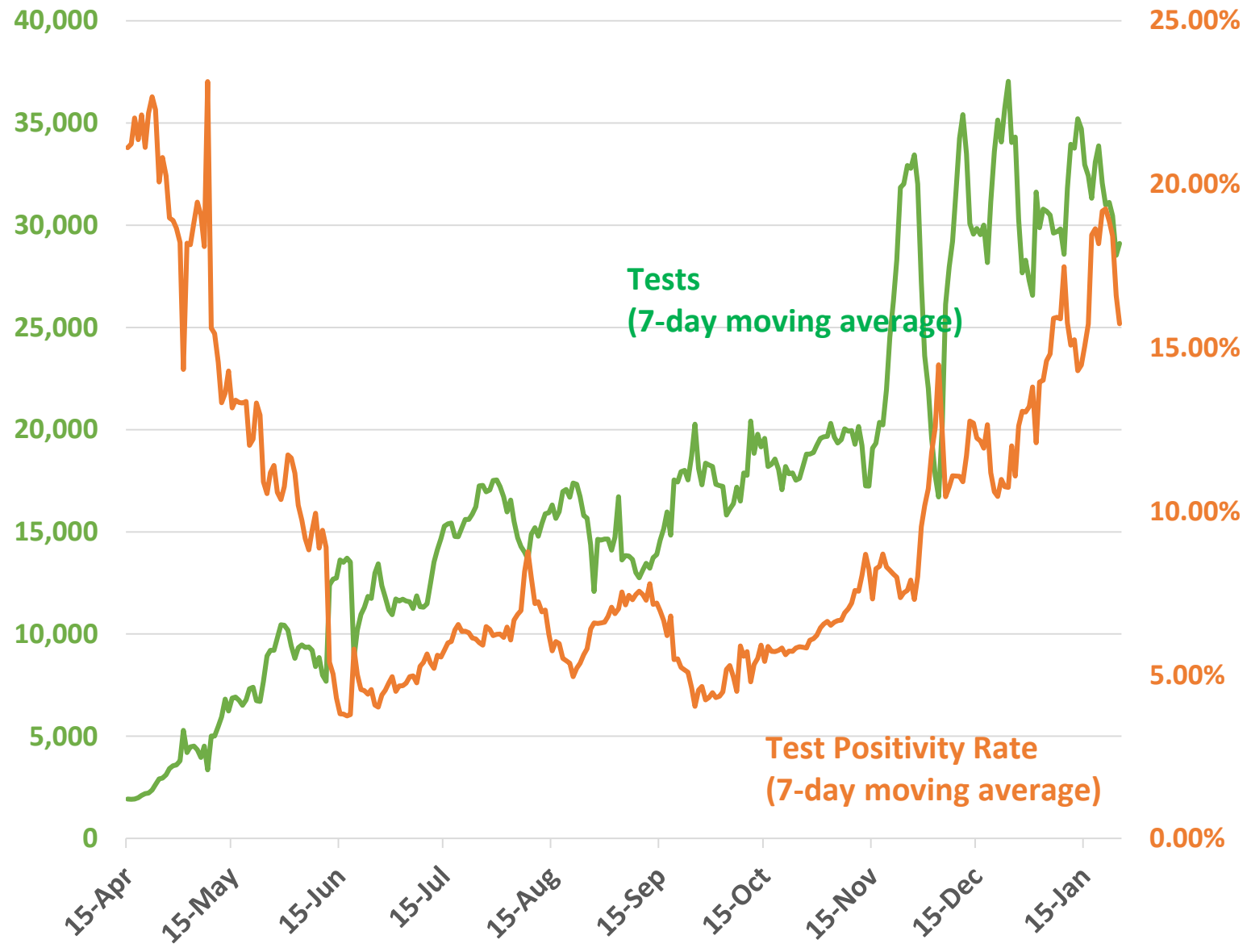
New confirmed cases have dipped to around 4,500/day on average

- This is the level from the beginning of January

Currently hospitalized cases may have peaked

- Hospitalizations reached about 3,150 and have started to decline
- If infections peaked last week (as indicated by the case trend), then hospitalizations should decline significantly over the next two weeks
- Some regions may continue to see increases for a couple of weeks

Testing remains high



Tests per day have averaged a little below 30,000

- Testing increased substantially beginning at the end of October
- However, testing has ranged around 30,000 to 35,000 for months

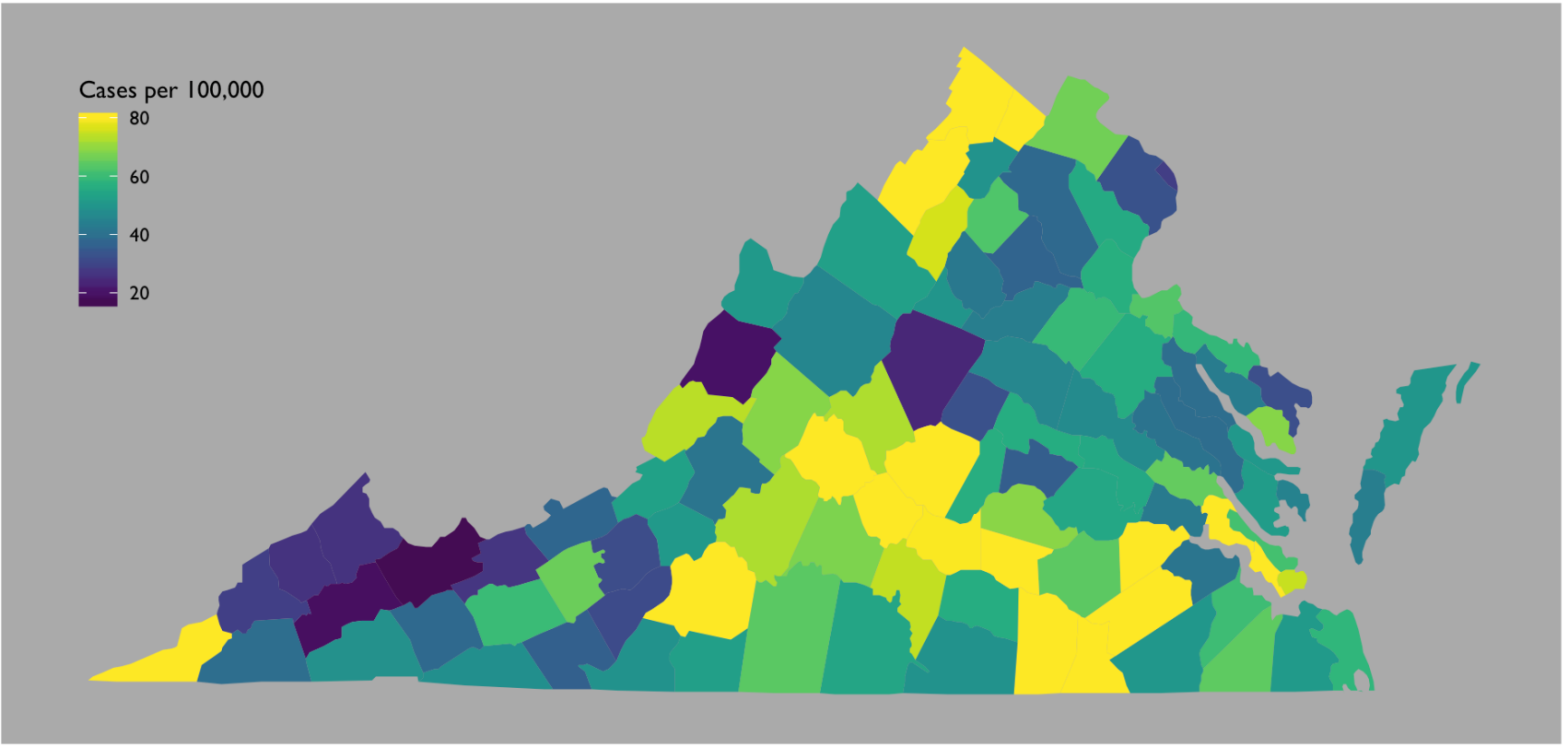
The test positivity rate is roughly 16 percent

- Five percent is a suggested target
- This would require close to 90,000 tests per day
- At this rate, the case count levels are likely to be slightly less reliable

Case levels have declined but remain very high across the Commonwealth

CASE COUNT

Source: VDH



Yellow indicates at least 80 cases per 100,000

Case levels have declined across the Commonwealth

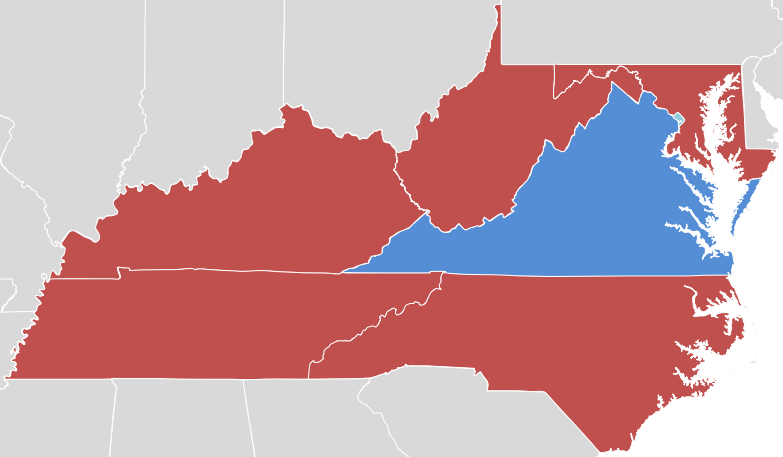
- 74 percent of counties have more than 40 cases per 100,000
- 6 percent have more than 100 cases per 100,000

Cases in the Far Southwest region have declined substantially

These data were updated January 26th and represent a seven-day average of the previous week

The spread has declined in most neighboring states

Over the last 7 days, Virginia had 53.7 (-26% from last week) new confirmed cases per day per 100,000



Very high case loads (>20):

- North Carolina (66.5 new cases per 100k, +7% from last week)
- Kentucky (61.3, -17%) *
- West Virginia (48.1, -20%)
- Tennessee (47.4, -25%)*
- Maryland (35.3, -6%)
- District of Columbia (29.8, -28%)

*Test positivity rates above 10%

High case loads (10-20): None

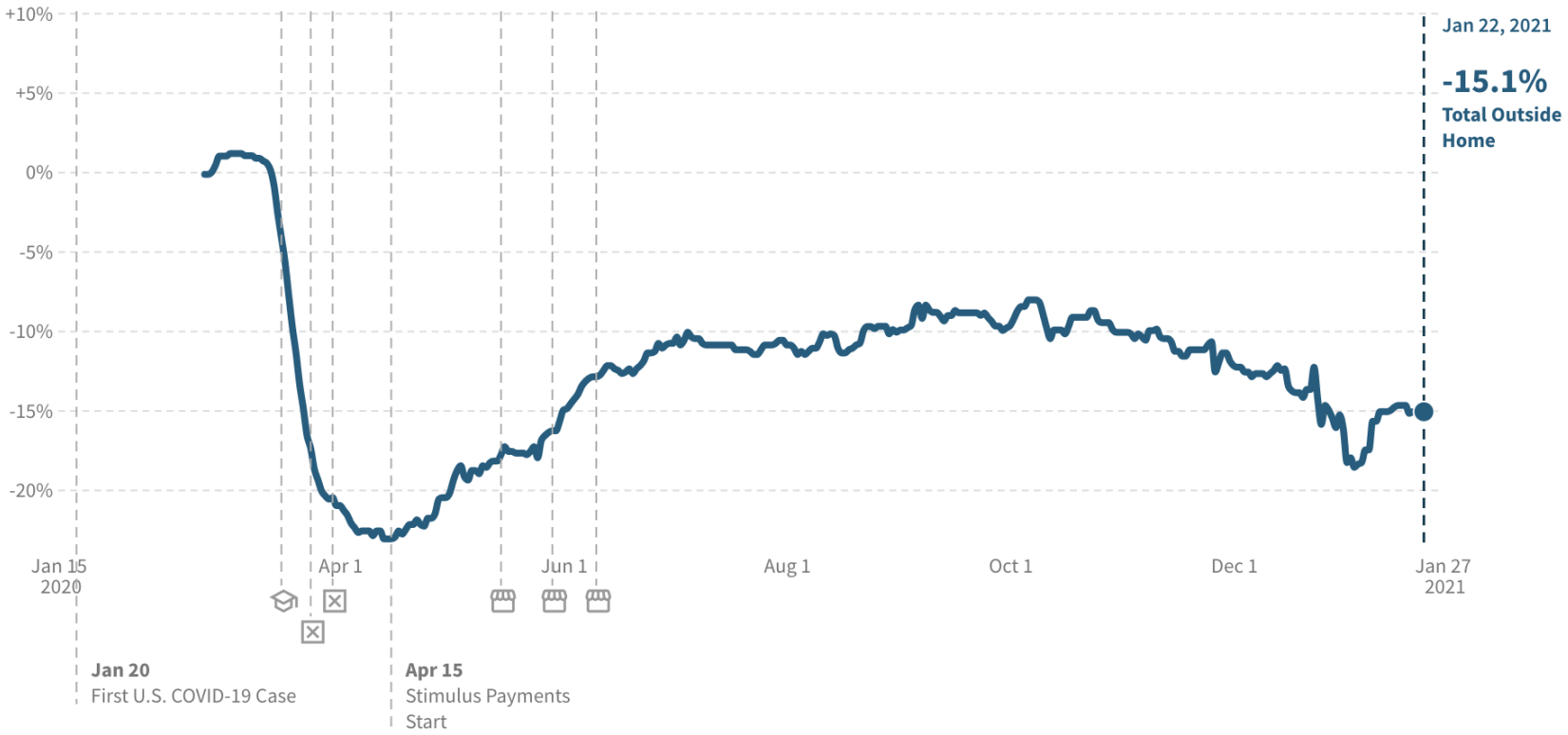
Lower case loads (<10): None

These data were updated January 26th and represent a seven-day average of the previous week

The decline in mobility may be helping to slow the spread

Time spent away from home compared to January 2020

Source: https://tracktherecovery.org/



There was a dip associated with the holidays and movement has not fully bounced back

Time spent away from home is about 15 percent lower than this time last year

The change varies across the Commonwealth

- Northern region has seen a 20 percent decline
- Far Southwest region has declined by 10 percent

One percent of Virginians are fully vaccinated and five percent have received the first shot

Age	0-9	10--19	20-29	30-39	40-49	50-59	60-69	70-79	80+	Total
Fully Vaccinated	0	116	8,785	16,433	14,850	15,149	10,653	2,753	2,720	71,459
% Full	0.0%	0.0%	0.8%	1.4%	1.4%	1.3%	1.1%	0.4%	0.9%	0.8%
Partially Vaccinated	0	1,499	44,181	63,865	69,213	73,720	59,365	56,271	58,008	426,122
% with Partial	0.0%	0.1%	3.8%	5.4%	6.4%	6.5%	6.1%	9.2%	18.6%	5.0%
Confirmed Cases	19,301	46,535	89,791	76,956	69,607	68,395	46,879	26,236	19,477	463,177
% Confirmed Cases	1.9%	4.2%	7.8%	6.6%	6.5%	6.1%	4.8%	4.3%	6.3%	5.4%

Source: VDH, January 26th

Vaccinations are being rolled out in Virginia

- 1,156,500 doses have been distributed as of January 26th
- 569,040 doses have been administered, including 71,459 second doses

As of January 26th, 587,460 doses had been distributed but not administered in Virginia

- Stockpiles have a risk of spoilage and the risk increases with time in storage
- Stockpiles also represent an opportunity cost delaying the pace of the recovery
- The location of these stockpiles can be used to identify the bottlenecks and improve logistics
- Operations research and management science can improve the efficiency of administration

We've been monitoring recent, relevant literature

Jowers et al. used county level data to understand implications of moratoria on evictions and utility disconnections on the spread and deaths from COVID

- They estimate policies to limit evictions reduce infections by 3.8 percent and deaths by 11 percent
- Limitations on utility disconnections are estimated to reduce infections by 4.4 percent and deaths by 7.4 percent

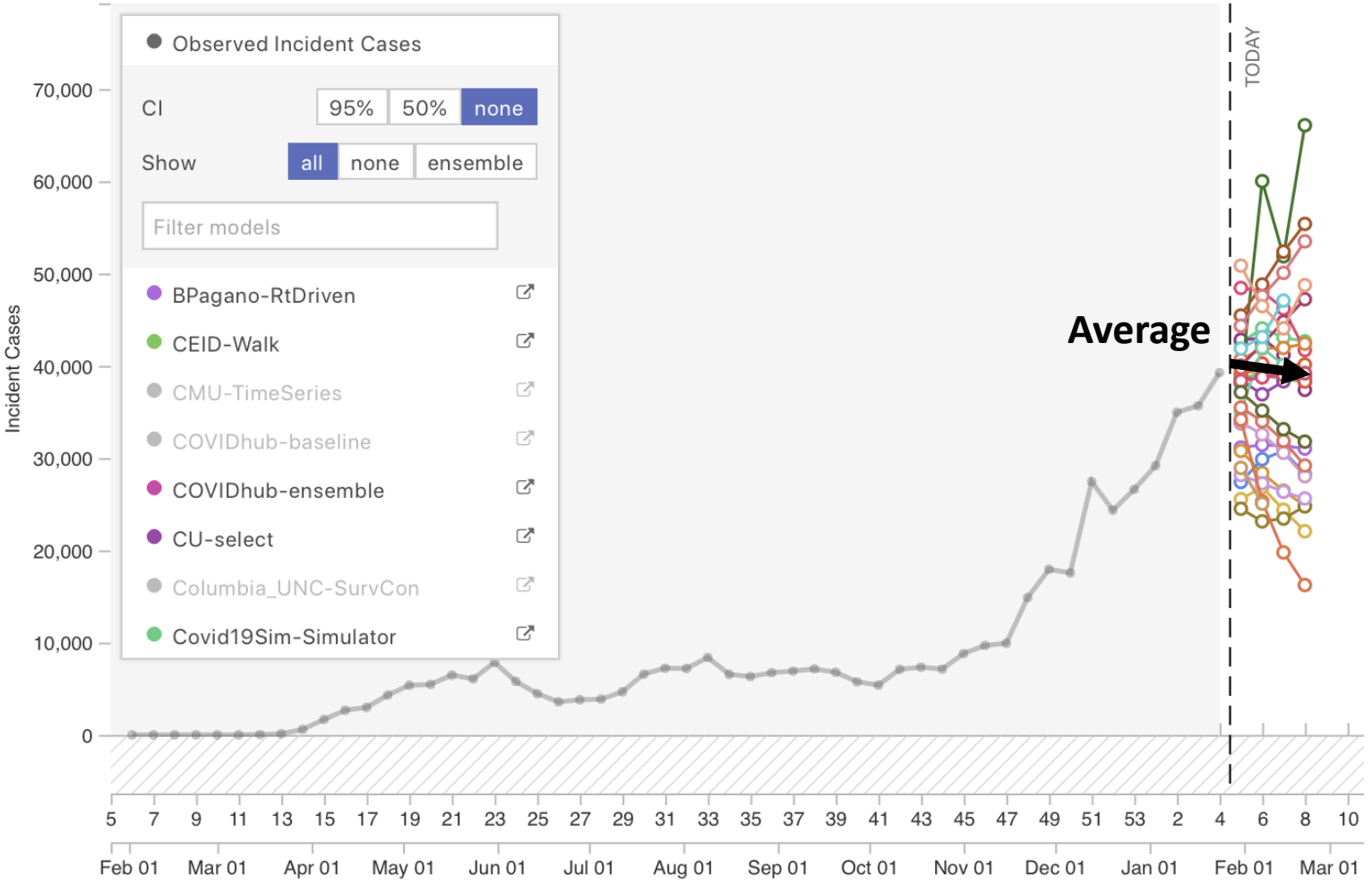
Bubar et al. modeled different vaccine prioritization strategies by age and other characteristics

- They estimate that vaccinating those aged 20-49 years would minimize the total number infected but that lives lost would be minimized by prioritizing those over 60 years of age
- Further, using serological tests to delay vaccinating those with antibodies further reduces deaths and total infections

Yang et al. modeled the spread of COVID during and after the vaccine rollout

- Both mass-vaccinations and NPIs will be necessary to reduce the spread of B.1.1.7 and other VOCs
- Prioritizing high-risk individuals reduces hospitalizations and deaths
- Steps to accelerate the vaccination, such as loosening adherence to prioritization (i.e., don't wait to vaccinate everyone in risk group Ib before starting other risk groups), result in better outcomes

Forecasts for cases vary but average to a small decline



Source: COVID-19 Forecast Hub, https://viz.covid19forecasthub.org/ Accessed January 27th

There is substantial variation in the case forecasts

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

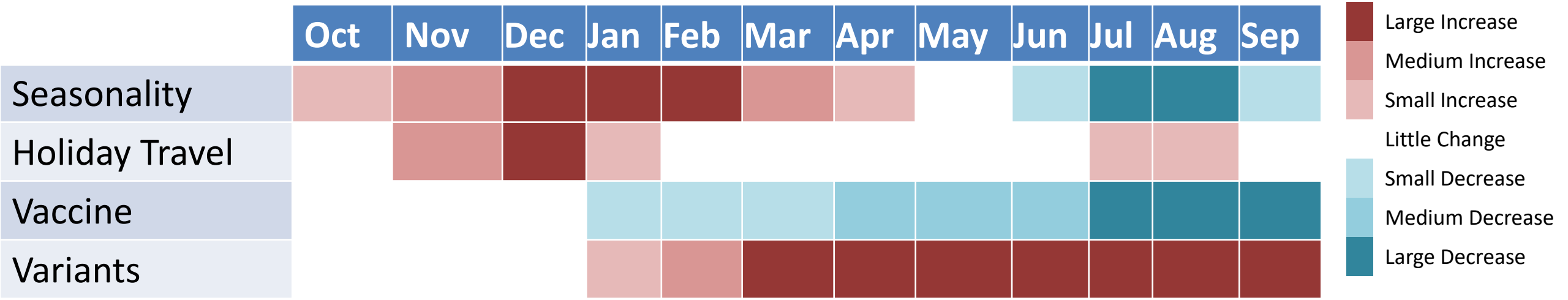
The mechanisms driving the spread at this stage are very different than in the early stage

- 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

Many of the model predictions lag the data

- This means that they match the trends in retrospect but not as forecasts

There are several factors driving the spread



There are several factors that will continue to drive the spread for the next few months

- Seasonal effects for COVID-19 appear to have increased spread during colder weather
- Holiday activities appear to have increased spread but are largely over for now
- The vaccines are becoming available but are not being delivered in quantities sufficient to meaningfully reduce the spread for now
- The B.1.1.7 Variant of Concern may increase the rate of spread as it enters Virginia and future variants could also change the severity of the disease or the efficacy of vaccines

There are some key unknowns about the current spread

- How many people have been infected with COVID-19 and have lingering protection?
- To what degree are people complying with best practices for prevention?

Discussion and Questions