

# **COVID-19 Modeling**

## **April 27, 2021**

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

# COVID Infections per 100K in Vermont (7-Day Average)



Cases are down 61% in April

Source: Vermont Department of Health—April 27, 2021

# Vermont Covid-19 Case Rates Declining Again in Spring

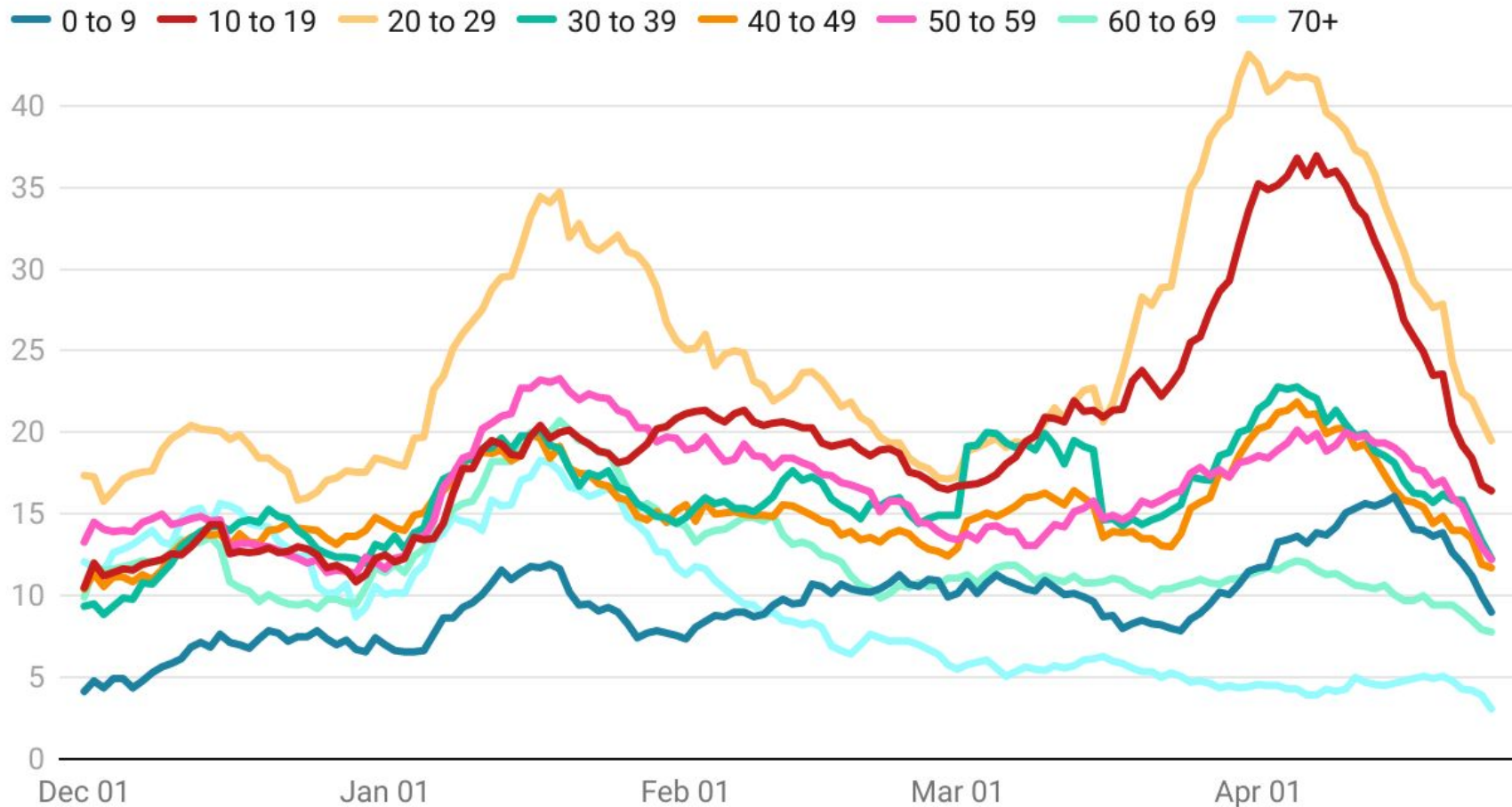
 **↓ 82%**

**APRIL 2020**  
(decrease in 7-day Average)

 **↓ 61%**

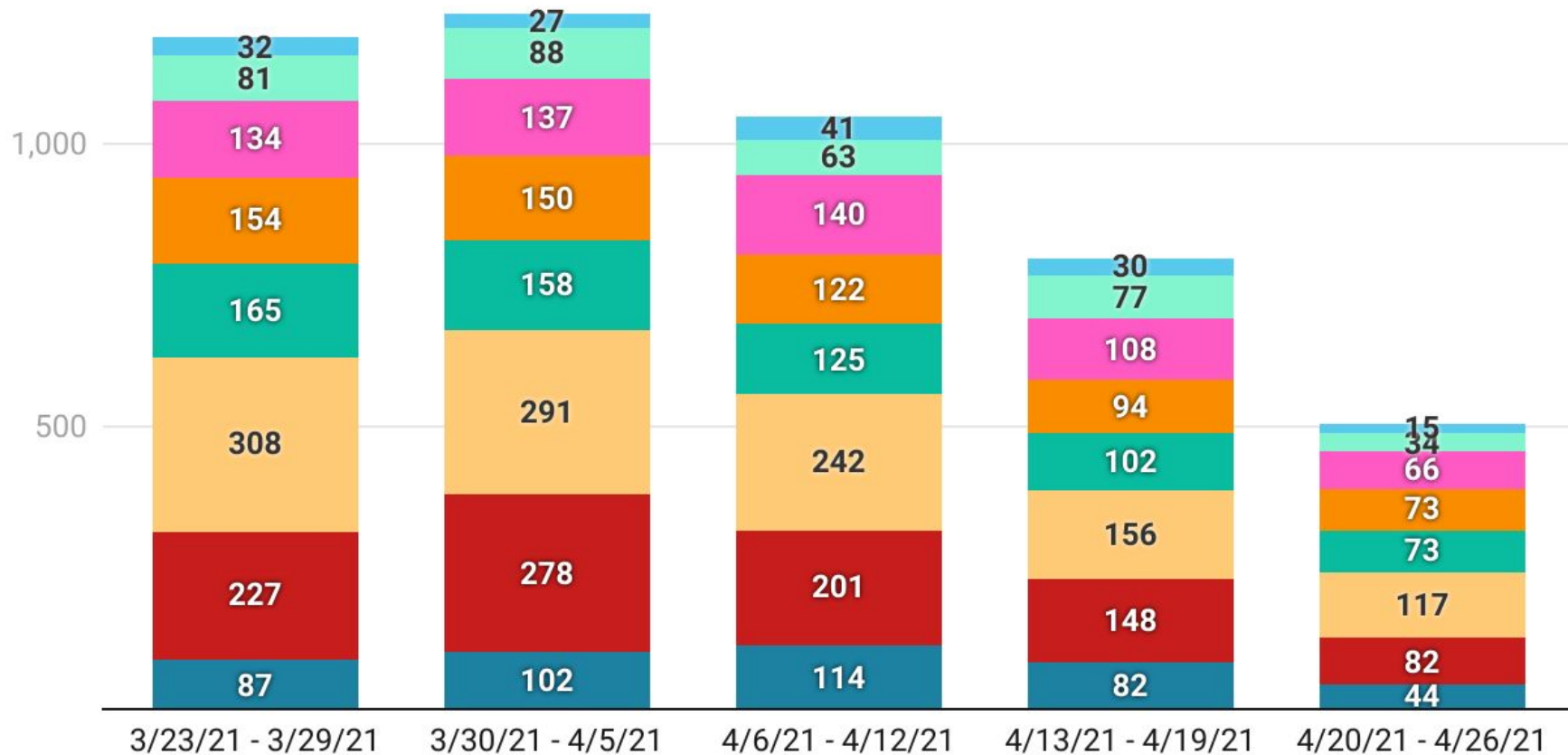
**APRIL 2021**  
(decrease in 7-day Average)

# Vermont Cases by Age, 14-Day Averages

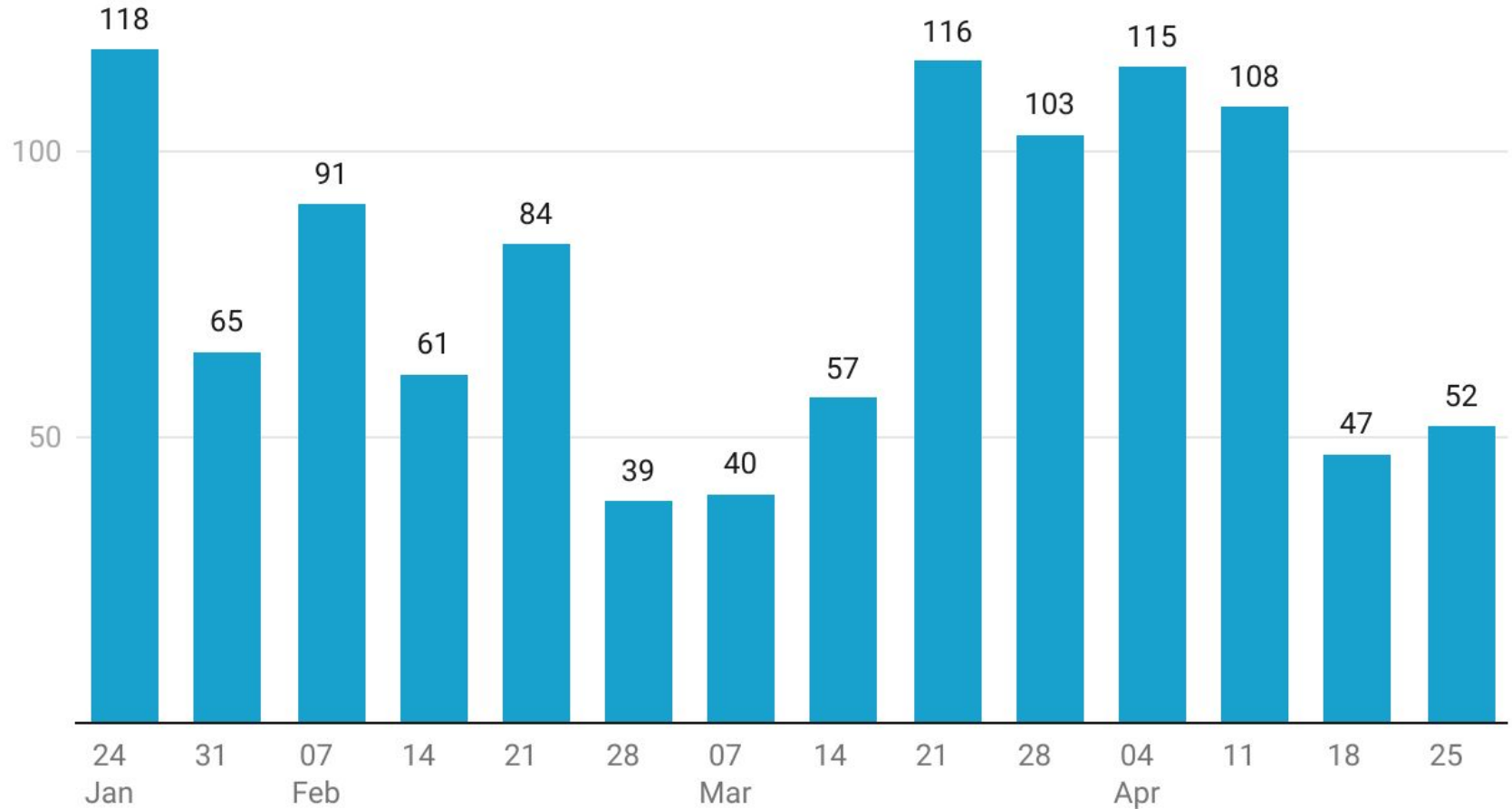


# Vermont Cases by Age

0 to 9 10 to 19 20 to 29 30 to 39 40 to 49 50 to 59 60 to 69 70+



# Weekly Higher Education Cases in Vermont

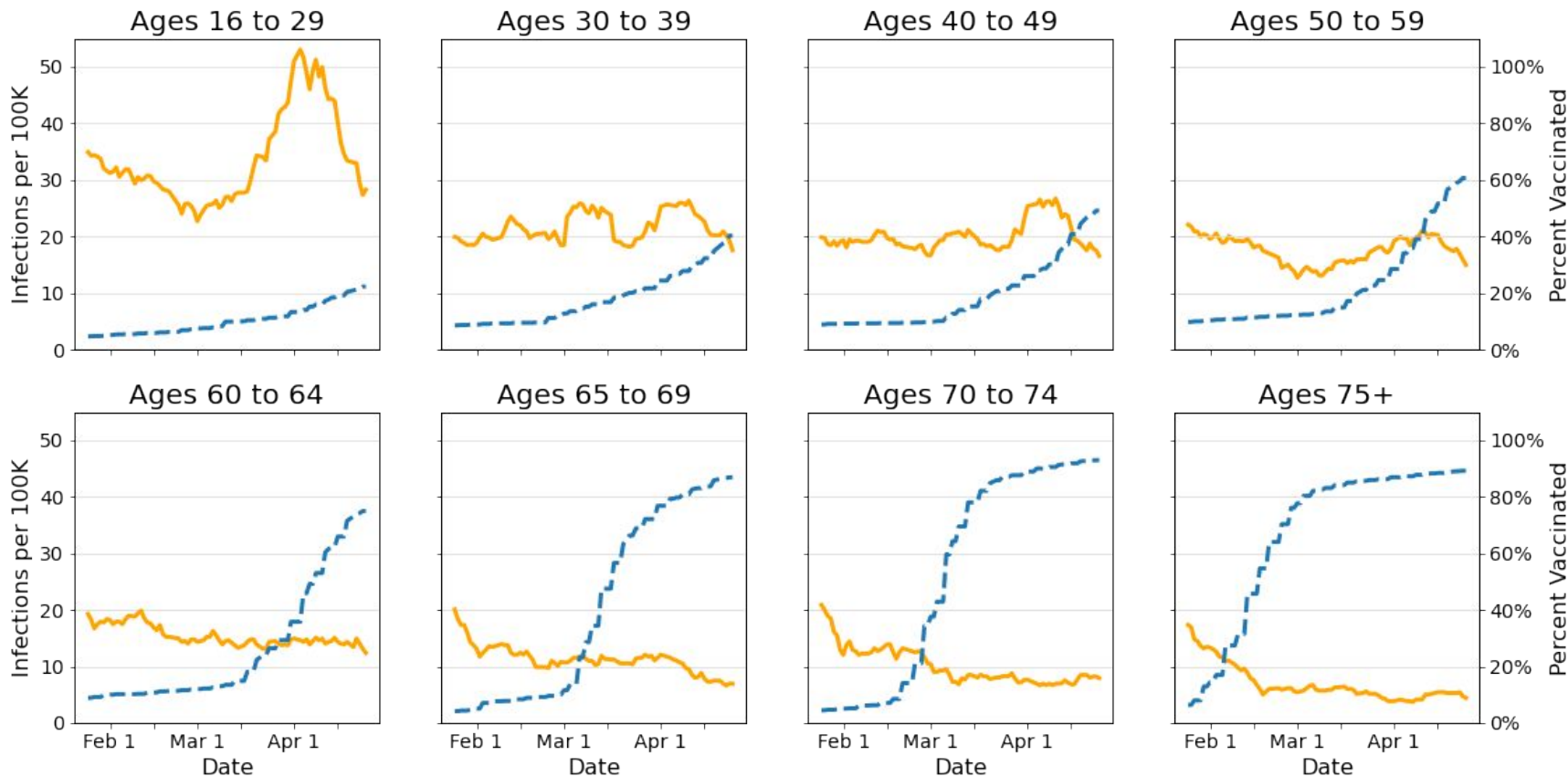


Source: Vermont Higher Education Institution Reporting—April 26, 2021

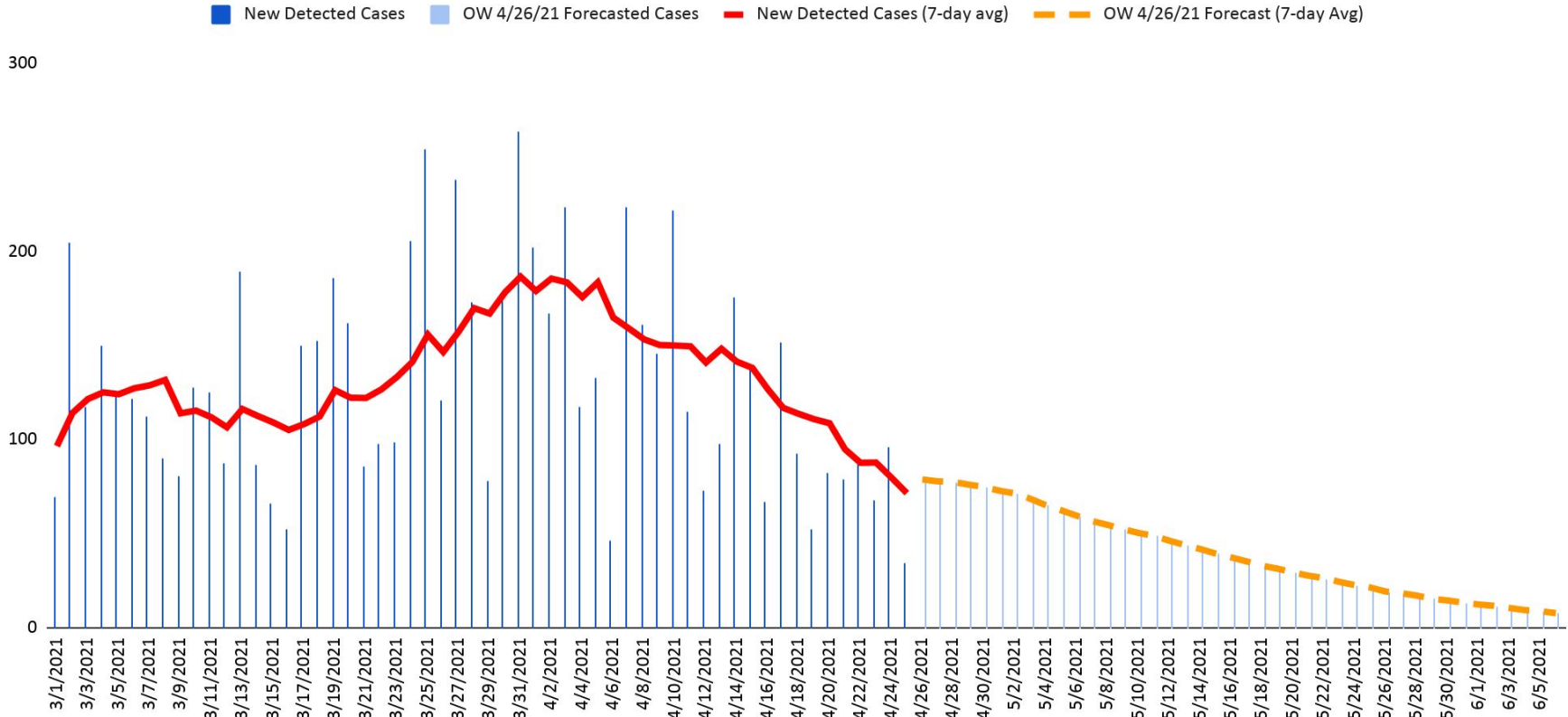
# Vermont Case Rate & Vaccination by Age Band

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

- - - Percent Received First Vaccine Dose



# Vermont Forecast





# Vermont Weekly COVID-19 Infections Forecast

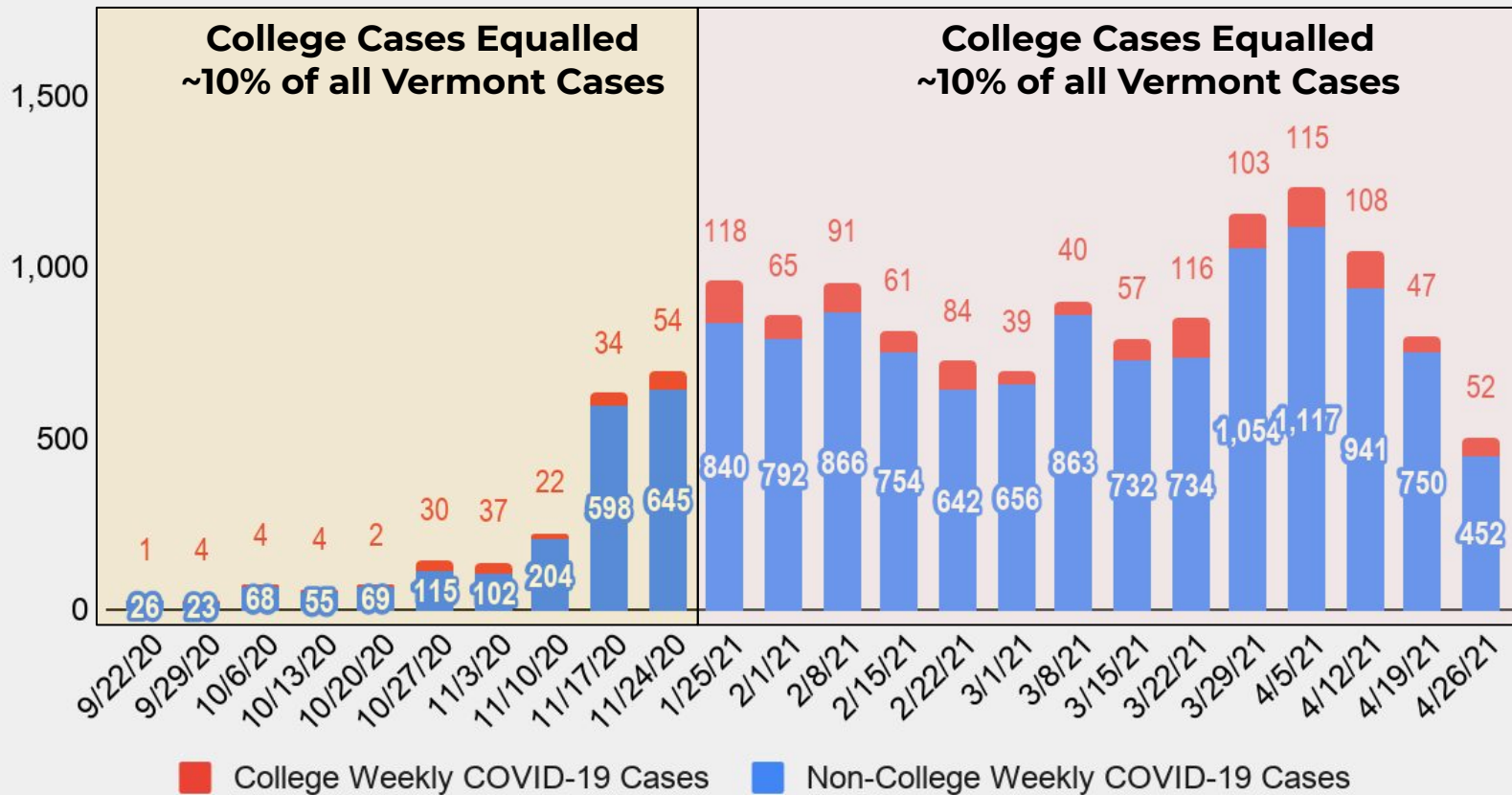
Calculated as a 7-day sum. Gray bands represent 50% and 95% confidence intervals. Since projections are only released once a week, the actual number may appear to over or undershoot the forecast.



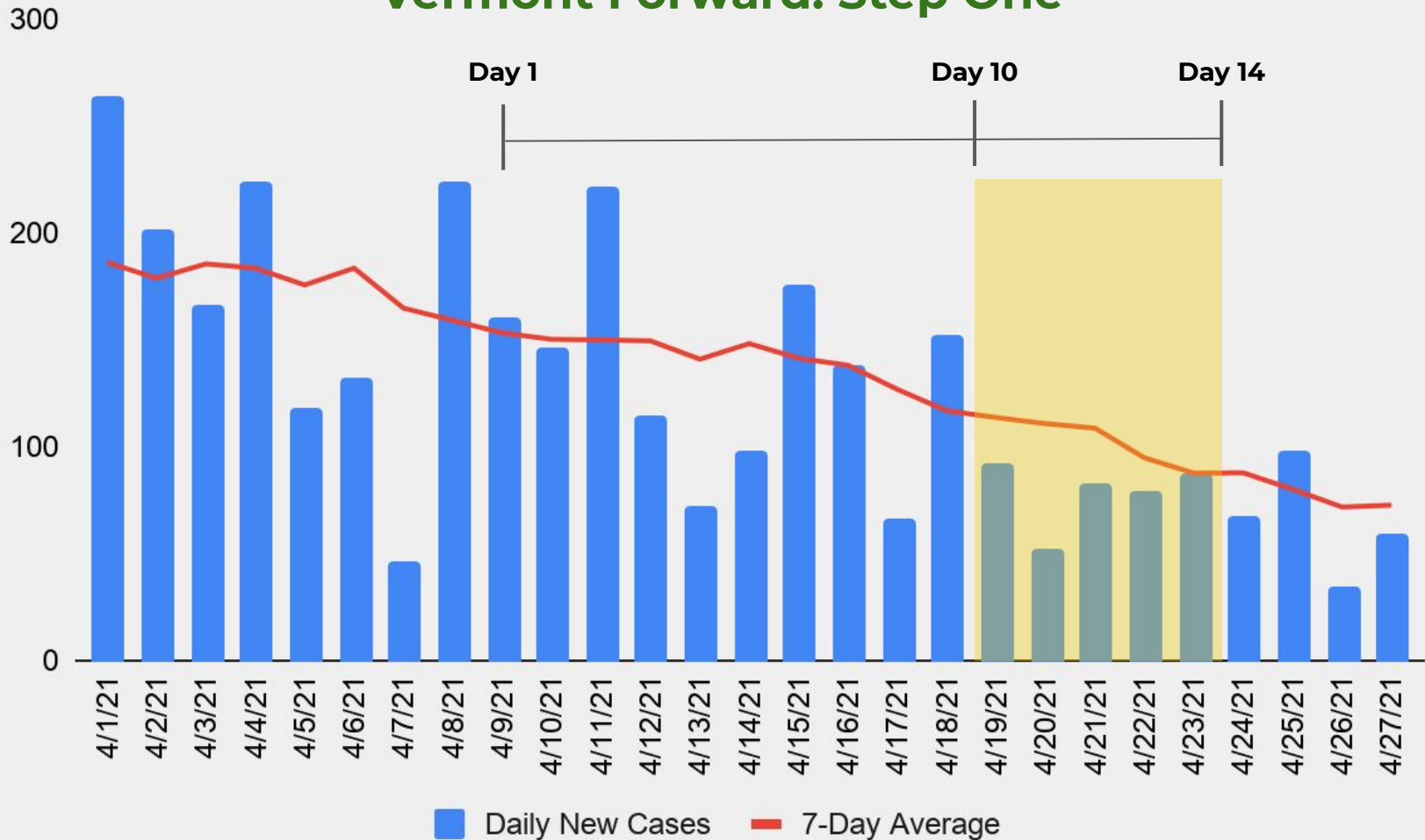
# Higher Education

Fall 2020

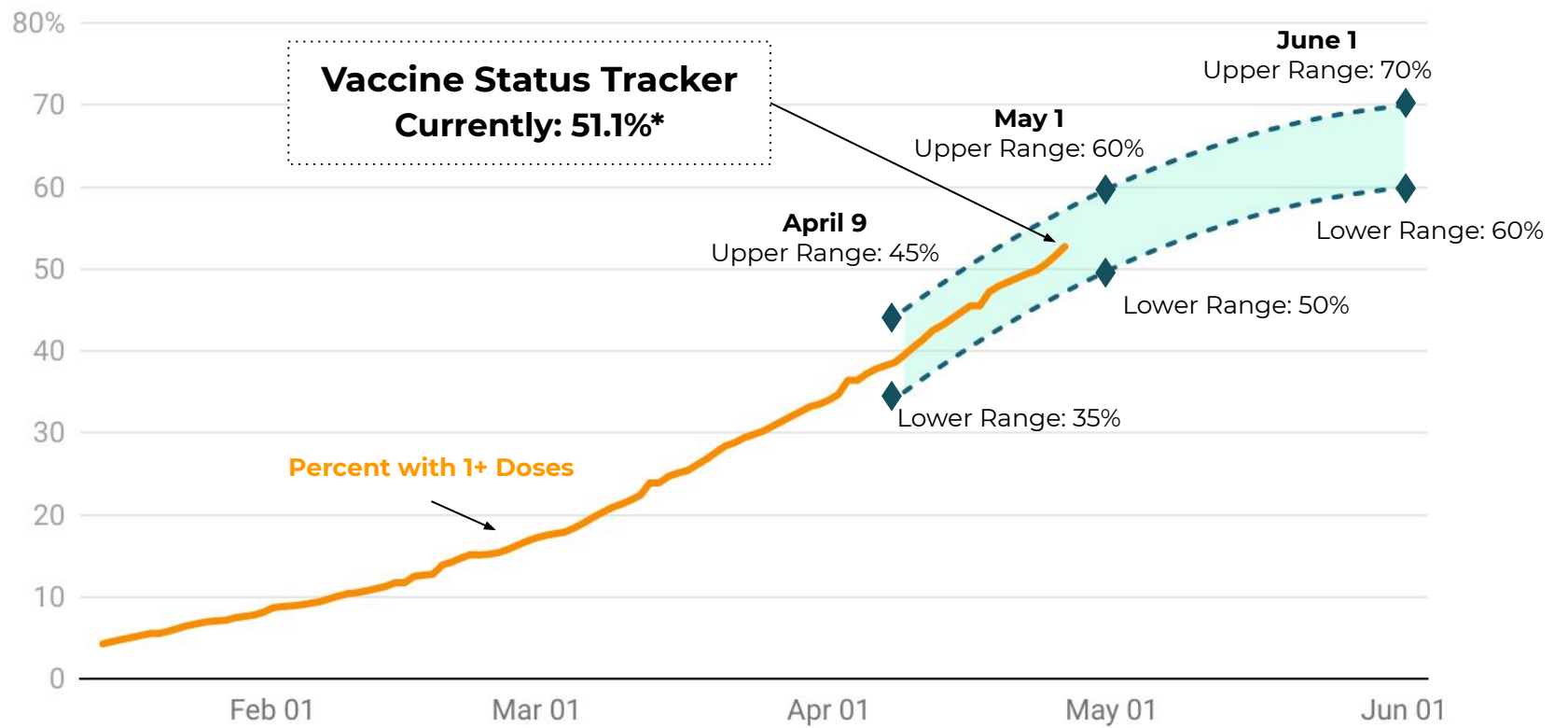
Spring 2021



# Vermont Forward: Step One



# Vermont Forward Progress to Goal



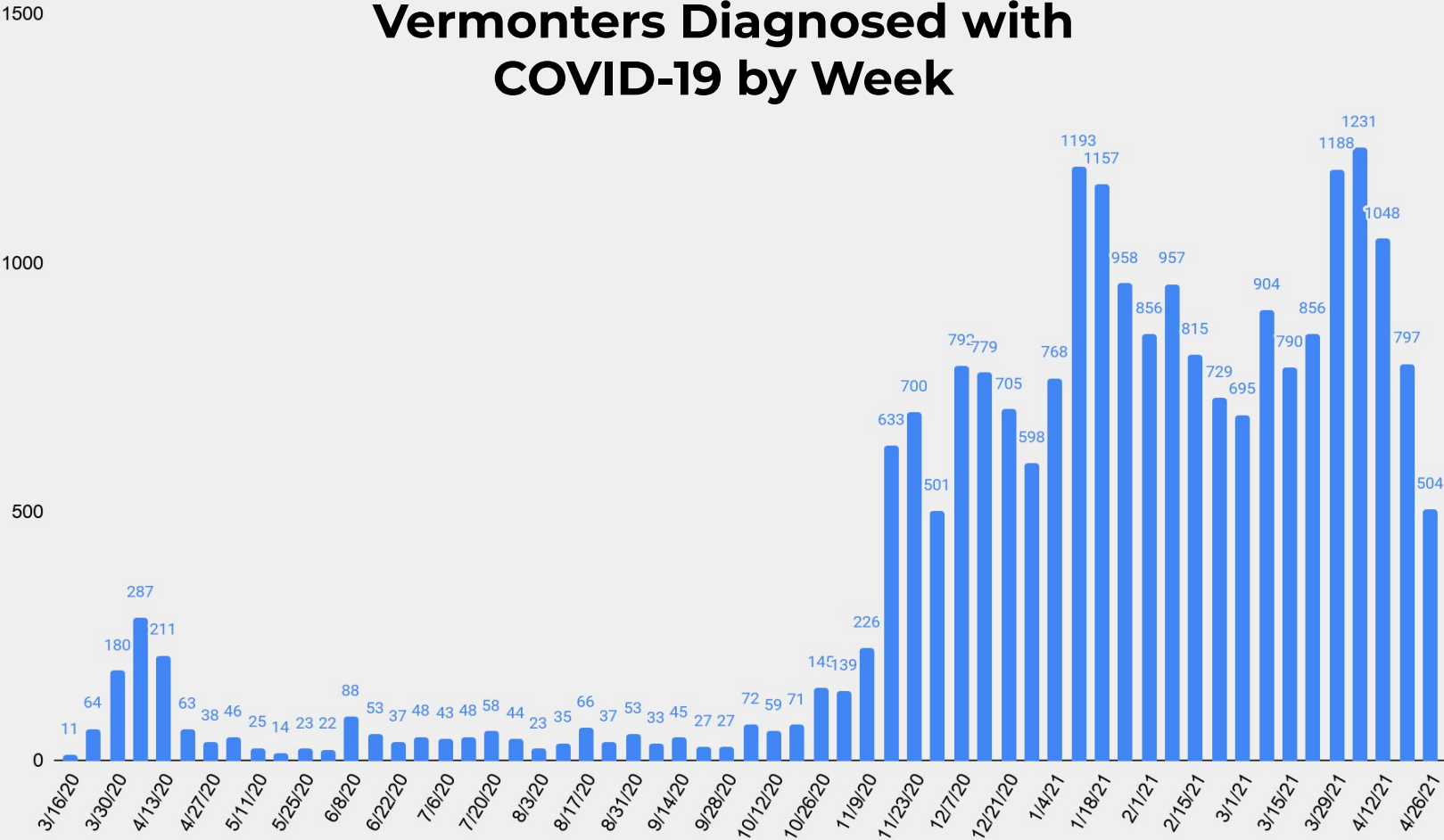
Source: CDC—April 26, 2021; ranges represent 1+ dose for all Vermonters; \*using 2020 census data - CDC lists Vermont at 52.7%

# Age of Infected Vermonters

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

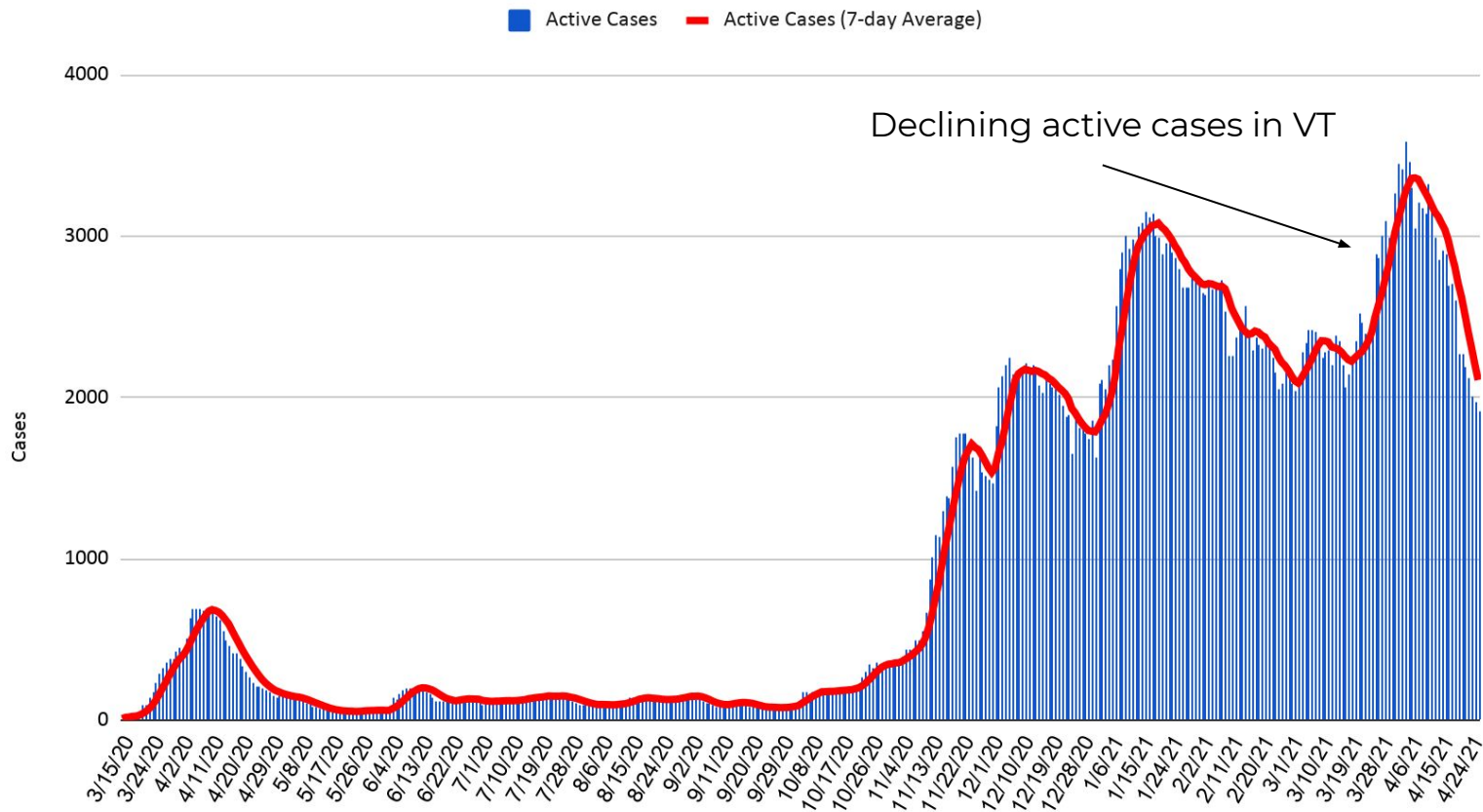


# Vermonters Diagnosed with COVID-19 by Week



Source: Vermont Department of Health (week calculated as Tuesday to Monday)

## Estimated Active Cases of COVID-19 in Vermont

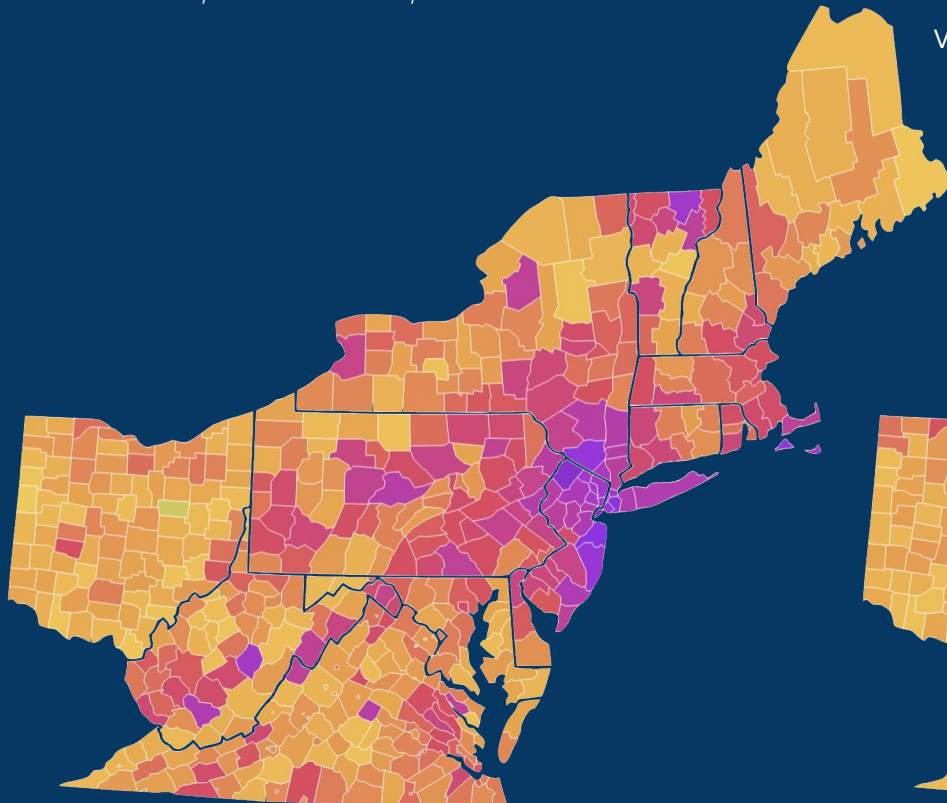


# Active Cases per Million

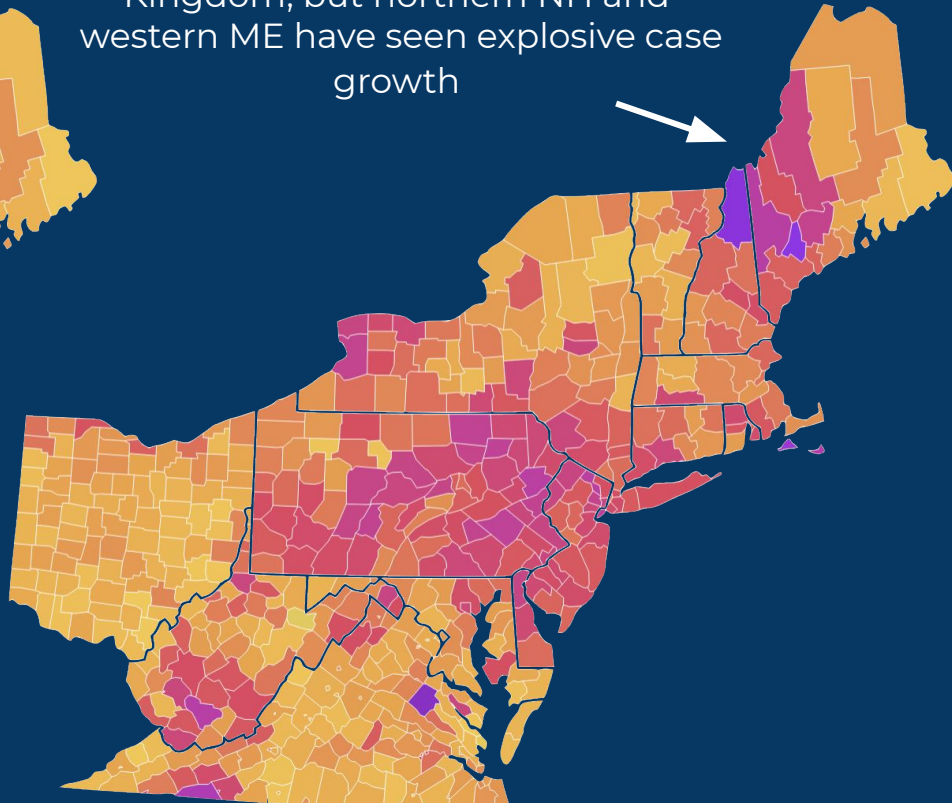


0 5,000 25,000 +

Cases are down in Northeast Kingdom, but northern NH and western ME have seen explosive case growth



Four Weeks Ago  
(March 28th)



Today  
(April 27th)



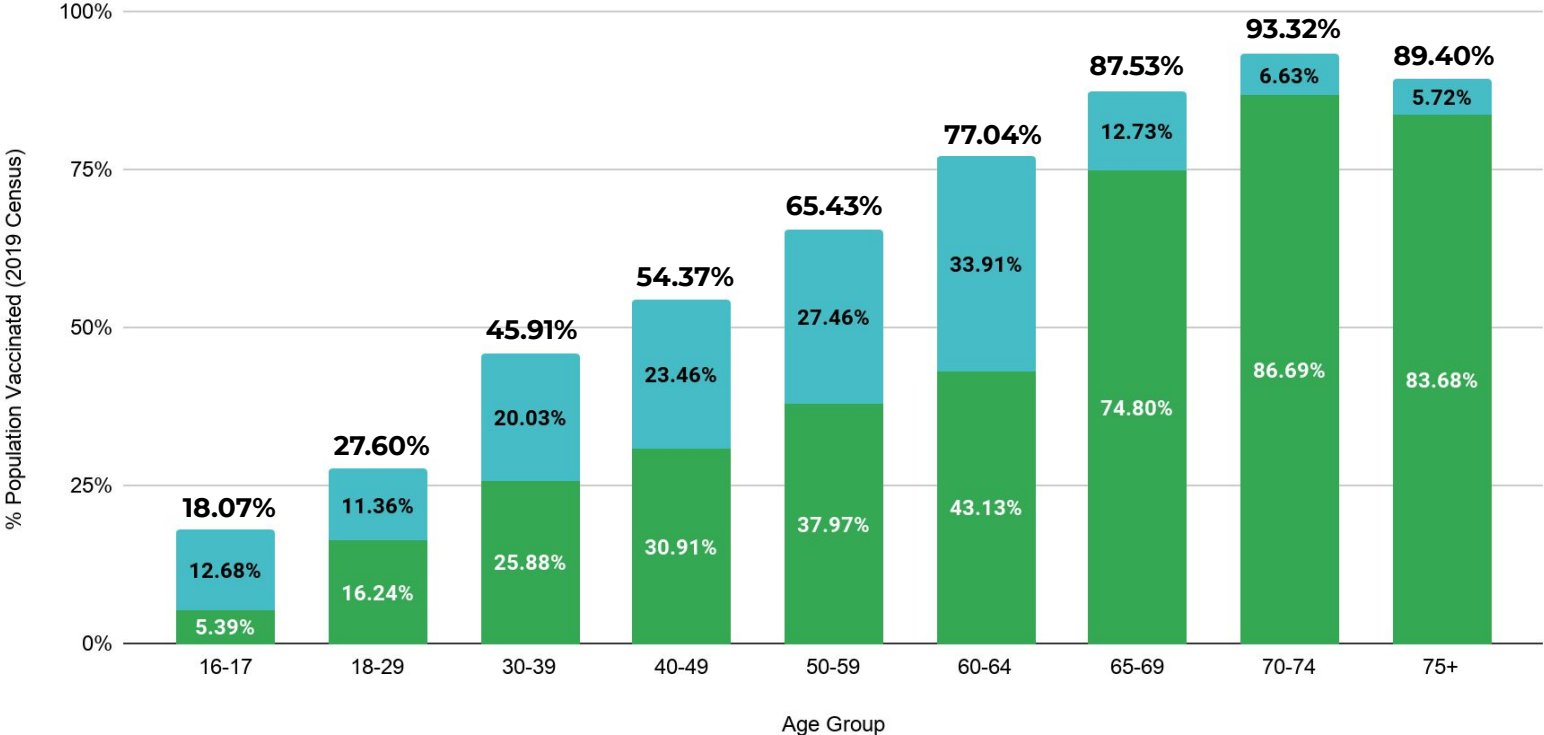
# Vermont CDC Vaccine Scorecard

Metric	Figure	State Ranking
<b>Doses Administered per 100K</b>	<b>86,142</b>	<b>2</b>
<b>% Population Started</b>	<b>52.7%</b>	<b>4</b>
<b>% Fully Vaccinated</b>	<b>35.6%</b>	<b>4</b>
<b>% 65+ One Dose</b>	<b>94.6%</b>	<b>2</b>
<b>% 65+ Fully Vaccinated</b>	<b>82.8%</b>	<b>1</b>

# Vermont Vaccination Progress

By Age Band

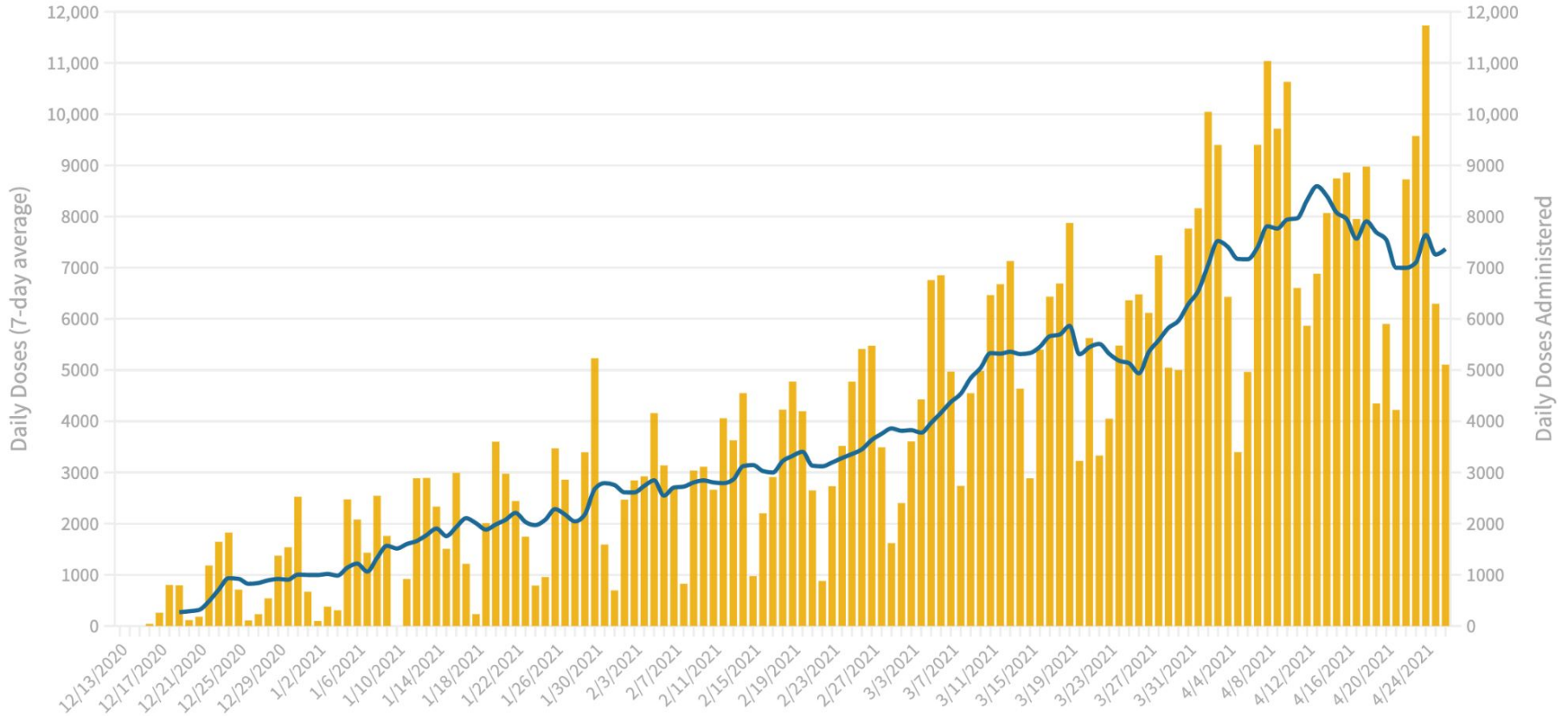
Partially Vaccinated Fully Vaccinated



Source: Vermont Dept. of Health—April 27, 2021; excludes those vaccinated through federal entities; uses 2019 Census data

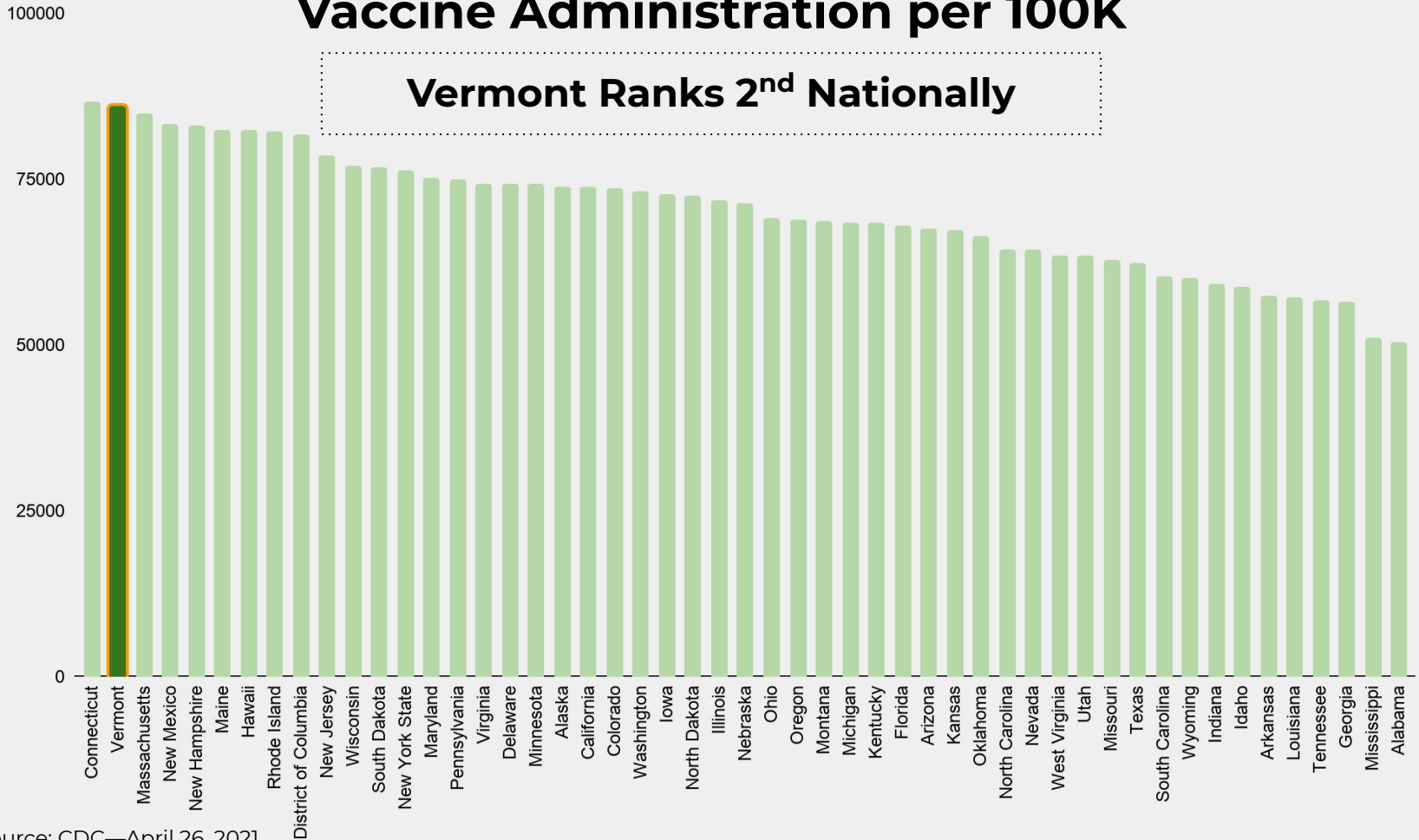
# COVID-19 Vaccinations in Vermont

■ Daily Doses (7-day average) ■ Daily Doses Administered



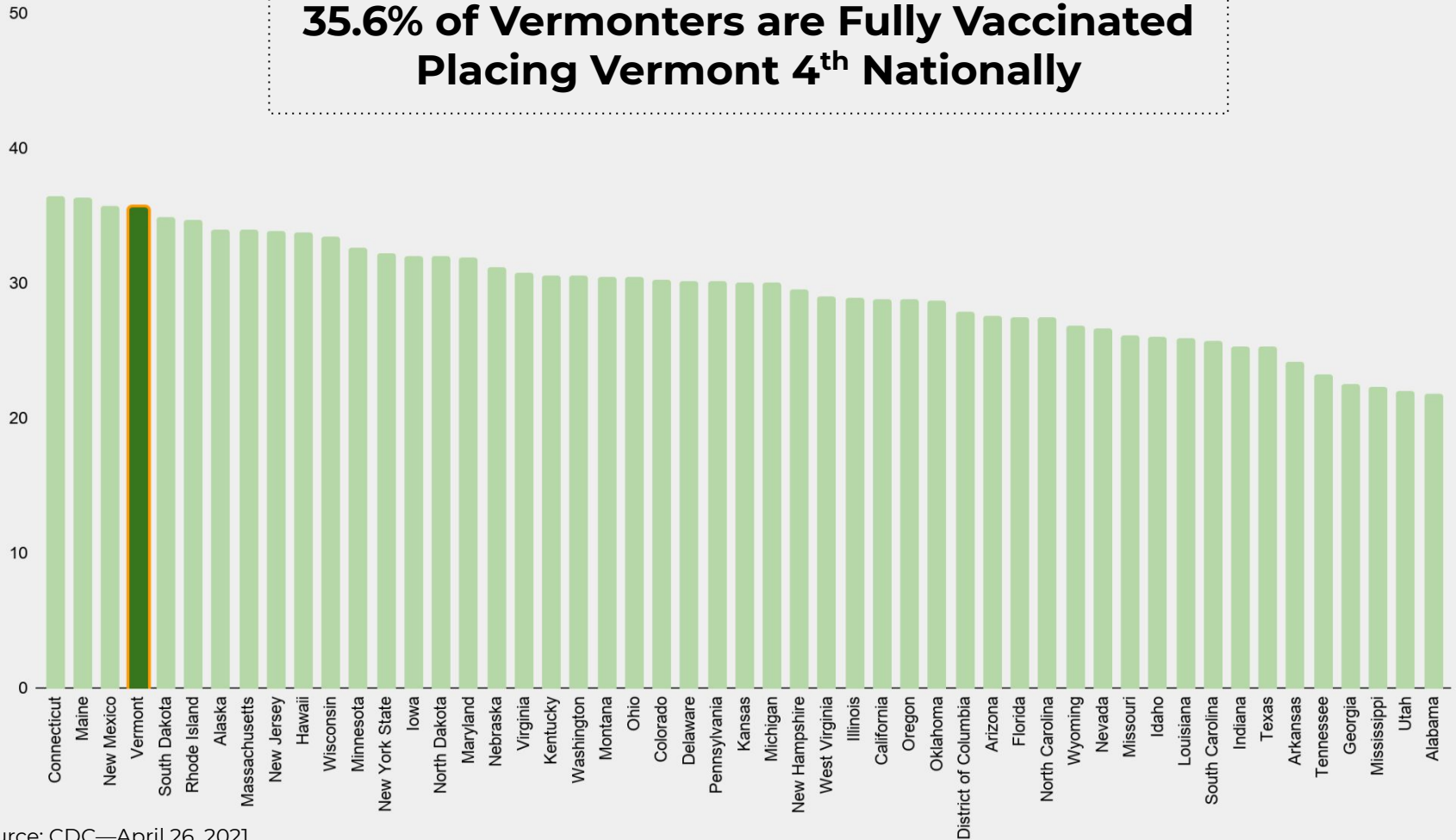
# Vaccine Administration per 100K

Vermont Ranks 2<sup>nd</sup> Nationally

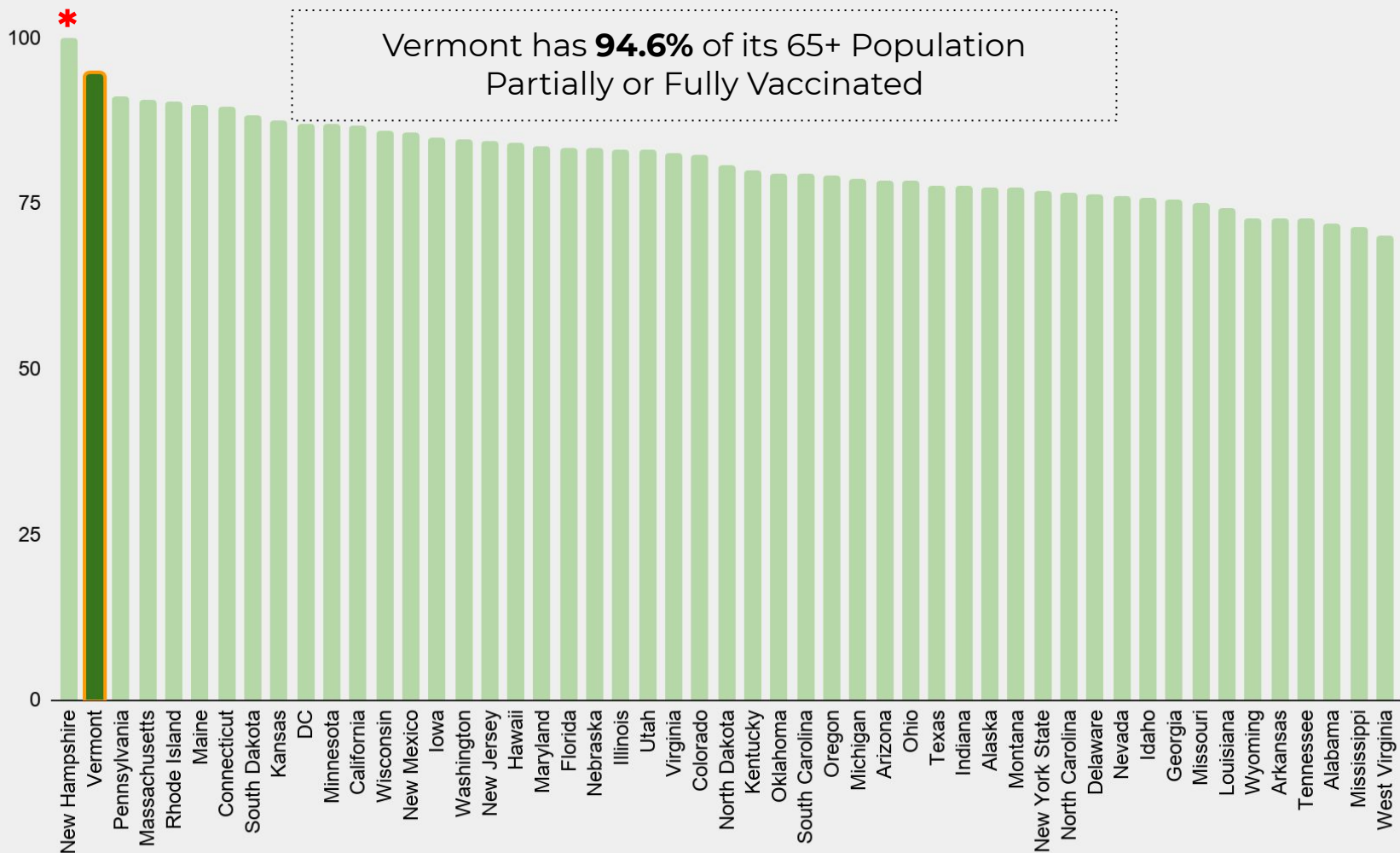


Source: CDC—April 26, 2021

## 35.6% of Vermonters are Fully Vaccinated Placing Vermont 4<sup>th</sup> Nationally



Source: CDC—April 26, 2021



Source: CDC—April 26, 2021; \*New Hampshire data reporting anomalies

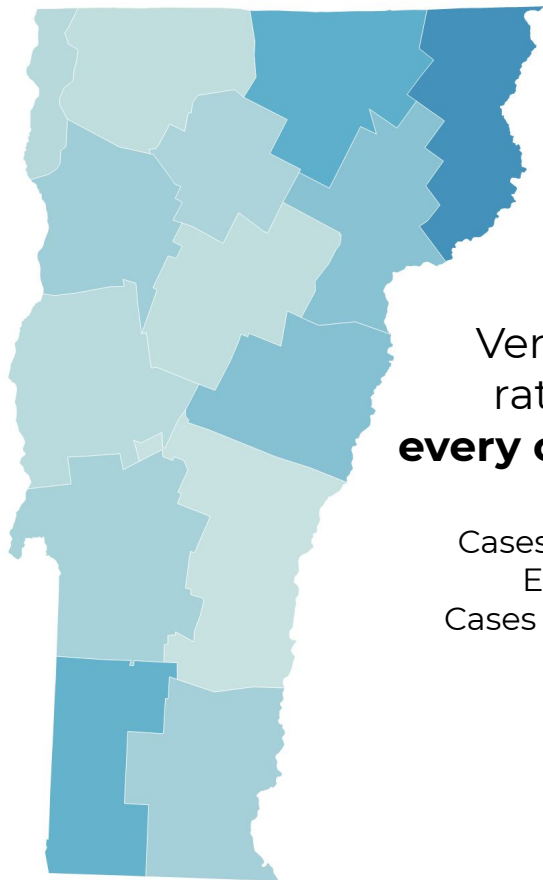
## Active Outbreaks in Long Term Care Facilities\*

Facility Name	Total COVID-19 Cases
EastView at Middlebury Residential Care Home, <i>Middlebury</i>	Not Shown
Valley Vista, <i>Vergennes</i>	Not Shown
Birchwood Terrace Rehab and Healthcare, <i>Burlington</i>	Not Shown

Source: Vermont Department of Health—\*Last updated April 26, 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 or fewer than 5 active cases.

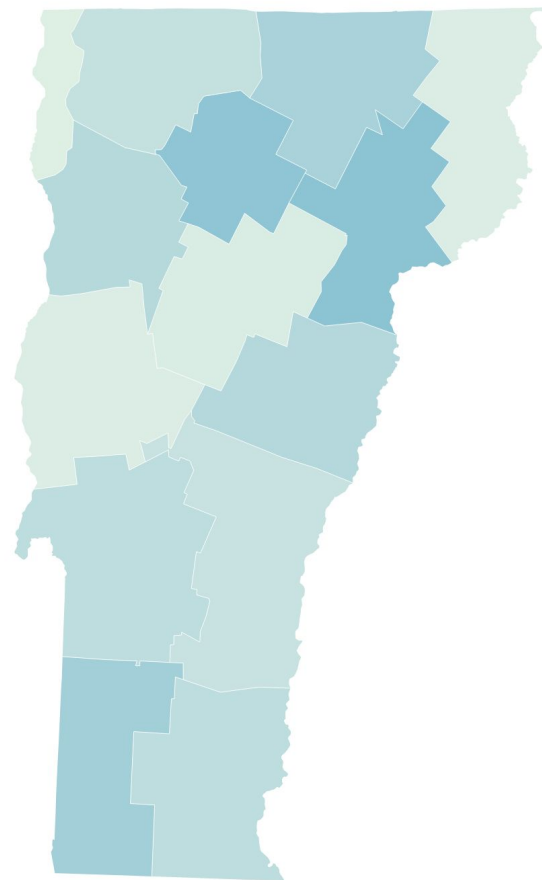
## Vermont Weekly Cases by County (per 100,000)

Results Reported April 13 to April 19



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

Results Reported April 20 to April 26



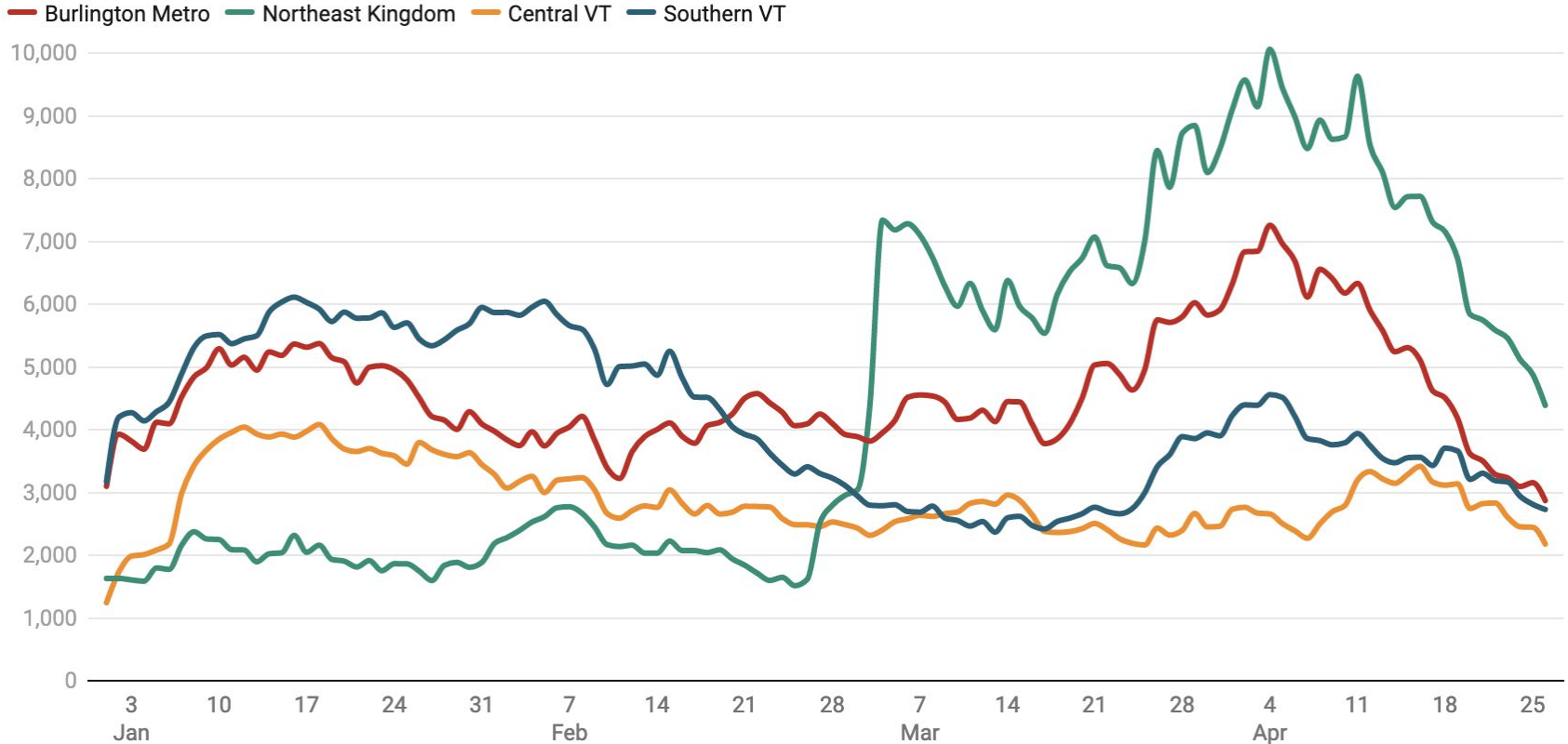
Vermont Covid-19 case rates last week **fell** in **every county** except Lamoille

Cases fell 48% in Orleans County  
Essex saw large declines  
Cases were flat in Windsor County

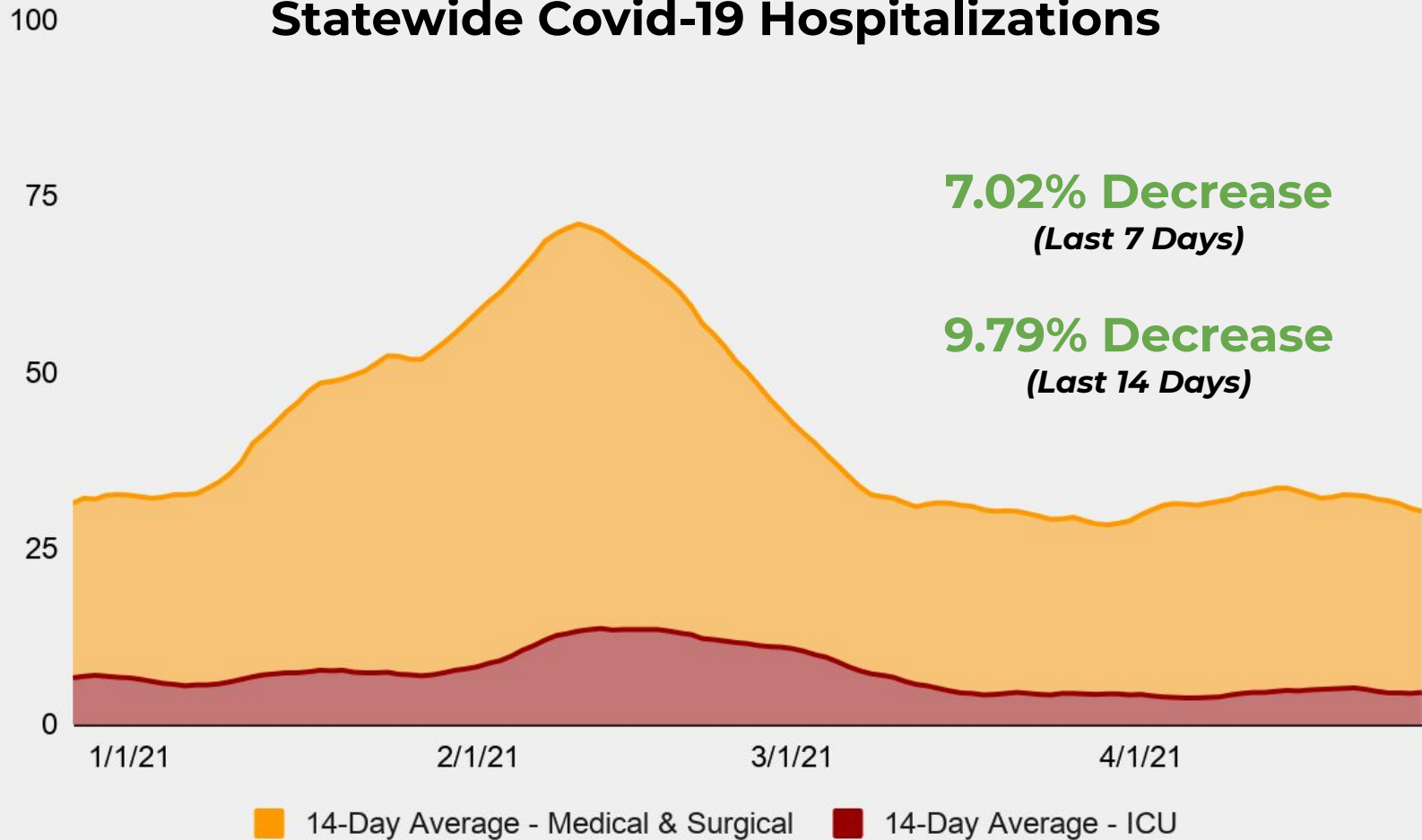


# Active COVID Cases per Million in Vermont Regions

For the purpose of this analysis, Vermont has been split into four regions: **Burlington Metro** (Chittenden, Franklin, Grand Isle), **Northeast Kingdom** (Caledonia, Orleans, Essex), **Central** (Lamoille, Washington, Addison, Orange), and **Southern** (Rutland, Windsor, Bennington, Windham).



# Statewide Covid-19 Hospitalizations

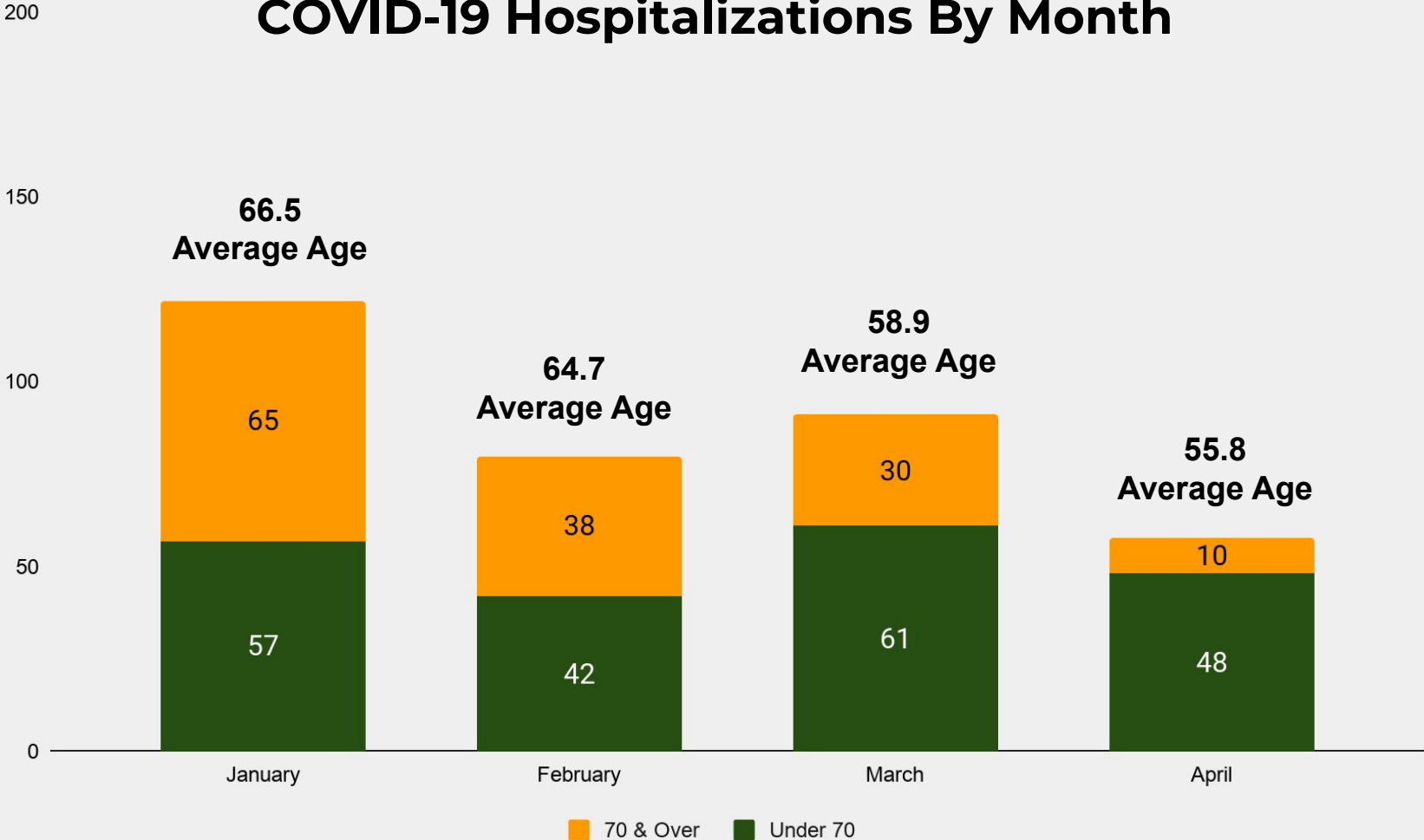


**7.02% Decrease**  
*(Last 7 Days)*

**9.79% Decrease**  
*(Last 14 Days)*

■ 14-Day Average - Medical & Surgical ■ 14-Day Average - ICU

# COVID-19 Hospitalizations By Month



# Vermont Covid-19 Deaths by Week

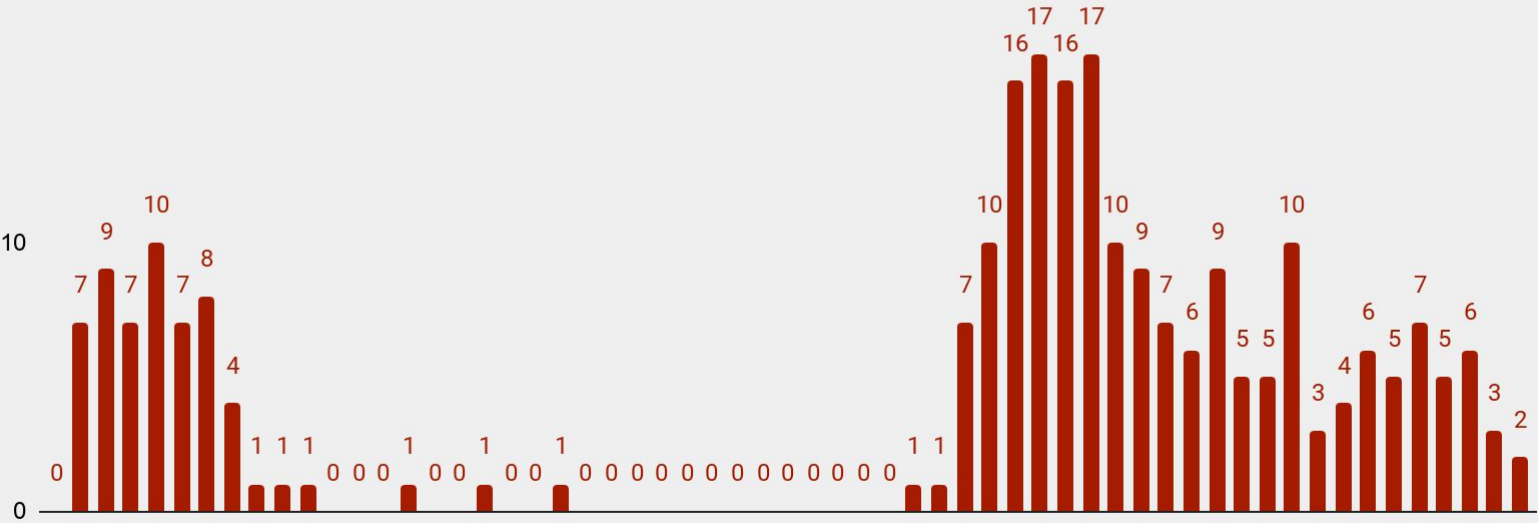
30

20

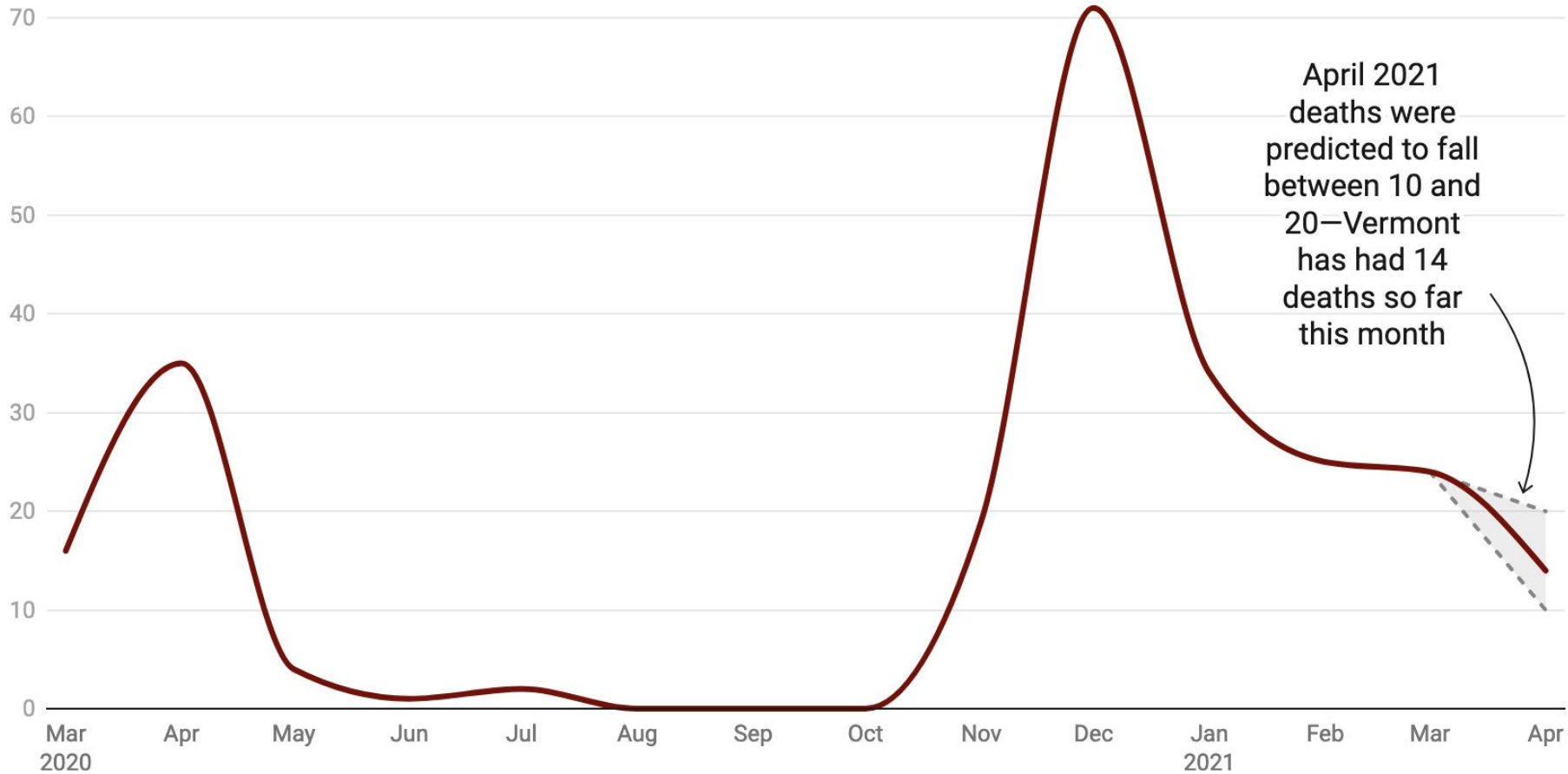
10

0

3/16/20 3/30/20 4/13/20 4/27/20 5/11/20 5/25/20 6/8/20 6/22/20 7/6/20 7/20/20 8/3/20 8/17/20 8/31/20 9/14/20 9/28/20 10/12/20 10/26/20 11/9/20 11/23/20 12/7/20 12/21/20 1/4/21 1/18/21 2/1/21 2/15/21 3/1/21 3/15/21 3/29/21 4/12/21 4/26/21

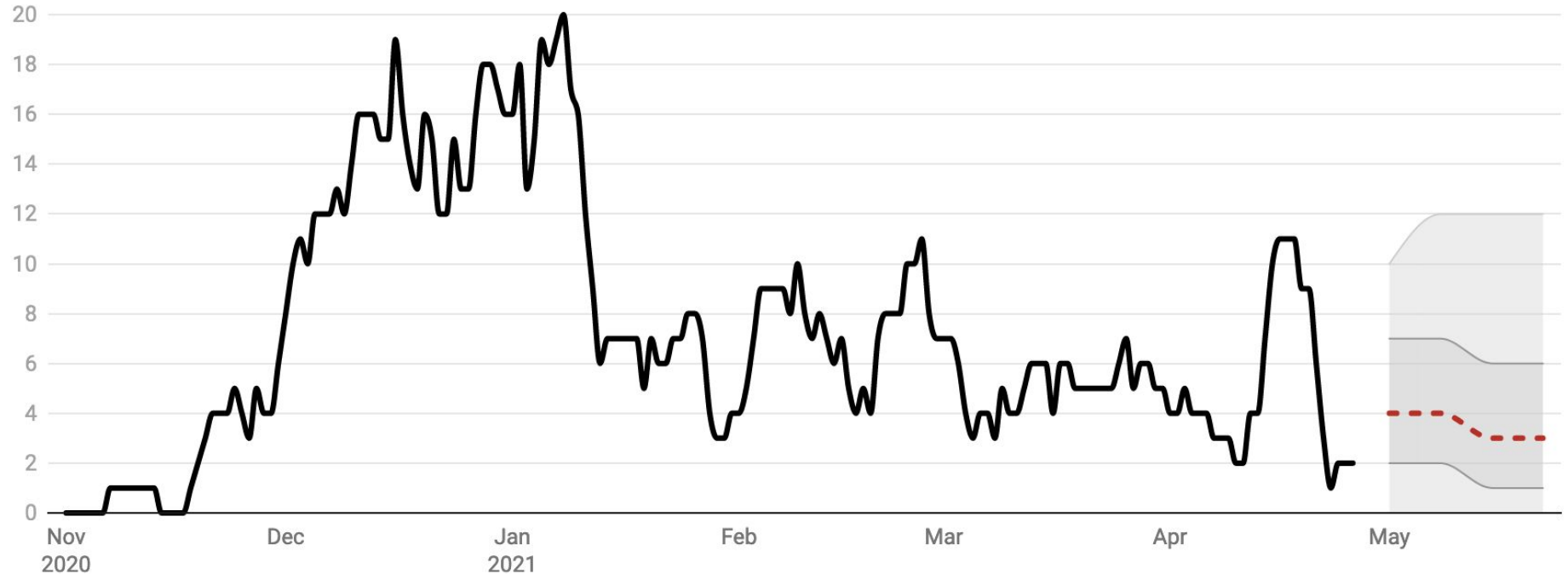


# Vermont COVID-19 Deaths by Month



# Vermont Weekly COVID-19 Deaths Forecast

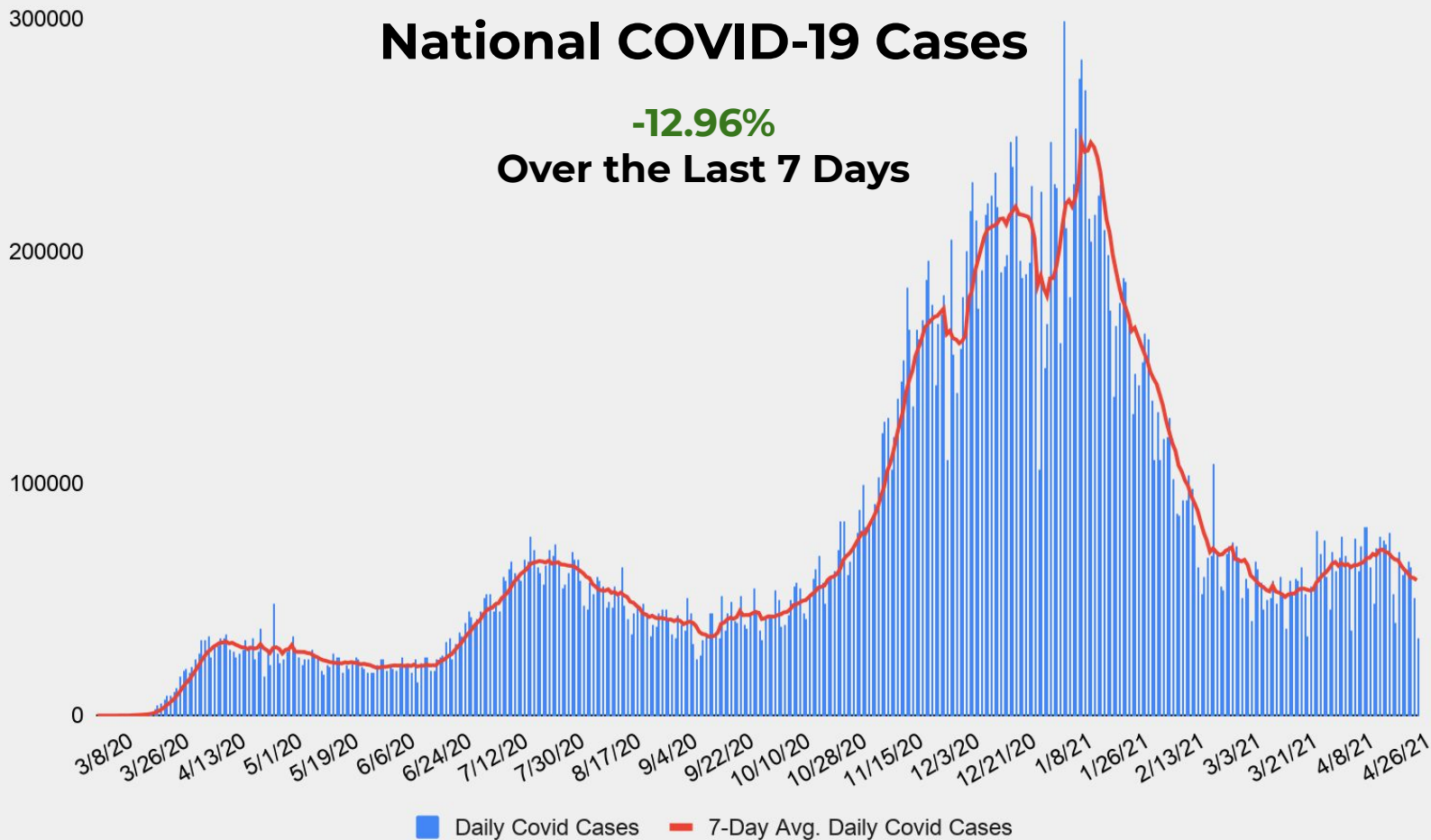
Calculated as a 7-day sum. Gray bands represent 50% and 95% confidence intervals. Since projections are only released once a week, the actual number may appear to over or undershoot the forecast.



# National COVID-19 Cases

-12.96%

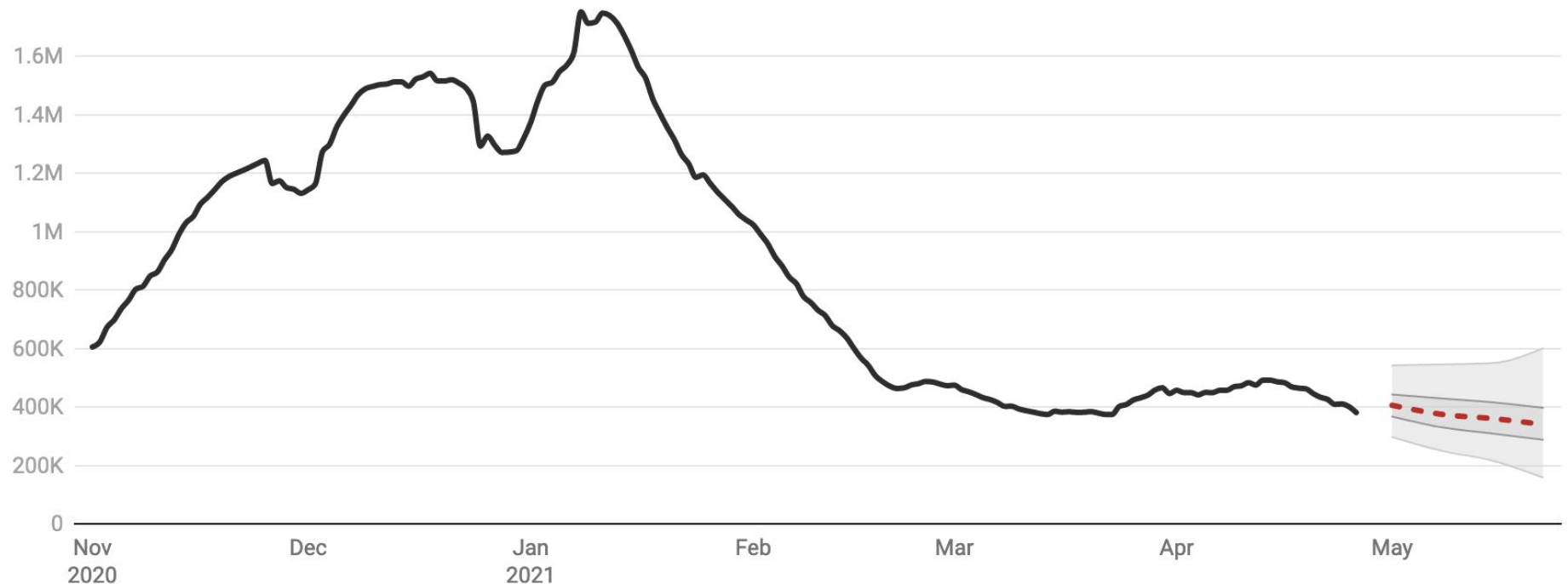
Over the Last 7 Days



Source: Covid Tracking Project; NYT & CDC—April 26, 2021

# US Weekly COVID-19 Infections Forecast

Calculated as a 7-day sum. Gray bands represent 50% and 95% confidence intervals. Since projections are only released once a week, the actual number may appear to over or undershoot the forecast.





# National COVID-19 Hospitalizations

150000

**+1.8%**

**Over the Last 7 Days**

100000

**58,499**

**59,427**

50000

**28,341**

**29,443**

**44,659**

0

3/30/20 4/22/20 5/15/20 6/7/20 6/30/20 7/23/20 8/15/20 9/7/20 9/30/20 10/23/20 11/15/20 12/8/20 12/31/20 1/23/21 2/15/21 3/10/21 4/2/21 4/25/21



Currently Hospitalized



7-Day Avg. Currently Hospitalized

# National COVID-19 Deaths

**-5.68%**

**Over the Last 7 Days**

6000

4000

2000

0

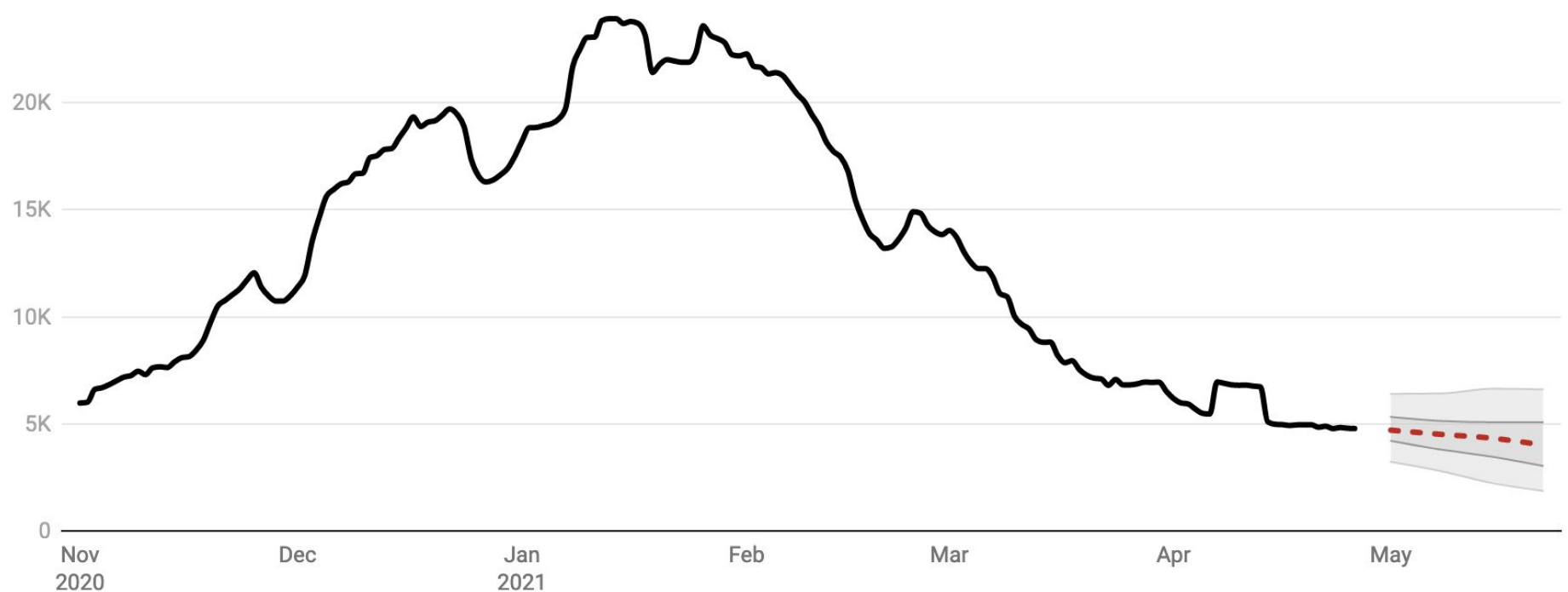
3/9/20 4/1/20 4/24/20 5/17/20 6/9/20 7/2/20 7/25/20 8/17/20 9/9/20 10/2/20 10/25/20 11/17/20 12/10/20 1/2/21 1/25/21 2/17/21 3/12/21 4/4/21 4/27/21

■ Daily Deaths    — 7-Day Avg. Daily Deaths

Source: Covid Tracking Project; NYT & CDC—April 26, 2021

# US Weekly COVID-19 Deaths Forecast

Calculated as a 7-day sum. Gray bands represent 50% and 95% confidence intervals. Since projections are only released once a week, the actual number may appear to over or undershoot the forecast.

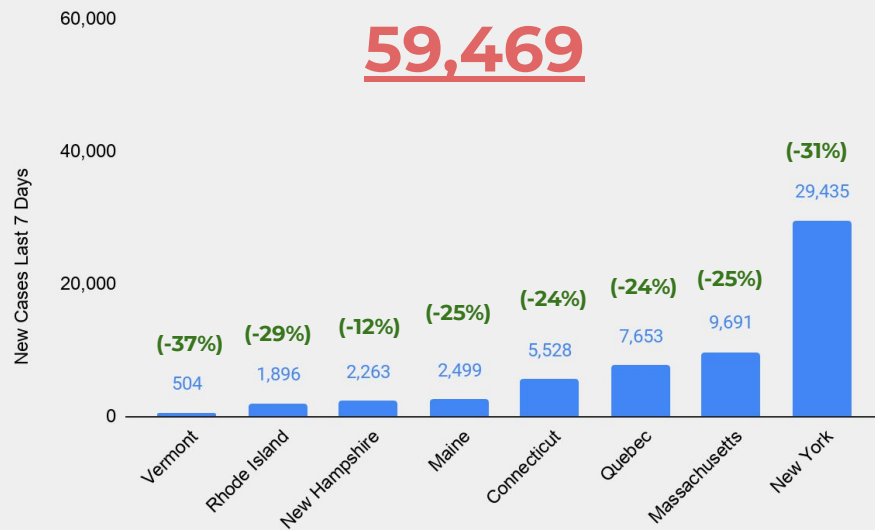
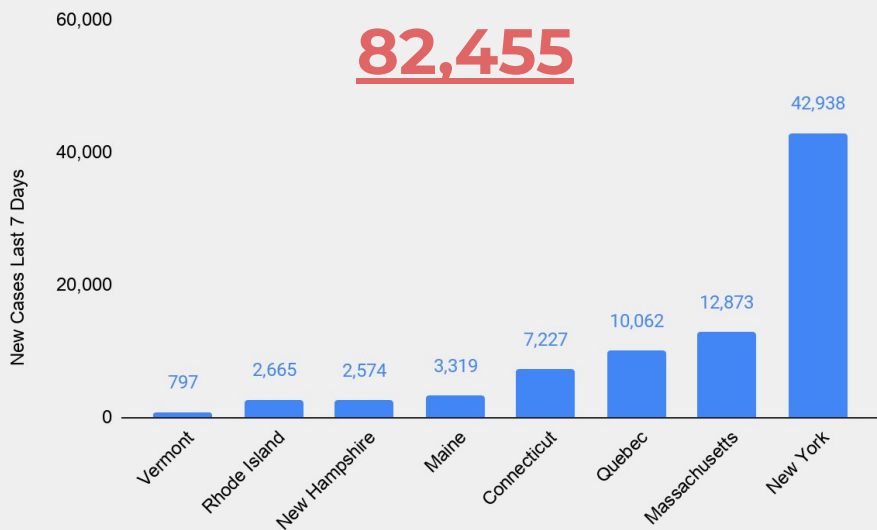


# Regional Cases

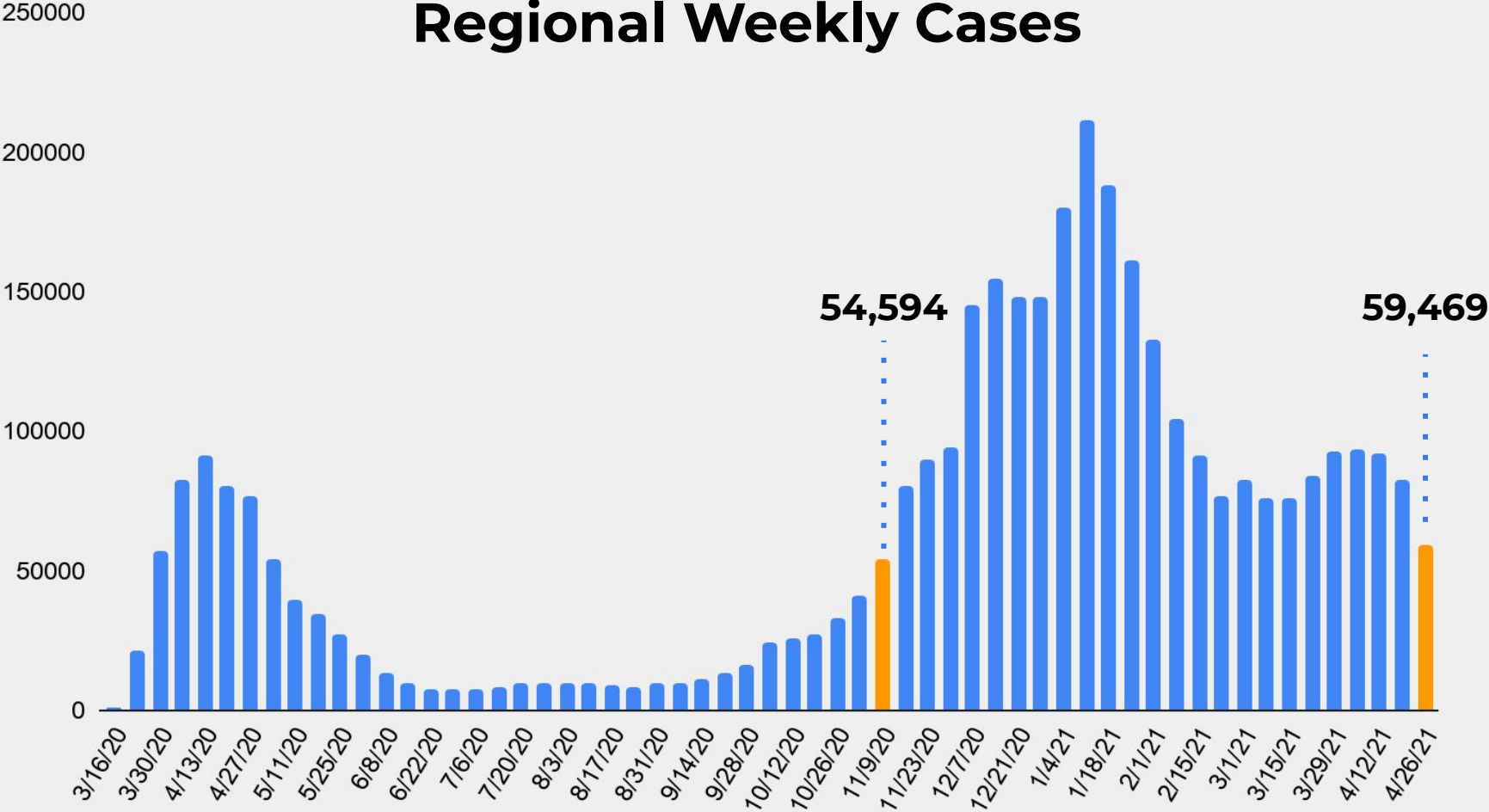
**-27.9% in New Cases**

New Cases April 13th to April 19th

New Cases April 20th to April 26th



# Regional Weekly Cases



Sources: State Health Departments & CTV National News (Quebec) (includes: CT, ME, MA, NH, NY, QC, RI & VT)

# Covid-19 Cases in K-12 Schools & Colleges Across Northern New England

## New Hampshire

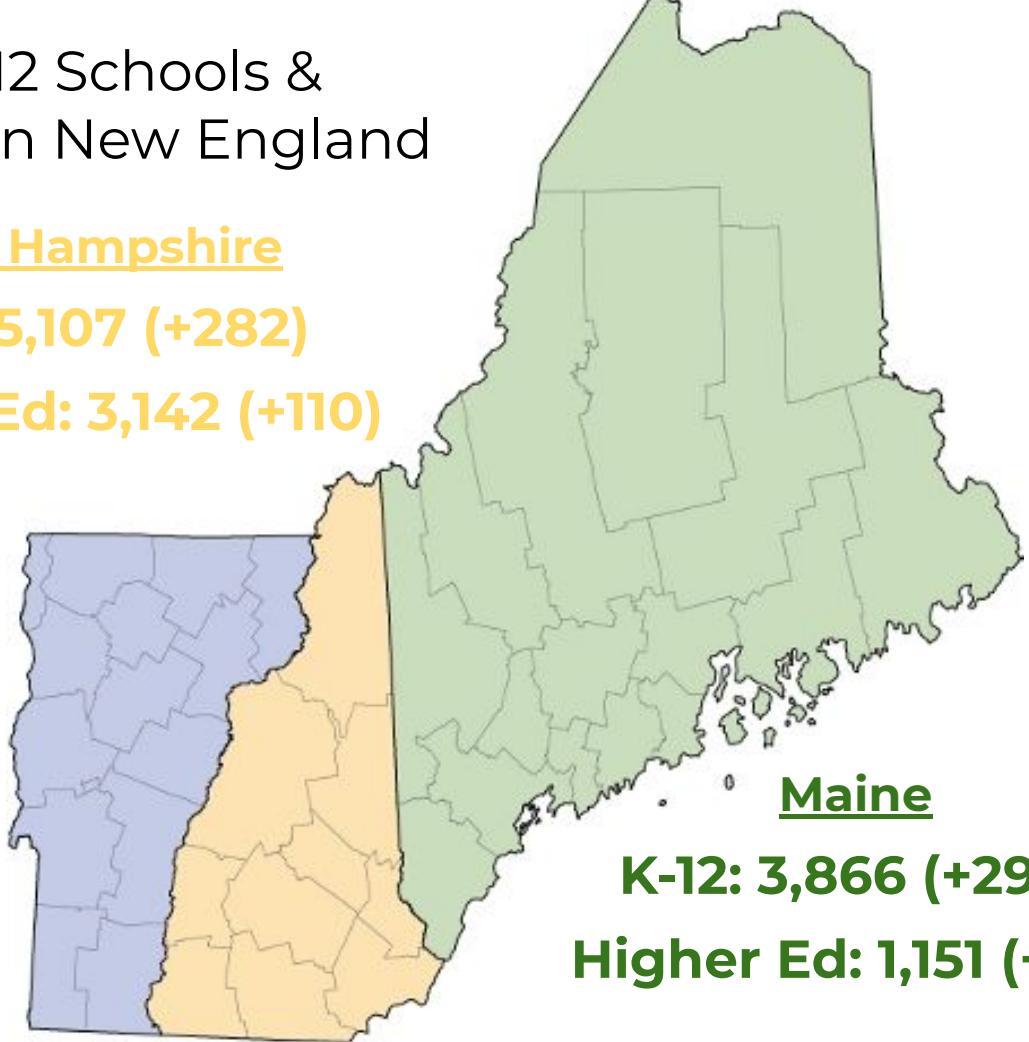
**K-12: 5,107 (+282)**

**Higher Ed: 3,142 (+110)**

## Vermont

**K-12: 1,250 (+17)**

**Higher Ed: 1,096 (+52)**

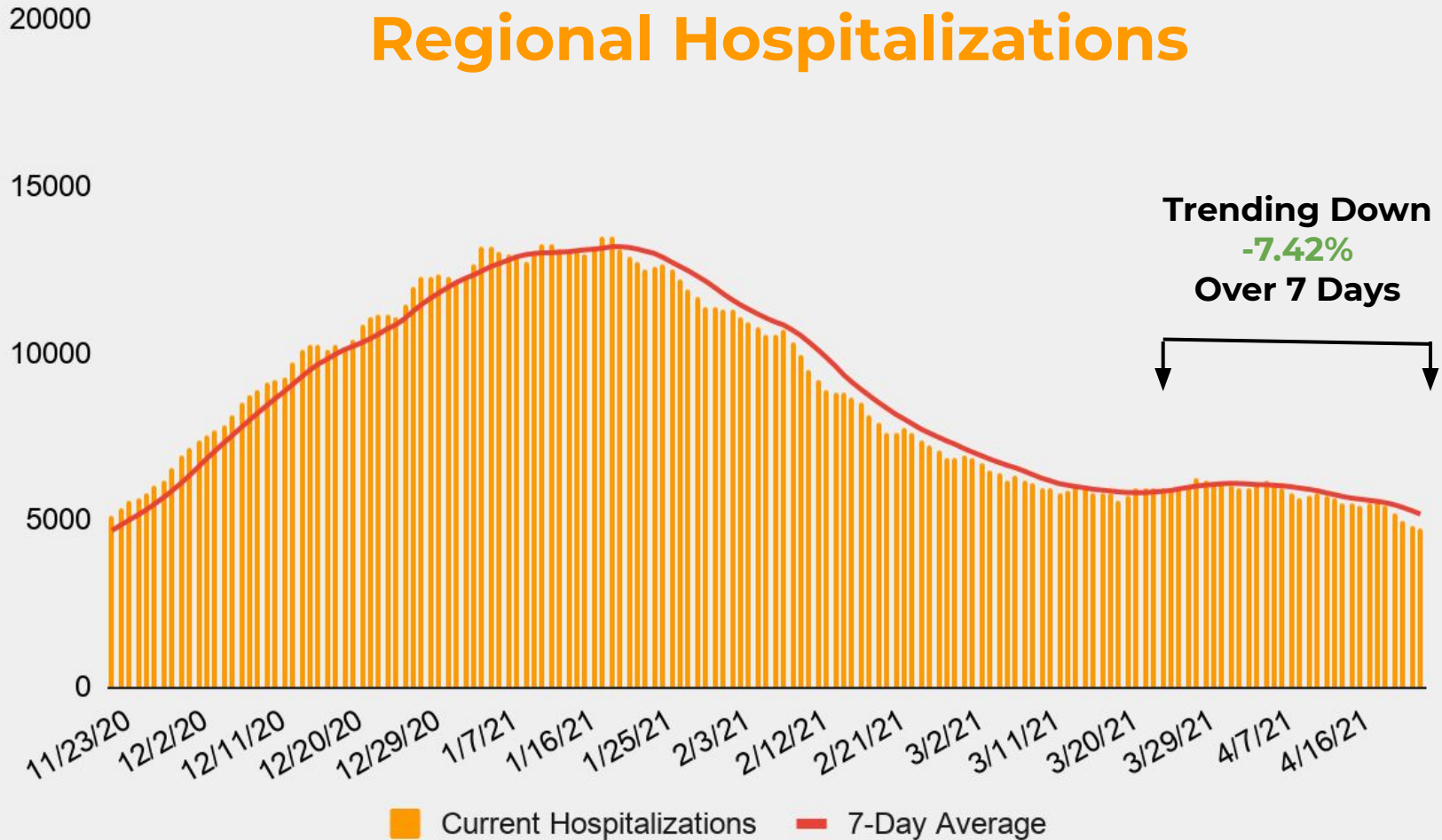


## Maine

**K-12: 3,866 (+290)**

**Higher Ed: 1,151 (+60)**

# Regional Hospitalizations



Source: Covid Tracking Project (7-Day Average in CT, ME, MA, NH, NY, RI & VT)—April 24, 2021

# RESTART VERMONT

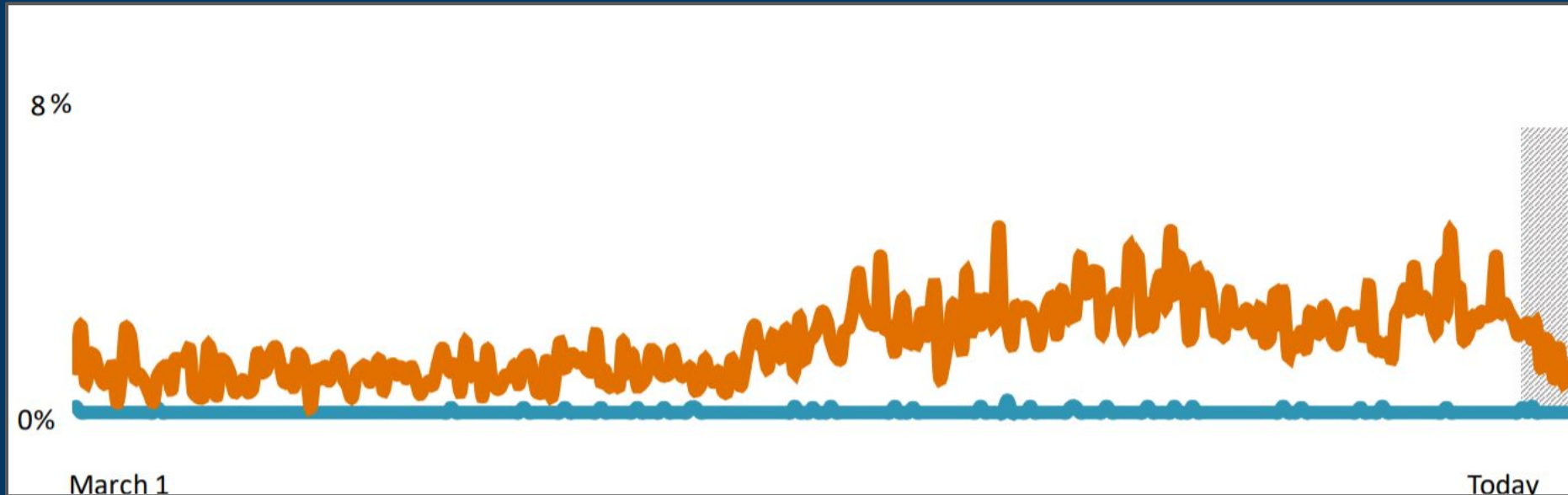
## Reopening Metrics

1. Syndromic Surveillance
2. Viral Growth & Reproductive Rates
3. Percentage of New Positive Tests
4. Hospital & Critical Care Bed Capacity



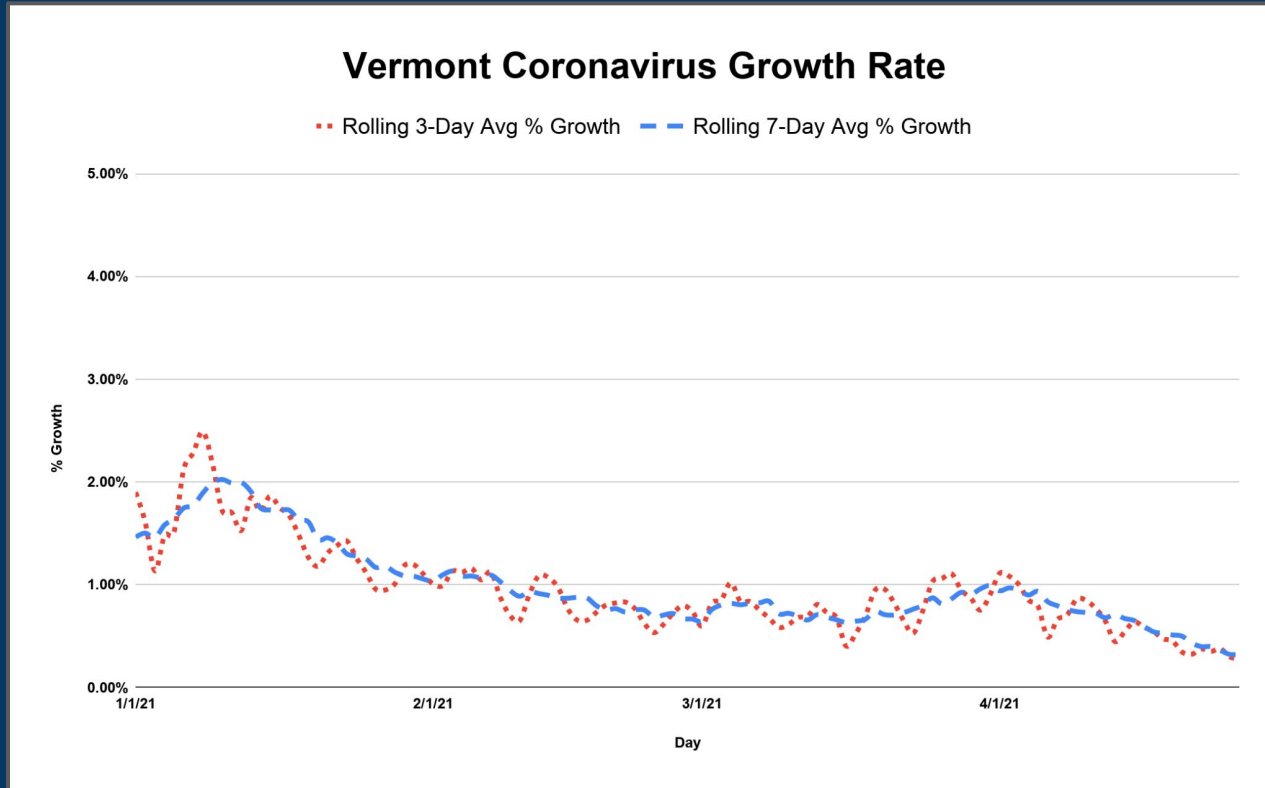
# Data Point 1: Syndromic Surveillance

- **Summary:** Percentage of visits with COVID-19 like illness and Influenza diagnosis
- **Warning Flag:** Percentage of visits exceeding 4% for multiple consecutive days



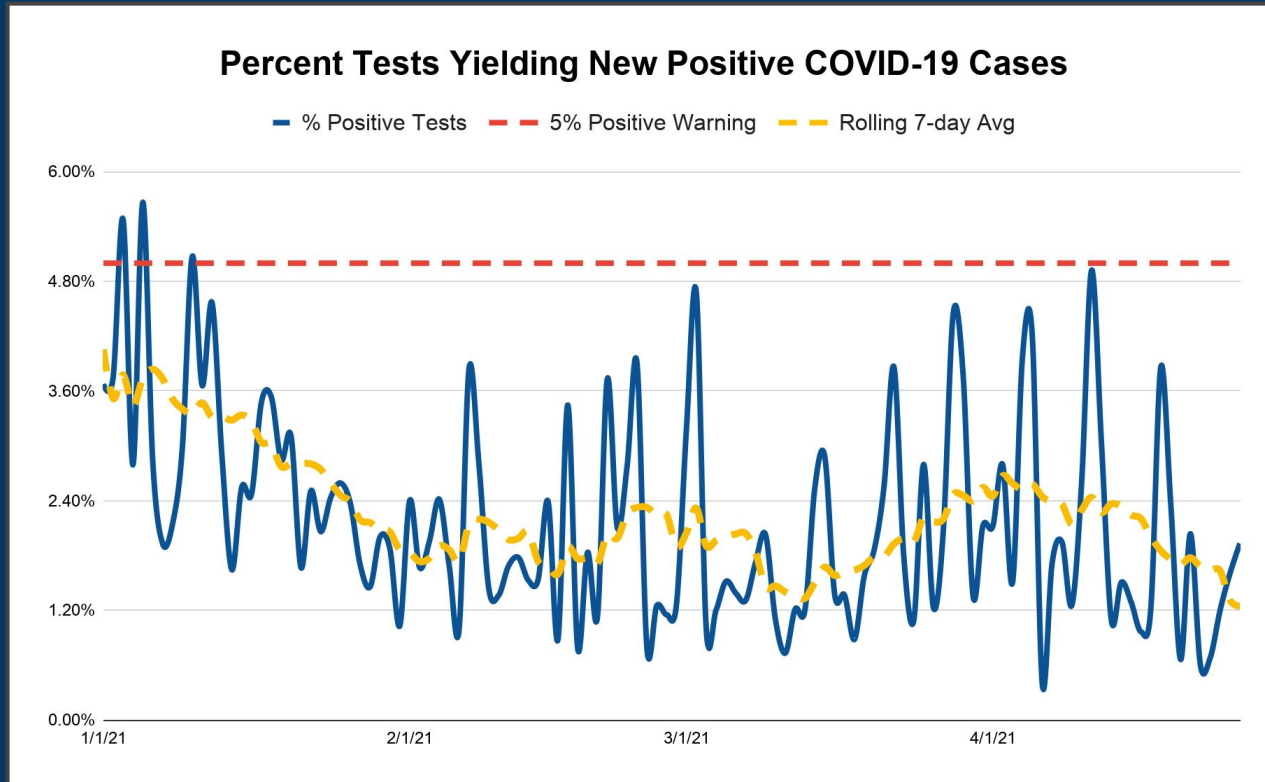
## Data Point 2: Viral Growth and Reproductive Rates

- **Summary:** Case growth measured by daily, 3-day, 7-day, and effective reproductive rate ( $R_t$ )
- **Warning Flags:** Sustained viral growth that would lead to <30% open ICU beds



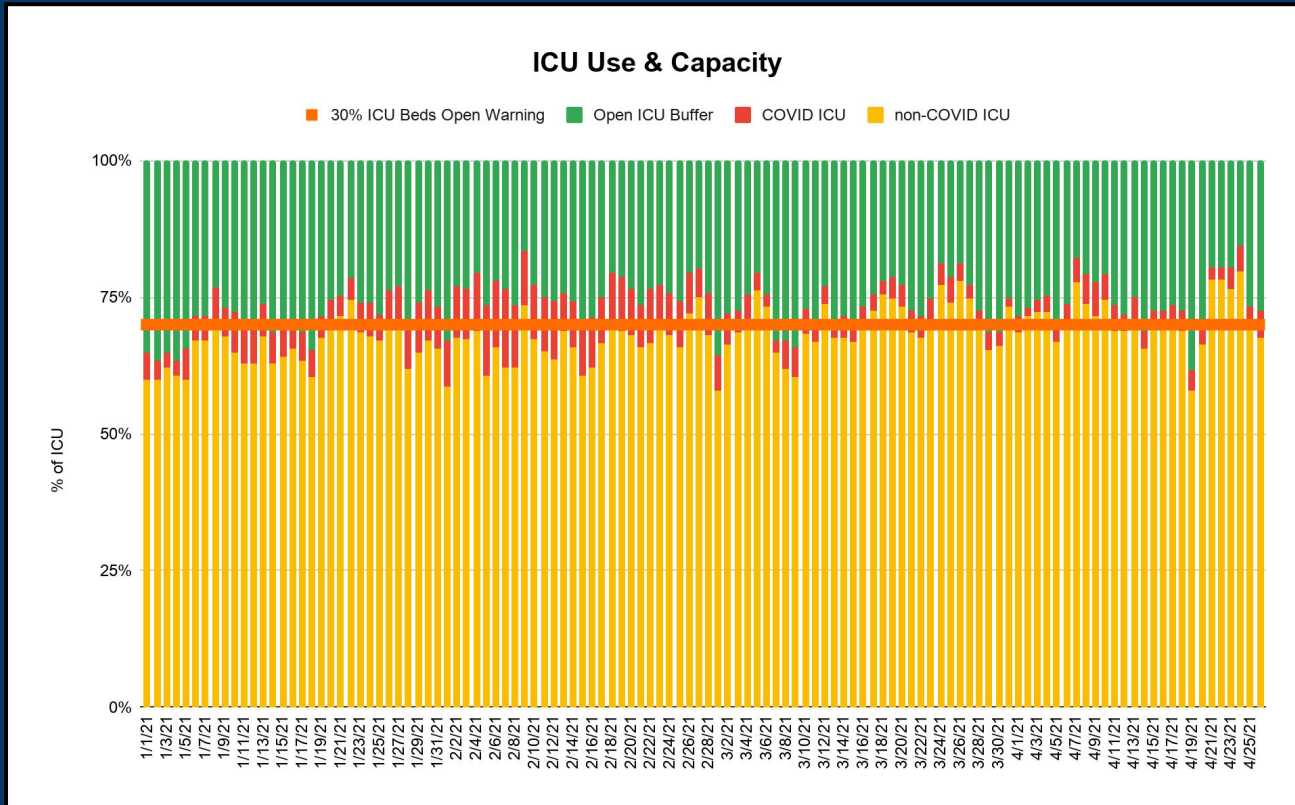
# Data Point 3: Percentage of New Positive Tests

- **Summary:** Percent of tests resulting in a new positive case
- **Warning Flags:** New positives represent >5% of daily results



# Data Point 4: Hospital & Critical Care Beds

- **Summary:** Number of occupied and unoccupied medical surgical and ICU beds
- **Warning Flags:** Reduction in ICU open beds to less than 30%



# Vermont Testing

