

COVID-19 Modeling

September 21, 2021

Presentation available at:
dfr.vermont.gov

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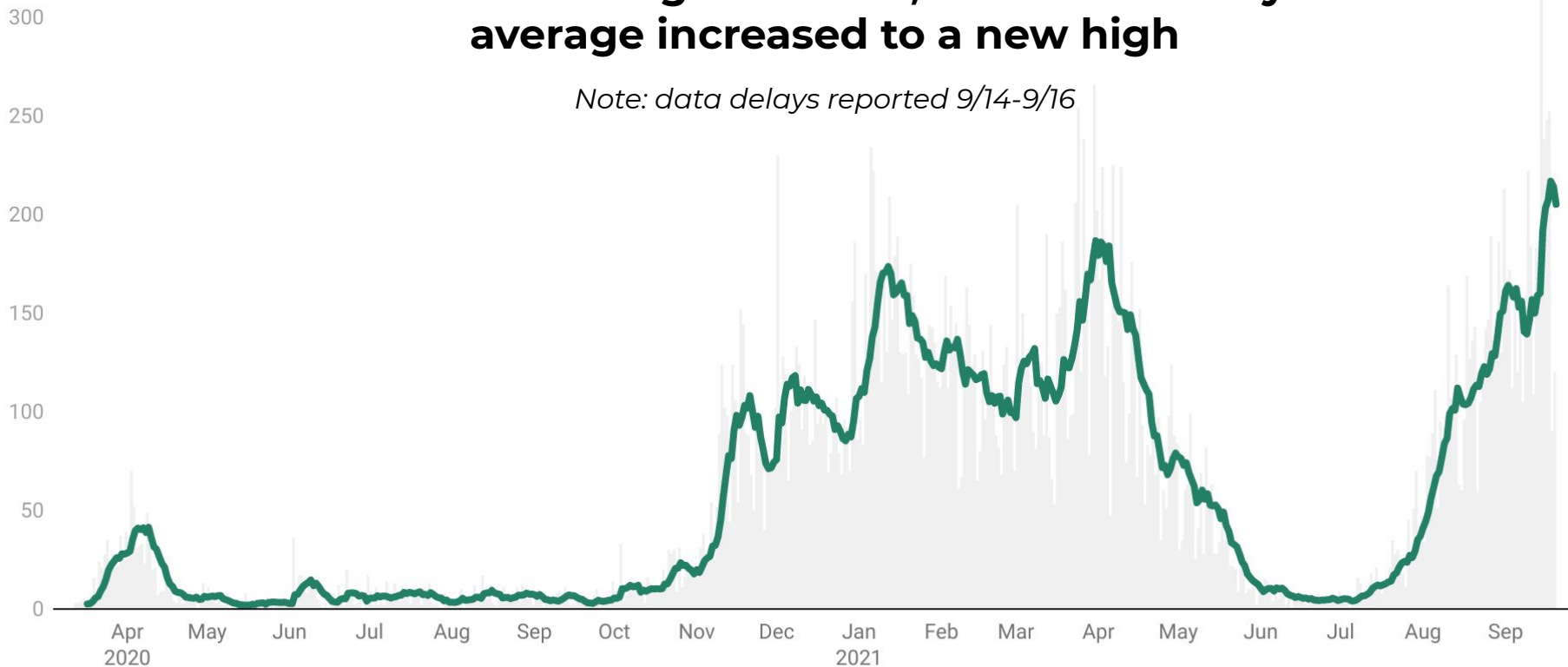
Vermont Case Data

Vermont 7-Day Covid-19 Case Average

7-Day Average

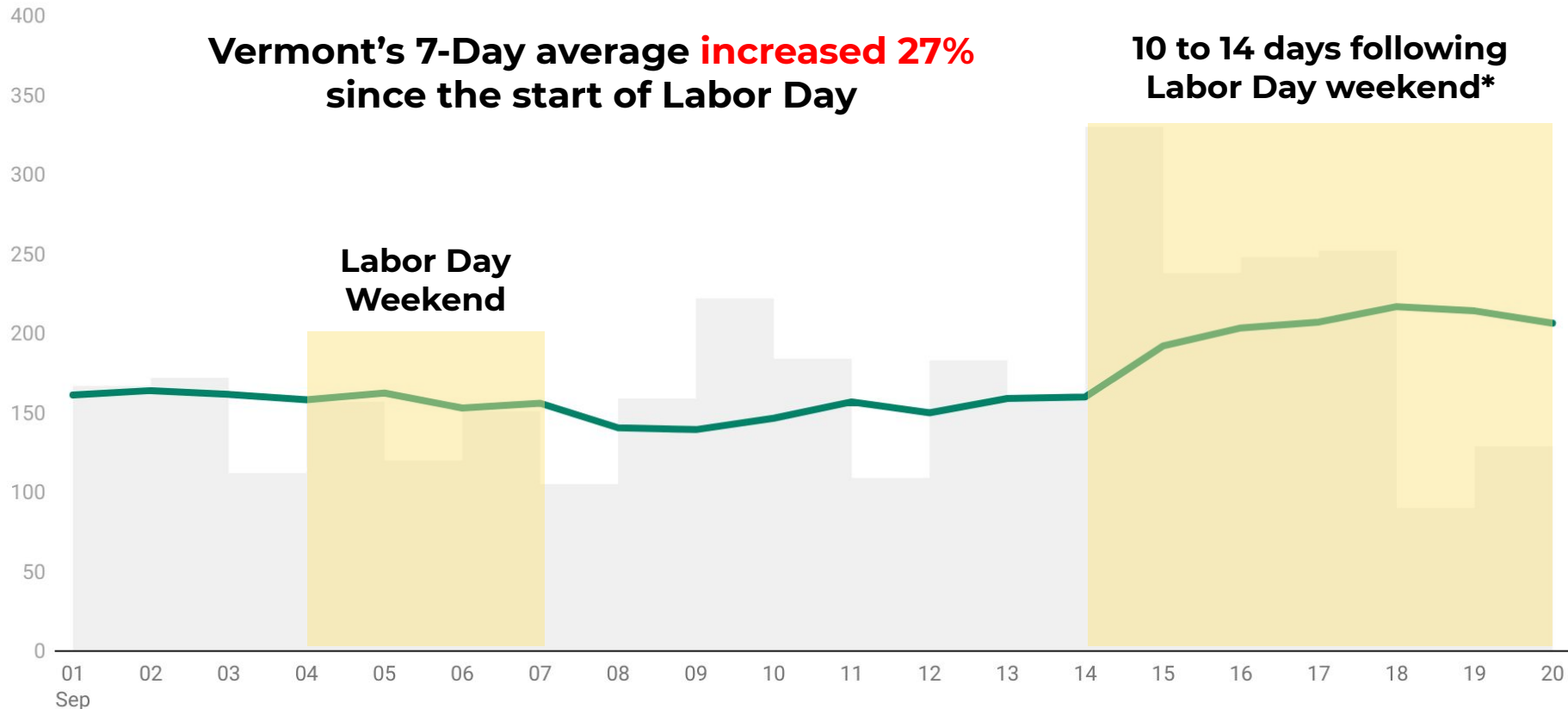
After declining last week, Vermont's 7-day average increased to a new high

Note: data delays reported 9/14-9/16



Vermont COVID-19 Case Increase Following Labor Day Weekend

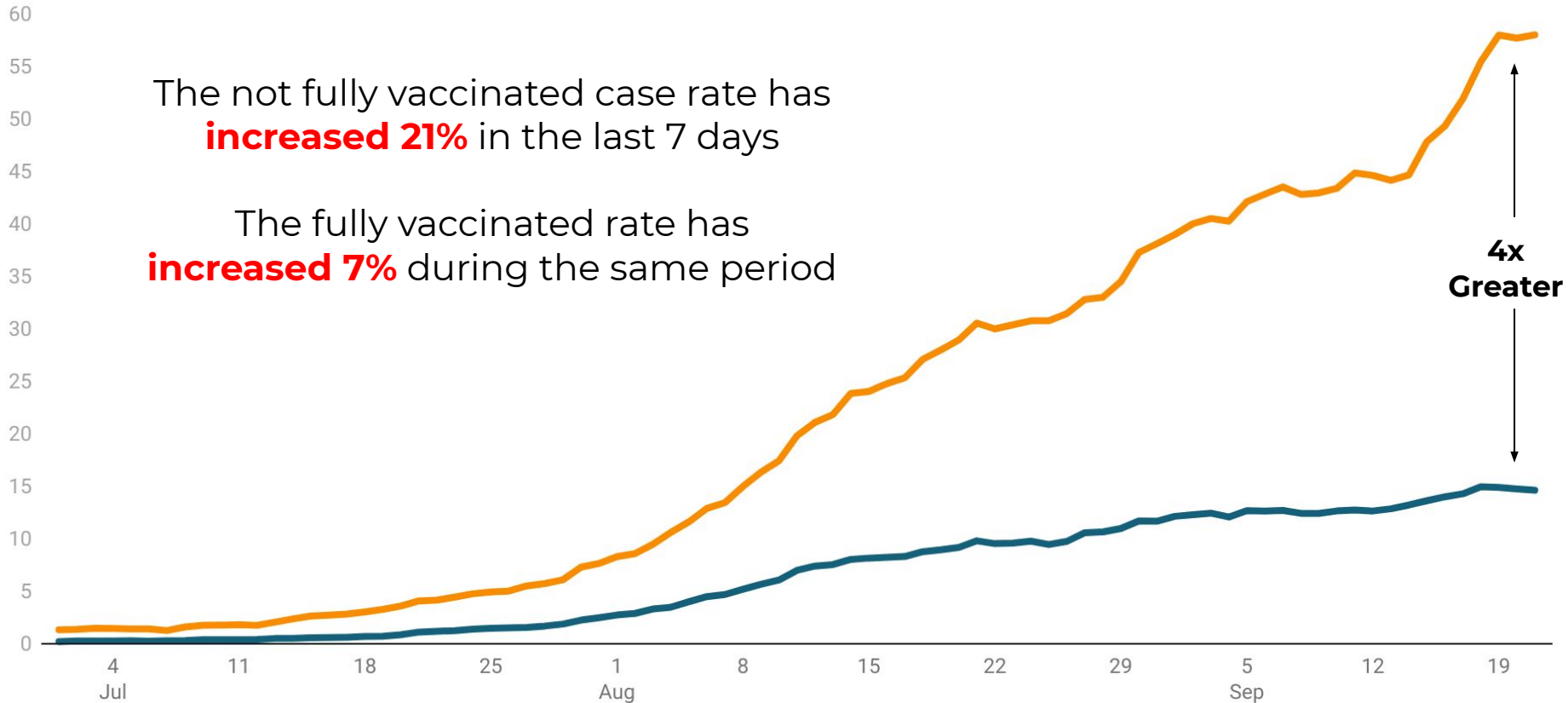
7-Day Average



Source: VDH—9/20/21 (*10 days starting on 9/4/21 and 14 days ending on 9/21/21)

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

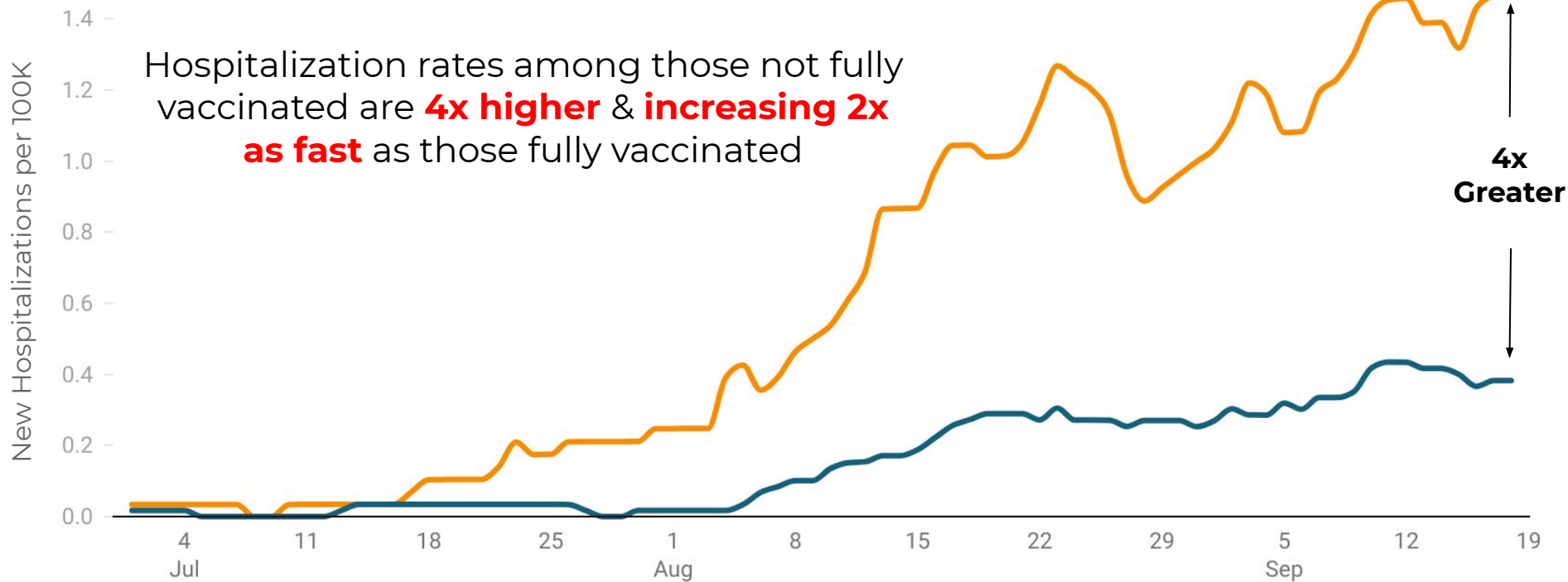
Not Fully Vaccinated Case Rate Fully Vaccinated Case Rate



Vermont COVID-19 Hospitalizations

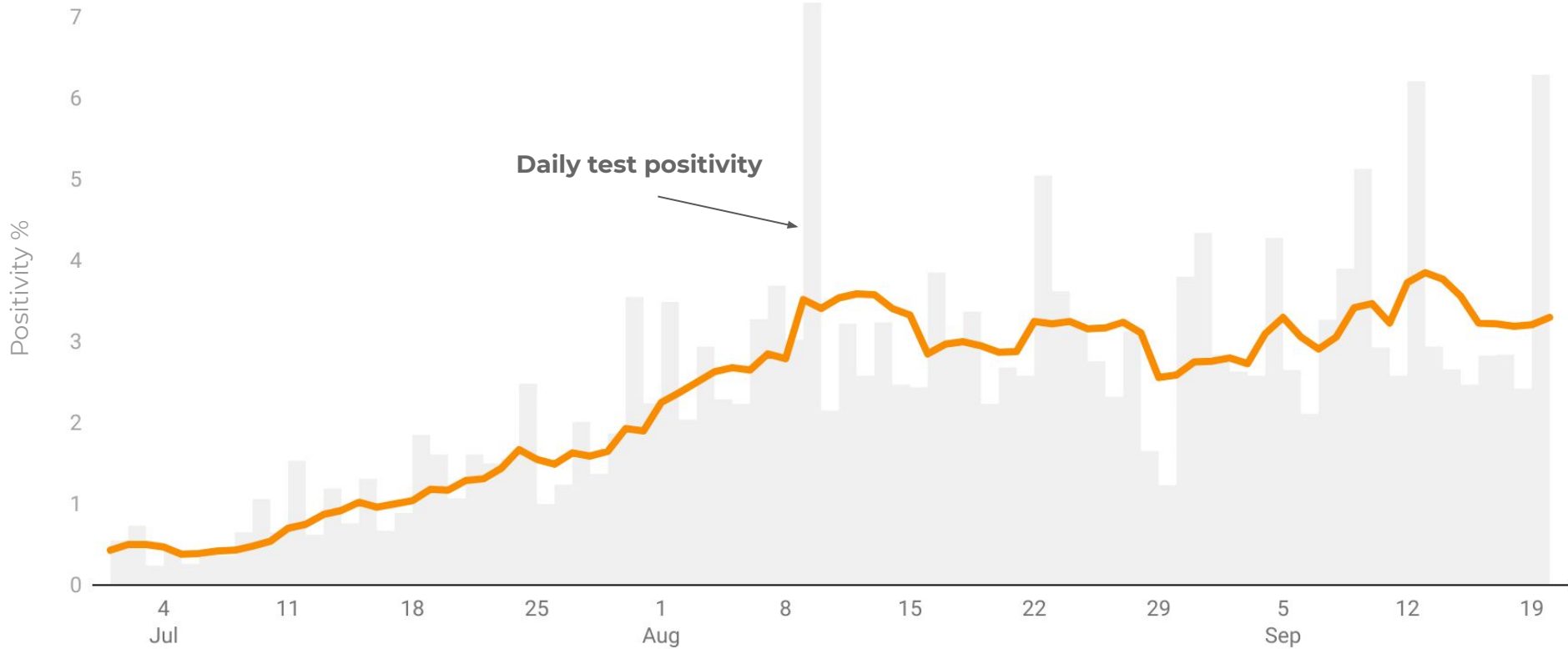
New Daily Hospital Admissions Per 100K (14-Day Average)

— Not Fully Vaccinated — Fully Vaccinated

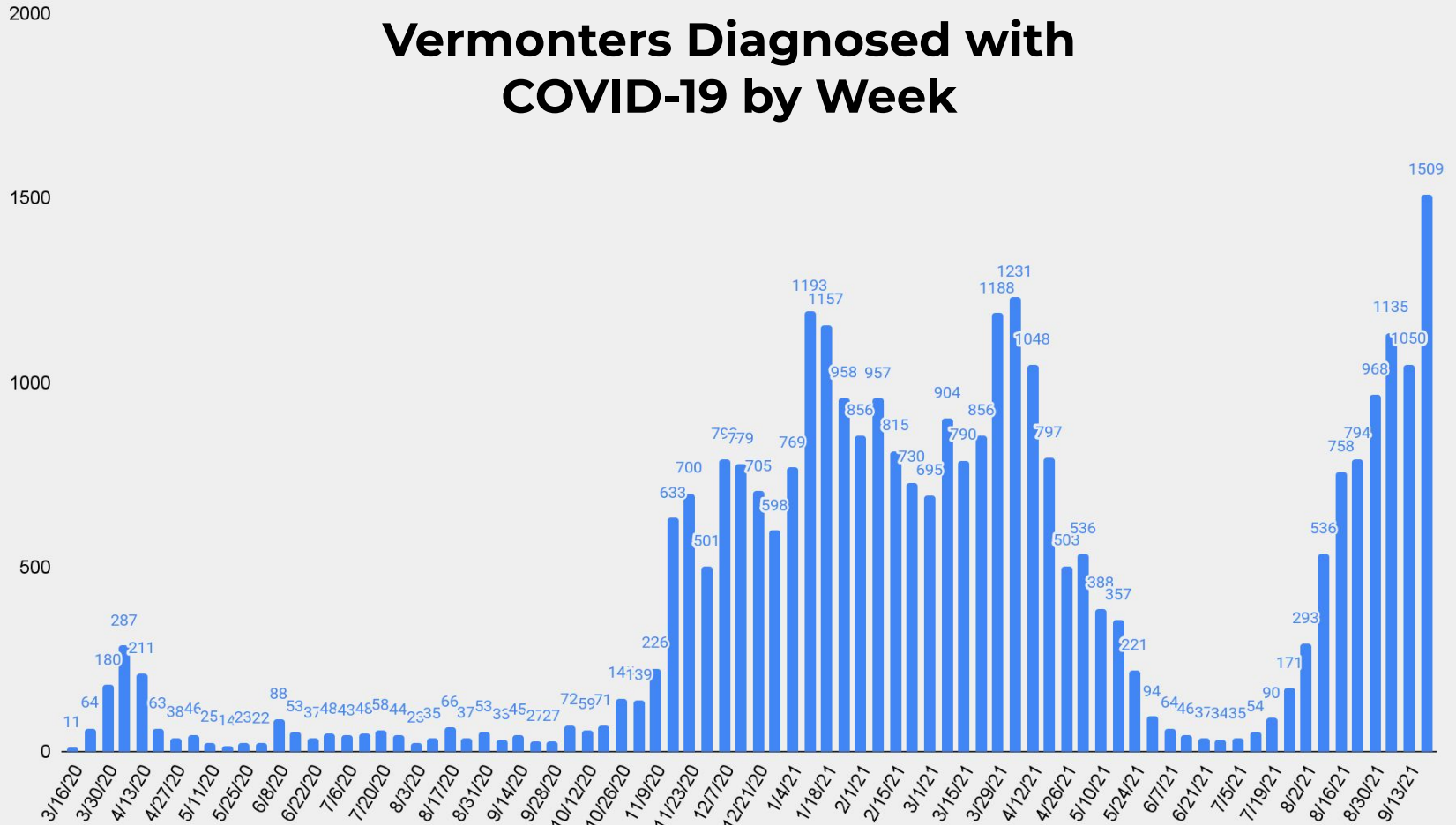


Vermont Test Positivity: Delta Wave

Rolling 7-Day Average

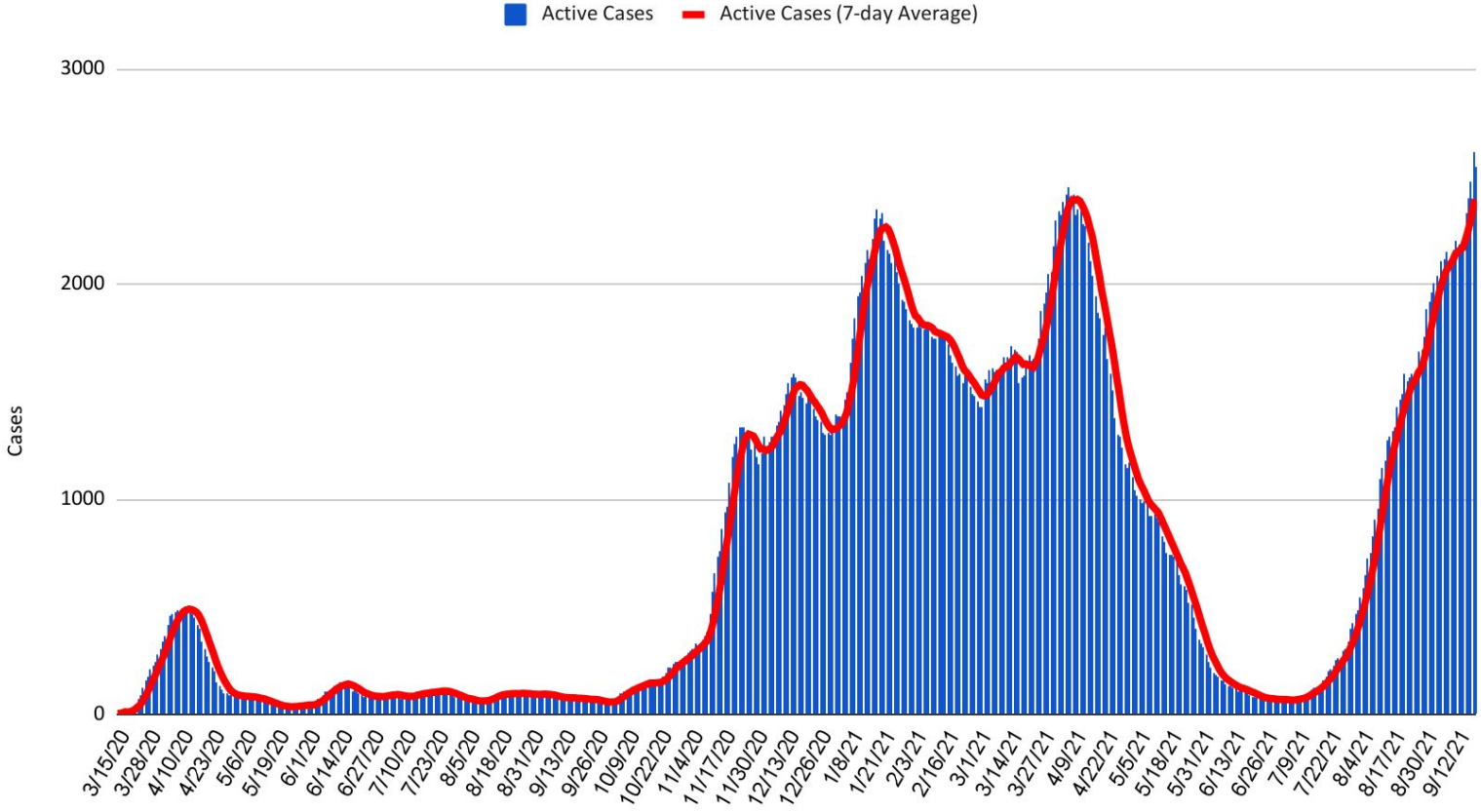


Vermonters Diagnosed with COVID-19 by Week



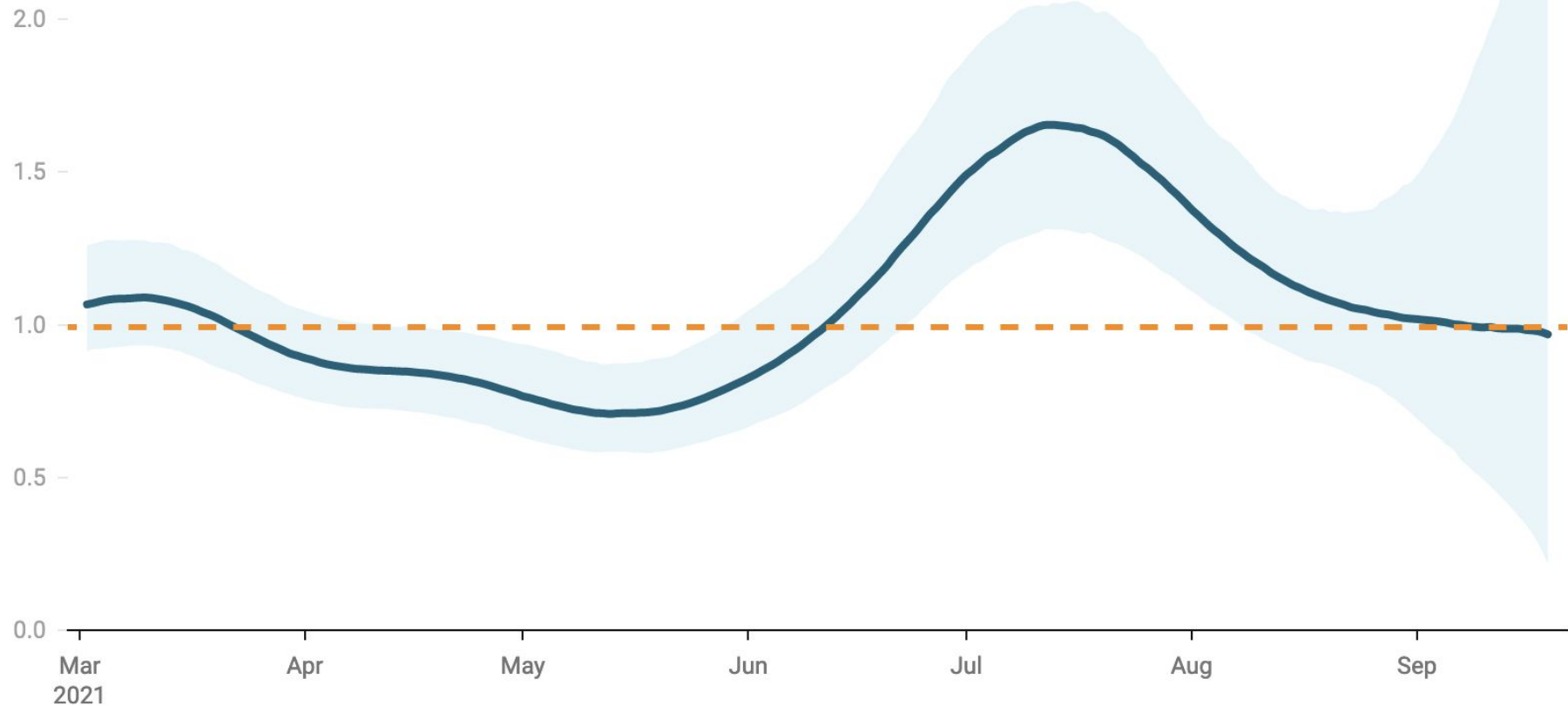
Source: Vermont Department of Health (week calculated as Tuesday to Monday)

Estimated Active Cases of COVID-19 in Vermont



Source: Vermont Dept. of Health—September 20, 2021

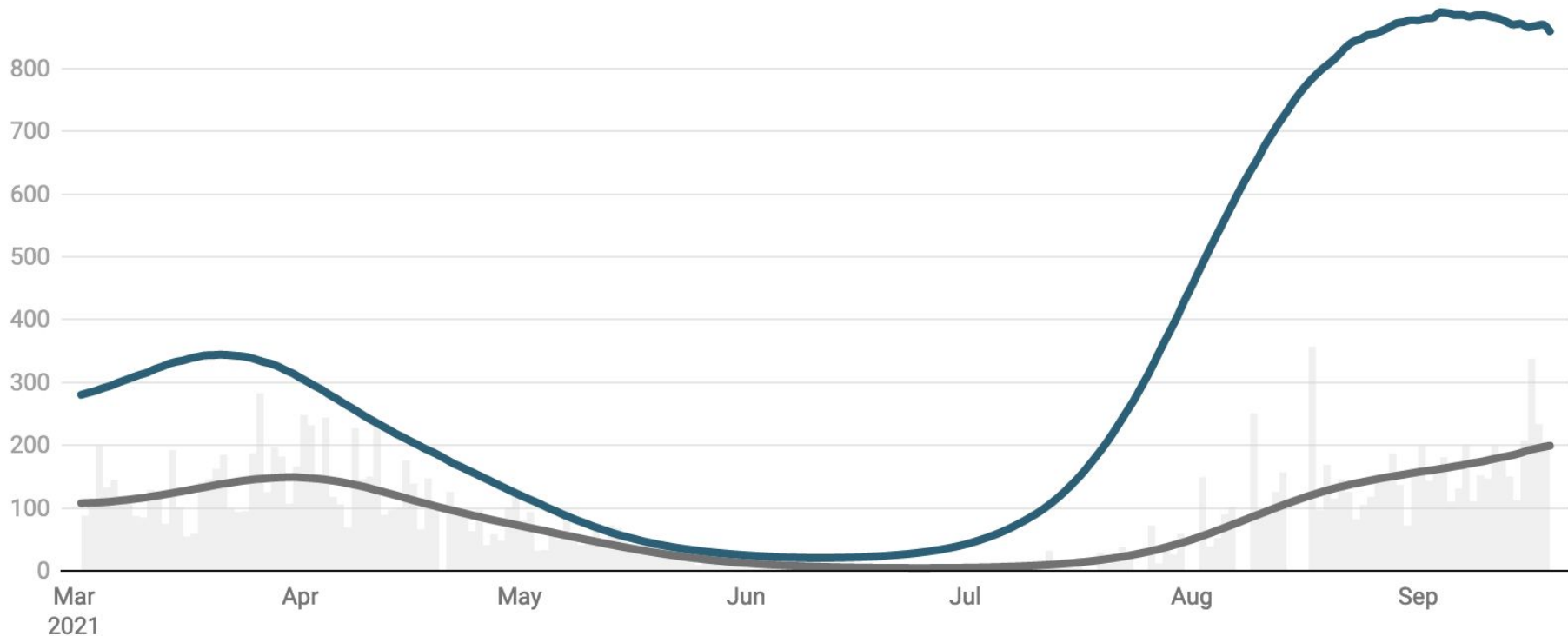
COVID-19 R_t in Vermont



Estimated vs Detected COVID-19 Cases in Vermont

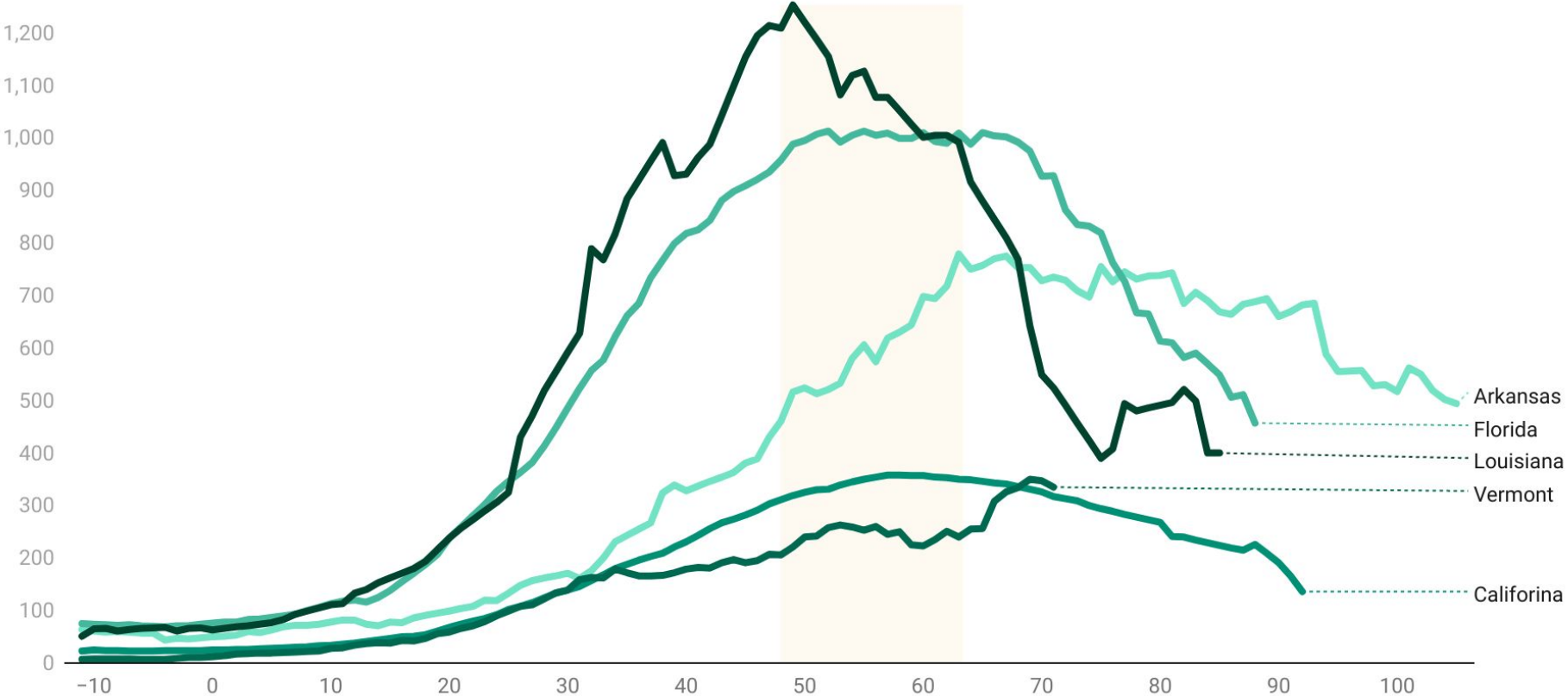
This figure shows both the number of detected cases (gray) and an estimate of the true number of infections.

— Detected Cases — Estimated True Cases



Delta Variant Driven Peaks Across the United States

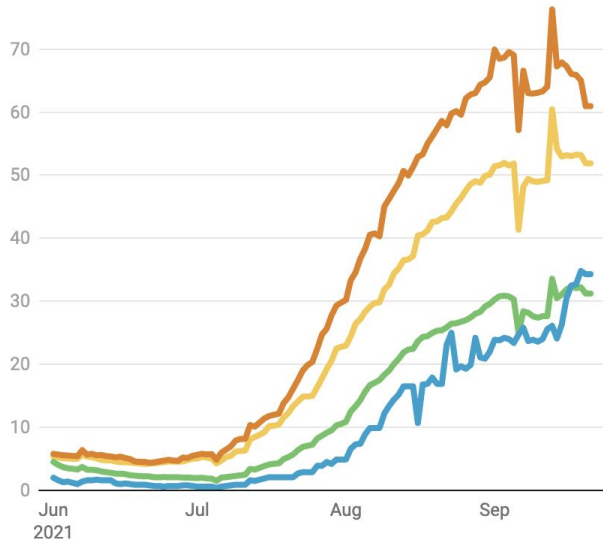
7-Day Average Per 1 Million



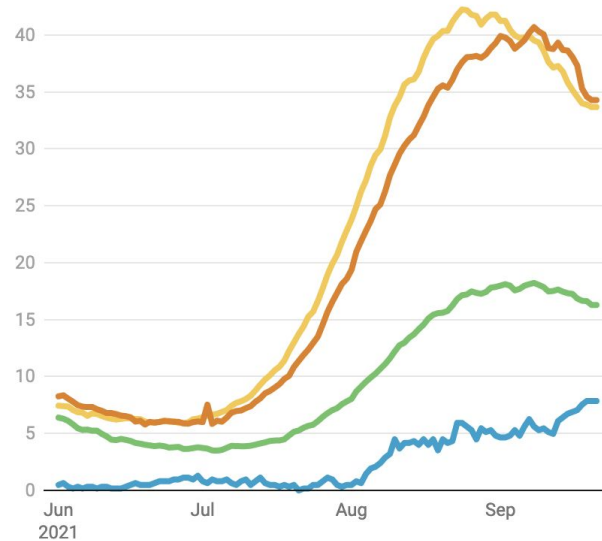
Source: CDC—September 20, 2021

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

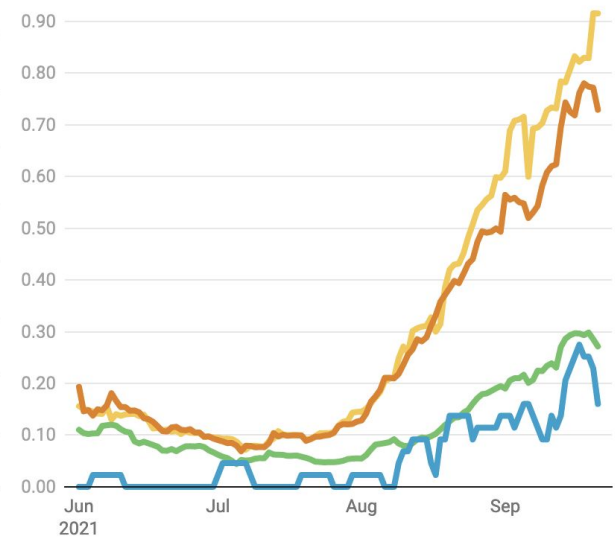
Bottom Third Vaccinated States Middle Third Vaccinated States Top Third Vaccinated States Vermont



Infections per 100K

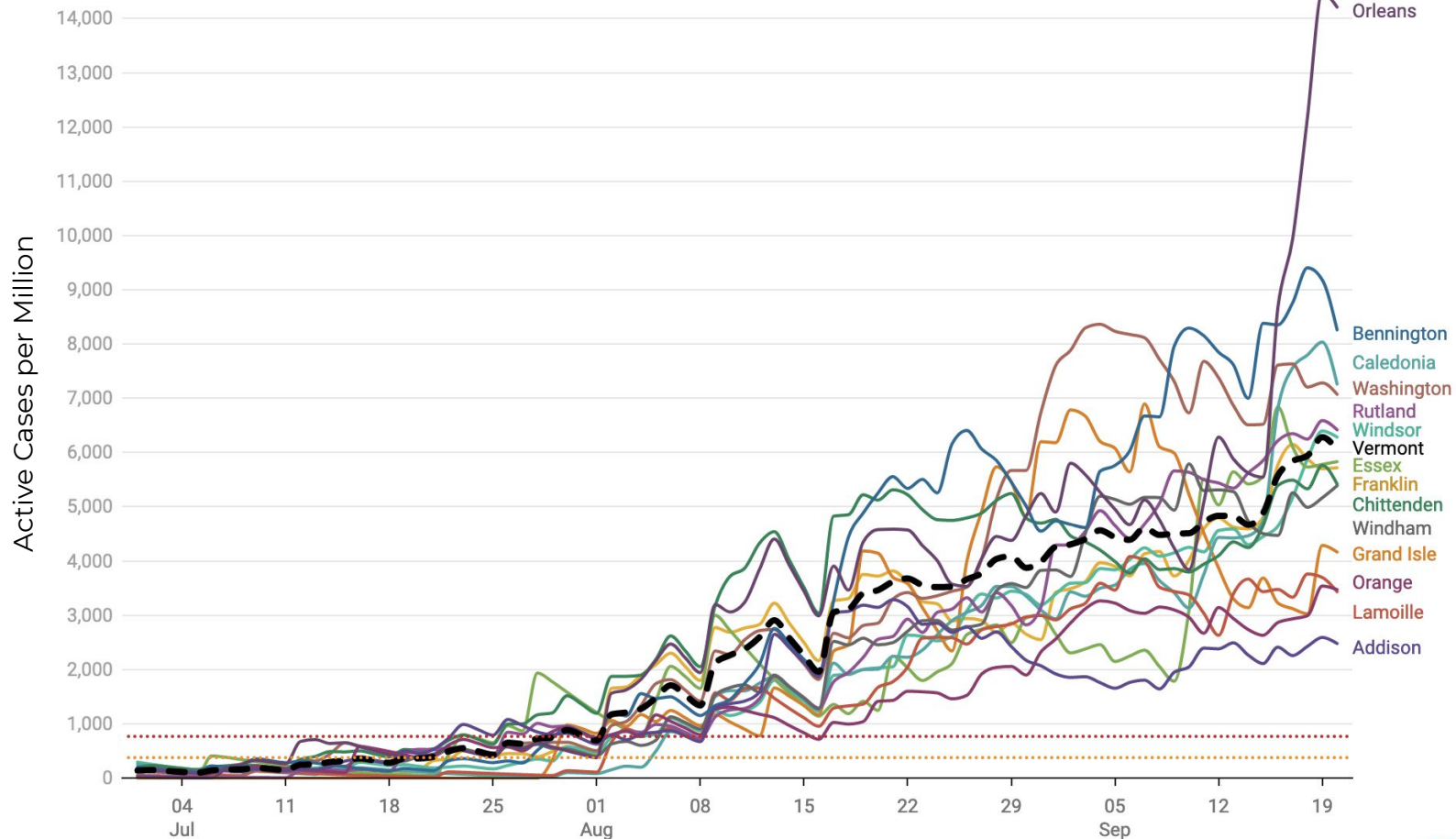


Hospitalizations per 100K



Deaths per 100K

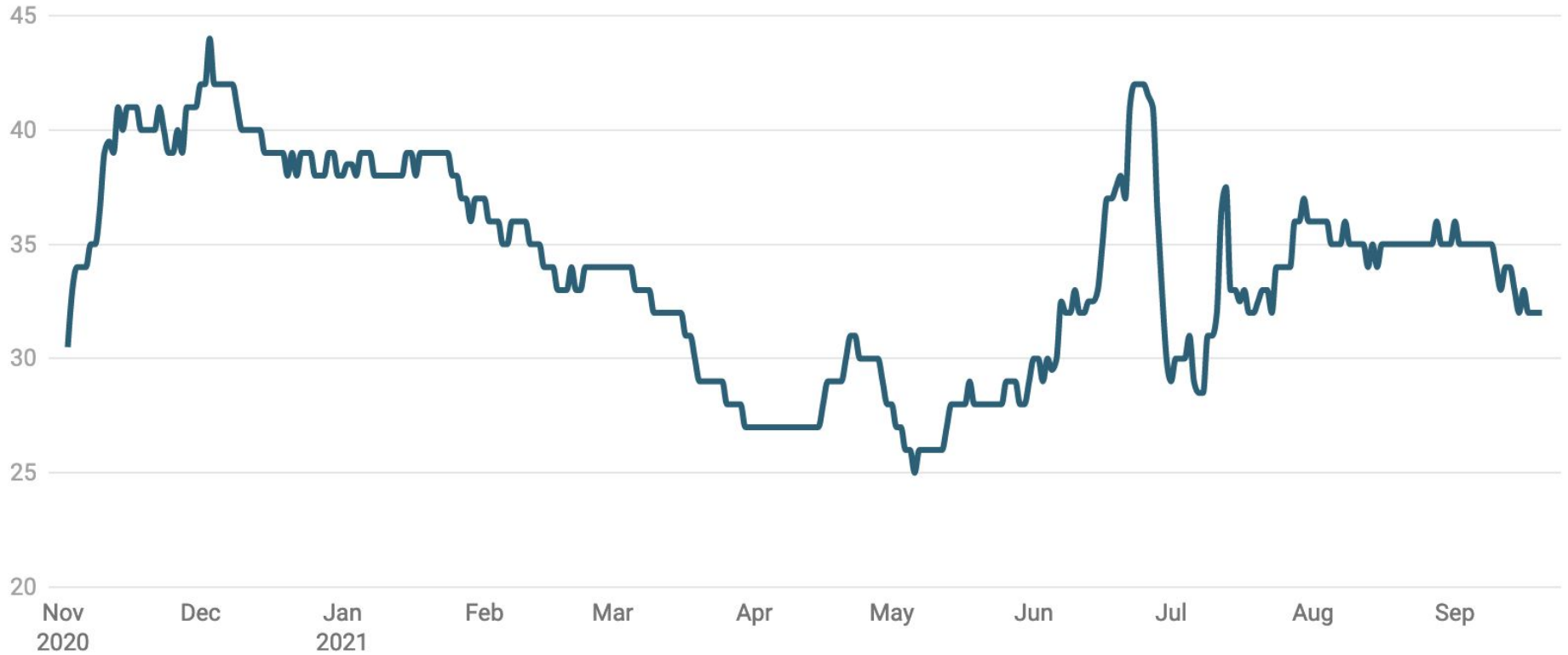
Active Cases in Vermont Counties



Source: Vermont Dept. of Health—September 21, 2021; DFR Active Case Algorithm (per million)

Age of Infected Vermonters

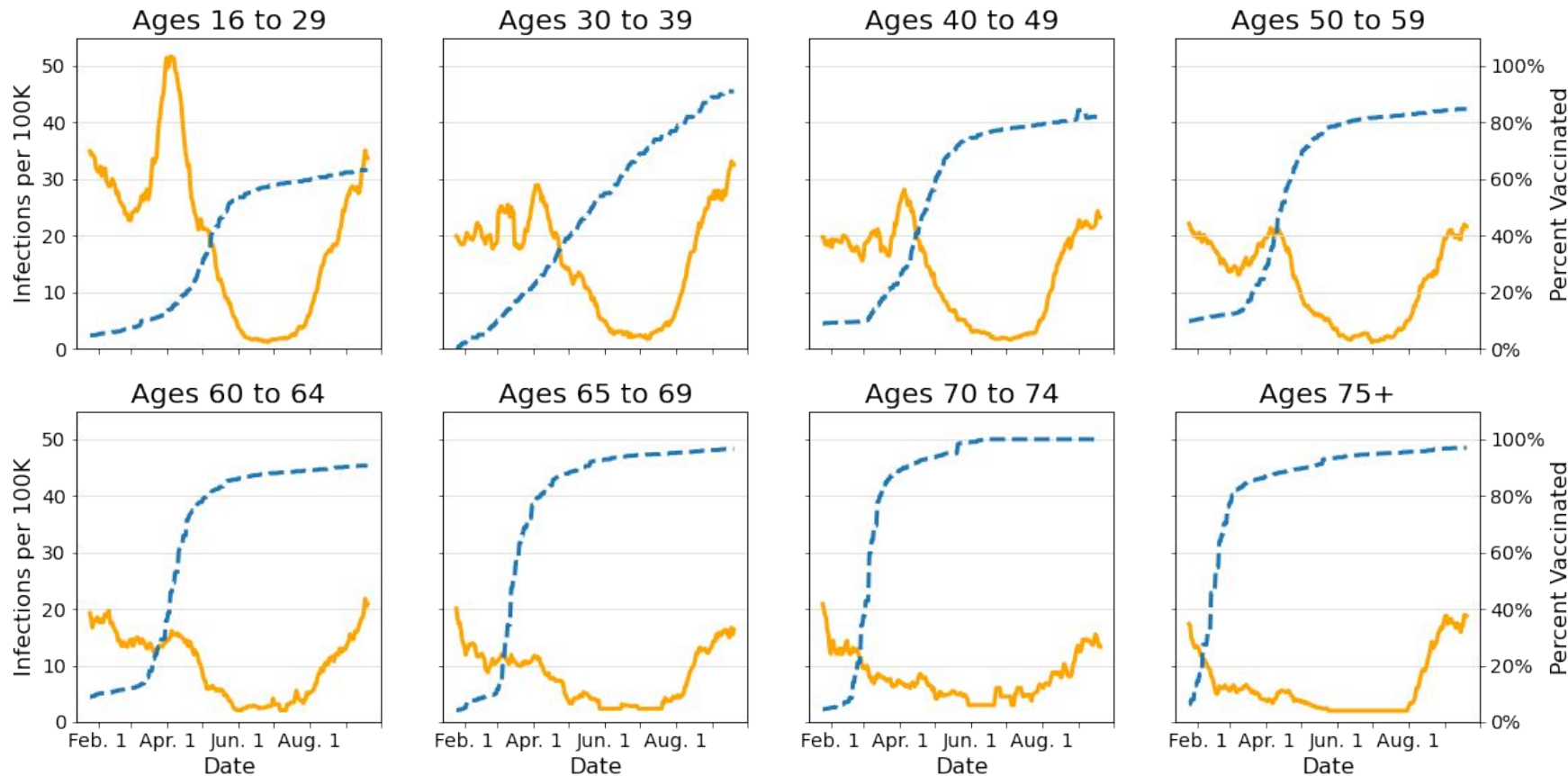
Median age of COVID positive individuals in VT over the last 14 days.



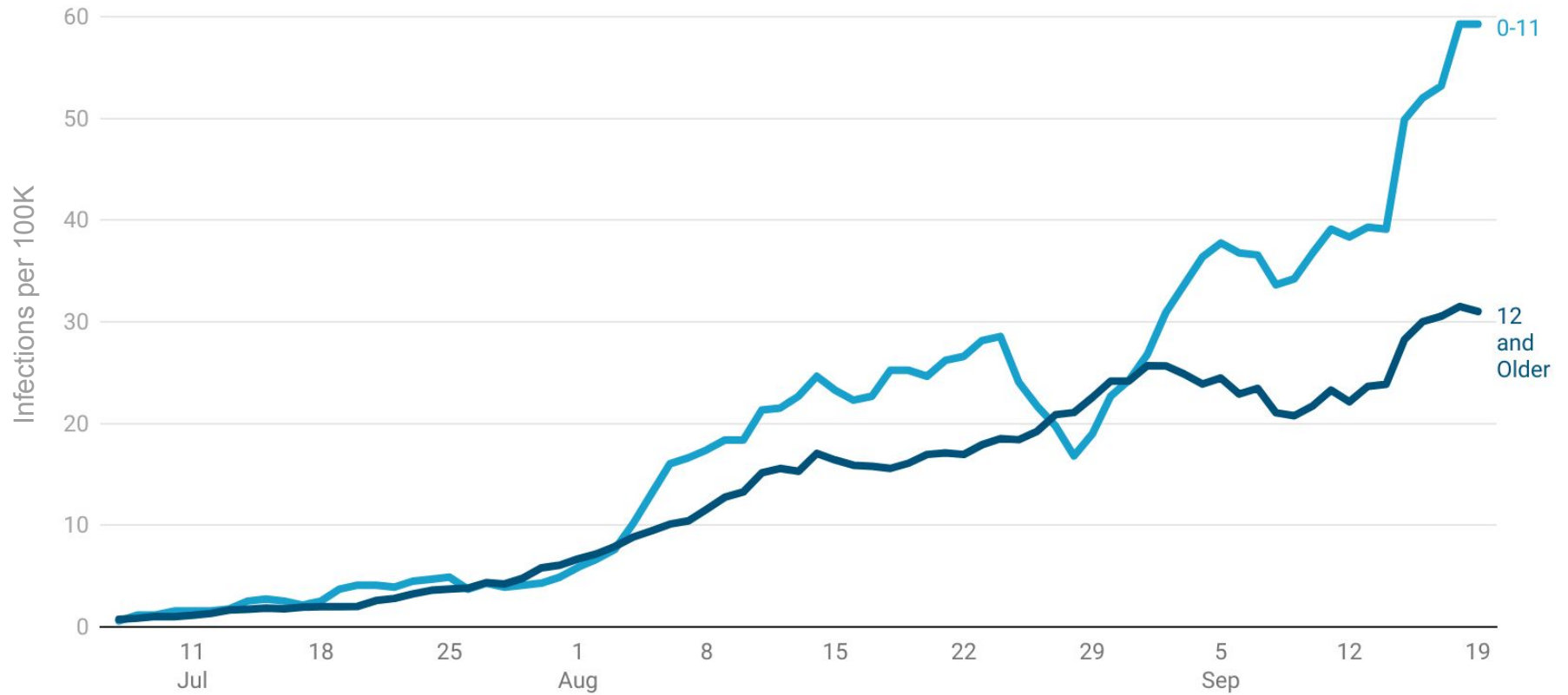
Vermont Case Rate & Vaccination by Age Band

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

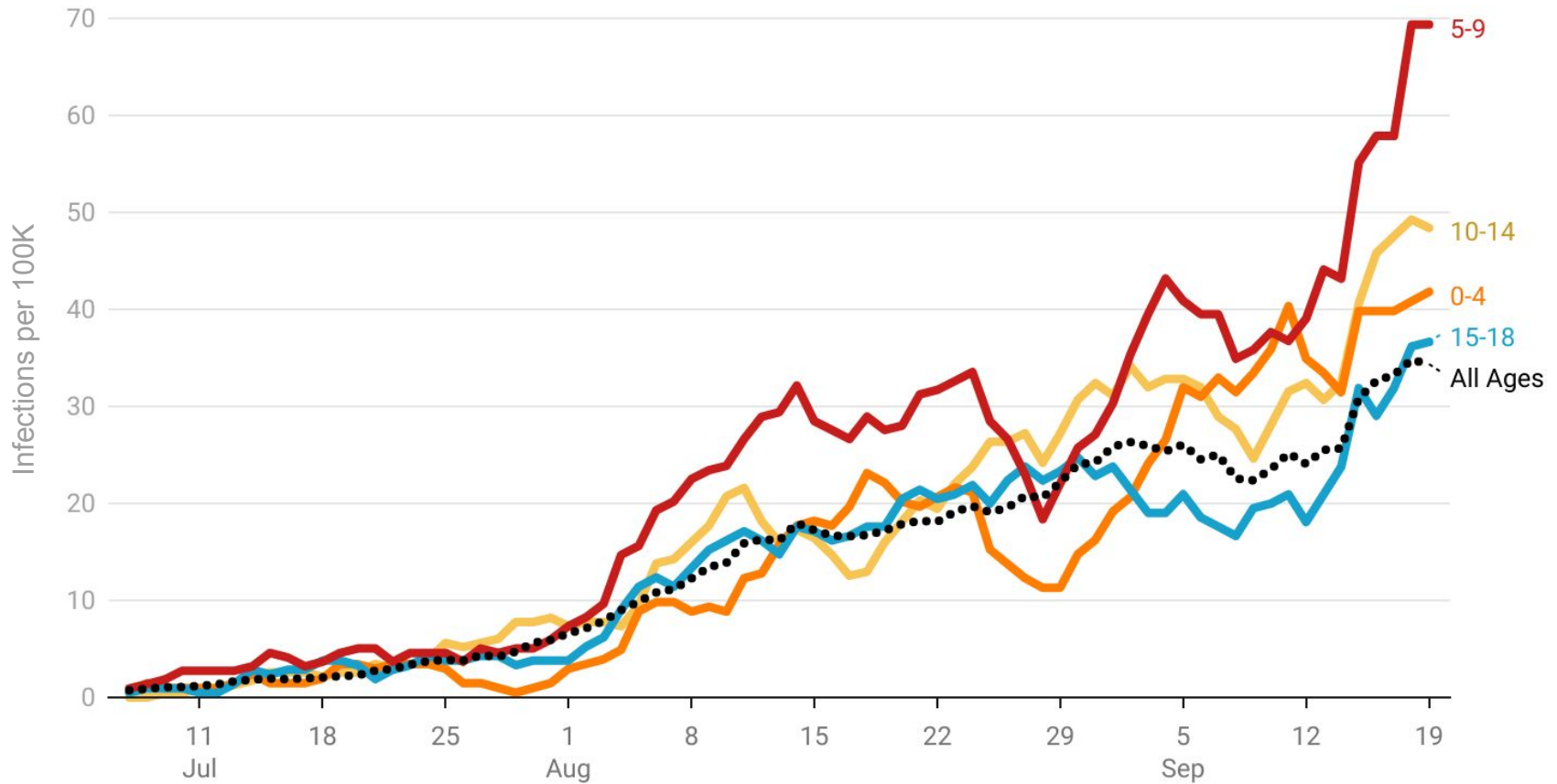
— Percent Received First Vaccine Dose



Vermont Case Rate By Age (7-Day Average)

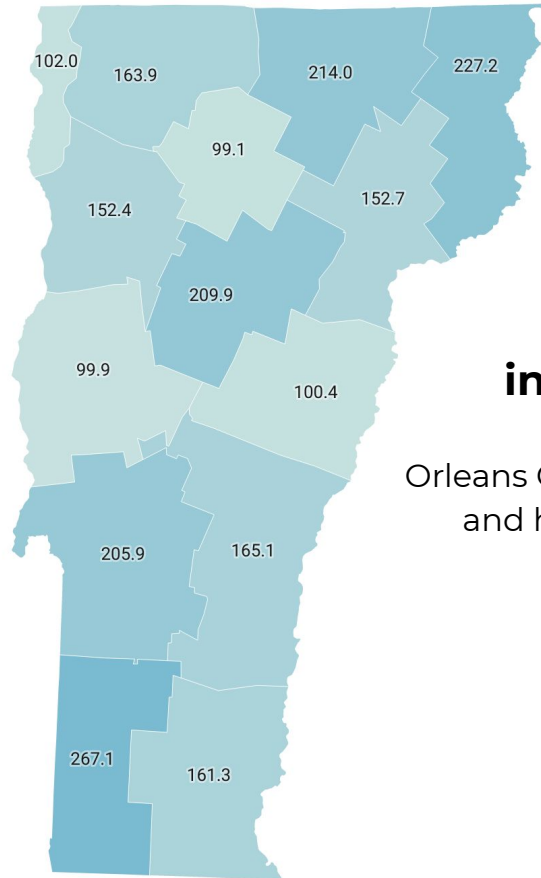


Vermont Covid-19 Case Rates by Age (7-Day Average)



Vermont Weekly Cases by County (per 100,000)

Results Reported September 7 to 13

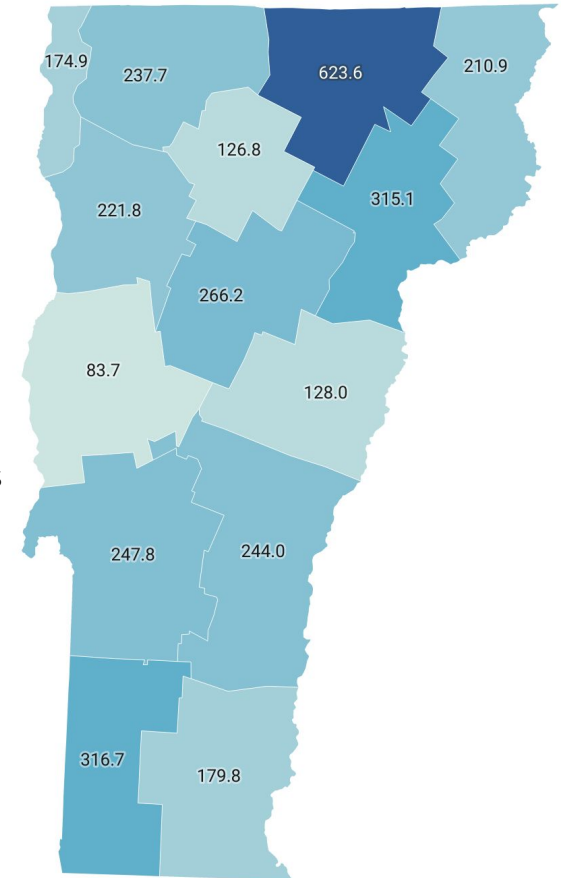


Covid-19 case rates
increased this past week

Orleans County reporting scattered outbreaks
and high degree of community spread

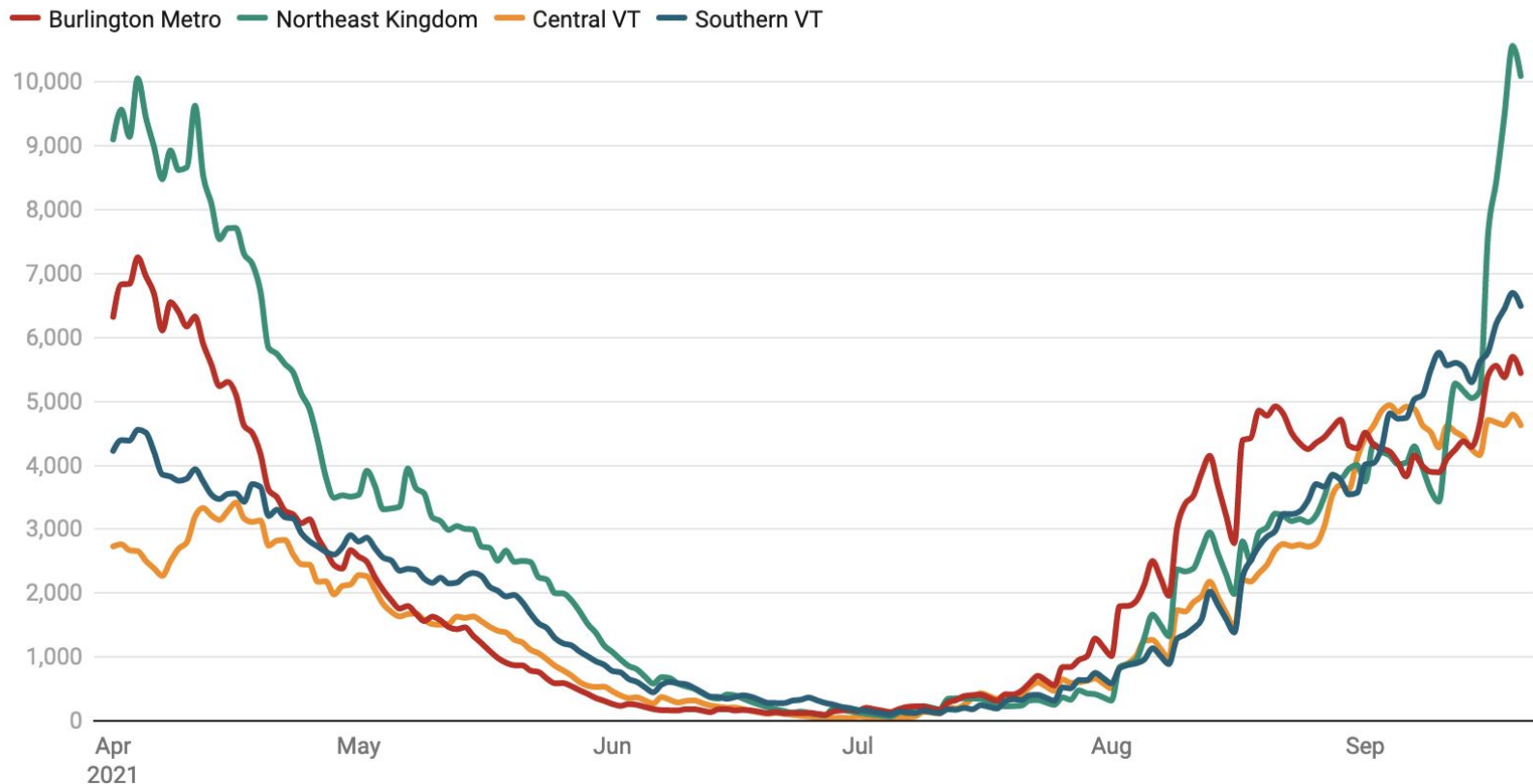
Vermont Weekly Cases by County (per 100,000)

Results Reported September 14 to 20



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).



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	28,624	27,103	371	456	694
		94.7%	1.3%	1.6%	2.4%

Week 1: **37 positive cases** out of 12,623 tests

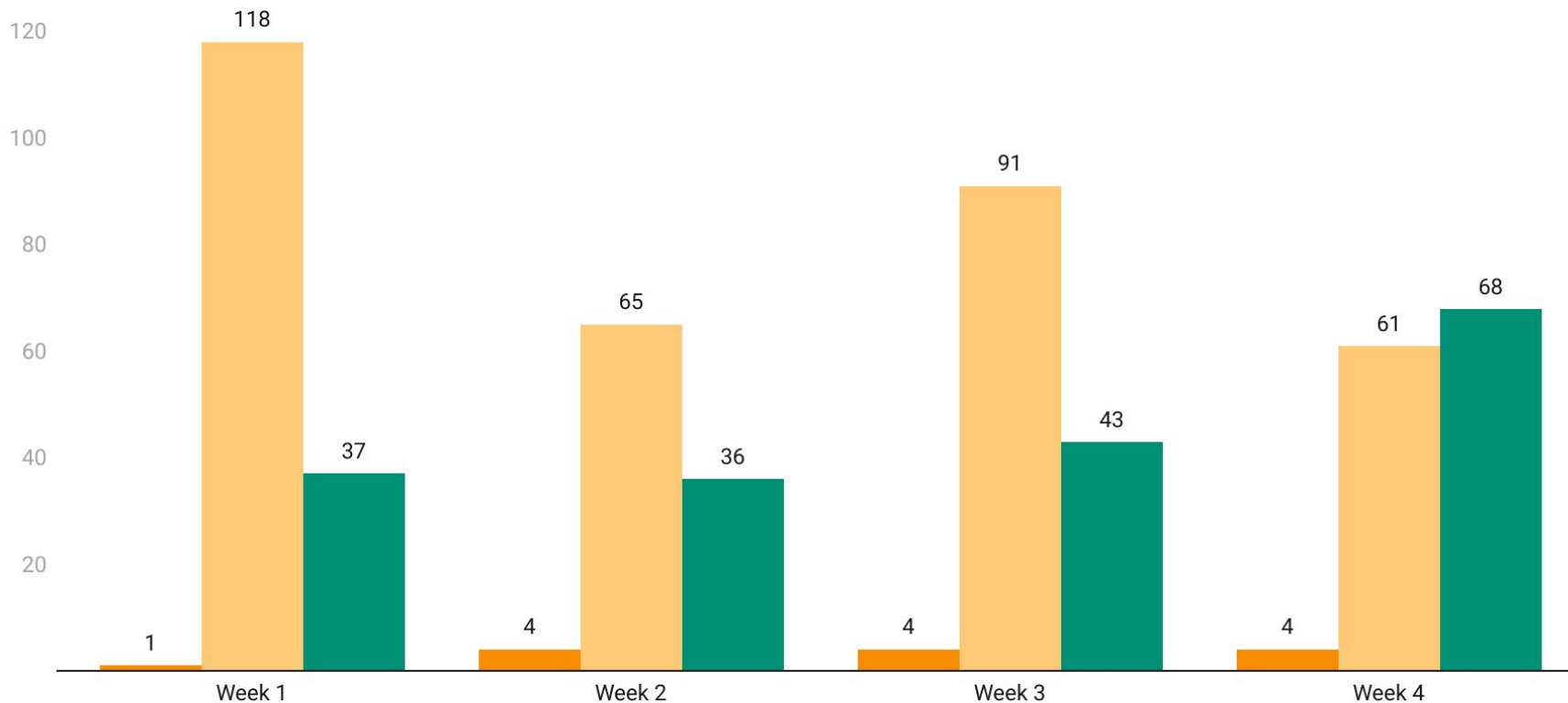
Week 2: **36 positive cases** out of 7,434 tests

Week 3: **43 positive cases** out of 3,053 tests

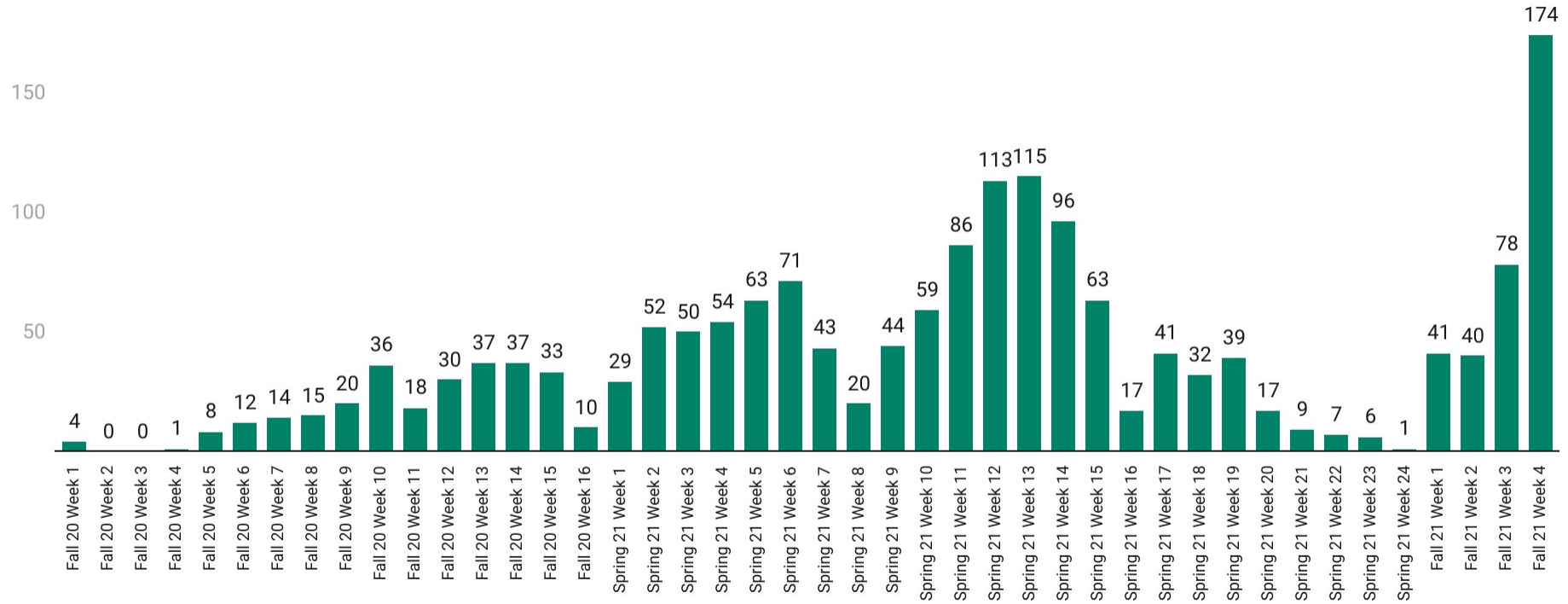
Week 4: **68 positive cases** out of 6,497 tests

Vermont Higher Education Cases By Semester

Fall 2020 Spring 2021 Fall 2021



Vermont COVID-19 Cases in K-12 Schools by Semester Week



Active Outbreaks in Long Term Care Facilities

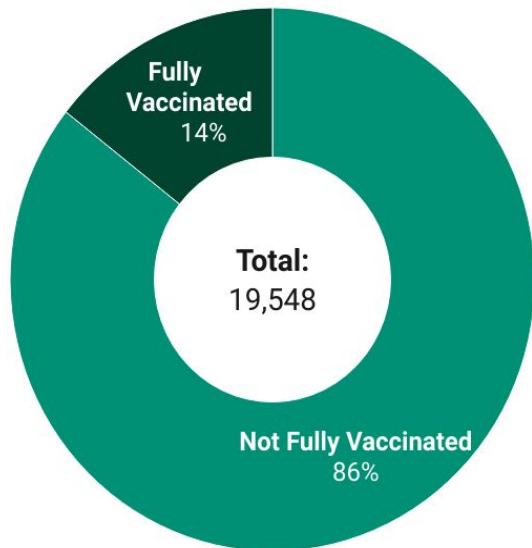
Facility Name	Total COVID-19 Cases
Vernon Green Nursing Home, <i>Vernon</i>	30
Green Mountain Nursing and Rehab, <i>Colchester</i>	22
Mansfield Place, <i>Essex</i>	18
Vermont Veterans Home, <i>Bennington</i>	17
Centers for Living and Rehab, <i>Bennington</i>	15
Vernon Hall Assisted Living, <i>Vernon</i>	12
Equinox Terrace, <i>Manchester</i>	10
Long Term Care Facility A	6
Long Term Care Facility B	6
St. Joseph Kervick Residence, <i>Rutland</i>	Not Shown
Total	136

Source: Vermont Department of Health—September 21, 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

Vermont Cases, Hospitalizations & Deaths By Vaccination Status Since January 1, 2021

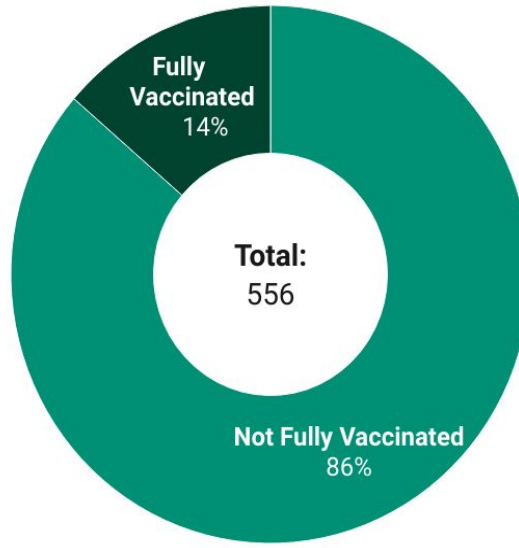
Cases

■ Not Fully Vaccinated (86%)
■ Fully Vaccinated (14%)



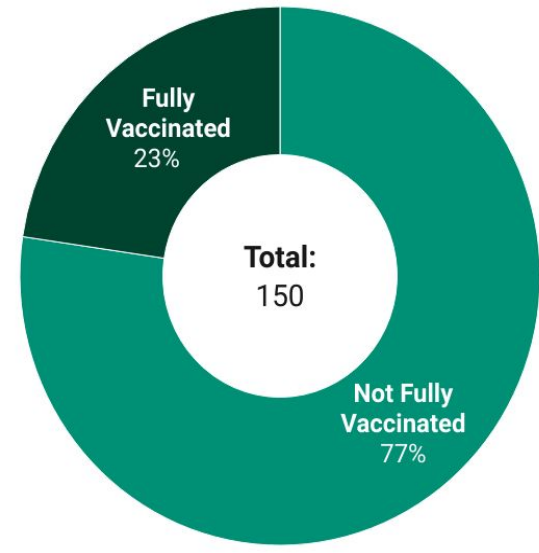
Hospitalizations

■ Not Fully Vaccinated (86%)
■ Fully Vaccinated (14%)



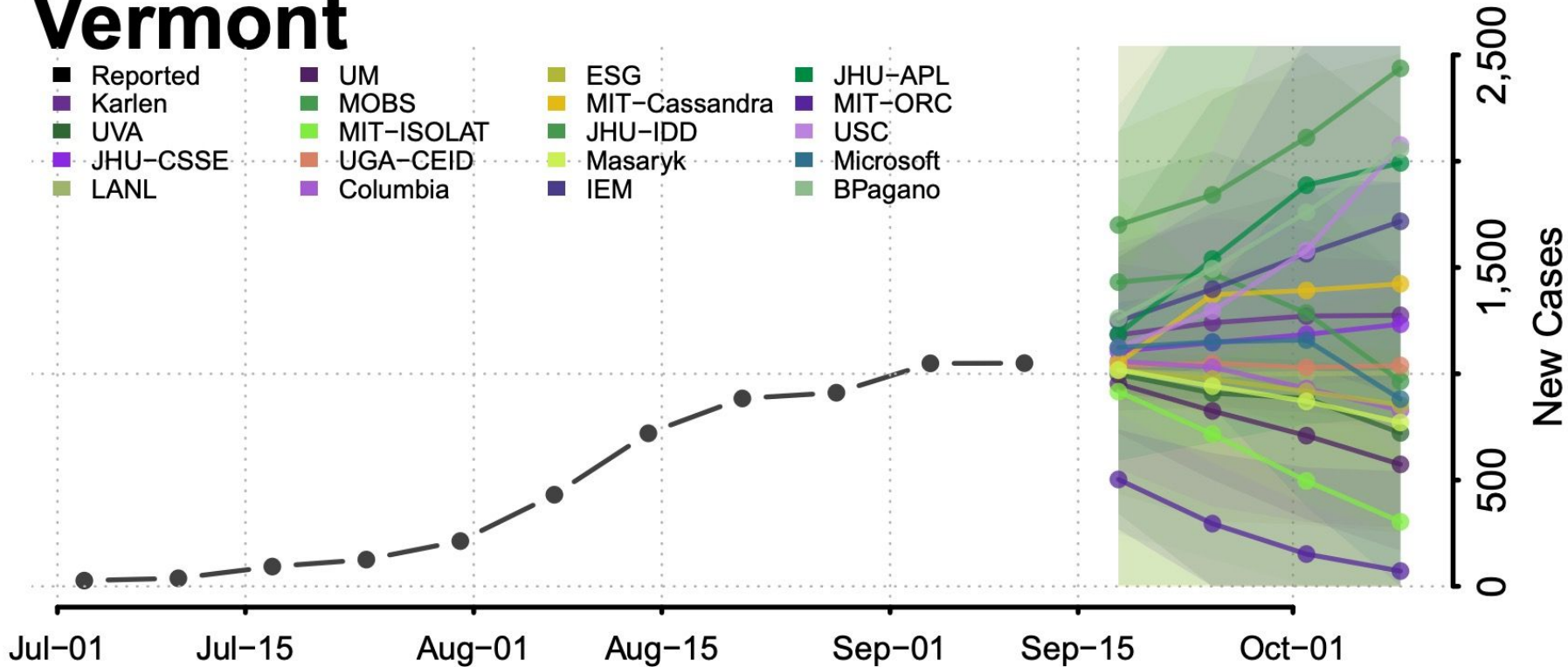
Deaths

■ Not Fully Vaccinated (77%)
■ Fully Vaccinated (23%)



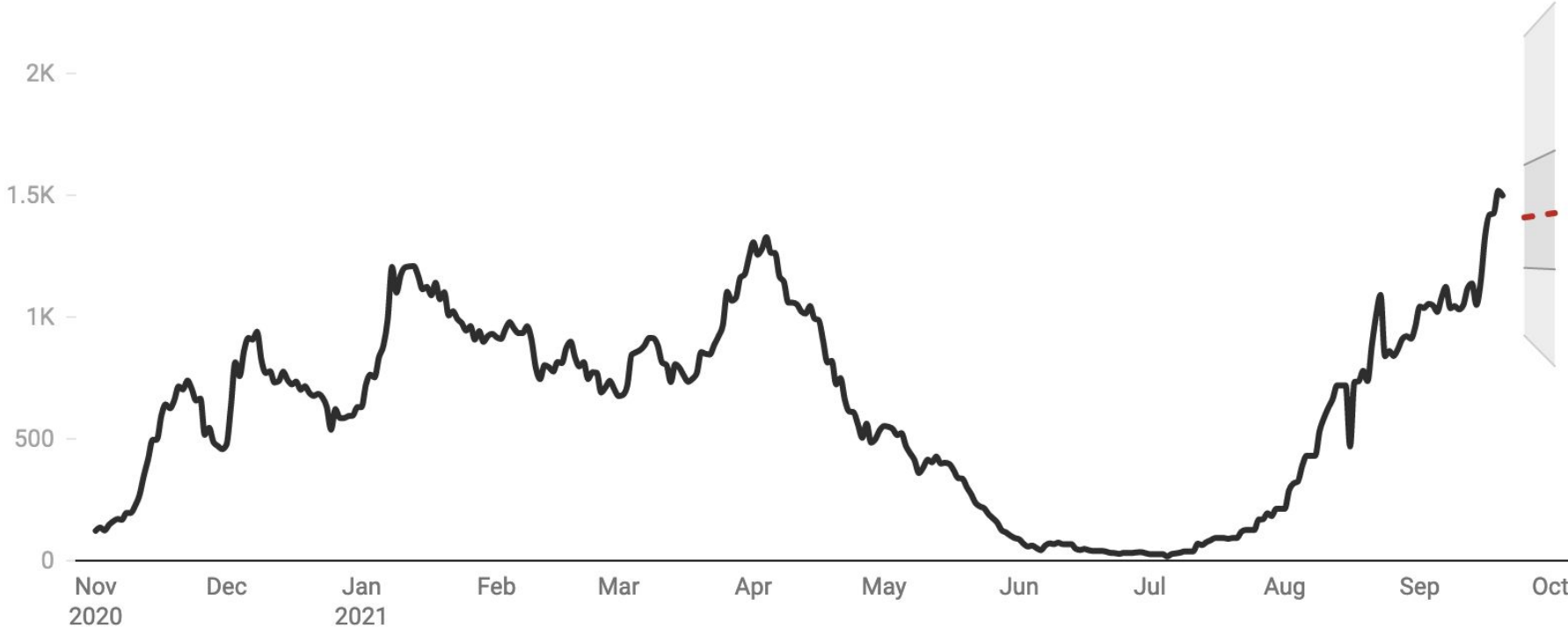
Vermont

- Reported
- Karlen
- UVA
- JHU-CSSE
- LANL
- UM
- MOBS
- MIT-ISOLAT
- UGA-CEID
- Columbia
- ESG
- MIT-Cassandra
- JHU-IDD
- Masaryk
- IEM
- JHU-APL
- MIT-ORC
- USC
- Microsoft
- BPagano



VT Weekly COVID-19 Infection 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.

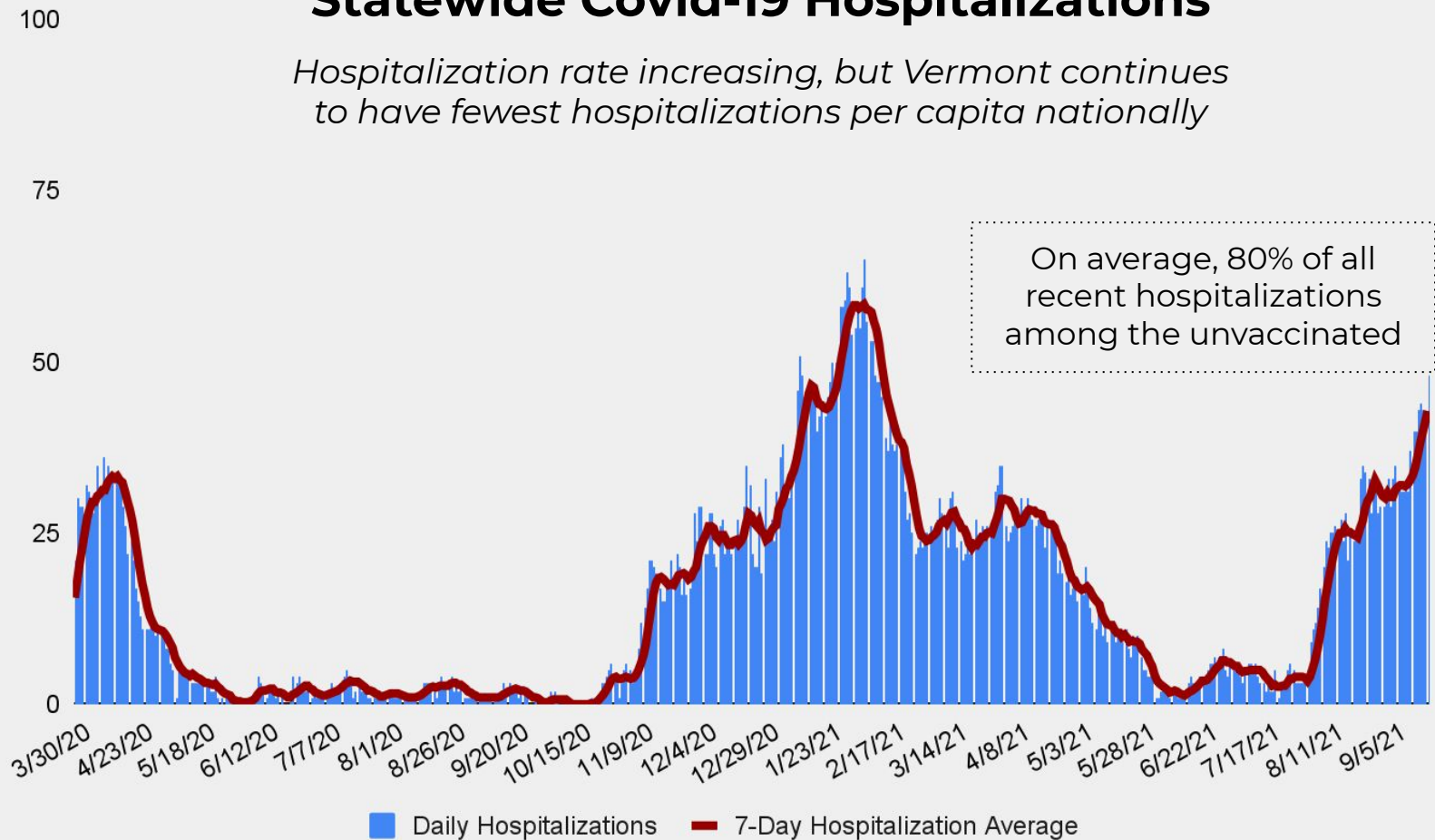


Source: CDC Ensemble Model—September 20, 2021 - Note: in recent weeks the CDC ensemble has only forecasted out two weeks

Vermont Hospitalization Data

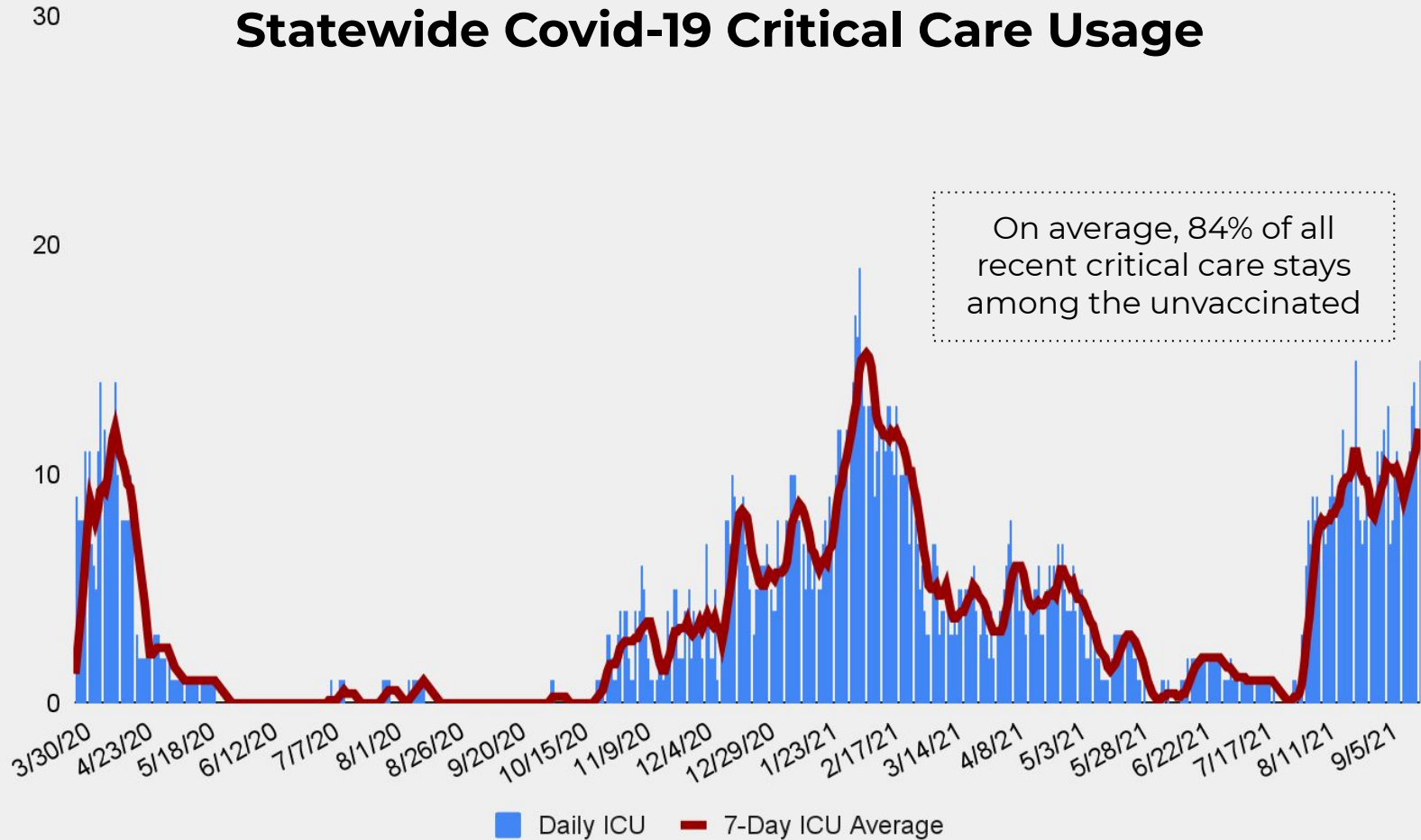
Statewide Covid-19 Hospitalizations

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



Source: Vermont Department of Health—September 21, 2021

Statewide Covid-19 Critical Care Usage



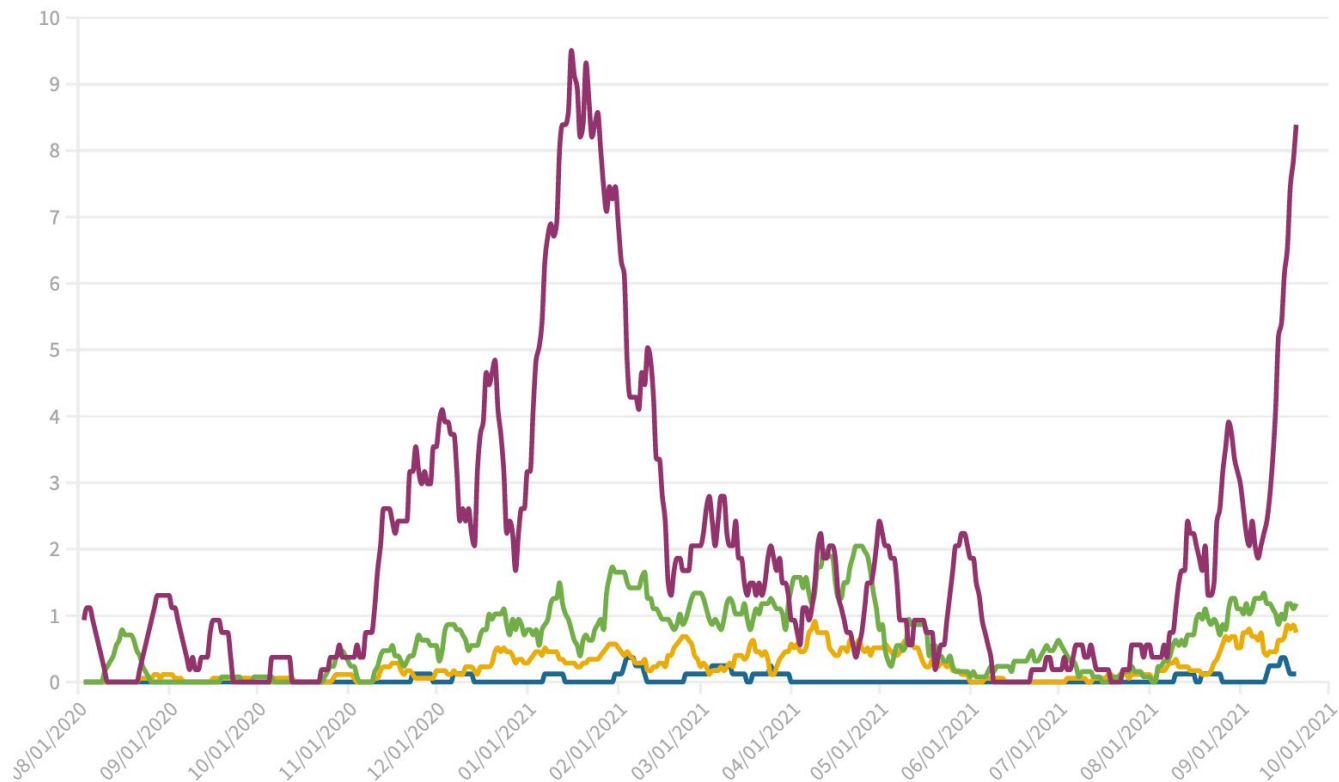
Source: Vermont Department of Health—September 21, 2021

New Hospitalizations per 100,000 Residents, by Age

0-17 years 18-49 years 50-69 years 70+ years

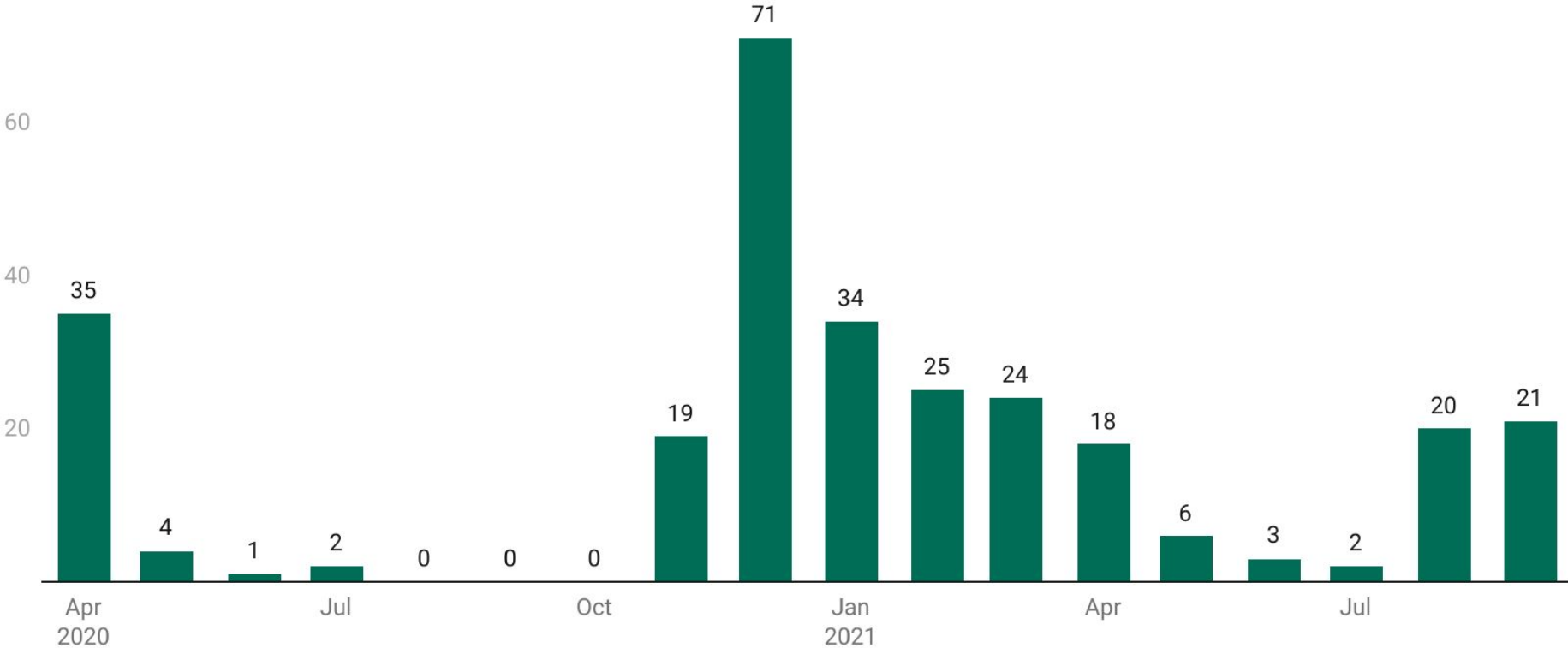
New Hospitalizations per 100K

Vermont



Vermont Fatality Data

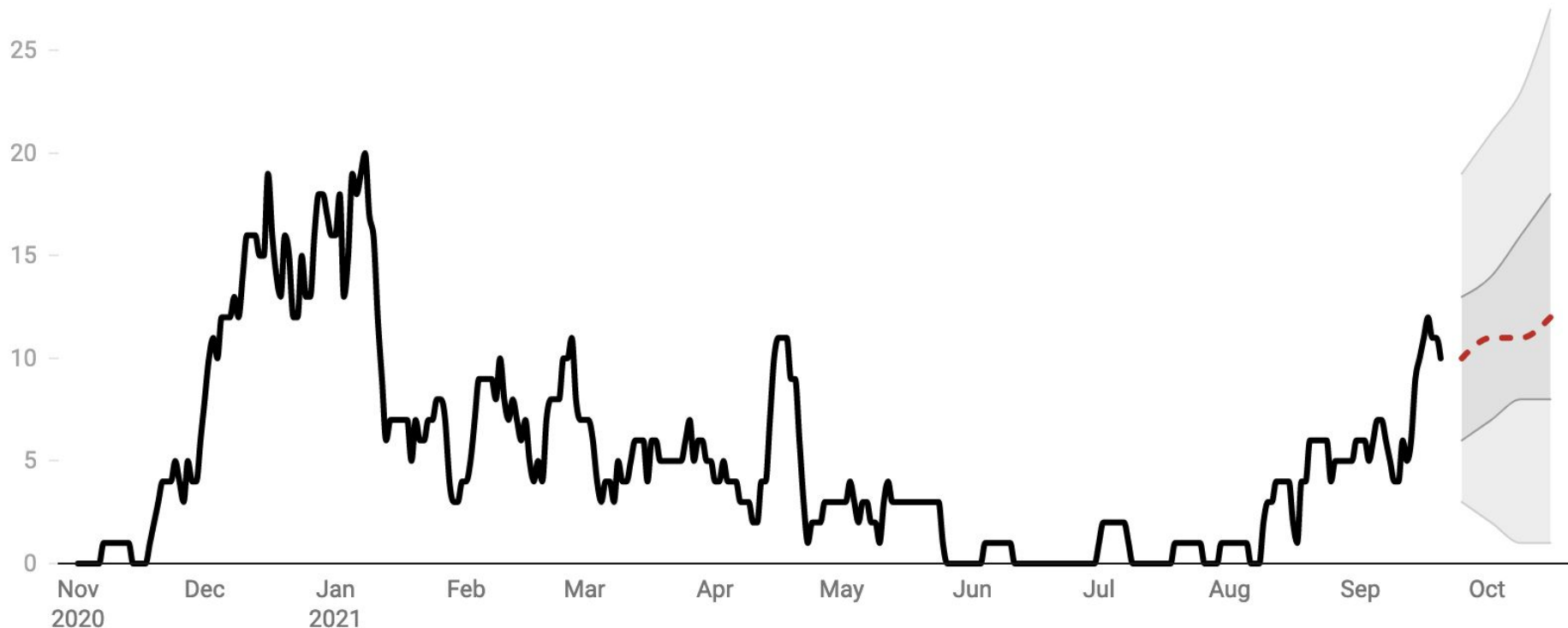
Monthly Covid-19 Deaths In Vermont



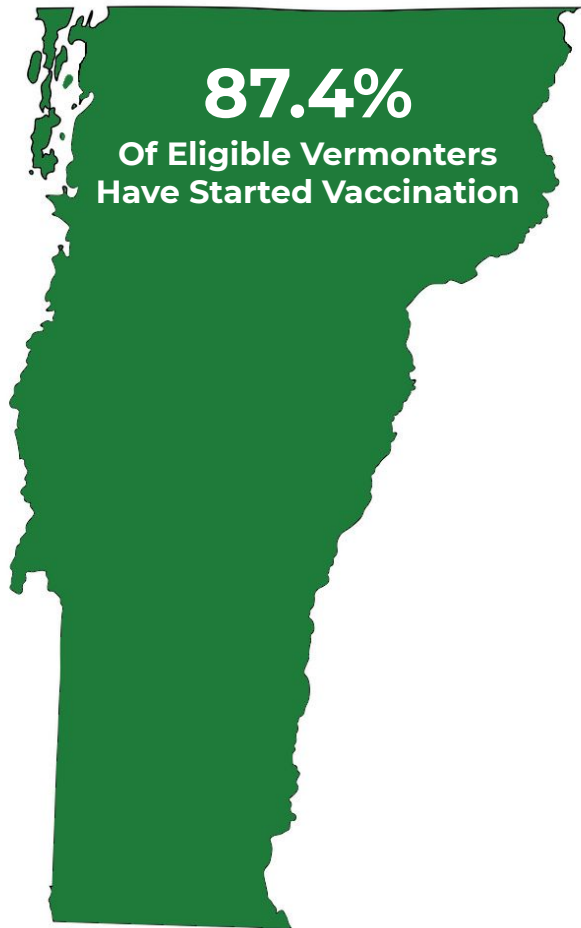
Source: Vermont Department of Health—September 20, 2021; deaths attributed to month in which death occurred rather than reported 35

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.



Vermont Vaccination Data



Vermont Vaccination

+2,188

Since Last Week

481,449

Vermonters with
at Least 1 Dose

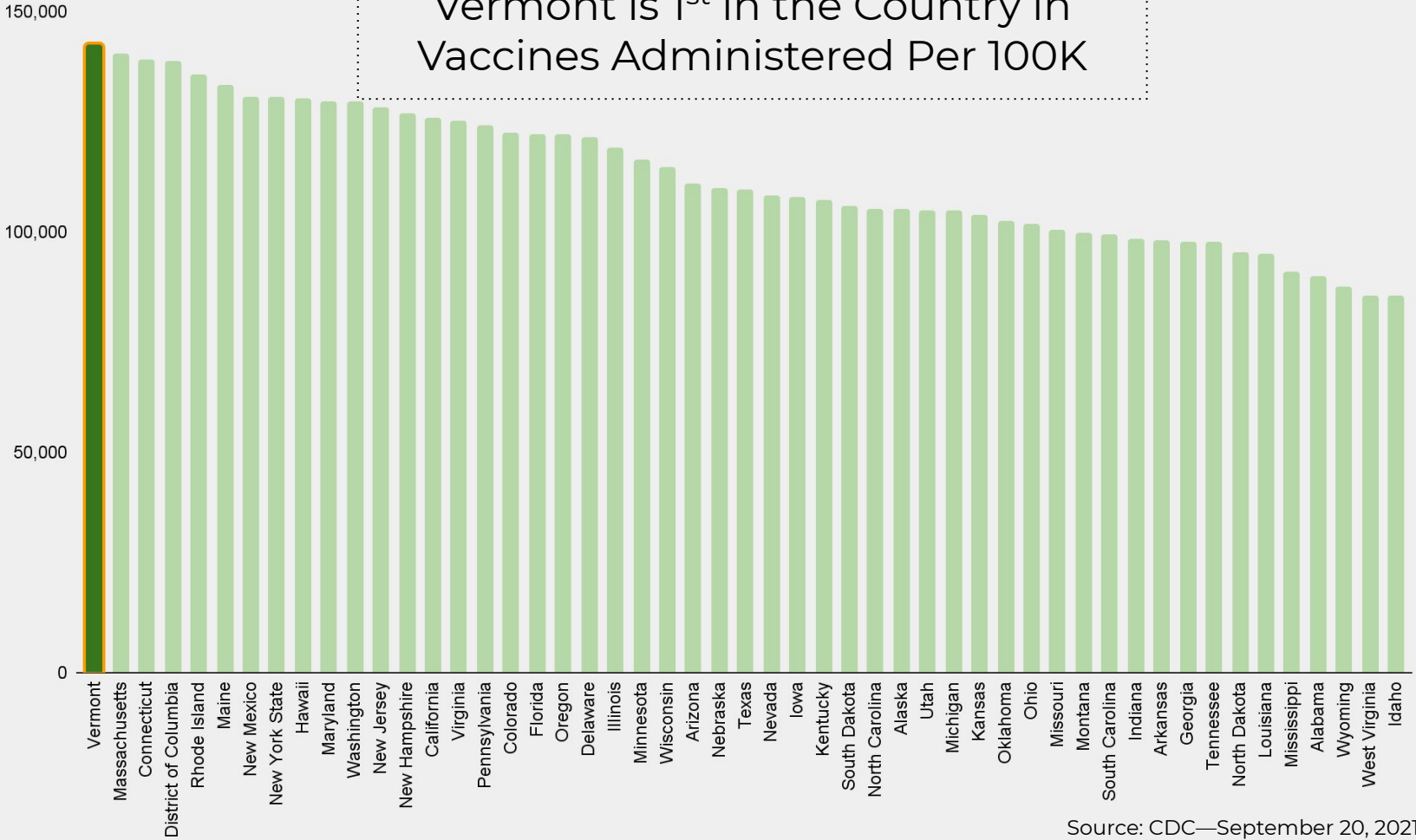
69,501

Eligible Vermonters
still to be vaccinated

Vermont CDC Vaccine Scorecard

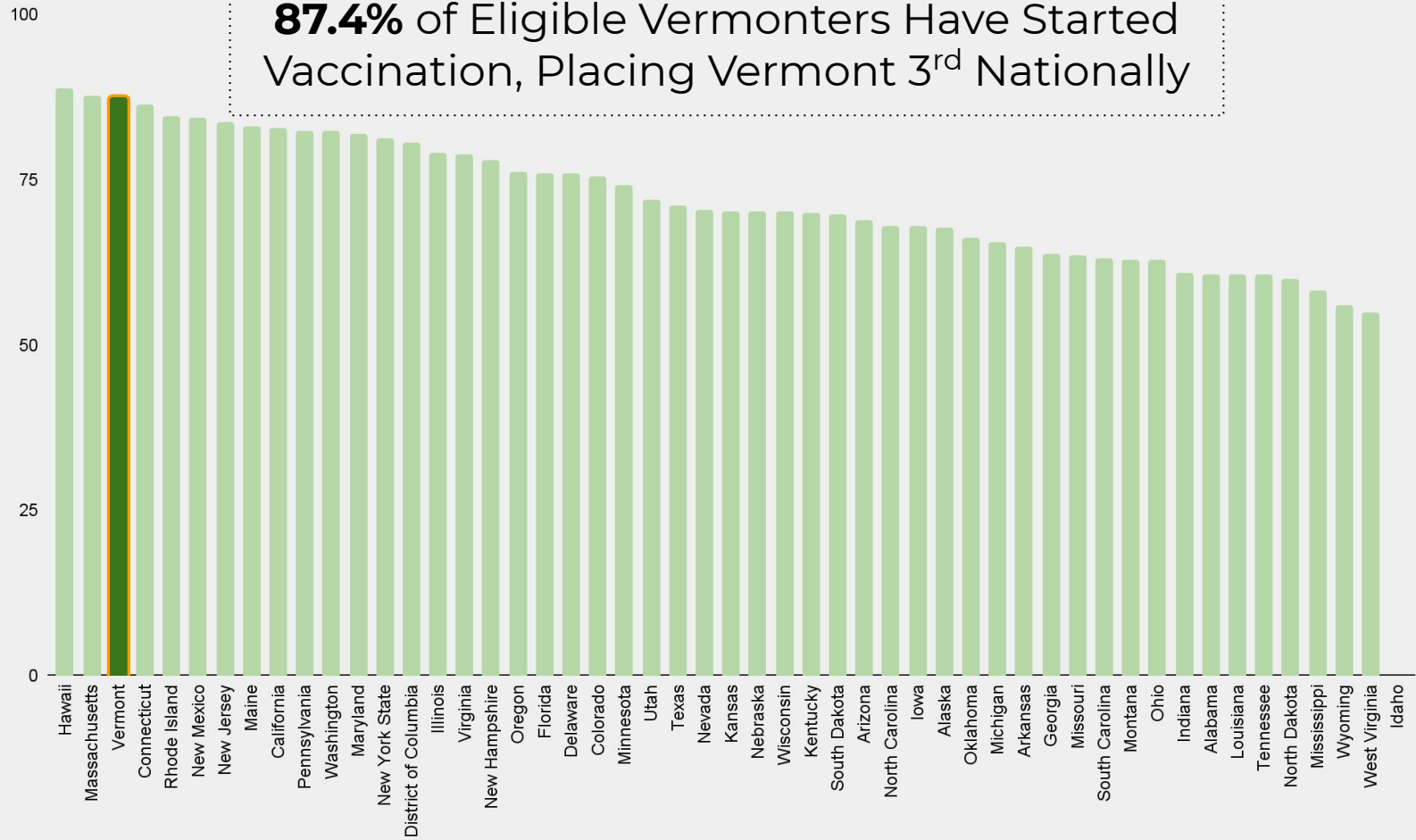
Metric	Figure	State Ranking
Doses Administered per 100K	142,562	1
% At Least 1 Dose (Eligible Population)	87.4%	3
% Fully Vaccinated (Eligible Population)	78.1%	1
% At Least 1 Dose (Full Population)	77.2%	1
% Fully Vaccinated (Full Population)	69.0%	1
% Fully Vaccinated (65 & Over)	95.1%	1

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



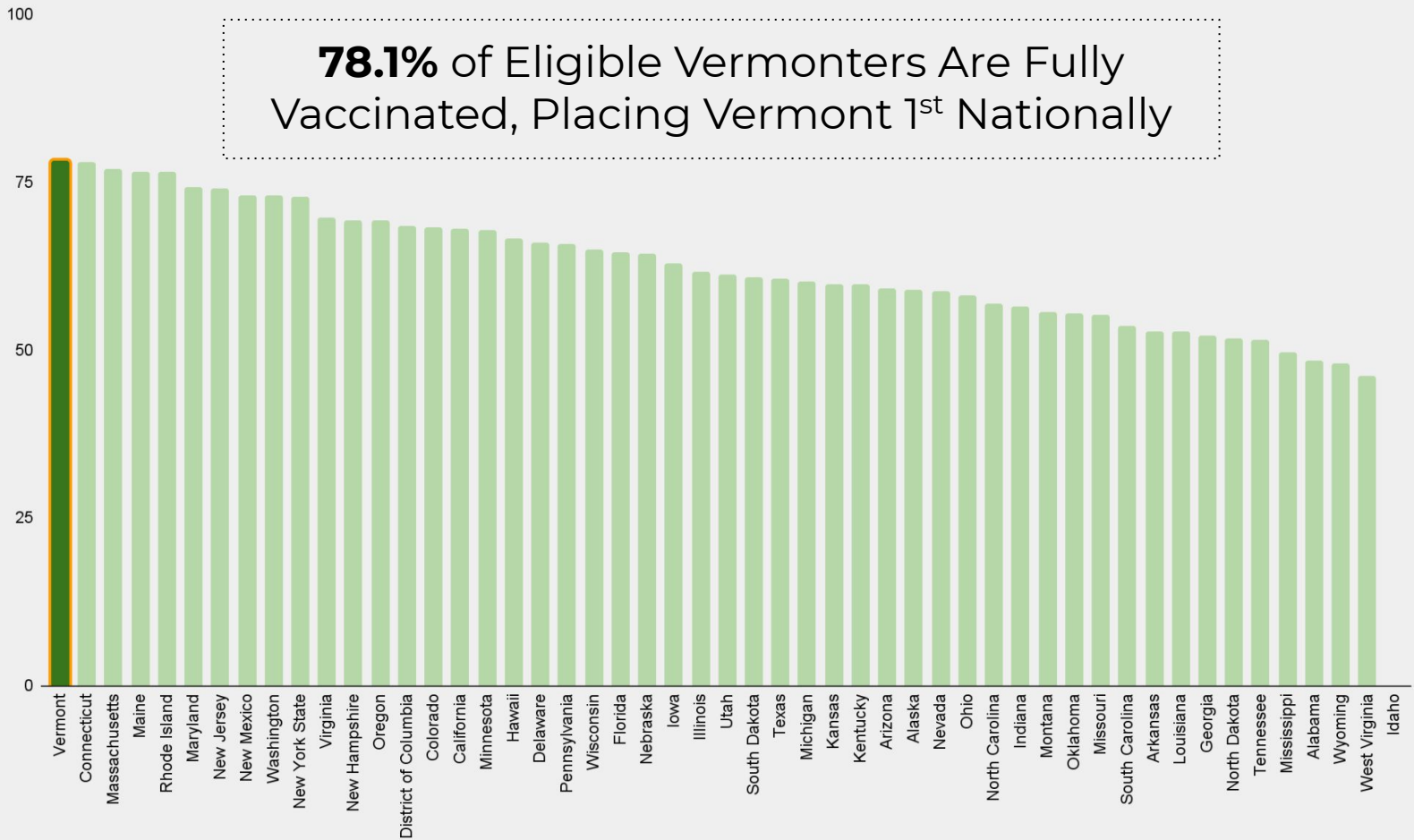
Source: CDC—September 20, 2021

87.4% of Eligible Vermonters Have Started Vaccination, Placing Vermont 3rd Nationally



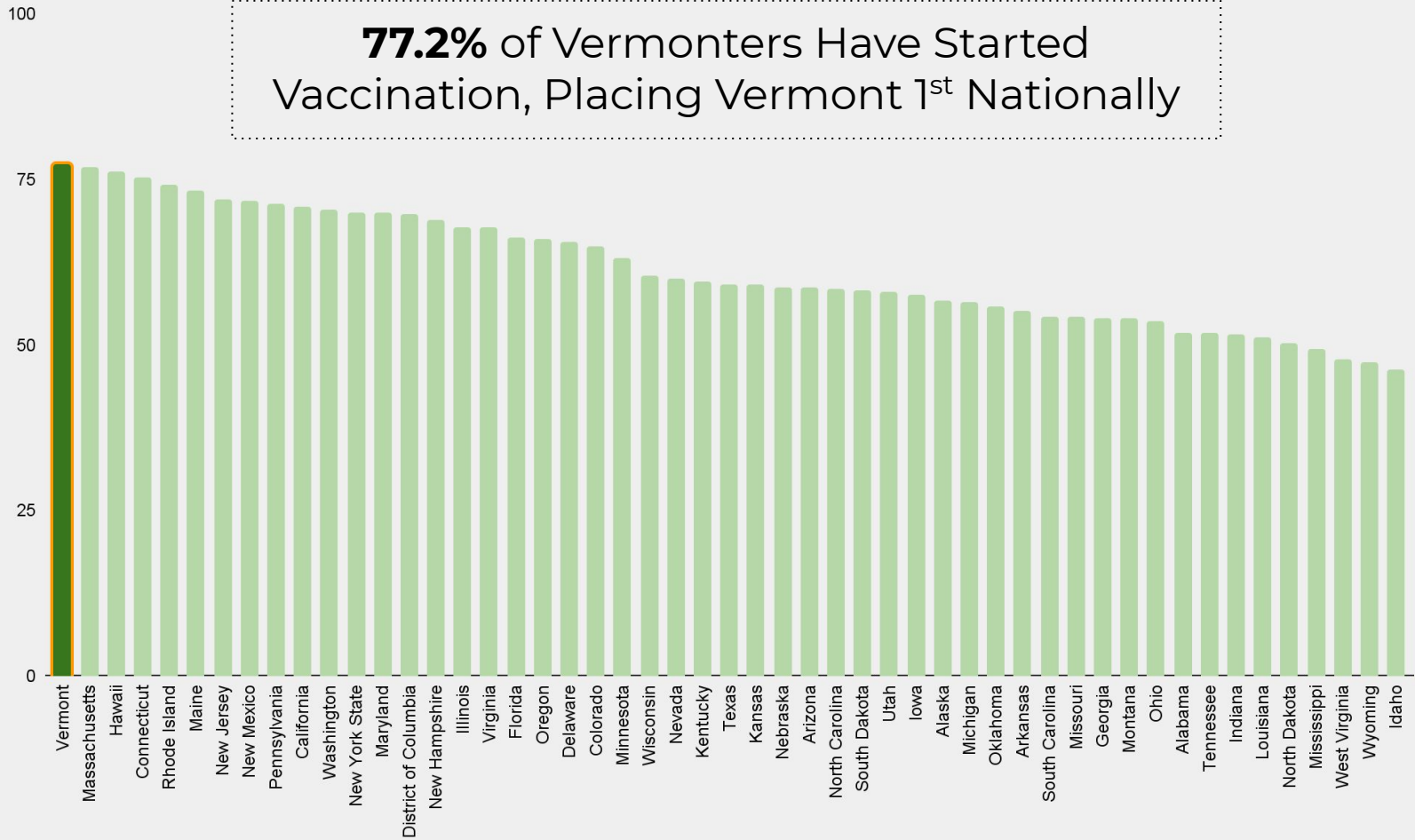
Source: CDC—September 20, 2021

78.1% of Eligible Vermonters Are Fully Vaccinated, Placing Vermont 1st Nationally



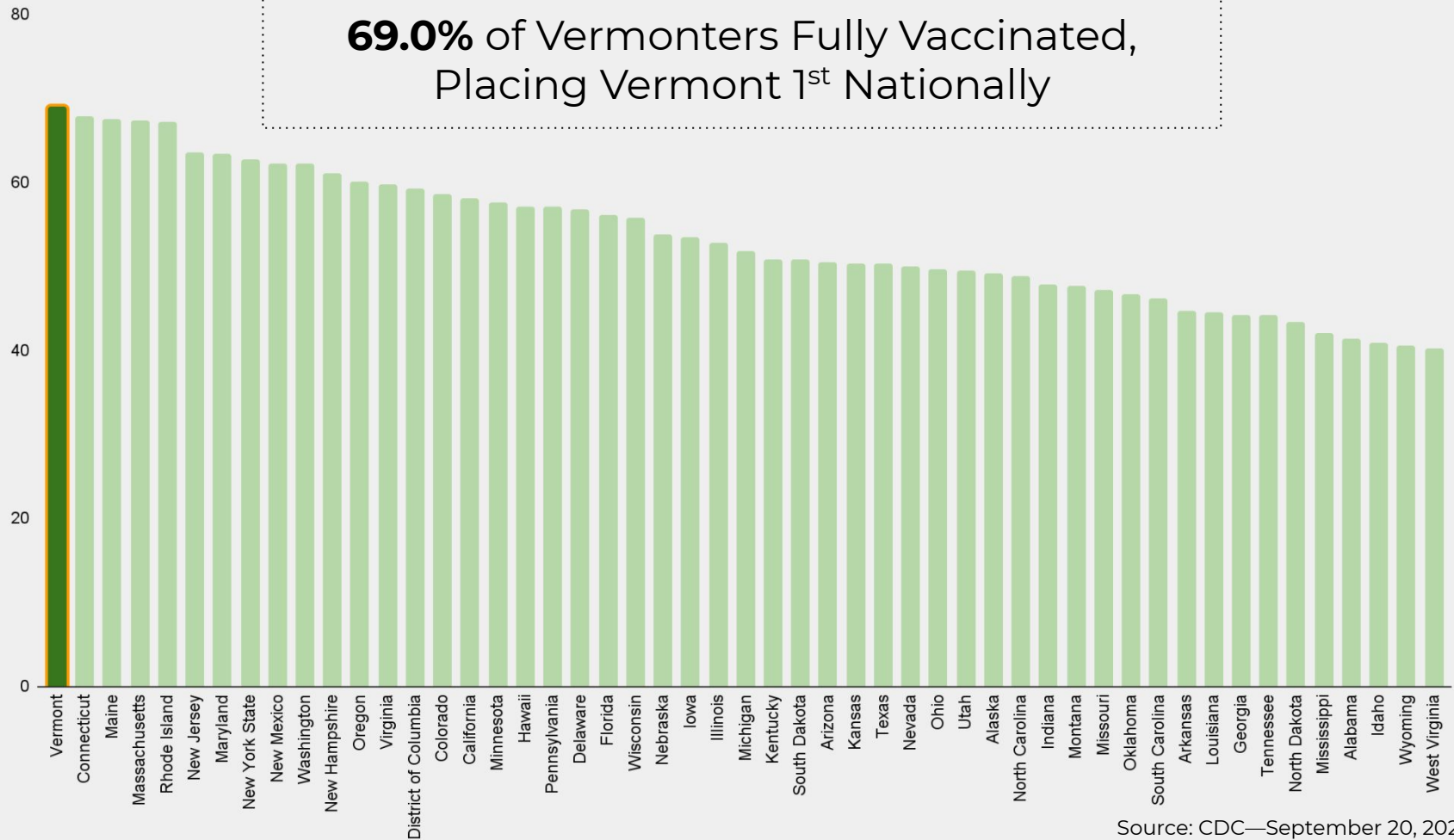
Source: CDC—September 20, 2021

77.2% of Vermonters Have Started Vaccination, Placing Vermont 1st Nationally



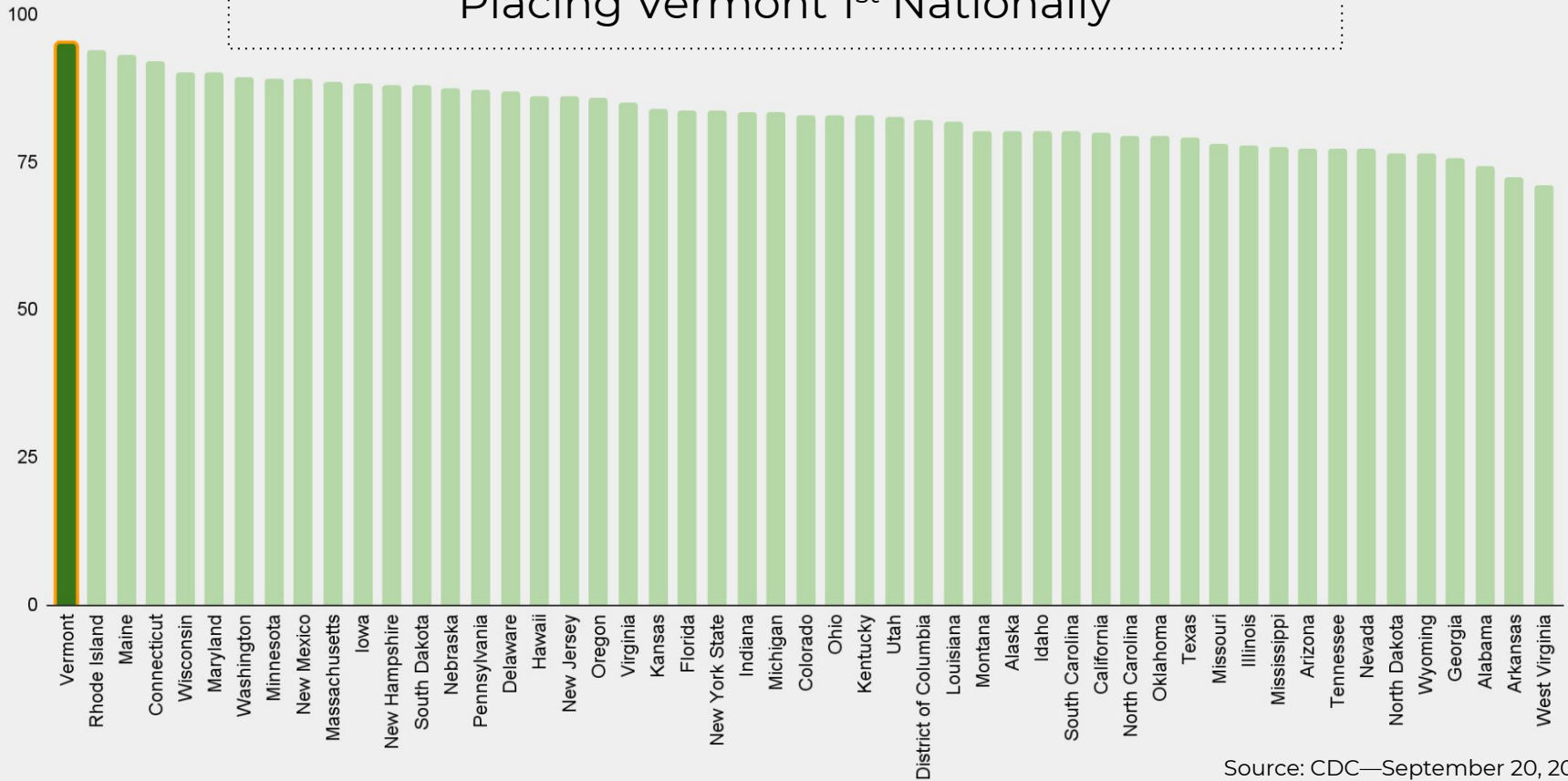
Source: CDC—September 20, 2021

69.0% of Vermonters Fully Vaccinated,
Placing Vermont 1st Nationally



Source: CDC—September 20, 2021

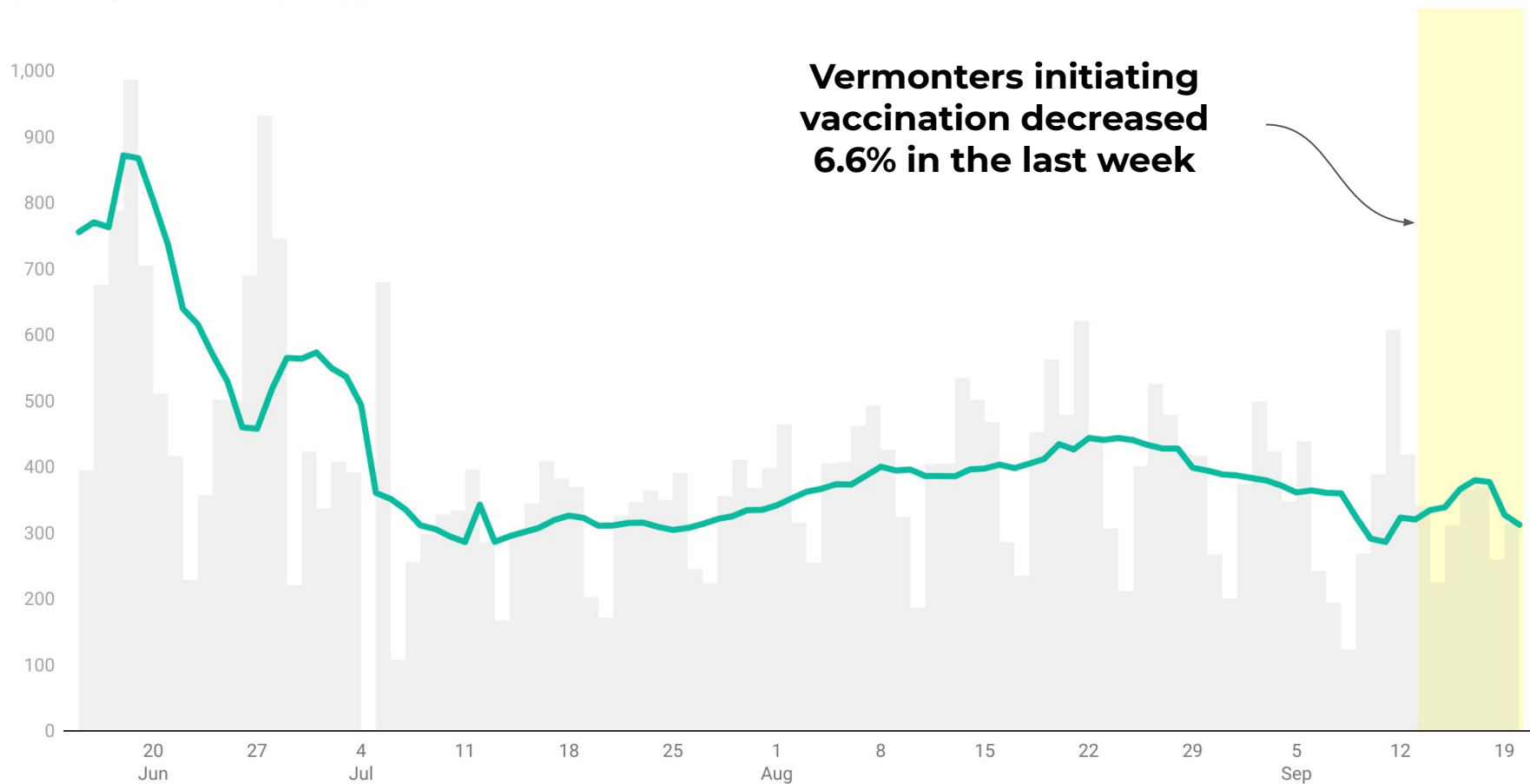
95.1% of 65 & Over Vermonters Fully Vaccinated,
Placing Vermont 1st Nationally



Source: CDC—September 20, 2021

Vermonters Initiating Vaccination By Day

— New Daily Vaccinations (7-Day Average)

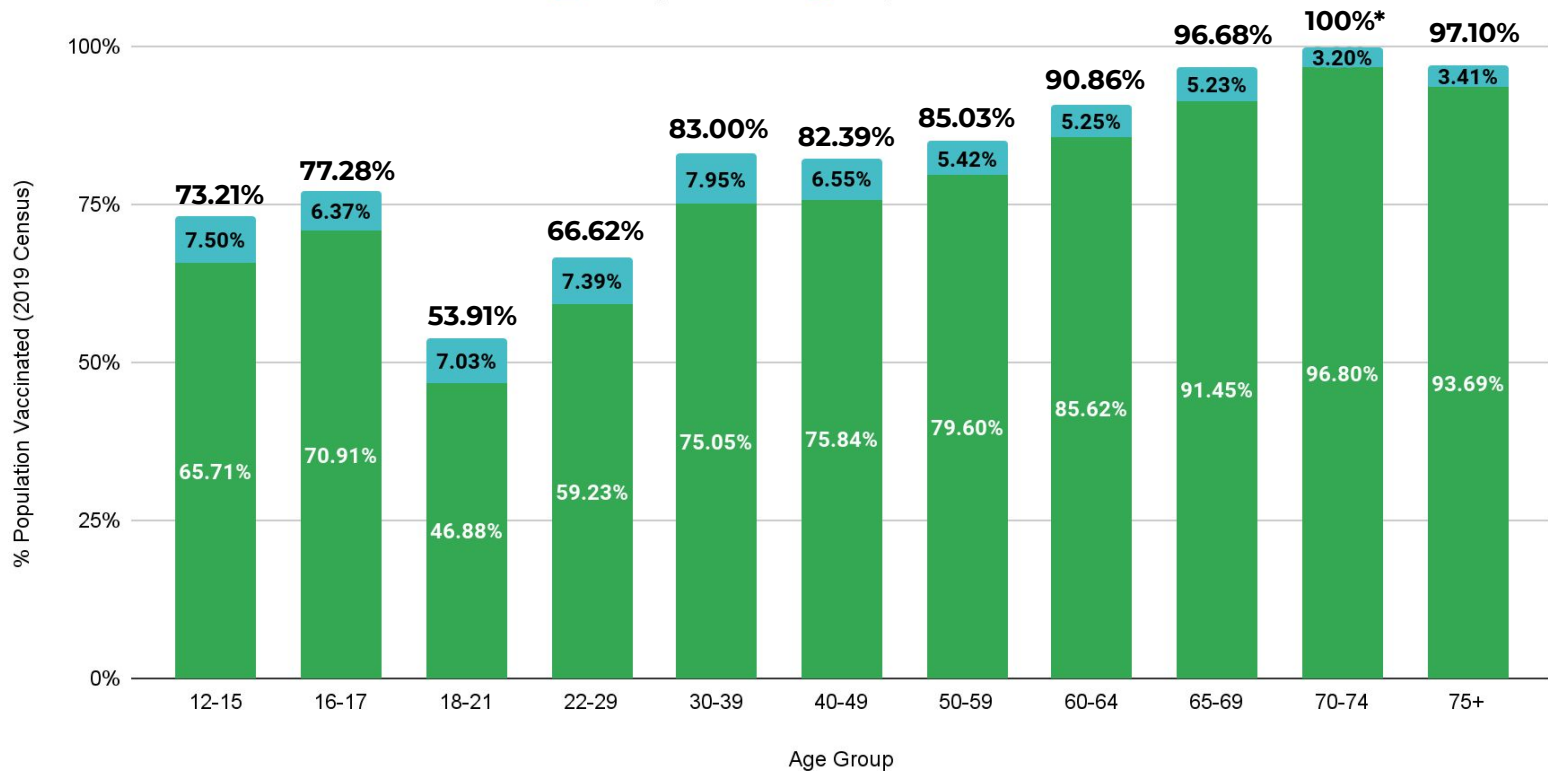


Vermonters initiating vaccination decreased 6.6% in the last week

Vermont Vaccination Progress

By Age Band

Partially Vaccinated Fully Vaccinated



Source: Vermont Dept. of Health—September 21, 2021; *based on 2019 census estimates; state data may differ from CDC reporting

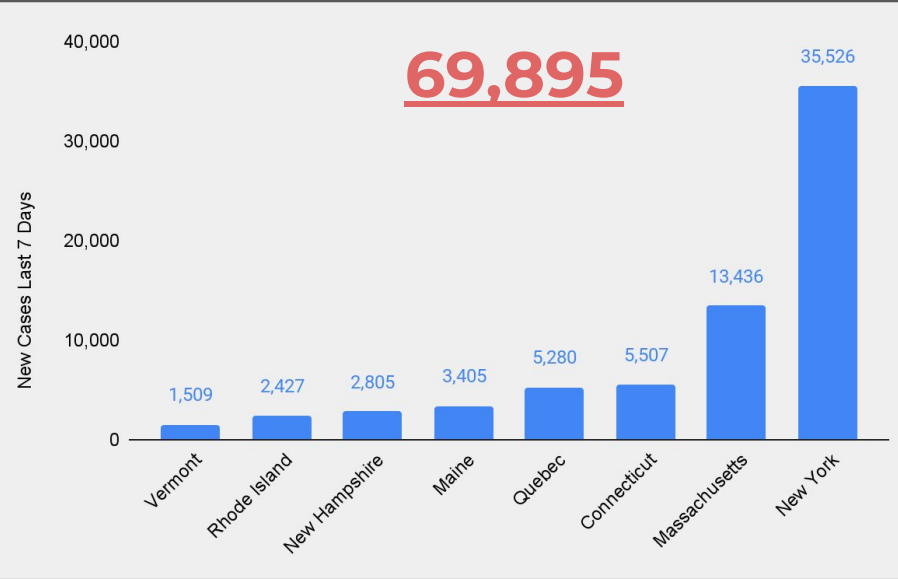
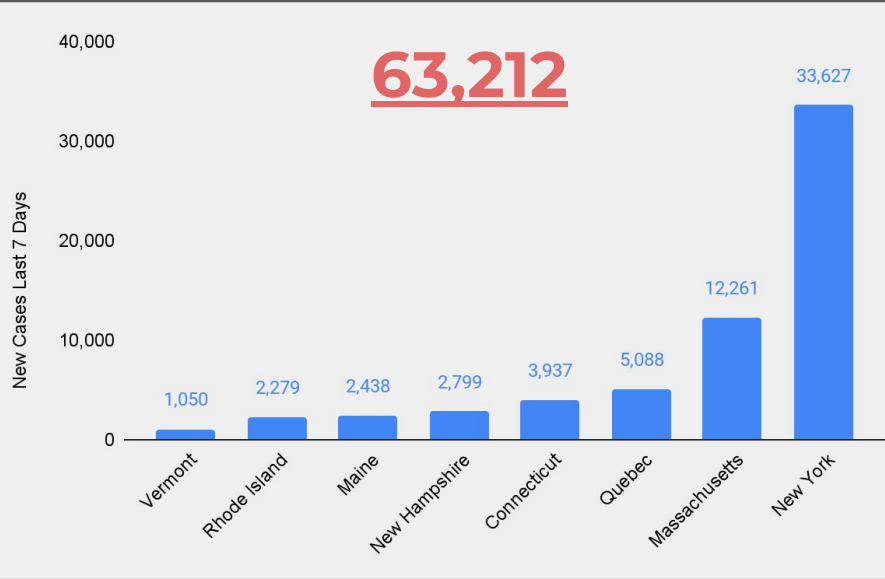
Regional Data

Regional Cases

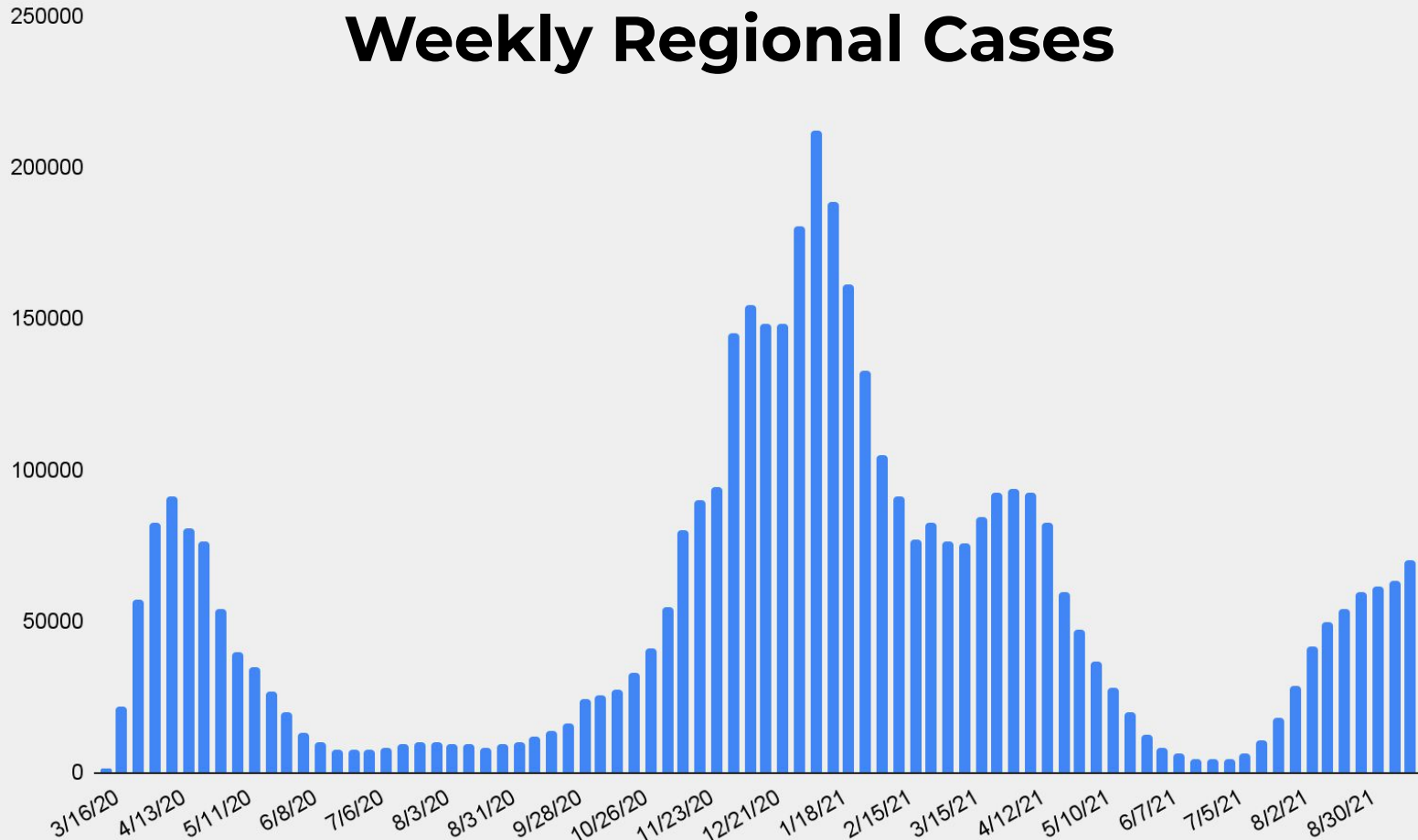
10.1% Increase in New Cases

New Cases September 7th to September 13th

New Cases September 14th to September 20th



Weekly Regional Cases



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

National Data

US Deaths During COVID-19 Pandemic

Per 100K

350

300

250

200

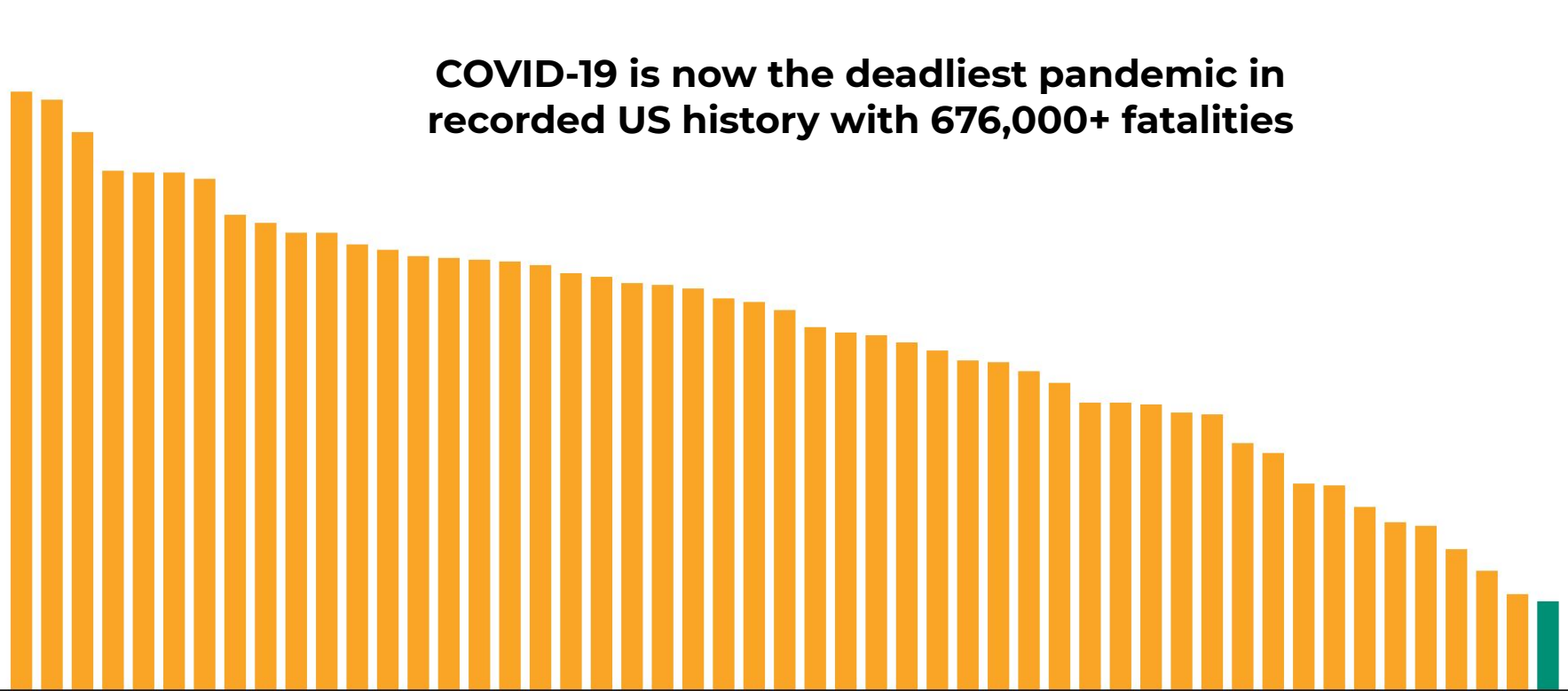
150

100

50

COVID-19 is now the deadliest pandemic in recorded US history with 676,000+ fatalities

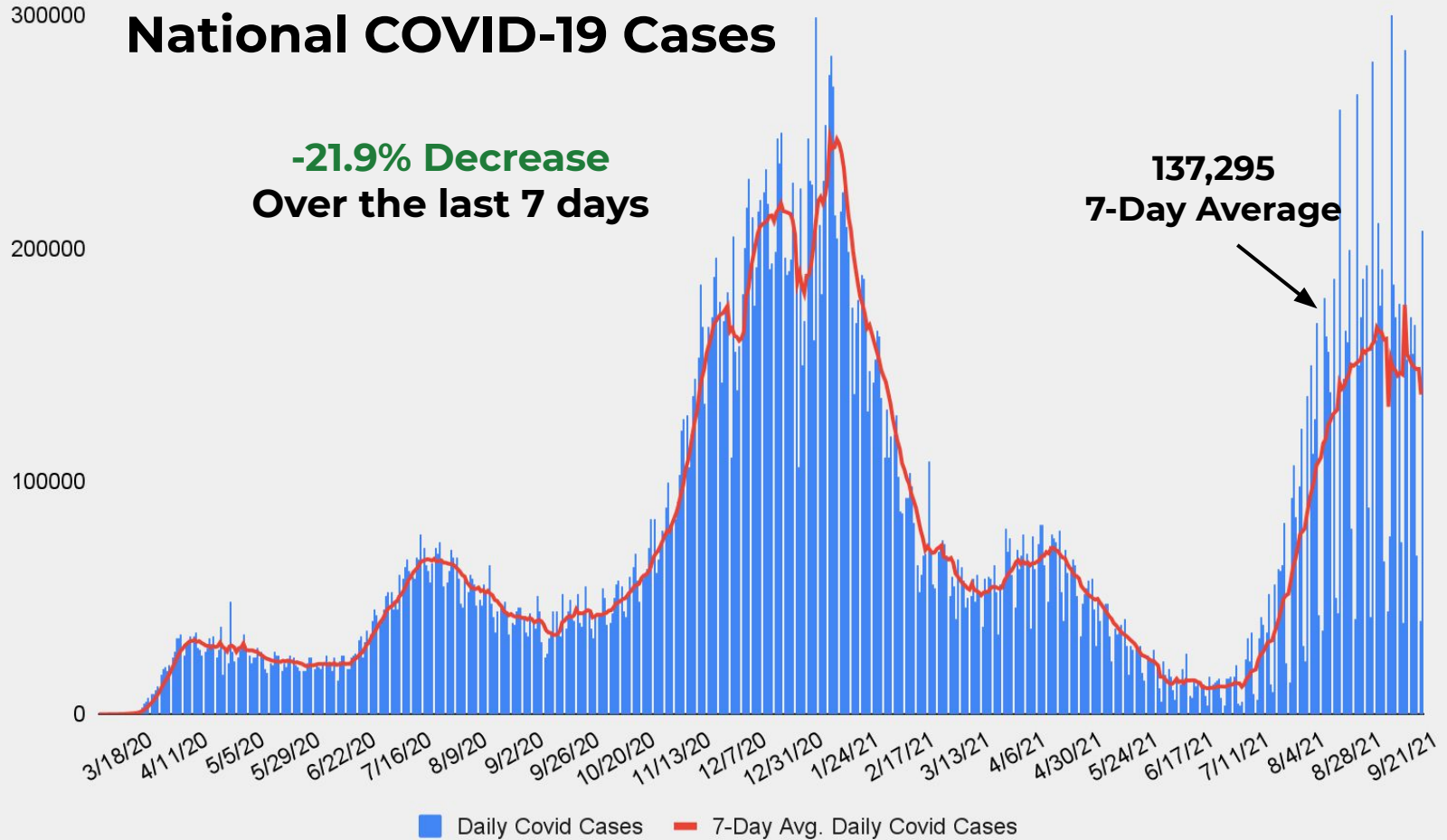
MS NJ LA AL AZ MA RI AR FL SD CT GA SC PA IN NM NV MI OK IL TN TX ND IA KS DE WV KY OH MO MT CA MD DC WY WI NC ID VA MN CO NE NH NY WA UT OR ME AK HI VT



National COVID-19 Cases

**-21.9% Decrease
Over the last 7 days**

**137,295
7-Day Average**



Source: Covid Tracking Project; NYT & CDC—September 21, 2021

Change in National Covid-19 Growth

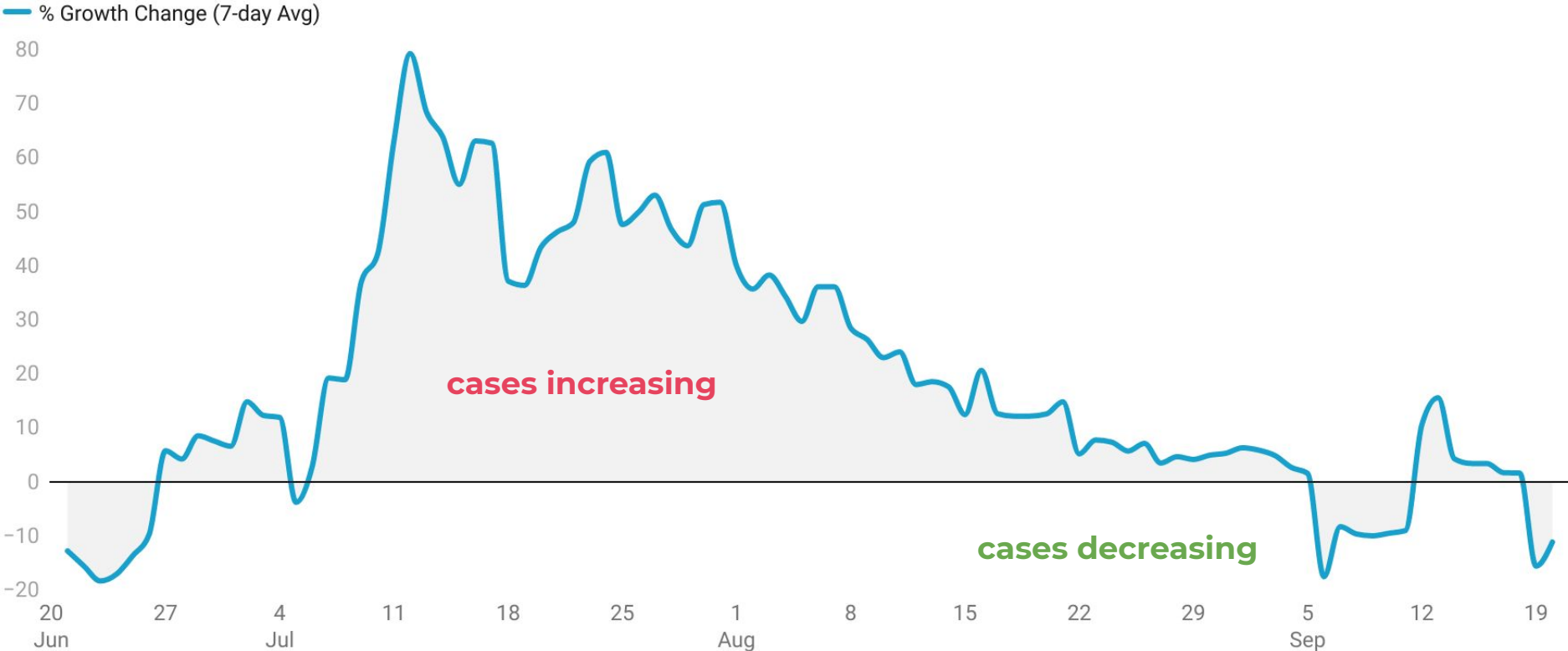
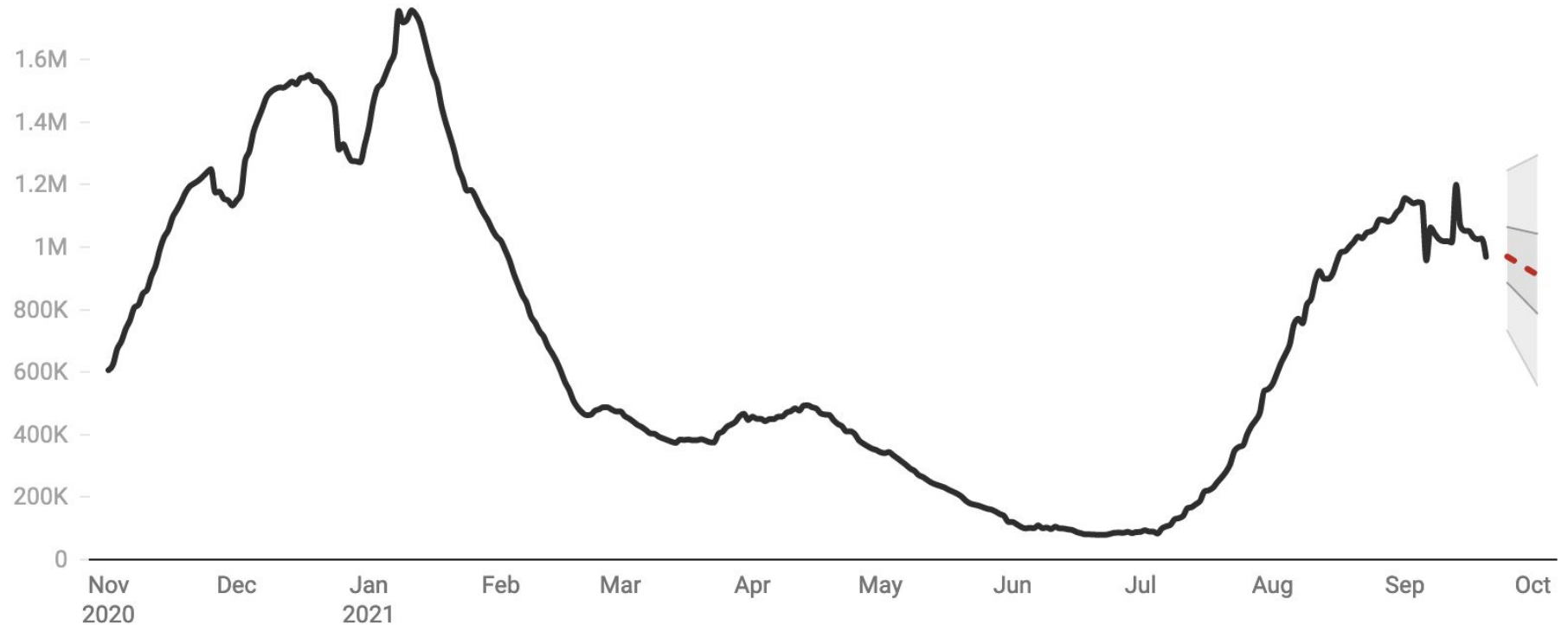


Chart: Vermont DFR Modeling Team • Source: CDC • Created with Datawrapper

US Weekly COVID-19 Infection Forecast

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



National COVID-19 Hospitalizations

-5.7% Decrease
Over the last 7 days

94,008
7-Day Average

150000

100000

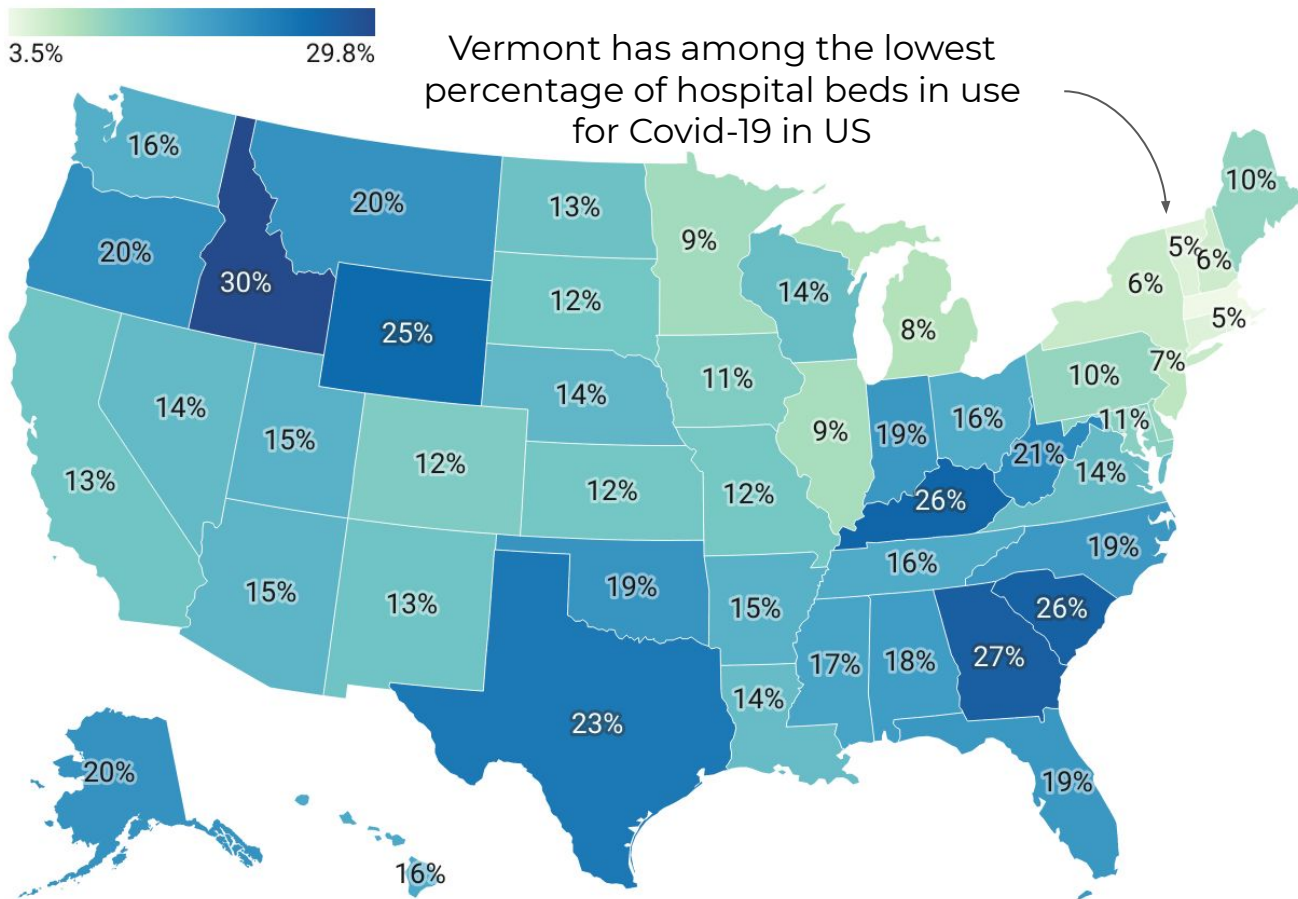
50000

0

4/12/20 5/13/20 6/13/20 7/14/20 8/14/20 9/14/20 10/15/20 11/15/20 12/16/20 1/16/21 2/16/21 3/19/21 4/19/21 5/20/21 6/20/21 7/21/21 8/21/21 9/21/21

Currently Hospitalized 7-Day Avg. Currently Hospitalized

Percent of All Hospital Beds Used for COVID-19

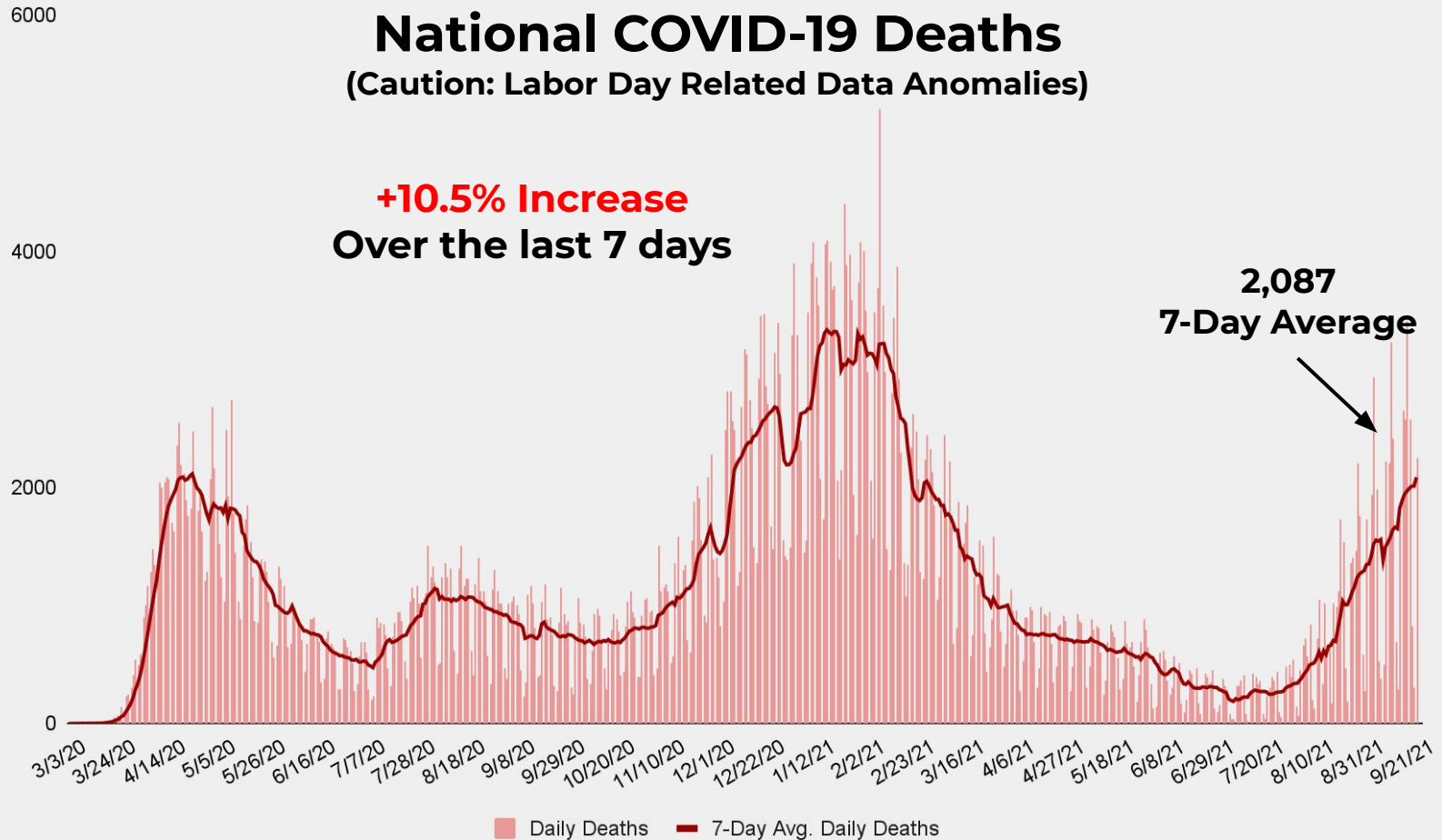


National COVID-19 Deaths

(Caution: Labor Day Related Data Anomalies)

+10.5% Increase
Over the last 7 days

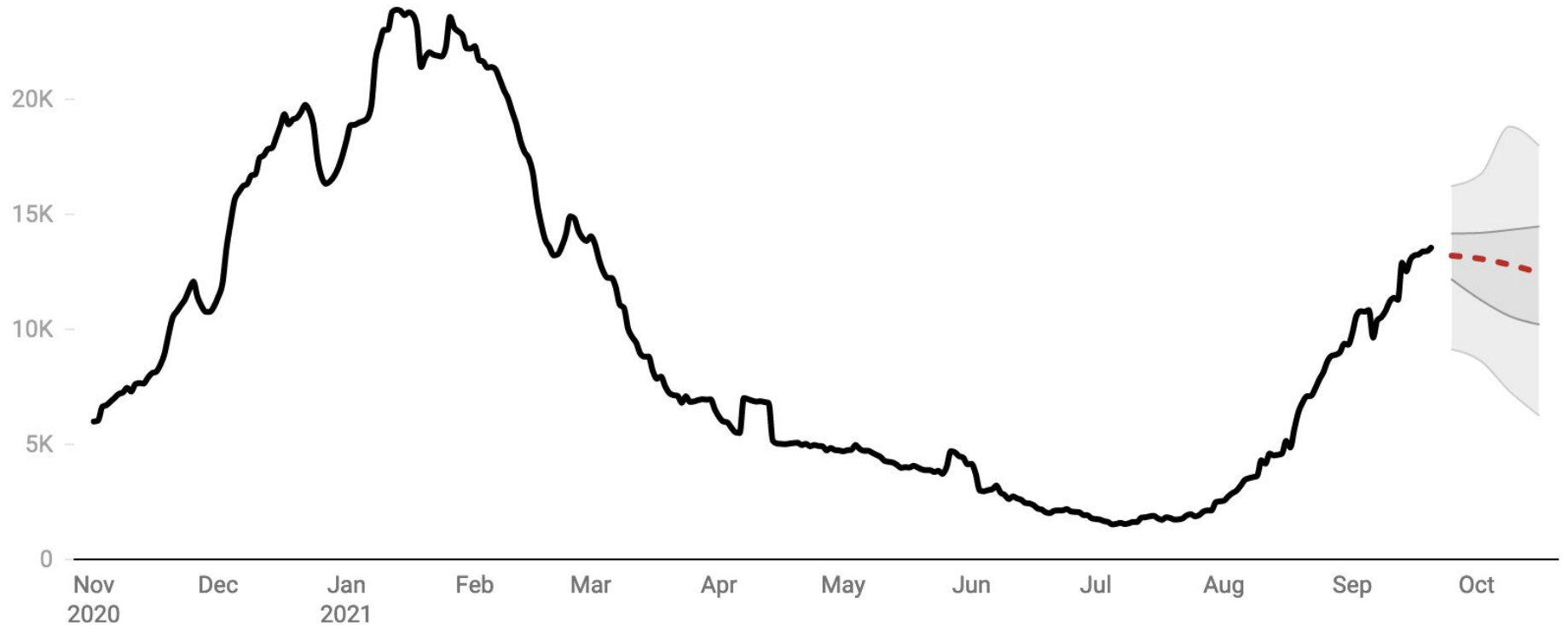
2,087
7-Day Average



Source: Covid Tracking Project; NYT & CDC—September 21, 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.



RESTART VERMONT

Reopening Metrics

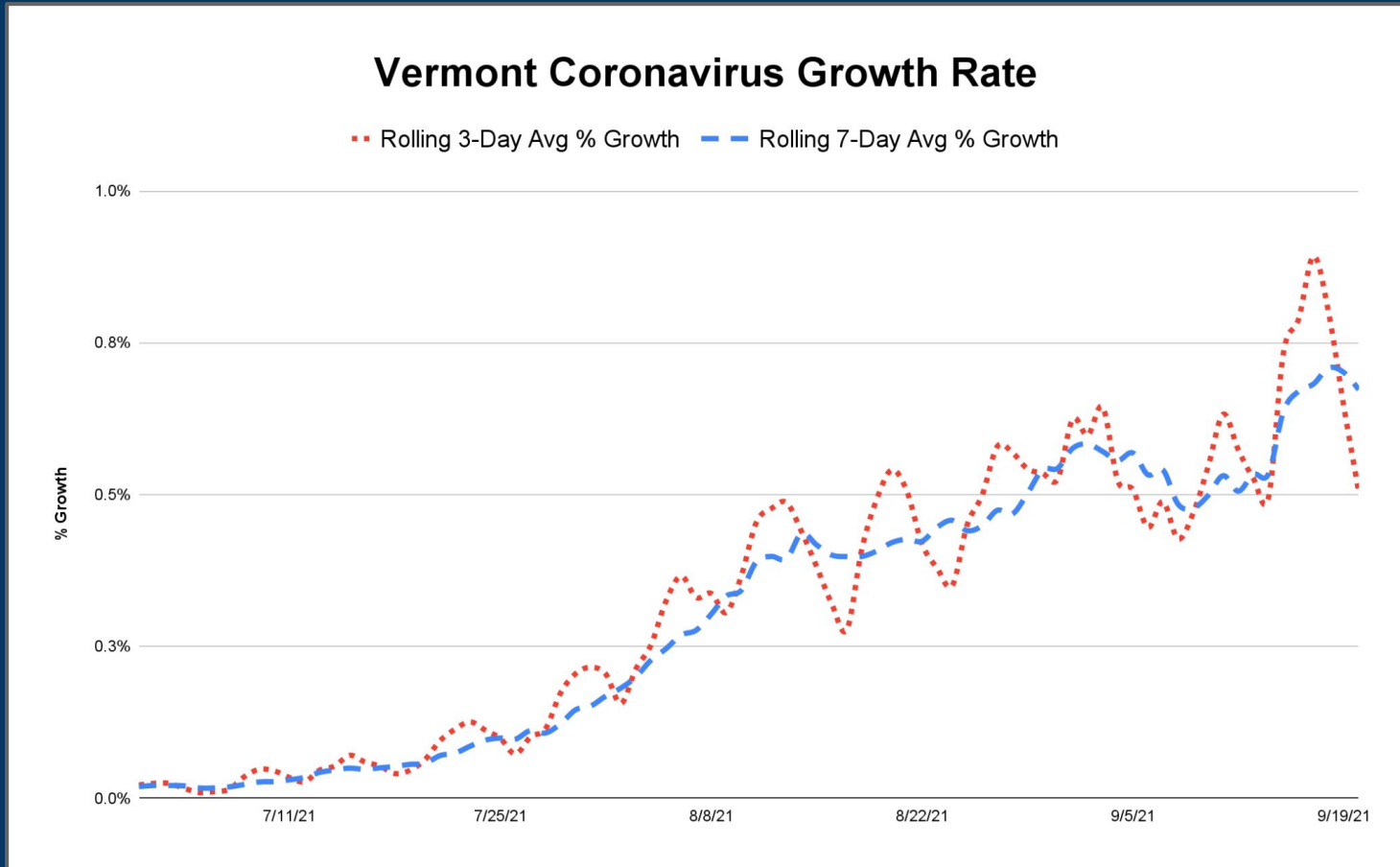
1. Syndromic Surveillance (*retired*)
2. Viral Growth & Reproductive Rates
3. Percentage of New Positive Tests
4. Hospital & Critical Care Bed Capacity

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

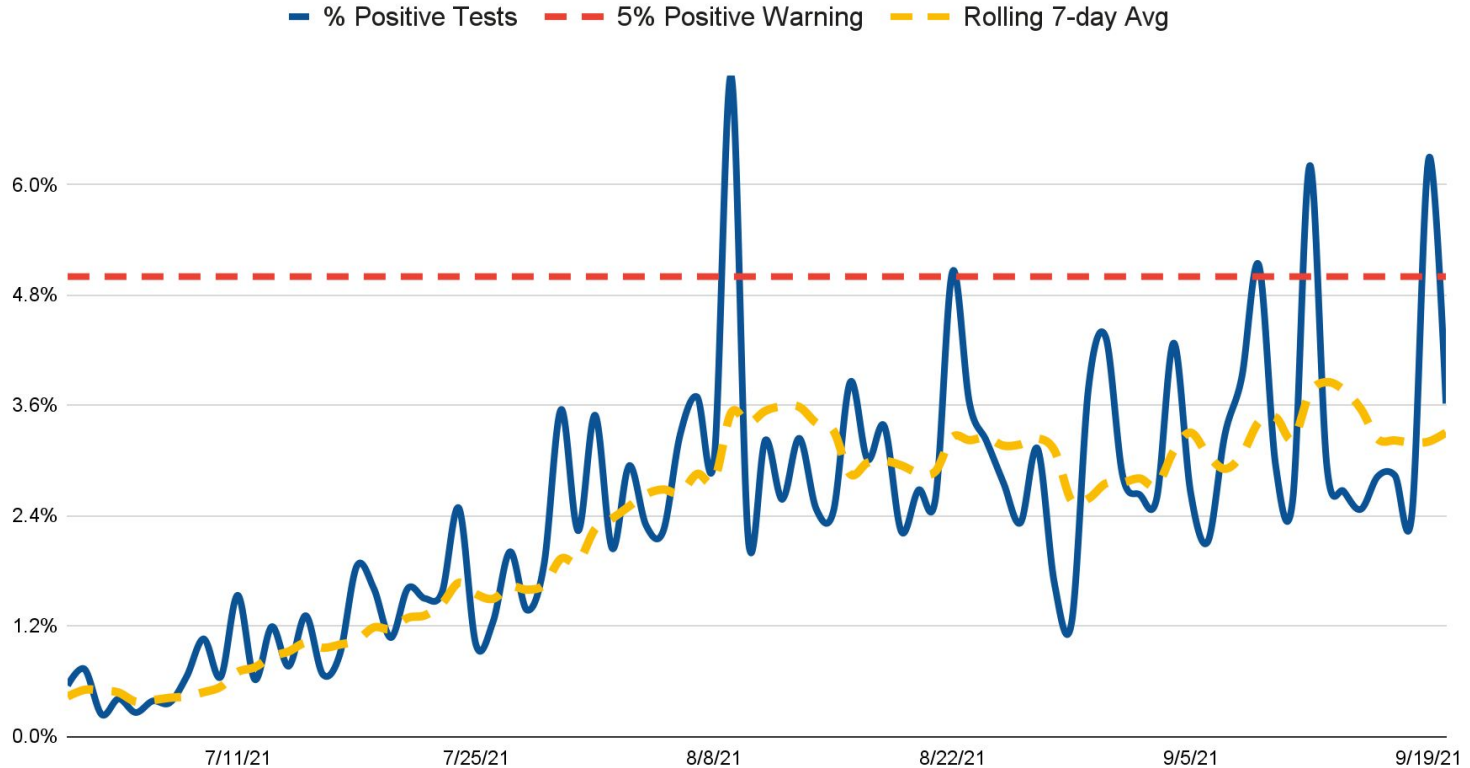
Vermont Department of Health no longer updating syndromic surveillance on a weekly basis.

Viral Growth & Reproductive Rates

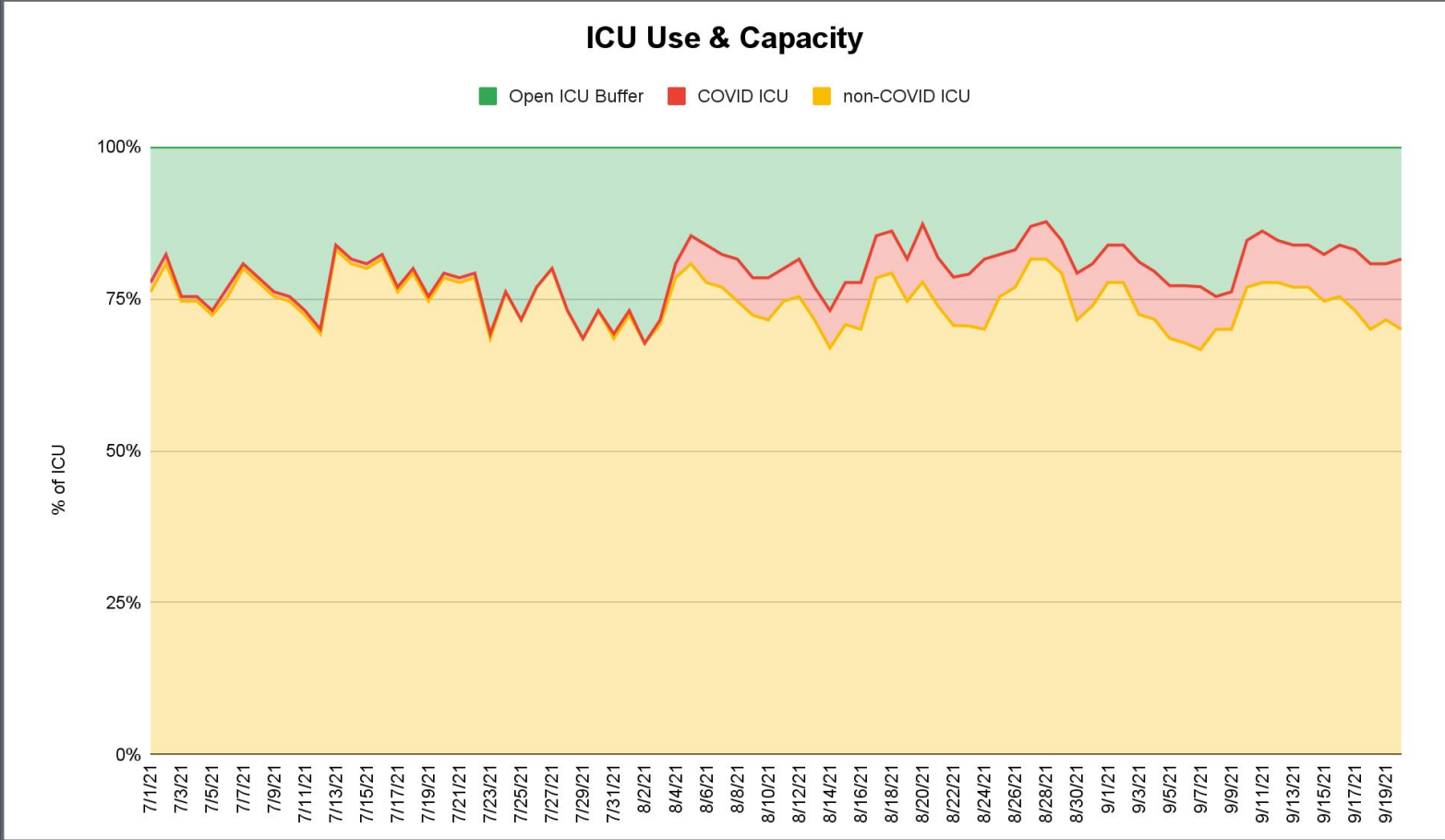


Percentage of New Positive Tests

Percent Tests Yielding New Positive COVID-19 Cases



Hospital & Critical Care Beds



Source: Vermont Department of Health

Vermont Testing

