Virginia COVID-19 Surveillance Data Update

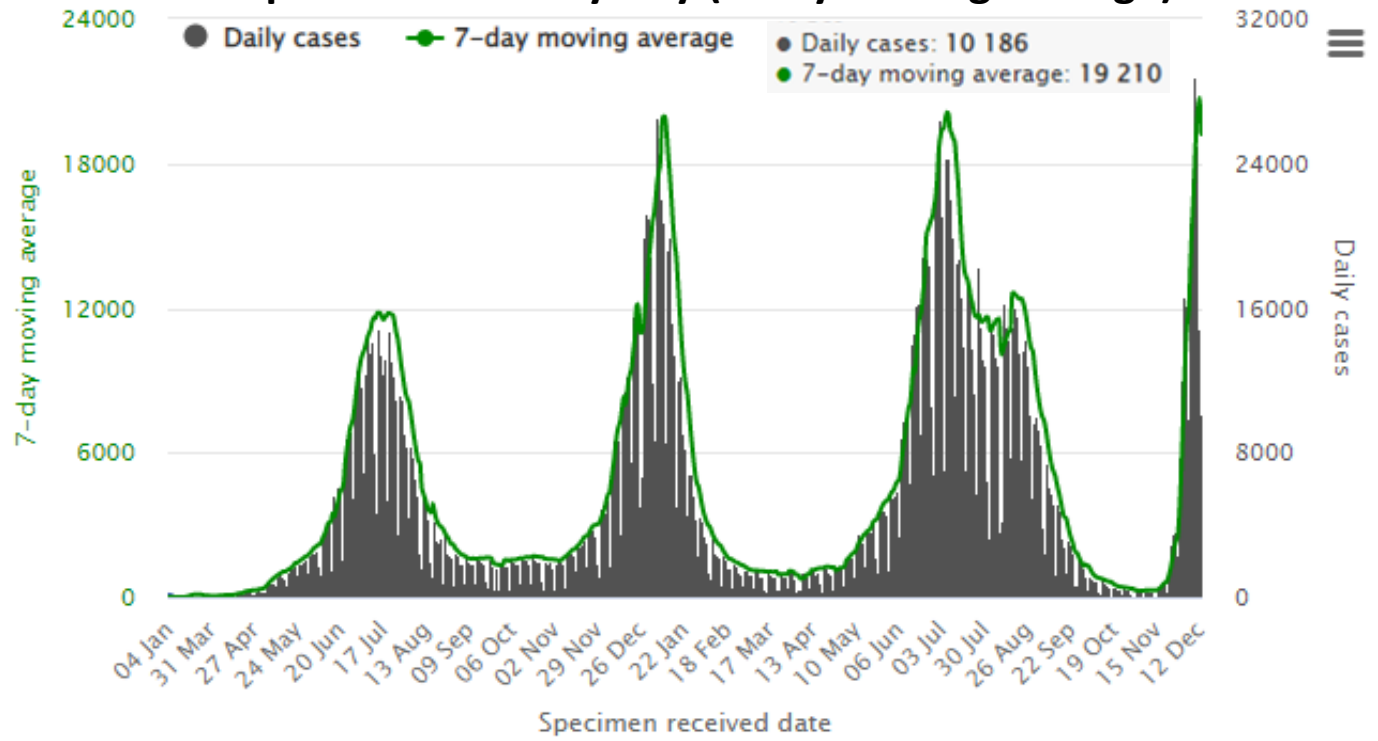
December 16, 2021

VIRGINIA'S HEALTH IS IN OUR HANDS.
Do your part, stop the spread.

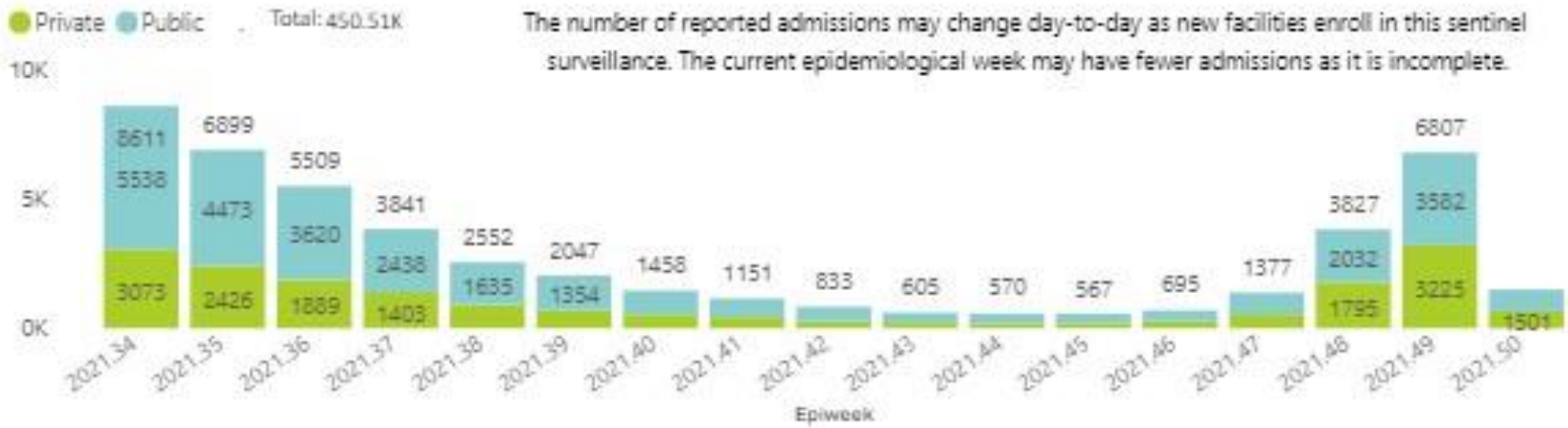
Omicron in South Africa Update

Updated 12/14

Epidemic Curve by Day (7-day moving average)



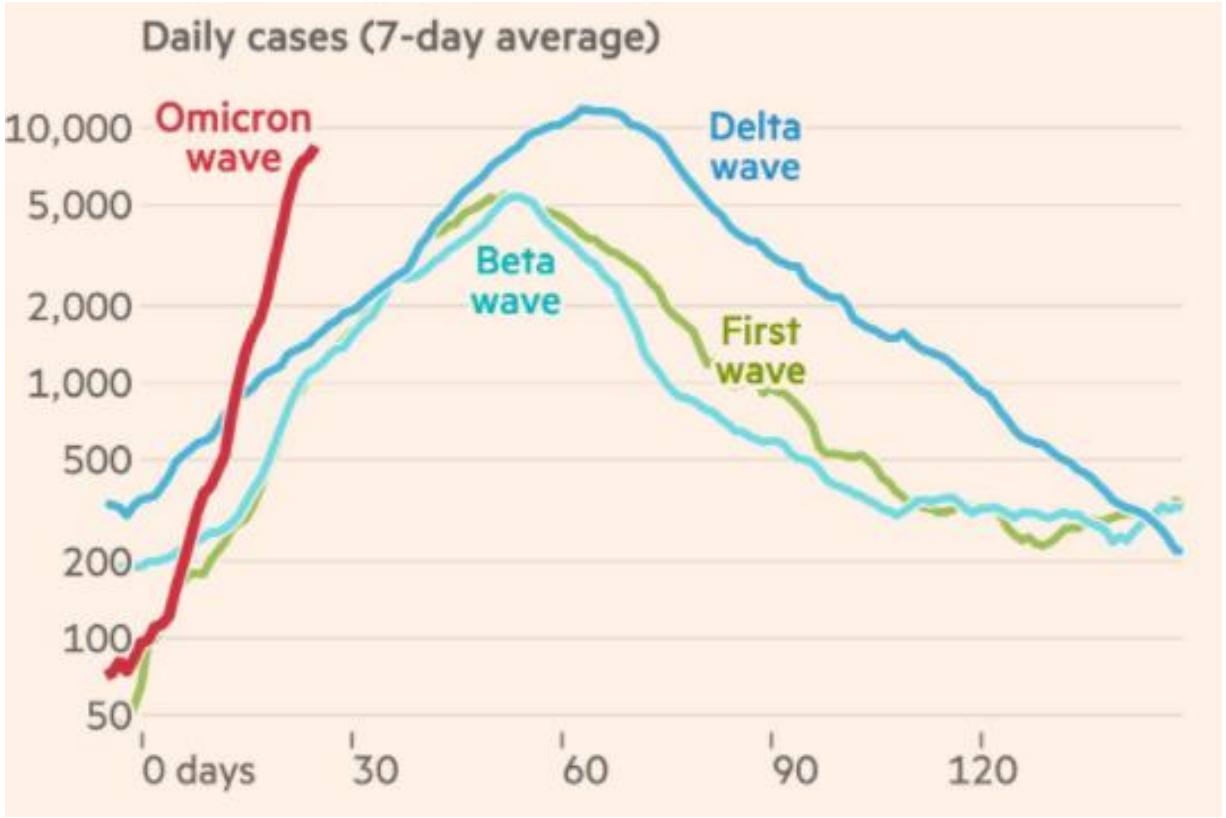
South Africa COVID-19 Hospitalizations



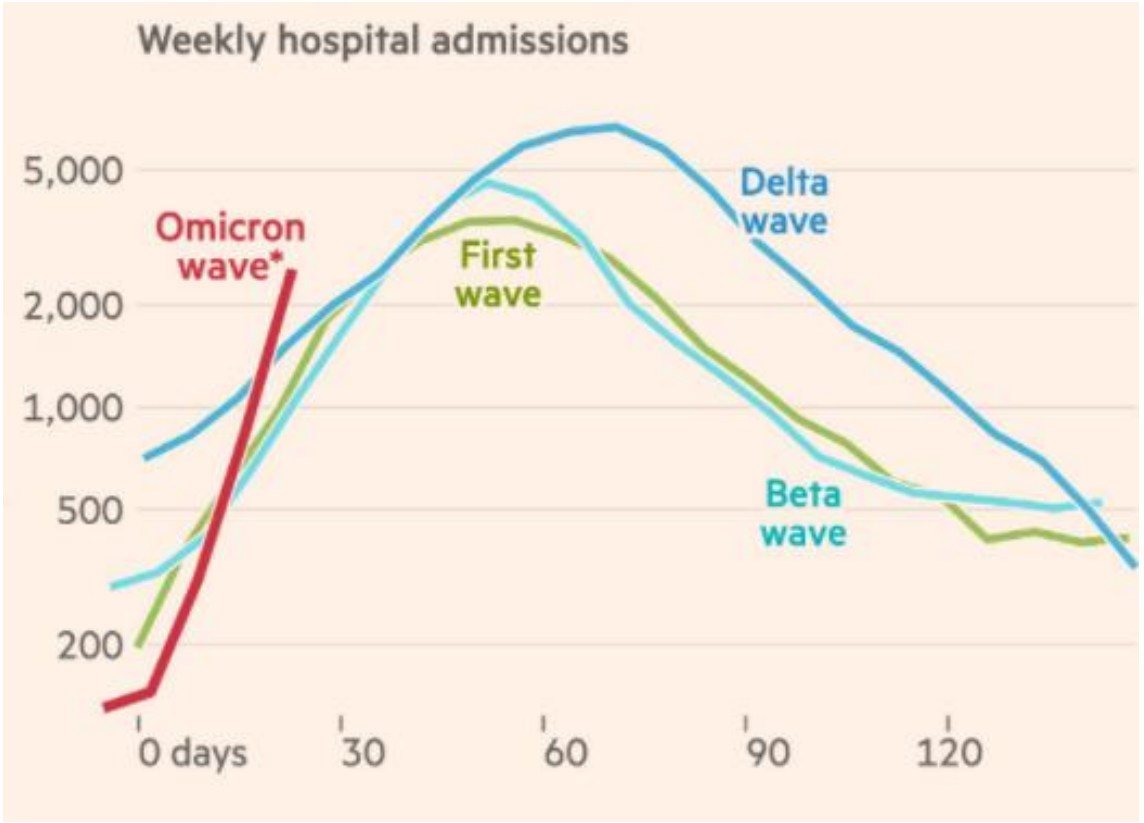
Omicron Cases and Hospital Admissions in Gauteng Province, South Africa

Updated 12/14

Cases by Number of Days



Hospital Admissions by Number of Days



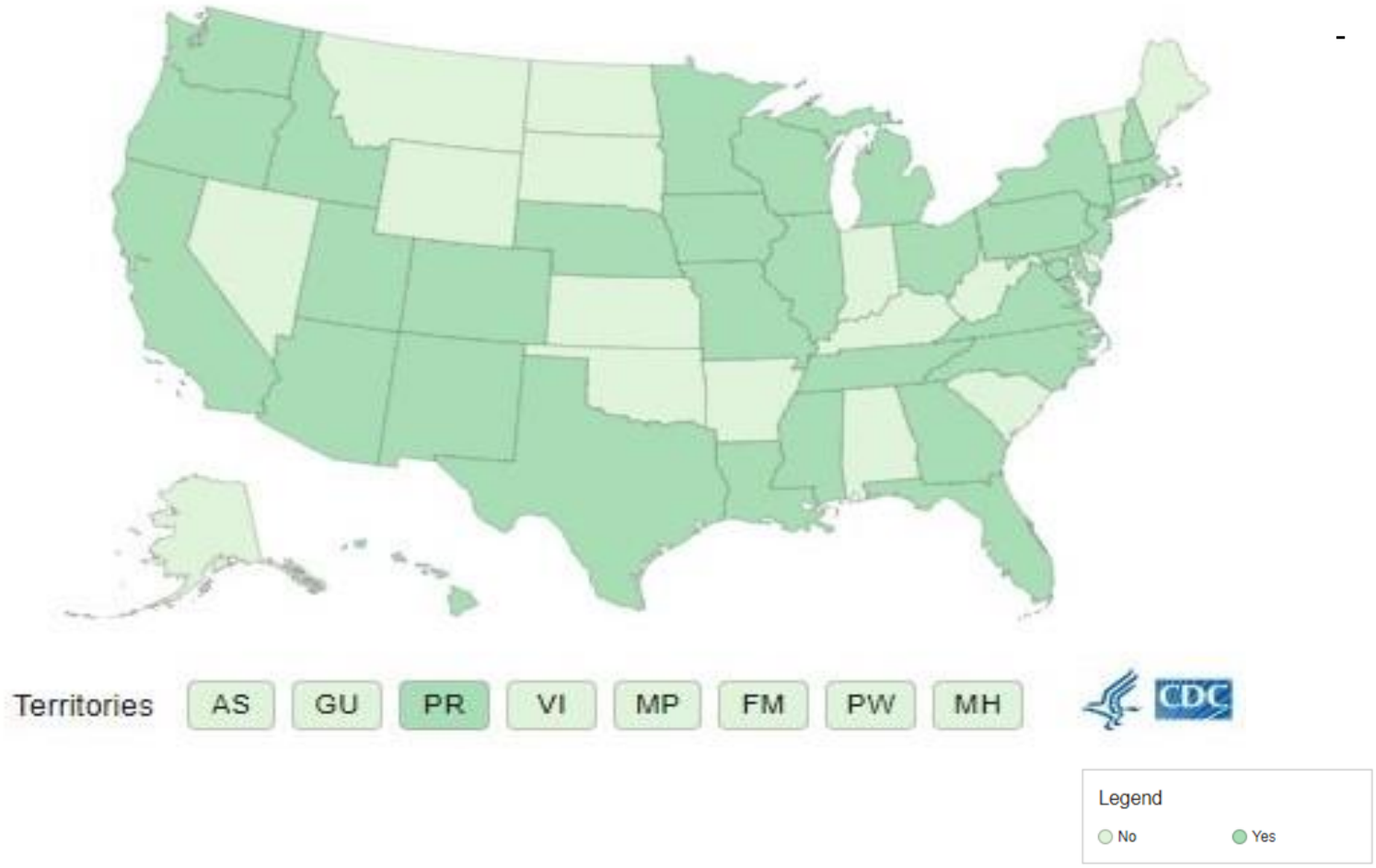
*Start of wave defined as when 7-day average of cases rose for 7 successive days

Source: Financial Times analysis of data from South Africa's National Institute for Communicable Diseases

CDC Omicron Update (MMWR Release 12/10)

Updated 12/15

US States with COVID-19 Cases Caused by Omicron Variant



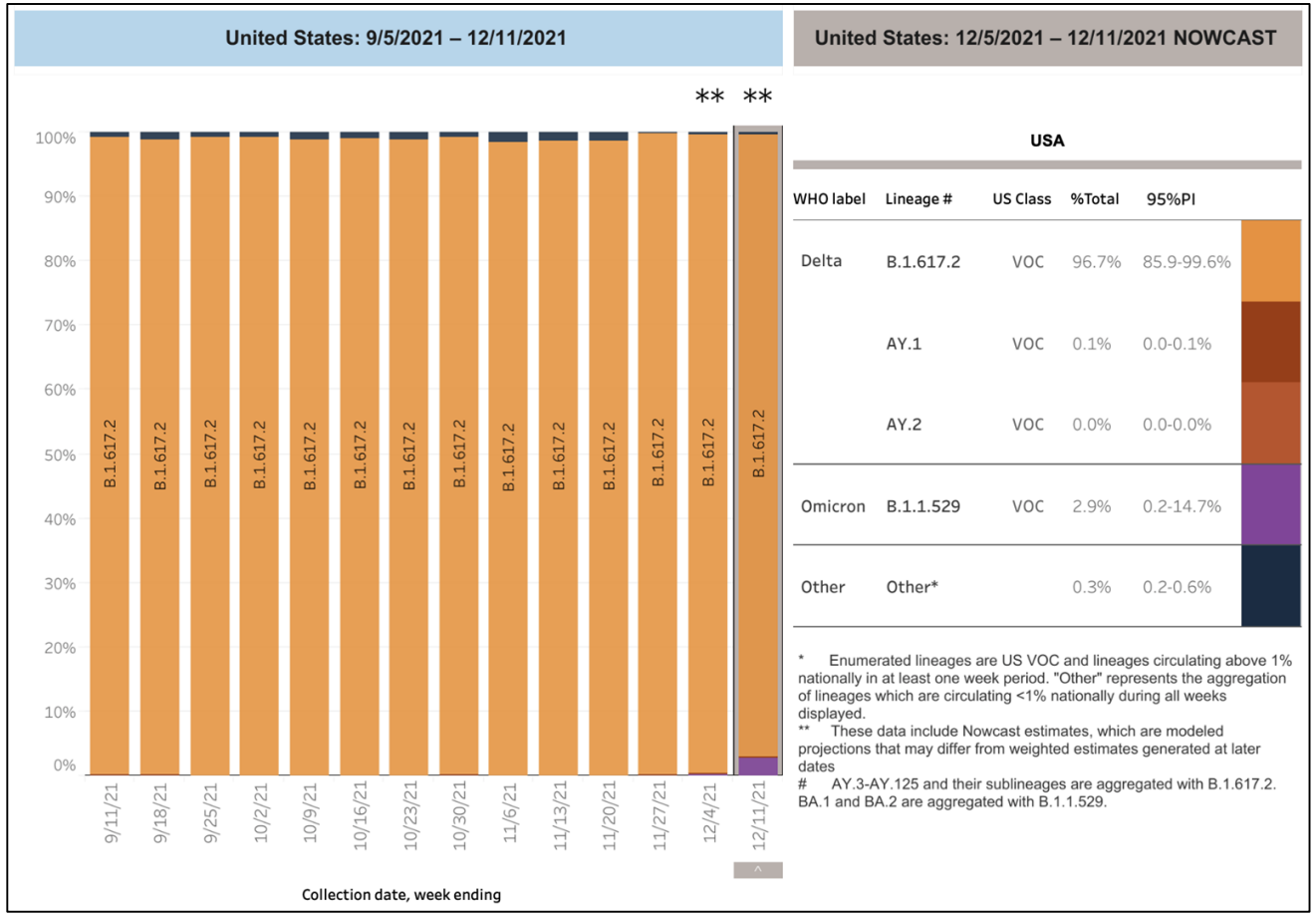
The Omicron variant has been detected in 35 states and jurisdictions (as of 12/15):

- MMWR report details 43 cases attributed to the Omicron Variant:
  - **Symptoms**: Most commonly reported - cough, fatigue, congestion, and runny nose
  - **Severity**: One hospitalization and zero deaths
  - **Patient Profile**:
    - 79% of effected persons were previously vaccinated
      - 47% completed primary series
      - 33% received booster dose
    - 14% of persons were previously infected with COVID
    - 58% of persons were 18-39 years old

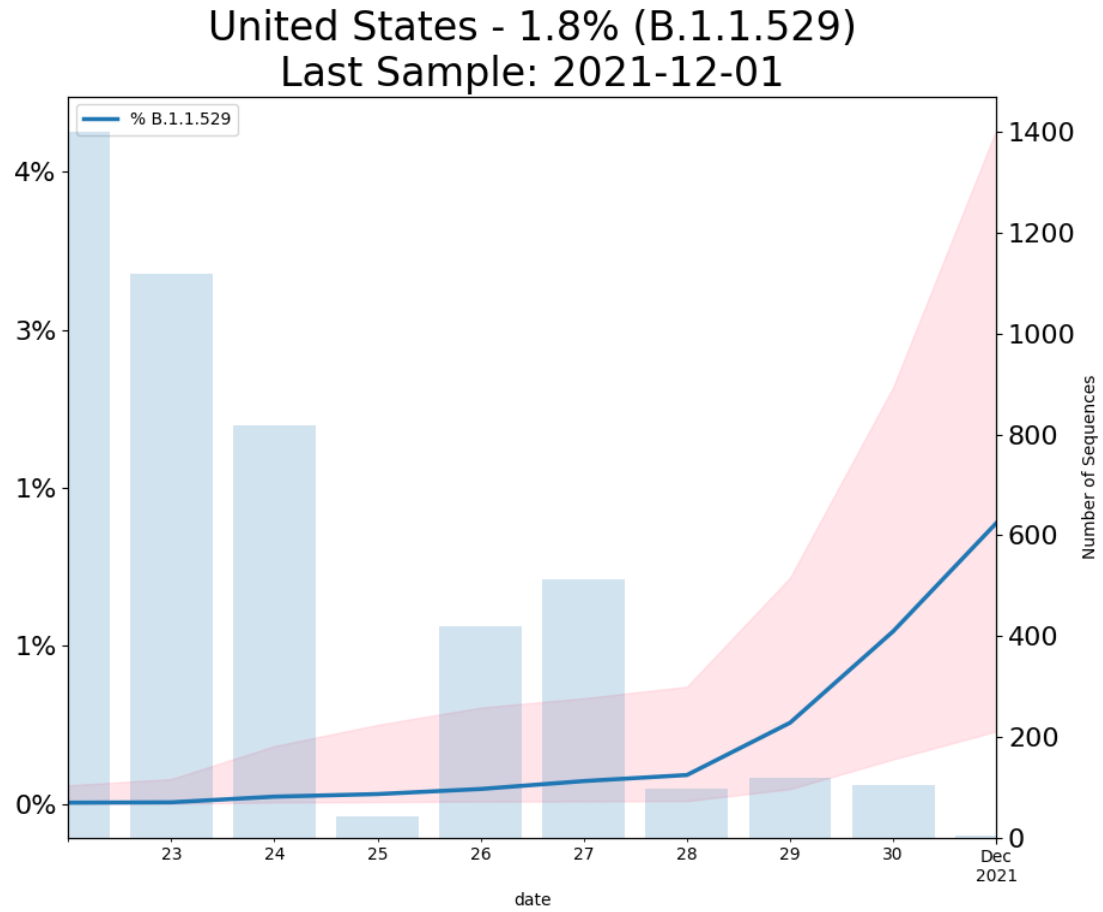
Source: SARS-CoV-2 B.1.1.529 (Omicron) Variant — United States, December 1–8, 2021 (cdc.gov)

U.S. Omicron Variant of Concern

National Omicron Prevalence: 0.4 to 2.9% in a week ~ 3 Doublings



Omicron ο – Lineage B.1.1.529



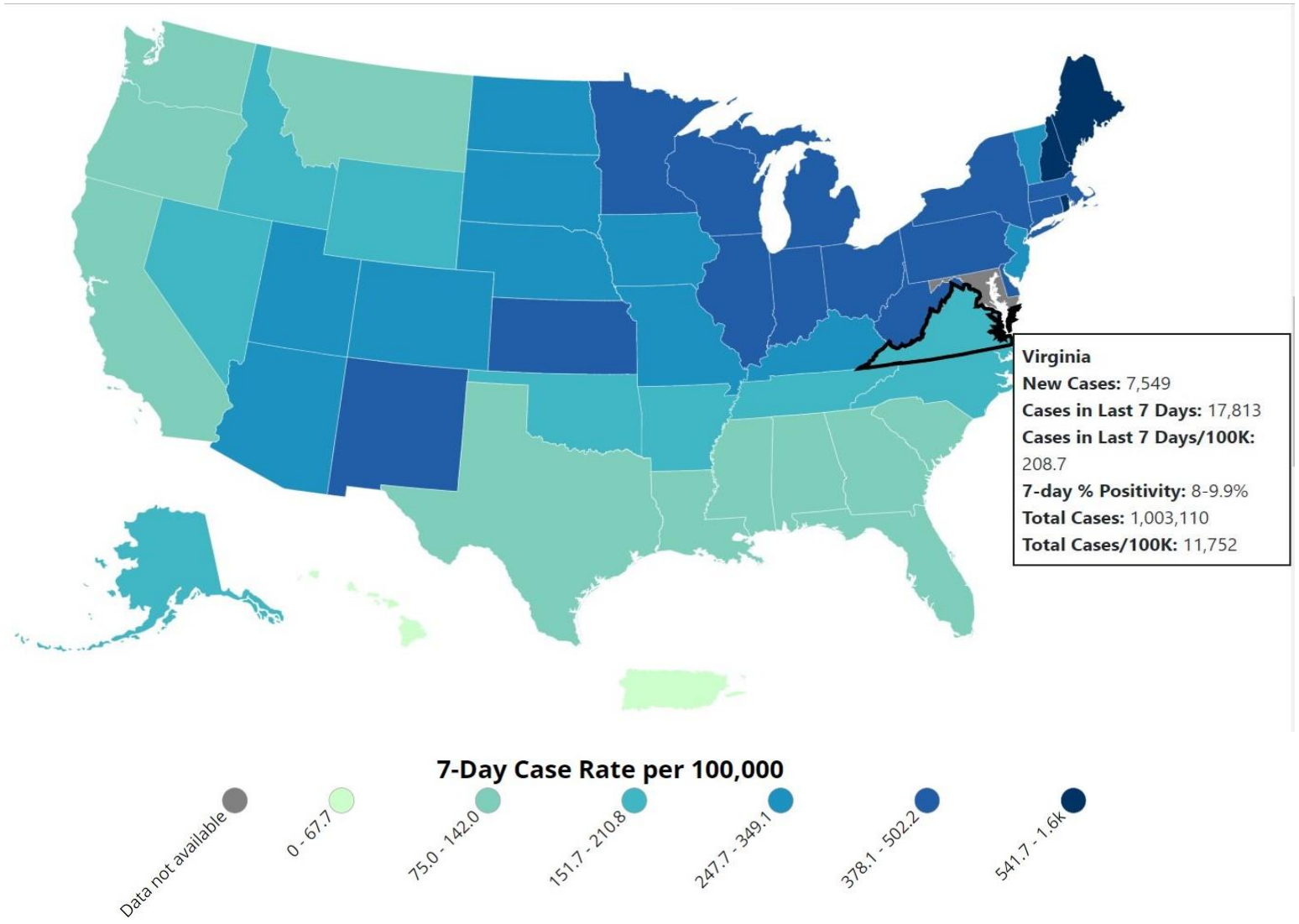
Source: outbreak.info; CDC Variant Tracking

UNIVERSITY of VIRGINIA
BIOCOMPLEXITY INSTITUTE

National: Weekly COVID-19 Case Rate

Updated 12/15

US COVID-19: 7-Day Case Rate per 100,000, by State/Territory



	Cases in the Last 7 Days Per 100k Population
Virginia	208.7 (+3.3%)
U.S.	248.6 (-2.9%)
New Hampshire	653.1 (-0.9%)
Rhode Island	638 (+14.1%)
Maine	541.7 (+35.1%)

Our Neighbors

Rates Higher than Virginia

West Virginia, **382.5** (-5.1%)
Kentucky, **338.4** (-0.2%)
North Carolina, **210.8** (+2.8%)

Rates Lower than Virginia:

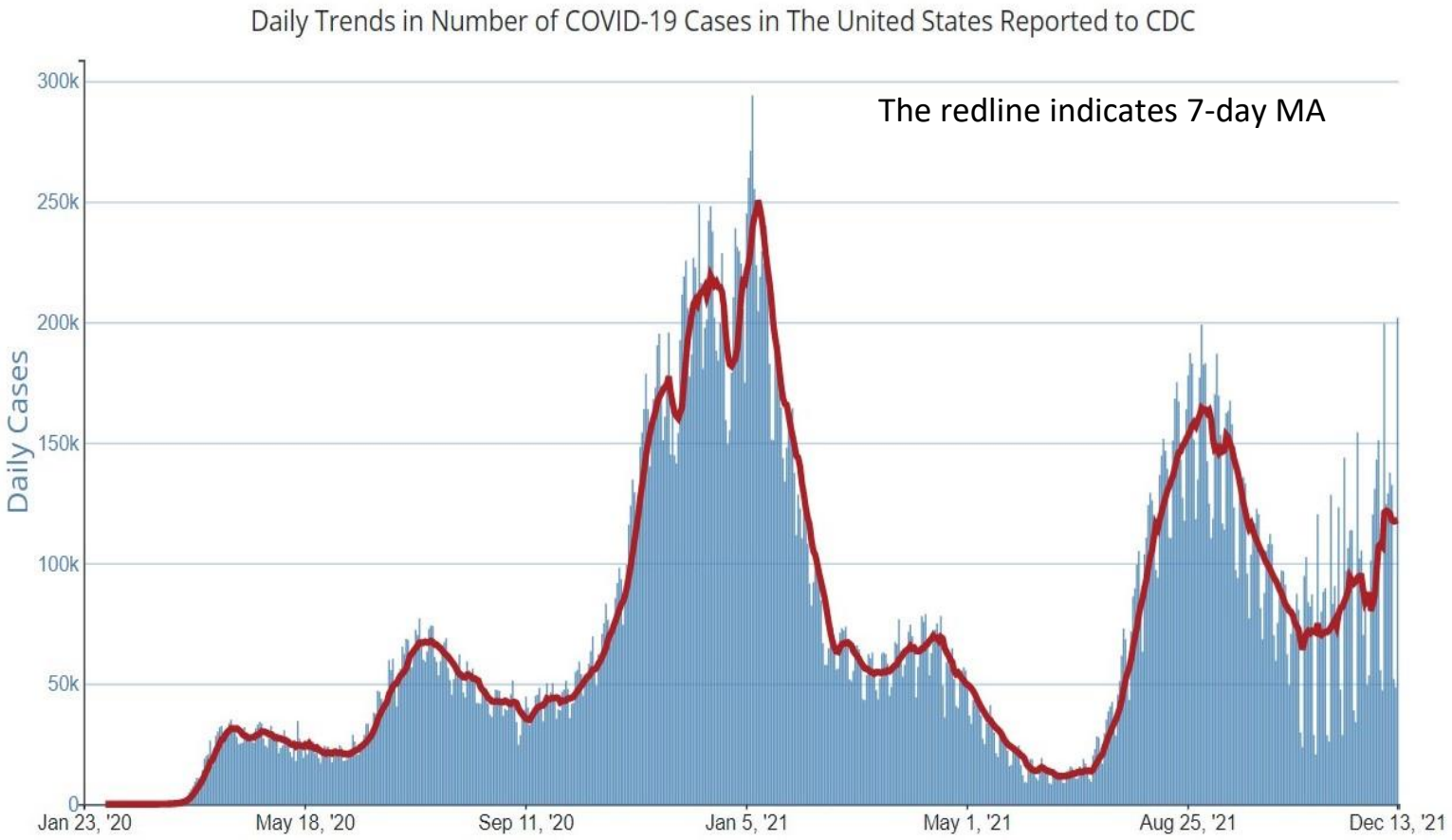
District of Columbia, **99.8** (-42%)

*Maryland, **N.A.**

Source: CDC COVID Data Tracker Please note rate change comparisons are from the previous week's data.

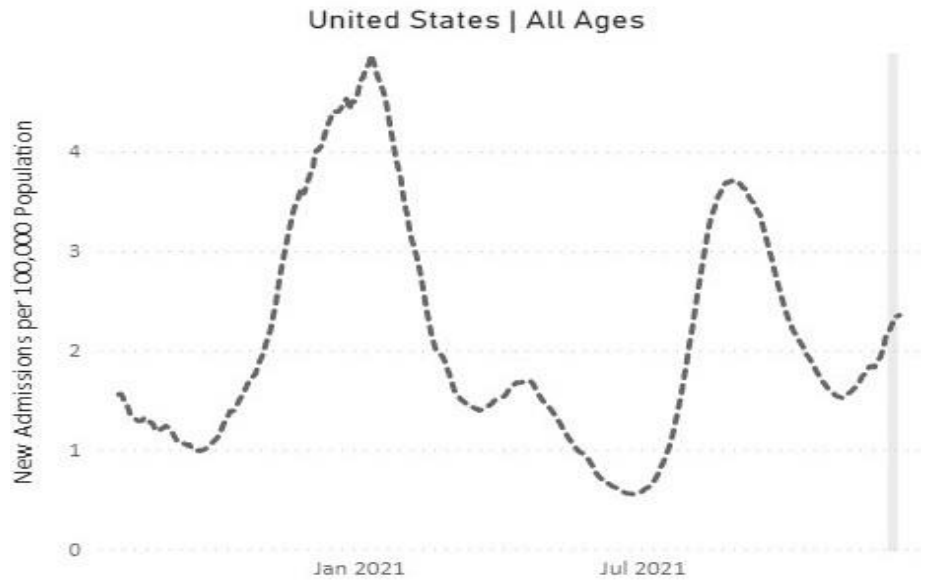
National: Cases, Hospitalizations, and Deaths

Updated 12/15



- Compared to last week, **cases** decreased to 117,890 (7-day MA) per day (-2.5%)
  - 53% lower than the January peak of 2021
  - 1237% higher than the June low of 2021
  - 28% lower than the September high of 2021
- **Hospitalizations** increased to 7,803 (7-day MA) per day (+7.7%)
- **Deaths** increased to 1,147 per day (+4.7%)

Hospitalization Trends

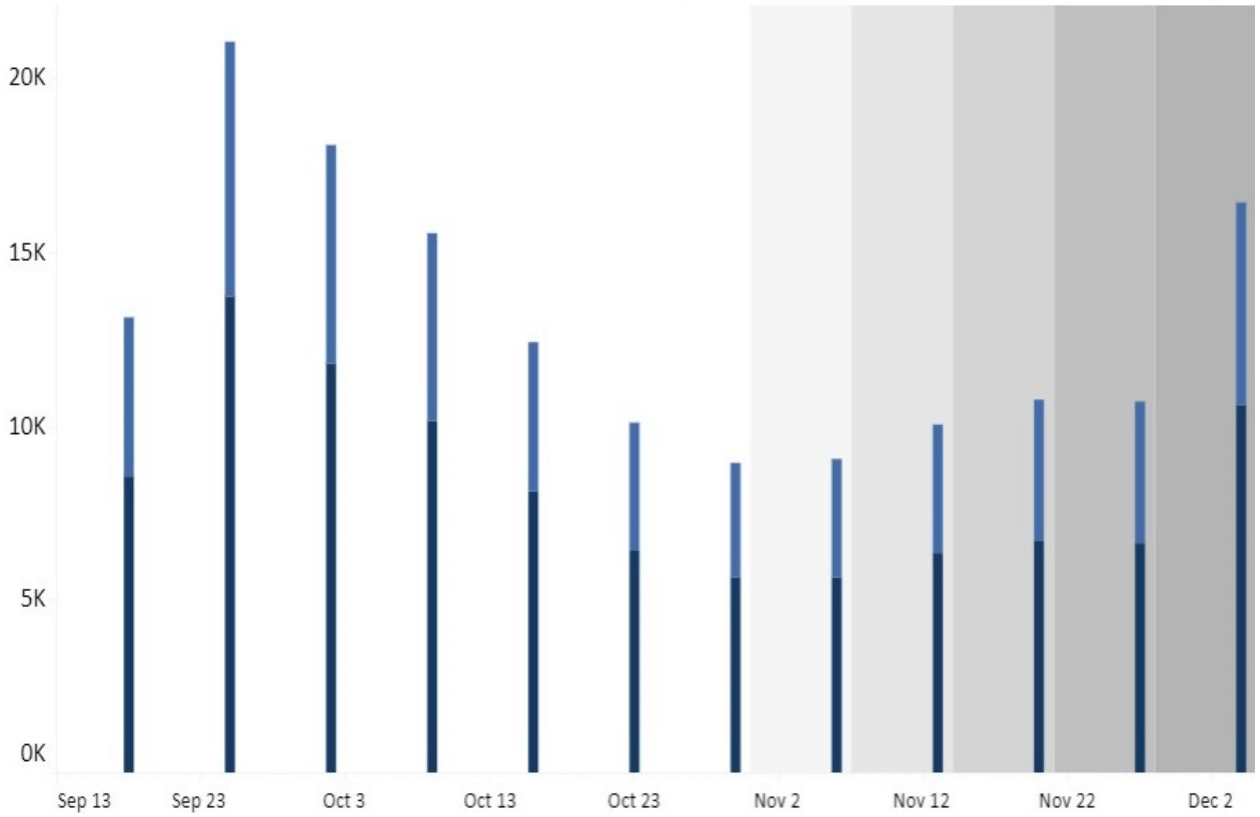


Source: CDC COVID Data Tracker

Virginia: Cases, Hospitalizations, and Deaths

Updated 12/8

Cases by Date of Symptom Onset, Past 13 weeks



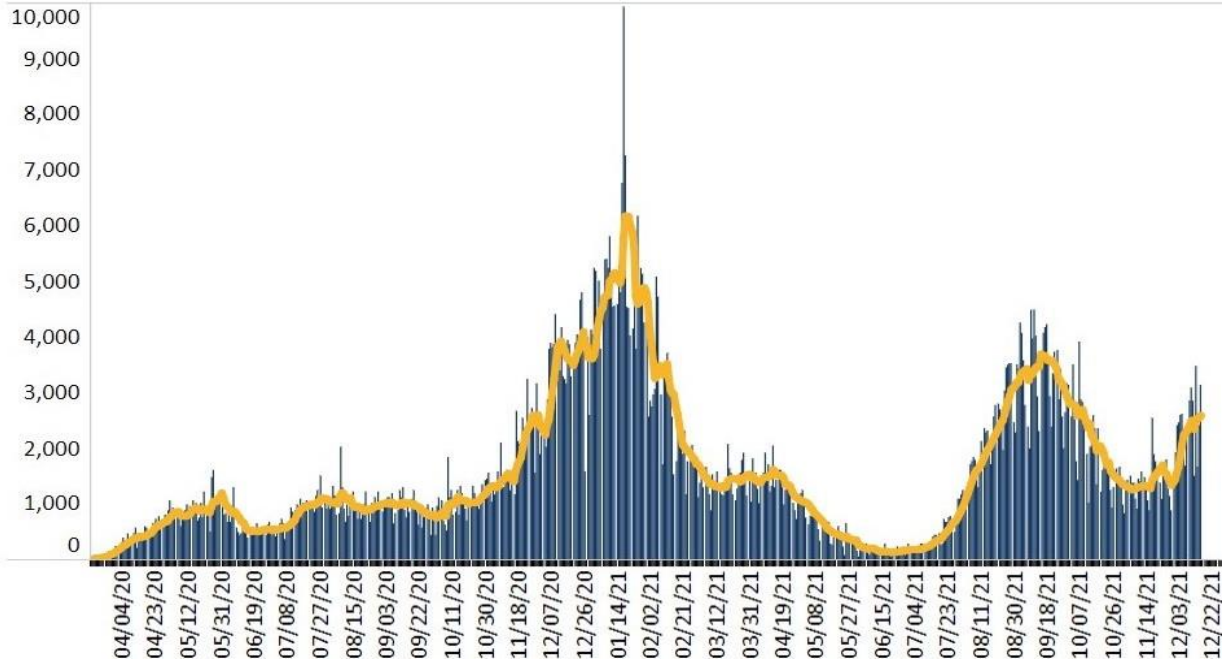
Gray shaded area illness may not have been reported yet

Compared to last week, **cases increased** to 2,585 (7-day MA) from 2,374 per day (+8.9%)

- 58% lower than the January peak of 2021
- 30% lower than the September high of 2021

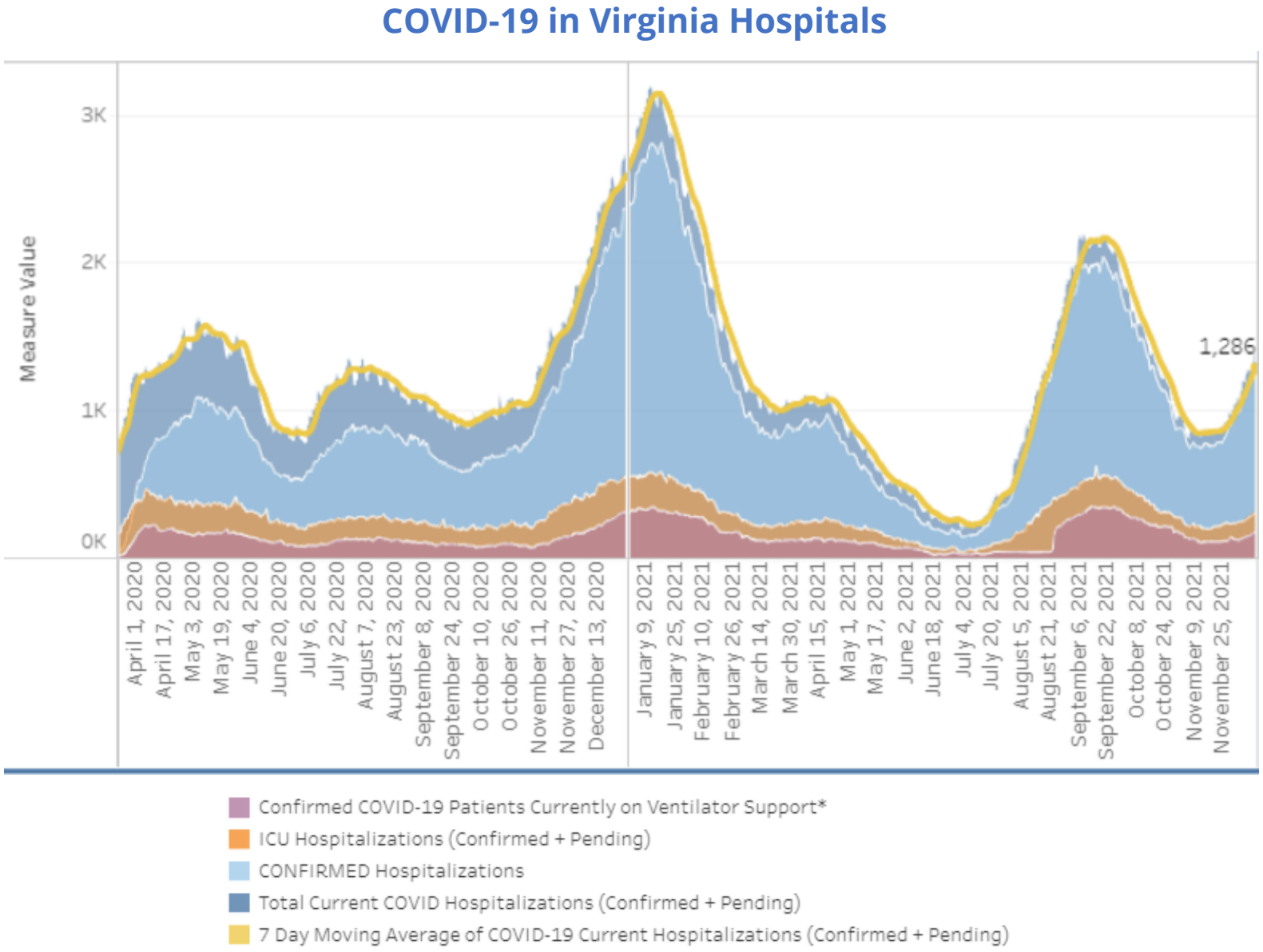
- **Hospitalizations** increased to 1,286 per day (+19%)
- **Deaths** increased to 26.7 per day (+73%)

Cases by Date Reported, All Reporting Timeline



Source: Cases – Coronavirus (virginia.gov), Cases and Deaths - Coronavirus (virginia.gov), VHHA Hospitalizations – Coronavirus (virginia.gov), Data represent a 7-day moving average

Virginia Hospitalization Trends



Hospitalizations have **increased 50%** since the Thanksgiving Holiday (November 25, 2021)

Compared to last week hospitalizations **increased to 1,286** (7-day MA) from 1,085 (+19%)

- 41% lower than the September high of 2021

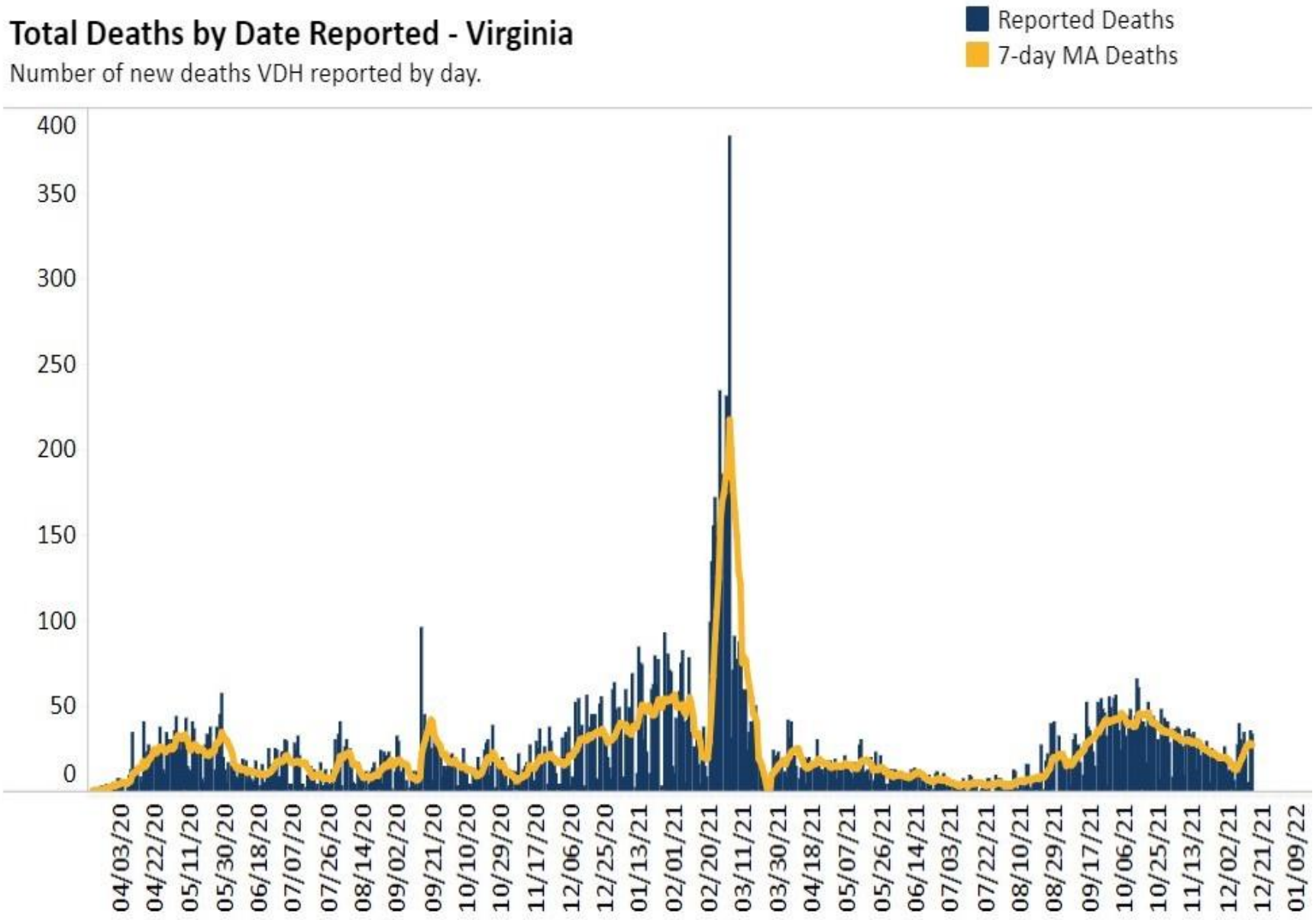
Compared to last week. ICU hospitalizations have **increased to 324** from 250 (+30%)

174 patients are currently on ventilator support

- 51% lower than the September high of 2021
- 35% lower than the December 15th, 2020, Hospitalization Rate

Virginia: Death Trends

Updated 12/15



Virginia has seen a **50% increase** in COVID-19 deaths over the last 2 weeks

- 11% lower than the COVID-19 deaths reported last year at this time (December 15, 2020)
- 41% lower than the October 2021 high

Source: Cases and Deaths by Date Reported - Coronavirus (virginia.gov)

Virginia: Regional Metric Summary

Updated 12/14

Metrics date: 12/12/2021

	Central	Eastern	Far Southwest	Near Southwest	Northern	Northwest
New cases per 100k within the last 7 days	206.7 ↑	151.8 ↑	356.1 ↓	269.3 ↑	160.4 ↑	285.4 ↑
% Positivity 7-day moving average	8.7% ↑	8.8% ↑	14.0% ↓	12.2% ↑	5.6% ↑	12.6% ↑
COVID-like ED visits rate per 100k	21.3 ↓	13.8 ↓	21.4 ↓	23.5 ↑	9.1 ↑	15.3 ↑

Burden	Level 0	Level 1	Level 2	Level 3	Level 4
New Cases	<10	10-49		50-100	>100
% Positivity	<3	3-5	5-8	8-10	>10
CLI ED Visits	<4		4-5.9		≥6

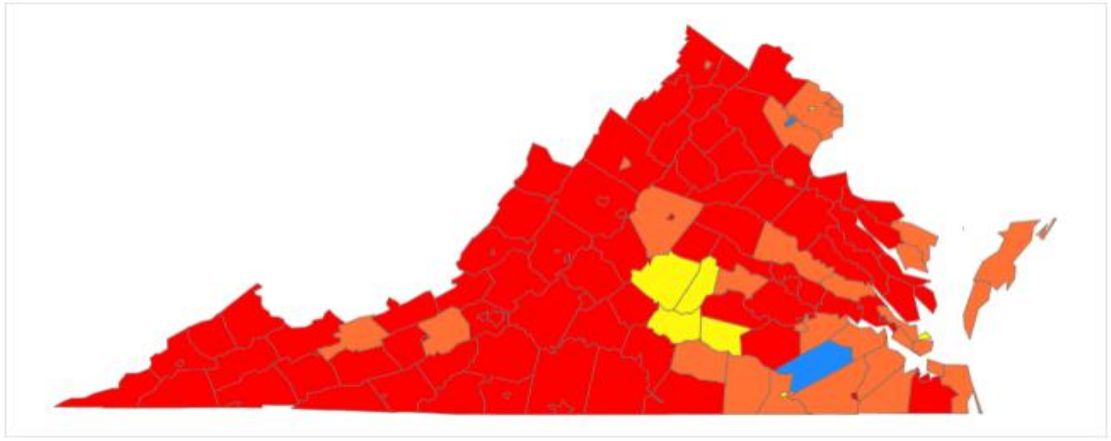
Symbol	Trend
↑	Increasing
↓	Decreasing
○	Fluctuating

Please note: the methods used this week have changed slightly; data is now compared from Sunday to Sunday instead of Wednesday to Wednesday

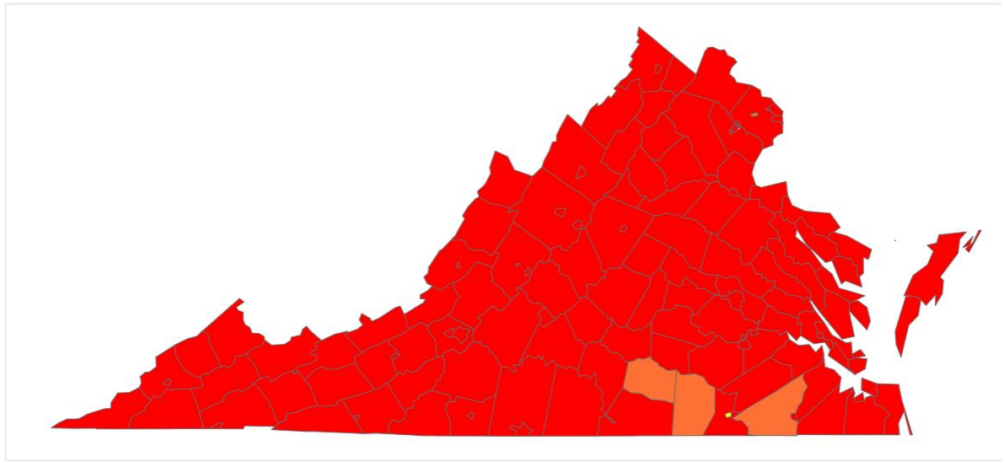
Source: Region Metrics – Coronavirus

*Data represents a 7-day moving average, trends compared to 1 week ago comparing end of week totals from Sunday to Sunday

Level of Community Transmission



December 2, 2021



December 16, 2021

Community Transmission Levels	Low Transmission	Moderate Transmission	Substantial Transmission	High Transmission
Total new cases per 100,000 persons in the past 7 days	0-9.99	10-49.99	50-99.99	≥100
Percentage of NAATs that are positive during the past 7 days	0-4.99%	5-7.99%	8-9.99%	≥10.0%

COVID-19 Burden in Virginia LTCFs

Questions can be directed to: hai@vdh.virginia.gov

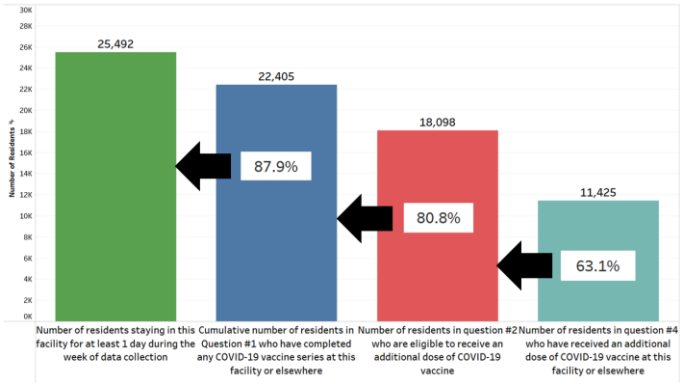
Updated 12/14/2021

Key Trends

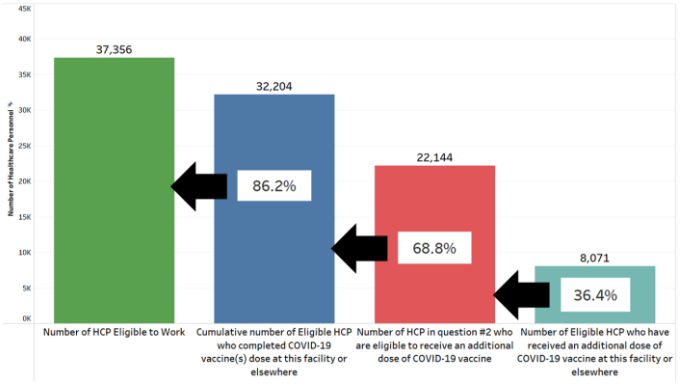
- Outbreaks in LTCFs have accounted for 24% of total COVID-19 outbreaks in Virginia.
  - There were **56 LTCF COVID-19 outbreaks reported in the past 30 days**: 17 in Southwest, 16 in Northwest, 12 in Central, 10 in Eastern, and 1 in Northern *(see figure top right)*.
- The number of reported resident and staff cases have increased in recent weeks *(see figure bottom right)*.
  - For the reporting week ending December 5, 2021, 96 resident and 89 staff cases were reported to NHSN.
- For reporting week ending December 5, 2021, data reported from 281 nursing homes showed **88% of residents were fully vaccinated**; data reported from 281 nursing homes showed **86% of staff were fully vaccinated** *(see figure bottom left)*.
  - Of the 18,098 residents eligible to receive an additional dose or booster, 11,425 (63%) have received an additional dose or booster of COVID-19 vaccine.
  - Of the 22,144 healthcare personnel eligible to receive an additional dose or booster, 8,071 (36%) have received an additional dose or booster of COVID-19 vaccine.
  - Twenty-five (9%) nursing homes reported that **no** eligible residents have received an additional dose or booster of COVID-19 vaccine at the time of reporting.

COVID-19 Booster Vaccination in Virginia Nursing Homes (n=286)

Nursing Home Residents

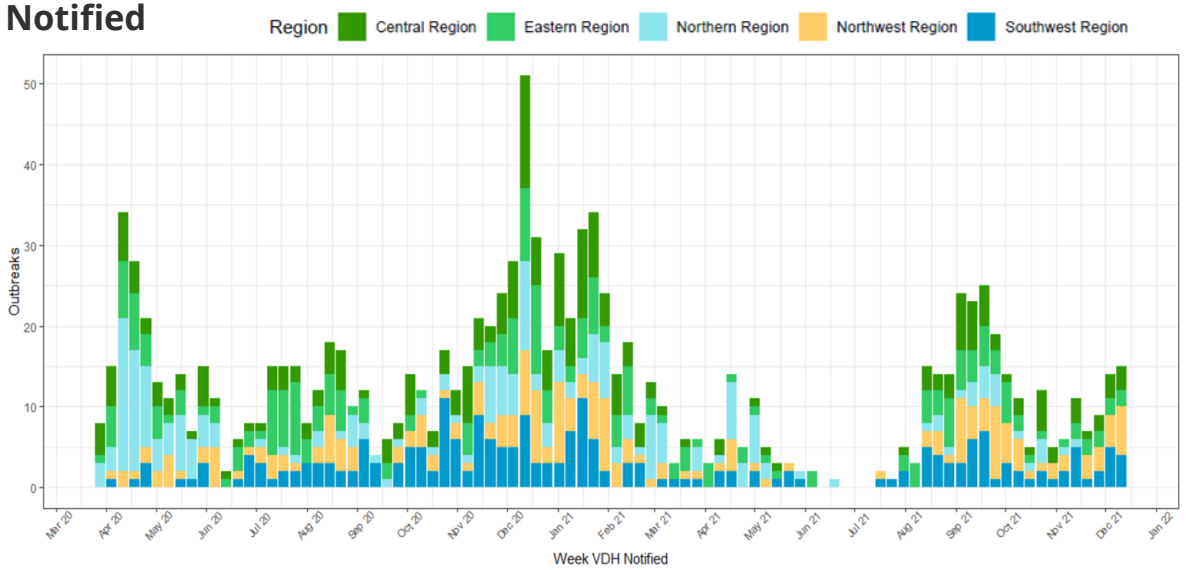


Nursing Home Staff



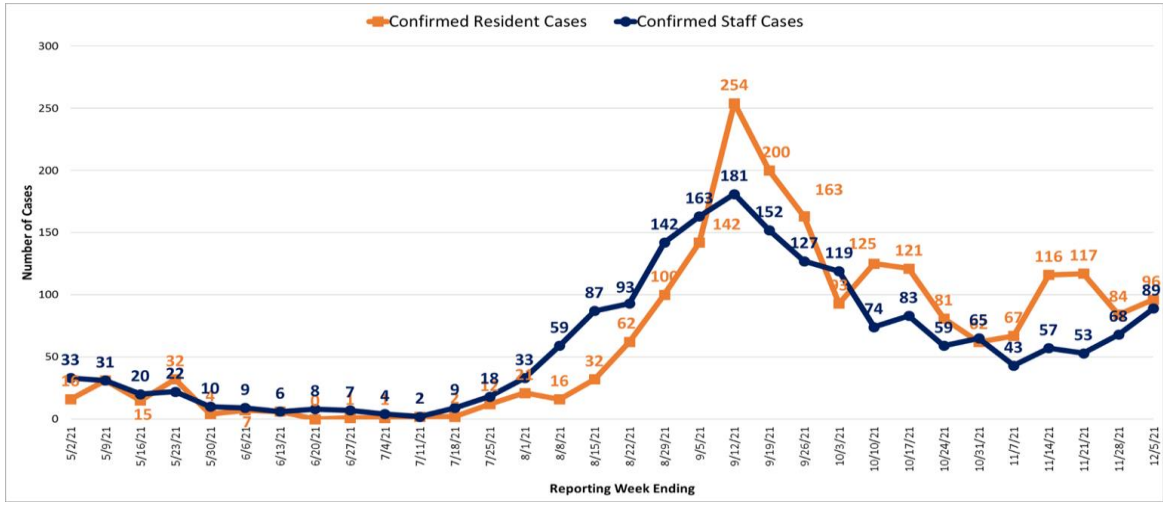
Data are from the National Healthcare Safety Network (NHSN) as of 12/14/2021 and are subject to change, including booster eligibility per updated vaccine guidance. In Virginia, 281 nursing homes reported resident vaccination data for reporting week ending 12/5/2021; 281 nursing homes reported staff vaccination data for reporting week ending 12/5/2021. For staff type definitions, refer to NHSN Table of Instructions.

Number and Region of LTCF COVID-19 Outbreaks by Date VDH Notified



Includes outbreaks reported from nursing homes, assisted living facilities, and multicare facilities to VDH with a confirmed or suspected etiologic agent of SARS-CoV-2; updated 12/13/2021.

Nursing Home Resident and Staff COVID-19 Cases



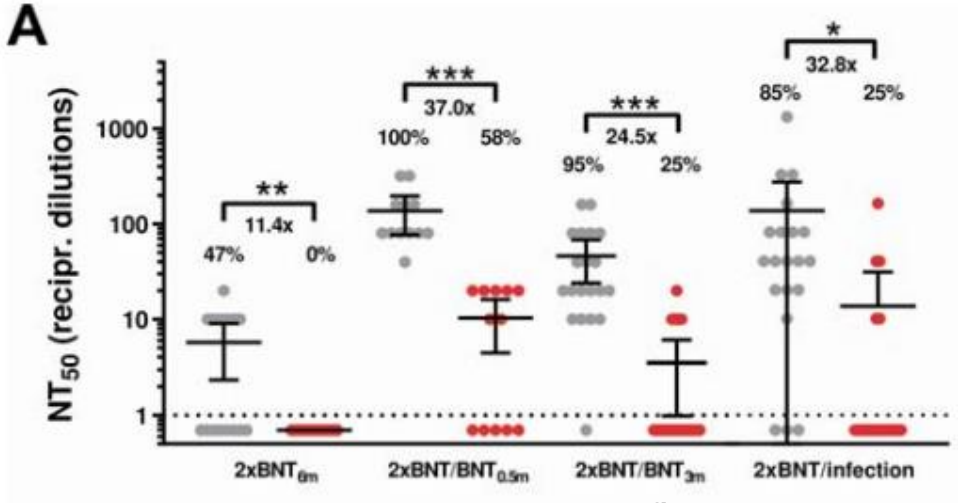
Data are from NHSN as of 12/14/2021 and are subject to change. For reporting information, please refer to the NHSN data collection forms: residents, staff.

Reduced Neutralization of SARS-CoV-2 Omicron Variant by Vaccine Sera and monoclonal antibodies: December 8, 2021

An in vitro study conducted in Germany looked at the efficacy of vaccines and monoclonal antibodies on Omicron compared to Delta

- In vitro findings demonstrated the **neutralization efficacy of vaccines and monoclonal antibodies is severely reduced against Omicron**.
- **Omicron is resistant to casirivimab and imdevimab** (2 main monoclonal antibodies) and more genotyping will be needed before monoclonal antibodies can be utilized to aid with Omicron.
- Based on Omicron's impact, researchers may need to consider creating new variant specific vaccines and monoclonal antibodies to treat and prevent COVID-19.
- Also consider that this study only looks at COVID-19 from an antibody specific level and not from a whole immune system perspective
- **When considering T-cell and B-cell response another study conducted showed that 92% of individuals with COVID-19 antibodies have T-cells that will respond and fight against Omicron despite the mutations that it has**

Vaccine Neutralization of COVID-19 Delta vs Omicron Pfizer Vaccine



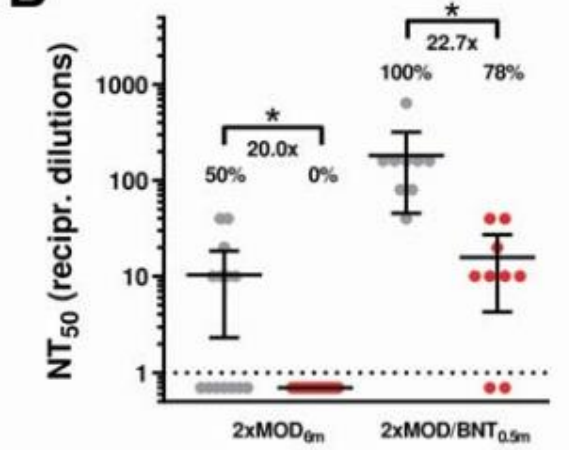
Pfizer no Booster 6 months after Vaccine

Pfizer + Booster 2 weeks after Vaccine

Pfizer + Booster 3 months after Vaccine

Pfizer + Infection

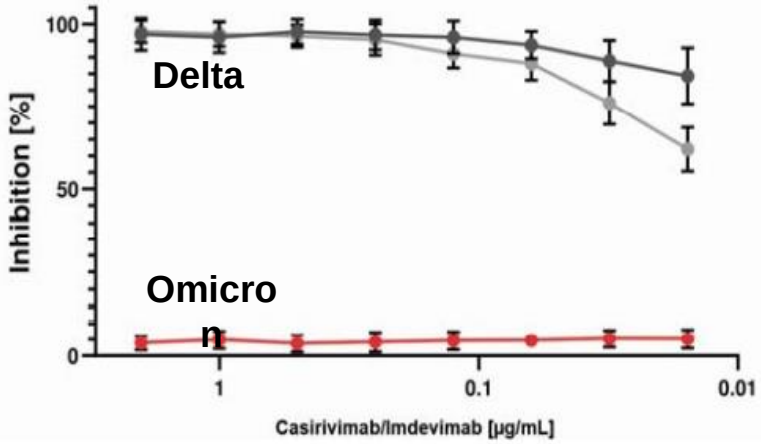
Vaccine Neutralization of COVID-19 Delta vs Omicron Moderna Vaccine & Heterologous Pfizer Booster



Moderna 6 months after vaccine

Moderna 2 weeks after Pfizer booster

Monoclonal Antibody Effectiveness at Inhibiting COVID-19 Delta vs Omicron



Red = **Omicron**
Gray = **Delta**
*** = level of Significance**
Bracketed number = reduction of efficacy

Literature Review: Emerging Omicron Variant

Updated 12/13

SARS-CoV-2 Omicron has extensive but incomplete escape of Pfizer BNT162b2 elicited neutralization and requires ACE2 for infections: December 9, 2021

African study investigating whether Omicron escapes antibody neutralization of vaccines via the ACE-2 receptor

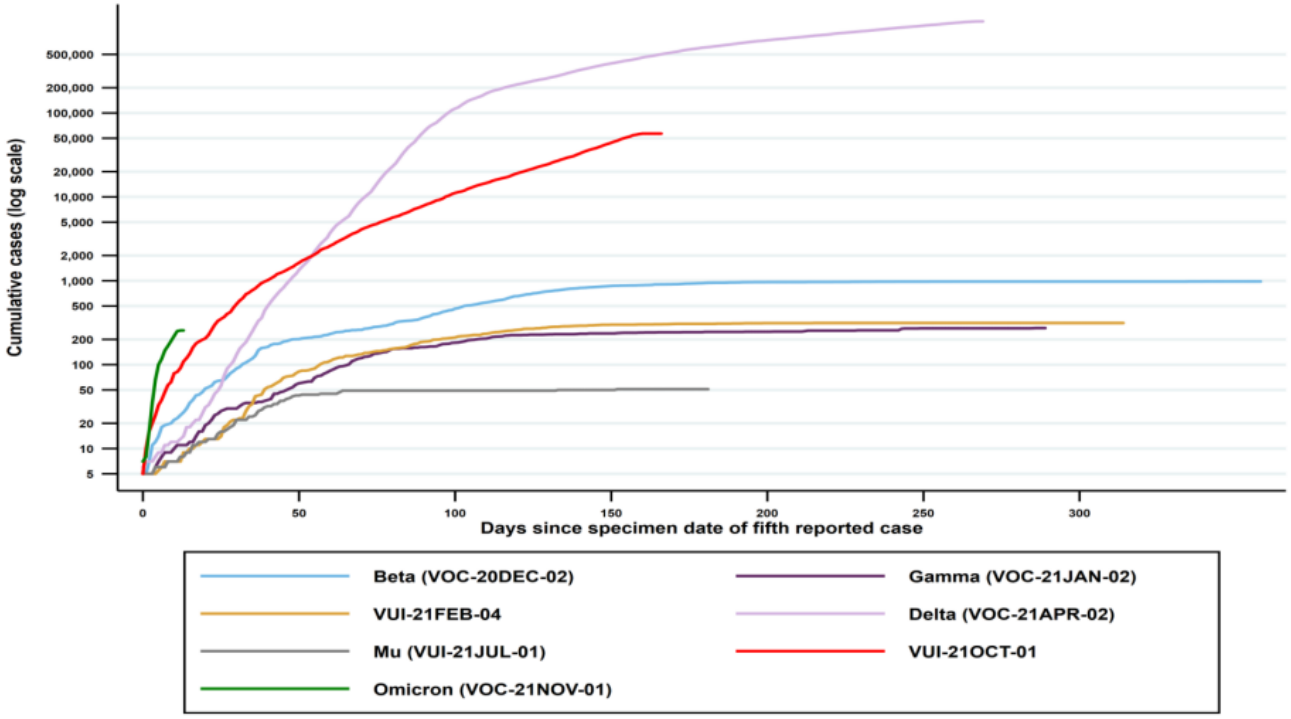
- In addition to Omicron's unique structure, **several mutations in the receptor binding domains of cells like the ACE-2** (a transmembrane protein) is predicted to increase transmission of disease.
- Virus still uses the ACE-2 receptors to infect cells, and the omicron variant now has a **higher rate of immune escape** than previous variants. This is likely due to the mutations in the receptor binding domains.
- Both previously infected and vaccinated individuals have higher neutralization levels that should protect them from severe disease in Omicron infection.

Enhancing Readiness for Omicron (B.1.1.529): Technical Brief and Priority Actions for Member States World Health Organization HQ: December 10, 2021

WHO developed policy recommendations for all countries and provided a series of data points for leaders to consider:

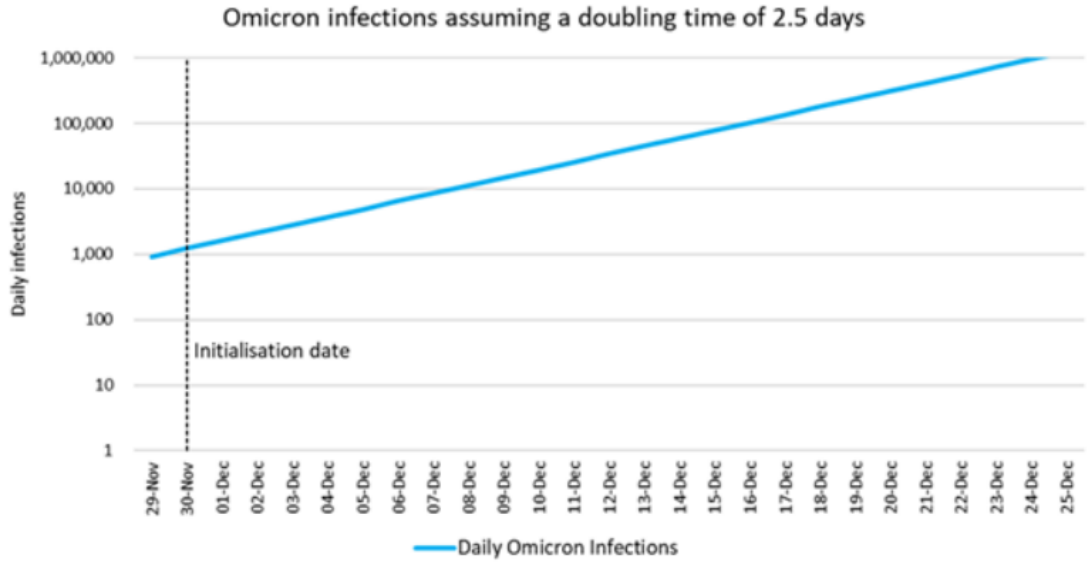
- Cases have been identified in 63 countries across all six WHO regions
- **Utilizing SGTF as a proxy for Omicron**, analysis from the UK Health Security Agency indicate the high uptick in cases (in week ending Dec 6th) suggest a **significant growth advantage of Omicron over Delta**. Similar estimates show a similar Omicron advantage over Delta in South Africa.
- The estimated daily reproductive number (Rt) in South Africa has gone from below 1 in early November to ranging as high as 3 within Gauteng Province (the epicenter of Omicron), and researchers find that targeted sampling along side lagged data can impact these estimates.

Cumulative COVID cases in England Grouped by Variant After the Fifth Reported Case (as of 12/5)



"Variants under Investigation"
Mu (VUI-21JUL-01)
VUI-21OCT-01
VUI-21FEB-04

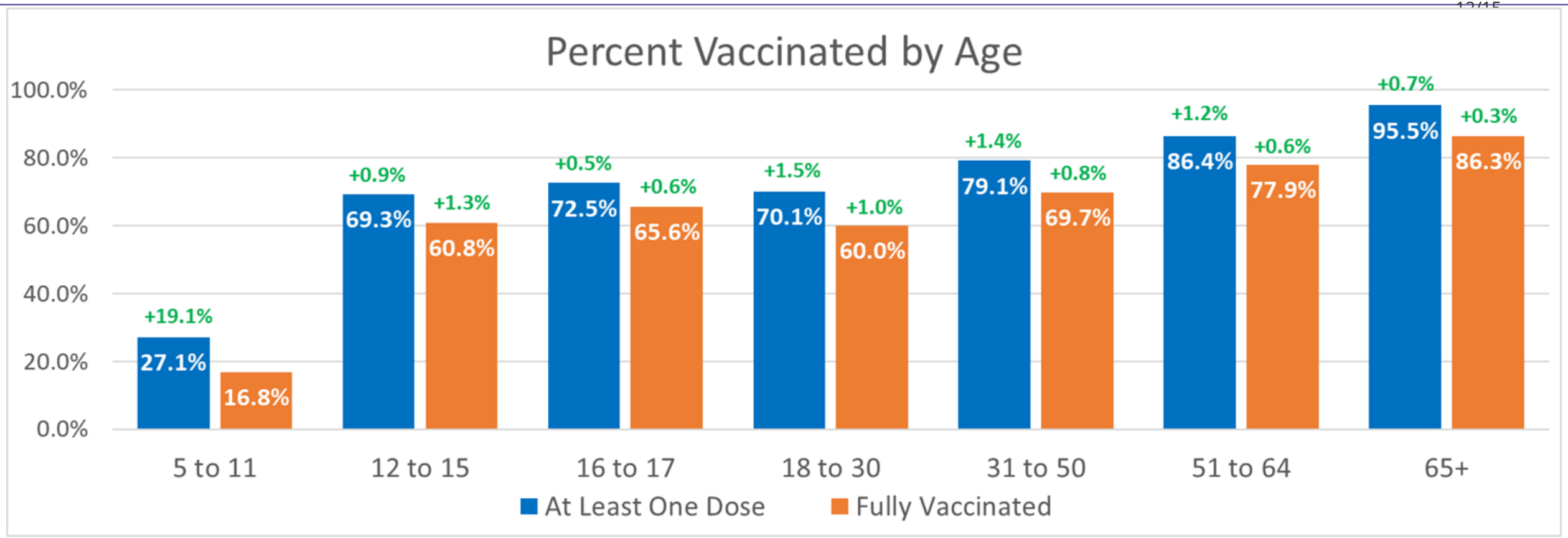
Daily Omicron Infections from Nov 30 with Doubling Time of 2.5 days



Source: [SARS-CoV-2 variants of concern and variants under investigation (publishing.service.gov.uk)]

Virginia: Vaccination by Age Groups

Updated 12/15



Virginia Vaccination by Age

- ✓ **87.2%** **(+1.7%)** of the Adult (18+) Population Vaccinated with at Least One Dose
- ✓ **70.8%** **(+2.6%)** of the Eligible (5+) Population Fully Vaccinated
- ✓ **95.5%** **(+1.0%)** of Virginians 65+ and **47.3%** **(+6.8%)** of 5 to 17 year olds have received at Least One Dose
- ✓ **66.6%** **(+2.6%)** of the Total Population has been Fully Vaccinated

- Green percent represents percent increase from two weeks prior

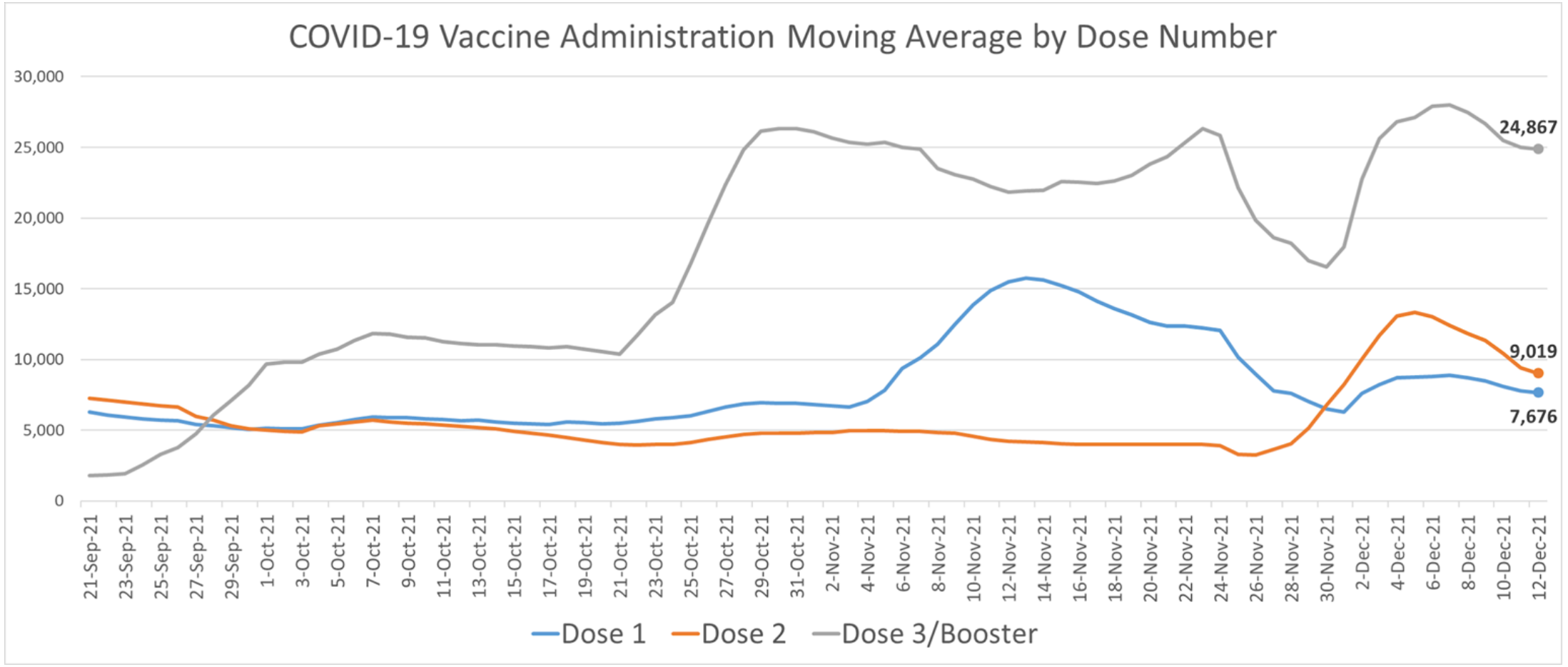
Source: COVID-19 in Virginia: Vaccine Summary, Keep Virginia Safe Tournament | Metaculus

Virginia: Plateauing Demand

Updated 12/15

First Dose, Second Dose, and Third Dose / Booster Administrations Are Plateauing

- First Dose administrations are plateauing after seeing a slight increasing following Thanksgiving
- Second Dose Administrations are plateauing after seeing a sharp increase from 5 to 11 year olds
- Third Dose/Booster administrations are plateauing after seeing a sharp increase following Thanksgiving break

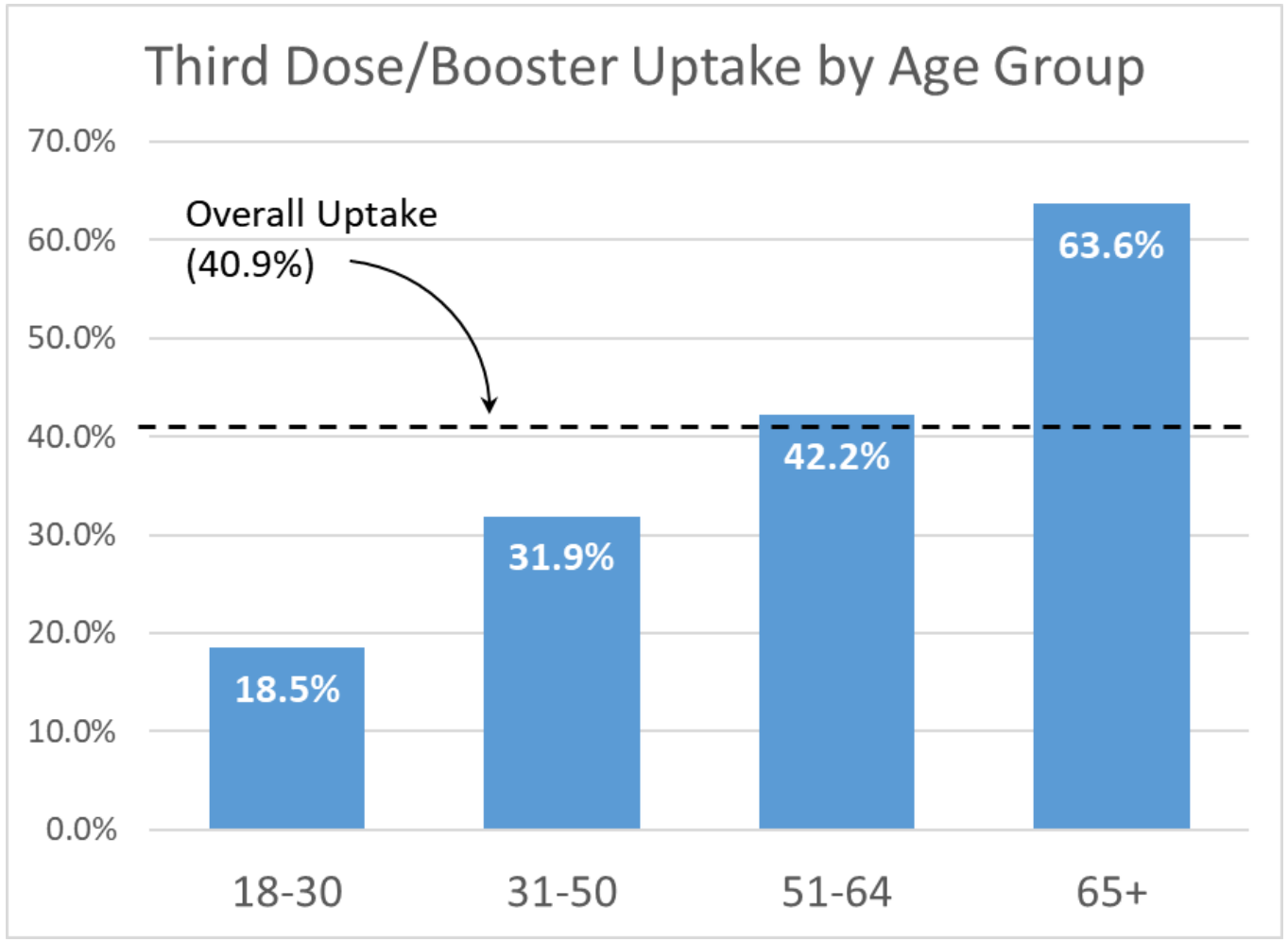


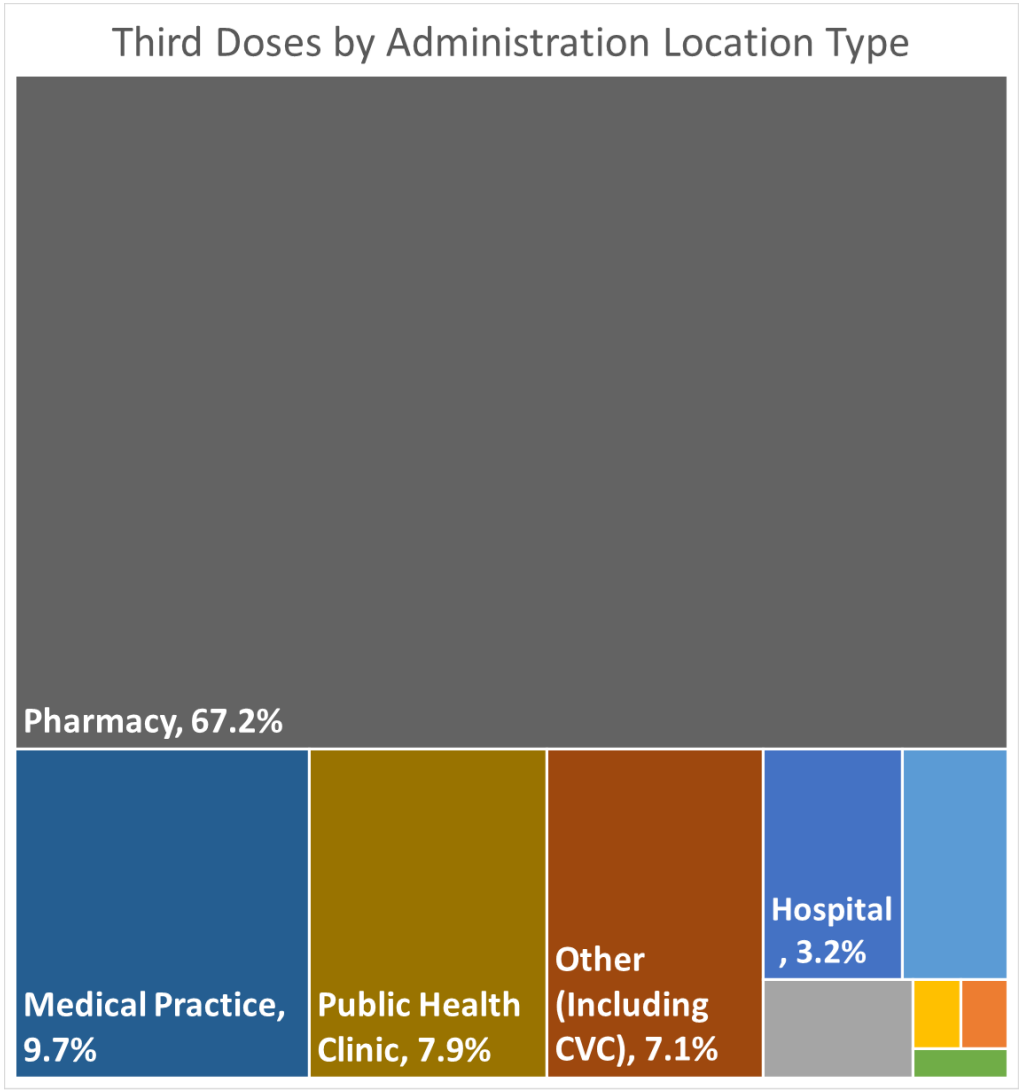
Federal doses not included in this number
Source: COVID-19 Vaccine Summary – Coronavirus (virginia.gov)

Virginia: Third Dose/Booster Uptake and Administrations

Updated 12/15

Third Dose/Booster Metrics show higher uptakes for older Age Groups, with over Two-thirds of Boosters being administered at Pharmacies





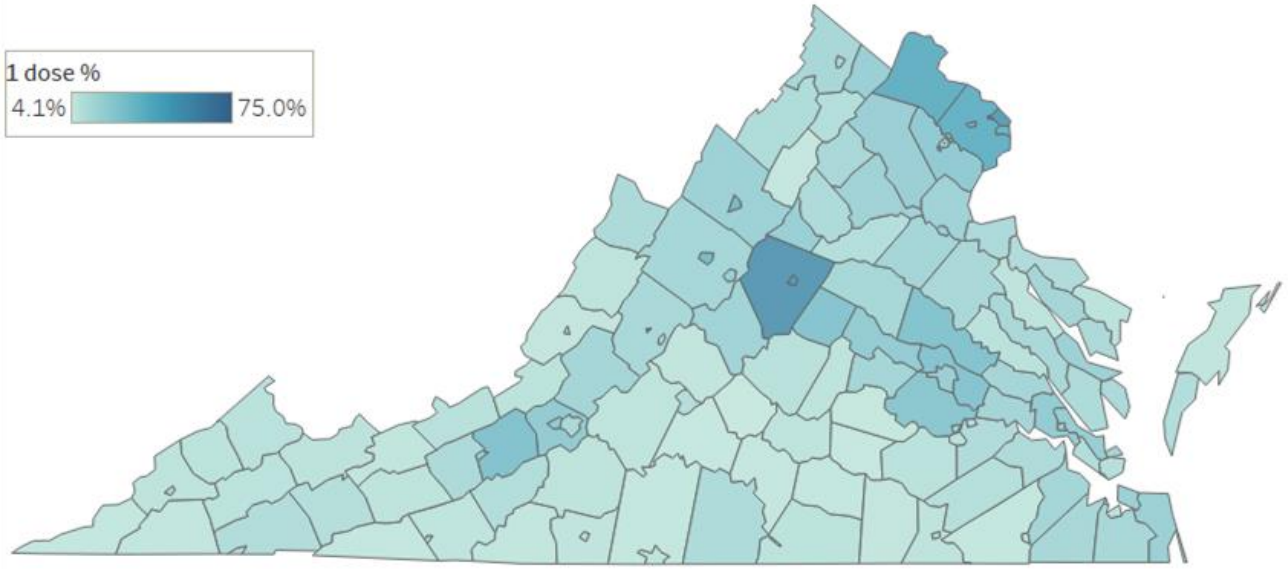
Green percent represents percent increase from two weeks prior
Federal doses not included in this number
Source: COVID-19 Vaccine Summary – Coronavirus (virginia.gov)

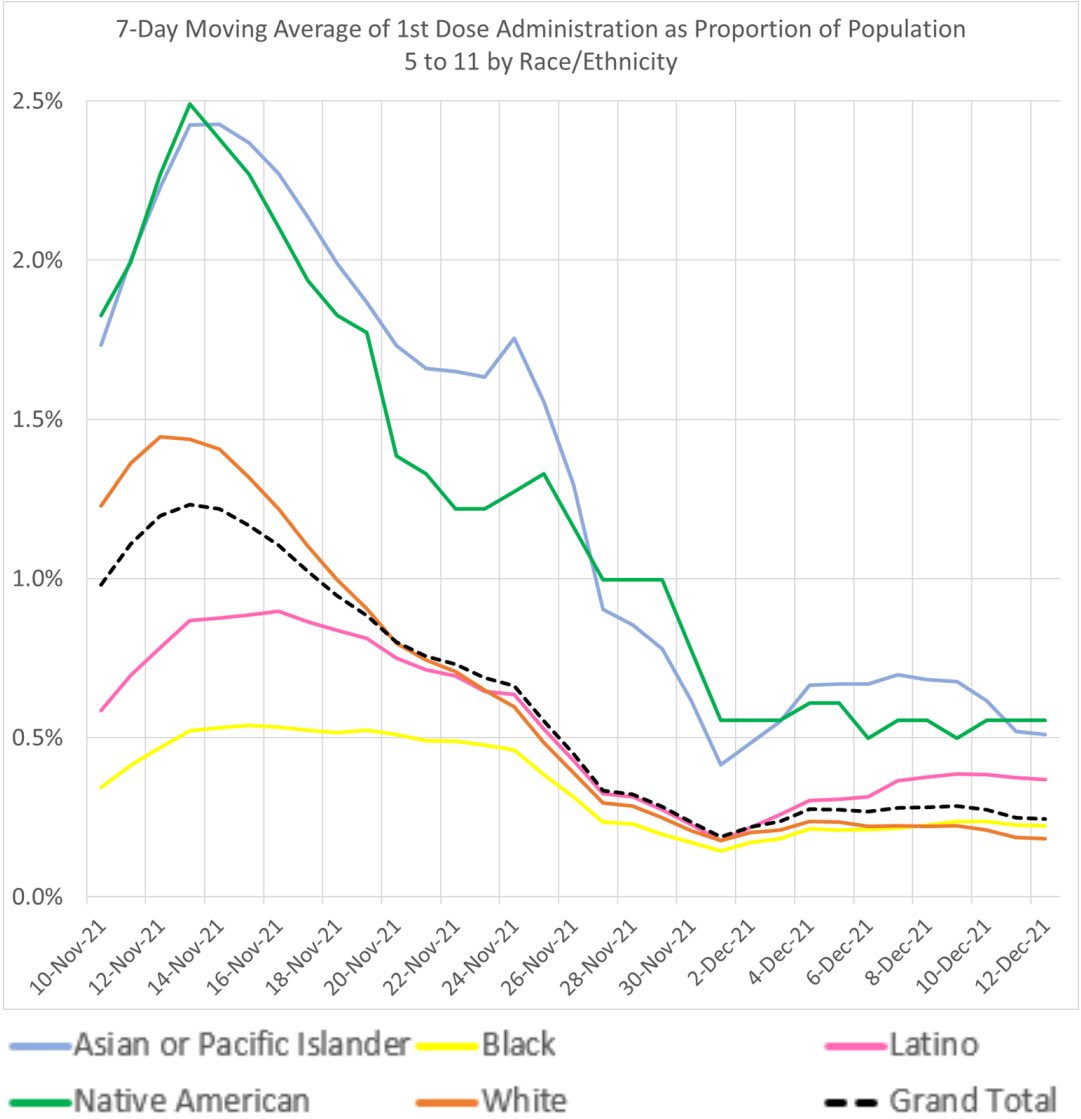
Virginia: 5 to 11 Vaccine Administration Metrics

Updated 12/15

Large Demographic Disparities in 5-11 First Dose Administration

- After multiple weeks of decline, first dose administrations are now plateauing
- While White children are currently seeing the most first dose administrations in quantity, Asian and Native American children have the highest vaccinations as a proportion of population
- Conversely: White, Black and Latino children have the lowest vaccination rates as a proportion of population so far
- There is a very large geographic disparity in vaccination rates

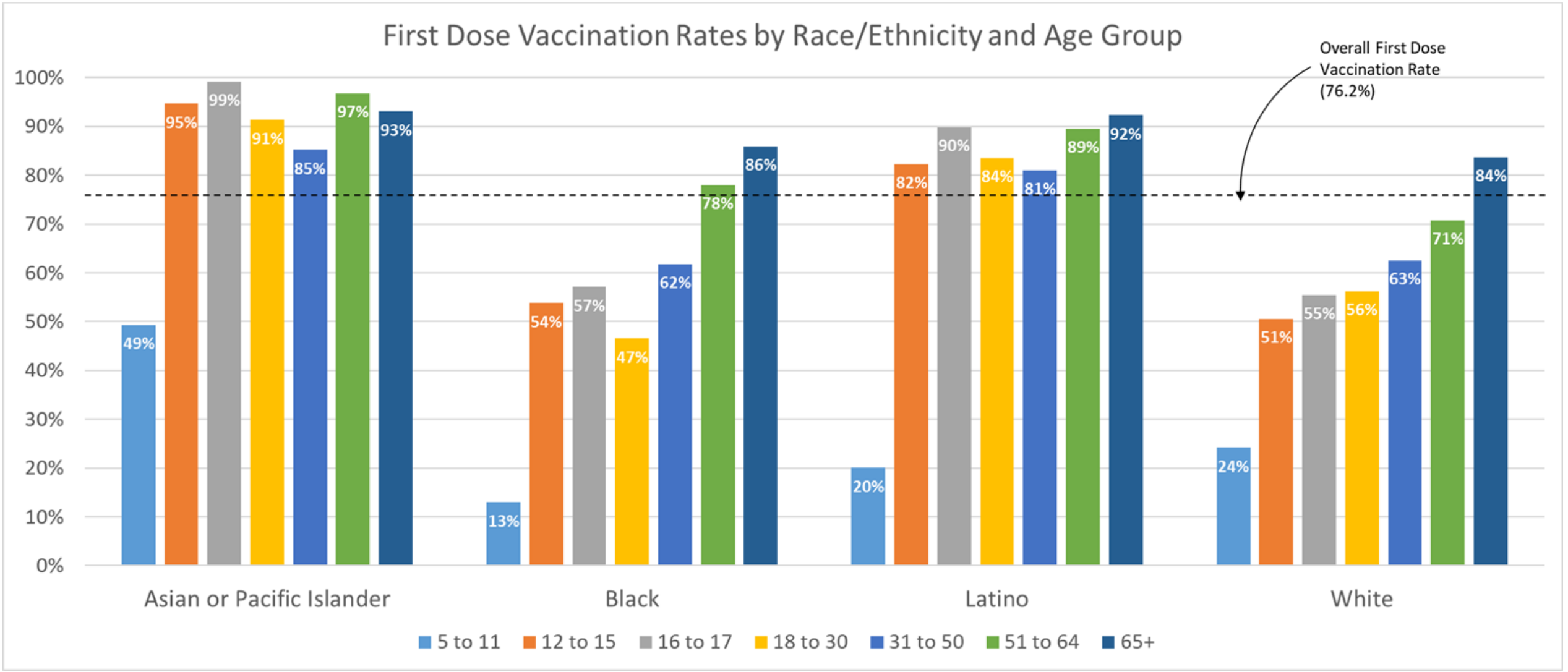




Federal doses not included in this number
Source: [COVID-19 Vaccine Summary – Coronavirus (virginia.gov)]

Virginia: Vaccination by Race/Ethnicity and Age

Updated 12/15

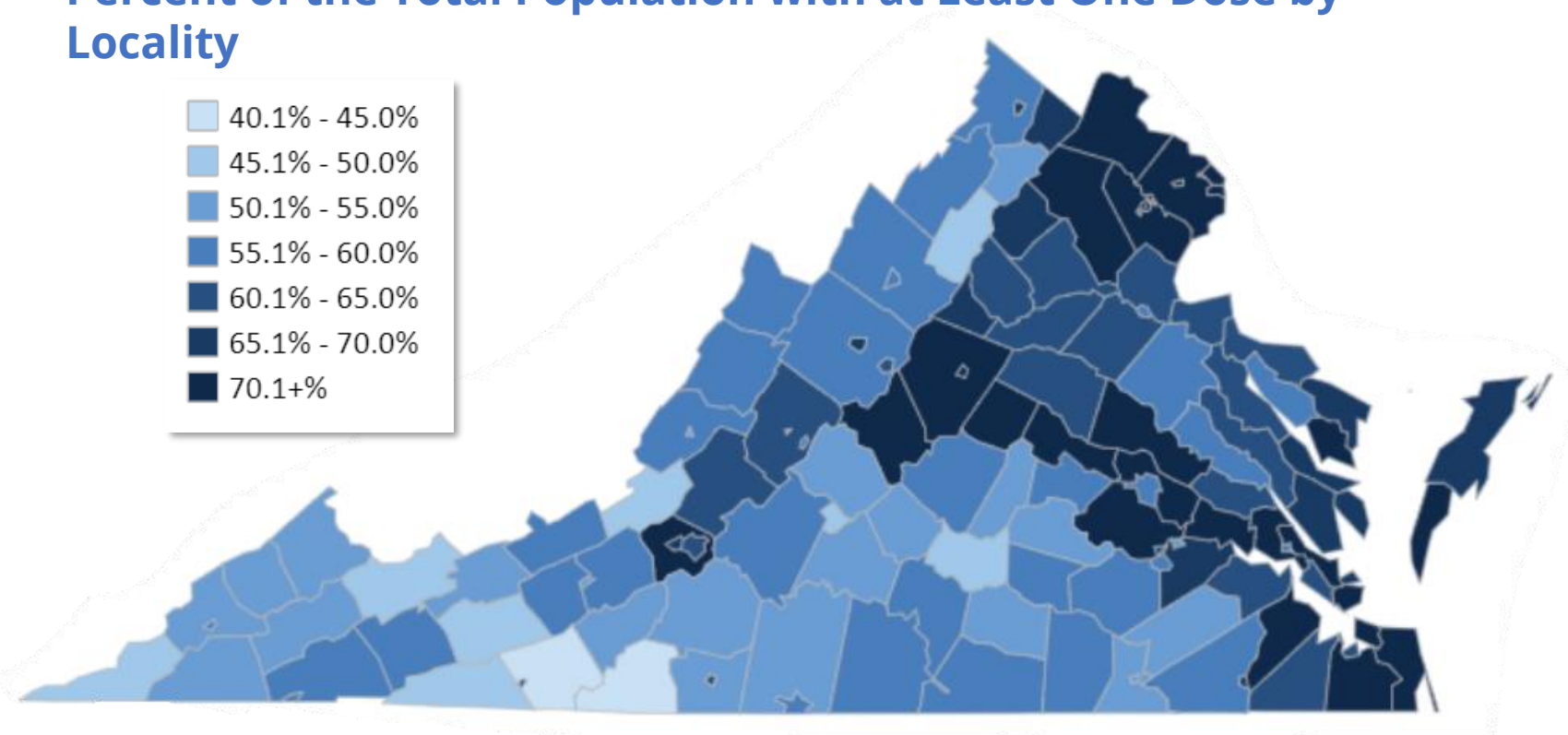


Source: [COVID-19 Vaccine Summary – Coronavirus (virginia.gov)]

Virginia: Vaccination across the Commonwealth by Geography

Updated 12/15

Percent of the Total Population with at Least One Dose by Locality



2013 SRHP Isserman Classification	5 to 11	12 to 17	16 to 17	18 to 30	31 to 50	51 to 64	65+	Grand Total
Mixed Urban	30%	70%	75%	71%	72%	83%	86%	64%
Urban	27%	72%	78%	63%	75%	84%	95%	73%
Mixed Rural	20%	50%	57%	55%	62%	73%	82%	60%
Rural	12%	41%	48%	50%	56%	69%	92%	72%
Grand Total	**25%**	**64%**	**70%**	**62%**	**70%**	**79%**	**89%**	**69%**

First Dose Vaccination Rate by Region for Total Population

Region Name	1st Dose Vaccination
Central	66.2%
Eastern	69.9%
Northern	79.2%
Northwest	63.7%
Southwest	55.5%

- 10 out of 133 Localities have a first dose vaccination rate below 50%
- 43 out of 133 Localities have a first dose vaccination rate above 65%
- There is a disparity across Urban and Rural areas by Age Groups, with Rural Adolescents the Lowest Vaccinated group

Federal doses not included in this number
Source: COVID-19 Vaccine Summary – Coronavirus (virginia.gov)

Virginia and Neighbors: Vaccination Rates

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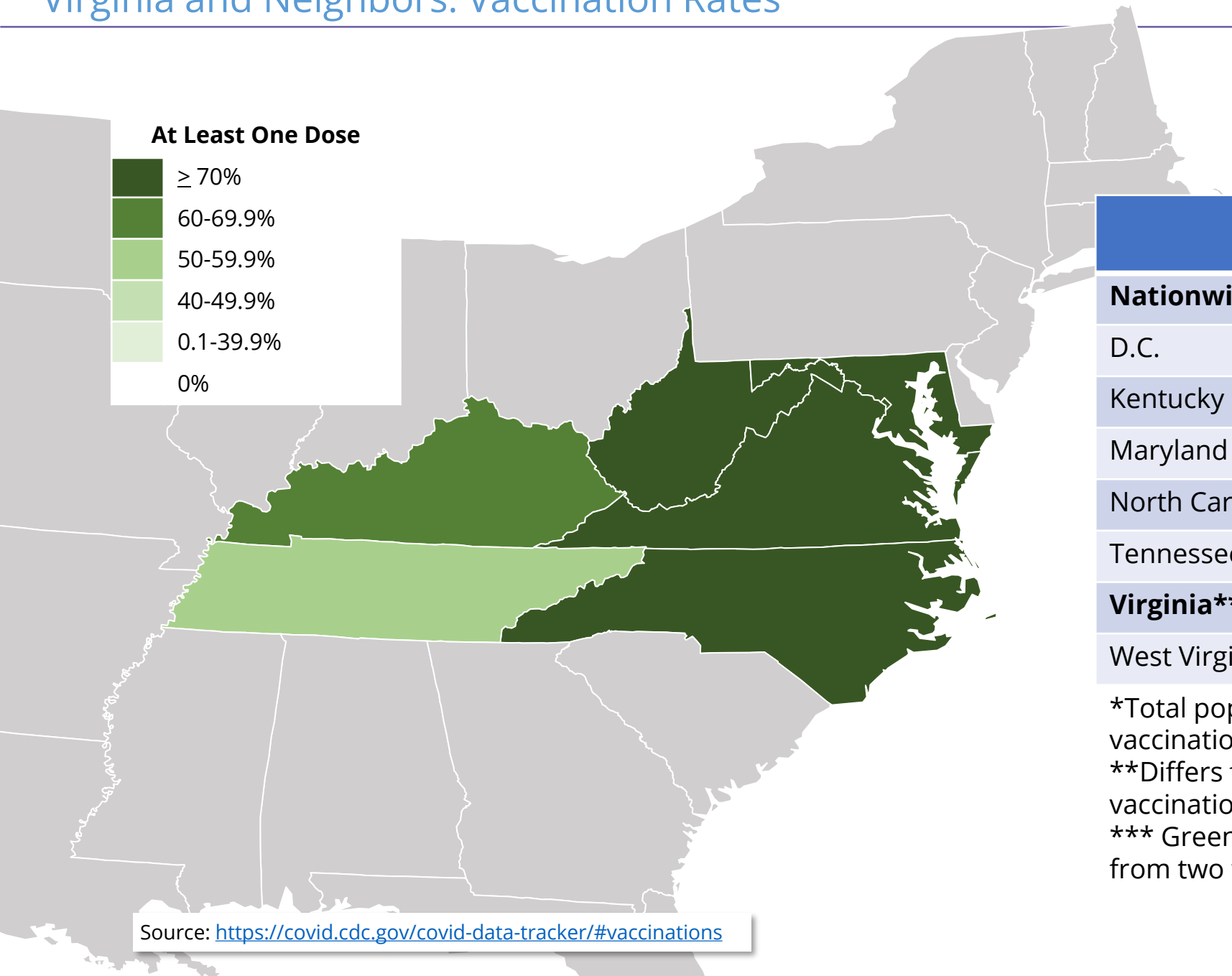

	At Least One Dose*	Fully Vaccinated*
Nationwide	**72.2% (+2.8%)**	**61.0% (+2.7%)**
D.C.	85.0% (+4.2%)	66.3% (+2.8%)
Kentucky	61.5% (+2.0%)	53.4% (+2.5%)
Maryland	78.6% (+2.2%)	69.4% (+2.7%)
North Carolina	73.2% (+4.1%)	55.6% (+2.6%)
Tennessee	57.8% (+1.8%)	50.5% (+2.0%)
Virginia**	**77.3% (+2.2%)**	**66.9% (+3.1%)**
West Virginia	89.4% (+65.9%)	71.4% (+72.0%)

*Total population, includes out-of-state vaccinations
**Differs from previous slide because all vaccination sources (e.g., federal) are included
*** Green percent represents percent increase from two weeks prior

Source: https://covid.cdc.gov/covid-data-tracker/#vaccinations