

# **COVID-19 Modeling**

## **February 1, 2022**

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

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# Overview

## Cases

Cases in Vermont this week plummeted by more than 3,000—a decrease of 40%. In the last two weeks, cases have fallen 56%. Forecasts predict these trends will continue, following similar patterns in states like New York and New Jersey where Omicron peaked earlier than in Vermont. However, cases remain elevated with nearly 700 average new infections reported daily, and Vermont hospitals remain short-staffed with high inpatient counts.

## Deaths

January 2022 was tied for the second-deadliest month of the pandemic in Vermont with 62 fatalities. However, as Omicron became dominant and cases soared, the proportion of infections resulting in a fatality dropped to 0.15%—the lowest figure since Fall 2020 when no deaths were reported for three straight months.

The risk from COVID-19, however, is not equal: while the rate of death for those under 70 is less than 1% (and close to zero for younger age groups), the case fatality rate for the oldest Vermonters is over 7%.

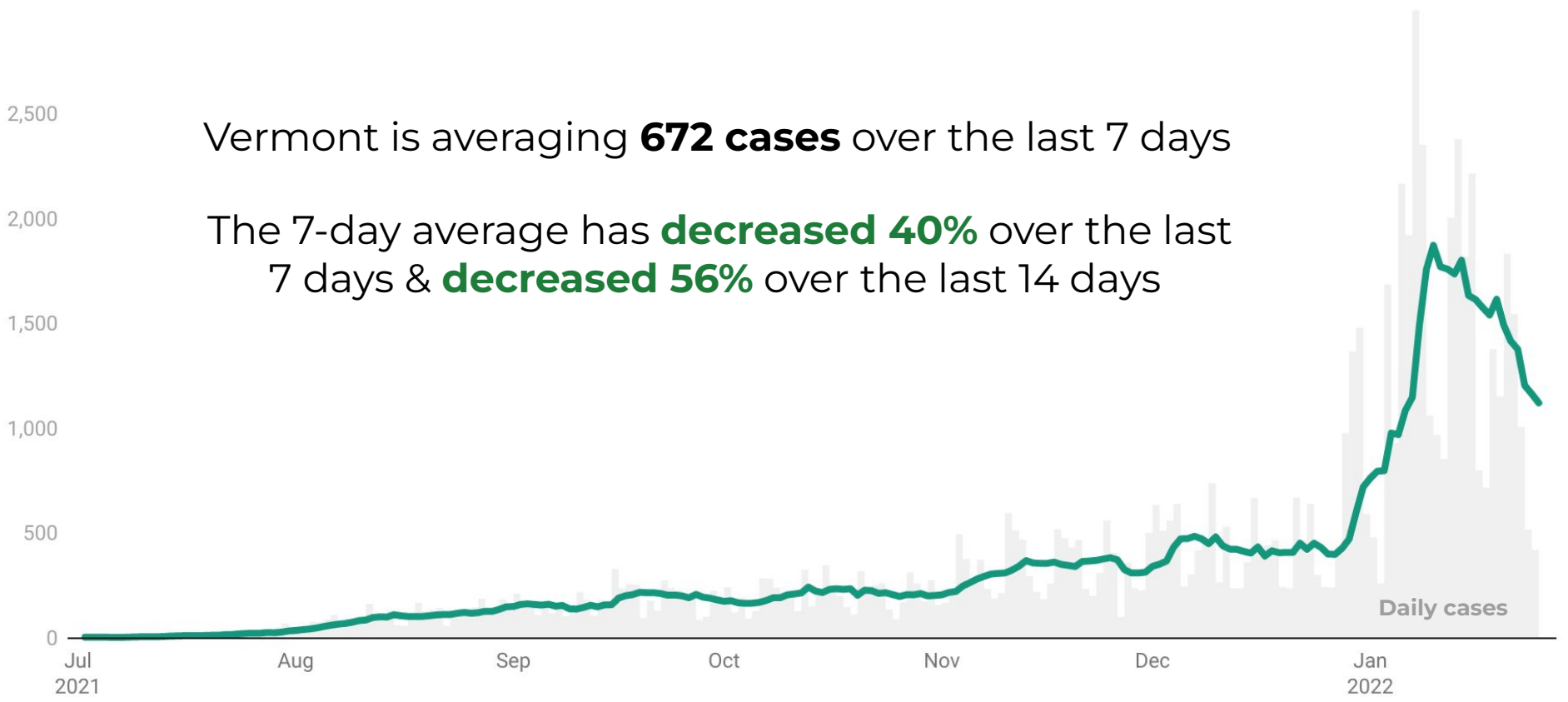
## Varying Risk

Differences in vaccination status, age, and underlying conditions present a nuanced picture of risk for Vermonters. Across the US, the average weekly chance of a boosted person dying of Covid was about one in a million according to the most recent available CDC data (the chance an average American will die in a car crash is 2.4 per million), but older and unvaccinated Vermonters face increased risk from the virus. For the latter group, state data continues to show the risk of death is ten-fold that of boosted Vermonters.

# Vermont Case Data

# Vermont New COVID-19 Cases

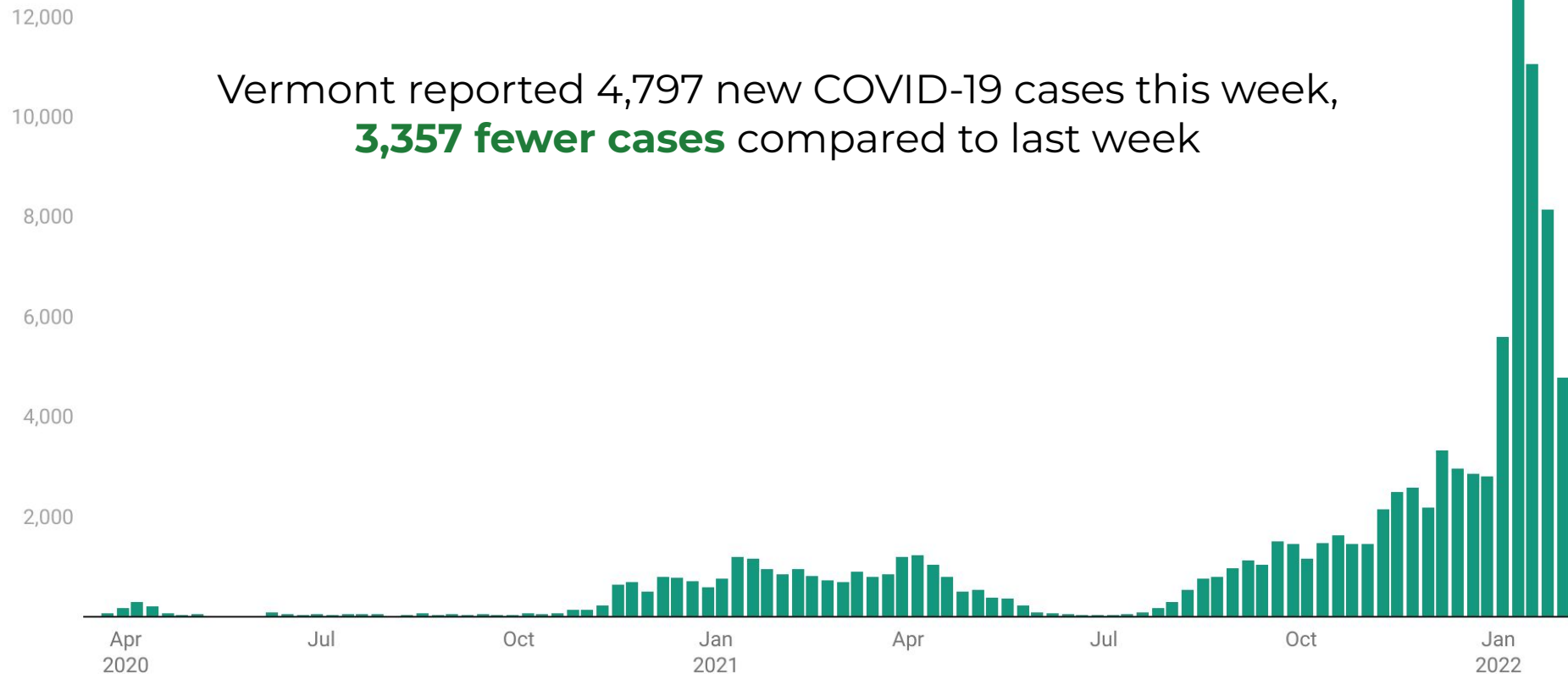
7-Day Average



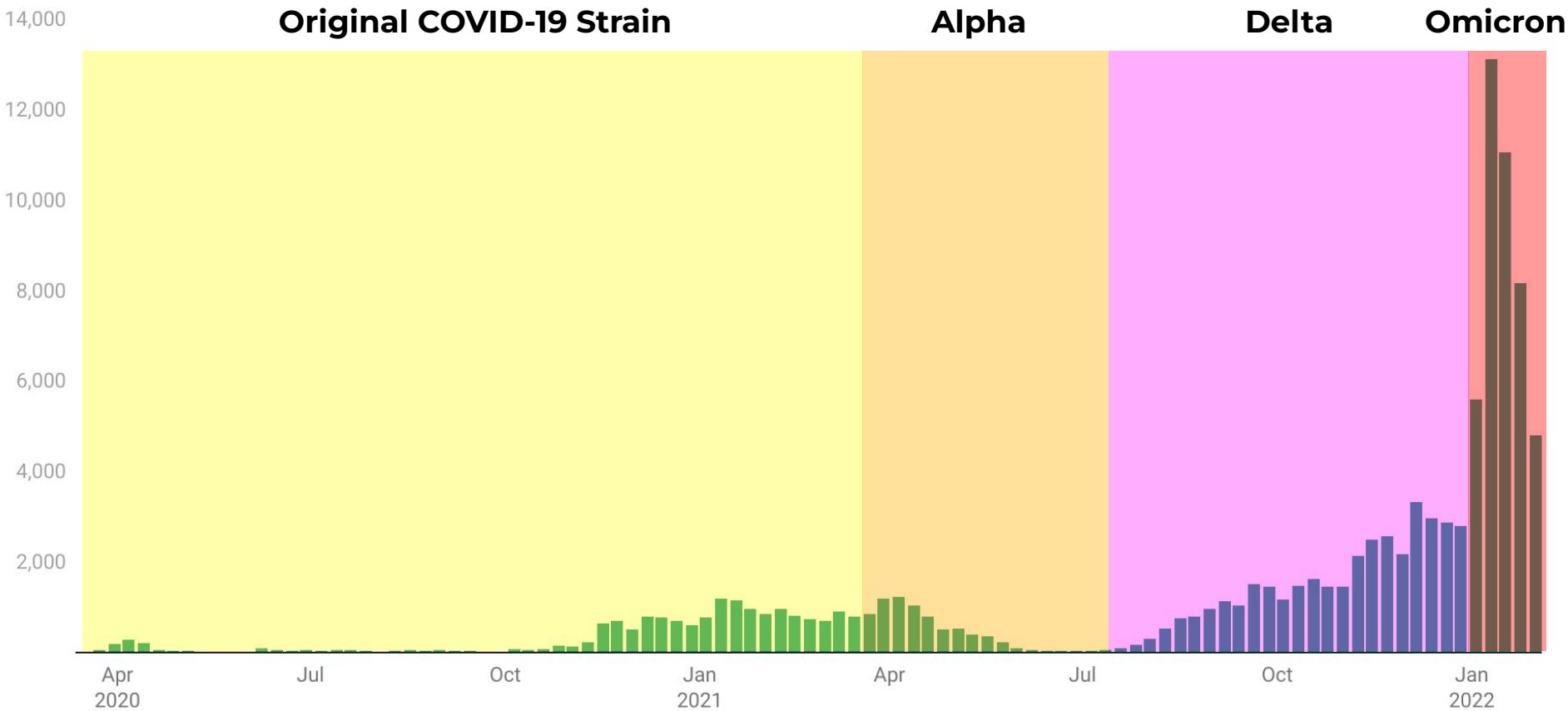
Source: VDH—February 1, 2022; created with Datawrapper

## Vermont New Weekly COVID-19 Cases

Vermont reported 4,797 new COVID-19 cases this week,  
**3,357 fewer cases** compared to last week

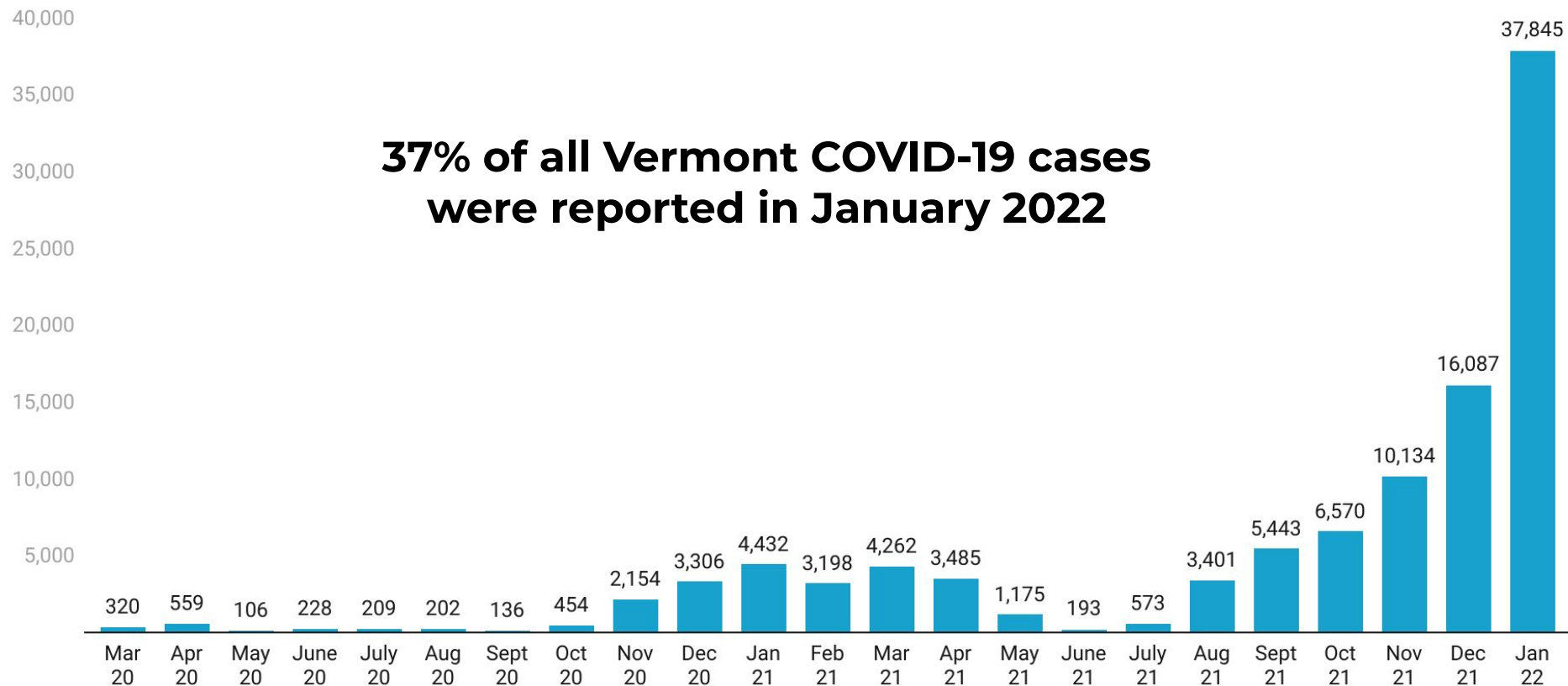


# Vermont New Weekly COVID-19 Cases By Variant



Source: VDH—January 31, 2022; created with Datawrapper; Approximates dates when original virus & variants were dominant in Vermont

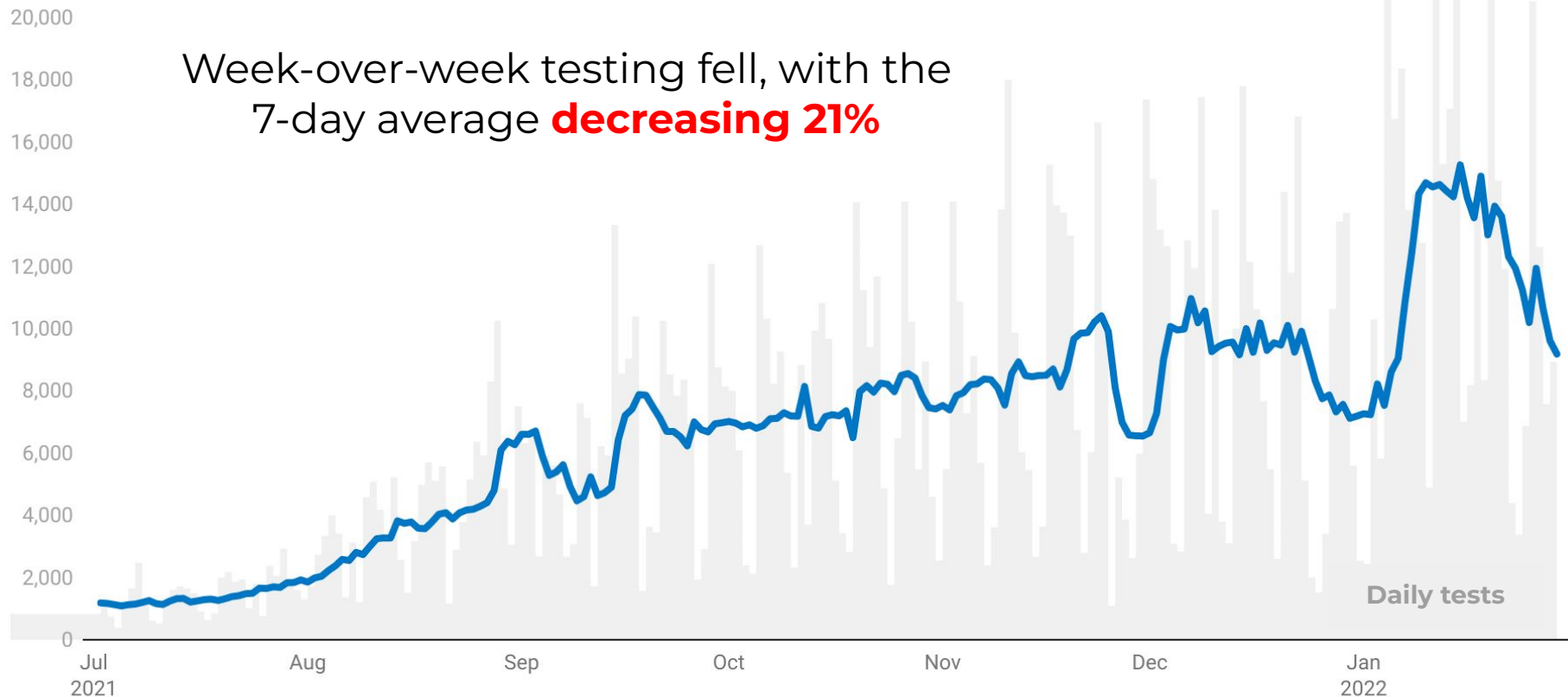
# Vermont COVID-19 Cases By Month





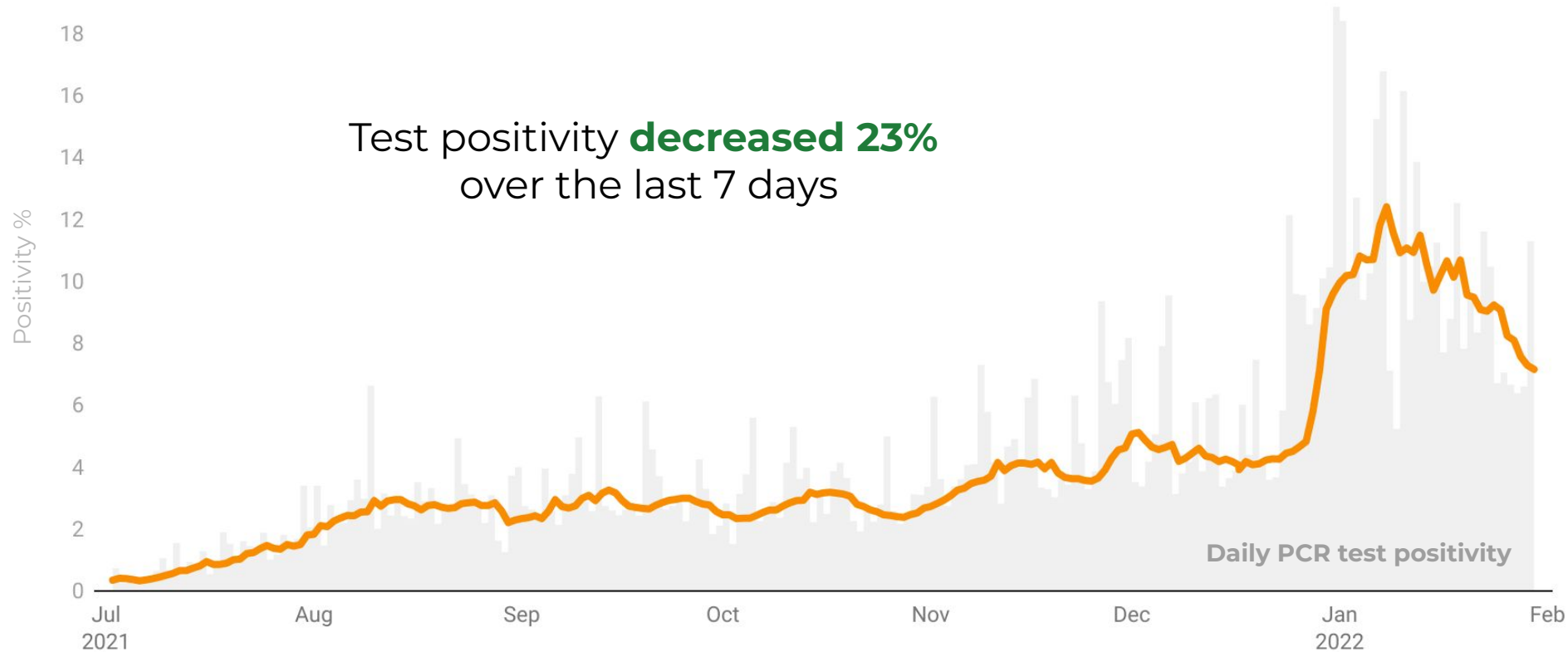
## Vermont COVID-19 PCR Testing

7-Day Average



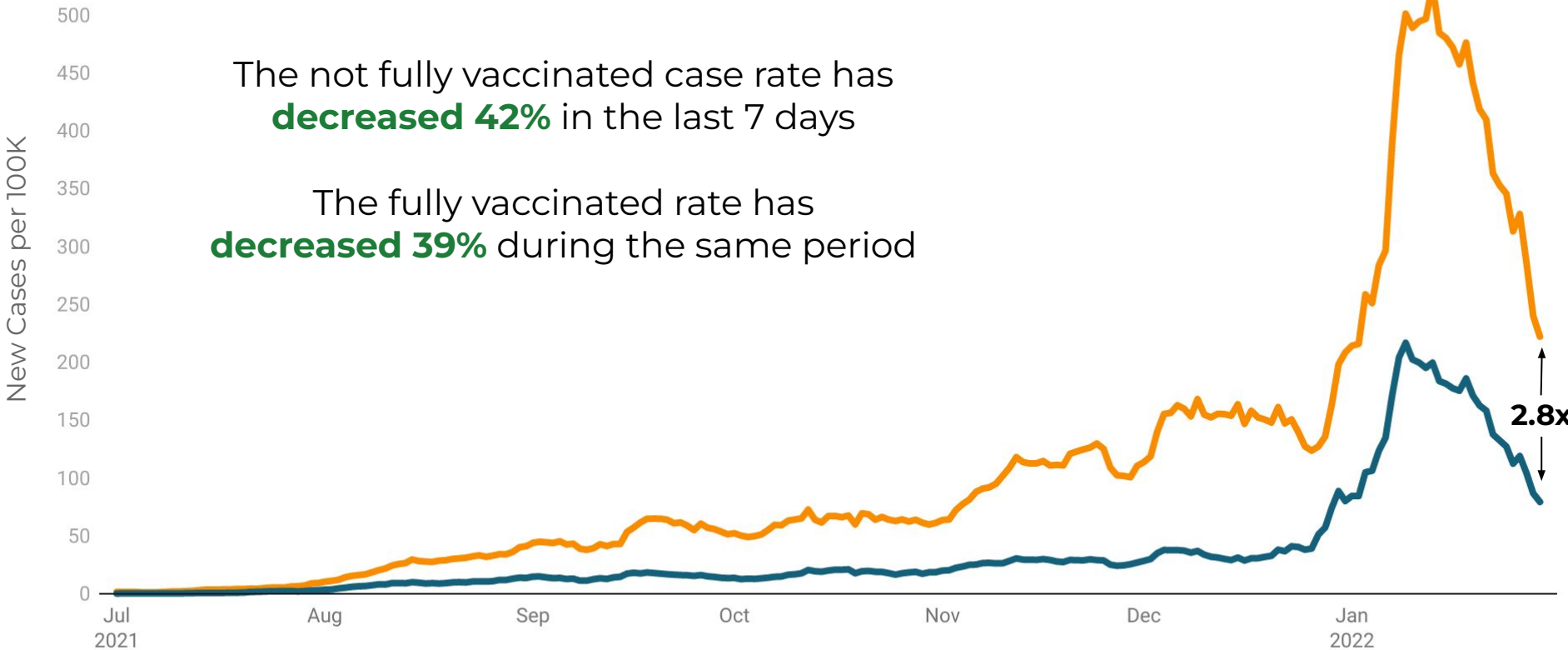
# Vermont PCR Test Positivity

7-Day Positivity Rate

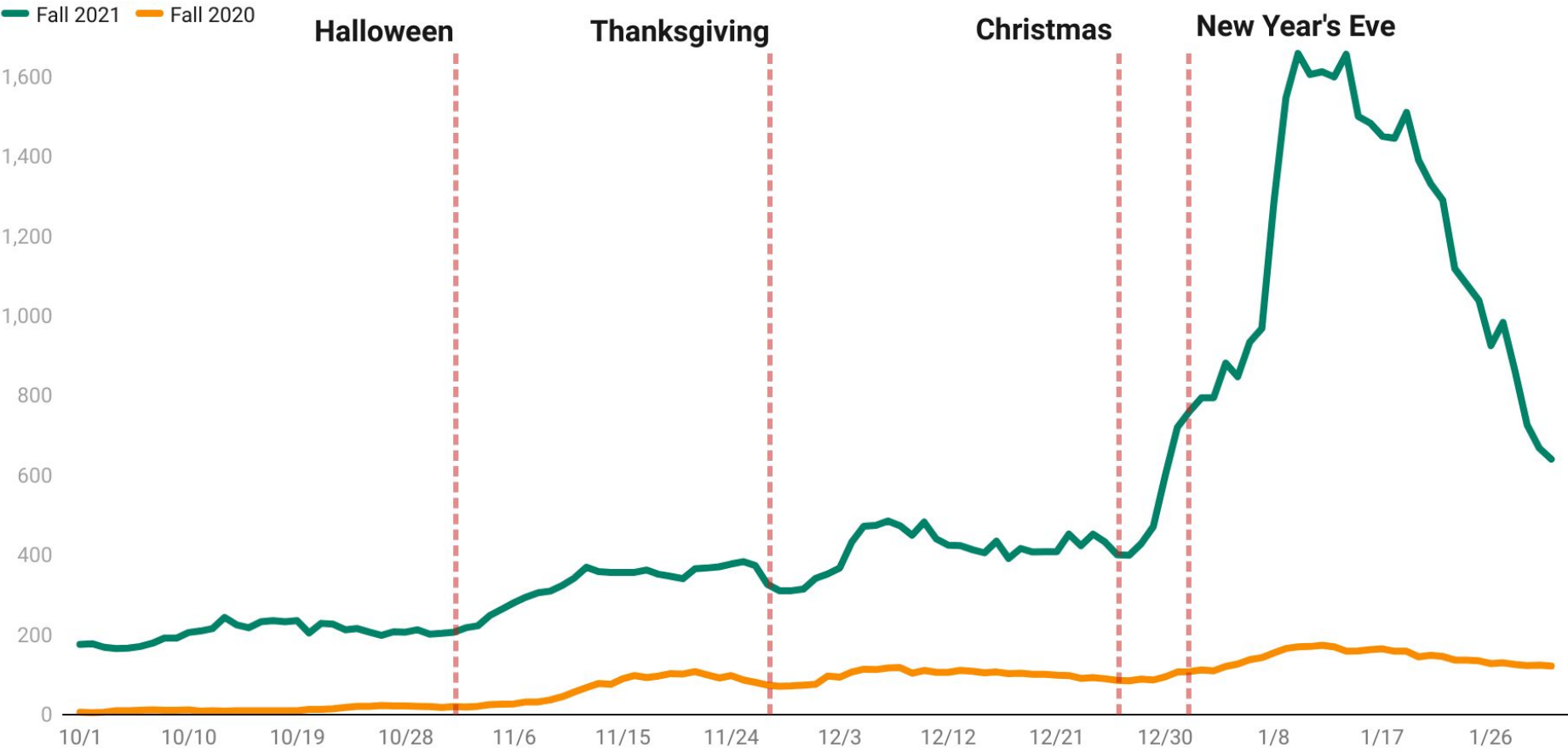


# Vermont COVID-19 New Case Rates Per 100K (7-Day Average)

Not Fully Vaccinated Case Rate Fully Vaccinated Case Rate



# Vermont COVID-19 Cases Fall/Winter '20-'21 vs. Fall/Winter '21-'22



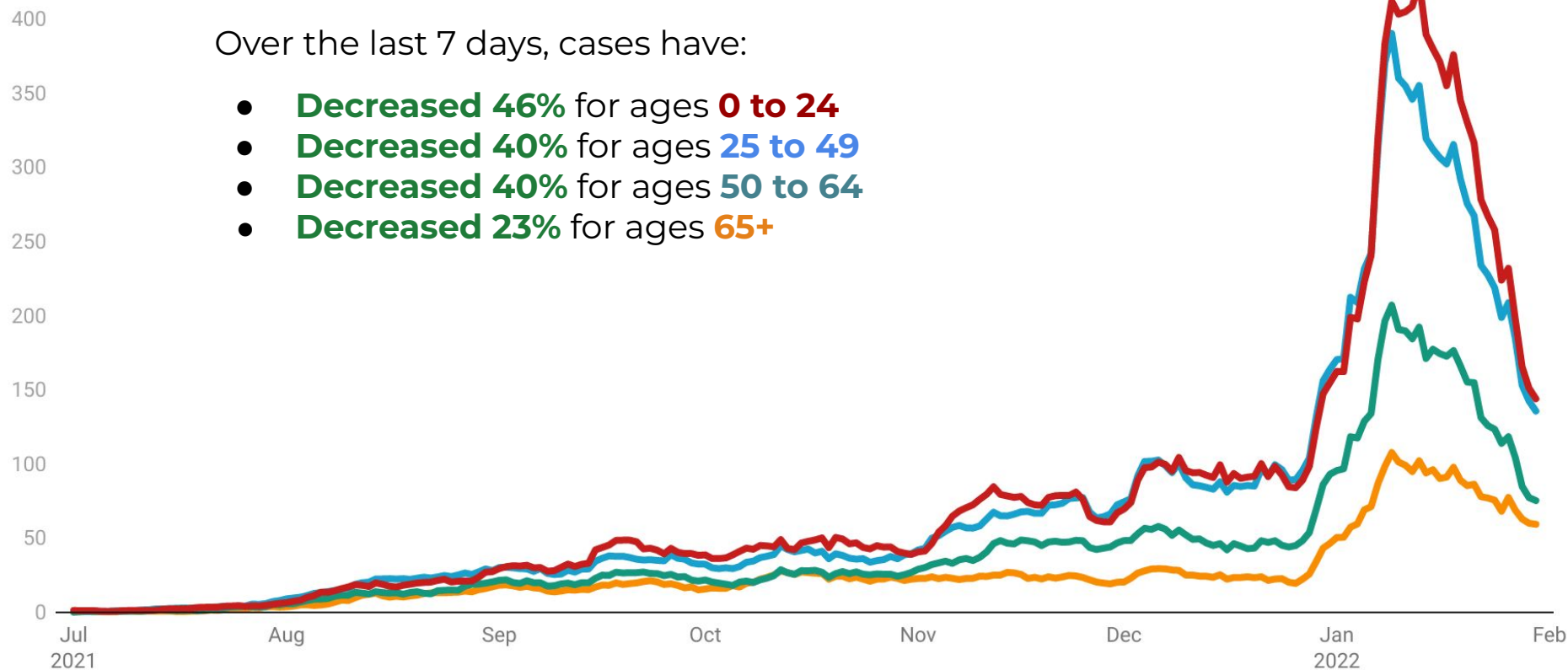
Source: VDH—February 1, 2022; created with Datawrapper

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

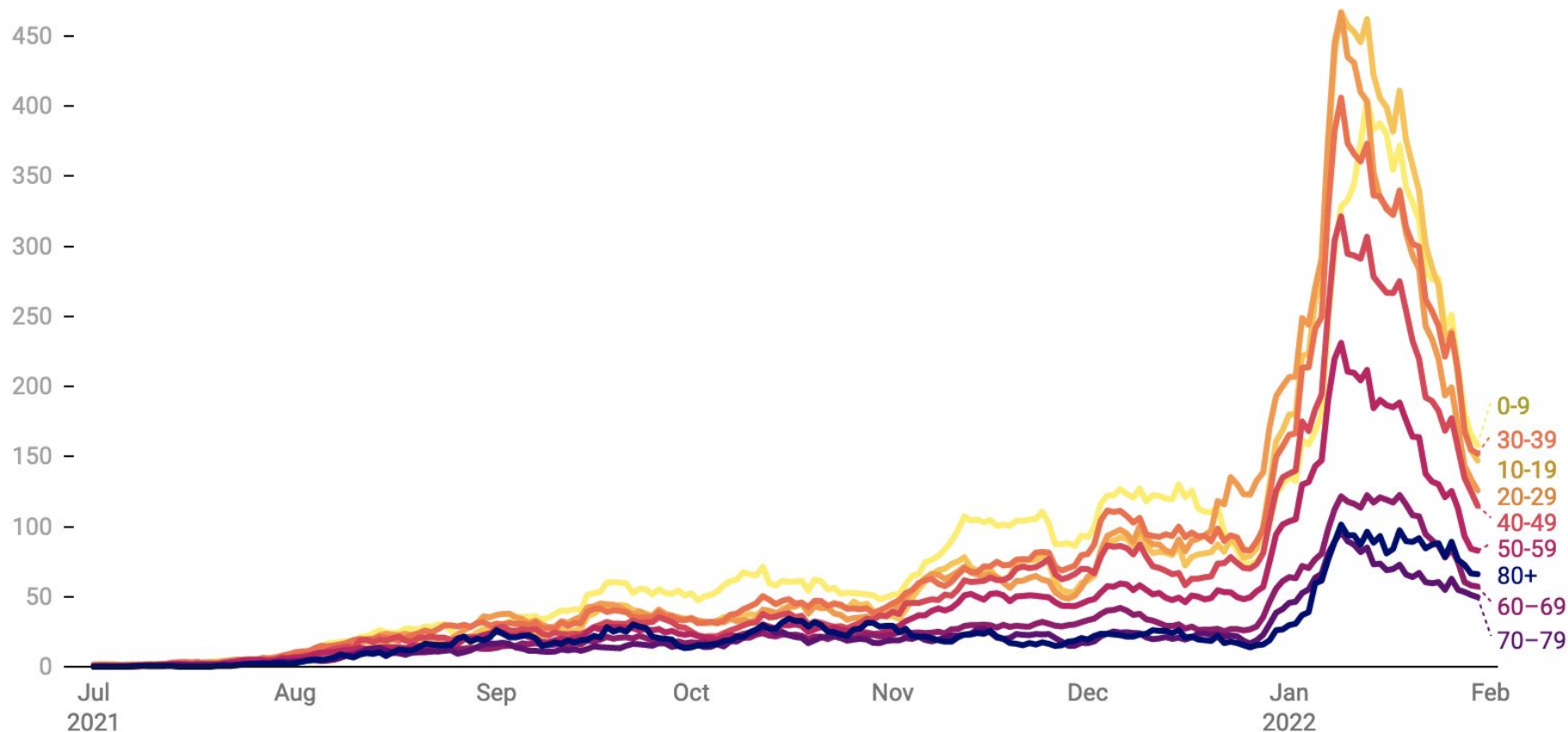
— 0 to 24 — 24 to 49 — 50 to 64 — 65+

Over the last 7 days, cases have:

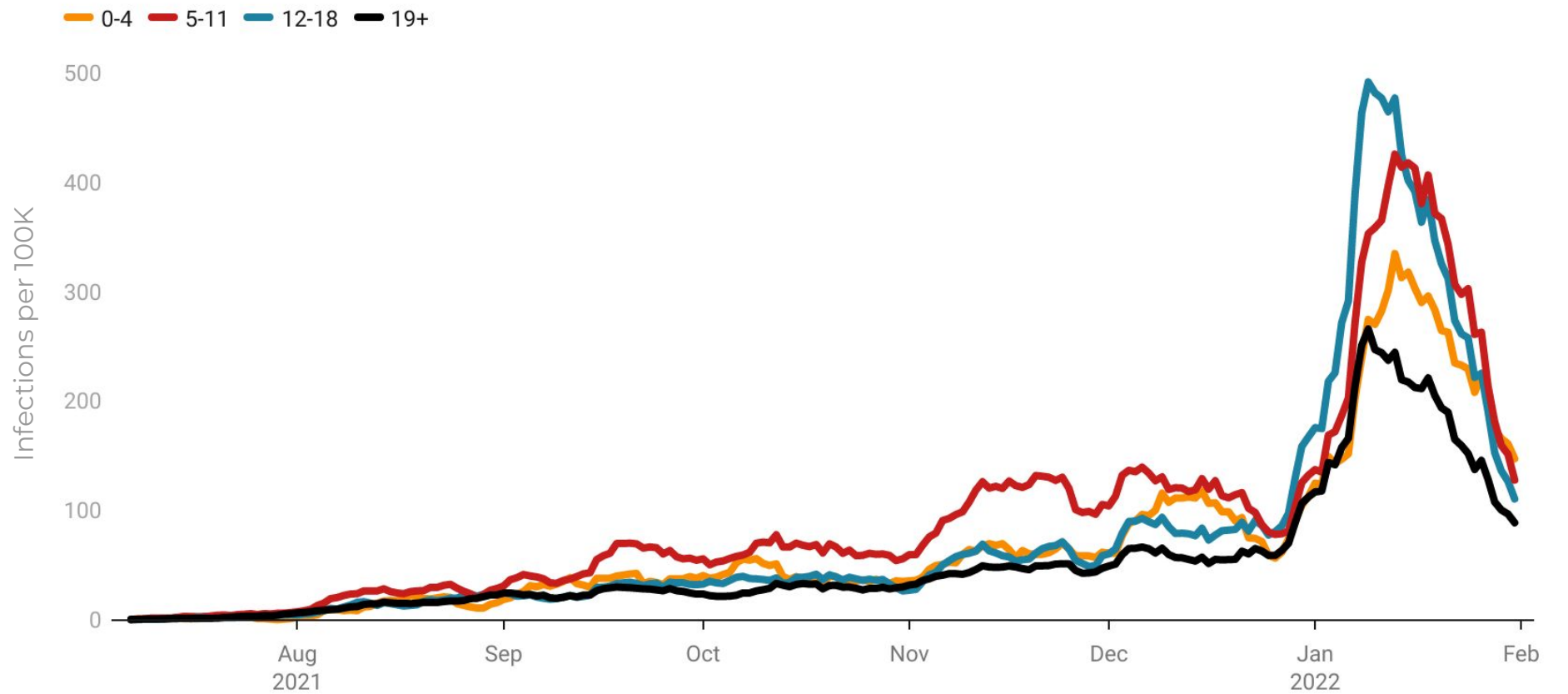
- **Decreased 46%** for ages **0 to 24**
- **Decreased 40%** for ages **25 to 49**
- **Decreased 40%** for ages **50 to 64**
- **Decreased 23%** for ages **65+**



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

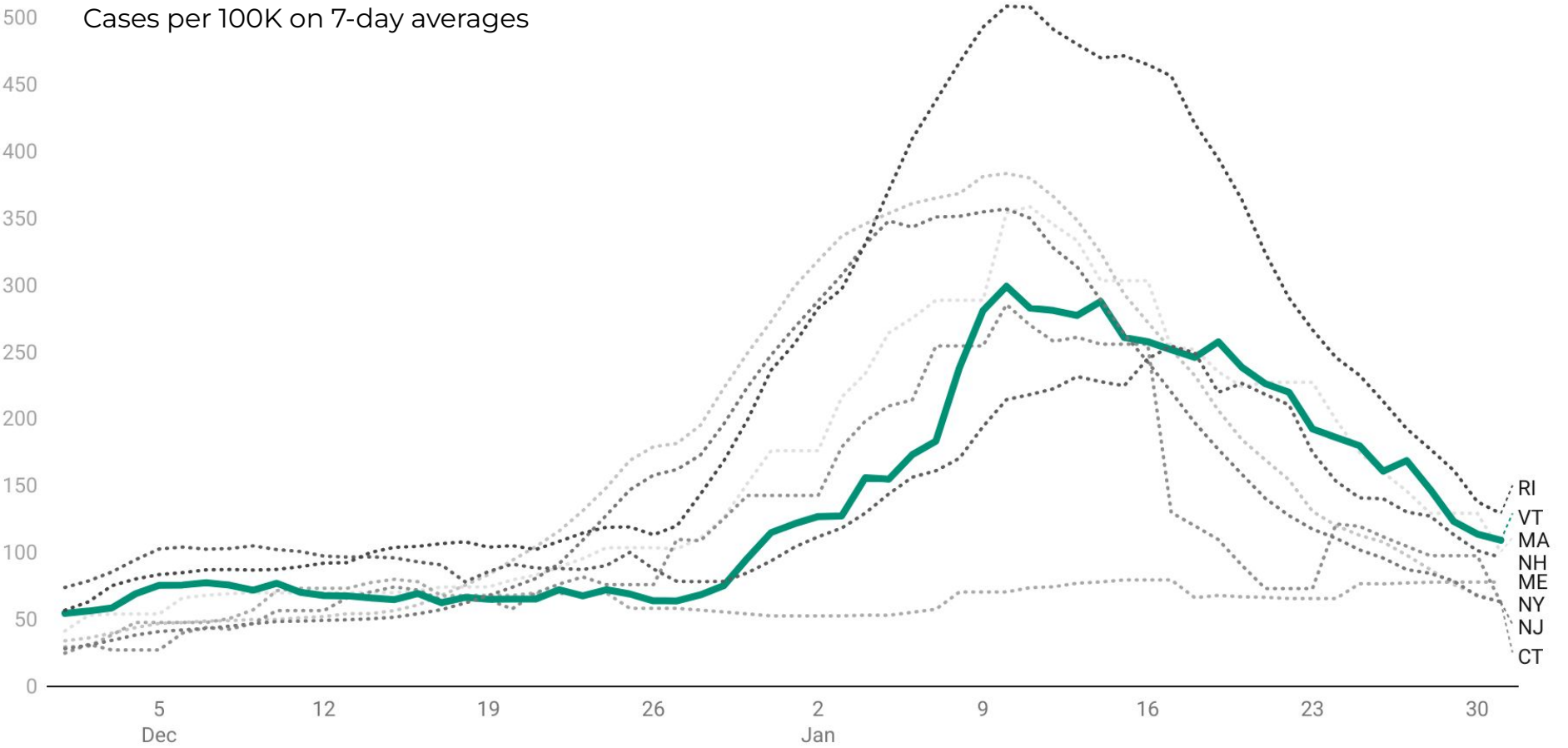


# Vermont Covid-19 Case Rates by Age (7-Day Average)



Source: VDH—February 1, 2022; created with Datawrapper

# Vermont COVID-19 Cases Compared to Northeast

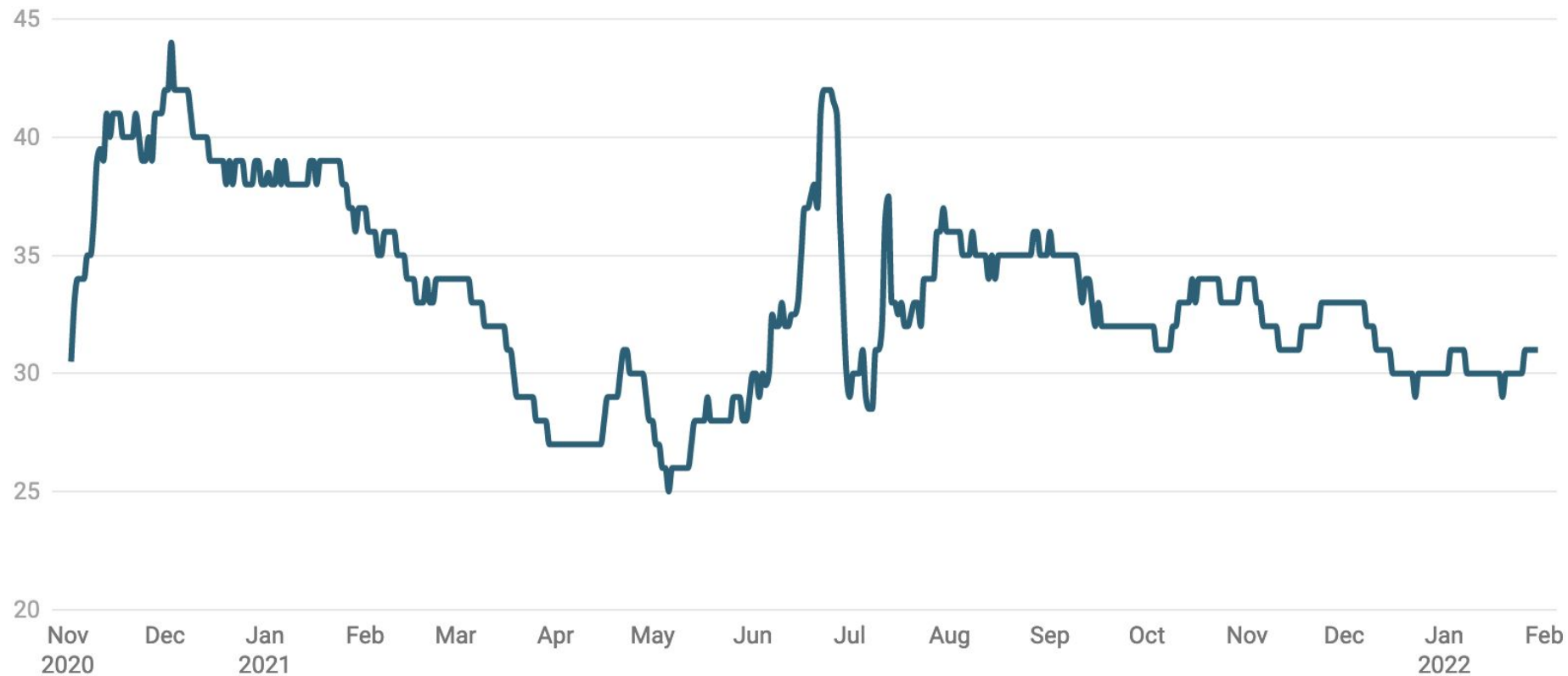


Sources: State Health Depts.—January 31, 2022

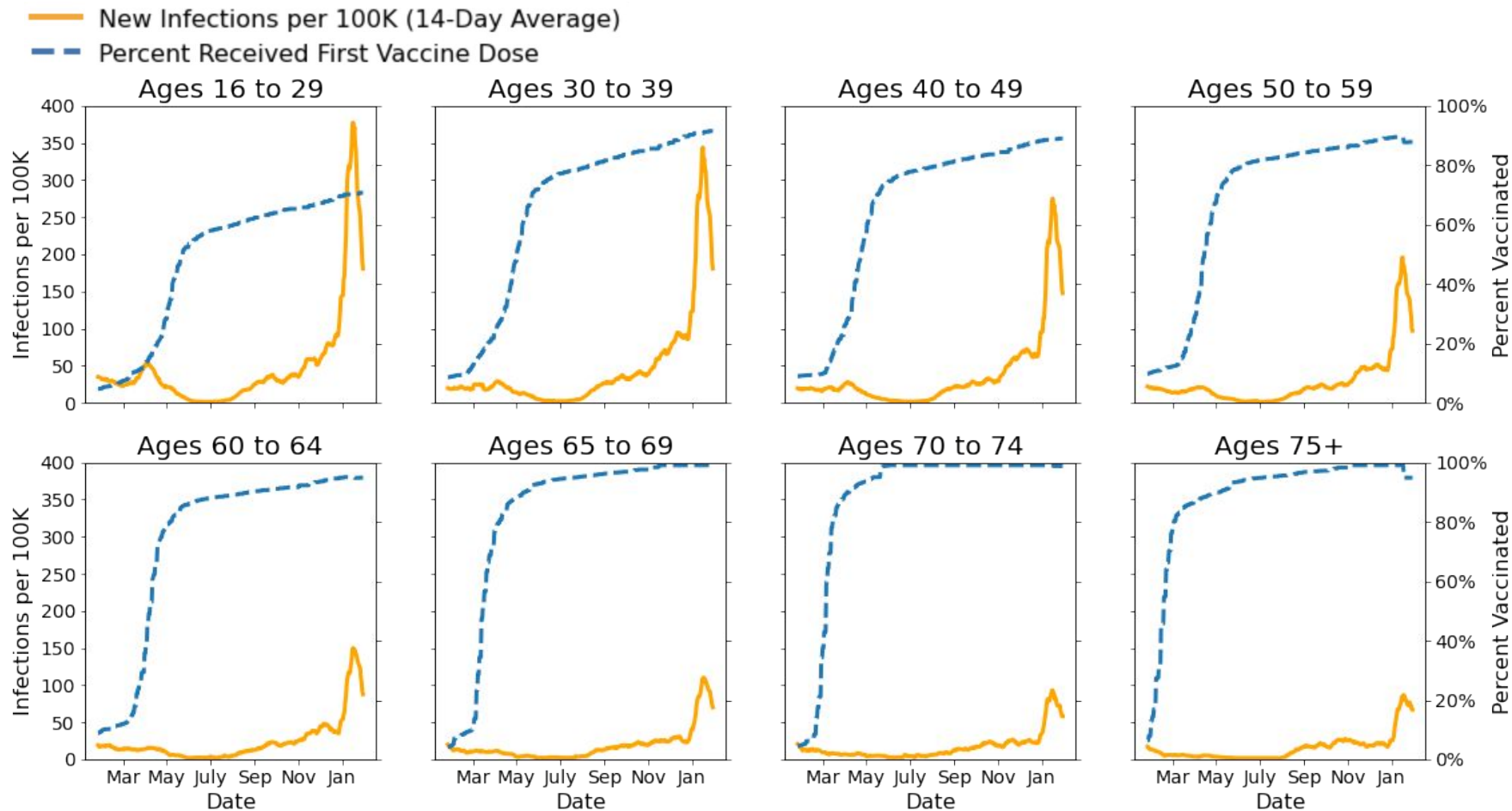


# Age of Infected Vermonters

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

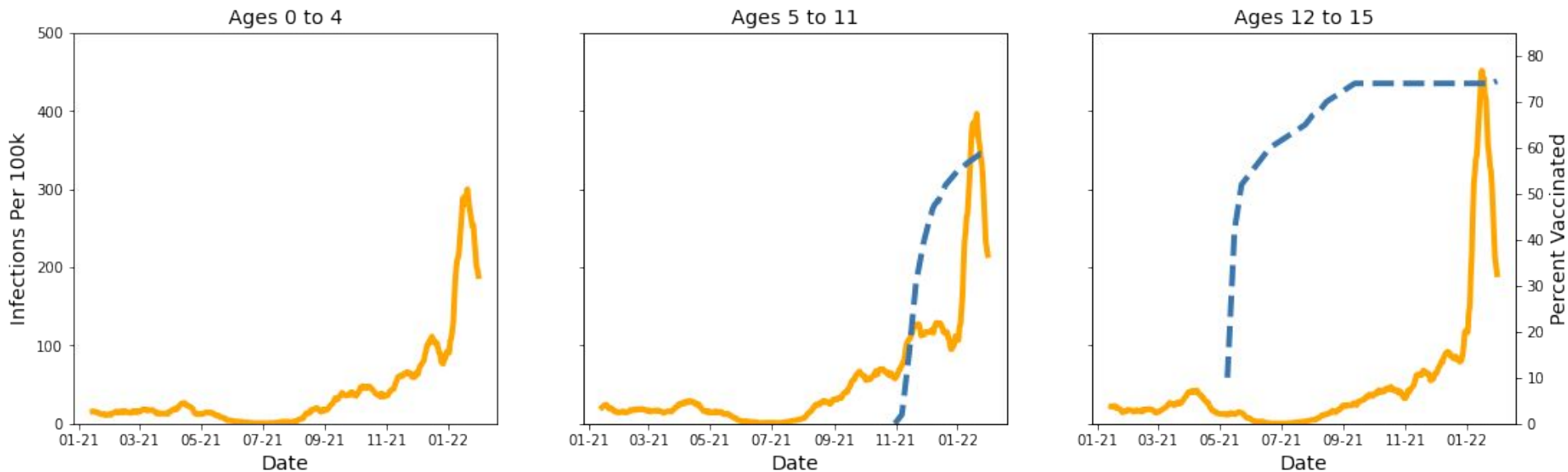


# Vermont Case Rate & Vaccination by Age Band

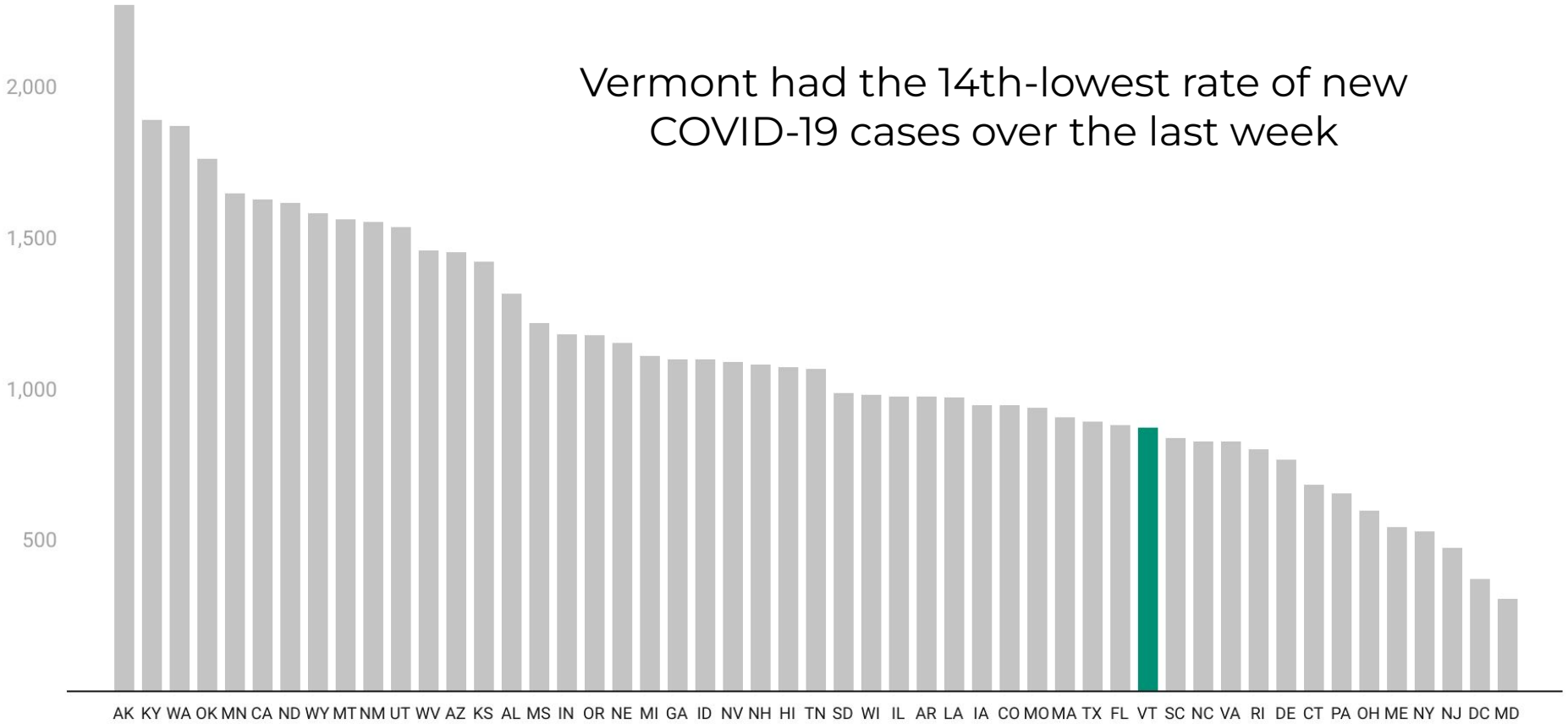


# Vermont Case Rate & Vaccination by Age Band

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

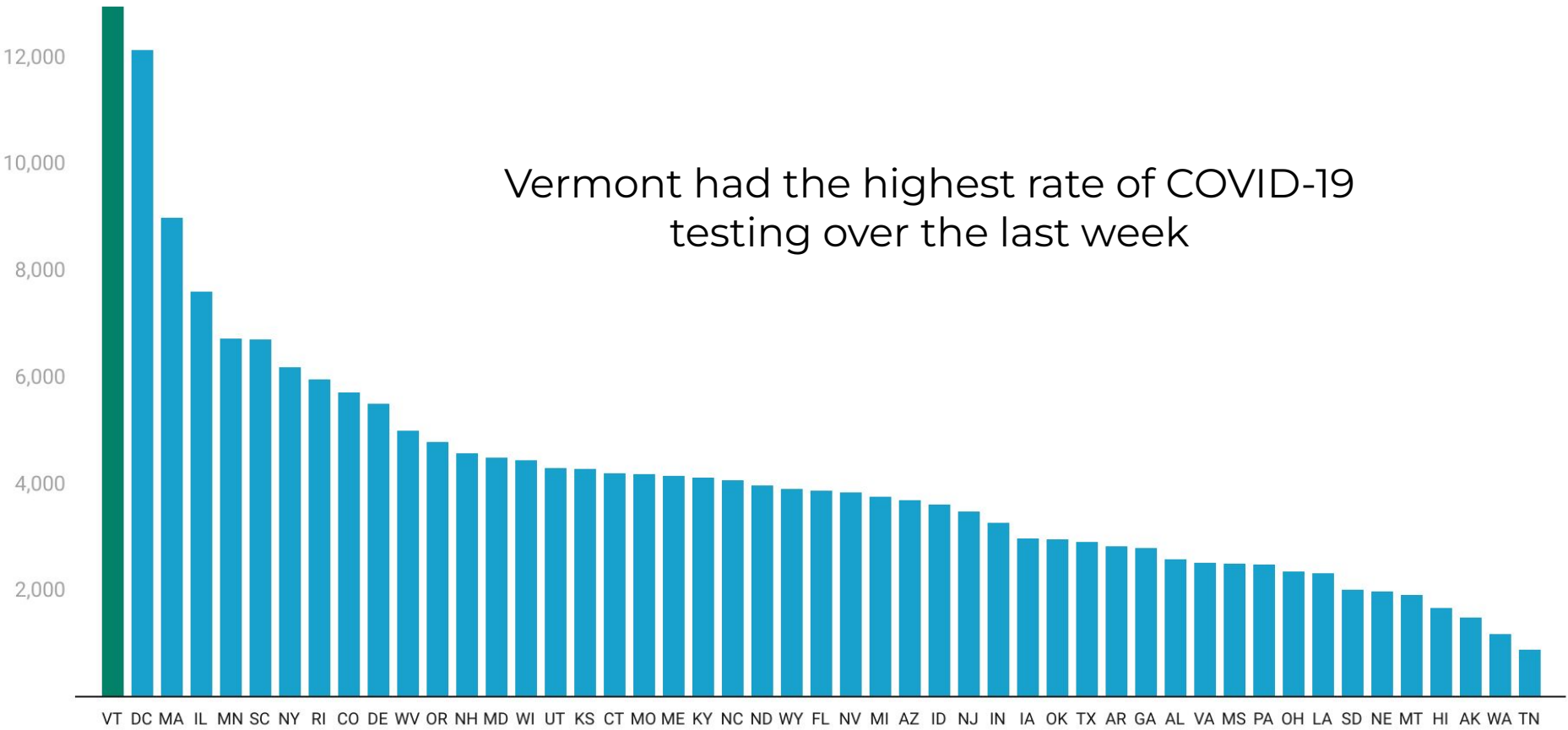


# National COVID-19 Case Rates Per 100K Last 7 Days



Source: VDH—January 31, 2022; Created with Datawrapper

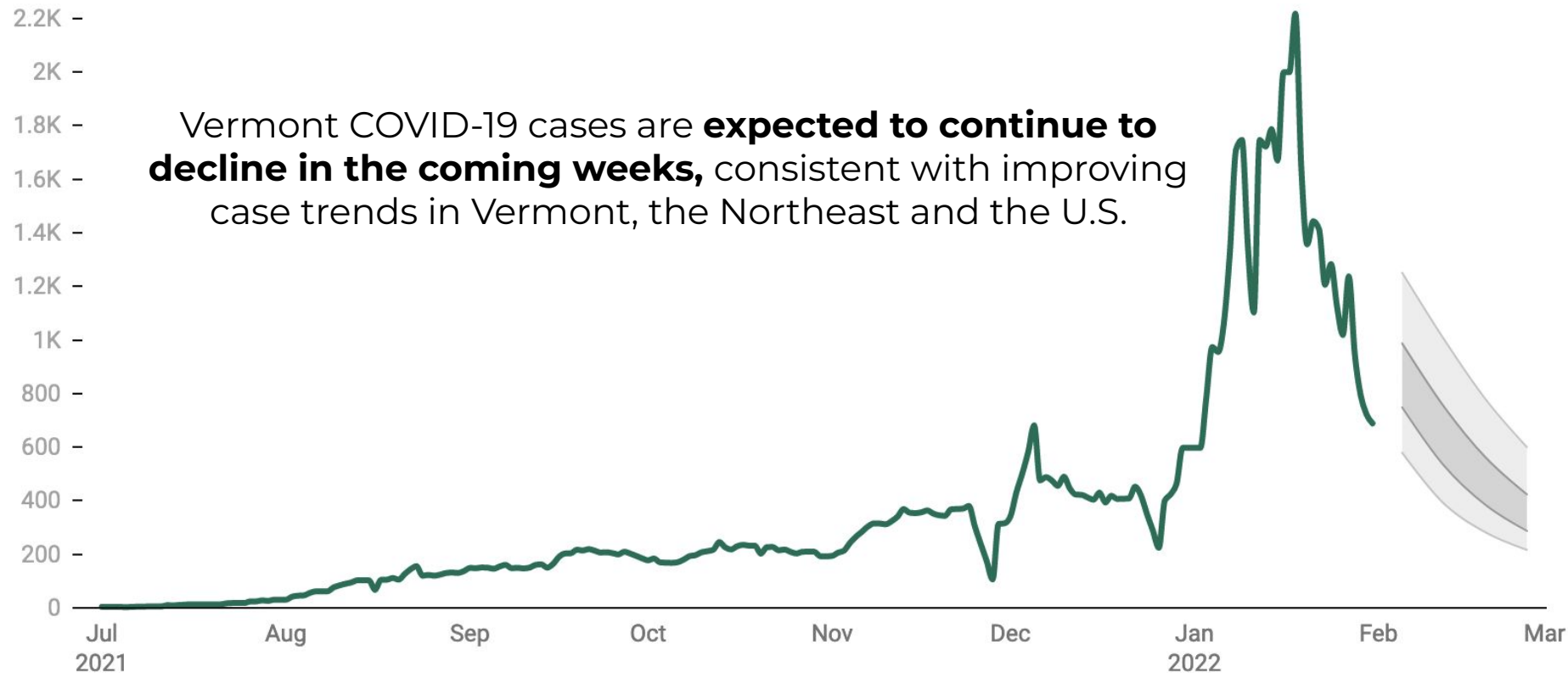
# COVID-19 Testing Per 100K Last 7 Days



Source: CDC and VDH—January 31, 2022; Created with Datawrapper (Note: California and New Mexico did not report testing data)

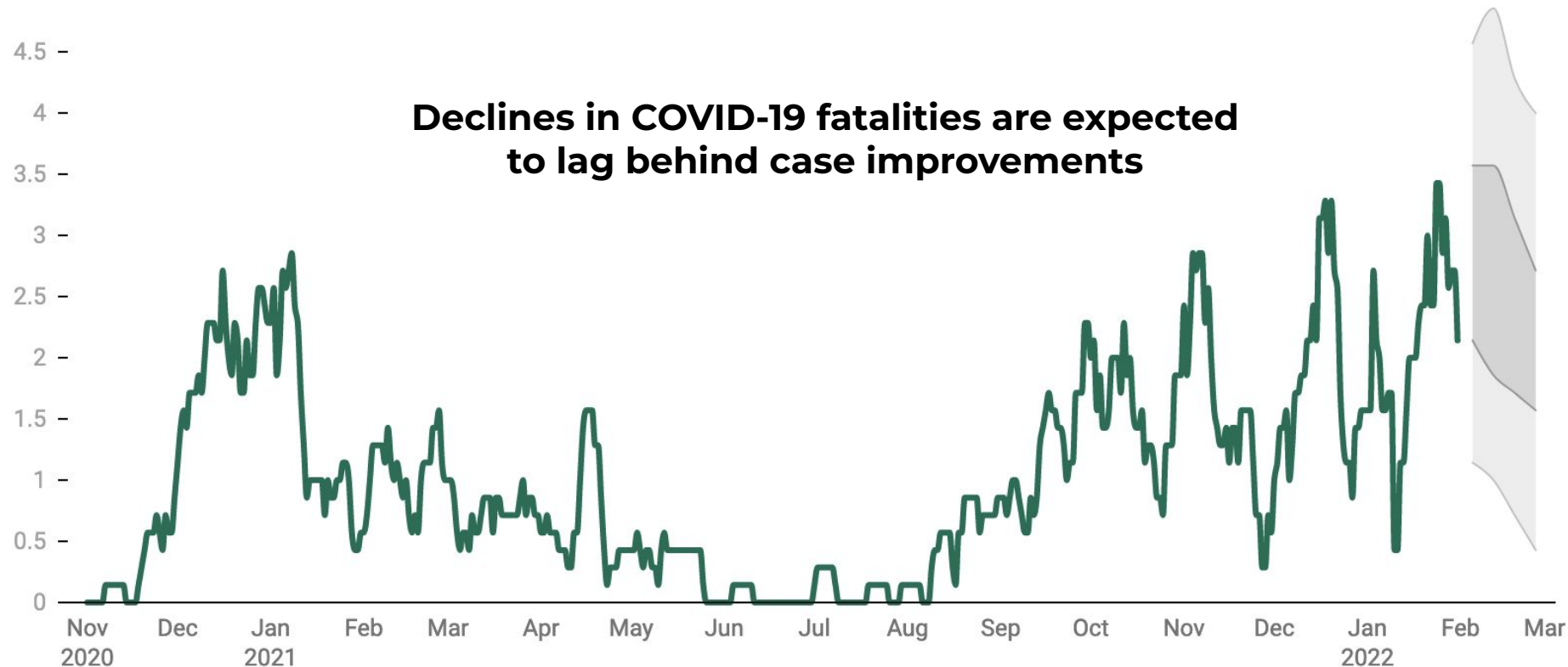
# VT COVID-19 Infection Confidence Intervals

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



# VT COVID-19 Death Confidence Intervals

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



# Active Outbreaks in Long Term Care Facilities (1/2)

| Facility Name  | Total COVID-19 Cases |
|--|----------------------|
| Mountain View Center, <i>Rutland</i>                   | 79                   |
| Bennington Health & Rehab                              | 59                   |
| Mayo Rehab & Continuing Care, <i>Northfield</i>        | 58                   |
| Queen City Nursing & Rehabilitation, <i>Burlington</i> | 57                   |
| Pines Rehab & Health Center, <i>Lyndonville</i>        | 46                   |
| Elderwood at Burlington                                | 38                   |
| The Residence at Shelburne Bay, <i>Shelburne</i>       | 30                   |
| Pine Heights at Brattleboro                            | 27                   |
| The Pines at Rutland Center for Nursing & Rehab        | 25                   |
| Vermont Veterans Home, <i>Bennington</i>               | 23                   |
| The Village at White River Junction                    | 22                   |
| Wake Robin, <i>Shelburne</i>                           | 14                   |
| Brookdale Fillmore Pond, <i>Bennington</i>             | 11                   |
| Green Mountain Nursing and Rehab, <i>Colchester</i>    | 11                   |
| Sterling House at Rockingham, <i>Bellows Falls</i>     | 8                    |
| Valley Terrace, <i>White River Junction</i>            | 7                    |
| <b>Total (shown)</b>                                   | <b>515</b>           |

Source: Vermont Department of Health—January 31, 2022 (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



# Active Outbreaks in Long Term Care Facilities (2/2)

| Facility Name   | Total COVID-19 Cases |
|---|----------------------|
| Thompson House, <i>Brattleboro</i>                      | Not Shown            |
| Our Lady of the Meadows, <i>Richford</i>                | Not Shown            |
| Equinox Terrace, <i>Manchester</i>                      | Not Shown            |
| Riverbend Residential Care Home, <i>Chelsea</i>         | Not Shown            |
| Birchwood Terrace Rehab & Healthcare, <i>Burlington</i> | Not Shown            |

Source: Vermont Department of Health—January 31, 2022 (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

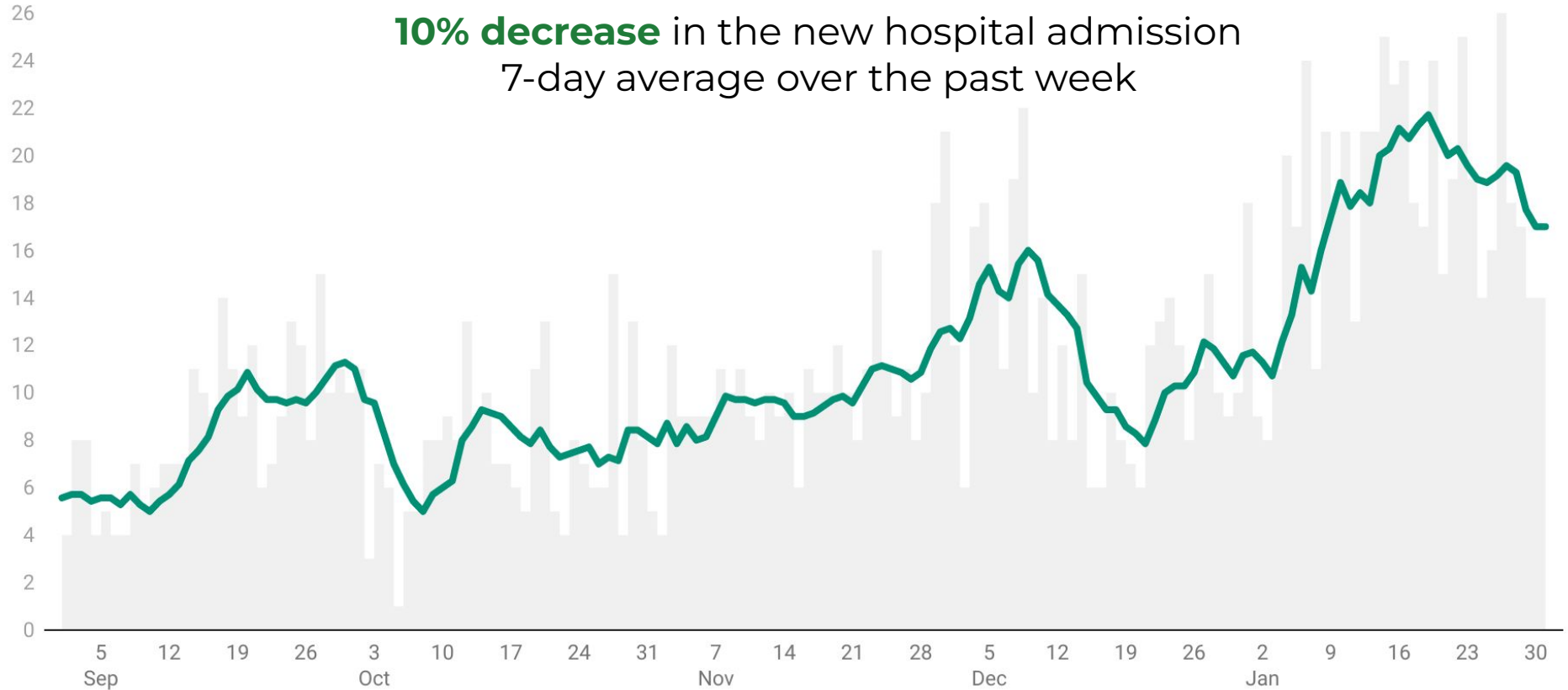
# Spring 2022 Higher Education

| <b><i>Metric</i></b>          | <b>Week 1</b> | <b>Week 2</b> | <b>Week 3</b> | <b>Week 4</b> |
|-------------------------------|---------------|---------------|---------------|---------------|
| <i>Tests</i>                  | 4,953         | 10,612        | 13,043        | 13,547        |
| <i>COVID-19<br/>Positives</i> | 313           | 382           | 303           | 282           |
| <i>Percent<br/>Positive</i>   | 6.3%          | 3.6%          | 2.3%          | 2.1%          |

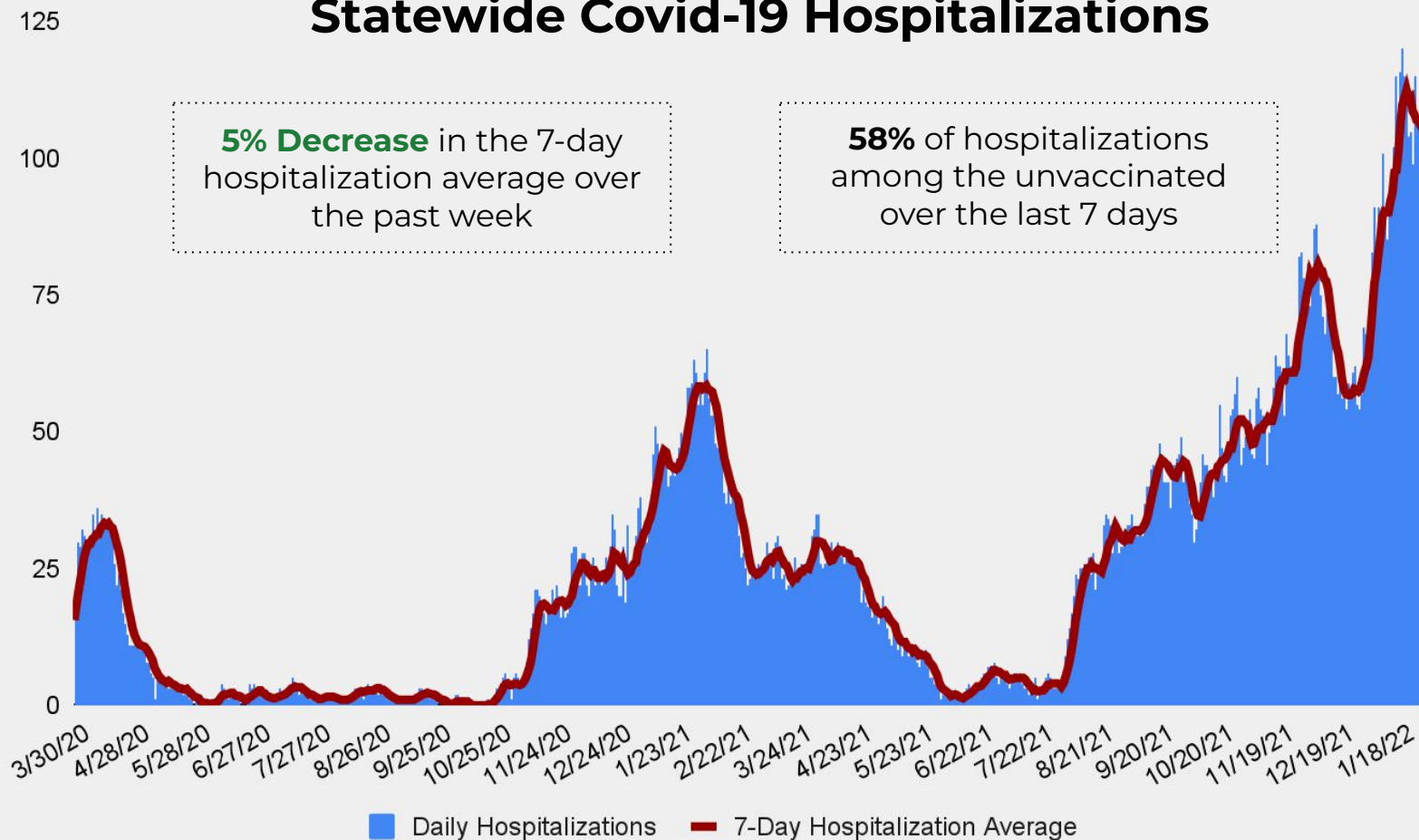
# Vermont Hospitalization Data

# Vermont New COVID-19 Hospital Admissions

7-Day Average

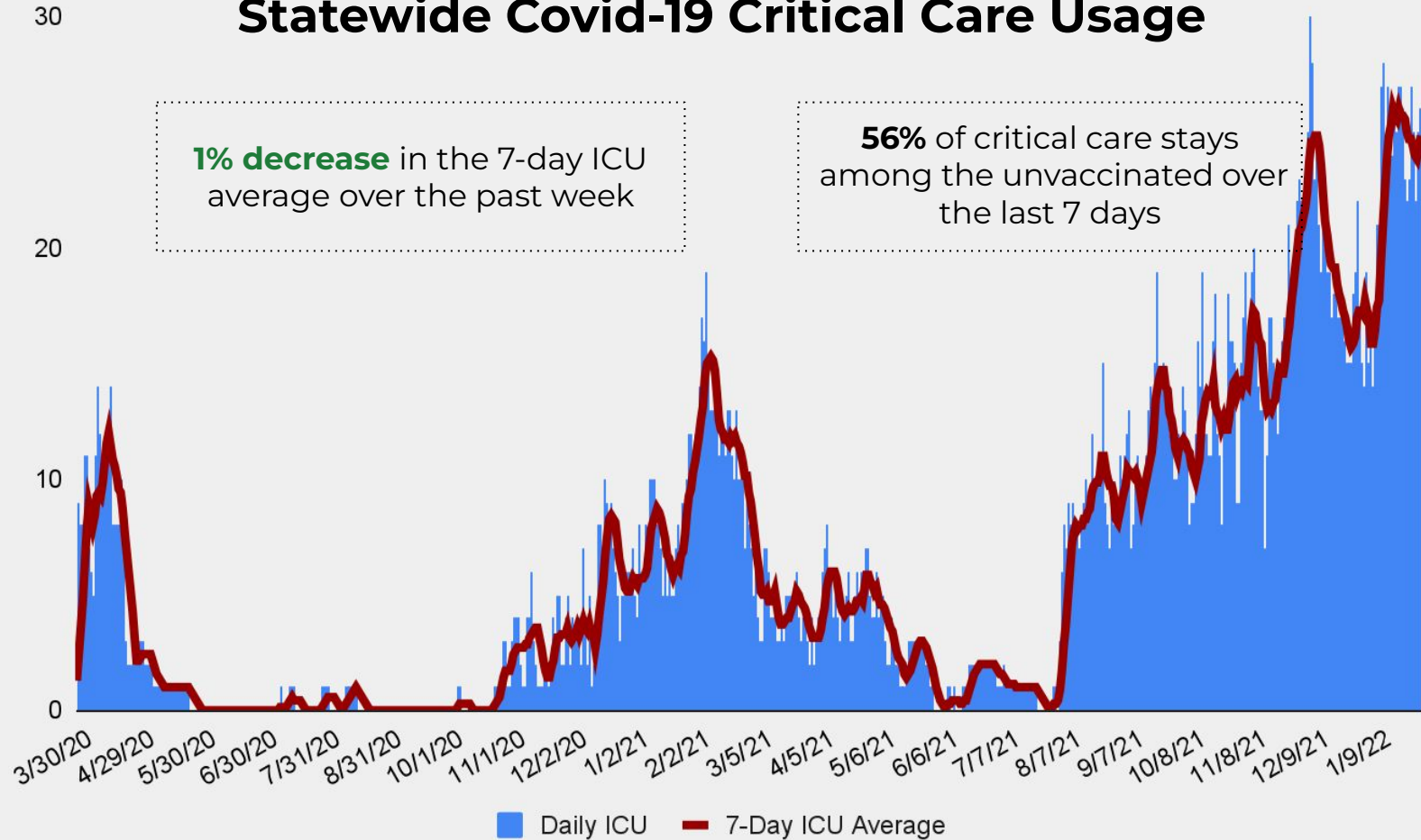


# Statewide Covid-19 Hospitalizations



Source: VDH—January 31, 2022

# Statewide Covid-19 Critical Care Usage



Source: VDH—January 31, 2022

# Vermonters Hospitalized for Influenza

7-Day Hospitalized for Influenza

6

Reported influenza hospitalizations  
in Vermont remain low

4

2

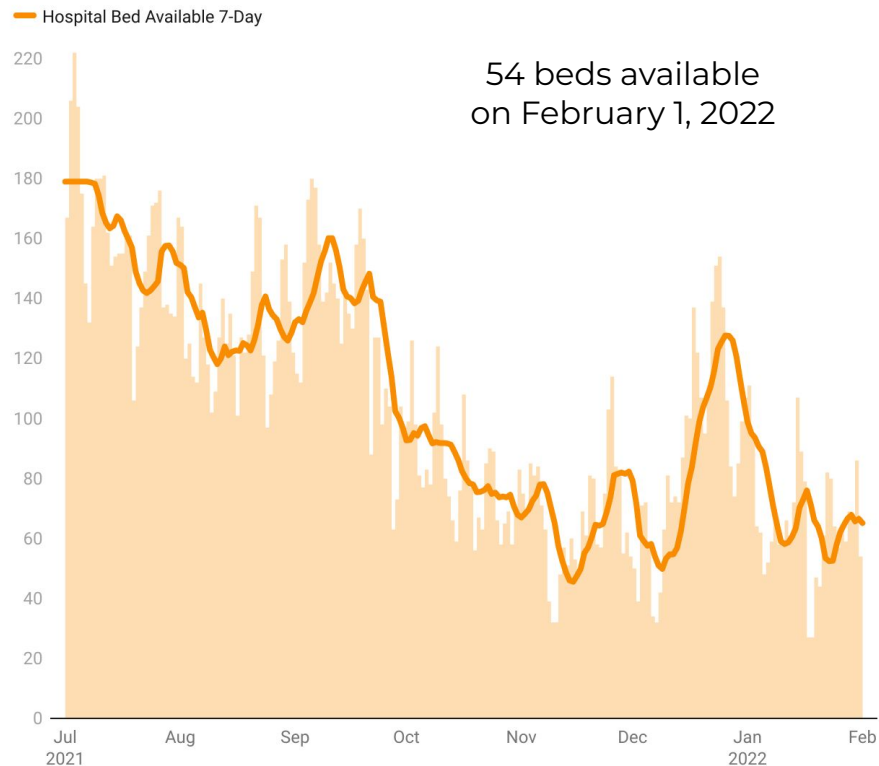
0

21 Nov 28 5 Dec 12 19 26 2 Jan 9 16 23 30

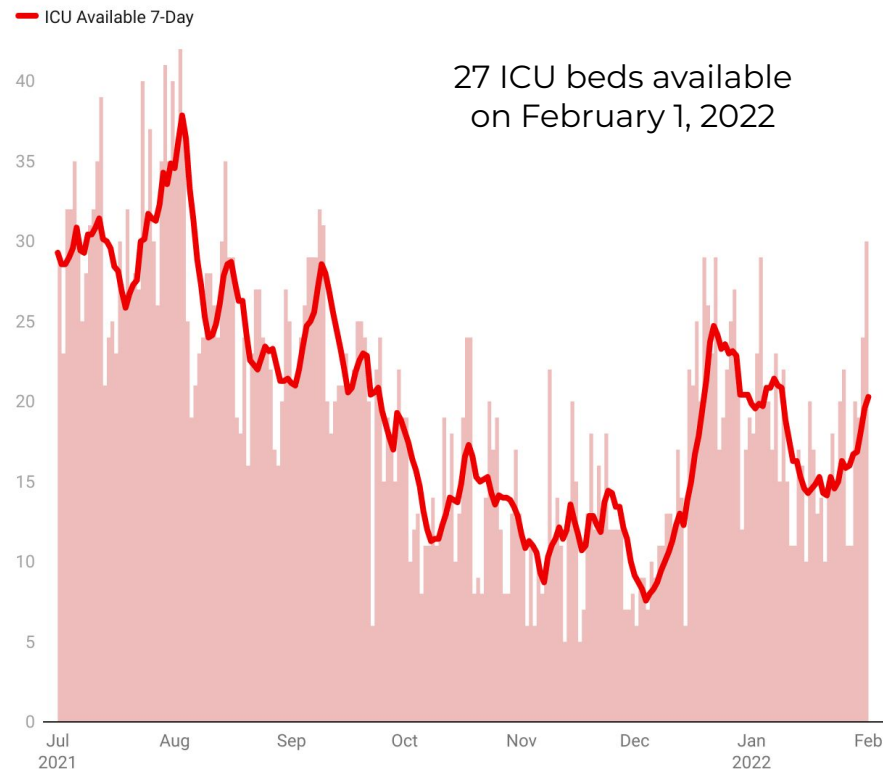
# Vermont Hospital Metrics

## (7-Day Averages)

### Vermont Hospital Beds Available Since July 1, 2021

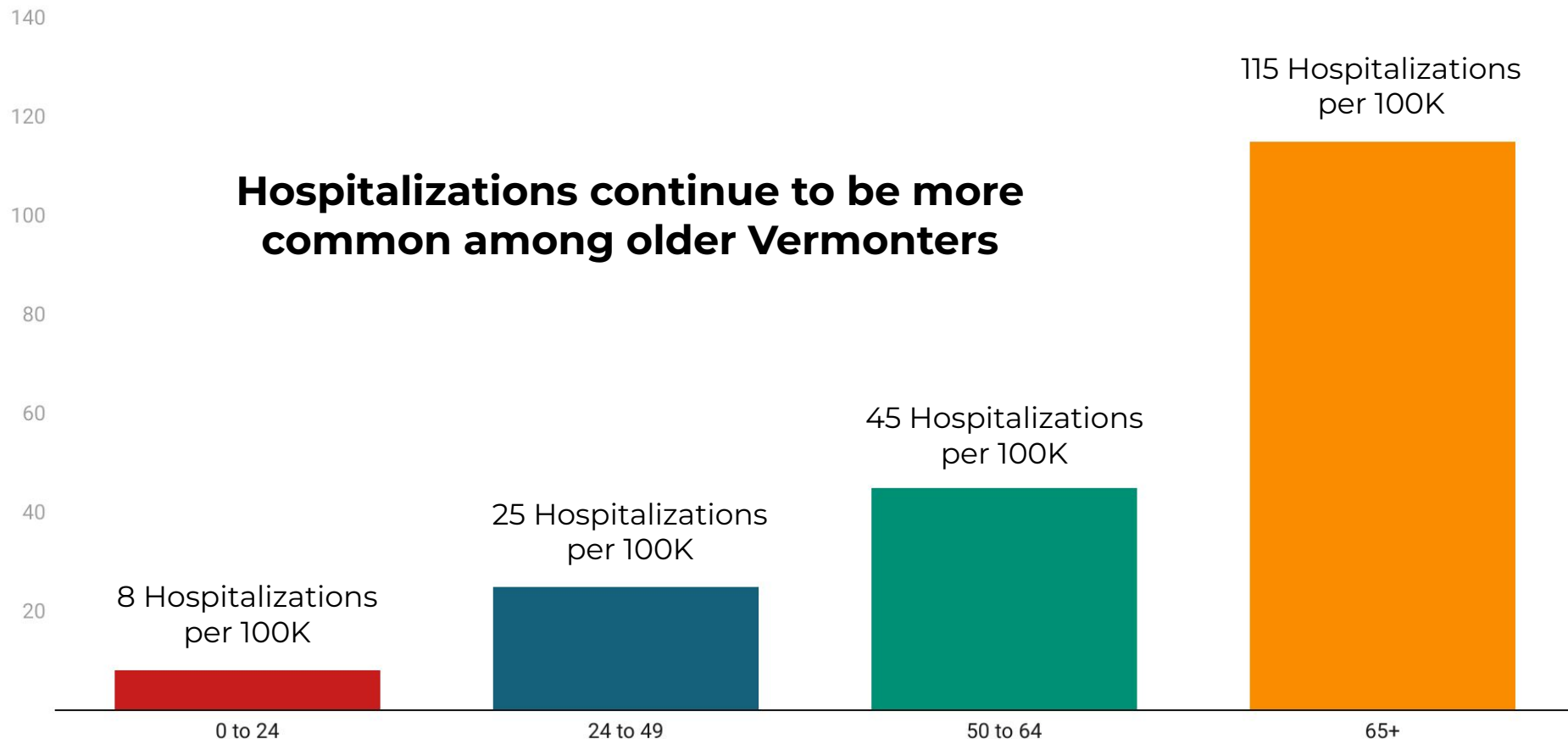


### Vermont ICU Beds Available Since July 1, 2021



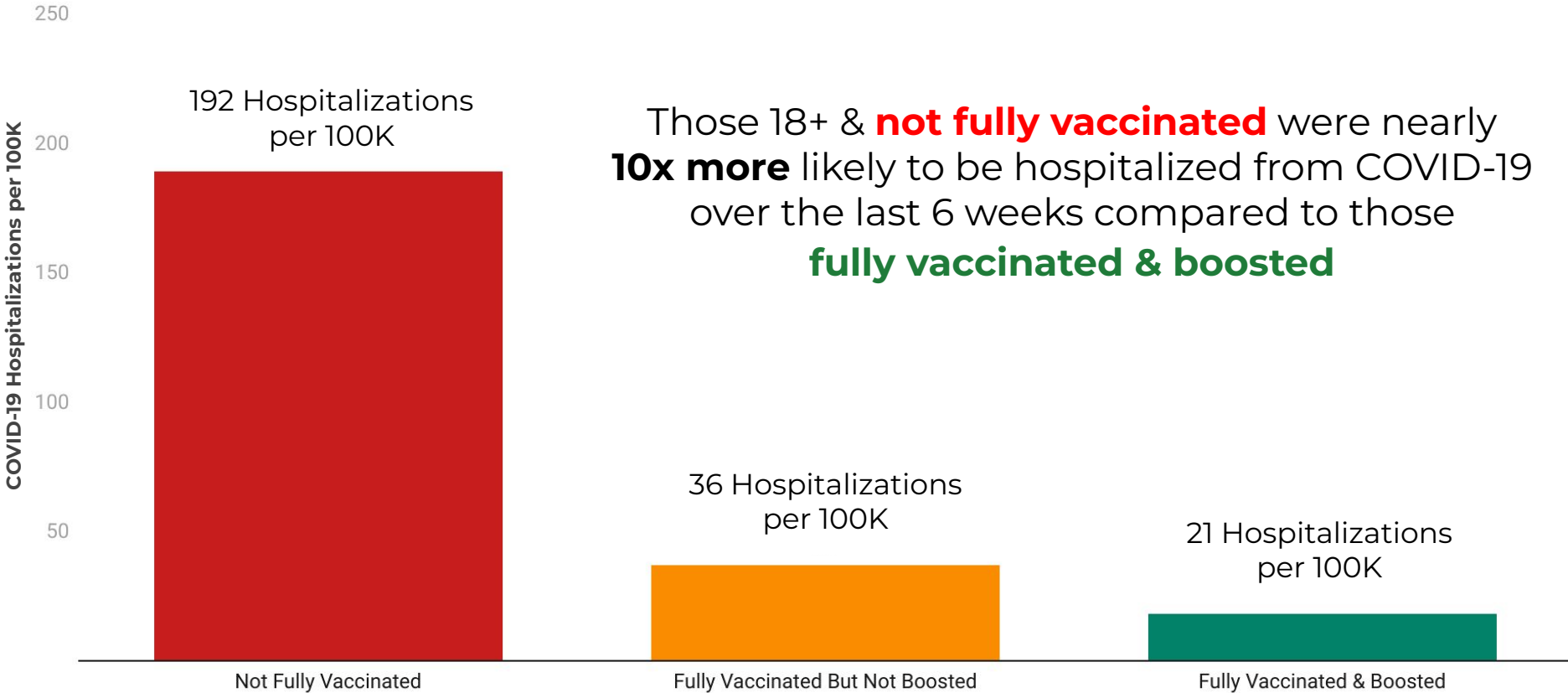


## COVID-19 Hospitalization Rate Per 100K By Age Over The Last 6 Weeks

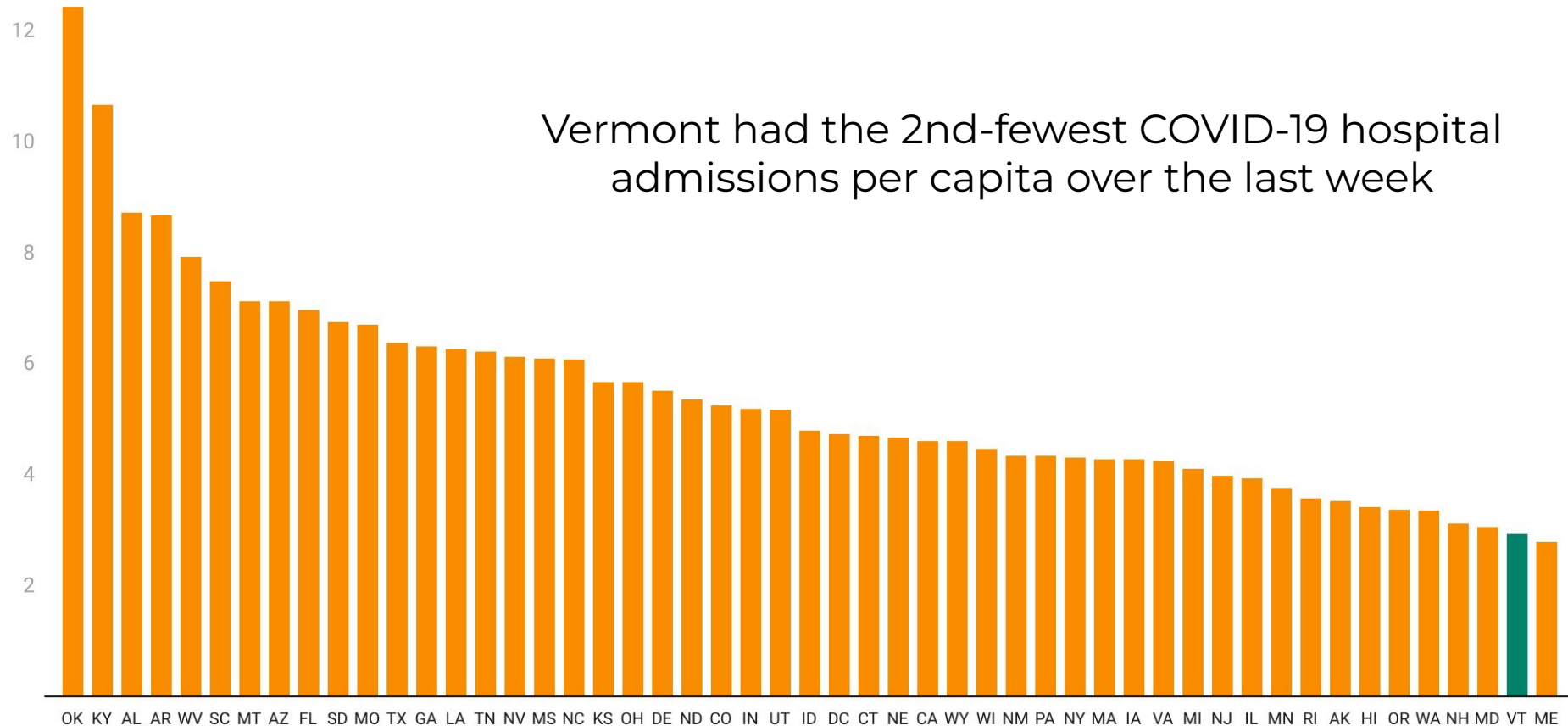


# COVID-19 Hospitalizations By Vaccination Status Per 100K

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

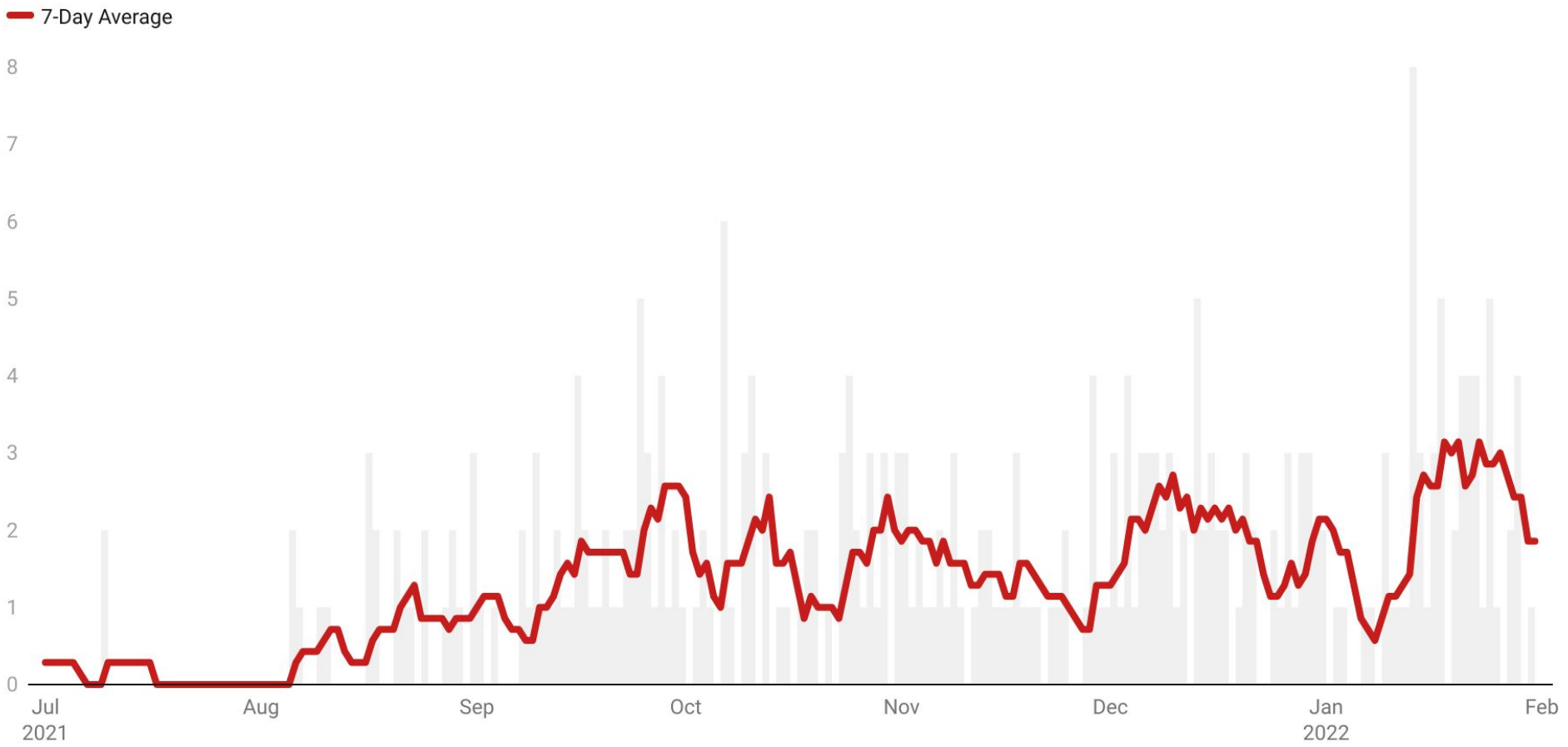


# COVID-19 Hospital Admissions Last 7 Days Per 100K



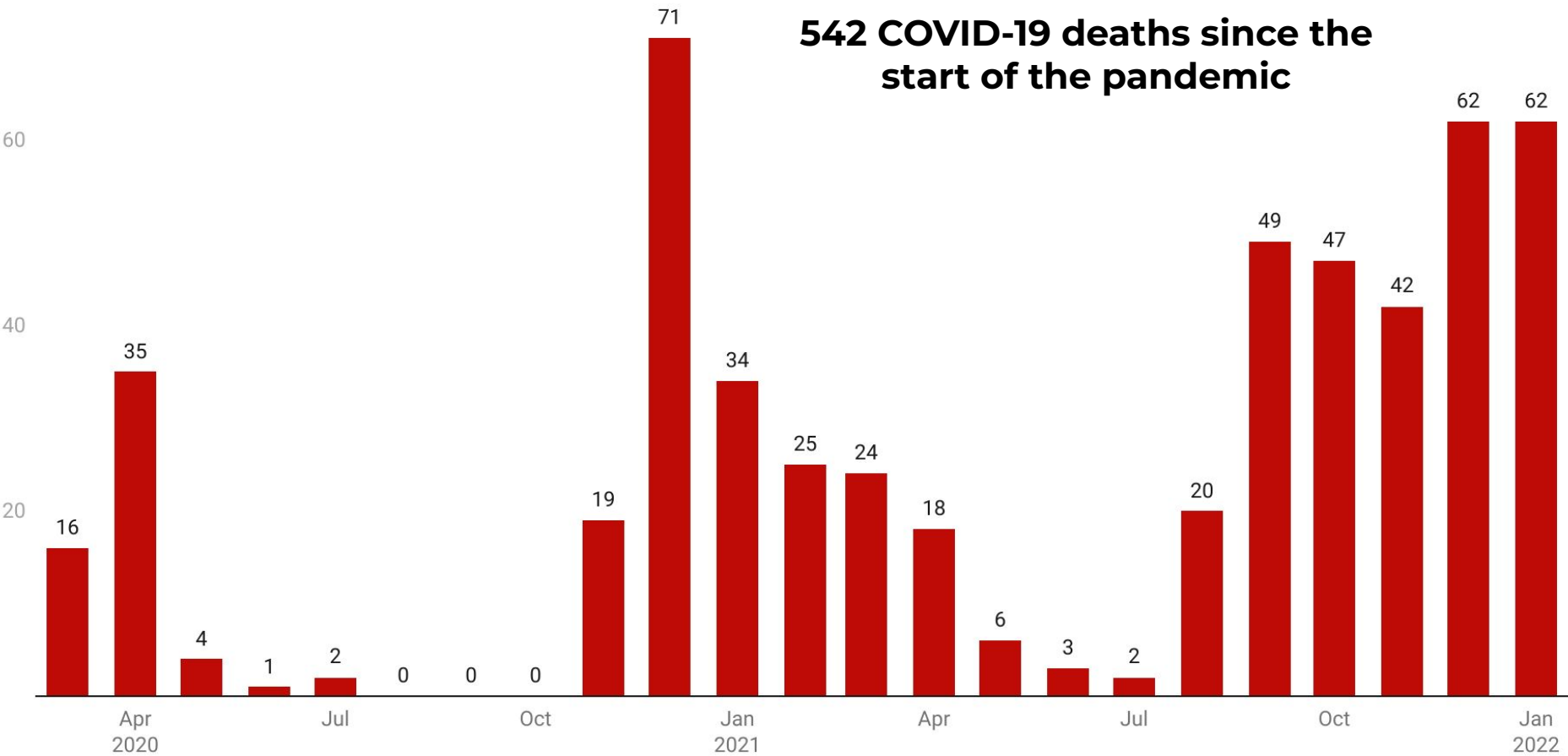
# Vermont Fatality Data

# Vermont COVID-19 Fatalities



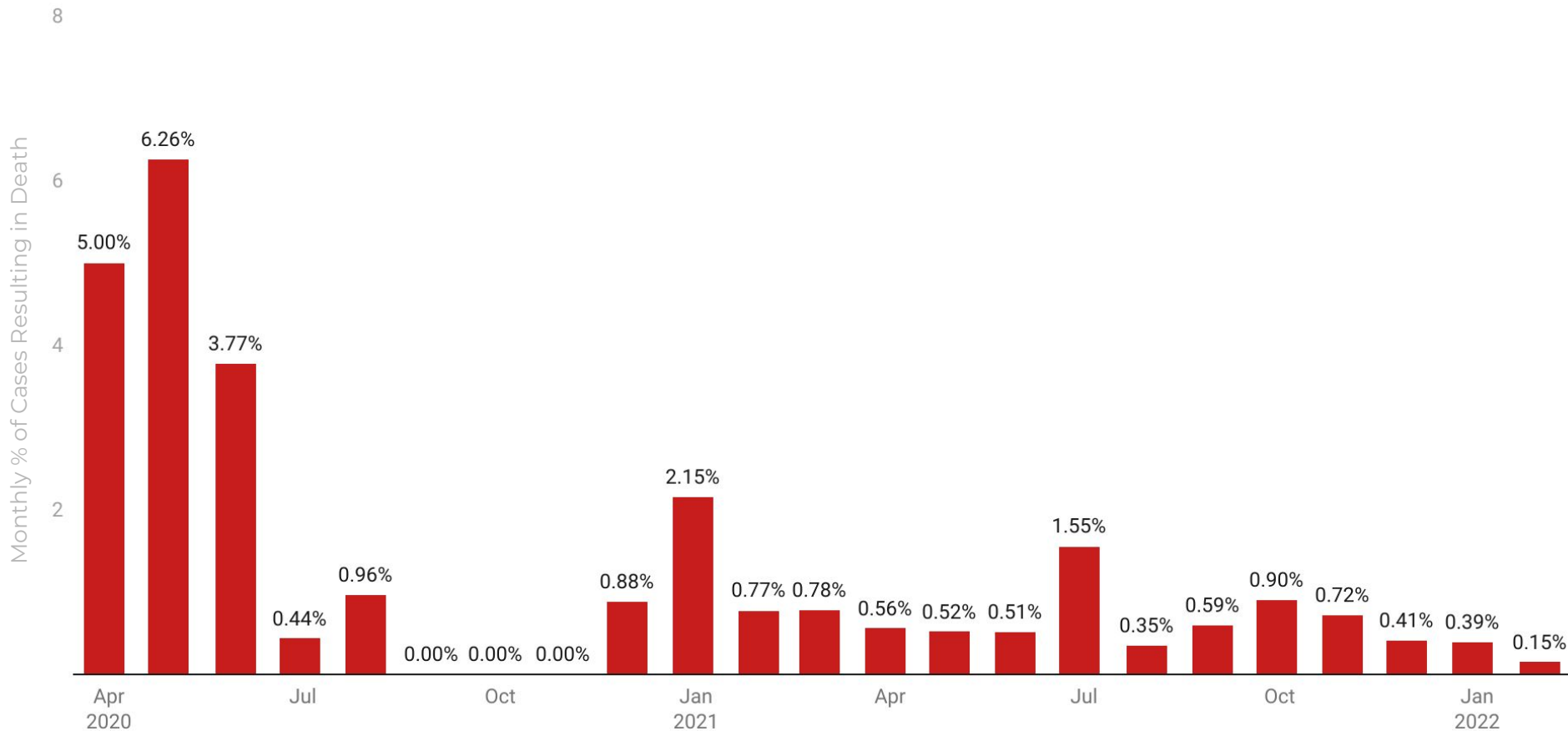
Source: VDH—February 1, 2022; created with Datawrapper

# Monthly Covid-19 Deaths In Vermont



Source: VDH—February 1, 2022; created with Datawrapper; deaths attributed to month in which death occurred rather than reported

# Monthly Covid-19 Fatality Rates



## Vermont Case Fatality Rate By Age

14

12

10

8

6

4

2

**The number of fatal COVID-19 cases is considerably higher among older Vermonters**

11.08%

3.23%

0.81%

0.34%

0.11%

0.04%

0.01%

20-29

30-39

40-49

50-59

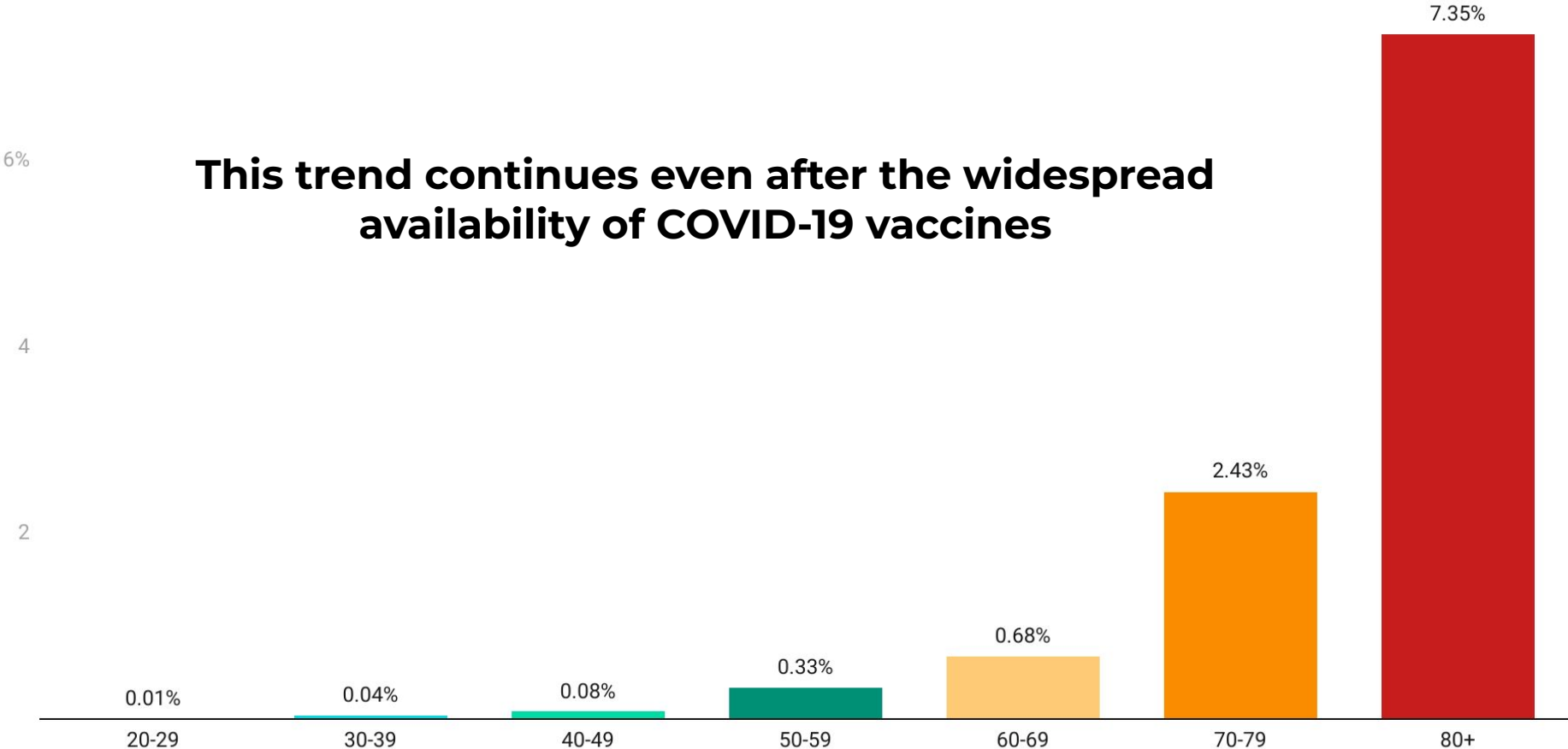
60-69

70-79

80+



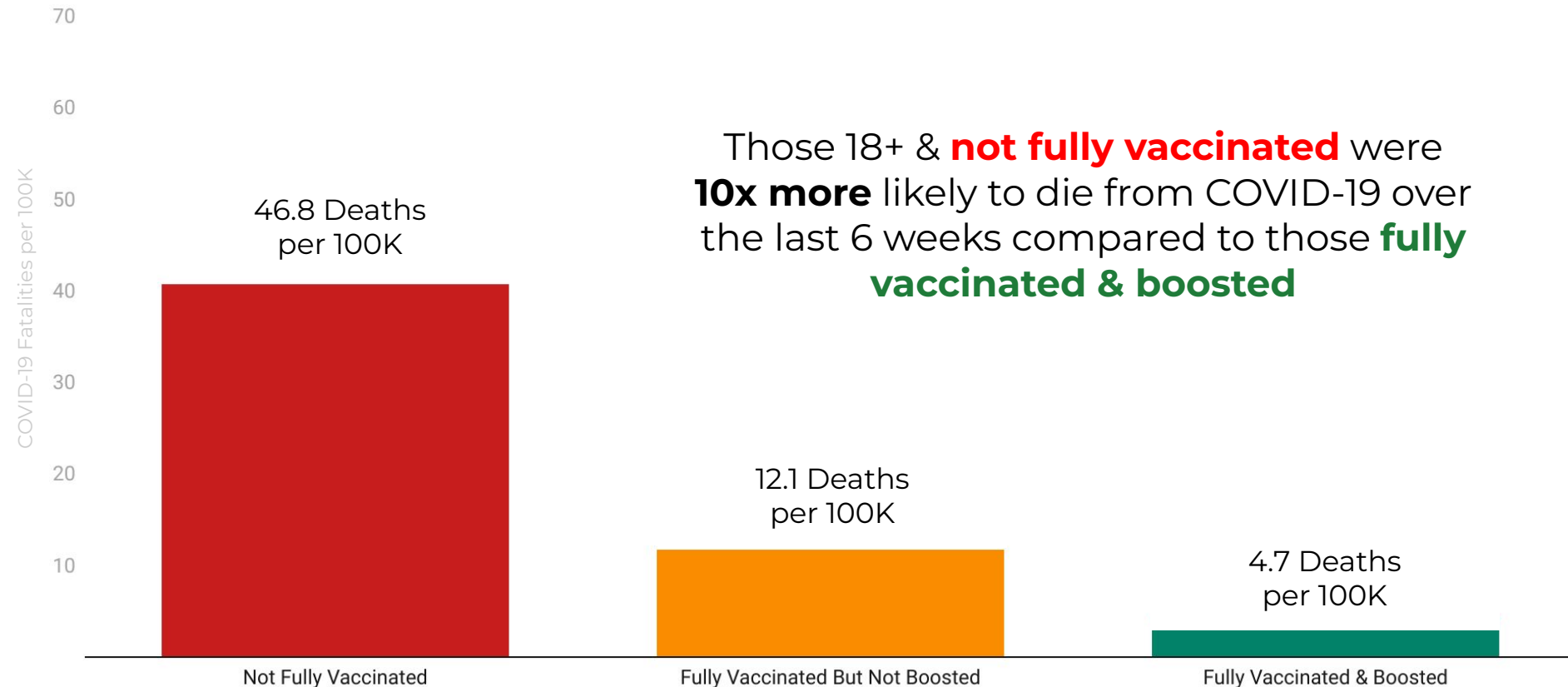
# Fatality Rates By Age Since May 15, 2021



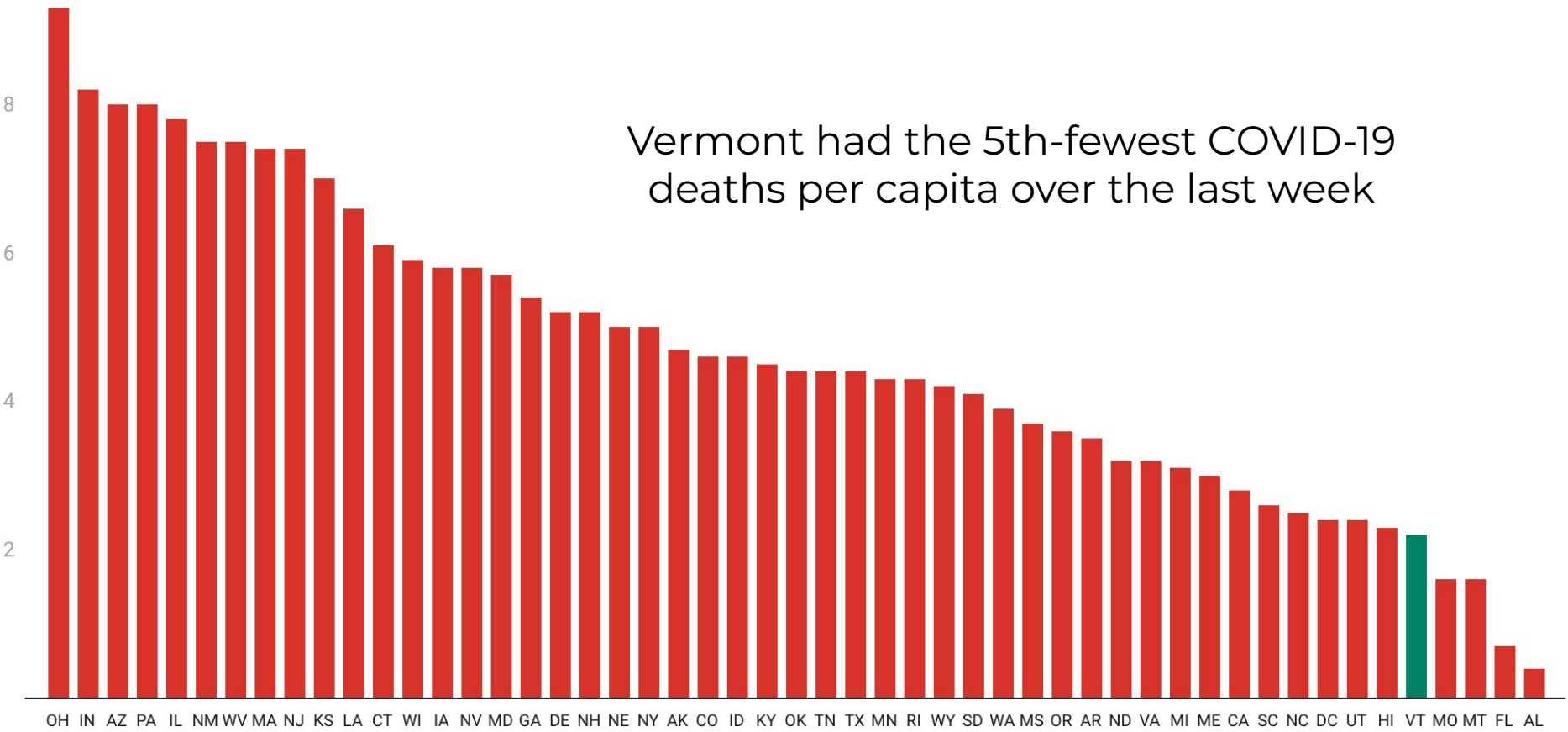
Source: VDH—January 31, 2022; created with Datawrapper

# COVID-19 Deaths By Vaccination Status Per 100K

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



# COVID-19 Deaths Per 100K Last 7 Days



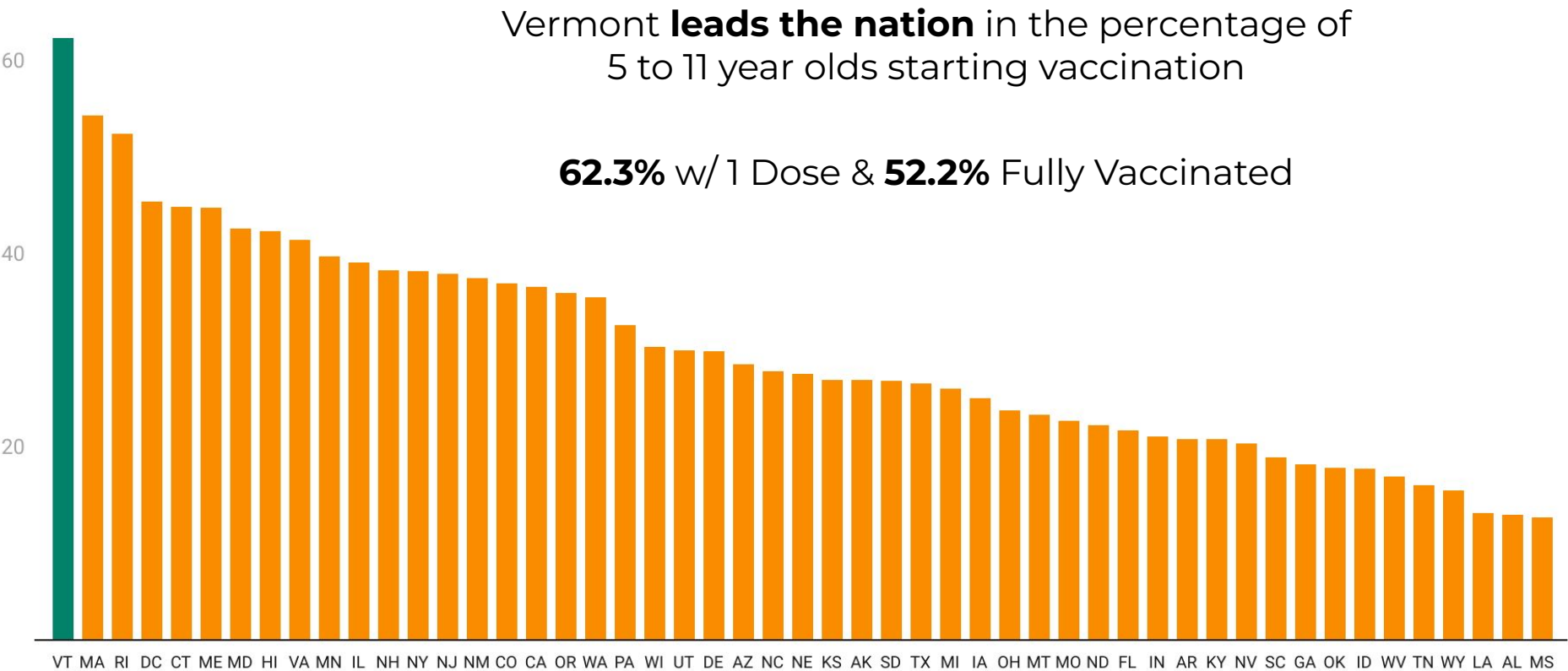
Source: CDC—January 31, 2022; Created with Datawrapper

# Vermont Vaccination Data

# Vermont CDC Vaccine Scorecard

| Metric                                      | Figure         | State Ranking   |
|---|----------------|-----------------|
| <b>Doses Administered per 100K</b>          | <b>212,307</b> | <b>1</b>        |
| <b>% At Least 1 Dose (5+ Population)</b>    | <b>95%+</b>    | <b>1 (tied)</b> |
| <b>% Fully Vaccinated (5+ Population)</b>   | <b>83.3%</b>   | <b>1 (tied)</b> |
| <b>% At Least 1 Dose (Full Population)</b>  | <b>92.1%</b>   | <b>5</b>        |
| <b>% Fully Vaccinated (Full Population)</b> | <b>79.4%</b>   | <b>1</b>        |
| <b>% Fully Vaccinated (65 &amp; Over)</b>   | <b>95%+</b>    | <b>1 (tied)</b> |

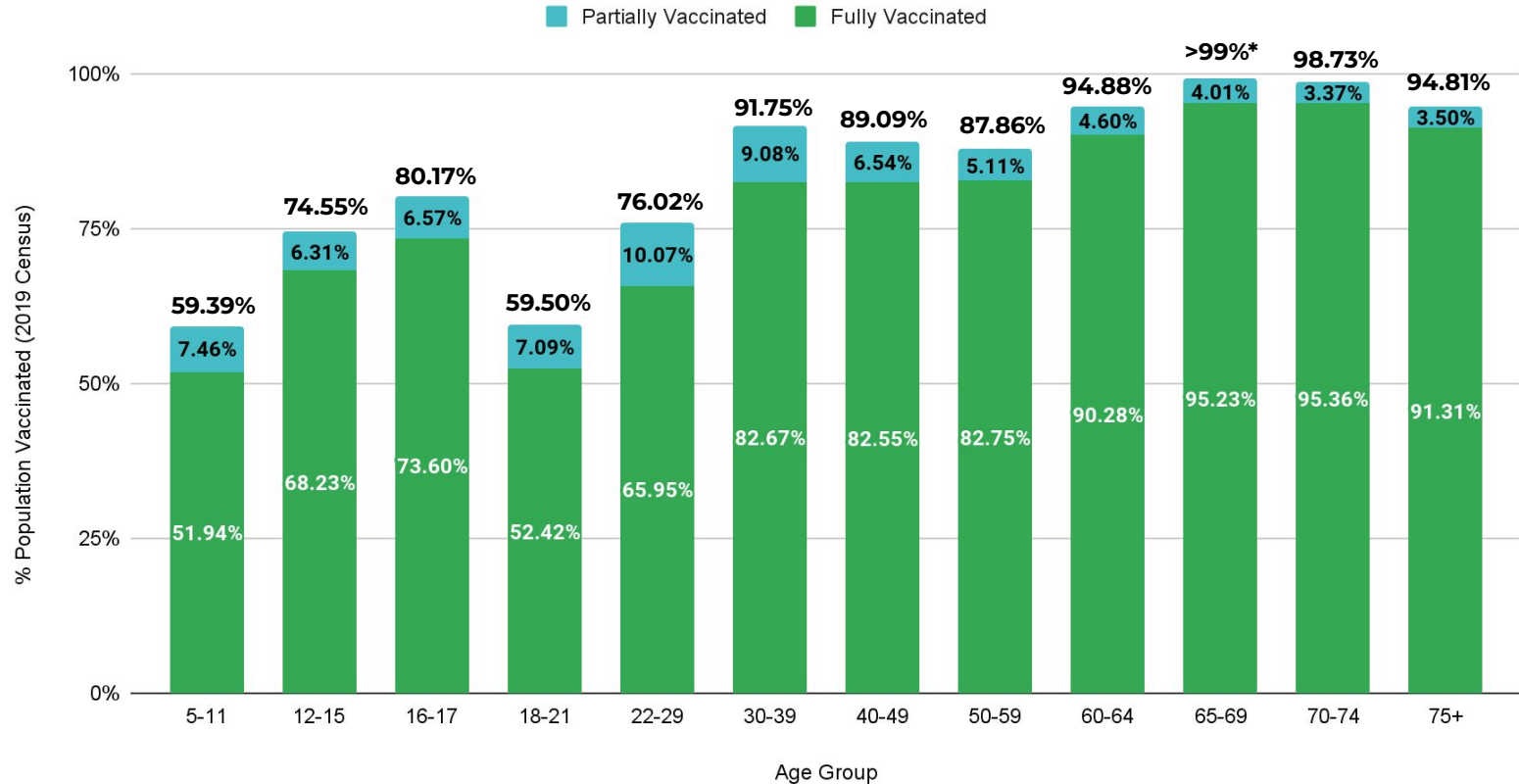
# Percent of 5 to 11 Population Starting Vaccination



Source: CDC—January 31, 2022; Created with Datawrapper

# Vermont Vaccination Progress

By Age Band

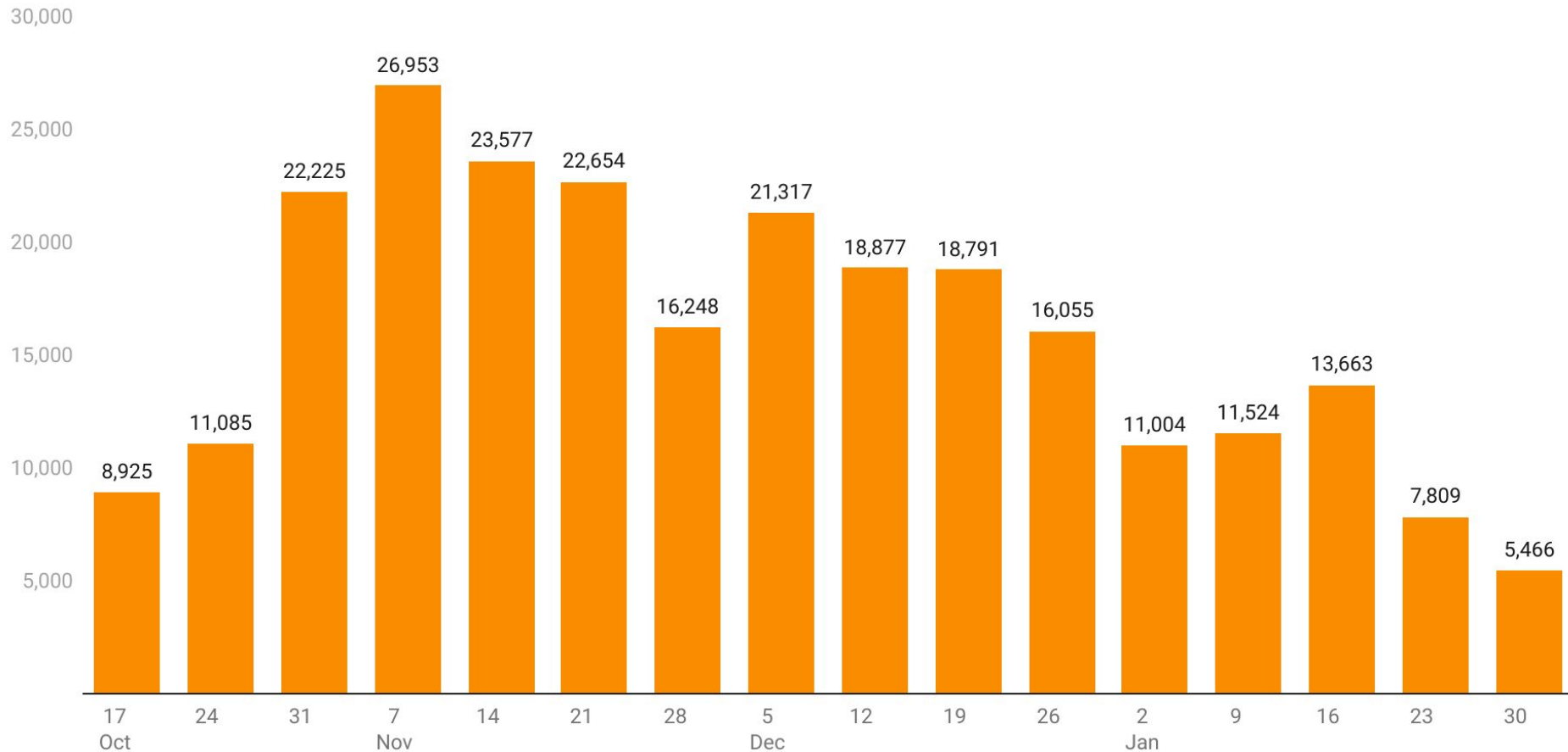


## Vermont CDC Booster Scorecard

| Metric                                     | Figure | State Ranking |
|--|--------|---------------|
| % of Fully Vaccinated w/ booster dose      | 57.0%  | 1             |
| % of Fully vaccinated 18+ w/ booster doses | 61.2%  | 1             |
| % of Fully vaccinated 50+ w/ booster doses | 70.6%  | 2             |
| % of Fully vaccinated 65+ w/ booster doses | 77.6%  | 3             |



## Vermont: Booster Shots Administered By Week



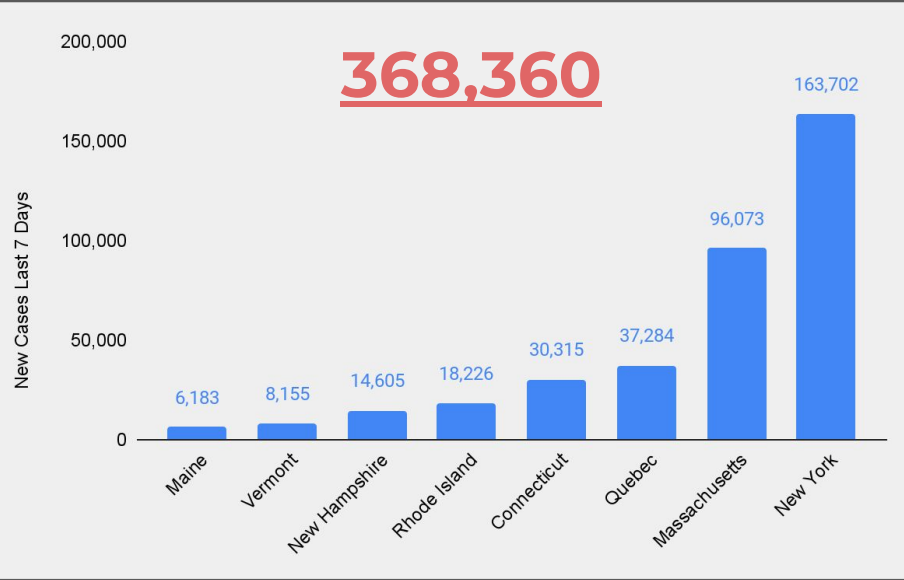
Source: CDC—January 31, 2022; created with Datawrapper

# Regional Data

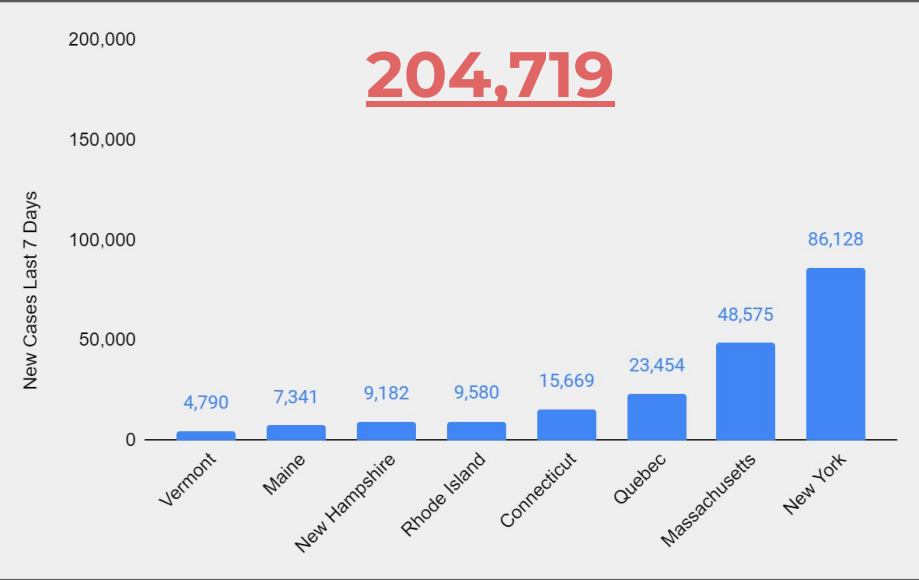
# Northeast Regional Cases

**44.4% Decrease in New Cases**

New Cases January 18th to January 24th



New Cases January 25th to January 31st



# Weekly Northeast Regional Cases

1000000

750000

500000

250000

0

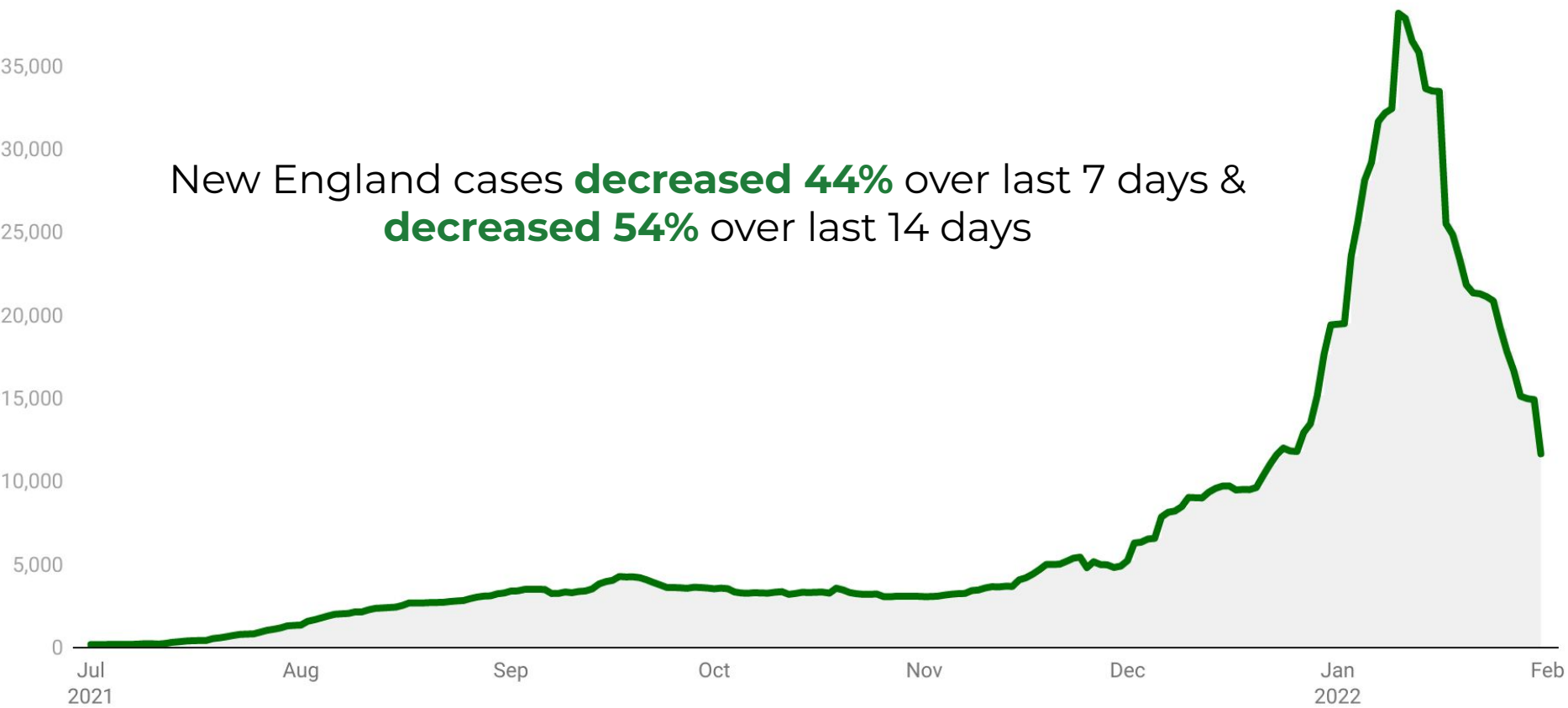
163,641 fewer cases this week compared to last

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 12/20/21 1/17/22

Sources: State Health Depts.—January 31, 2022 (includes: CT, ME, MA, NH, NY, QC, RI & VT)

# New England COVID-19 Cases

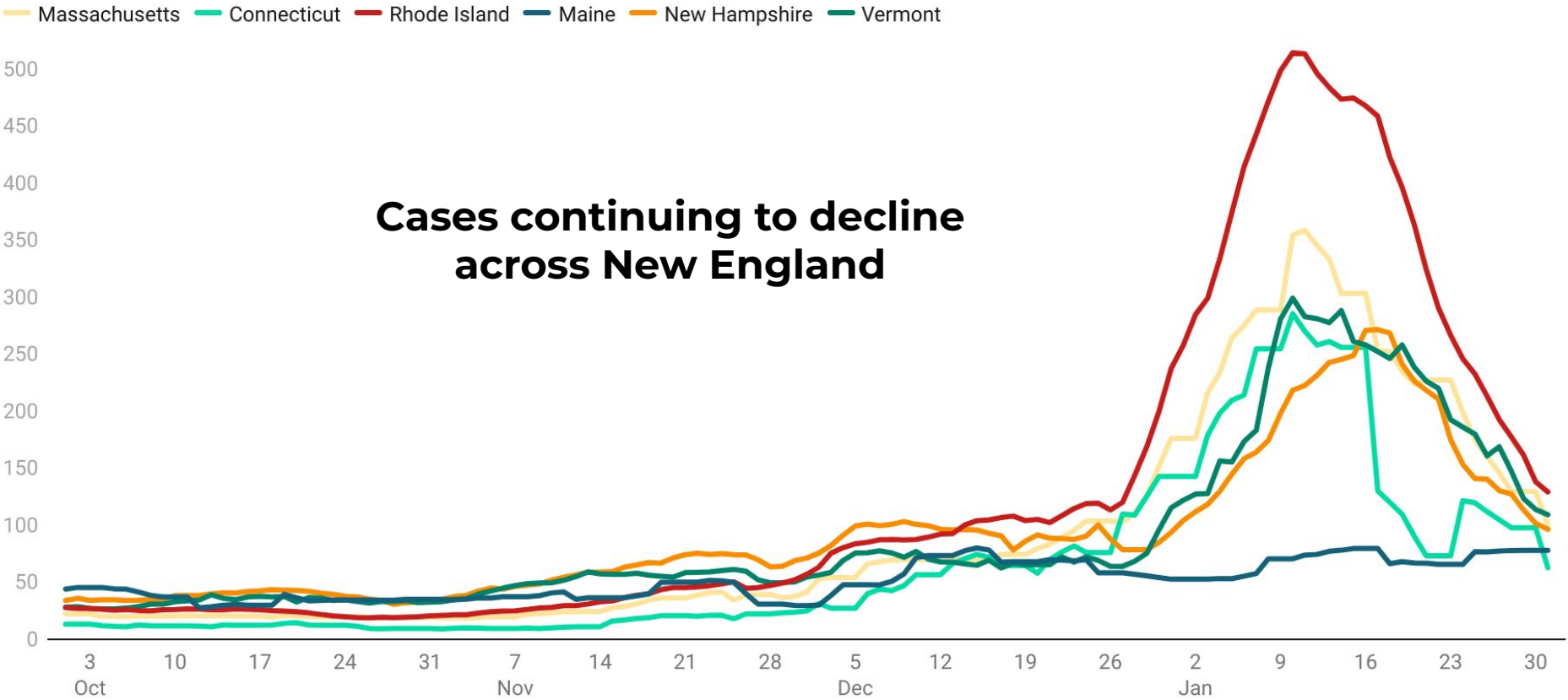
New England 7-Day Case Average



Sources: State Health Depts.—January 31, 2022 (includes: CT, ME, MA, NH, RI & VT)

# New England COVID-19 Case Trends

7-Day Average Cases Per 100K

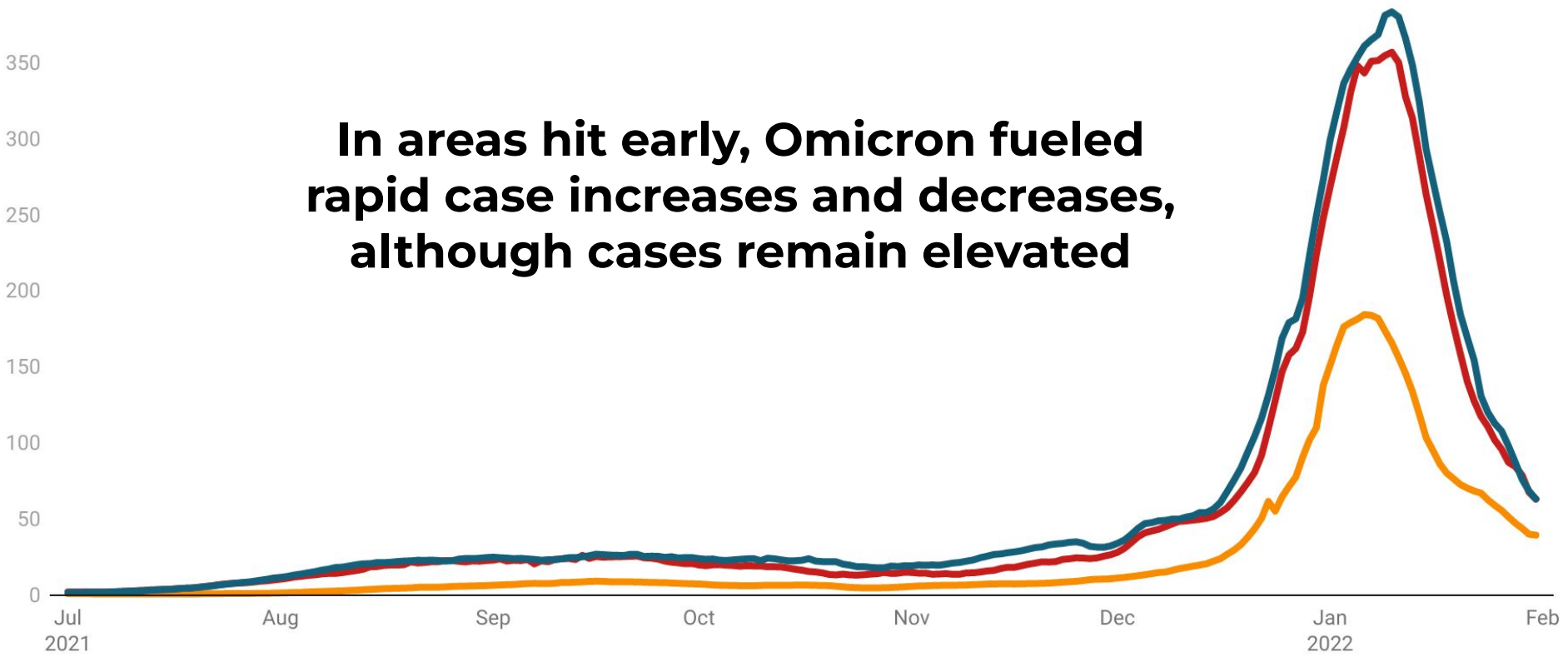


Sources: State Health Depts.—January 31, 2022 (includes: CT, ME, MA, NH, RI & VT)

# COVID-19 Case Trends in Northeast

7-day Average, Cases Per 100K

Quebec New York New Jersey

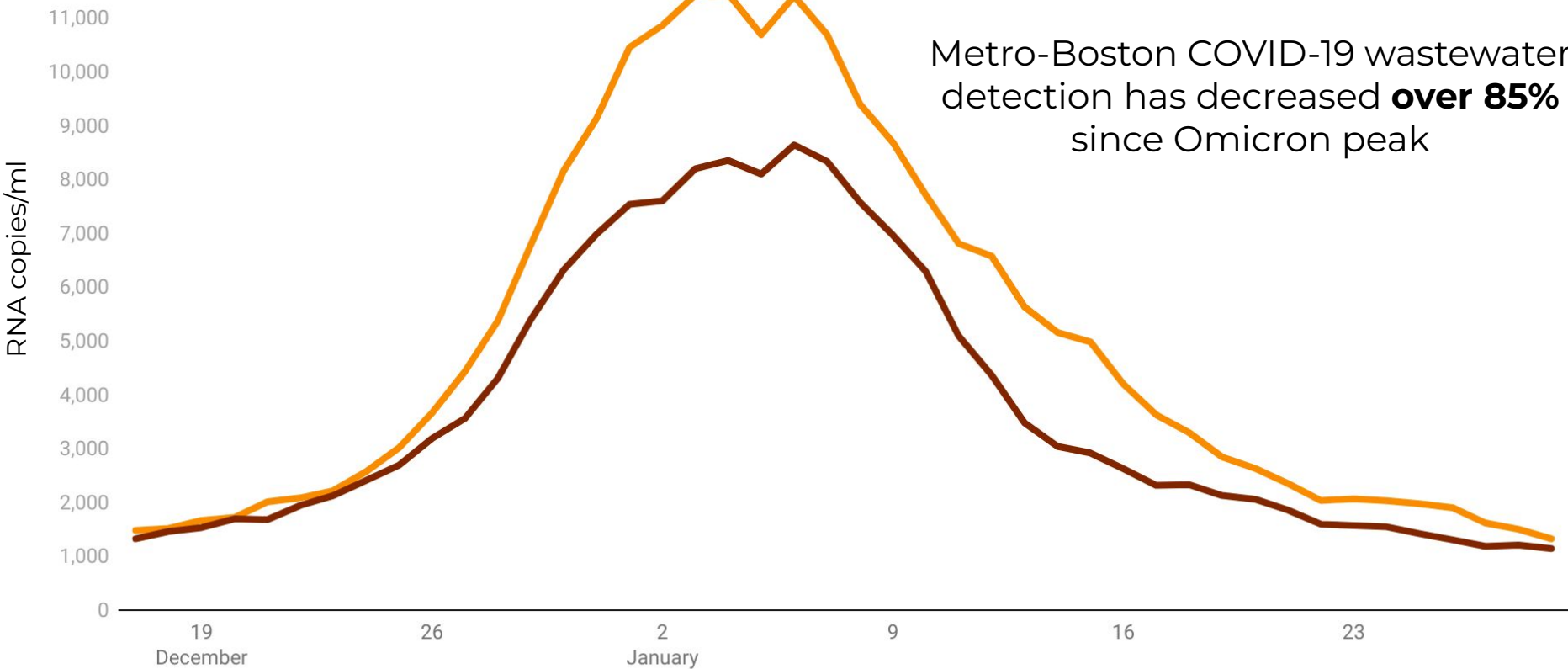


**In areas hit early, Omicron fueled rapid case increases and decreases, although cases remain elevated**

Sources: State/Provincial Health Depts.—January 31, 2022

# Boston Wastewater COVID-19 Detection

Southern Collection Area (7-Day Average) Northern Collection Area (7-Day Average)

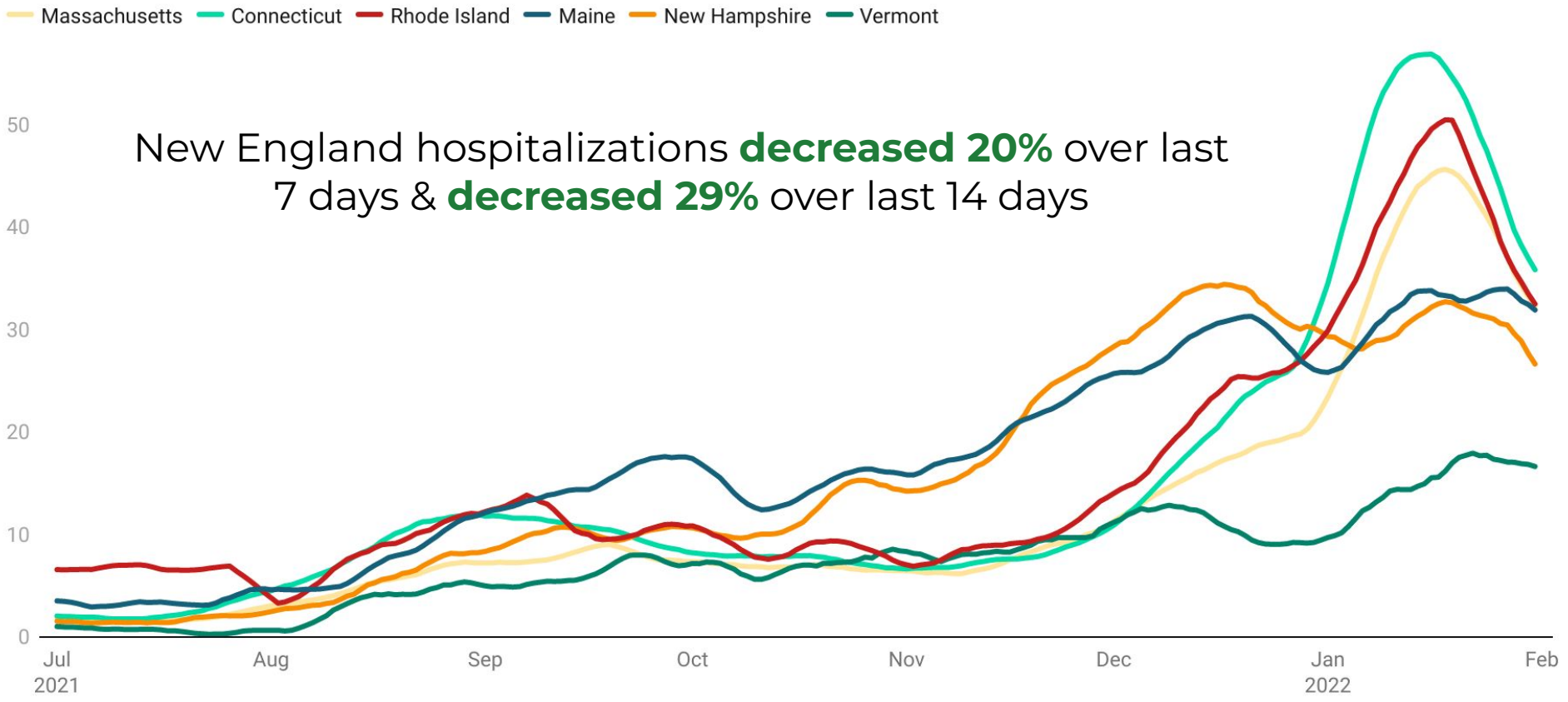


Source: Massachusetts Water Resources Authority—January 28, 2022



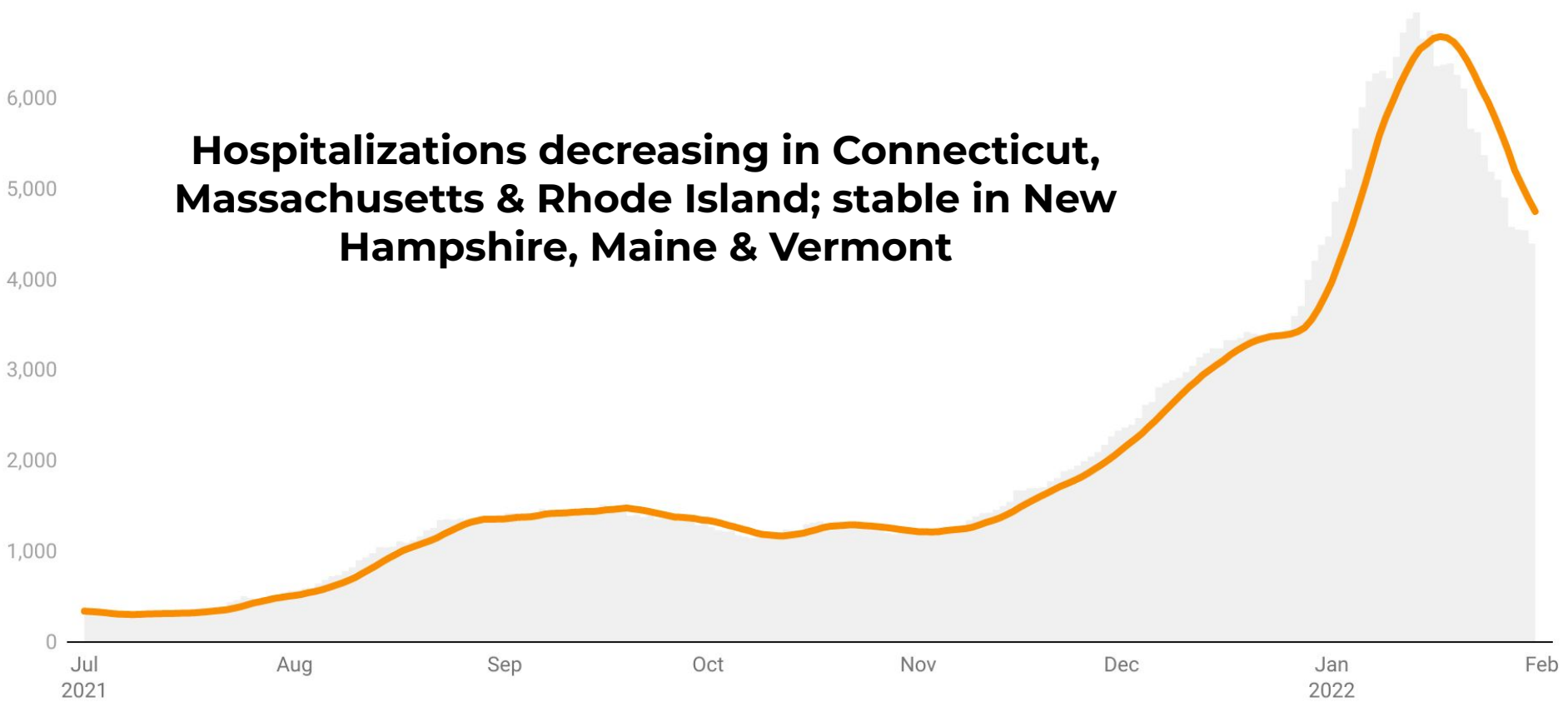
# New England COVID-19 Hospitalizations Trends

7-Day Average Hospitalizations Per 100K



# New England COVID-19 Hospitalizations

7-Day Average

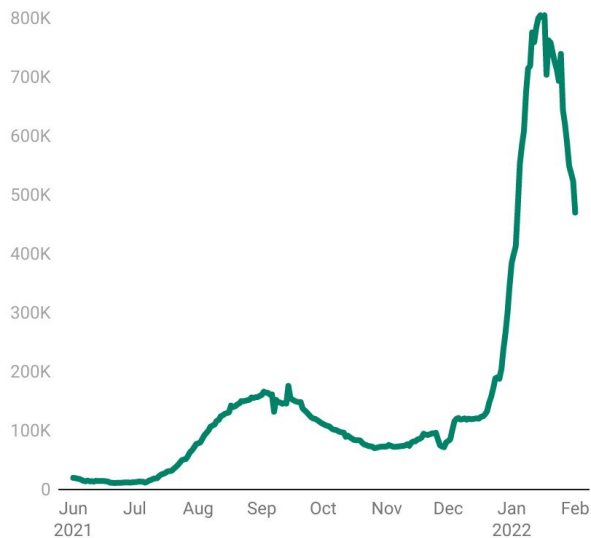


Sources: HHS—January 31, 2022 (includes: CT, ME, MA, NH, RI & VT)

# National Data

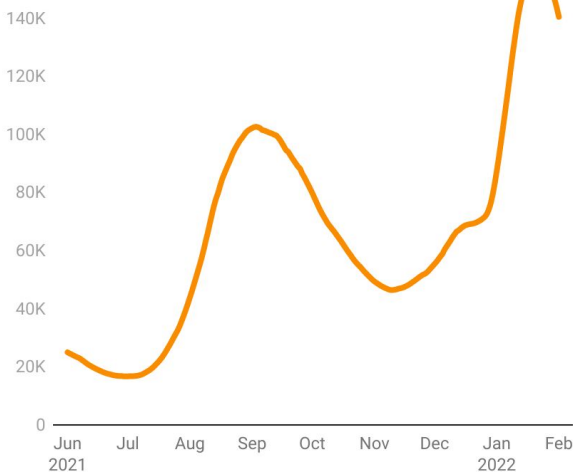
# U.S. Infections, Hospitalizations, & Deaths

**36% Decrease**  
**Over last 7 days**



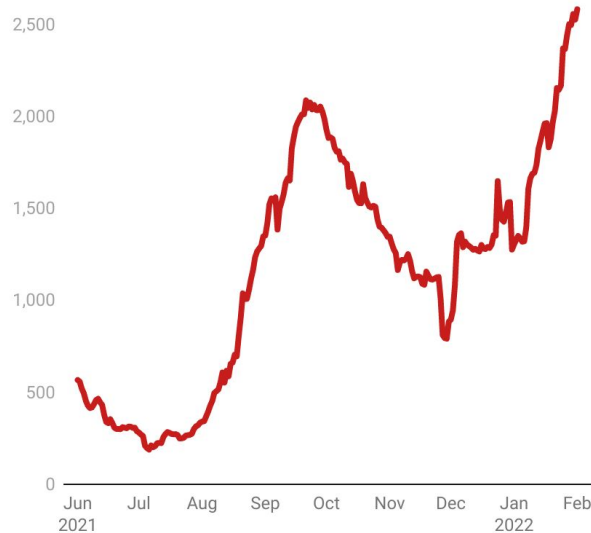
**Infections**  
**(7-Day Average)**

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



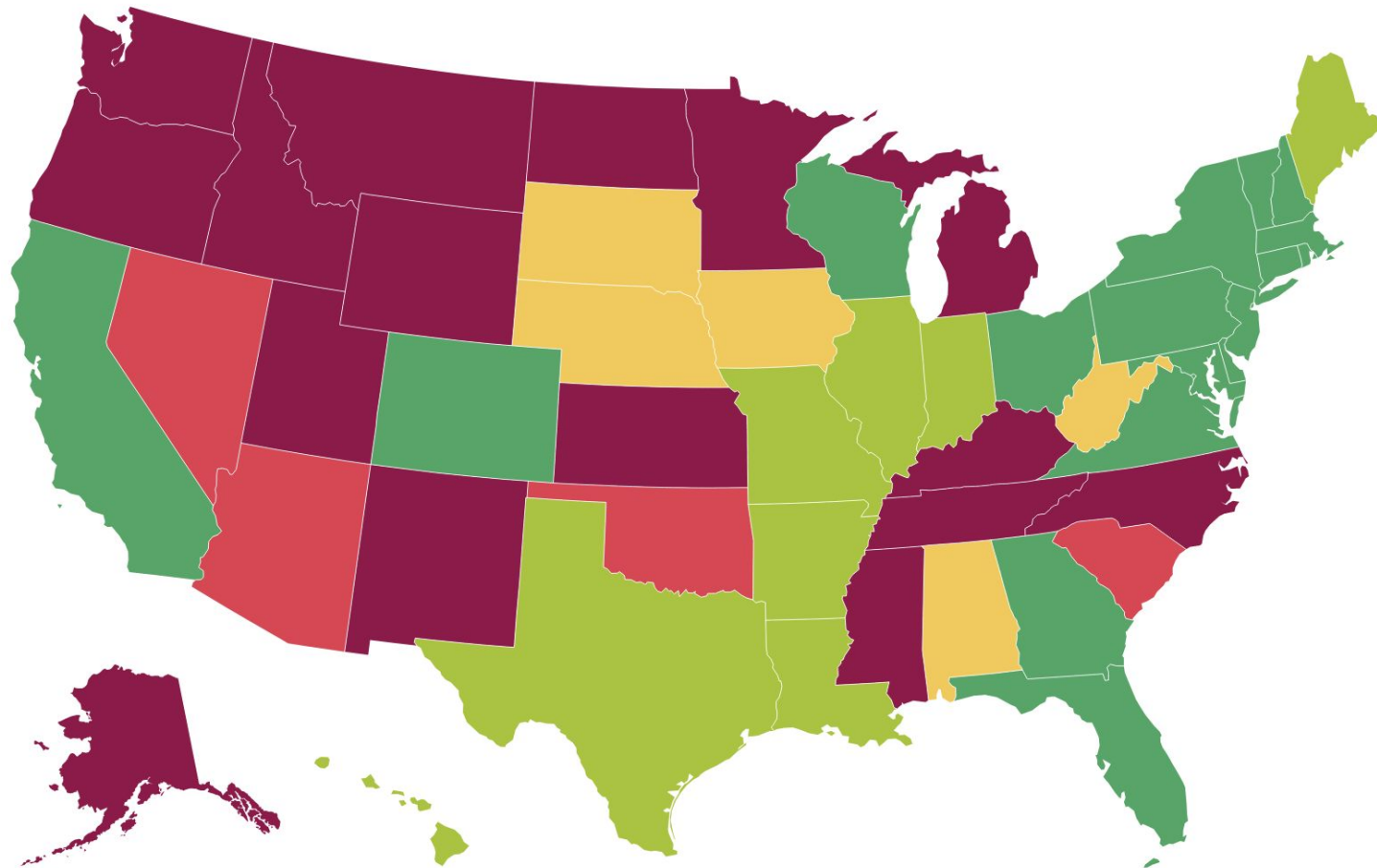
**Hospitalizations**  
**(7-Day Average)**

**9% Increase**  
**Over last 7 days**



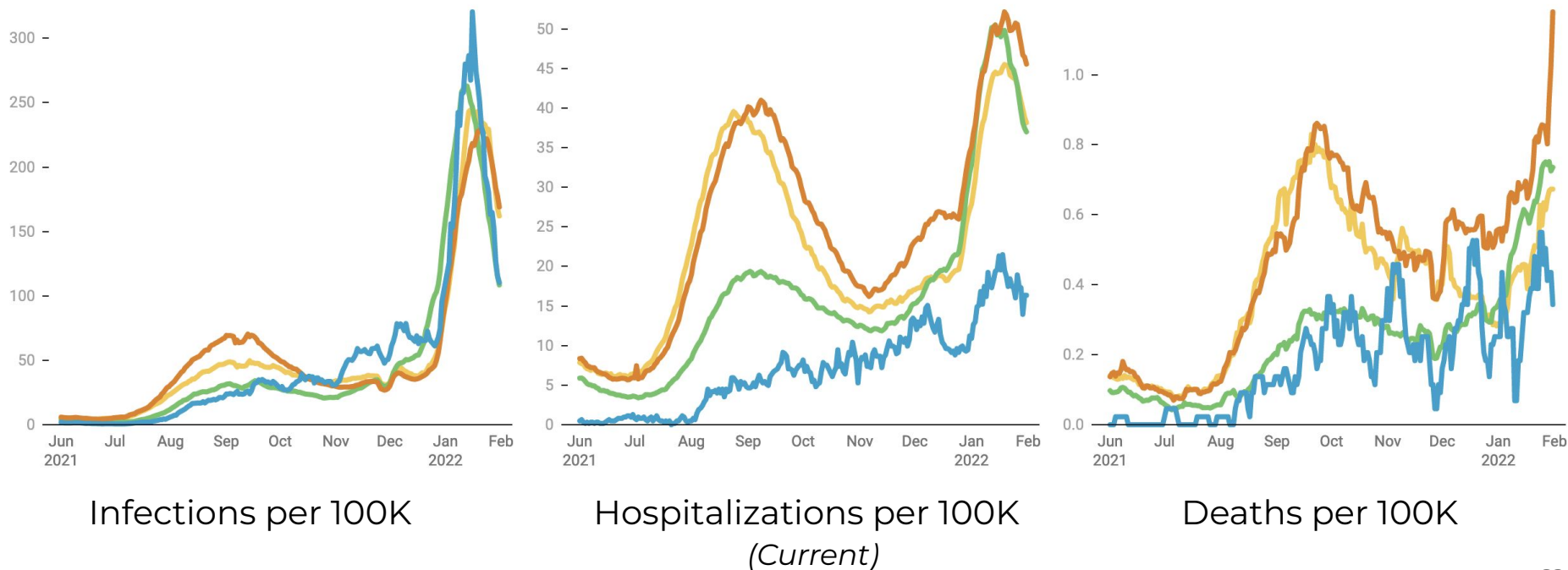
**Deaths**  
**(7-Day Average)**

# Week Over Week Percent Change in COVID-19 Infections



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

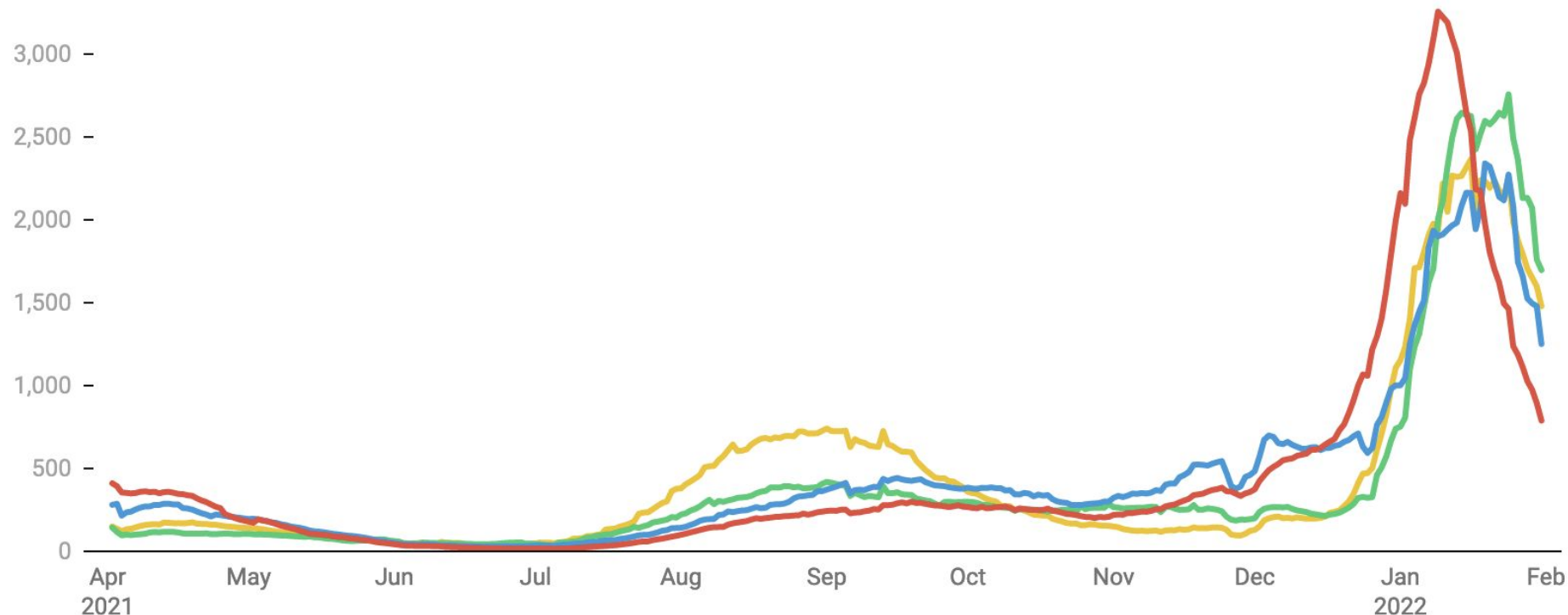
Bottom Third Vaccinated States   Middle Third Vaccinated States   Top Third Vaccinated States   Vermont



# Daily COVID-19 Cases per Million in US Regions

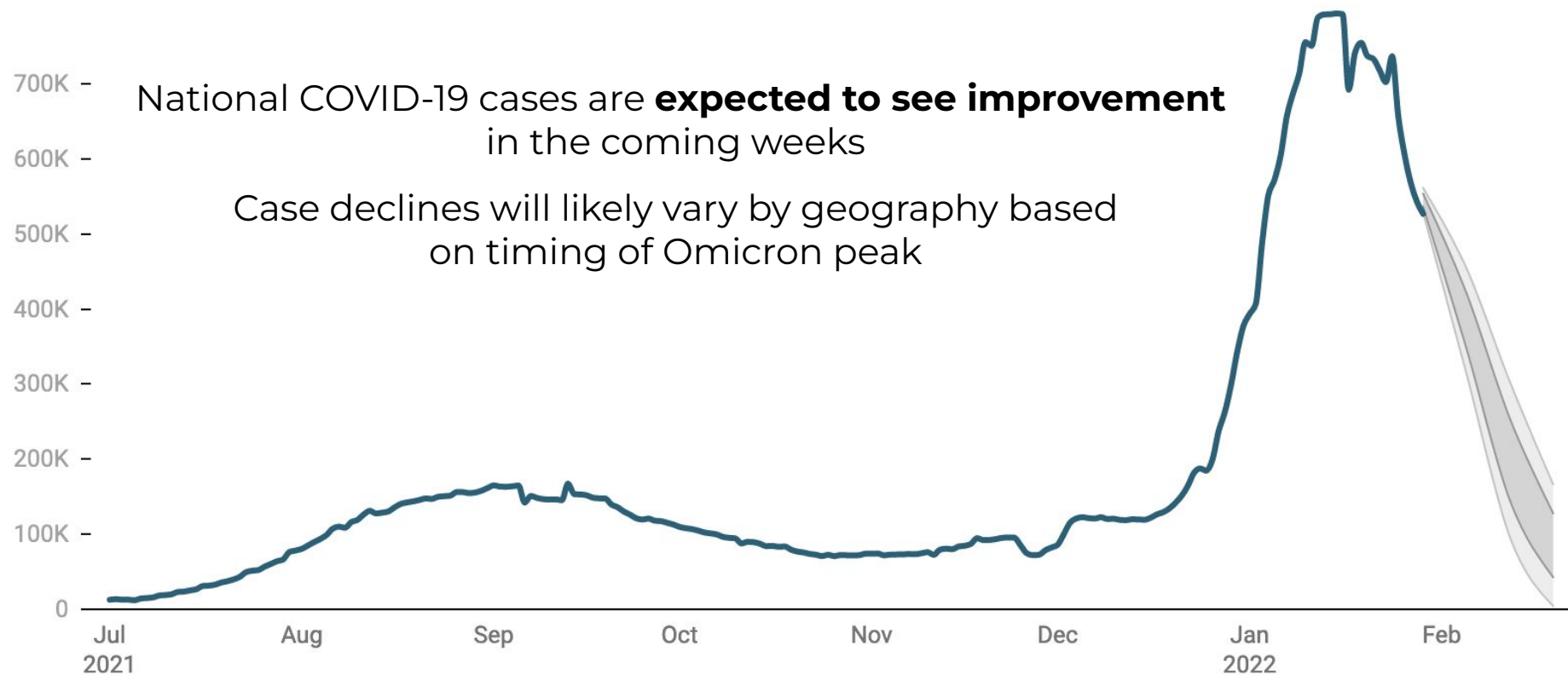
Calculated as a 7-day moving average. Definitions of North, Midwest, South, and West taken from the U.S. Census bureau.

— Northeast — Midwest — South — West



# US COVID-19 Infection Confidence Intervals

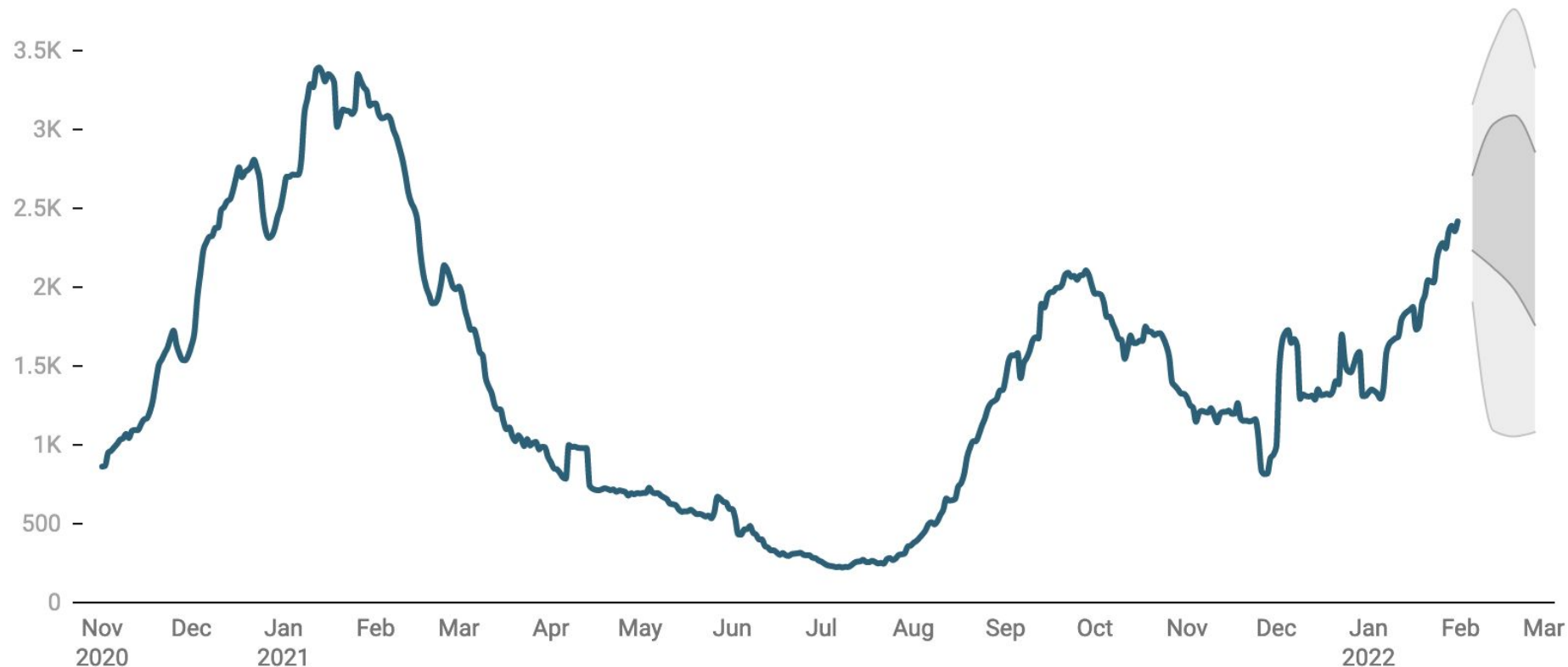
Calculated as a 7-day mean. Inner and outer bands represent 50% and 95% confidence intervals, respectively.





# US COVID-19 Death Confidence Intervals

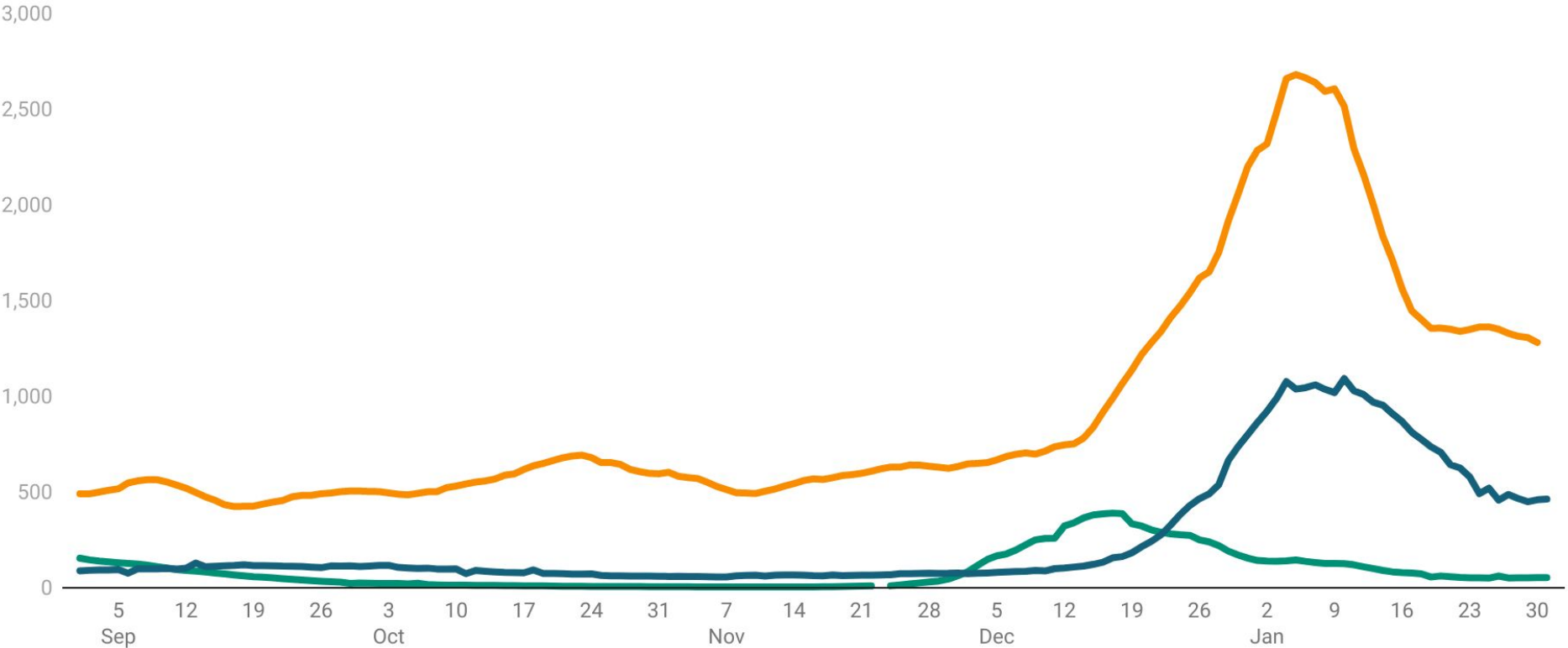
Calculated as a 7-day mean. Inner and outer bands represent 50% and 95% confidence intervals, respectively.



# International Cases Omicron Wave

Cases per million on 7-day average

United Kingdom Canada South Africa



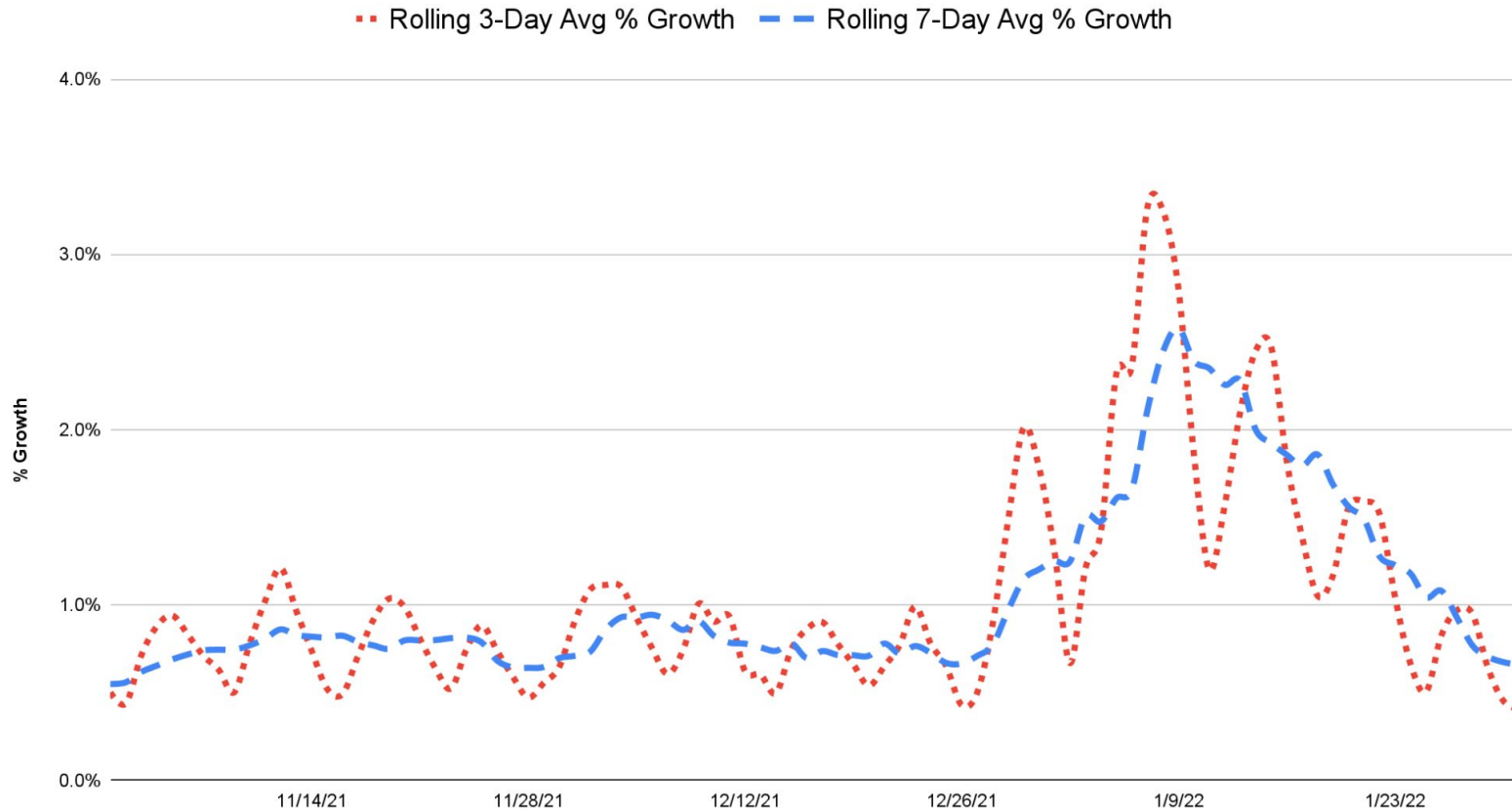
Source: Our World In Data—February 1, 2021; created with Datawrapper

# RESTART VERMONT

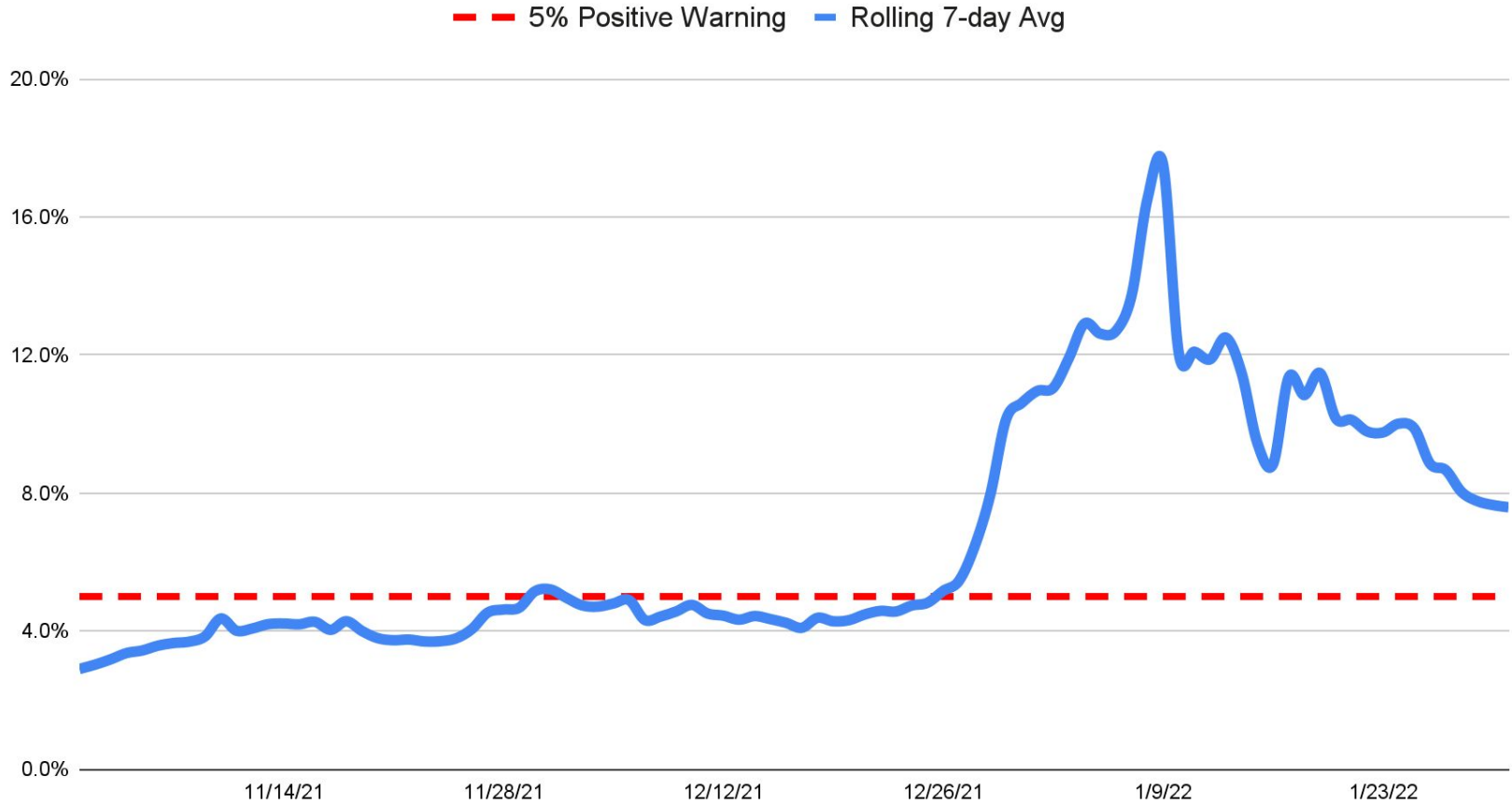
## Reopening Metrics

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

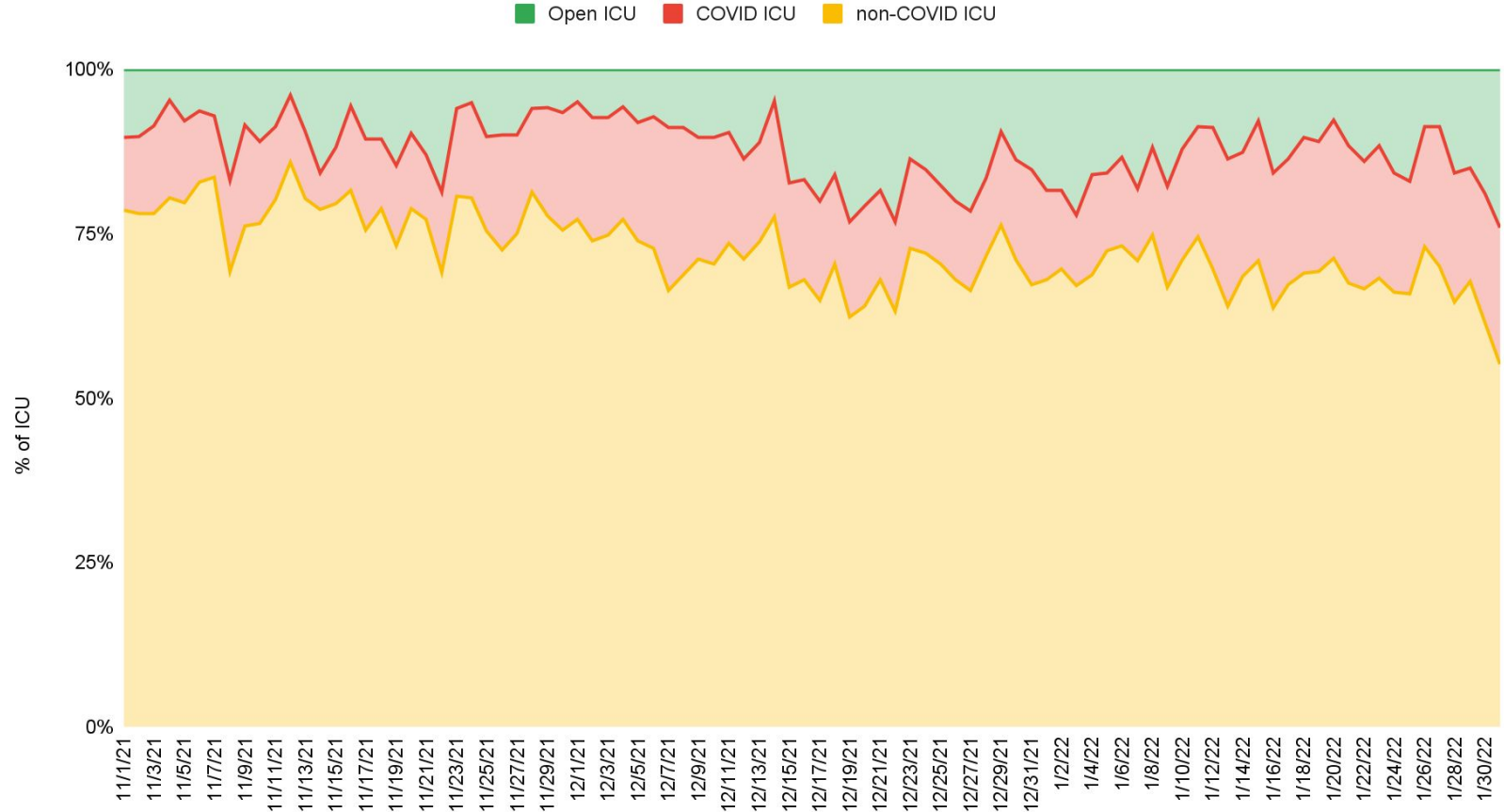


# Test Positivity



Source: Vermont Department of Health; 7-day positivity calculated as positive tests last seven days/tests last seven days

# Critical Care Beds



# Vermont Testing

