COVID-19 Modeling January 19, 2022

Presentation available at:
dfr.vermont.gov

Table of Contents

Overview *(Note: the holiday weekend may have introduced reporting anomalies in COVID-19 data this week)*

New confirmed COVID-19 infections have decreased from last week's high, **down 2,115 cases**, with **every Vermont county** reporting lower rates than the previous week (slides 5 & 25). PCR testing volume remains high (6), with Vermont's per capita testing **highest in the United States** this week (15).

New England and other jurisdictions hit early with Omicron have reported case decreases for more than a week (44-49). Boston's wastewater testing is also showing **early signs of declining viral activity** (50).

With the arrival of Omicron, Vermont continues to see more breakthrough cases (9), but risk of hospitalization (10) and death (11) remains low for those fully vaccinated and boosted. Vermont has now surpassed 500 COVID-19 deaths (36).

COVID-19 **hospitalizations have reached a new record** in Vermont, with 122 patients in the hospital for the virus (29). Hospitalizations have increased 18% over the last week and ICU numbers have climbed 34% (29-30). A majority of those in both the hospital and ICU are **not fully vaccinated**. Availability of hospital beds has decreased this week with Vermont hospitals today reporting 27 open medical-surgical beds & 14 ICU beds (32).
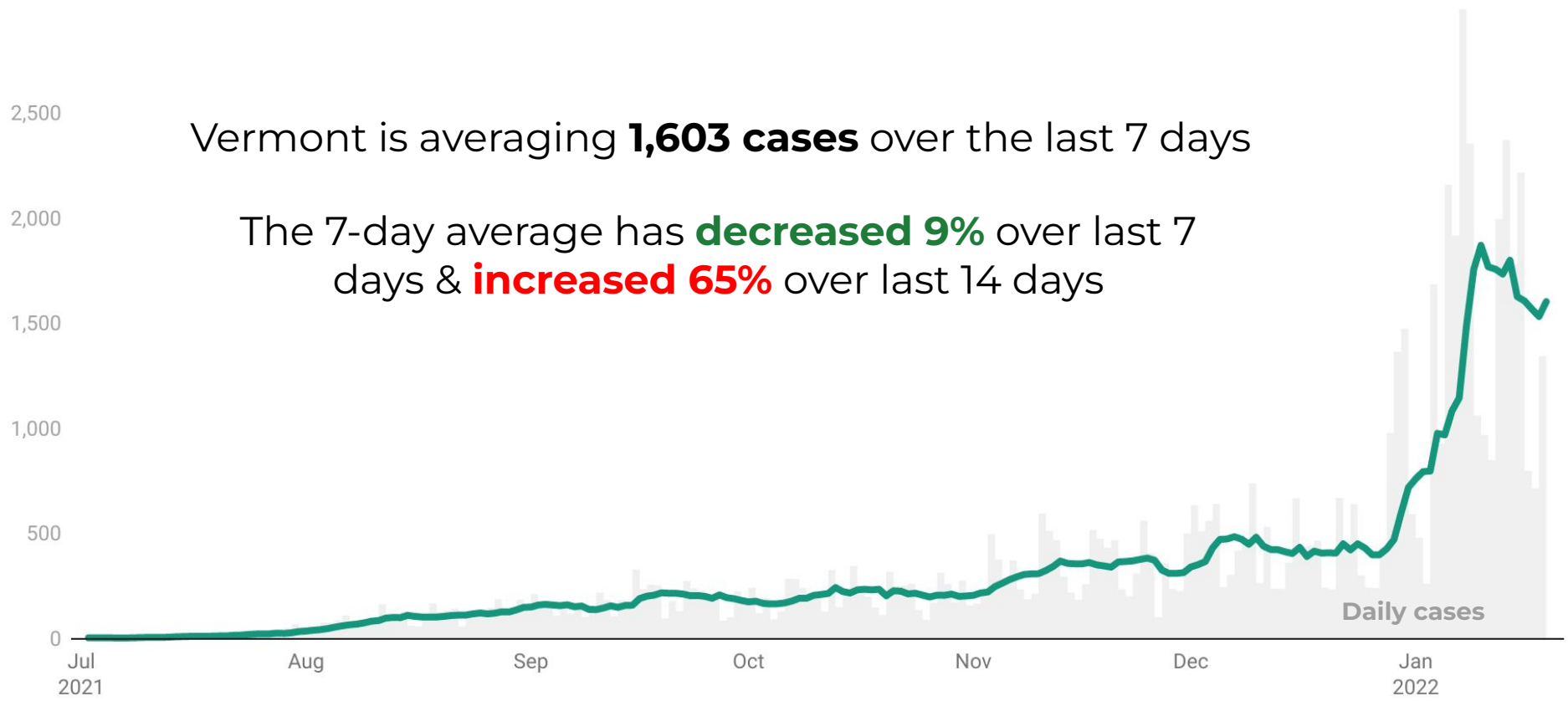
Reported influenza hospitalizations in Vermont remain very low (31). Cases in LTCFs have risen sharply this week (26), and colleges are now also reporting elevated cases as the spring semester begins (27).

Vermont COVID-19 cases are expected to **slow and possibly decline** in the coming weeks as the Omicron surge possibly subsides (23). Hospitalizations and deaths are expected to lag behind improving case trends (24).

Vermont Case Data

Vermont New COVID-19 Cases

━━ 7-Day Average

Vermont is averaging **1,603 cases** over the last 7 days

The 7-day average has **decreased 9%** over last 7 days & **increased 65%** over last 14 days

2,500

2,000

1,500

1,000

500

0

Daily cases

Jul
2021

Aug

Sep

Oct

Nov

Dec

Jan
2022

Source: VDH—January 19, 2022; created with Datawrapper

5

Vermont COVID-19 PCR Testing

— 7-Day Average

Week-over-week testing increased,
with the 7-day average **increasing 2.4%**

Number of Tests

Daily tests

20,000
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0

Jul 2021   Aug   Sep   Oct   Nov   Dec   Jan 2022

Vermont Test Positivity

▬ 7-Day Positivity Rate

Test positivity **decreased 11%**
over the last 7 days

Despite elevated test positivity, Vermont
reporting lowest figure in US

Daily test positivity

Positivity %

18
16
14
12
10
8
6
4
2
0

Jul
2021
Aug
Sep
Oct
Nov
Dec
Jan
2022

Source: VDH—January 19, 2022; created with Datawrapper; national test positivity reported by Johns Hopkins University
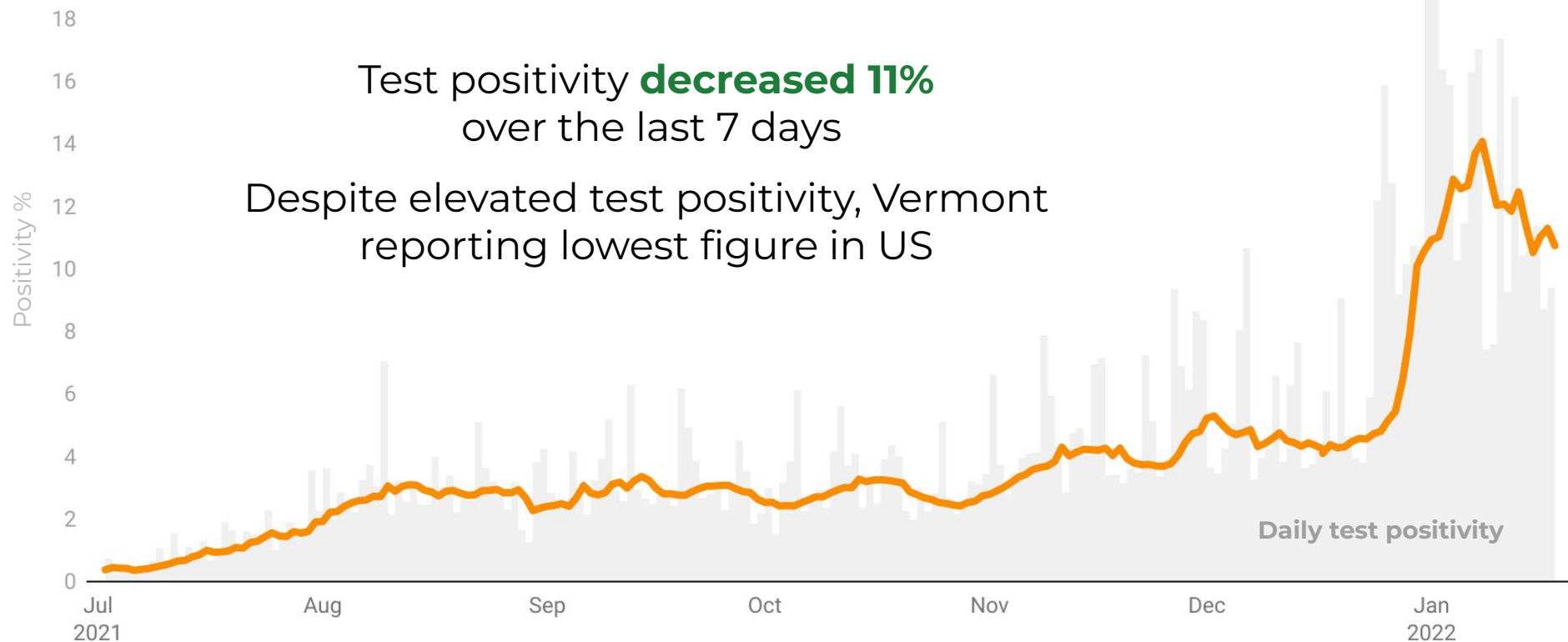
Vermont New Weekly COVID-19 Cases

Vermont reported 10,985 new COVID-19 cases this week,
2,115 fewer cases compared to last week

12,000

10,000

8,000

6,000

4,000

2,000

Apr
2020

Jul

Oct

Jan
2021

Apr

Jul

Oct

Jan
2022
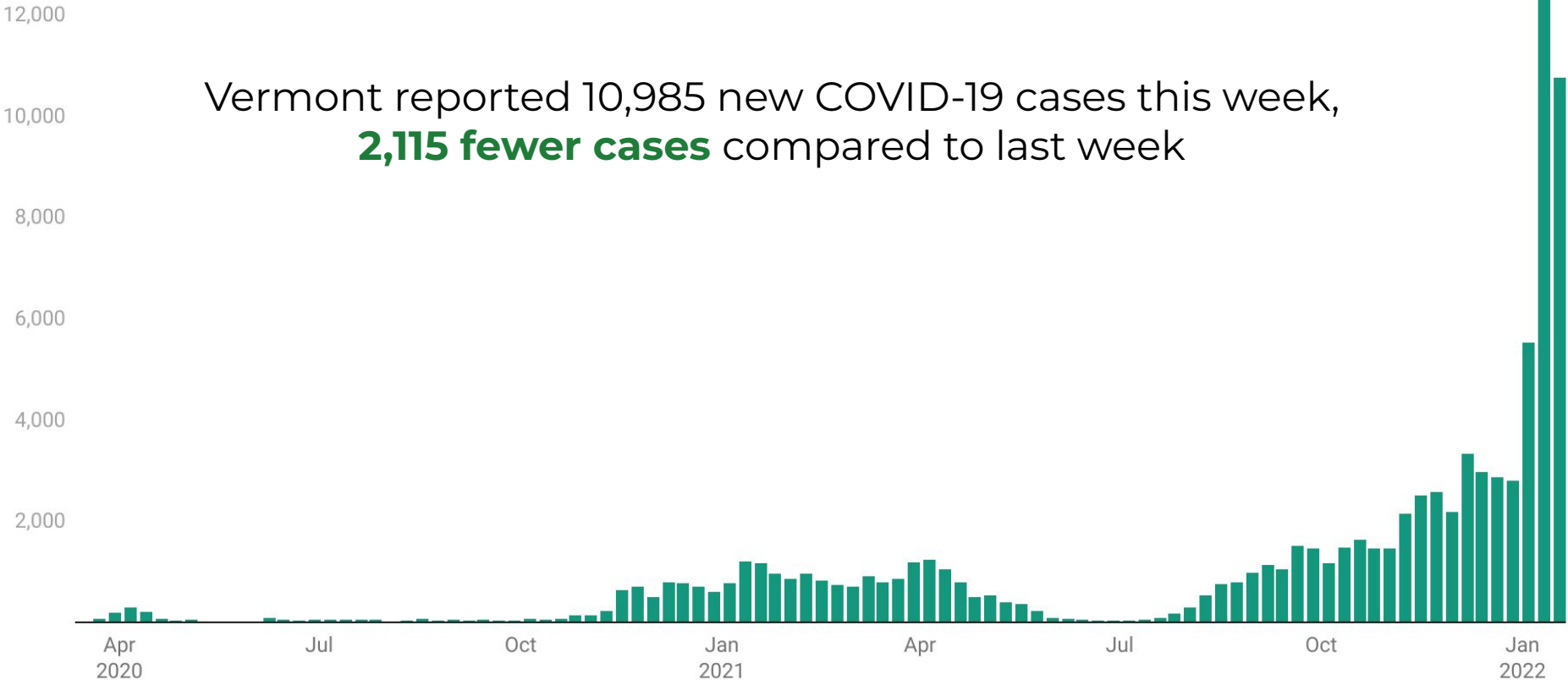
Vermont COVID-19 New Case Rates Per 100K (7-Day Average)

— Not Fully Vaccinated Case Rate   — Fully Vaccinated Case Rate

The not fully vaccinated case rate has
increased 2% in the last 7 days

The fully vaccinated rate has
decreased 13% during the same period

2.7x

New Cases per 100K

Source: VDH & CDC—January 15, 2022; Created with Datawrapper

9
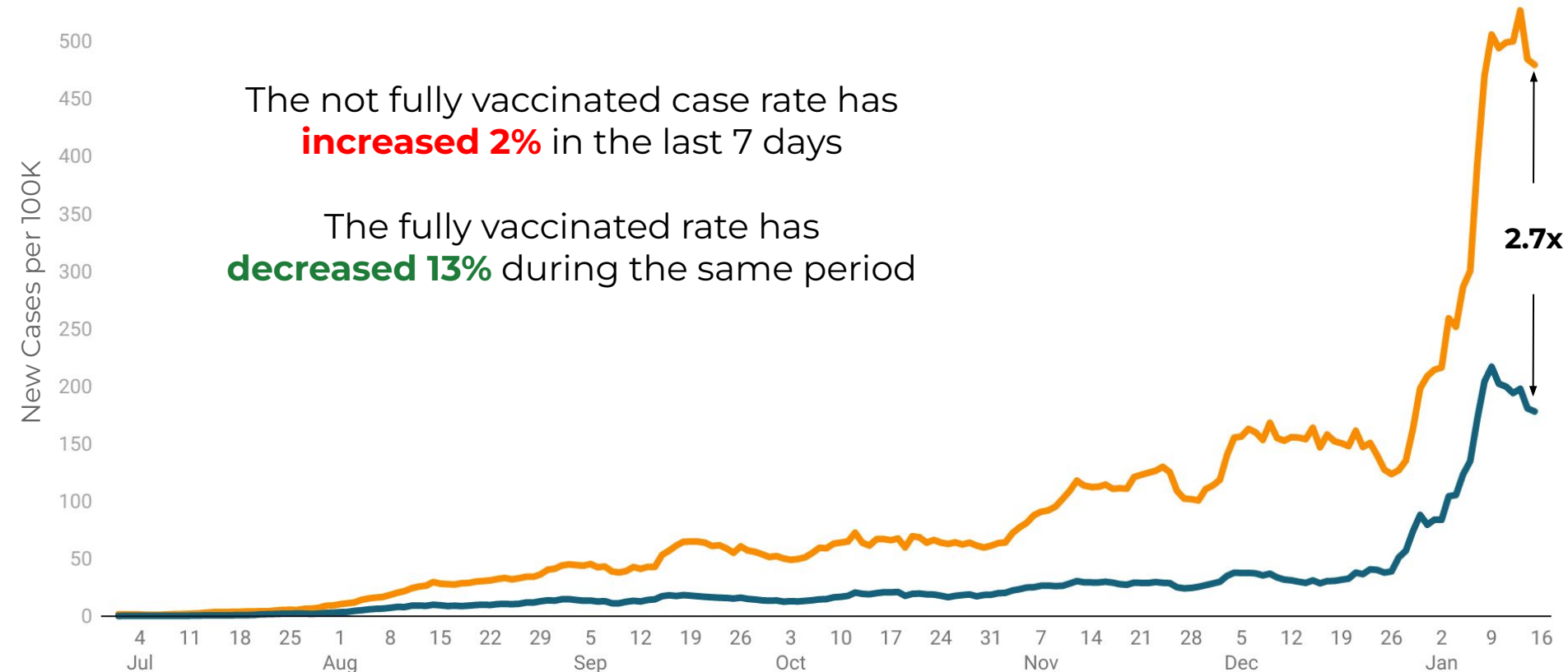
COVID-19 Hospitalizations By Vaccination Status Per 100K

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

COVID-19 Hospitalizations per 100K (y-axis)

250

200 — 170 Hospitalizations per 100K (Not Fully Vaccinated)

150

100

50 — 26 Hospitalizations per 100K (Fully Vaccinated But Not Boosted)

8 Hospitalizations per 100K (Fully Vaccinated & Boosted)

Categories: Not Fully Vaccinated | Fully Vaccinated But Not Boosted | Fully Vaccinated & Boosted

Those 18+ & **not fully vaccinated** were **20x more** likely to be hospitalized from COVID-19 over the last 6 weeks compared to those **fully vaccinated & boosted**

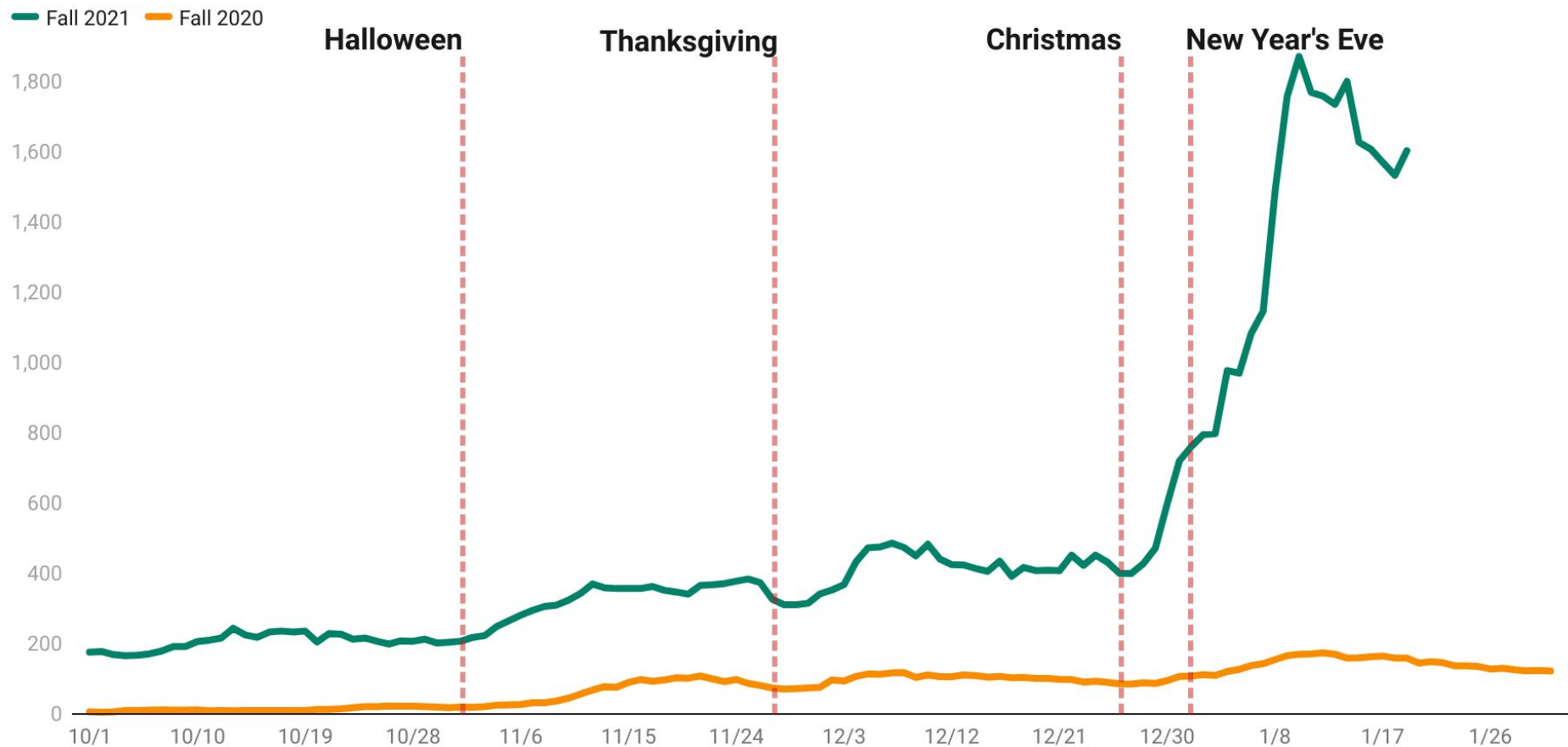# COVID-19 Deaths By Vaccination Status Per 100K

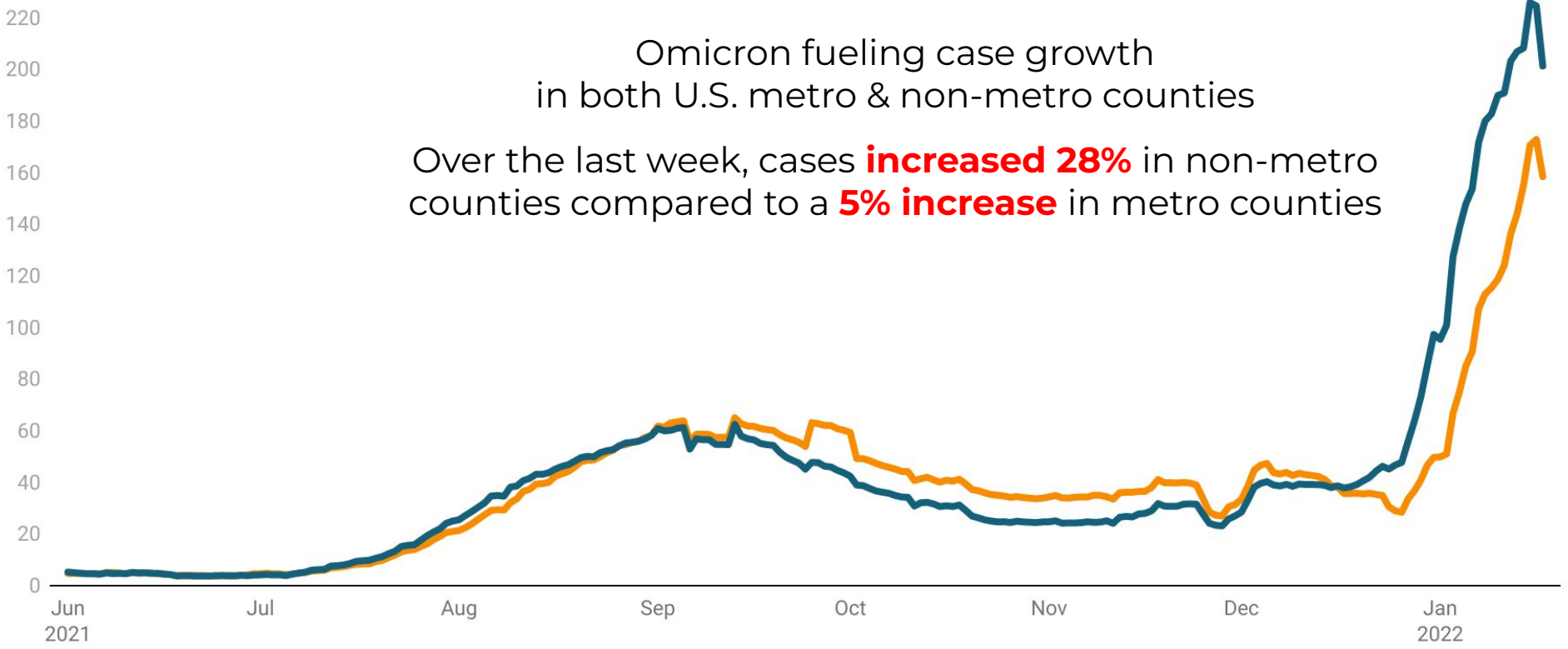Measured Among Vermont's 18 & Over Population Over the Last 6 Weeks

COVID-19 Fatalities per 100K

42.0 Deaths
per 100K

Those 18+ & **not fully vaccinated** were
15x more likely to die from COVID-19 over
the last 6 weeks compared to those **fully
vaccinated & boosted**

10.6 Deaths
per 100K

2.8 Deaths
per 100K

Not Fully Vaccinated

Fully Vaccinated But Not Boosted

Fully Vaccinated & Boosted
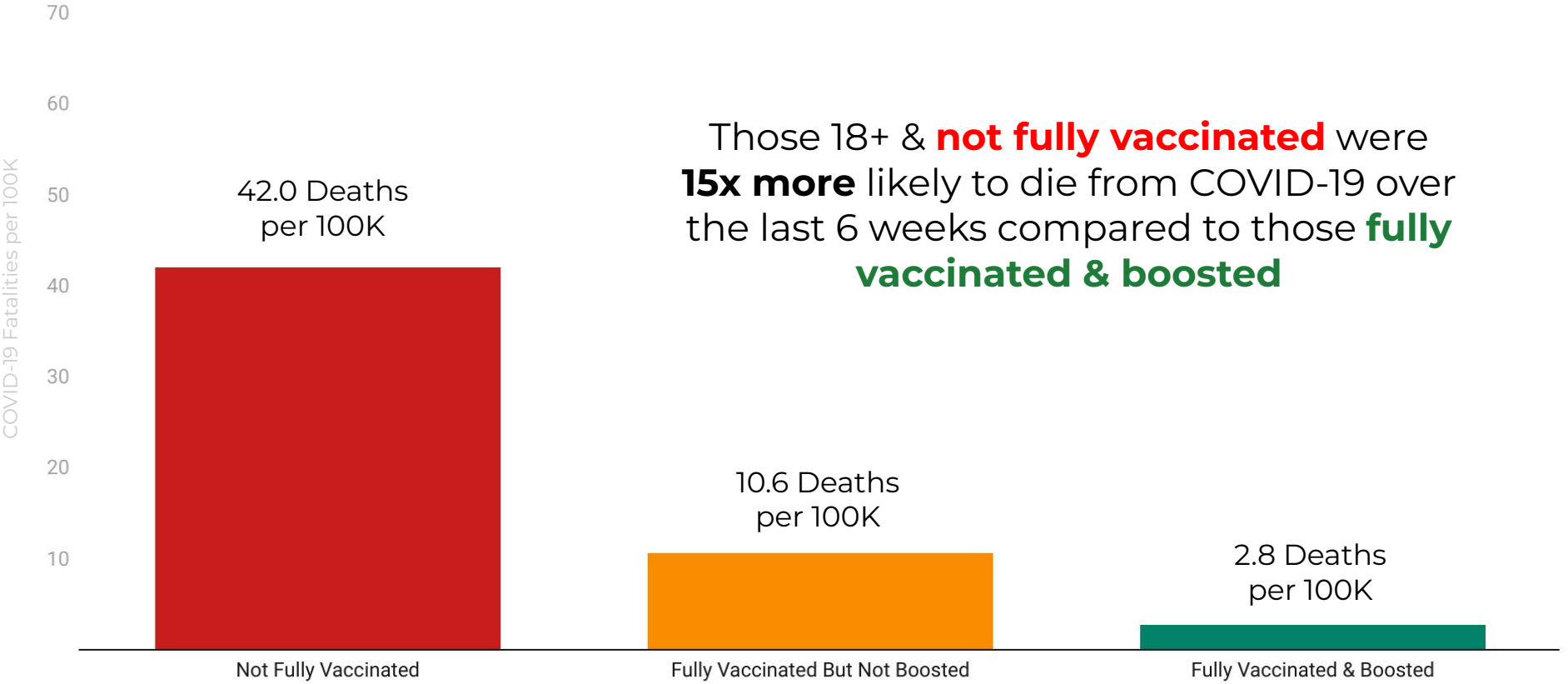
Vermont COVID-19 Cases Fall/Winter '20-'21 vs. Fall/Winter '21-'22

Fall 2021 ━ **Fall 2020**

Halloween   Thanksgiving   Christmas   New Year's Eve

Source: VDH—January 19, 2022; created with Datawrapper

COVID-19 Cases in U.S. Metro vs. Non-Metro Counties

Values are 7-day rolling averages per 100K

● Metro   ● Non-Metro

Omicron fueling case growth
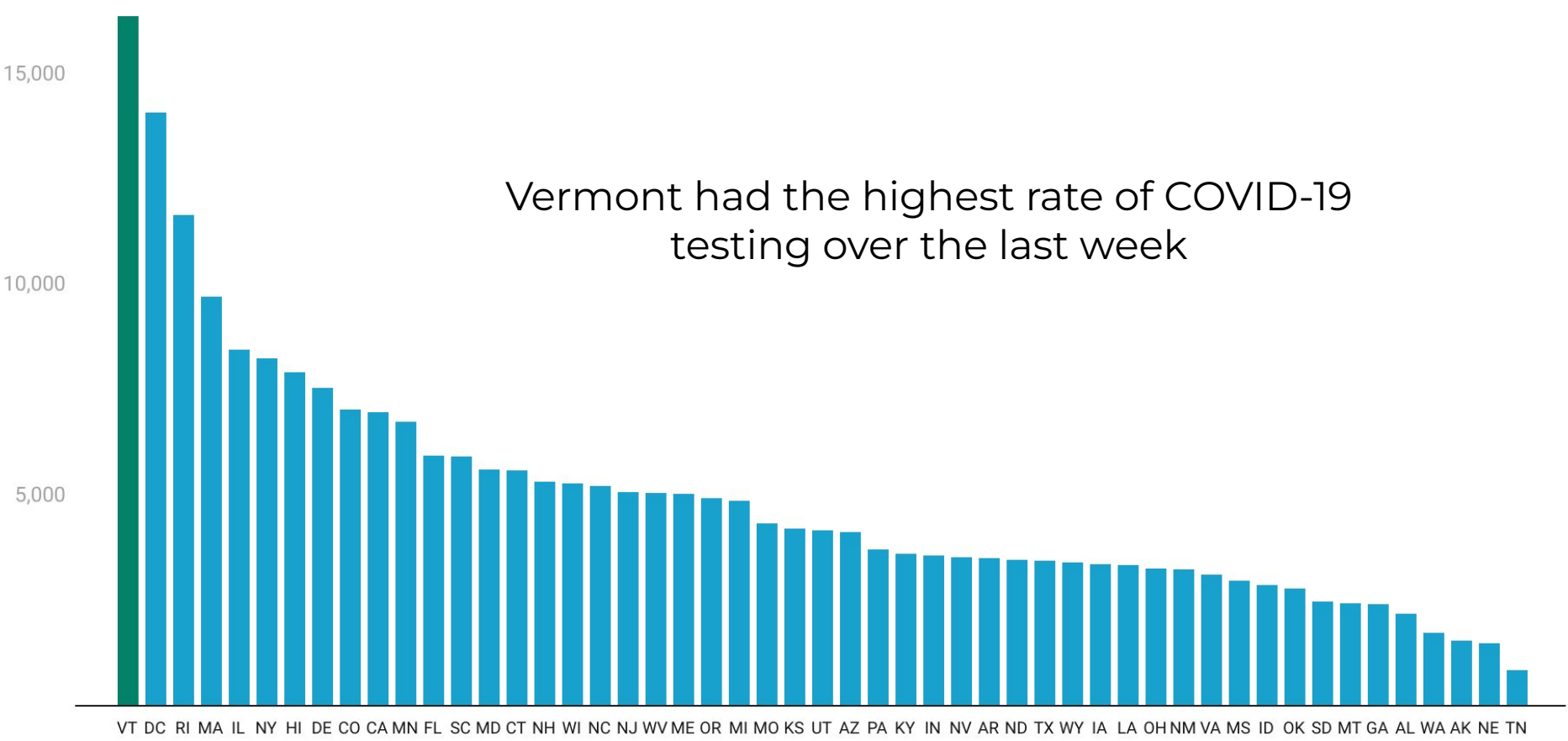in both U.S. metro & non-metro counties

Over the last week, cases **increased 28%** in non-metro
counties compared to a **5% increase** in metro counties

Source: Johns Hopkins University—January 18, 2022

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

Vermont had the 11th-highest rate of new COVID-19 cases over the last week
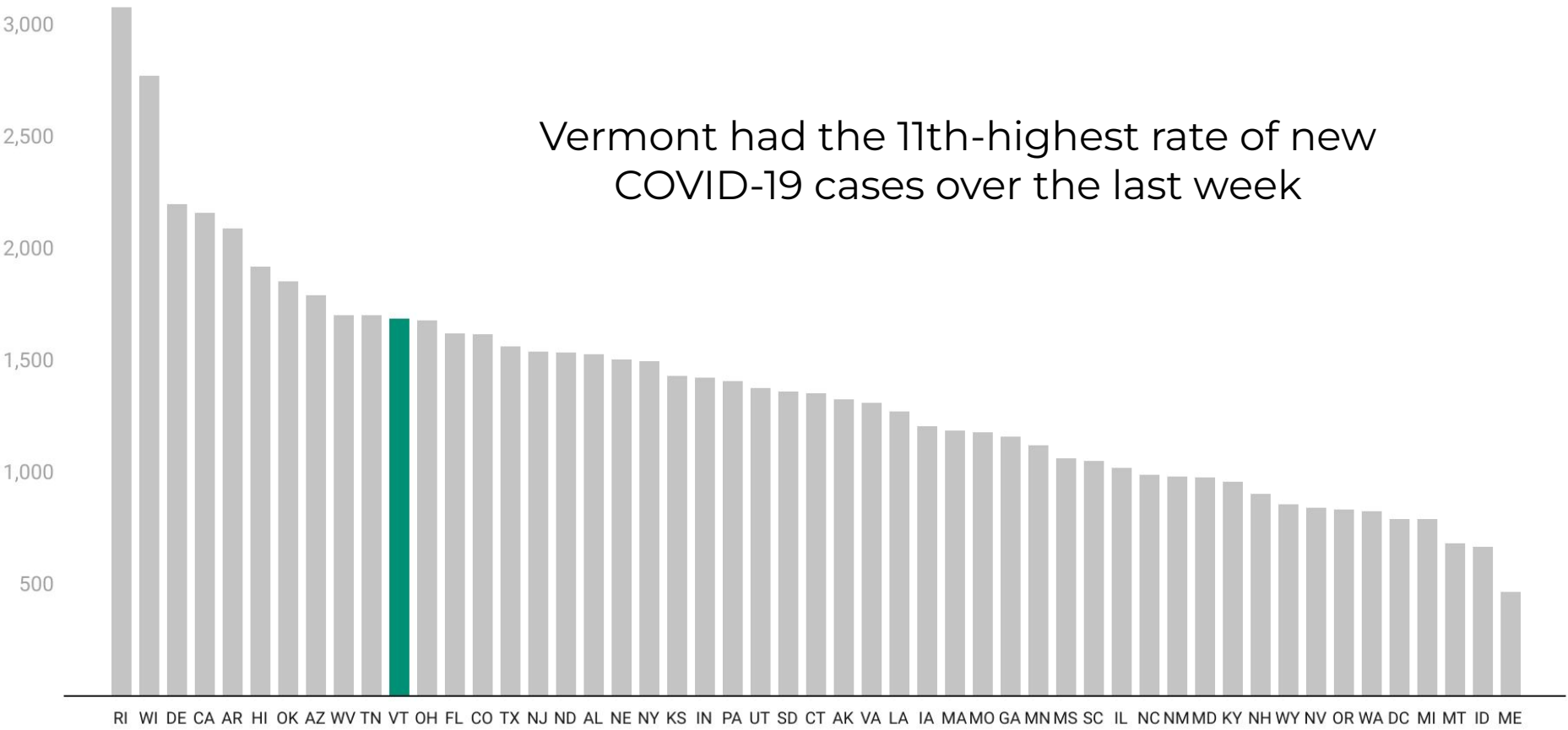
COVID-19 Testing Per 100K Last 7 Days

Vermont had the highest rate of COVID-19 testing over the last week

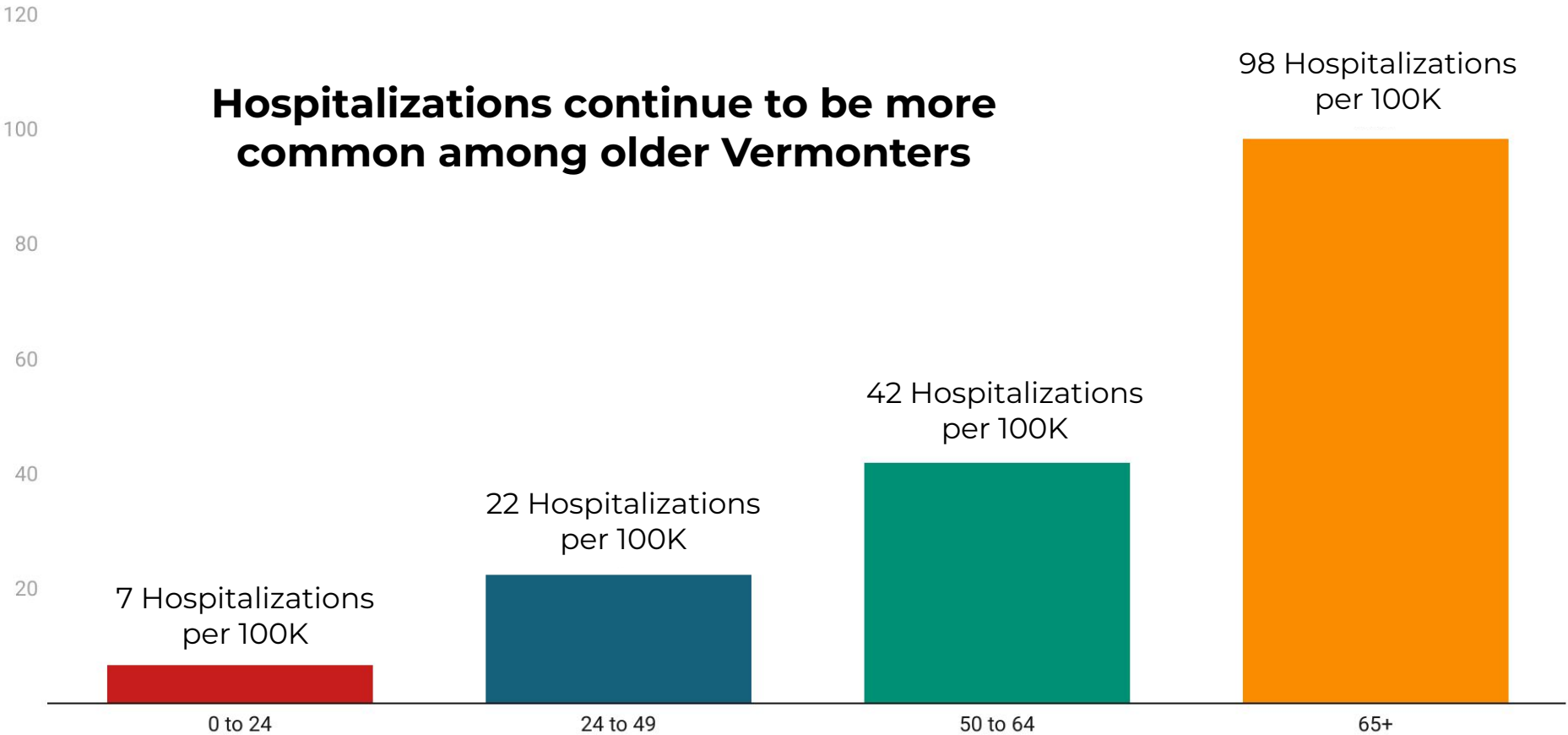# Vermont Case Rates Per 100K By Age (7-Day Average)

Legend: ● 0 to 24 ● 24 to 49 ● 50 to 64 ● 65+

Over the last 7 days, cases have:

- **Decreased 8%** for ages **0 to 24**
- **Decreased 12%** for ages **25 to 49**
- **Decreased 8%** for ages **50 to 64**
- **Decreased 2%** for ages **65+**

Source: VDH—January 19, 2022; created with Datawrapper
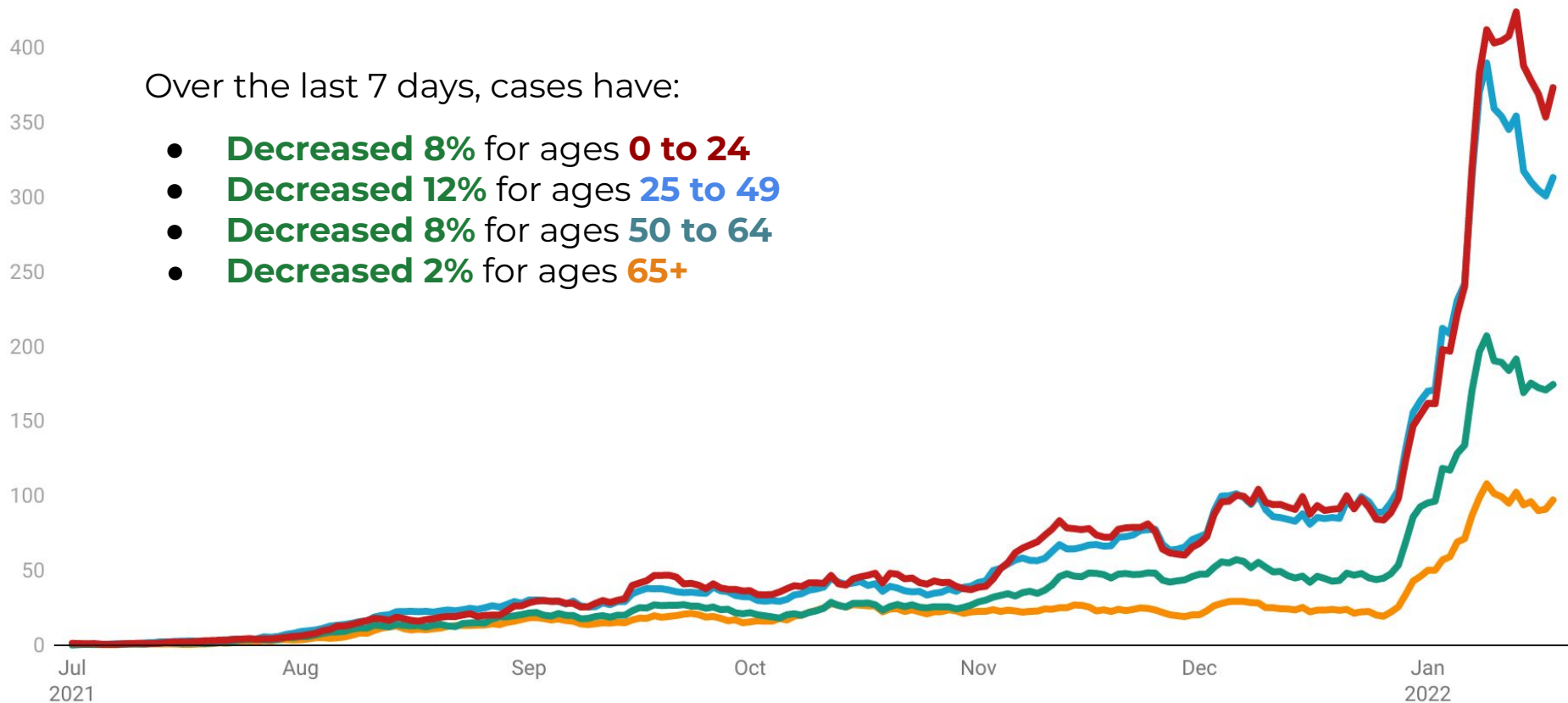
COVID-19 Hospitalization Rate Per 100K By Age Over The Last 6 Weeks

Hospitalizations continue to be more common among older Vermonters

98 Hospitalizations per 100K

42 Hospitalizations per 100K

22 Hospitalizations per 100K

7 Hospitalizations per 100K
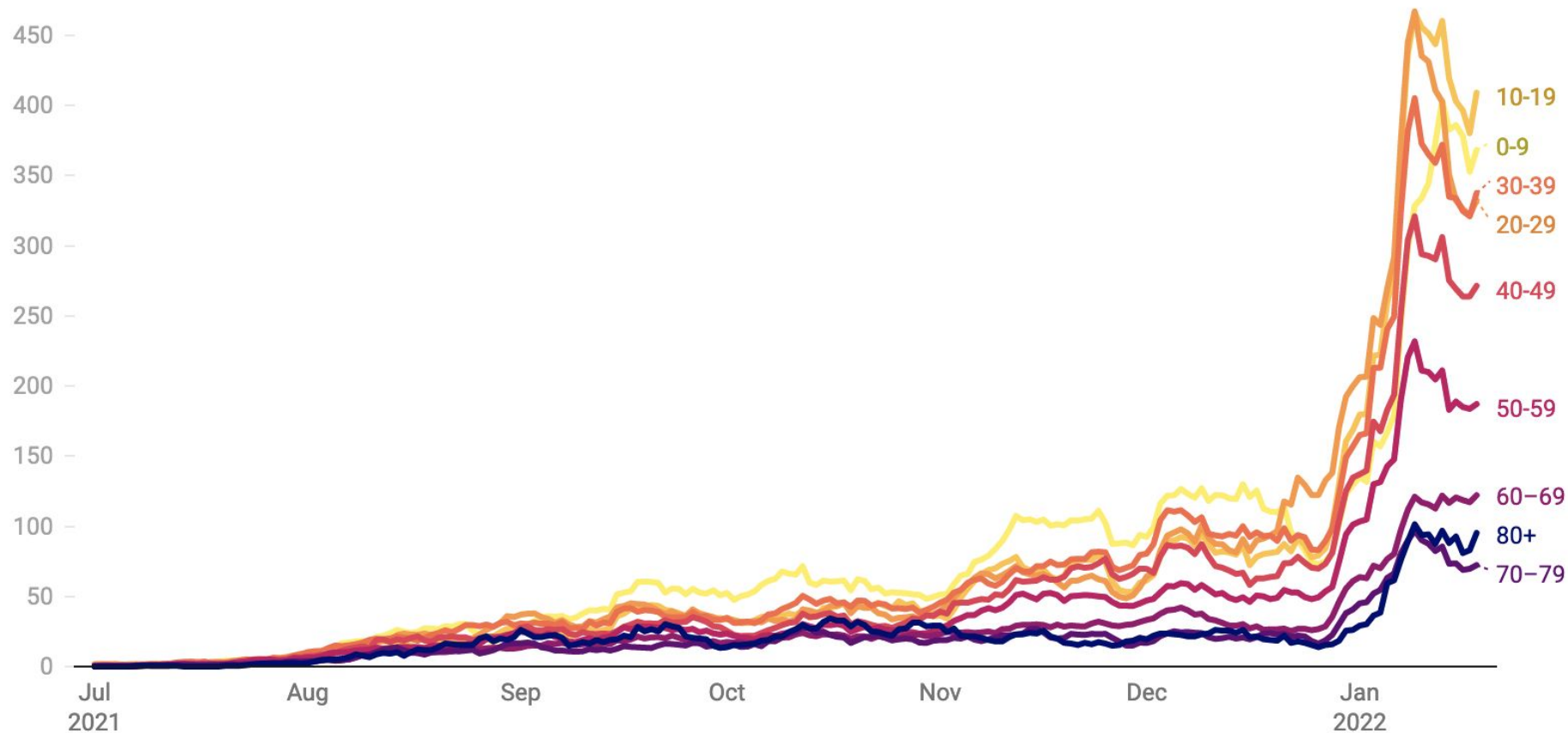
| 0 to 24 | 24 to 49 | 50 to 64 | 65+ |

Source: VDH—January 15, 2022; created with Datawrapper

17

Age of Infected Vermonters

Median age of COVID positive individuals in VT over the last 14 days.
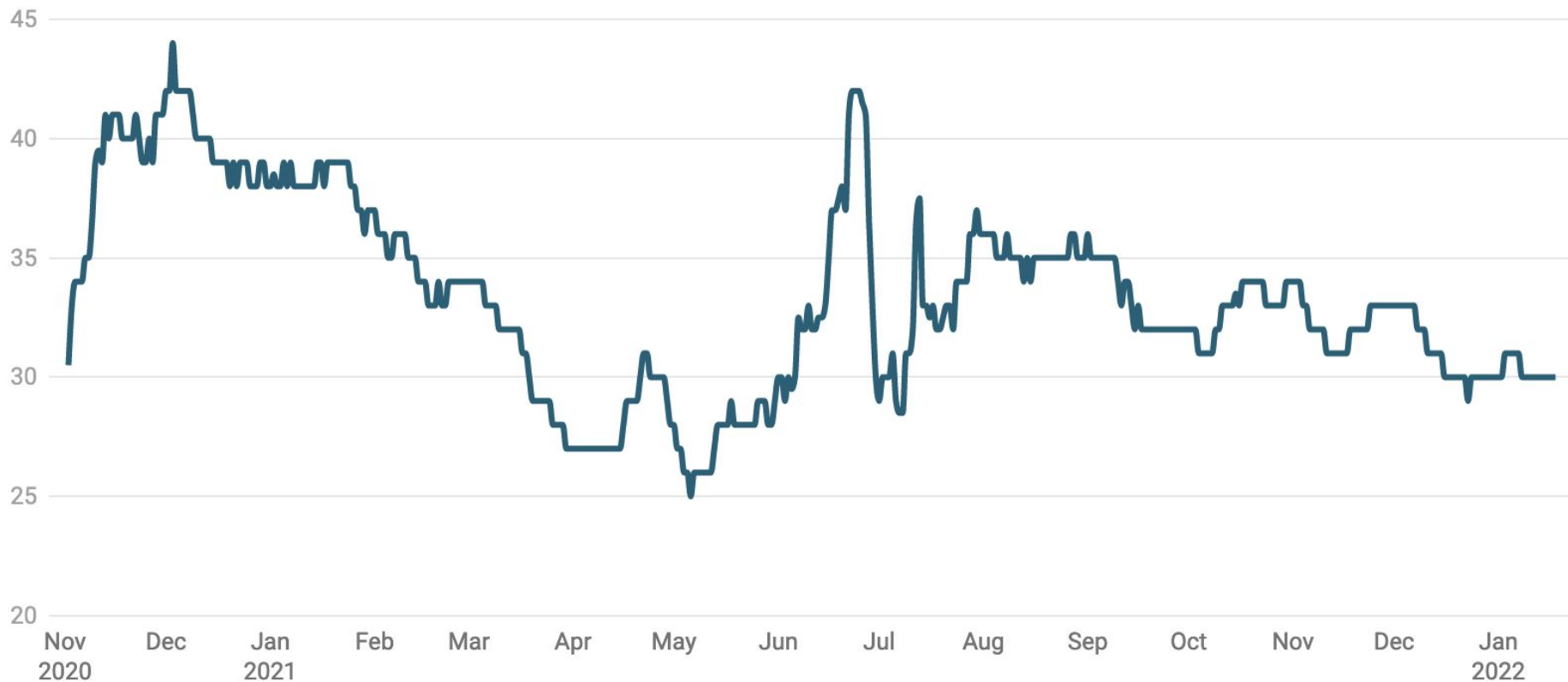
VT COVID-19 Infections per 100K by Age Group

Source: VDH—January 19, 2022; created with Datawrapper

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

Legend: 0-4 | 5-11 | 12-18 | 19+

Y-axis: Infections per 100K — 0, 100, 200, 300, 400, 500

X-axis: Aug 2021, Sep, Oct, Nov, Dec, Jan 2022

Vermont Case Rate & Vaccination by Age Band

— New Infections per 100K (14-Day Average)
- - - Percent Received First Vaccine Dose
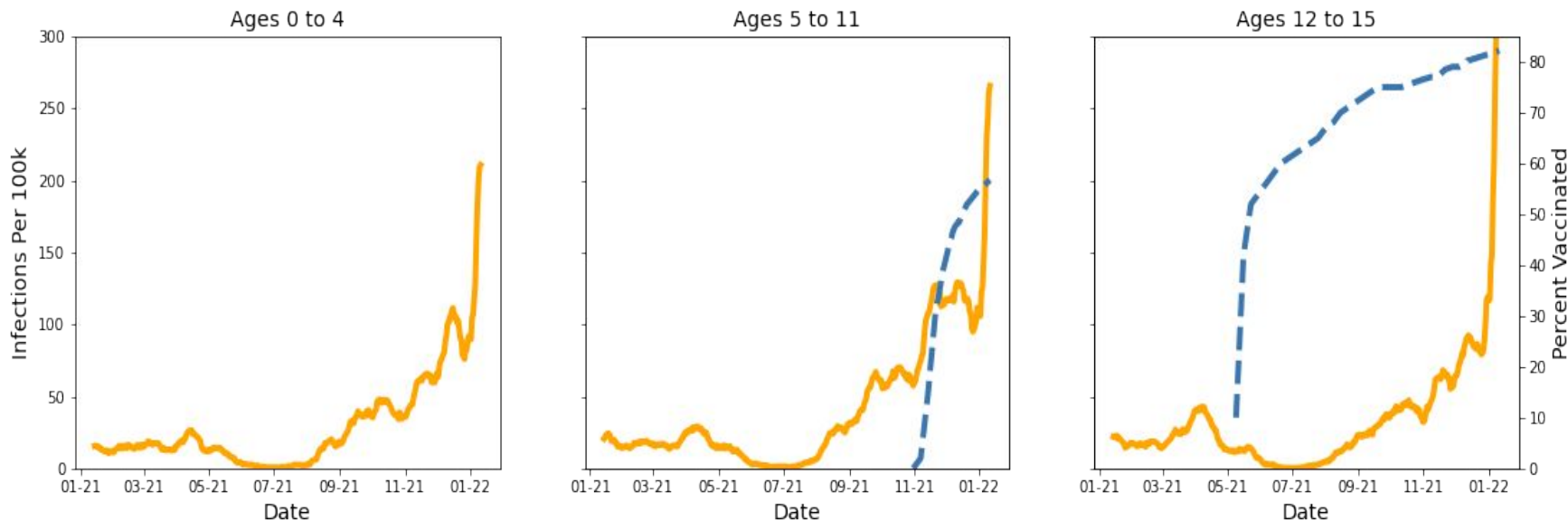
Source: VDH—January 18, 2022
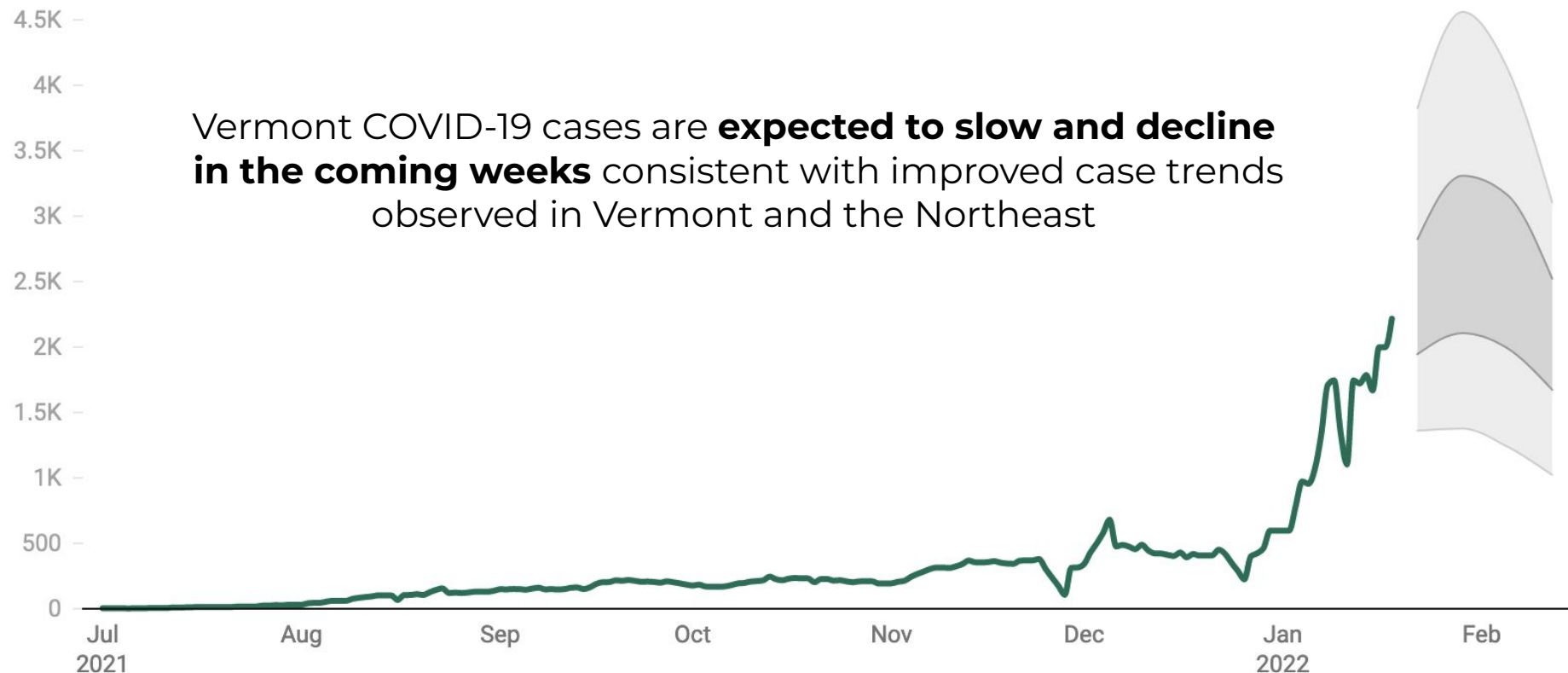
Vermont Case Rate & Vaccination by Age Band
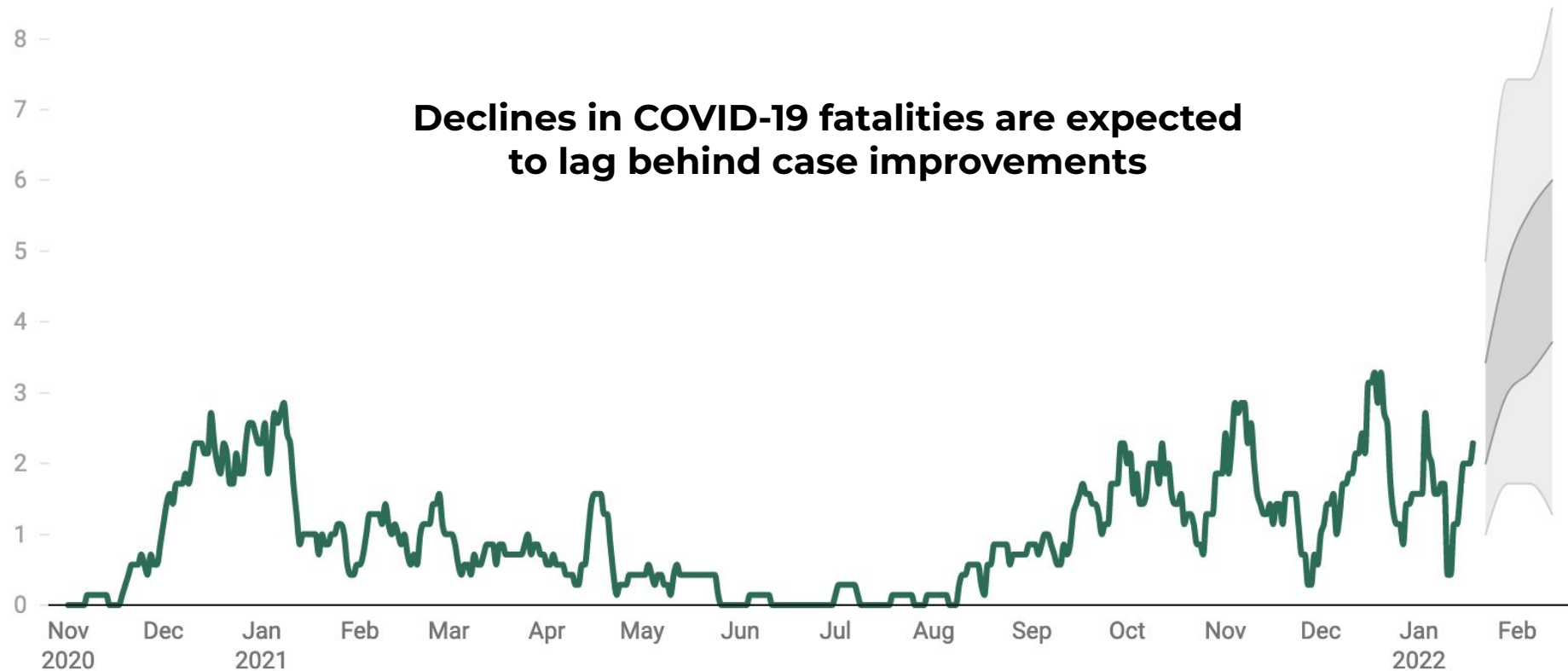
Source: VDH—January 18, 2022

VT COVID-19 Infection Confidence Intervals

Calculated as a 7-day mean. Inner and outer bands represent 50% and 95% confidence intervals, respectively.
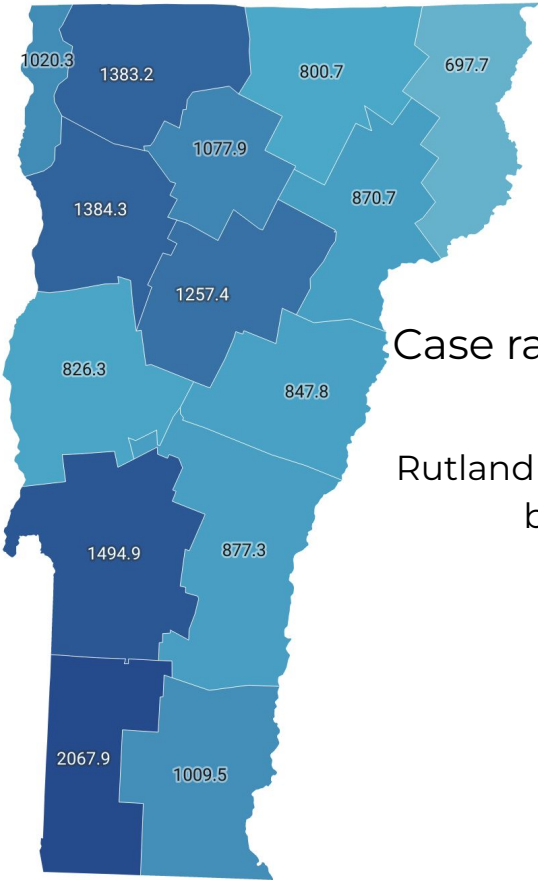
Vermont COVID-19 cases are **expected to slow and decline in the coming weeks** consistent with improved case trends observed in Vermont and the Northeast

VT COVID-19 Death Confidence Intervals

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

Declines in COVID-19 fatalities are expected to lag behind case improvements

Source: Johns Hopkins University & CDC—January 18, 2022

24

Vermont Weekly Cases by County (per 100,000)

Results Reported January 6 to 12

0   1600

1020.3
1383.2
800.7
697.7
1077.9
1384.3
870.7
1257.4
826.3
847.8
1494.9
877.3
2067.9
1009.5

Vermont Weekly Cases by County (per 100,000)

Results Reported January 13 to 19

0   1600

670.5
1168.1
634.7
551.7
431.9
766.7
1006.3
849.7
642.6
567.5
1362.7
706.9
1239.1
679.9

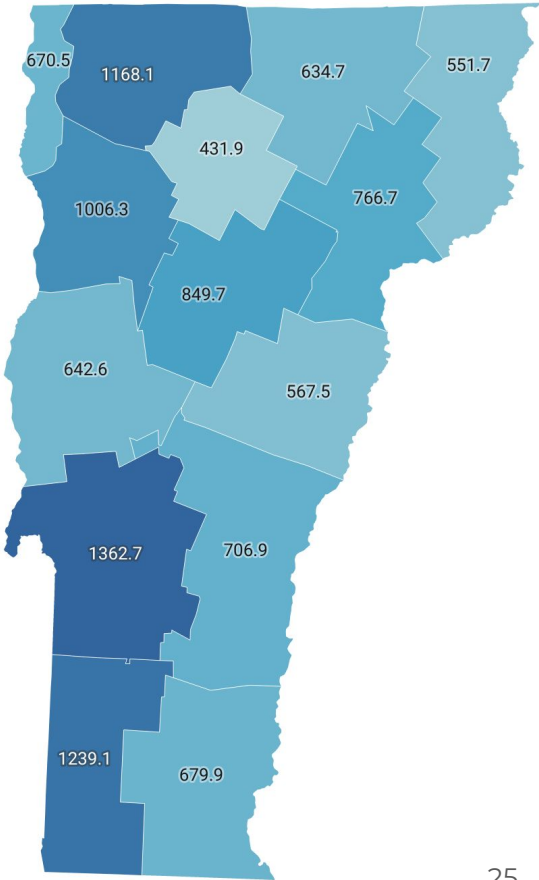Case rates **decreased in every county** this past week

Rutland reporting highest case rates, followed by Bennington and Chittenden

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 Outbreaks in Long Term Care Facilities

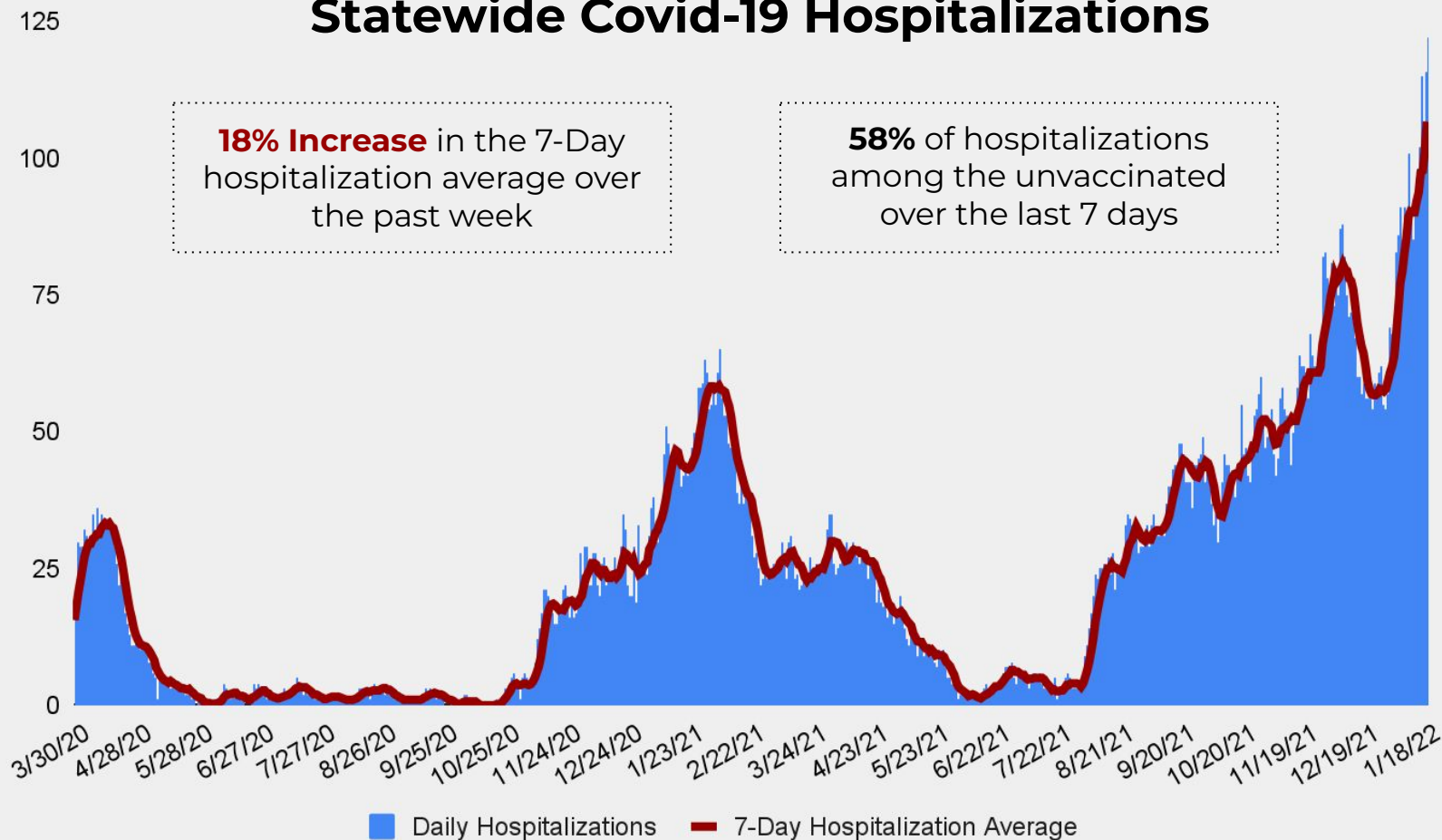| Facility Name	Total COVID-19 Cases
Mayo Rehab & Continuing Care, *Northfield*	51
Bennington Health & Rehab	49
Rutland Health & Rehab	34
The Manor, *Morrisville*	20
Harbor Village Senior Living, *South Burlington*	18
St. Albans Healthcare & Rehab	18
Elderwood at Burlington	16
The Pines at Rutland Center for Nursing & Rehab	16
Pines Rehab & Health Center, *Lyndonville*	14
Pine Heights at Brattleboro	13
The Residence at Quarry Hill, *South Burlington*	6
The Village at White River Junction	6
Wake Robin, *Shelburne*	7
Valley Terrace, *White River Junction*	Not Shown
Birchwood Terrace Rehab & Healthcare, *Burlington*	Not Shown
Total (shown)	**268**

Source: Vermont Department of Health—January 18, 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

Metric	Week 1	Week 2
Tests	4,953	10,612
Positive For COVID-19	313	382

Vermont Hospitalization Data

Statewide Covid-19 Hospitalizations

18% Increase in the 7-Day hospitalization average over the past week

58% of hospitalizations among the unvaccinated over the last 7 days

Daily Hospitalizations
7-Day Hospitalization Average

Source: VDH—January 19, 2022

29

Statewide Covid-19 Critical Care Usage

34% Increase in the 7-Day ICU average over the past week

58% of critical care stays among the unvaccinated over the last 7 days

Daily ICU —— 7-Day ICU Average
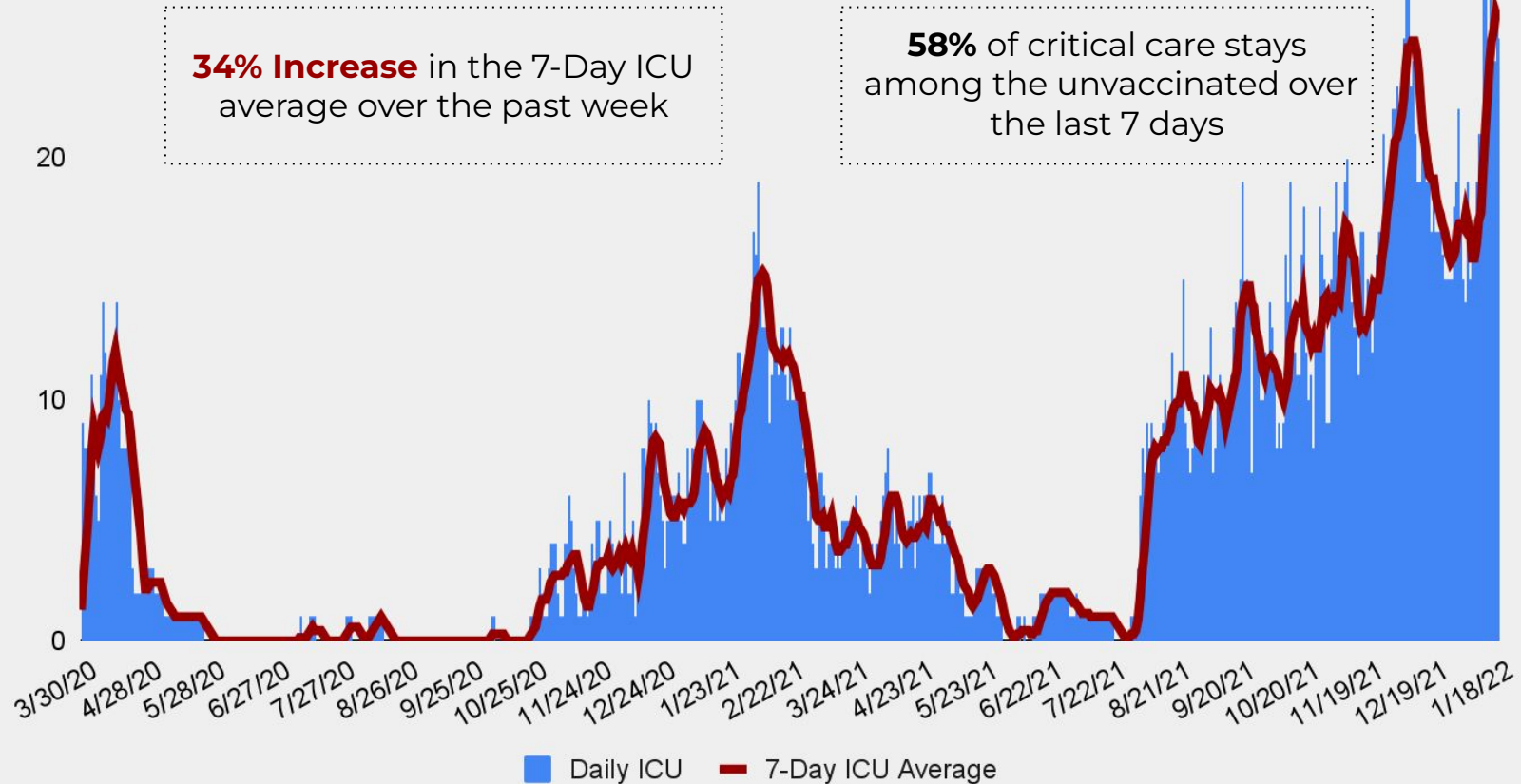
Source: VDH—January 19, 2022

Vermonters Hospitalized for Influenza

— 7-Day Hospitalized for Influenza

Reported influenza hospitalizations in Vermont have remained low during the Delta and Omicron waves
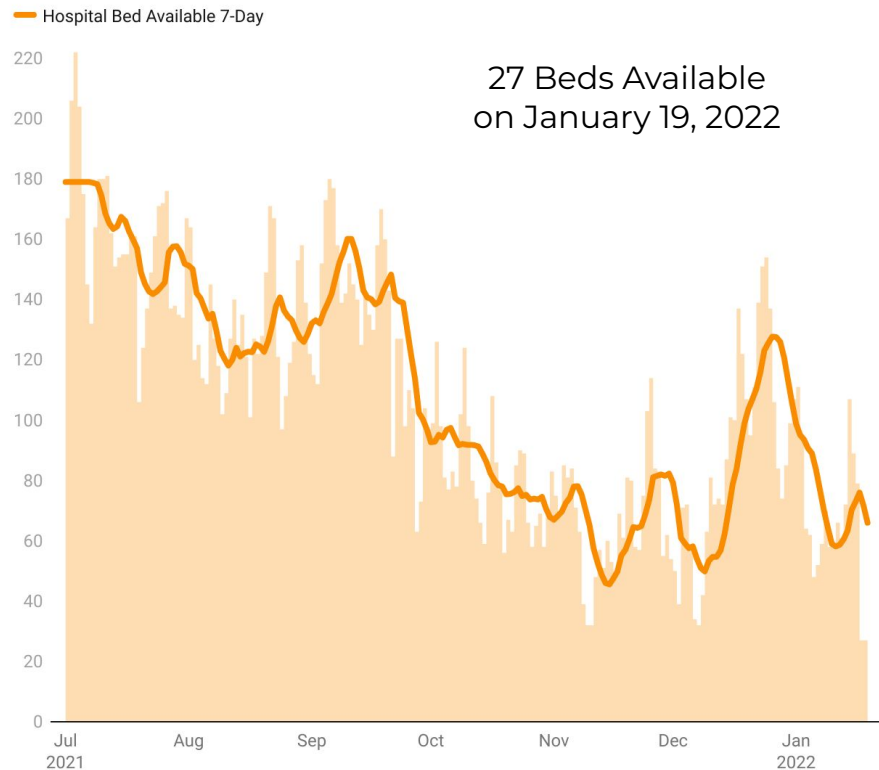
6

4

2

0

21
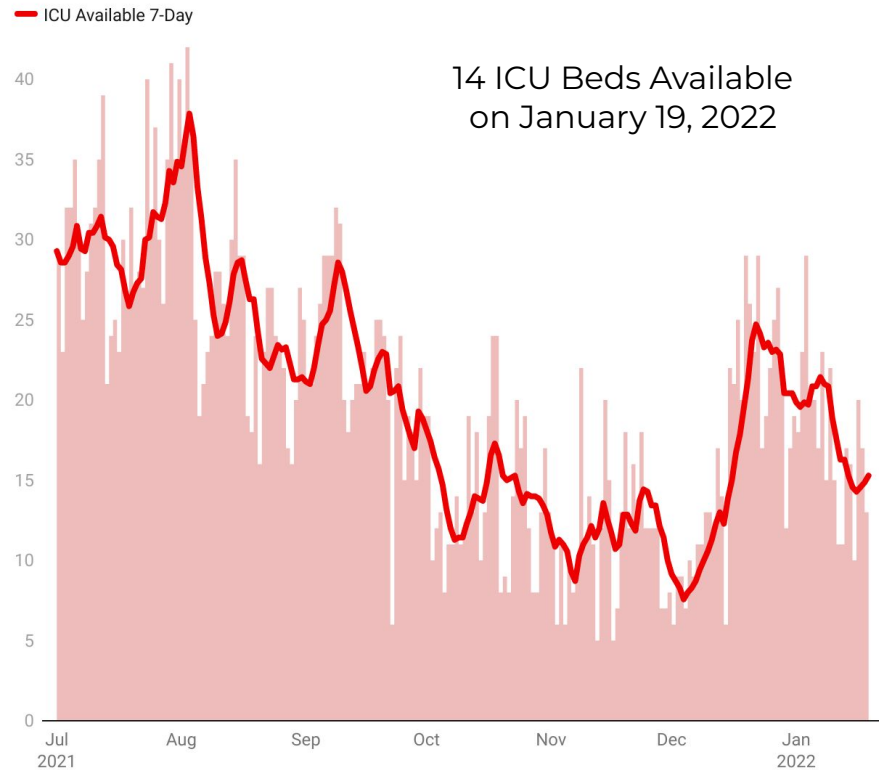Nov

28

5
Dec

12

19

26

2
Jan
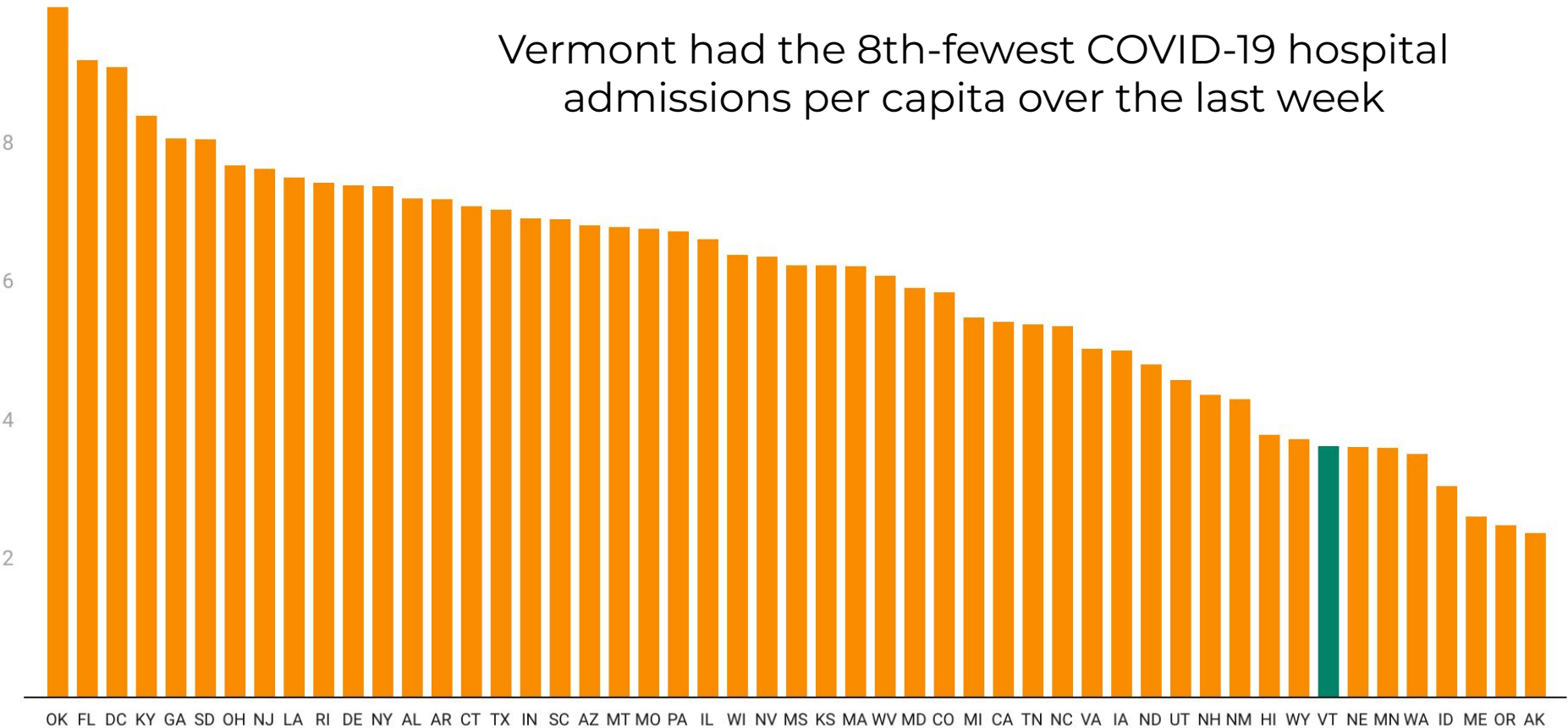
9

16

Vermont Hospital Metrics
(7-Day Averages)

Vermont Hospital Beds Available Since July 1, 2021

— Hospital Bed Available 7-Day

27 Beds Available
on January 19, 2022

Vermont ICU Beds Available Since July 1, 2021

— ICU Available 7-Day

14 ICU Beds Available
on January 19, 2022

Source: VDH—January 19, 2022; Created with Datawrapper

COVID-19 Hospital Admissions Last 7 Days Per 100K

Vermont had the 8th-fewest COVID-19 hospital admissions per capita over the last week

Vermont Fatality Data

Vermont COVID-19 Fatalities

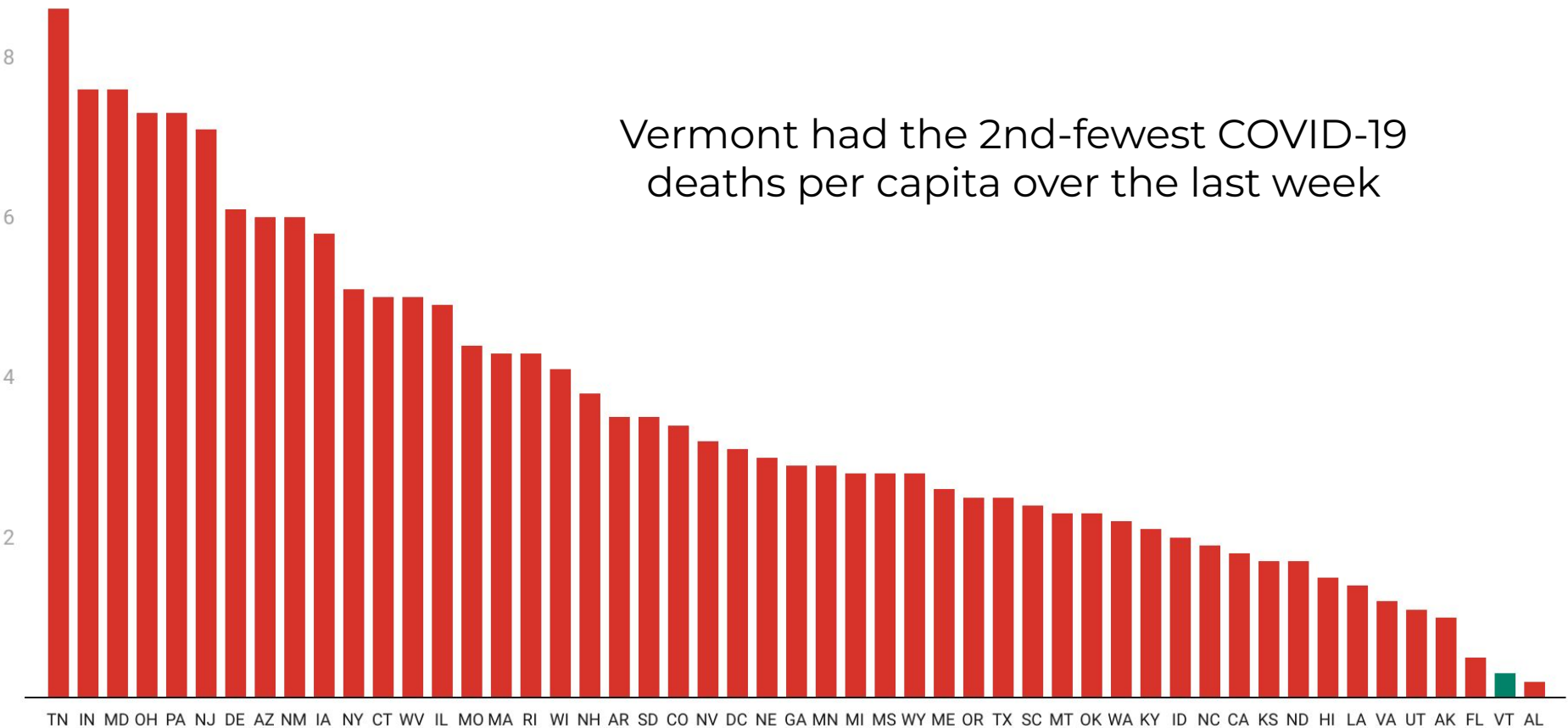— 7-Day Average
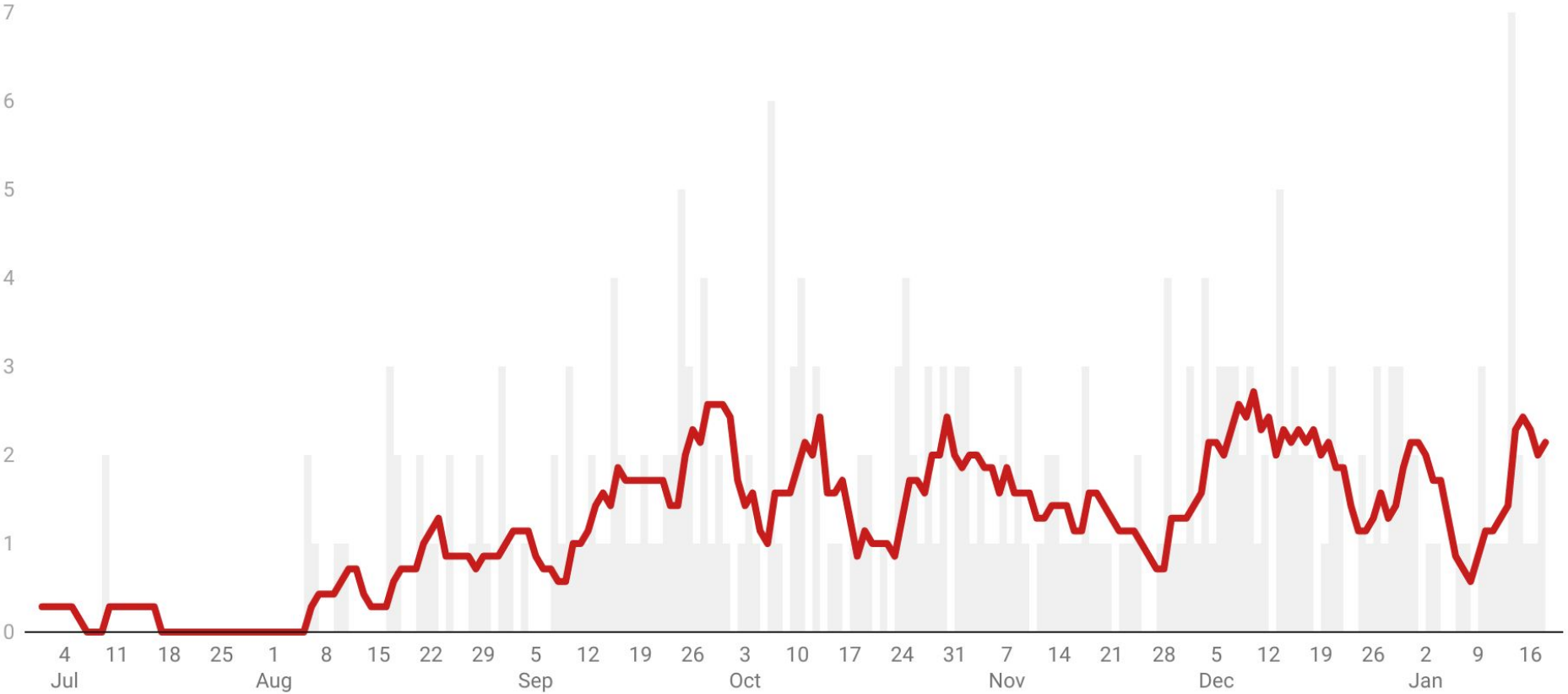
Monthly Covid-19 Deaths In Vermont

507 COVID-19 deaths since the start of the pandemic
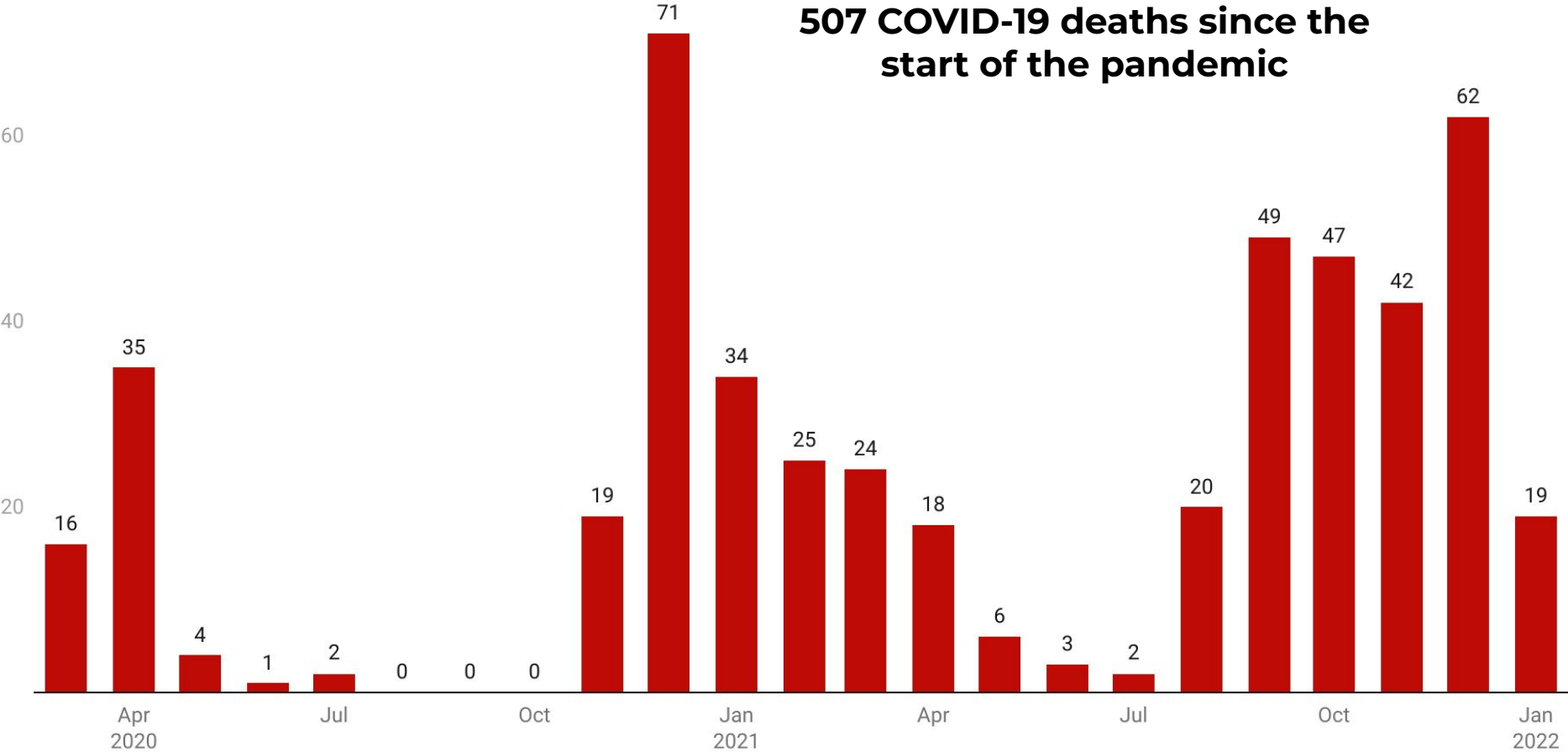
Source: VDH—January 19, 2022; deaths attributed to month in which death occurred rather than reported
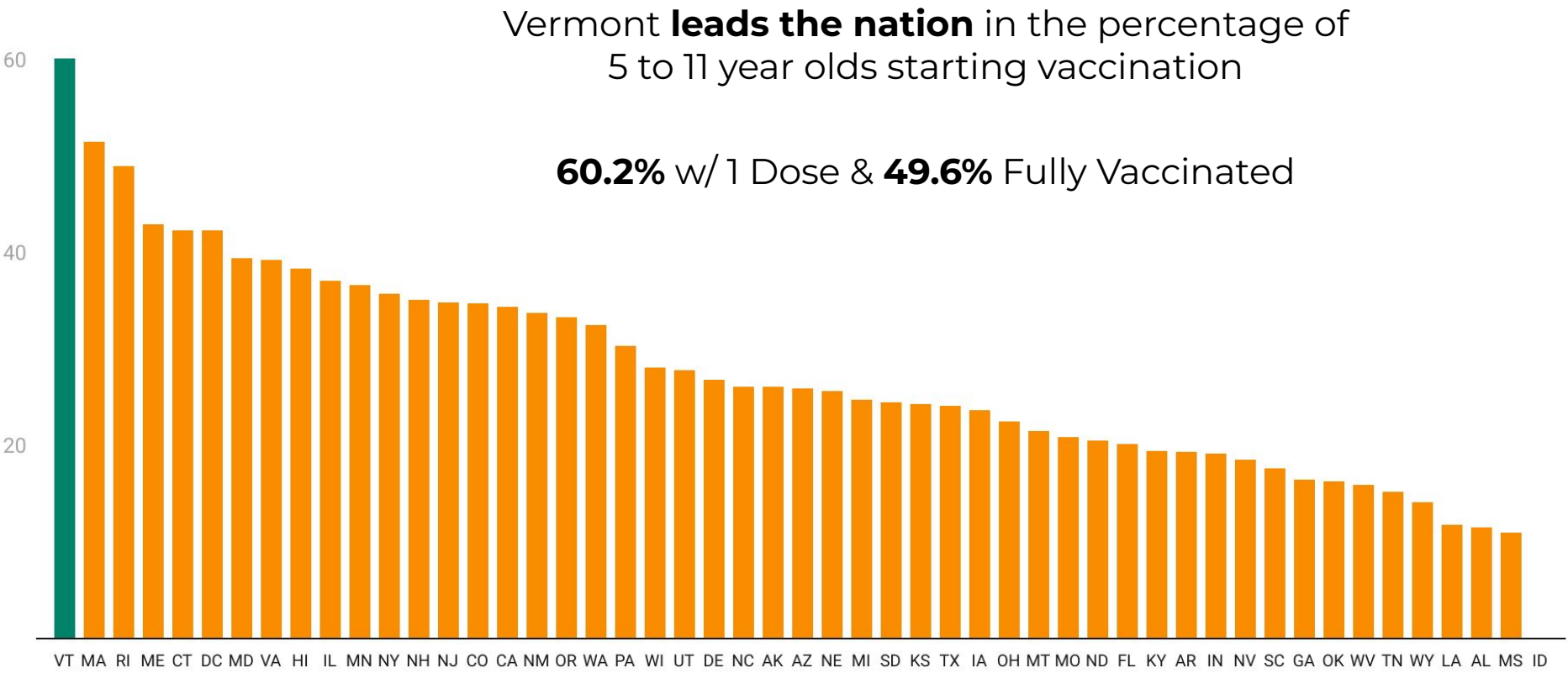
36

COVID-19 Deaths Per 100K Last 7 Days

Vermont had the 2nd-fewest COVID-19 deaths per capita over the last week

States (left to right): TN, IN, MD, OH, PA, NJ, DE, AZ, NM, IA, NY, CT, WV, IL, MO, MA, RI, WI, NH, AR, SD, CO, NV, DC, NE, GA, MN, MI, MS, WY, ME, OR, TX, SC, MT, OK, WA, KY, ID, NC, CA, KS, ND, HI, LA, VA, UT, AK, FL, VT, AL

Vermont Vaccination Data

Vermont CDC Vaccine Scorecard

Metric	Figure	State Ranking
Doses Administered per 100K	**208,766**	1
% At Least 1 Dose (5+ Population)	**95%+**	1 (tied)
% Fully Vaccinated (5+ Population)	**82.5%**	1
% At Least 1 Dose (Full Population)	**91.0%**	5
% Fully Vaccinated (Full Population)	**78.6%**	1
% Fully Vaccinated (65 & Over)	**95%+**	1 (tied)

Percent of 5 to 11 Population Starting Vaccination

Vermont **leads the nation** in the percentage of
5 to 11 year olds starting vaccination

60.2% w/ 1 Dose & **49.6%** Fully Vaccinated

Vermont Vaccination Progress

By Age Band
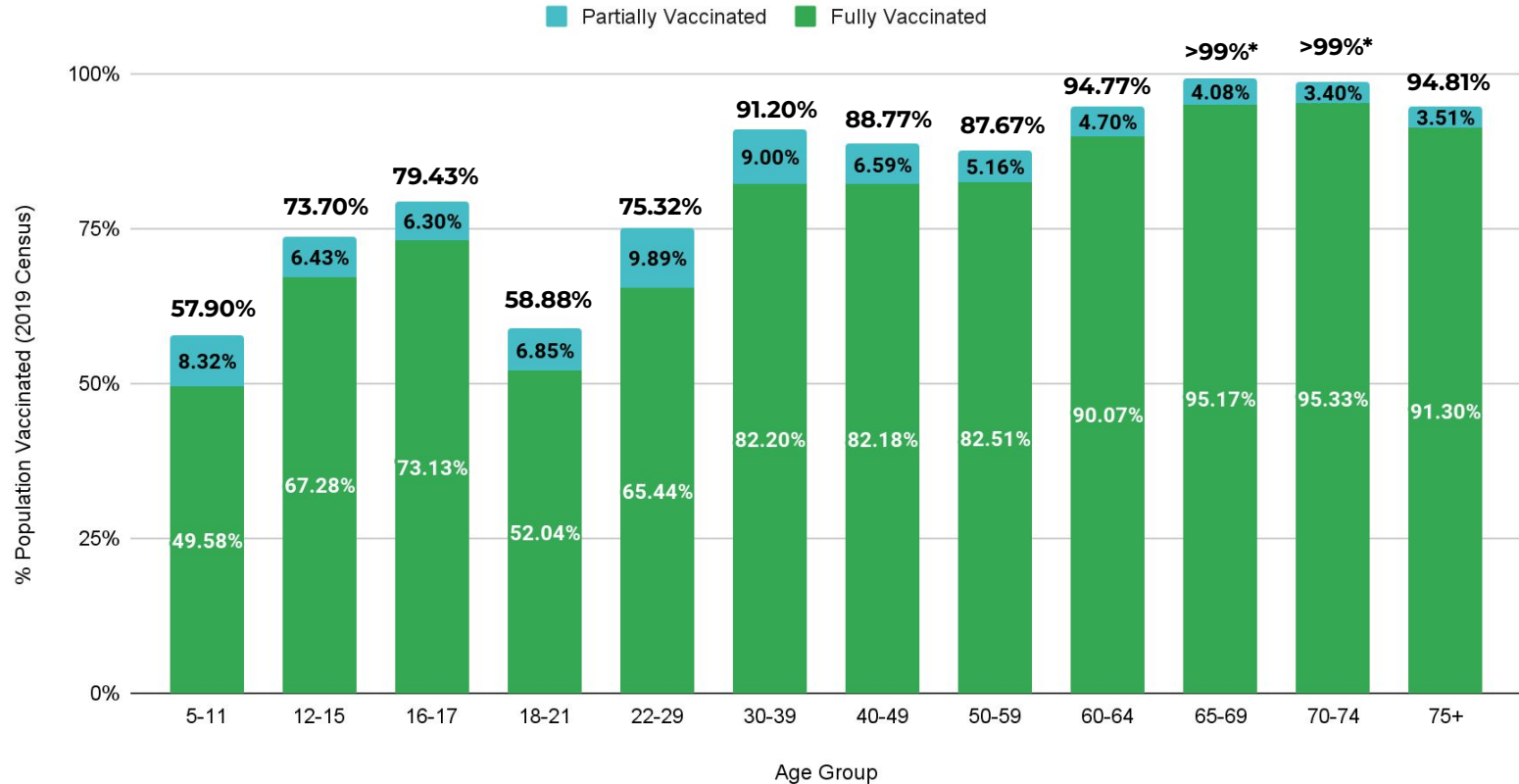
Legend: ▢ Partially Vaccinated ▢ Fullly Vaccinated

Y-axis: % Population Vaccinated (2019 Census)

X-axis: Age Group

Age Group	Total	Partially Vaccinated	Fully Vaccinated
5-11	57.90%	8.32%	49.58%
12-15	73.70%	6.43%	67.28%
16-17	79.43%	6.30%	73.13%
18-21	58.88%	6.85%	52.04%
22-29	75.32%	9.89%	65.44%
30-39	91.20%	9.00%	82.20%
40-49	88.77%	6.59%	82.18%
50-59	87.67%	5.16%	82.51%
60-64	94.77%	4.70%	90.07%
65-69	>99%*	4.08%	95.17%
70-74	>99%*	3.40%	95.33%
75+	94.81%	3.51%	91.30%

Vermont CDC Booster Scorecard

Metric	Figure	State Ranking
% of Fully Vaccinated w/ booster dose	**54.9%**	1
% of Fully vaccinated 18+ w/ booster doses	**59.4%**	1
% of Fully vaccinated 50+ w/ booster doses	**69.2%**	1
% of Fully vaccinated 65+ w/ booster doses	**76.6%**	2

Regional Data

Northeast Regional Cases

38.4% Decrease in New Cases
(Note: possible data anomalies from holiday weekend)

New Cases January 4th to January 10th

933,568

New Cases Last 7 Days

State	New Cases
Maine	6,642
Vermont	13,100
New Hampshire	19,995
Rhode Island	37,657
Connecticut	71,250
Quebec	98,538
Massachusetts	170,939
New York	522,089
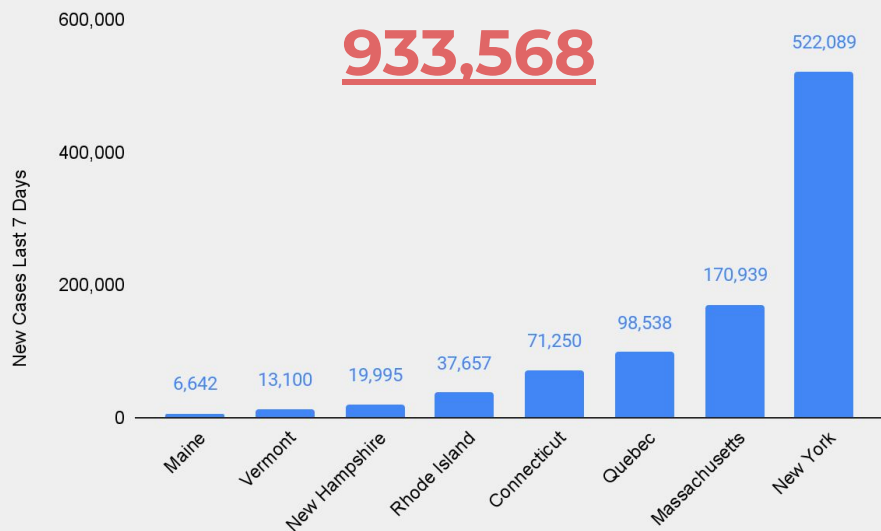
New Cases January 11th to January 17th

574,737

New Cases Last 7 Days

State	New Cases
Maine	7,492
Vermont	10,985
New Hampshire	22,111
Connecticut	32,456
Rhode Island	33,495
Quebec	51,287
Massachusetts	81,640
New York	342,763
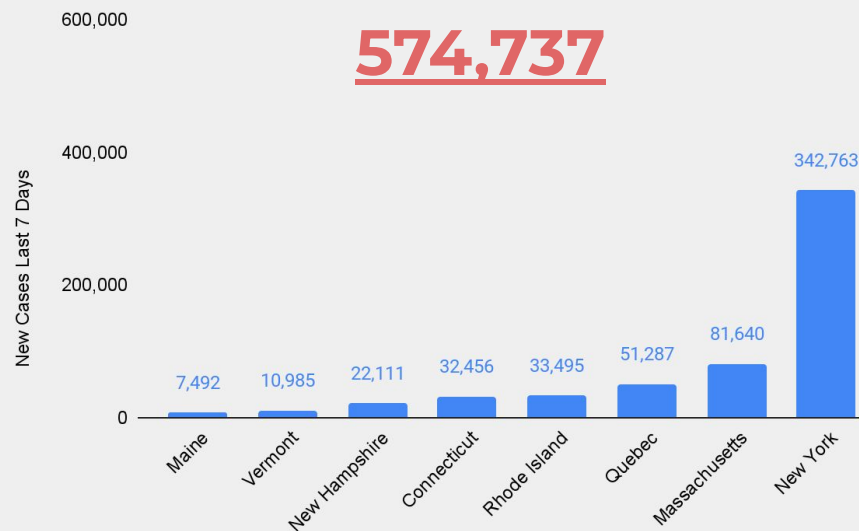
Weekly Northeast Regional Cases

358,831 fewer cases this week compared to last
(Note: possible data anomalies from holiday weekend)

Sources: State Health Depts.—January 10, 2022 (includes: CT, ME, MA, NH, NY, QC, RI & VT)

45

New England COVID-19 Cases

— New England 7-Day Case Average
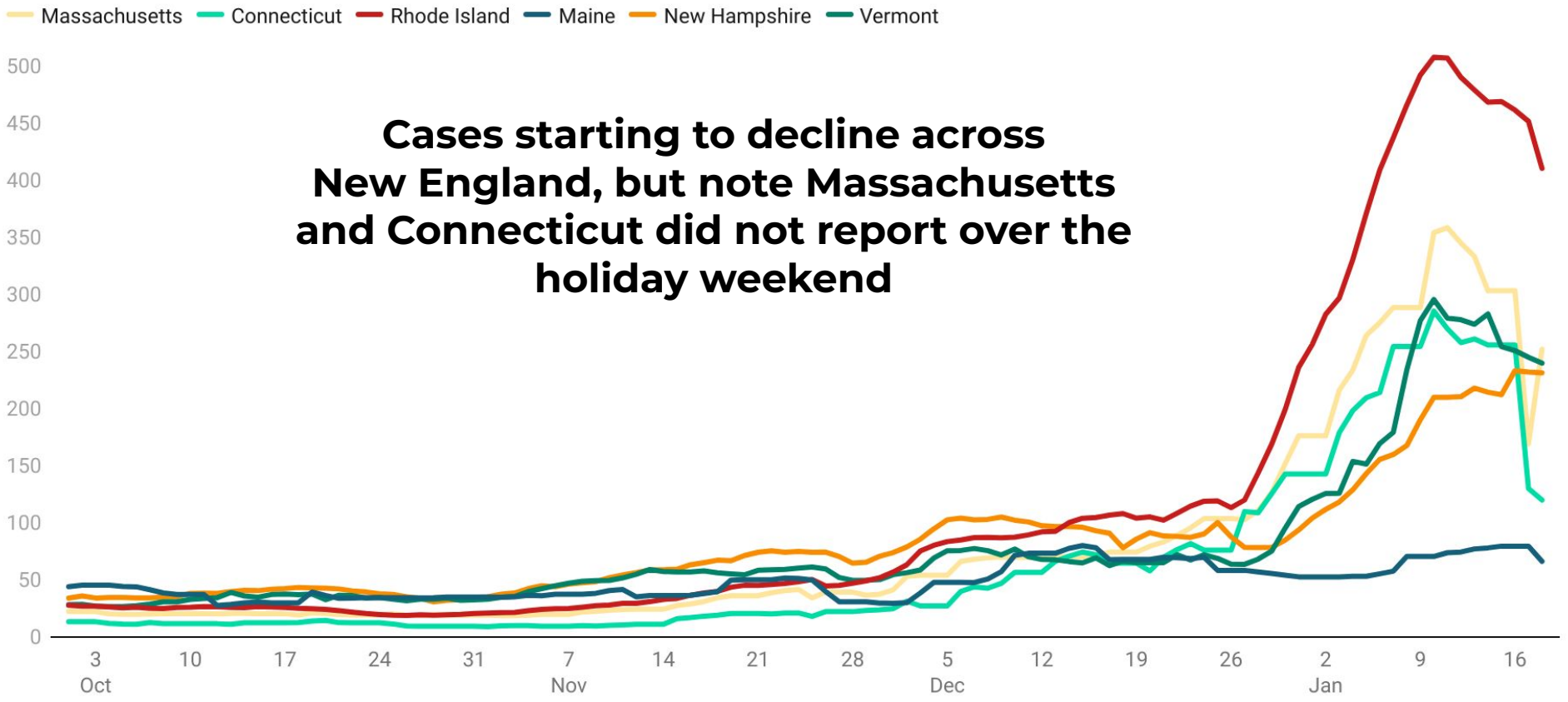
New England cases **decreased 34%** over last 7 days &
decreased 3% over last 14 days
(Note: possible data anomalies from holiday weekend)

35,000

30,000

25,000

20,000

15,000

10,000

5,000

0

Jul
2021

Aug

Sep

Oct

Nov

Dec

Jan
2022

New England COVID-19 Case Trends

7-Day Average Cases Per 100K

— Massachusetts — Connecticut — Rhode Island — Maine — New Hampshire — Vermont

**Cases starting to decline across
New England, but note Massachusetts
and Connecticut did not report over the
holiday weekend**

Sources: State Health Depts.—January 18, 2022 (includes: CT, ME, MA, NH, RI & VT)

New England COVID-19 Case Trends

14-Day Average Cases Per 100K

— Massachusetts — Connecticut — Rhode Island — Maine — New Hampshire — Vermont

Cases are still declining on the more stable 14-day average, which also smooths out possible data anomalies over the holiday weekend

Sources: State Health Depts.—January 18, 2022 (includes: CT, ME, MA, NH, RI & VT)

48
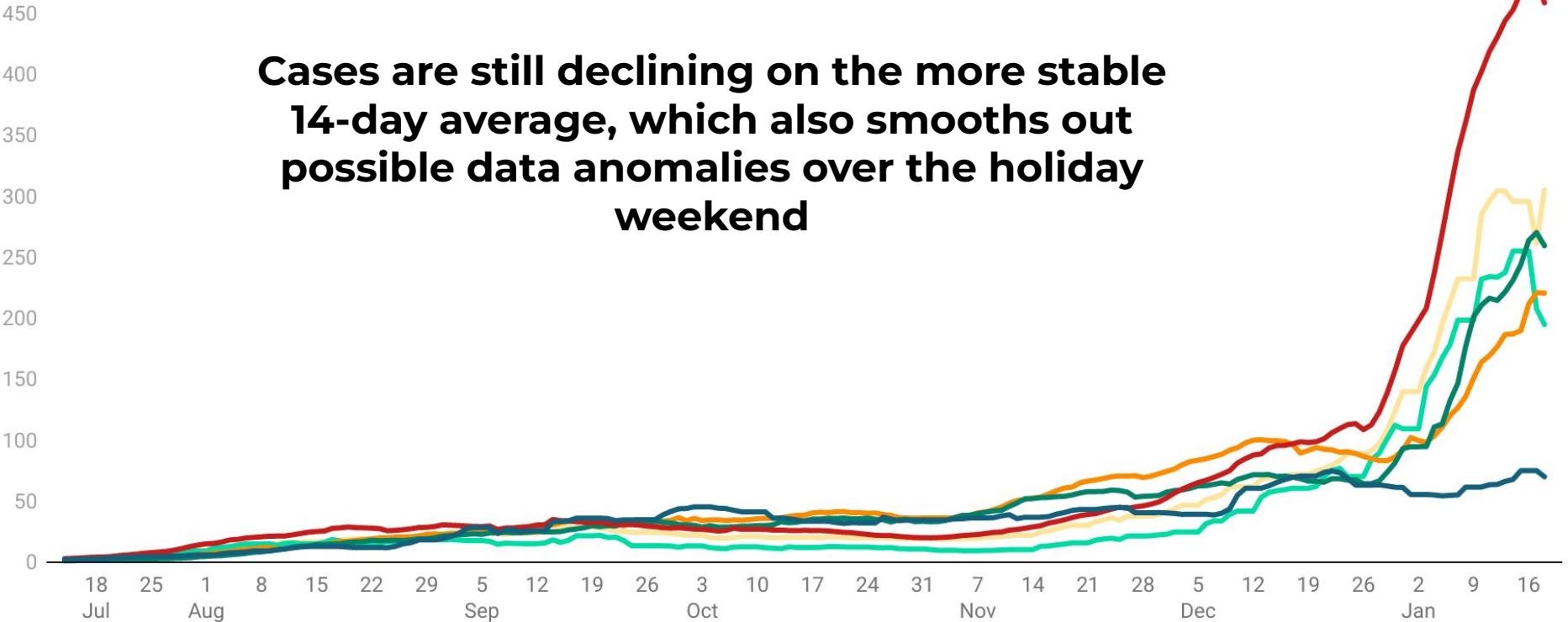
COVID-19 Case Trends in Northeast
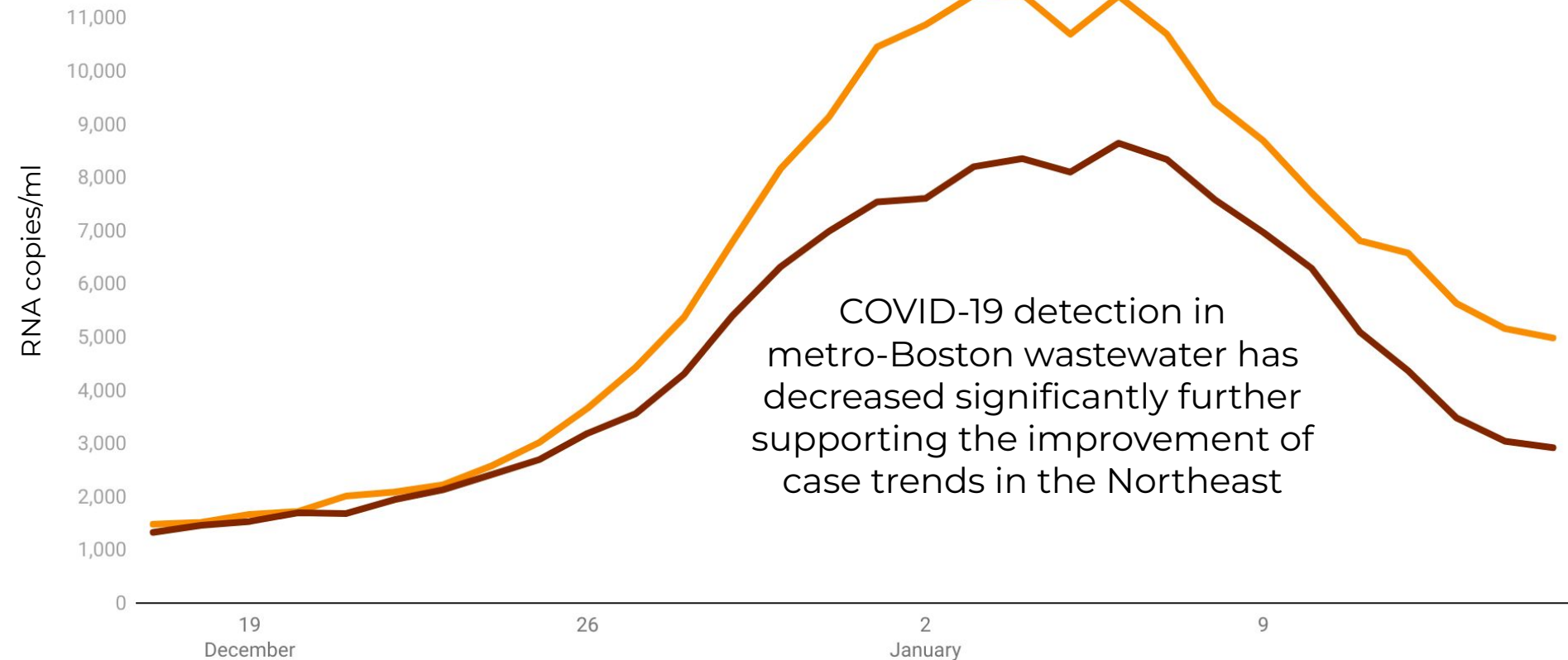
7-day Average, Cases Per 100K

— Quebec — New York — New Jersey
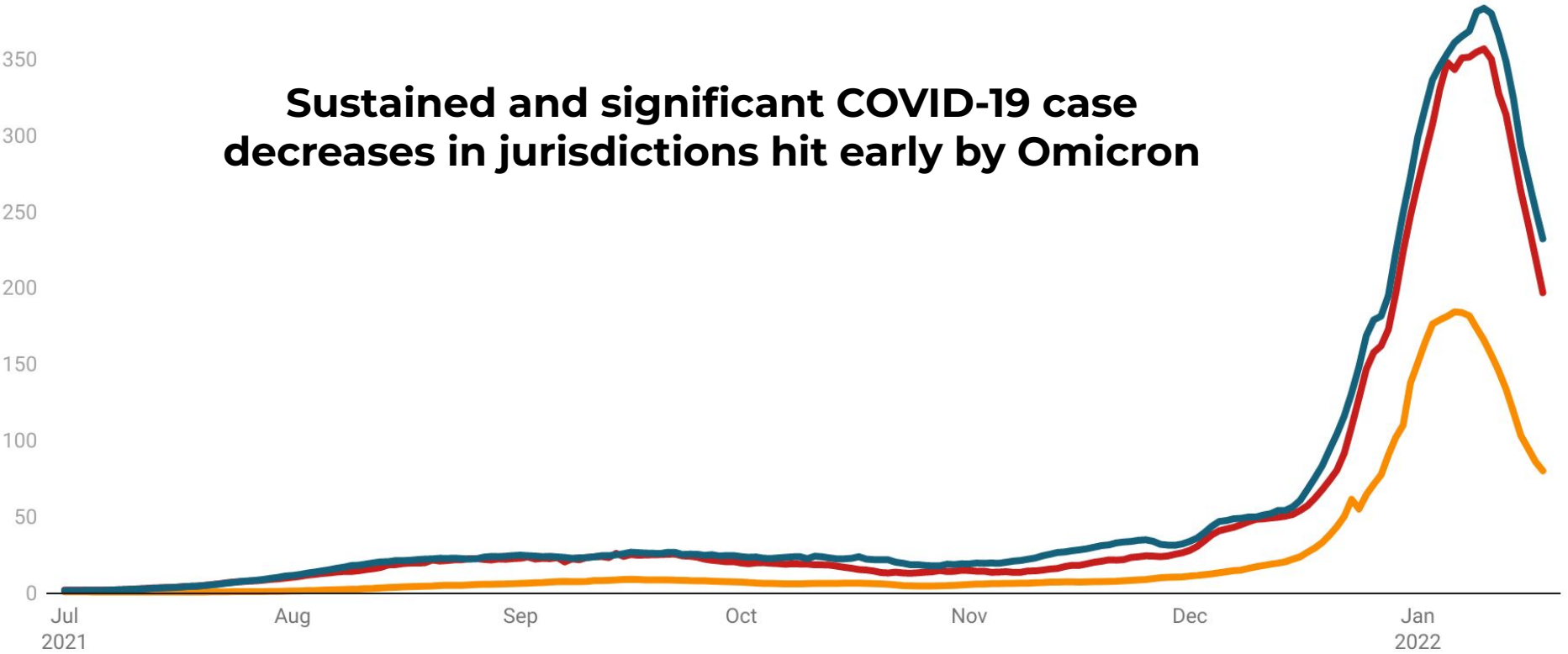
Sustained and significant COVID-19 case decreases in jurisdictions hit early by Omicron

350

300

250

200

150

100

50

Jul
2021

Aug

Sep

Oct

Nov

Dec

Jan
2022

Sources: Health Depts.—January 18, 2022

Boston Wastewater COVID-19 Detection

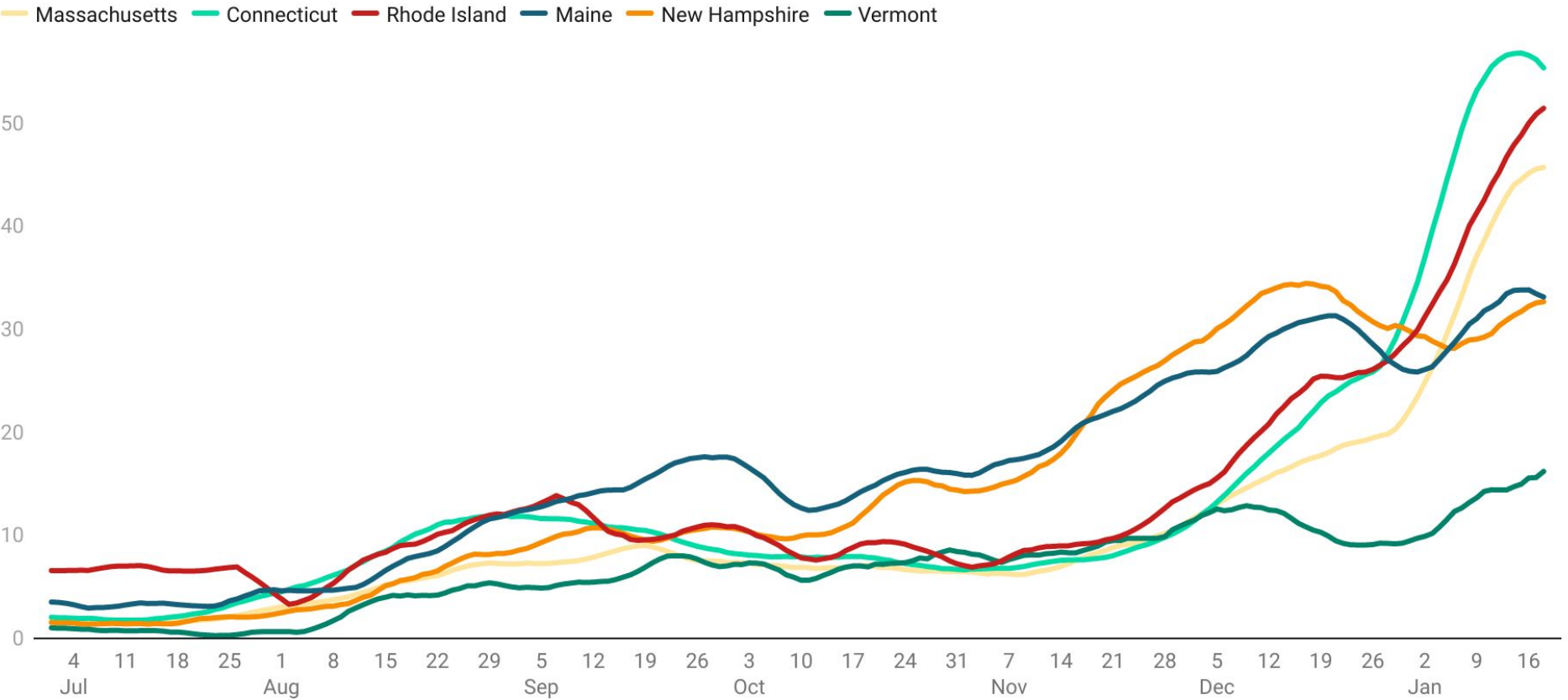— Southern Collection Area (7-Day Average) — Northern Collection Area (7-Day Average)

RNA copies/ml

11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0

19
December

26

2
January

9

COVID-19 detection in
metro-Boston wastewater has
decreased significantly further
supporting the improvement of
case trends in the Northeast

Source: Massachusetts Water Resources Authority—January 15, 2022

New England COVID-19 Hospitalizations

— 7-Day Average

New England hospitalizations **increased 8%** over last 7 days & **increased 45%** over last 14 days

New England COVID-19 Hospitalizations Trends

7-Day Average Hospitalizations Per 100K

Legend: Massachusetts, Connecticut, Rhode Island, Maine, New Hampshire, Vermont

Sources: HHS—January 18, 2022 (includes: CT, ME, MA, NH, RI & VT)

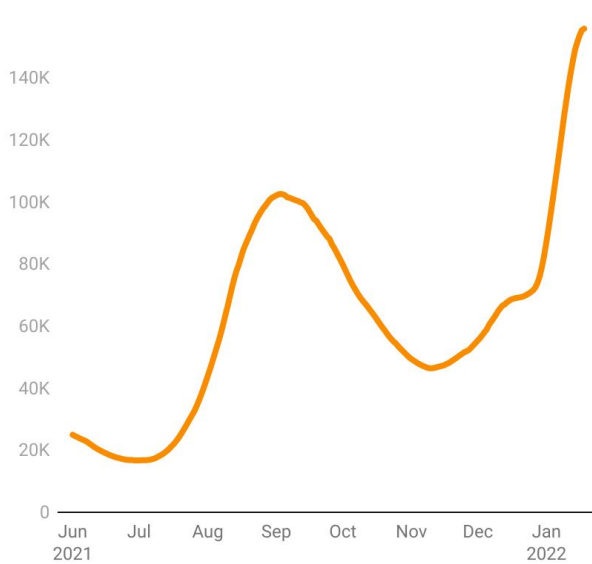# National Data

U.S. Infections, Hospitalizations, & Deaths
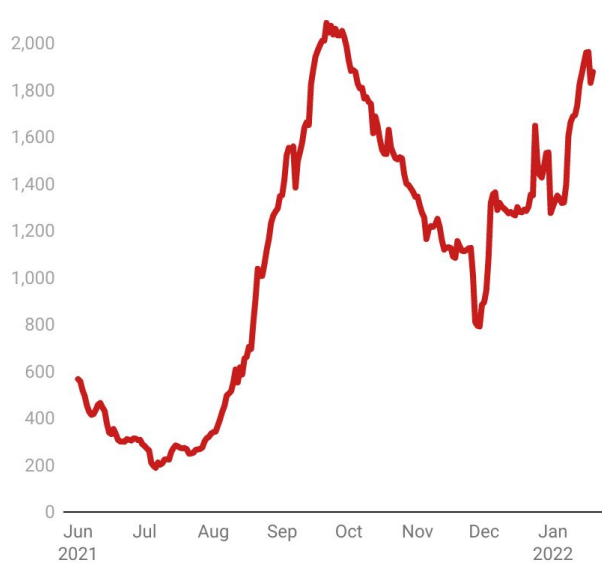## *(Note: possible data anomalies from holiday weekend)*

0.4% Decrease	**13% Decrease**	**8% Decrease**
Over last 7 days	**Over last 7 days**	**Over last 7 days**

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

Source: Covid Act Now—January 18, 2022; 7-day averages; created with Datawrapper

55
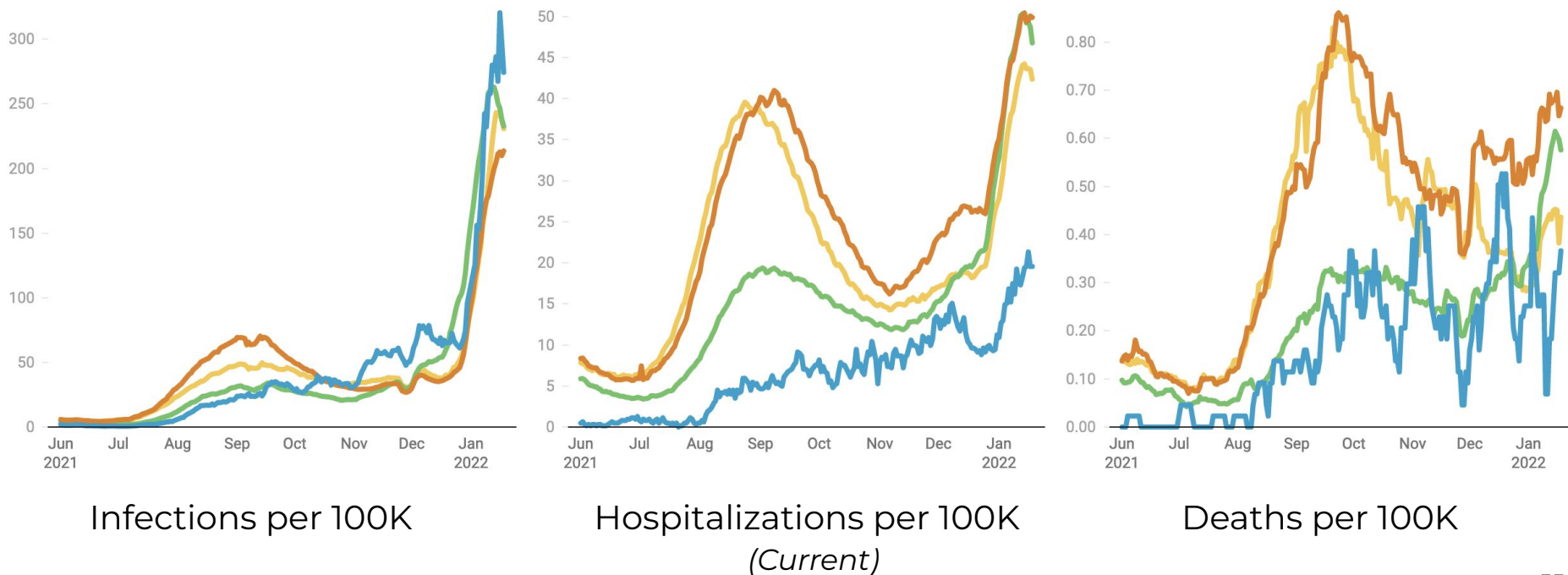
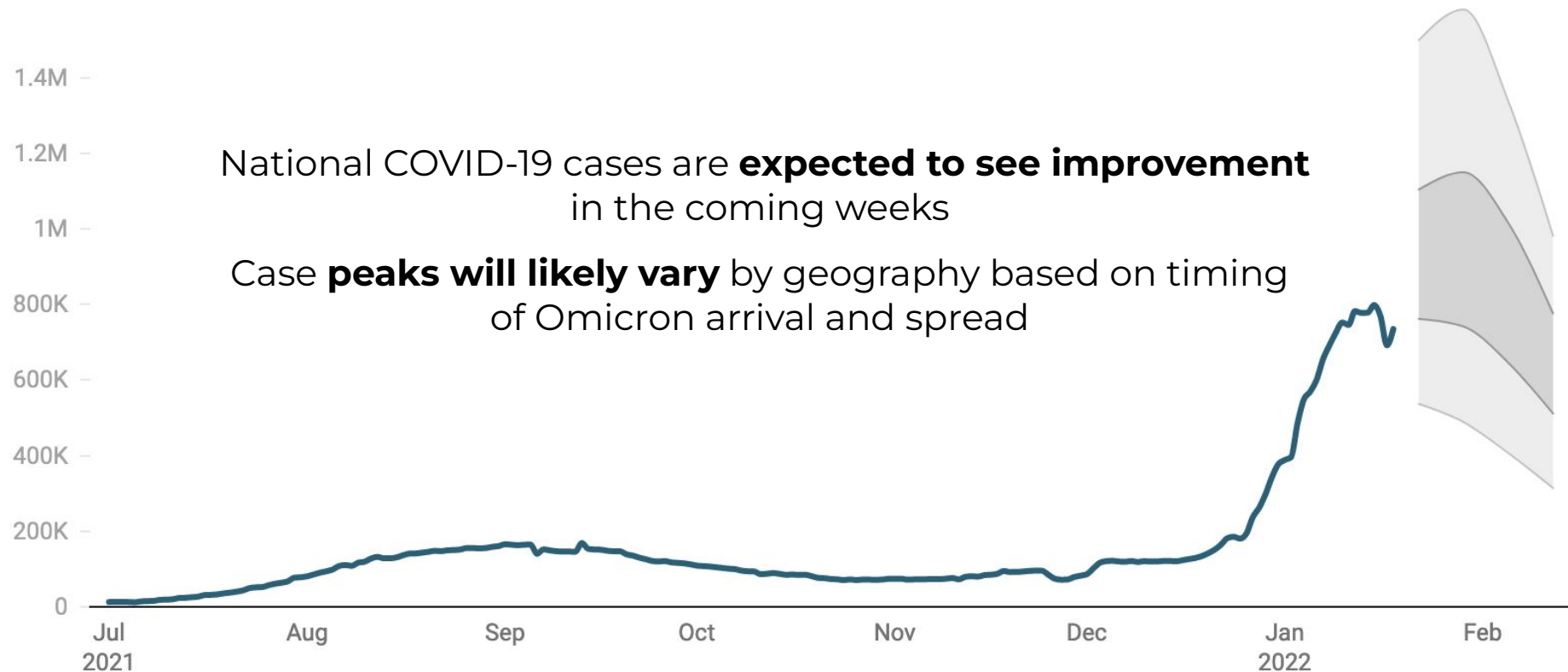# Daily COVID-19 Cases per Million in US Regions

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
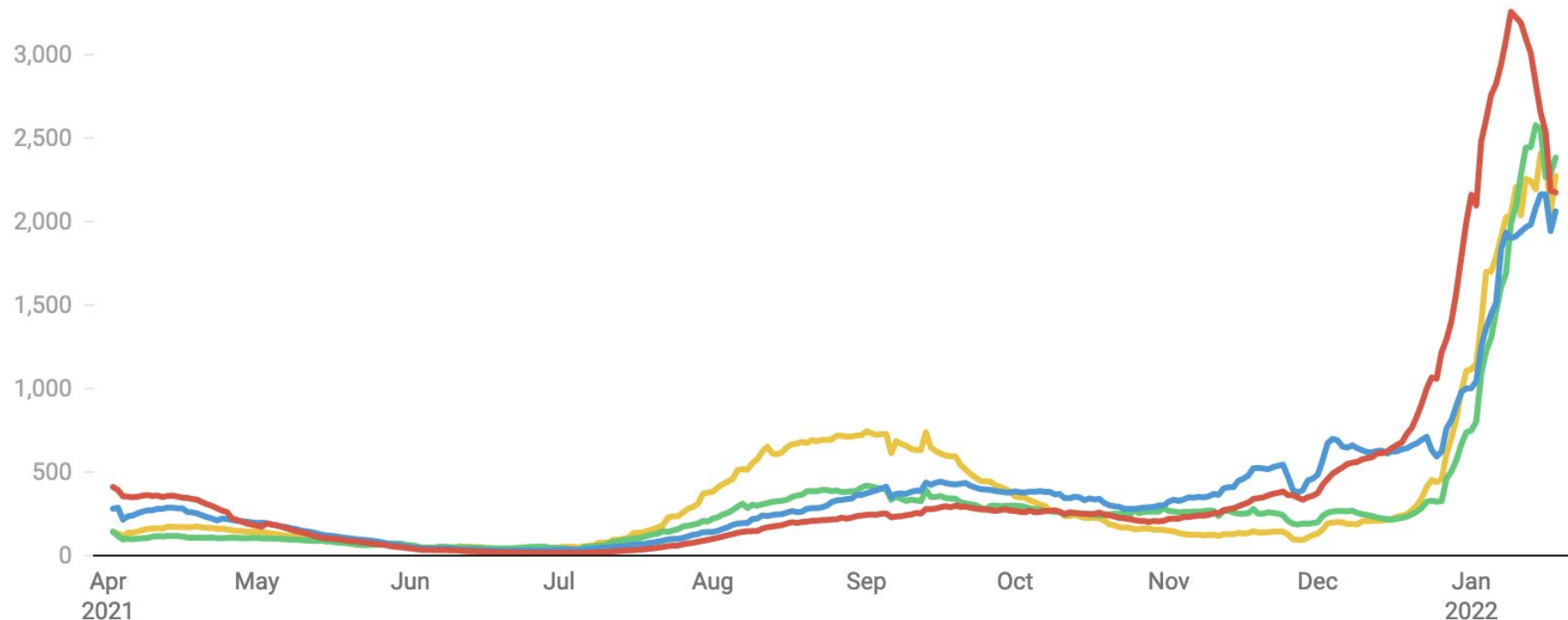
US COVID-19 Infection Confidence Intervals

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

National COVID-19 cases are **expected to see improvement** in the coming weeks

Case **peaks will likely vary** by geography based on timing of Omicron arrival and spread

Source: CDC—January 18, 2022; created with Datawrapper
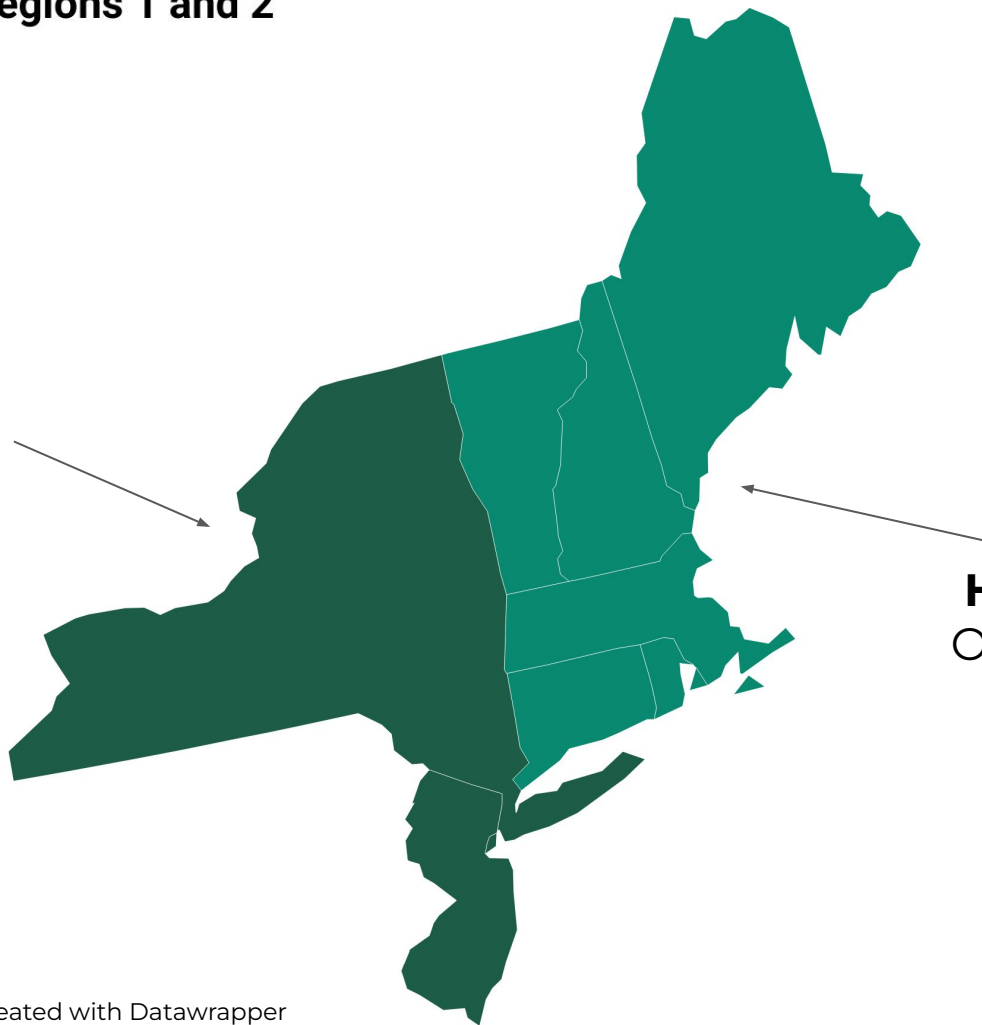
US COVID-19 Death Confidence Intervals

Calculated as a 7-day mean. Inner and outer bands represent 50% and 95% confidence intervals, respectively.
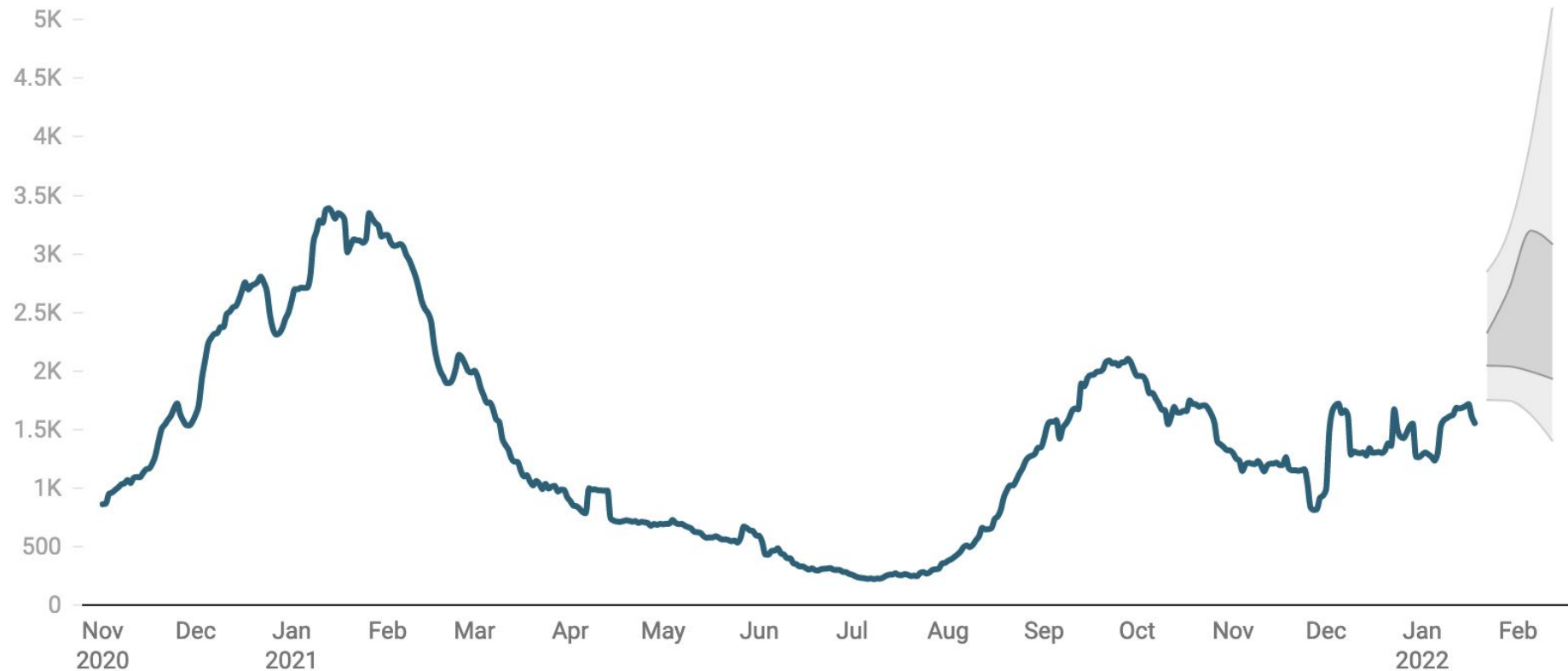
COVID-19 Variant Data

Omicron Spread HHS Regions 1 and 2
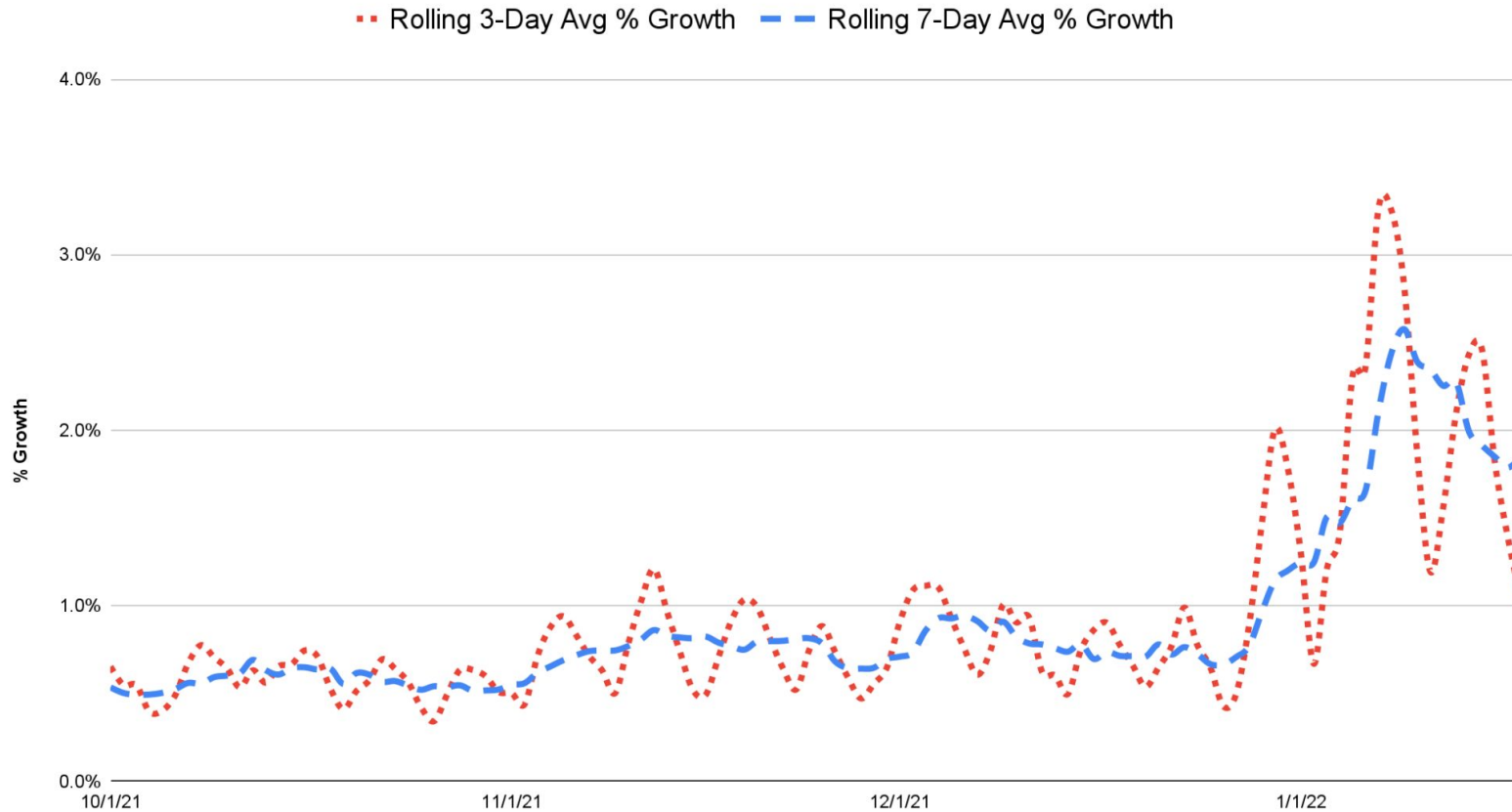
HHS Region 2
Omicron 99.8%
of cases

HHS Region 1
Omicron 99.2%
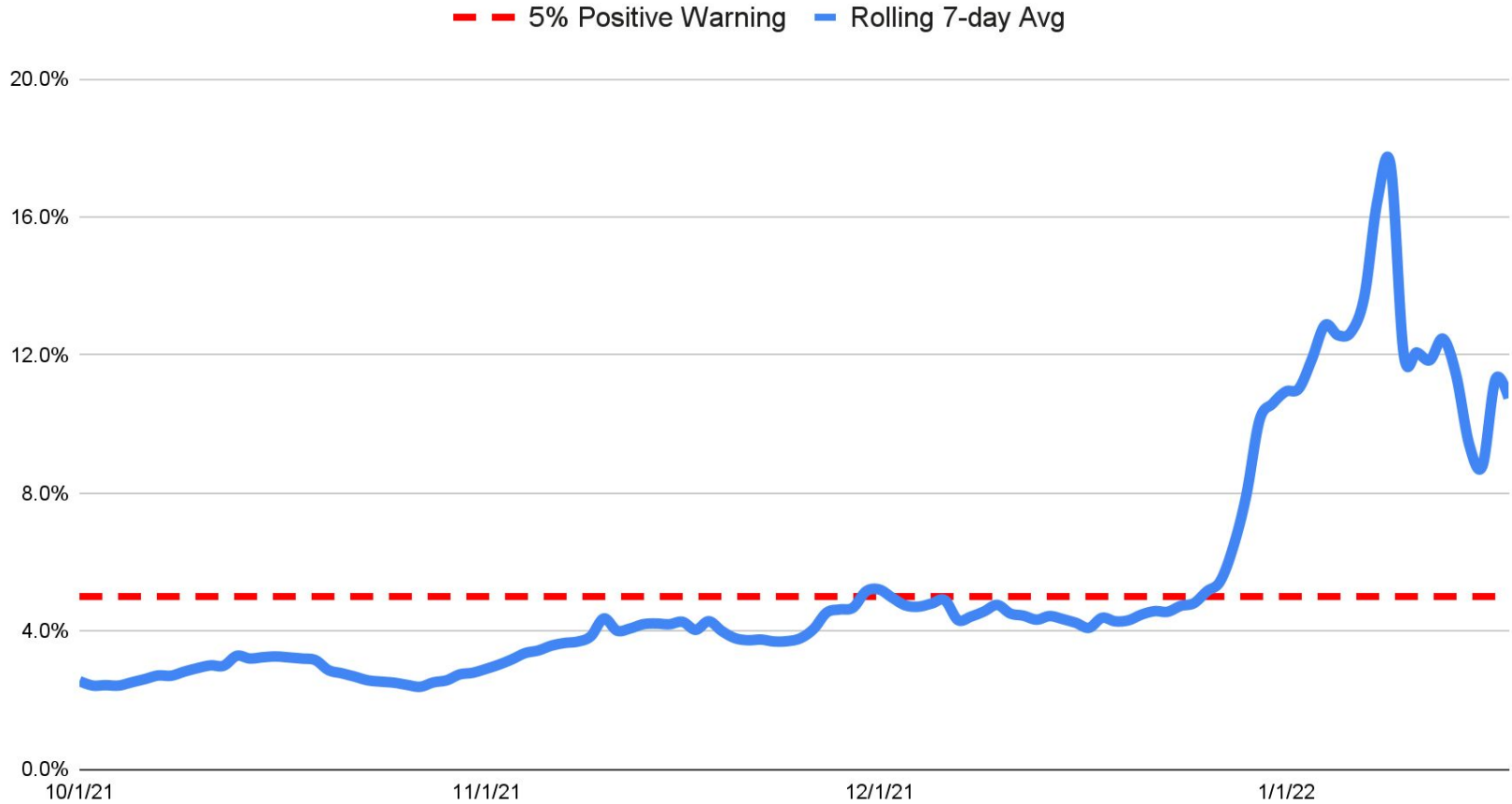of cases

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
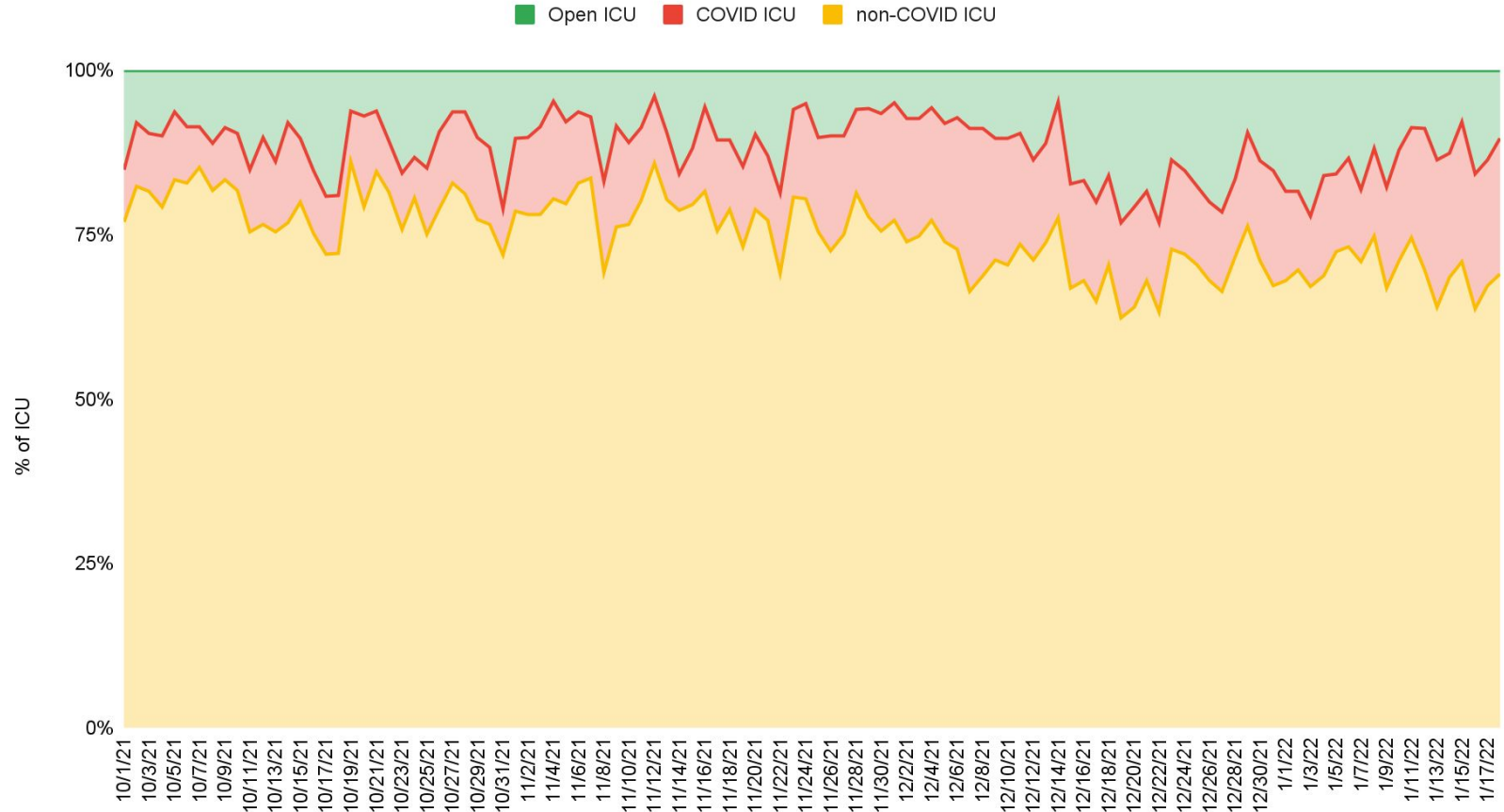5. Testing Volume

Viral Growth & Reproductive Rates

Source: Vermont Department of Health

Test Positivity

- - - 5% Positive Warning — Rolling 7-day Avg

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

Critical Care Beds

Legend: Open ICU, COVID ICU, non-COVID ICU

Vermont Testing

Source: Vermont Department of Health; results reported to VDH daily