

# COVID-19 Modeling

## December 14, 2021

Presentation available at:  
[dfr.vermont.gov](https://dfr.vermont.gov)

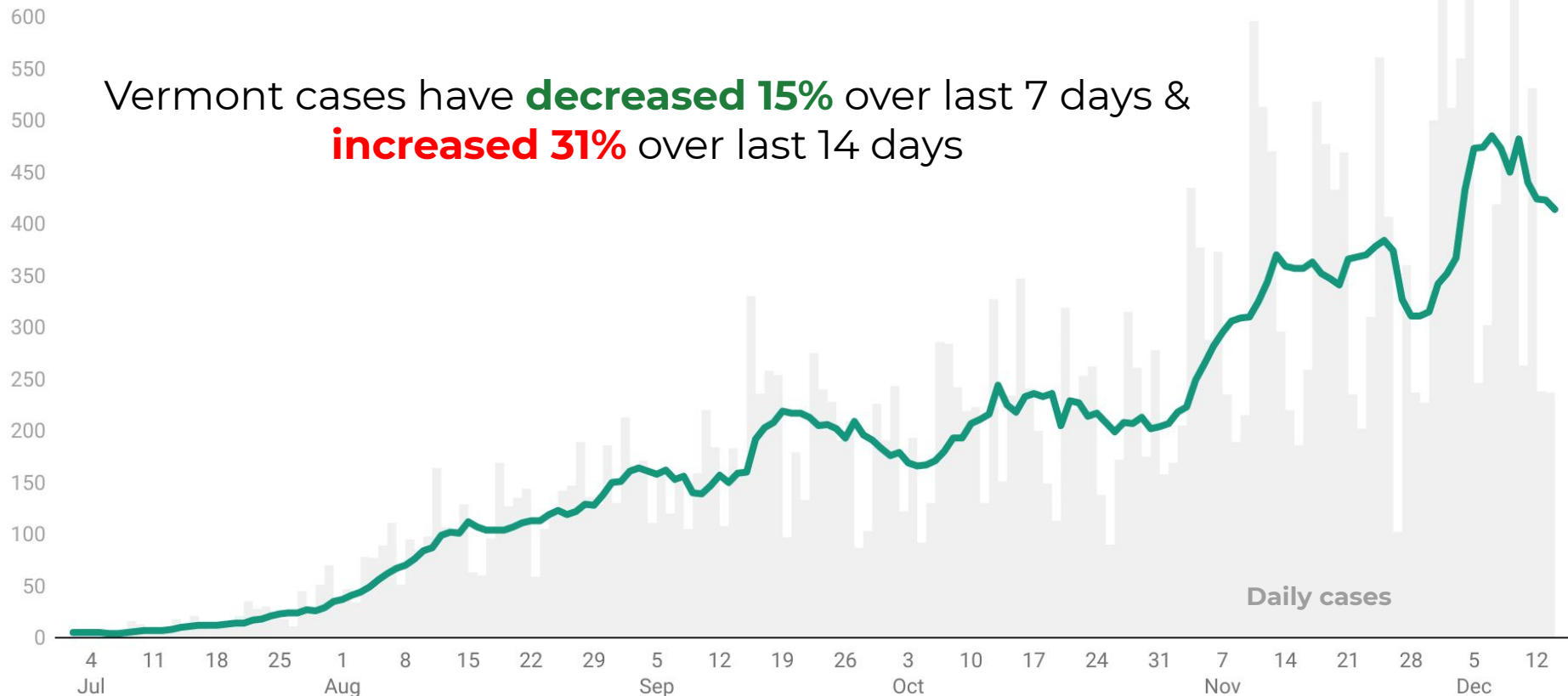
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# Vermont Case Data

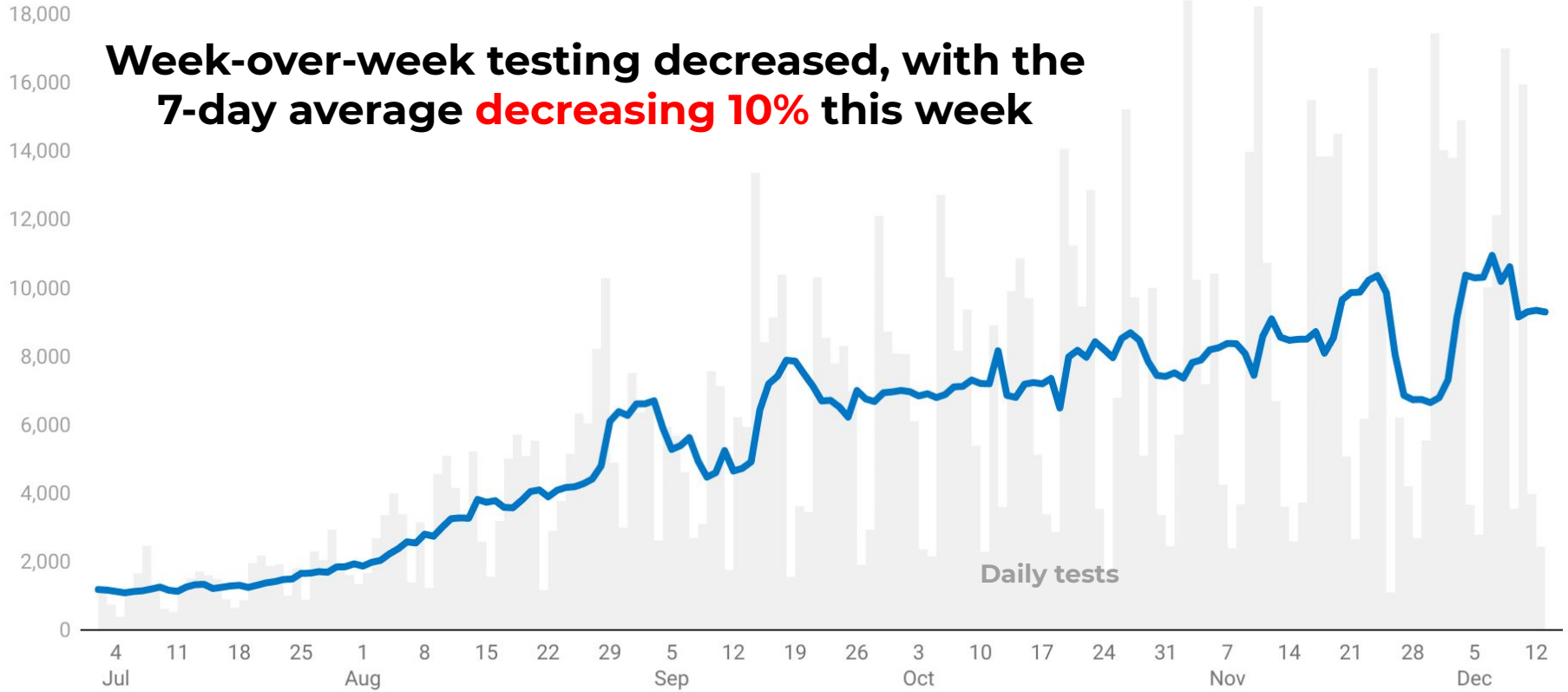
# Vermont New COVID-19 Cases

7-Day Average



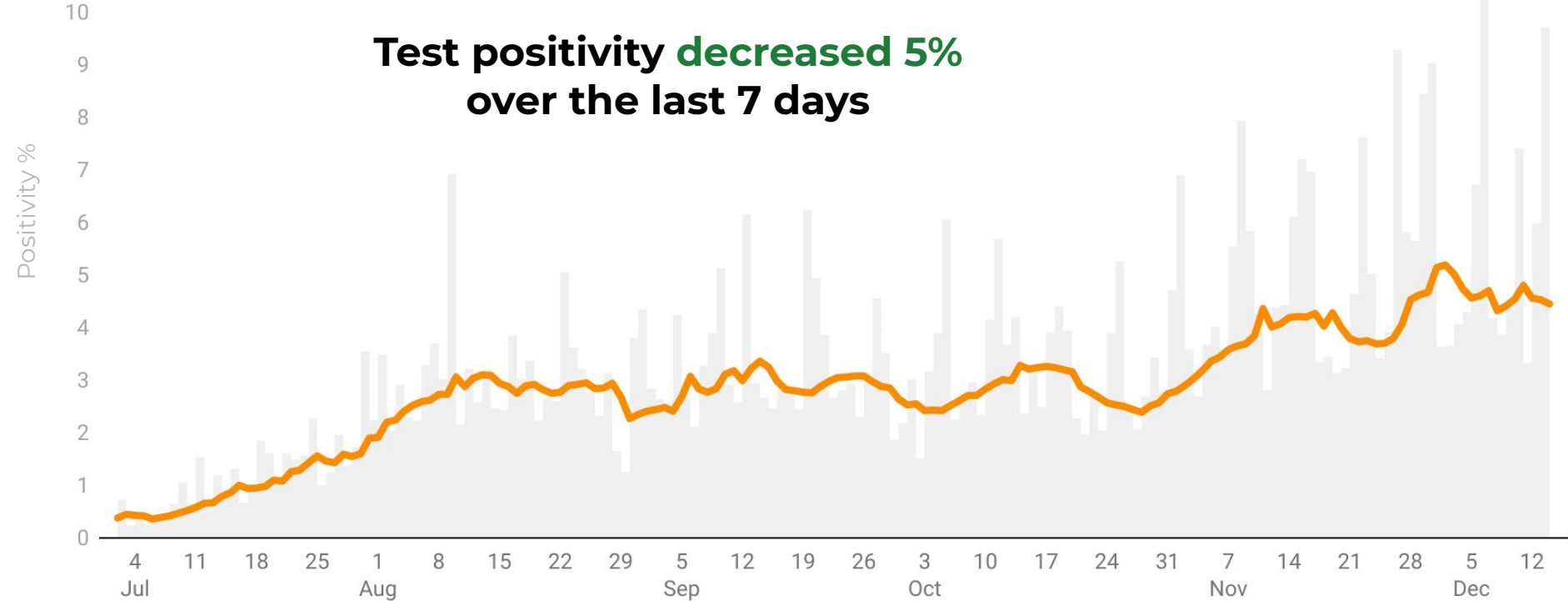
# Vermont COVID-19 Testing

7-Day Average



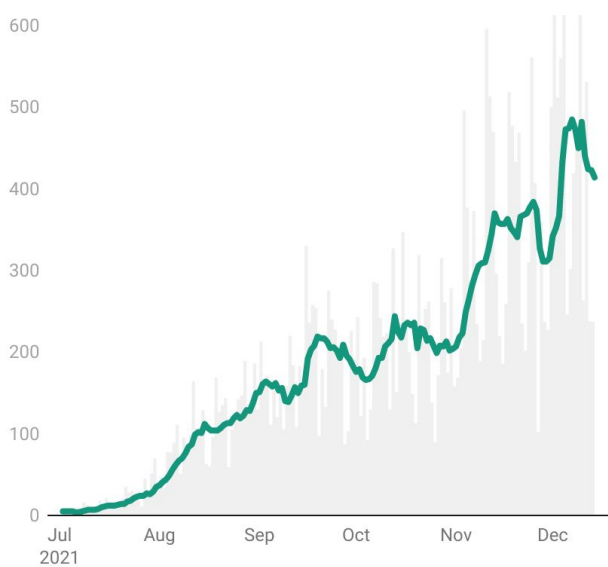
# Vermont Test Positivity: Delta Wave

7-Day Positivity Rate



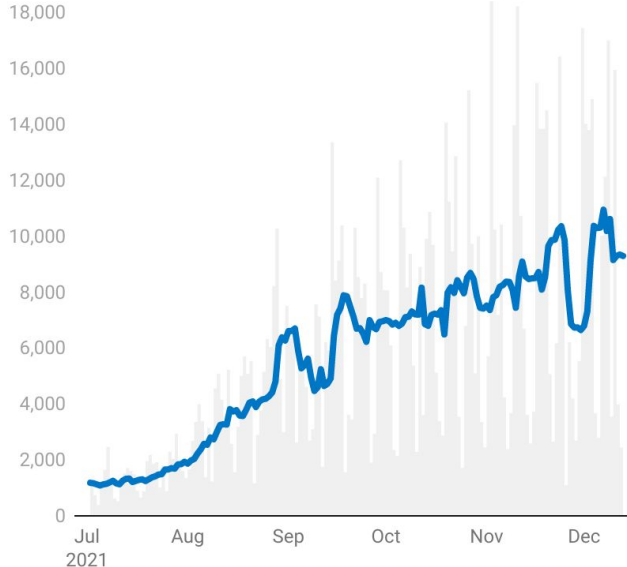
# Vermont Case Growth Metrics

**15% Decrease**  
**Over last 7 days**



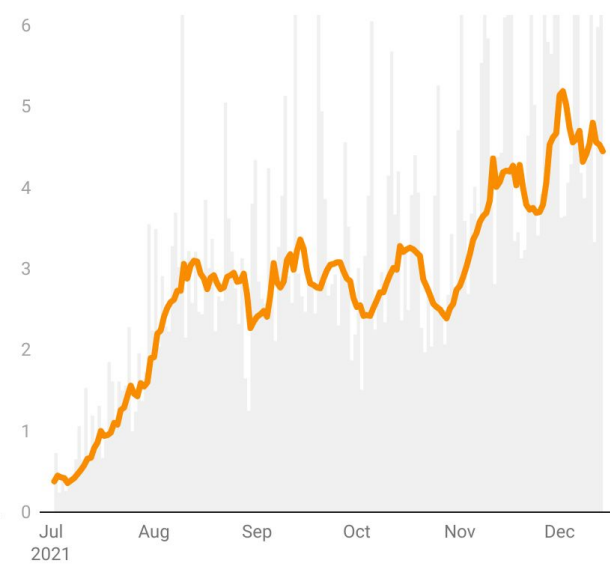
**Infections**

**10% Decrease**  
**Over last 7 days**



**Testing**

**5% Decrease**  
**Over last 7 days**



**Positivity Rate**

# Vermont COVID-19 New Case Rates Per 100K (7-Day Average)

— Not Fully Vaccinated Case Rate — Fully Vaccinated Case Rate

The not fully vaccinated case rate has **decreased 0.3%** in the last 7 days

The fully vaccinated rate has **decreased 16%** during the same period

New Cases per 100K

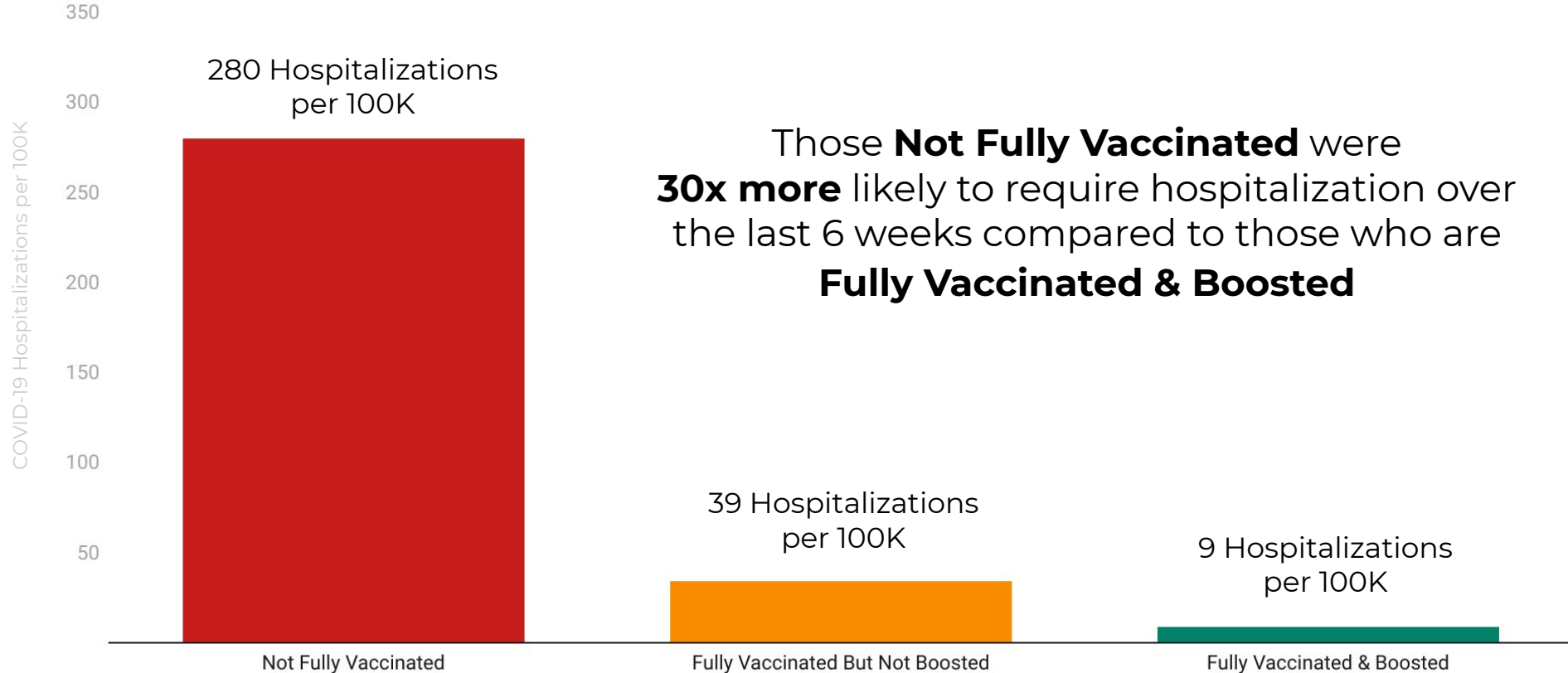


5.1x Greater



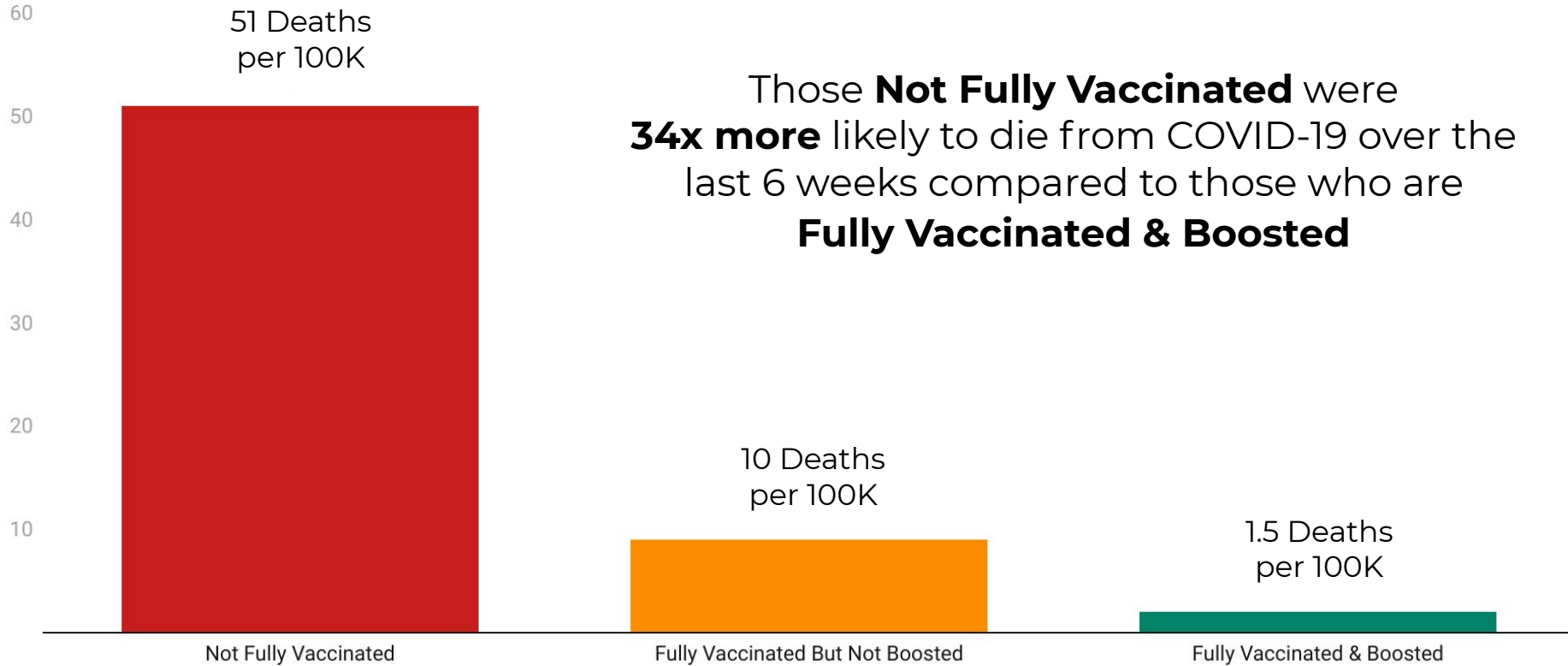
# COVID-19 Hospitalizations By Vaccination Status Per 100K

Measured Among Vermont's 18 & Over Population Over the Last 6 Weeks

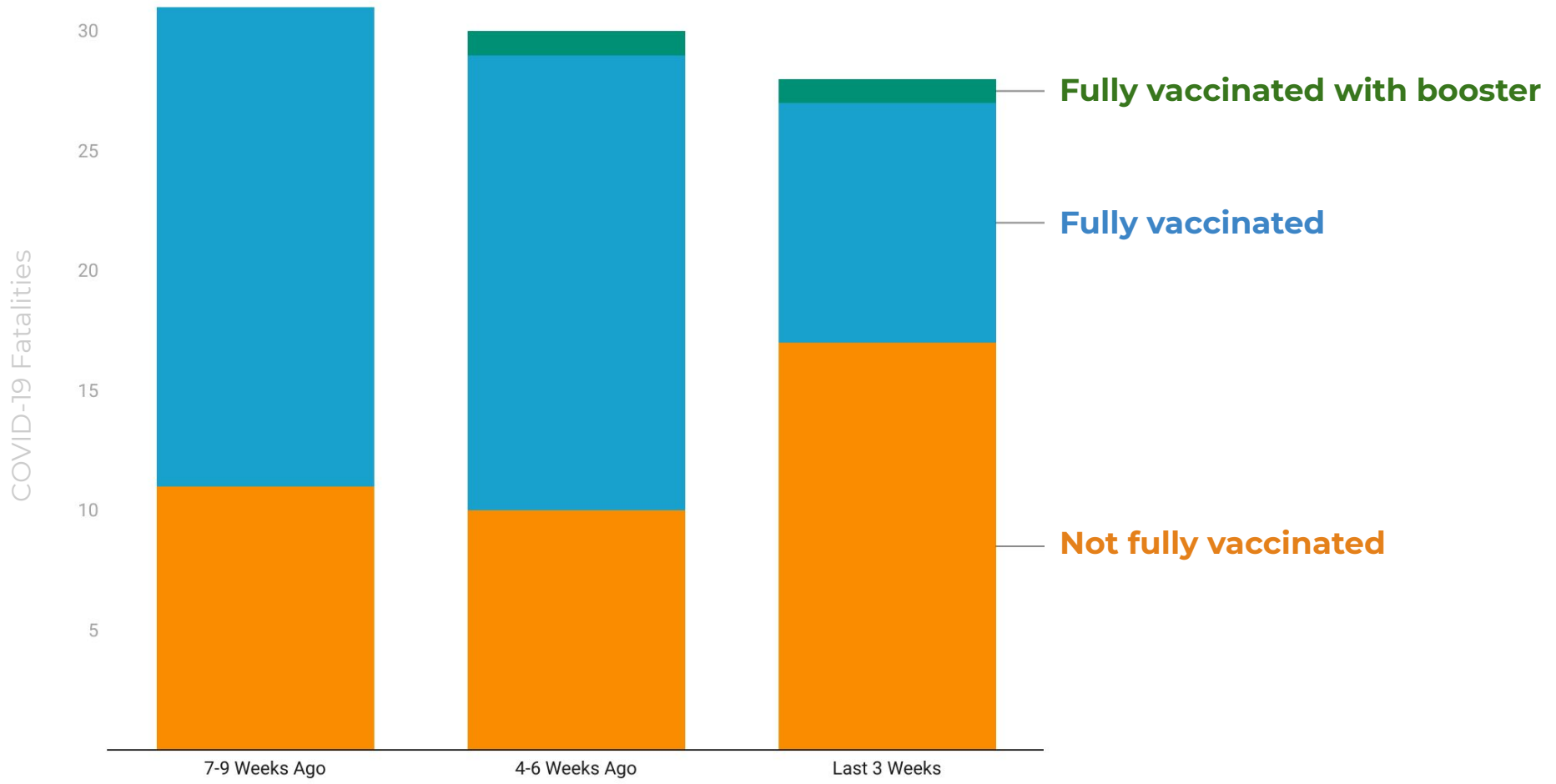


# COVID-19 Deaths By Vaccination Status Per 100K

Measured Among Vermont's 18 & Over Population Over the Last 6 Weeks



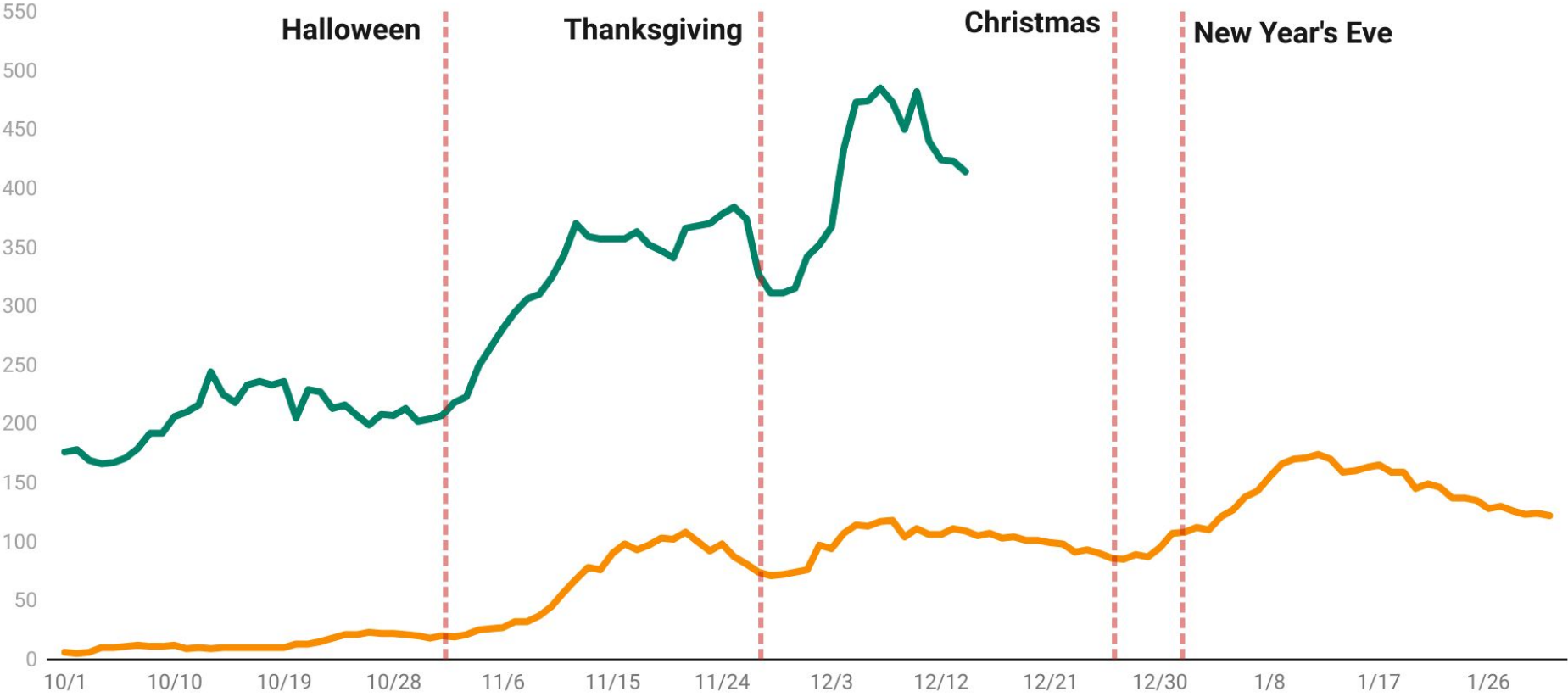
# Recent Trend: Fewer Deaths Among Fully Vaccinated Vermonters



Source: VDH—December 13, 2021; Created with Datawrapper

# Vermont COVID-19 Cases Fall 2020 vs. Fall 2021

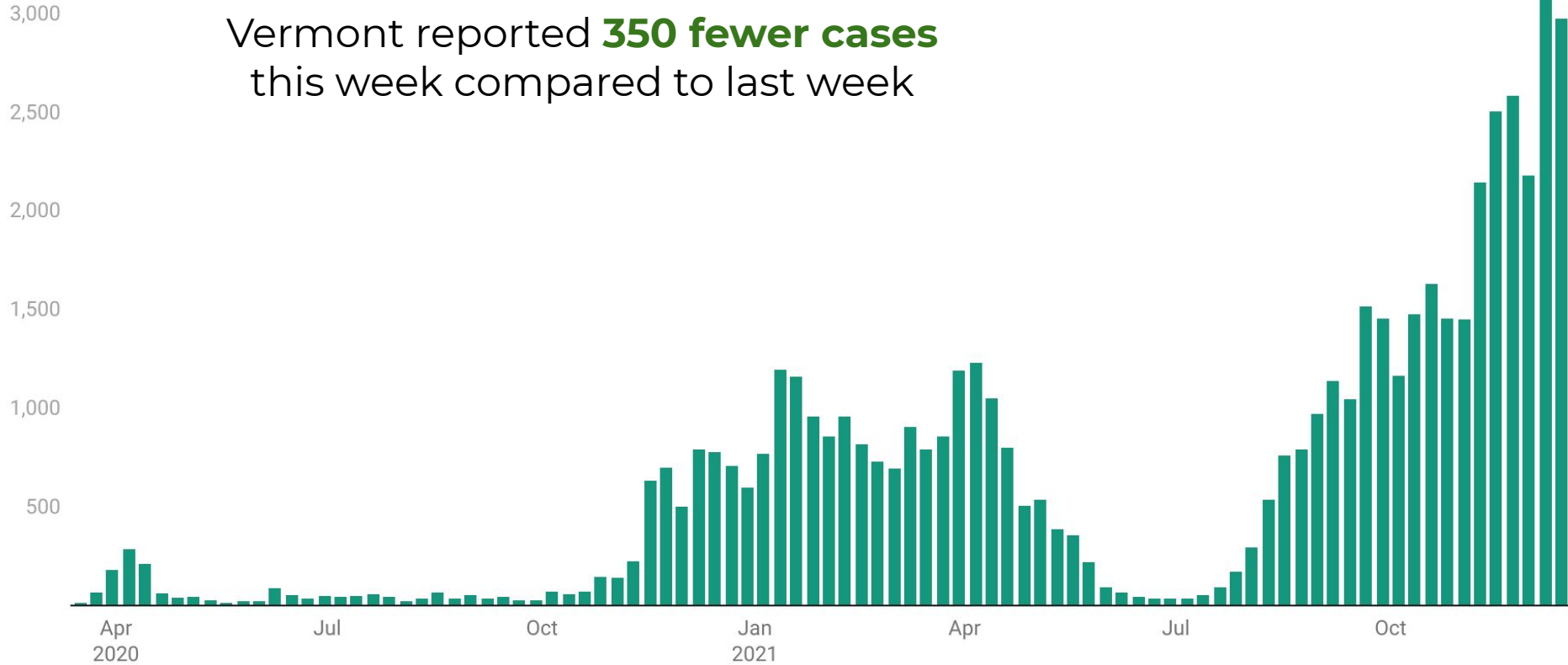
Fall 2021 Fall 2020



Source: Vermont Dept. of Health—December 14, 2021; created with Datawrapper

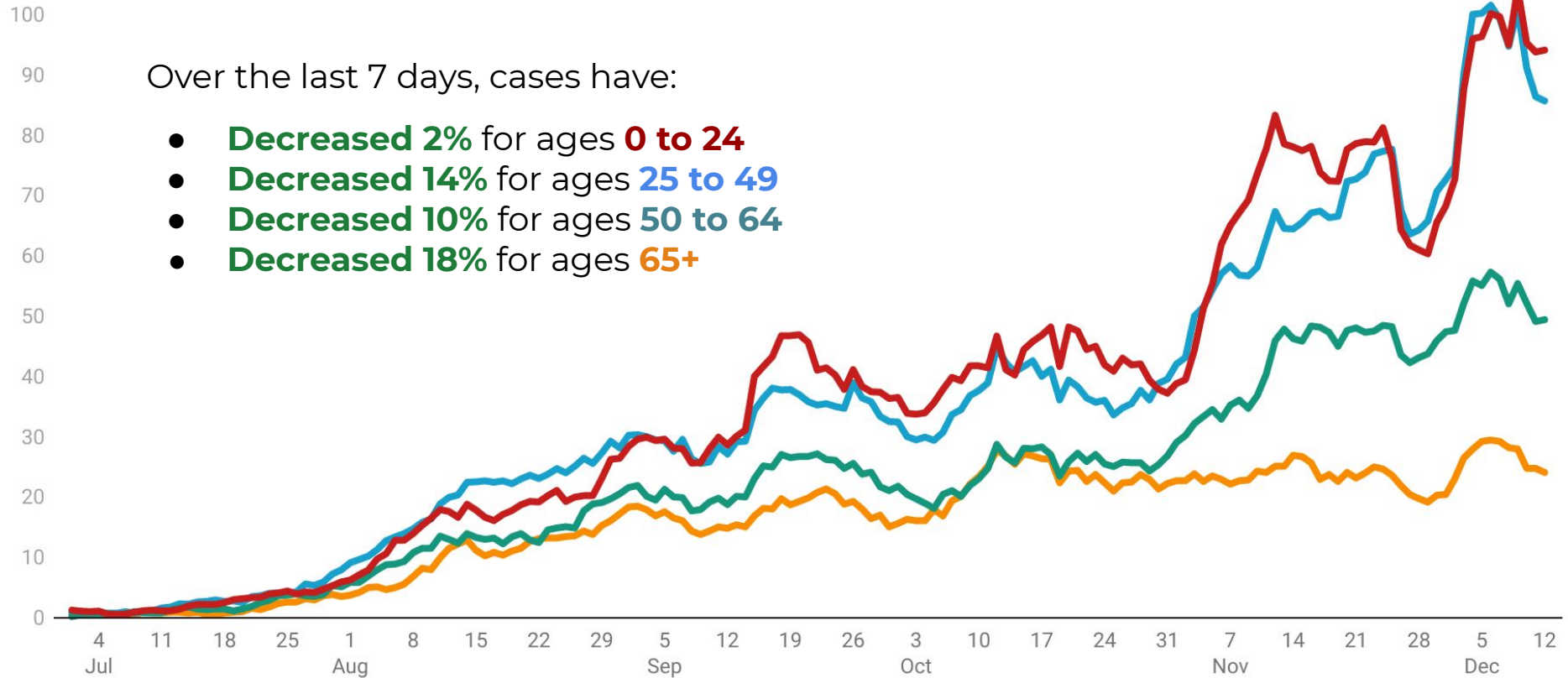
# Vermont New Weekly COVID-19 Cases

Vermont reported **350 fewer cases** this week compared to last week

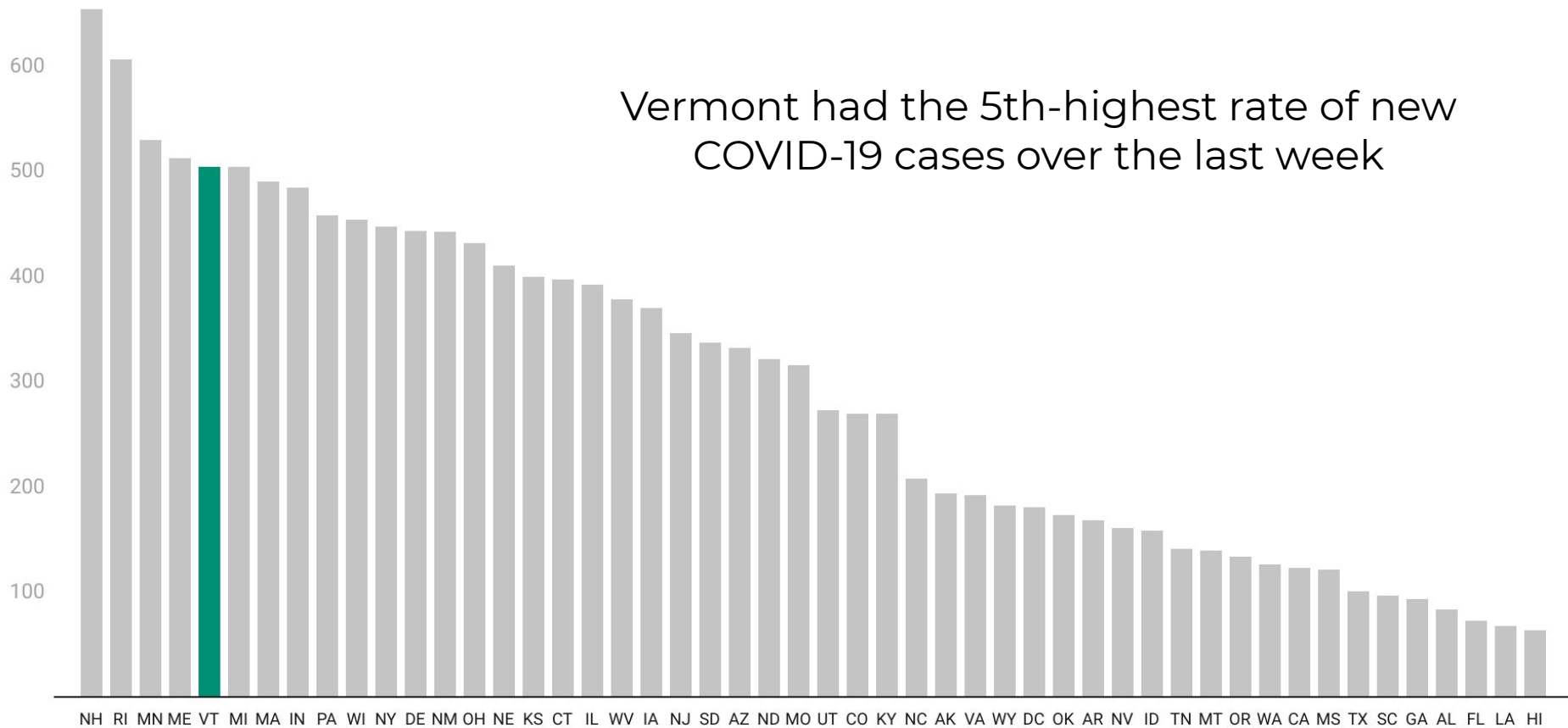


# Vermont Case Rates Per 100K By Age (7-Day Average)

— 0 to 24 — 24 to 49 — 50 to 64 — 65+

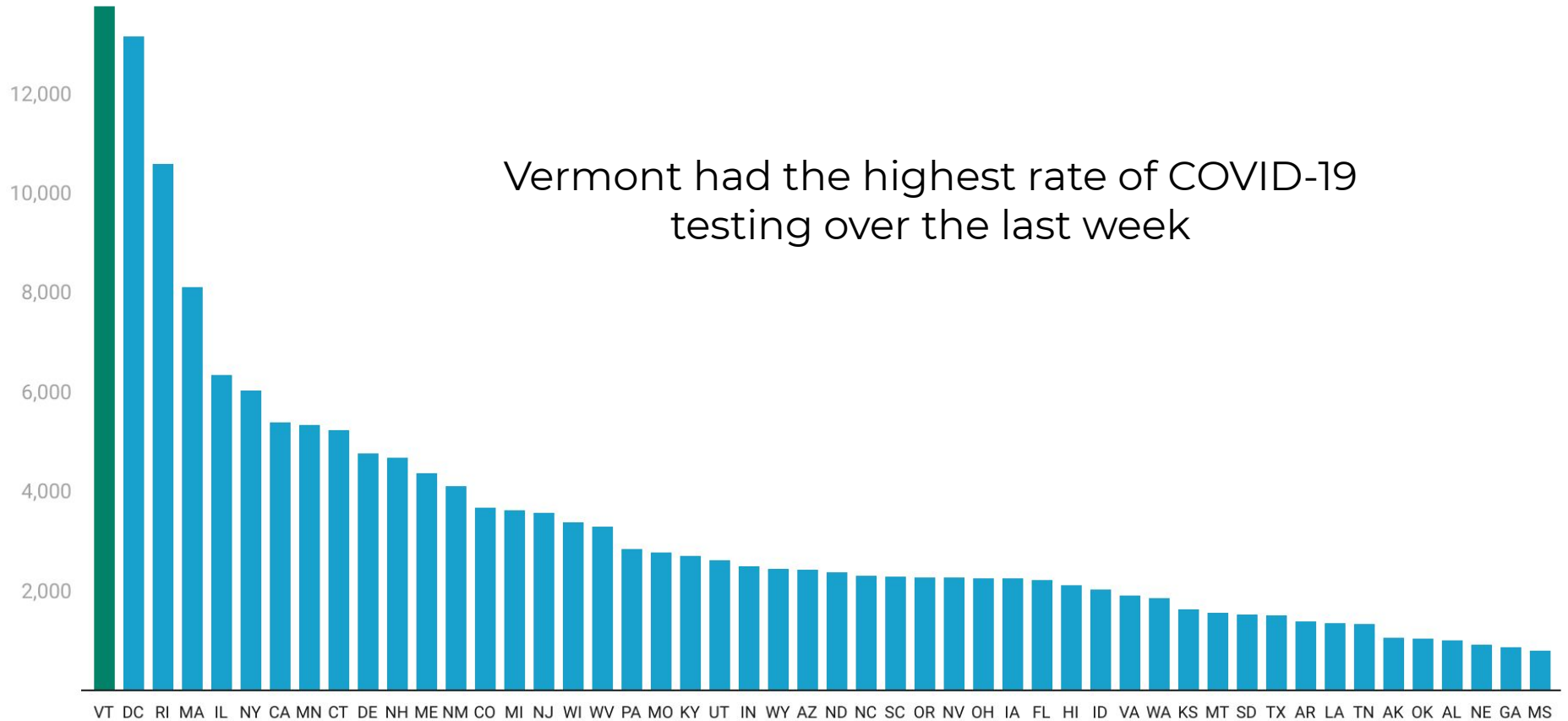


# National COVID-19 Case Rates Per 100K Last 7 Days



Source: CDC—December 13, 2021; Created with Datawrapper; Maryland excluded due to inability to report resulting from cyber incident

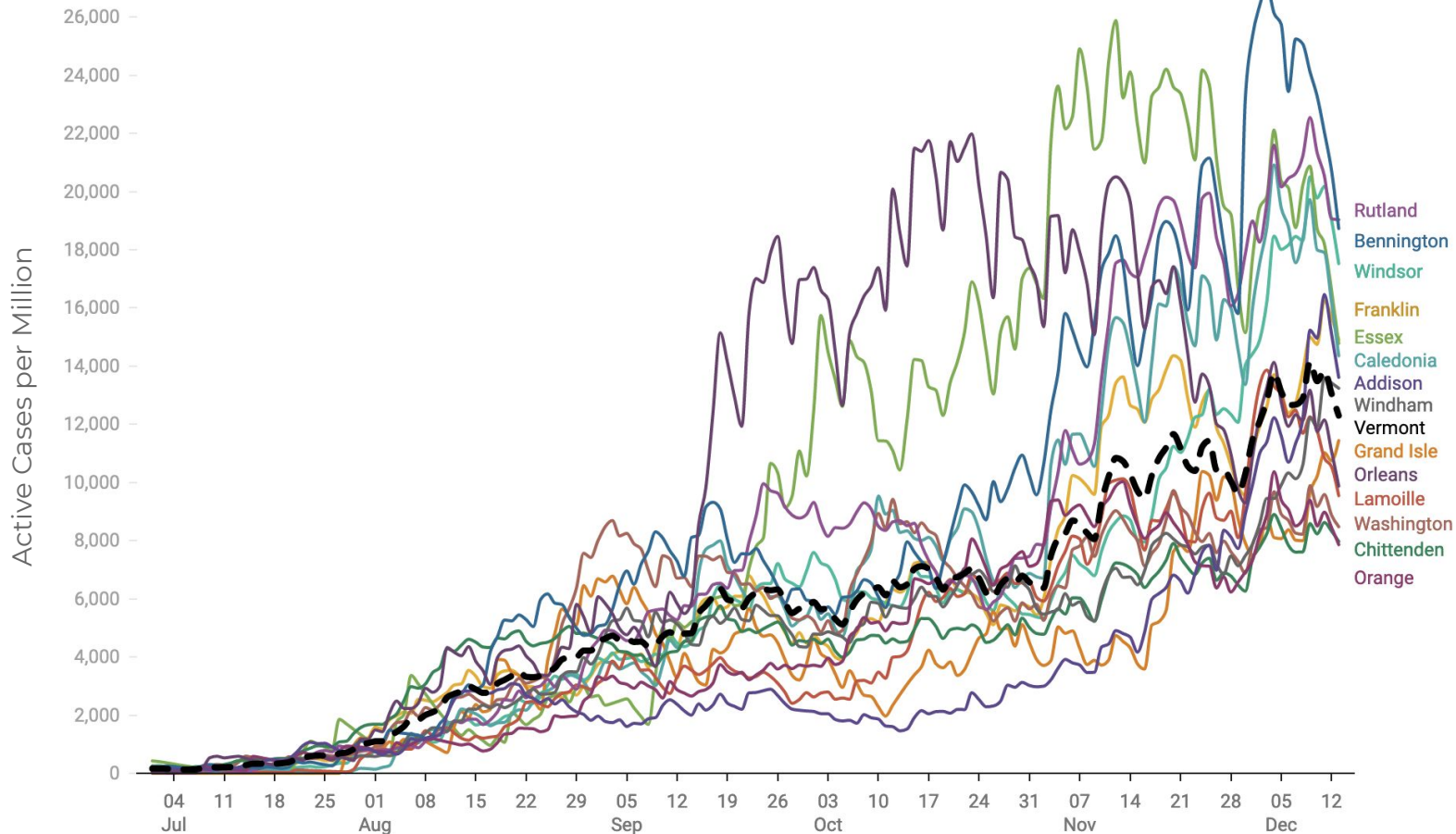
# COVID-19 Testing Per 100K Last 7 Days



Source: CDC—December 13, 2021; Created with Datawrapper; Maryland excluded due to inability to report resulting from cyber incident



# Active Cases in Vermont Counties

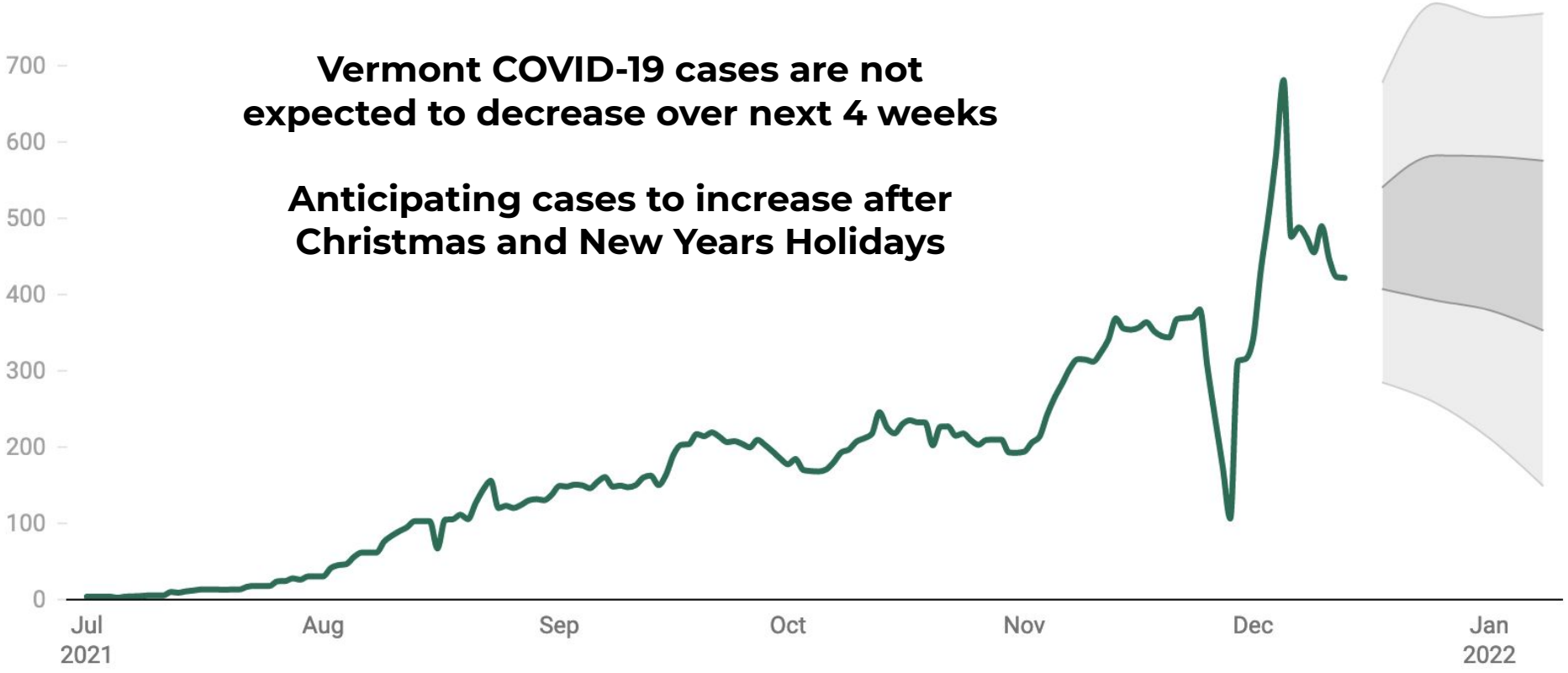


# VT COVID-19 Infection Confidence Intervals

Calculated as a 7-day mean. Inner and outer bands represent 50% and 95% confidence intervals, respectively.

**Vermont COVID-19 cases are not expected to decrease over next 4 weeks**

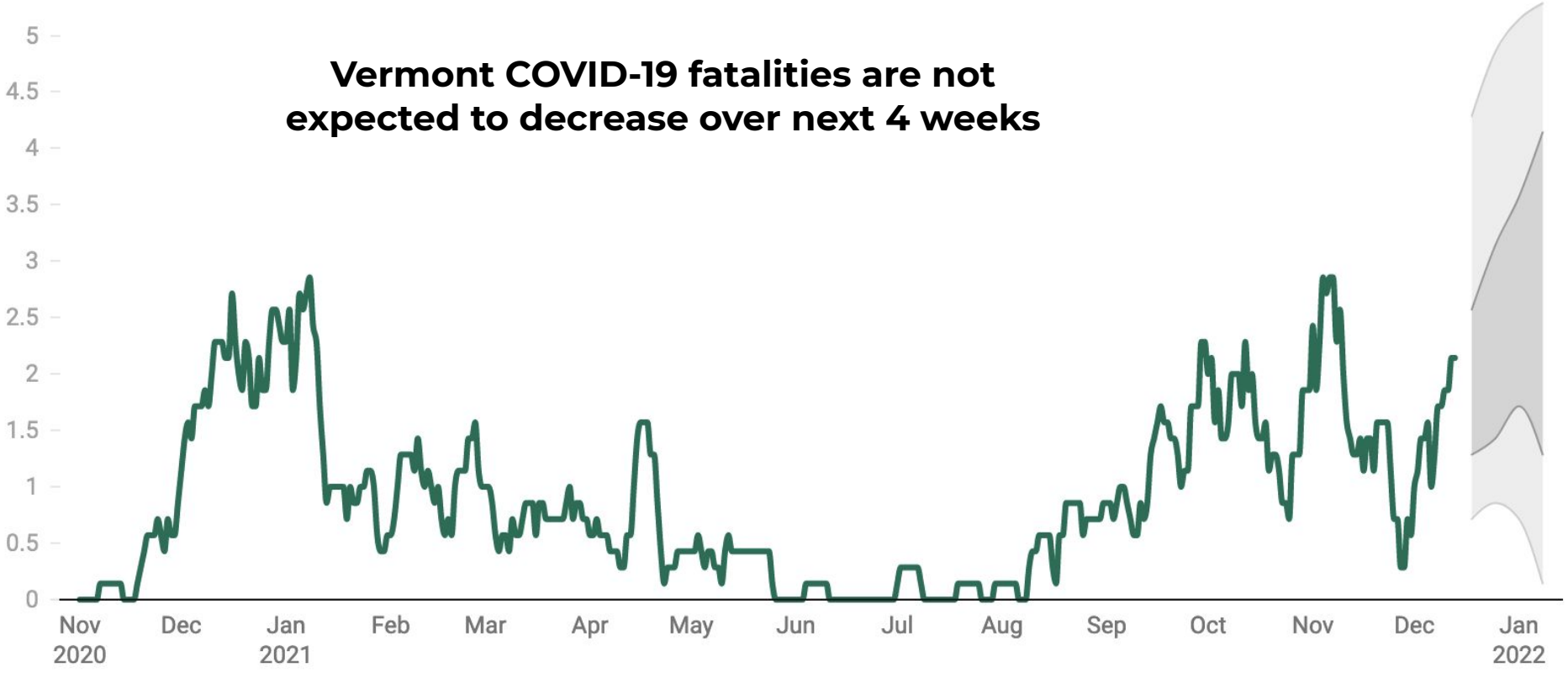
**Anticipating cases to increase after Christmas and New Years Holidays**



Source: Johns Hopkins University & CDC—December 14, 2021

# VT COVID-19 Death Confidence Intervals

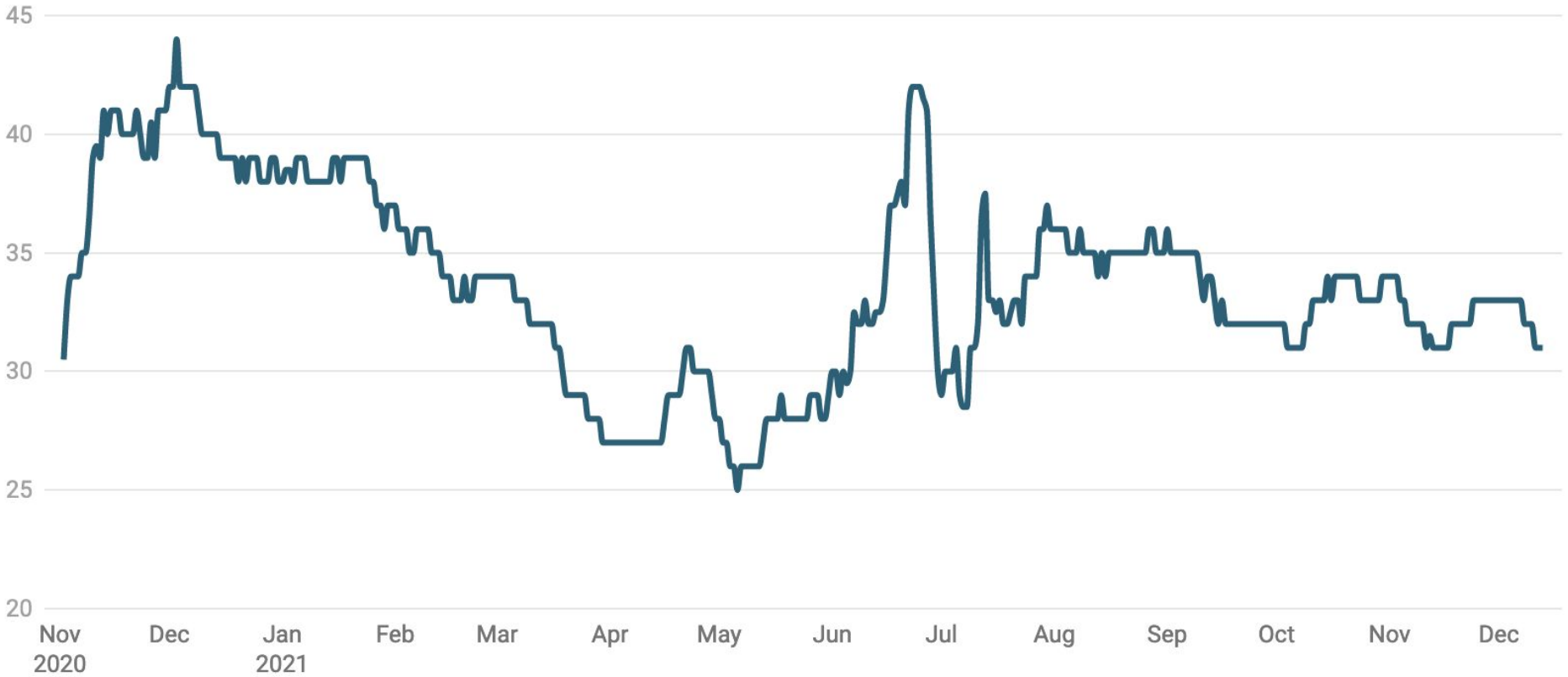
Calculated as a 7-day mean. Inner and outer bands represent 50% and 95% confidence intervals, respectively.



Source: Johns Hopkins University & CDC—December 14, 2021

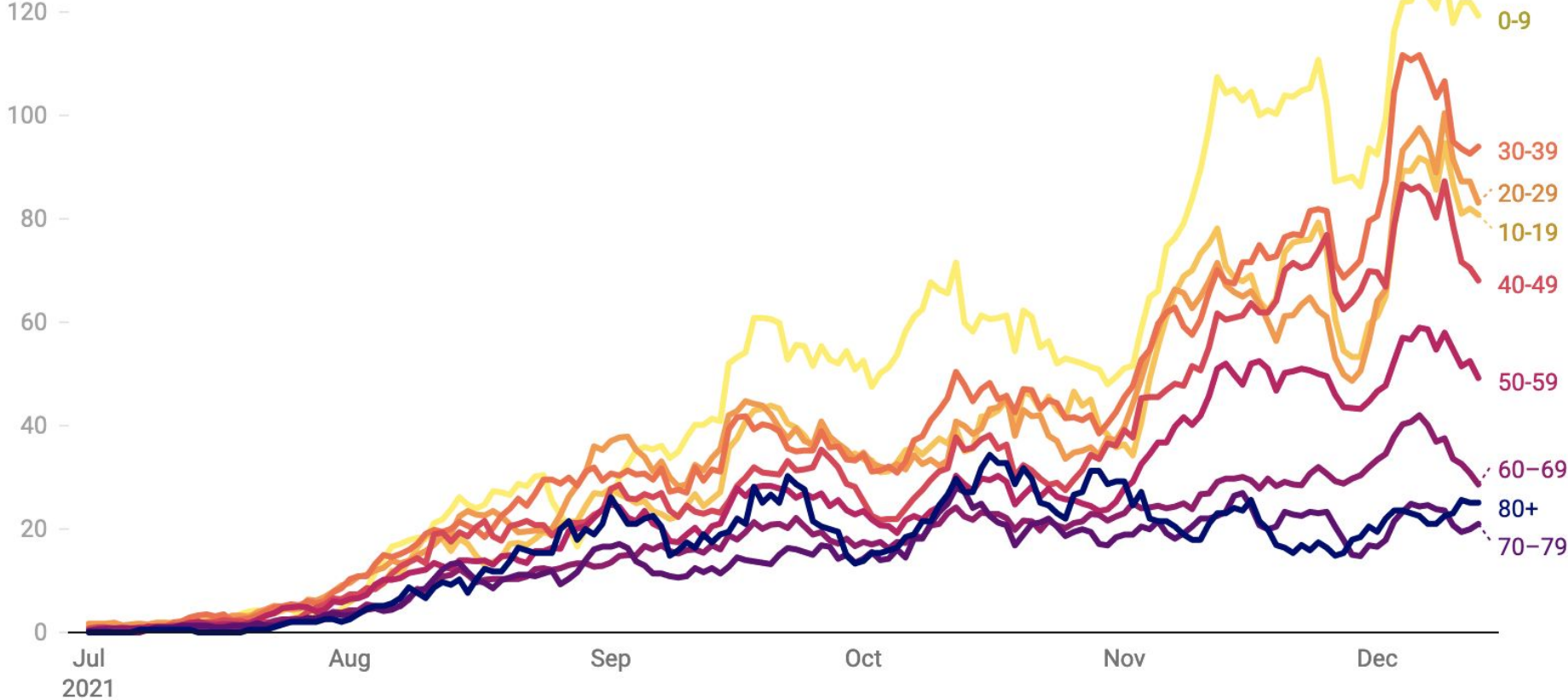
# Age of Infected Vermonters

Median age of COVID positive individuals in VT over the last 14 days.



Source: VDH—December 14, 2021; created with Datawrapper

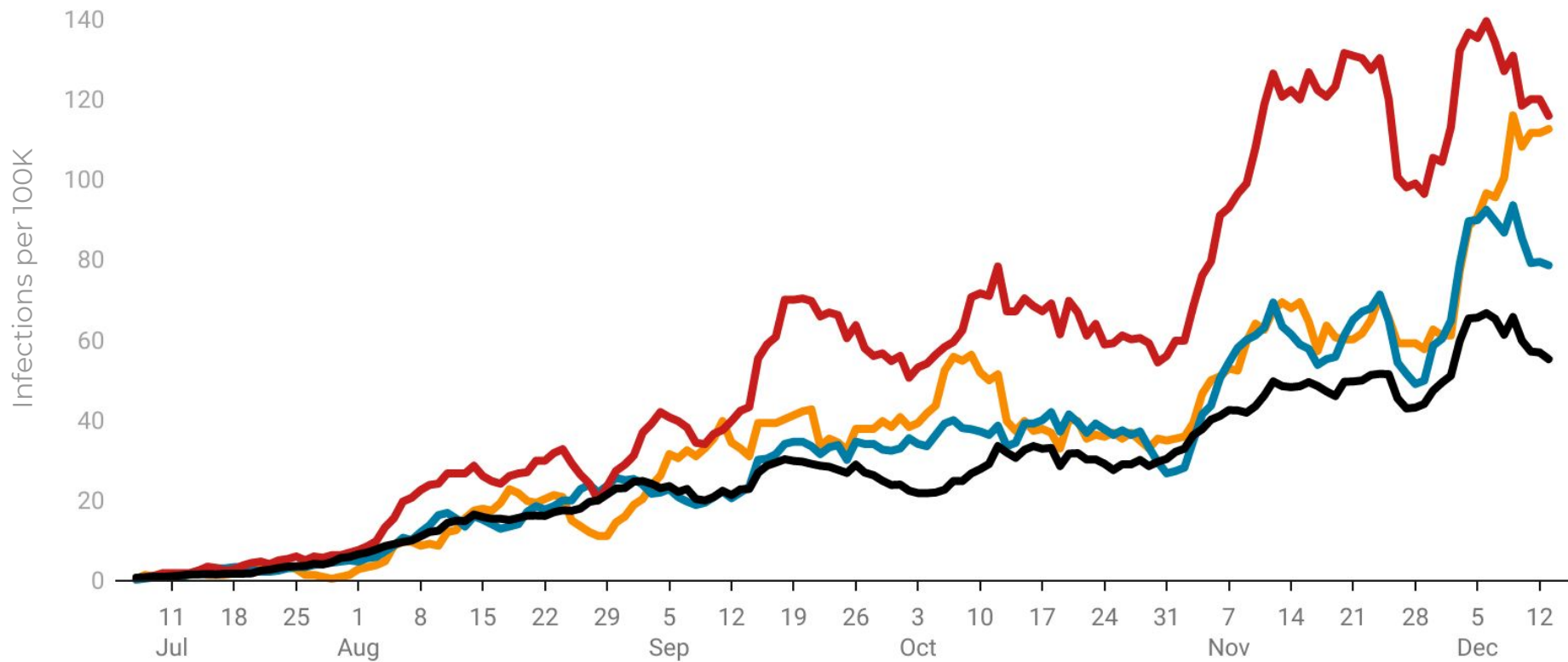
# VT COVID-19 Infections per 100K by Age Group



Source: VDH—December 14, 2021; created with Datawrapper

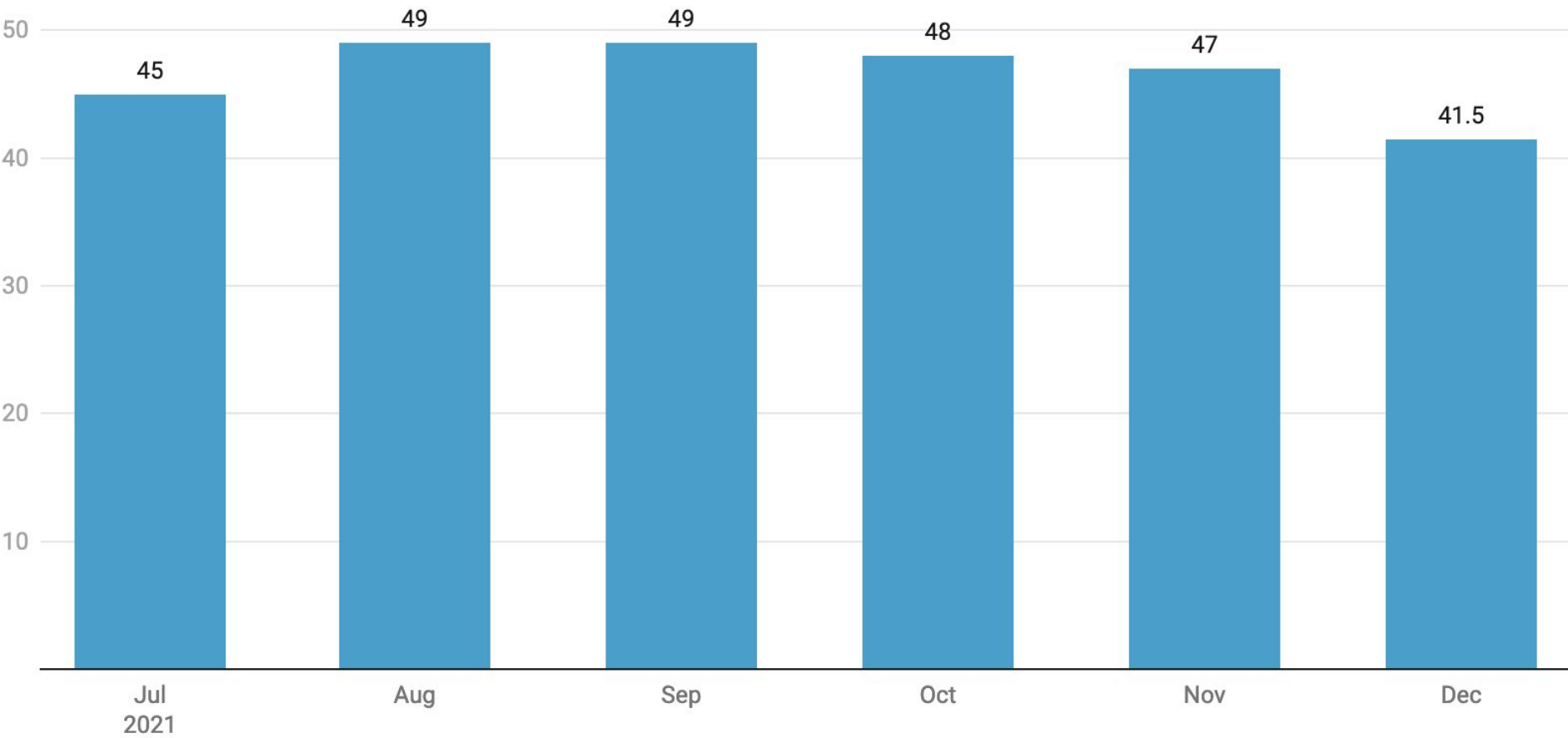
# Vermont Covid-19 Case Rates by Age (7-Day Average)

0-4 5-11 12-18 19+



Source: VDH—December 13, 2021; created with Datawrapper

# Median Age of VT Breakthrough Infections by Month

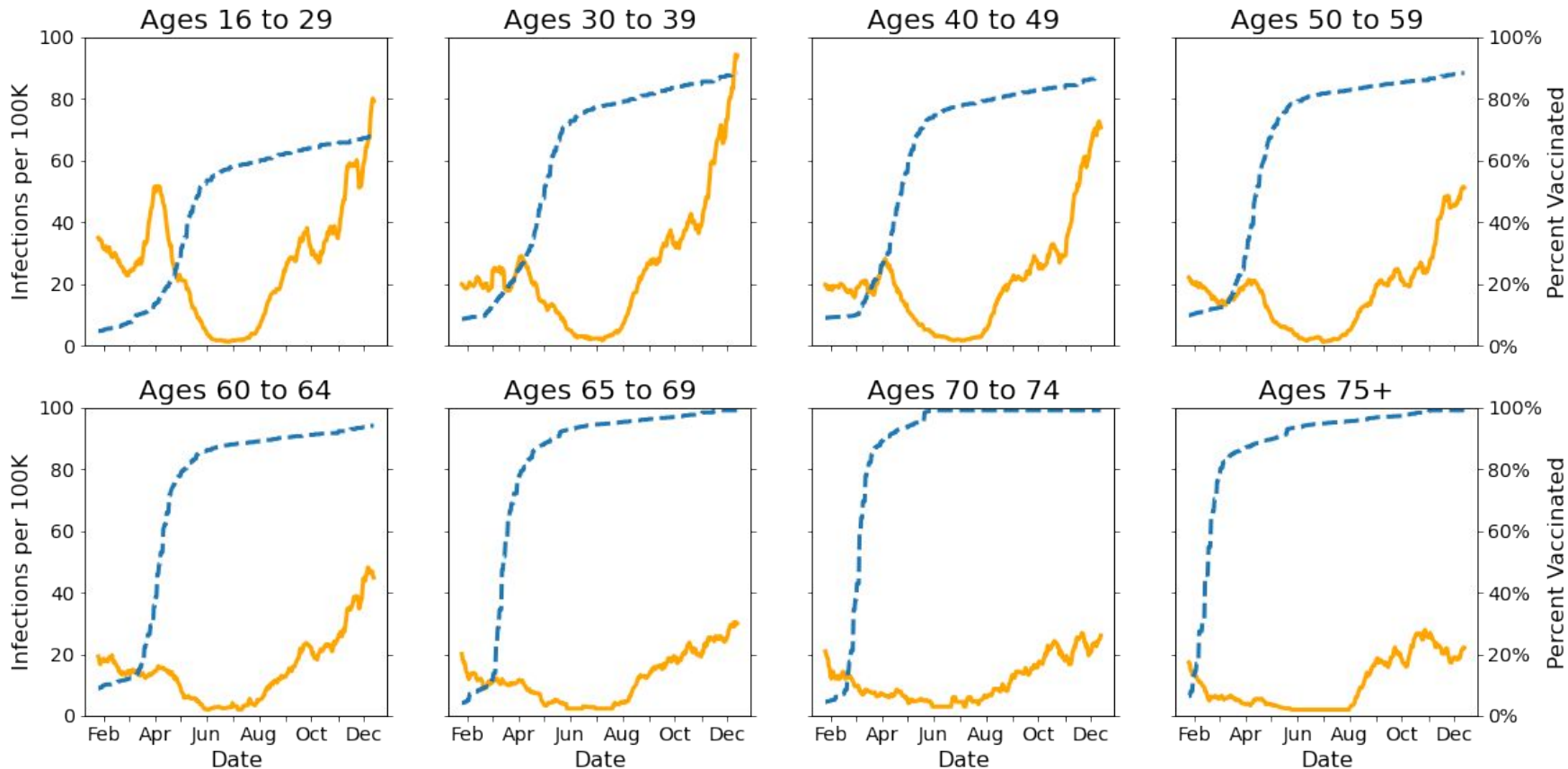


Source: Vermont Dept. of Health—December 14, 2021; created with Datawrapper

# Vermont Case Rate & Vaccination by Age Band

— New Infections per 100K (14-Day Average)

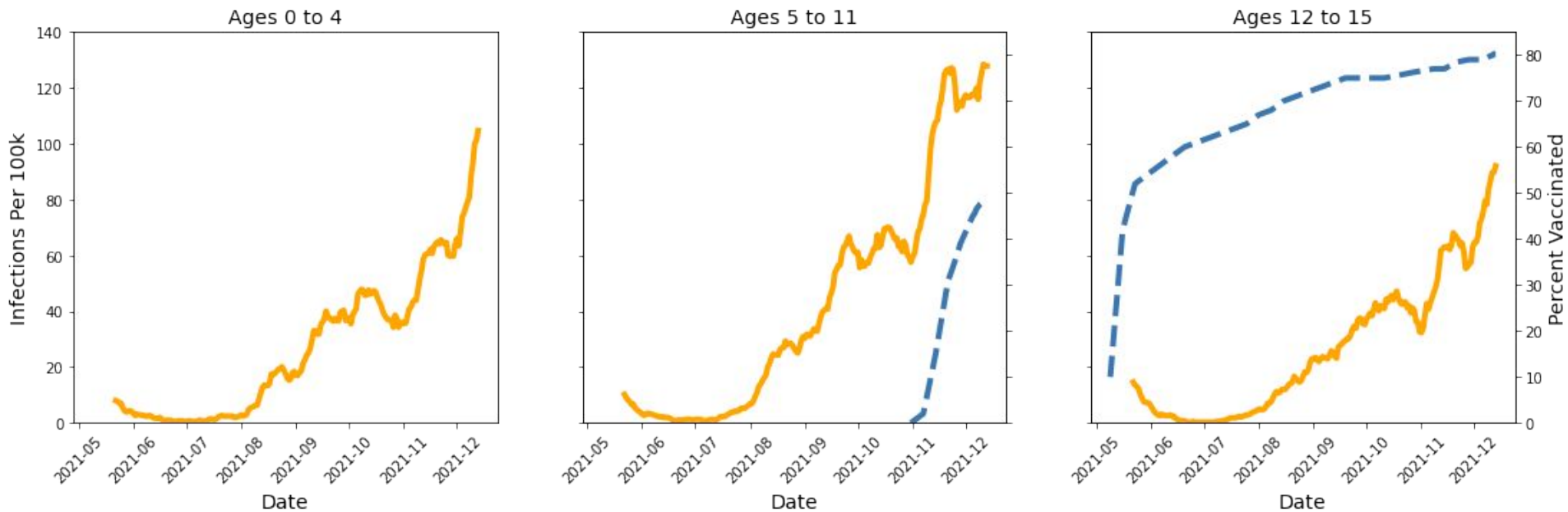
— Percent Received First Vaccine Dose





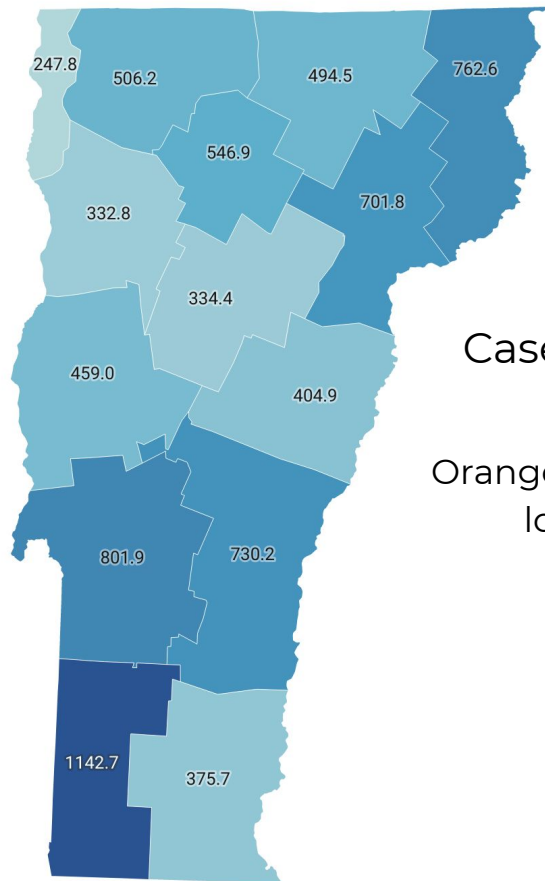
# Vermont Case Rate & Vaccination by Age Band

- New Infections per 100K (14-Day Average)
- - - Percent Received First Vaccine Dose



## Vermont Weekly Cases by County (per 100,000)

Results Reported November 30 to December 6

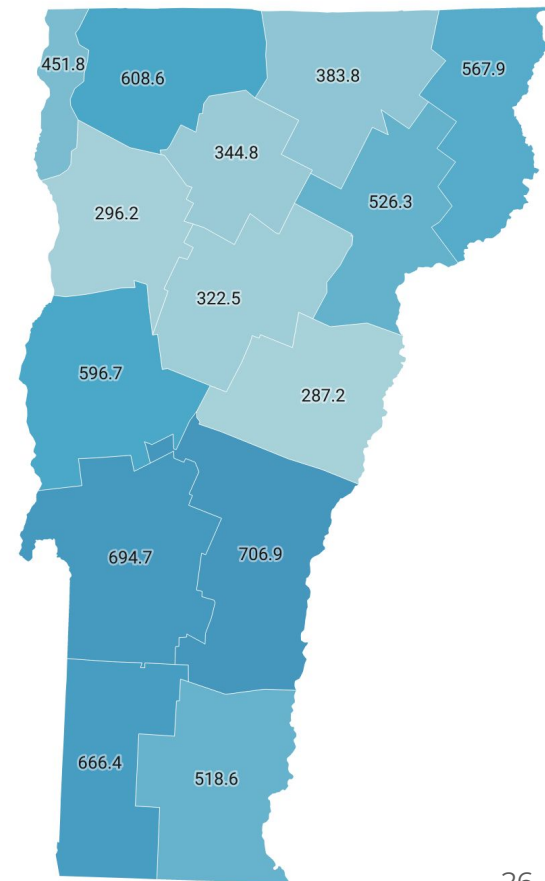


Case rates **decreased in 10 of 14** counties this week

Orange and Chittenden Counties reporting lowest levels of spread statewide

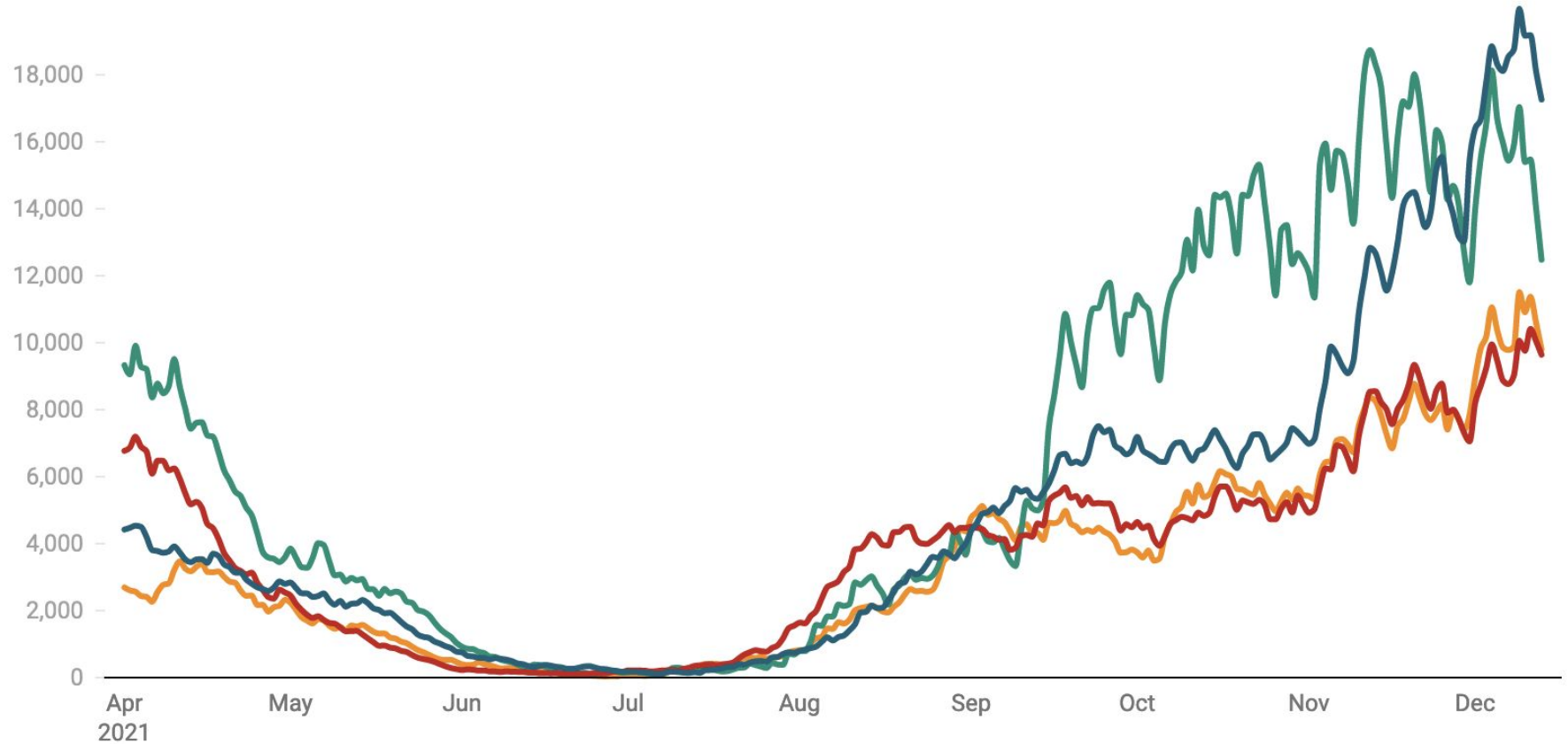
## Vermont Weekly Cases by County (per 100,000)

Results Reported December 7 to 13



# Active Cases per Million in Vermont Regions

— Burlington Metro — Northeast Kingdom — Central VT — Southern VT



# Fall 2021 Higher Education Restart

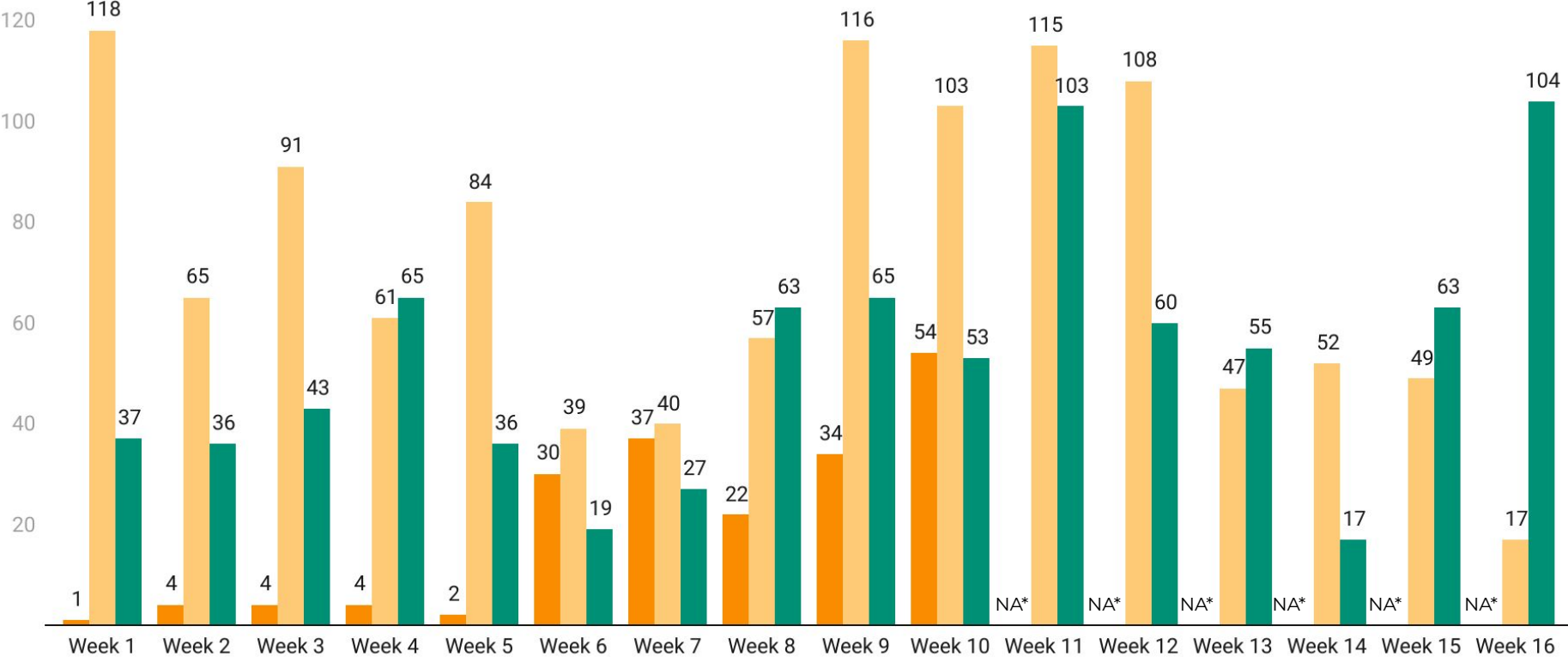
Higher Education Institutions Reporting	Enrollment	Students Fully Vaccinated	Students Not Fully Vaccinated (No Exemption Granted)	Students with Unknown Vaccine Status	Students Granted Vaccine Mandate Exemption
16 of 16	28,586	27,201	255	445	685
		95.2%	0.9%	1.6%	2.4%

Week 1: **37 cases** out of 12,623 tests  
 Week 2: **36 cases** out of 7,434 tests  
 Week 3: **43 cases** out of 3,053 tests  
 Week 4: **65 cases** out of 6,497 tests  
 Week 5: **36 cases** out of 4,878 tests  
 Week 6: **19 cases** out of 4,516 tests  
 Week 7: **27 cases** out of 3,536 tests  
 Week 8: **63 cases** out of 3,668 tests

Week 9: **65 cases** out of 4,398 tests  
 Week 10: **53 cases** out of 4,575 tests  
 Week 11: **132 cases** out of 8,404 tests  
 Week 12: **60 cases** out of 6,048 tests  
 Week 13: **55 cases** out of 6,029 tests  
 Week 14: **17 cases** out of 2,066 tests  
 Week 15: **63 cases** out of 8,141 tests  
 Week 16: **104 cases** out of 6,079 tests

# Vermont Higher Education Cases By Semester

Fall 2020 Spring 2021 Fall 2021



Source: Vermont Higher Education Institutions—December 13, 2021—Created with Datawrapper; \* During the Fall 2020 semester Week 1 started later than Spring and Fall 2021 and therefore reached Thanksgiving Break by Week 11.

# Active Outbreaks in Long Term Care Facilities

Facility Name	Total COVID-19 Cases
Queen City Nursing & Rehabilitation, <i>Burlington</i>	11
Seall, <i>Bennington</i>	10
The Manor, <i>Morrisville</i>	8
Mountain View Center, <i>Rutland</i>	Not Shown
LTCF C	Not Shown
St. Johnsbury Health & Rehabilitation	Not Shown
Thompson House, <i>Brattleboro</i>	Not Shown
<b>Total</b>	<b>29</b>

Source: Vermont Department of Health—December 14, 2021 (reporting Monday through previous Sunday); 'Active' defined as less than 28 days since most recent case's specimen collection date or illness start date (whichever is later); \*privacy suppressions include facility w/ <25 staff and residents and/or >75% of facility infected

# Vermont Hospitalization Data

# Statewide Covid-19 Hospitalizations

100

75

50

25

0

The 7-Day hospitalization average was **flat** over the past week

**72%** of hospitalizations among the unvaccinated over the last 7 days

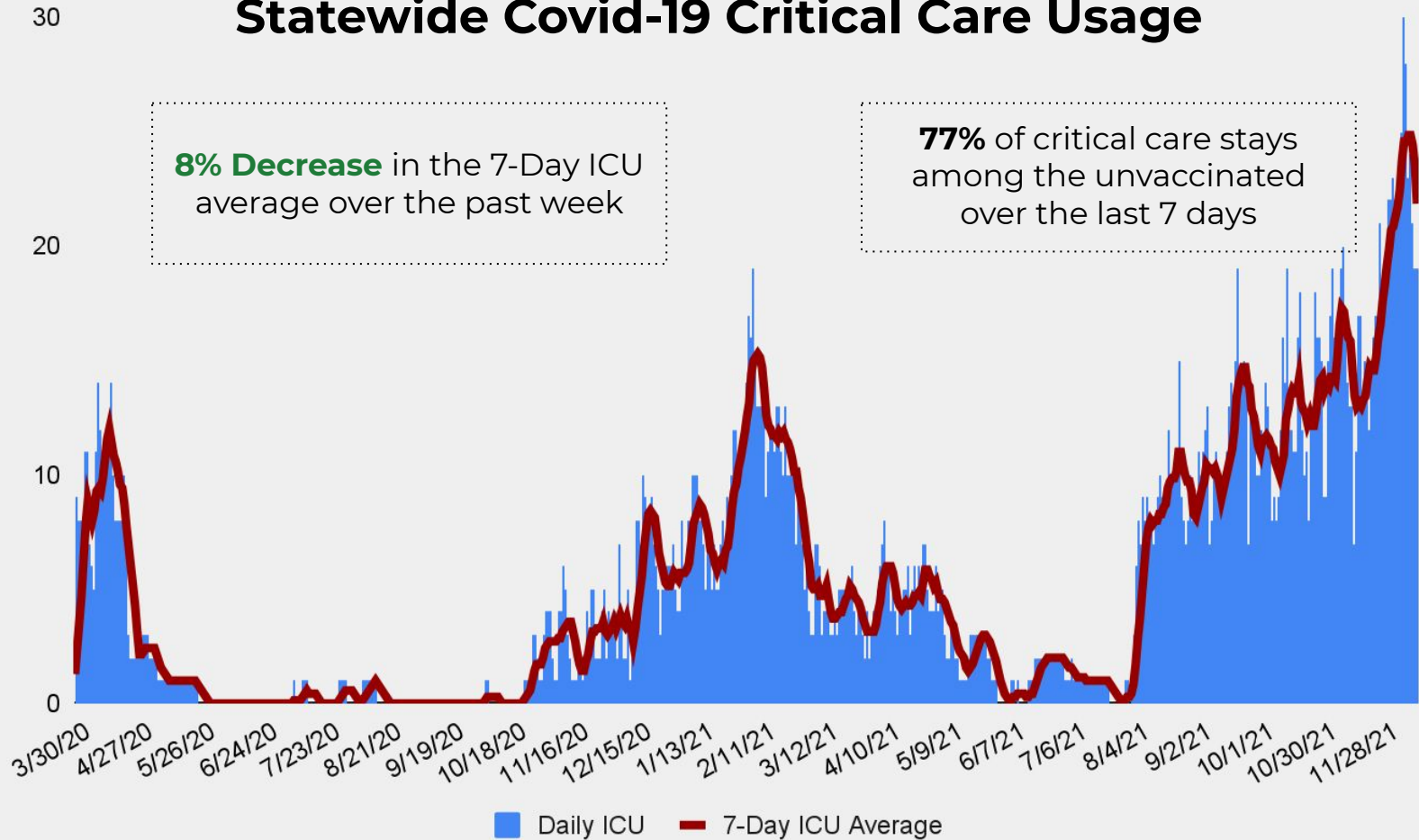
3/30/20 4/26/20 5/24/20 6/21/20 7/19/20 8/16/20 9/13/20 10/11/20 11/8/20 12/6/20 1/3/21 1/31/21 2/28/21 3/28/21 4/25/21 5/23/21 6/20/21 7/18/21 8/15/21 9/12/21 10/10/21 11/7/21 12/5/21

■ Daily Hospitalizations ■ 7-Day Hospitalization Average

Source: Vermont Department of Health—December 14, 2021



# Statewide Covid-19 Critical Care Usage



**8% Decrease** in the 7-Day ICU average over the past week

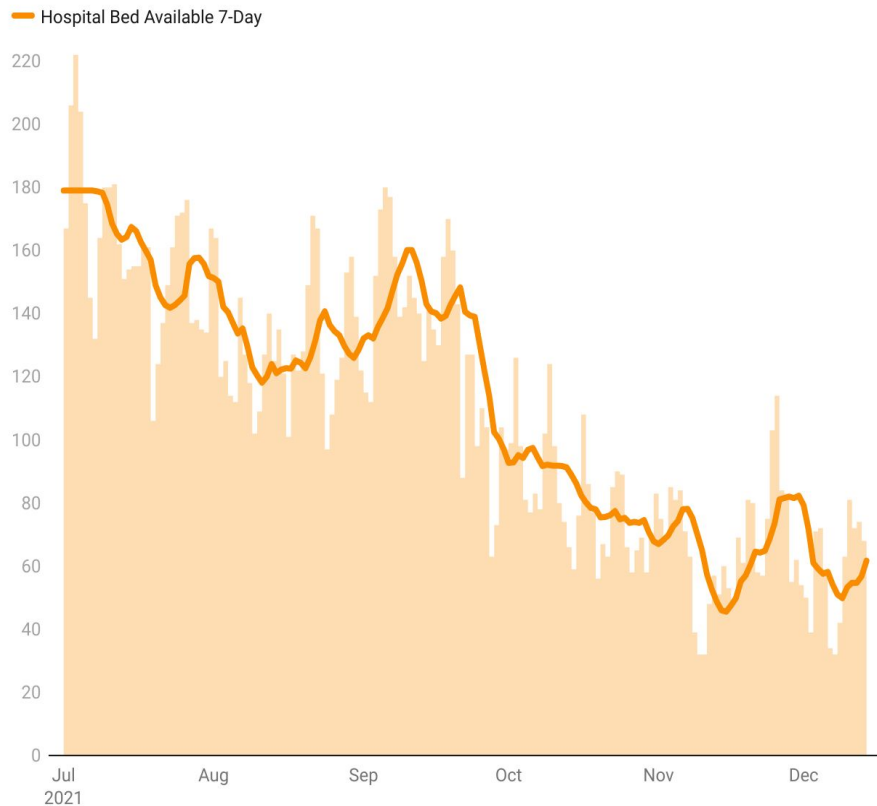
**77%** of critical care stays among the unvaccinated over the last 7 days

■ Daily ICU ■ 7-Day ICU Average

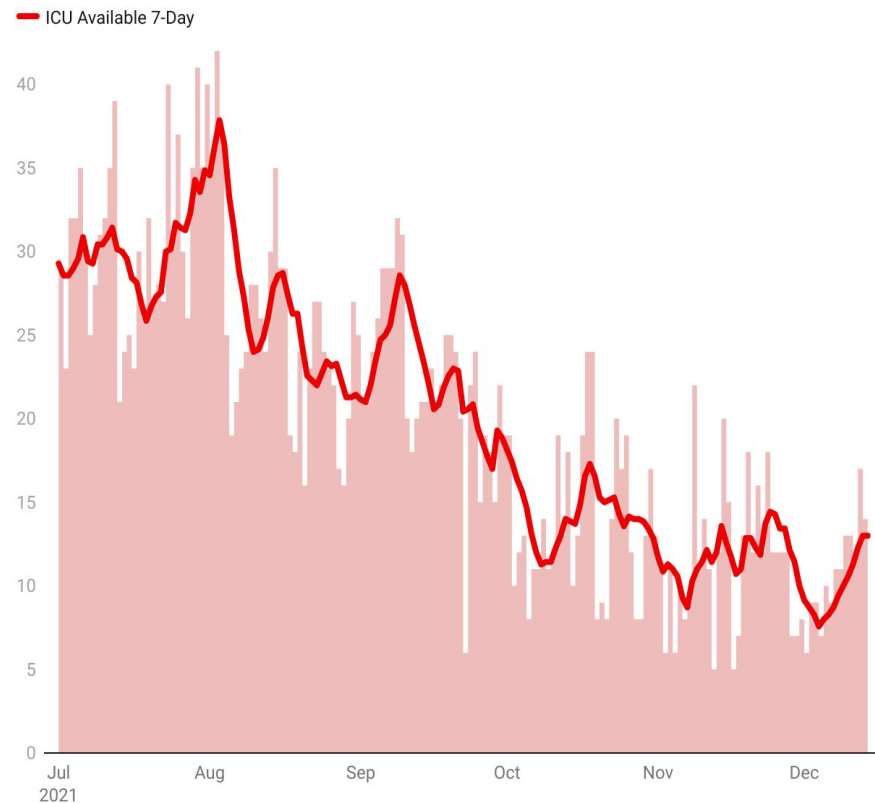
# Vermont Hospital Metrics

*(7-Day Averages)*

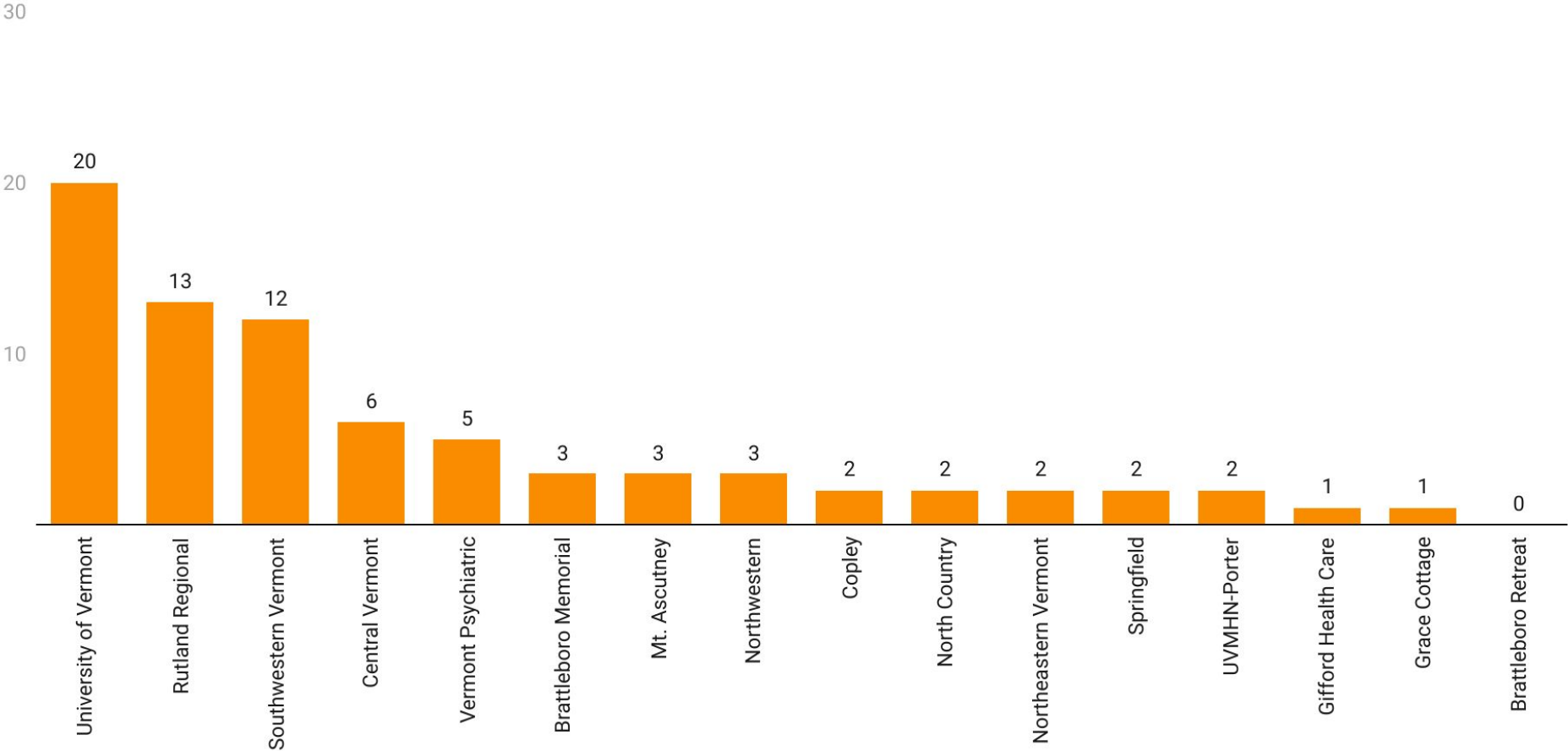
## Vermont Hospital Beds Available Since July 1, 2021



## Vermont ICU Beds Available Since July 1, 2021

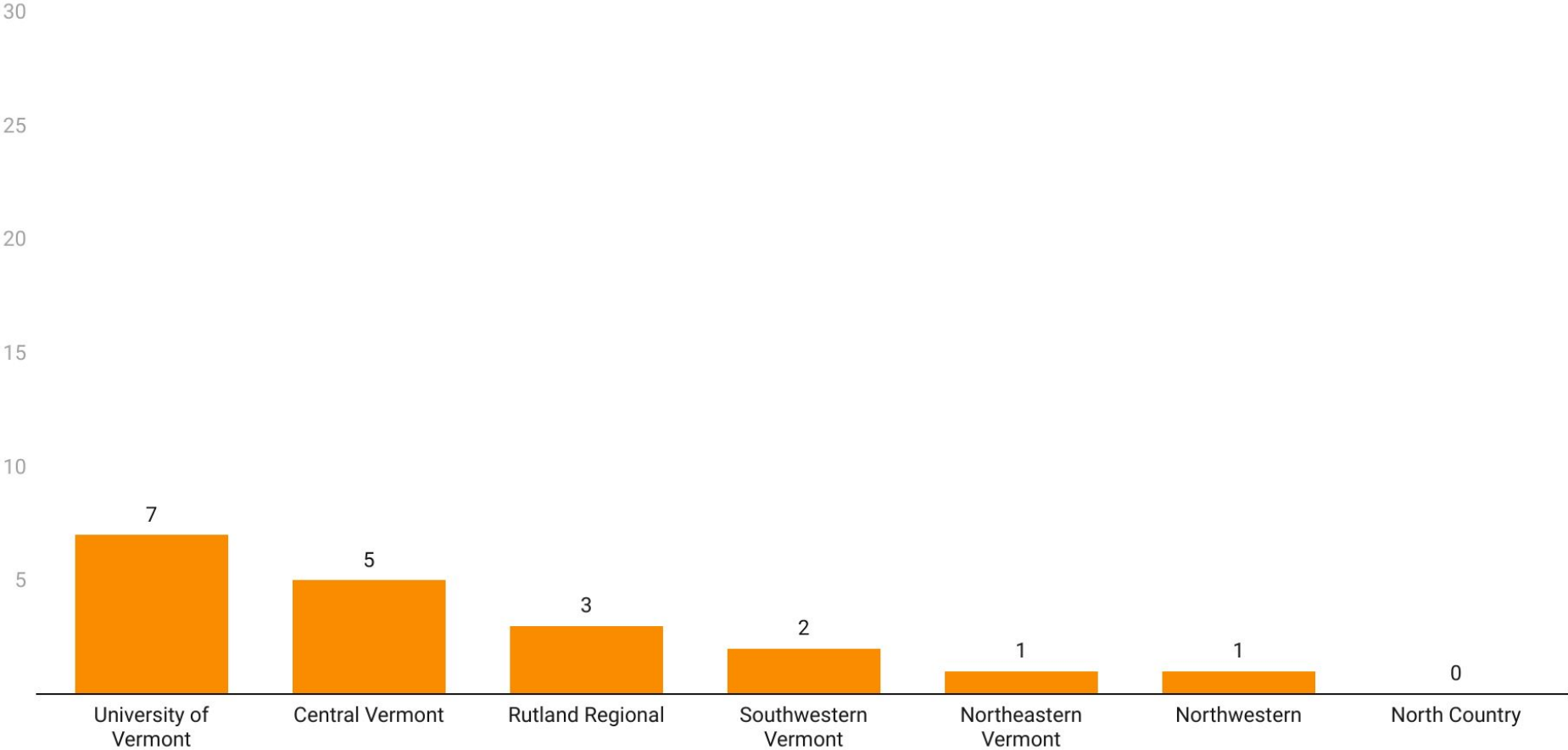


# COVID-19 Hospitalizations By Hospital



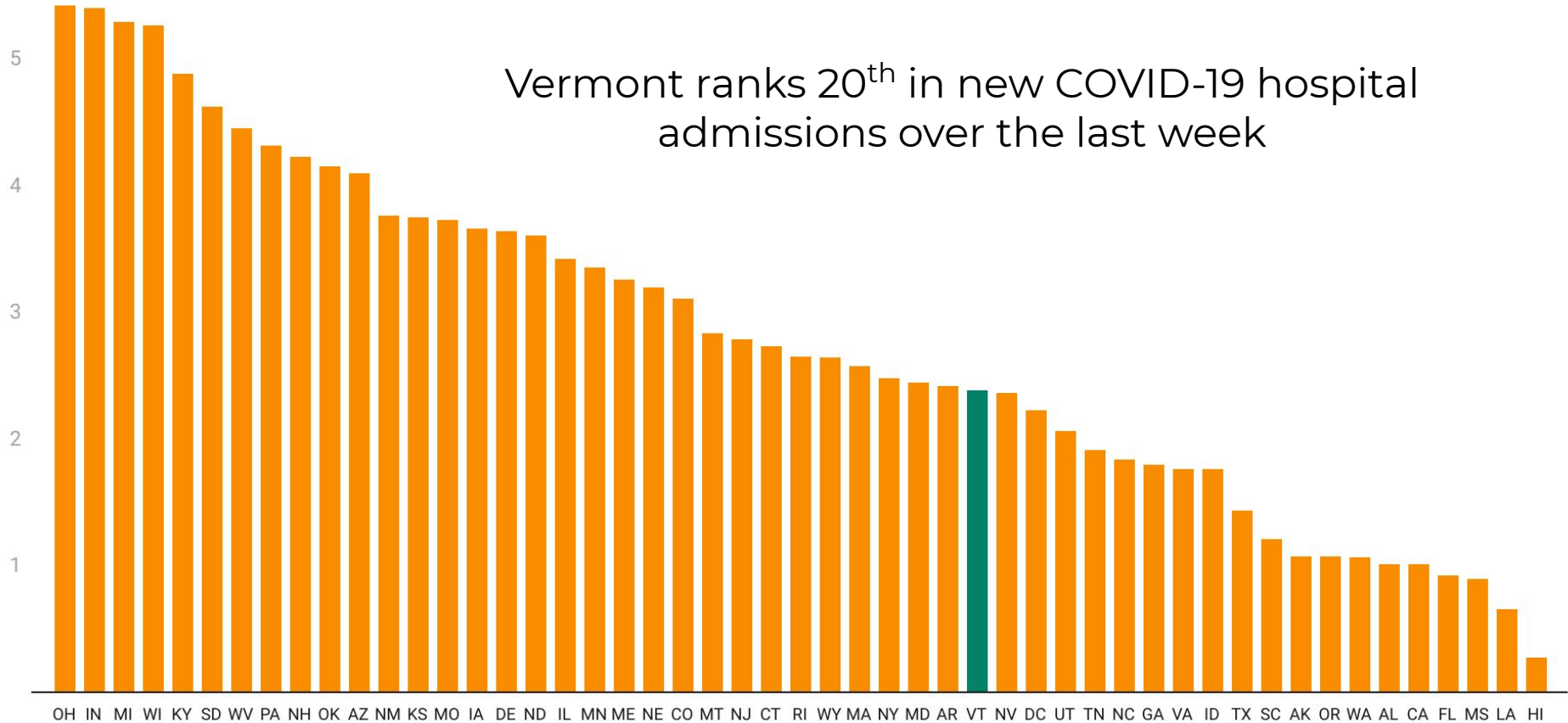
Source: Vermont Department of Health—December 14, 2021;

# COVID-19 ICUs By Hospital



Source: Vermont Department of Health—December 14, 2021;

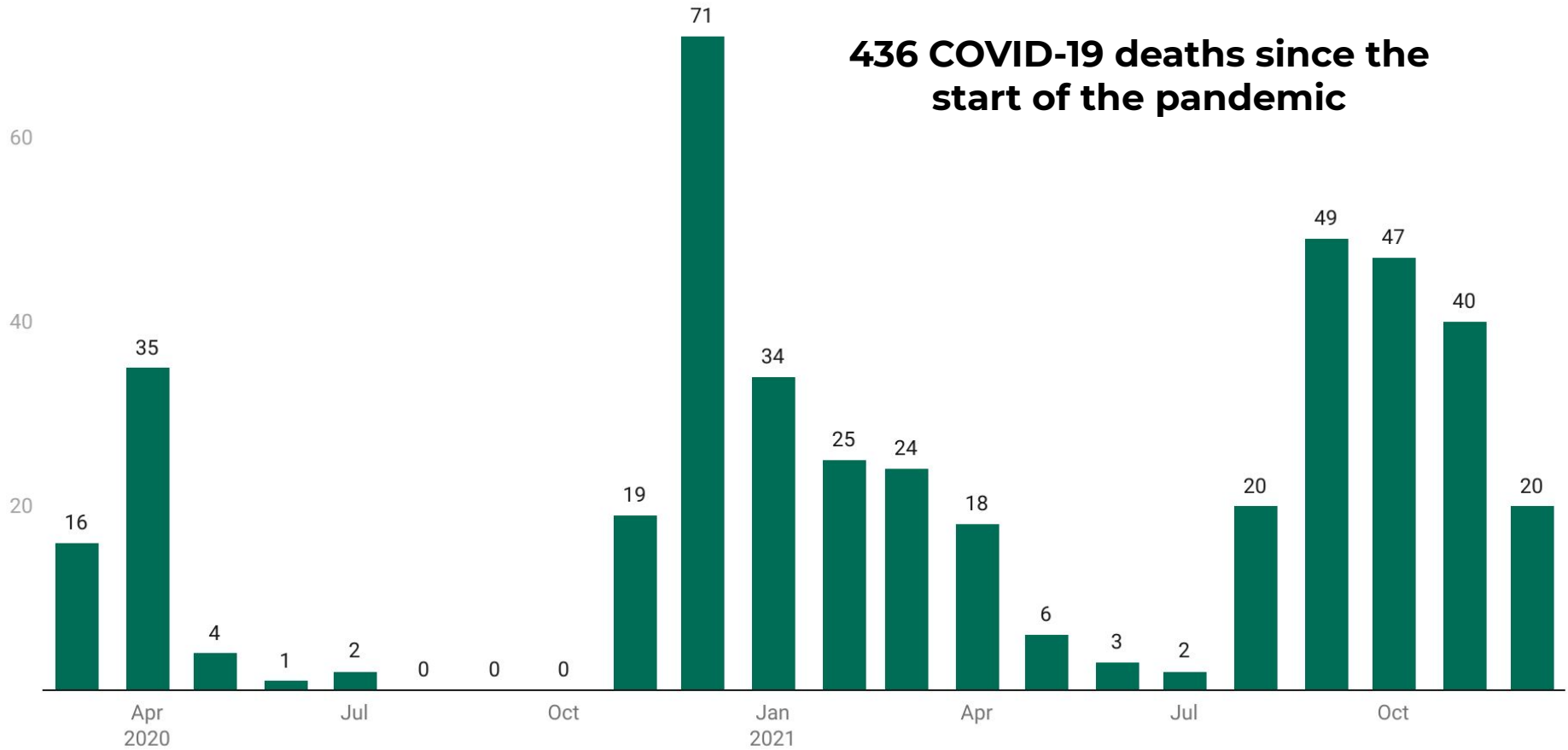
# COVID-19 Hospital Admissions Last 7 Days Per 100K



# Vermont Fatality Data



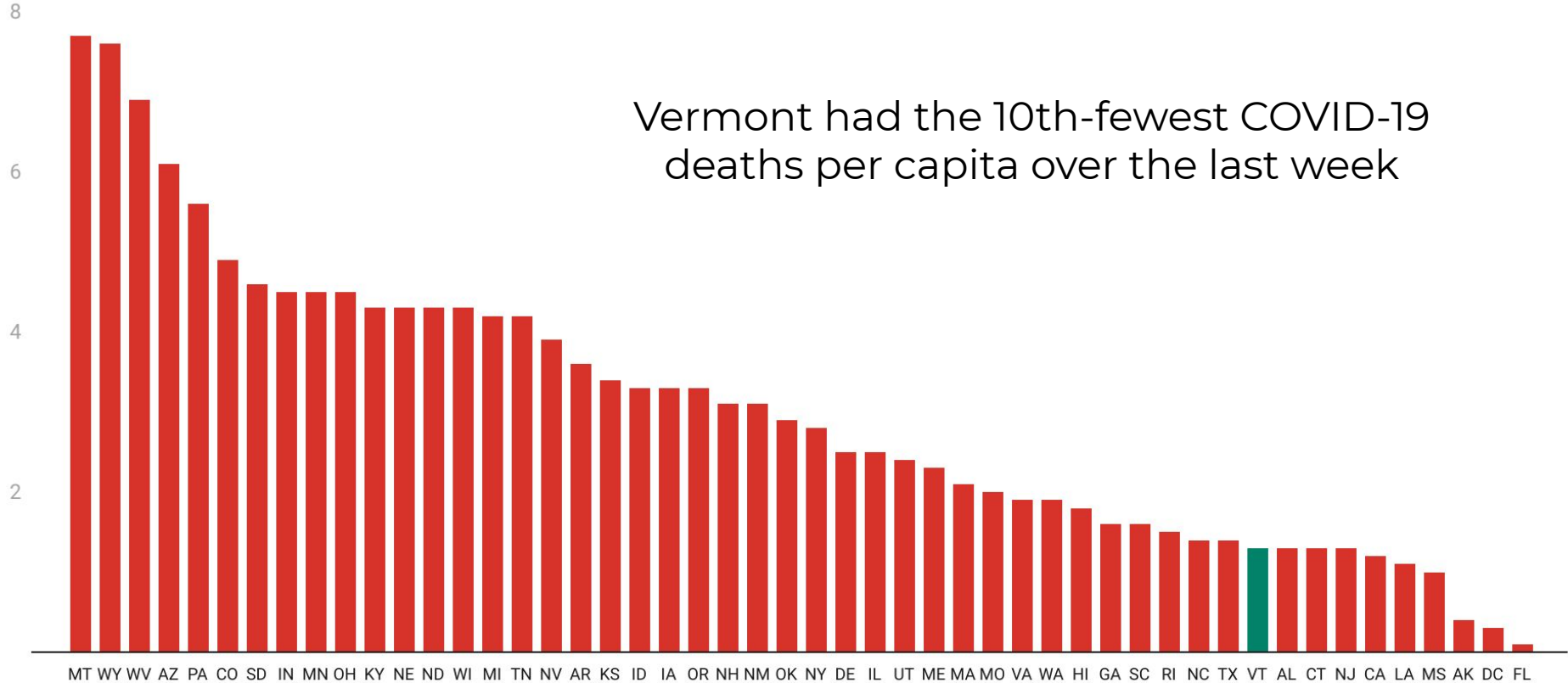
# Monthly Covid-19 Deaths In Vermont



Source: Vermont Department of Health—December 14, 2021; deaths attributed to month in which death occurred rather than reported



# COVID-19 Deaths Per 100K Last 7 Days



Vermont had the 10th-fewest COVID-19 deaths per capita over the last week

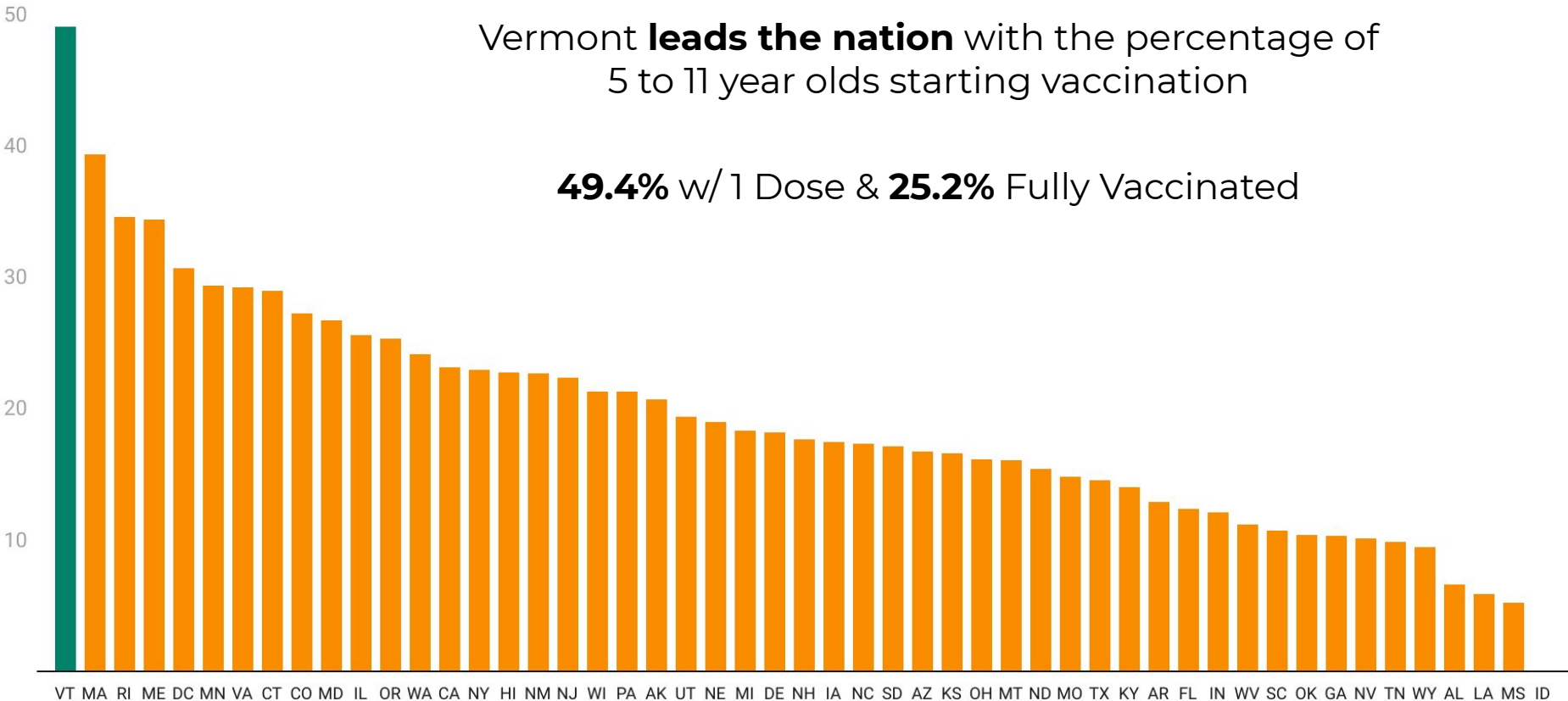
Source: CDC—December 13, 2021; Created with Datawrapper; Maryland excluded due to inability to report resulting from cyber incident

# Vermont Vaccination Data

# Vermont CDC Vaccine Scorecard

Metric	Figure	State Ranking
<b>Doses Administered per 100K</b>	<b>190,360</b>	<b>1</b>
<b>% At Least 1 Dose (5+ Population)</b>	<b>91.5%</b>	<b>2</b>
<b>% Fully Vaccinated (5+ Population)</b>	<b>79.1%</b>	<b>1</b>
<b>% At Least 1 Dose (Full Population)</b>	<b>87.3%</b>	<b>2</b>
<b>% Fully Vaccinated (Full Population)</b>	<b>75.4%</b>	<b>1</b>
<b>% Fully Vaccinated (65 &amp; Over)</b>	<b>99.2%</b>	<b>1</b>

# Percent of 5 to 11 Population Starting Vaccination

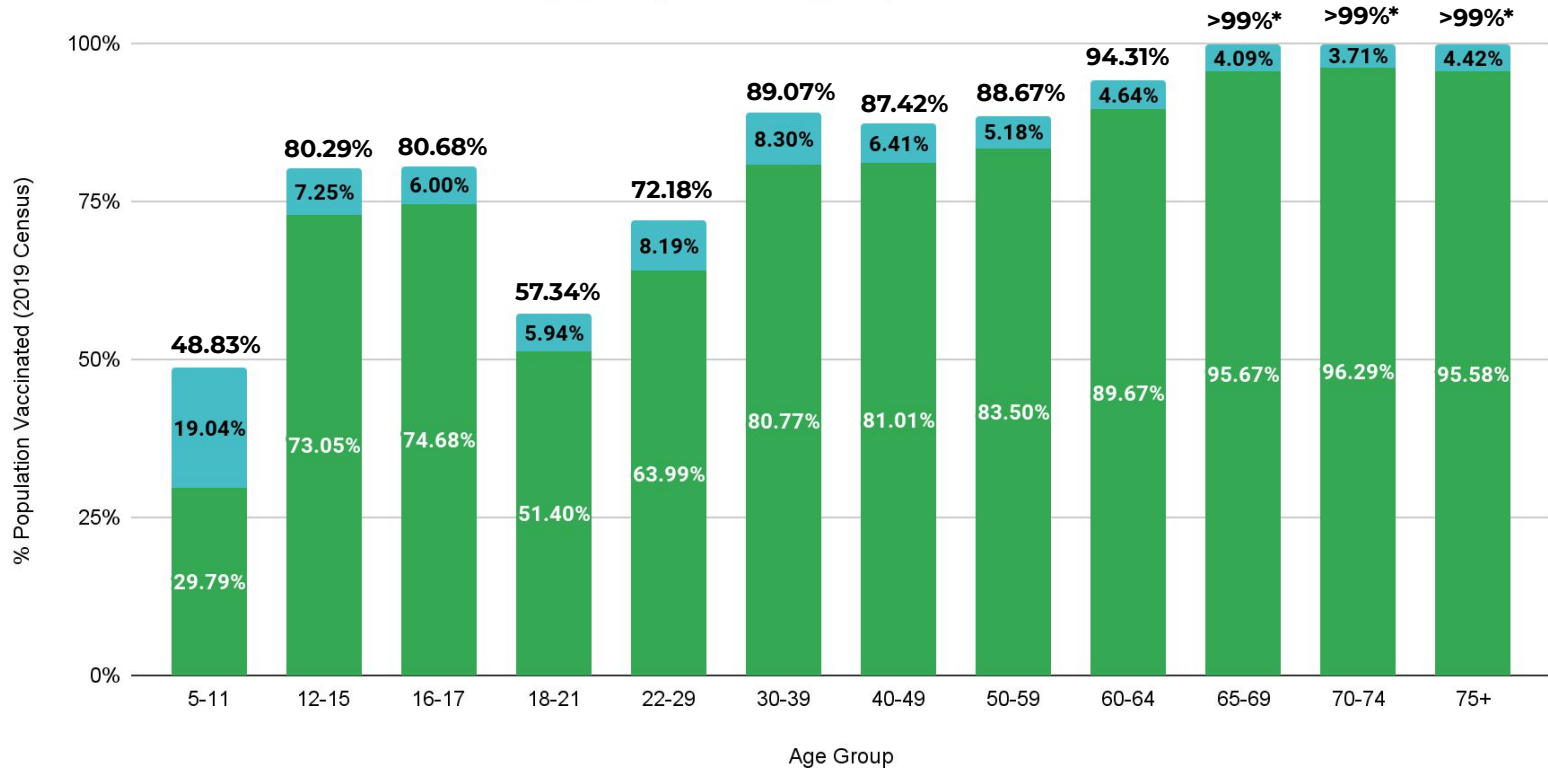


Source: CDC—December 13, 2021

# Vermont Vaccination Progress

By Age Band

Partially Vaccinated Fully Vaccinated



Source: Vermont Dept. of Health—December 14, 2021; \*based on 2019 census estimates; state data may differ from CDC reporting

# Vermont CDC Booster Scorecard

Metric	Figure	State Ranking
<b>% of Fully Vaccinated w/ booster dose</b>	<b>42.1%</b>	<b>1</b>
<b>% of Fully vaccinated 18+ w/ booster doses</b>	<b>46.1%</b>	<b>1</b>
<b>% of Fully vaccinated 50+ w/ booster doses</b>	<b>58.6%</b>	<b>1</b>
<b>% of Fully vaccinated 65+ w/ booster doses</b>	<b>70.0%</b>	<b>2</b>

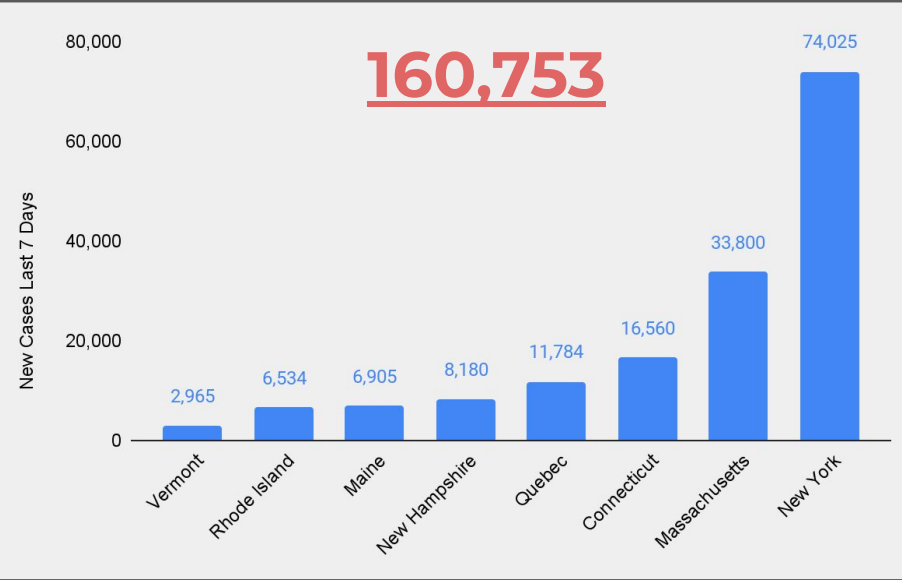
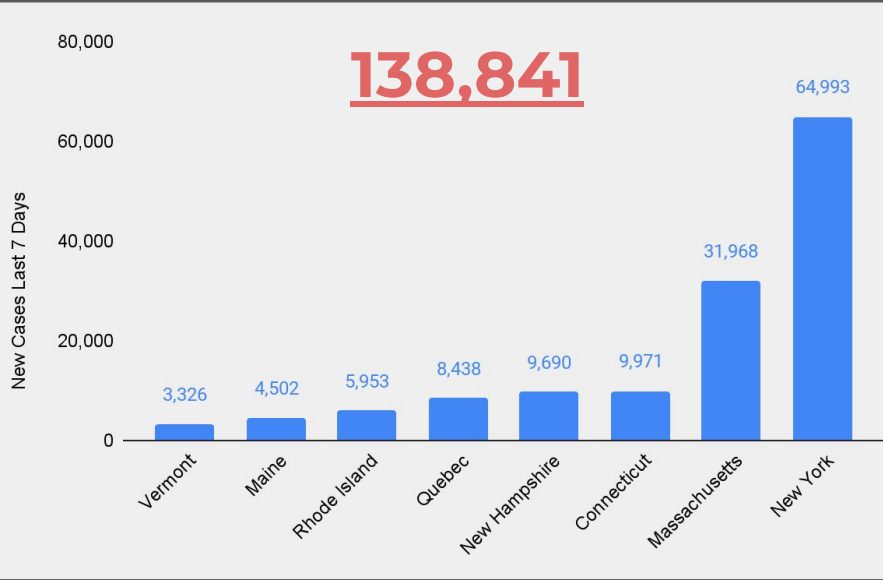
# Regional Data

# Northeast Regional Cases

**15.8% Increase in New Cases**

New Cases November 30th to December 6th

New Cases December 7th to December 13th





# Weekly Northeast Regional Cases

250000

200000

150000

100000

50000

0

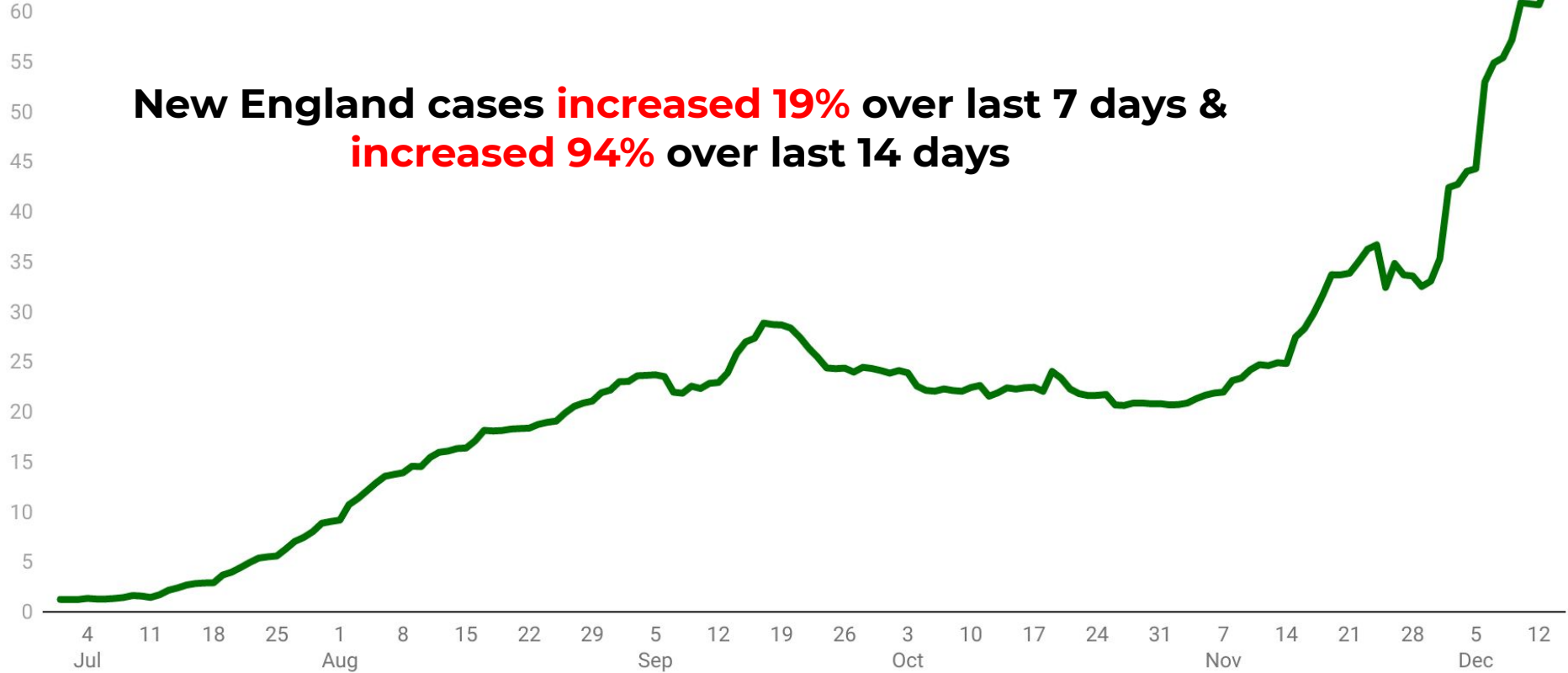
**Most Weekly COVID-19  
Cases Reported Since  
January 25, 2021**

3/16/20 4/13/20 5/11/20 6/8/20 7/6/20 8/3/20 8/31/20 9/28/20 10/26/20 11/23/20 12/21/20 1/18/21 2/15/21 3/15/21 4/12/21 5/10/21 6/7/21 7/5/21 8/2/21 8/30/21 9/27/21 10/25/21 11/22/21

Sources: State Health Depts.—December 13, 2021 (includes: CT, ME, MA, NH, NY, QC, RI & VT)

# New England COVID-19 Cases Per 100K (7-Day Average)

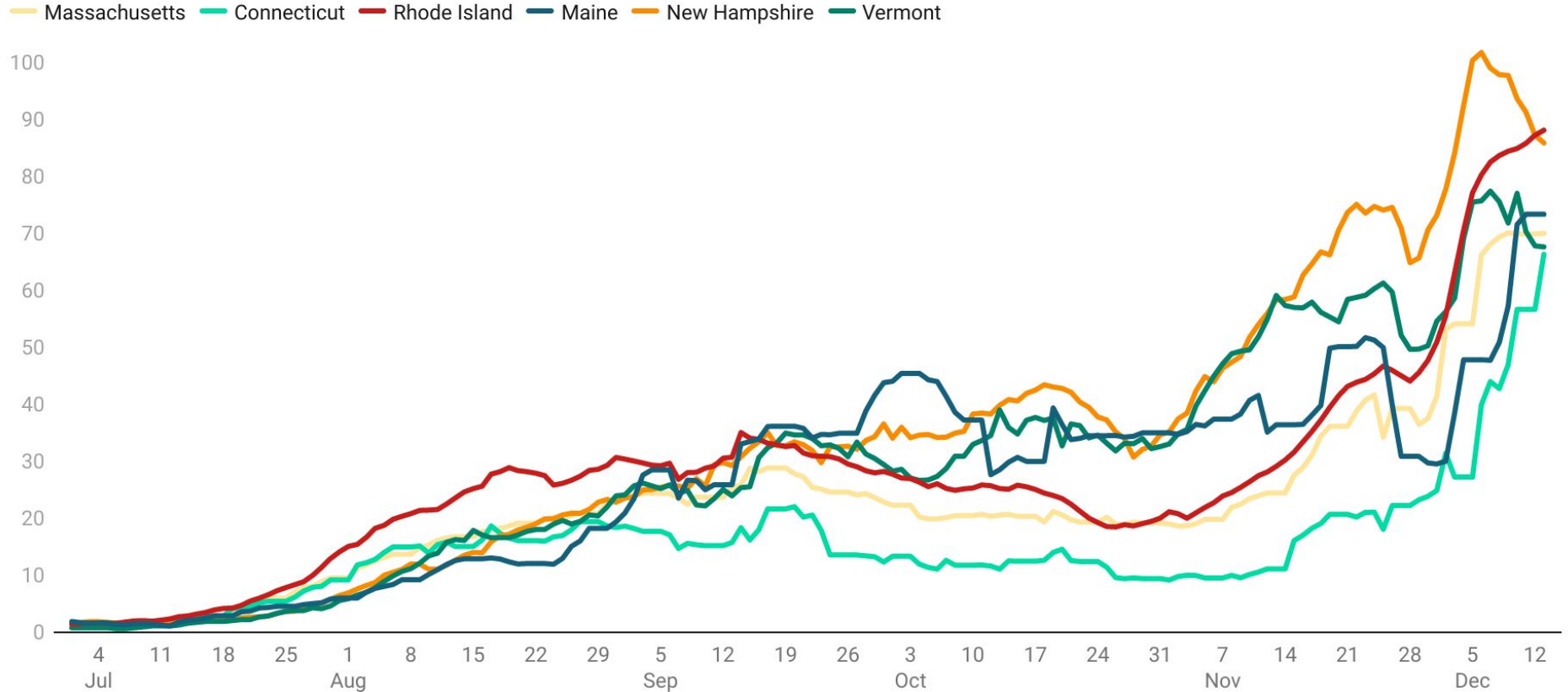
— New England Case Rate



Sources: State Health Depts.—December 13, 2021 (includes: CT, ME, MA, NH, RI & VT)

# New England COVID-19 Case Trends

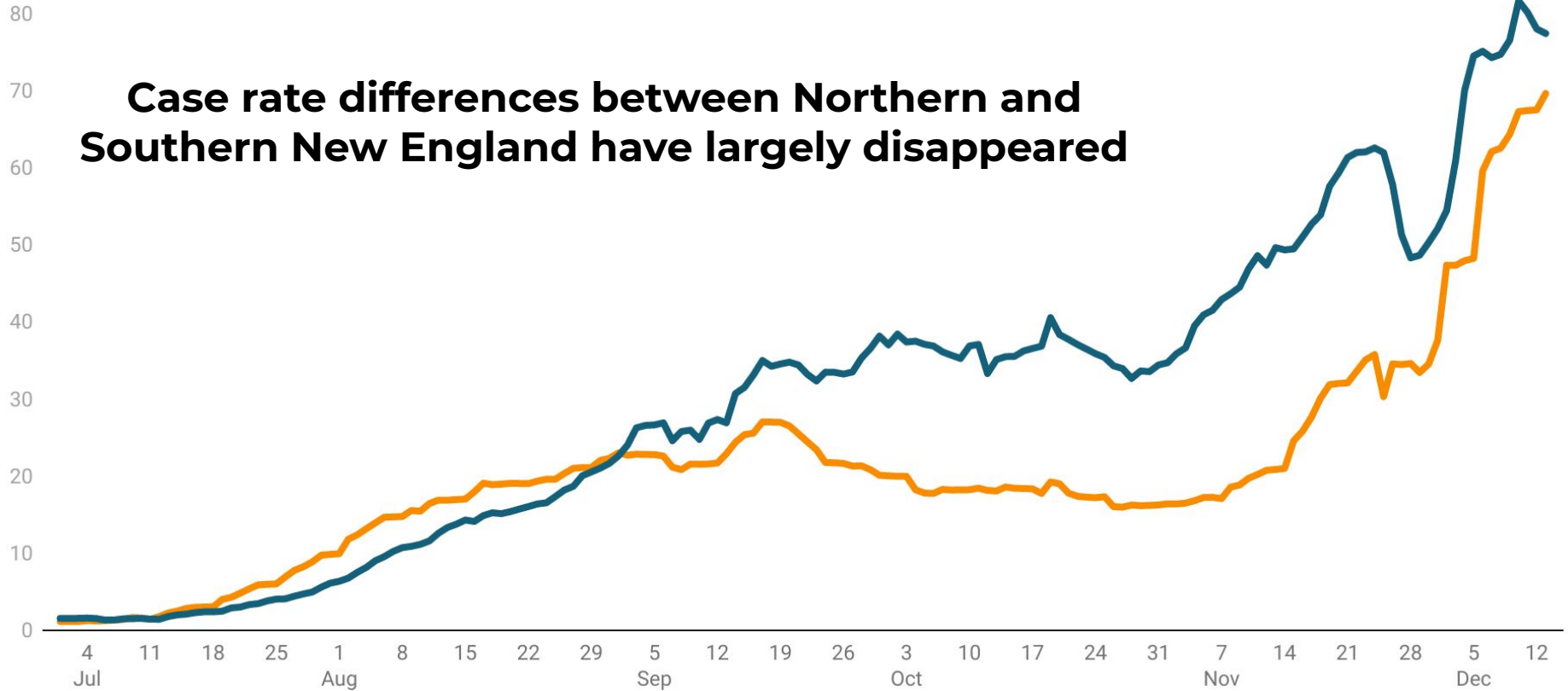
7-Day Average Cases Per 100K



Sources: State Health Depts.—December 13, 2021 (includes: CT, ME, MA, NH, RI & VT)

# Northern vs. Southern New England Case Rate Per 100K

Southern NE 7-Day Case Rate Northern NE 7-Day Case Rate

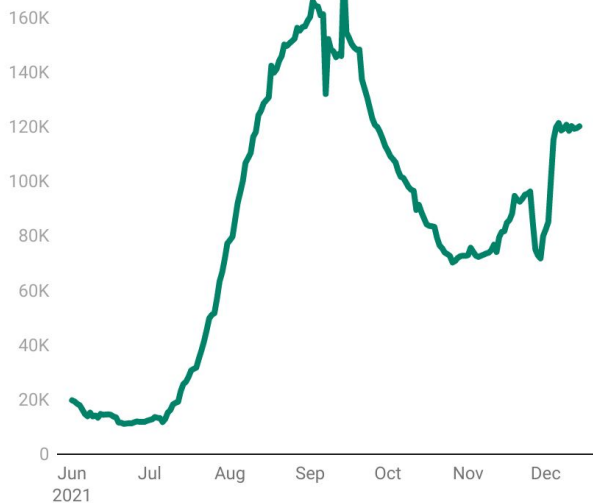


Sources: State Health Depts.—December 13, 2021 (Northern NE includes: ME, NH & VT & Southern NE includes: CT, MA & RI)

# National Data

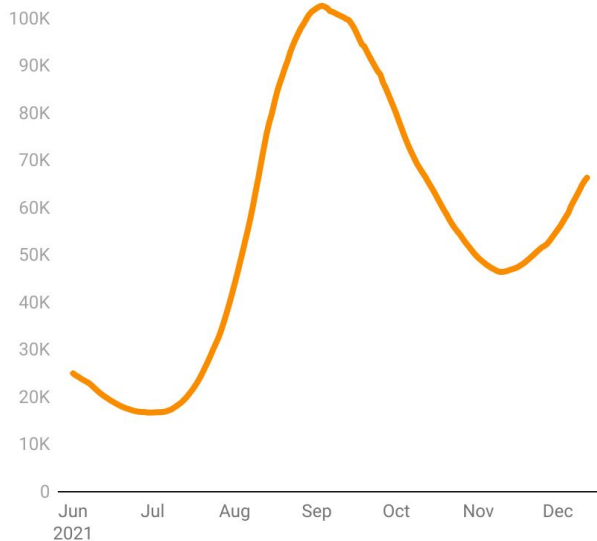
# U.S. Infections, Hospitalizations, & Deaths

**1.3% Increase**  
Over last 7 days



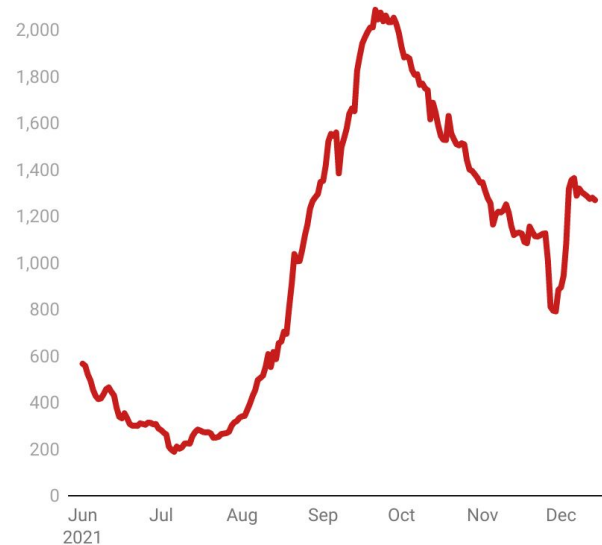
**Infections**  
*(7-Day Average)*

**11.3% Increase**  
Over last 7 days



**Hospitalizations**  
*(7-Day Average)*

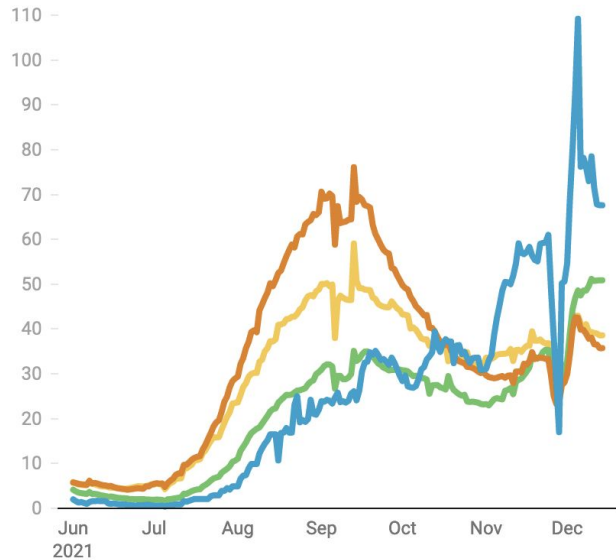
**1.4% Decrease**  
Over last 7 days



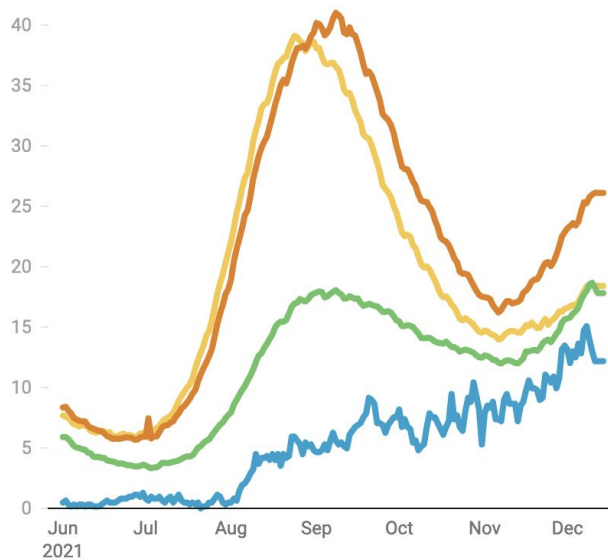
**Deaths**  
*(7-Day Average)*

# Infections, Hospitalizations, & Deaths by Percentage of State Population Vaccinated

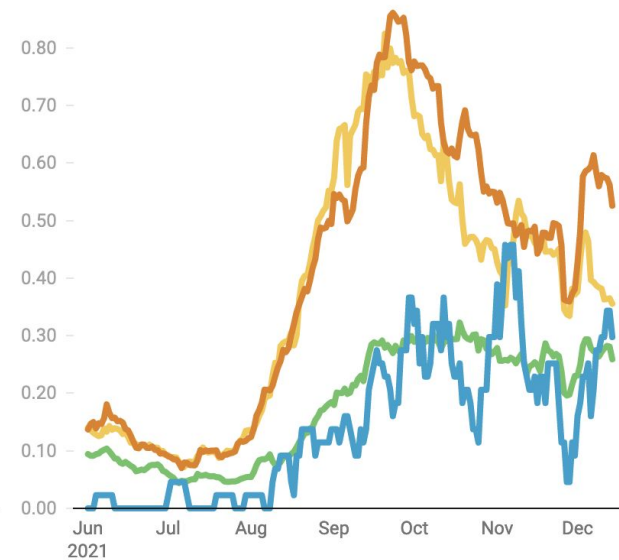
Bottom Third Vaccinated States   Middle Third Vaccinated States   Top Third Vaccinated States   Vermont



Infections per 100K



Hospitalizations per 100K  
(Current)

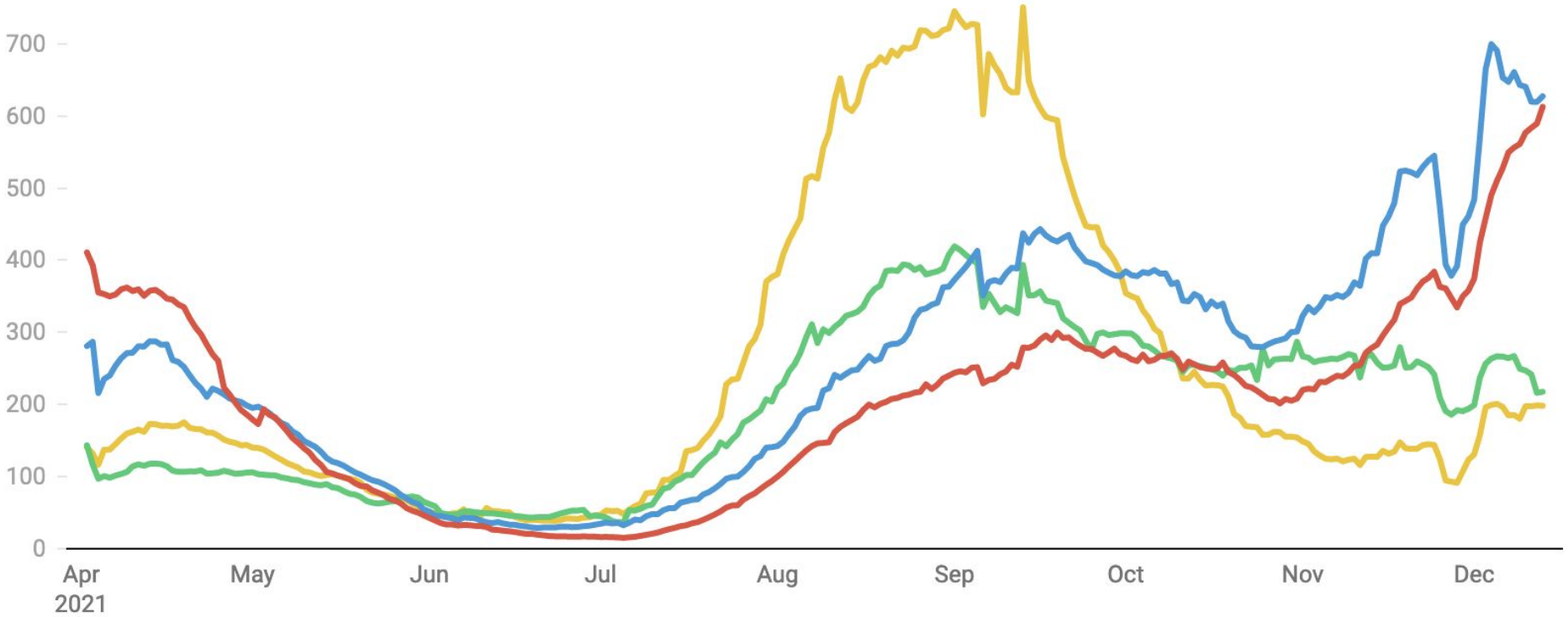


Deaths per 100K

# Daily COVID-19 Cases per Million in US Regions

Calculated as a 7-day moving average. Definitions of North, Midwest, South, and West taken from the U.S. Census bureau.

— Northeast — Midwest — South — West

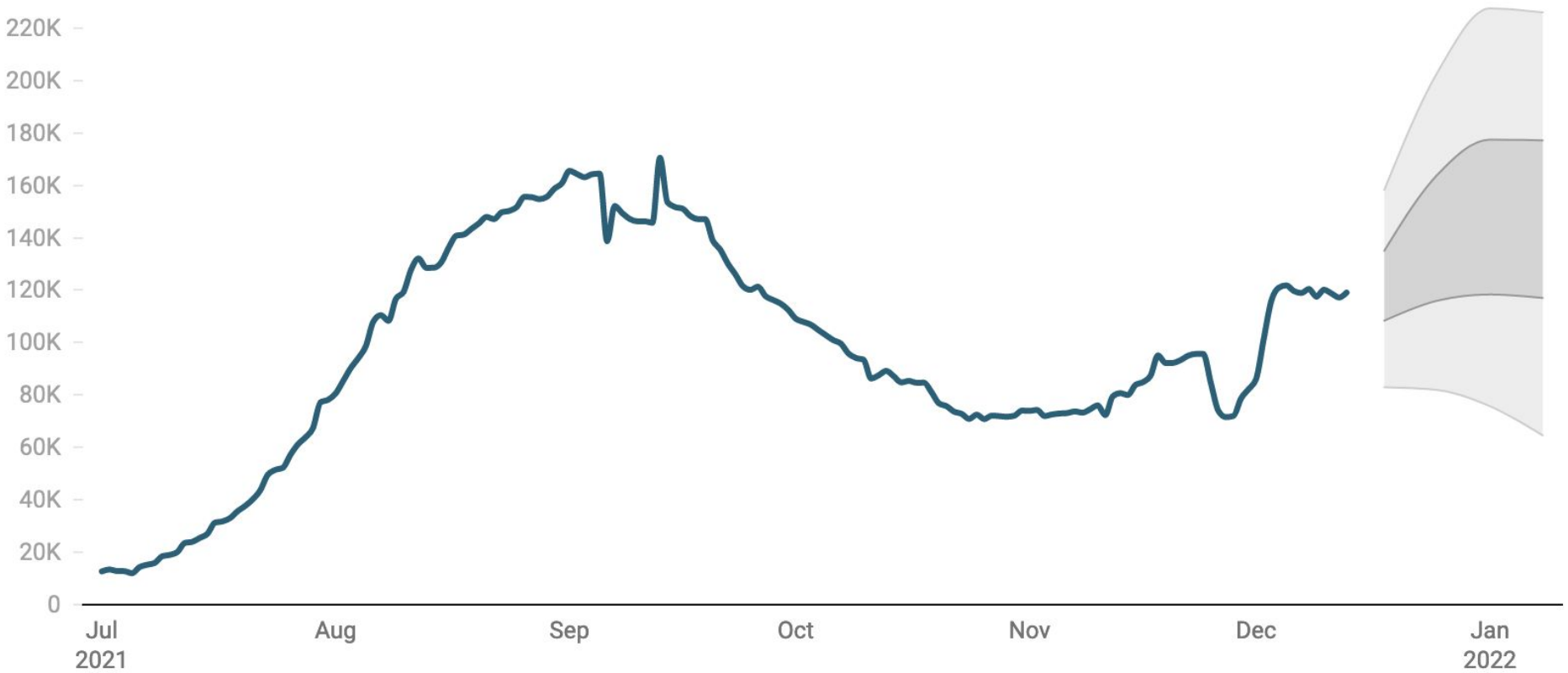


Source: JHU—November 30, 2021; 7-day averages; created with Datawrapper



# US COVID-19 Infection Confidence Intervals

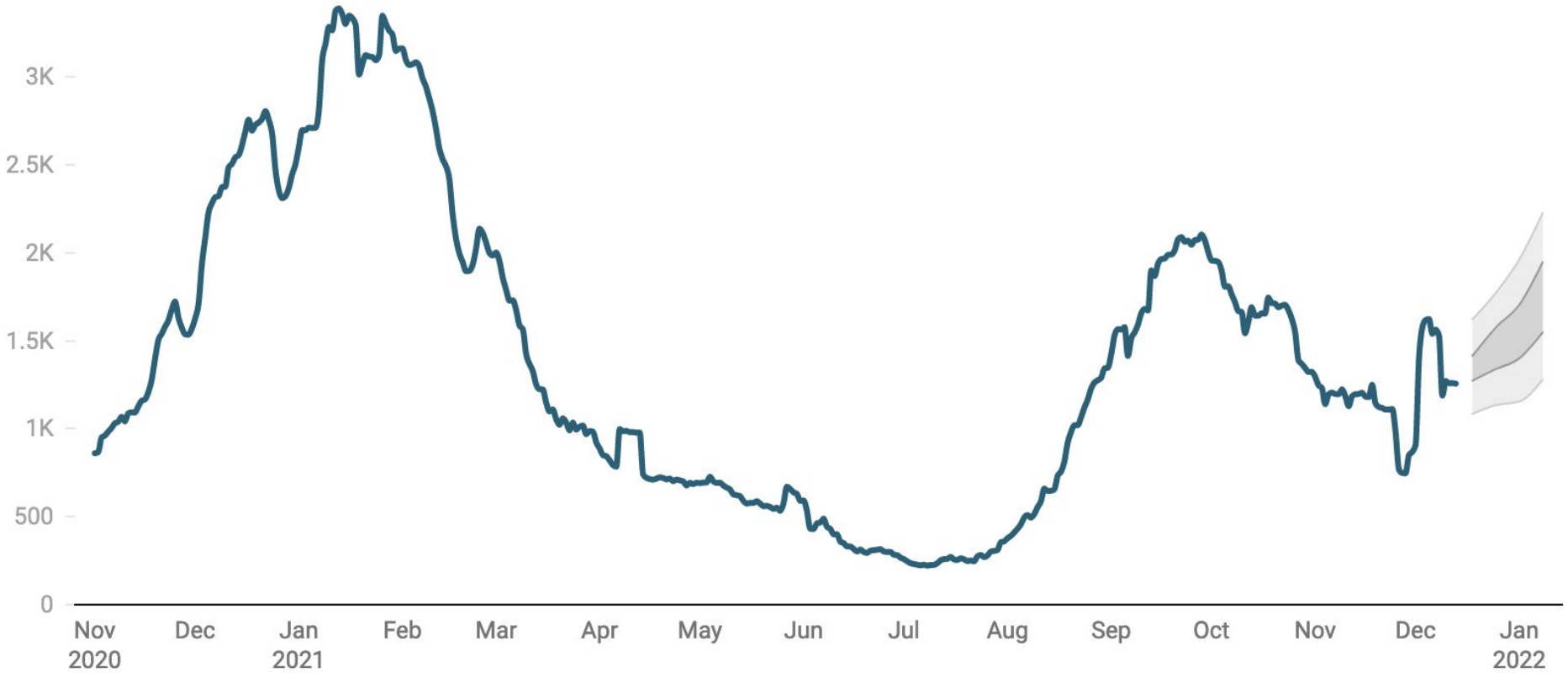
Calculated as a 7-day mean. Inner and outer bands represent 50% and 95% confidence intervals, respectively.



Source: CDC—November 30, 2021

# US COVID-19 Death Confidence Intervals

Calculated as a 7-day mean. Inner and outer bands represent 50% and 95% confidence intervals, respectively.



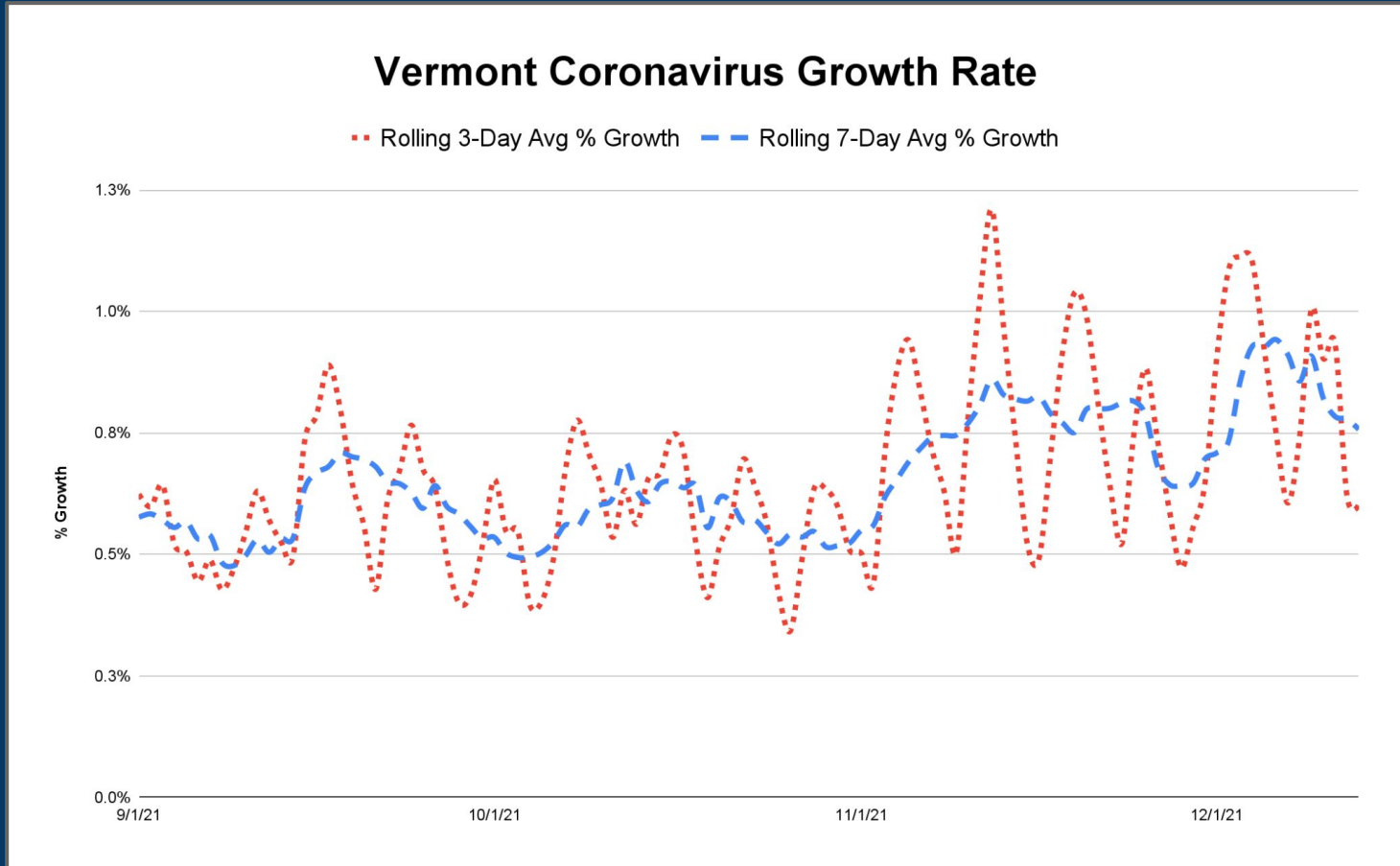
Source: CDC—November 30, 2021

# RESTART VERMONT

## Reopening Metrics

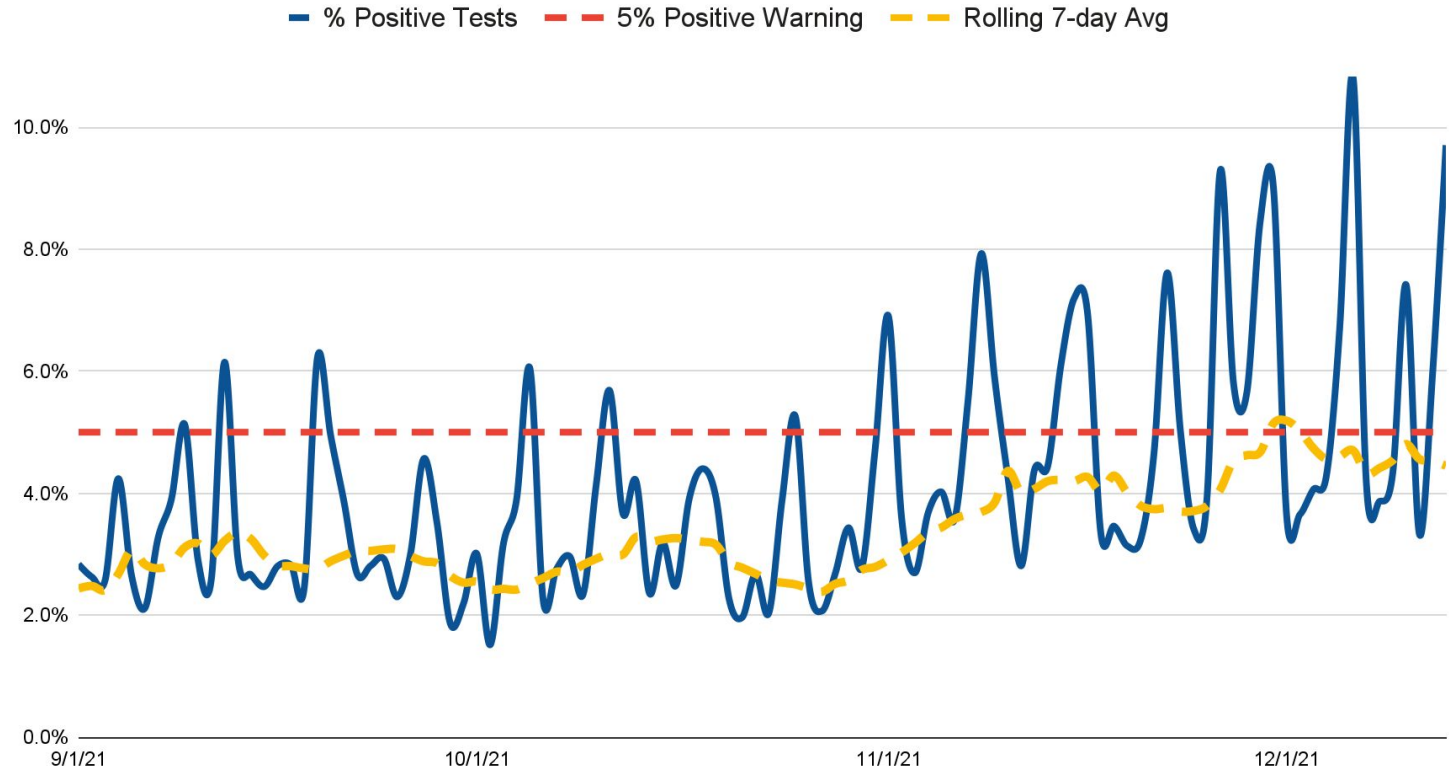
1. Syndromic Surveillance (*retired*)
2. Viral Growth & Reproductive Rates
3. Percentage of New Positive Tests
4. Hospital & Critical Care Bed Capacity
5. Testing Volume

# Viral Growth & Reproductive Rates

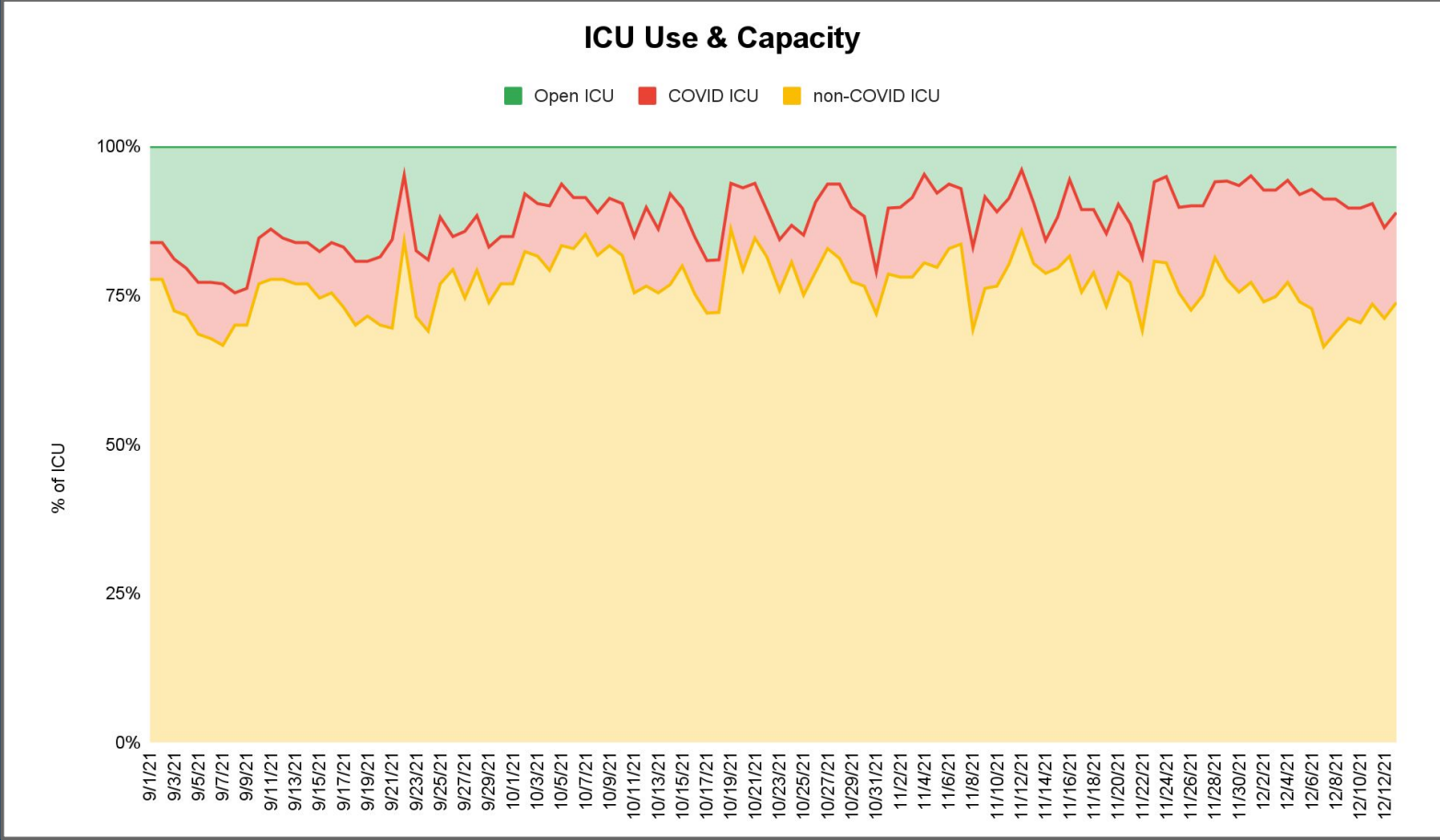


# Test Positivity

## Percent Tests Yielding New Positive COVID-19 Cases



# Hospital & Critical Care Beds



Source: Vermont Department of Health

# Vermont Testing

