COVID-19 Modeling
October 5, 2021

Presentation available at:
dfr.vermont.gov

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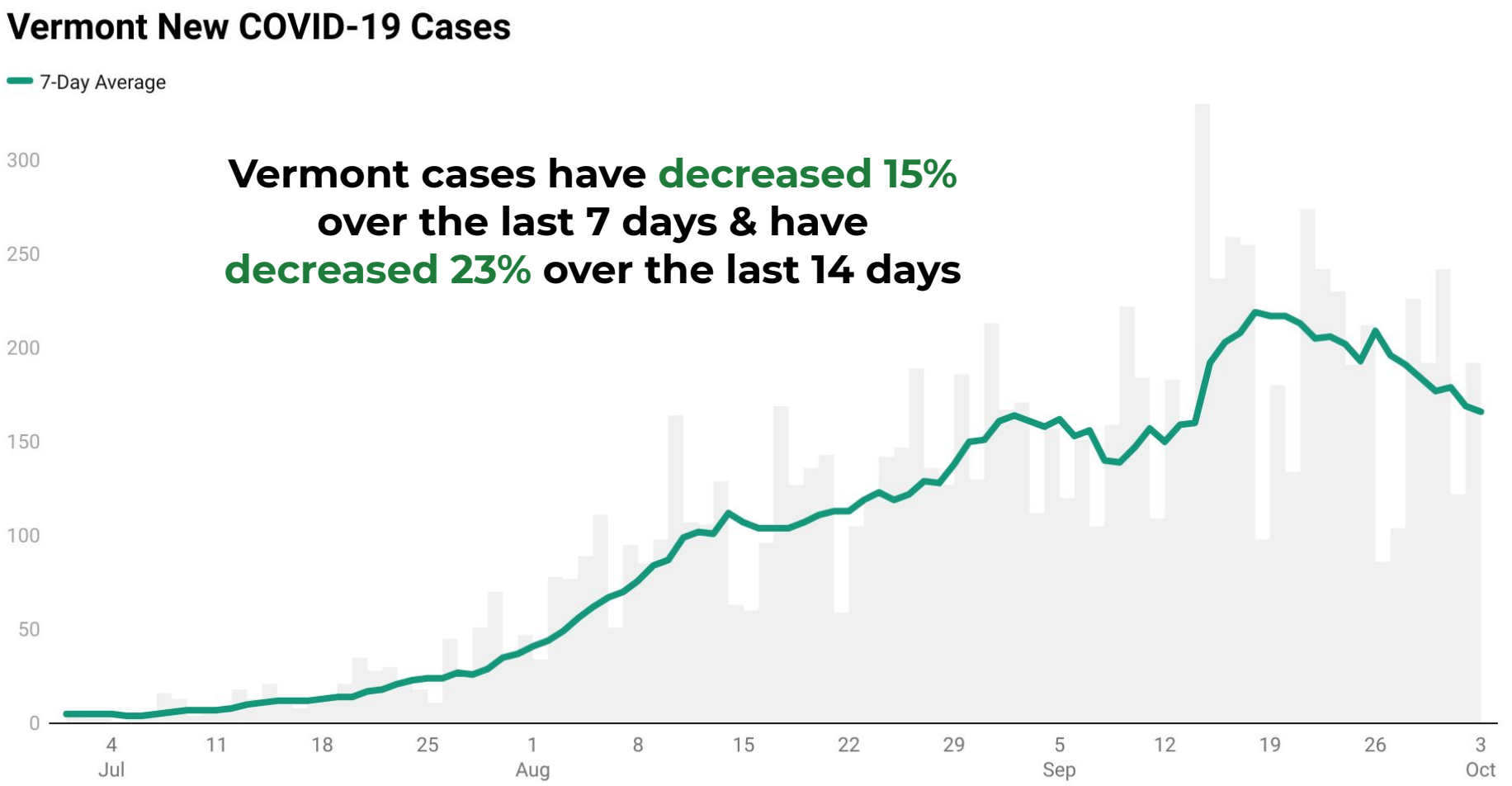
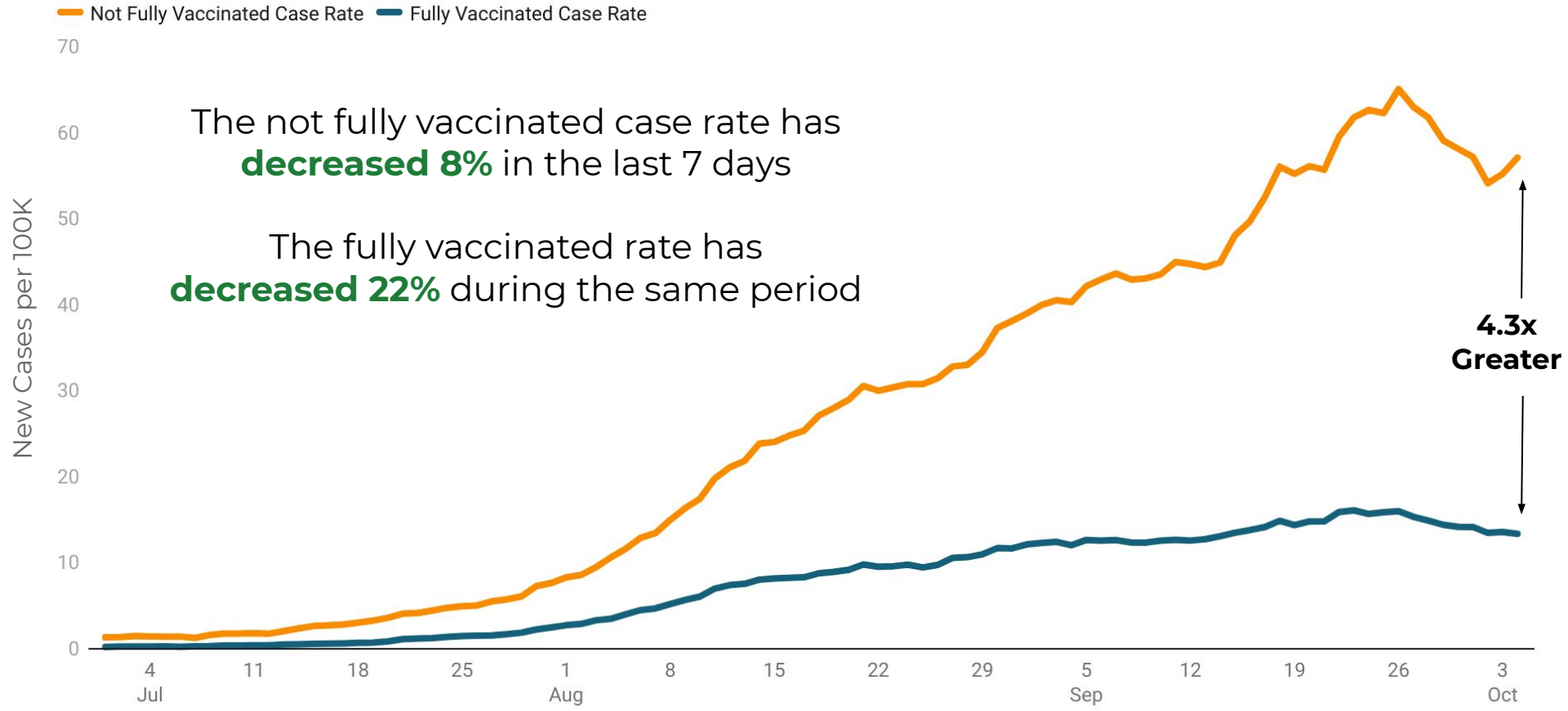
Vermont Case Data



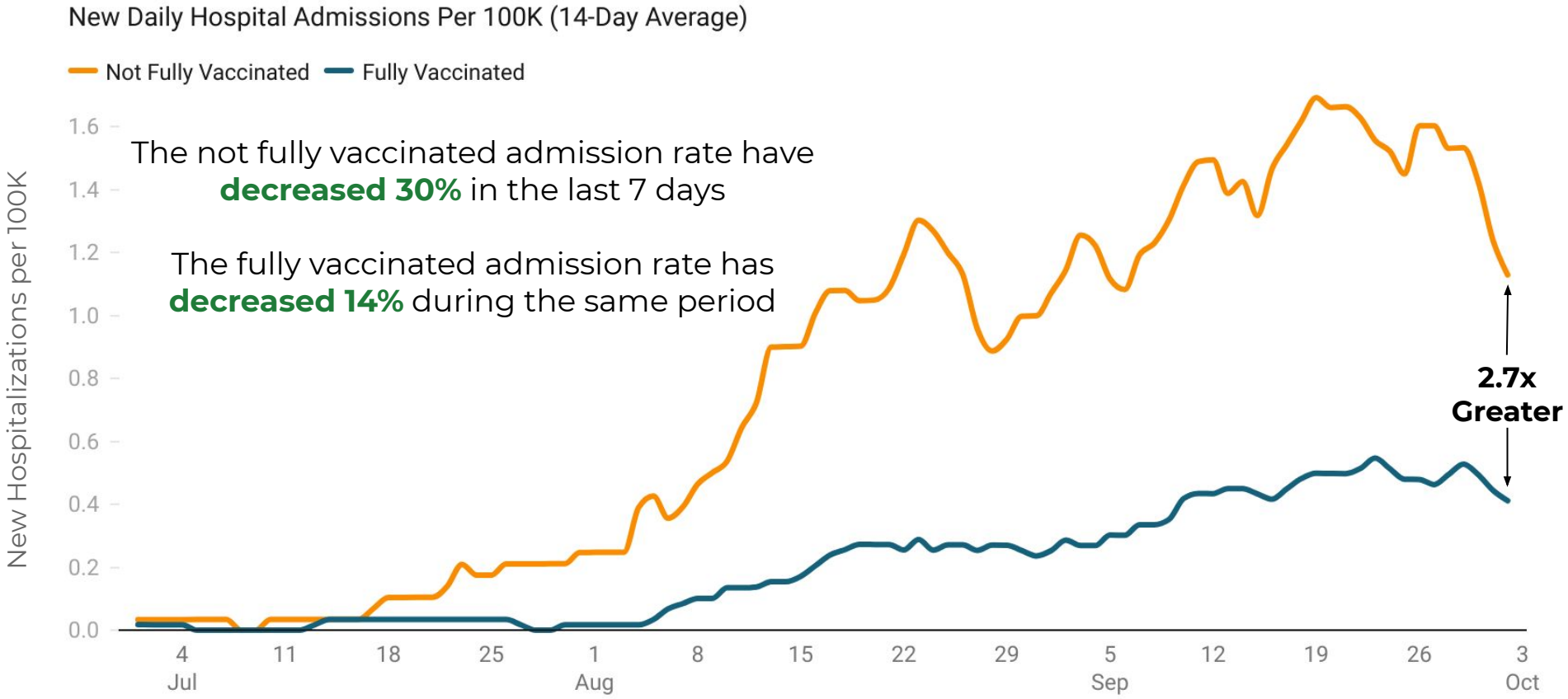
Source: Vermont Dept. of Health—October 4, 2021; created with datawrapper

Vermont COVID-19 New Case Rates Per 100K (14-Day Average)



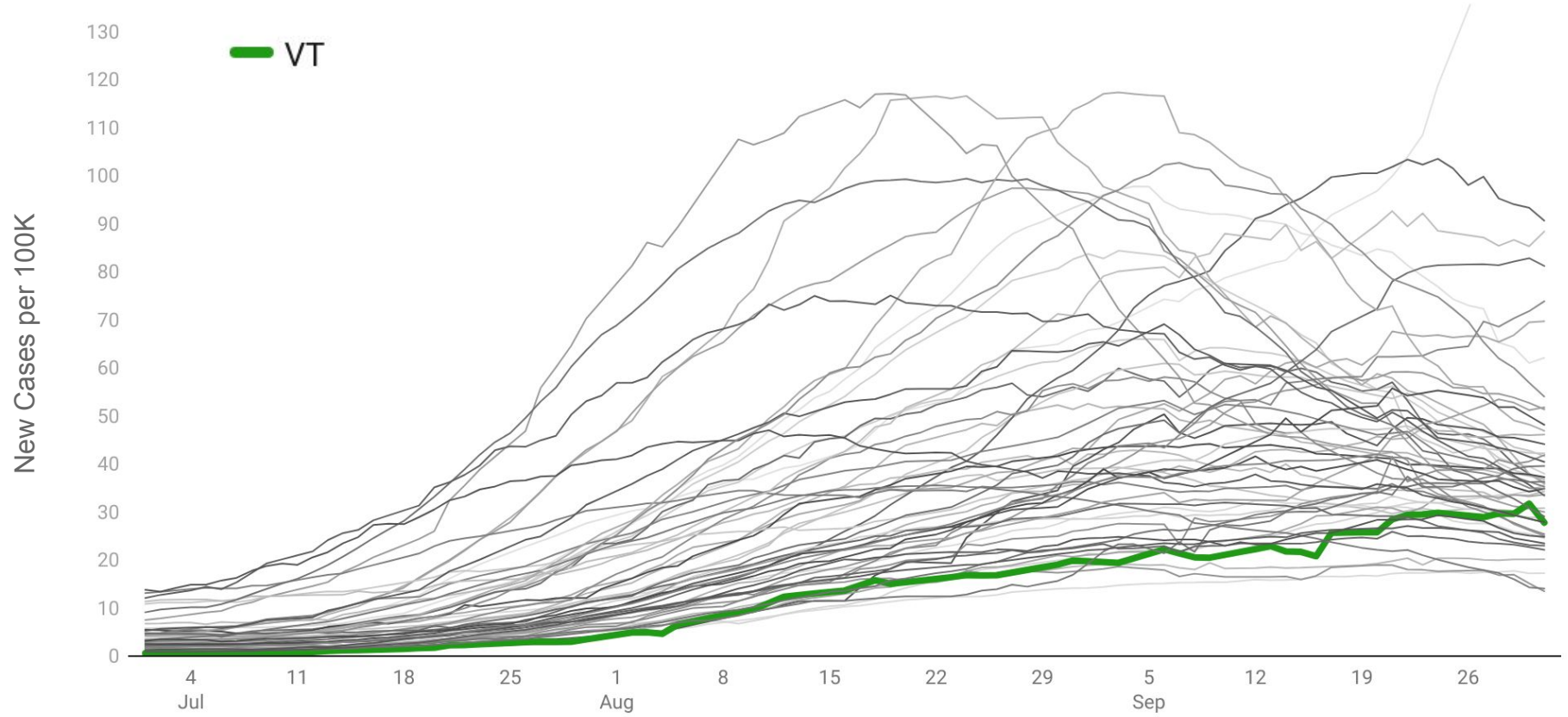
Source: Vermont Dept. of Health—October 4, 2021

Vermont COVID-19 Hospitalizations



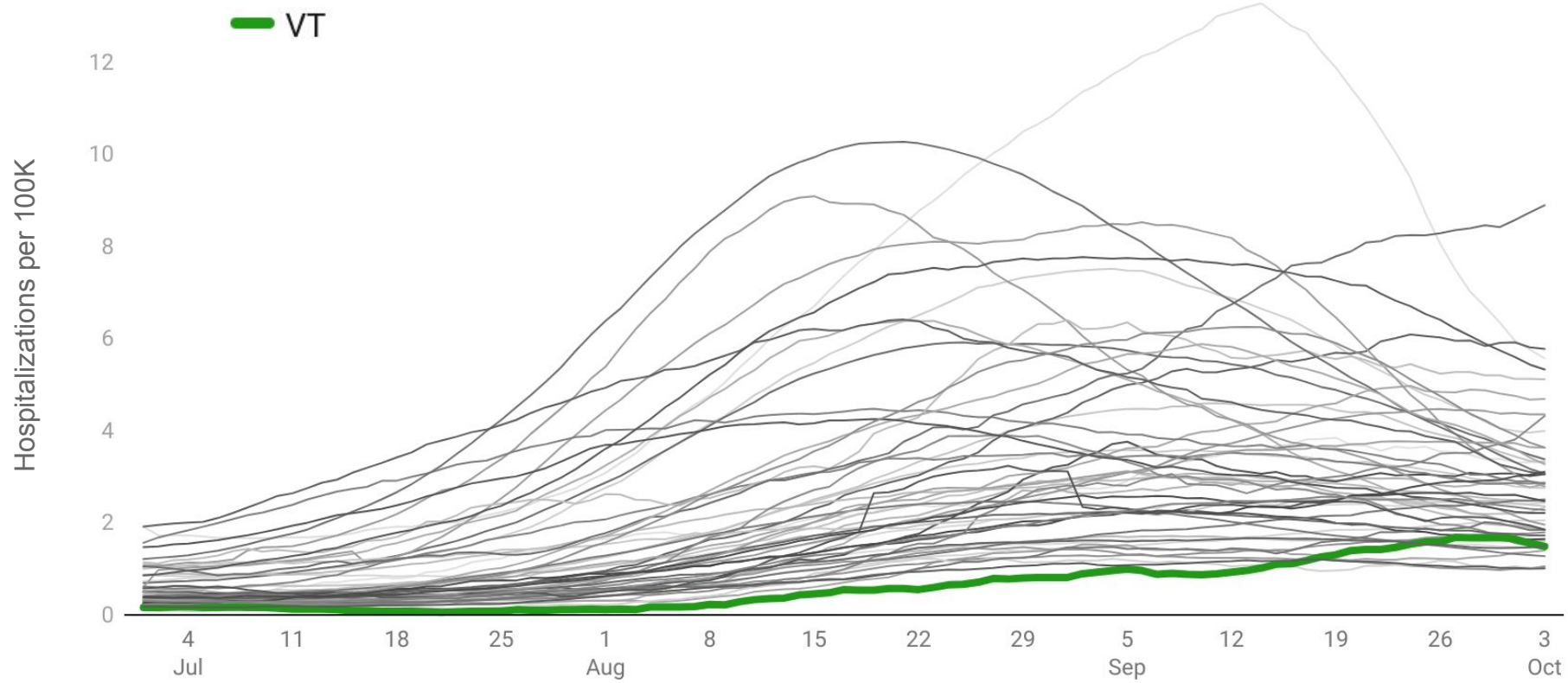
Source: Vermont Dept. of Health and CDC—October 2, 2021

Delta Wave: Cases Per 100k By State (14-Day Avg.)



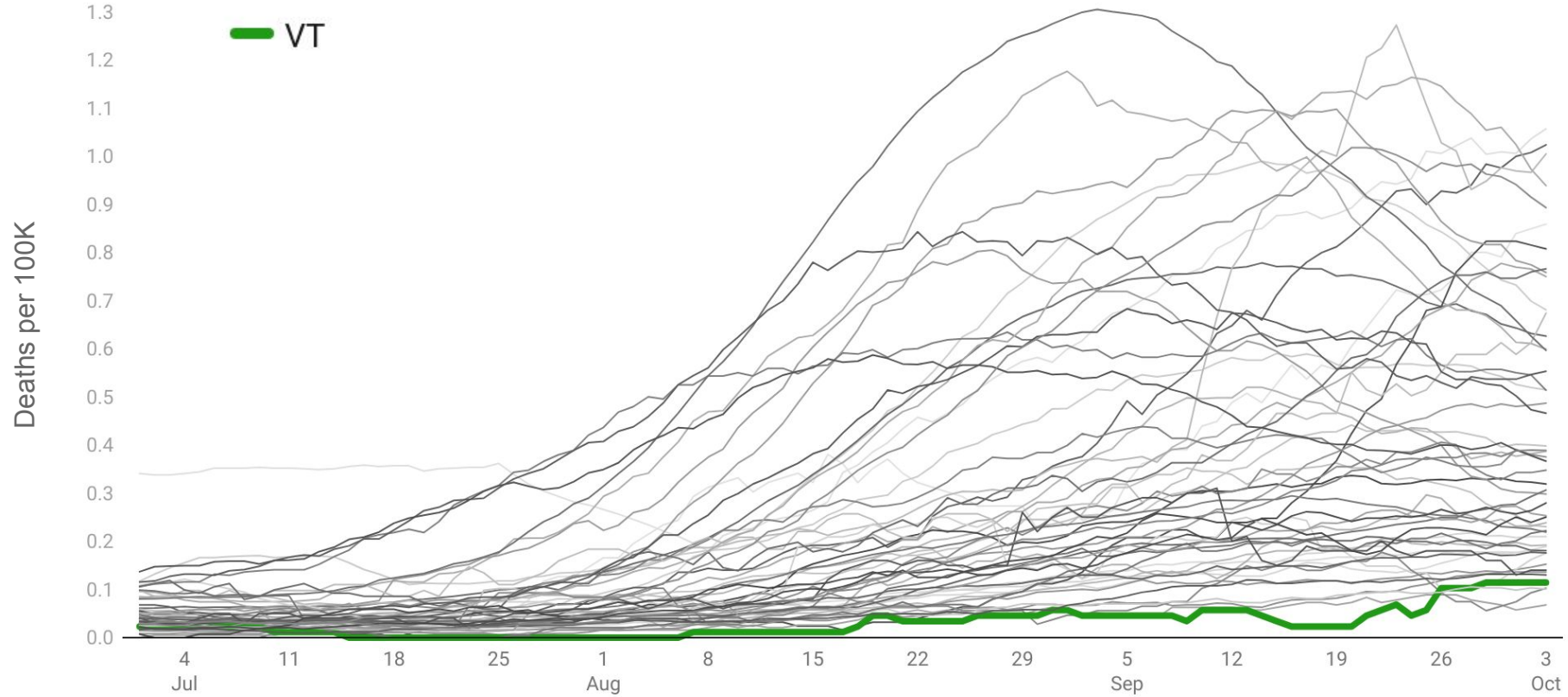
Souce: CDC—October 4, 2021

Delta Wave: Daily Hospitalizations per 100K By State (14-Day Avg.)



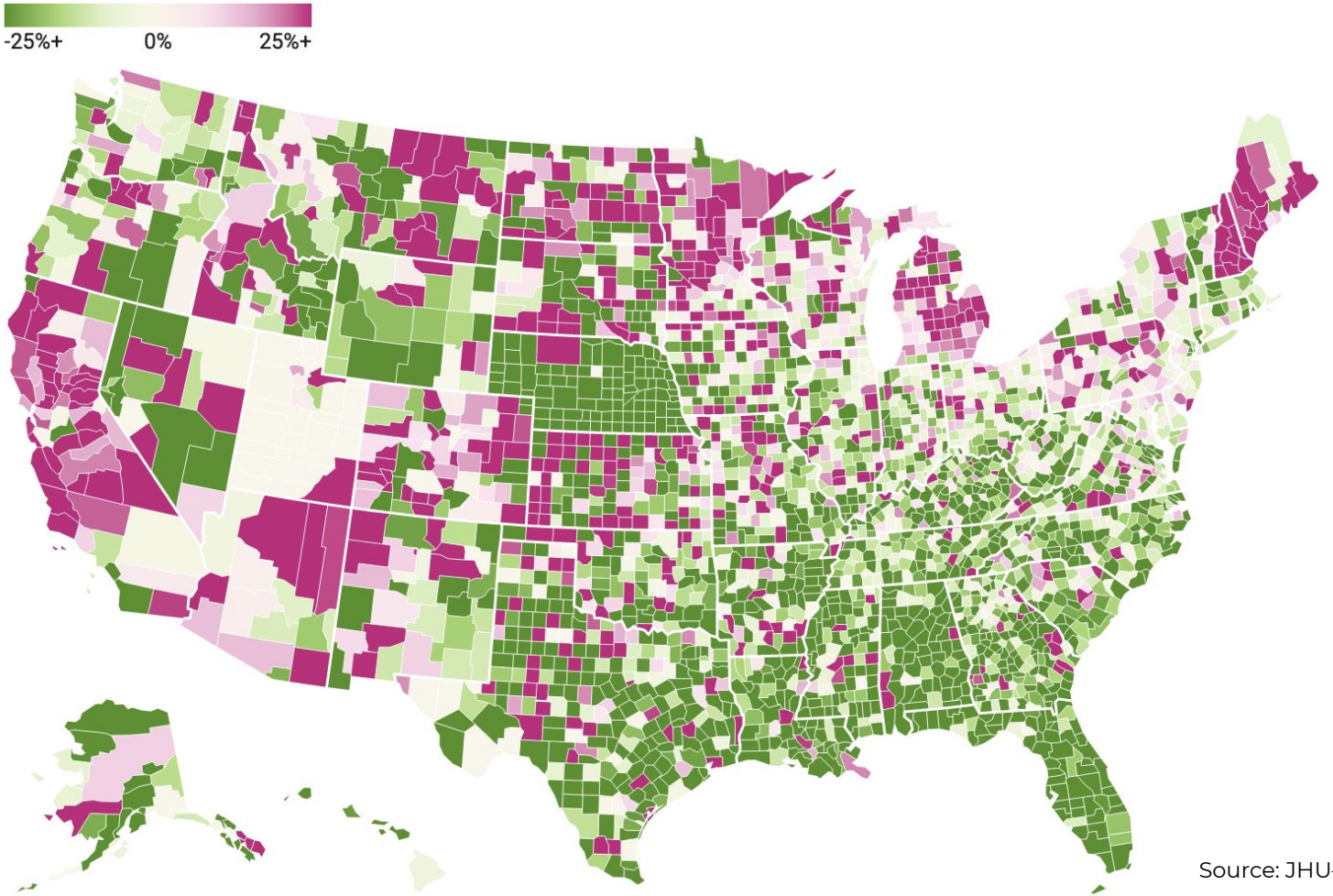
Souce: HHS—October 4, 2021

Delta Wave: Daily Covid-19 Deaths Per 100K By State (14-Day Avg.)



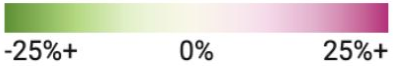
Souce: HHS—October 4, 2021

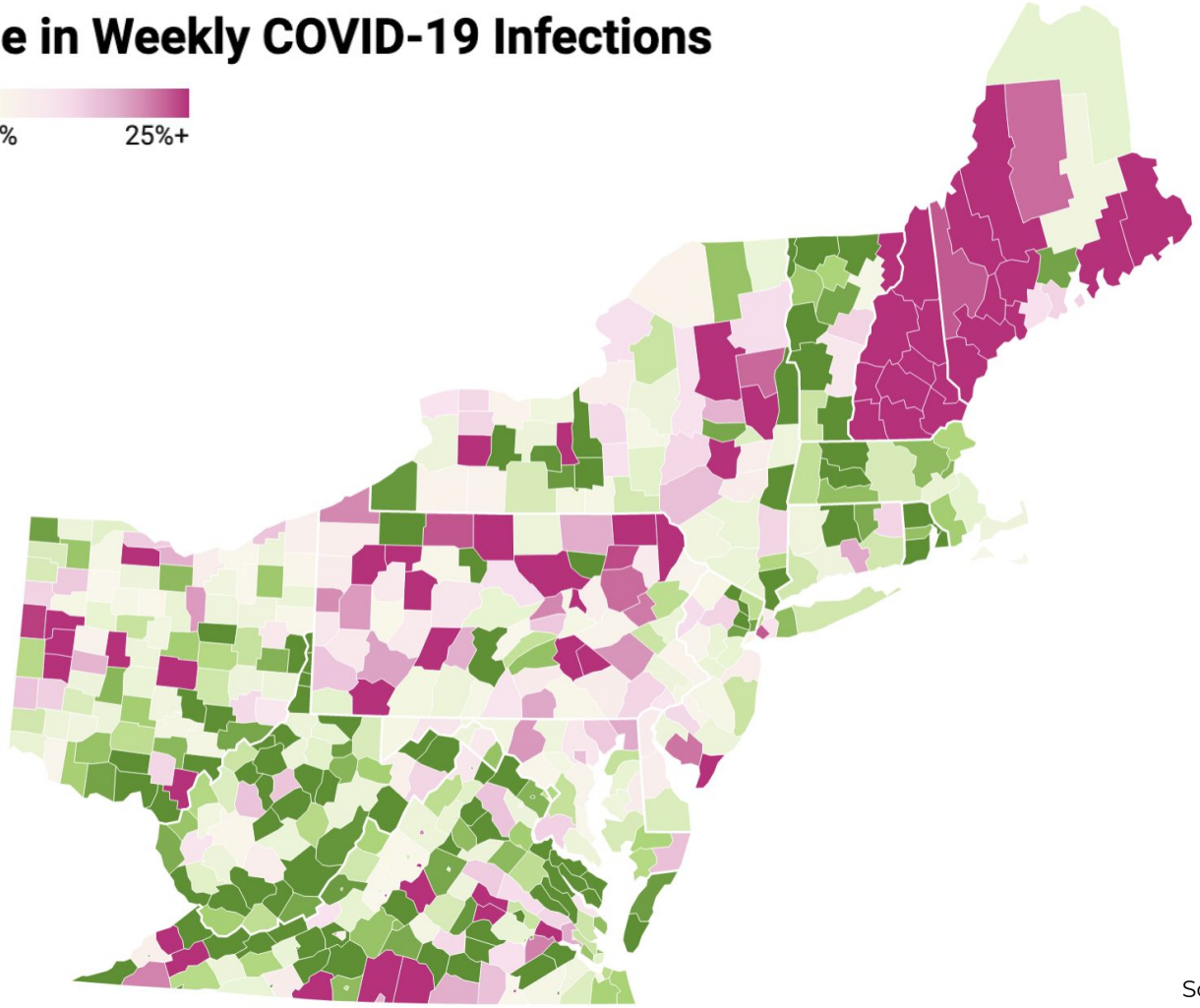
% Change in Weekly COVID-19 Infections



Source: JHU—October 4, 2021

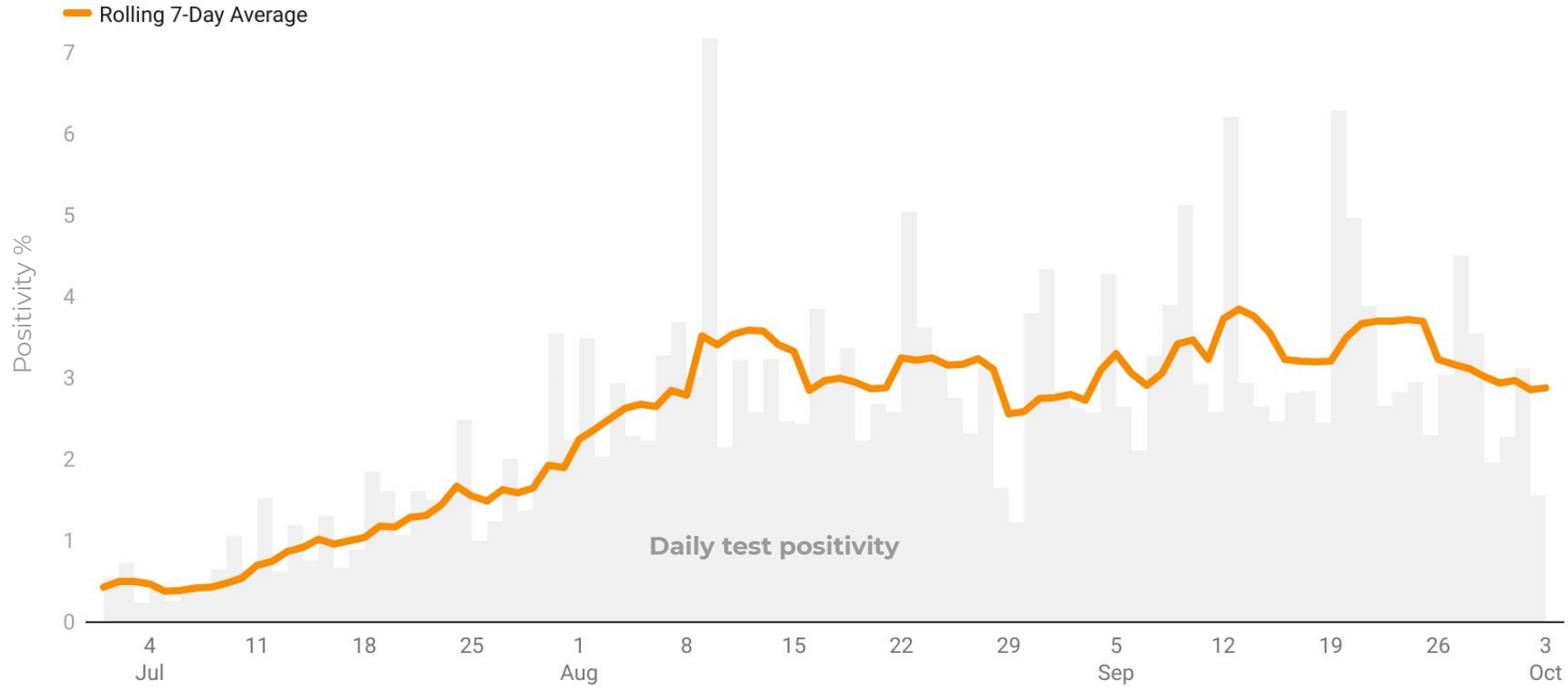
% Change in Weekly COVID-19 Infections





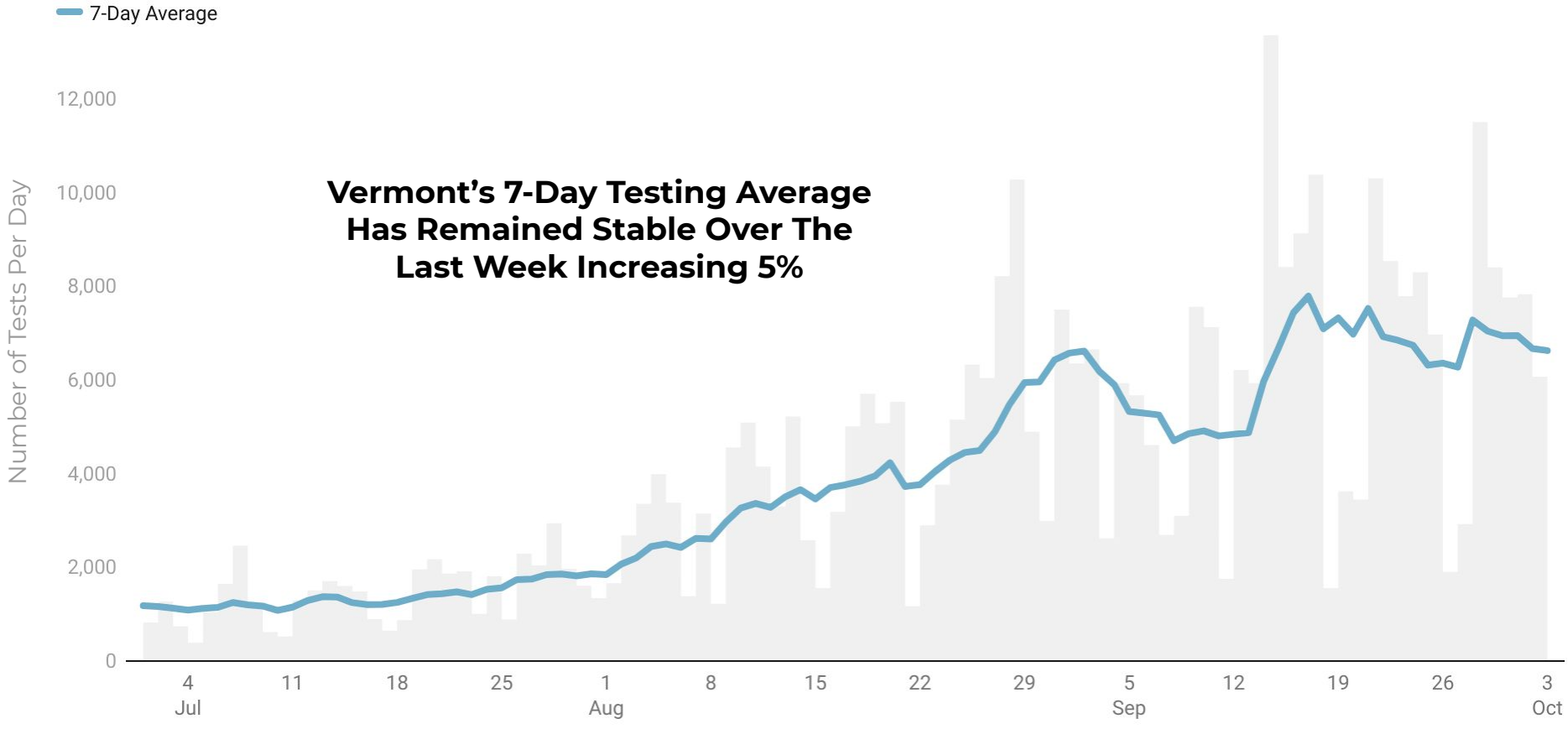
Source: JHU—October 4, 2021

Vermont Test Positivity: Delta Wave



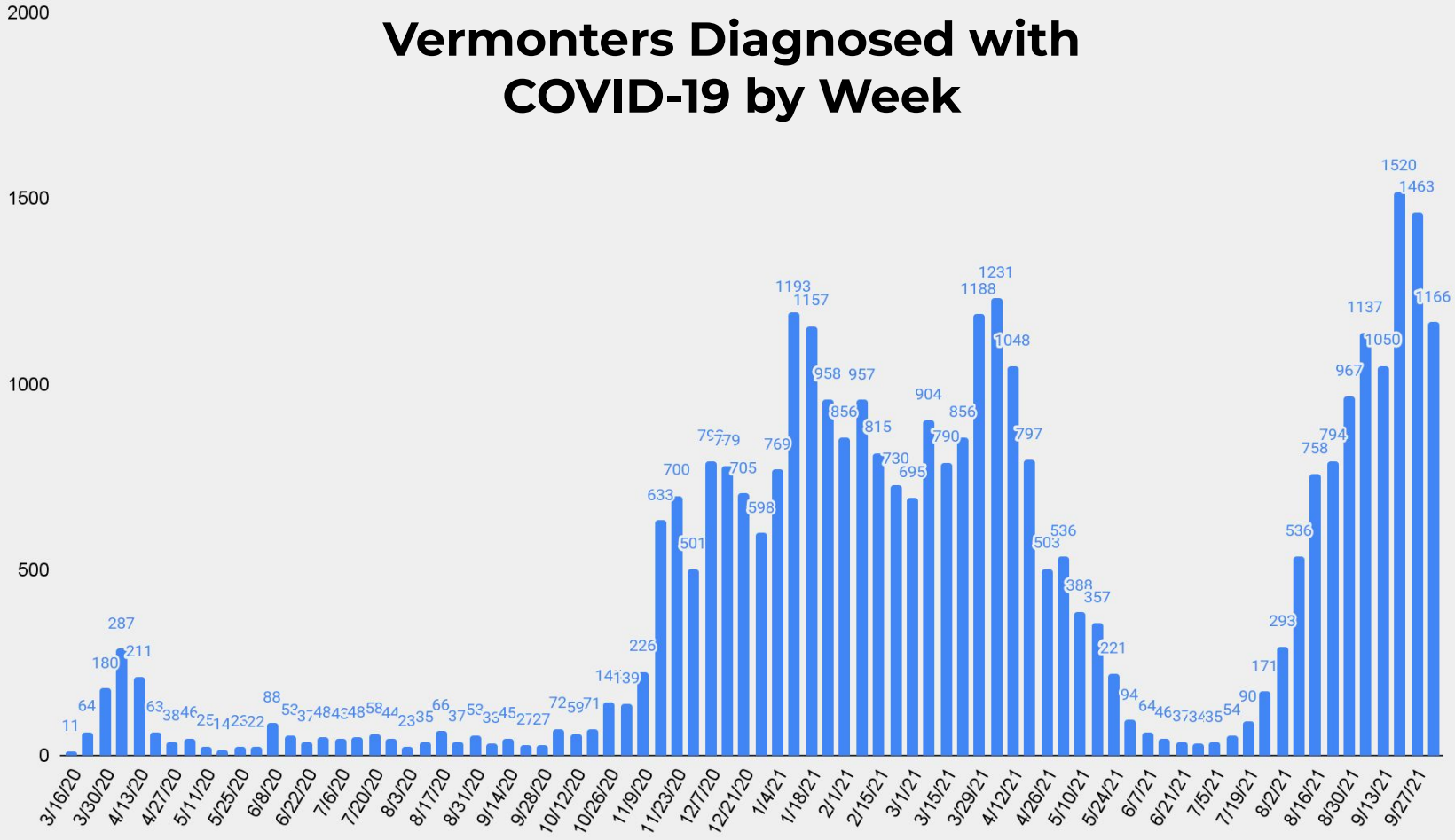
Source: VDH—October 4, 2021; created with Datawrapper

Vermont COVID-19 Testing



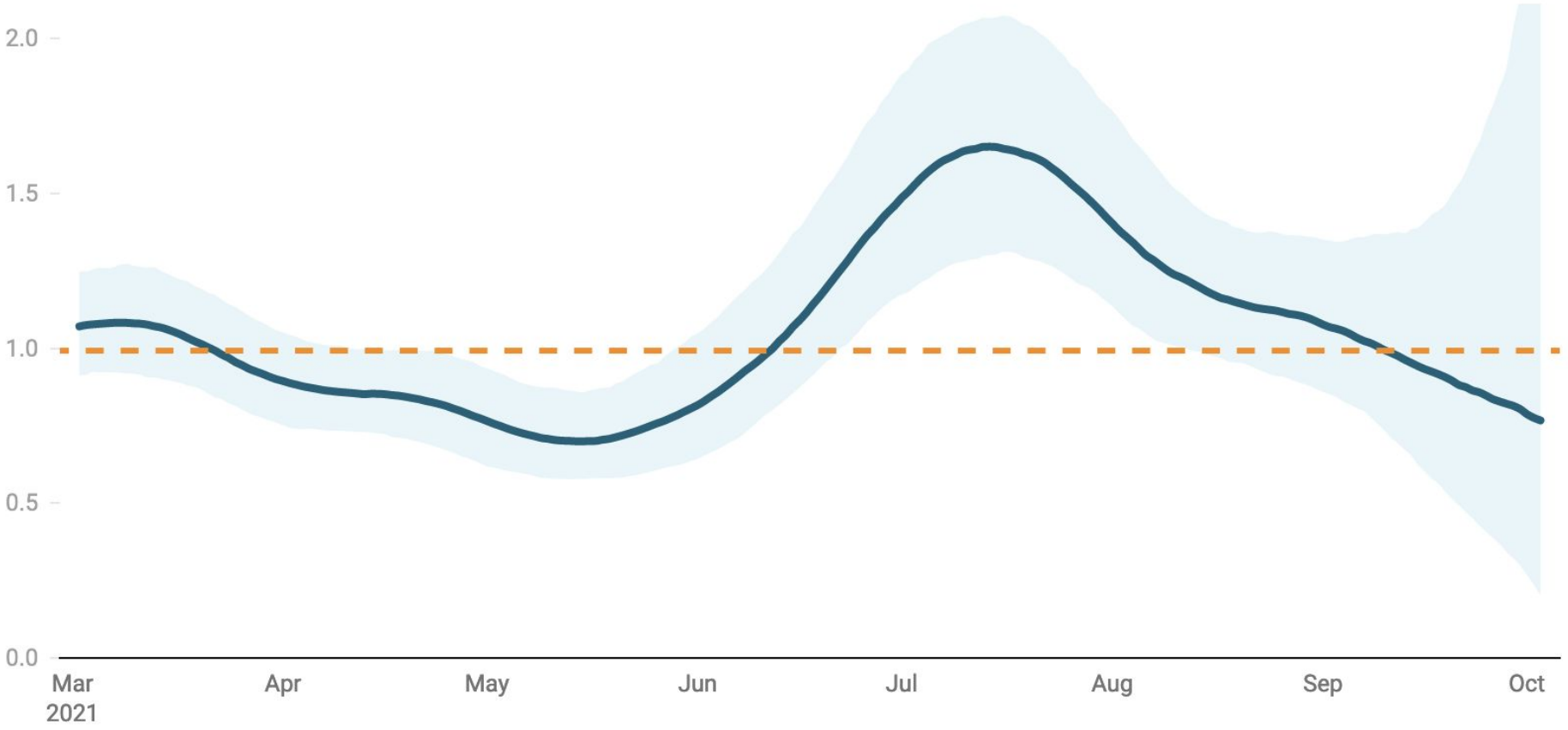
Source: VDH—October 4, 2021; created with Datawrapper

Vermonters Diagnosed with COVID-19 by Week



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

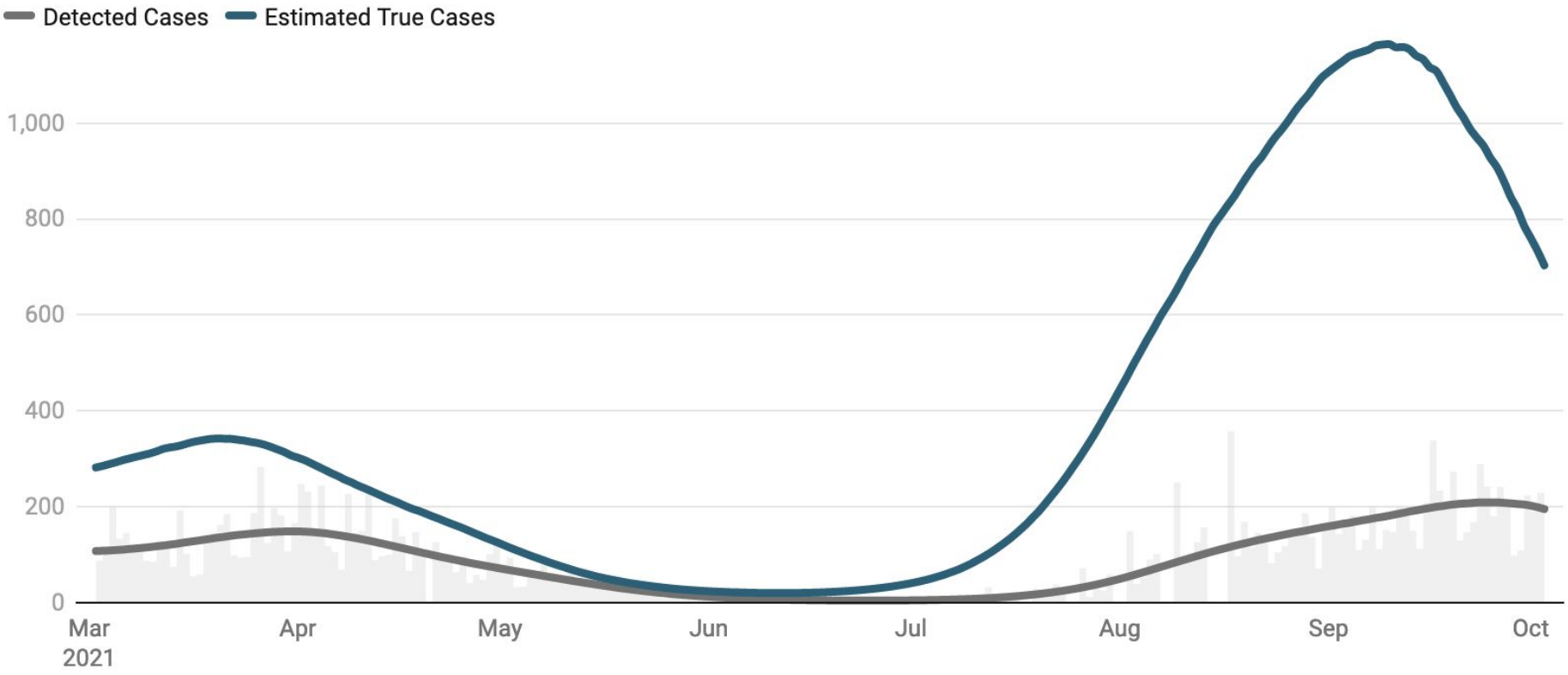
COVID-19 R_t in Vermont



Source: Covidestim—Covid-19 Nowcasting—October 4, 2021

Estimated vs Detected COVID-19 Cases in Vermont

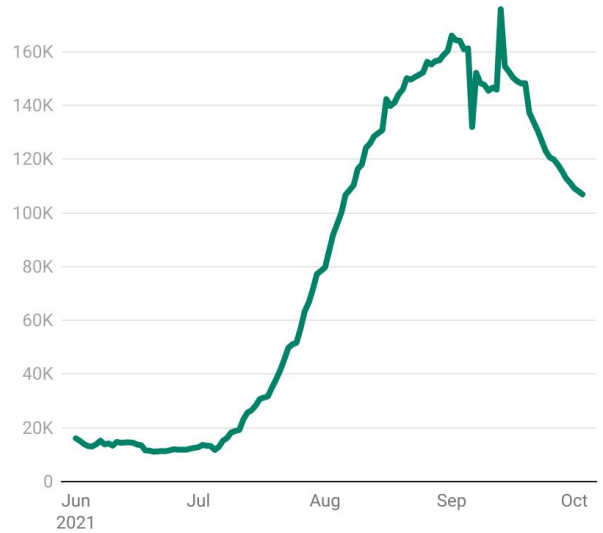
This figure shows both the number of detected cases (gray) and an estimate of the true number of infections.



Source: Covidestim—Covid-19 Nowcasting—October 4, 2021

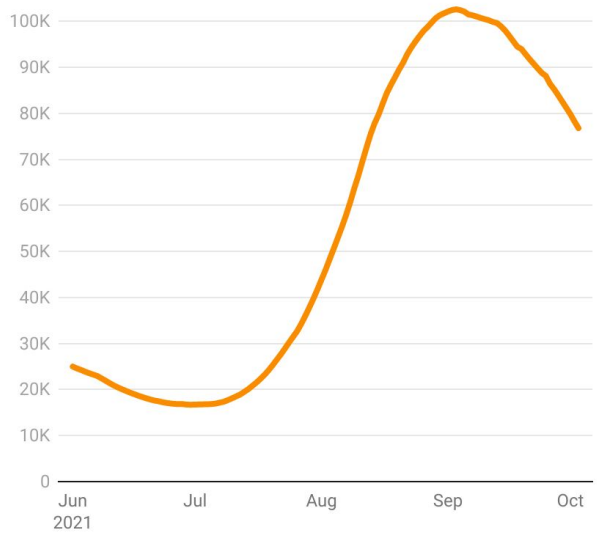
U.S. Infections, Hospitalizations, & Deaths
(7-Day Average)

10.2% Decrease
Over last 7 days



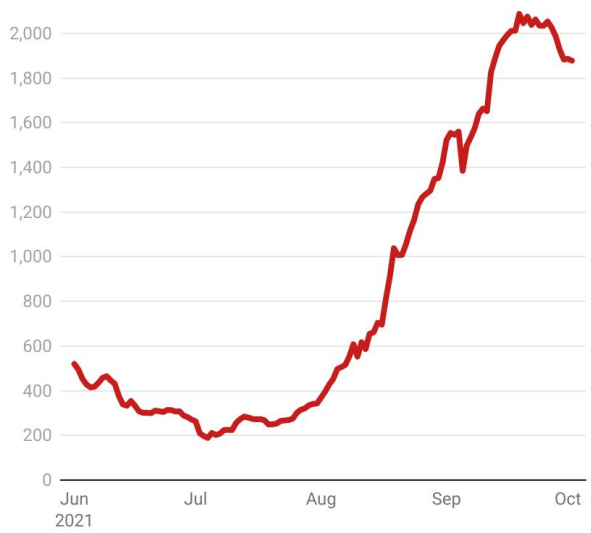
Infections

10.4% Decrease
Over last 7 days



Hospitalizations
(Current)

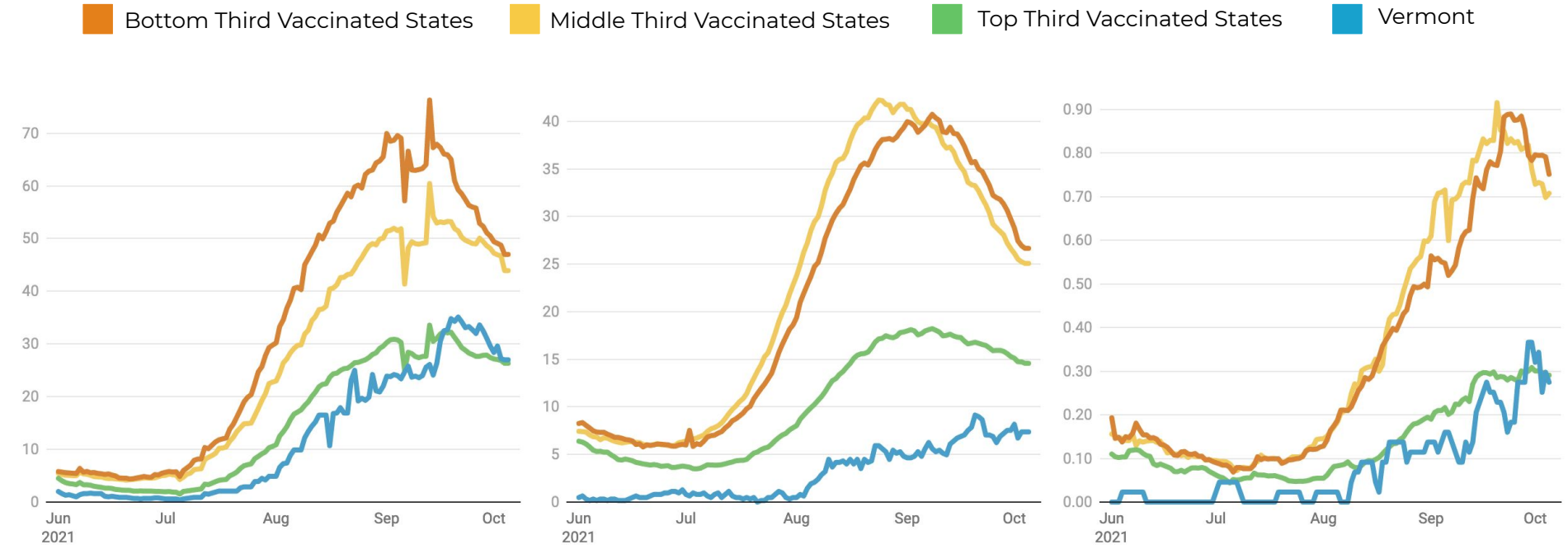
10.9% Decrease
Over last 7 days



Deaths

Source: New York Times—October 4, 2021; created with Datawrapper

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



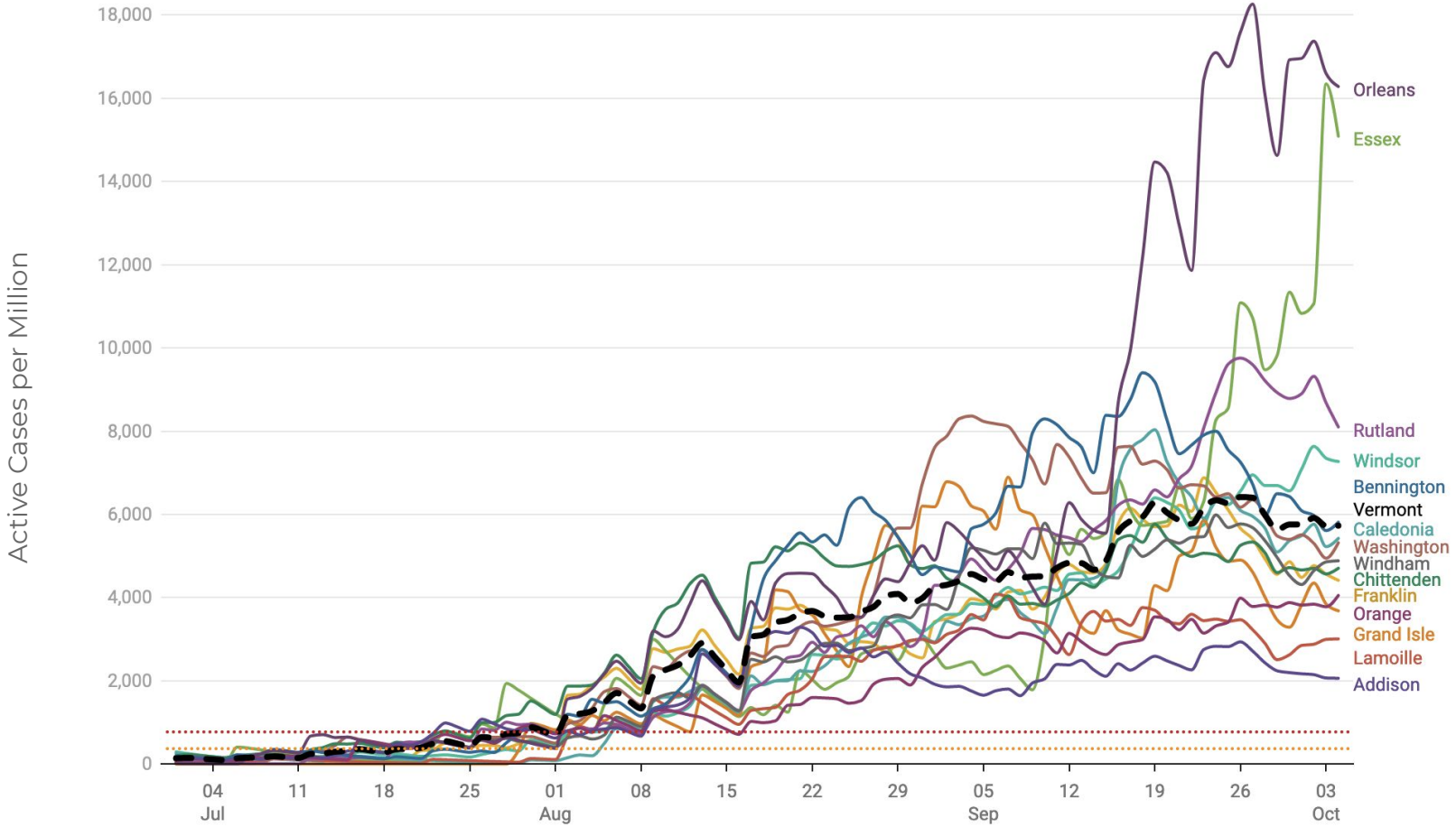
Infections per 100K

Hospitalizations per 100K

Deaths per 100K

Source: Covid Act Now—October 4, 2021; 7-day averages; created with Datawrapper

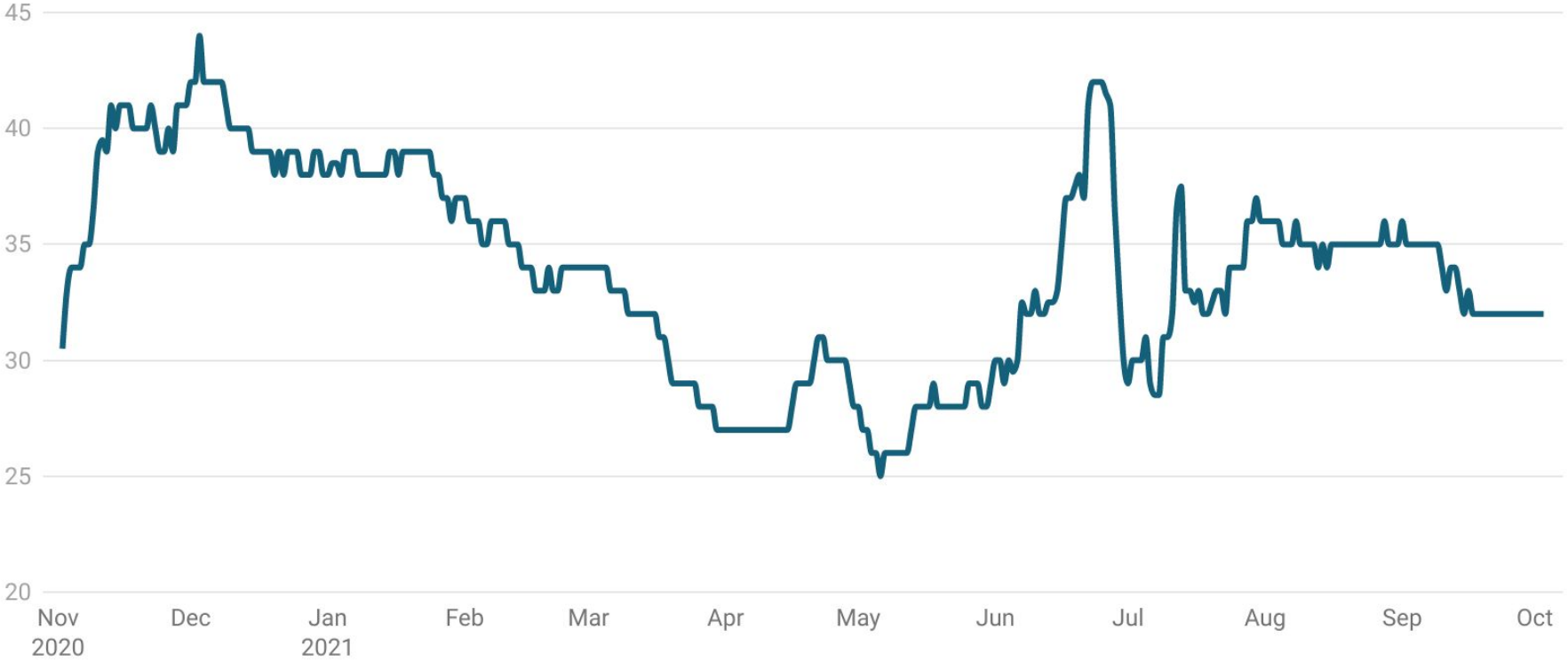
Active Cases in Vermont Counties



Source: Vermont Dept. of Health—October 4, 2021; DFR Active Case Algorithm (per million)

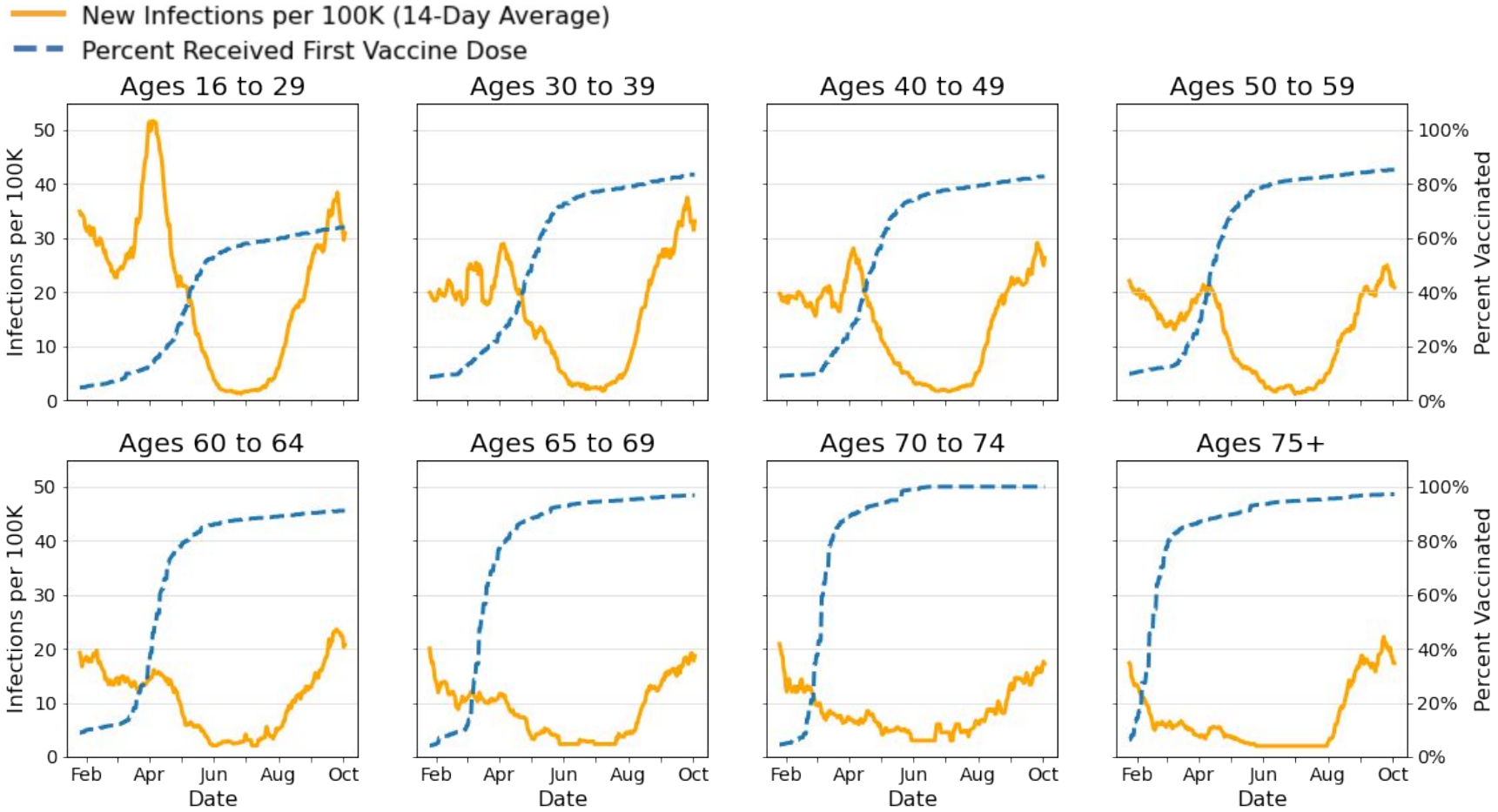
Age of Infected Vermonters

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



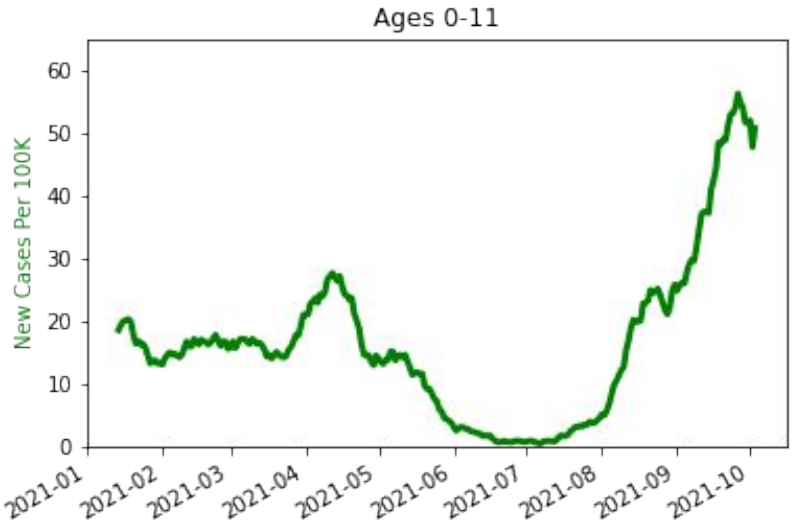
Source: VDH—October 4, 2021

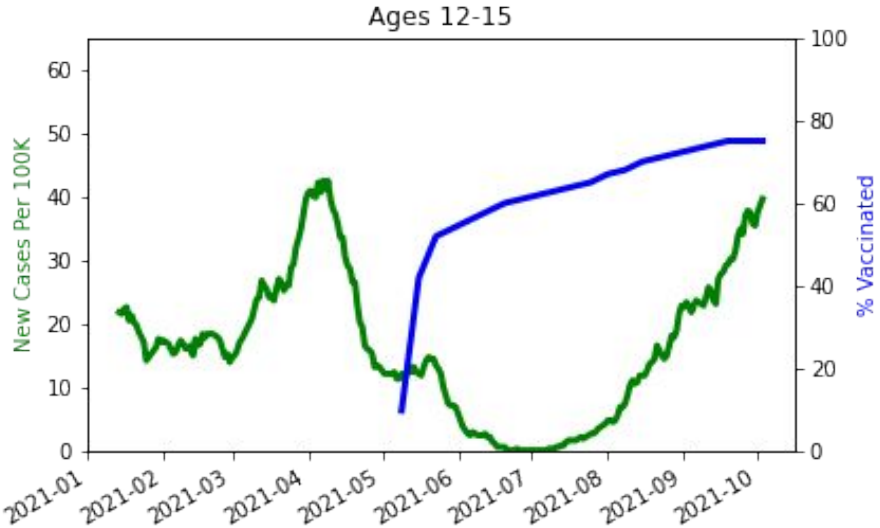
Vermont Case Rate & Vaccination by Age Band



Source: VDH—October 4, 2021

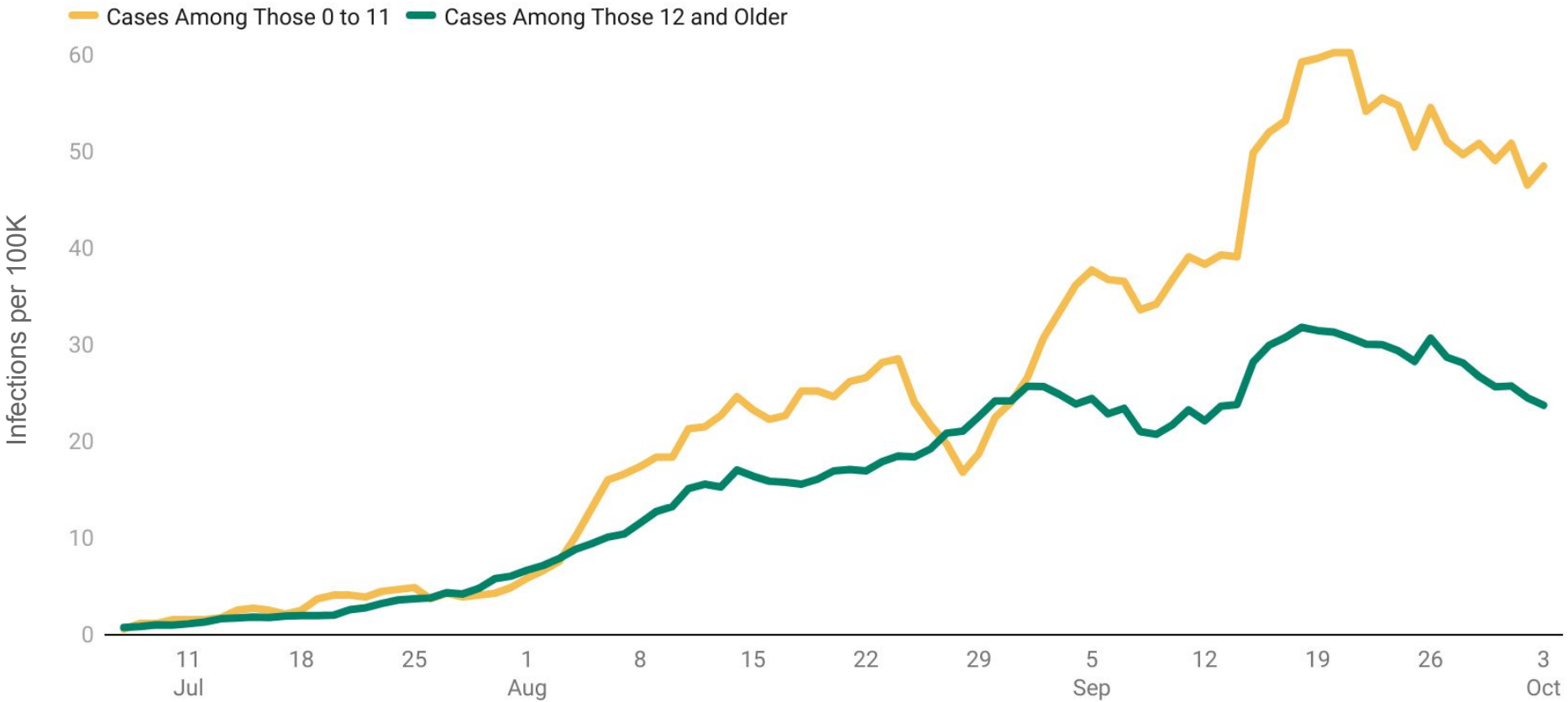
Vermont Case Rate & Vaccination by Age Band





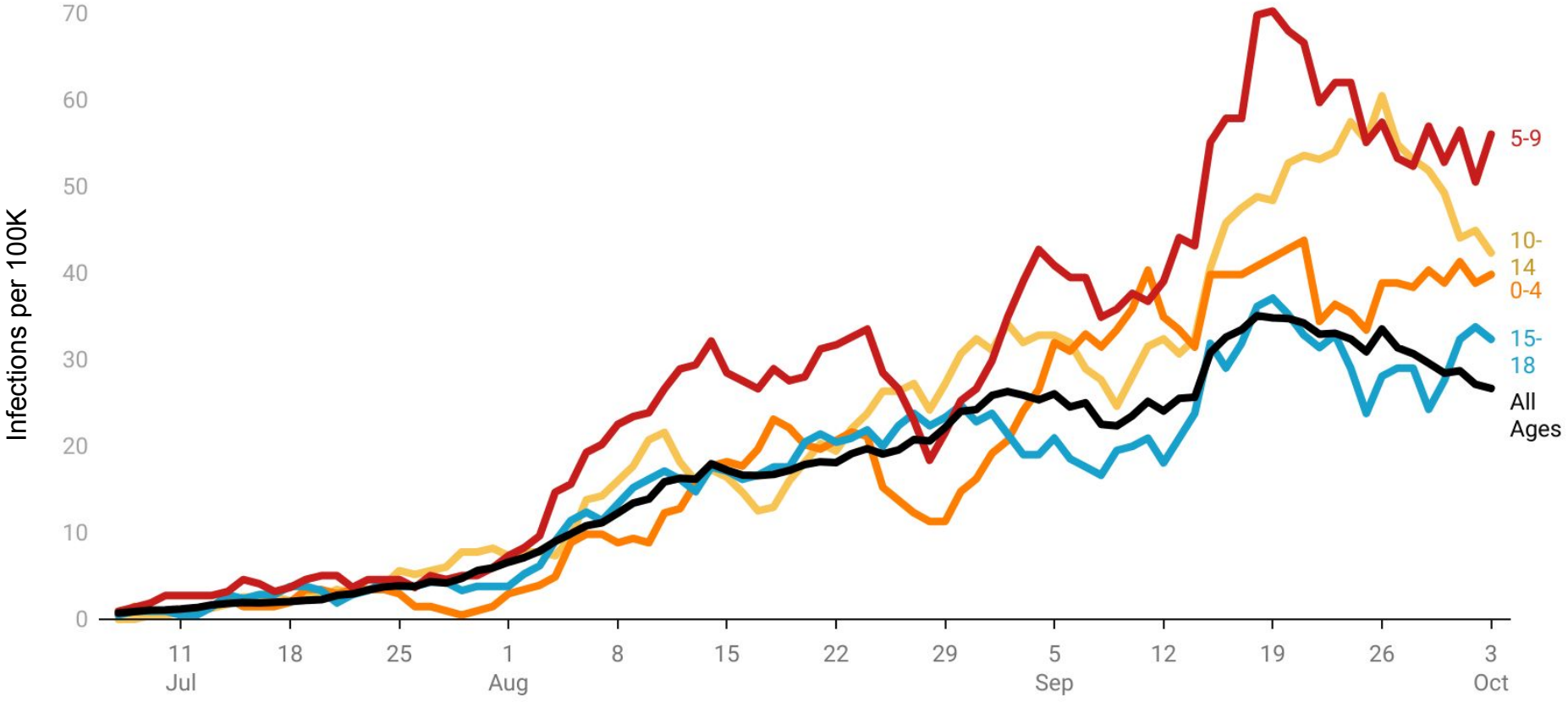
Source: VDH—October 4, 2021

Vermont Case Rate By Age (7-Day Average)



Source: VDH—October 4, 2021; created with Datawrapper

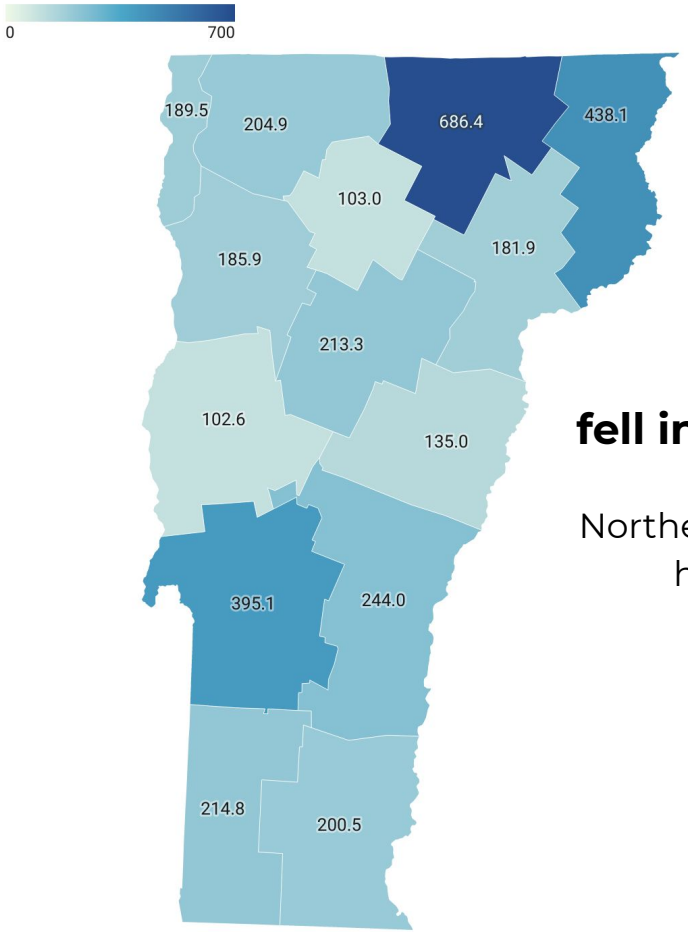
Vermont Covid-19 Case Rates by Age (7-Day Average)



Source: VDH—October 4, 2021; created with Datawrapper

Vermont Weekly Cases by County (per 100,000)

Results Reported September 21 to 27



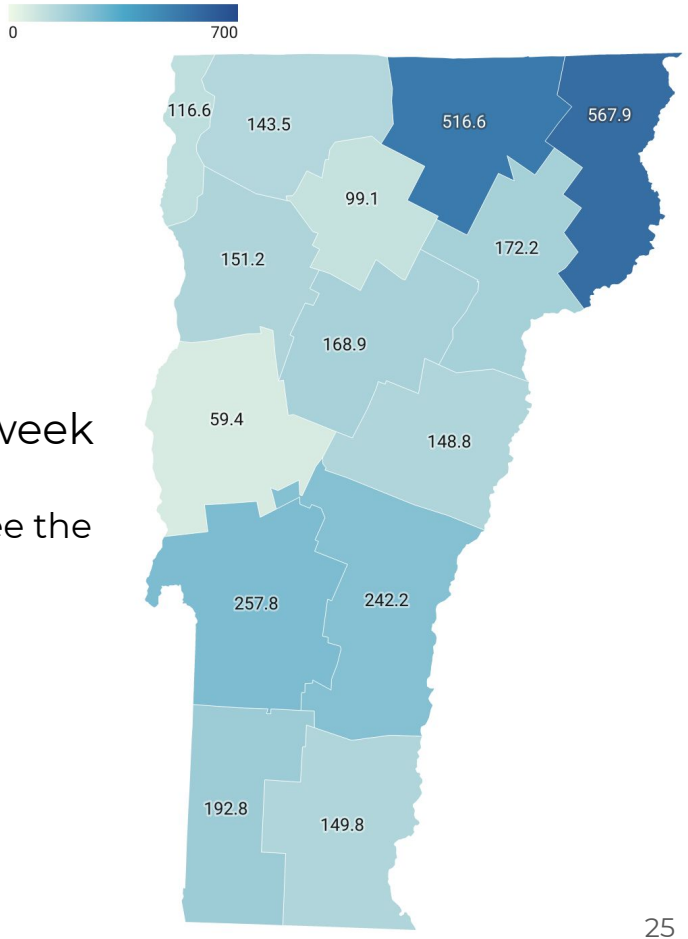
Map: Vermont DFR COVID Modeling Team • Source: Vermont Dept. of Health • Created with Datawrapper

Covid-19 case rates
fell in 12 of 14 counties this week

Northeast Kingdom continues to see the highest case rates in Vermont

Vermont Weekly Cases by County (per 100,000)

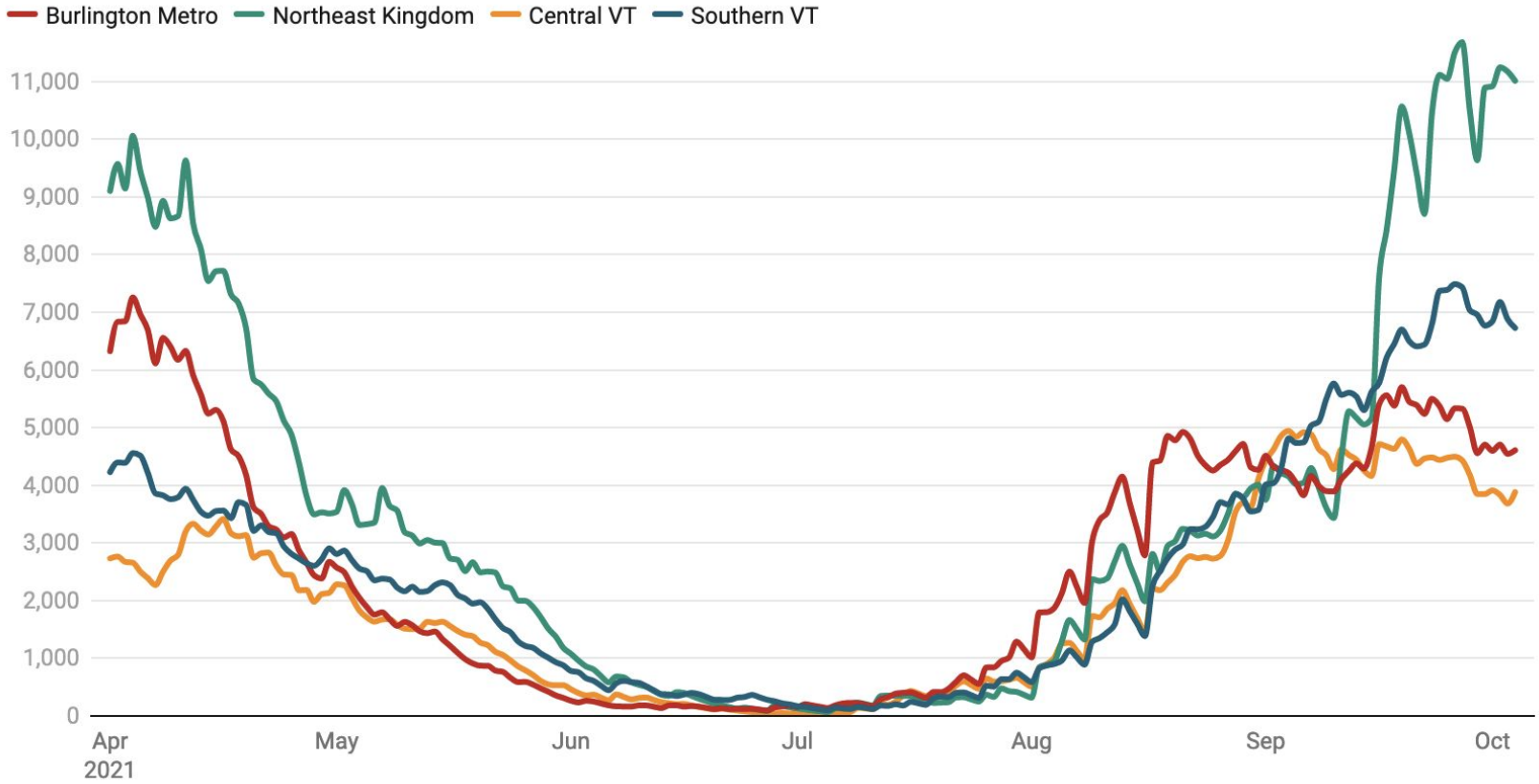
Results Reported September 28 to October 4



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—October 4, 2021

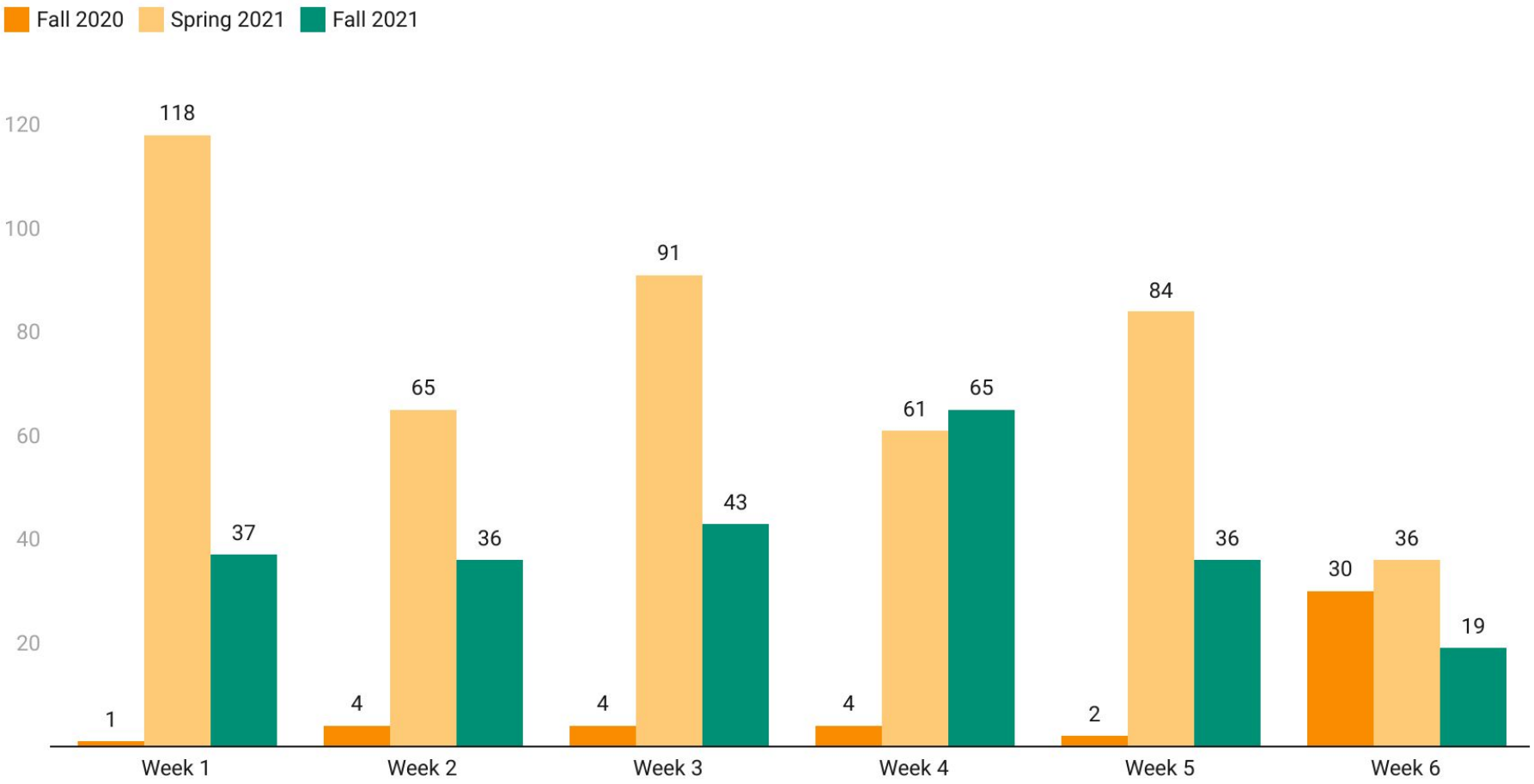
Fall 2021 Higher Education Restart

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
16 of 16	**28,560**	**27,141**	**277**	**455**	**687**
		95.0%	**1.0%**	**1.6%**	**2.4%**

Week 1: **37 cases** out of 12,623 tests
Week 2: **36 cases** out of 7,434 tests
Week 3: **43 cases** out of 3,053 tests
Week 4: **65 cases** out of 6,497 tests
Week 5: **36 cases** out of 4,878 tests
Week 6: **19 cases** out of 4,516 tests

Source: Vermont Higher Education Institutions—October 4, 2021

Vermont Higher Education Cases By Semester



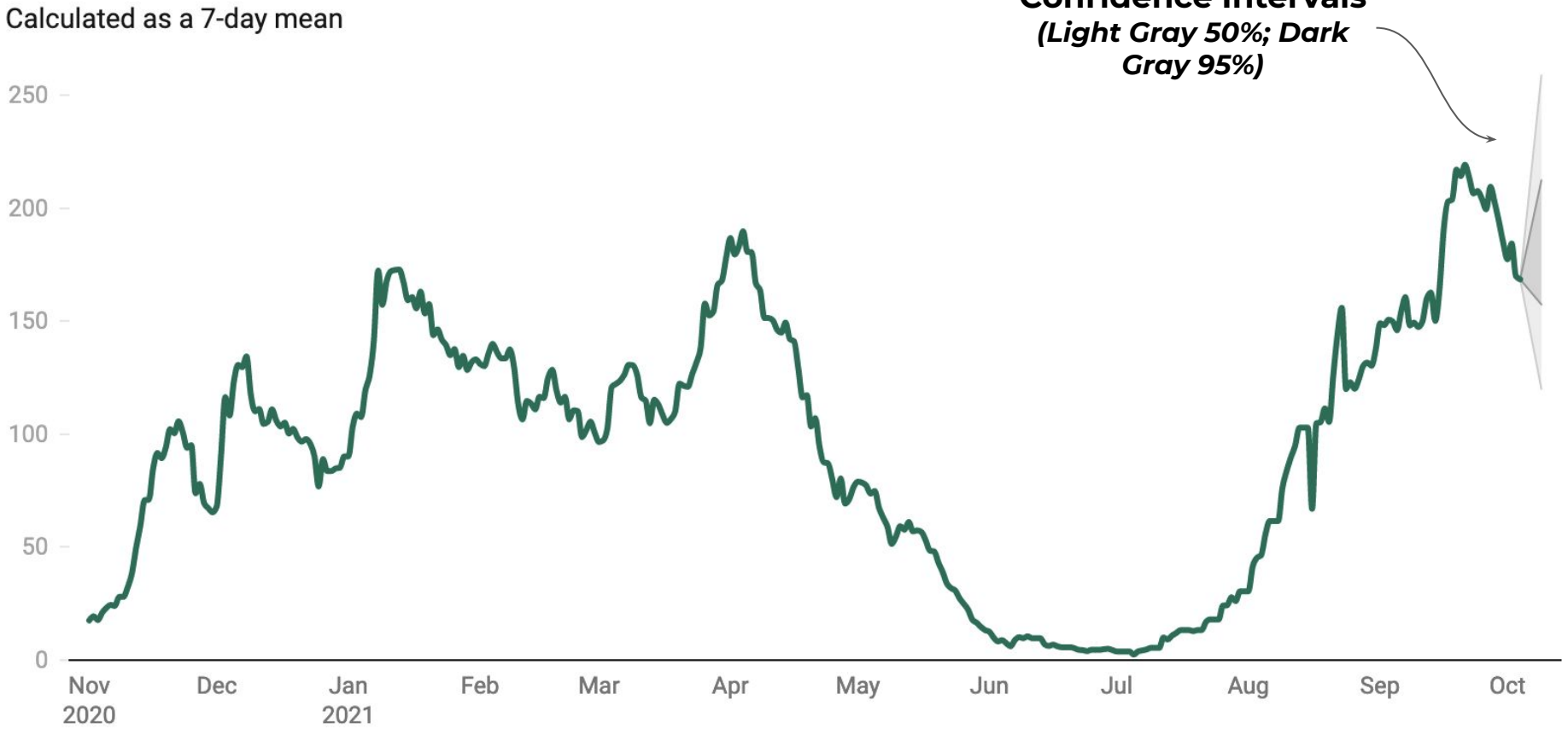
Source: Vermont Higher Education Institutions—October 4, 2021—Created with Datawrapper

Active Outbreaks in Long Term Care Facilities

Facility Name	Total COVID-19 Cases
Green Mountain Nursing and Rehab, *Colchester*	41
Vernon Green Nursing Home, *Vernon*	30
Centers for Living and Rehab, *Bennington*	25
Mansfield Place, *Essex*	20
Equinox Terrace, *Manchester*	19
Vernon Hall Assisted Living, *Vernon*	13
St. Joseph Kervick Residence, *Rutland*	8
Long Term Care Facility A	7
Total	**163**

Source: Vermont Department of Health—October 4, 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 COVID-19 Infections Confidence Intervals

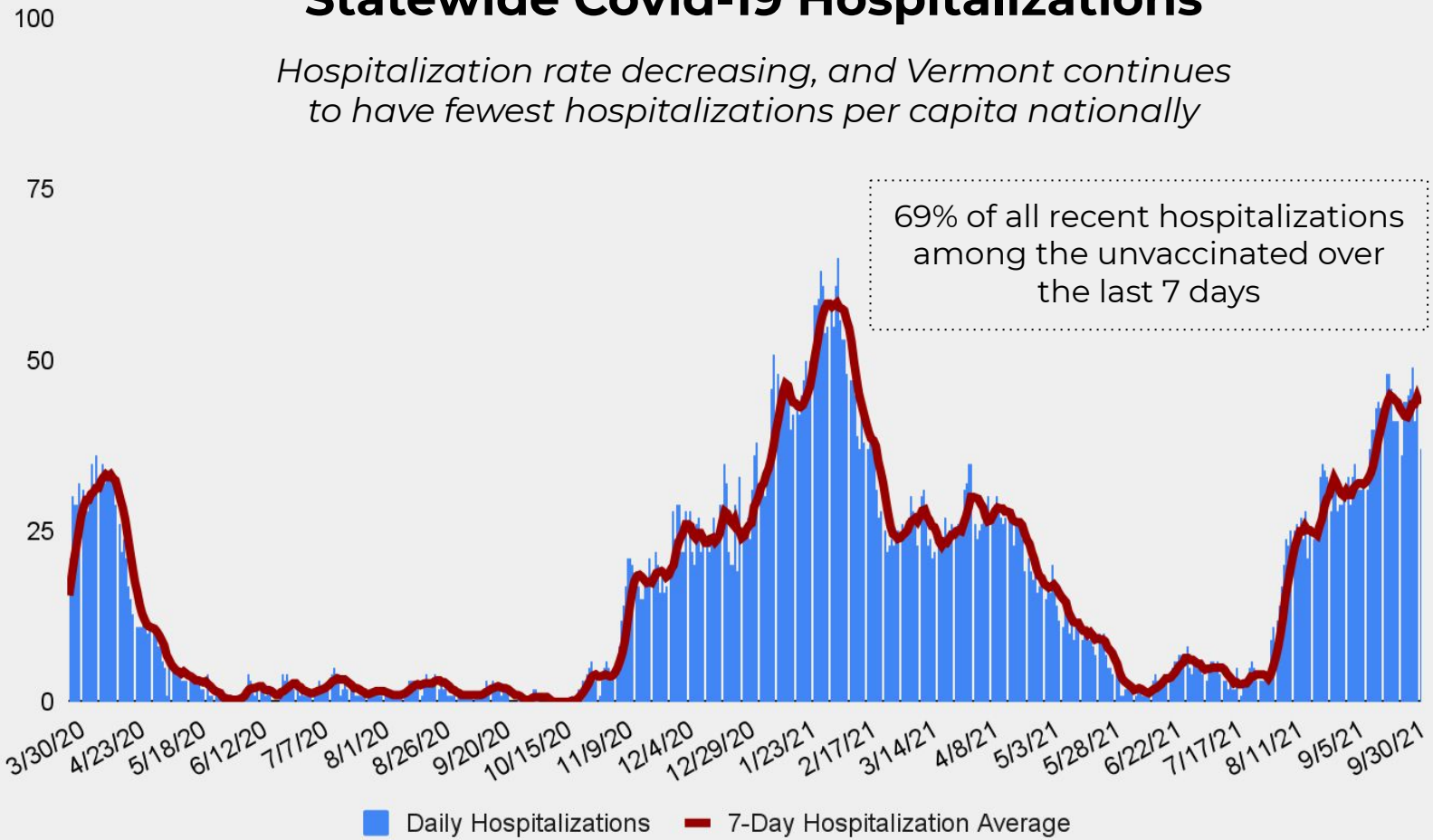


Source: Centers for Disease Control and Prevention—October 4, 2021; created with Datawrapper

Vermont Hospitalization Data

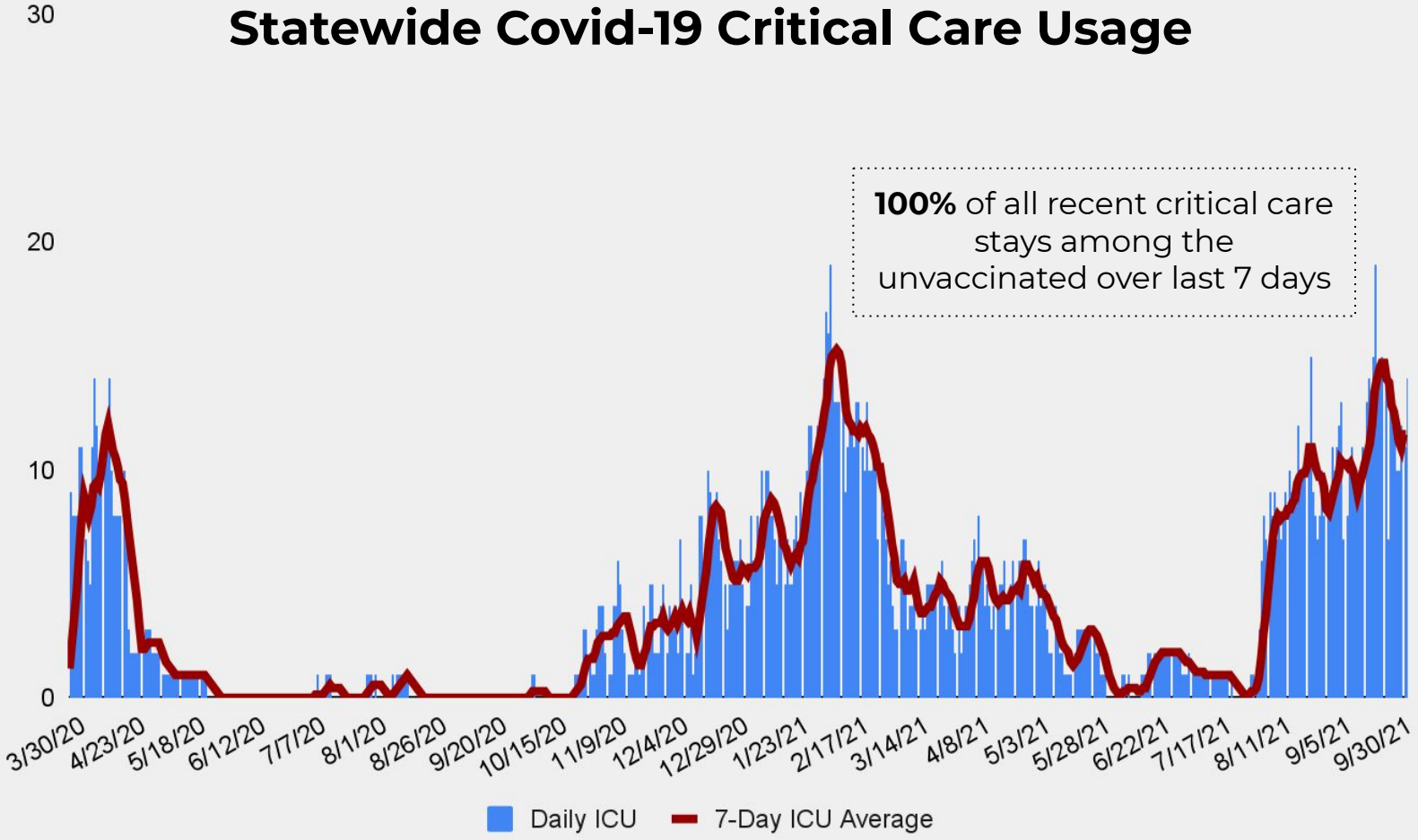
Statewide Covid-19 Hospitalizations

Hospitalization rate decreasing, and Vermont continues to have fewest hospitalizations per capita nationally

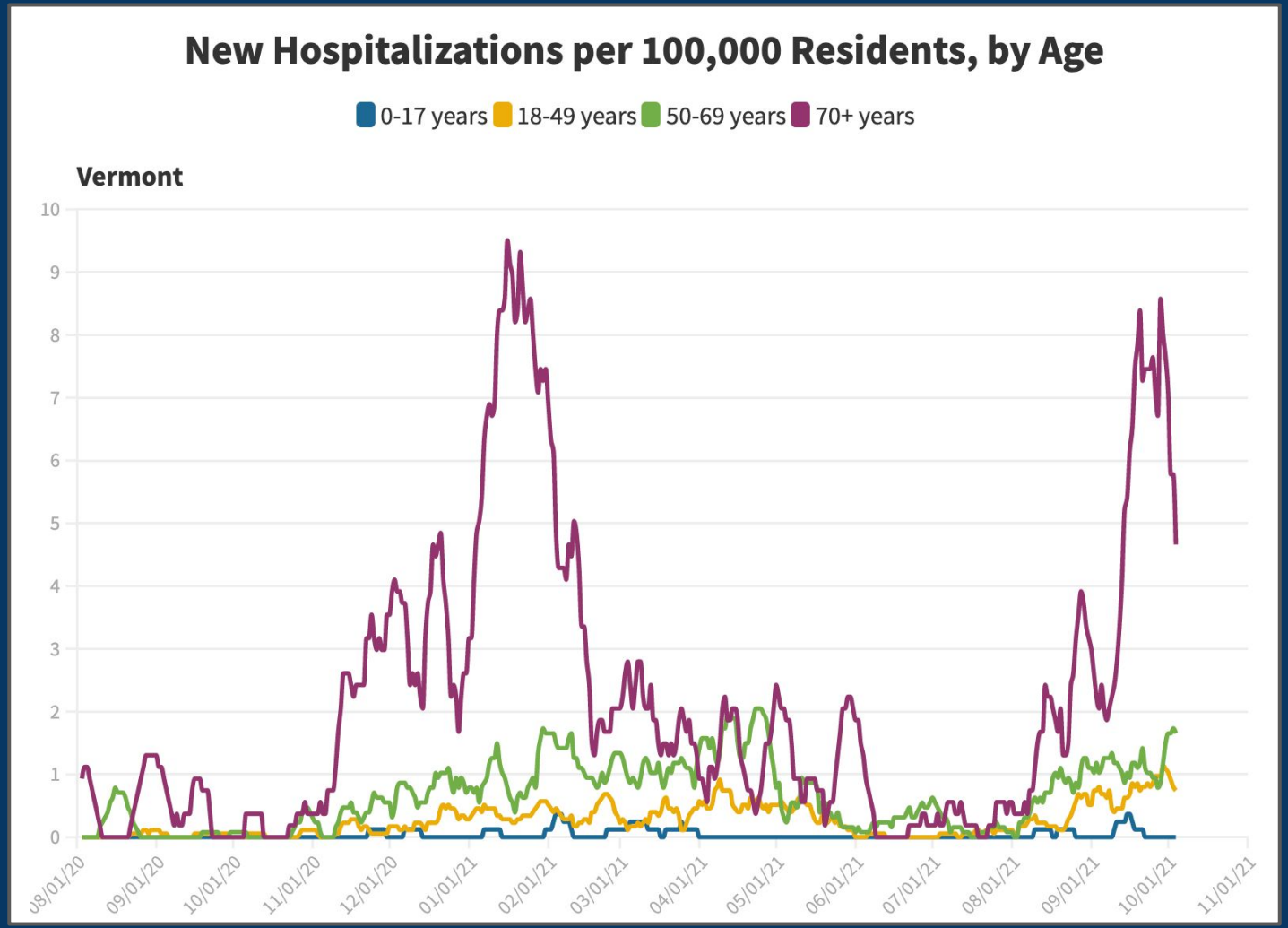


Source: Vermont Department of Health—October 4, 2021

Statewide Covid-19 Critical Care Usage

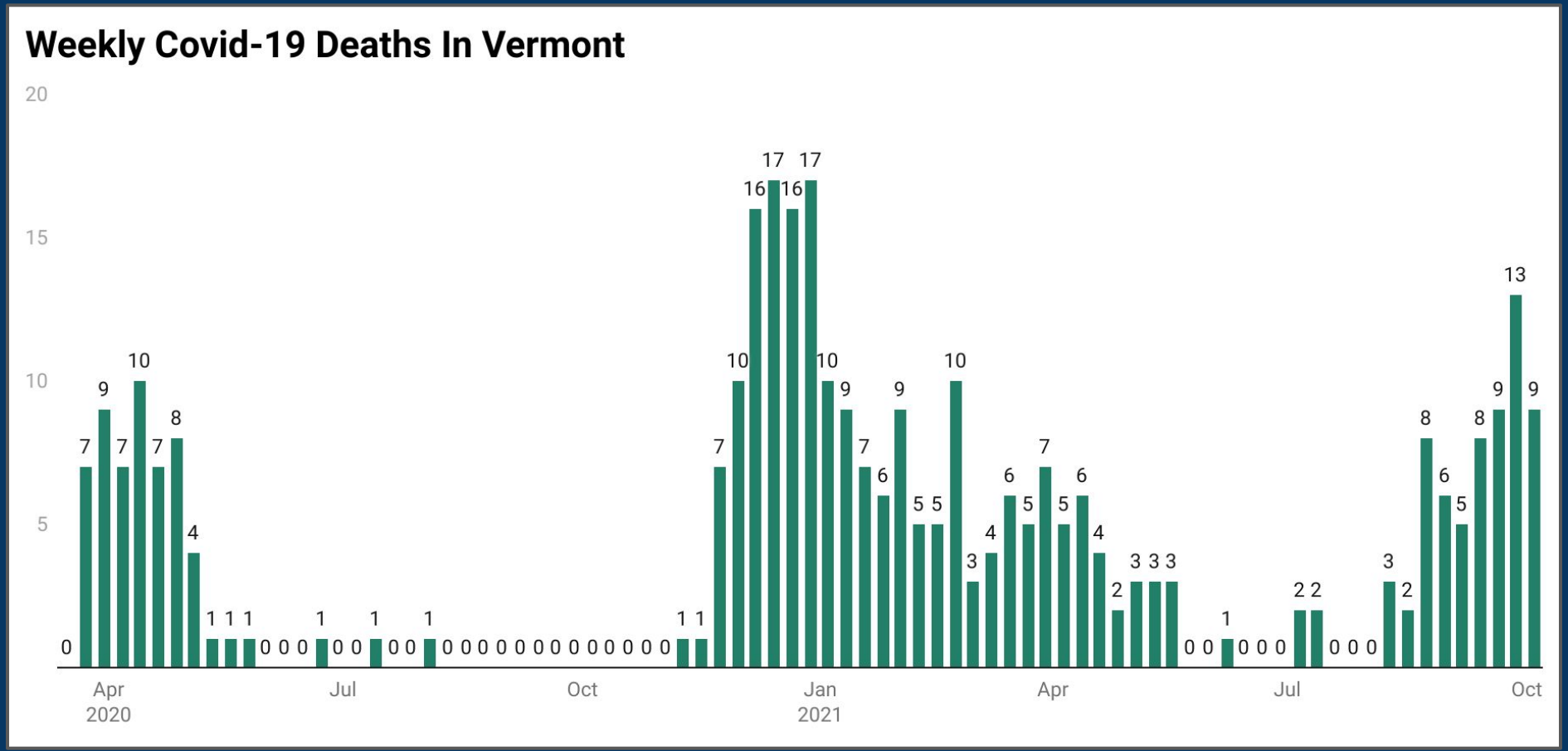


Source: Vermont Department of Health—October 4, 2021

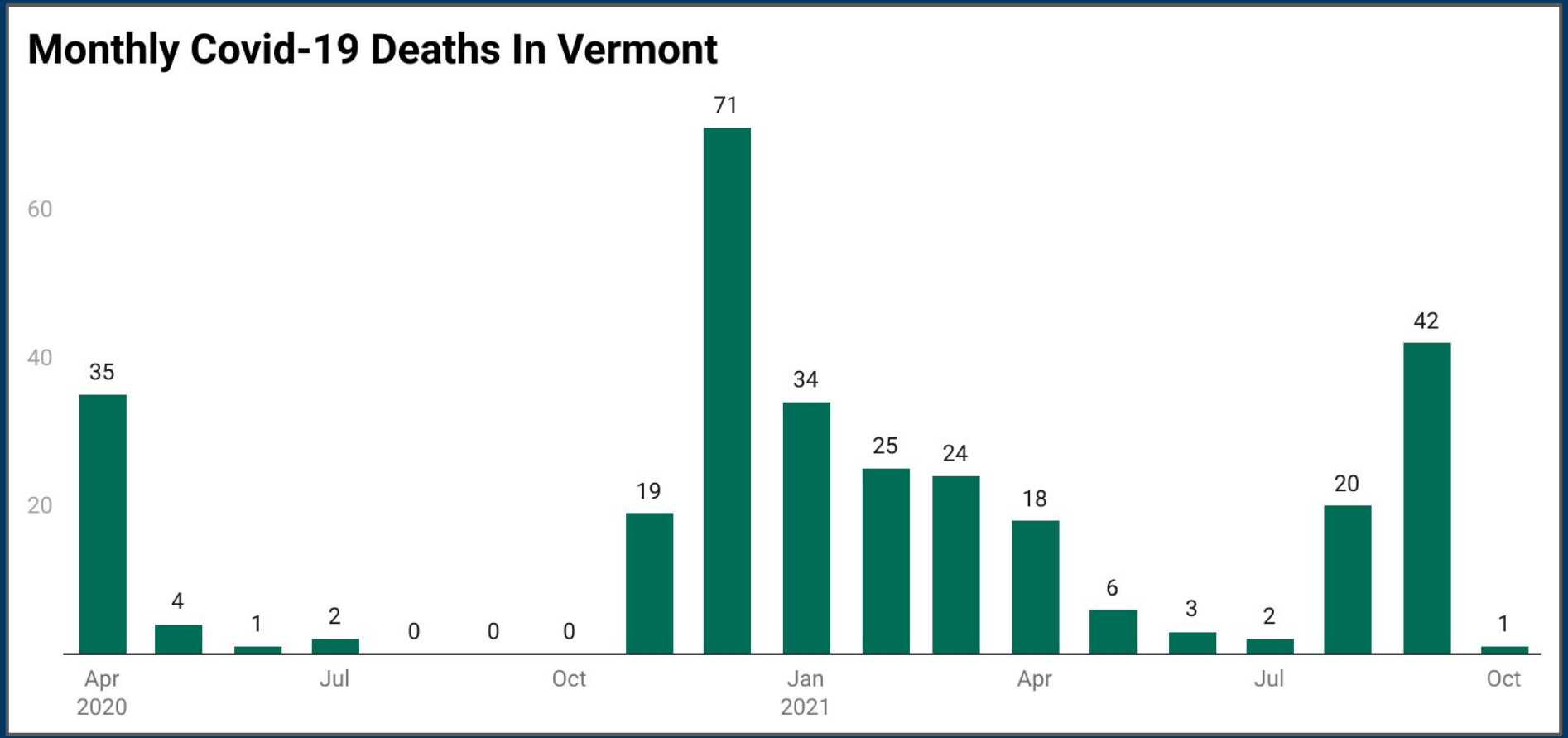


Source: US Dept. of Health & Human Services; 7-day average—October 4, 2021

Vermont Fatality Data

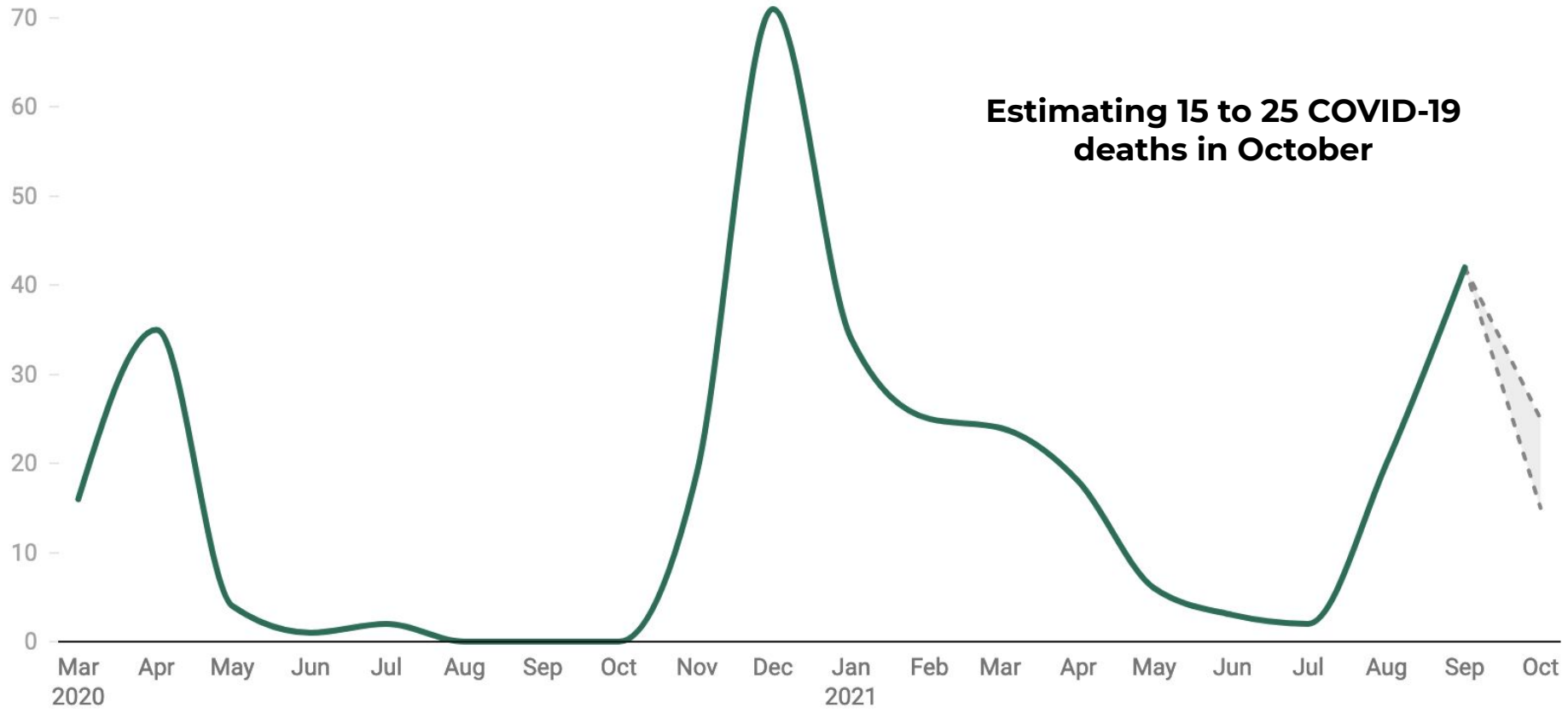


Source: Vermont Department of Health—October 4, 2021 (reporting week ending Tuesday to Monday)



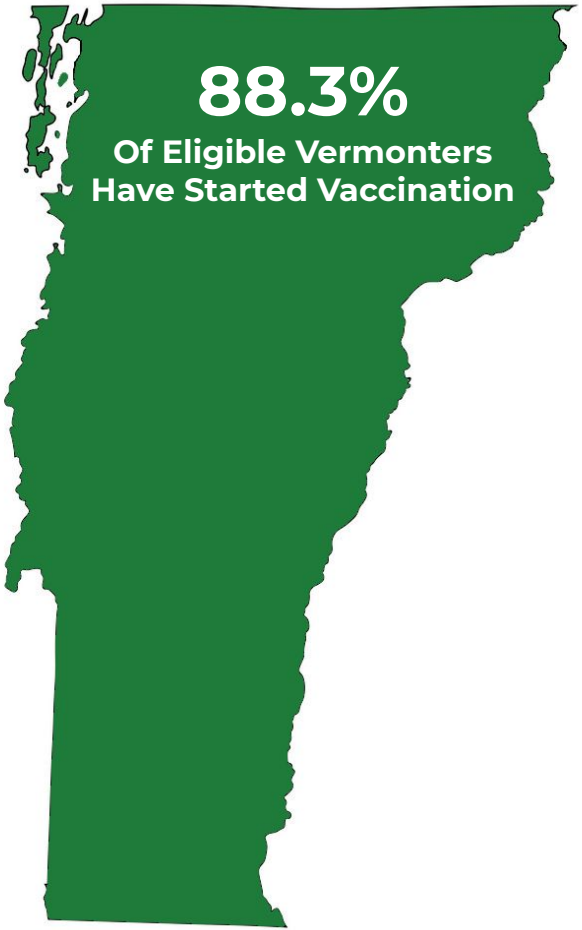
Source: Vermont Department of Health—October 5, 2021; deaths attributed to month in which death occurred rather than reported

Vermont COVID-19 Deaths by Month



Source: Vermont Department of Health—October 5, 2021; DFR Forecast

Vermont Vaccination Data



Vermont Vaccination

+2,708
Since Last Week

486,396
Vermonters with
at Least 1 Dose

64,554
Eligible Vermonters
still to be vaccinated

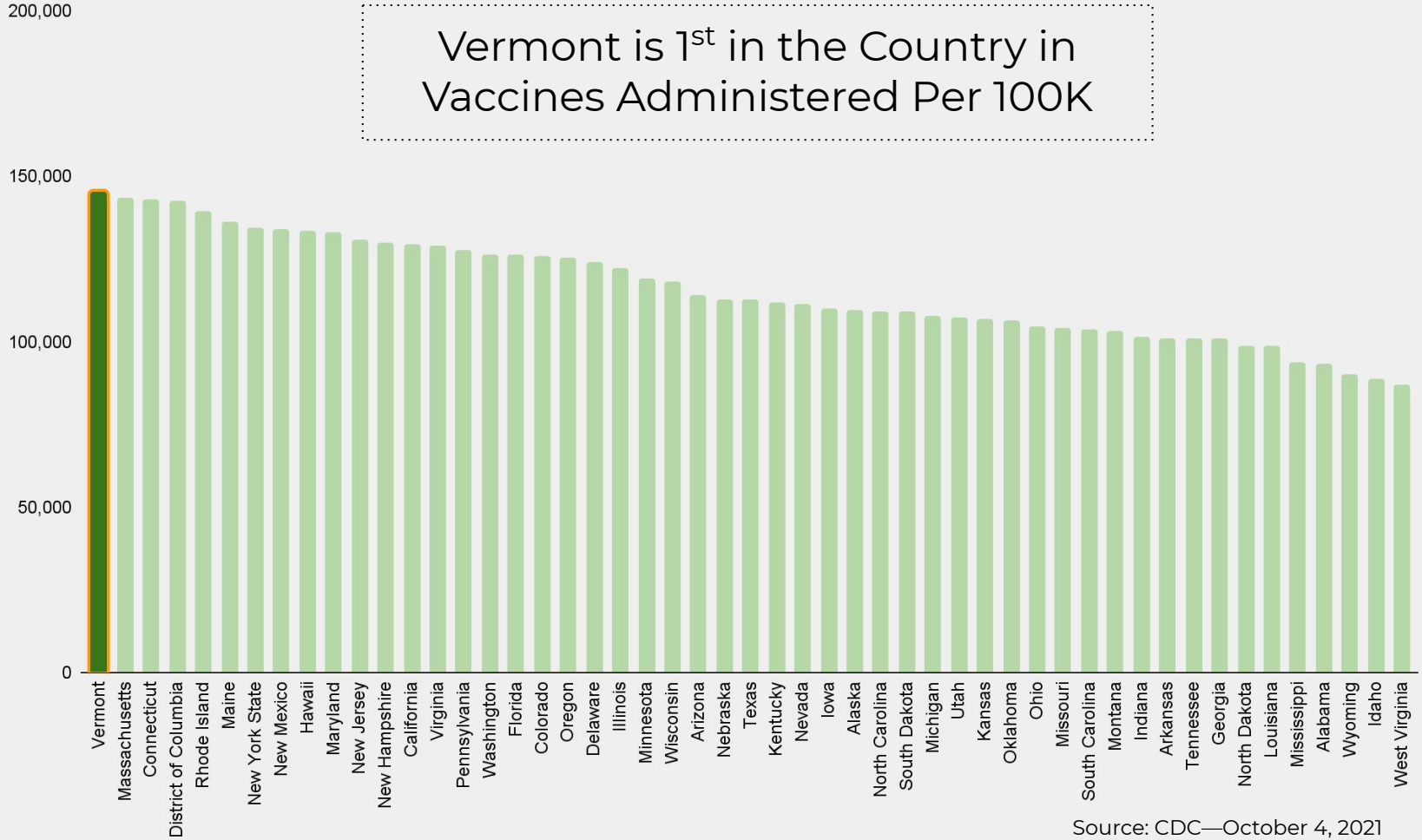
Source: CDC—October 4, 2021

Vermont CDC Vaccine Scorecard

Metric	Figure	State Ranking
Doses Administered per 100K	**145,386**	**1**
% At Least 1 Dose (Eligible Population)	**88.3%**	**3**
% Fully Vaccinated (Eligible Population)	**79.3%**	**2**
% At Least 1 Dose (Full Population)	**78.0%**	**1**
% Fully Vaccinated (Full Population)	**69.7%**	**1**
% Fully Vaccinated (65 & Over)	**95.6%**	**1**

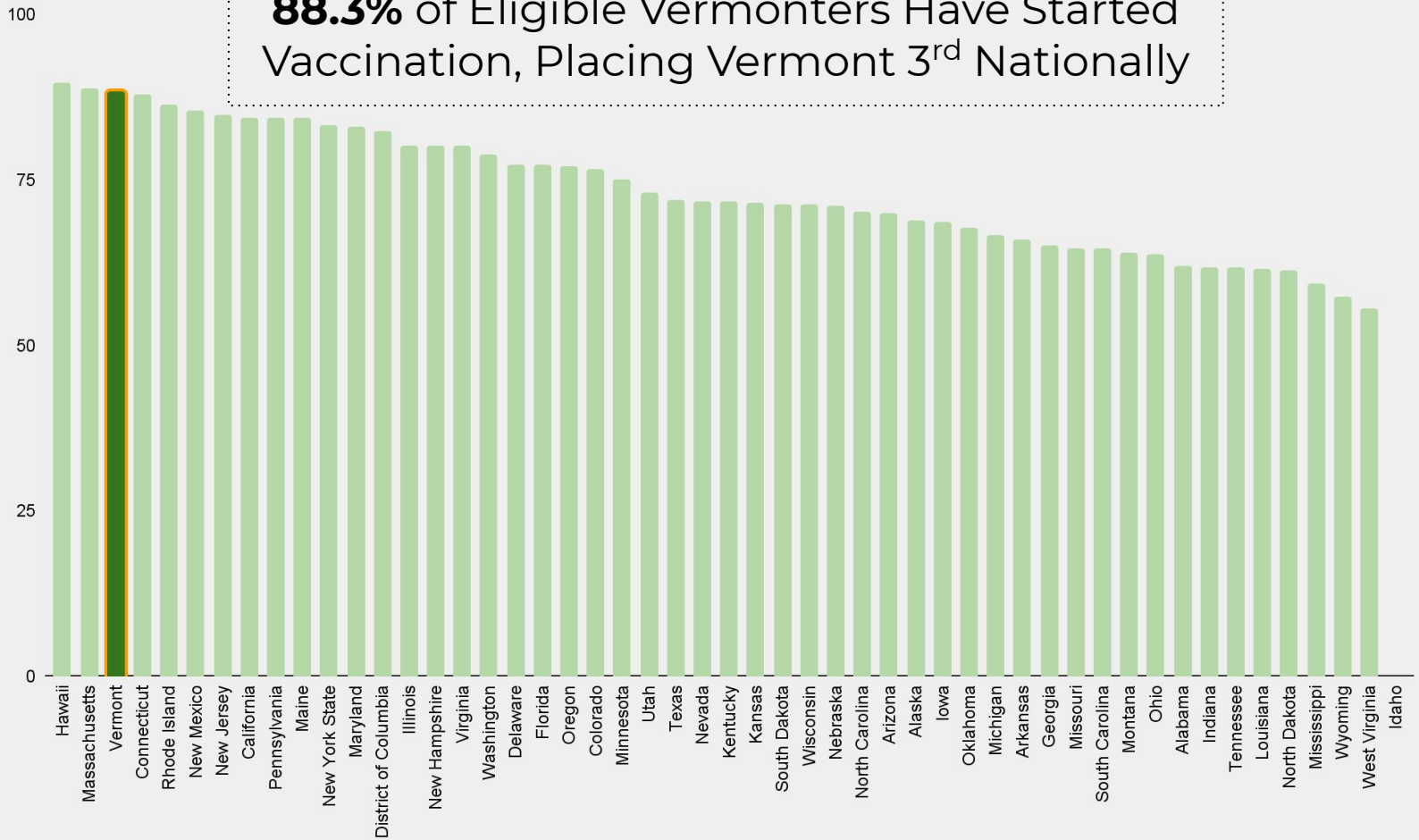
Source: CDC—October 4, 2021

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



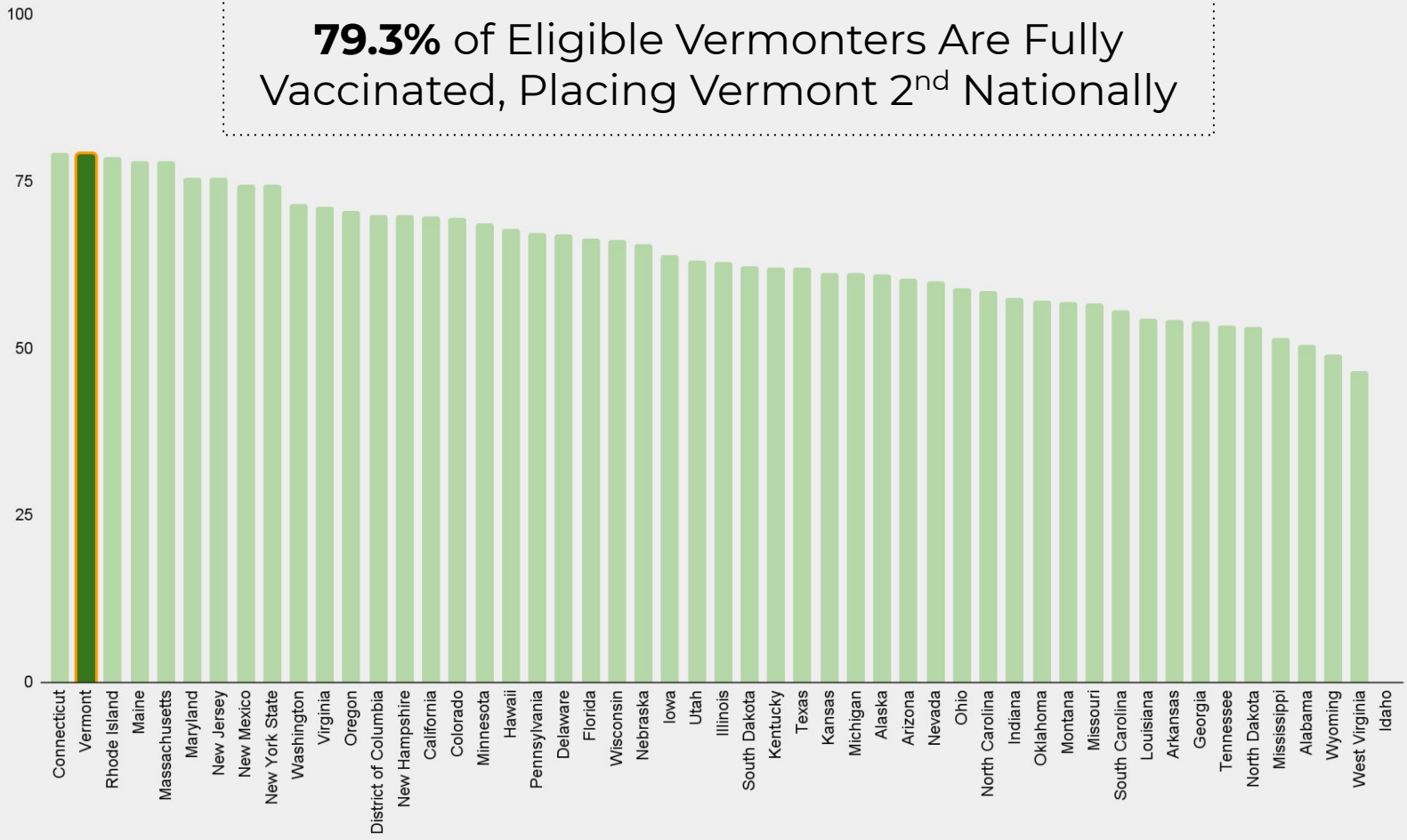
Source: CDC—October 4, 2021

88.3% of Eligible Vermonters Have Started Vaccination, Placing Vermont 3rd Nationally



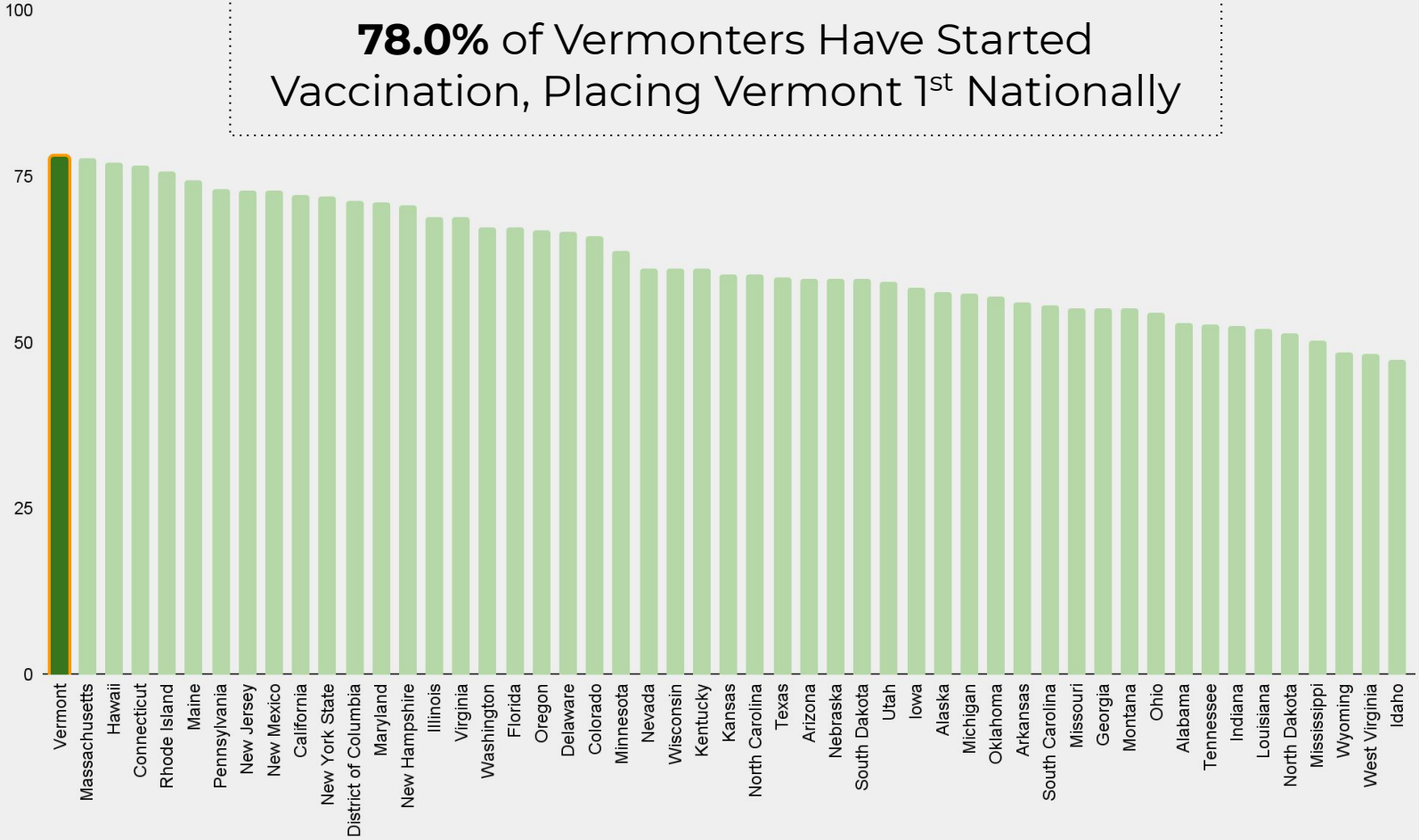
Source: CDC—October 4, 2021

79.3% of Eligible Vermonters Are Fully Vaccinated, Placing Vermont 2nd Nationally



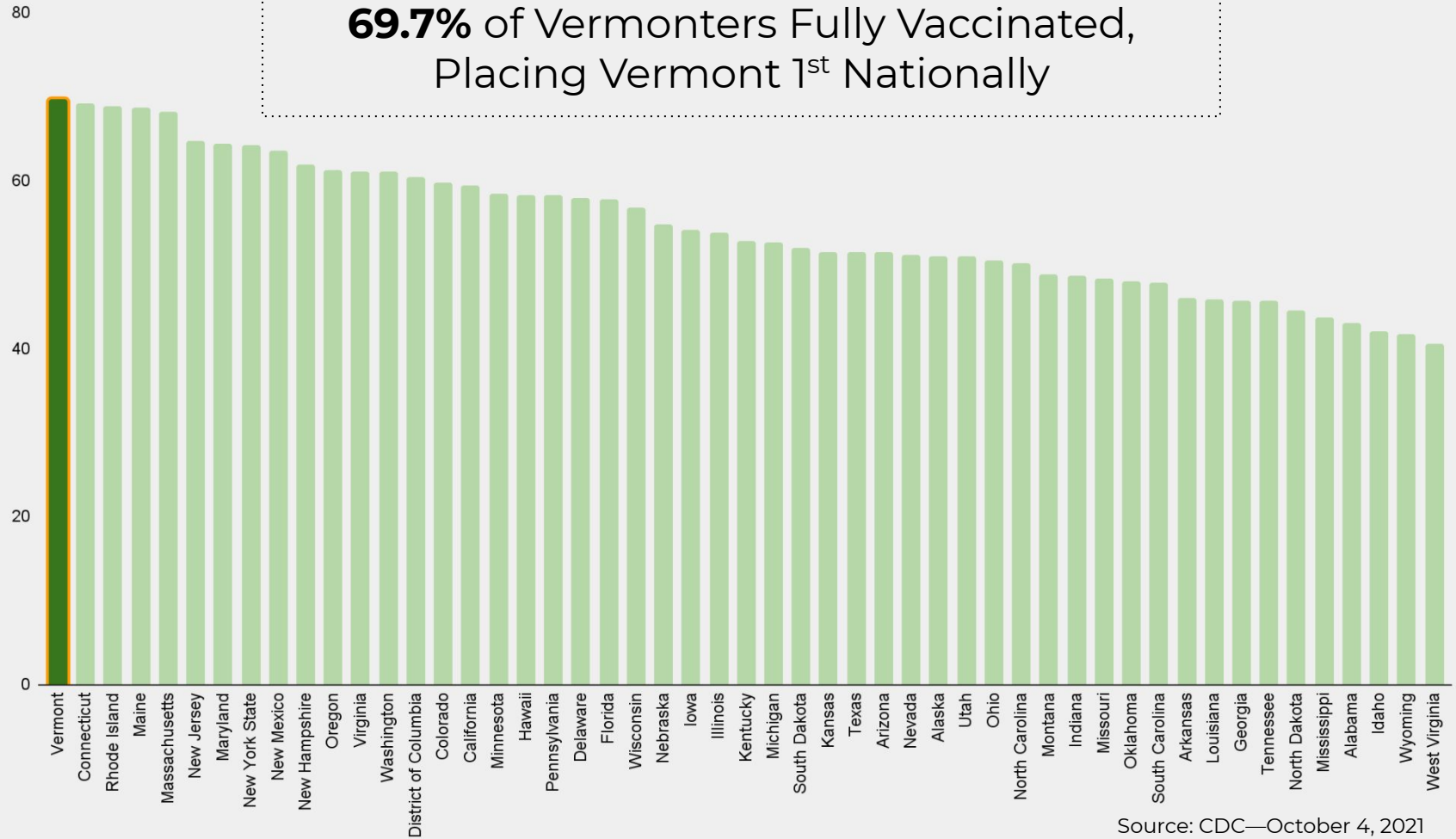
Source: CDC—October 4, 2021

78.0% of Vermonters Have Started Vaccination, Placing Vermont 1st Nationally



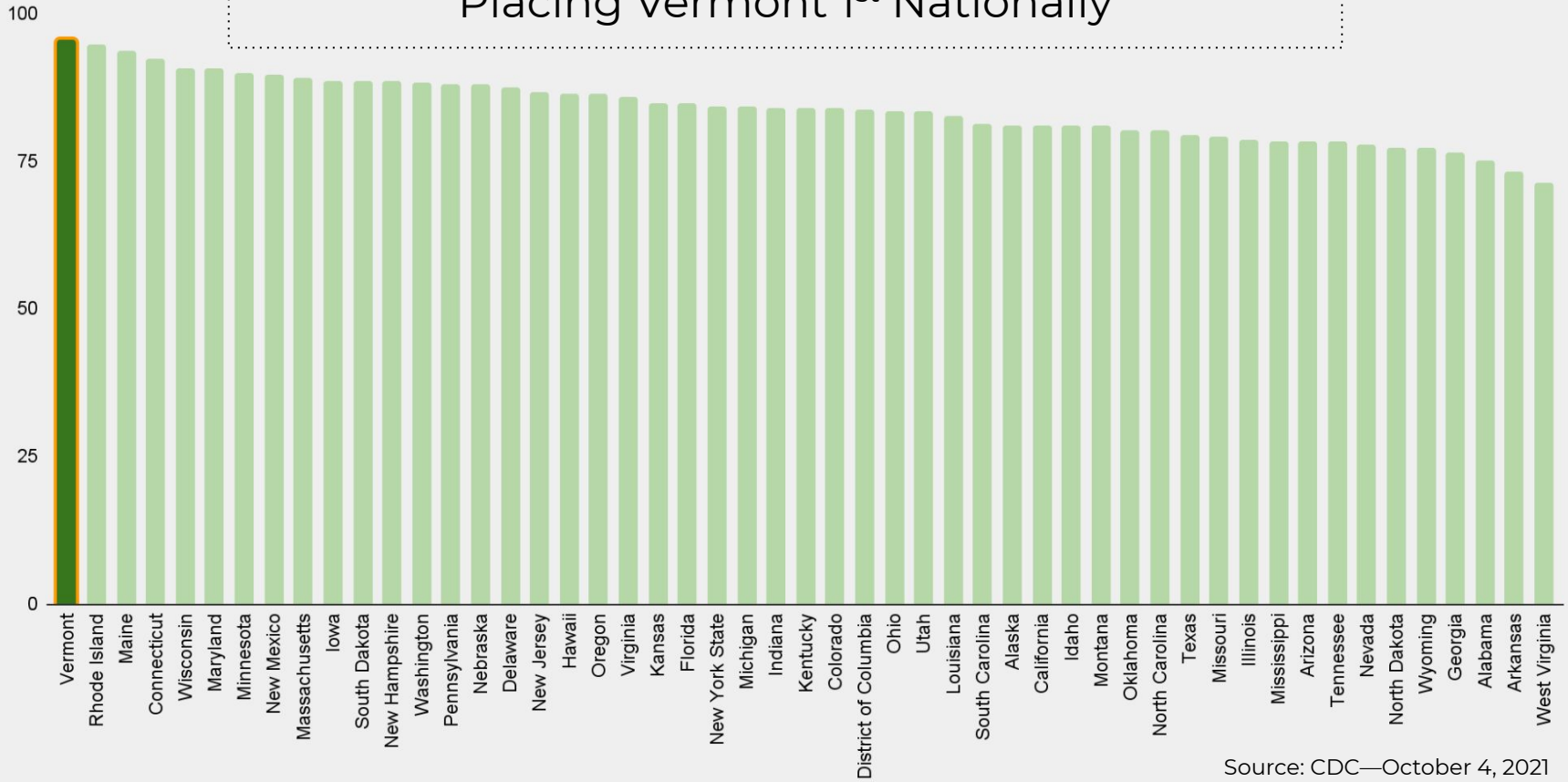
Source: CDC—October 4, 2021

69.7% of Vermonters Fully Vaccinated, Placing Vermont 1st Nationally



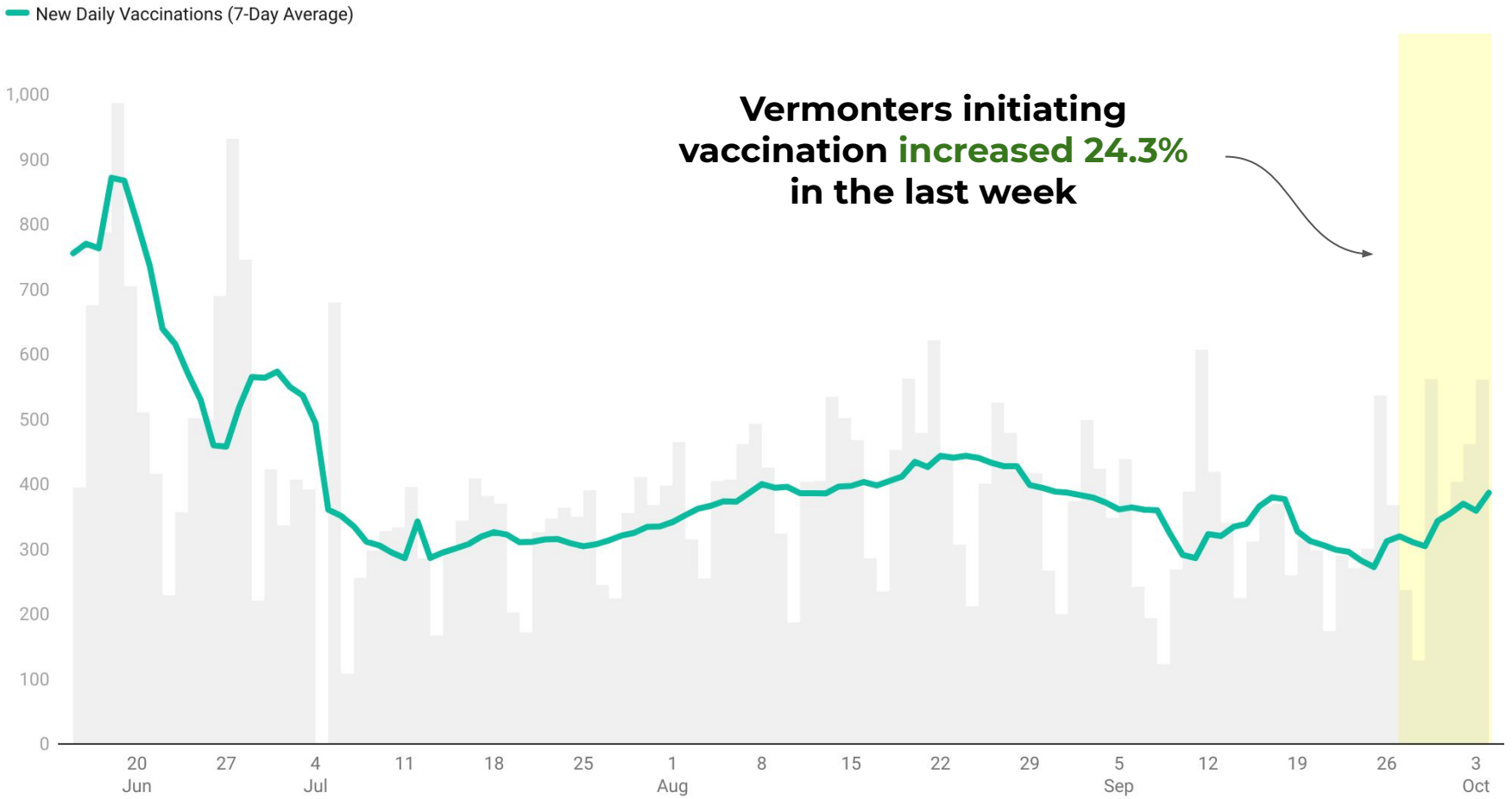
Source: CDC—October 4, 2021

95.6% of 65 & Over Vermonters Fully Vaccinated, Placing Vermont 1st Nationally

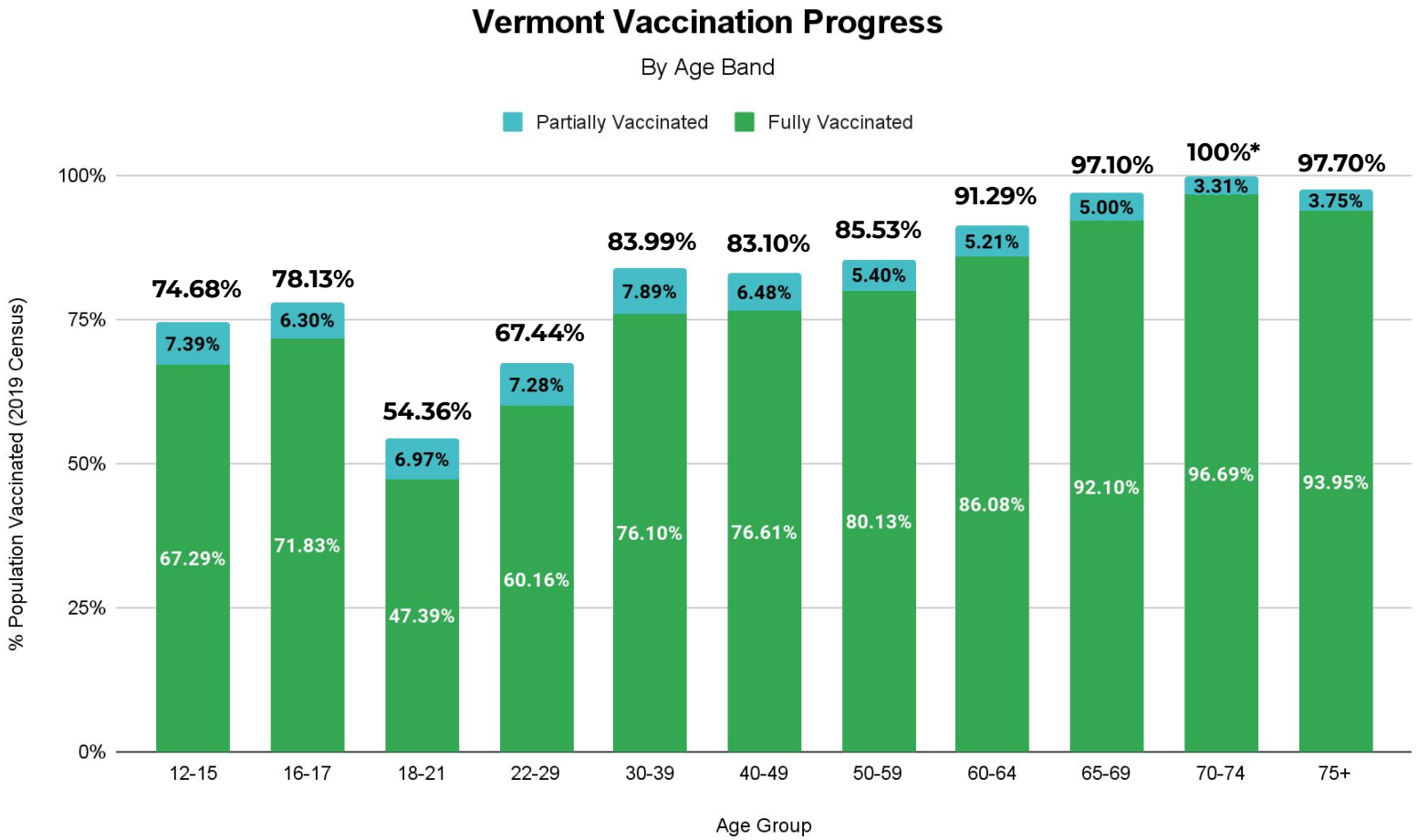


Source: CDC—October 4, 2021

Vermonters Initiating Vaccination By Day



Source: CDC—October 4, 2021—Created with Datawrapper



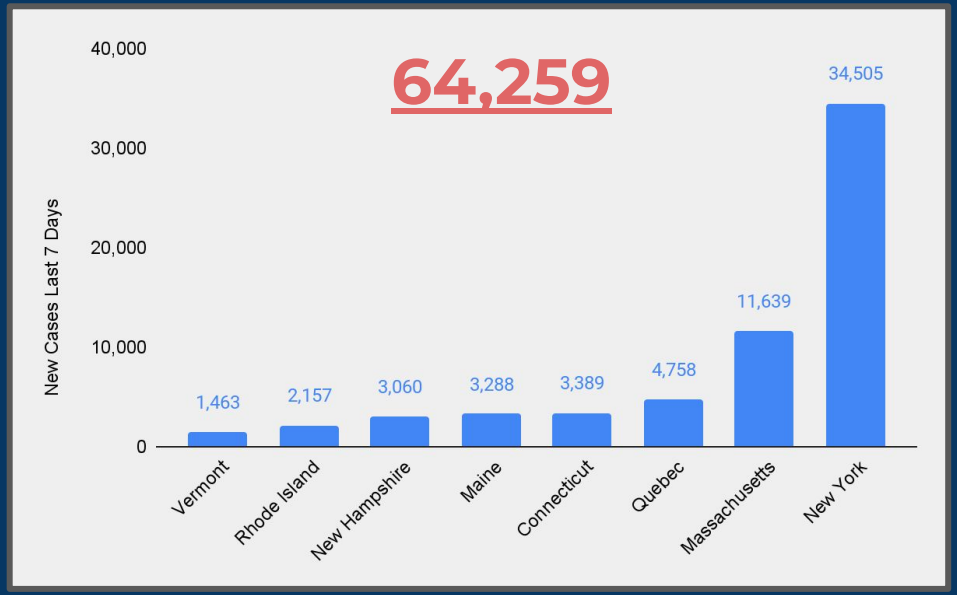
Source: Vermont Dept. of Health—October 4, 2021; *based on 2019 census estimates; state data may differ from CDC reporting

Regional Data

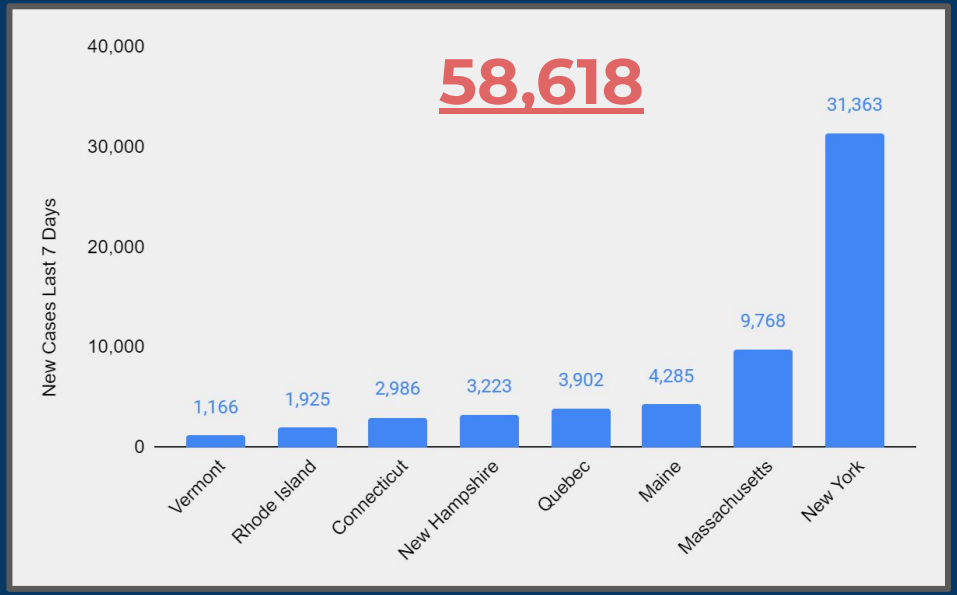
Regional Cases

8.8% Decrease in New Cases

New Cases September 21st to September 27th

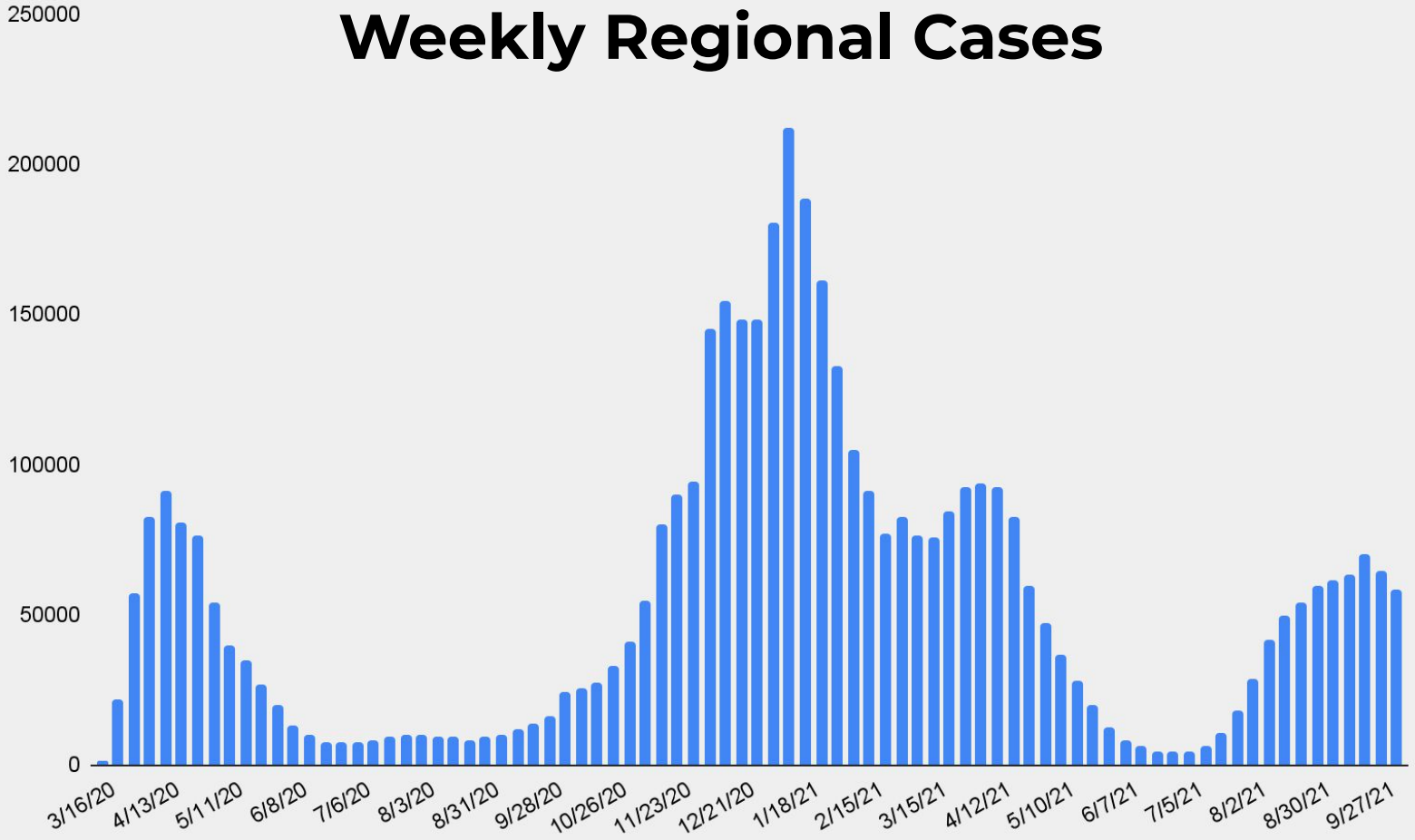


New Cases September 28th to October 4th



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

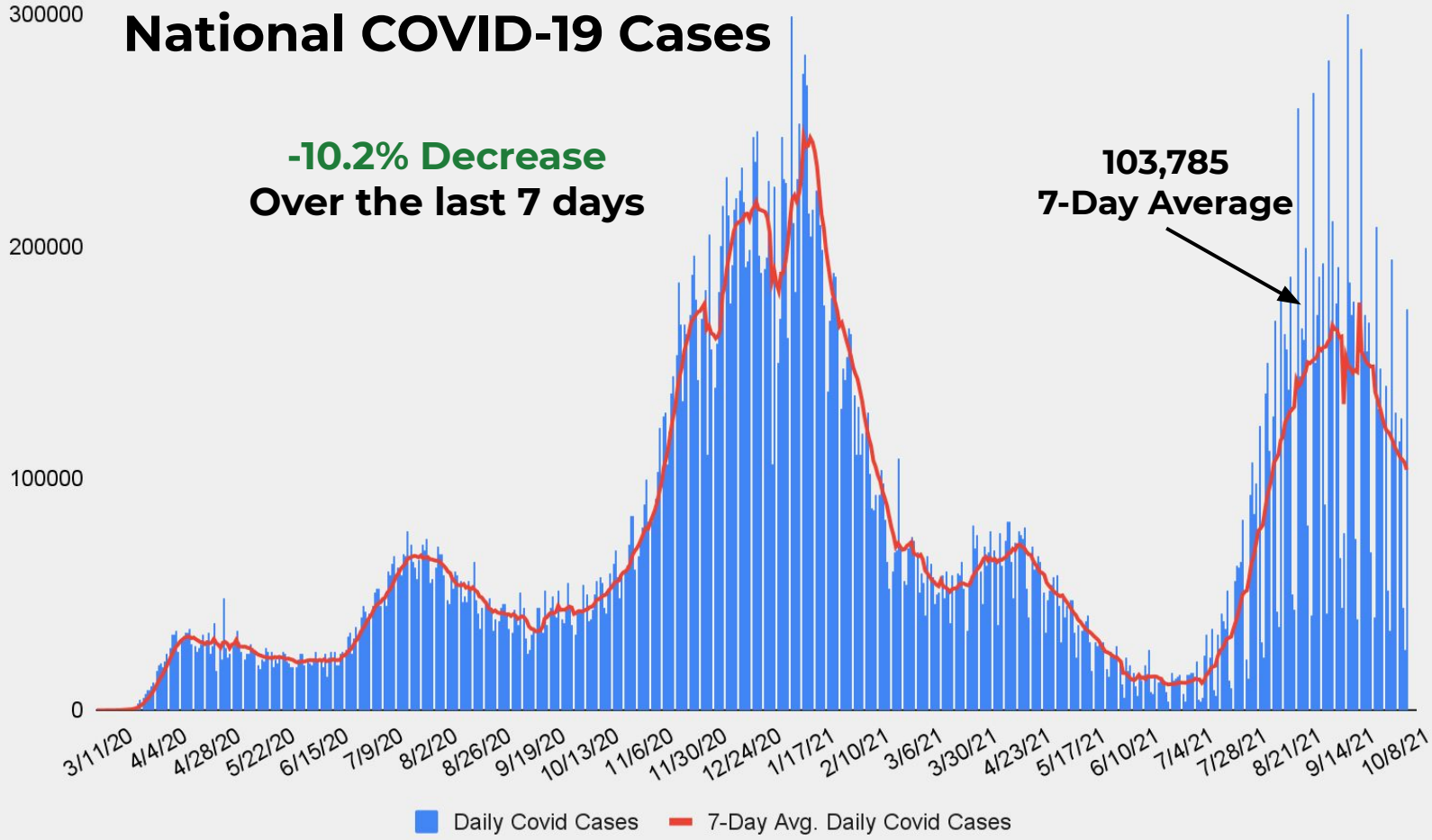
Weekly Regional Cases



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

National Data

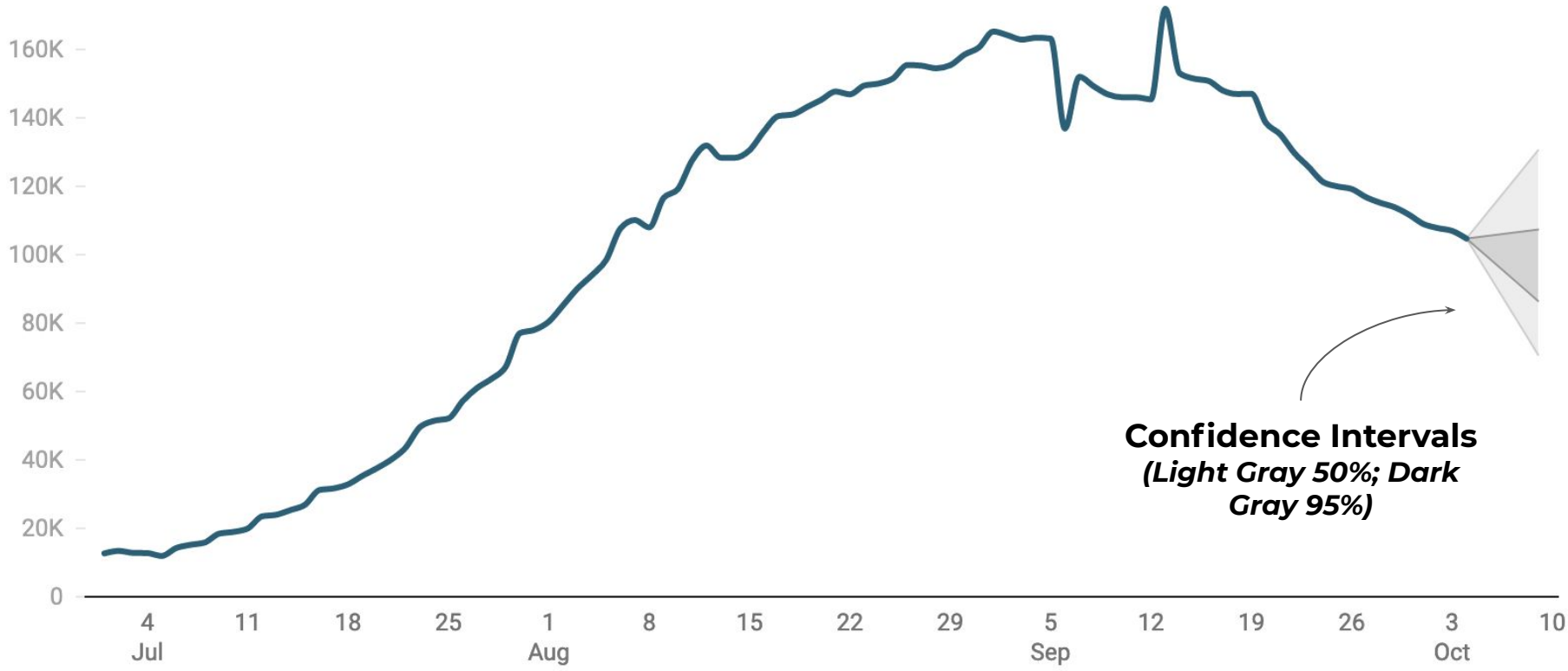
National COVID-19 Cases



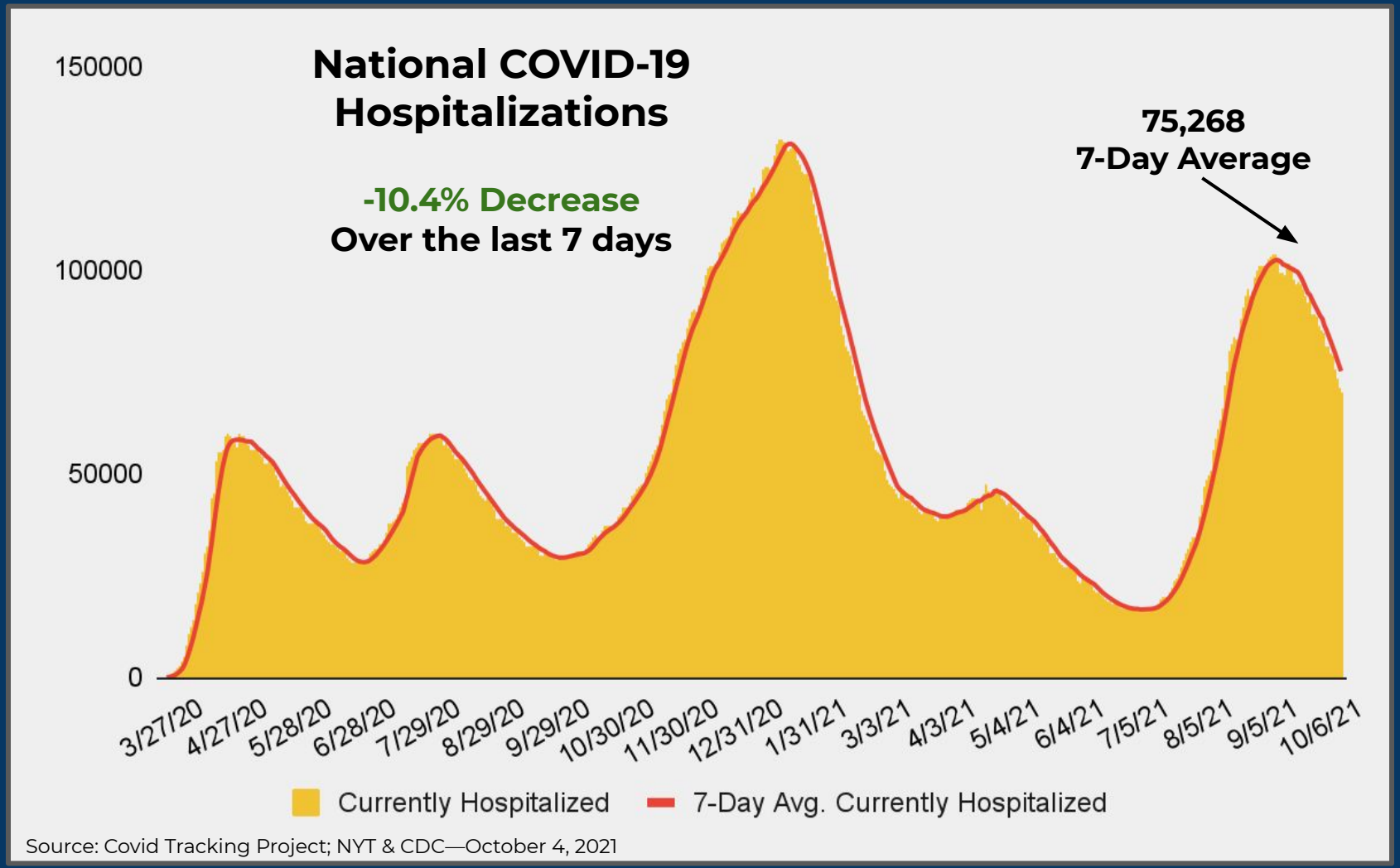
Source: Covid Tracking Project; NYT & CDC—October 4, 2021

US COVID-19 Infections Confidence Intervals

Calculated as a 7-day mean

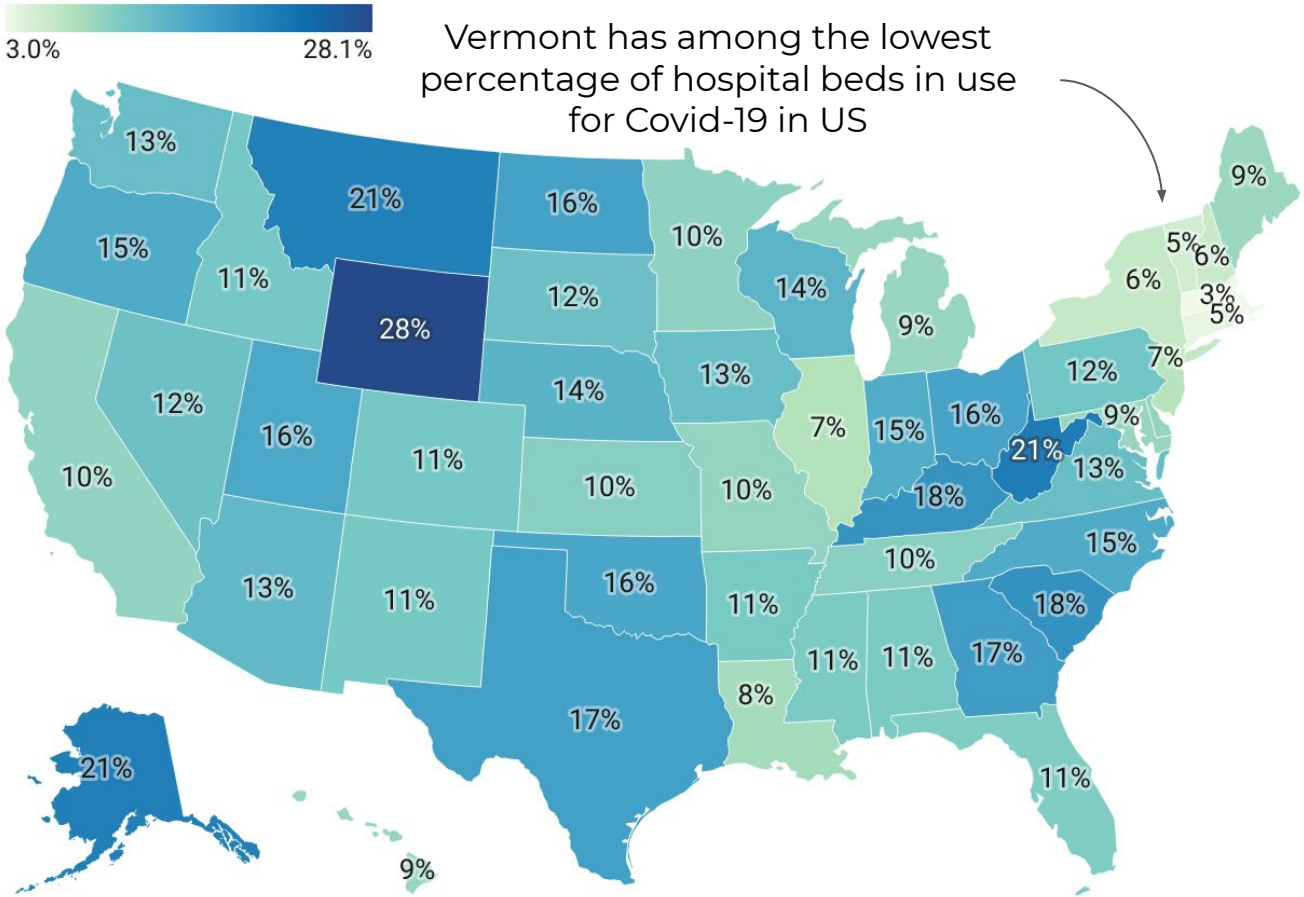


Source: Centers for Disease Control and Prevention—October 4, 2021; created with datawrapper



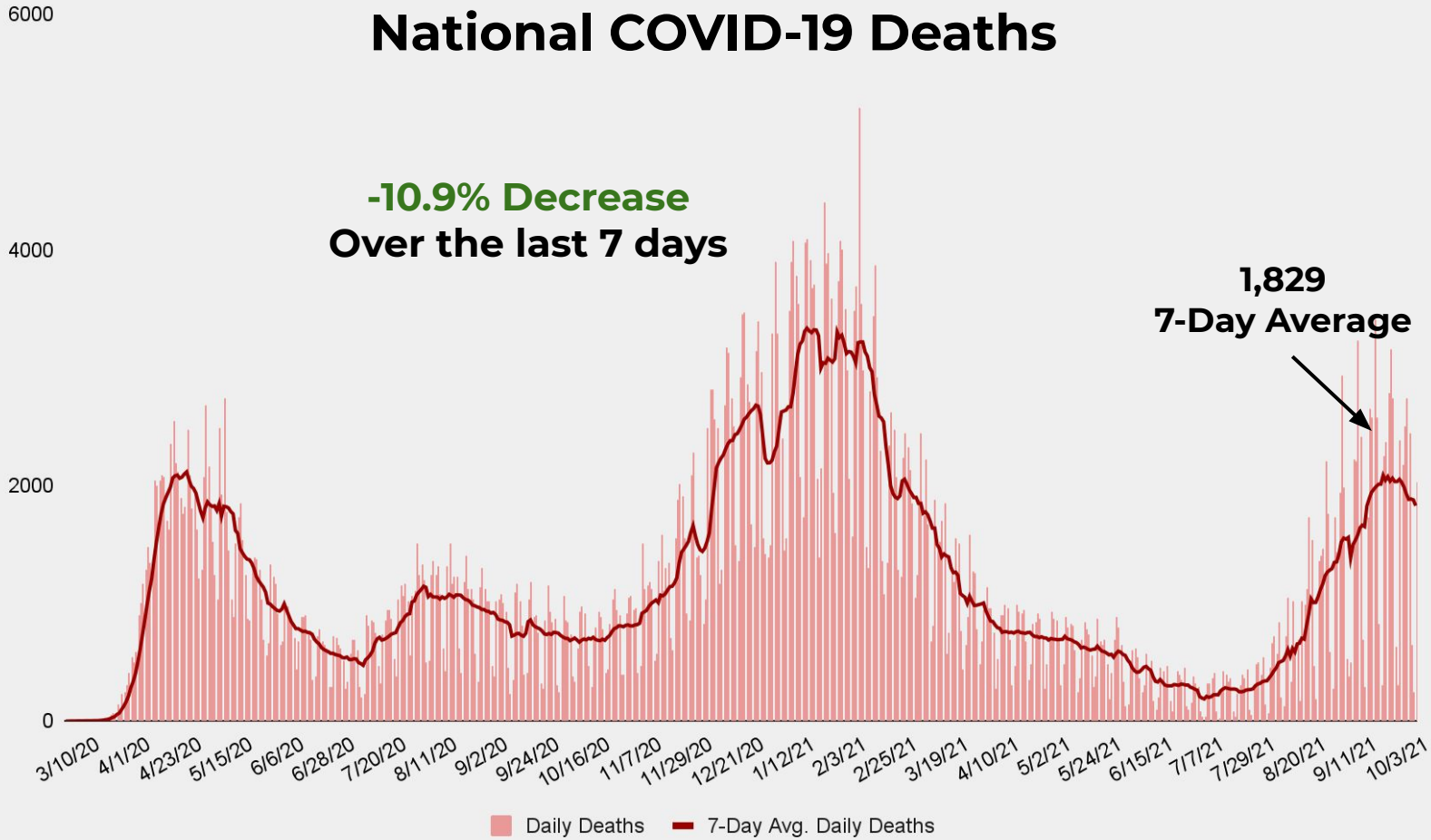
Source: Covid Tracking Project; NYT & CDC—October 4, 2021

Percent of All Hospital Beds Used for COVID-19



Source: HHS—October 4, 2021

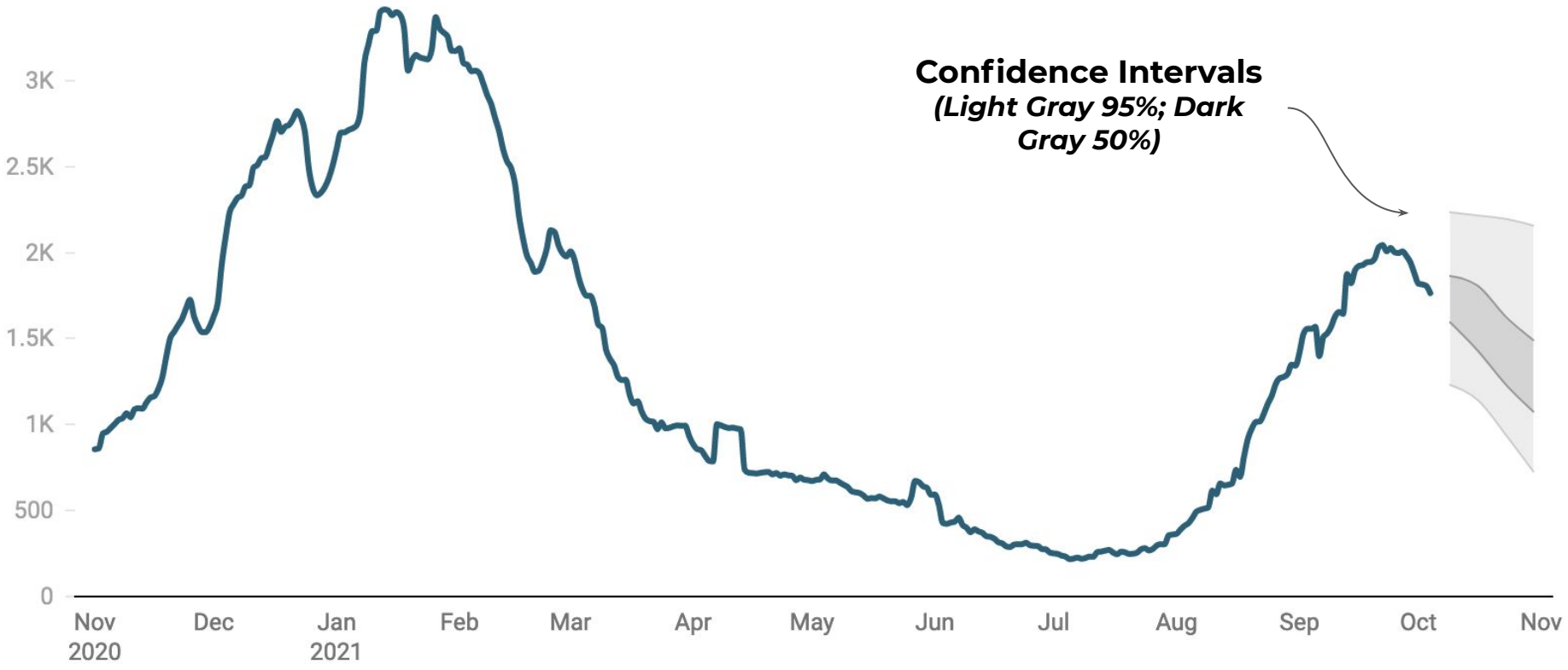
National COVID-19 Deaths



Source: Covid Tracking Project; NYT & CDC—October 4, 2021

US COVID-19 Deaths Confidence Intervals

Calculated as a 7-day mean



Source: Centers for Disease Control and Prevention—October 4, 2021; created with datawrapper

RESTART VERMONT

Reopening Metrics

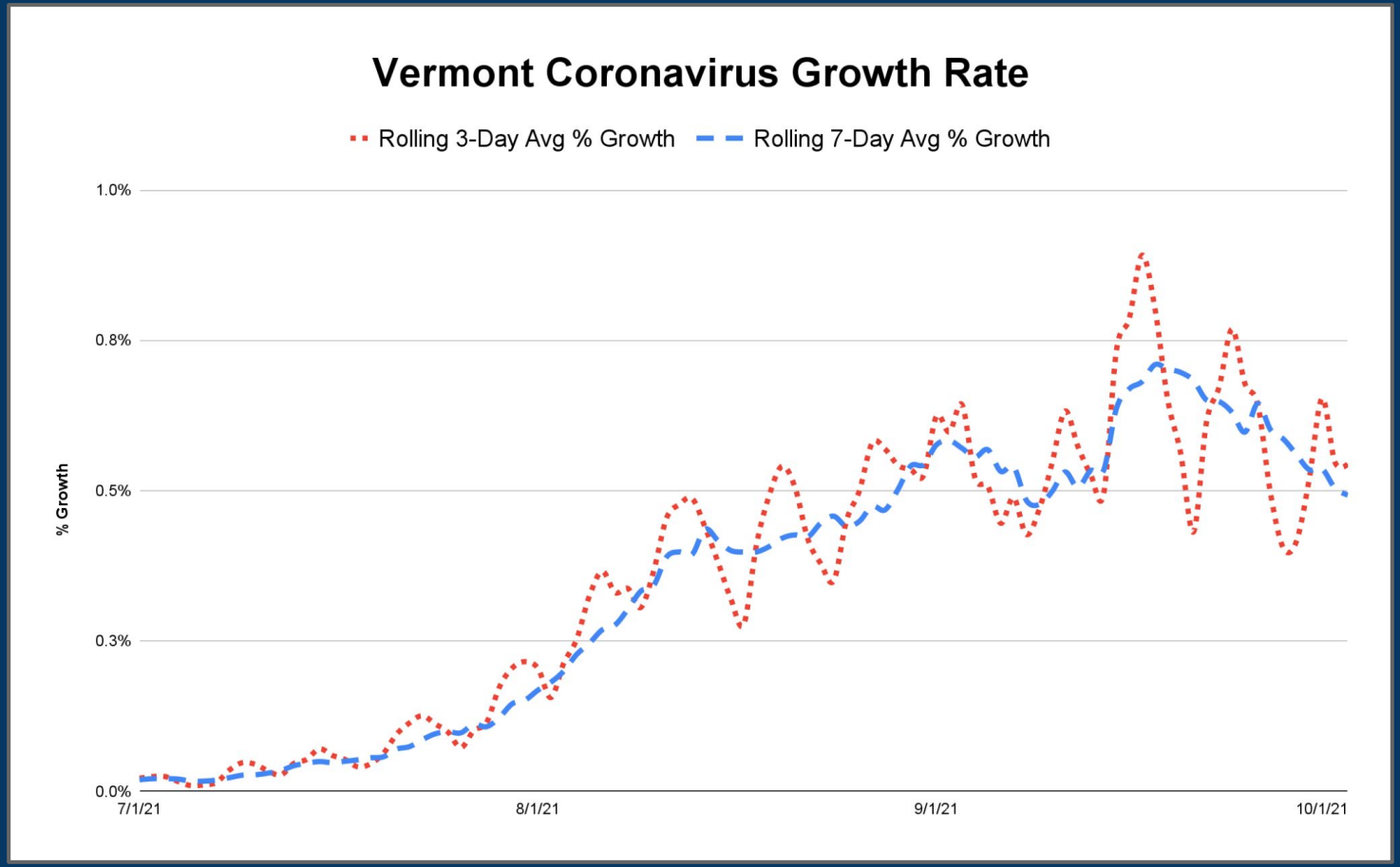
1. Syndromic Surveillance *(retired)*
2. Viral Growth & Reproductive Rates
3. Percentage of New Positive Tests
4. Hospital & Critical Care Bed Capacity

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

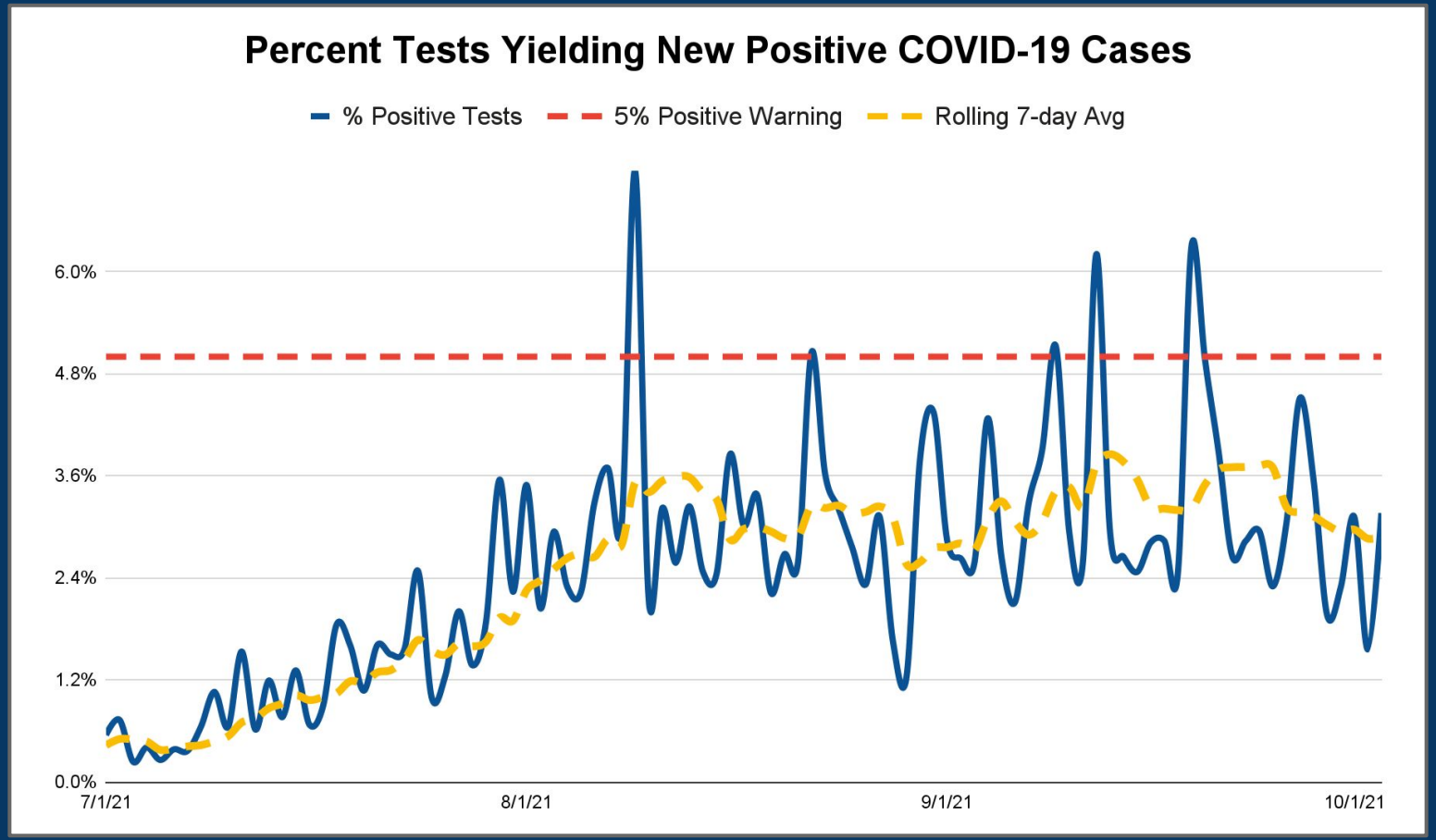
Vermont Department of Health no longer updating syndromic surveillance on a weekly basis.

Viral Growth & Reproductive Rates



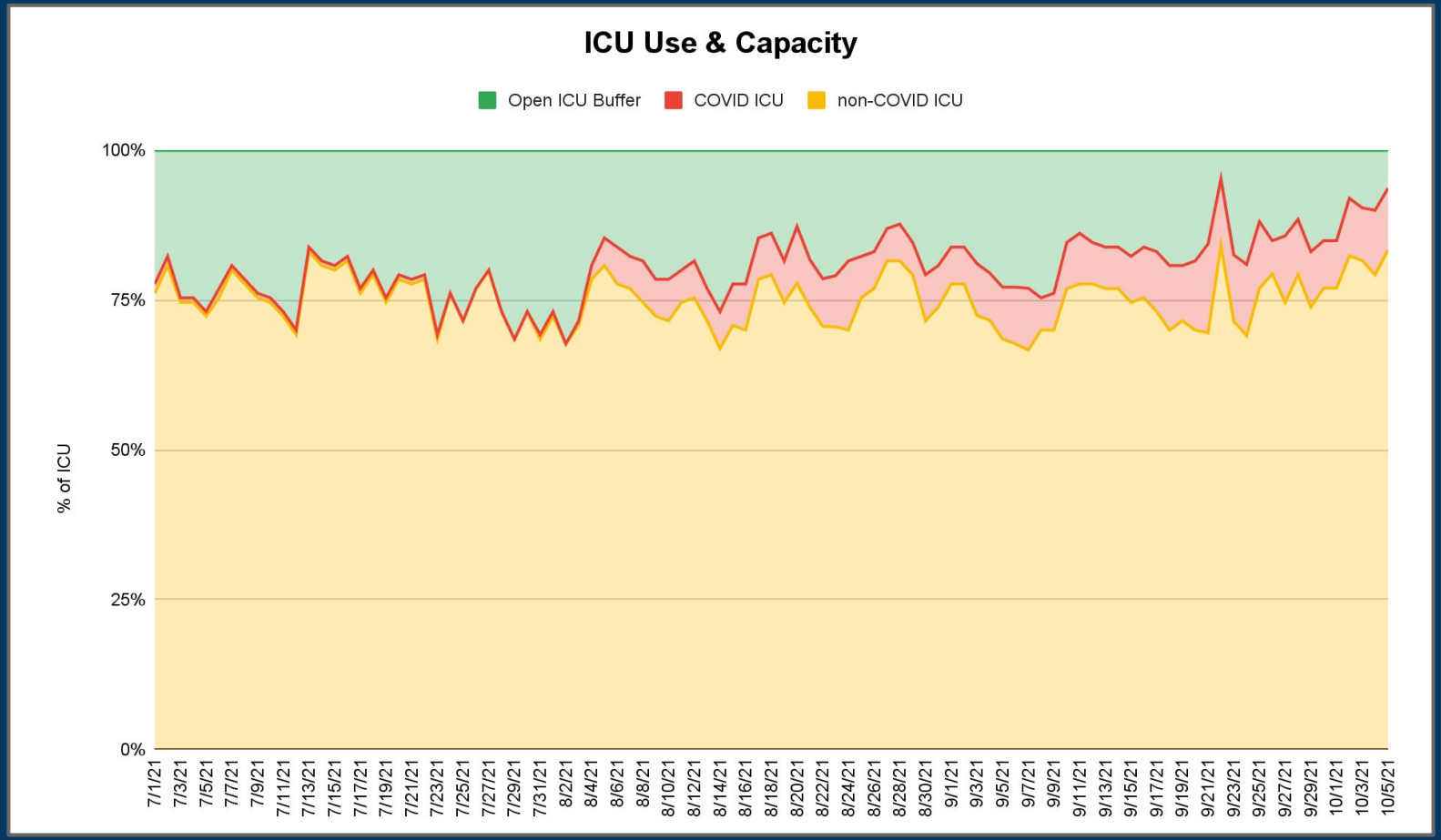
Source: Vermont Department of Health

Percentage of New Positive Tests



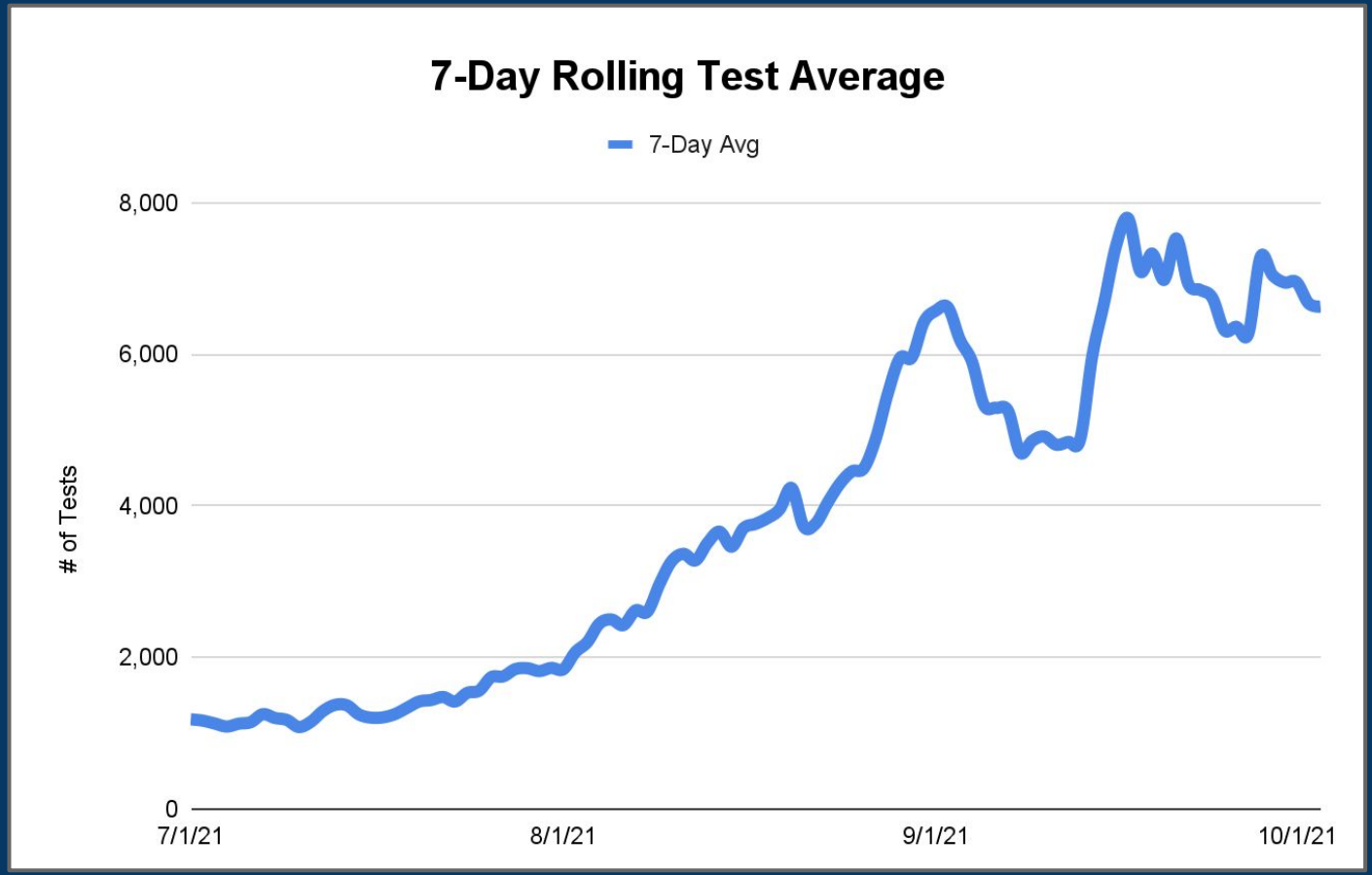
Source: Vermont Department of Health

Hospital & Critical Care Beds



Source: Vermont Department of Health

Vermont Testing



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