



Transitioning from Pandemic to Endemic Phase

Presented to Oregon House Covid-19 Special
Committee, 6/3/2022

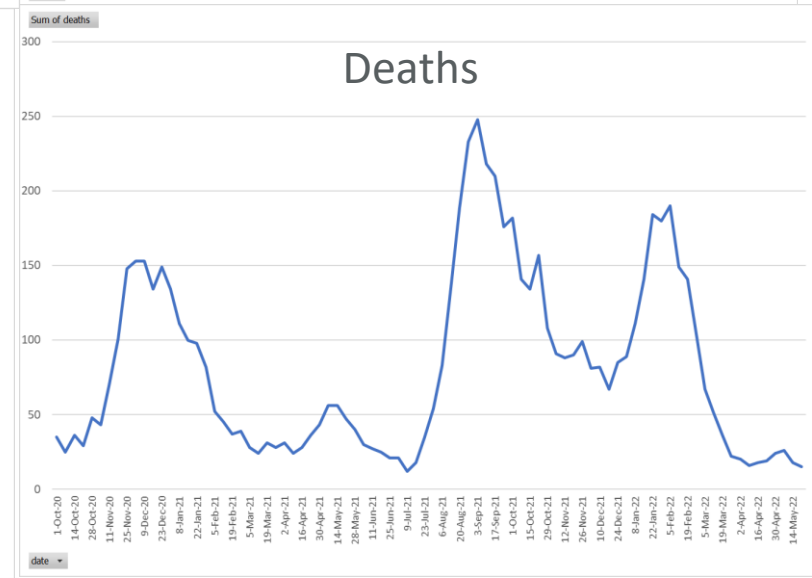
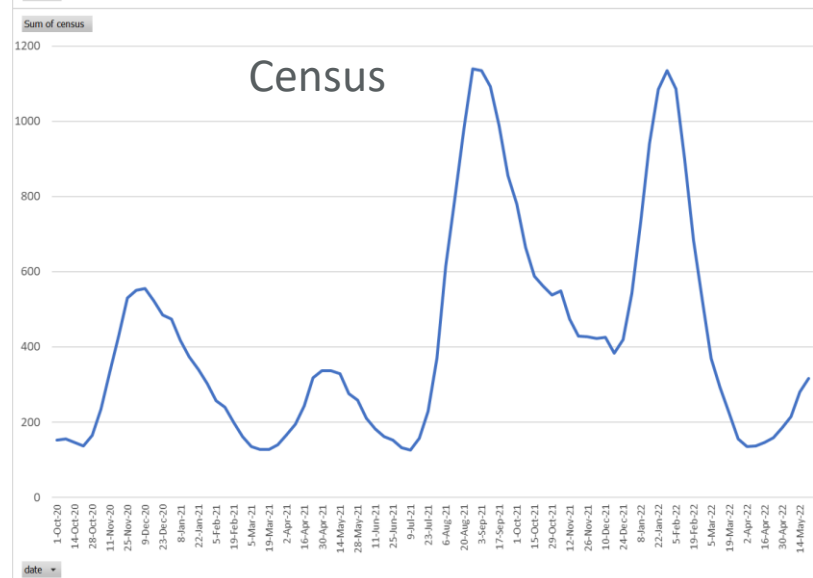
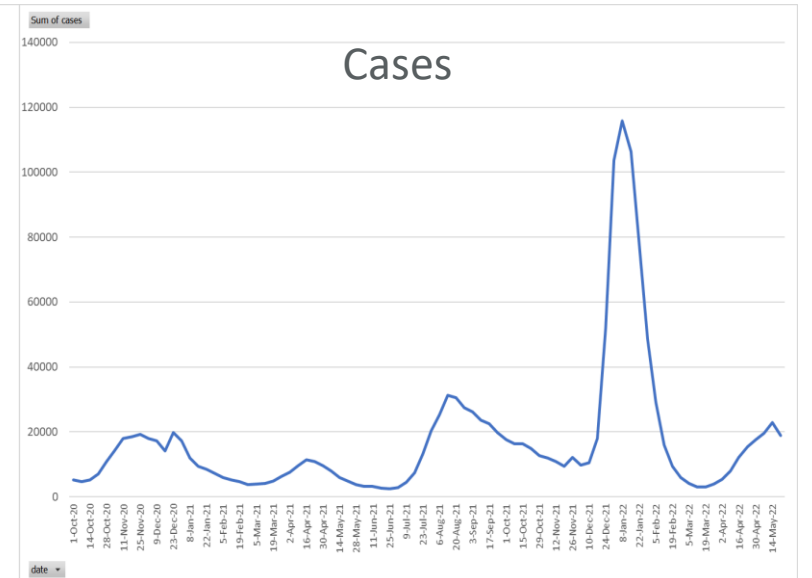
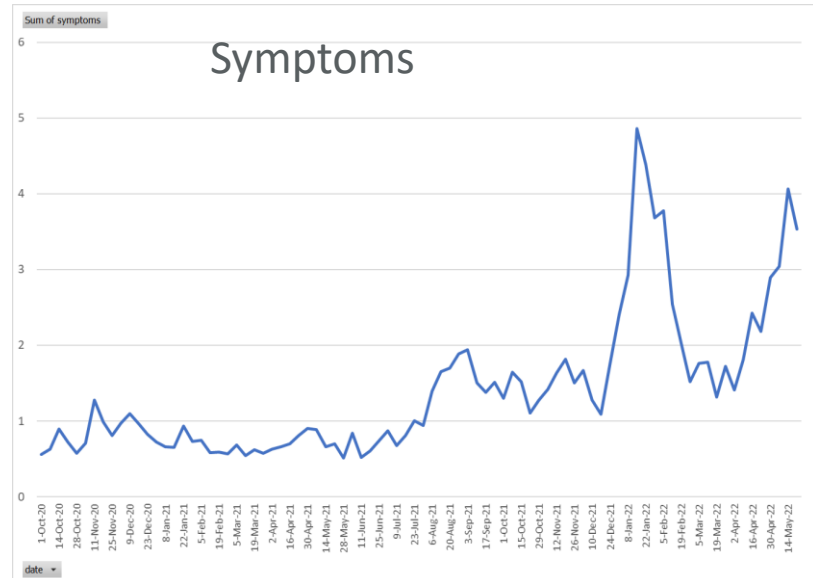
Peter Graven, PhD; Office of Advanced Analytics, BIAA, ITG

Pandemic/Epidemic vs Endemic

- Not an expert in infectious disease
- Not an expert in evolutionary virology
- Each variant can produce its own epidemic/pandemic
 - Not just the same virus going around producing these surges
- But, so far, previous exposure (through vaccine or infection) has proved very good at preventing subsequent severe disease.
 - Prevention of infection has been dependent on variant

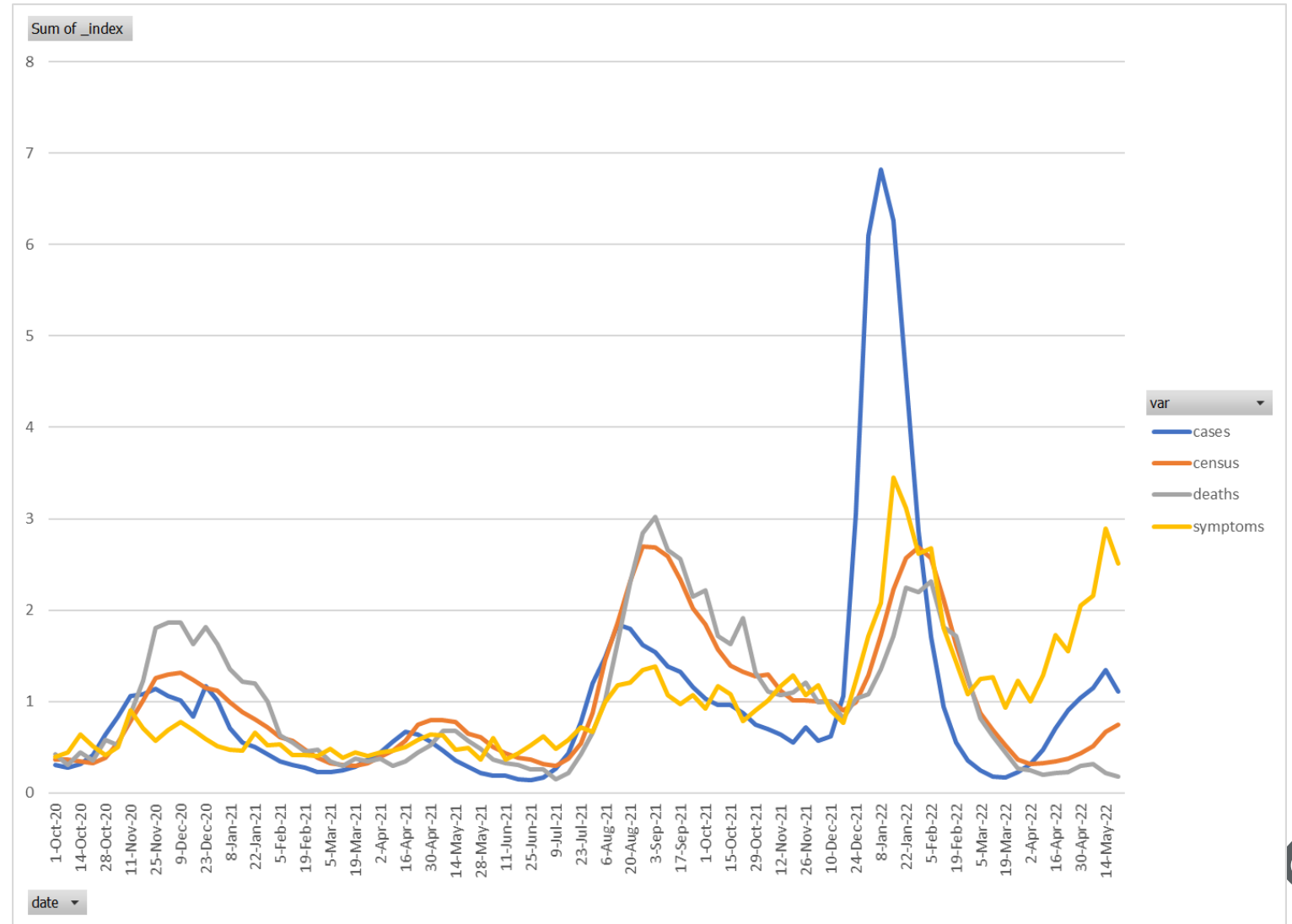
Burden of Disease

While symptoms are at one of their highest levels ever in Oregon, the cases reported is significantly lower, census is low and deaths are at their lowest levels.



Burden of Disease

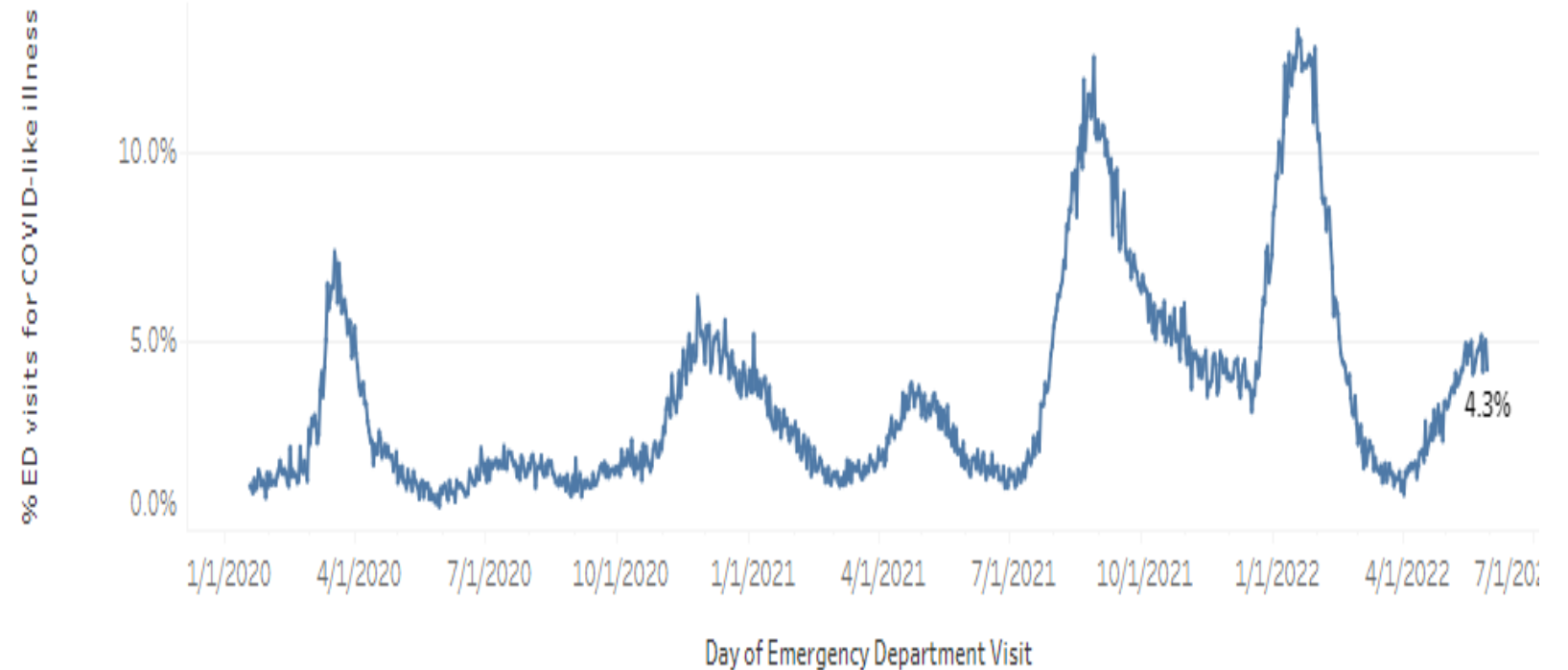
If we create an index of each metric relative to its mean value and overlay the indices the series can be compared more easily.



ED Visits for COVID

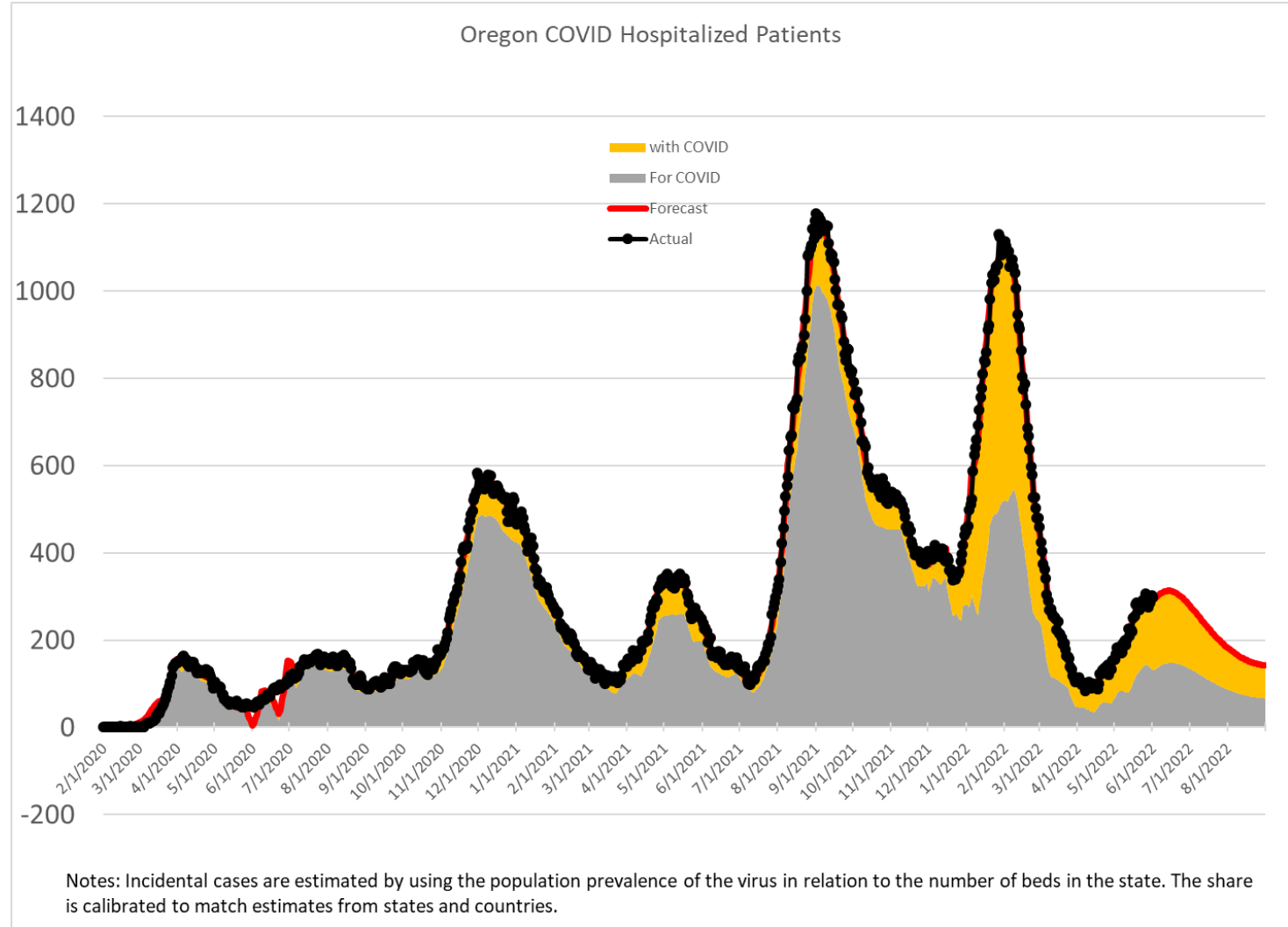
The number and percent of ED visits for COVID has increased during BA2. Despite a high infection level this is still much lower than Delta or BA1 surges.

2. Percentage of statewide emergency department visits for COVID-19-like illness (CLI) by day



Incidental Hospitalization Estimate

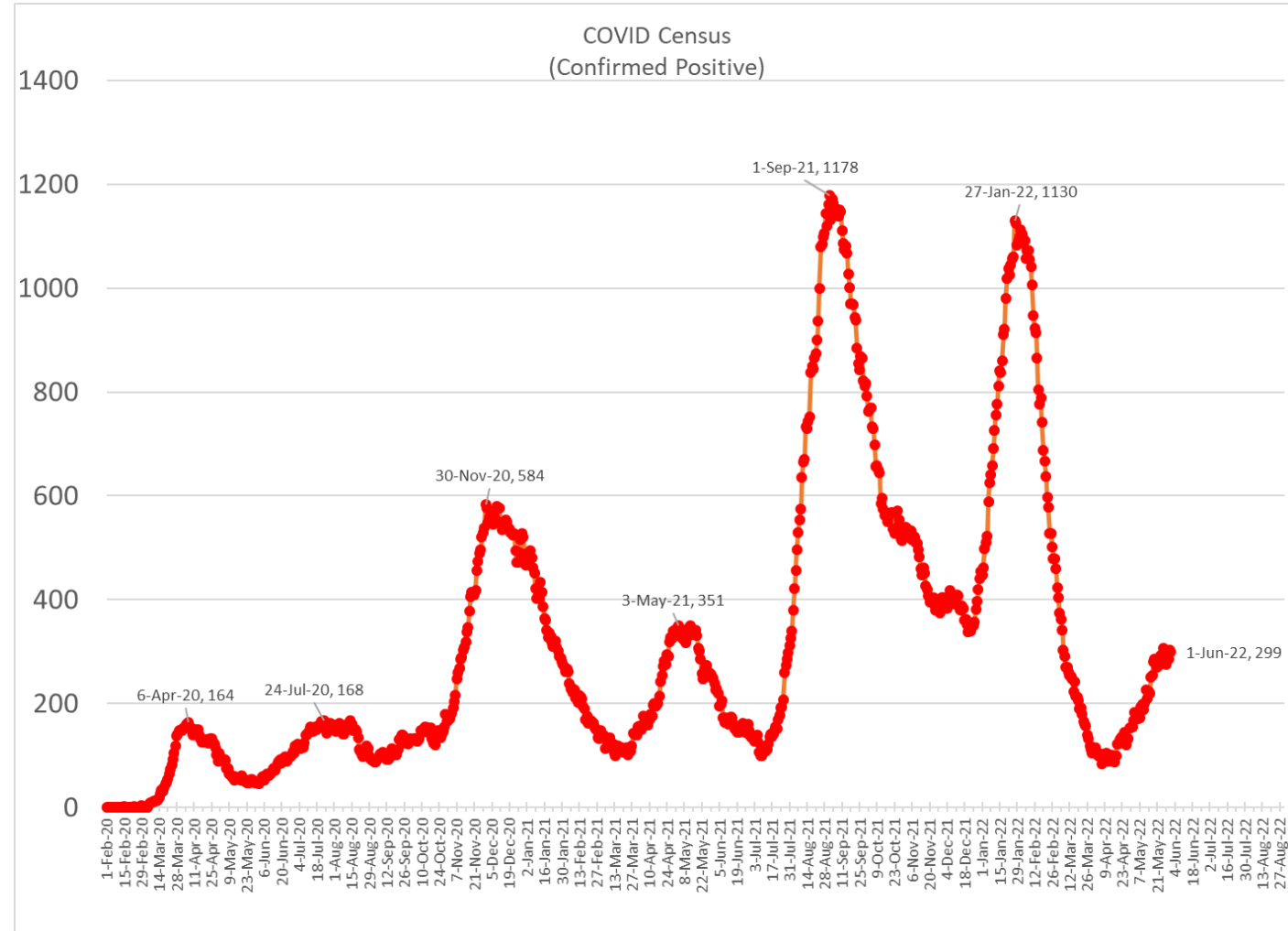
Due to the high prevalence of infections and low hospitalization rate per infection, a significant share of hospitalizations are expected to be incidental.



Briefing Material

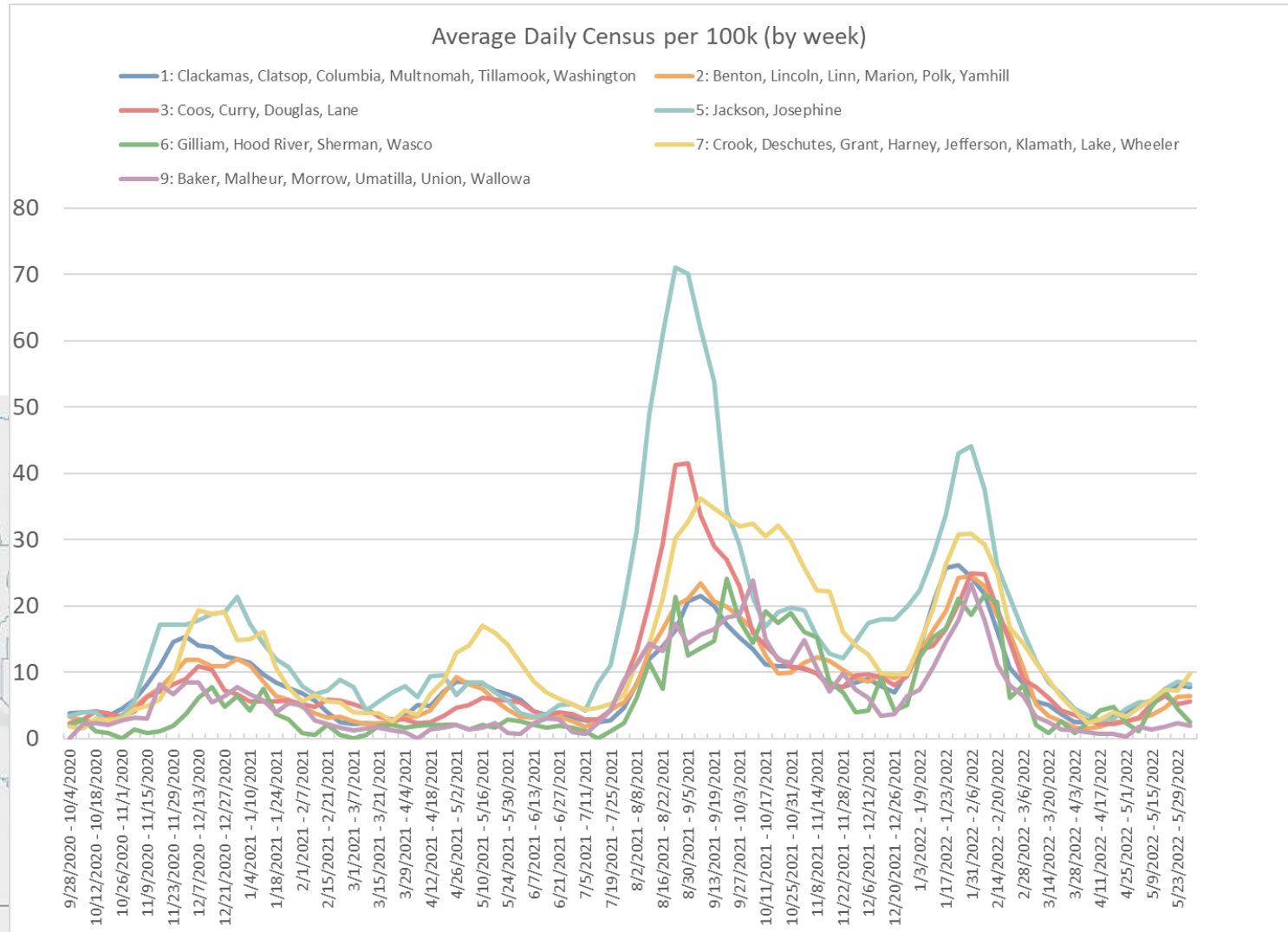
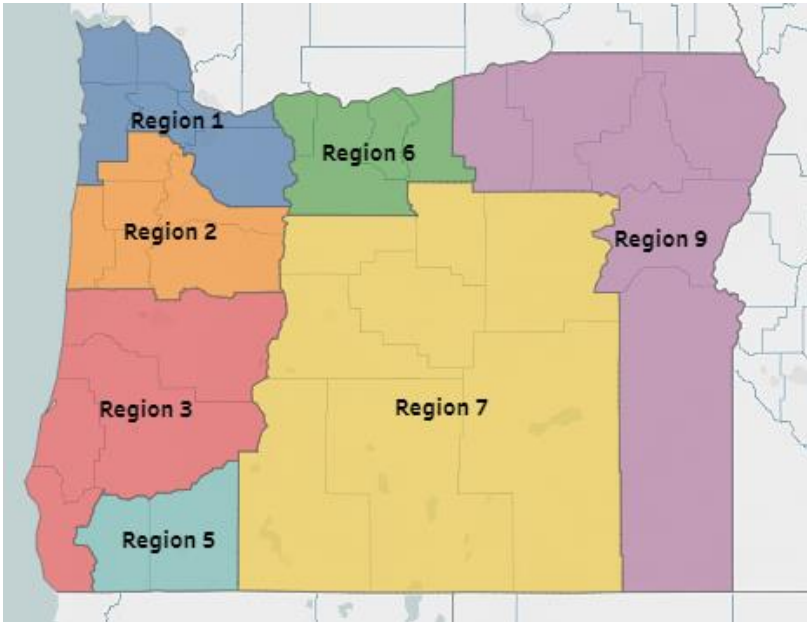
Hospitalized Patients in Oregon

As of 6/2/2022, 299 people are hospitalized with COVID-19 in Oregon. This is 18 more than last report.



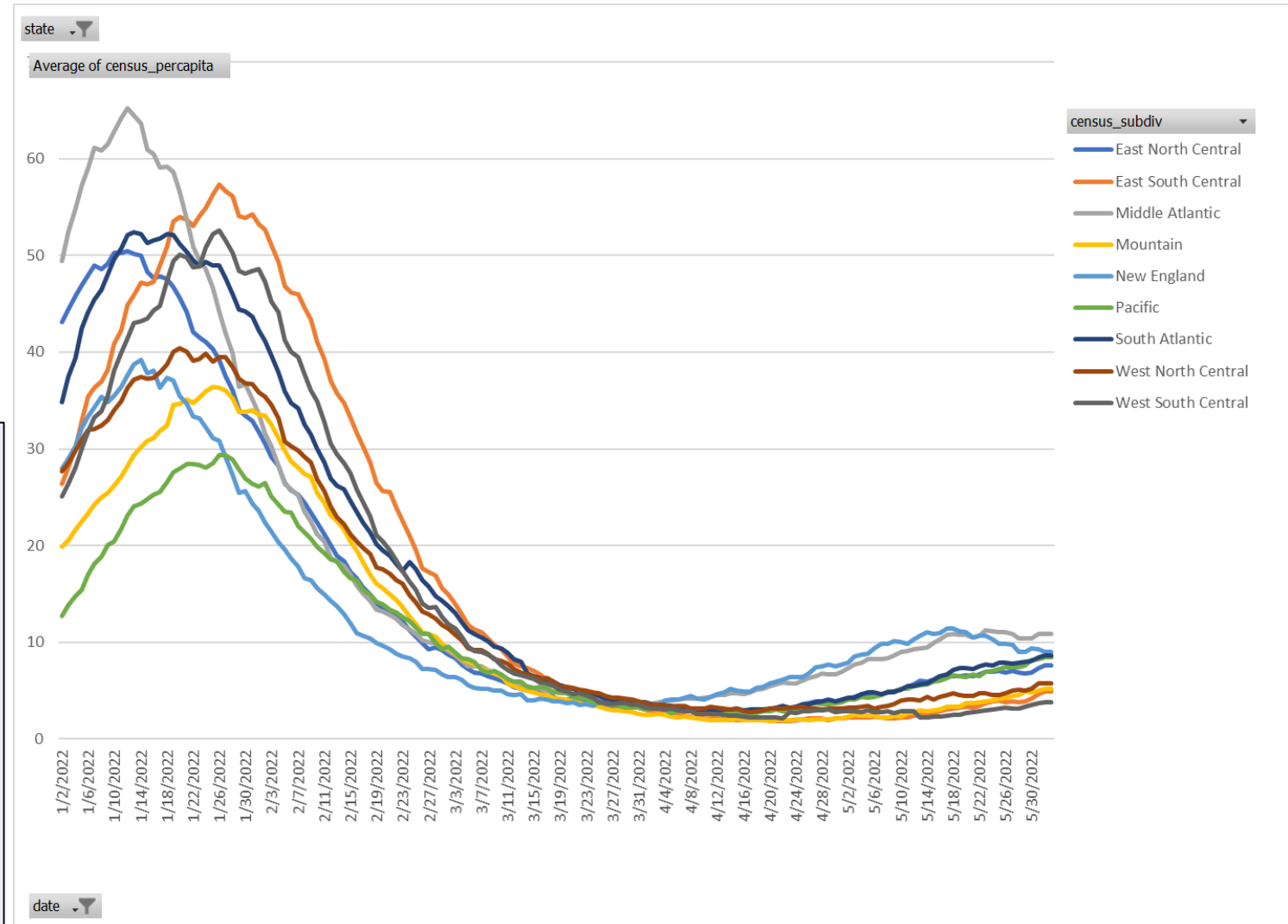
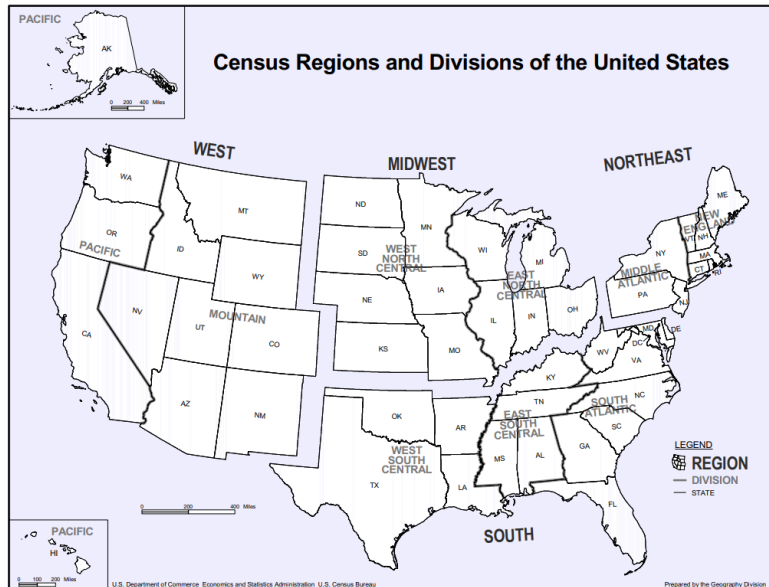
Regional Hospital Census

Region 7 has continued to increase and now has highest census per capita. Other regions appear to have leveled off.



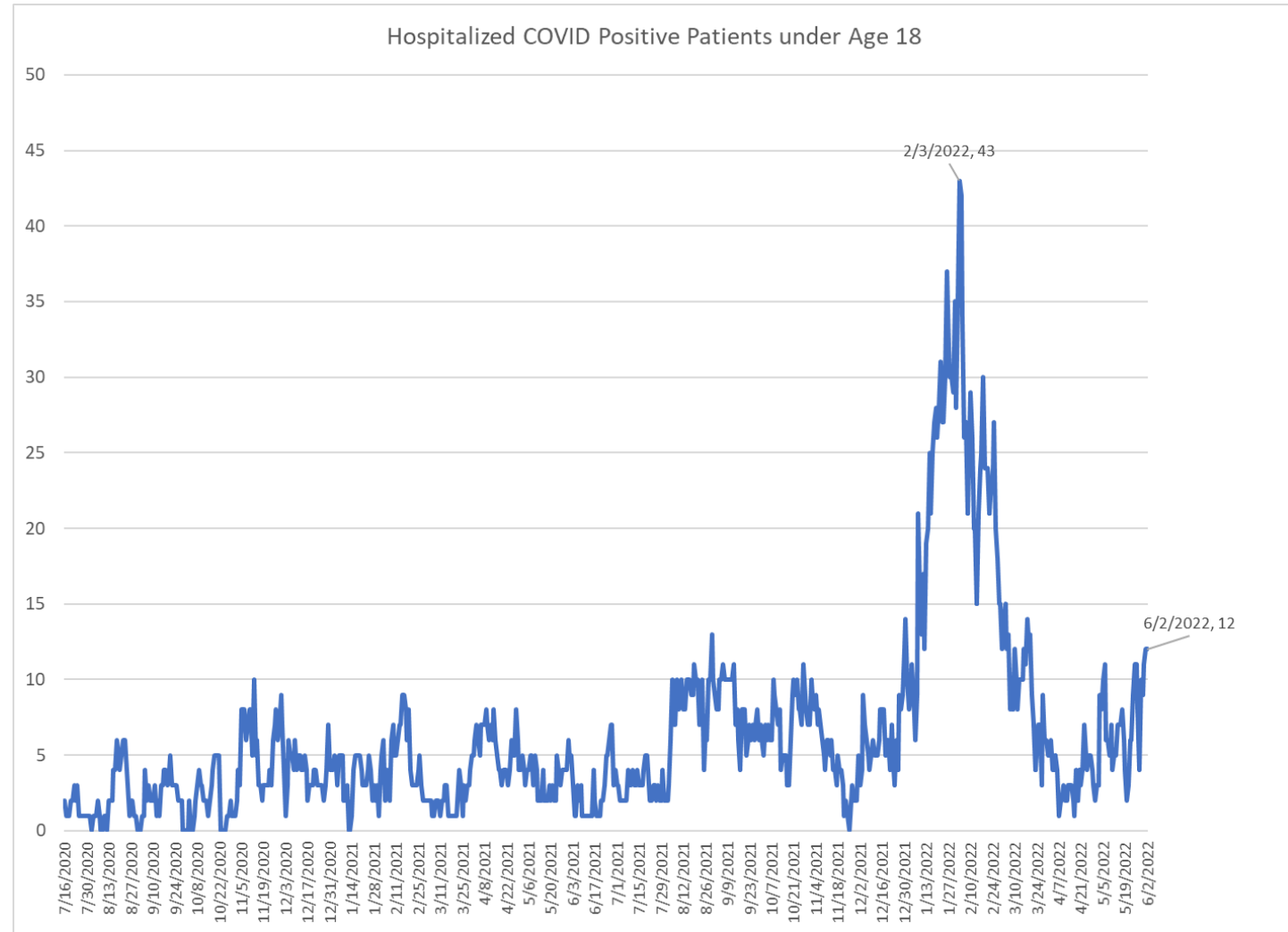
U.S. Hospital Census

A peak in hospitalization is apparent in New England. A crest is evident in Mid-Atlantic. Other regions are showing continued mild increases.



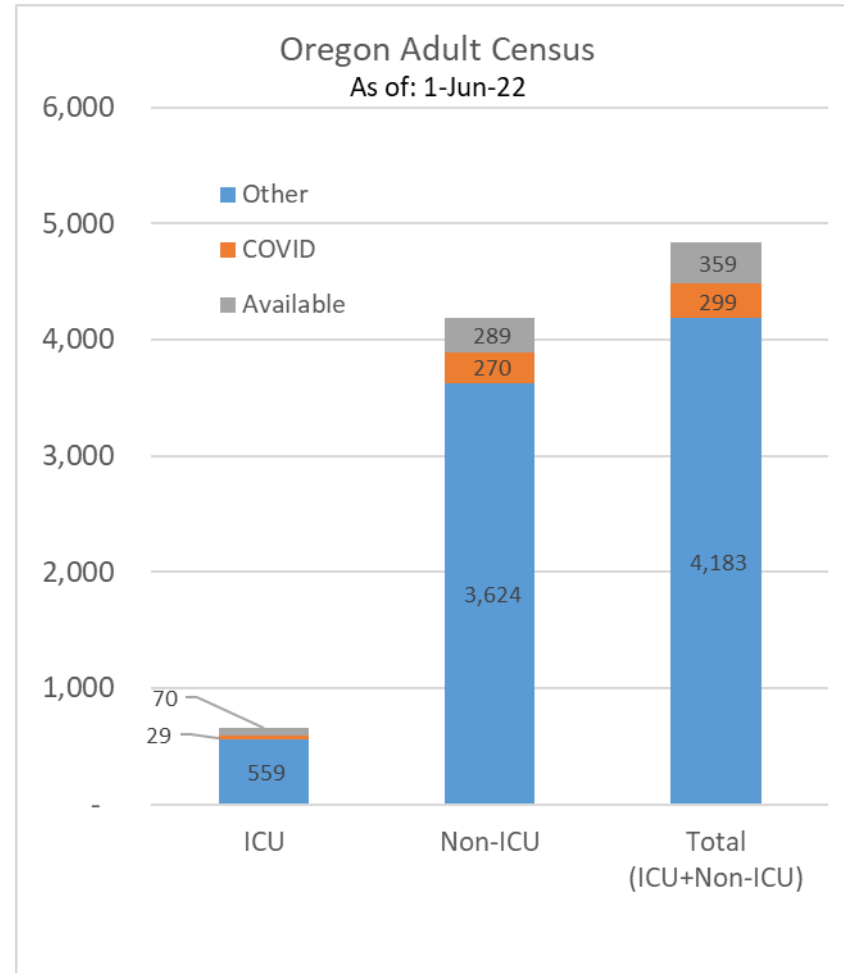
Pediatric Census in Oregon

The pediatric census level is at 12 as of 6/2.

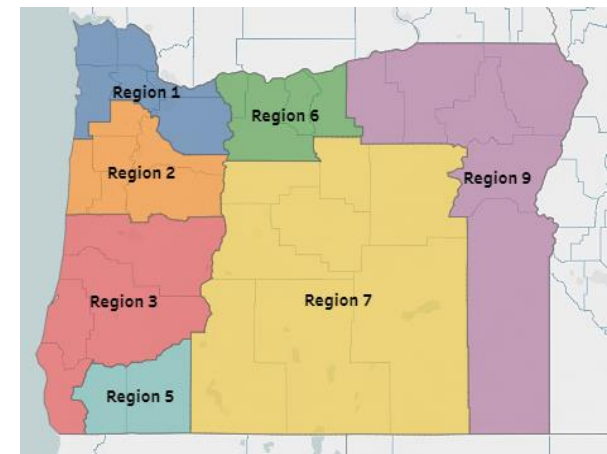


Oregon Hospital Capacity

As of 6/1/22, 5% of occupied ICU beds are filled with COVID patients. This level has not changed since last reported two weeks ago.



Region	Share of Occupied w/COVID		
	ICU	Non-ICU	Total
1	6%	7%	7%
2	7%	6%	7%
3	1%	7%	6%
5	0%	6%	5%
6	33%	0%	9%
7	5%	10%	9%
<u>9</u>	<u>0%</u>	<u>5%</u>	<u>4%</u>
Total	5%	7%	7%

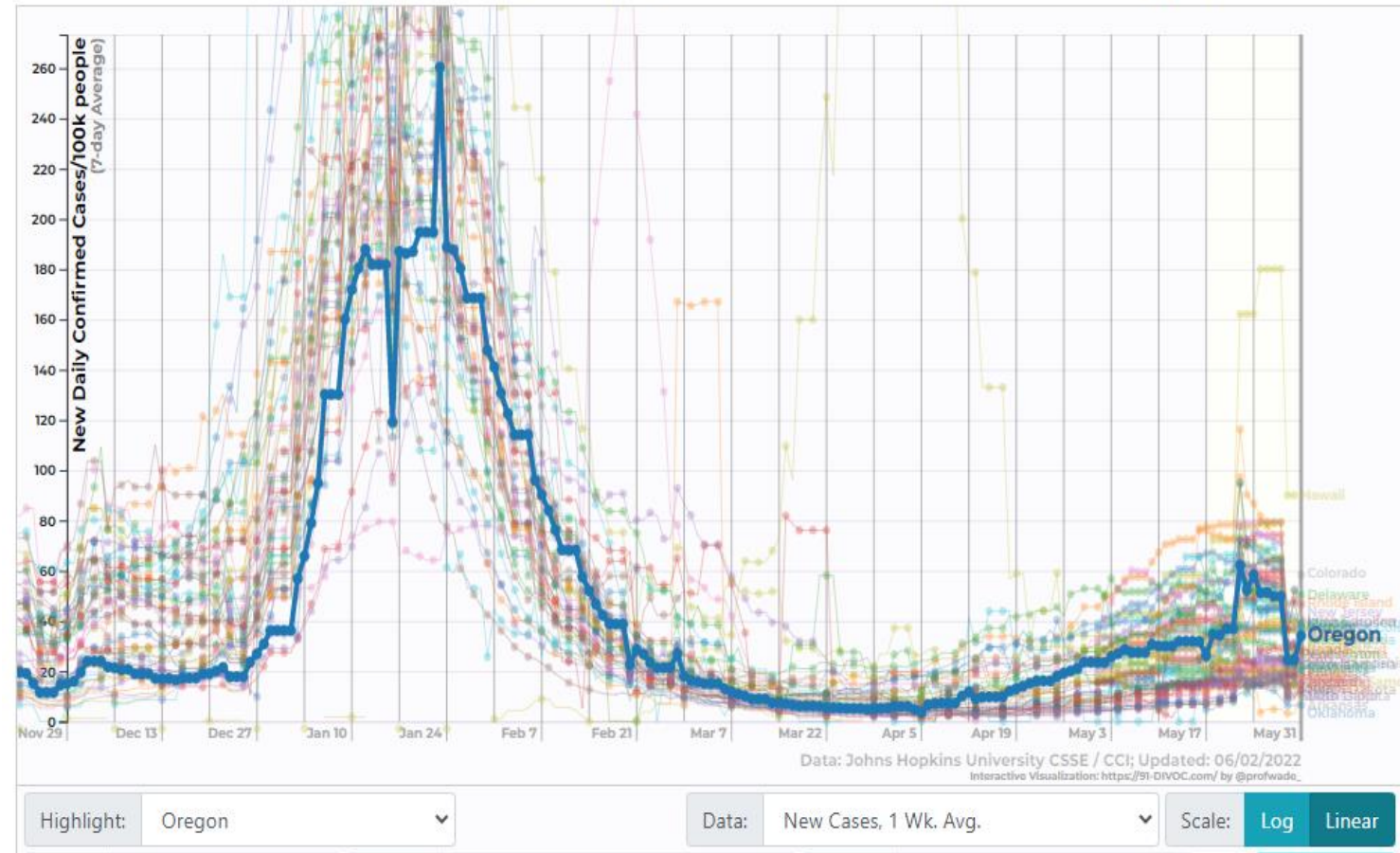


New Cases in Oregon

Oregon cases levels are about middle of the pack (19th in US) and appear to have crested.

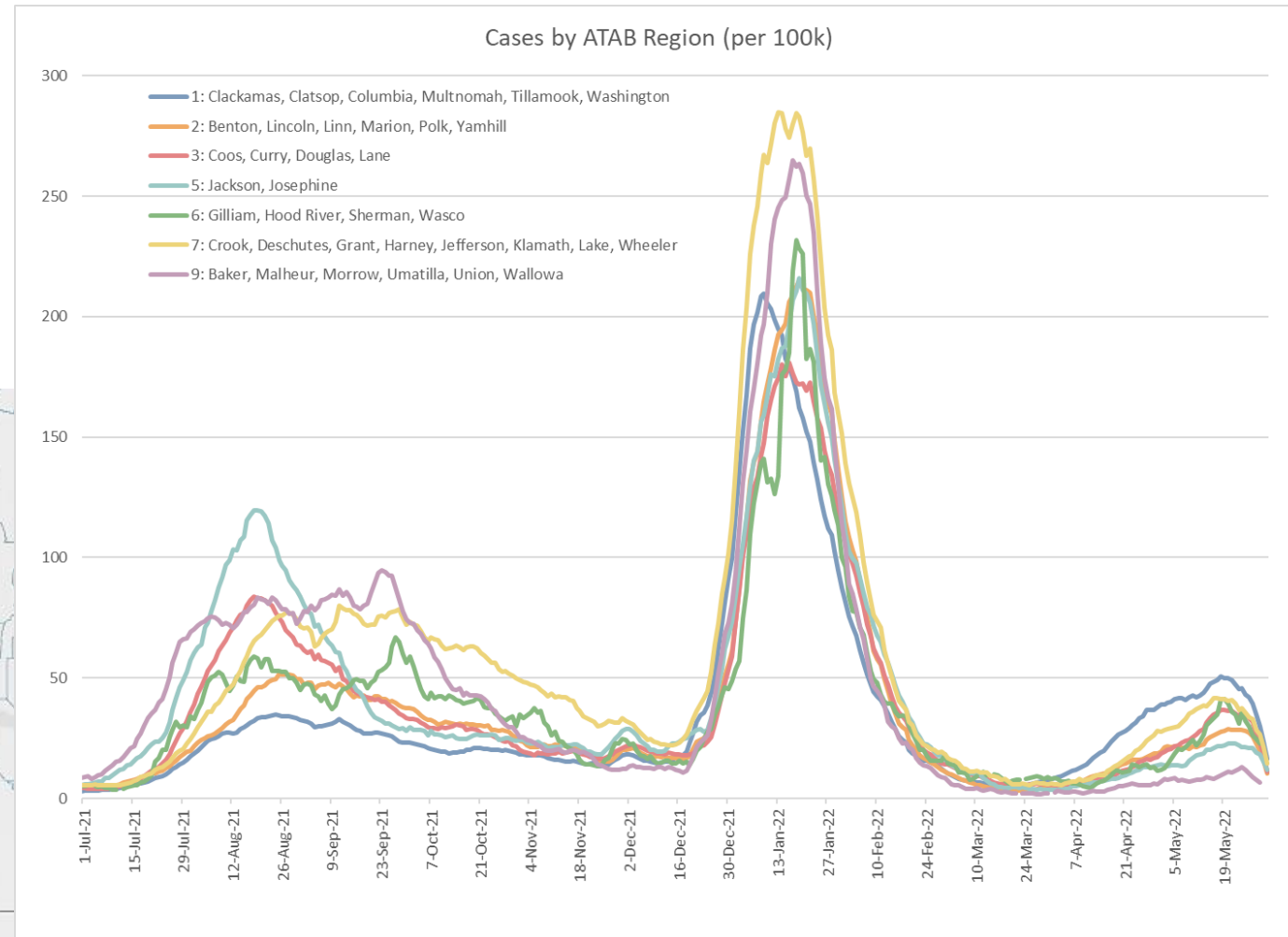
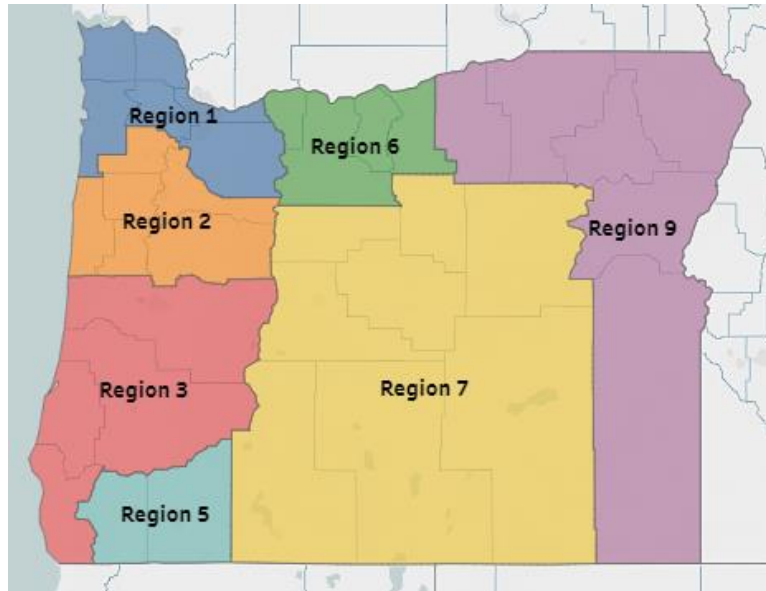
Note: Holiday weekends and changes in daily reporting sometimes lead to temporary increases in the 7-day moving average.

New Confirmed COVID-19 Cases per Day by States/Territories, normalized by population



Cases by Oregon Region

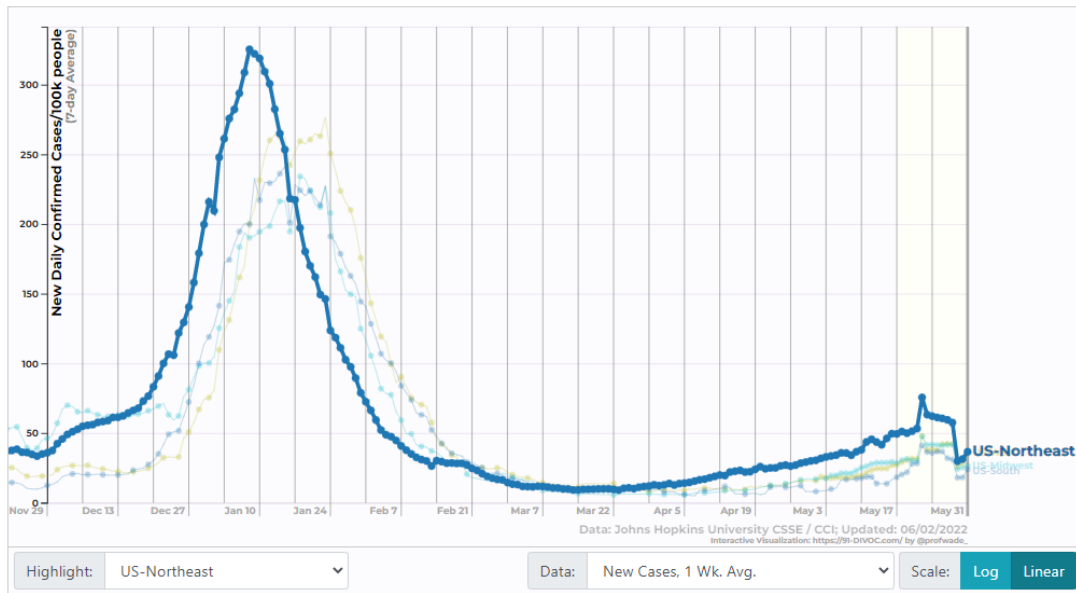
Cases appear to have crested in most regions in the state.



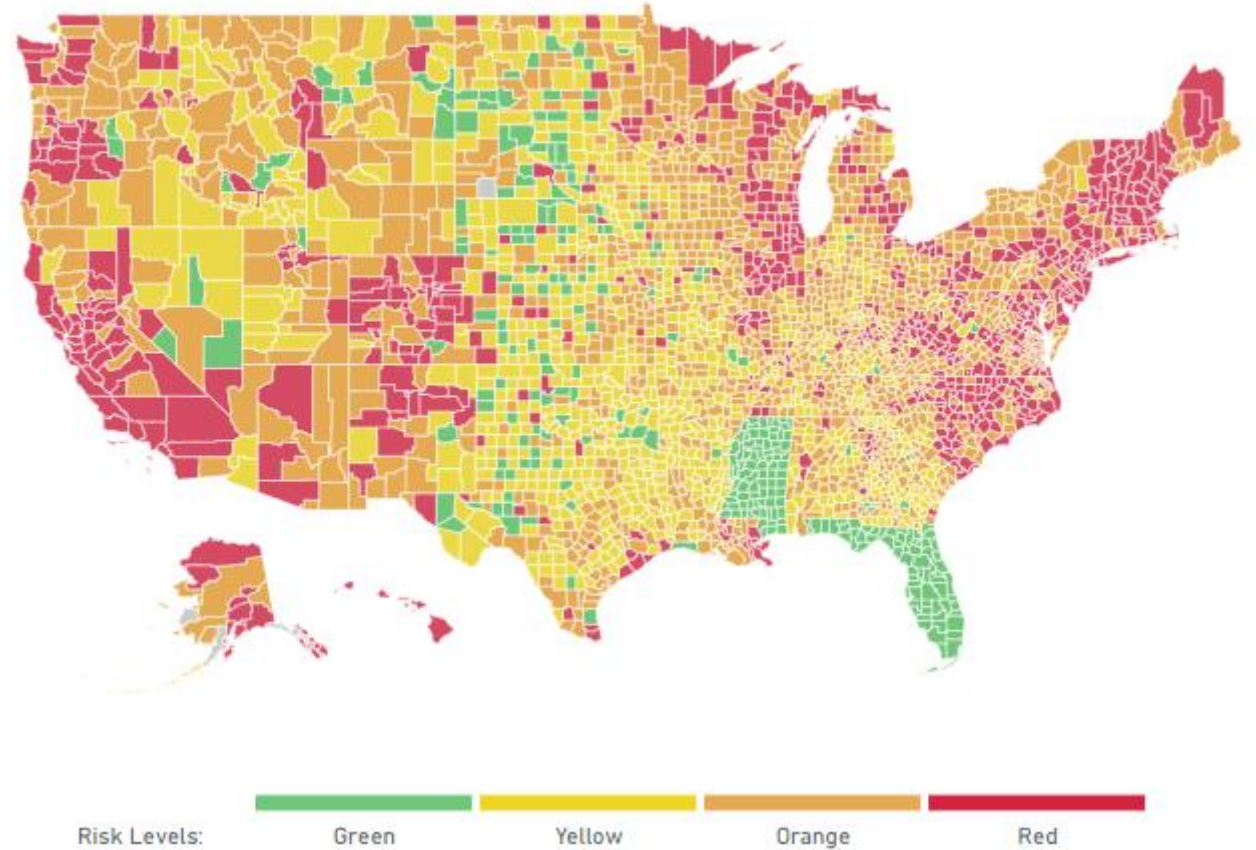
Cases by County in U.S.

The Northeast has begun a decline in cases leading to lower risk levels.

New Confirmed COVID-19 Cases per Day by States/Territories, normalized by population



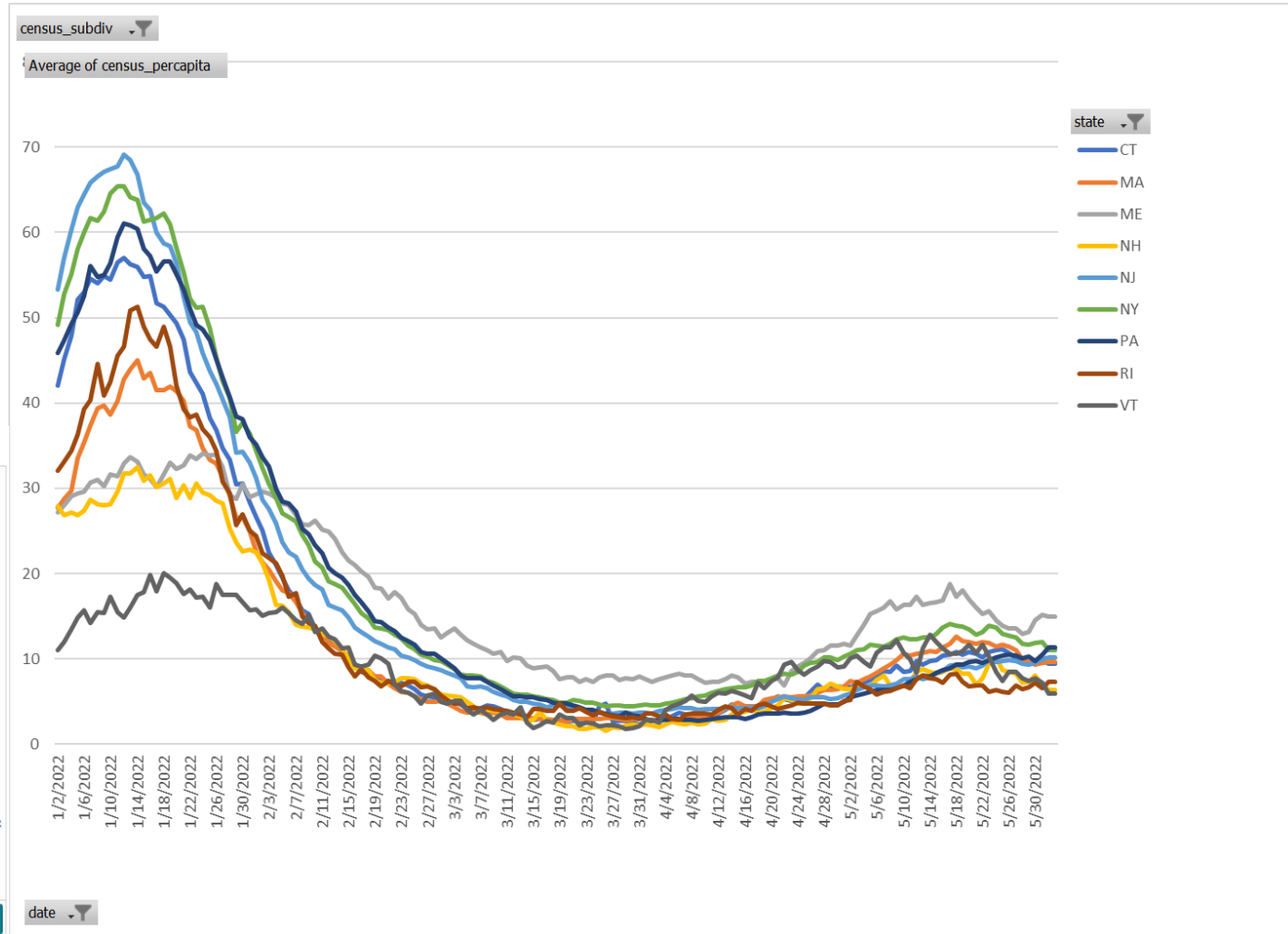
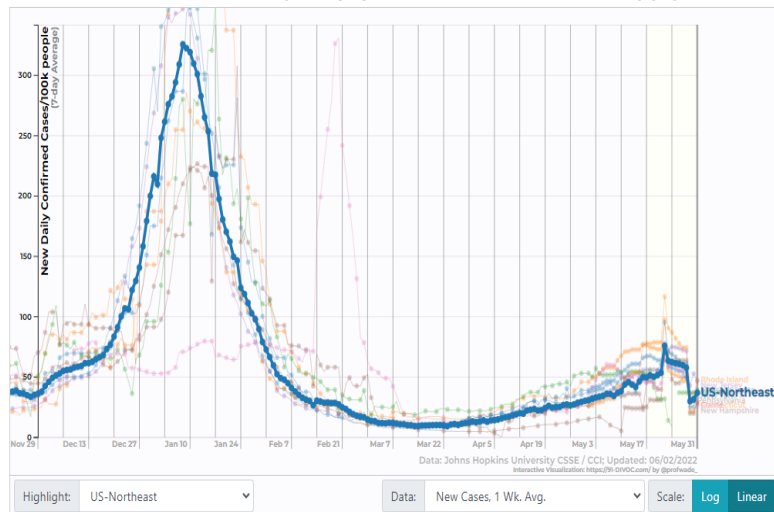
Risk Levels by County



Omicron in Northeast

Cases in the Northeast have begun declining and the hospital census is beginning to follow. Vermont has seen its census drop by 50%.

New Confirmed COVID-19 Cases per Day by States/Territories, normalized by population



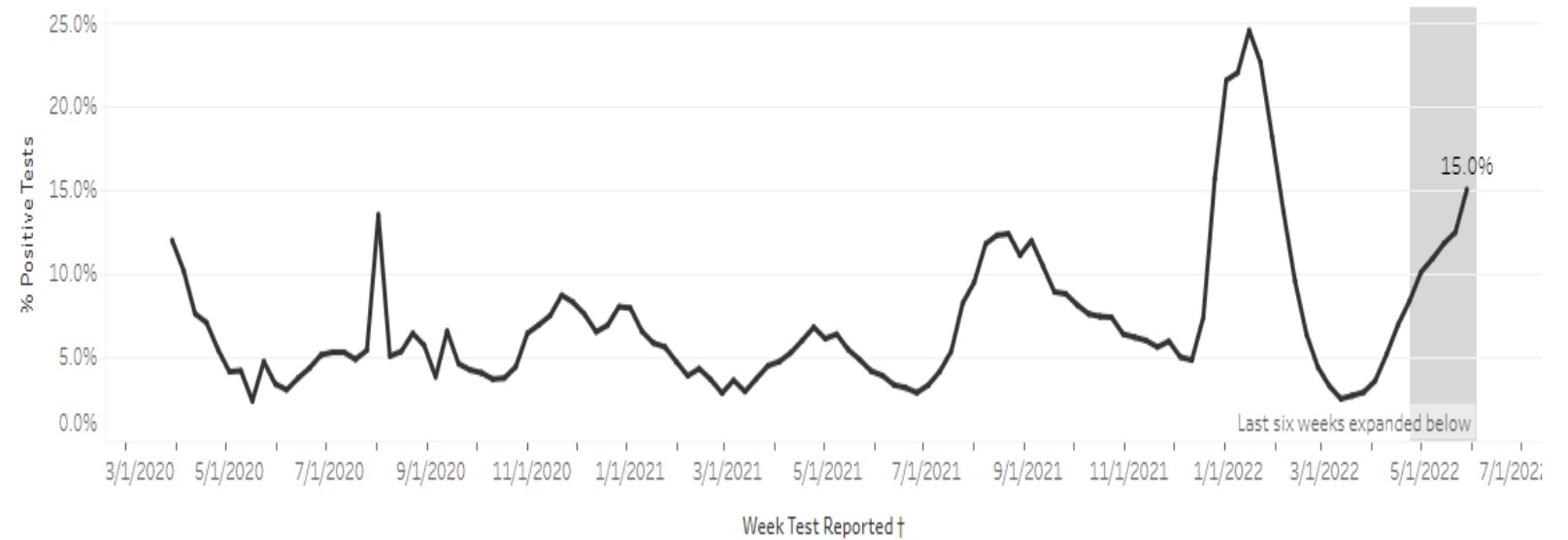
Test Positivity

The most recent complete week (5/22-5/28) had a test positivity of 12.5%.

The rate has increased since week of 3/13.

Weekly test positivity over time - All

This line chart shows the weekly percent test positivity, the number of positive tests divided by the number of total tests, by date reported to public health.

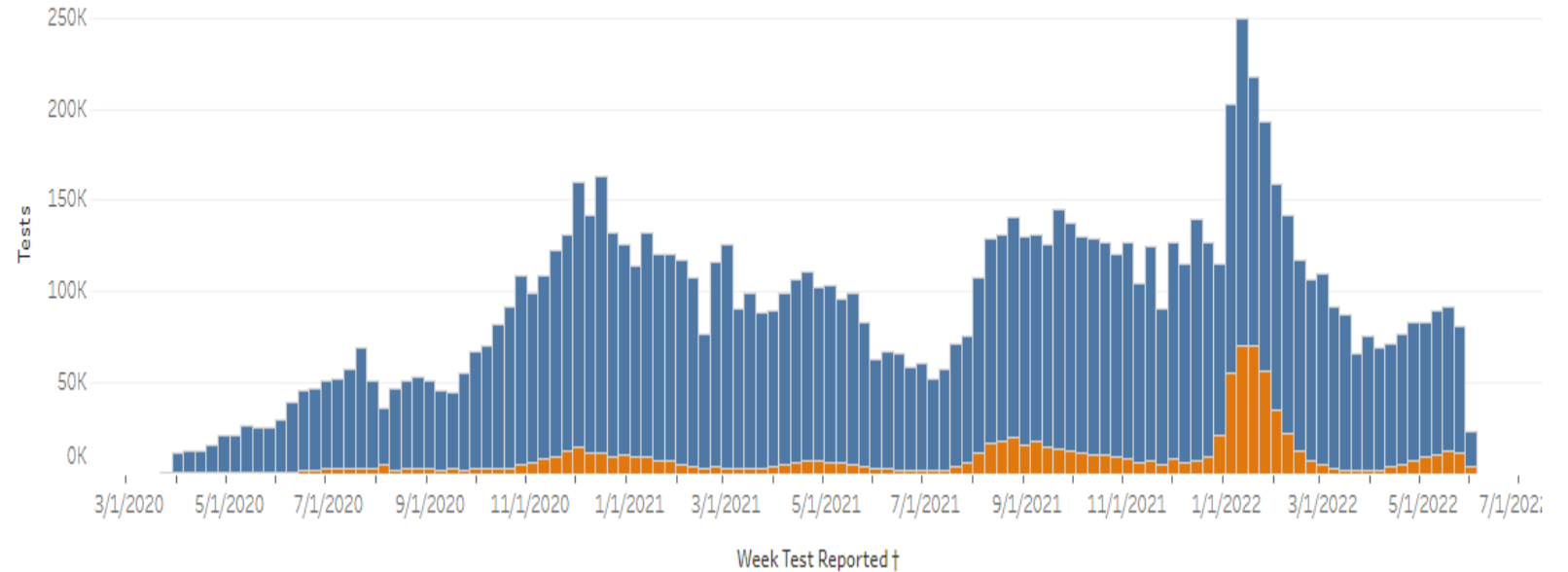


Total Tests

Testing levels have not picked up despite the increased positivity rate.

Weekly Positive and Negative COVID-19 test counts over time - All

This stacked bar chart shows weekly total tests by the date reported to public health and result, positive or negative.



Wastewater

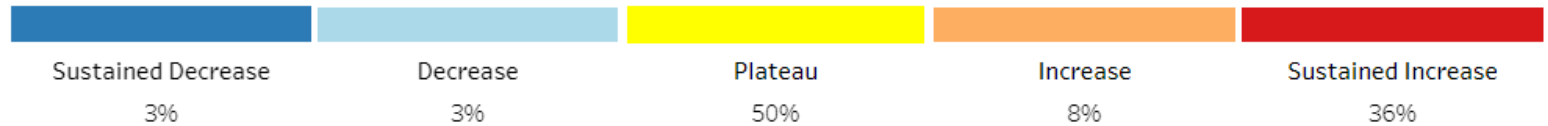
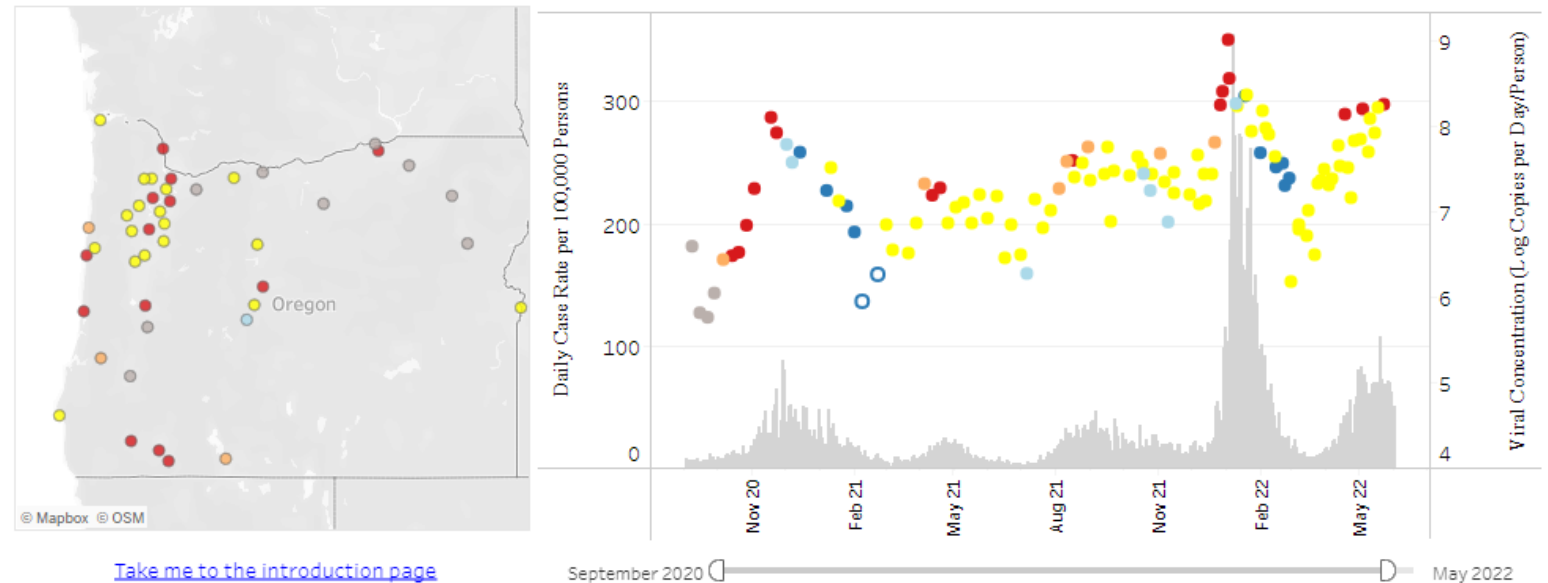
Wastewater levels continue to show plateau, increase or sustained increase.

In Portland, viral concentrations appear higher than during Delta, though lower than Omicron BA1 wave.

Data from Portland are highlighted in the chart over time.

Oregon's SARS-CoV-2 Wastewater Monitoring

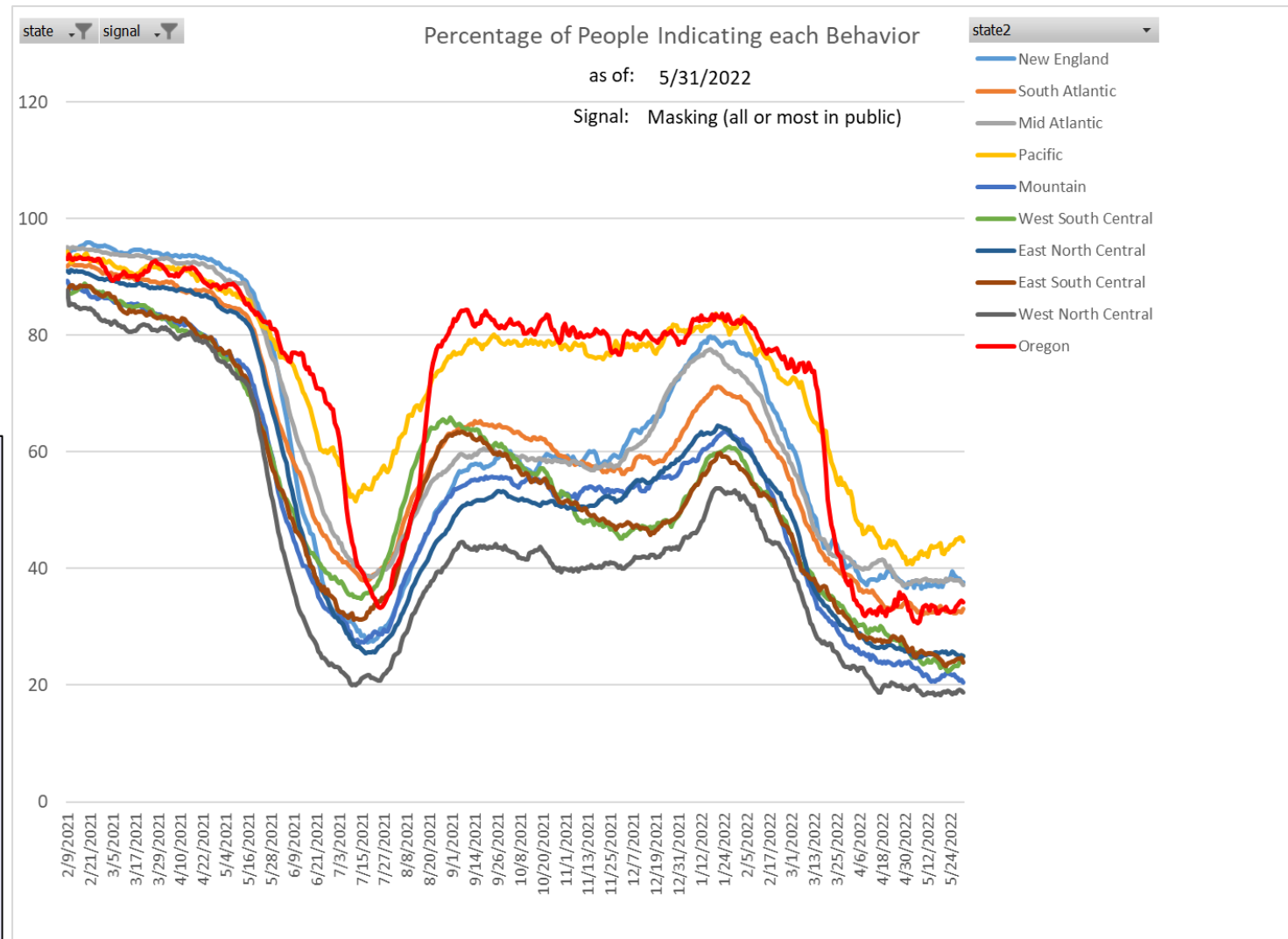
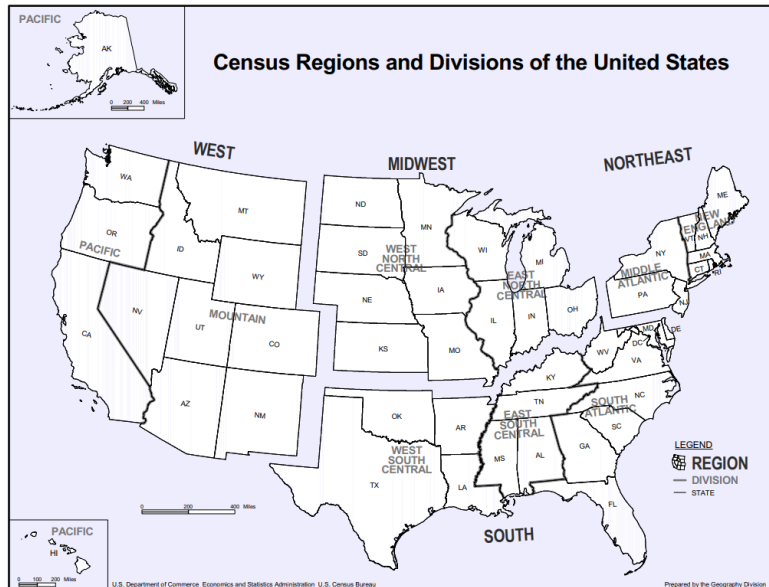
Select a site on the map by clicking the circle representing the site. This will display a facility's viral concentration and daily case rate.



Review of Leading Indicators

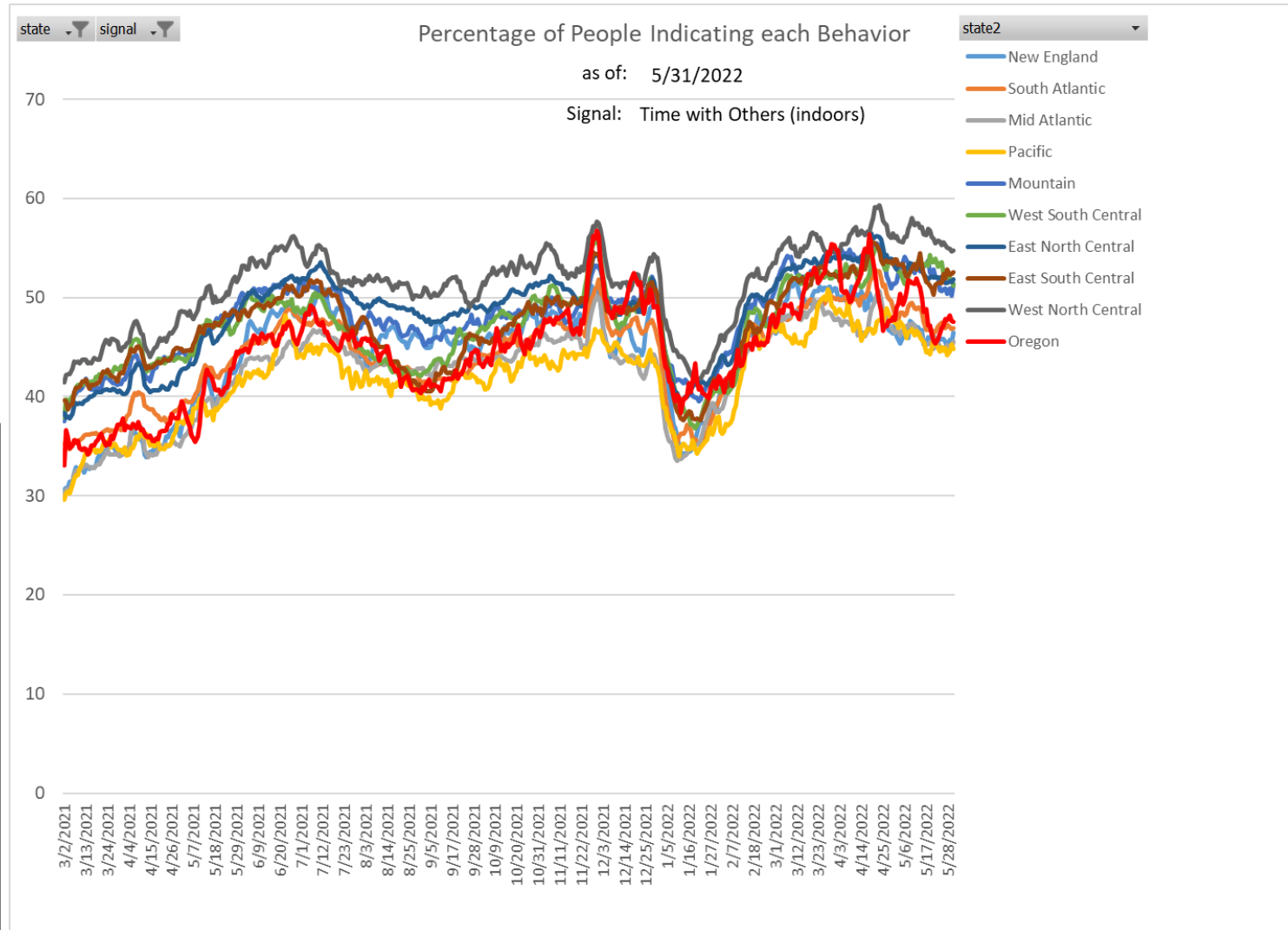
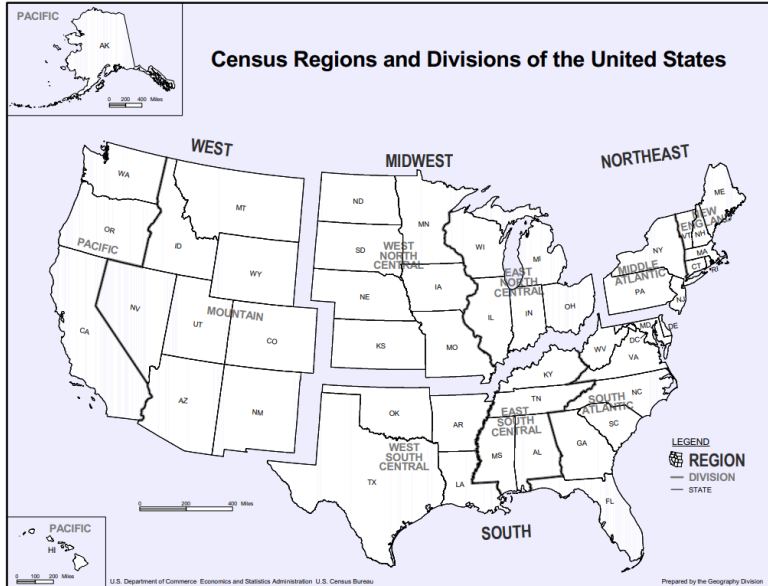
Masking

While the masking rate varies between regions, the levels is largely unchanged since beginning of April.



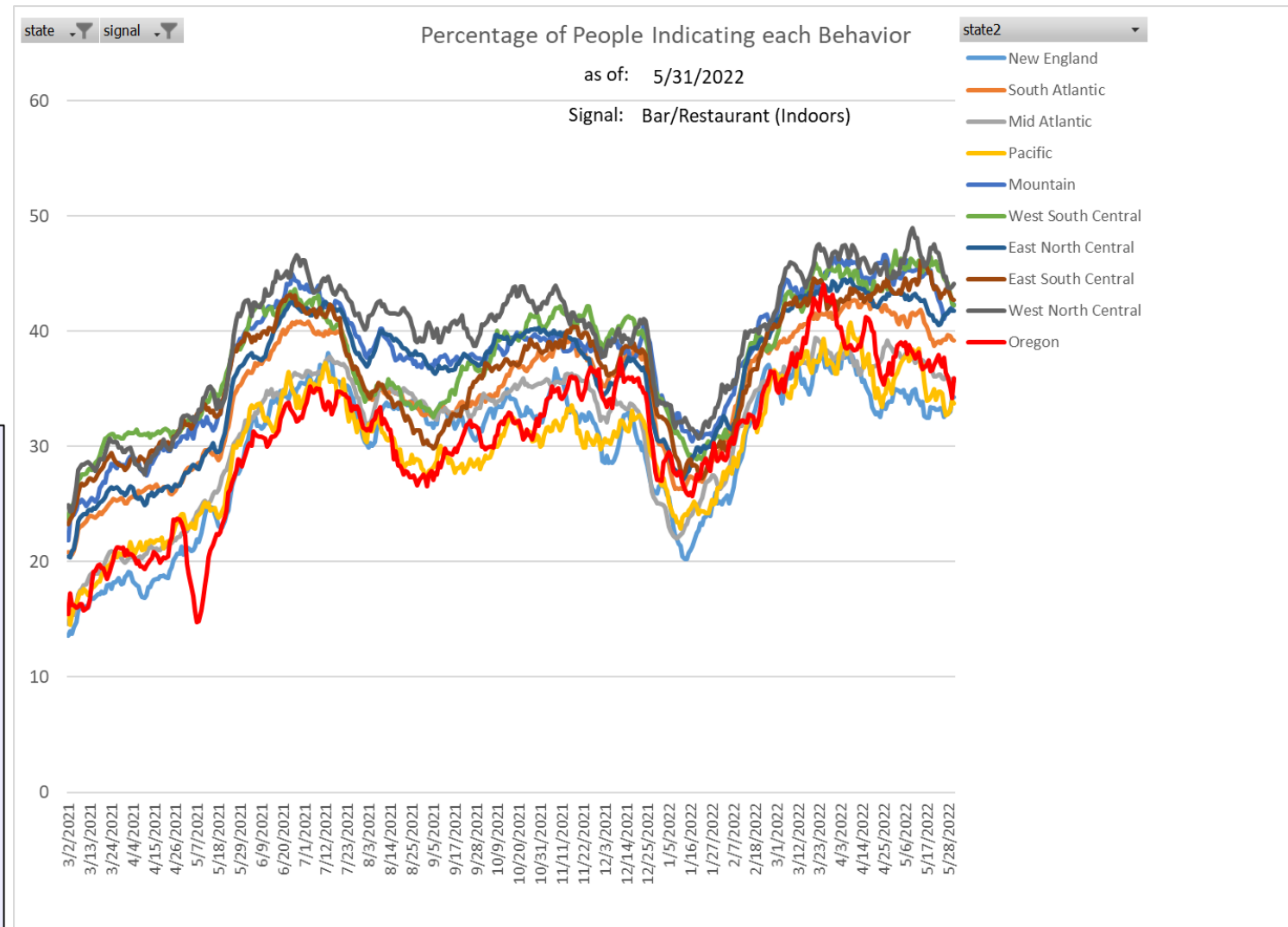
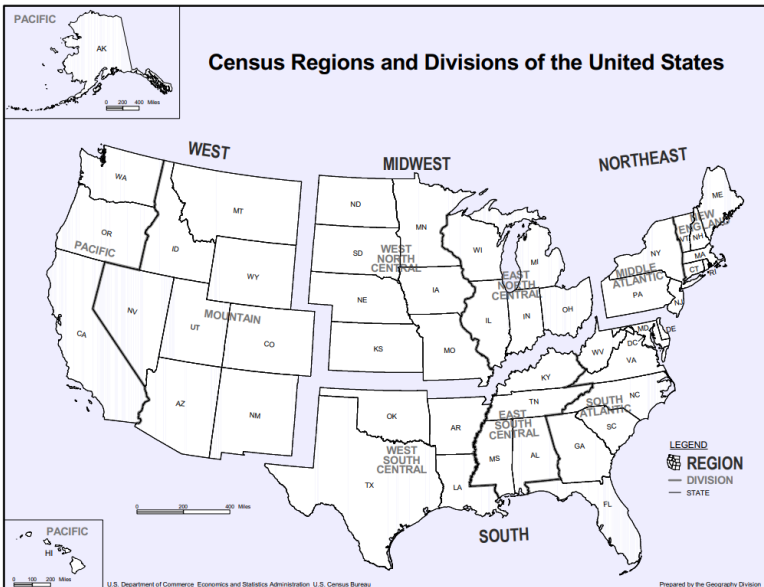
Time with Others Indoors

Time with others indoors is generally steady across regions in the US and Oregon.



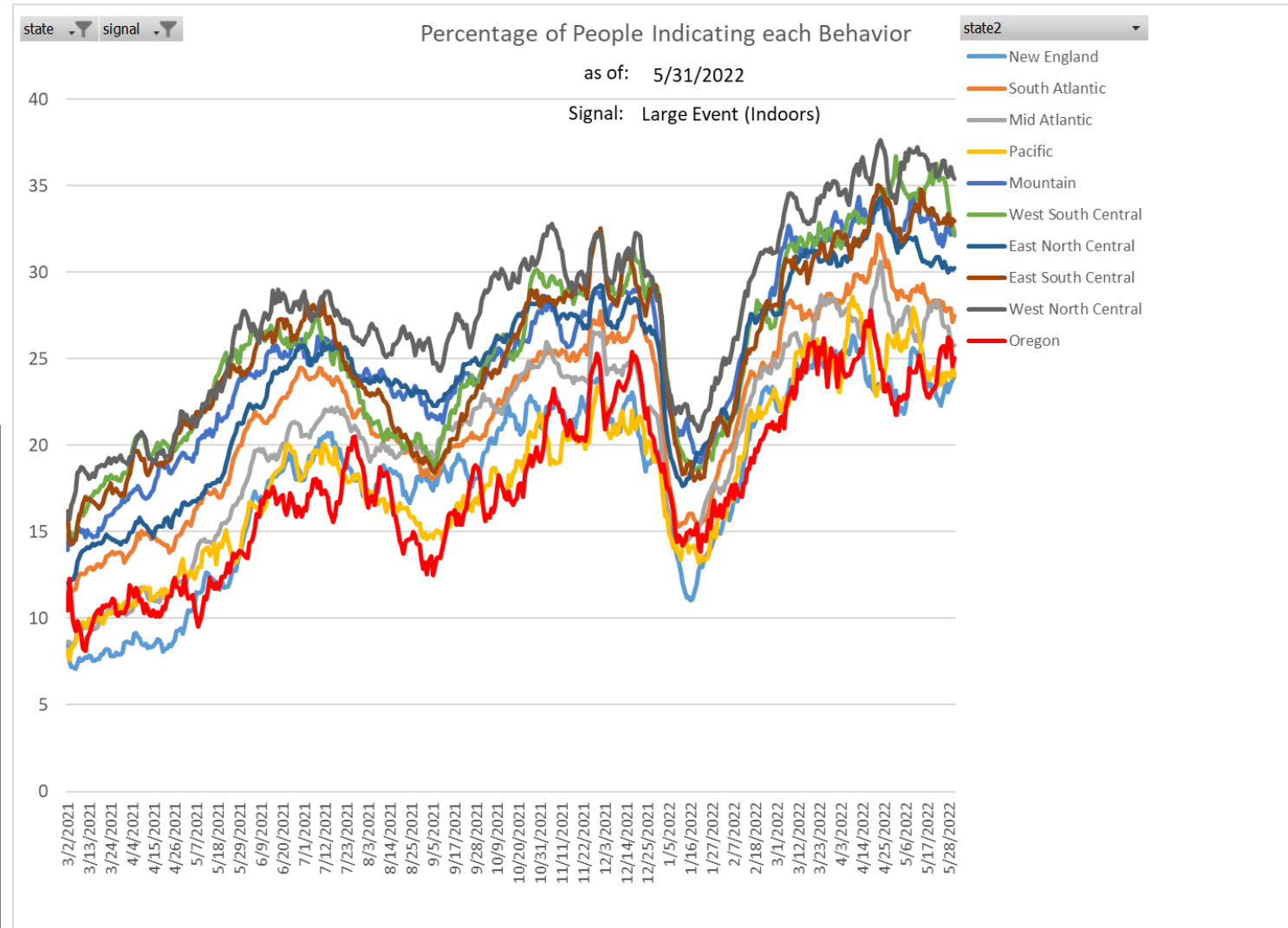
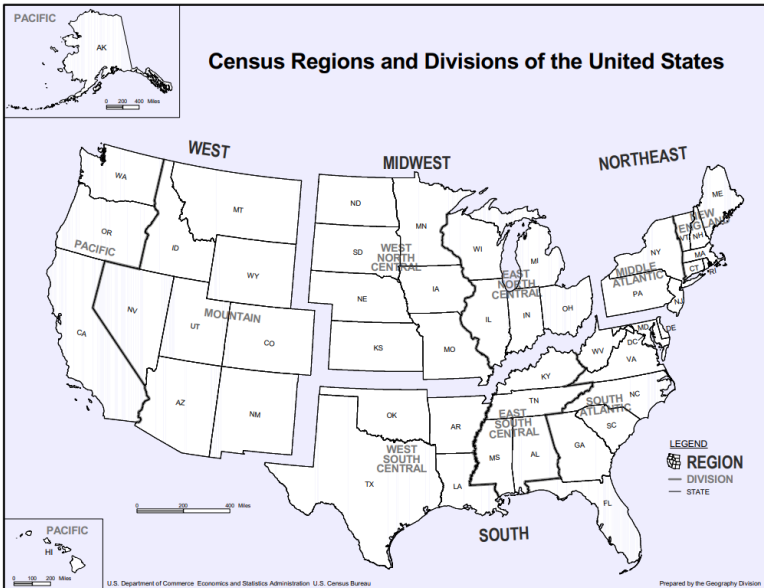
Bar/Restaurant Indoors

The percent of people indicating going to a bar or restaurant indoors is relatively stable across regions.



Large Events Indoors

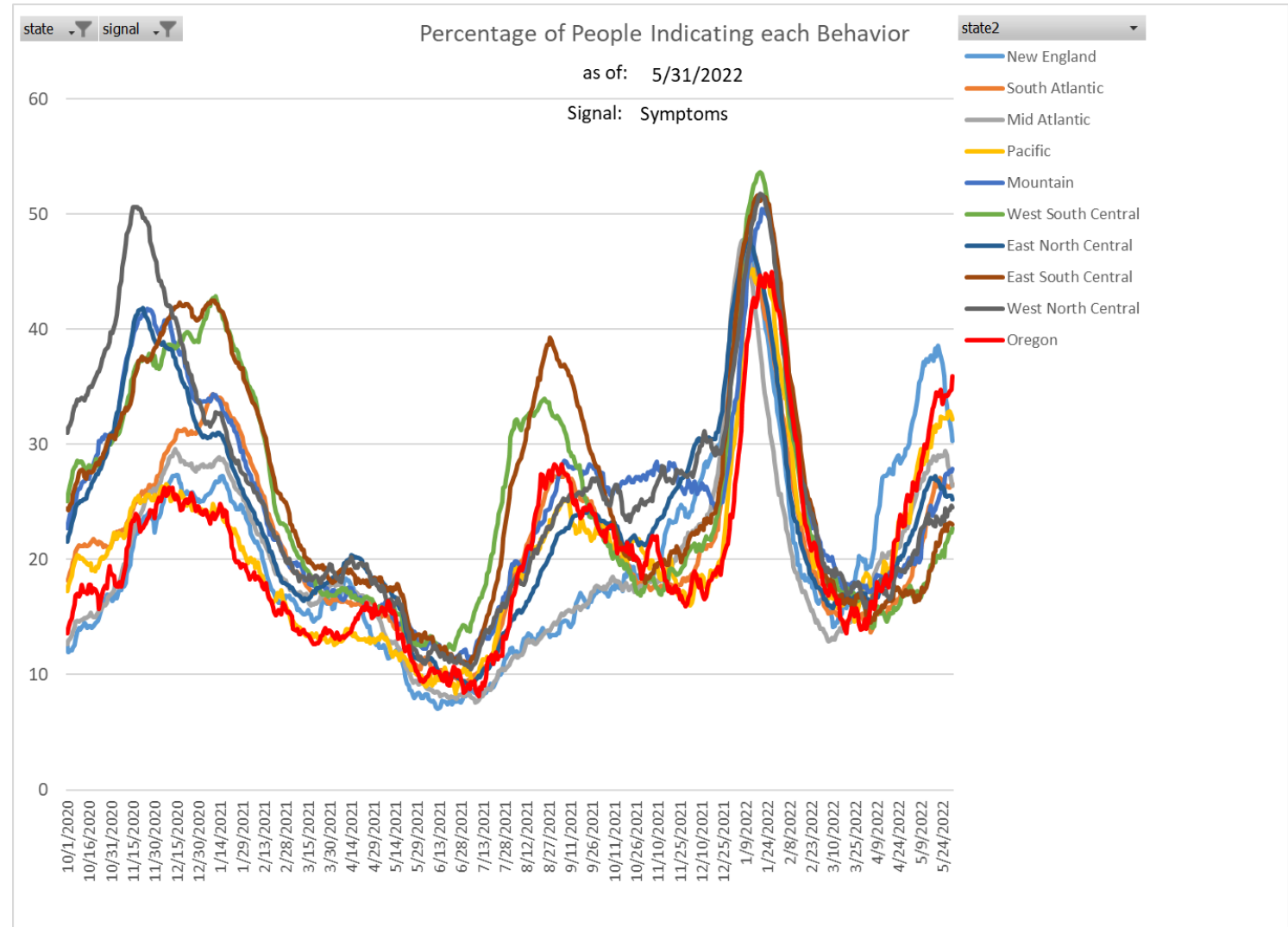
The percentage of people attending large events indoors is lower in Oregon than other regions. The trend is generally stable.



Symptoms

Symptom levels continue to increase in Oregon and other regions. These reports suggest infection levels are above Delta though still only 75% of what they were during BA1.

Note: This question asks individuals if anyone in their household or community has symptoms of COVID.

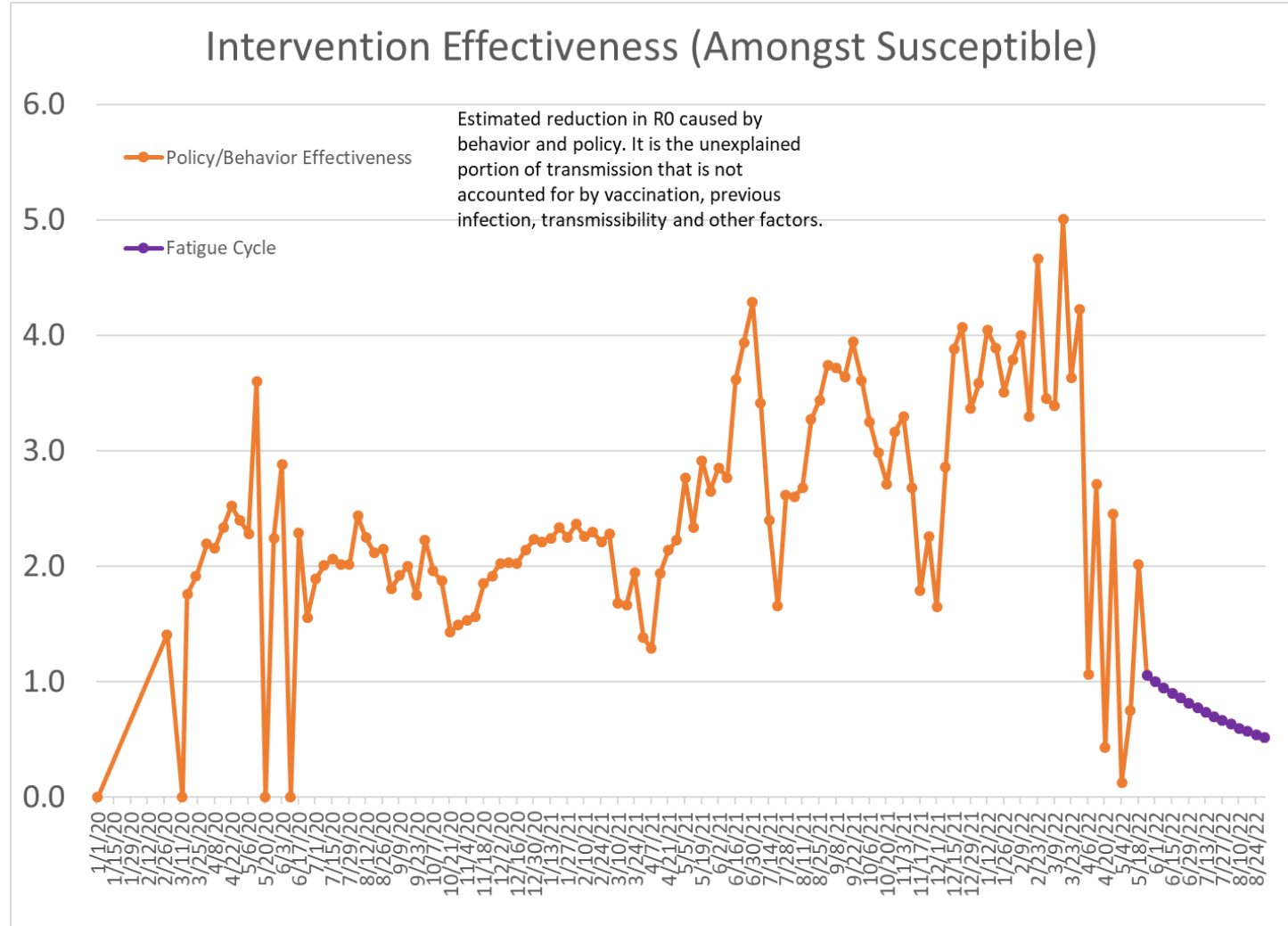


Statewide Forecast

Behavior Effects

This value represents how effective the non-pharmaceutical interventions (NPIs) and individual behaviors have been at reducing the spread of the virus.

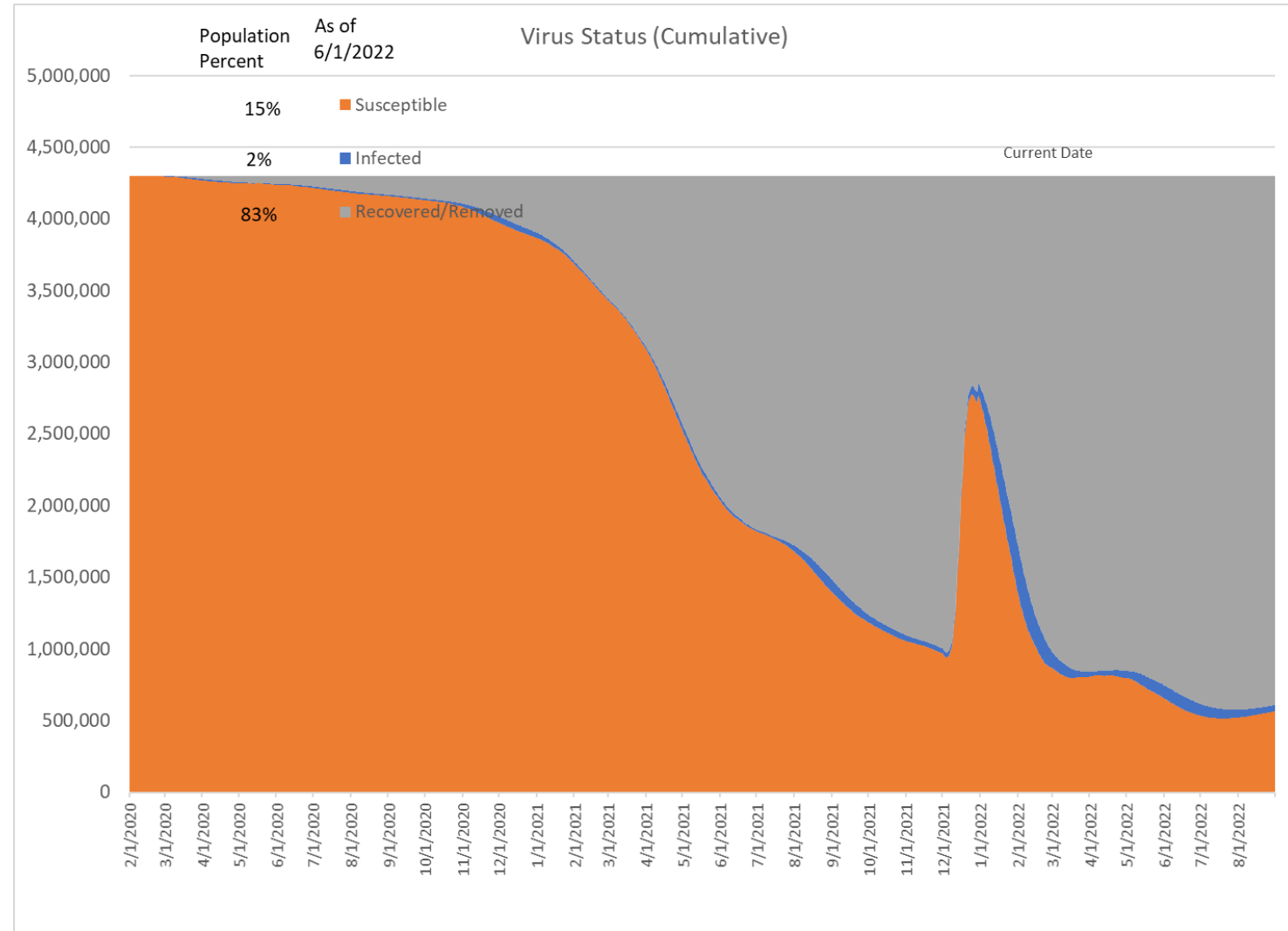
The last 5 weeks of data have shown considerably lower levels of transmission reduction from non-pharmaceutical interventions.



Herd Chart

The percent susceptible is at 15% which is down from two weeks ago.

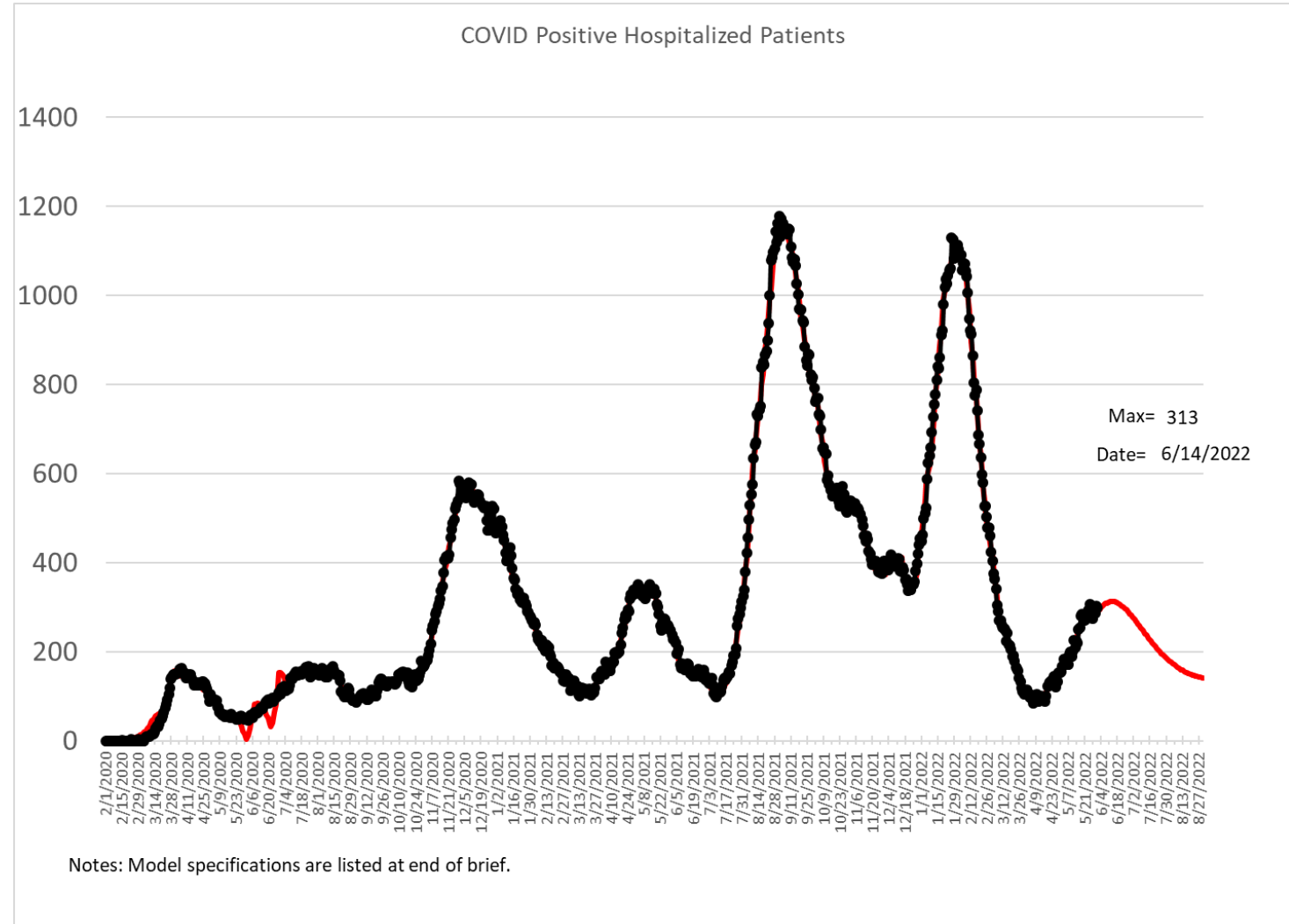
There is a significant discrepancy between the percentage of people the model assumes are being infected during BA2 compared to BA1 and the apparent levels of symptoms in the community (the model assumes smaller levels during BA2). This is likely due to an over-estimate of the hospitalization rate during the BA2 surge and an over-estimate of the R0 of BA1.



Census Forecast-Primary Scenario

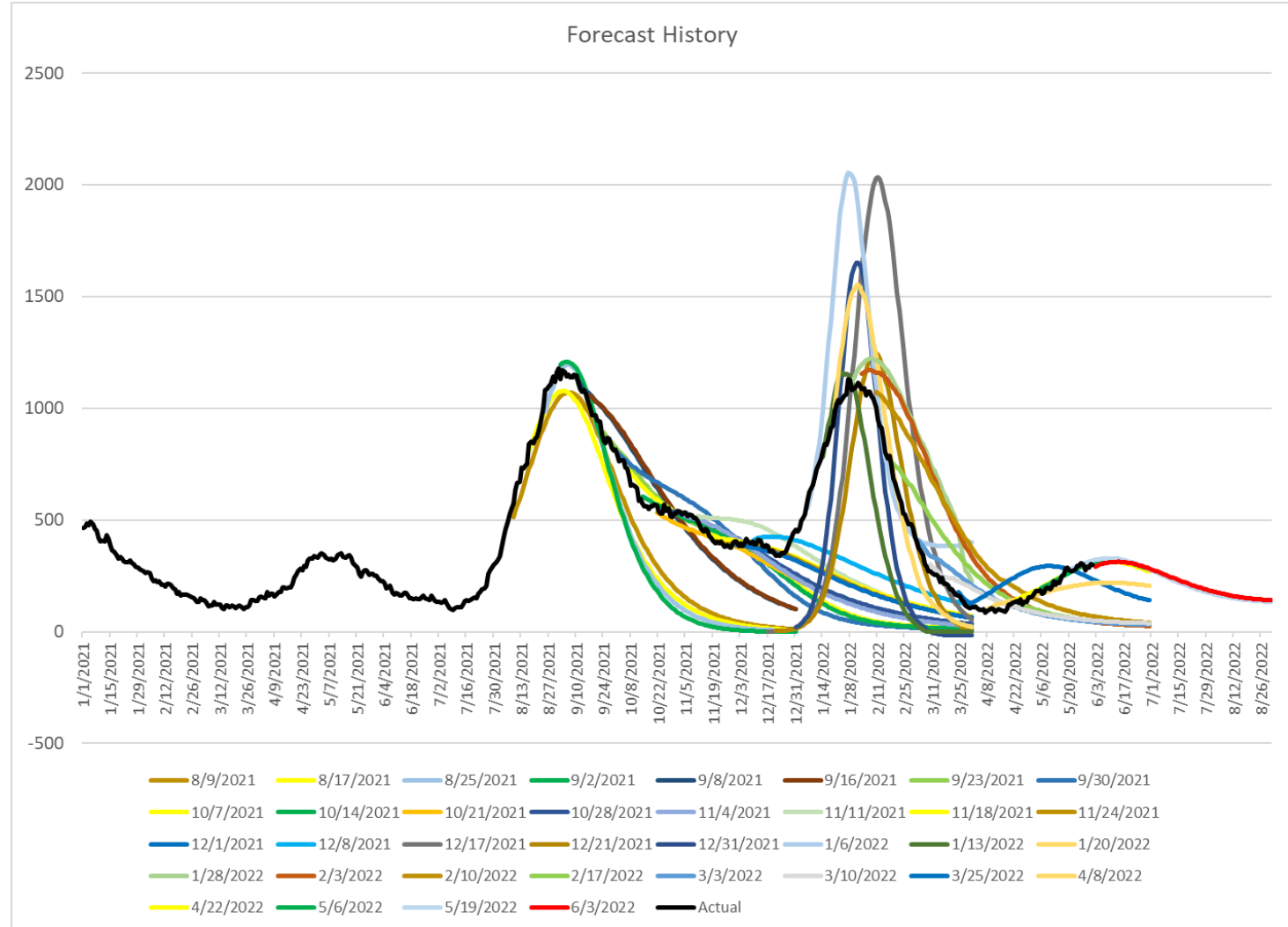
The primary forecast shows a slight increase in hospitalized patients as the impacts of BA2 and reduced COVID restrictions are experienced.

The peak is shown as 329 on 6/9/2022.



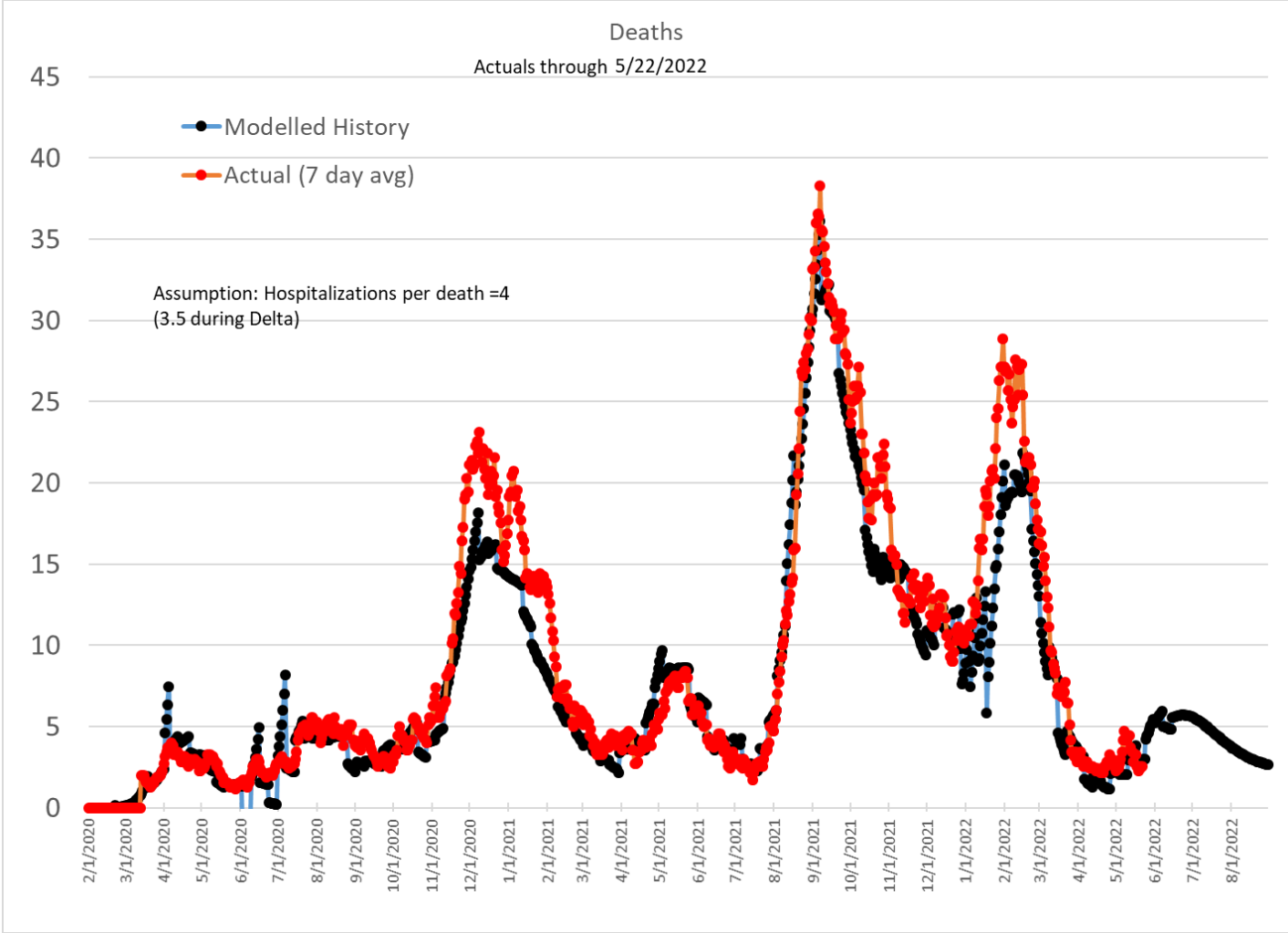
Forecast History

The forecast has been largely similar since 4/8.



Death Forecast

So far, deaths have not risen since the BA2 wave has gone on. Some increase is expected but the larger share of incidental hospitalizations is indicative of lower severity and potential for lower deaths than previous waves.

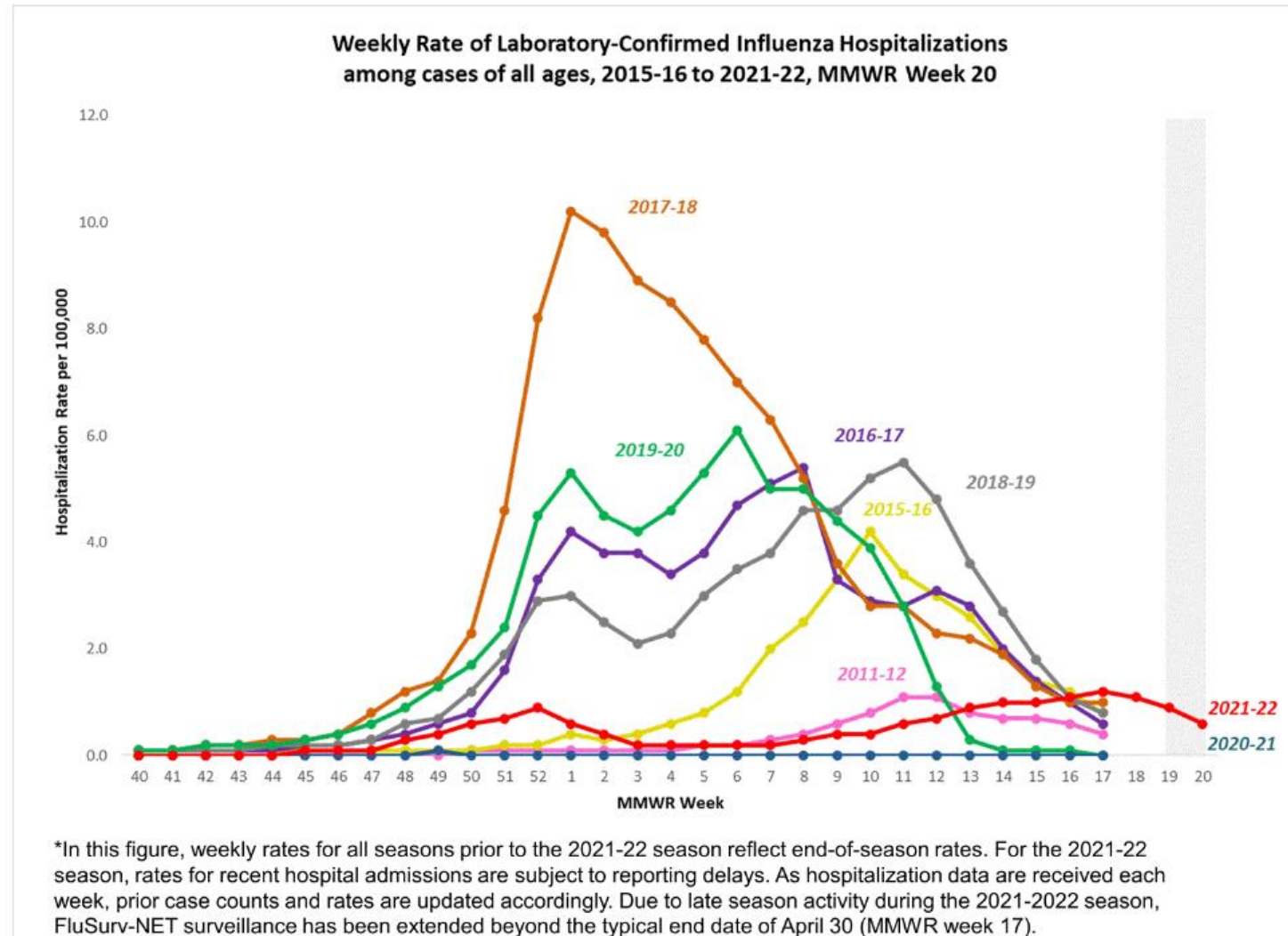


Ancillary Data

Hospitalized Influenza Cases in U.S.

Hospitalized cases of influenza has begun a decline.

Note: weekly surveillance has been extended beyond previous seasons due to the unusual pattern.



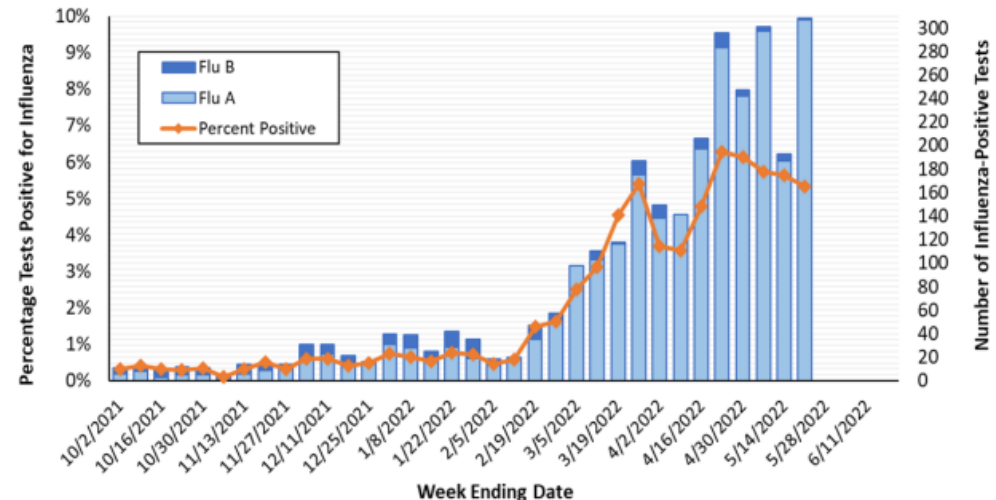
Influenza Cases in Oregon

After an apparent peak, reported flu cases increases to higher levels in the last 3 weeks.

Table 1. Influenza Test Results in Oregon, NREVSS, Current Week, 2021–2022 Season

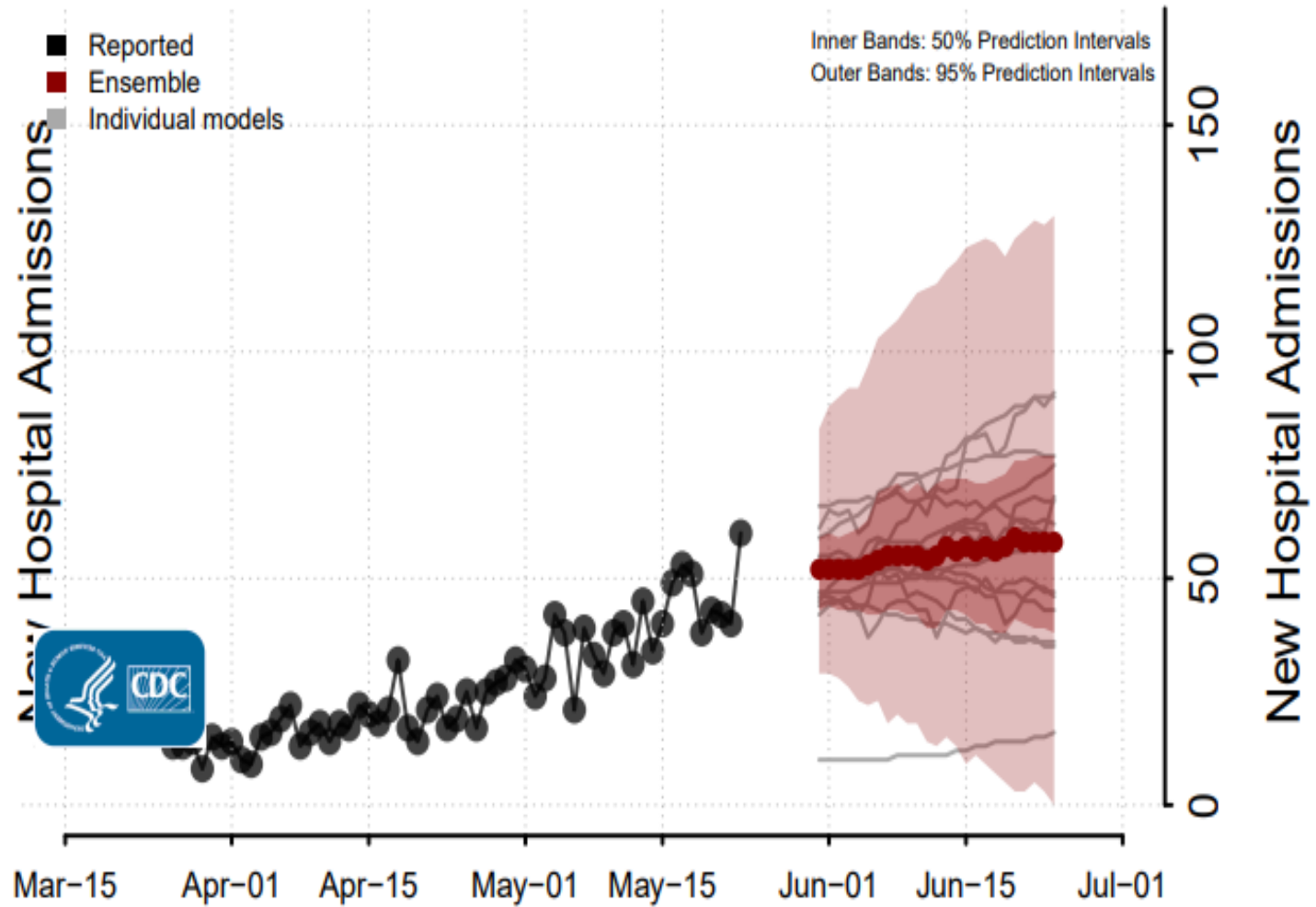
Region	Total Tests	Positive		Flu A		Flu B	
		No.	(%)	No.	(%)	No.	(%)
Portland Metro	3321	101	3.0%	100	99.0%	1	1.0%
Southern Oregon	740	30	4.1%	30	100.0%	0	0.0%
Columbia Gorge	297	52	17.5%	52	100.0%	0	0.0%
Central Oregon	990	114	11.5%	114	100.0%	0	0.0%
Willamette Valley	435	11	2.5%	11	100.0%	0	0.0%
State Total	5783	308	5.3%	307	99.7%	1	0.3%

Figure 2. Oregon Influenza Laboratory Surveillance
Percent Positive Influenza Tests by Week, NREVSS, 2021–2022 Season



CDC Forecasts

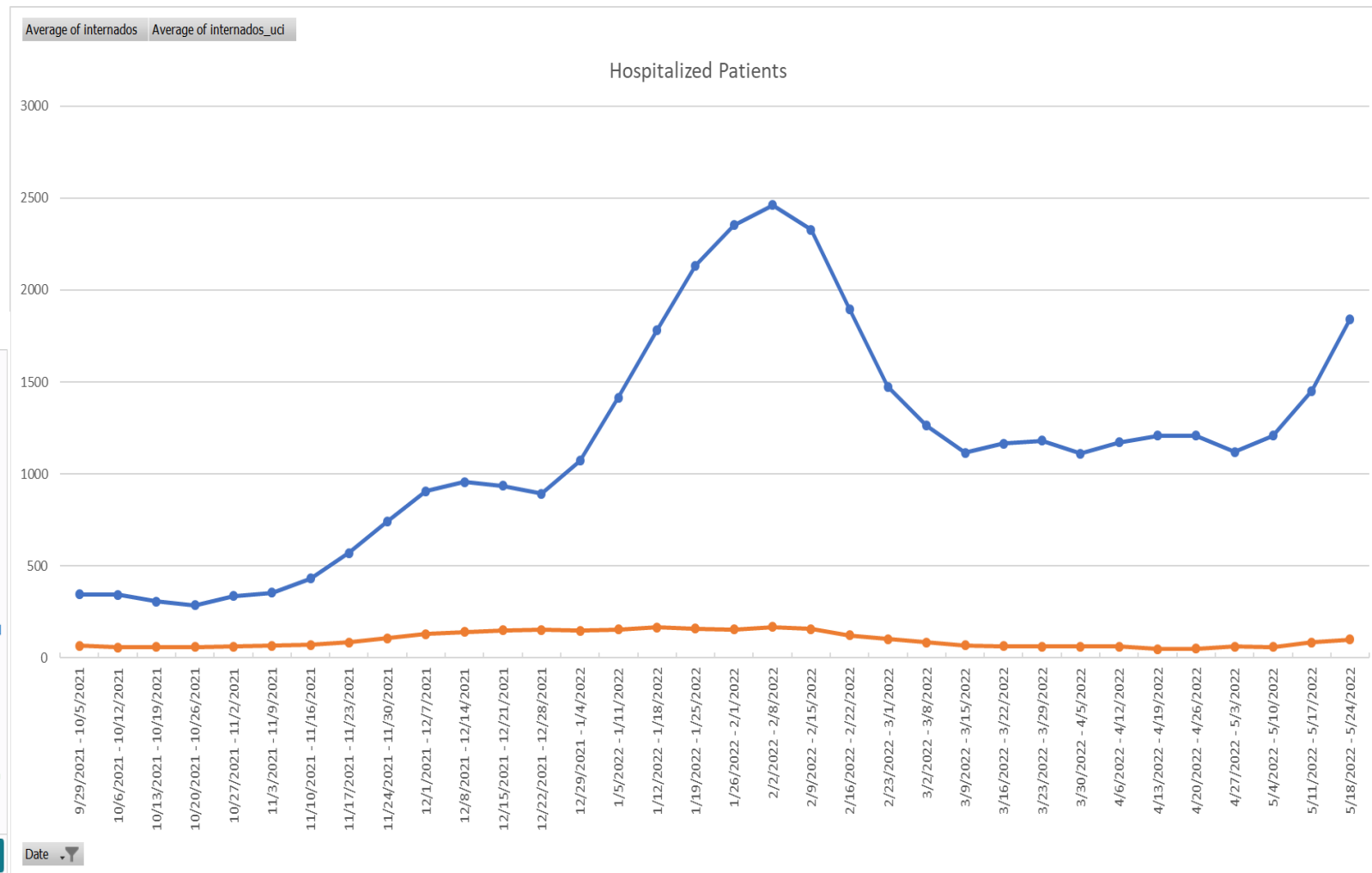
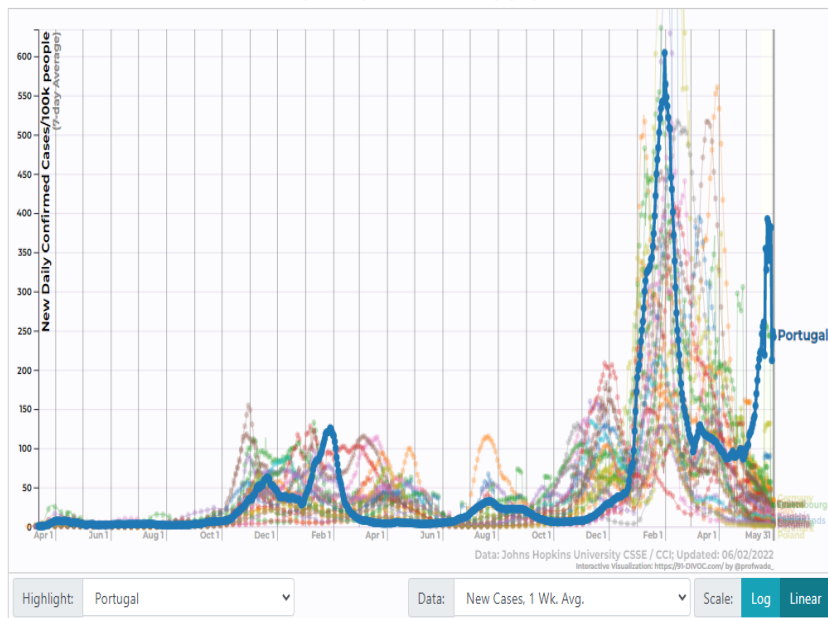
Over the next 3 weeks the forecasters reporting results to CDC are generally increases in new hospital admissions.



BA5 in Portugal

While an increase in hospitalizations is evident in Portugal, it is unclear if these are incidental hospitalizations.

New Confirmed COVID-19 Cases per Day, normalized by population

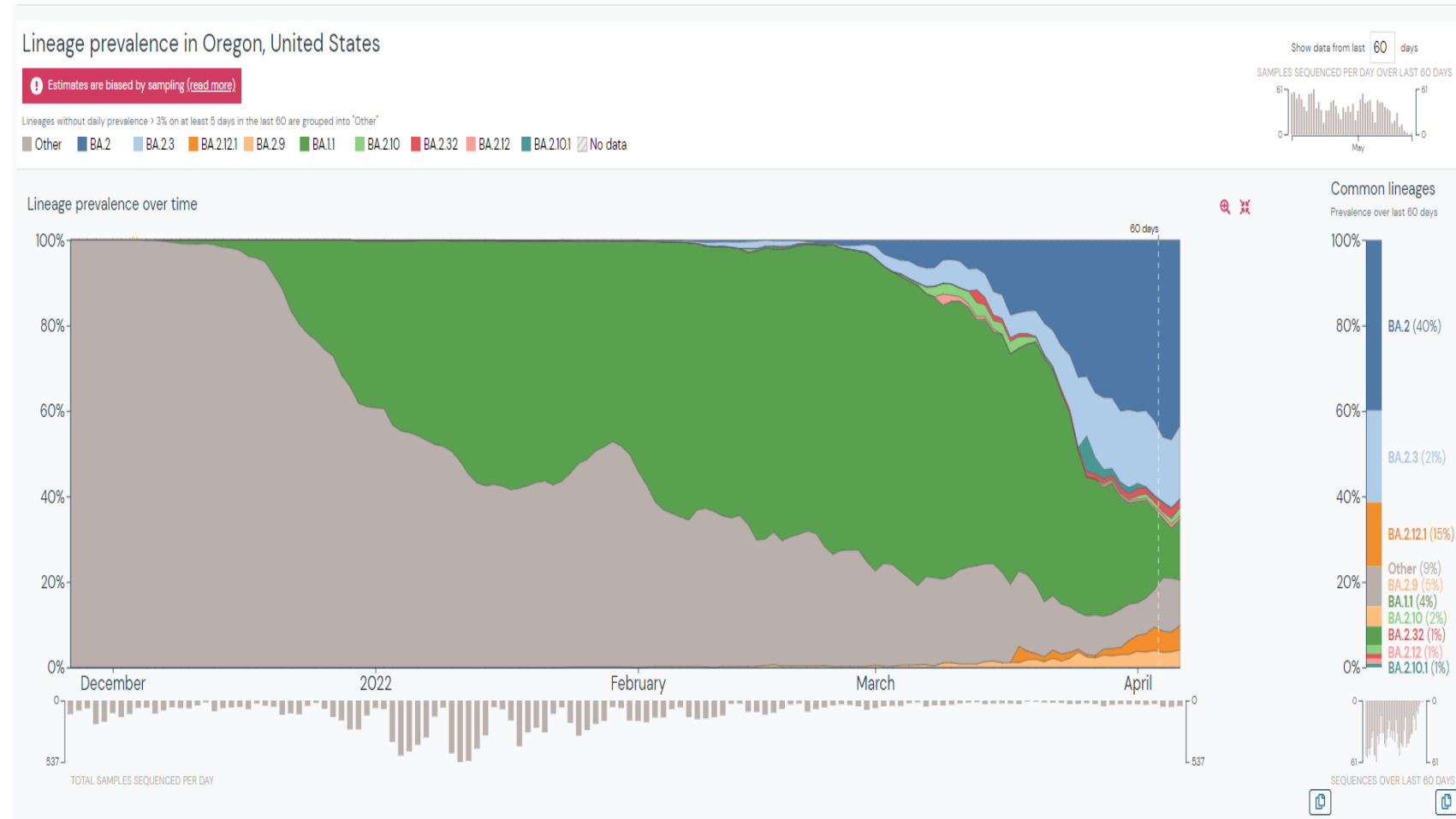


Omicron Strains in Oregon

Many strains of Omicron are present. BA2 and its sub-strains make up about 80% of the currently circulating virus in Oregon according to sequenced samples.

BA2.12.1 is not showing particular growth in Oregon.

No sequences of BA4 or BA5 are in the dataset.

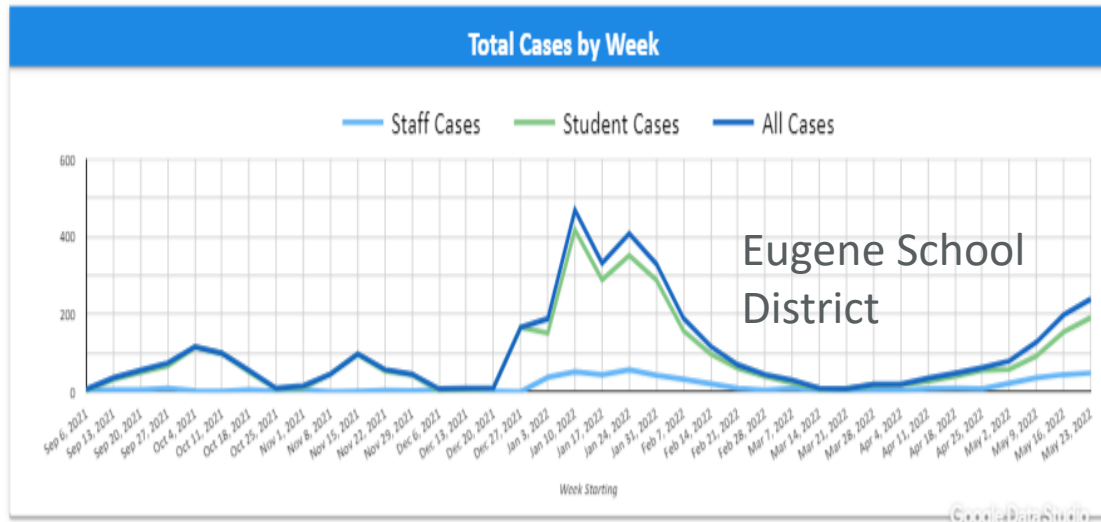
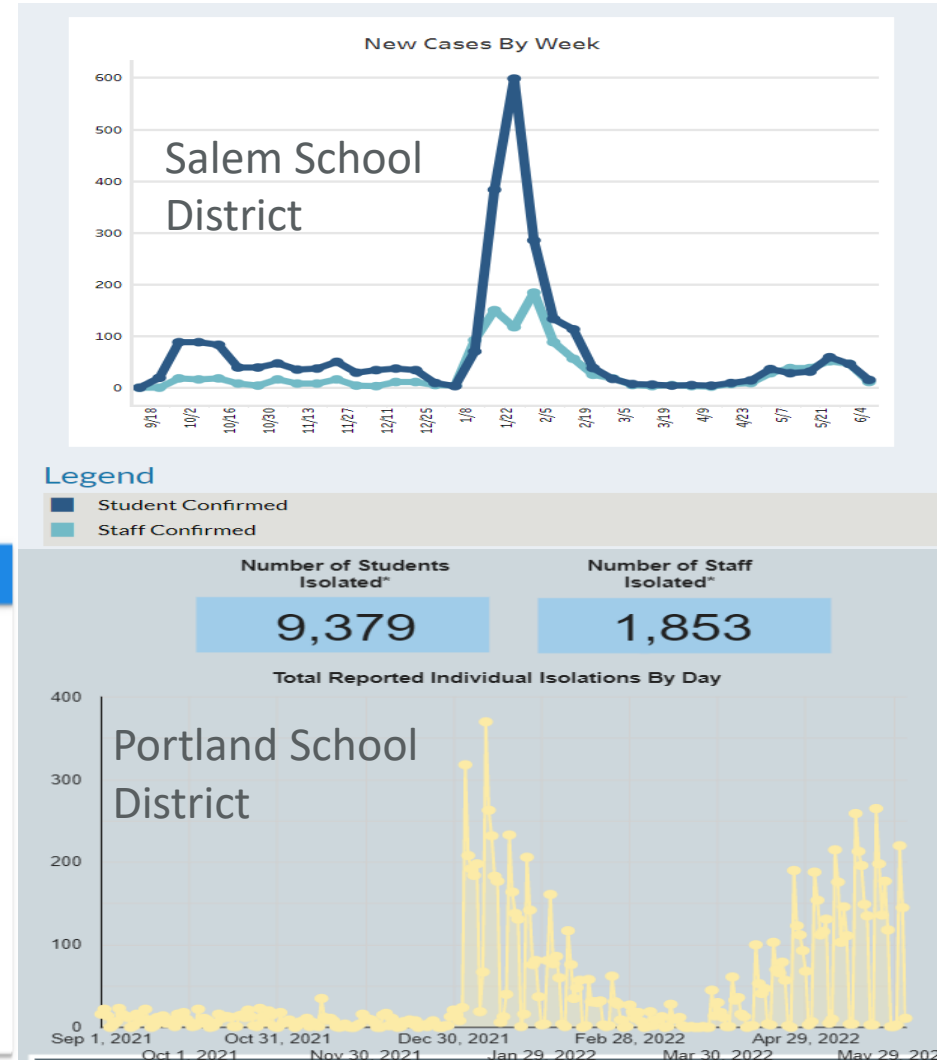


School Infection Levels

School district data are shown both as a measure of impact of COVID on kids and because schools accept at-home test results to indicate cases.

Eugene continues to increase while Salem and Portland appear to have peaked.

The levels in Portland are similar to during the BA1 wave.



Acknowledgments

Each week this model requires updates, input and expertise from many people.

I would like to thank Dr. William Messer for his assistance in understanding waning dynamics, Brian O’Roak and Xuan Qin, at OHSU, for their expertise to understand genetic sequencing information, and the hospital forecasting workgroup for their feedback on weekly forecasts, including collaboration with Julie Maher and Erik Everson at Multnomah County PDES.

Thank you!

Specifications

- Specifications:
- Spread: Omicron is faster spreading due to shorter recovery period (12 days vs 9 days with R0 at 6.5). BA2 faster than BA1 by 23%.
- Immune Escape during Omicron: 72%
- Behavior: Decreased NPI pattern.
- Hospitalization Rate: 15% of Delta
- ICU Rate of hospitalized: 80% of Delta
- Boosters: fitted with actuals and decline expected.
- Incidental: Estimated with community prevalence and calibrated with external estimates.
- Length of stay: shortening of stay over time. From 7 and 14 to 5 and 12 days for those with and without ICU.
- Days from exposure to admission= decreasing from 12 to 8 days.
- Recovery period=12 days prior to Omicron and 9 days for Omicron.