COVID-19 Modeling
August 31, 2021

Presentation available at:
dfr.vermont.gov

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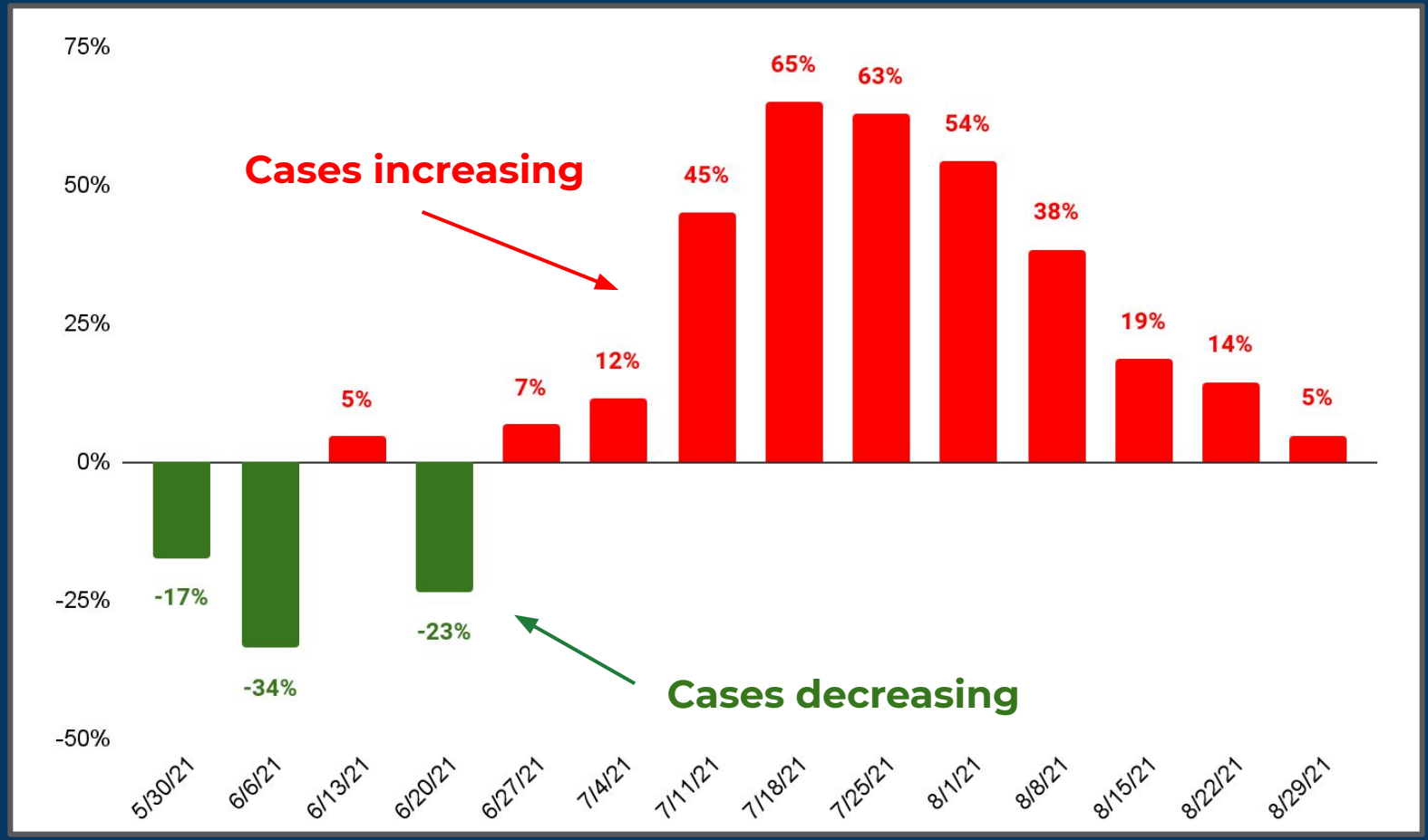
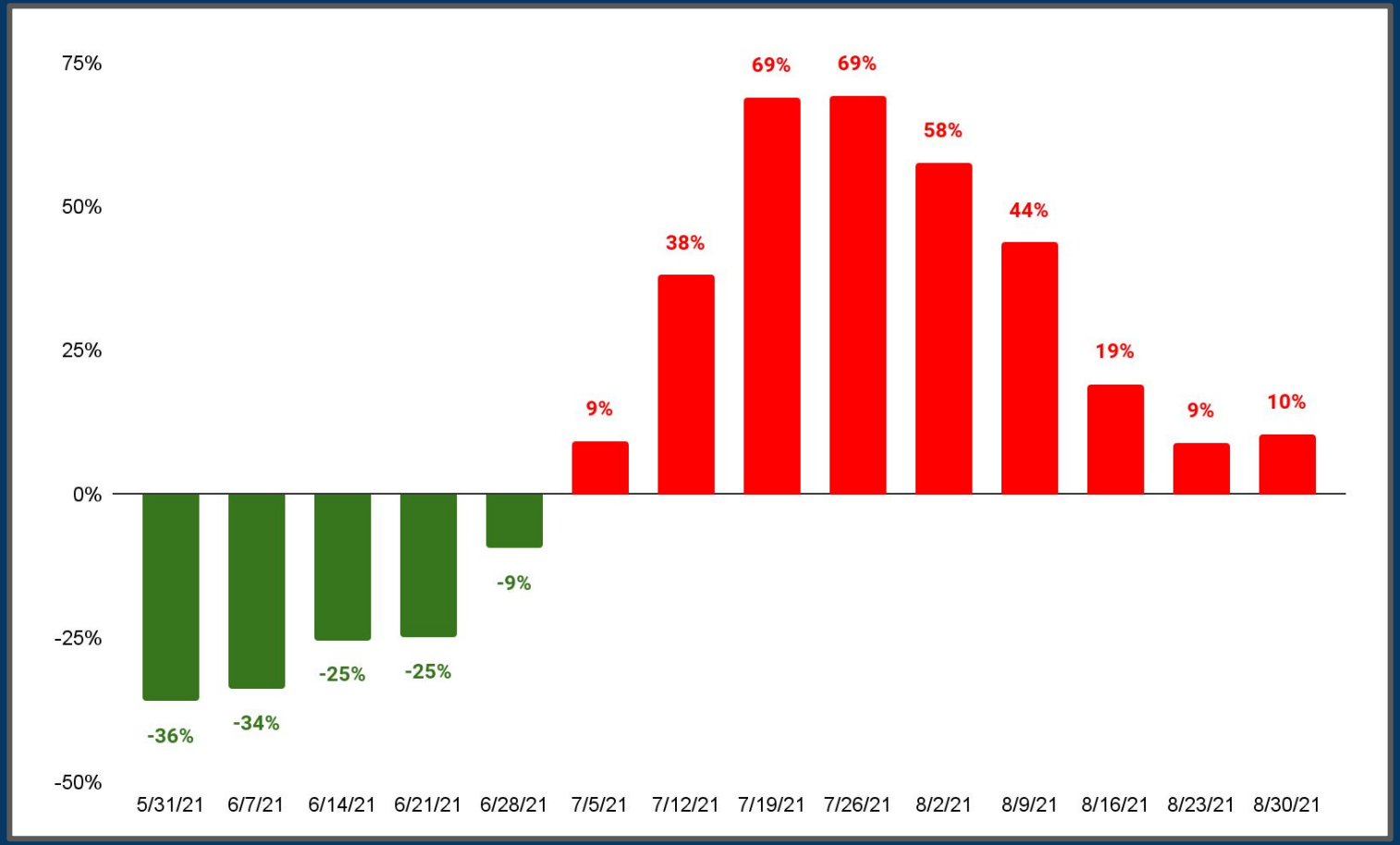
Change in National Weekly Case Growth



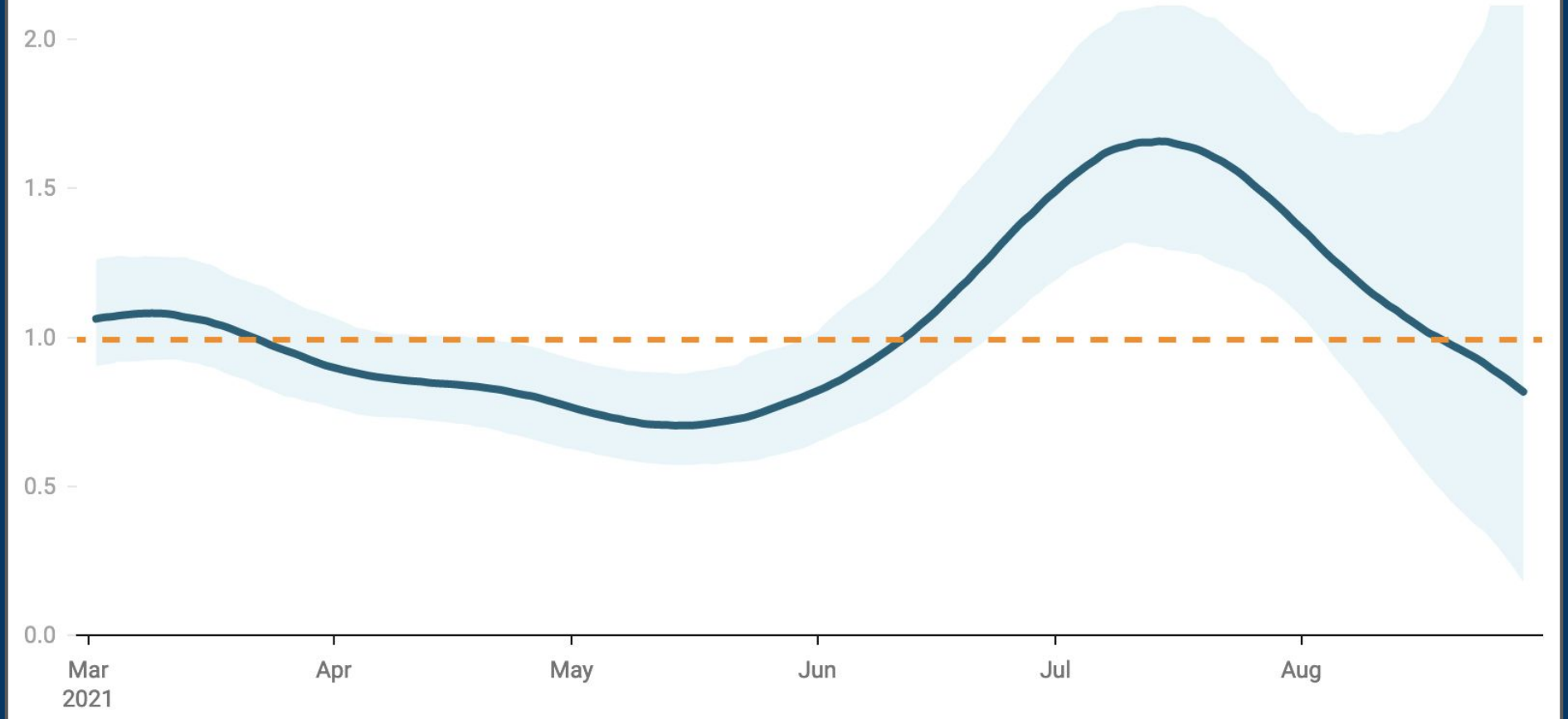
Source: CDC, NYT, & Covid Tracking Project

Change in Northeast Regional Weekly Case Growth



Source: State Health Departments & CTV National News (Quebec)

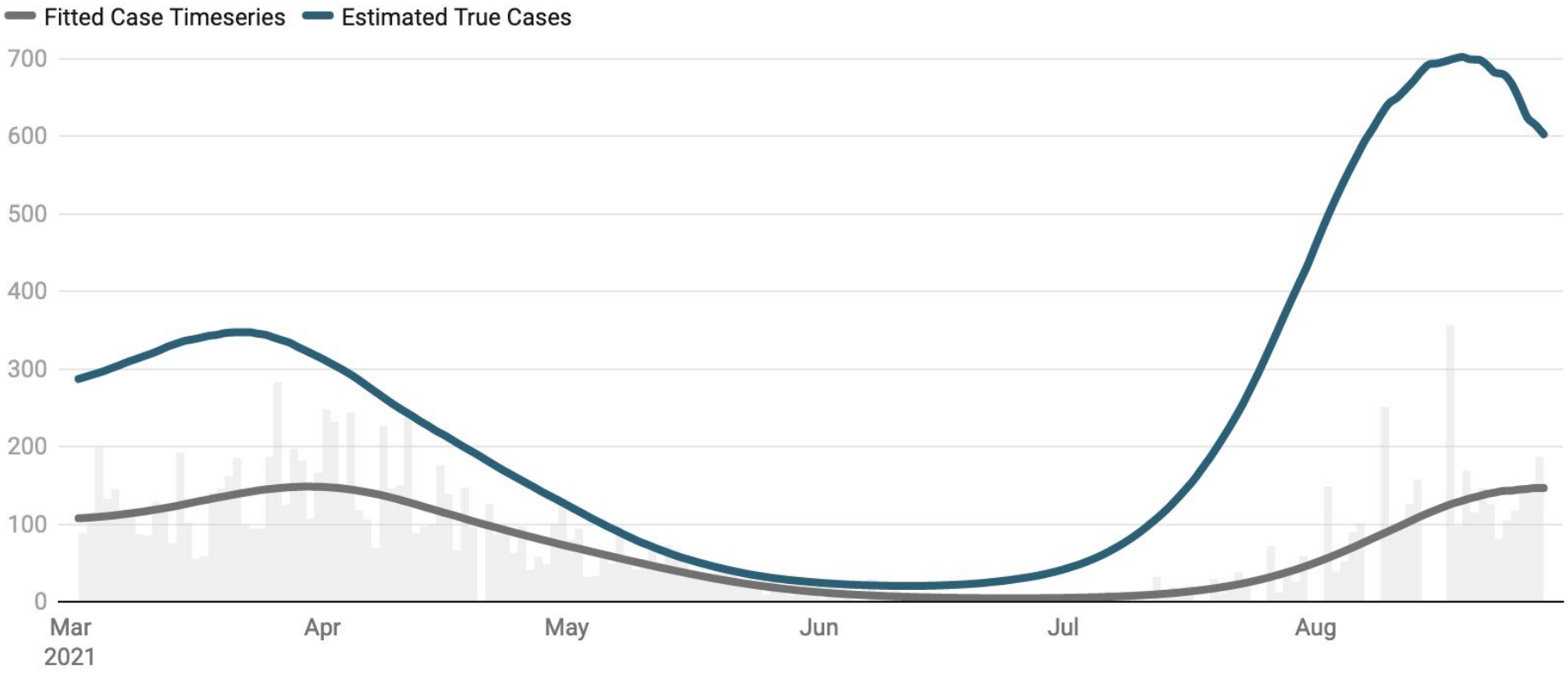
COVID-19 R_t in Vermont



Source: Covidestim—Covid-19 Nowcasting—August 30, 2021

Estimated vs Detected COVID-19 Cases in Vermont

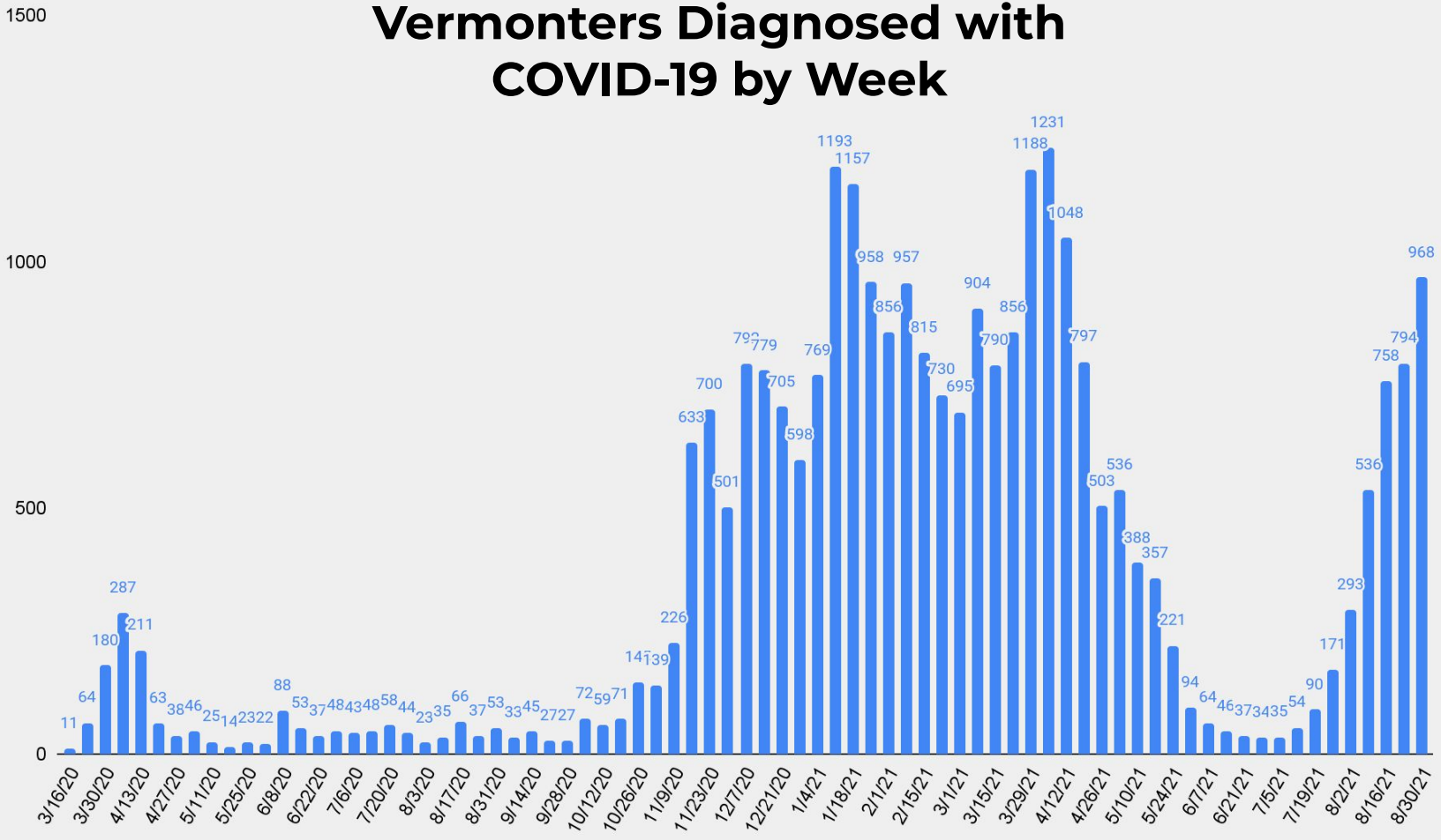
This figure shows the a curve fit to the actual number of cases as well as an estimate of the true number of infections.



Source: Covidestim—Covid-19 Nowcasting—August 30, 2021

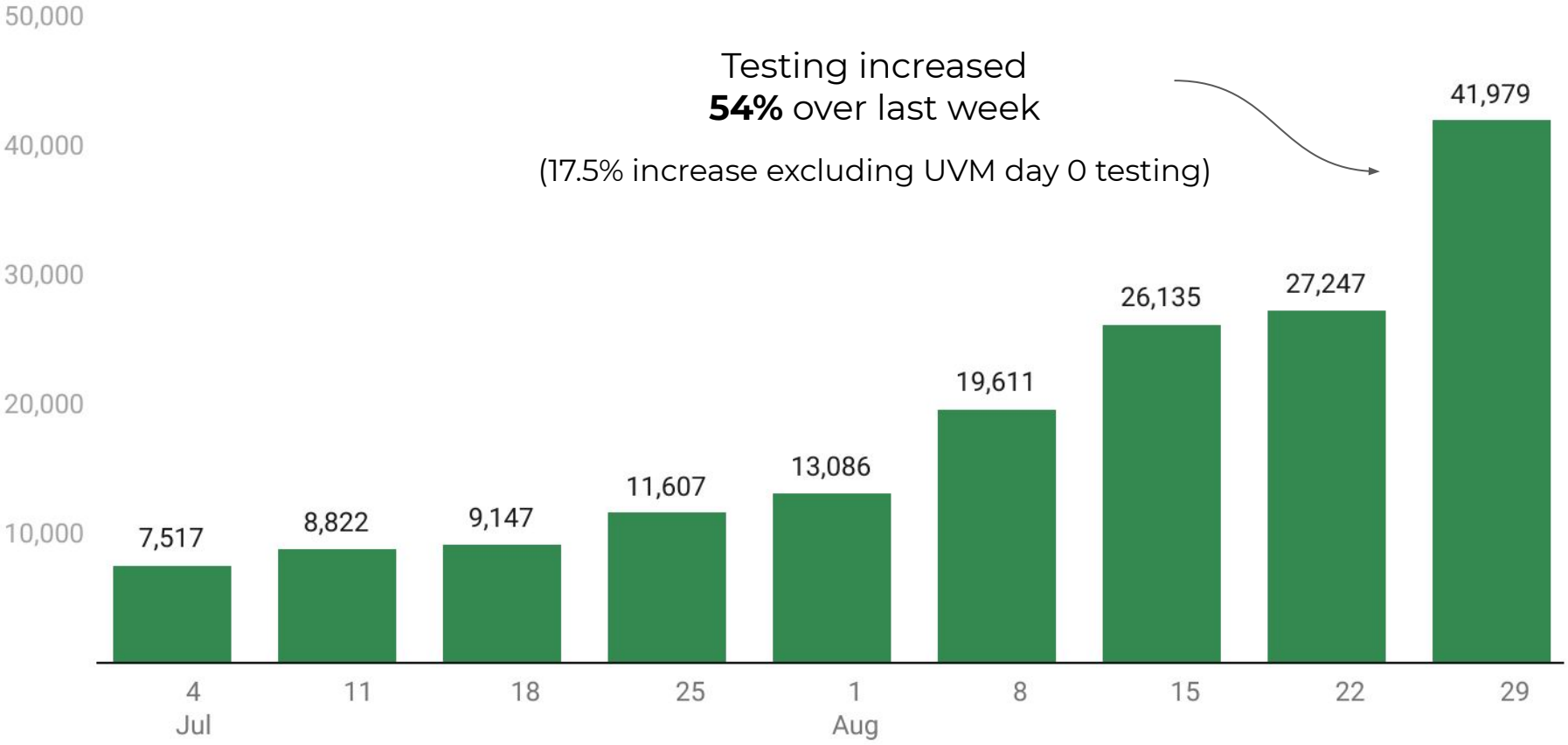
Vermont Case Data

Vermonters Diagnosed with COVID-19 by Week



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

Vermont Weekly COVID-19 Tests

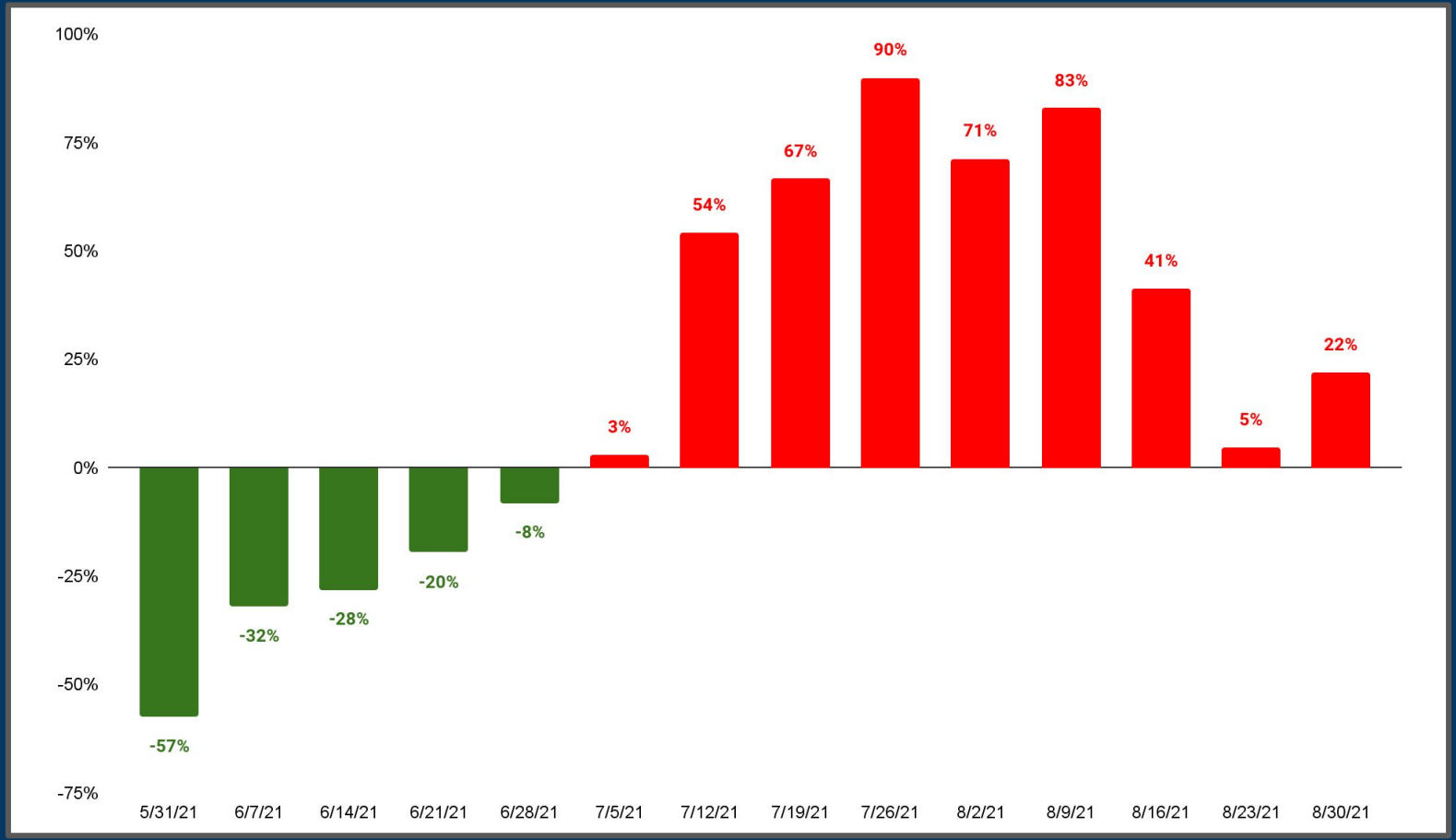


Source: Vermont Dept. of Health—August 30, 2021

Vermont Weekly Positivity Rate

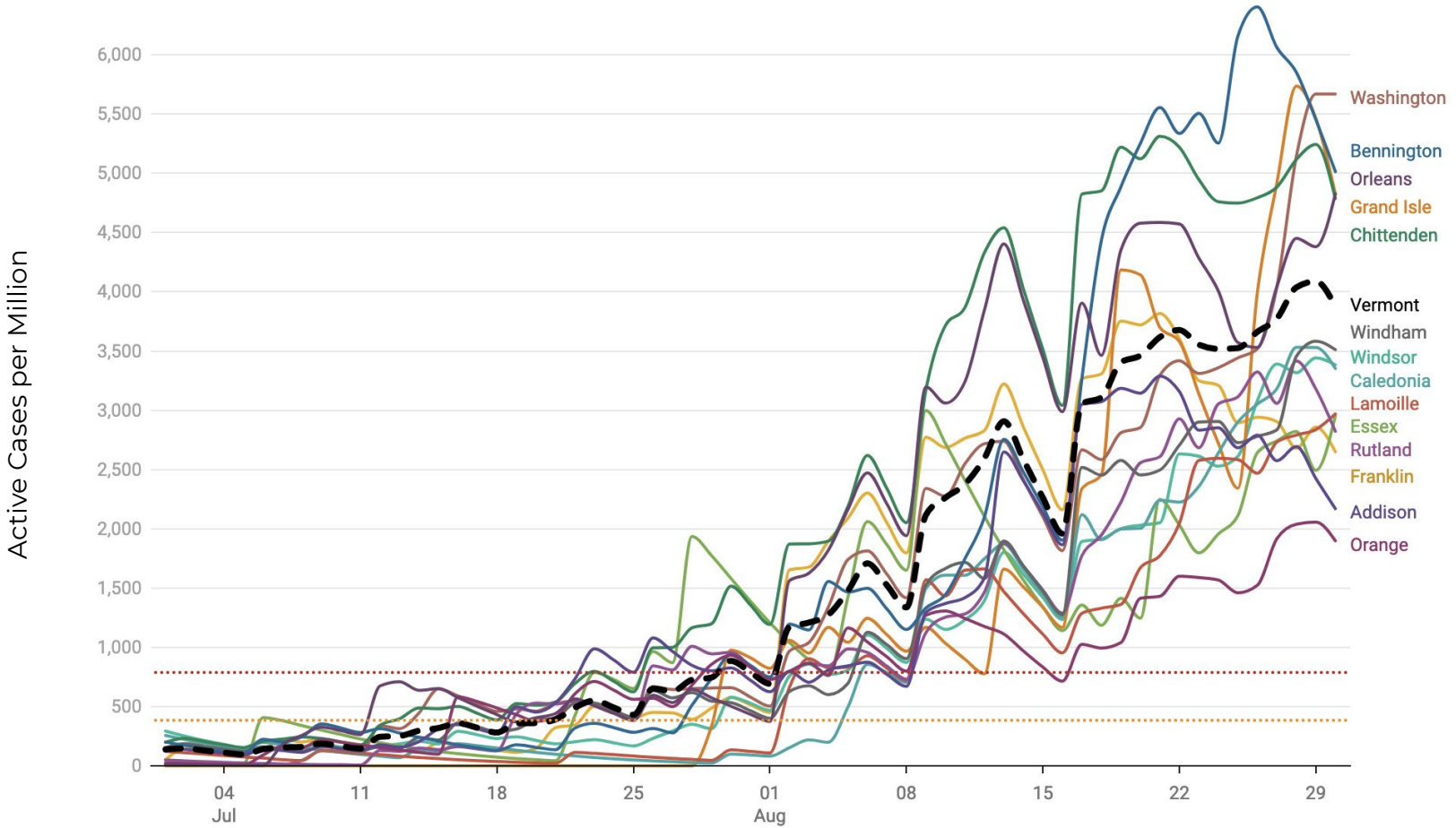
Source: Vermont Dept. of Health—August 30, 2021

Change in Vermont Weekly Case Growth



Source: Vermont Dept. of Health (Tuesday to Monday)

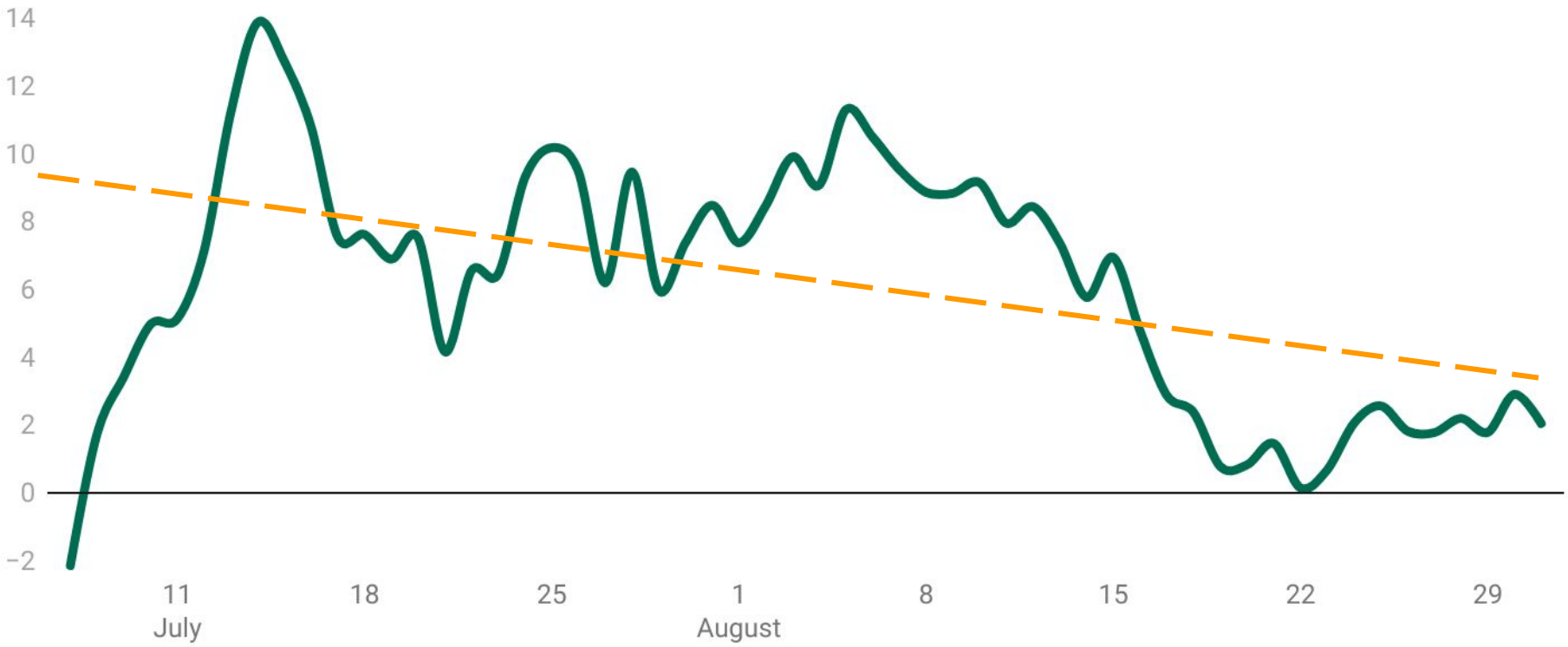
Active Cases in Vermont Counties



Source: Vermont Dept. of Health—August 31, 2021; DFR Active Case Algorithm (per million)

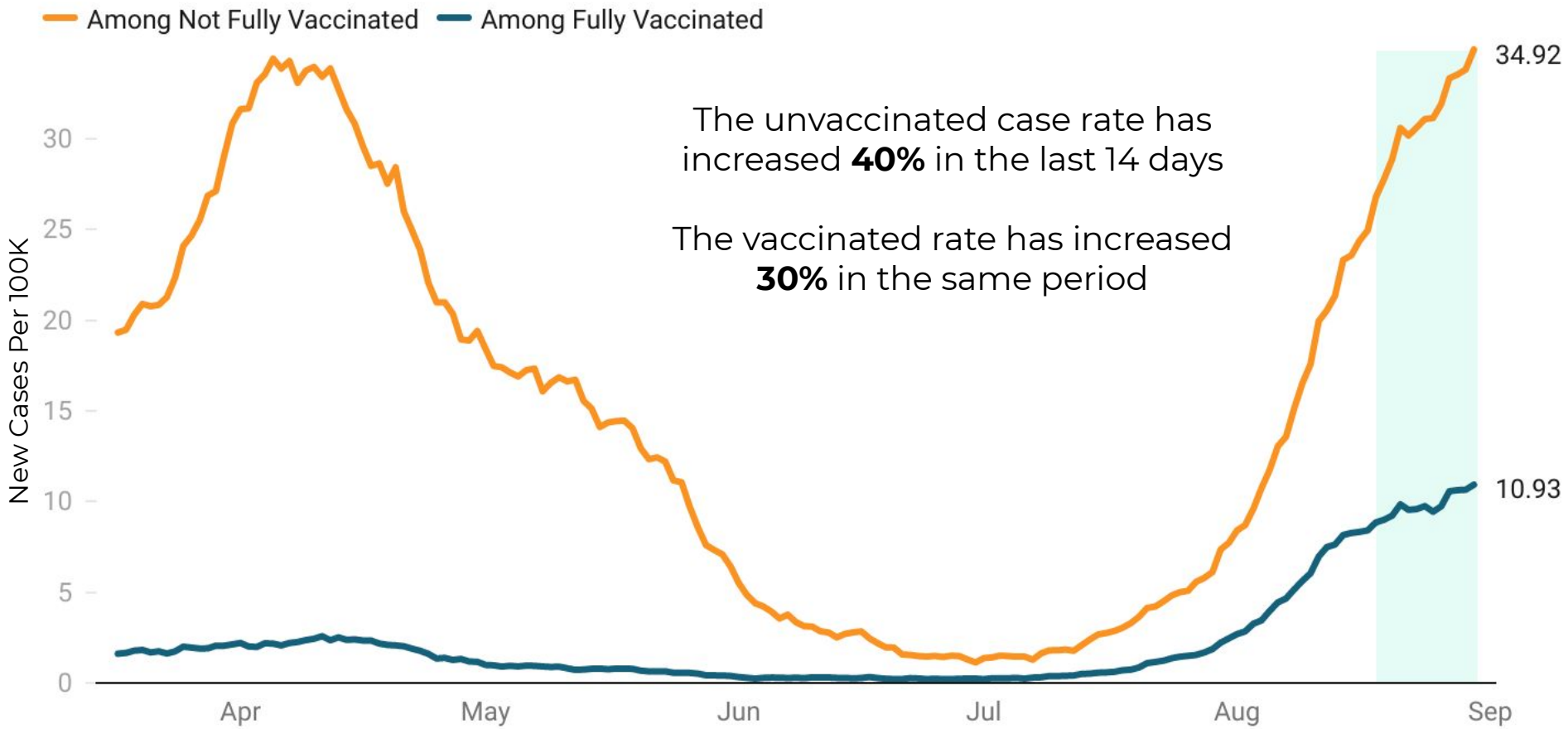
Vermont Case Growth Trends

Daily growth rate change in Vermont's 14-day case average



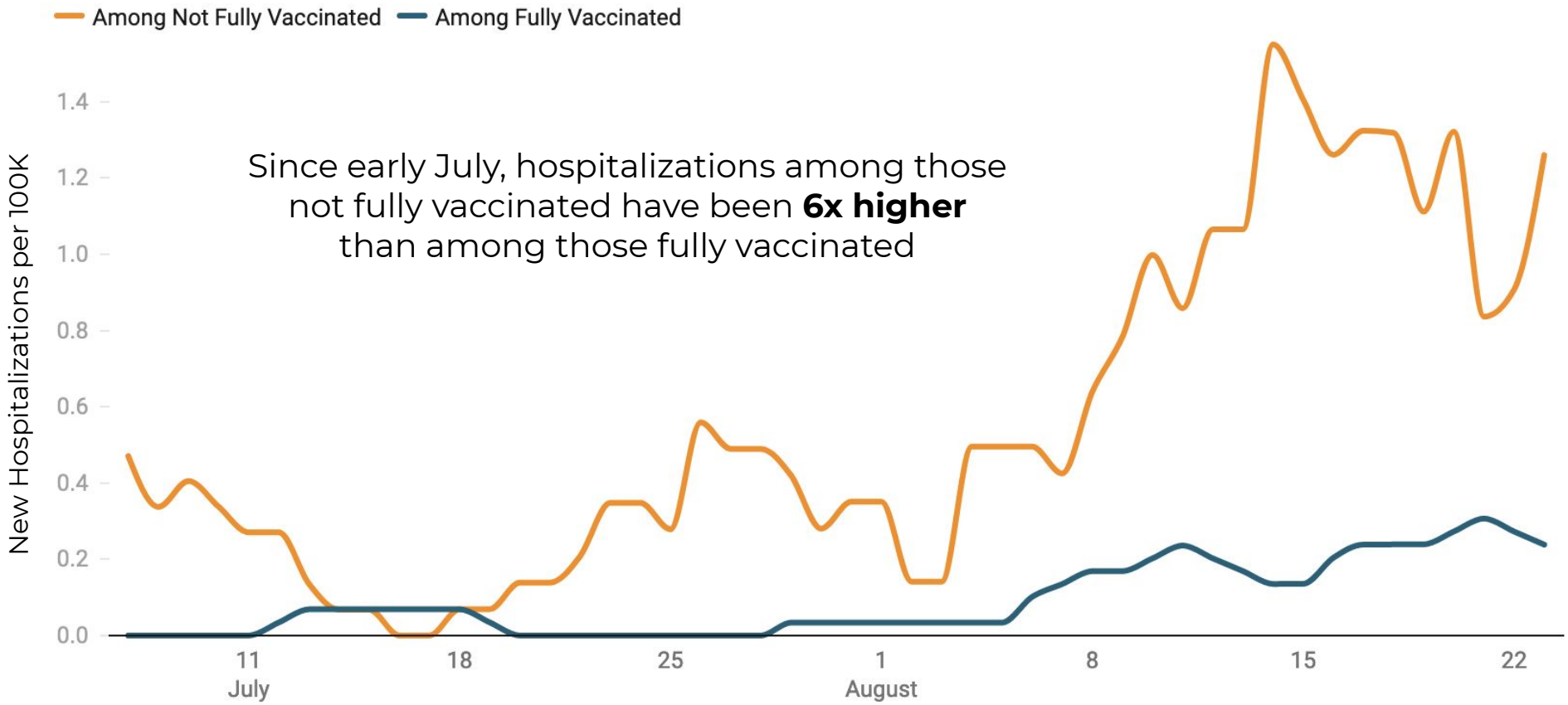
Source: Vermont Dept. of Health—August 30, 2021

Vermont COVID-19 Cases Per 100k (14 Day Average)



Source: Vermont Dept. of Health and CDC—August 30, 2021

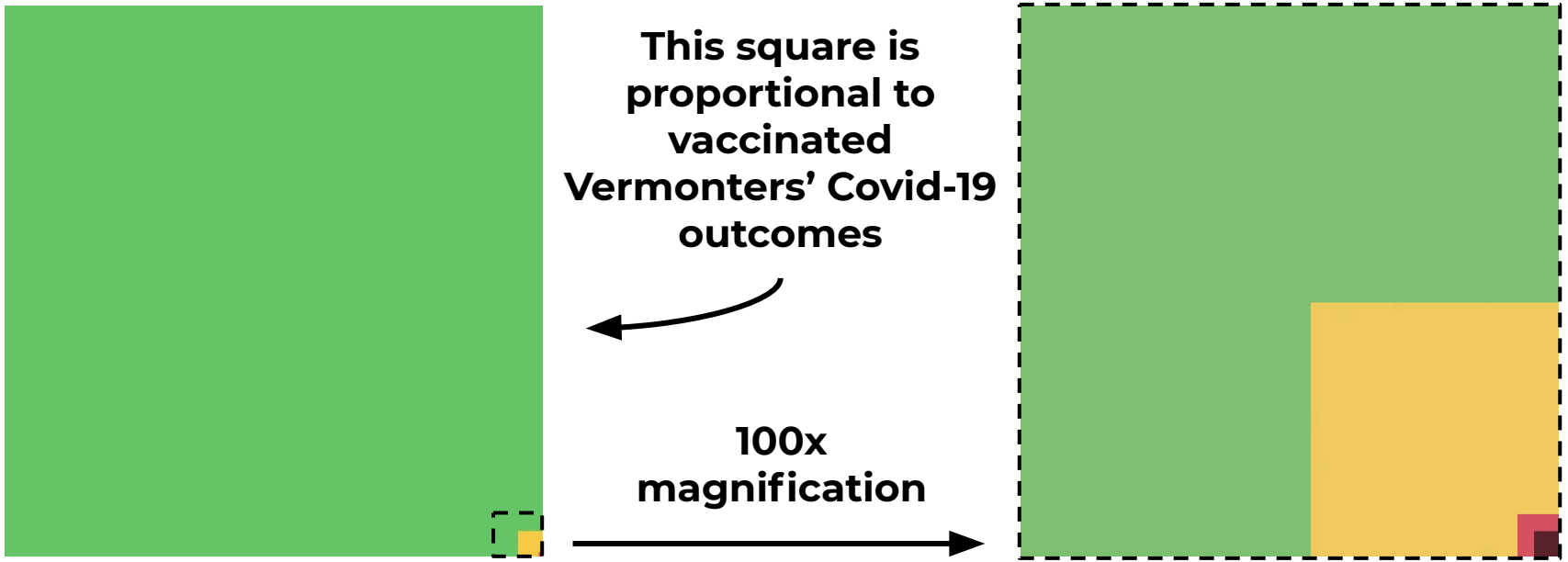
COVID-19 Hospitalizations per 100K in Vermont (7-Day Average)



Source: Vermont Dept. of Health and CDC—August 30, 2021

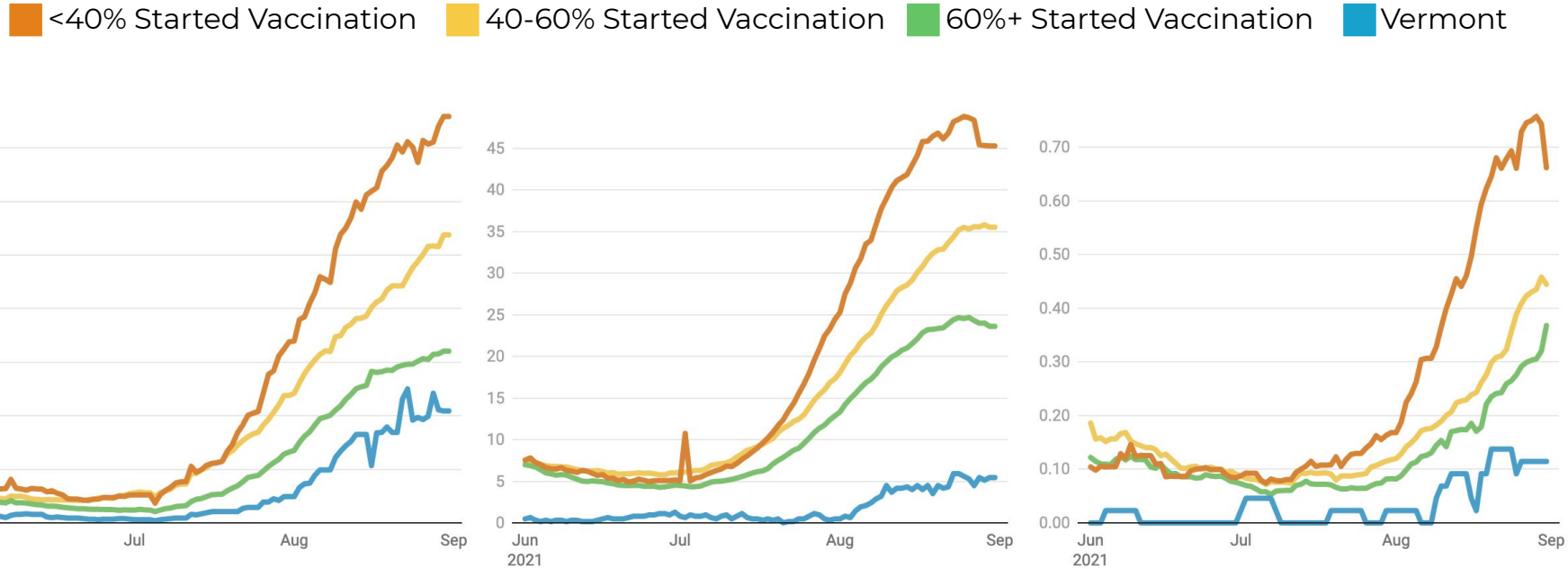
Covid-19 Among Fully Vaccinated People in Vermont

- 423,508 fully vaccinated
- 1,550 tested positive (0.36%)
- 36 hospitalized for Covid-19 (0.009%)
- 13 died due to Covid-19 (0.003%)



Source: Vermont Department of Health and CDC; percentages calculated using CDC total fully vaccinated; data from January 1, 2021 to August 28, 2021; magnification 100x areal/10x linear

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

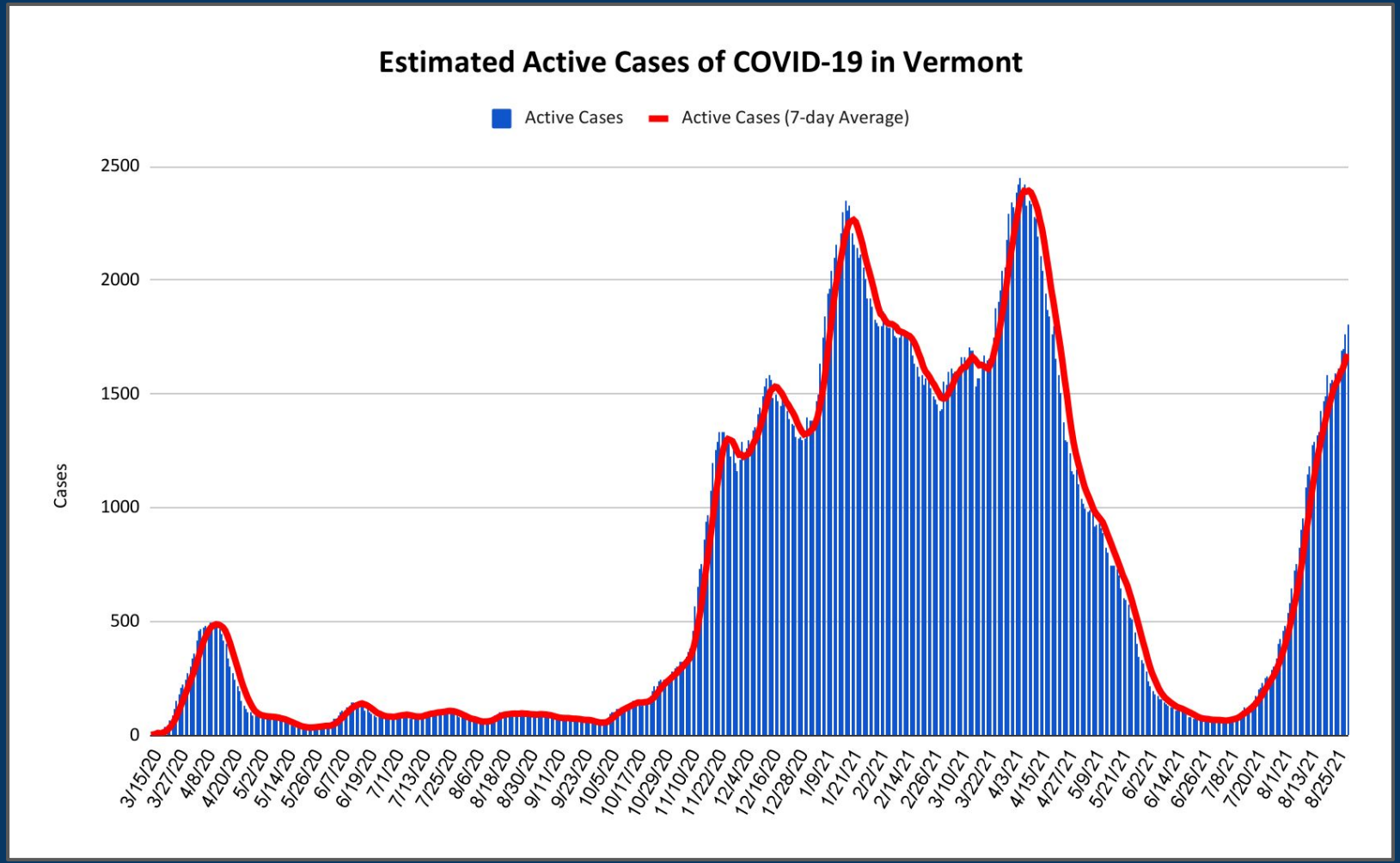


Infections per 100K

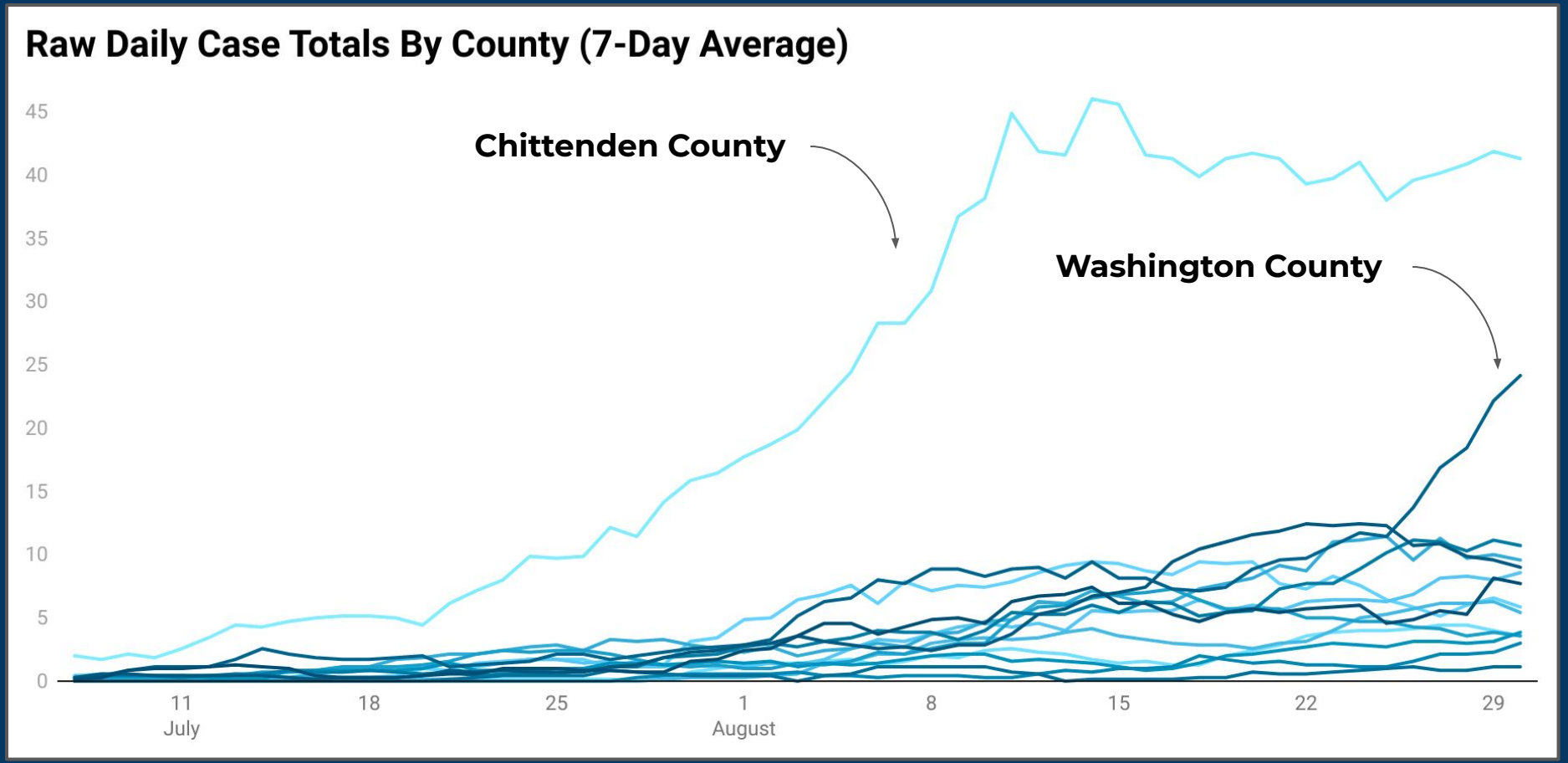
Hospitalizations per 100K

Deaths per 100K

Source: Covid Act Now—August 23, 2021; Measures last 14 days; 16 states <40%, 17 states 40-60%, 20 states 60%+ vaccination



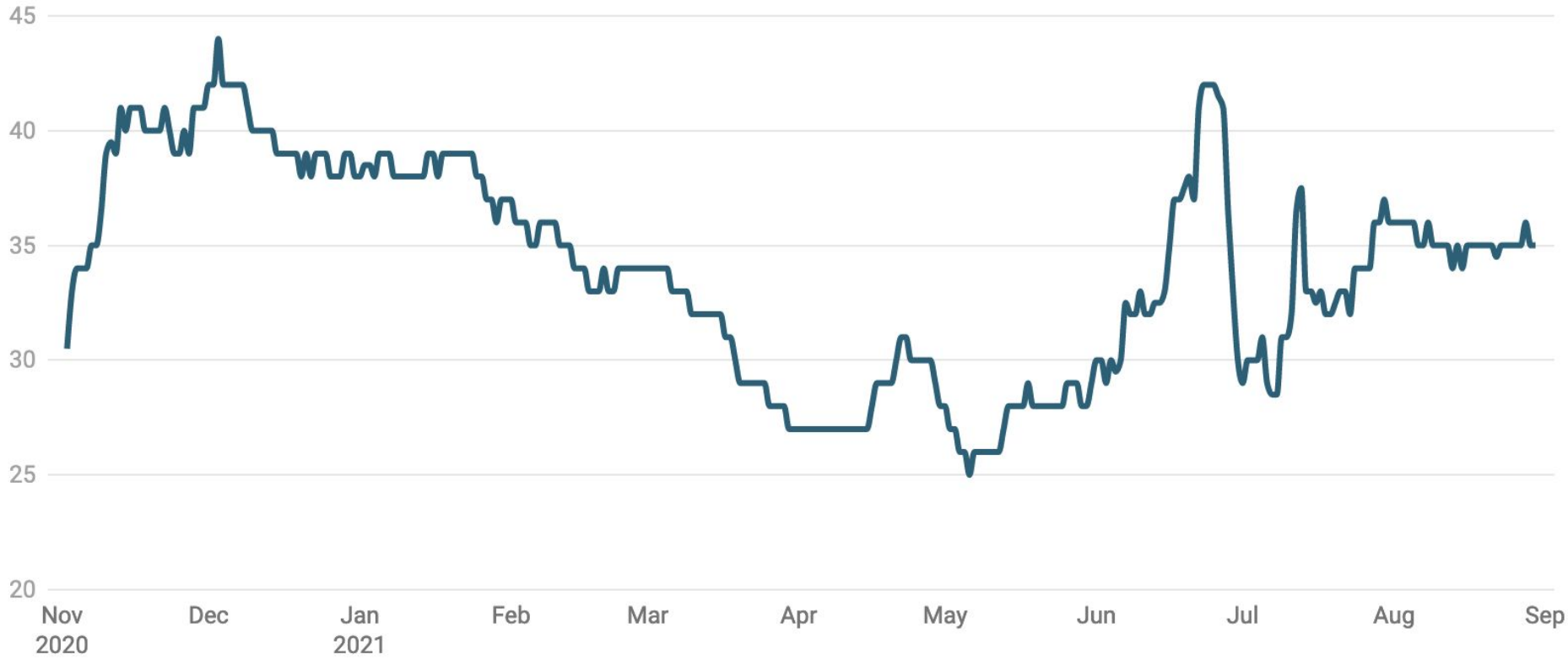
Source: Vermont Dept. of Health—August 31, 2021



Source: Vermont Dept. of Health—August 31, 2021

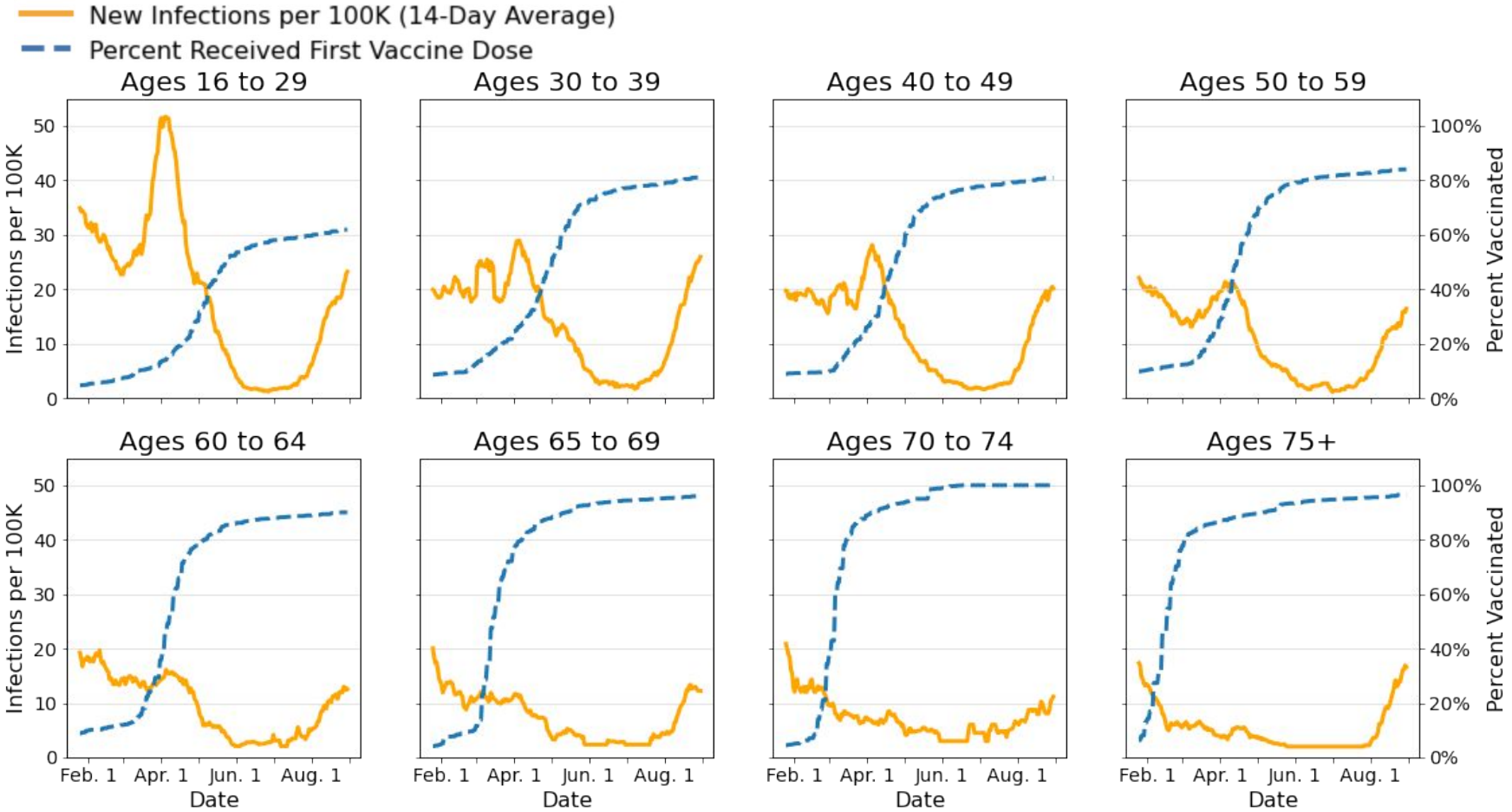
Age of Infected Vermonters

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



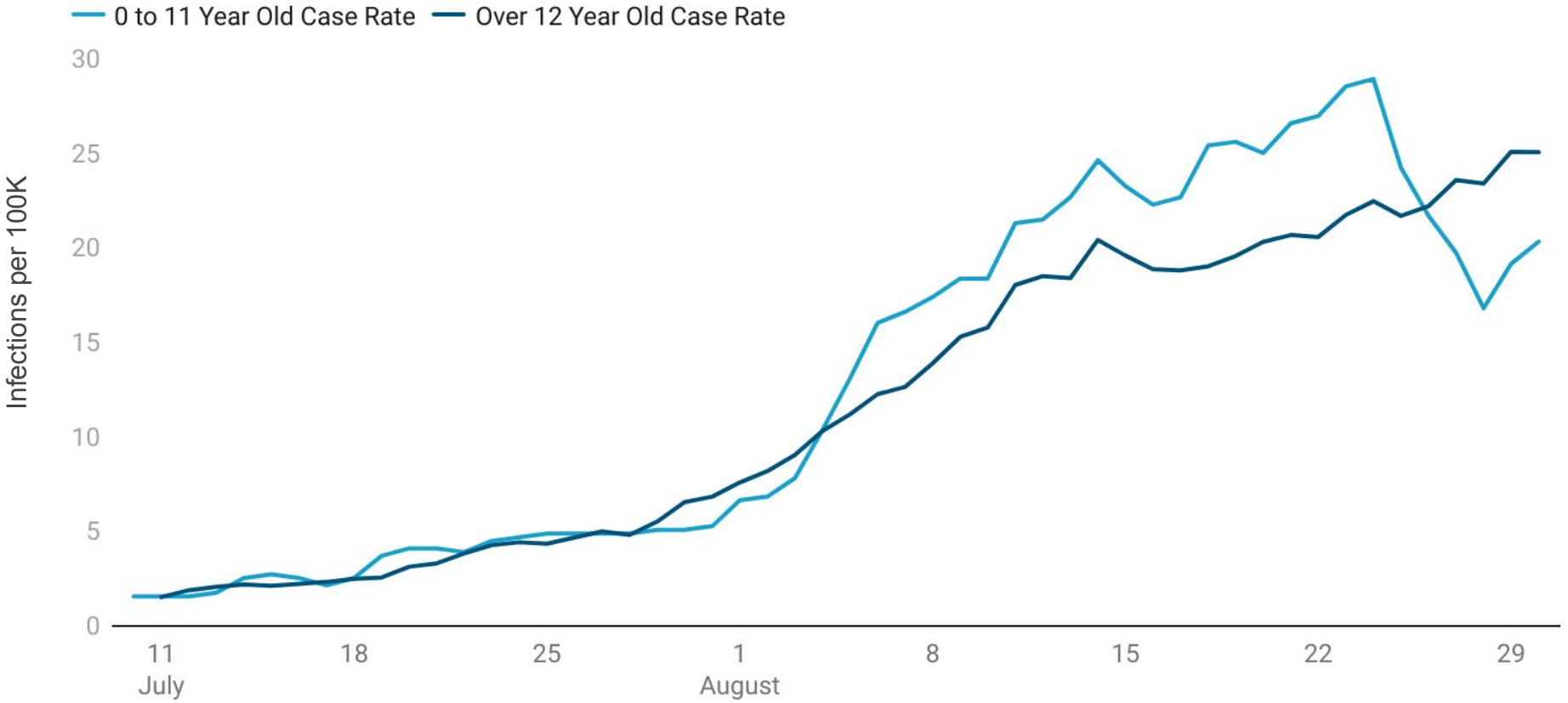
Source: VDH—August 31, 2021

Vermont Case Rate & Vaccination by Age Band



Source: VDH—August 24, 2021

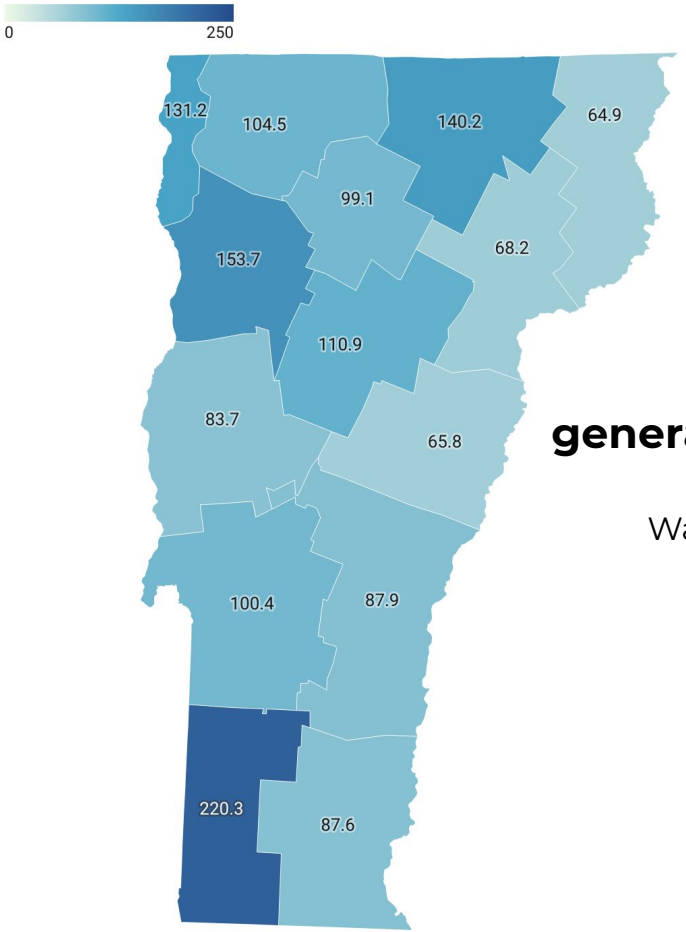
Vermont Case Rates By Age (7-Day Average)



Souce: VDH—August 30, 2021

Vermont Weekly Cases by County (per 100,000)

Results Reported August 18 to 23



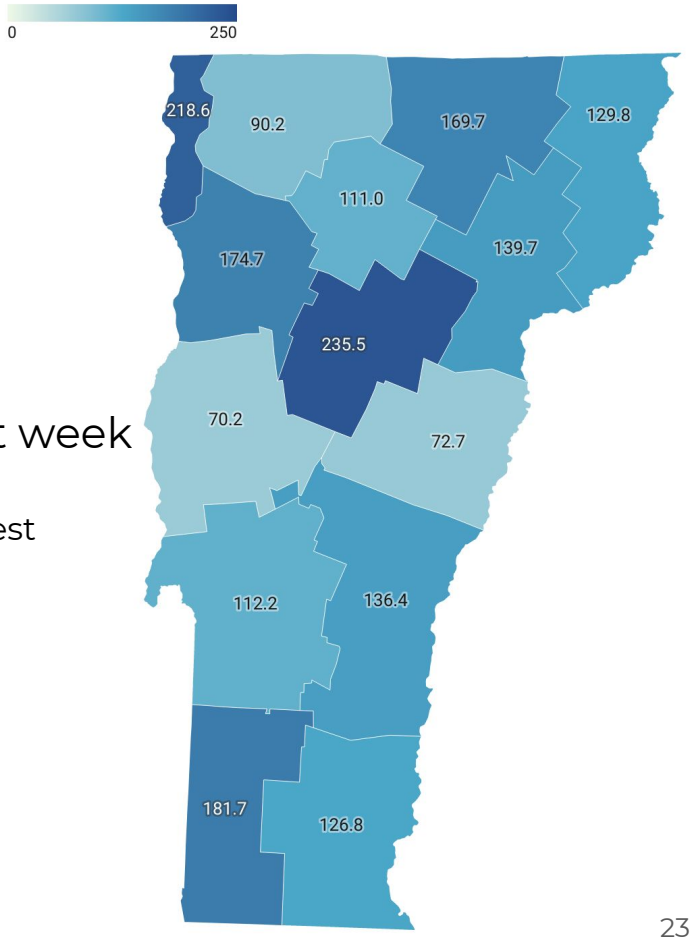
Map: Vermont DFR COVID Modeling Team • Source: Vermont Dept. of Health • Created with Datawrapper

Covid-19 case rates
generally increased this past week

Washington County seeing highest case rates in Vermont

Vermont Weekly Cases by County (per 100,000)

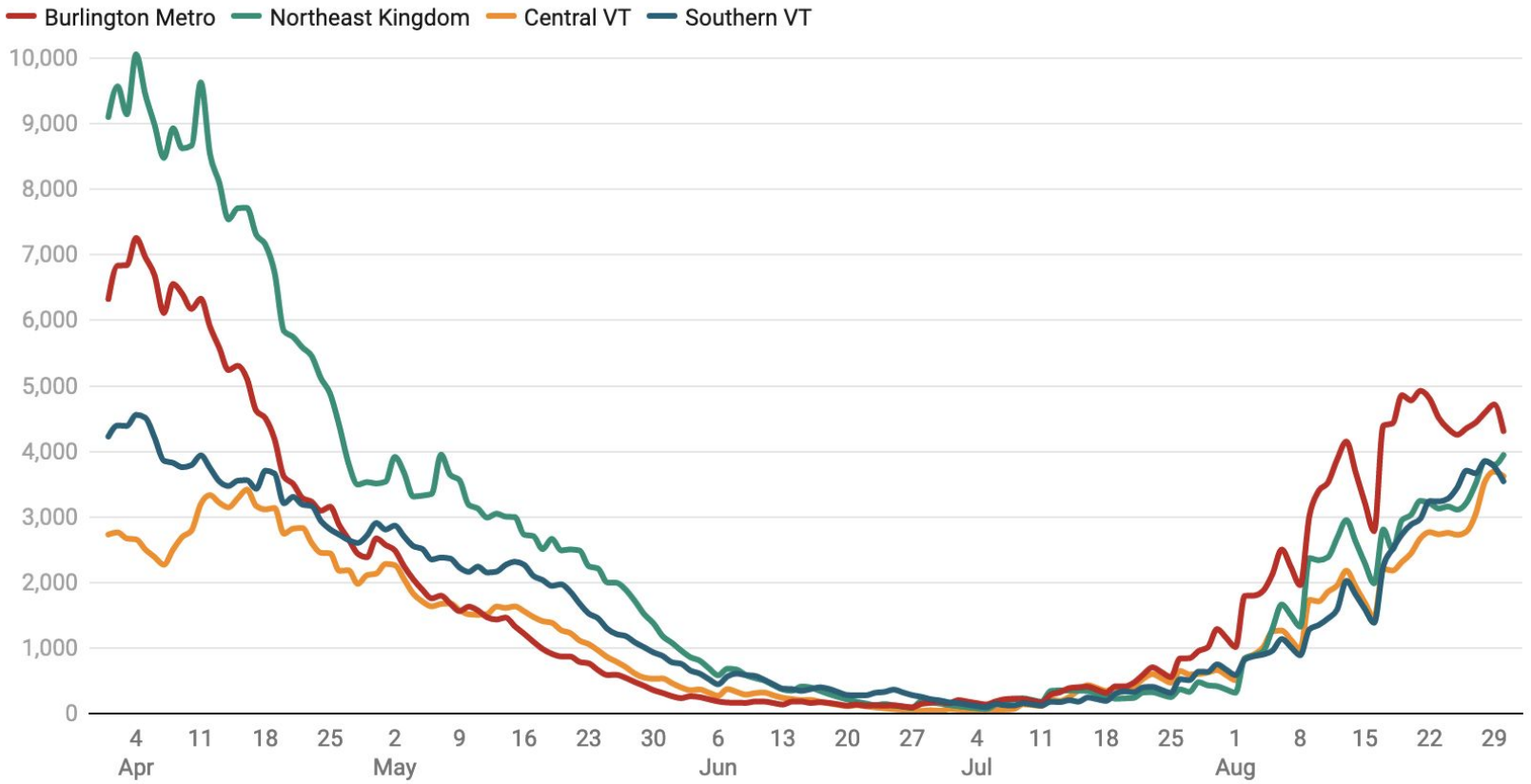
Results Reported August 24 to 30



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

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).



Souce: VDH & DFR Active Case Algorithm —August 31, 2021

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
14 (of 16)	25,350	23,404	769	764	413
		92.3%	3.0%	3.0%	1.6%

Week Number 1: **32 positive cases** out of 10,347 tests

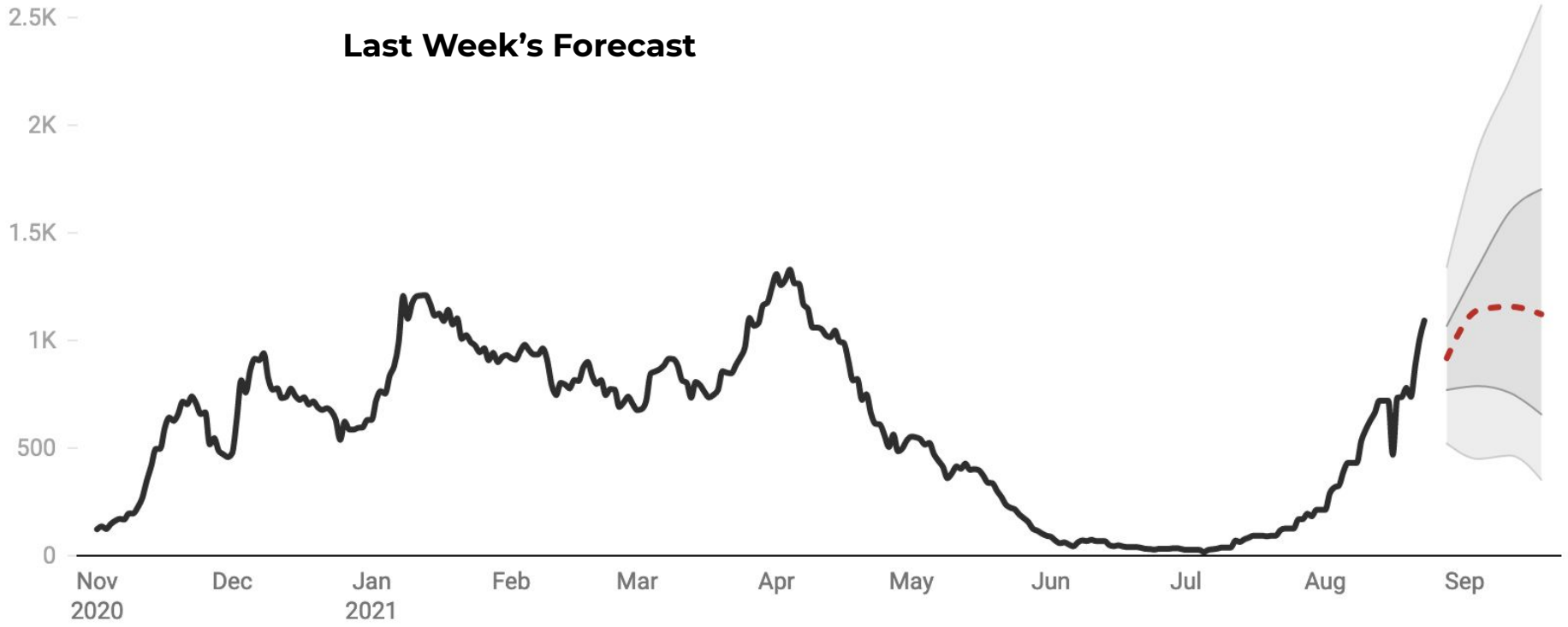
Active Outbreaks in Long Term Care Facilities

Facility Name	Total COVID-19 Cases
Cedar Hill Skilled Nursing Facility, *Windsor*	29
Maple Lane Nursing Home, *Barton*	24
Ethan Allen Residence, *Burlington*	24
Maple Ridge Memory Care, *Essex Junction*	14
Vermont Veterans Home, *Bennington*	13
Harbor Village, *Burlington*	Not Shown*
Mansfield Place, *Essex*	Not Shown*
Total (of facilities shown)	104

Source: Vermont Department of Health—August 30, 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*

VT 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.



Souce: CDC Ensemble Model—August 23, 2021

VT Weekly COVID-19 Infections Forecast

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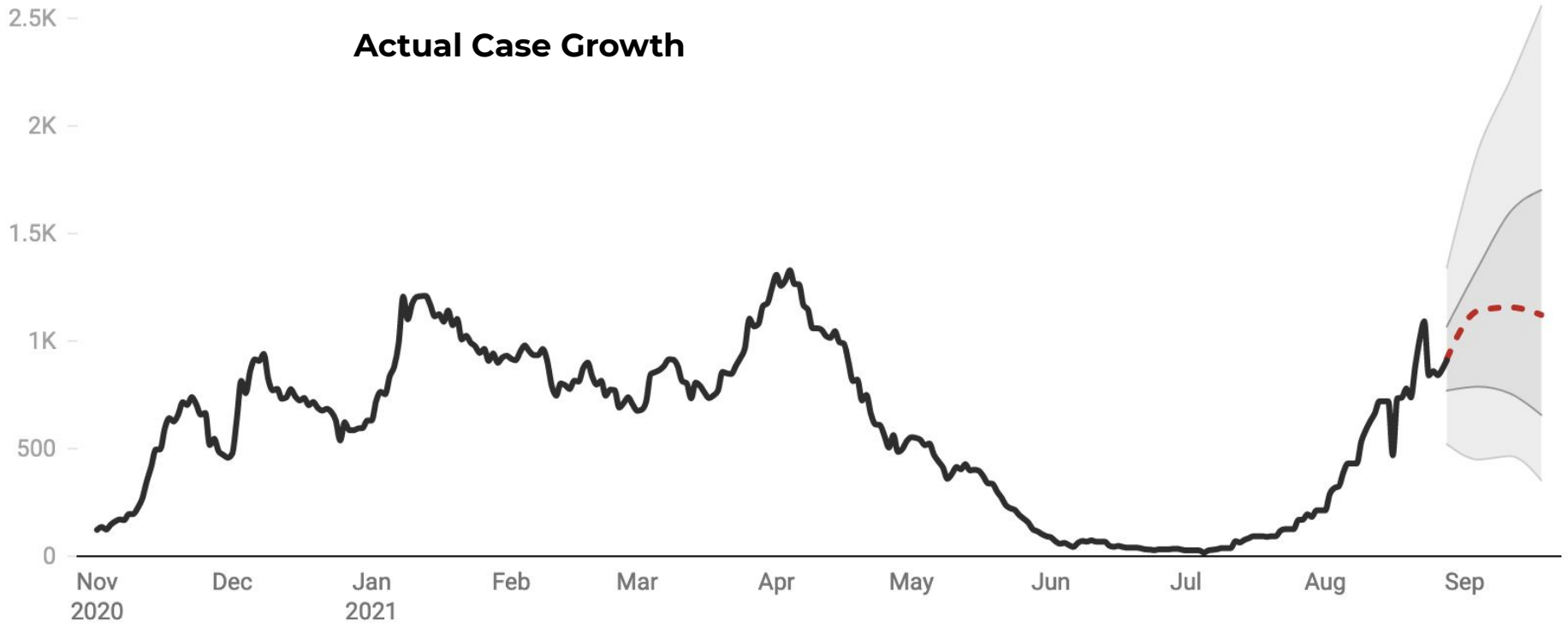

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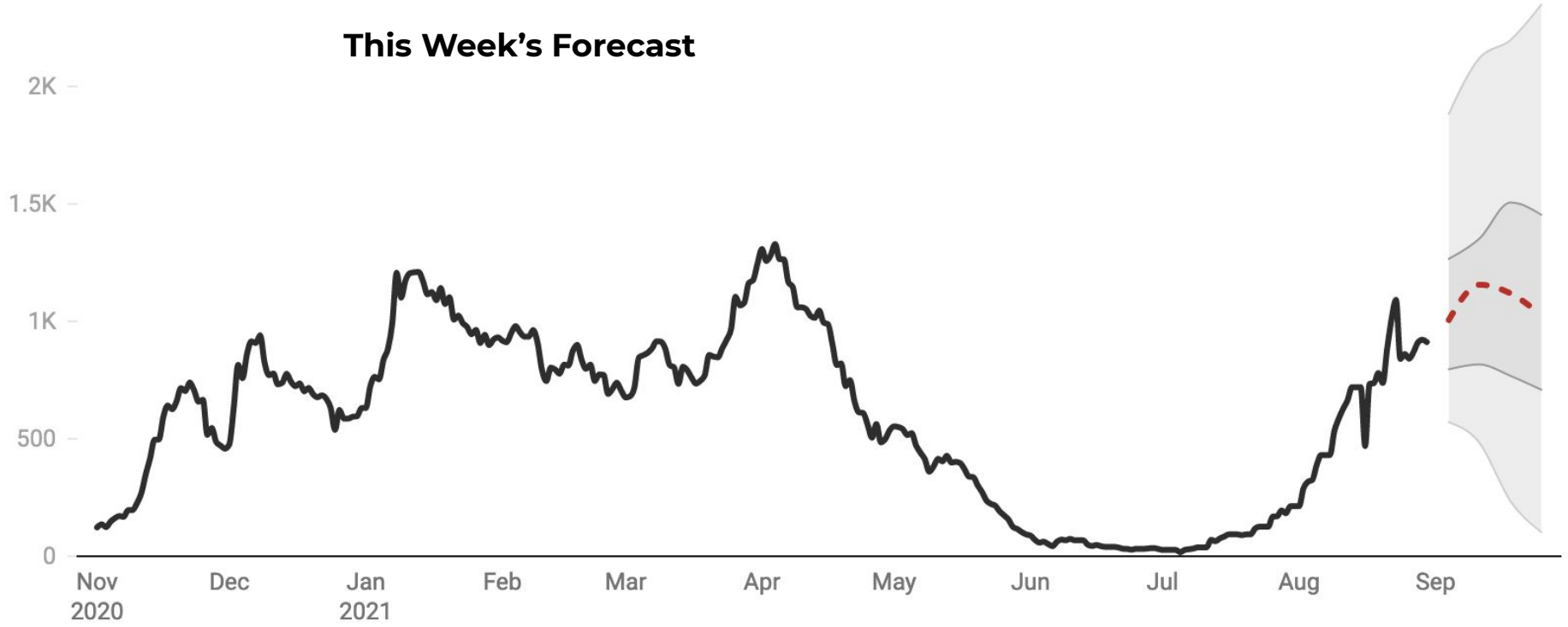
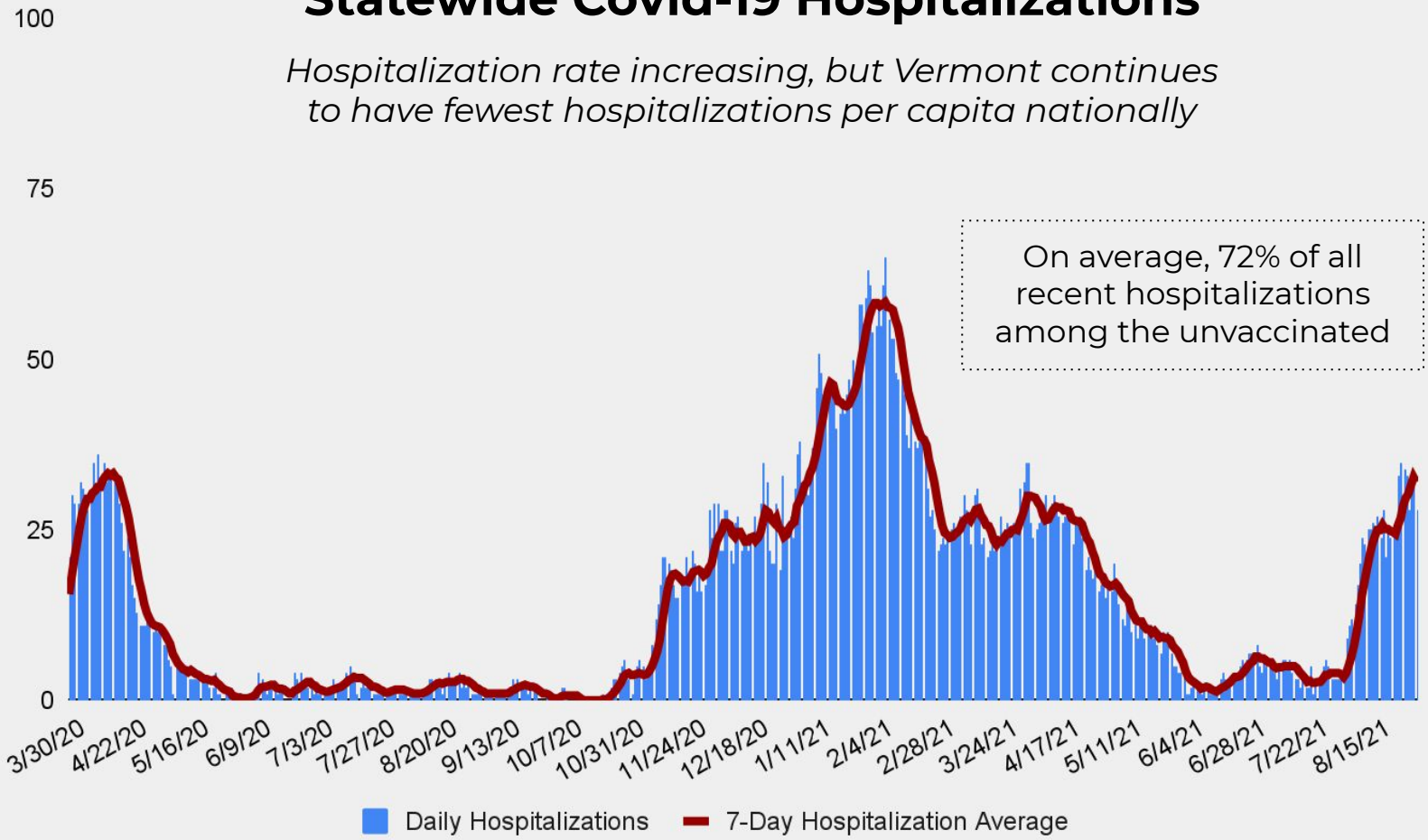


Souce: CDC Ensemble Model—August 30, 2021

Vermont Hospitalization Data

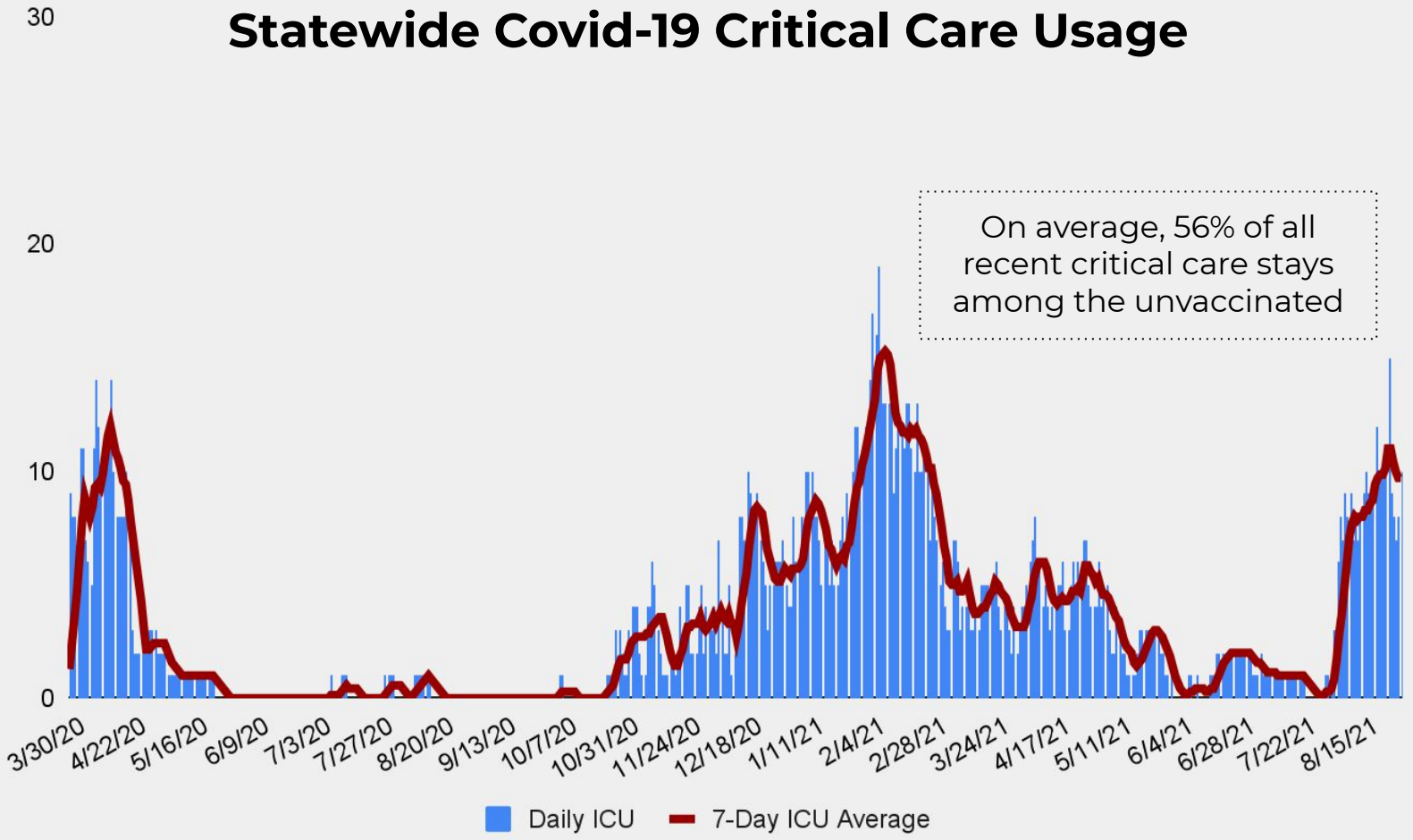
Statewide Covid-19 Hospitalizations

Hospitalization rate increasing, but Vermont continues to have fewest hospitalizations per capita nationally



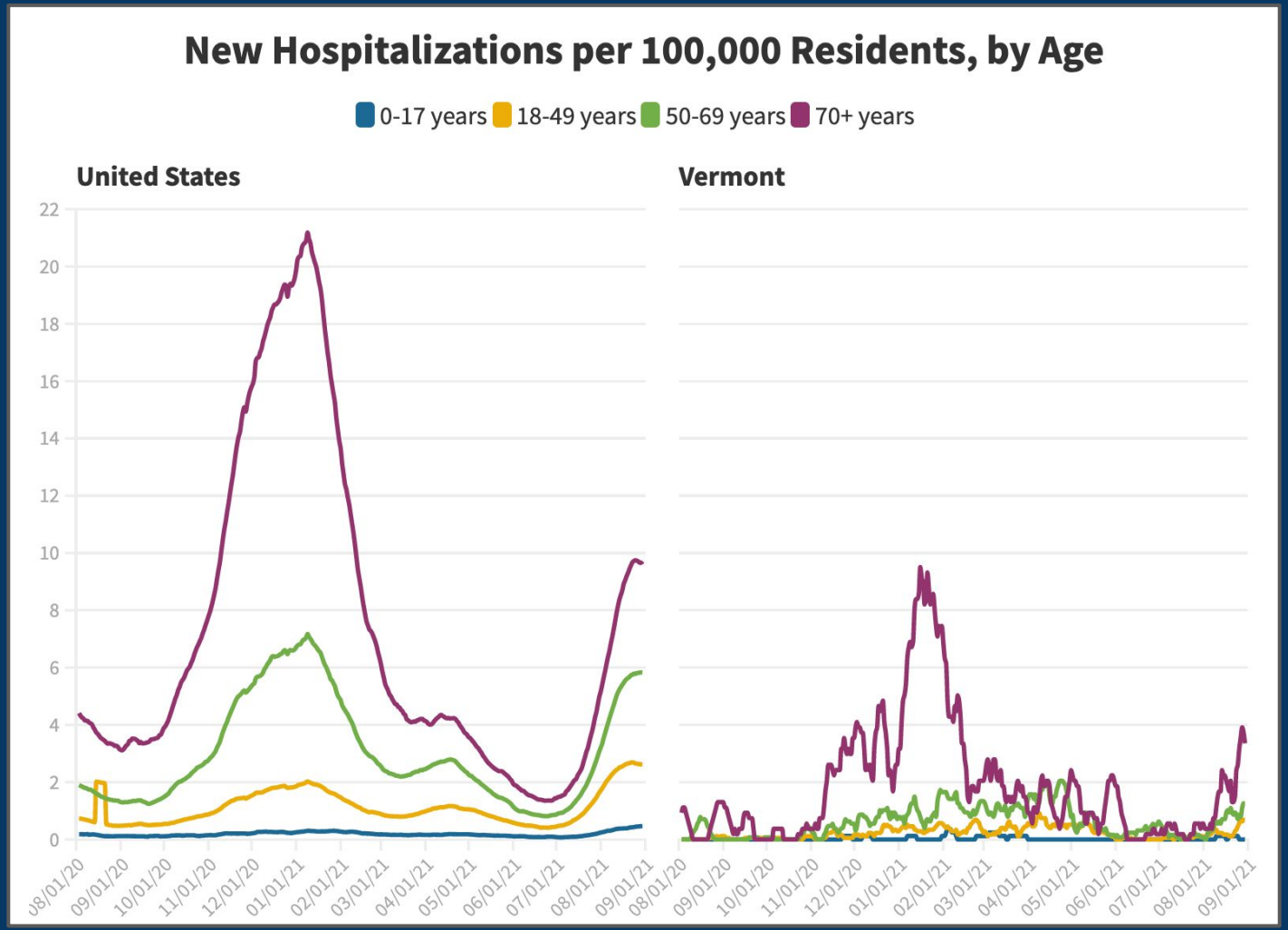
Source: Vermont Department of Health—August 30, 2021

Statewide Covid-19 Critical Care Usage



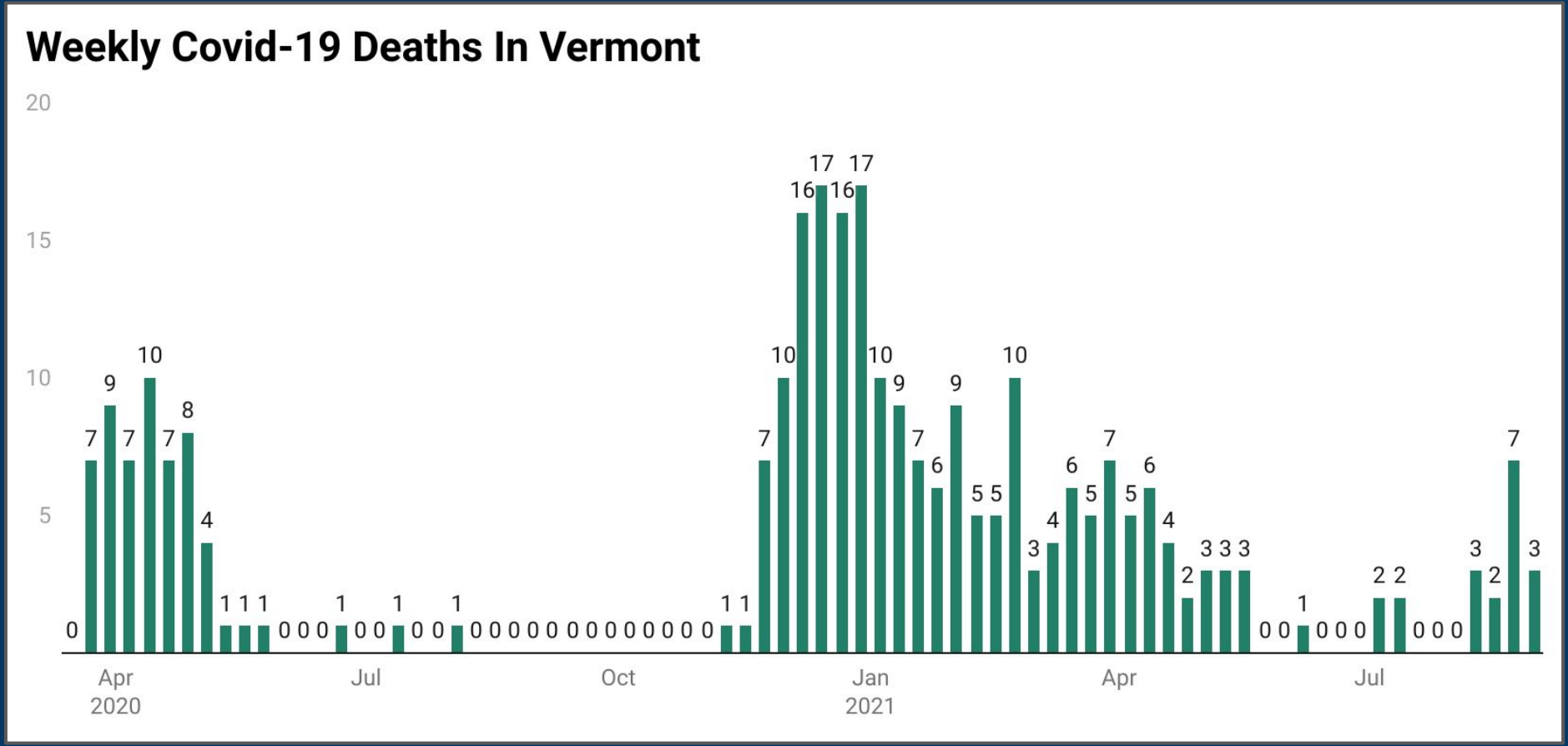
Source: Vermont Department of Health—August 30, 2021

New Hospitalizations per 100K



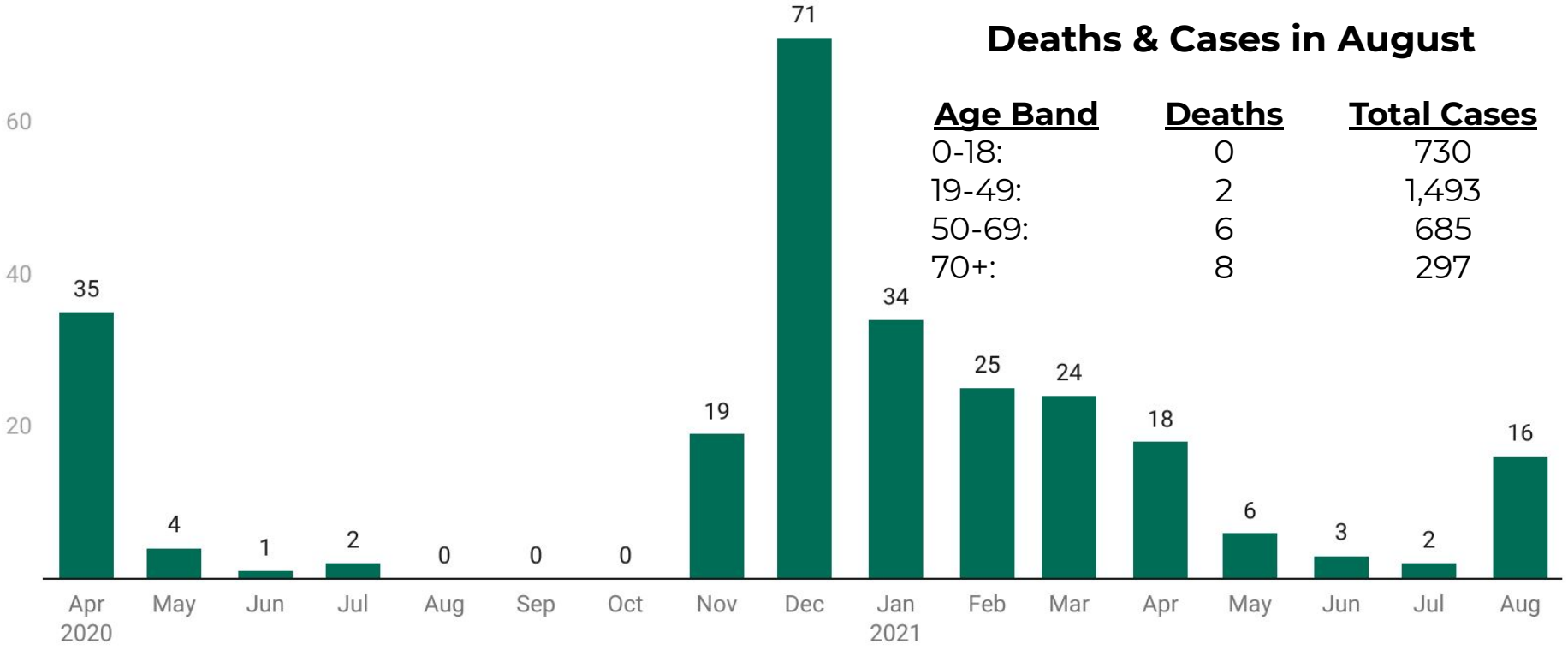
Source: US Dept. of Health & Human Services; 7-day average

Vermont Fatality Data



Source: Vermont Department of Health—August 30, 2021 (week ending)

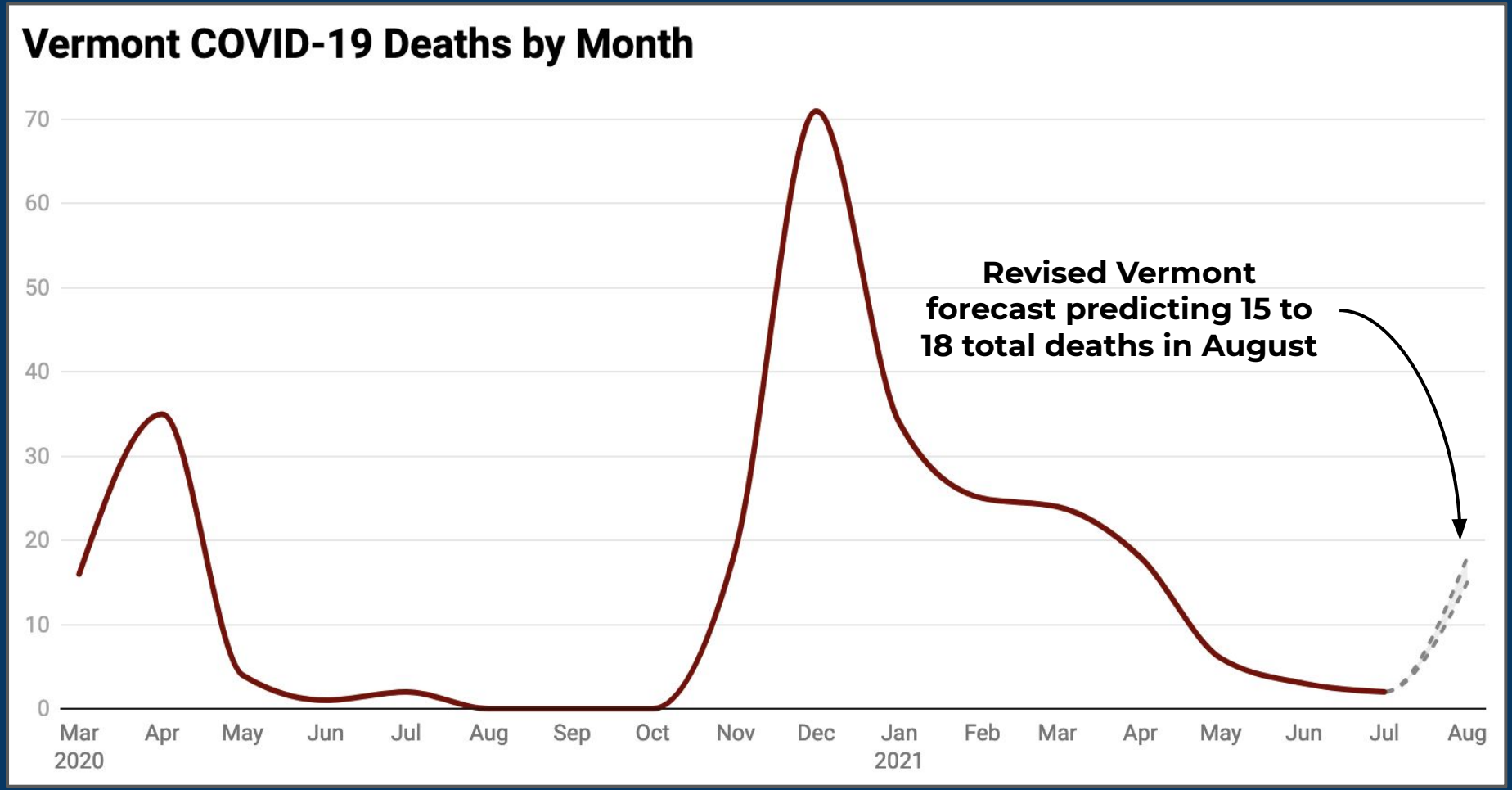
Monthly Covid-19 Deaths In Vermont



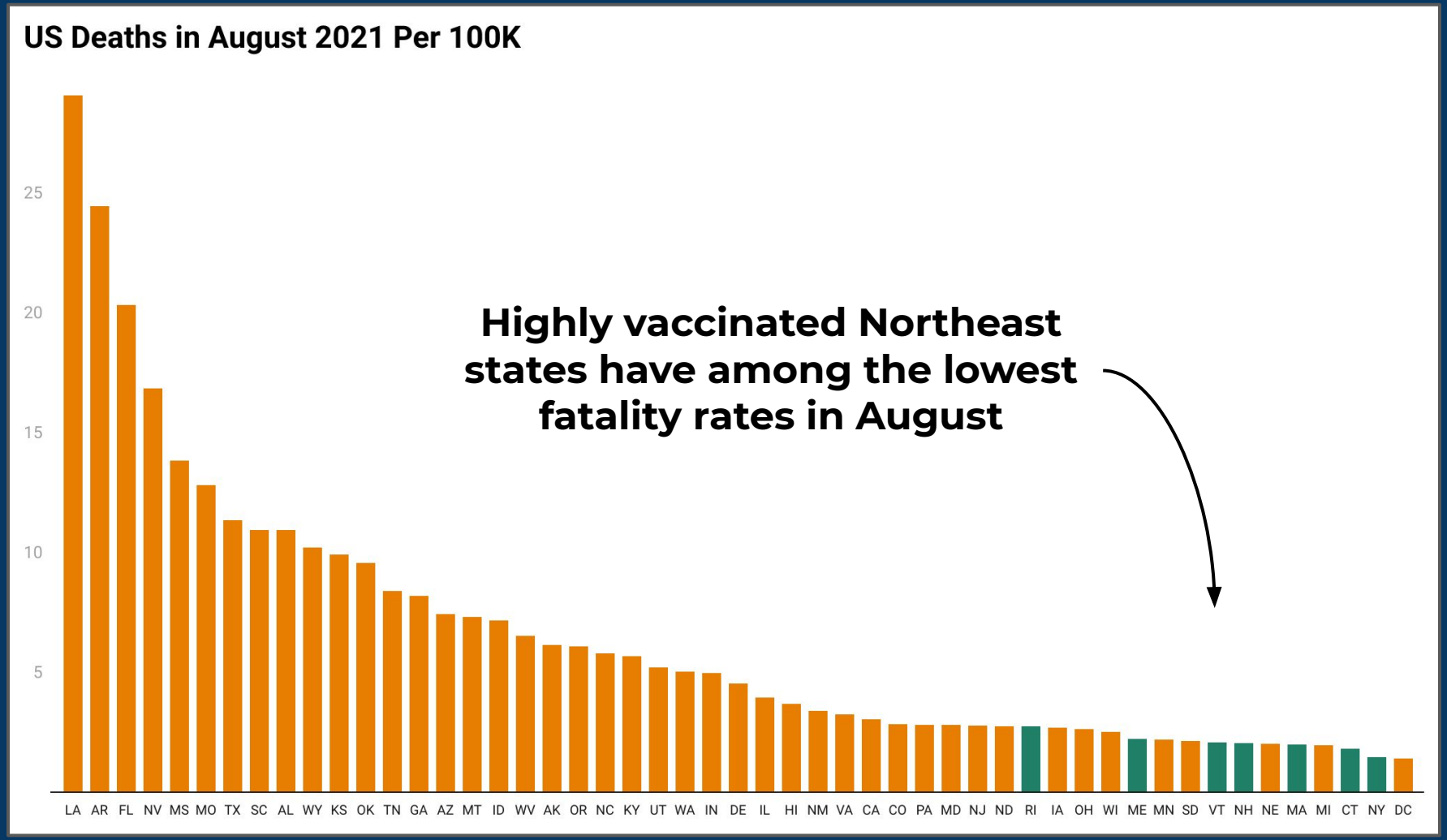
Deaths & Cases in August

Age Band	Deaths	Total Cases
0-18:	0	730
19-49:	2	1,493
50-69:	6	685
70+:	8	297

Source: Vermont Department of Health—August 30, 2021; deaths attributed to month in which death occurred rather than reported



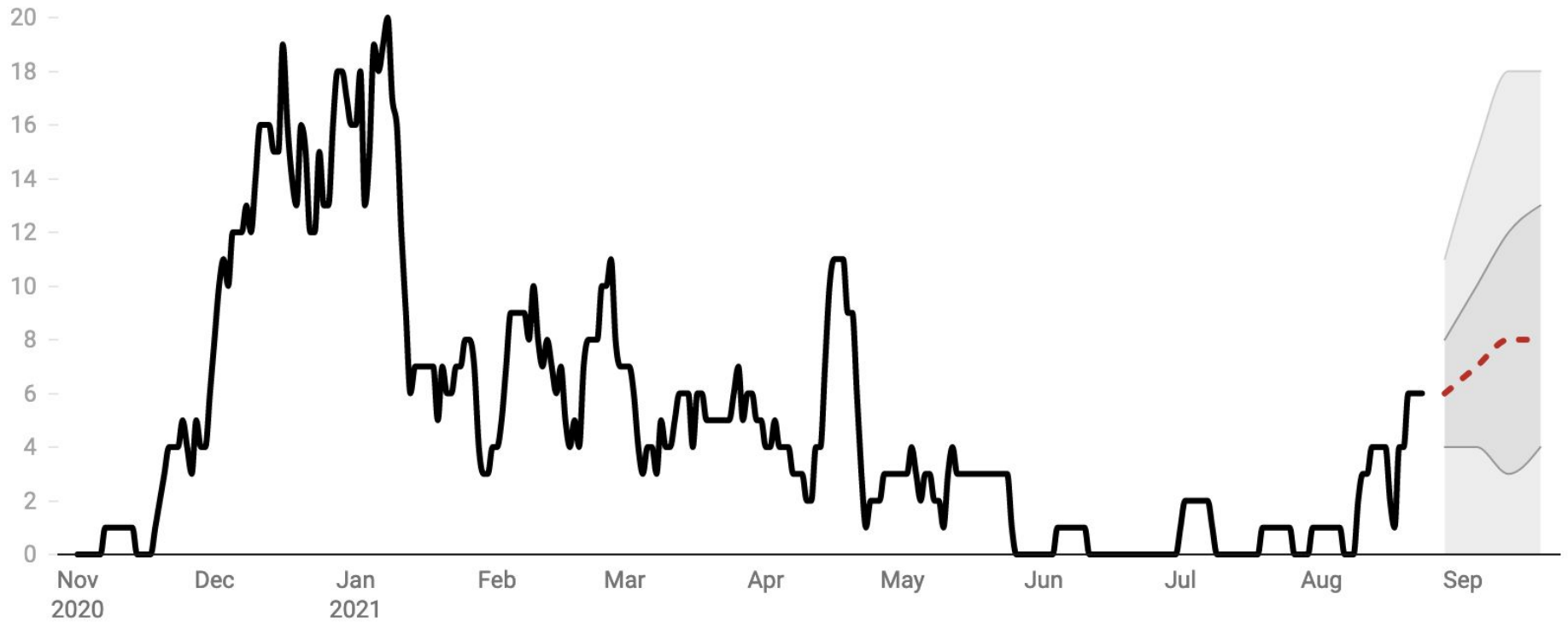
Source: Vermont Department of Health (revised up from 0 to 6 deaths at the start of August)



Source: CDC—August 30, 2021

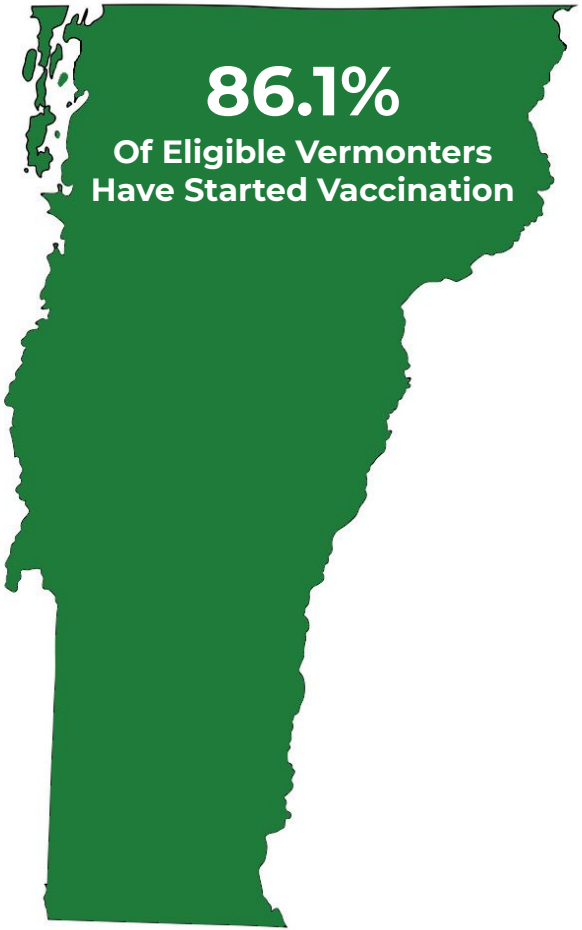
VT Weekly COVID-19 Deaths Forecast

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.



Source: Centers for Disease Control and Prevention—August 30, 2021

Vermont Vaccination Data



Vermont Vaccination

+2,761
Since Last Week

474,467
Vermonters with
at Least 1 Dose

76,483
Eligible Vermonters
still to be vaccinated

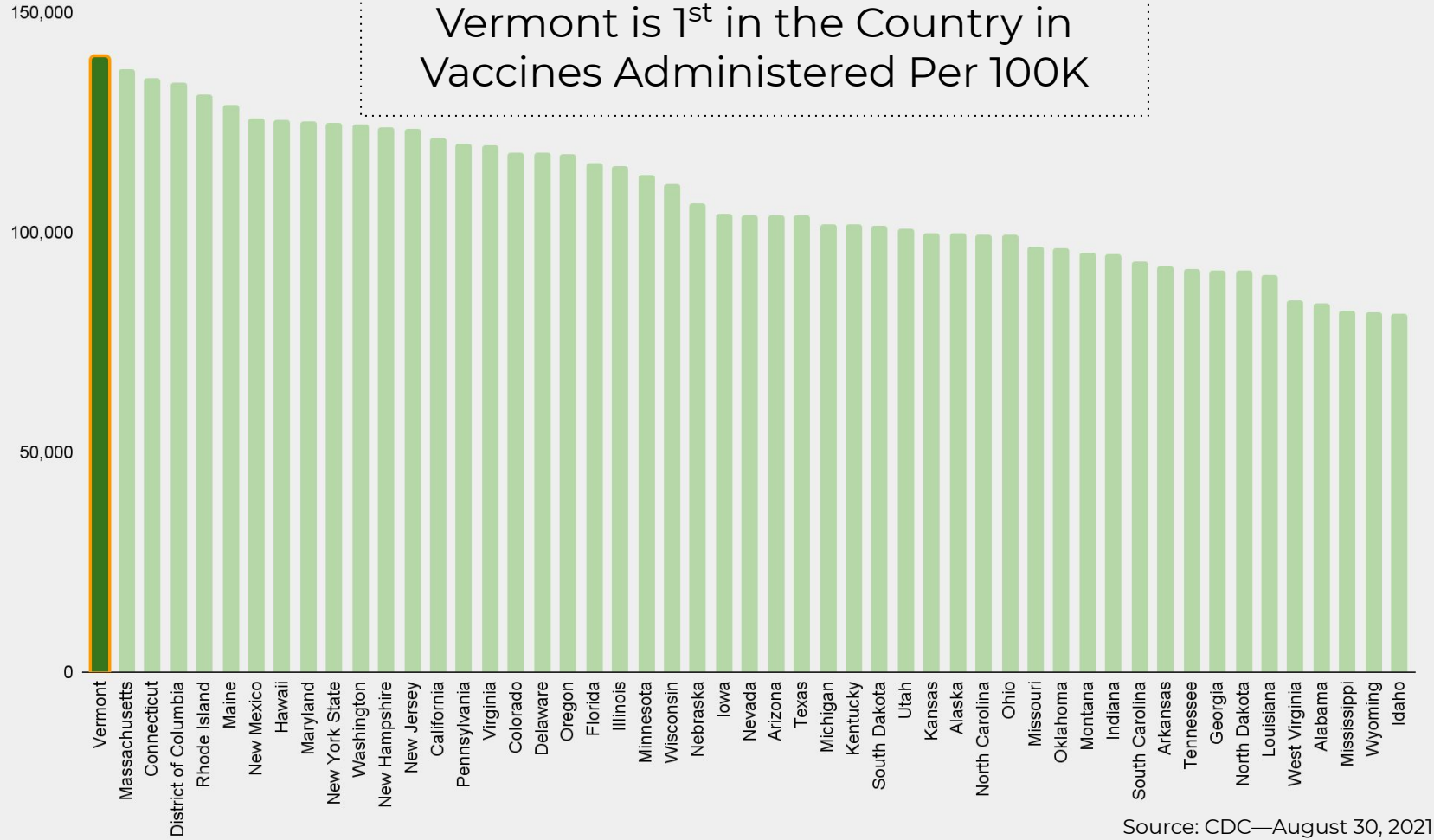
Source: CDC—August 30, 2021

Vermont CDC Vaccine Scorecard

Metric	Figure	State Ranking
Doses Administered per 100K	**139,976**	**1**
% At Least 1 Dose (Eligible Population)	**86.1%**	**2**
% Fully Vaccinated (Eligible Population)	**76.9%**	**1**
% At Least 1 Dose (Full Population)	**76.1%**	**1**
% Fully Vaccinated (Full Population)	**67.9%**	**1**
% Fully Vaccinated (65 & Over)	**94.4%**	**1**

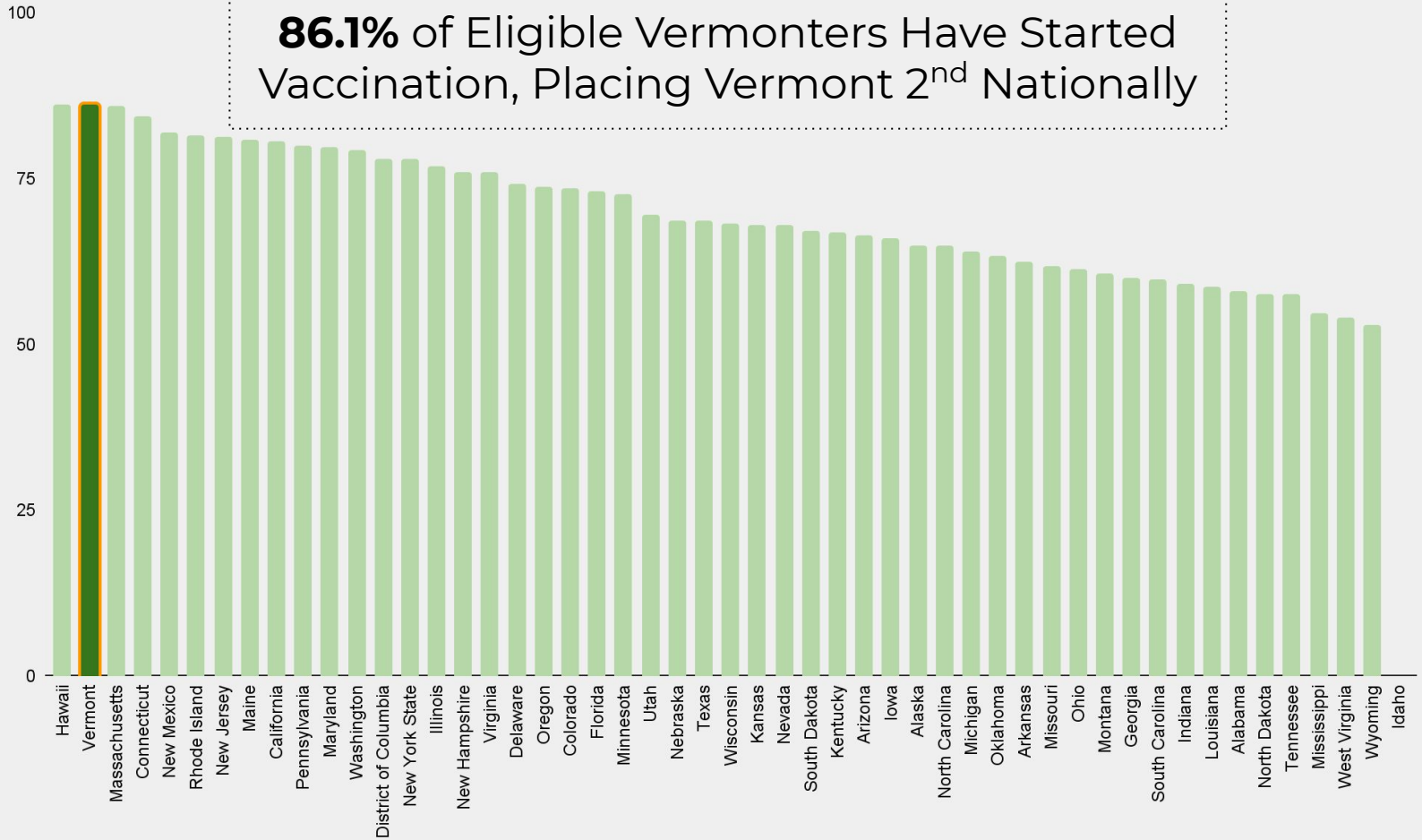
Source: CDC—August 30, 2021

Vermont is 1st in the Country in Vaccines Administered Per 100K



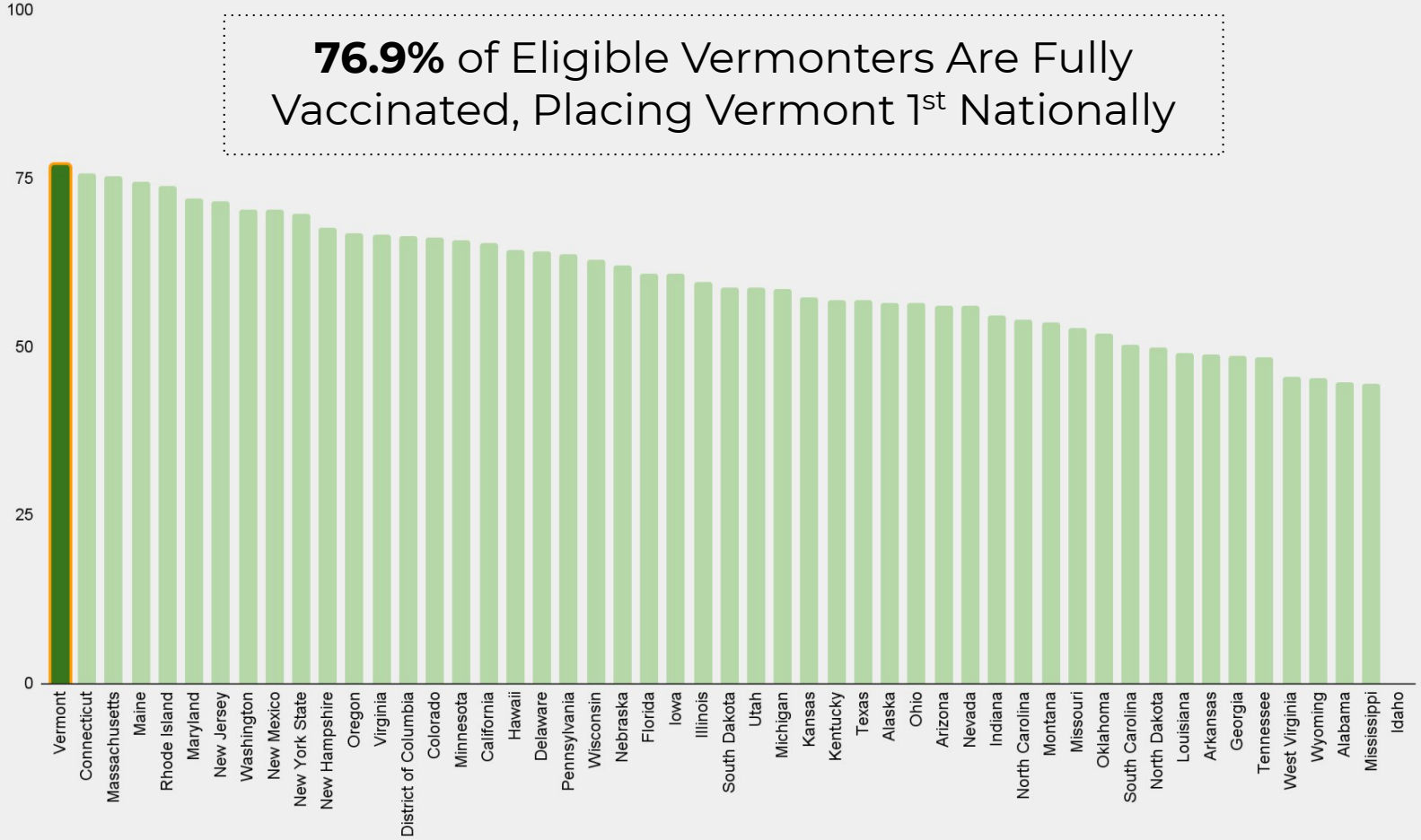
Source: CDC—August 30, 2021

86.1% of Eligible Vermonters Have Started Vaccination, Placing Vermont 2nd Nationally



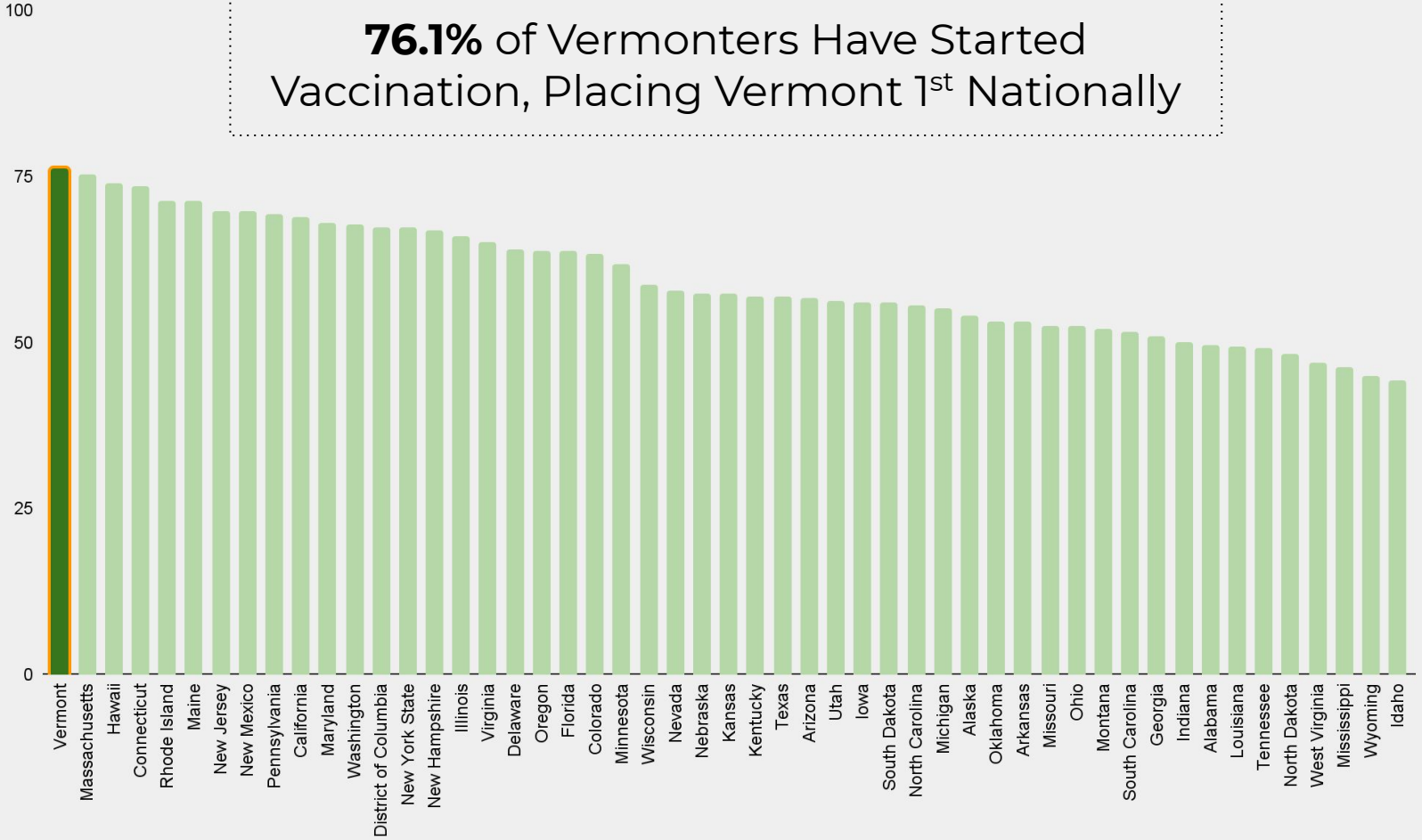
Source: CDC—August 30, 2021

76.9% of Eligible Vermonters Are Fully Vaccinated, Placing Vermont 1st Nationally



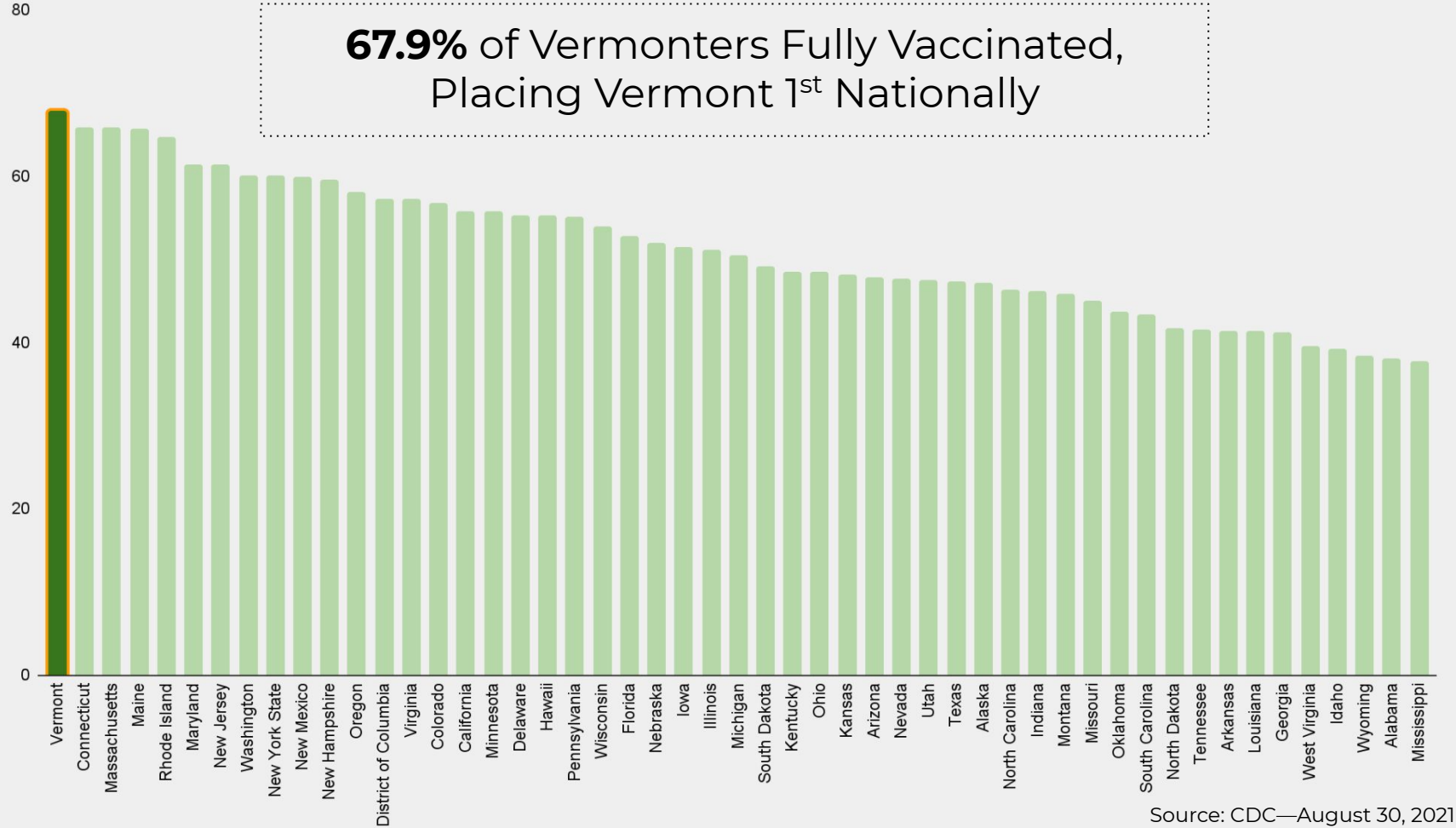
Source: CDC—August 30, 2021

76.1% of Vermonters Have Started Vaccination, Placing Vermont 1st Nationally



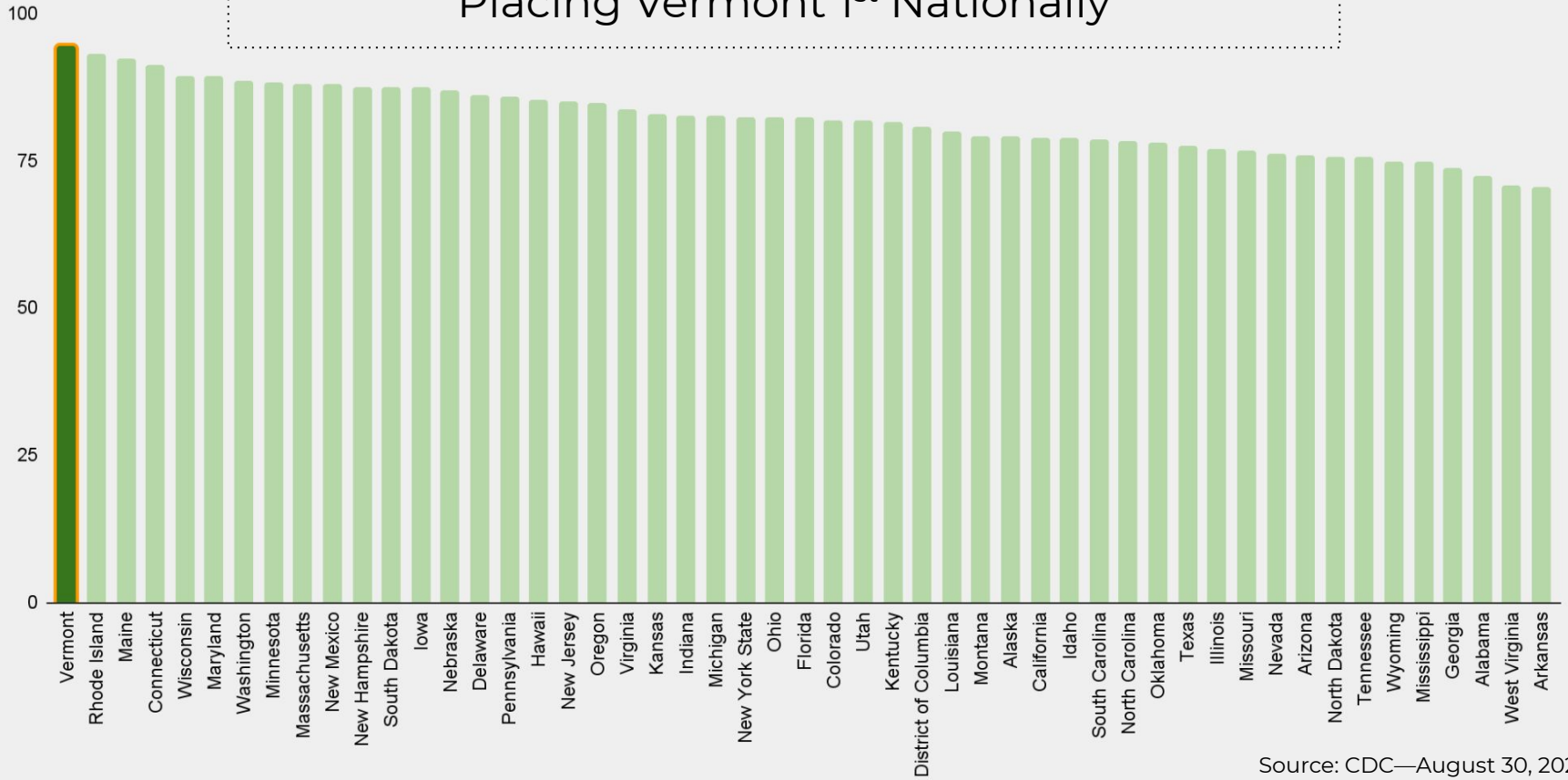
Source: CDC—August 30, 2021

67.9% of Vermonters Fully Vaccinated, Placing Vermont 1st Nationally



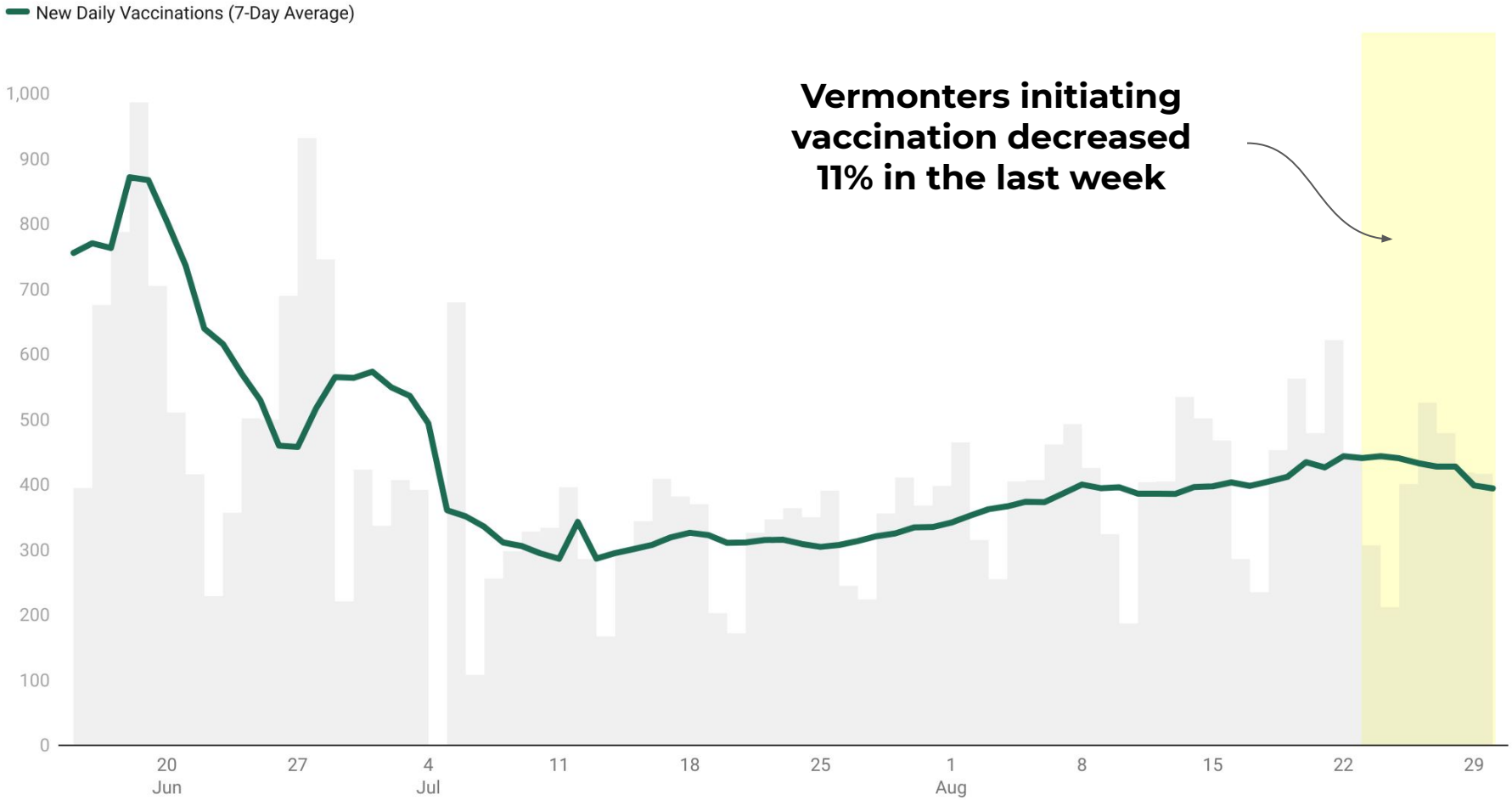
Source: CDC—August 30, 2021

94.4% of 65 & Over Vermonters Fully Vaccinated, Placing Vermont 1st Nationally



Source: CDC—August 30, 2021

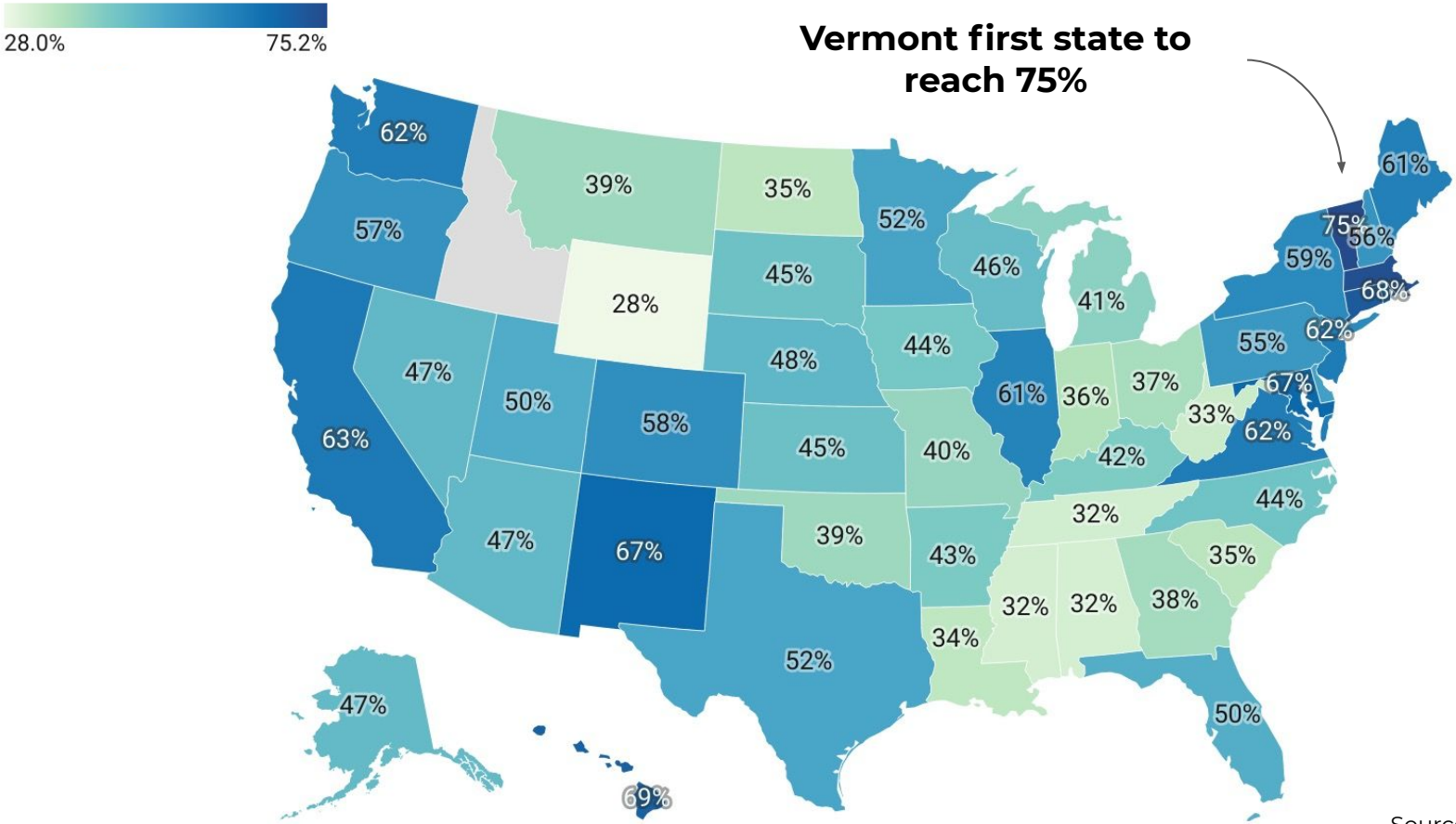
Vermonters Initiating Vaccination By Day



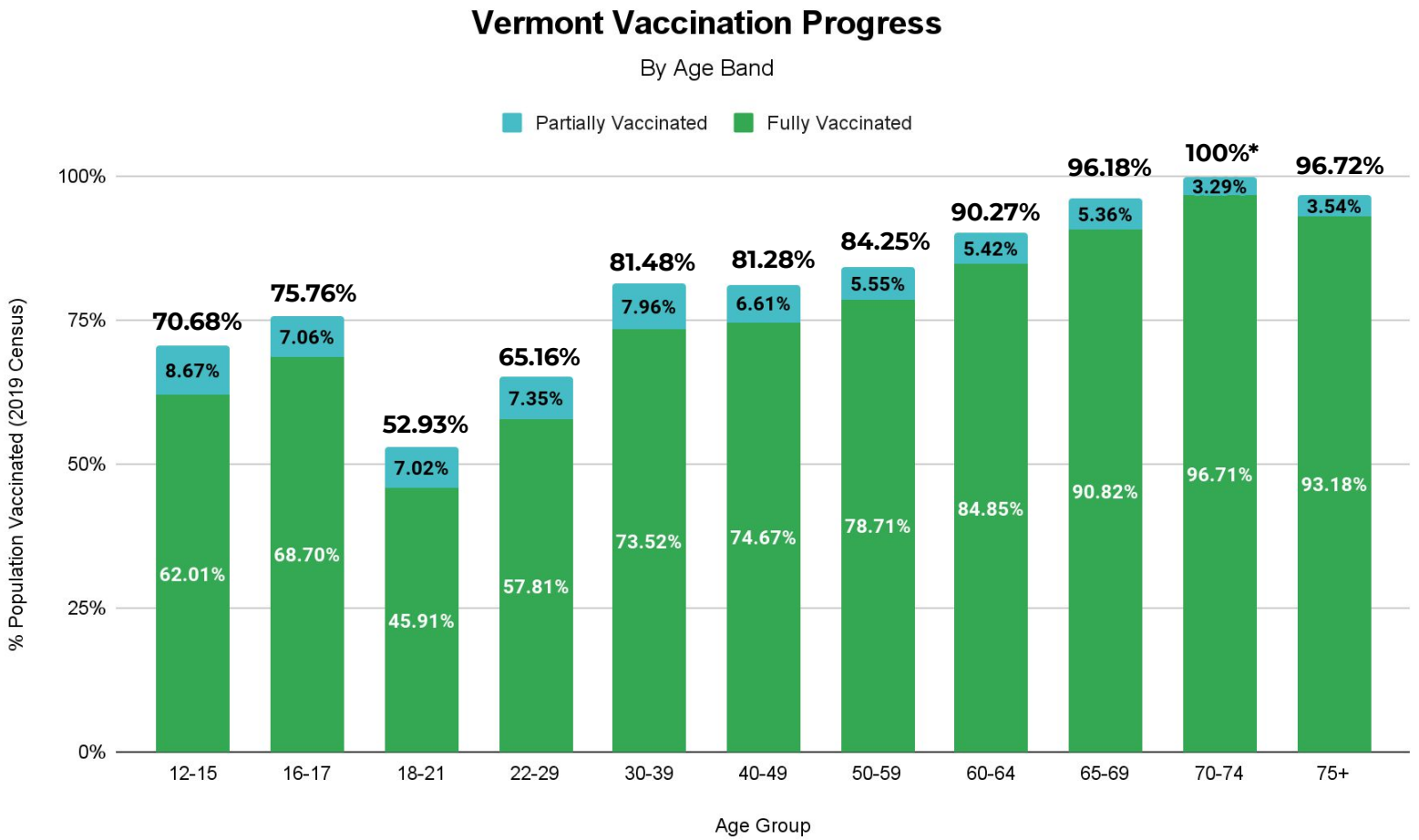
Source: CDC—August 30, 2021

Percent of Population Ages 12 to 17 with At Least One Dose

Idaho does not publish child vaccination rates.



Source: CDC—August 30, 2021



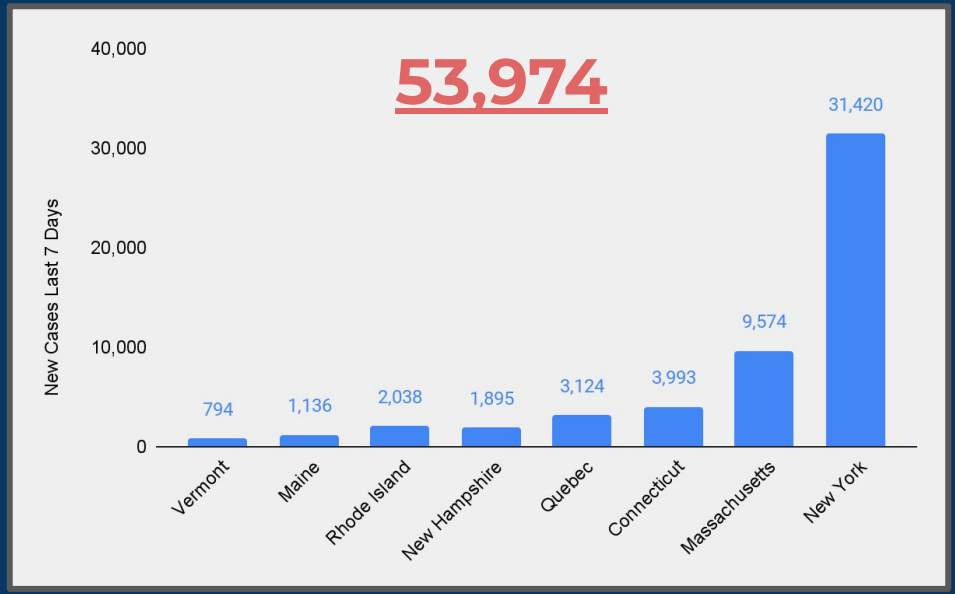
Source: Vermont Dept. of Health—August 31, 2021; *based on 2019 census estimates; state data may differ from CDC reporting

Regional Data

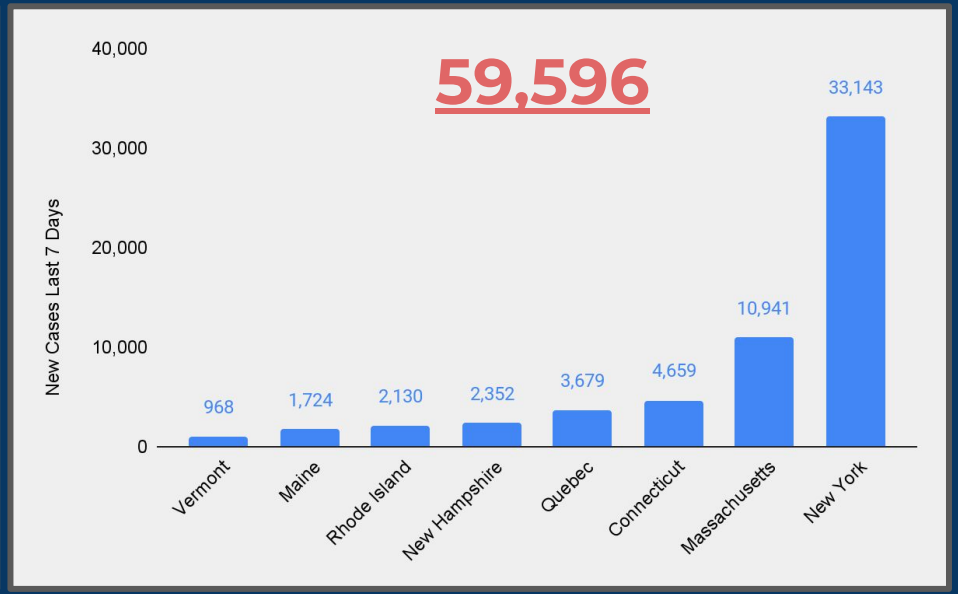
Regional Cases

10.4% Increase in New Cases

New Cases August 17th to August 23rd

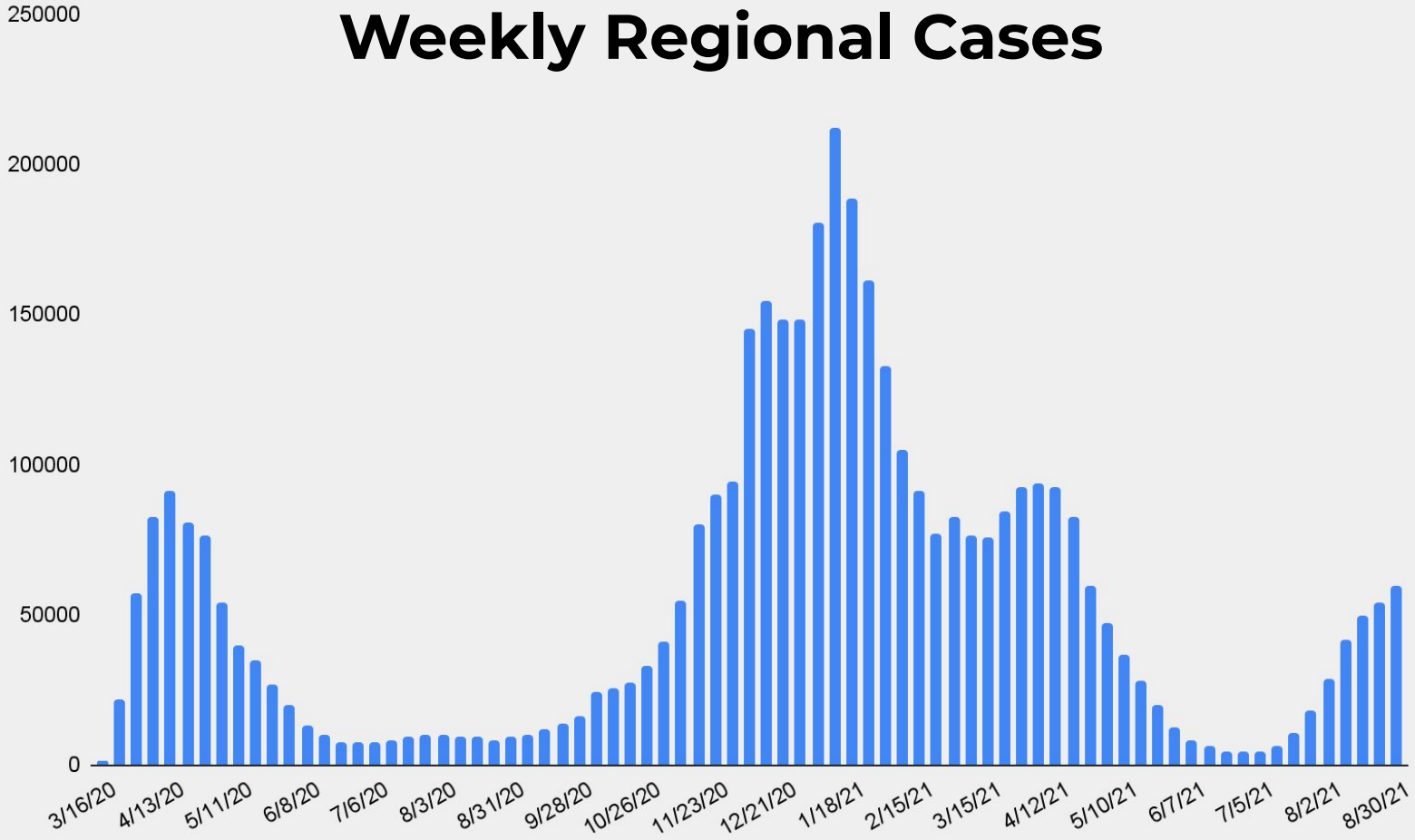


New Cases August 23rd to August 30th



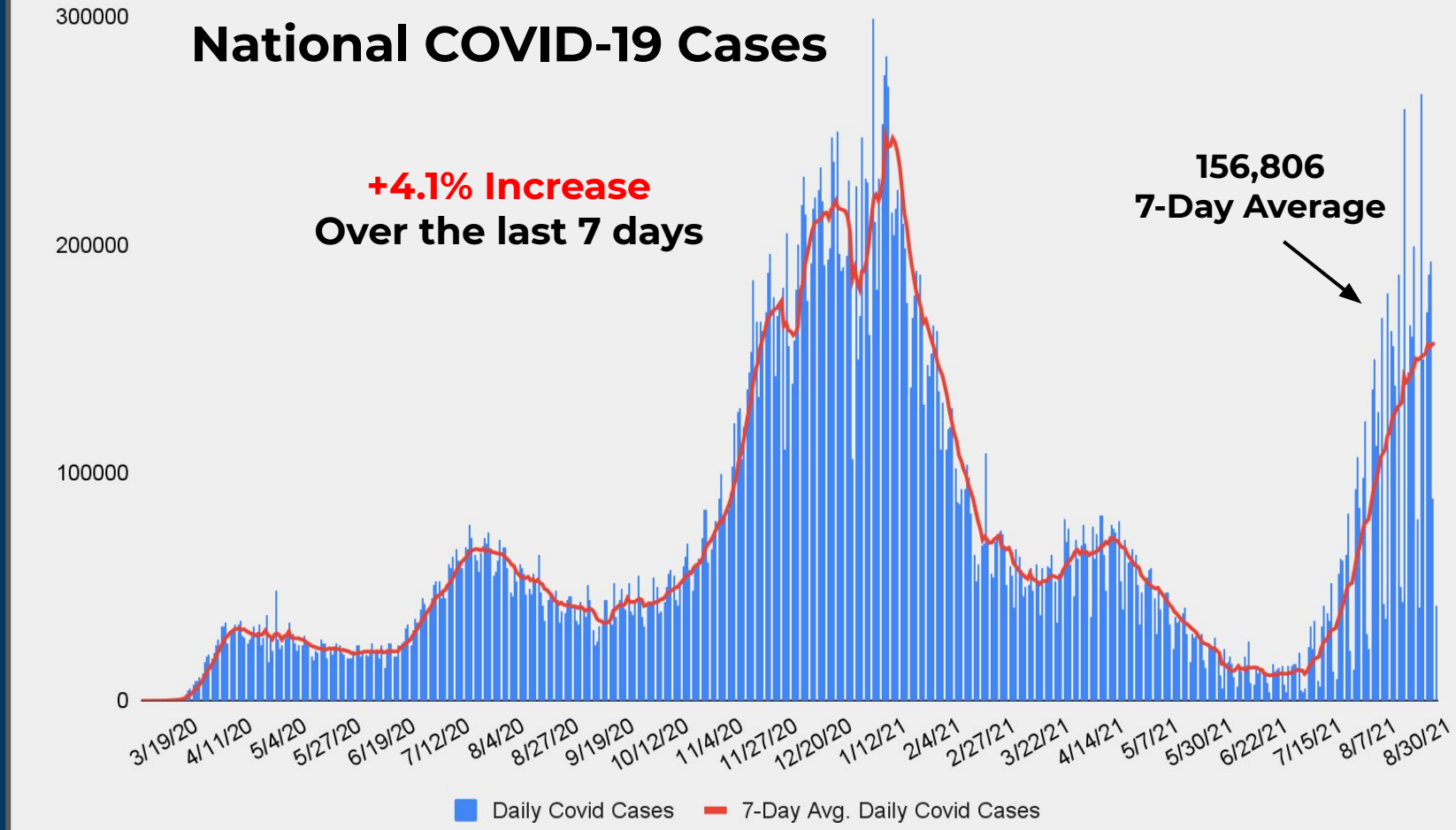
Sources: State Health Departments & CTV National News (Quebec)

Weekly Regional Cases



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

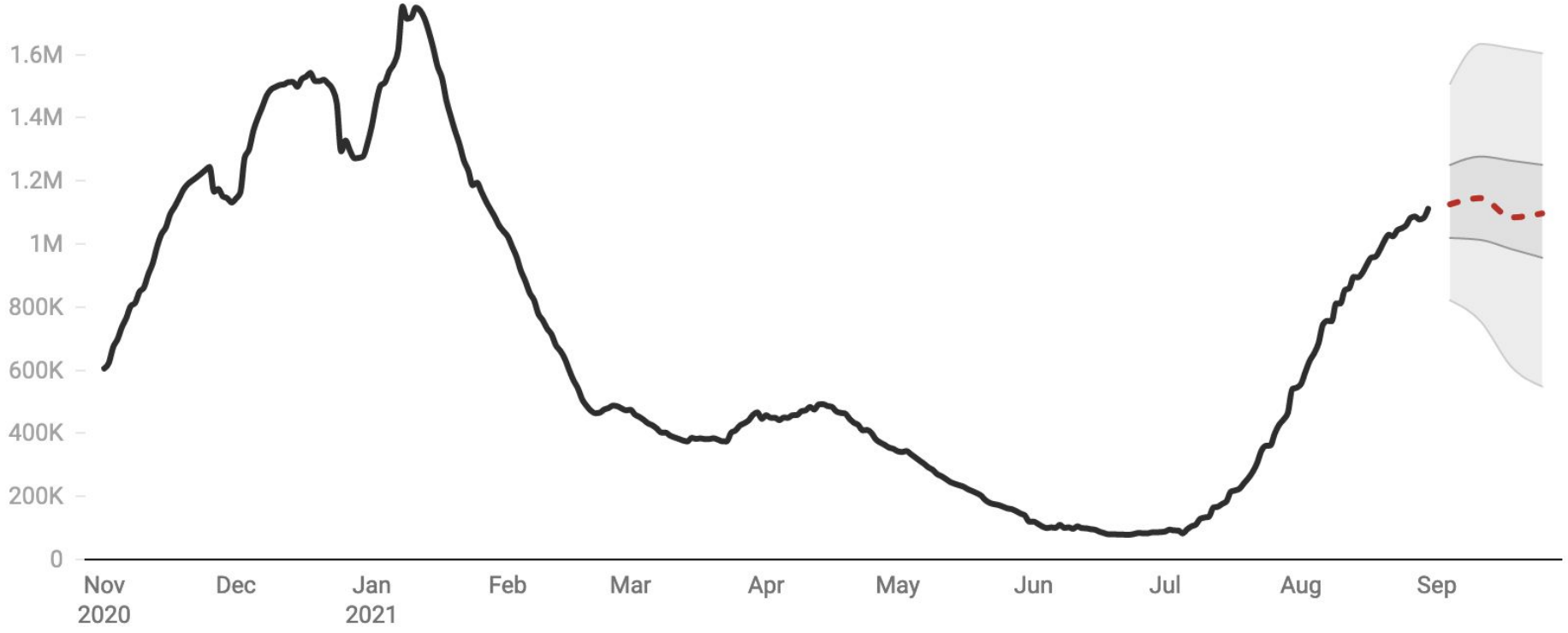
National Data



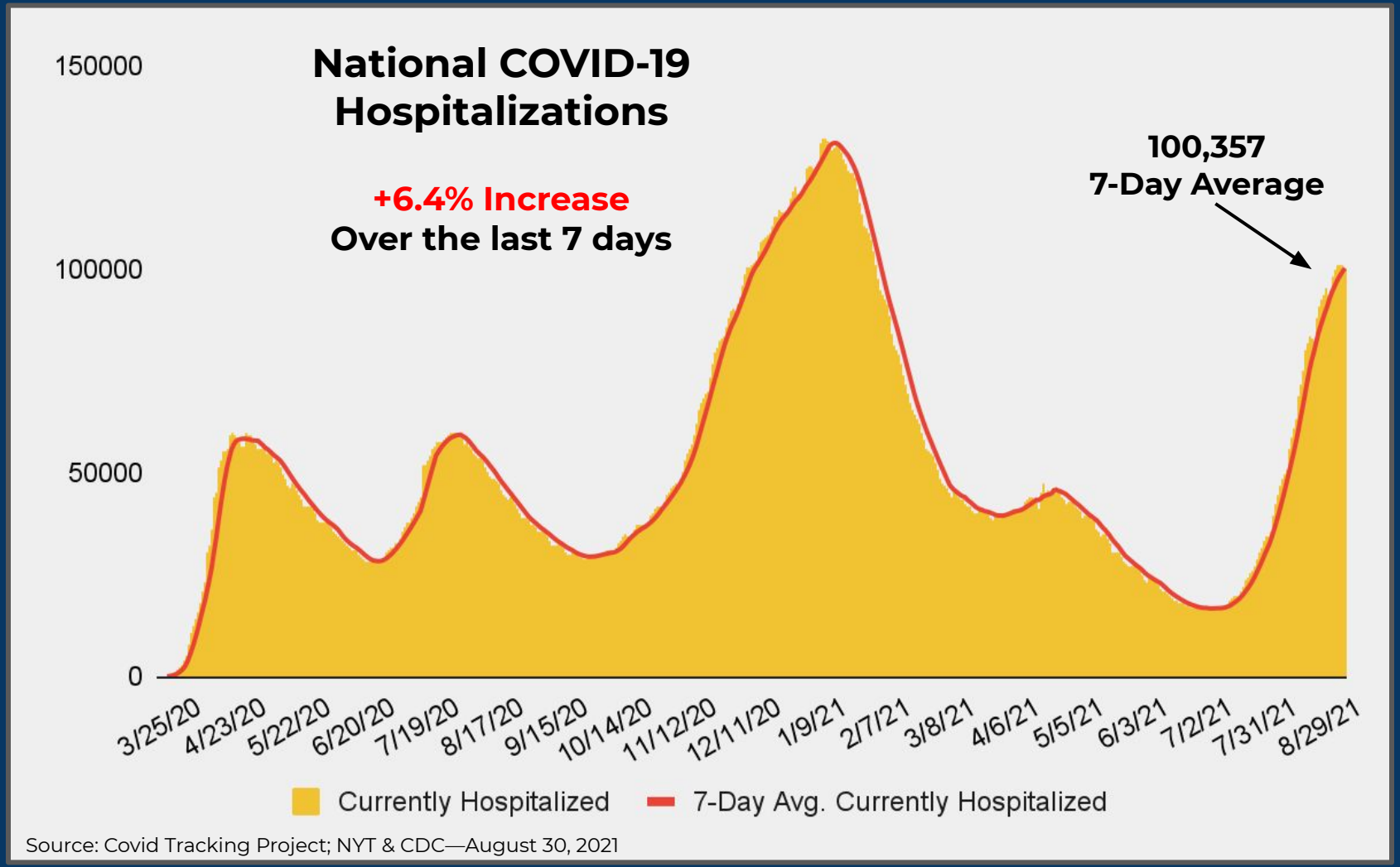
Source: Covid Tracking Project; NYT & CDC—August 30, 2021

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.

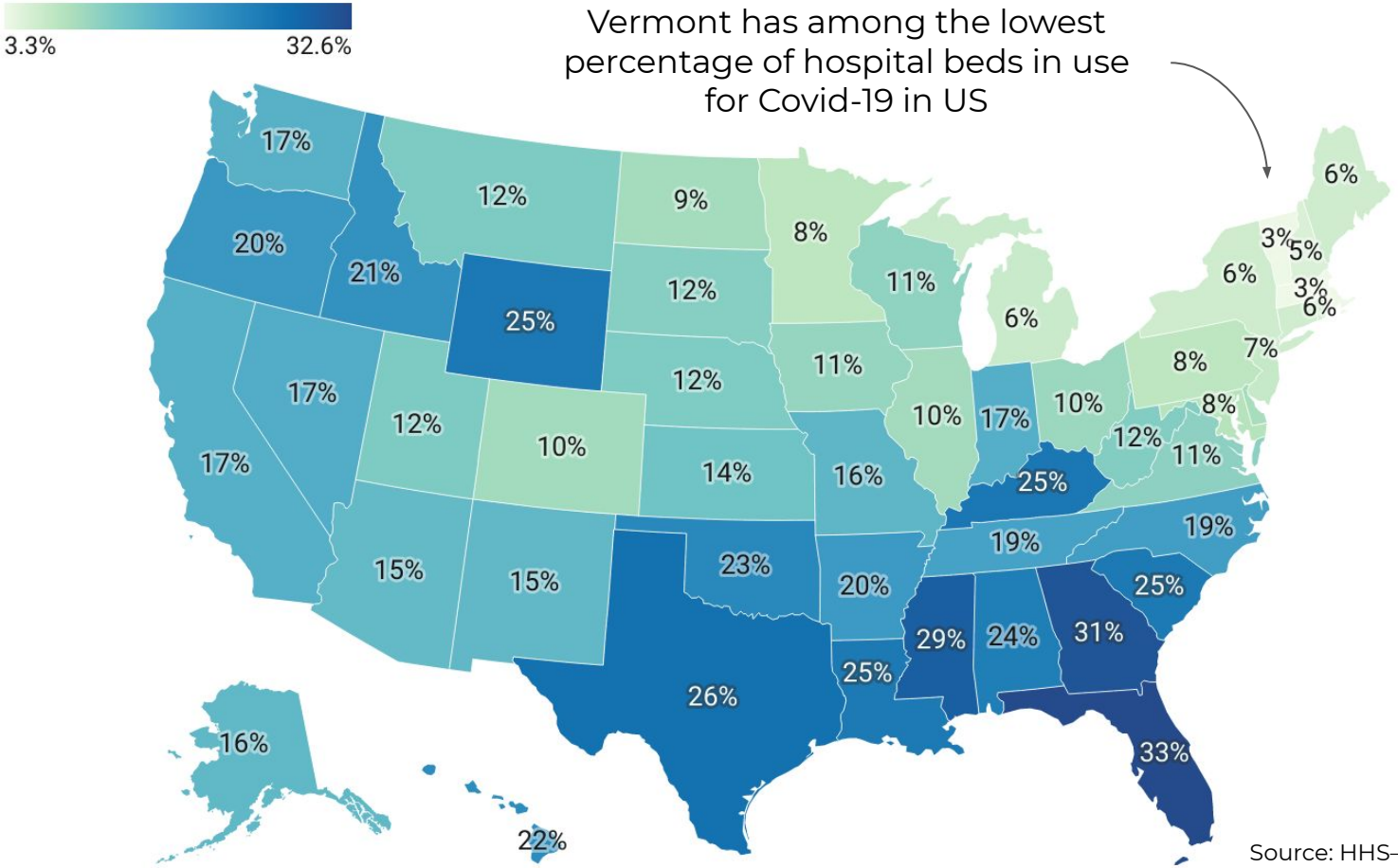


Source: Centers for Disease Control and Prevention—August 30, 2021



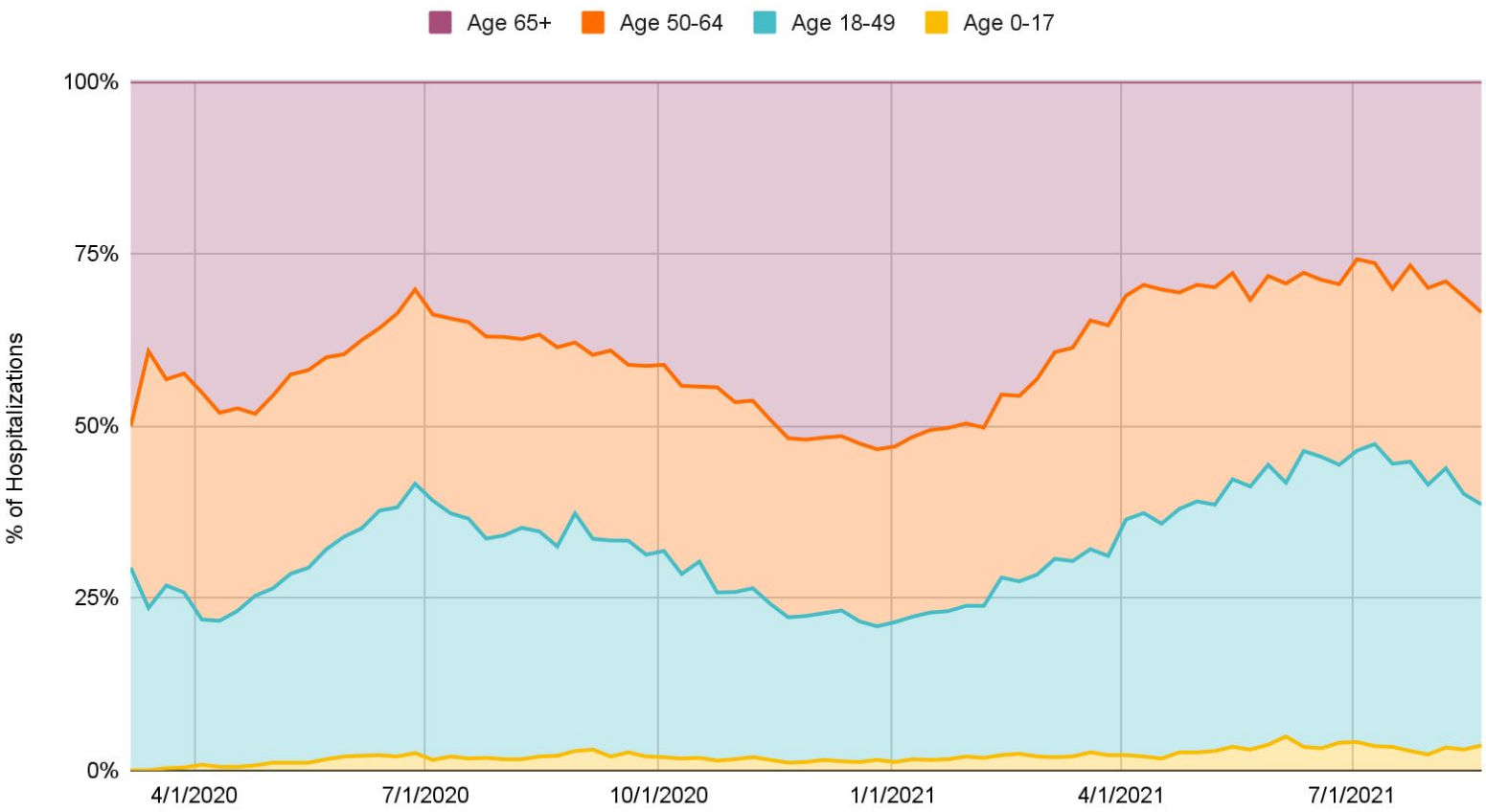
Source: Covid Tracking Project; NYT & CDC—August 30, 2021

Percent of All Hospital Beds Used for COVID-19



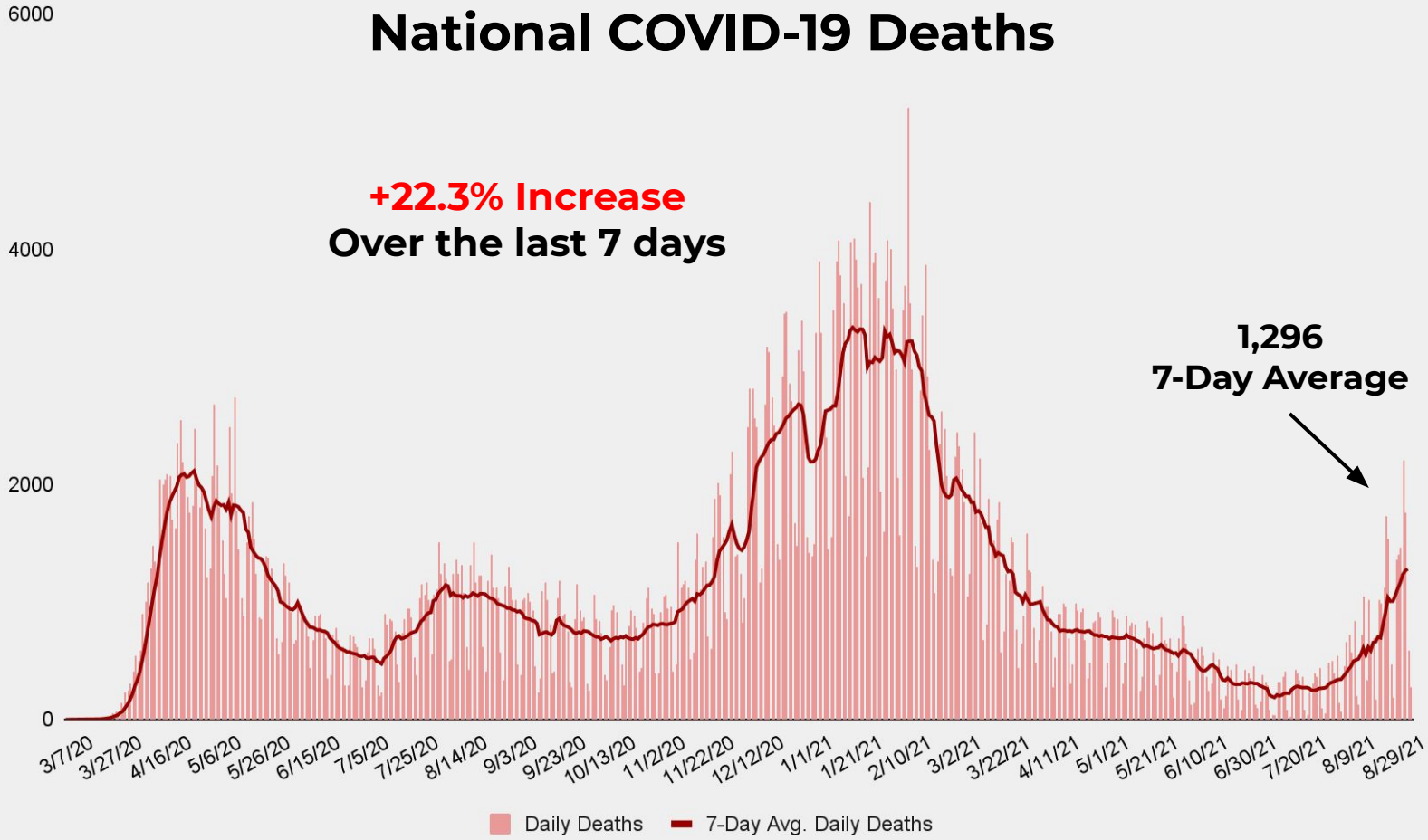
Source: HHS—August 30, 2021

National COVID-19 Hospitalizations by Age



Source: CDC COVID-Associated Hospitalization Surveillance Network (COVID-NET); data are preliminary and subject to change and lag; surveillance network represents ~32 million (10% of US pop.)

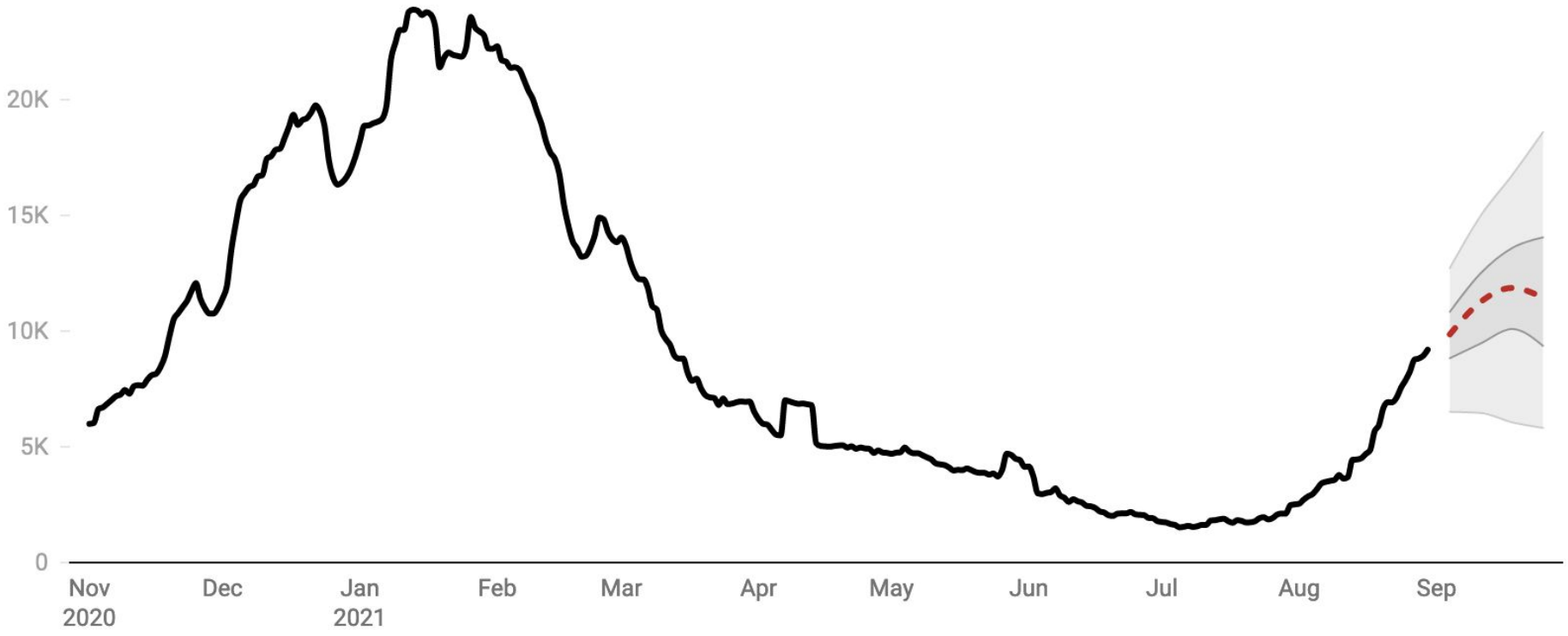
National COVID-19 Deaths



Source: Covid Tracking Project; NYT & CDC—August 30, 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.



Source: Centers for Disease Control and Prevention—August 30, 2021

RESTART VERMONT

Reopening Metrics

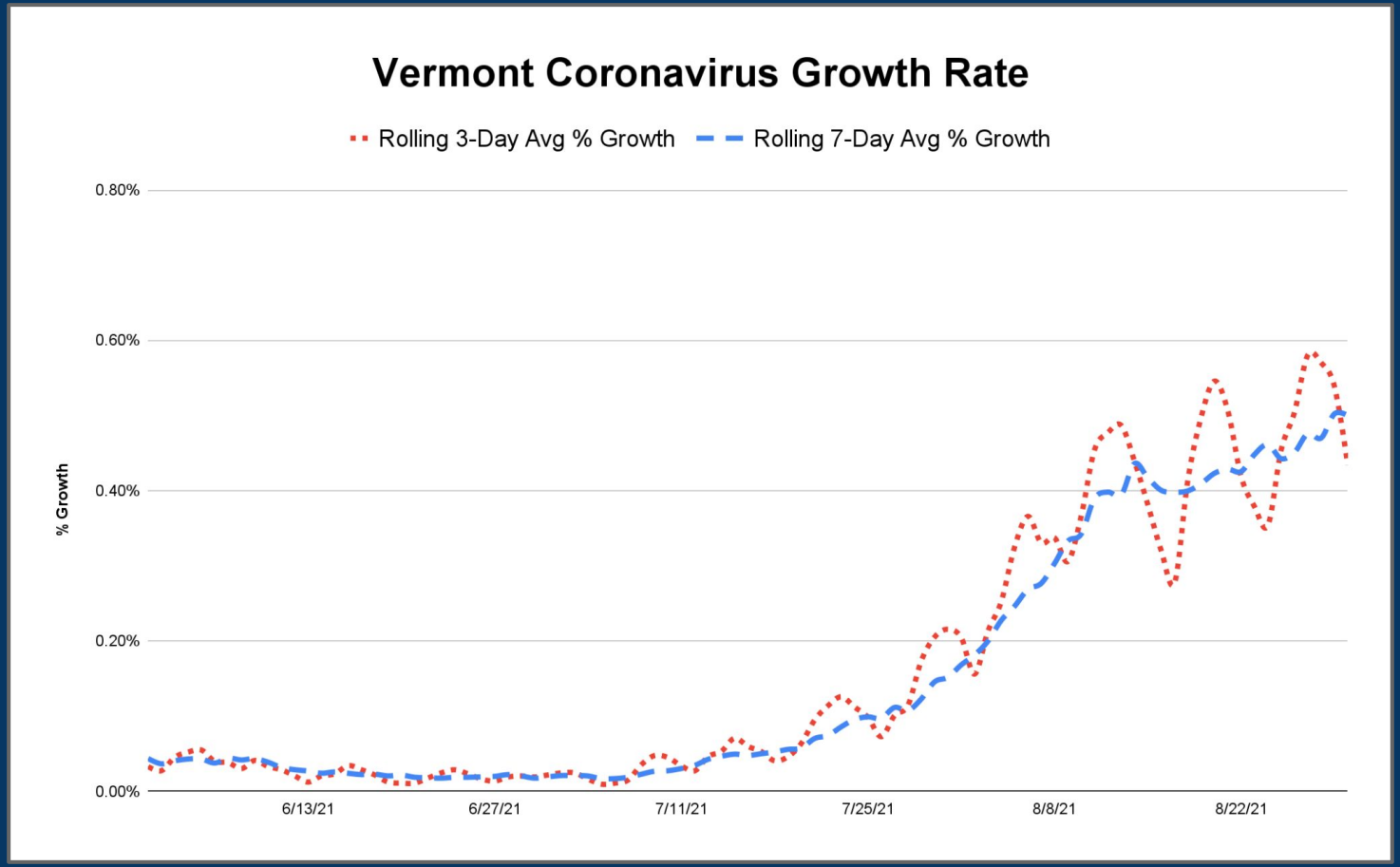
1. Syndromic Surveillance *(retired)*
2. Viral Growth & Reproductive Rates
3. Percentage of New Positive Tests
4. Hospital & Critical Care Bed Capacity

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

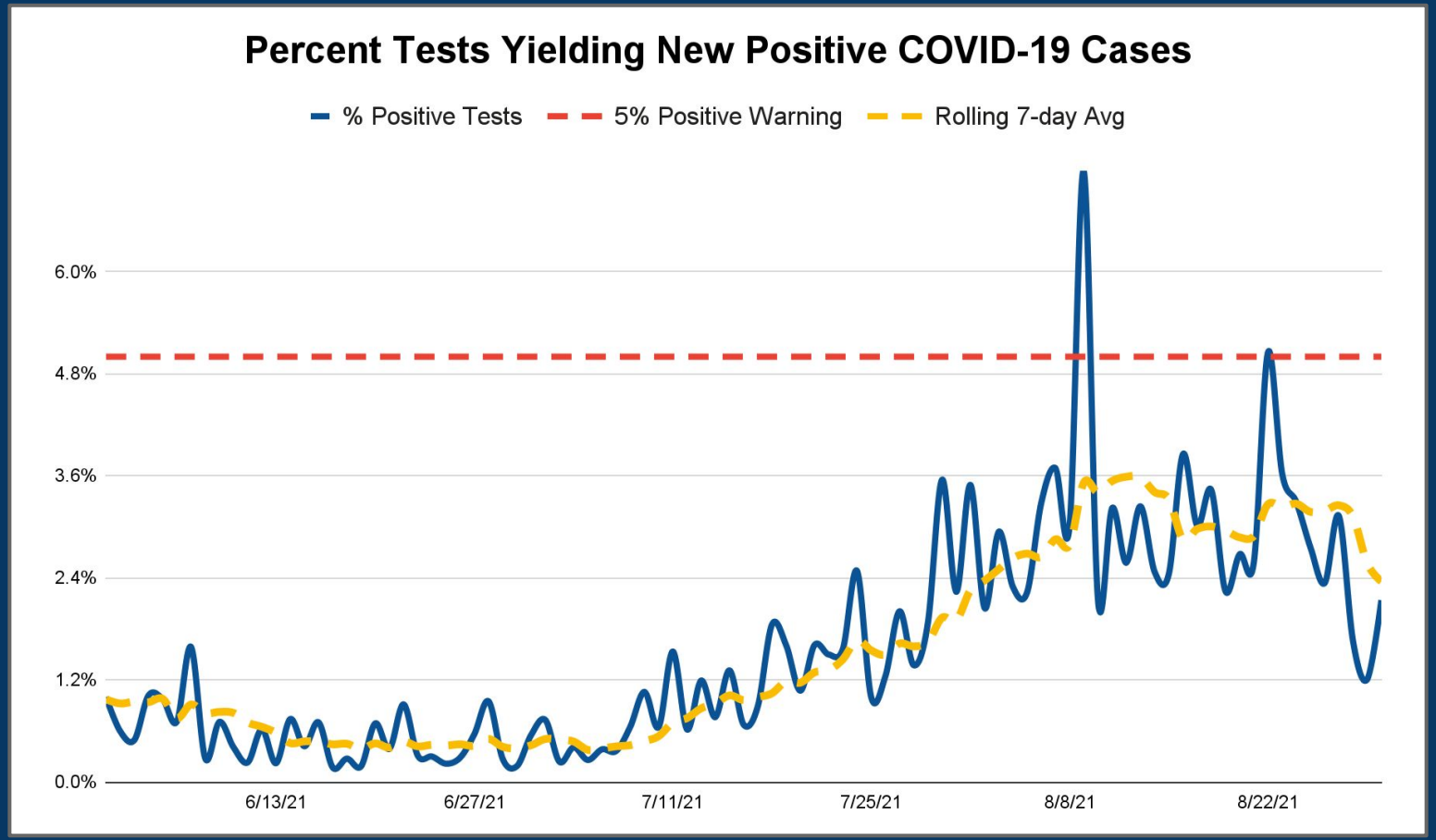
Vermont Department of Health no longer updating syndromic surveillance on a weekly basis.

Viral Growth & Reproductive Rates



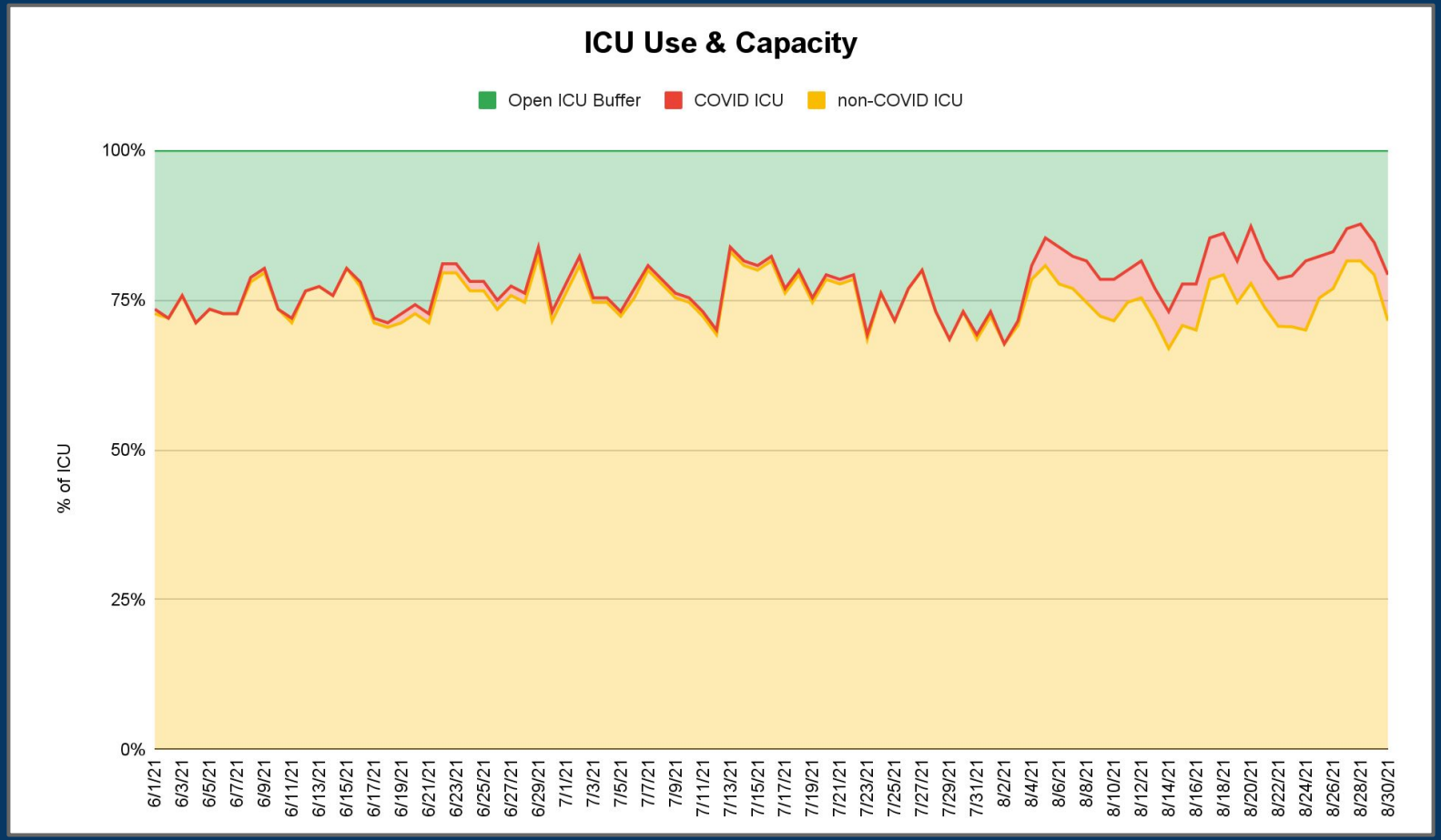
Source: Vermont Department of Health

Percentage of New Positive Tests



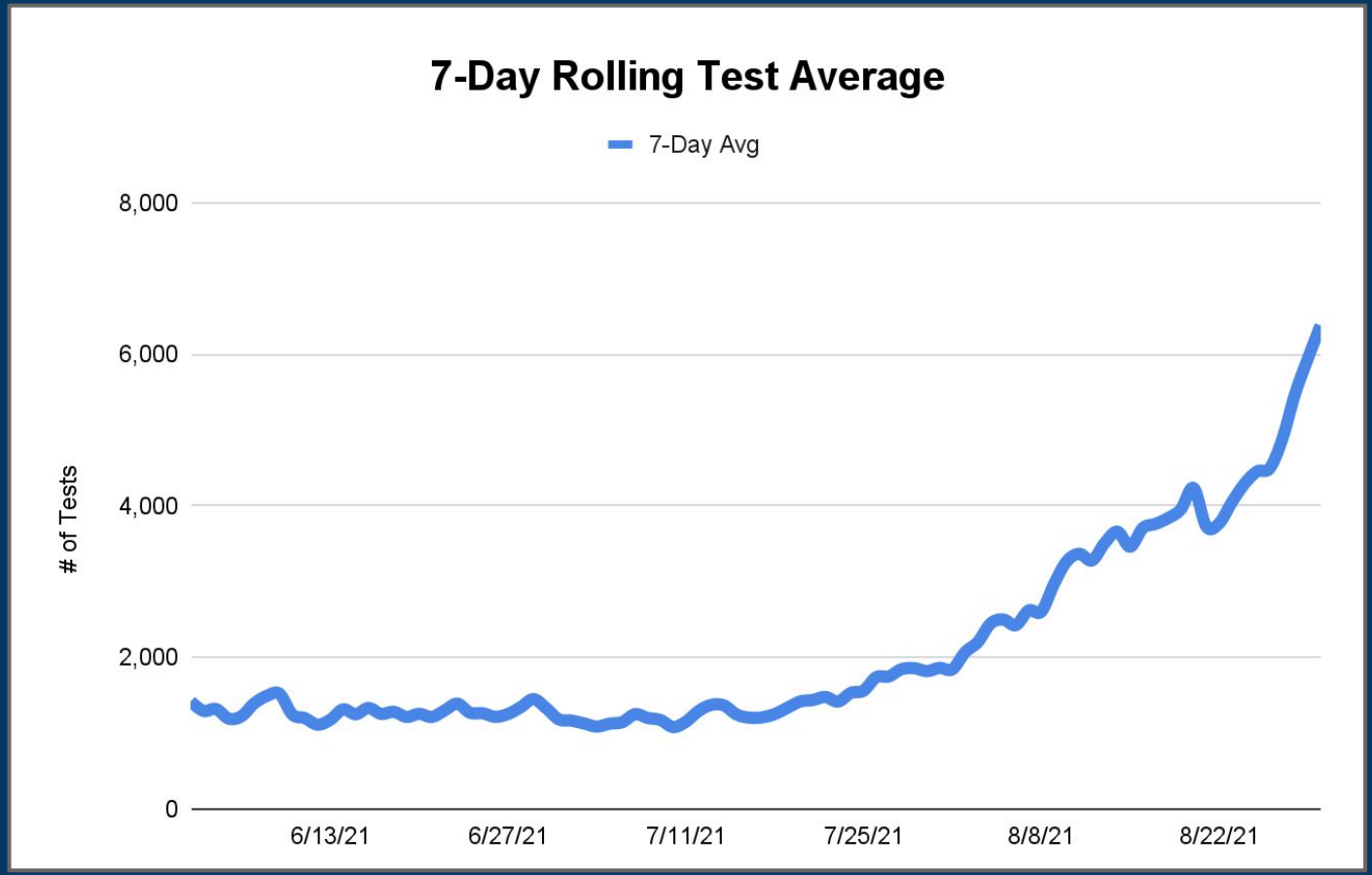
Source: Vermont Department of Health

Hospital & Critical Care Beds



Source: Vermont Department of Health

Vermont Testing



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