# COVID-19 Modeling April 13, 2021
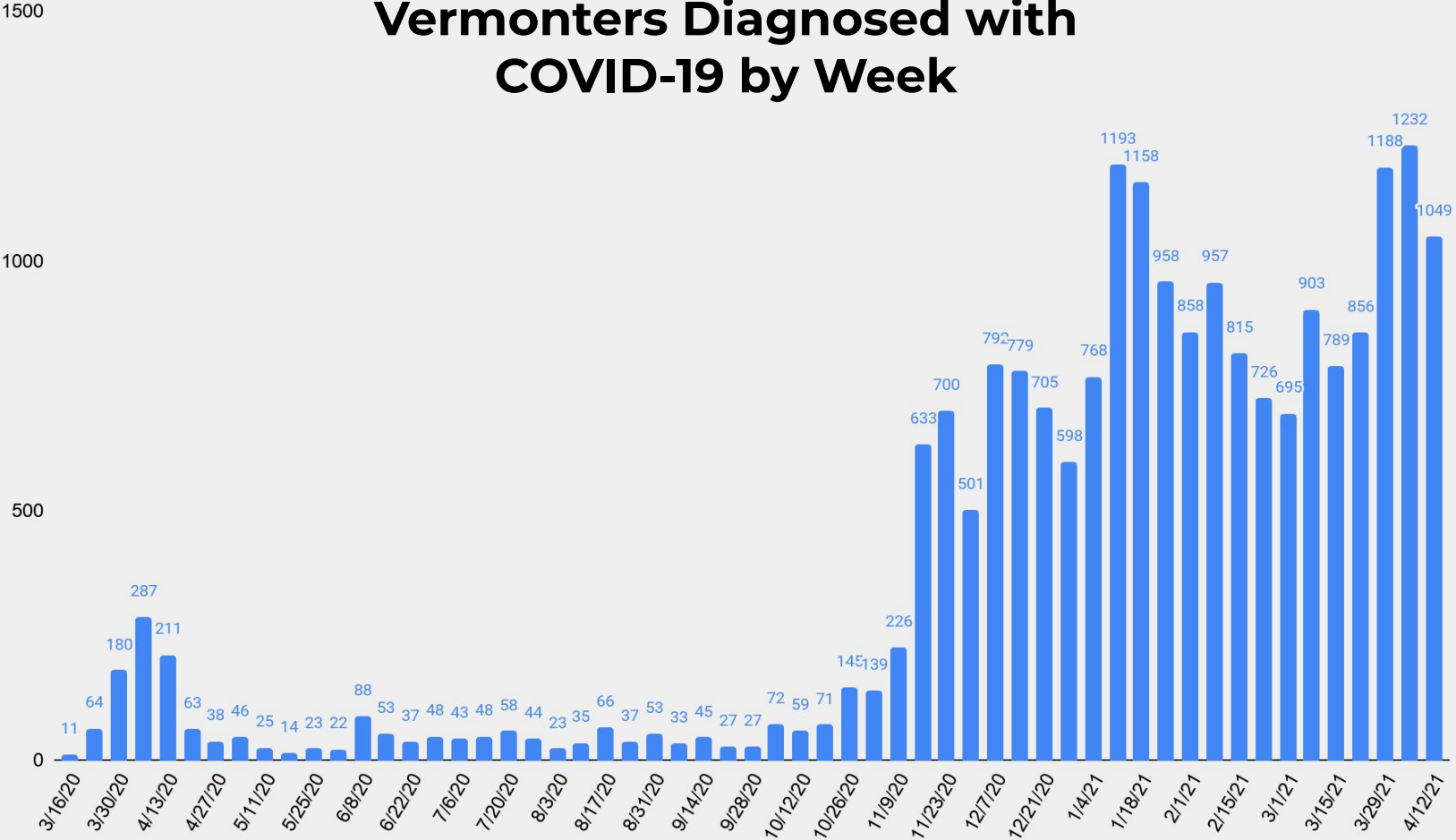
Presentation available at:
dfr.vermont.gov

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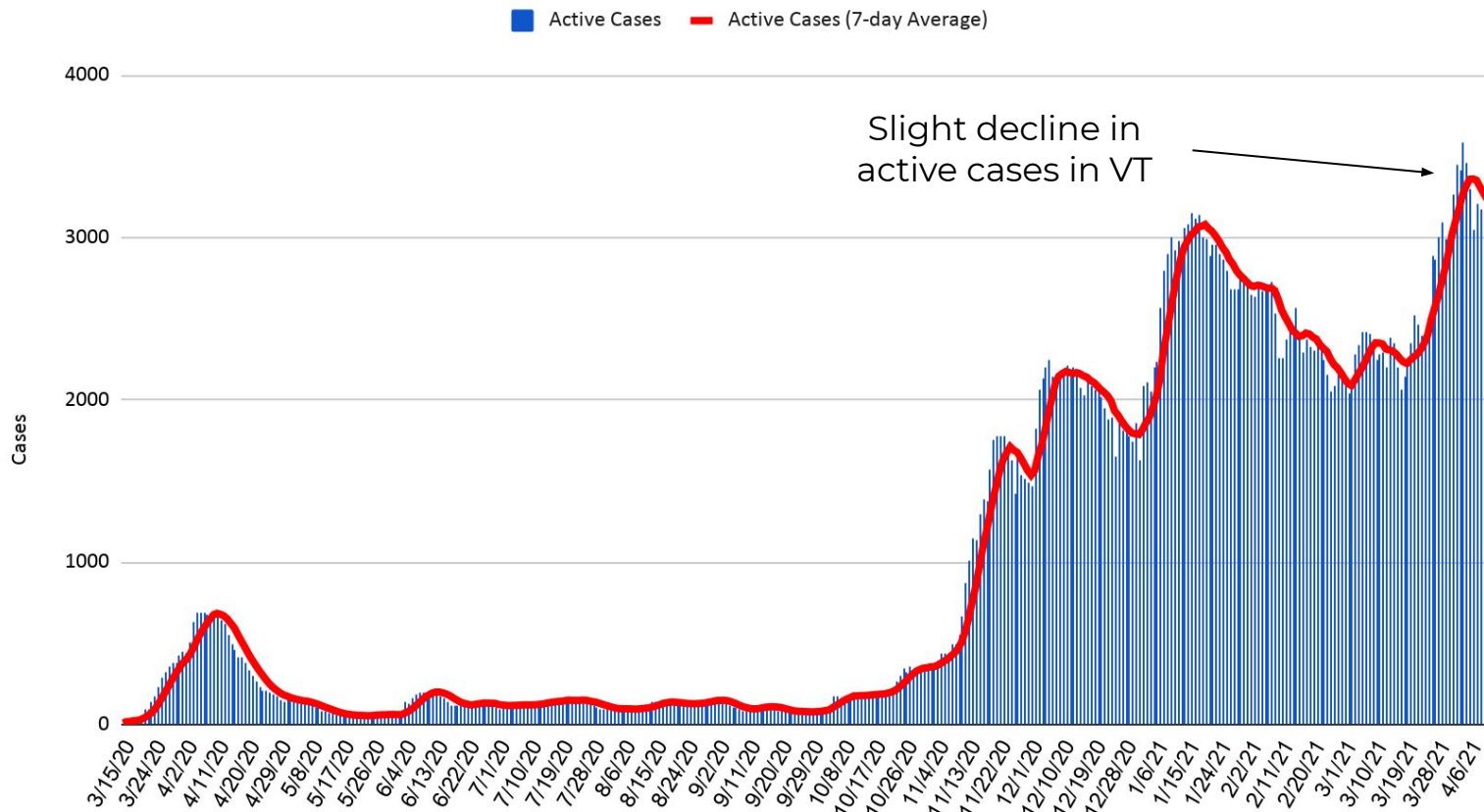


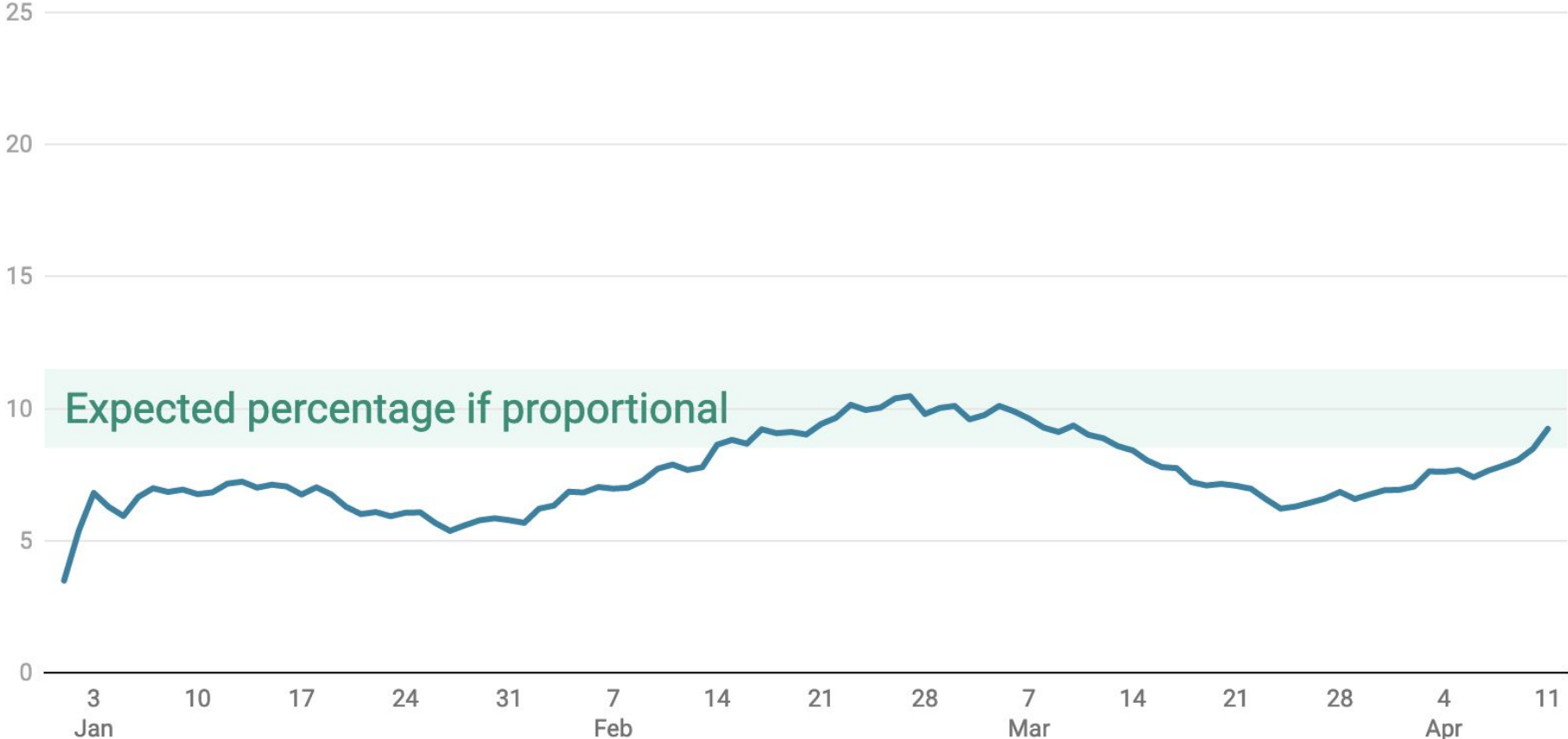Cases have declined 23% this week

# Vermonters Diagnosed with COVID-19 by Week

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

3

Estimated Active Cases of COVID-19 in Vermont

Slight decline in active cases in VT

# % of Vermont's COVID Infections Aged 0-9 (14-Day Average)



Expected percentage if proportional

# % of Vermont's COVID Infections Aged 10-19 (14-Day Average)



Expected percentage if proportional
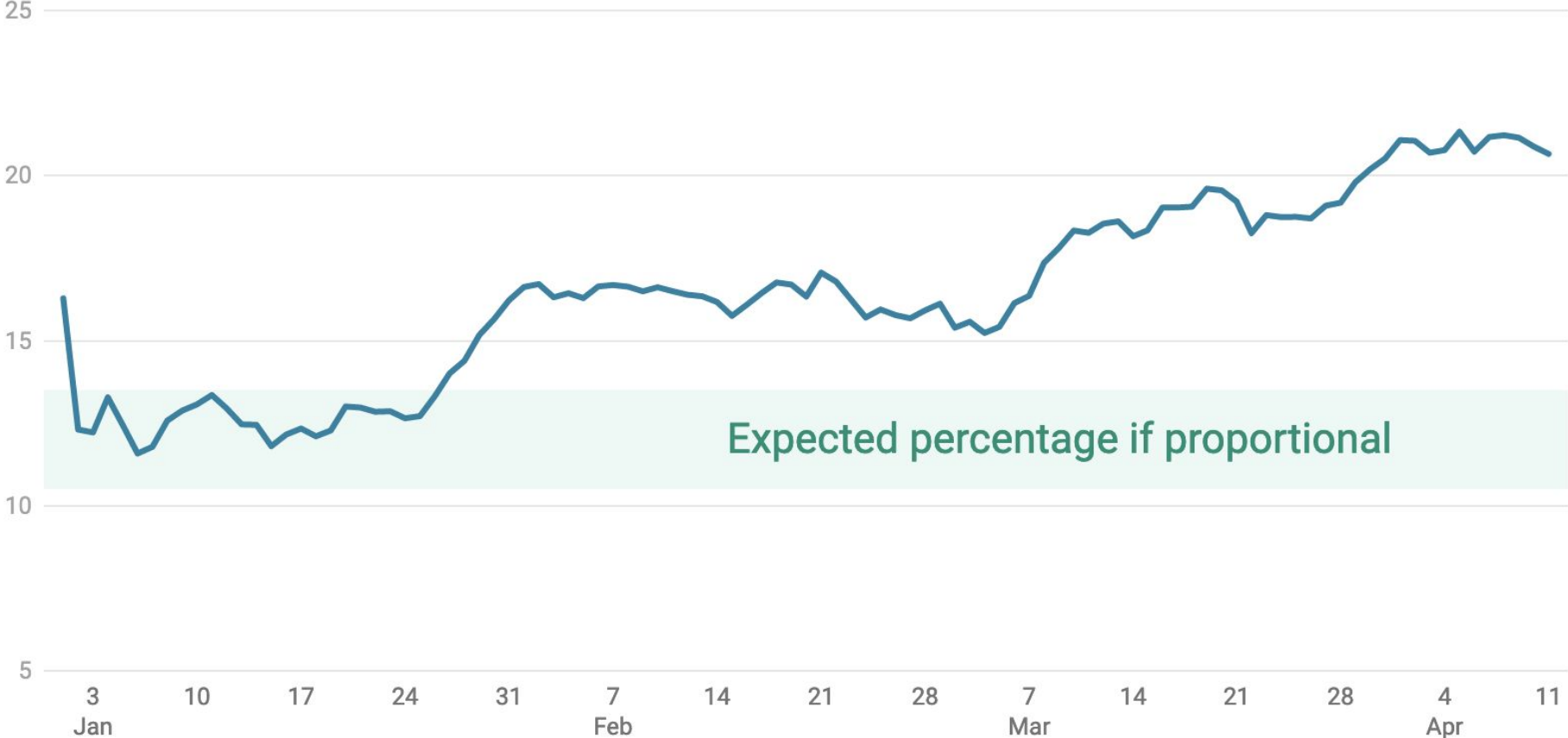
# % of Vermont's COVID Infections Aged 20-29 (14-Day Average)



Expected percentage if proportional
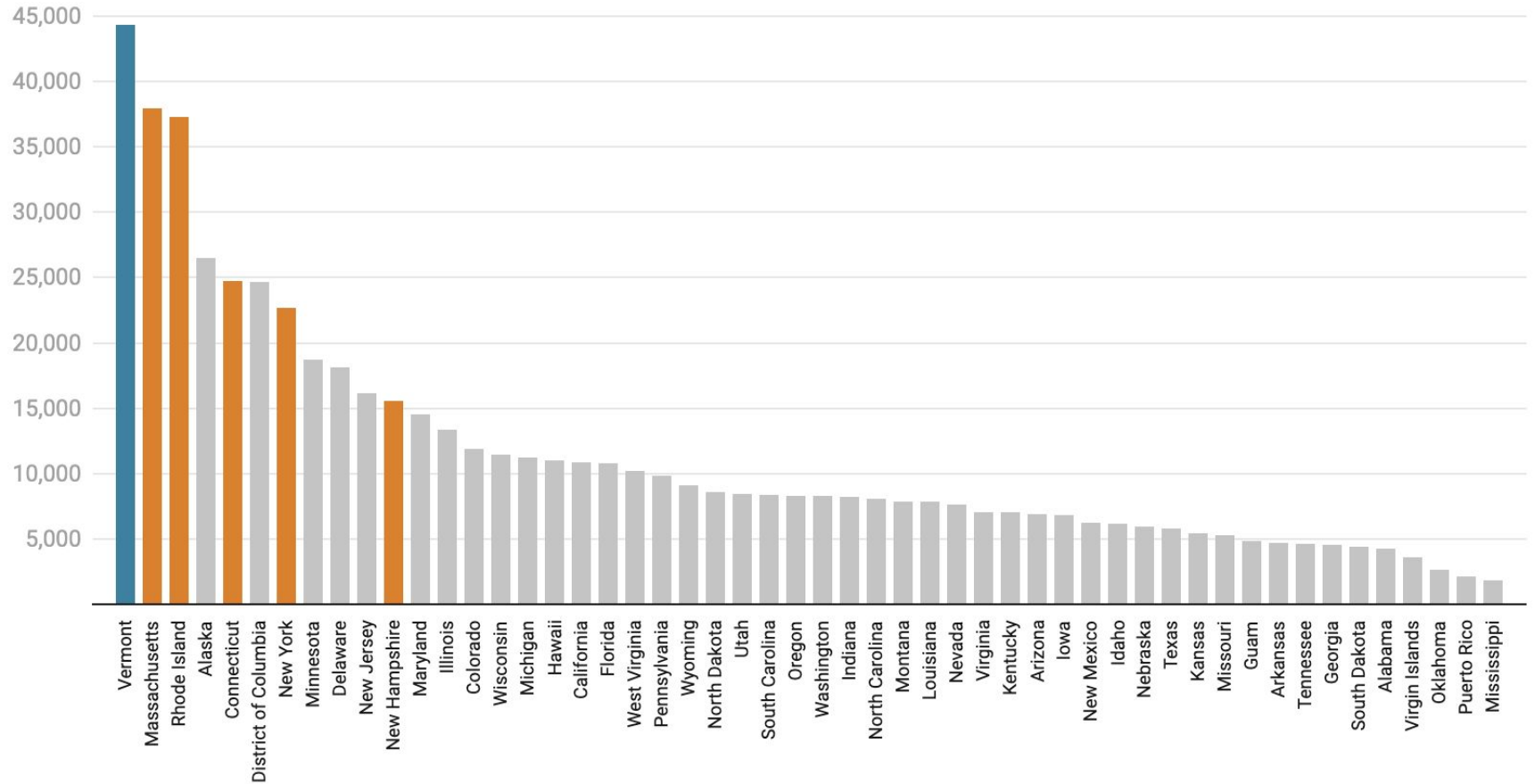
# Age of Infected Vermonters Decreasing

Median age of COVID positive individuals in VT over the last 14 days. Green bars represent expanded vaccine eligibility.



LTCF Residents and Medical Workers

Ages 75+    70+    65+    60+    50+    40+
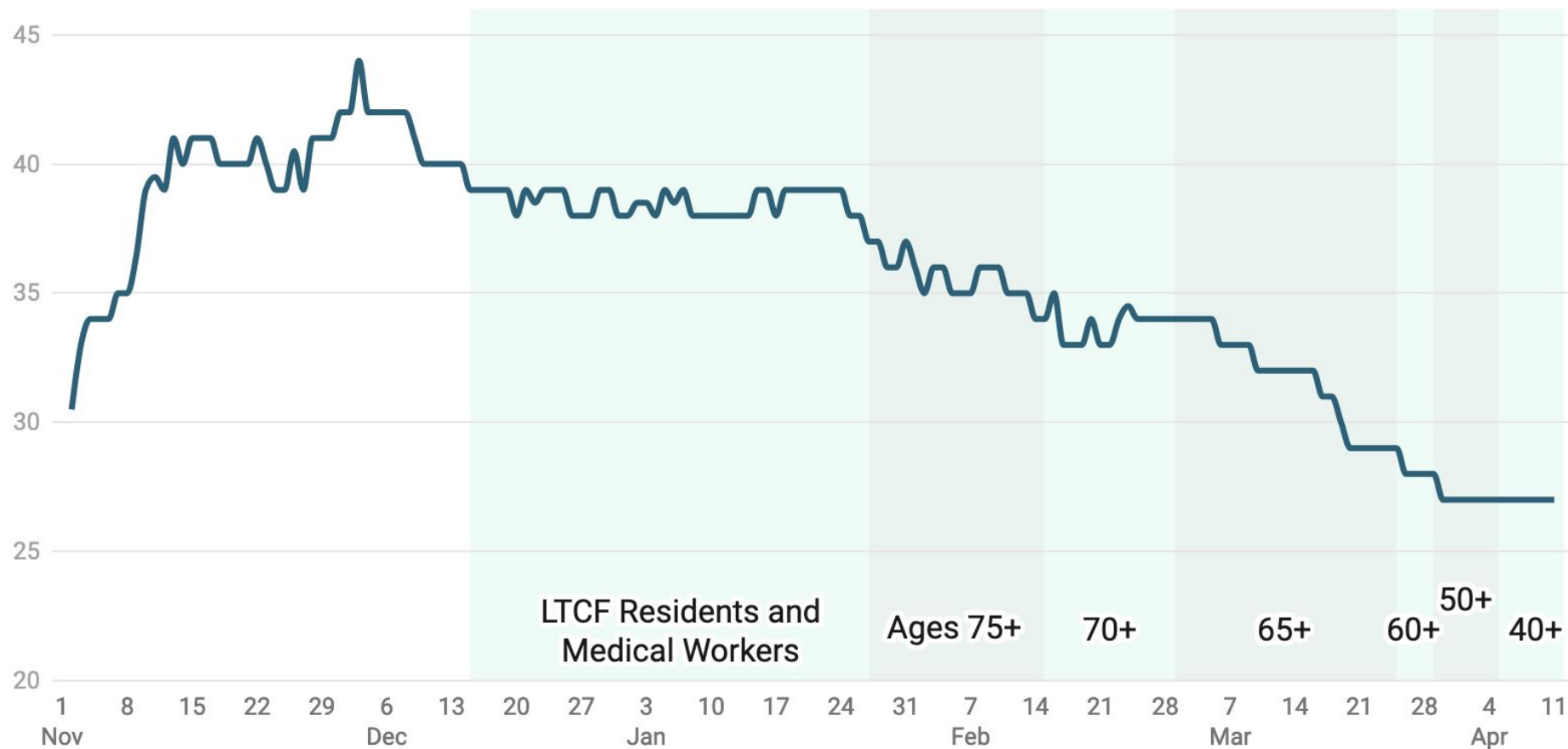
# COVID Tests per 100K in Last 30 Days Among **Vermont** and its **Neighbors**



*Note: Maine and Ohio do not report testing data to the CDC*

# Vermont Forecast
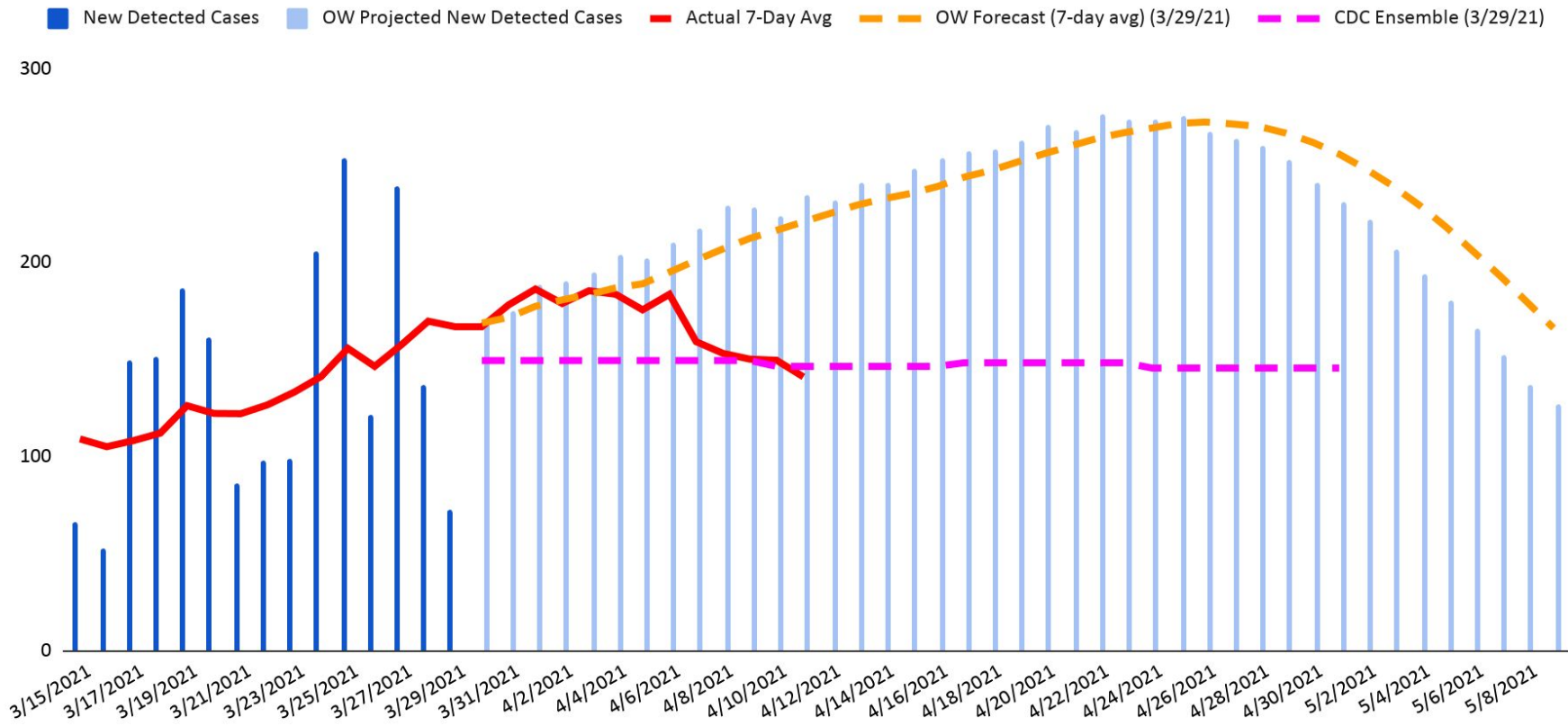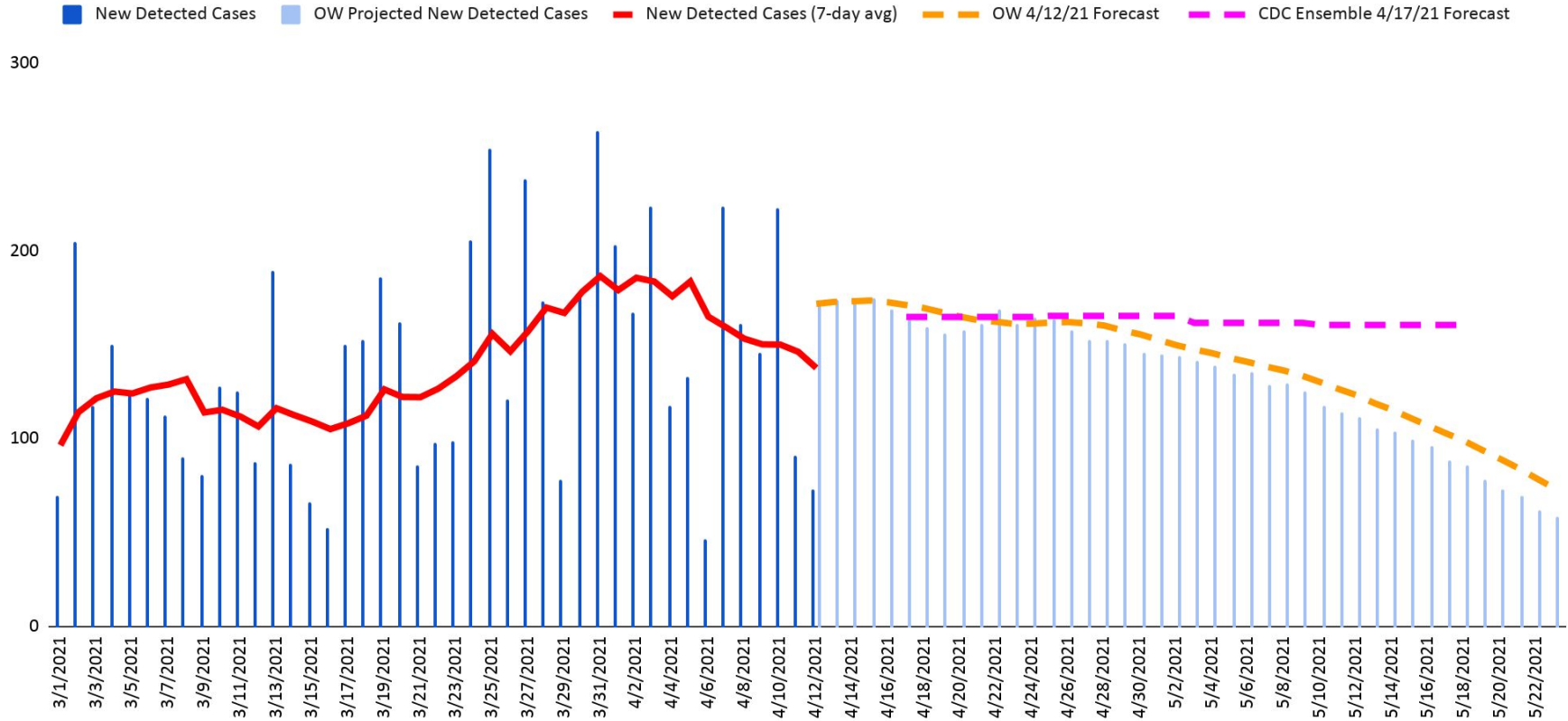
Legend: New Detected Cases | OW Projected New Detected Cases | Actual 7-Day Avg | OW Forecast (7-day avg) (3/29/21) | CDC Ensemble (3/29/21)

Source: Johns Hopkins University Data, CDC Ensemble, & Oliver Wyman Forecast Model; Note: assumes current vaccine supply

# Vermont Forecast

Legend: New Detected Cases | OW Projected New Detected Cases | New Detected Cases (7-day avg) | OW 4/12/21 Forecast | CDC Ensemble 4/17/21 Forecast

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# Vermont Weekly COVID-19 Infections Forecast

Calculated as the 7-day sum of new infections. 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.

Source: CDC Ensemble Model via COVID Model Hub

# Vermont Vaccination Progress

## By Age Band

Fully Vaccinated  Partially Vaccinated

Source: Vermont Dept. of Health—April 13, 2021; excludes those vaccinated through federal entities
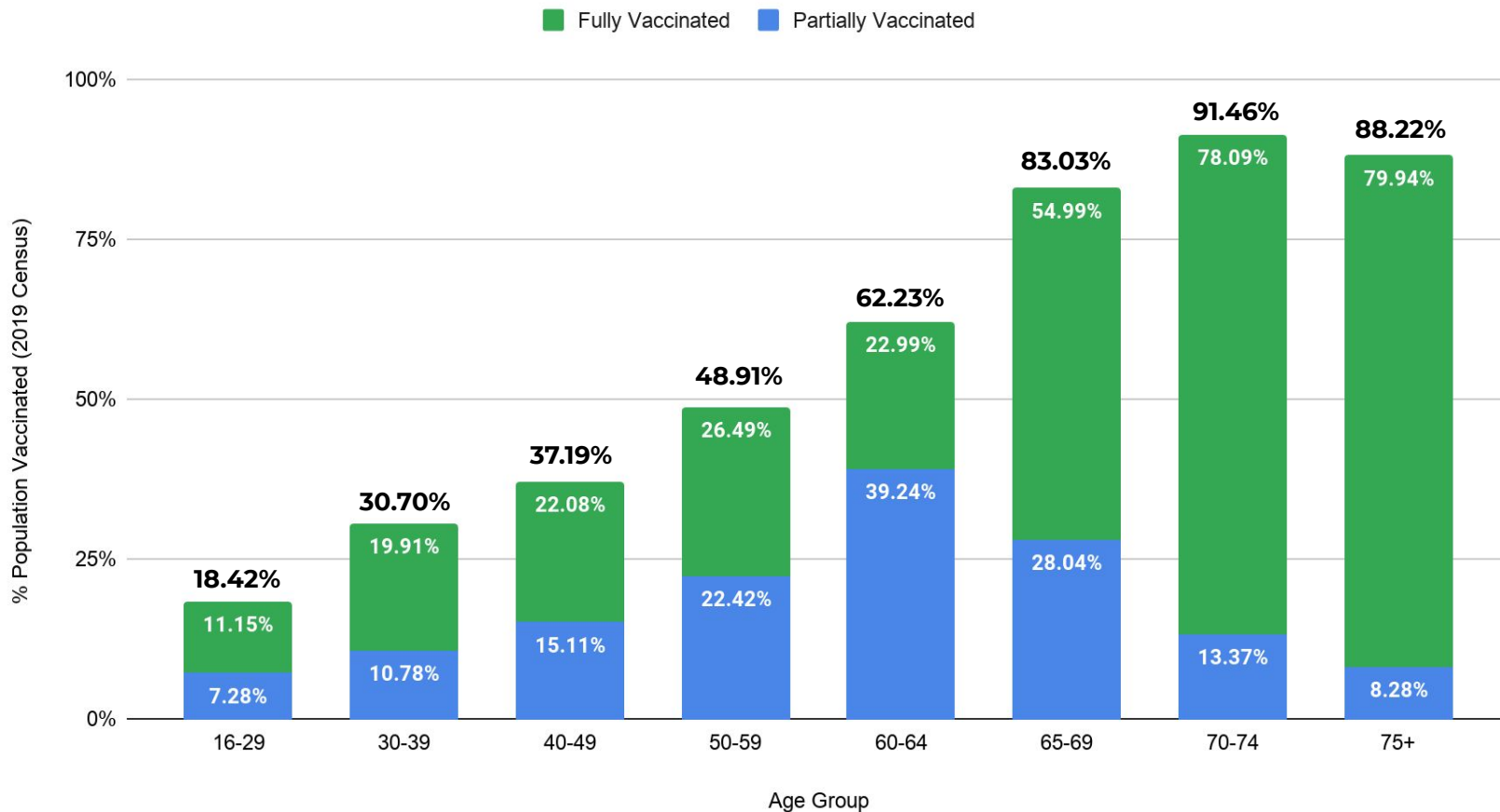
# Vaccinated & Unvaccinated Vermonters

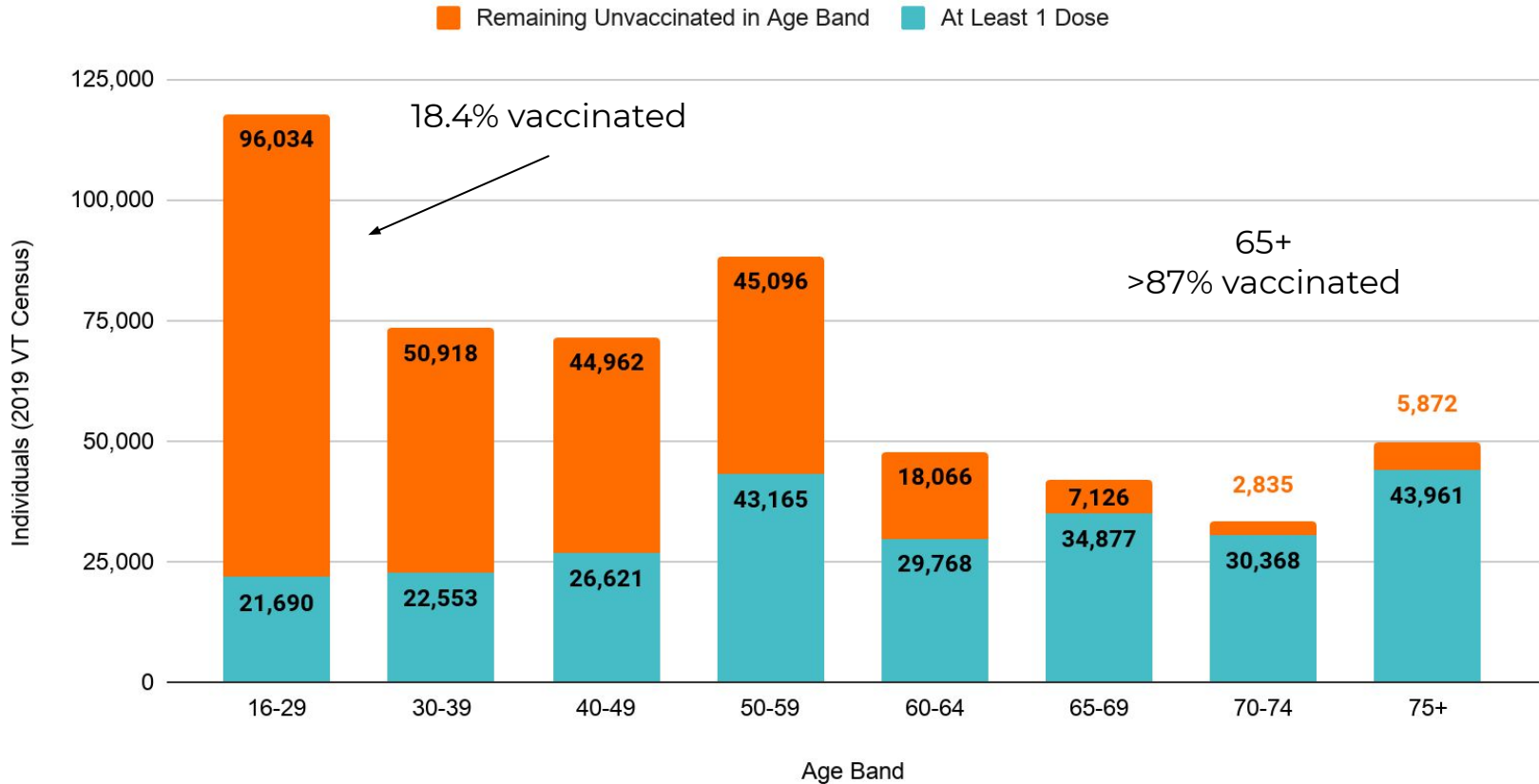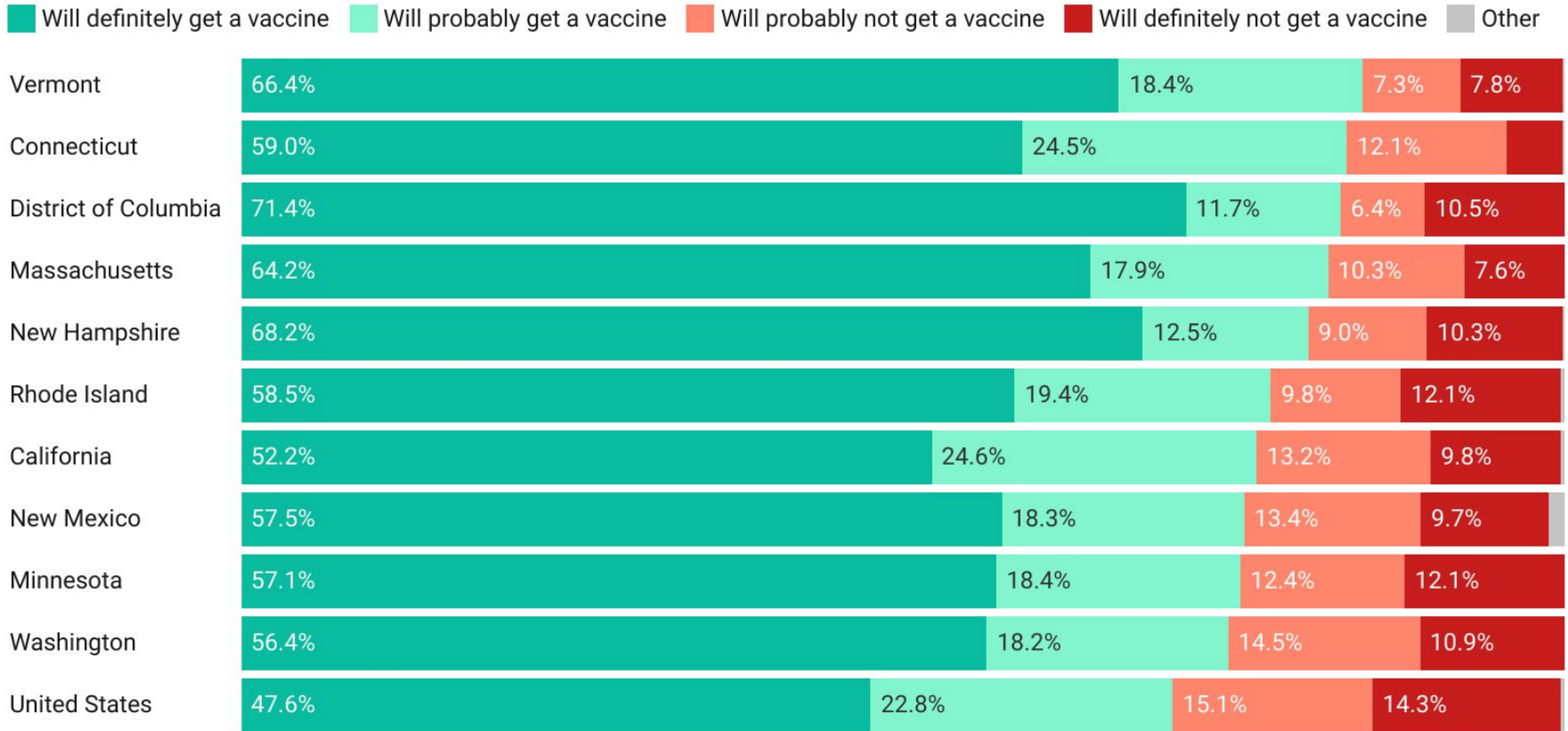## By Age Band

■ Remaining Unvaccinated in Age Band    ■ At Least 1 Dose

18.4% vaccinated

65+
>87% vaccinated

| Age Band | Remaining Unvaccinated | At Least 1 Dose |
|----------|------------------------|-----------------|
| 16-29    | 96,034                 | 21,690          |
| 30-39    | 50,918                 | 22,553          |
| 40-49    | 44,962                 | 26,621          |
| 50-59    | 45,096                 | 43,165          |
| 60-64    | 18,066                 | 29,768          |
| 65-69    | 7,126                  | 34,877          |
| 70-74    | 2,835                  | 30,368          |
| 75+      | 5,872                  | 43,961          |

Individuals (2019 VT Census)

Age Band

Source: Vermont Dept. of Health—April 13, 2021; excludes those vaccinated through federal entities

# U.S. COVID-19 Vaccine Willingness

This analysis excludes those who have already received a vaccine.

**Legend:** ■ Will definitely get a vaccine ■ Will probably get a vaccine ■ Will probably not get a vaccine ■ Will definitely not get a vaccine ■ Other

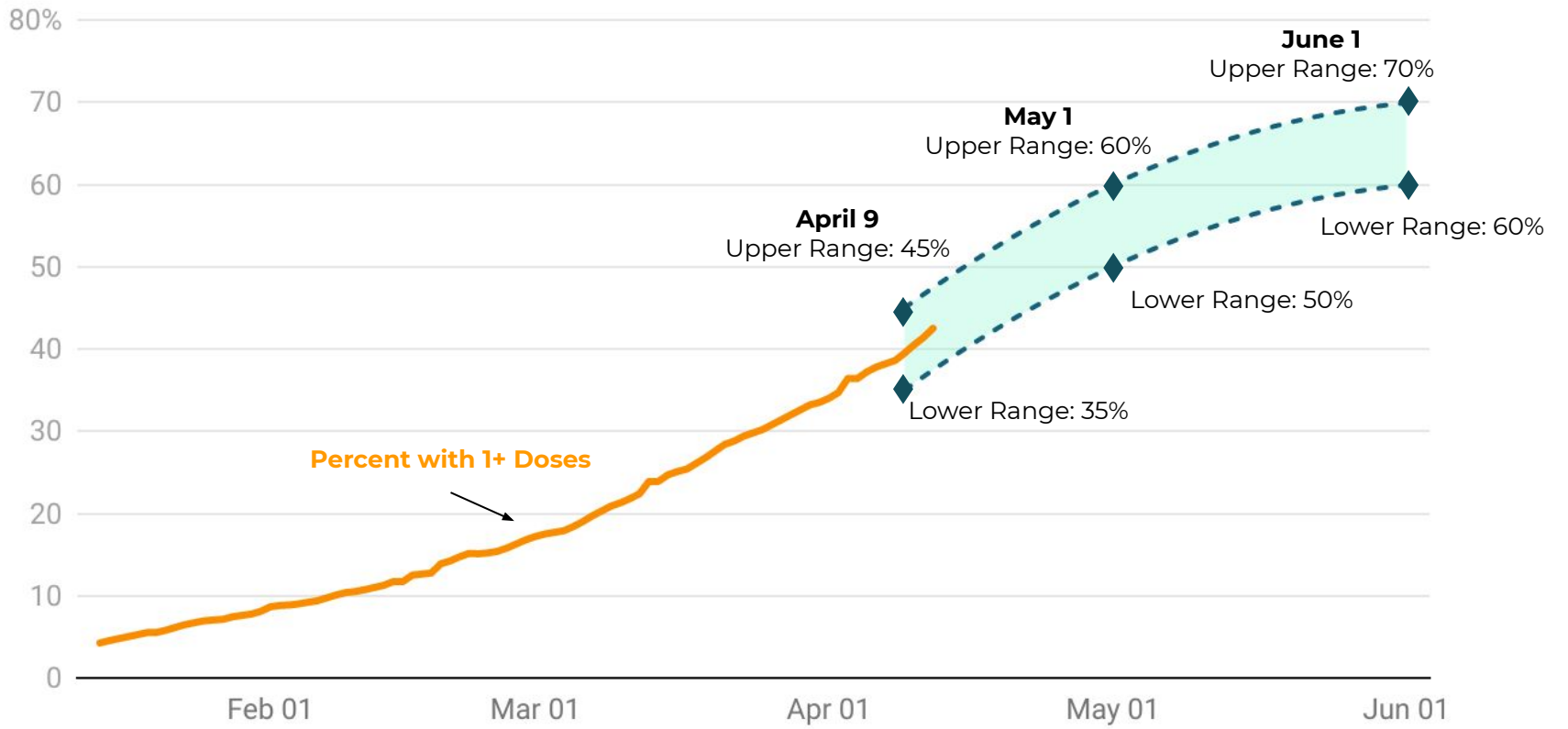| State | Will definitely get a vaccine | Will probably get a vaccine | Will probably not get a vaccine | Will definitely not get a vaccine |
|---|---|---|---|---|
| Vermont | 66.4% | 18.4% | 7.3% | 7.8% |
| Connecticut | 59.0% | 24.5% | 12.1% | |
| District of Columbia | 71.4% | 11.7% | 6.4% | 10.5% |
| Massachusetts | 64.2% | 17.9% | 10.3% | 7.6% |
| New Hampshire | 68.2% | 12.5% | 9.0% | 10.3% |
| Rhode Island | 58.5% | 19.4% | 9.8% | 12.1% |
| California | 52.2% | 24.6% | 13.2% | 9.8% |
| New Mexico | 57.5% | 18.3% | 13.4% | 9.7% |
| Minnesota | 57.1% | 18.4% | 12.4% | 12.1% |
| Washington | 56.4% | 18.2% | 14.5% | 10.9% |
| United States | 47.6% | 22.8% | 15.1% | 14.3% |

# Vermont Case Rate & Vaccination by Age Band



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

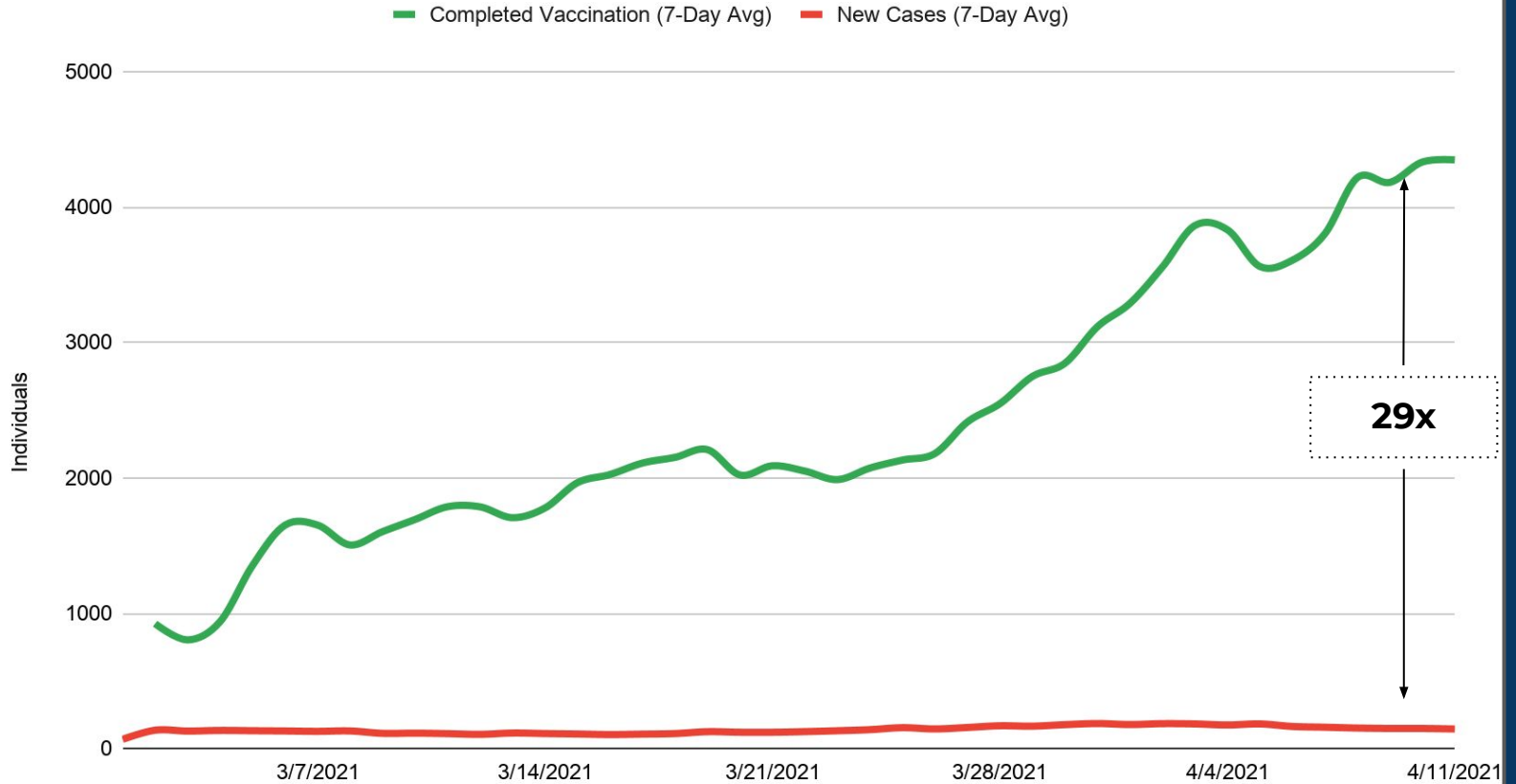Source: VDH - April 11, 2021
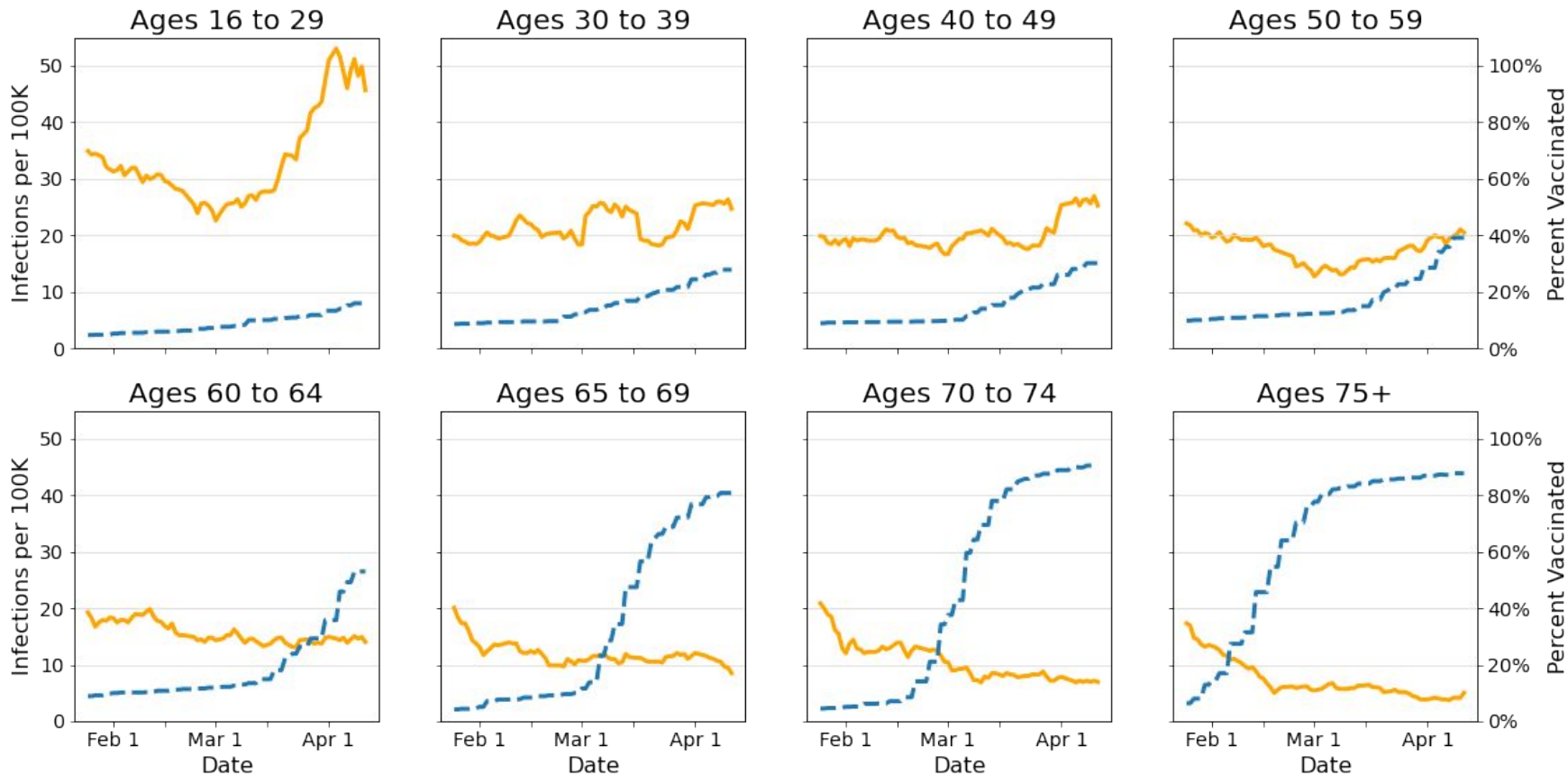
# Vermont Forward
## *Progress to Goal*



**April 9**
Upper Range: 45%

**May 1**
Upper Range: 60%

**June 1**
Upper Range: 70%

Lower Range: 60%

Lower Range: 50%

Lower Range: 35%

**Percent with 1+ Doses**

Source: Vermont Dept. of Health—April 12, 2021; ranges represent 1+ dose for all Vermonters

**Vaccination vs New Infection**

— Completed Vaccination (7-Day Avg)　— New Cases (7-Day Avg)

29x

Source: Vermont Dept. of Health

18

COVID-19 Vaccinations in Vermont

Source: Vermont Department of Health — April 13, 2021

Vermont has **91.6%** of it 65+ Population
Partially or Fully Vaccinated

New Hampshire, Vermont, Maine, Rhode Island, Massachusetts, Connecticut, South Dakota, Kansas, Minnesota, Pennsylvania, Wisconsin, Delaware, Texas, Iowa, California, Washington, New Mexico, Nebraska, Utah, Florida, Colorado, Maryland, Illinois, New Jersey, North Dakota, Virginia, Oklahoma, South Carolina, Kentucky, Oregon, Ohio, Indiana, Arizona, Montana, Michigan, Alaska, North Carolina, Idaho, Nevada, DC, New York State, Louisiana, Georgia, Missouri, Wyoming, Tennessee, Arkansas, Mississippi, West Virginia, Alabama, Hawaii

Source: CDC—April 12, 2021  *New Hampshire vaccine data contains anomalies—65+ jumped from 85% to 101%, now stands at 99.9%

Vaccine Administration per 100K

Vermont Ranks 4th Nationally
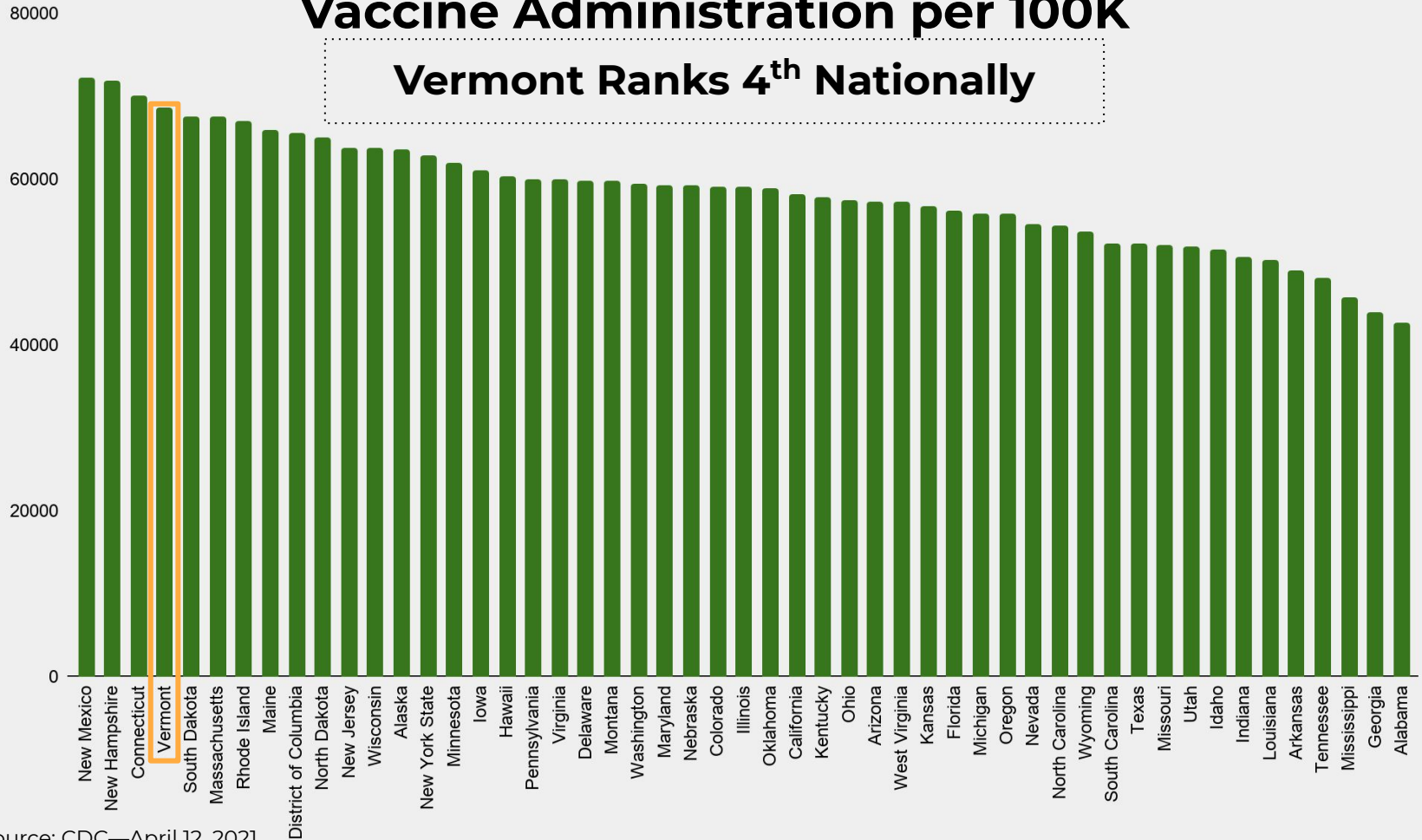
Source: CDC—April 12, 2021

21

# Percentage Population Fully Vaccinated

## Vermont Ranks 7th Nationally

Source: CDC—April 12, 2021

22
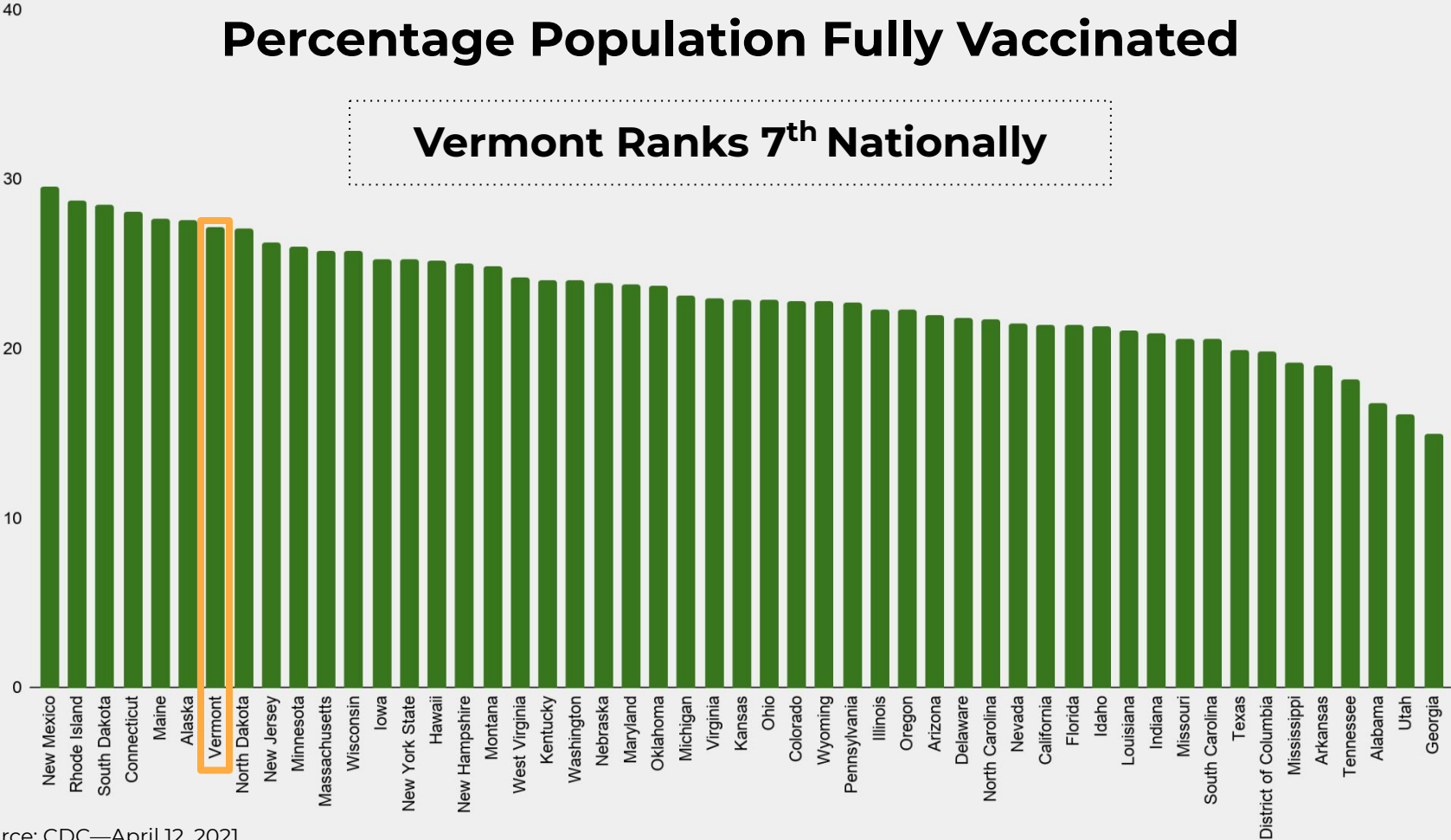
# Active Outbreaks in Long Term Care Facilities

## January 4, 2021: Avg LTCF Outbreak ~38 Cases

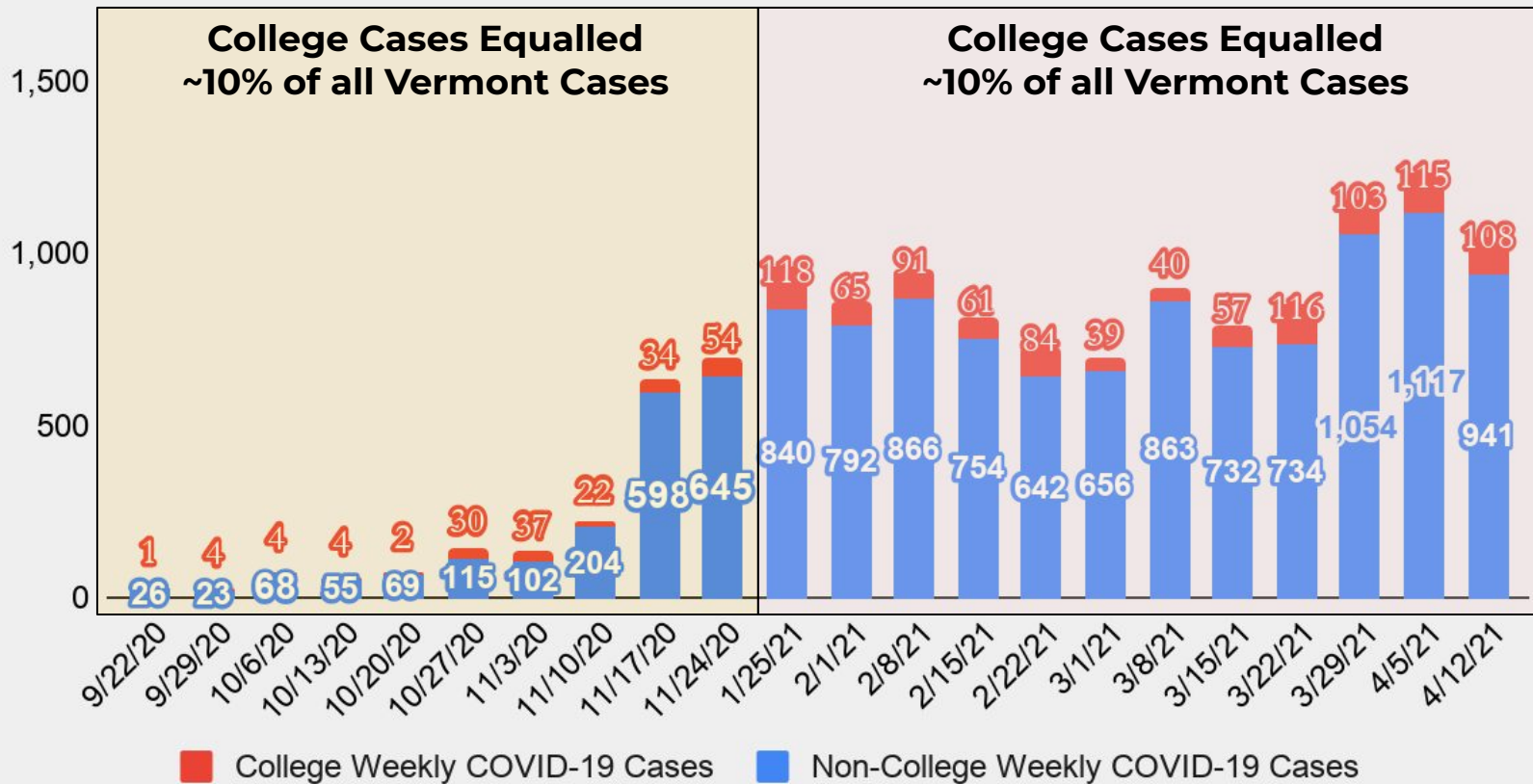| Facility Name | Total COVID-19 Cases |
|---|---|
| River's Edge Community Care Home, *Bennington* | 8 |

Source: Vermont Department of Health—April 12, 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.*
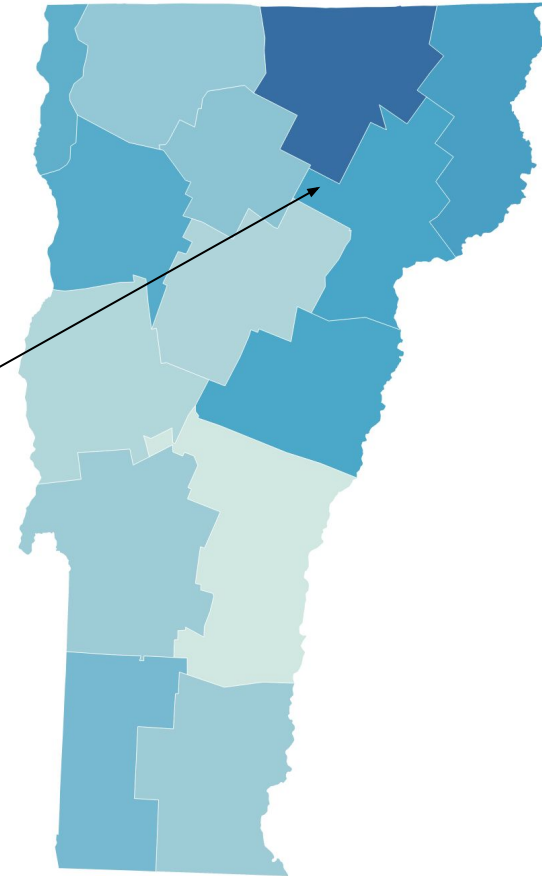
# Higher Education

**Fall 2020**

**Spring 2021**

**College Cases Equalled ~10% of all Vermont Cases**

**College Cases Equalled ~10% of all Vermont Cases**

| Date | Non-College | College |
|------|-------------|---------|
| 9/22/20 | 26 | 1 |
| 9/29/20 | 23 | 4 |
| 10/6/20 | 68 | 4 |
| 10/13/20 | 55 | 4 |
| 10/20/20 | 69 | 2 |
| 10/27/20 | 115 | 30 |
| 11/3/20 | 102 | 37 |
| 11/10/20 | 204 | 22 |
| 11/17/20 | 598 | 34 |
| 11/24/20 | 645 | 54 |
| 1/25/21 | 840 | 118 |
| 2/1/21 | 792 | 65 |
| 2/8/21 | 866 | 91 |
| 2/15/21 | 754 | 61 |
| 2/22/21 | 642 | 84 |
| 3/1/21 | 656 | 39 |
| 3/8/21 | 863 | 40 |
| 3/15/21 | 732 | 57 |
| 3/22/21 | 734 | 116 |
| 3/29/21 | 1,054 | 103 |
| 4/5/21 | 1,117 | 115 |
| 4/12/21 | 941 | 108 |

■ College Weekly COVID-19 Cases    ■ Non-College Weekly COVID-19 Cases

Source: Vermont Higher Education Institution Reporting—April 12, 2021

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

Results Reported March 30 to April 5

1    450
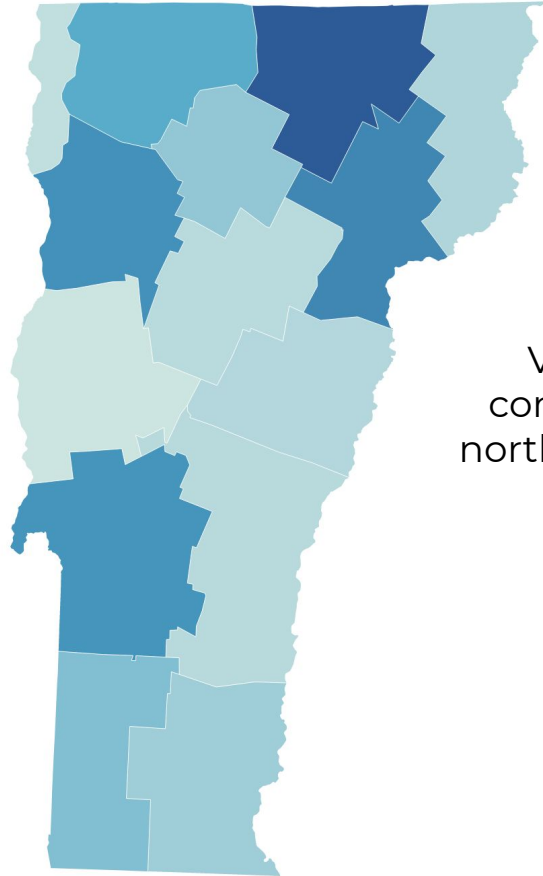
**Vermont Weekly Cases by County (per 100,000)**
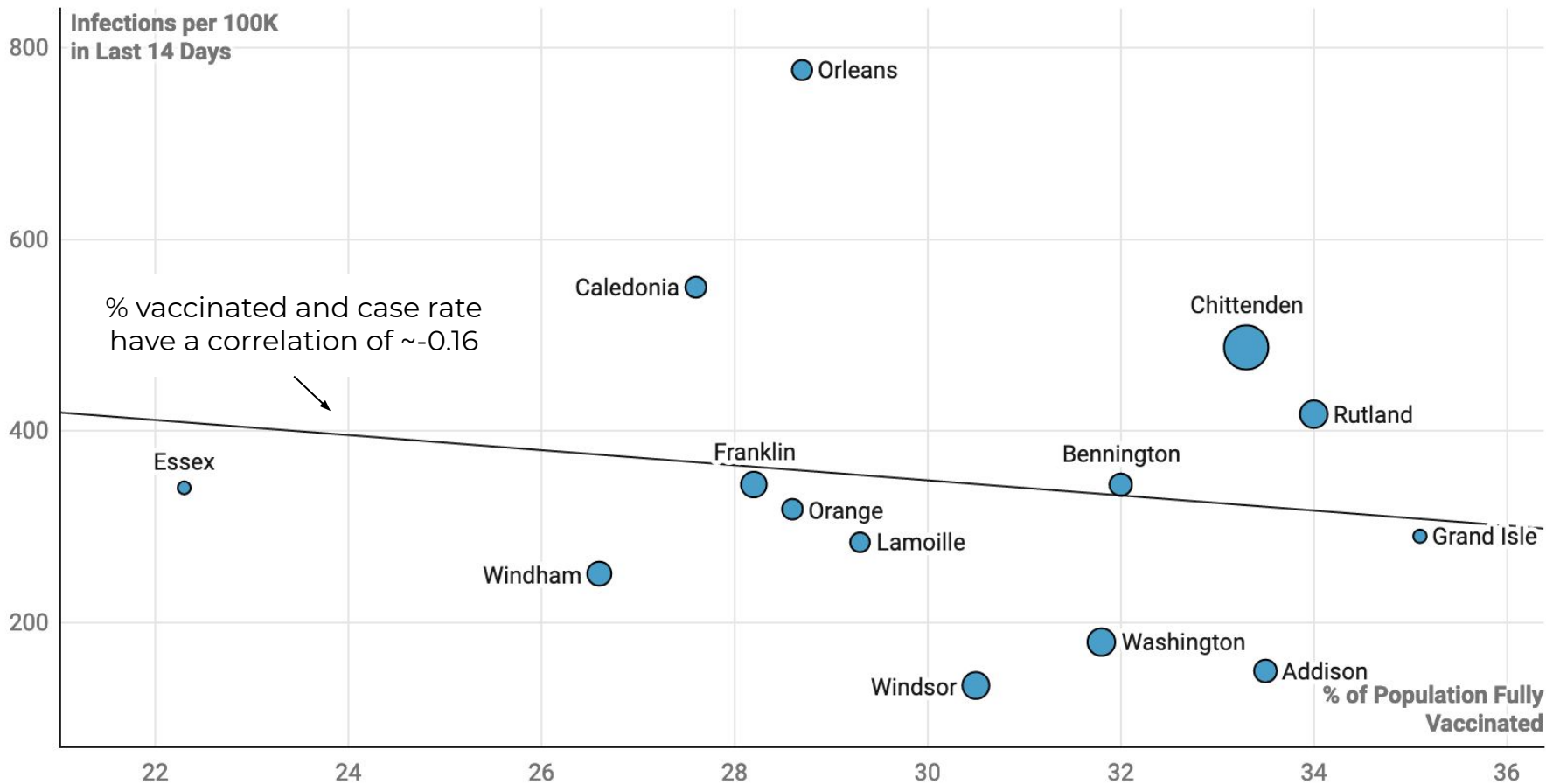
Results Reported April 6 to April 12

1    450

Viral spread concentrated in northeast Vermont

25

Map: Vermont DFR COVID Modeling Team • Source: Vermont Dept. of Health • Created with Datawrapper

Map: Vermont DFR COVID Modeling Team • Source: Vermont Dept. of Health • Created with Datawrapper

# Active COVID Cases per Million in Vermont Regions



Legend: Burlington Metro, Northeast Kingdom, Central VT, Southern VT
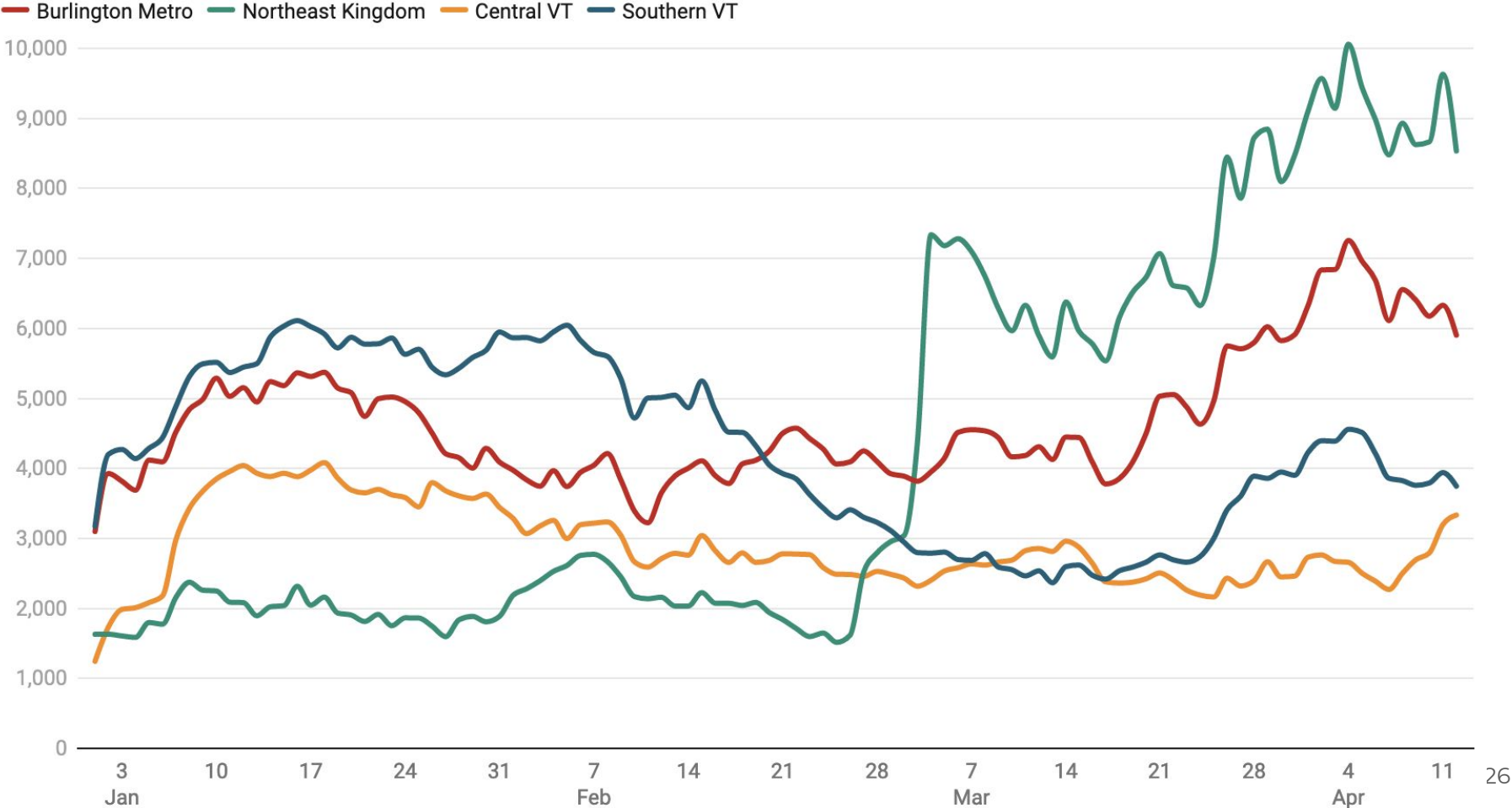
# Vaccinations & Case Rates in Vermont Counties

Tracking association between vaccinations and new infections in Vermont, current correlation weak given % population now fully vaccinated

**Infections per 100K in Last 14 Days**

% vaccinated and case rate have a correlation of ~-0.16

Orleans
Caledonia
Chittenden
Rutland
Essex
Franklin
Bennington
Orange
Lamoille
Grand Isle
Windham
Washington
Addison
Windsor

**% of Population Fully Vaccinated**

Statewide Covid-19 Hospitalizations

**6.42% Increase**
*(Last 7 Days)*

Legend: 14-Day Average - Medical & Surgical | 14-Day Average - ICU
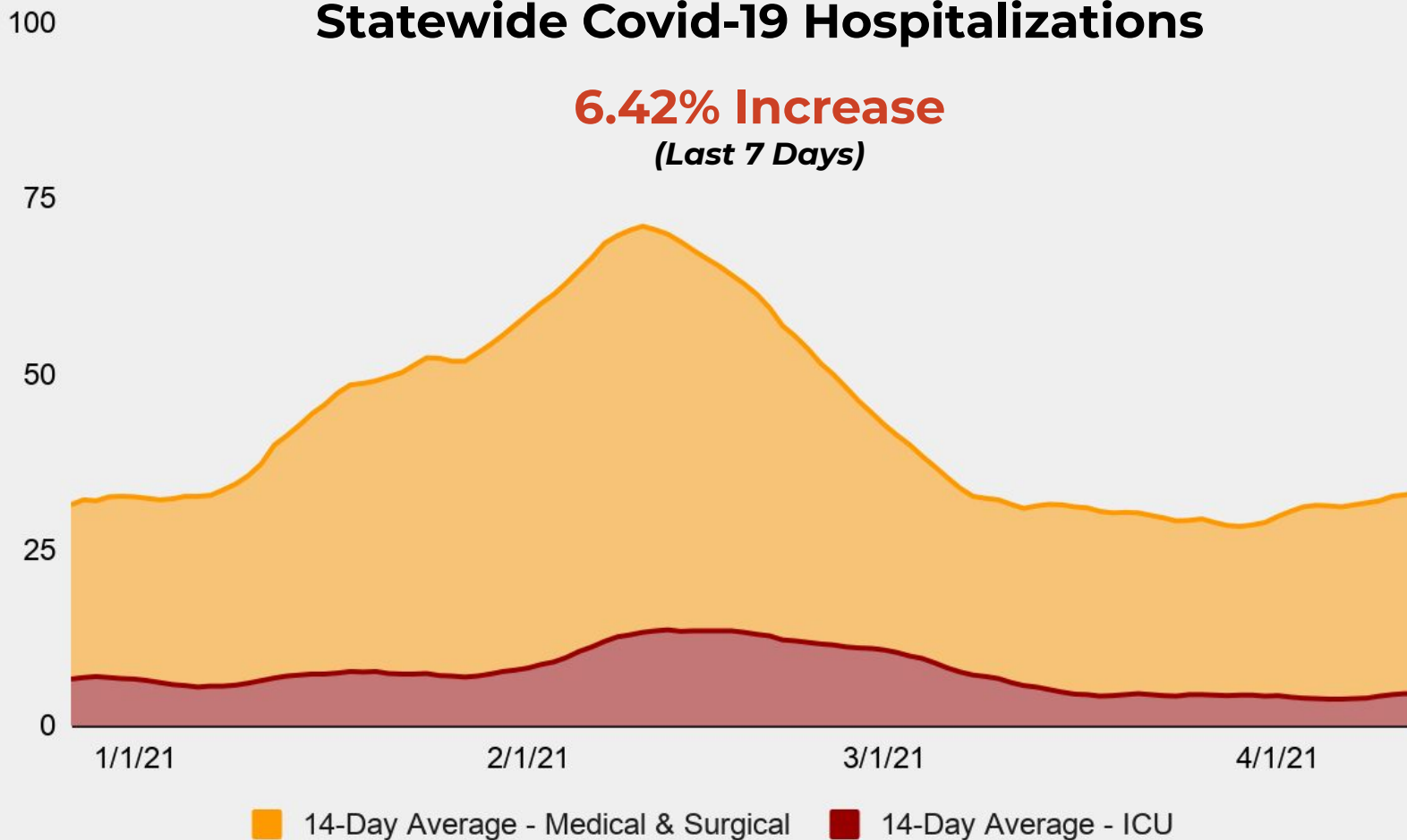
Source: Vermont Department of Health—April 12, 2021

Vermont Covid-19 Deaths by Week
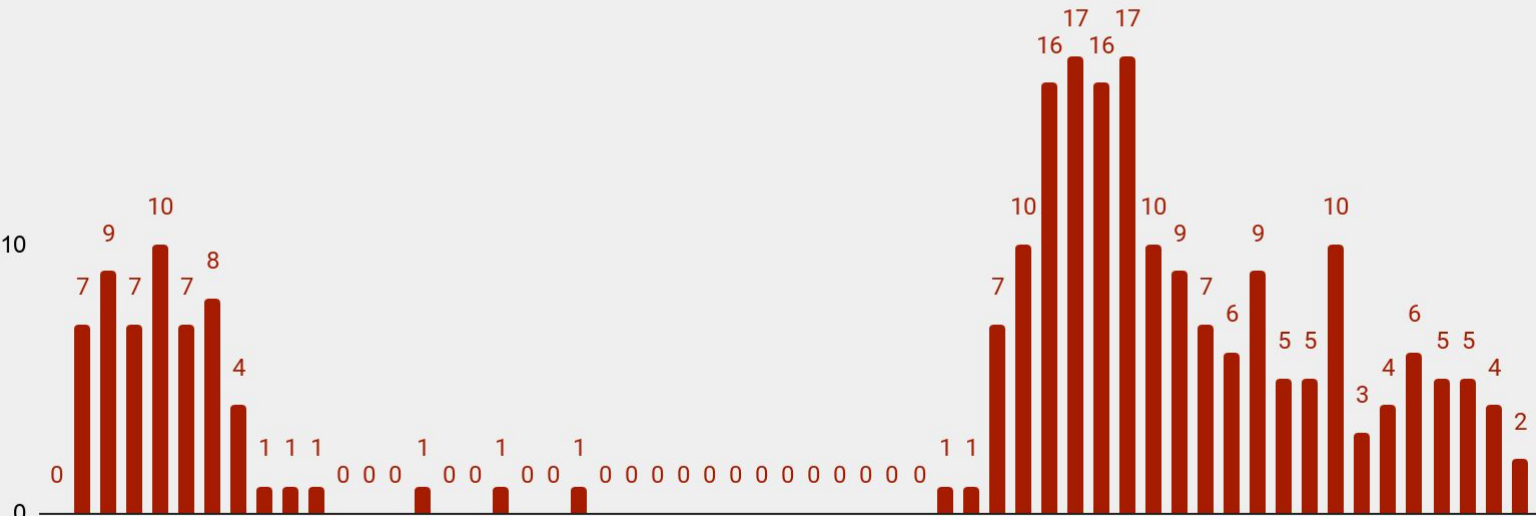
Vermont Covid-19 Deaths Decreased in March
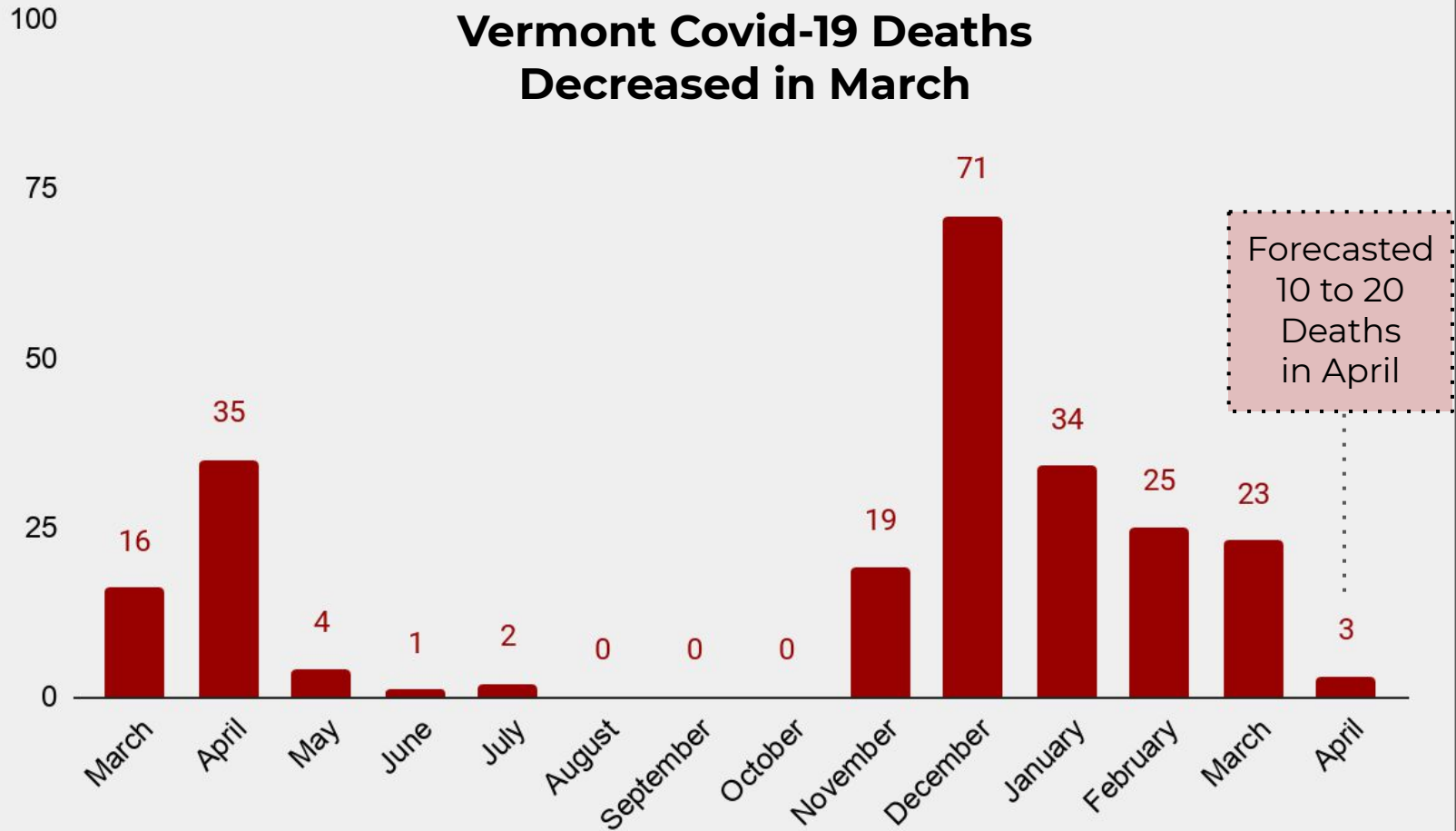
Forecasted 10 to 20 Deaths in April

# Vermont Weekly COVID-19 Deaths Forecast

Calculated as the 7-day sum of new infections. 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.
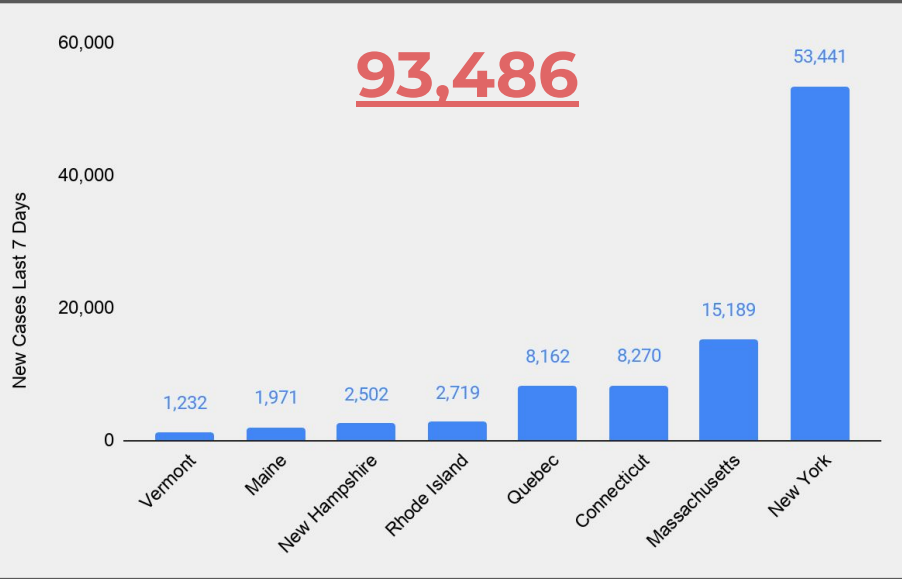
**Active Cases per Million**

0      5,000      25,000 +
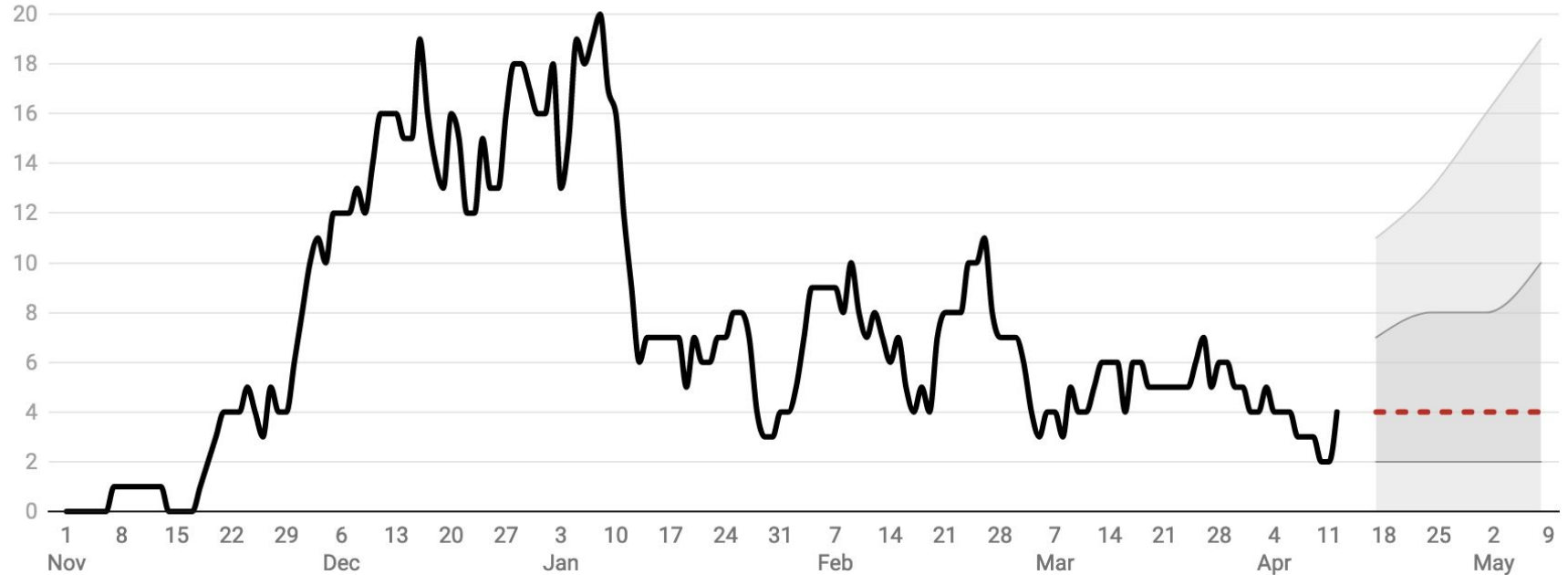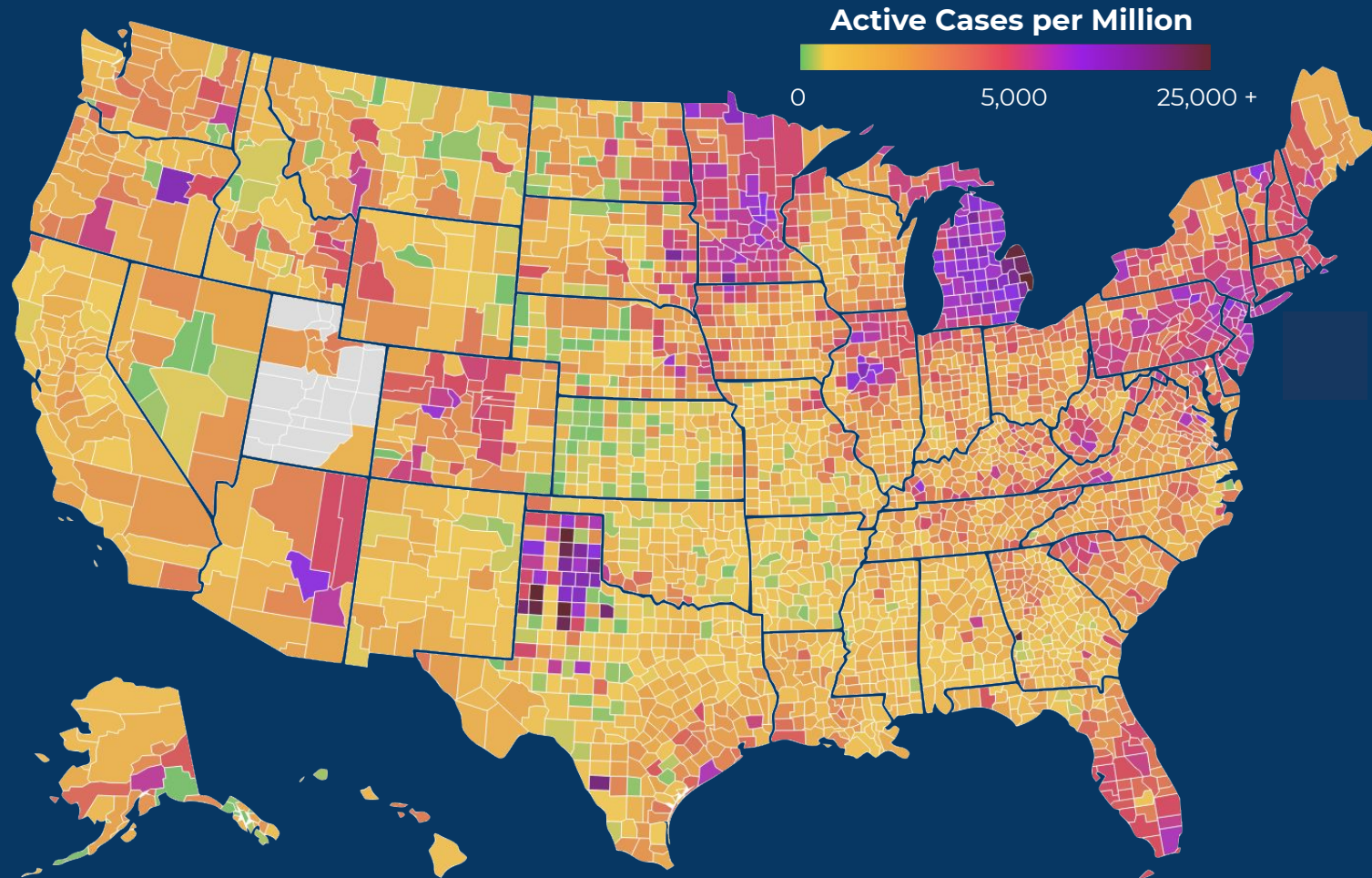
# Regional Cases

## 1.29% Decrease in New Cases

### New Cases March 30th to April 5th

**93,486**

New Cases Last 7 Days

| State | New Cases |
|-------|-----------|
| Vermont | 1,232 |
| Maine | 1,971 |
| New Hampshire | 2,502 |
| Rhode Island | 2,719 |
| Quebec | 8,162 |
| Connecticut | 8,270 |
| Massachusetts | 15,189 |
| New York | 53,441 |

### New Cases April 6th to April 12

**92,278**

New Cases Last 7 Days

| State | New Cases |
|-------|-----------|
| Vermont | 1,049 |
| Maine | 2,295 |
| Rhode Island | 3,039 |
| New Hampshire | 3,153 |
| Connecticut | 7,916 |
| Quebec | 10,618 |
| Massachusetts | 14,881 |
| New York | 49,327 |

Sources: State Health Departments & CTV National News (Quebec) (RI delayed reporting on 4/12/21 - 7-day average used in lieu)

33
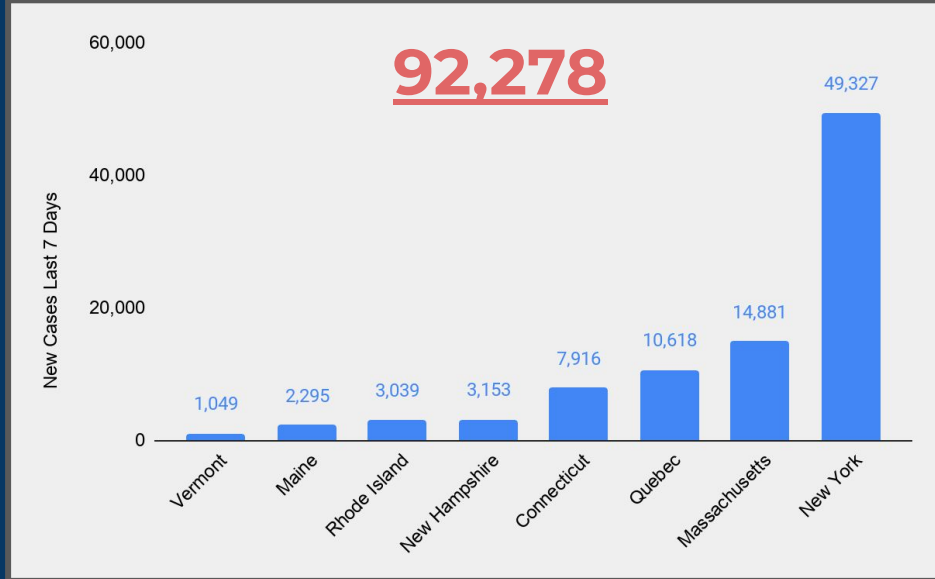
# National COVID-19 Cases

**+7.3% Increase**
**Over the Last 10 Days**

**-72% Decrease**
**Since January 11th**

Legend: ▮ Daily Covid Cases  ▬ 7-Day Avg. Daily Covid Cases
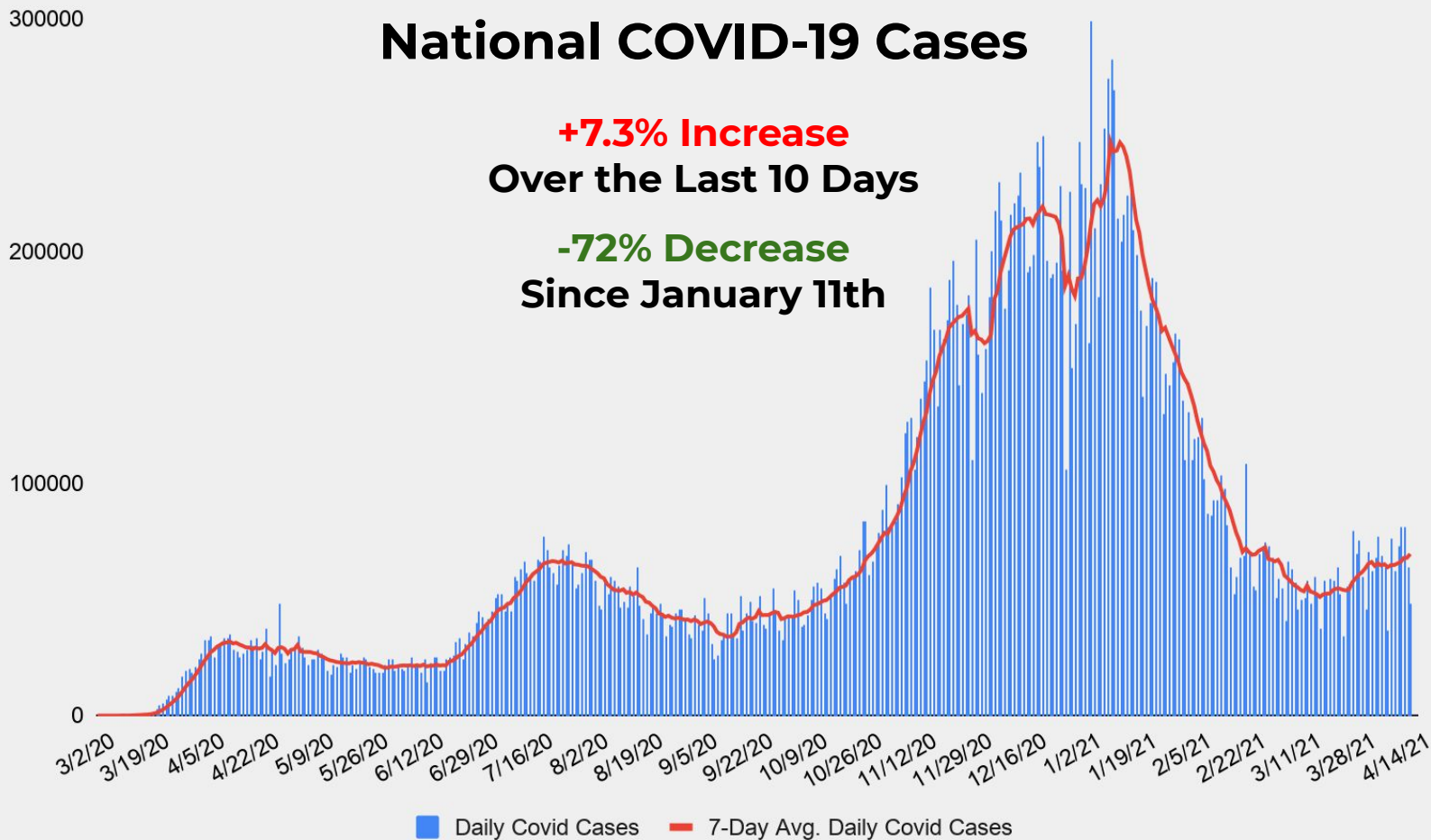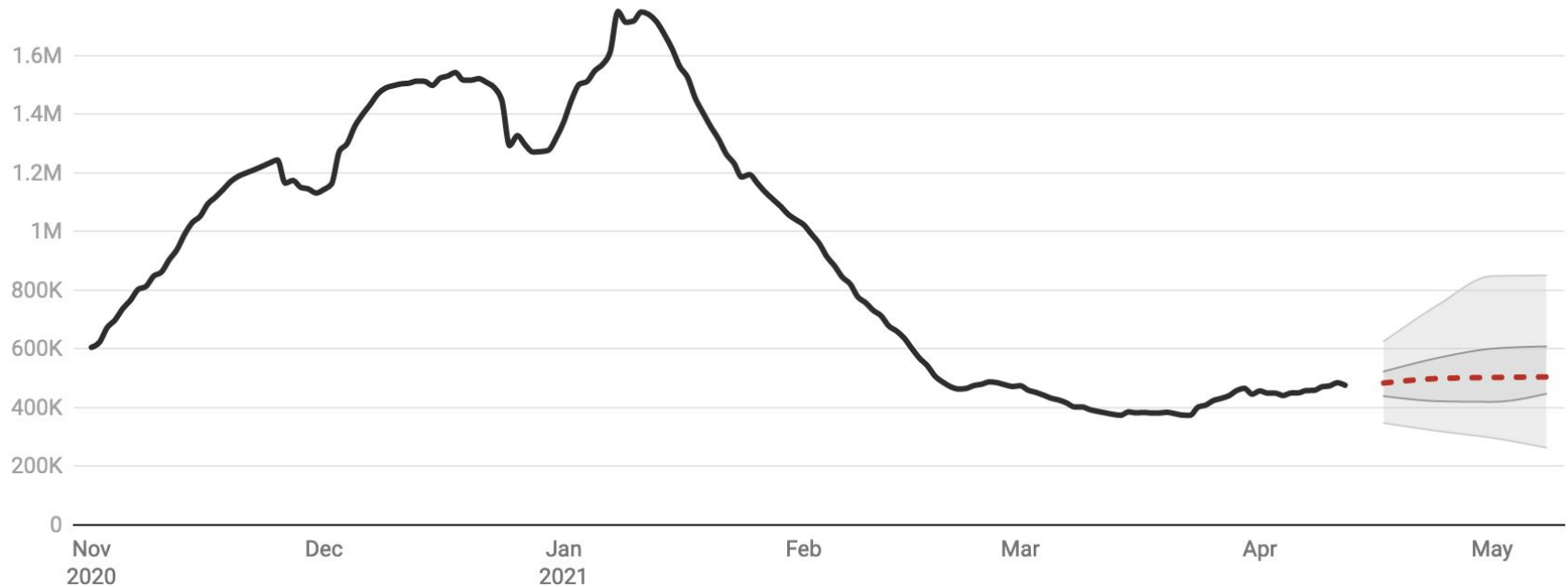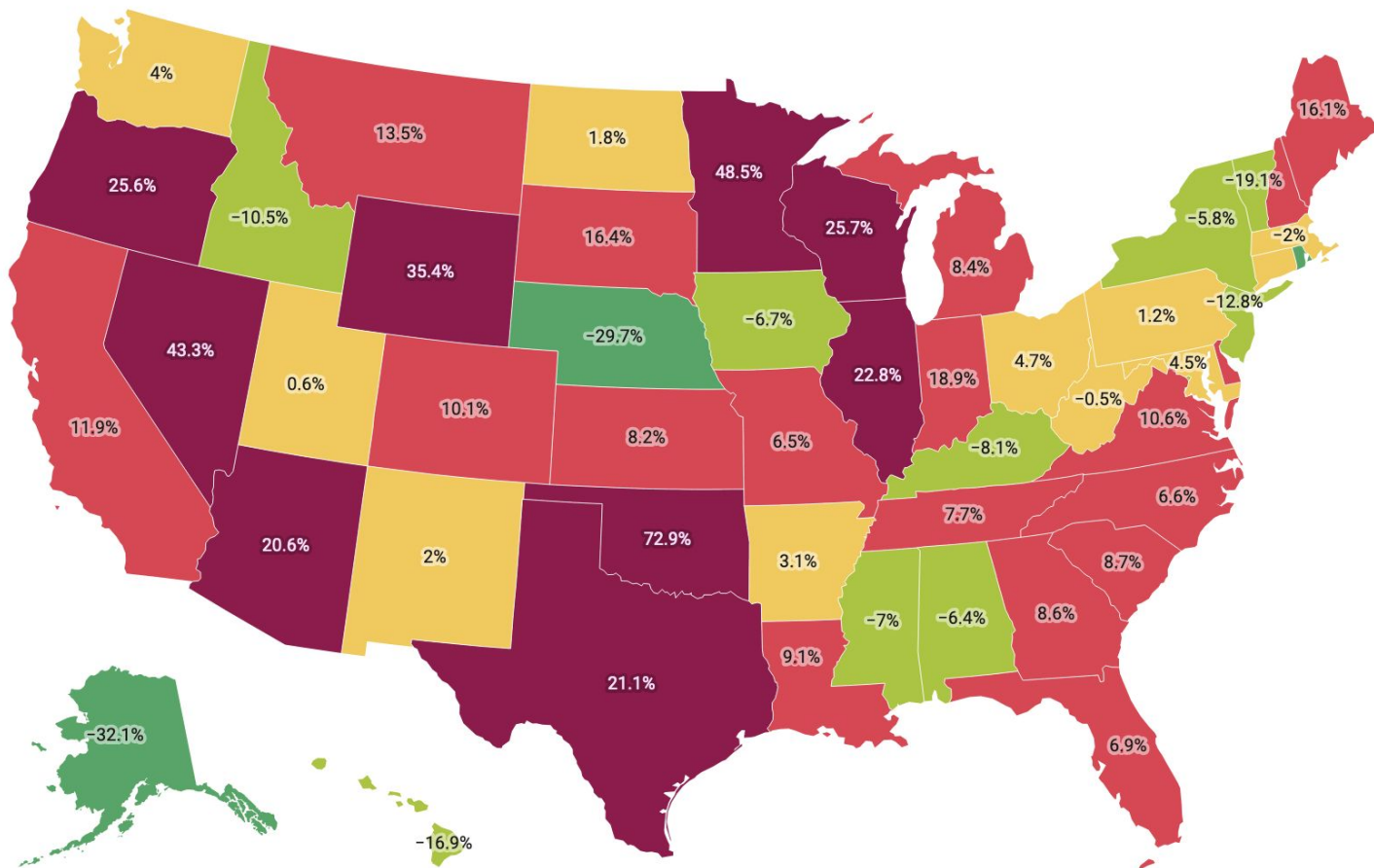
Source: Covid Tracking Project; NYT & CDC—April 12, 2021

US Weekly COVID-19 Infections Forecast

Calculated as the 7-day sum of new infections. 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.

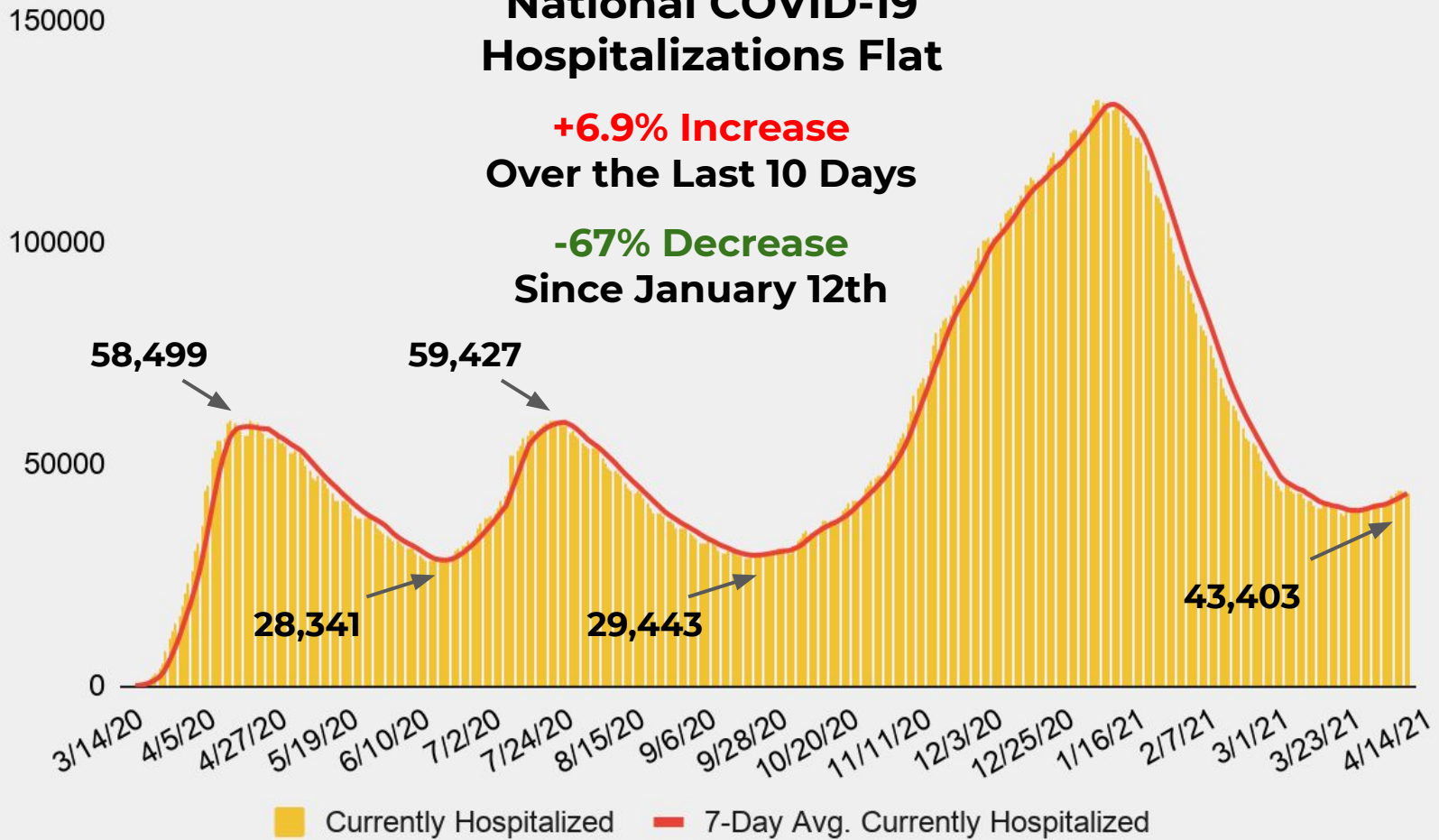# Percent Change in Weekly COVID-19 Infections

National COVID-19 Hospitalizations Flat

+6.9% Increase
Over the Last 10 Days

-67% Decrease
Since January 12th

58,499

59,427

28,341

29,443

43,403

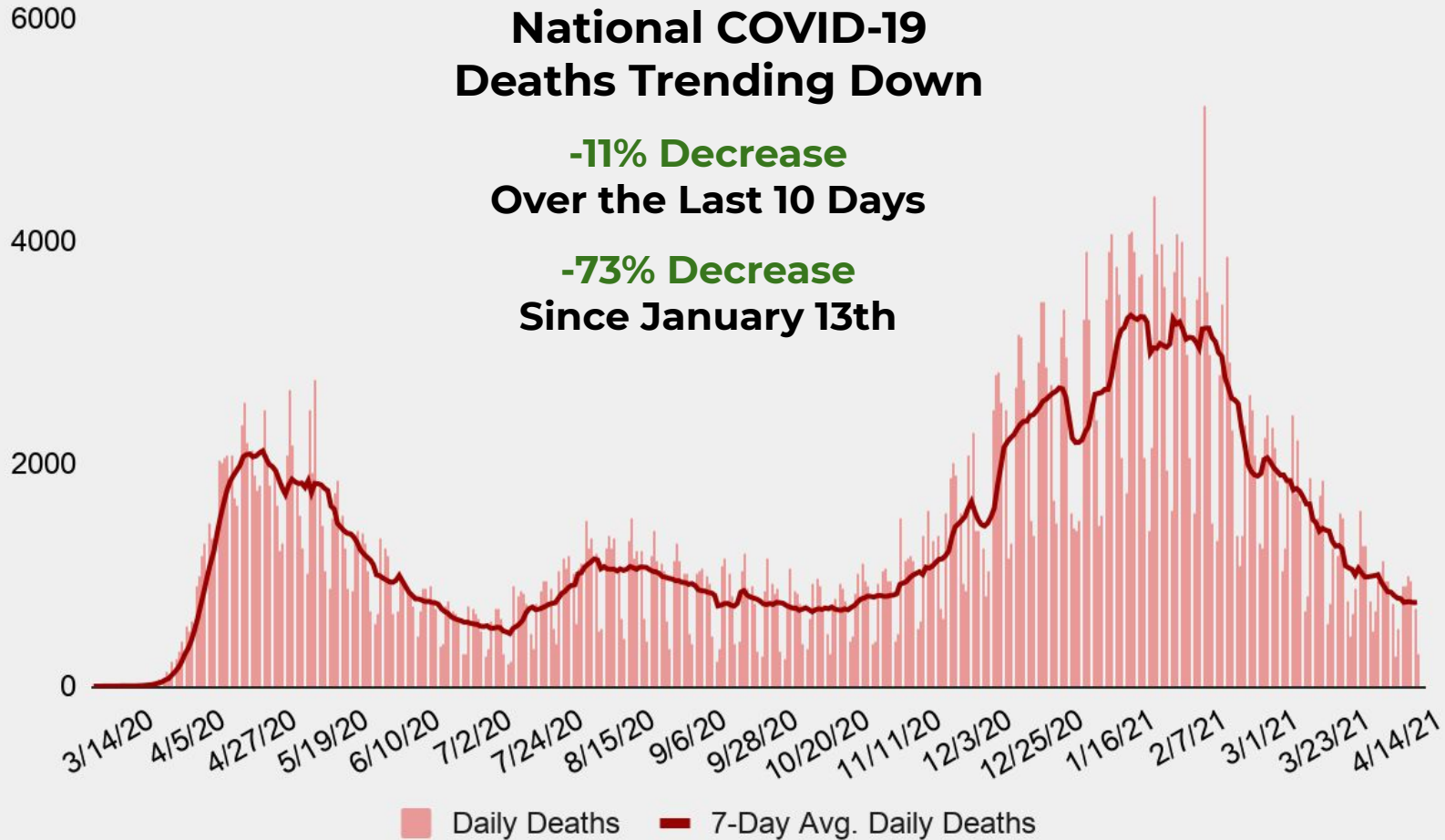Currently Hospitalized — 7-Day Avg. Currently Hospitalized

Source: Covid Tracking Project; NYT & CDC—April 12, 2021

# National COVID-19 Deaths Trending Down

**-11% Decrease**
**Over the Last 10 Days**

**-73% Decrease**
**Since January 13th**



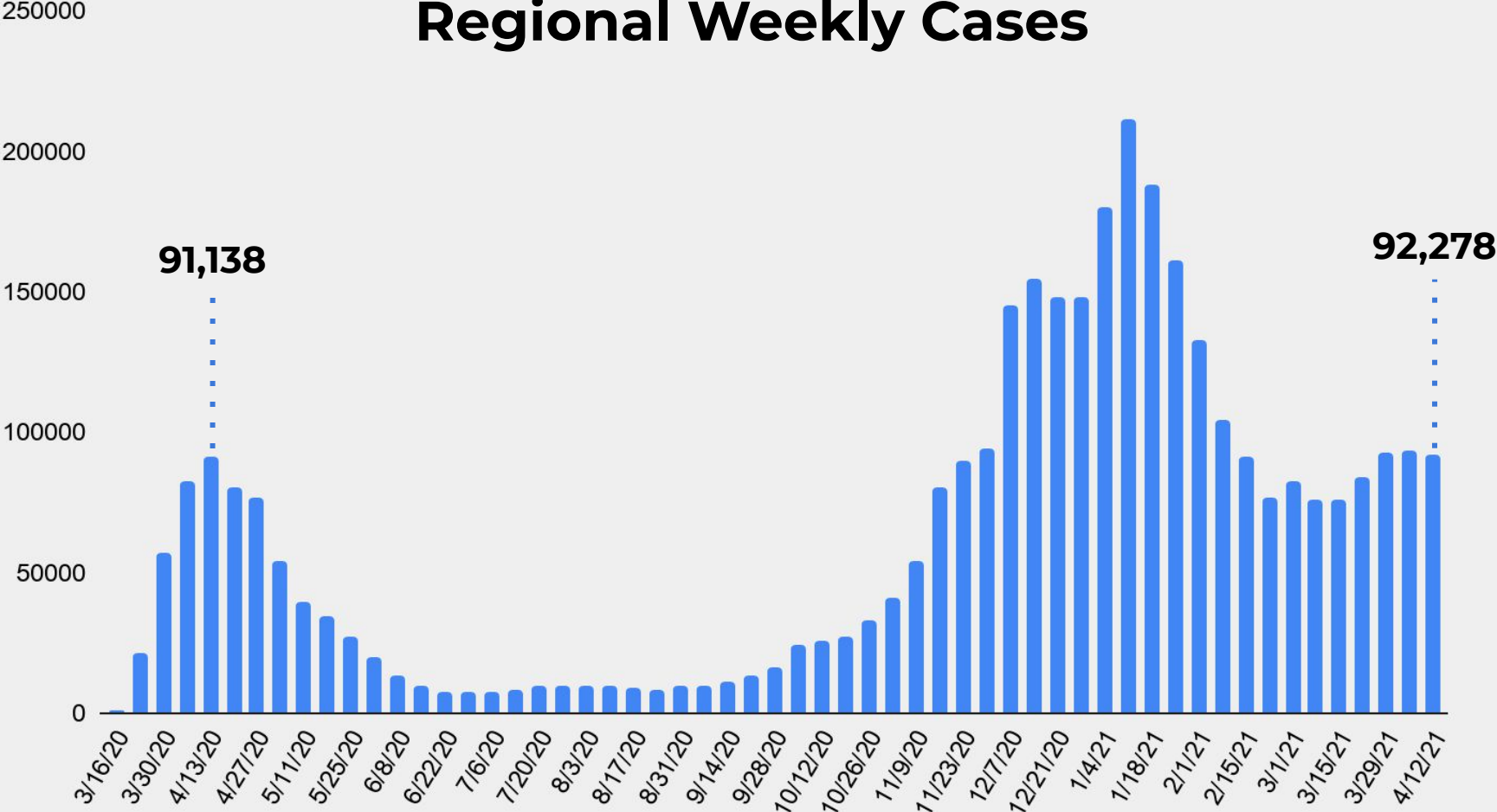Daily Deaths    ▬ 7-Day Avg. Daily Deaths

Source: Covid Tracking Project; NYT & CDC—April 12, 2021

US Weekly COVID-19 Deaths Forecast

Calculated as the 7-day sum of new infections. 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.

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# Regional Weekly Cases



**91,138**

**92,278**

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



**New Hampshire**

**K-12: 4,428 (+418)**

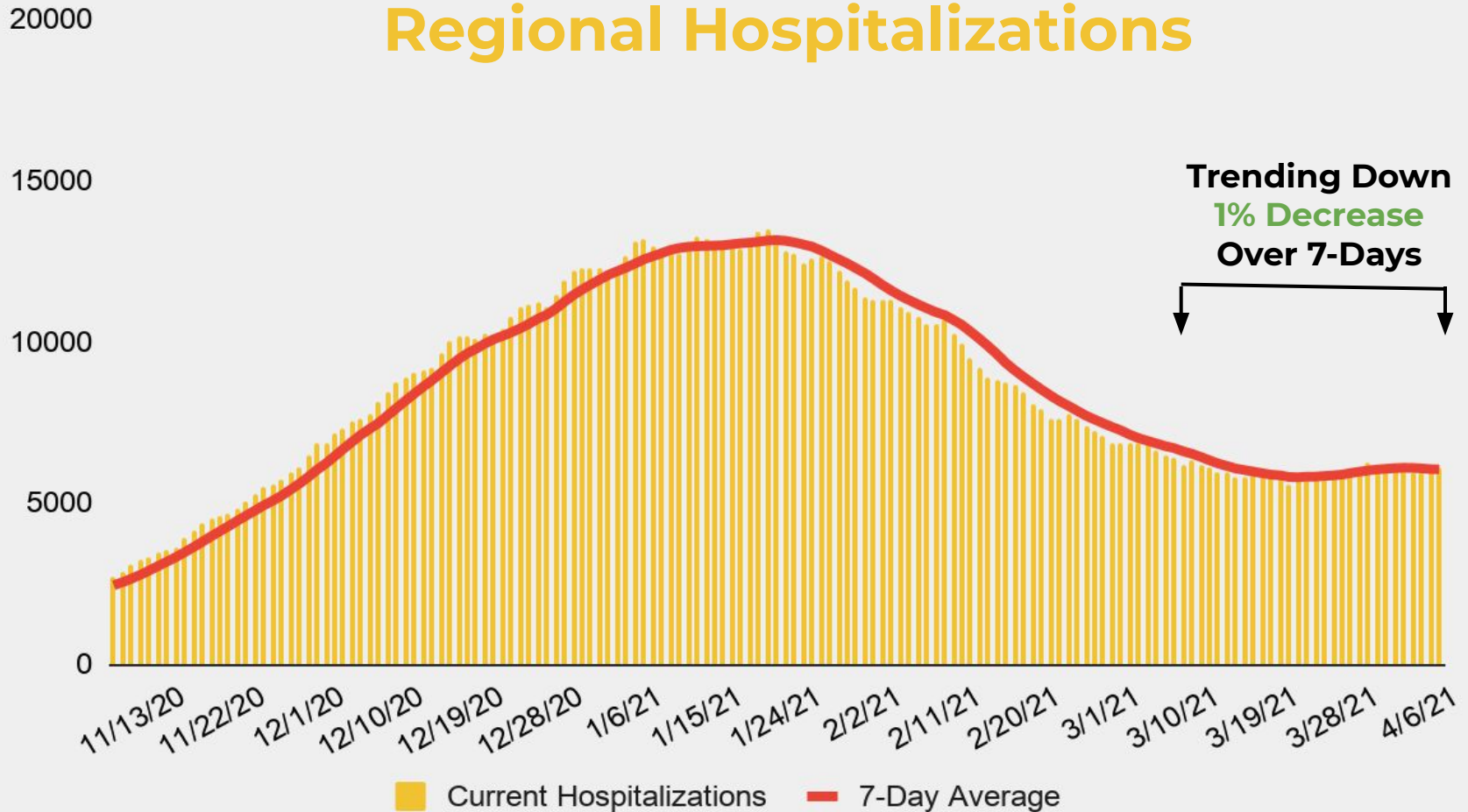**Higher Ed: 2,848 (+93)**

**Vermont**

**K-12: 1,170 Cases (+96)**

**Higher Ed: 776 (+103)**
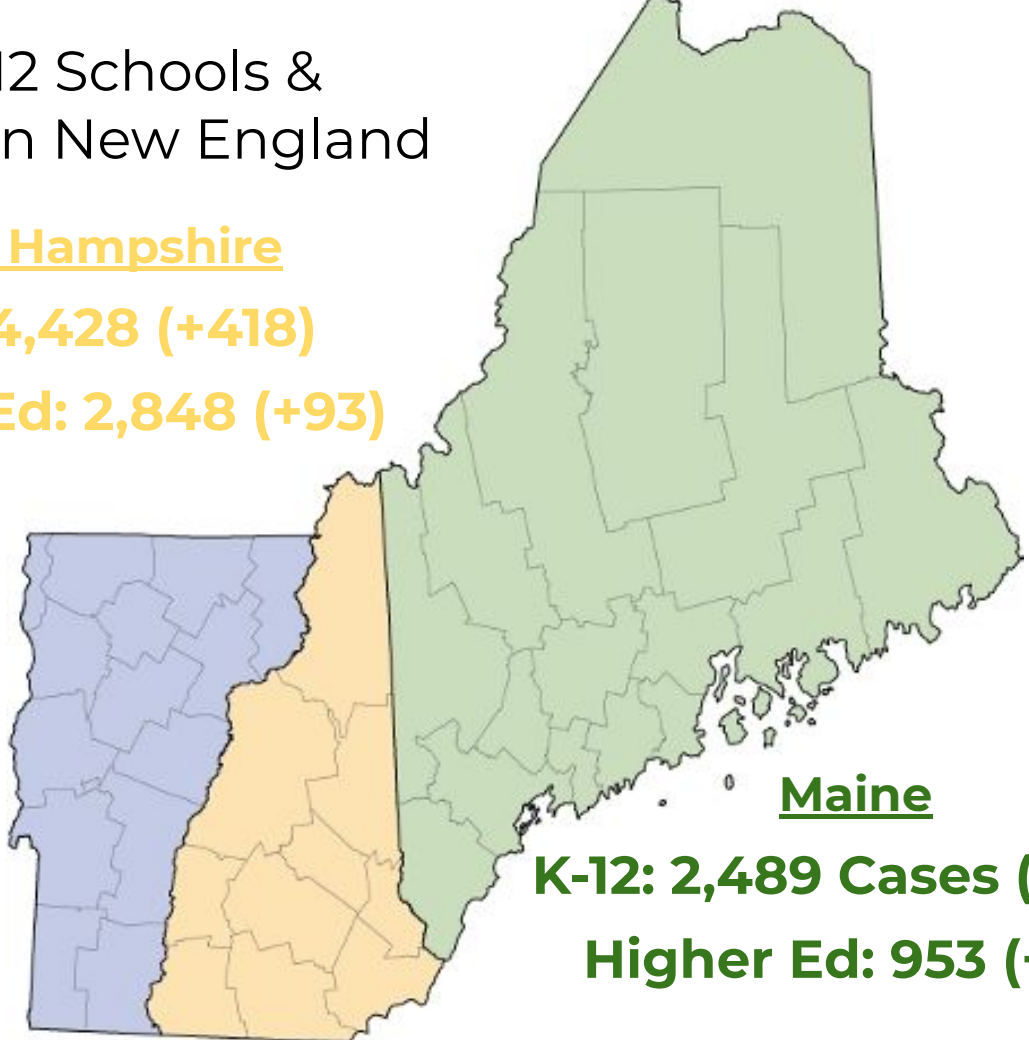
**Maine**

**K-12: 2,489 Cases (+525)**

**Higher Ed: 953 (+81)**

Source: ME, NH & VT K-12 Dashboards. K-12 cases from the full school year; Higher Ed. cases from the Spring Semester.

# Regional Hospitalizations

**Trending Down**
**1% Decrease**
**Over 7-Days**

Current Hospitalizations — 7-Day Average

Source: Covid Tracking Project (7-Day Average in CT, ME, MA, NH, NY, RI & VT)—April 12, 2021

# RESTART VERMONT

## Reopening Metrics

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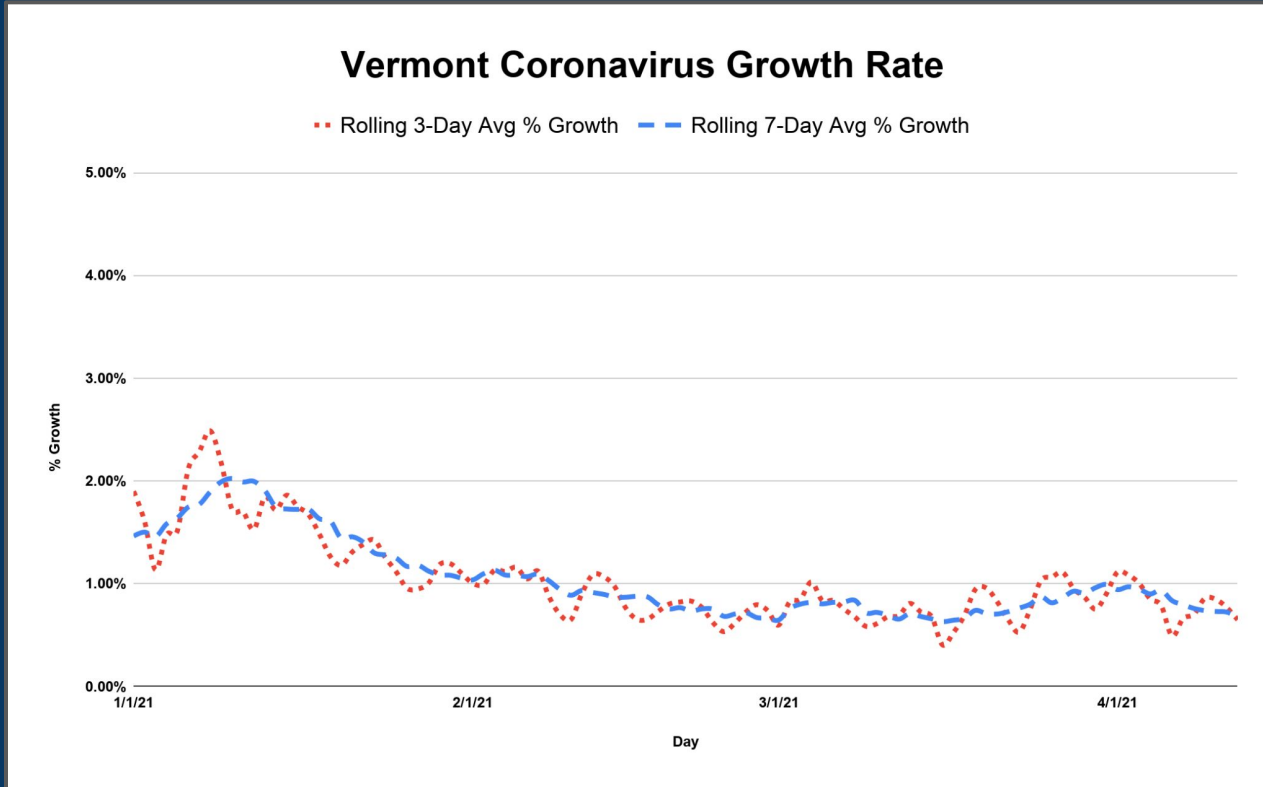4. Hospital & Critical Care Bed Capacity

# 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
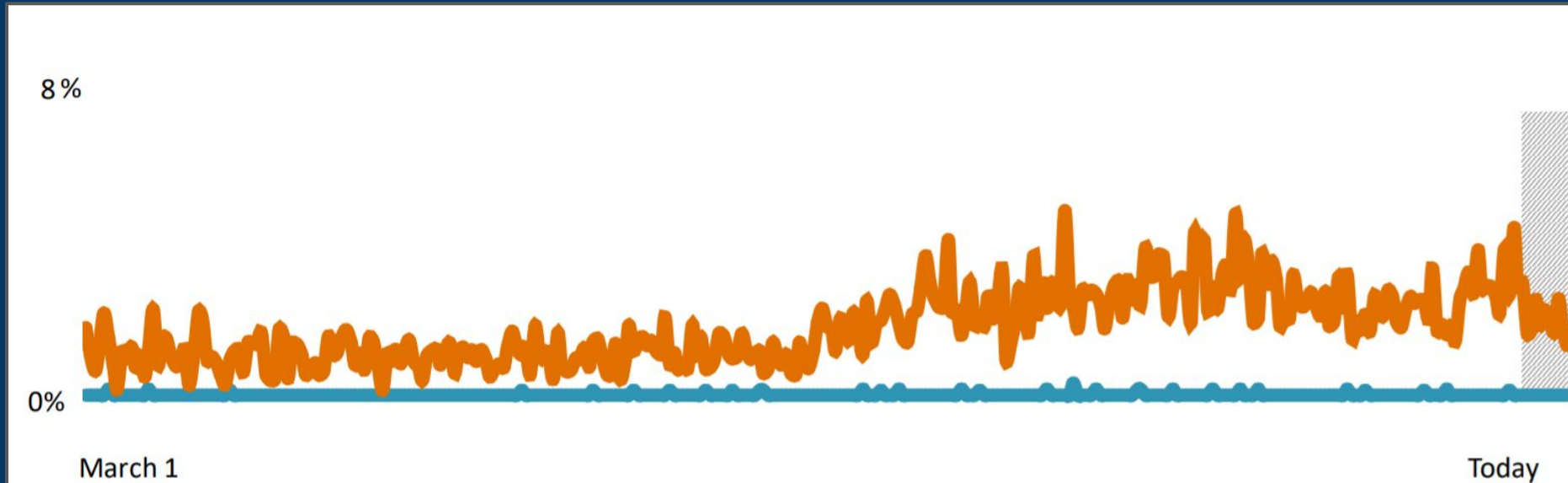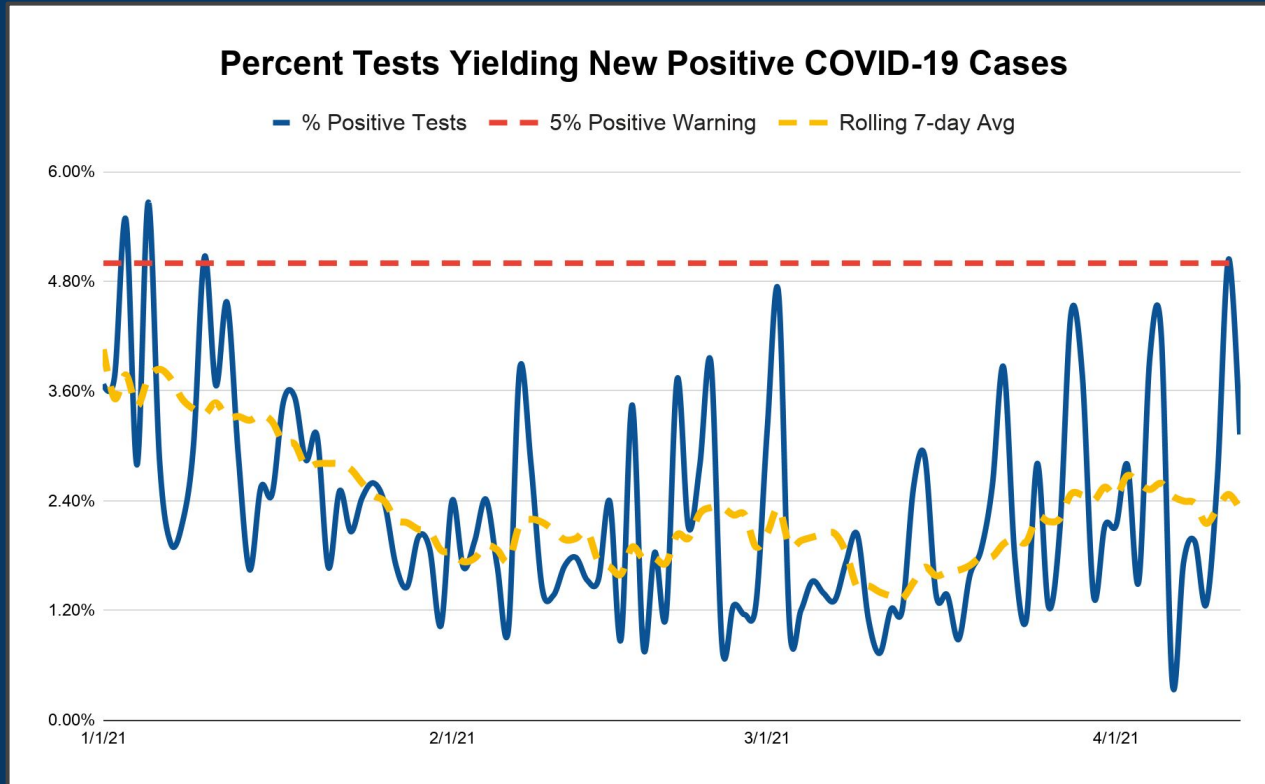
# Data Point 2: Viral Growth and Reproductive Rates

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



**Vermont Coronavirus Growth Rate**

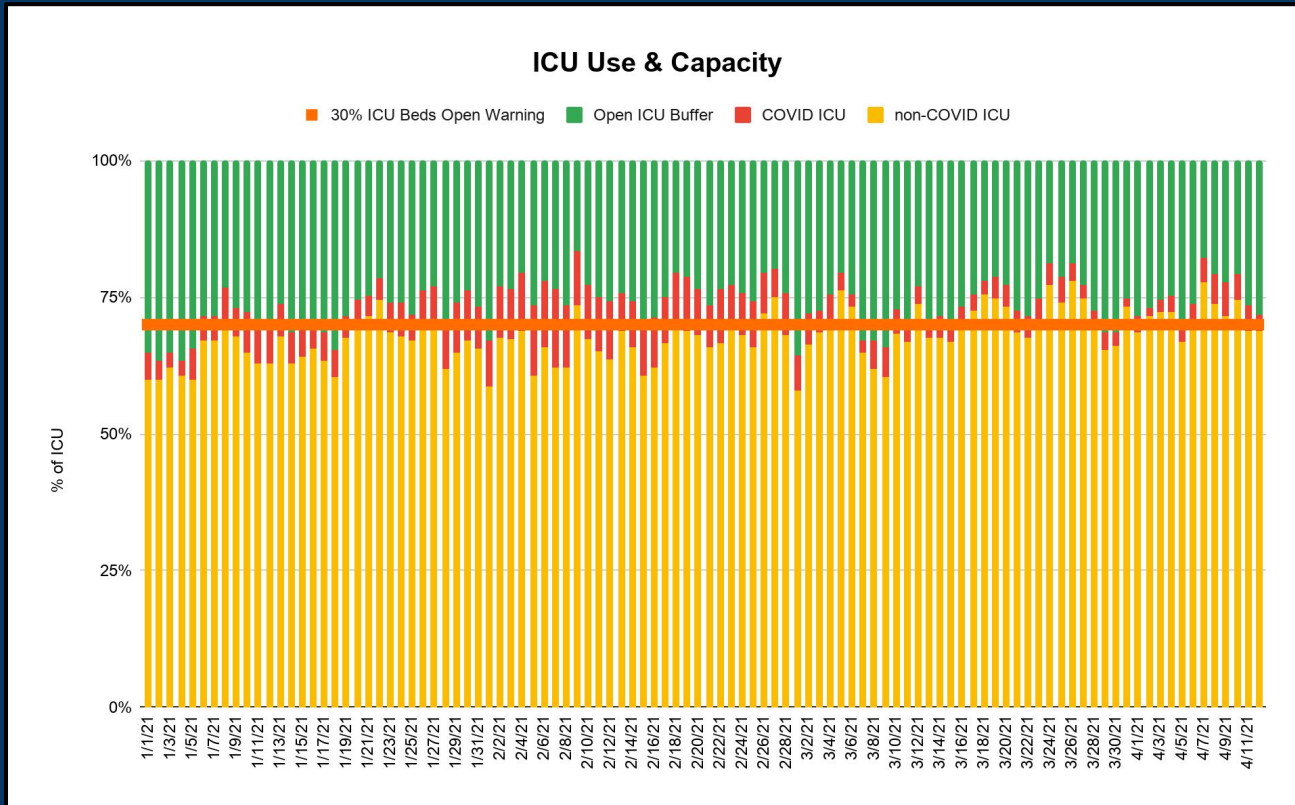Source: Vermont Department of Health—April 13, 2021

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# 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



**Percent Tests Yielding New Positive COVID-19 Cases**

Legend: % Positive Tests — 5% Positive Warning — Rolling 7-day Avg

# 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%



ICU Use & Capacity

Source: Vermont Department of Health—April 13, 2021

# Vermont Testing



## 7-Day Rolling Test Average

Legend: ▬ Rolling 7-Day Test Average    ▬ ▬ 5,000 Benchmark