

COVID-19 Modeling

September 14, 2021

Presentation available at:
dfr.vermont.gov

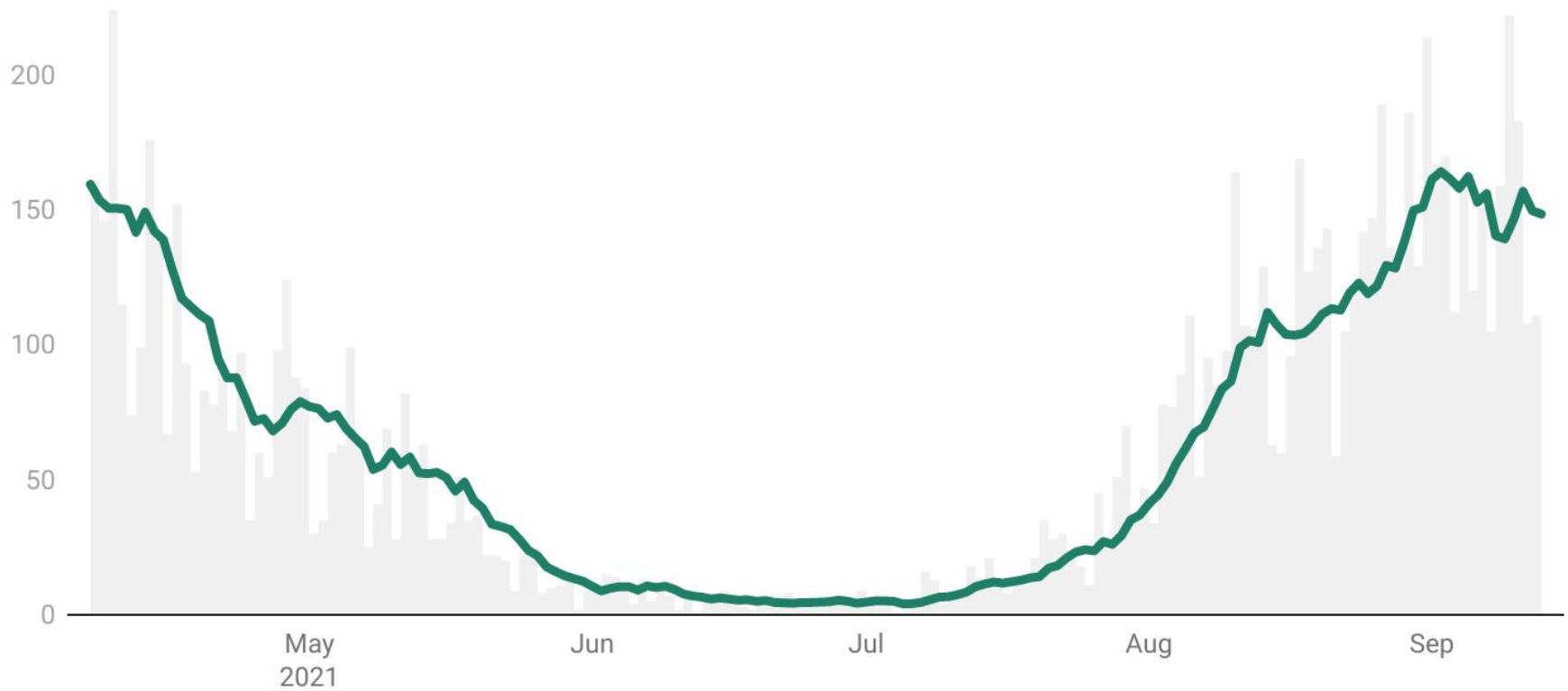
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Vermont Case Data

Vermont COVID-19 Case Growth

7-Day Average



Week-Over-Week Changes in Newly Detected Cases: Vermont

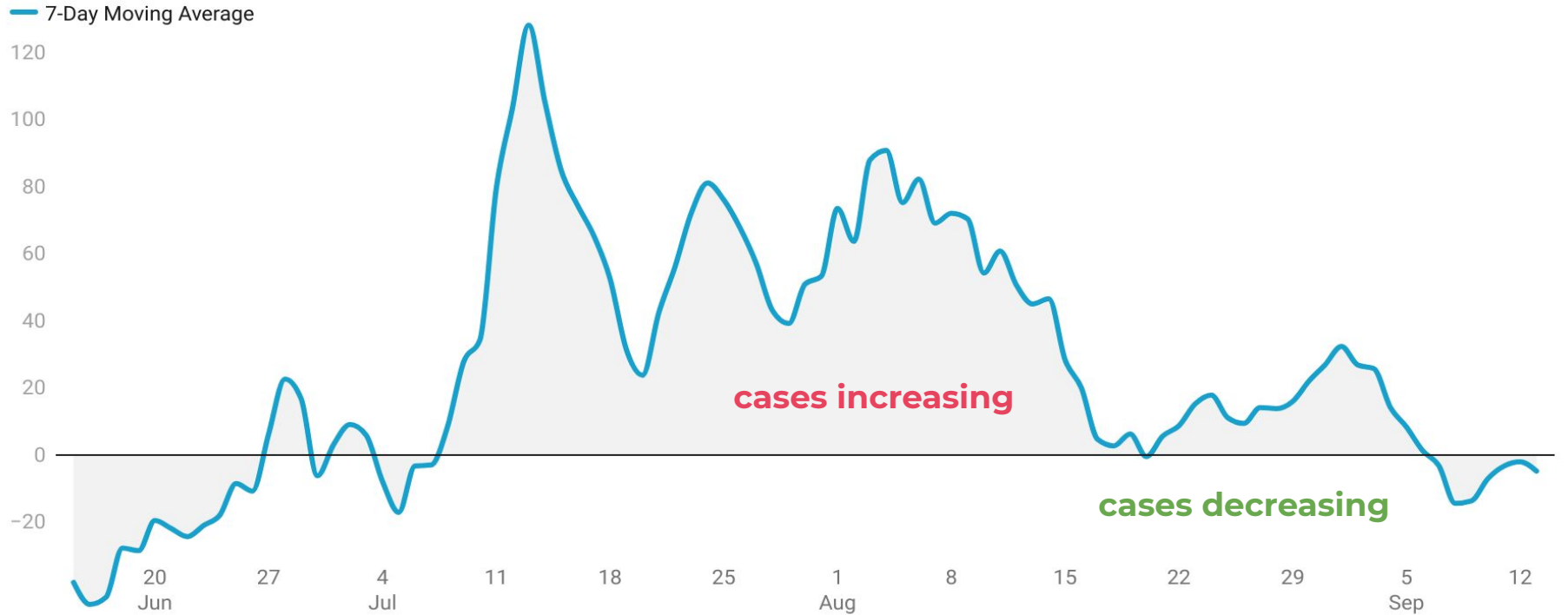
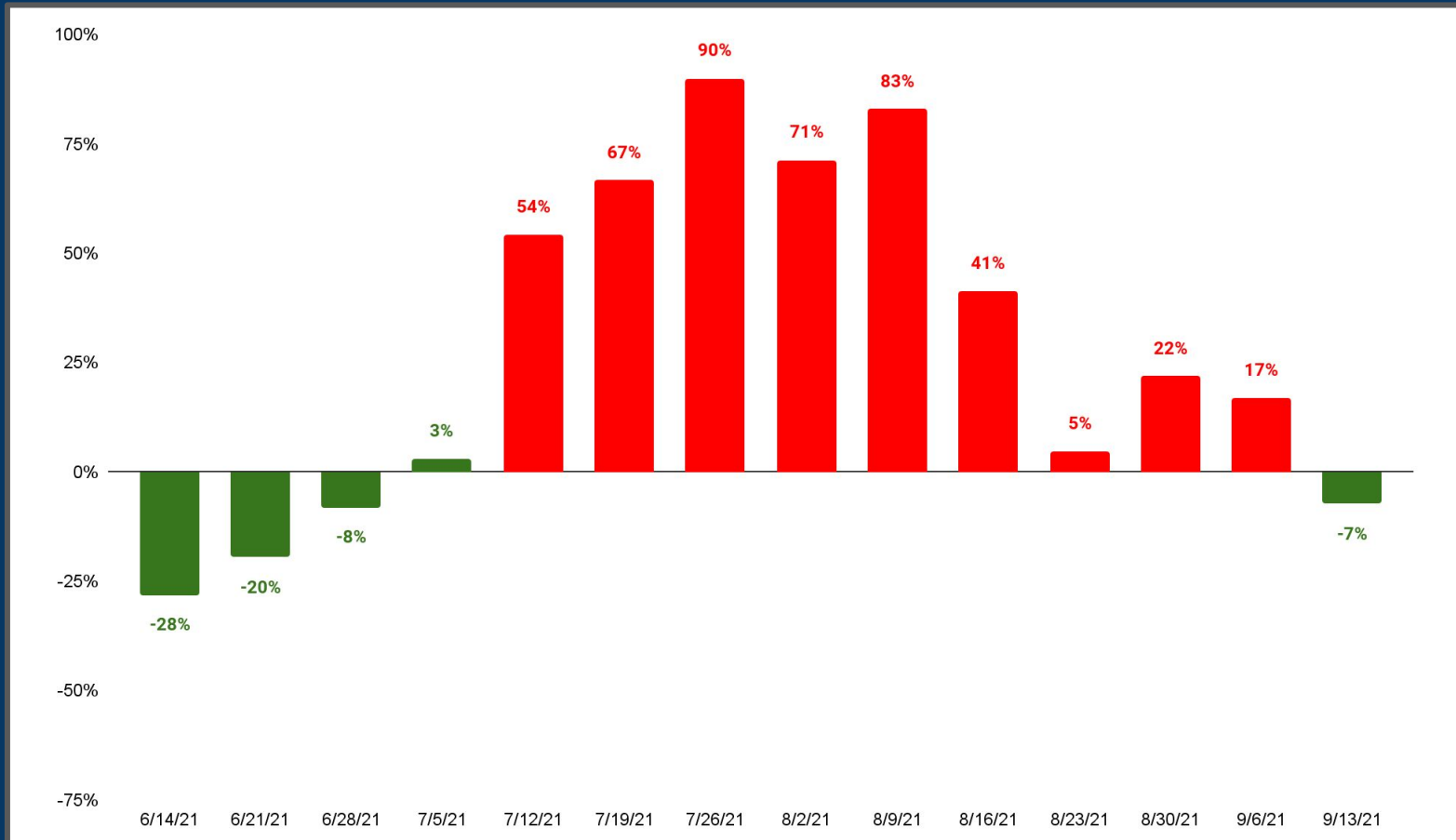
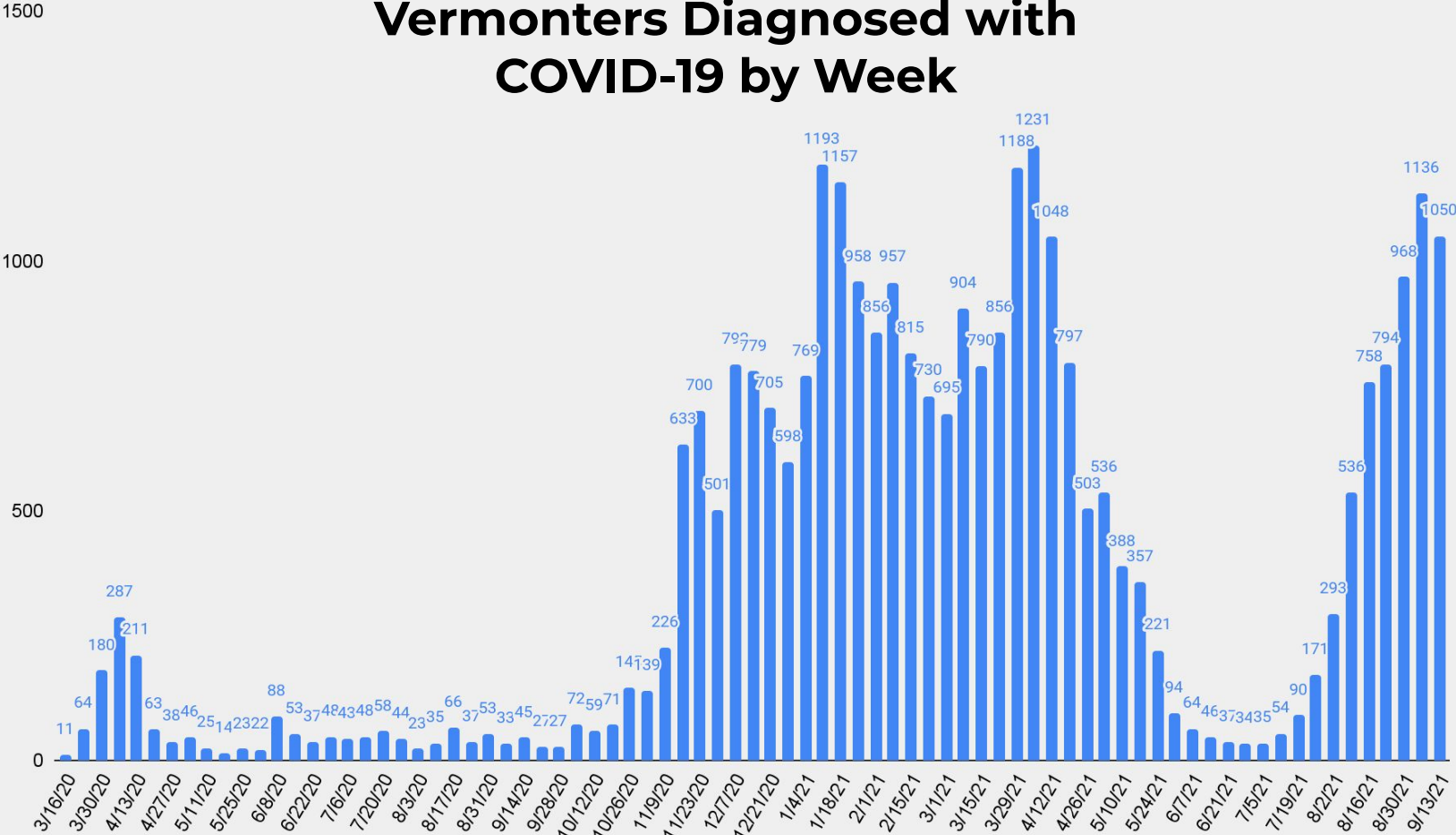


Chart: Vermont DFR Modeling Team • Source: CDC • Created with Datawrapper

Change in Vermont Weekly Case Growth

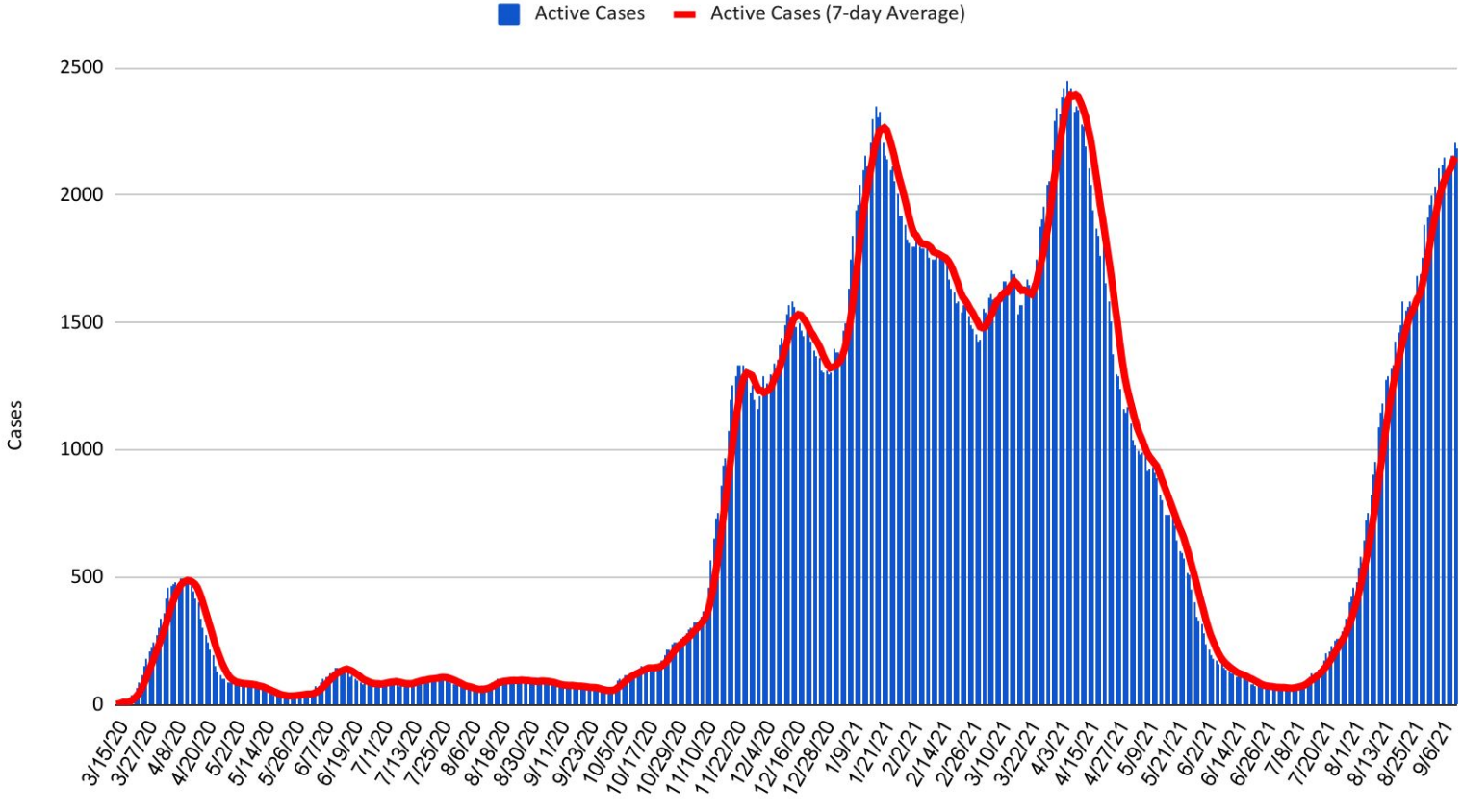


Vermonters Diagnosed with COVID-19 by Week



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 13, 2021

Vermont Daily Covid-19 Testing

15000

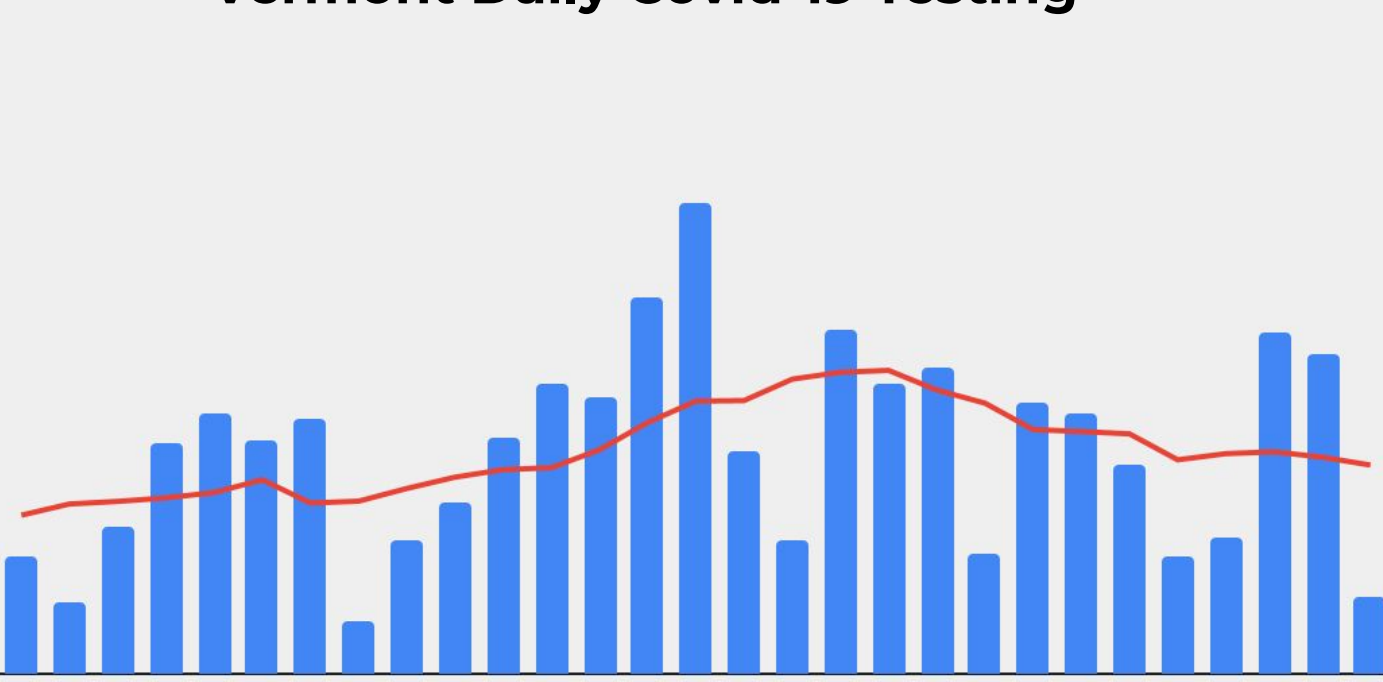
10000

5000

0

8/15/21 8/16/21 8/17/21 8/18/21 8/19/21 8/20/21 8/21/21 8/22/21 8/23/21 8/24/21 8/25/21 8/26/21 8/27/21 8/28/21 8/29/21 8/30/21 8/31/21 9/1/21 9/2/21 9/3/21 9/4/21 9/5/21 9/6/21 9/7/21 9/8/21 9/9/21 9/10/21 9/11/21 9/12/21

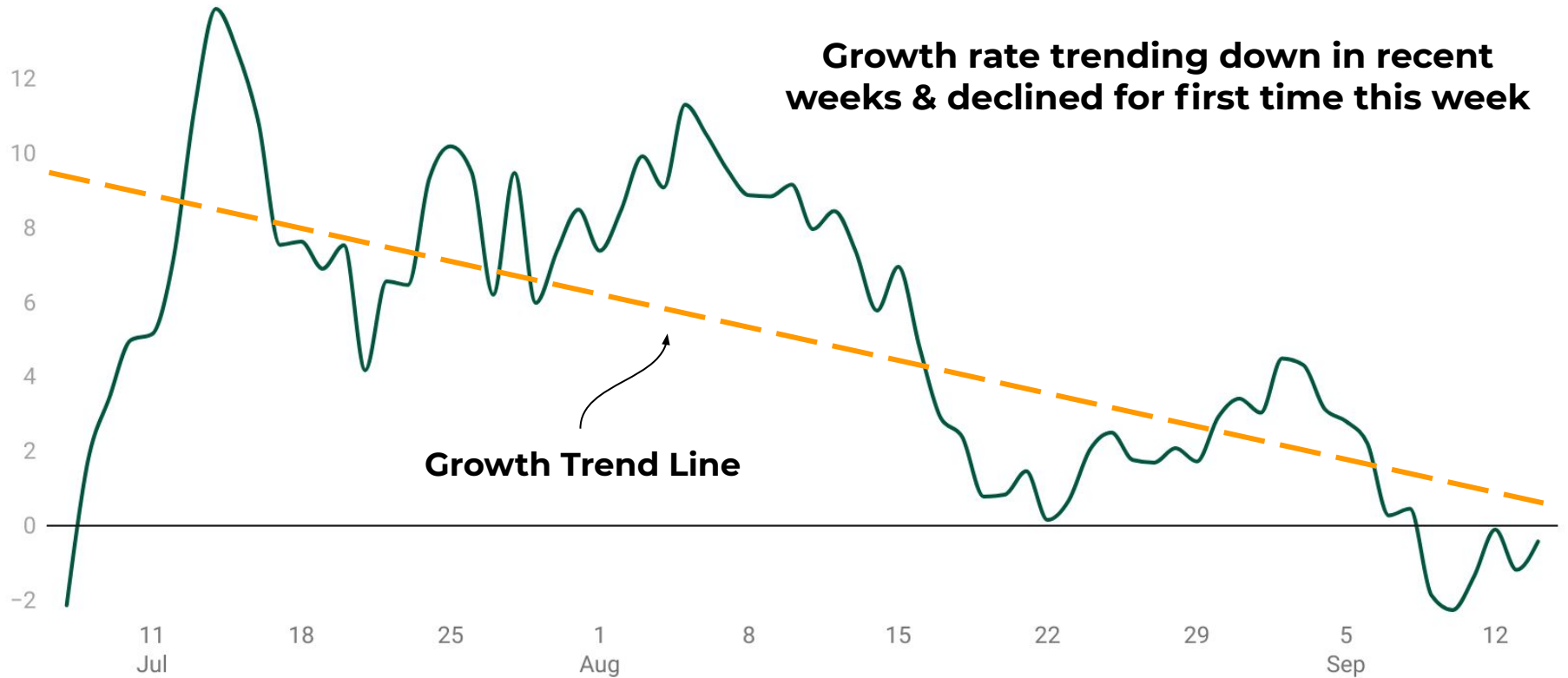
■ Daily Tests — 7-Day Average



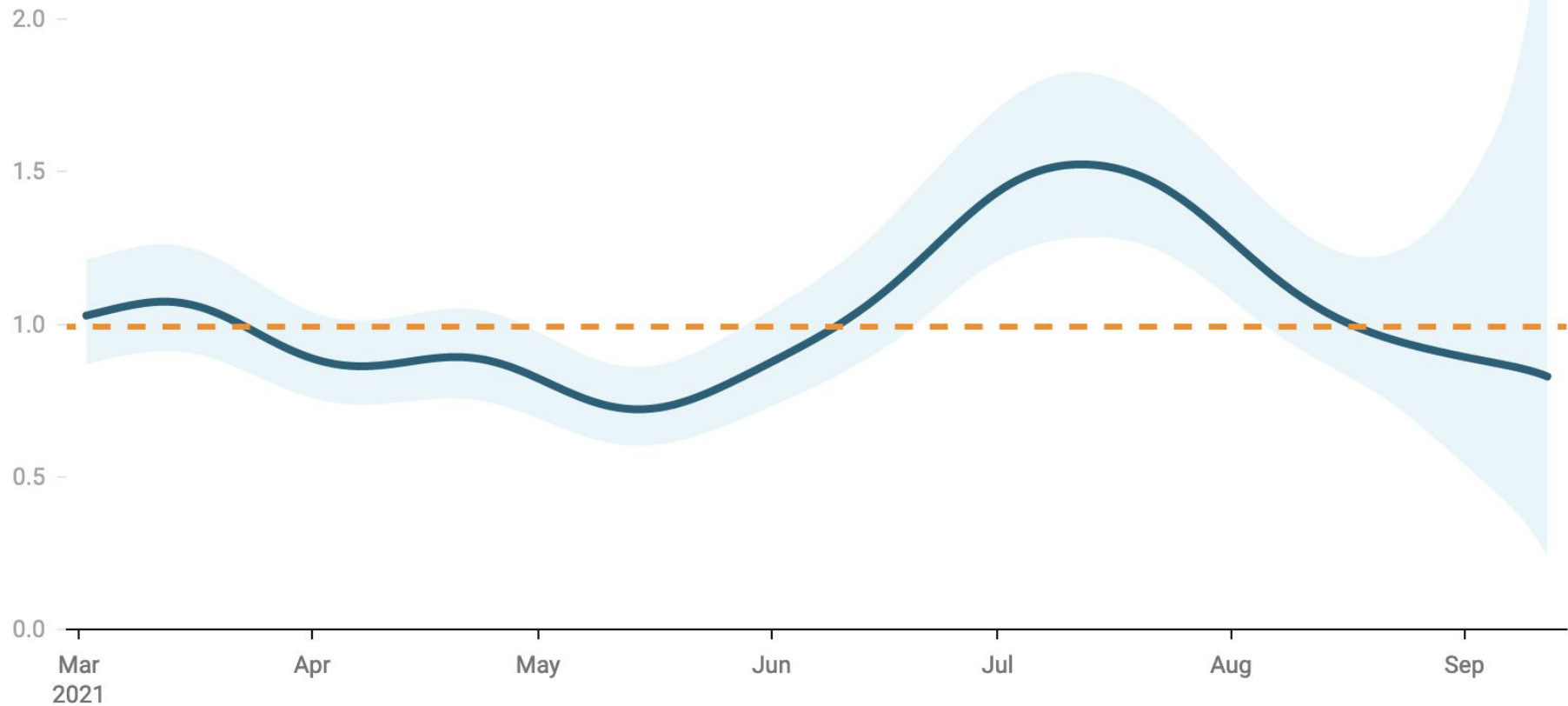
Source: Vermont Dept. of Health—September 13, 2021

Vermont Case Growth Trends

Daily Growth Rate Change in Vermont's 14-Day Case Average



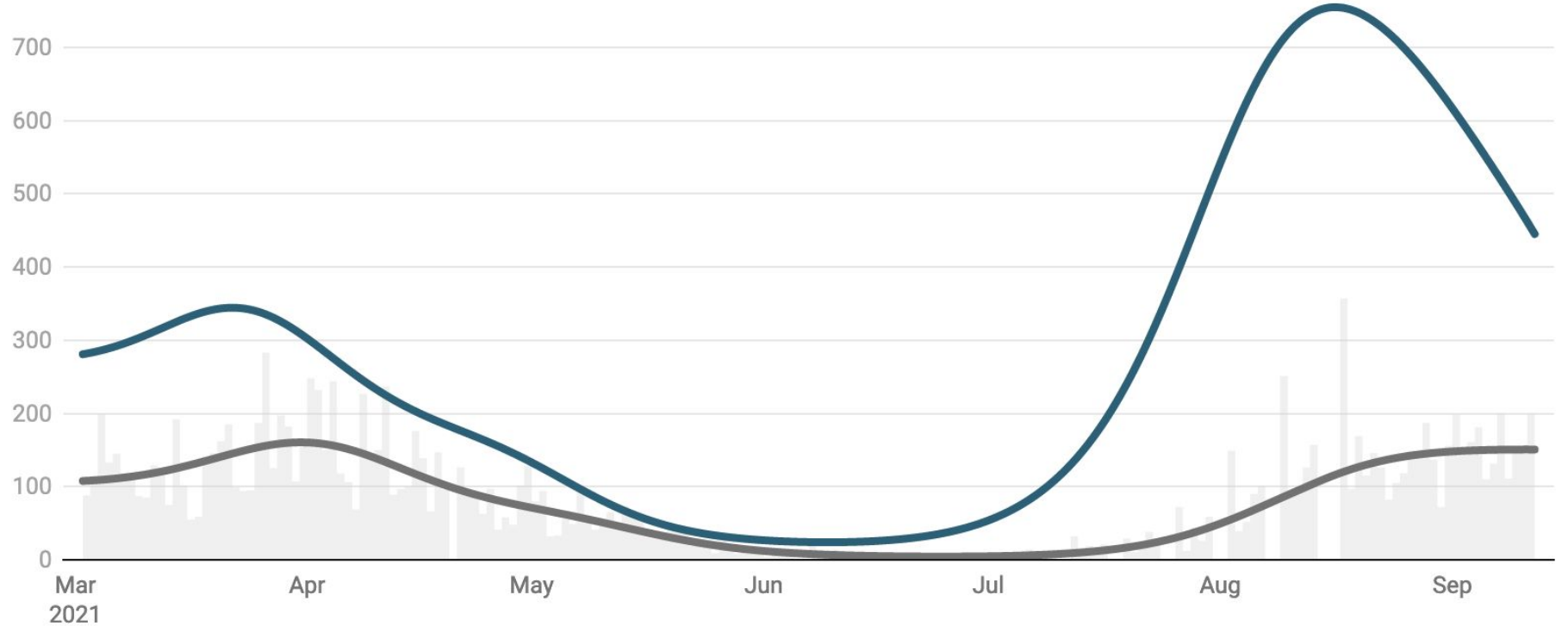
COVID-19 R_t in Vermont



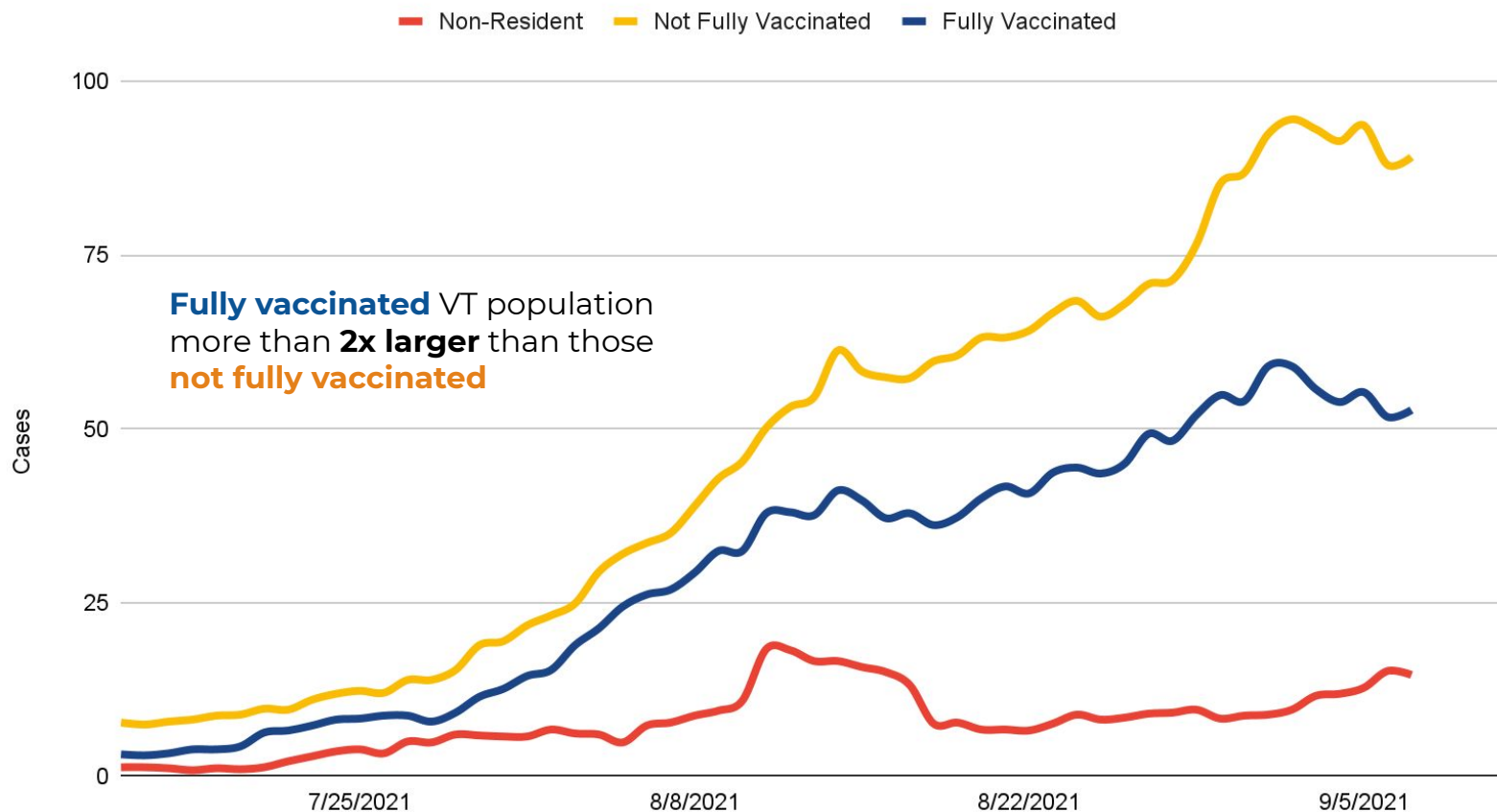
Estimated vs Detected COVID-19 Cases in Vermont

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

— Detected Cases — Estimated True Cases



Vermont Covid-19 Cases (Raw Count 7-Day Average)

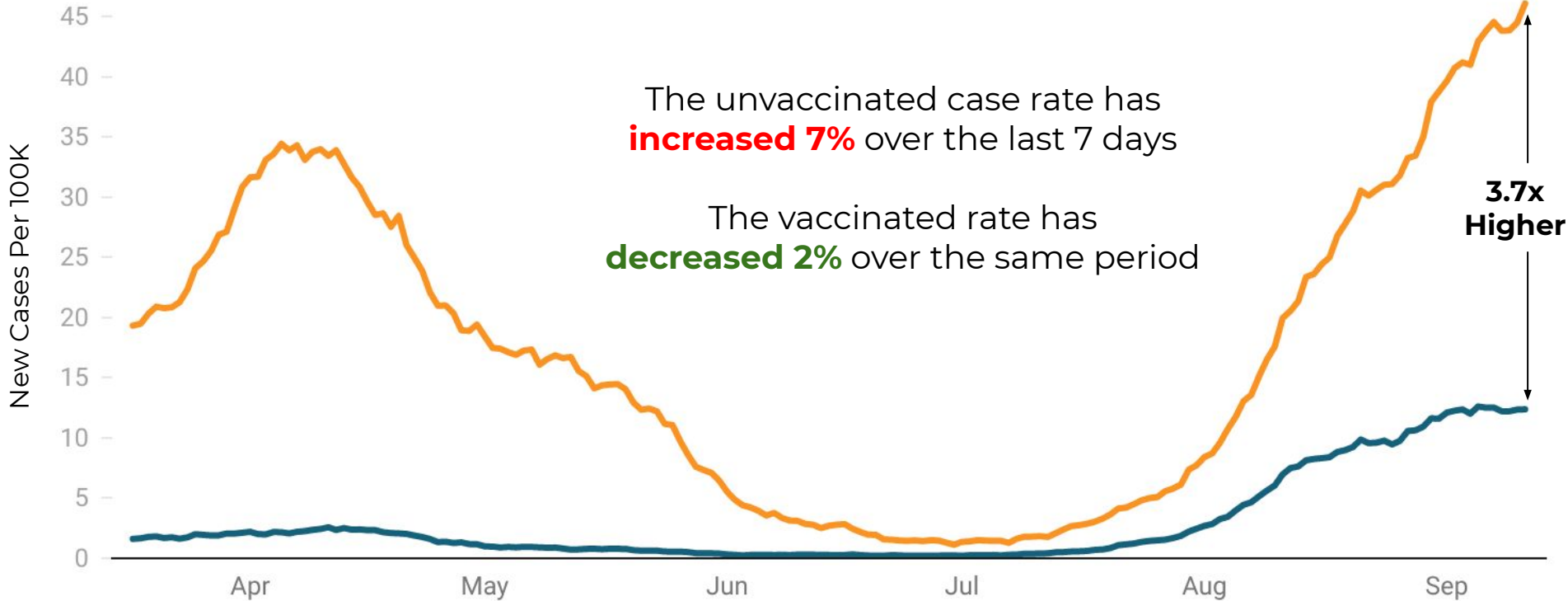


Source: Vermont Dept. of Health—September 11, 2021; not fully vaccinated population includes children 0-11 & eligible unvaccinated adults; population estimates using 2019 US census data

Vermont COVID-19 Cases

New Daily Covid-19 Cases Per 100K (14-Day Average)

— Not Fully Vaccinated — Fully Vaccinated



The unvaccinated case rate has **increased 7%** over the last 7 days

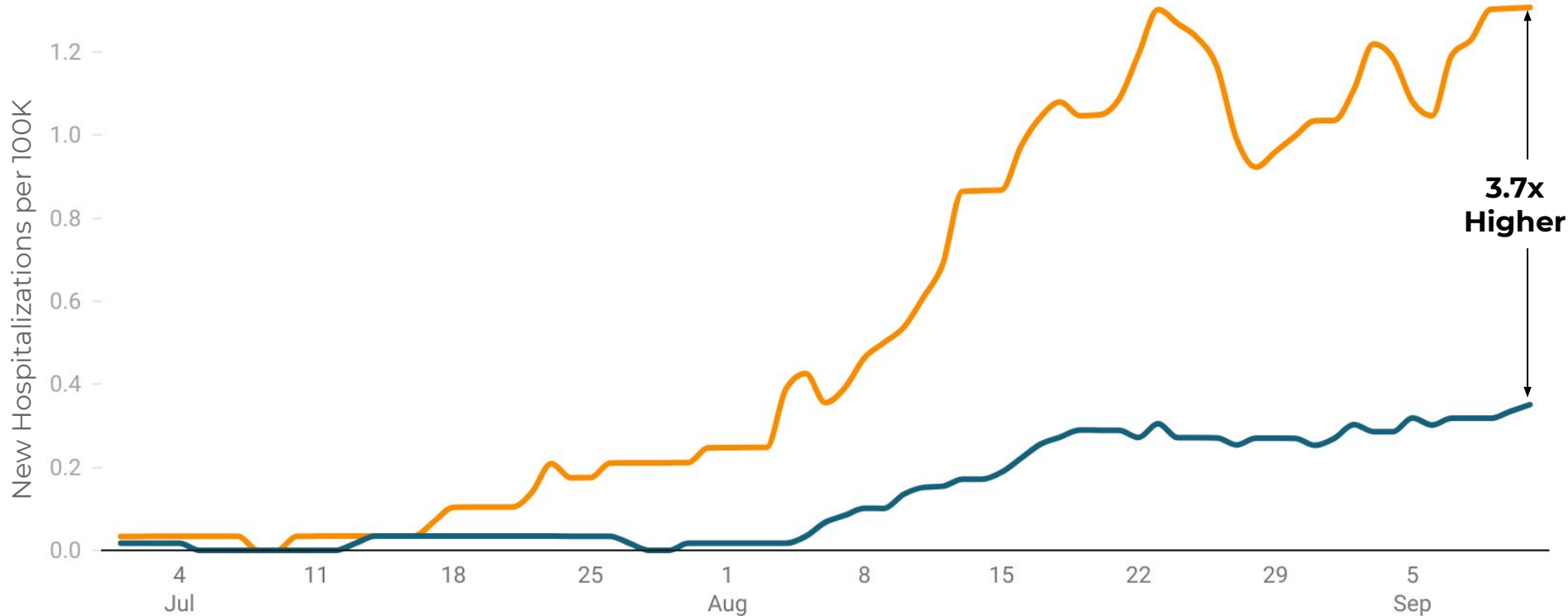
The vaccinated rate has **decreased 2%** over the same period

3.7x Higher

Vermont COVID-19 Hospitalizations

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

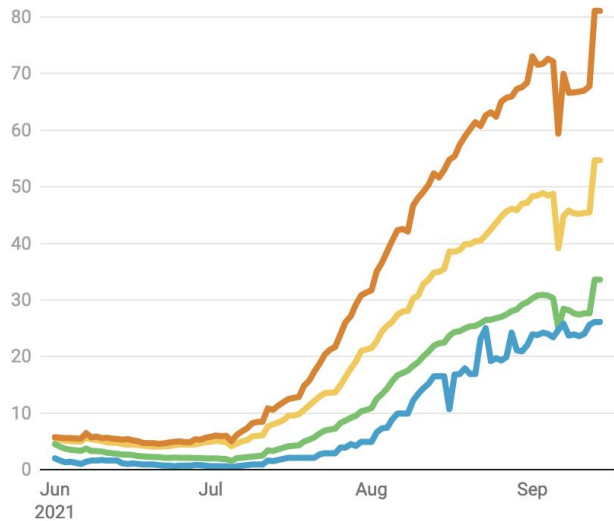
Not Fully Vaccinated Fully Vaccinated



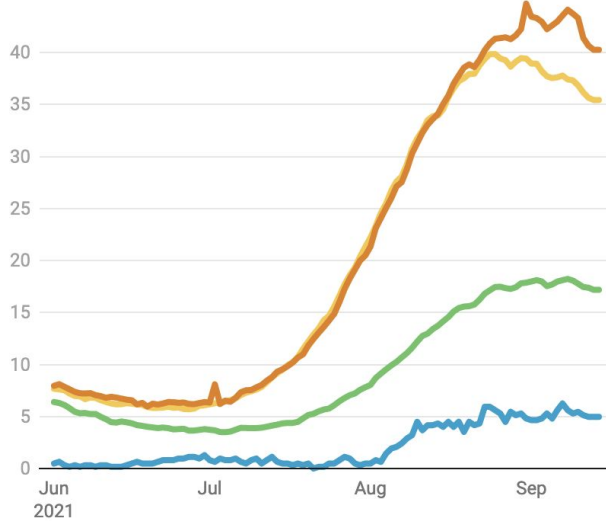
3.7x Higher

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

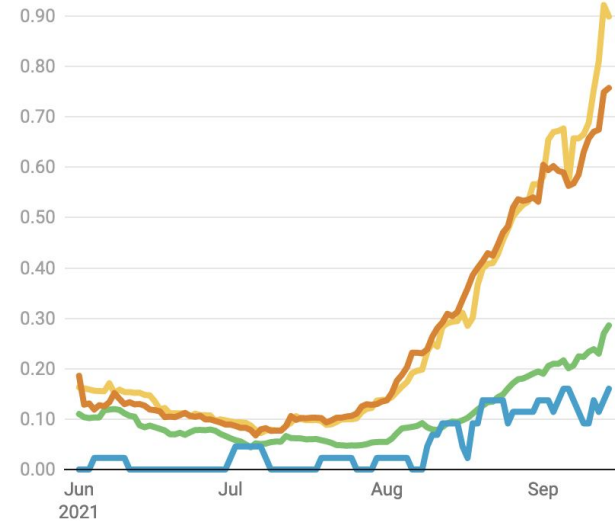
■ Bottom Third Vaccinated States
 ■ Middle Third Vaccinated States
 ■ Top Third Vaccinated States
 ■ Vermont



Infections per 100K

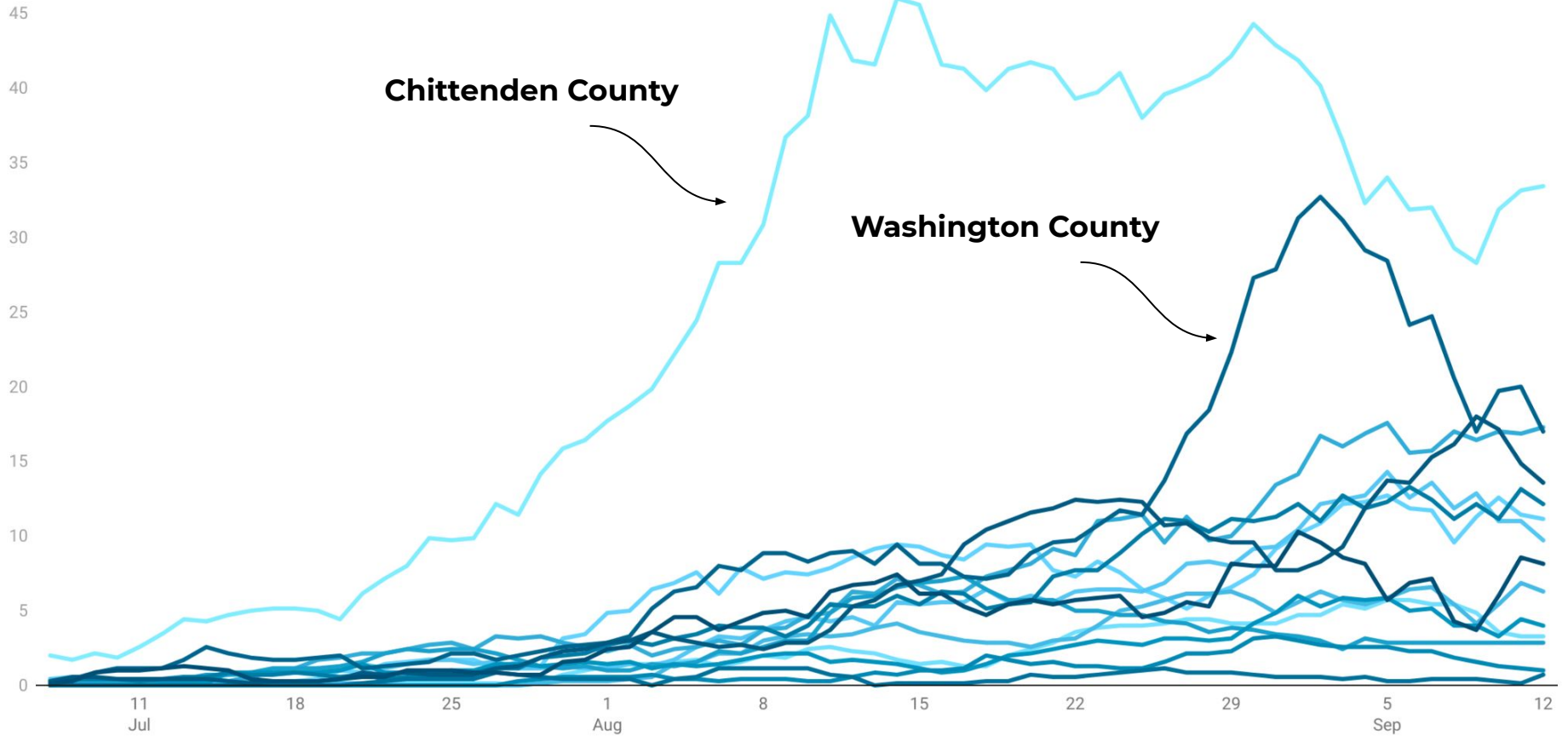


Hospitalizations per 100K



Deaths per 100K

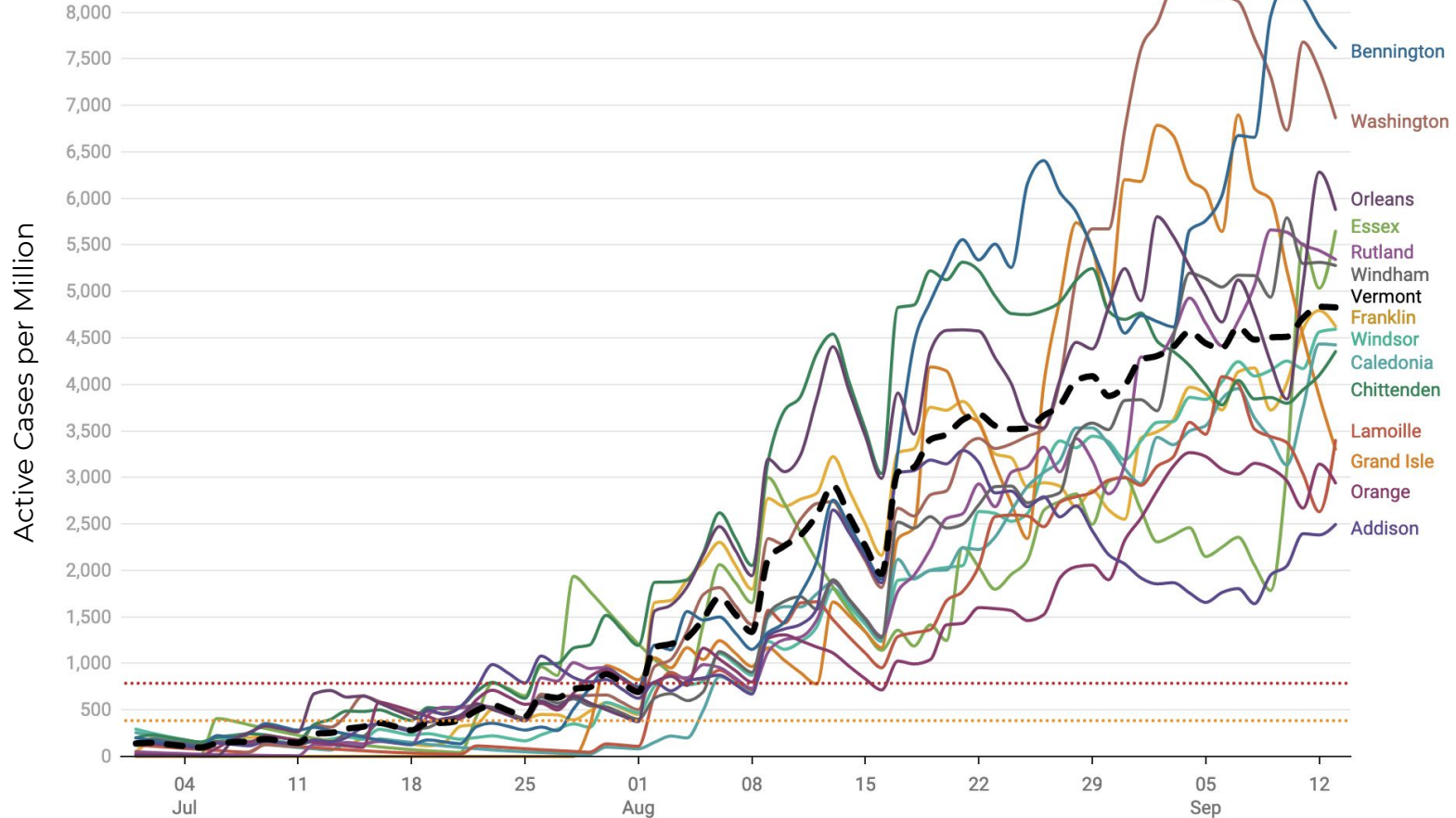
Raw Daily Case Totals By County (7-Day Average)



Chittenden County

Washington County

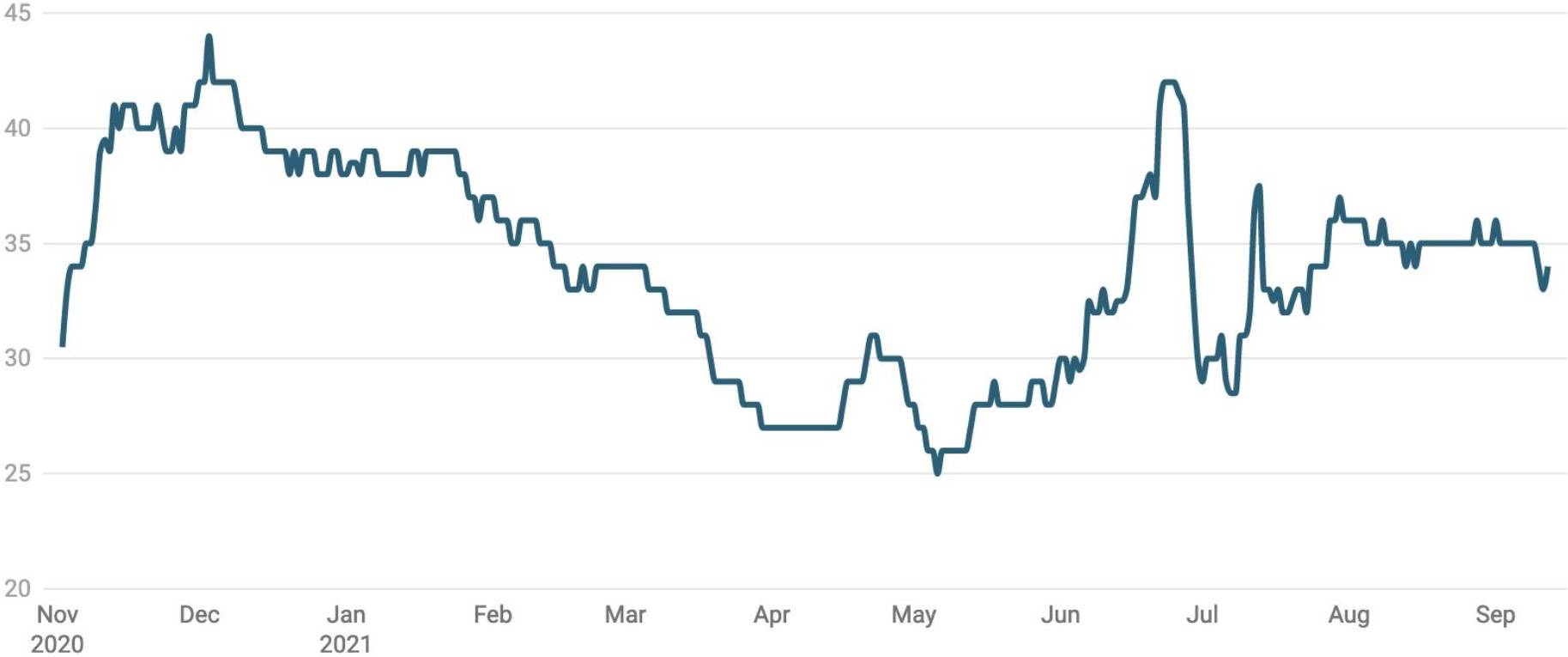
Active Cases in Vermont Counties



Source: Vermont Dept. of Health—September 12, 2021; DFR Active Case Algorithm (per million)

Age of Infected Vermonters

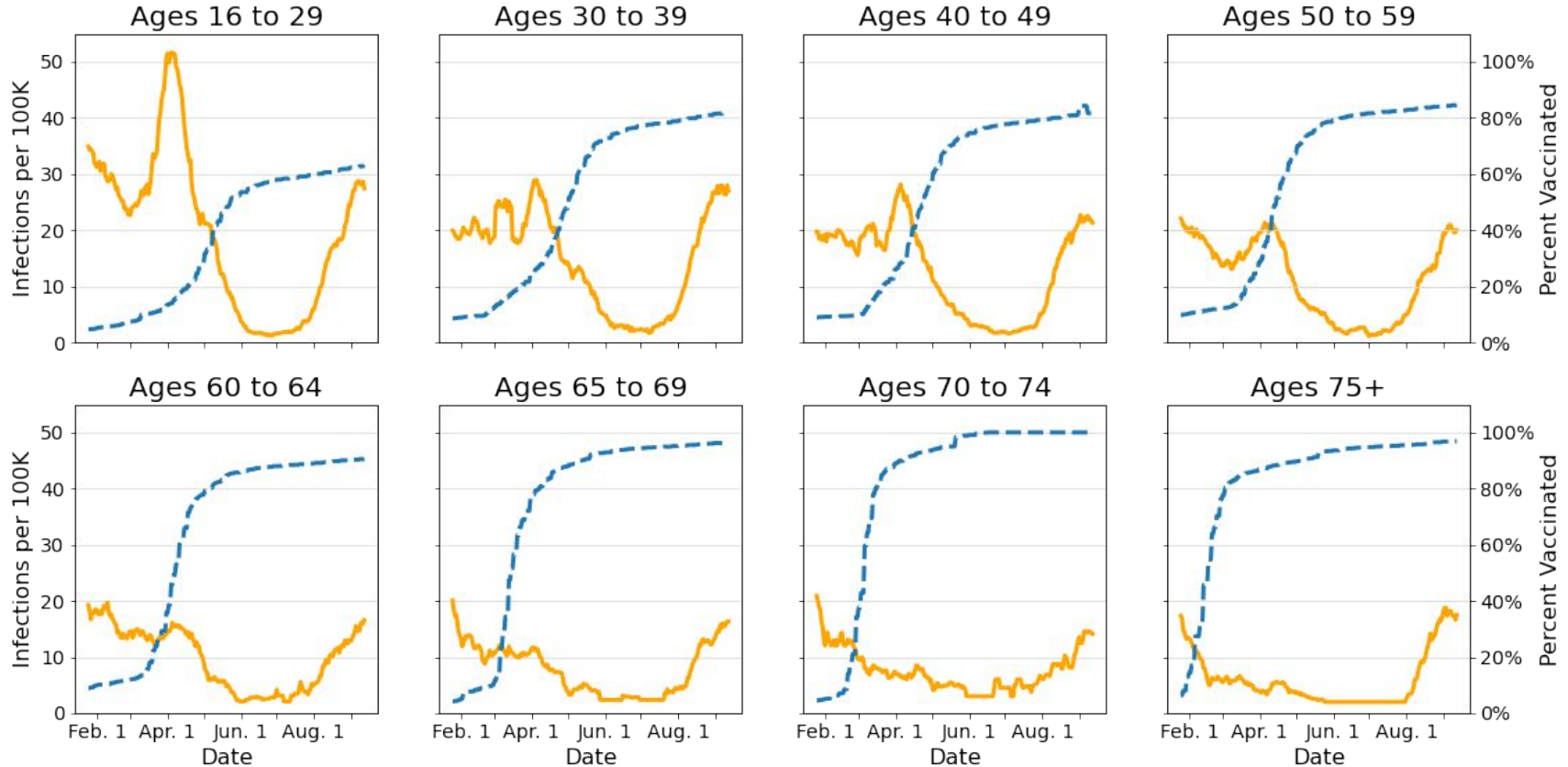
Median age of COVID positive individuals in VT over the last 14 days.



Source: VDH—September 13, 2021

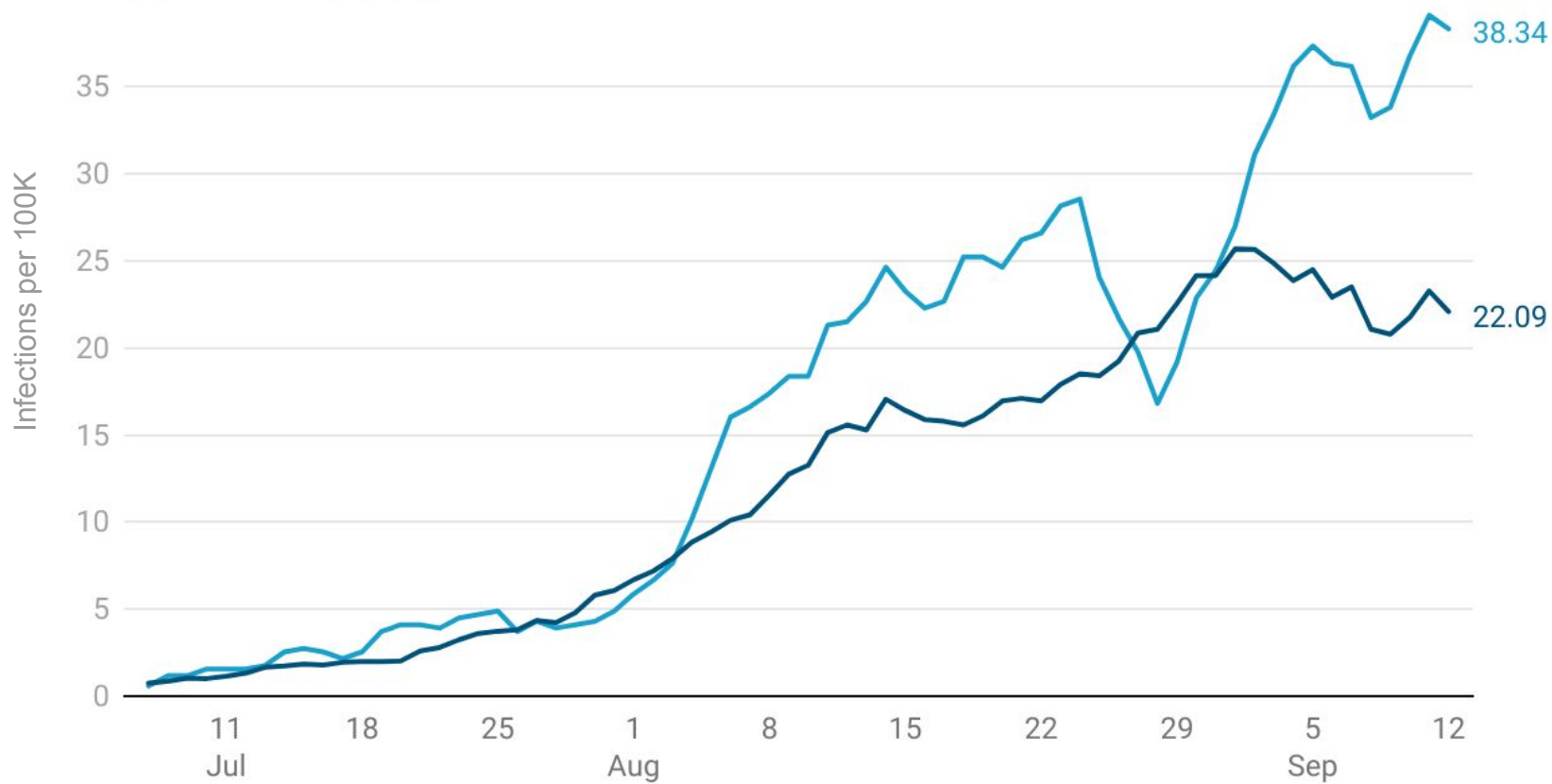
Vermont Case Rate & Vaccination by Age Band

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

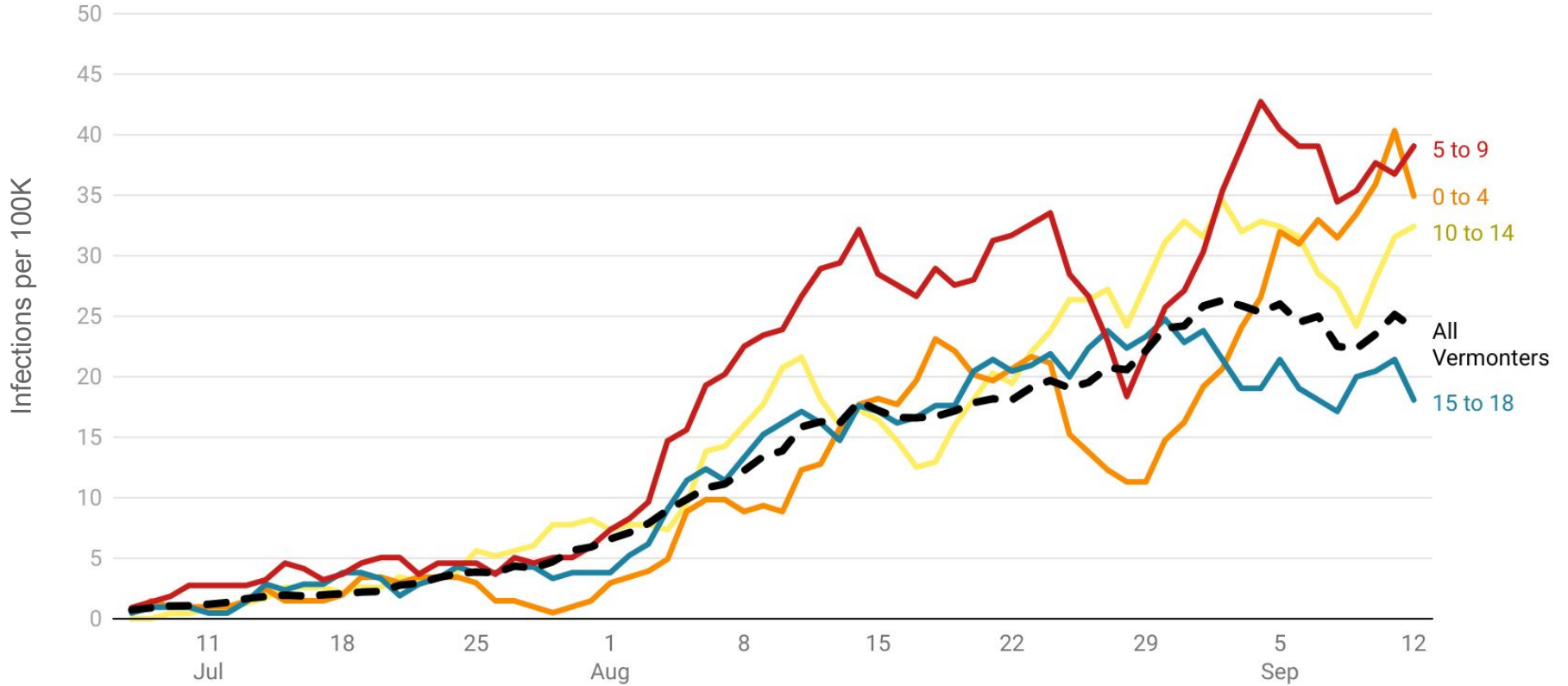


Vermont Case Rates By Age (7-Day Average)

0 to 11 12 and Older

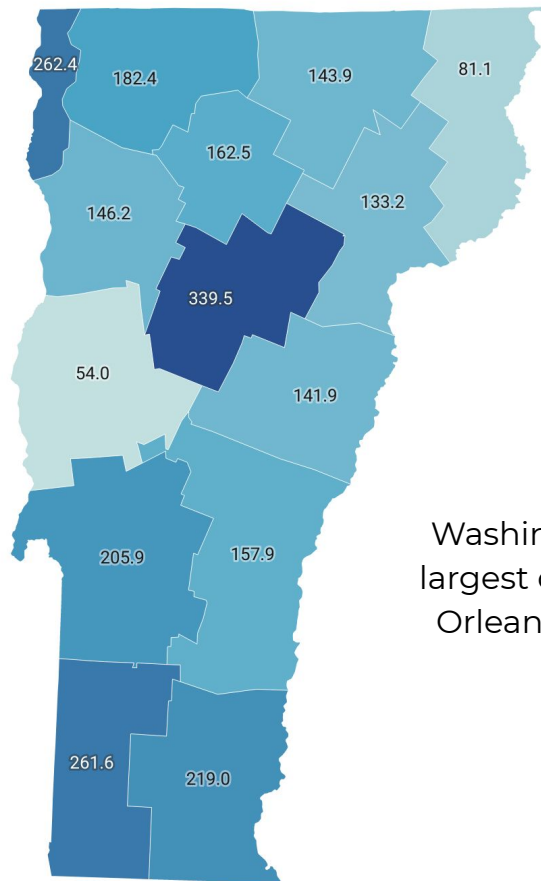


Vermont Case Rates By Age (7-Day Average)



Vermont Weekly Cases by County (per 100,000)

Results Reported August 31 to September 6

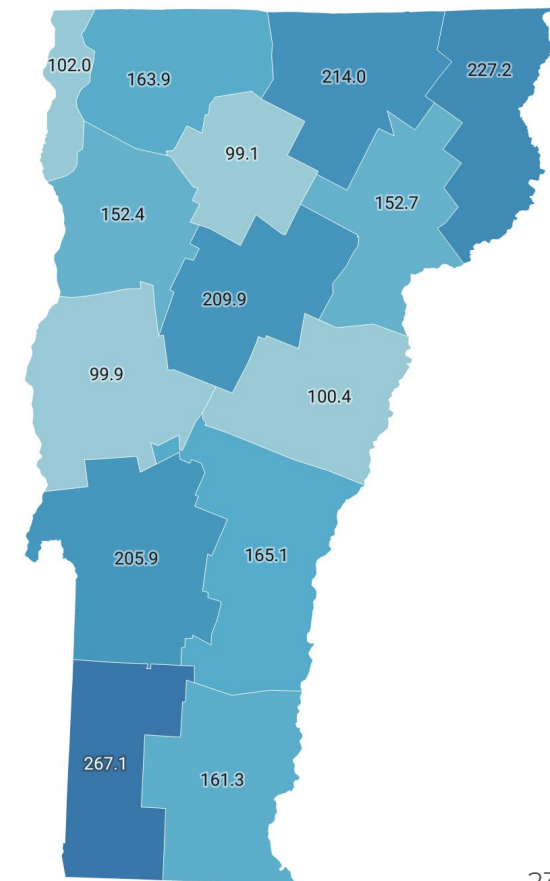


Covid-19 case rates **decreased slightly** this past week

Washington County and Grand Isle saw the largest decreases week over week; Essex and Orleans saw the largest case rate increases

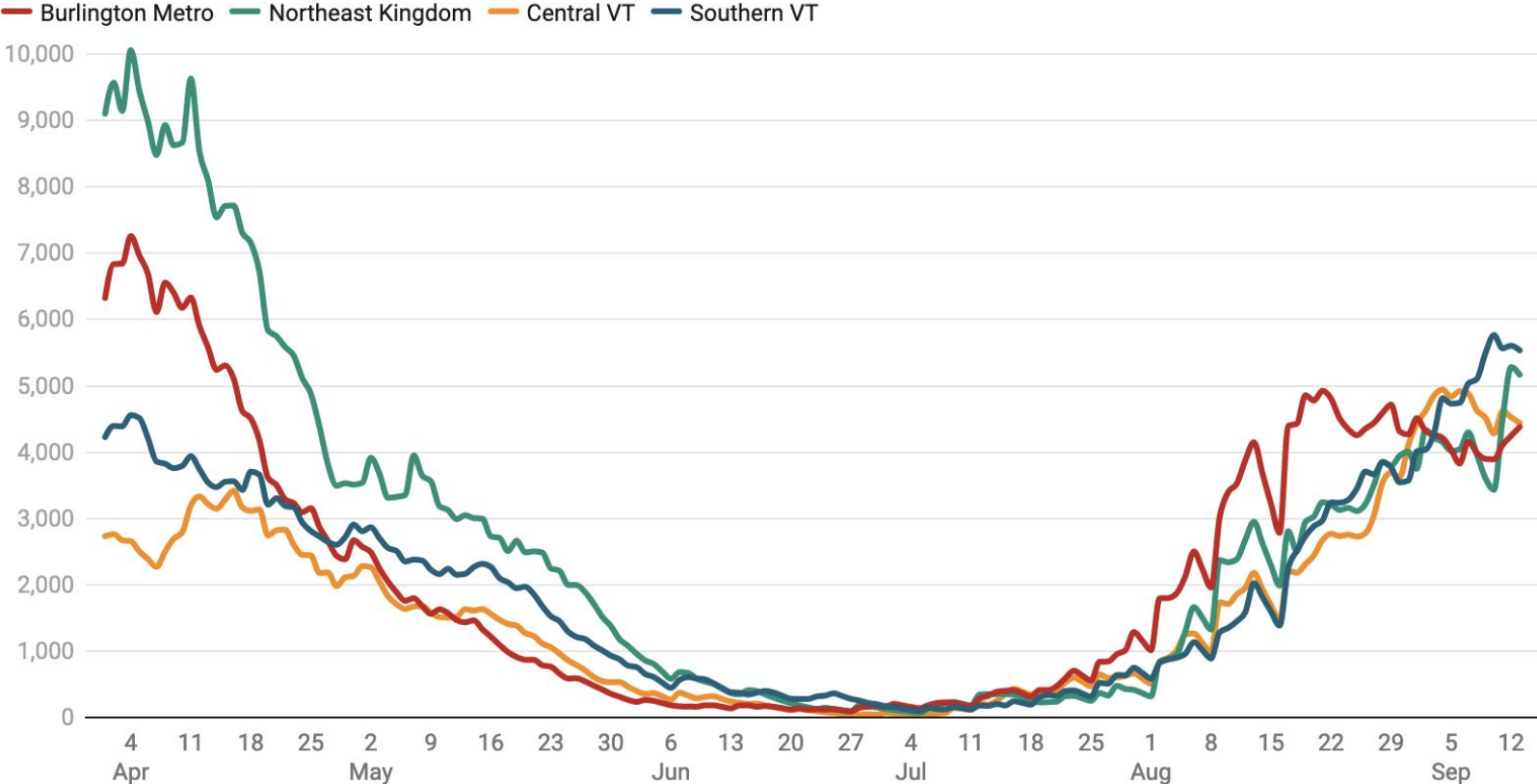
Vermont Weekly Cases by County (per 100,000)

Results Reported September 7 to 13



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).



Source: VDH & DFR Active Case Algorithm —September 13, 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	28,744	26,892	480	668	704
		93.6%	1.7%	2.3%	2.4%

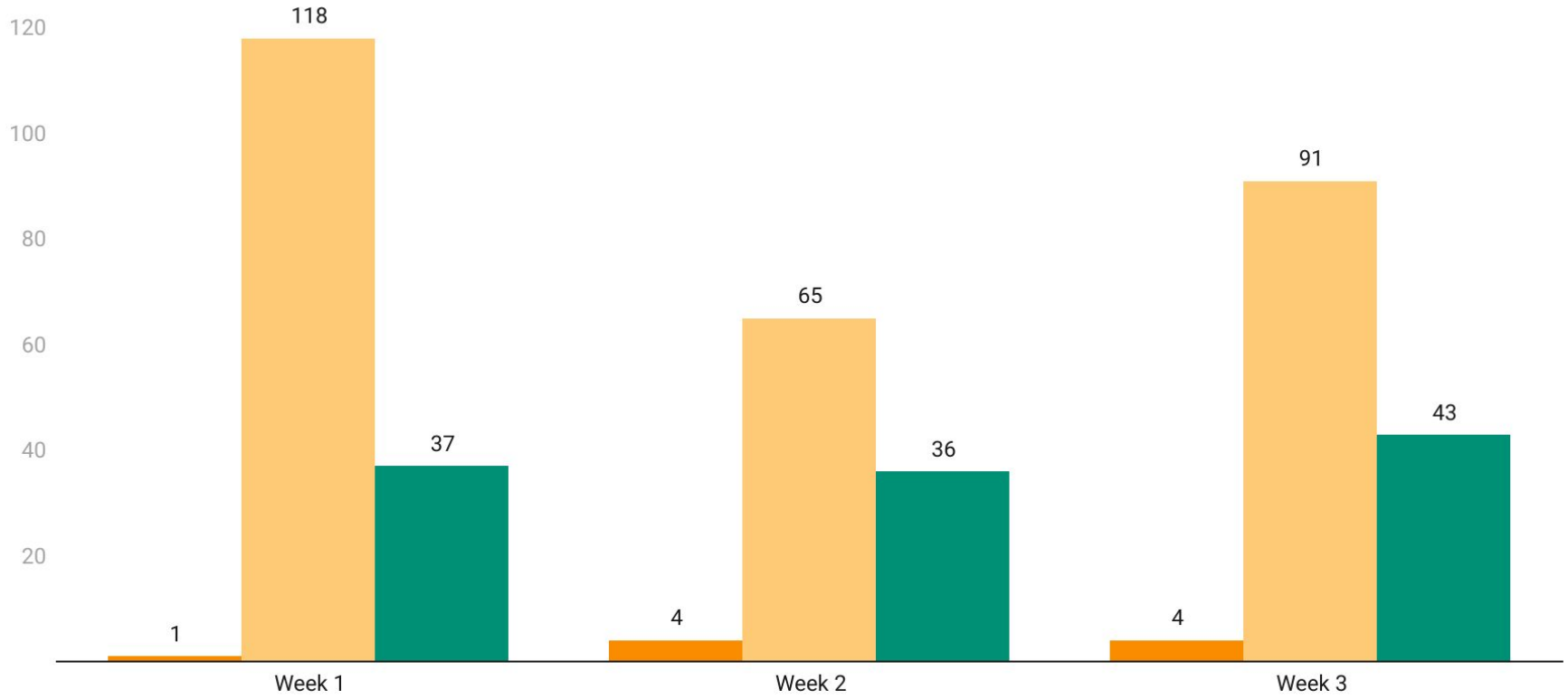
Week 1: **37 positive cases** out of 12,623 tests

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

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

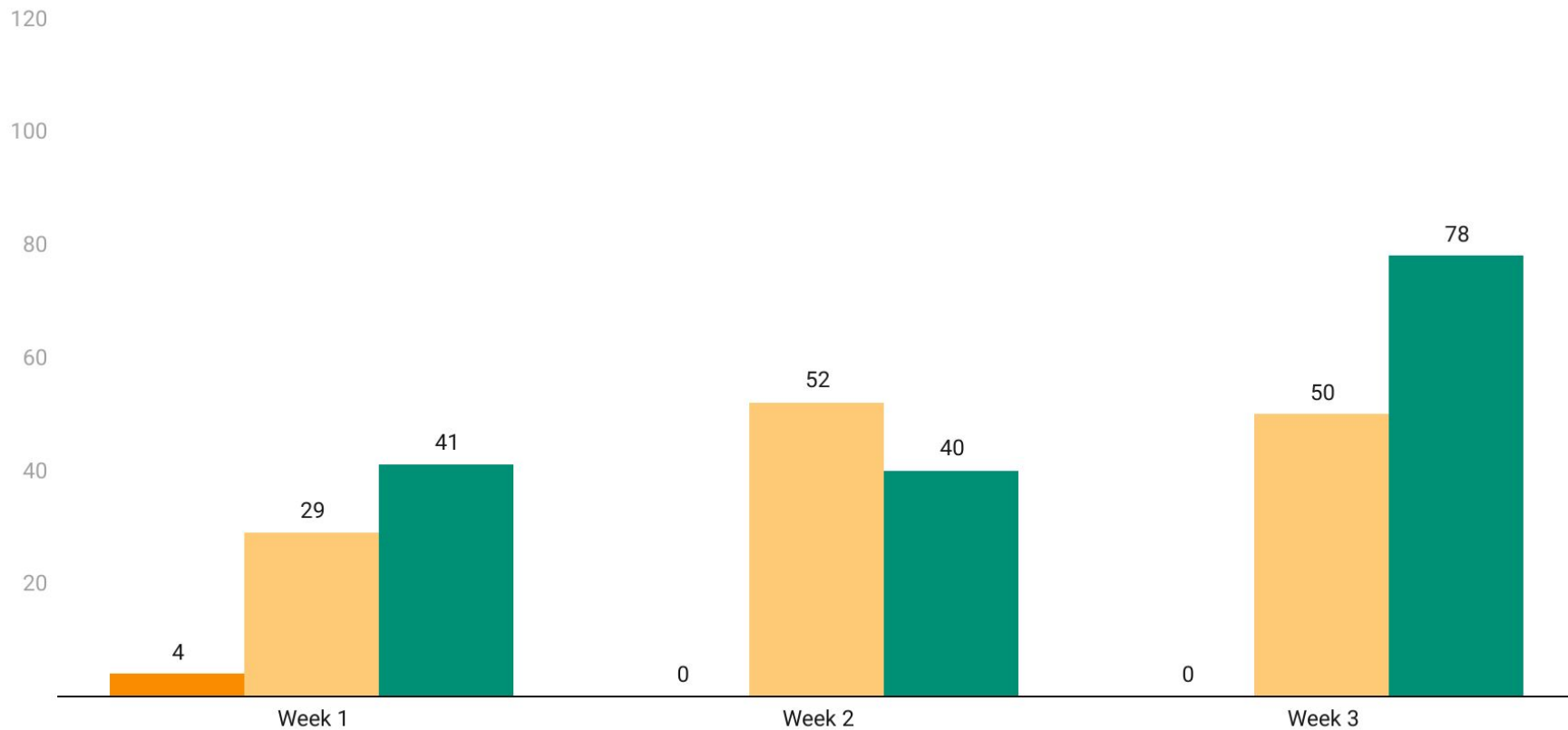
Vermont Higher Education Cases By Semester

Fall 2020 Spring 2021 Fall 2021



Vermont K-12 Cases By Semester

Fall 2020 Spring 2021 Fall 2021



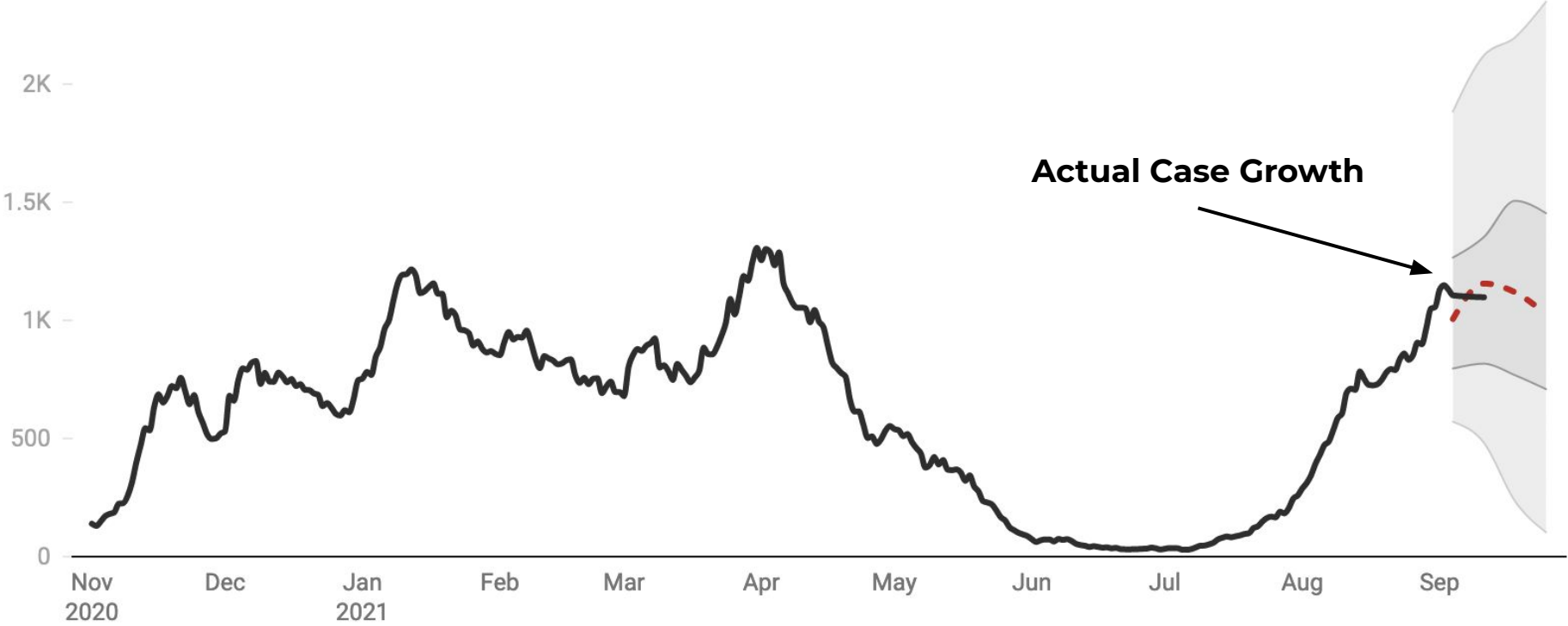
Active Outbreaks in Long Term Care Facilities

Facility Name	Total COVID-19 Cases
Cedar Hill Skilled Nursing Facility, <i>Windsor</i>	30
Vernon Green Nursing Home, <i>Vernon</i>	28
Ethan Allen Residence, <i>Burlington</i>	25
Vermont Veterans Home, <i>Bennington</i>	16
Green Mountain Nursing and Rehab, <i>Colchester</i>	12
Mansfield Place, <i>Essex</i>	12
Vernon Hall Assisted Living, <i>Vernon</i>	11
Total	134

Source: Vermont Department of Health—September 13, 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.

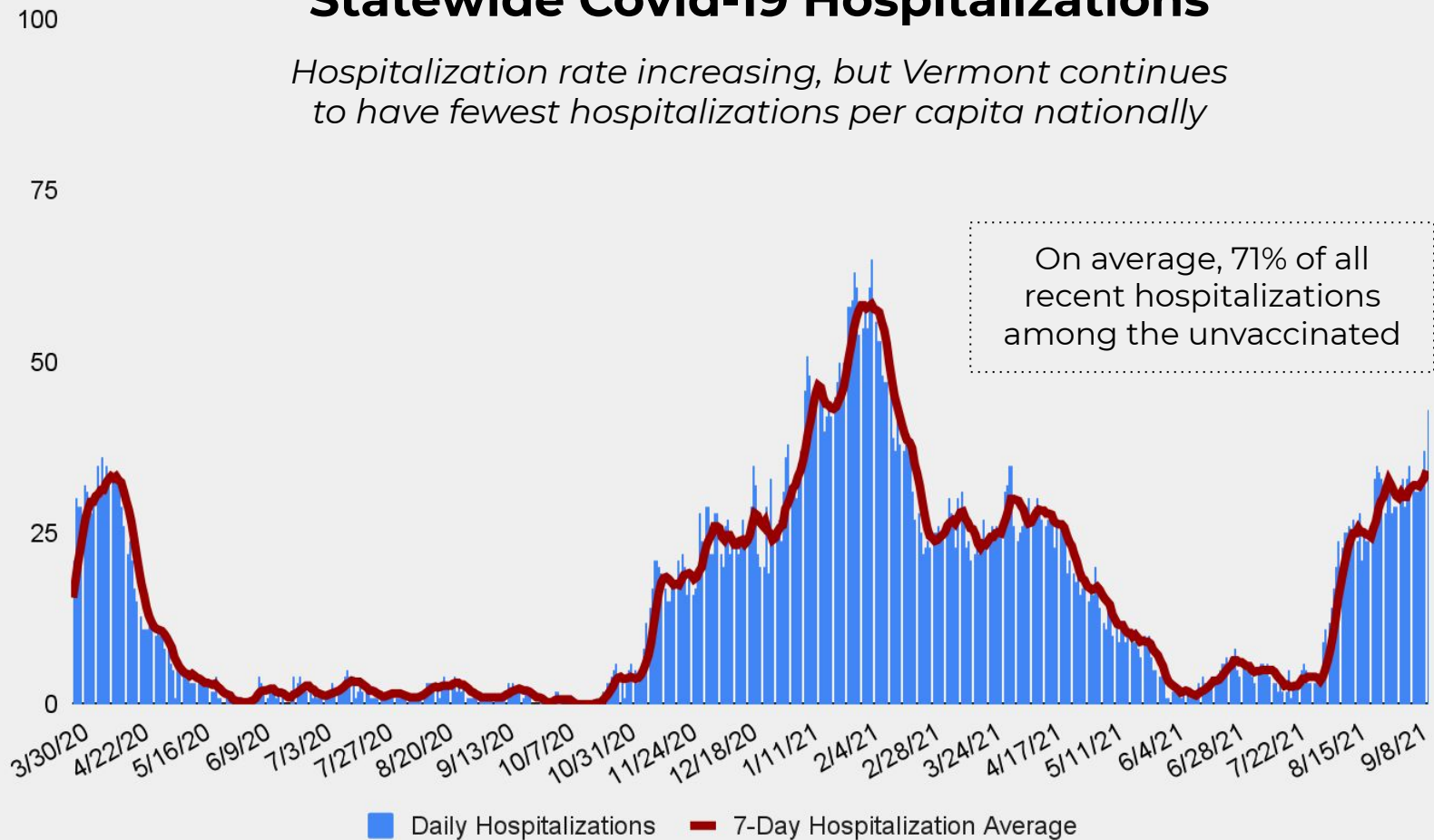


Source: CDC Ensemble Model—September 14, 2021

Vermont Hospitalization Data

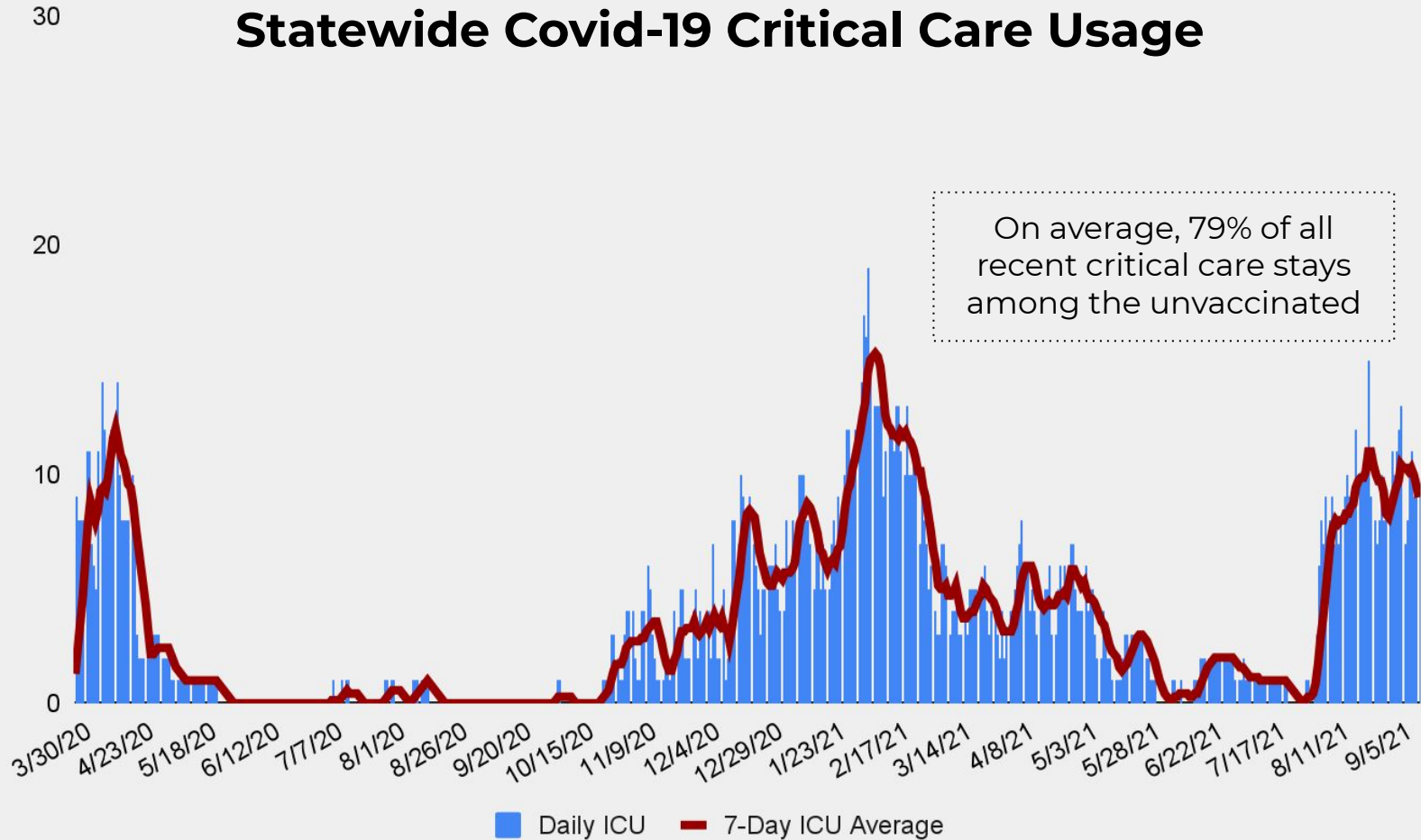
Statewide Covid-19 Hospitalizations

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



Source: Vermont Department of Health—September 13, 2021

Statewide Covid-19 Critical Care Usage



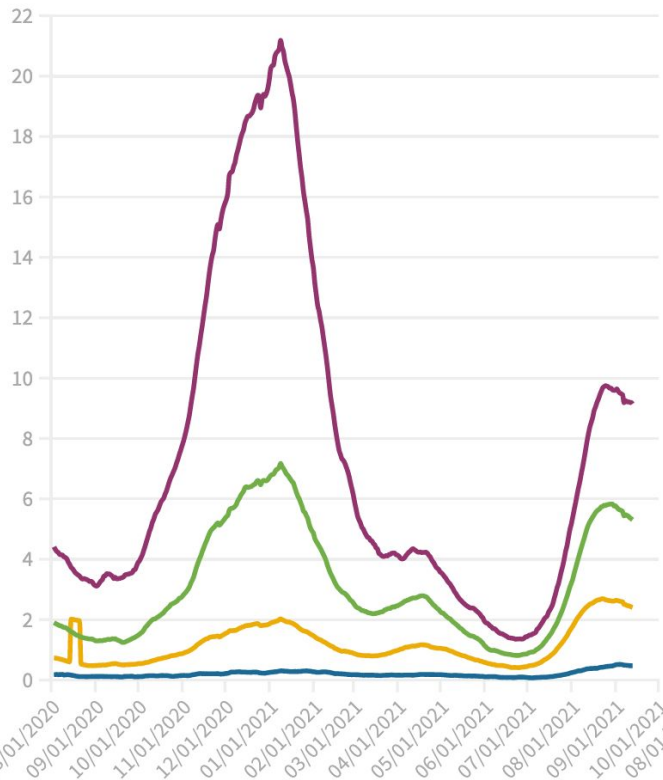
Source: Vermont Department of Health—September 13, 2021

New Hospitalizations per 100,000 Residents, by Age

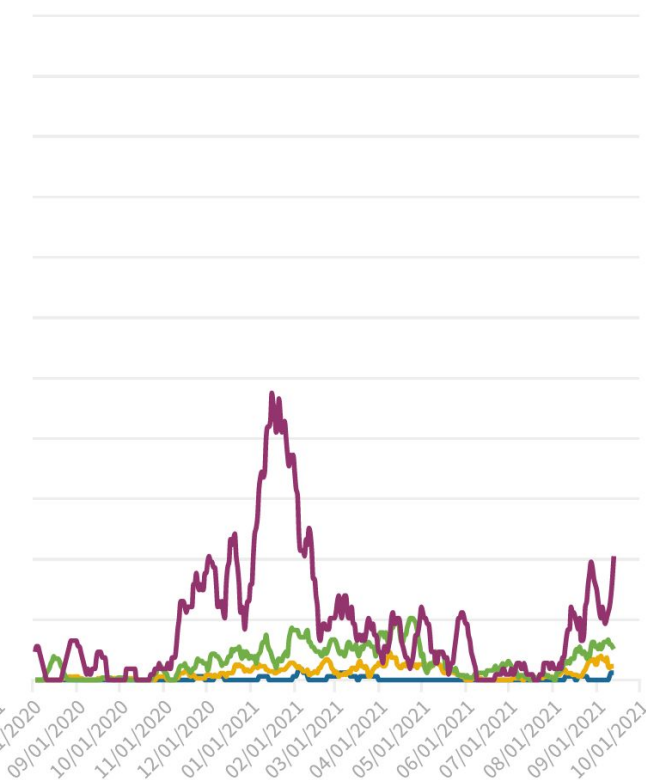
0-17 years 18-49 years 50-69 years 70+ years

New Hospitalizations per 100K

United States

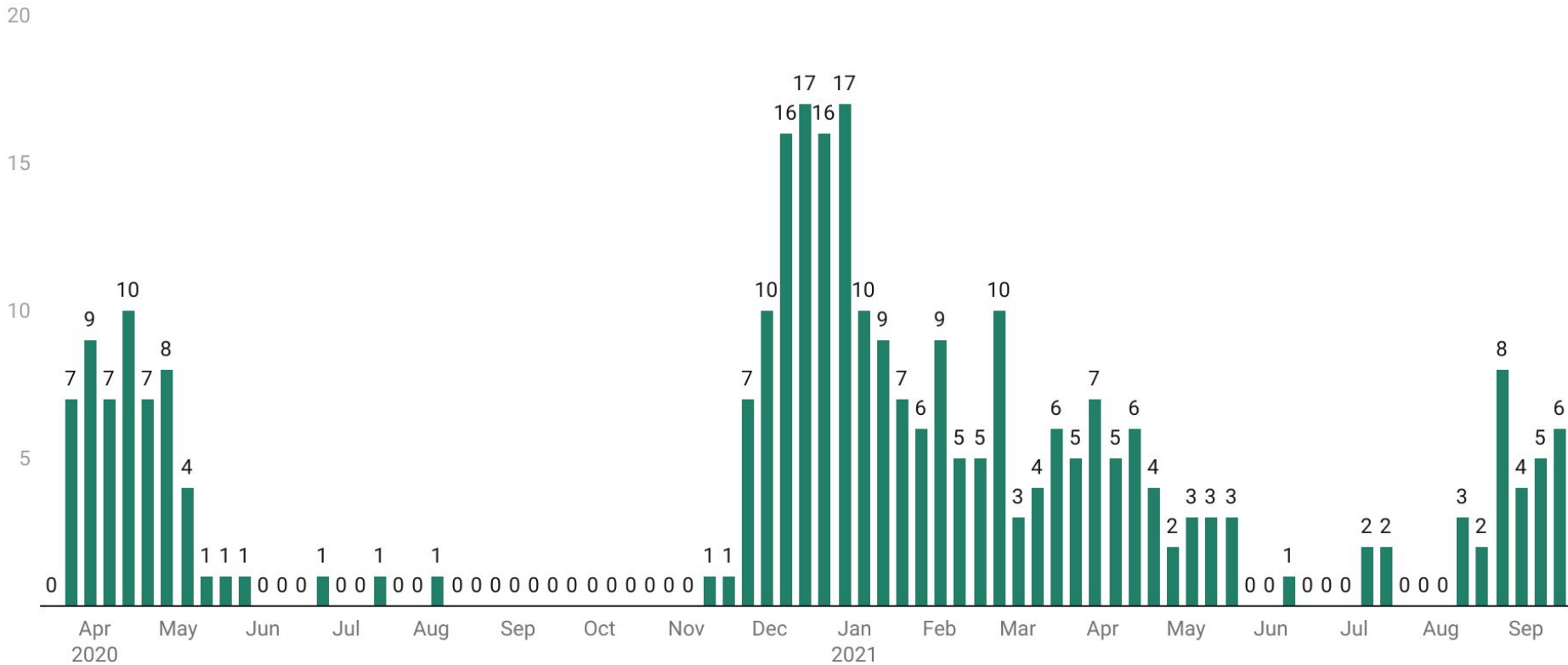


Vermont



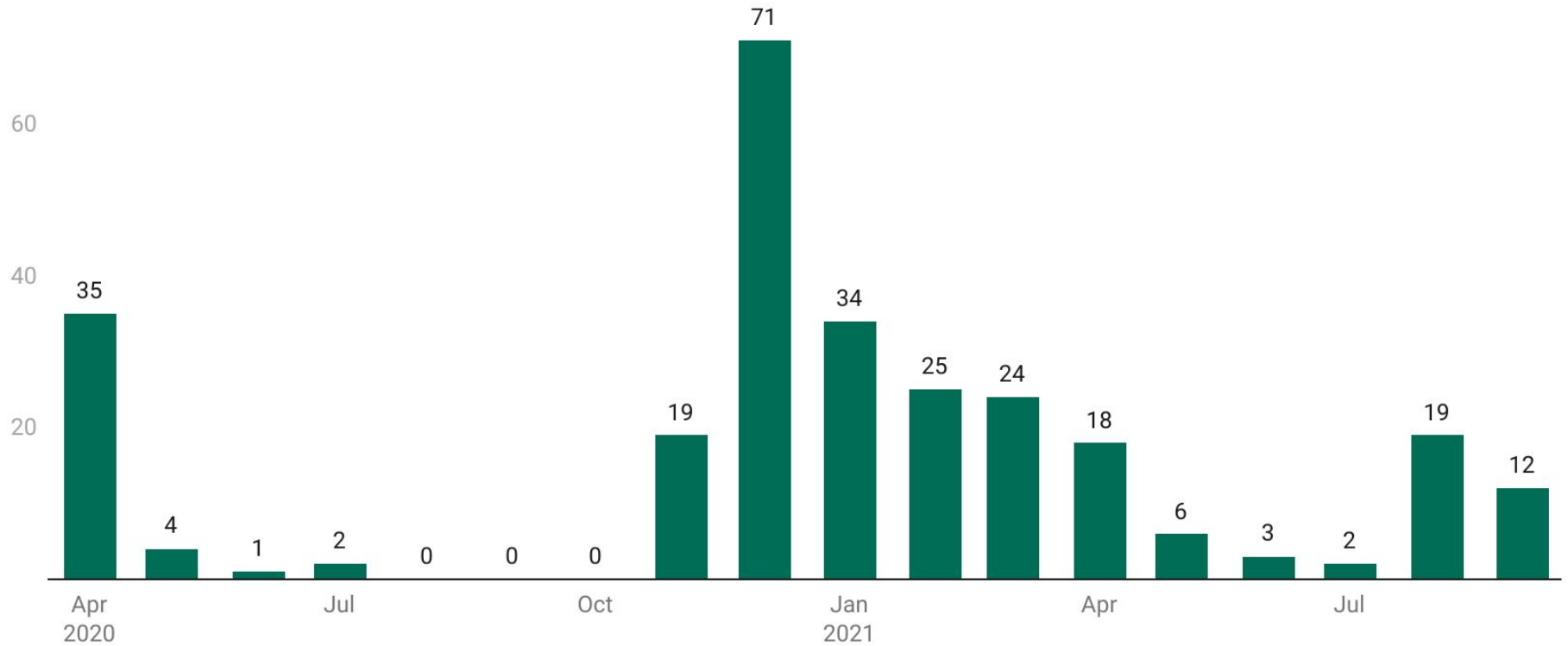
Vermont Fatality Data

Weekly Covid-19 Deaths In Vermont



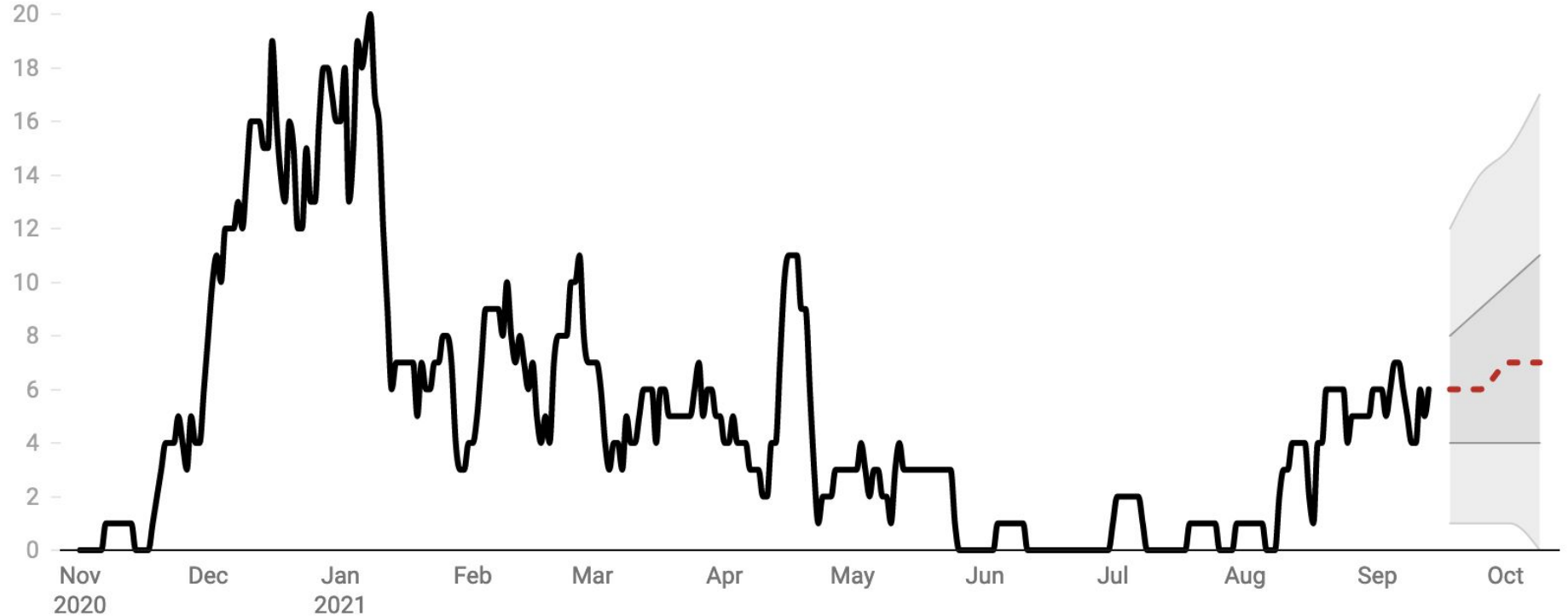
Source: Vermont Department of Health—September 13, 2021 (week ending)

Monthly Covid-19 Deaths In Vermont

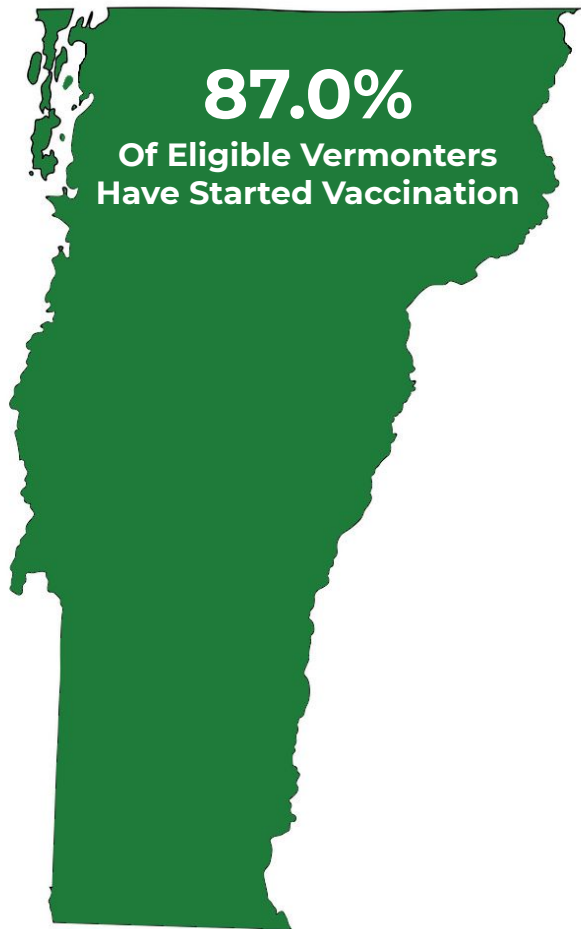


VT Weekly COVID-19 Deaths Forecast

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

+2,243

Since Last Week

479,261

Vermonters with
at Least 1 Dose

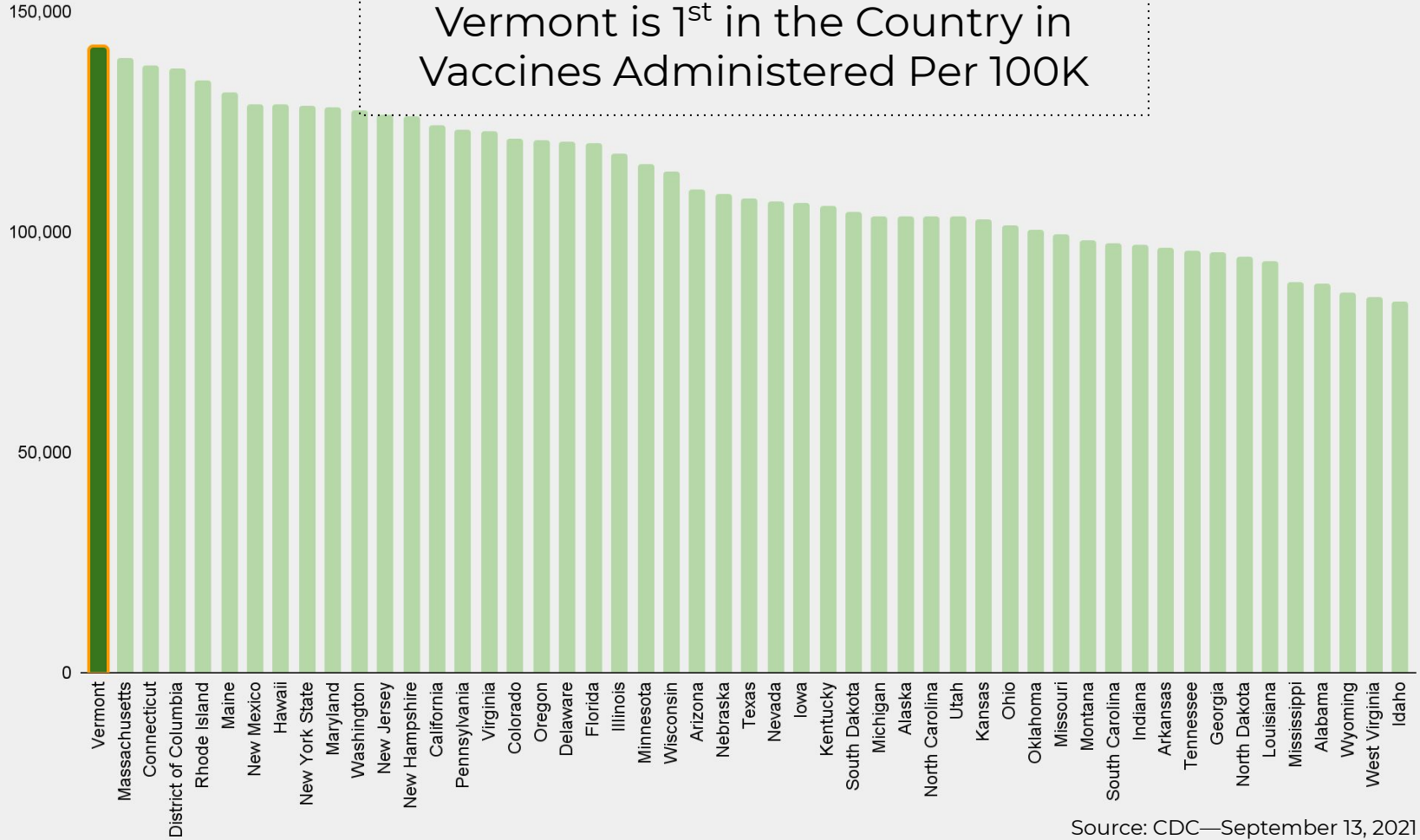
71,689

Eligible Vermonters
still to be vaccinated

Vermont CDC Vaccine Scorecard

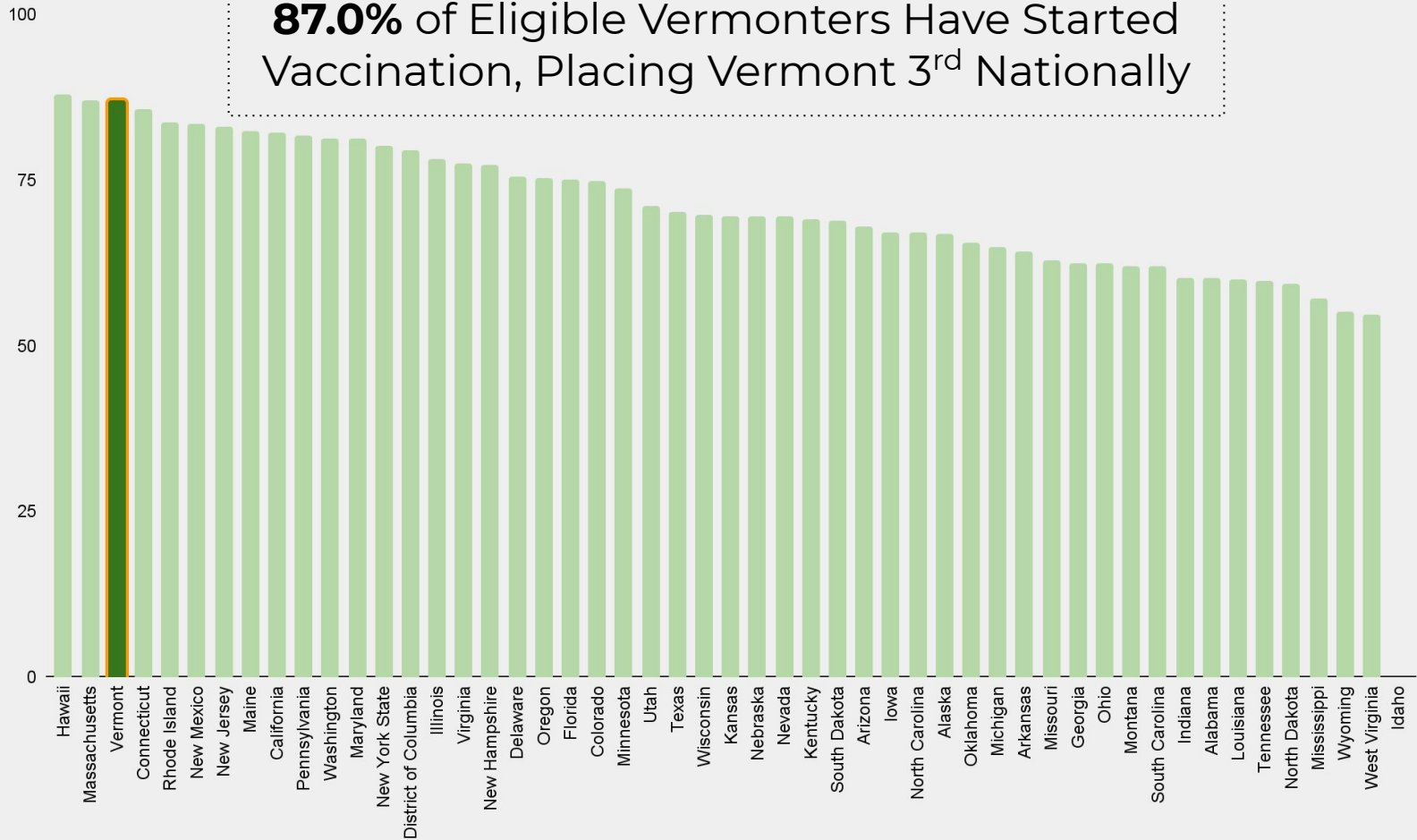
Metric	Figure	State Ranking
Doses Administered per 100K	141,786	1
% At Least 1 Dose (Eligible Population)	87.0%	3
% Fully Vaccinated (Eligible Population)	77.8%	1
% At Least 1 Dose (Full Population)	76.9%	1
% Fully Vaccinated (Full Population)	68.7%	1
% Fully Vaccinated (65 & Over)	94.9%	1

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



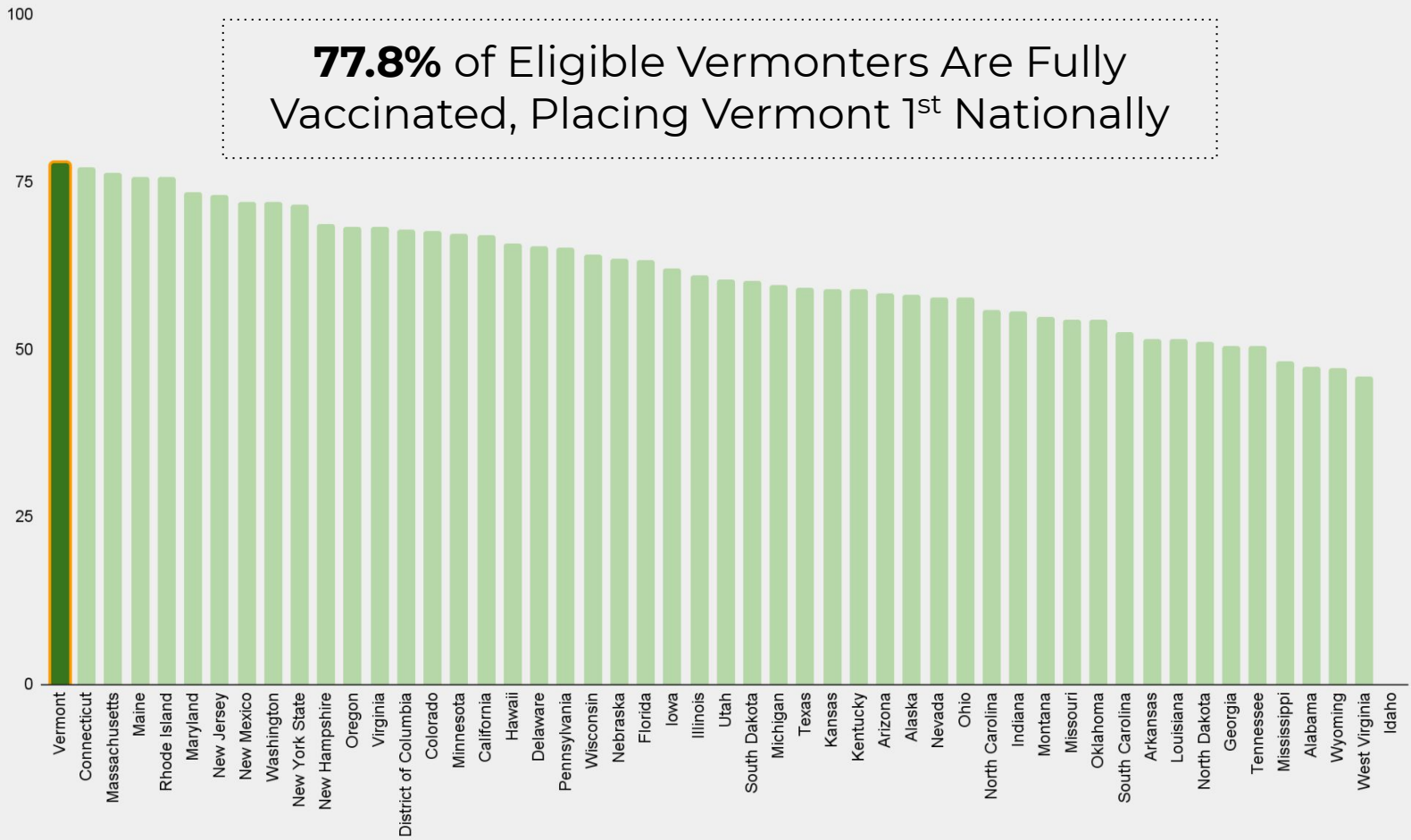
Source: CDC—September 13, 2021

87.0% of Eligible Vermonters Have Started Vaccination, Placing Vermont 3rd Nationally



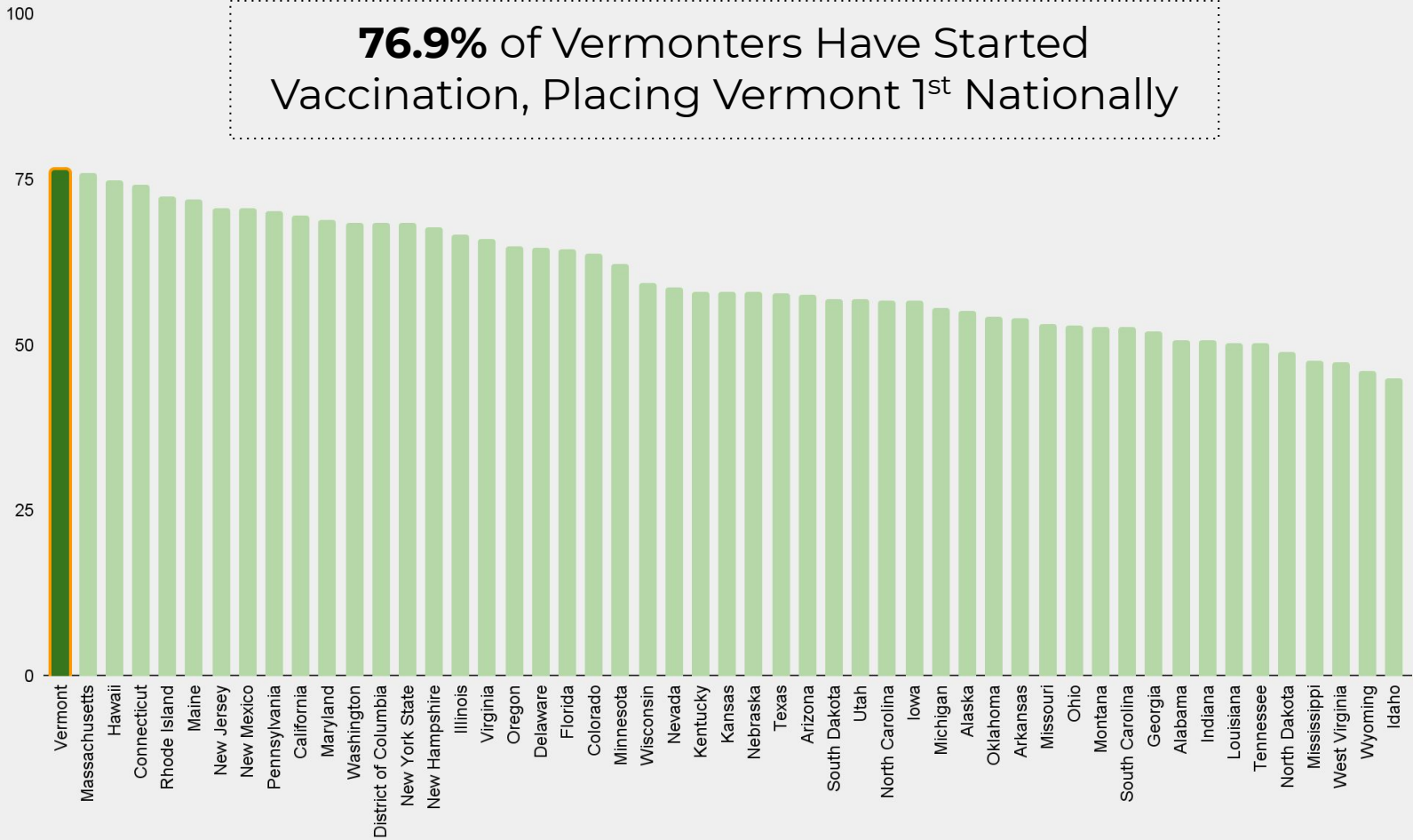
Source: CDC—September 13, 2021

77.8% of Eligible Vermonters Are Fully Vaccinated, Placing Vermont 1st Nationally



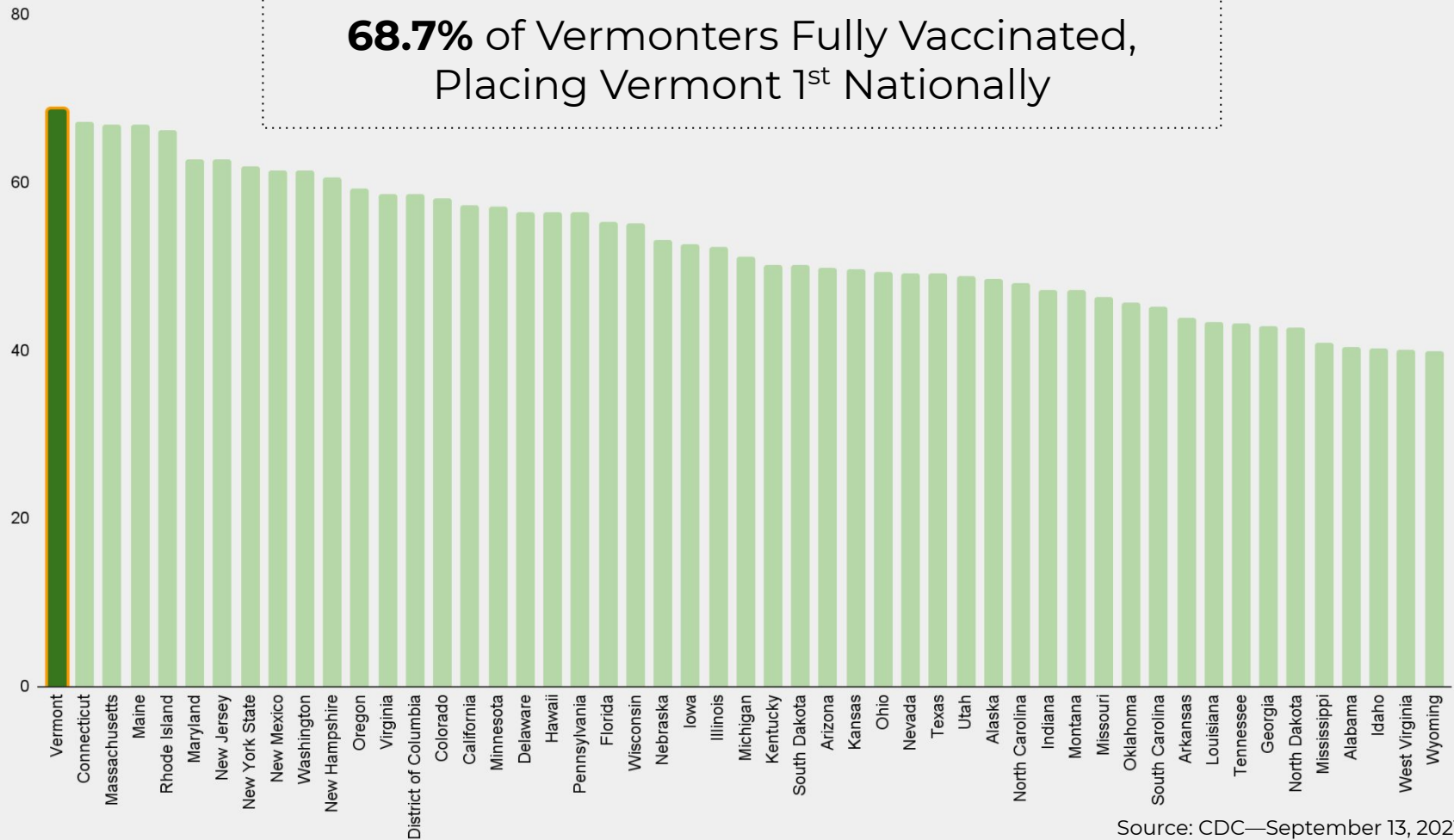
Source: CDC—September 13, 2021

76.9% of Vermonters Have Started Vaccination, Placing Vermont 1st Nationally



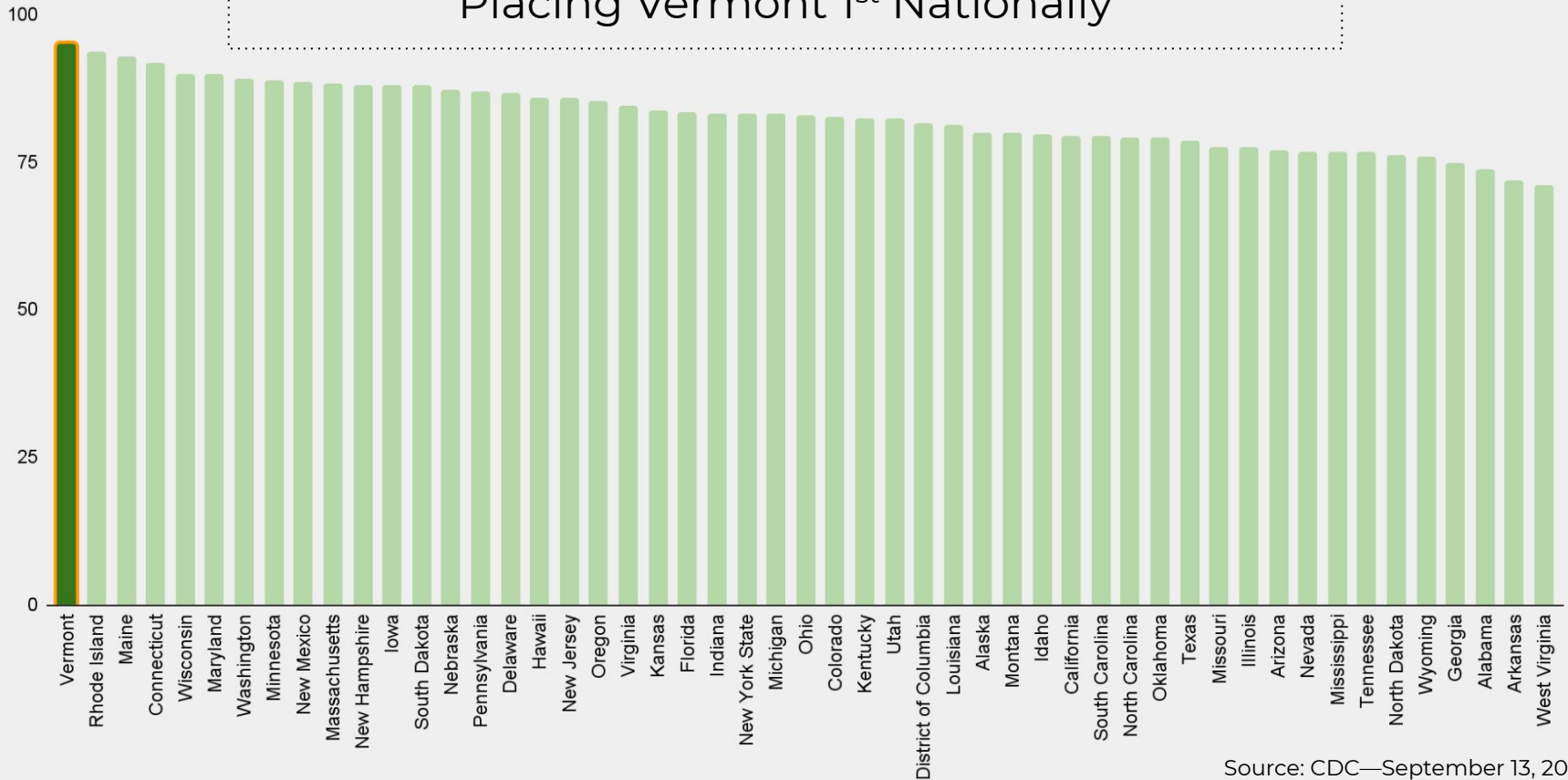
Source: CDC—September 13, 2021

68.7% of Vermonters Fully Vaccinated,
Placing Vermont 1st Nationally



Source: CDC—September 13, 2021

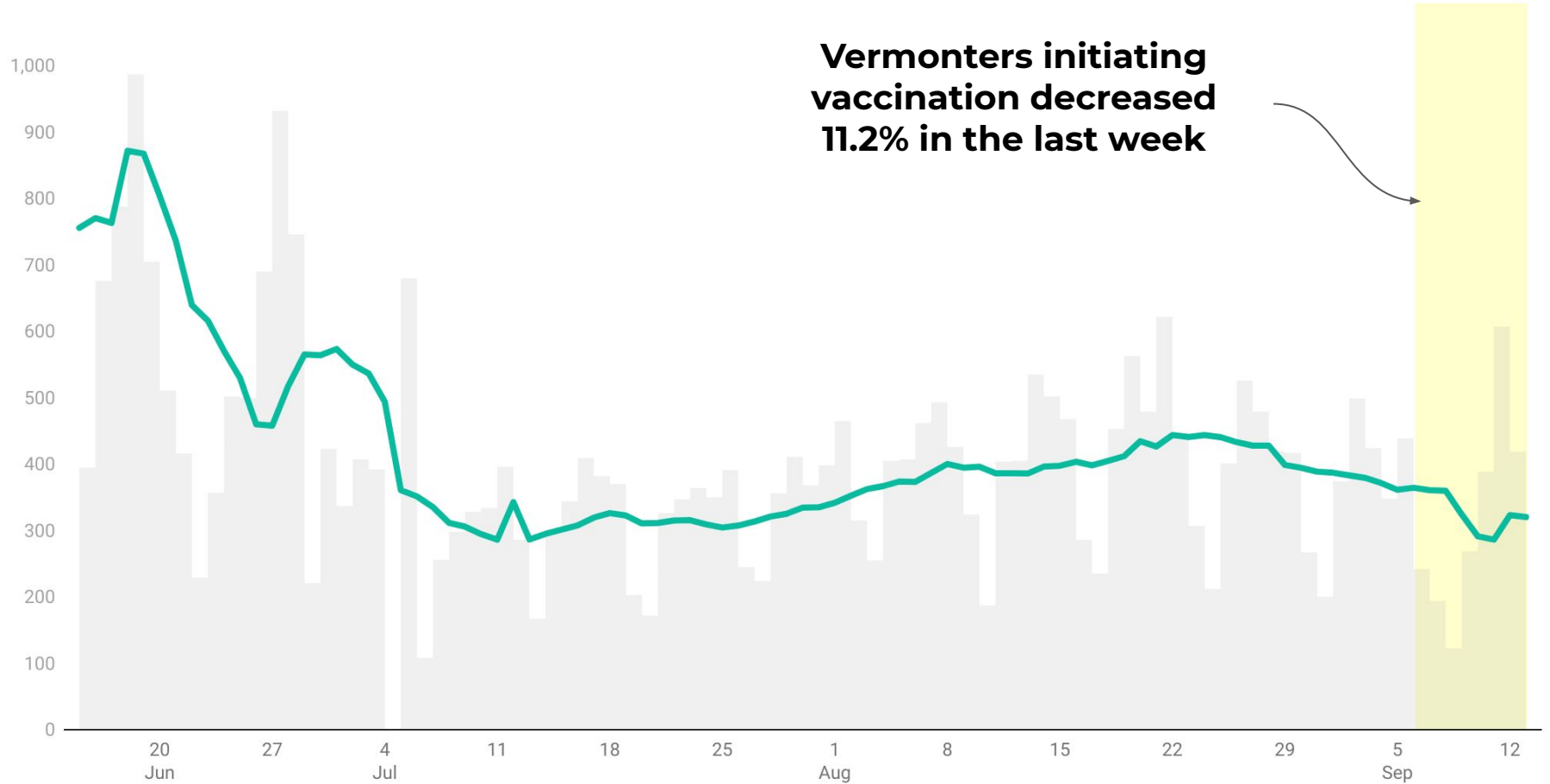
94.9% of 65 & Over Vermonters Fully Vaccinated,
Placing Vermont 1st Nationally



Source: CDC—September 13, 2021

Vermonters Initiating Vaccination By Day

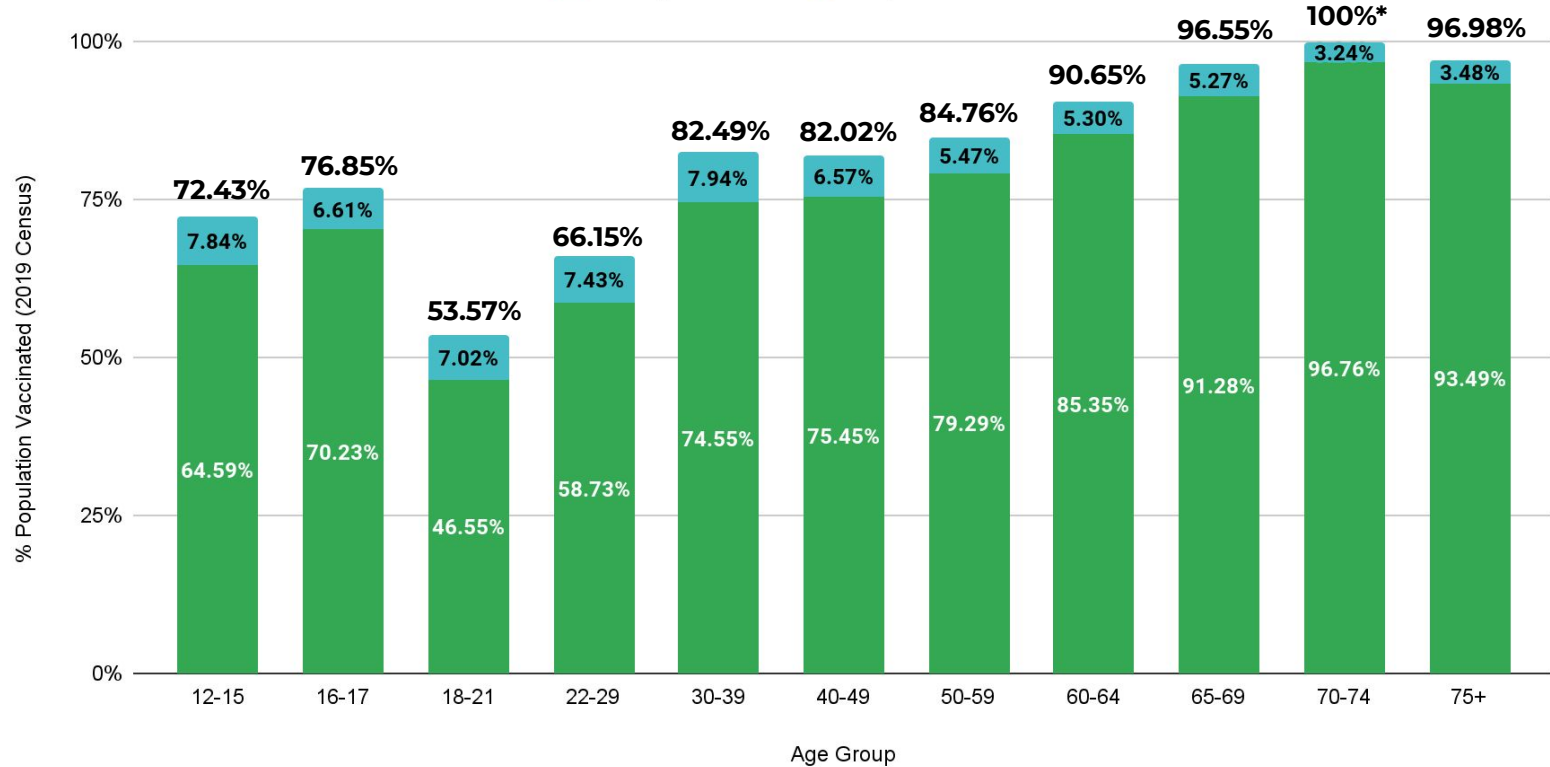
— New Daily Vaccinations (7-Day Average)



Vermont Vaccination Progress

By Age Band

Partially Vaccinated Fully Vaccinated



Source: Vermont Dept. of Health—September 13, 2021; *based on 2019 census estimates; state data may differ from CDC reporting

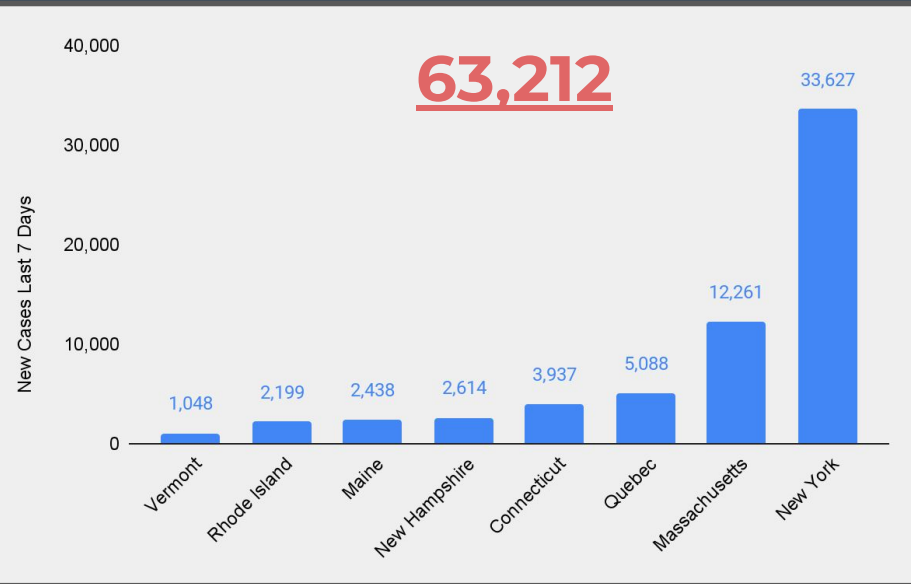
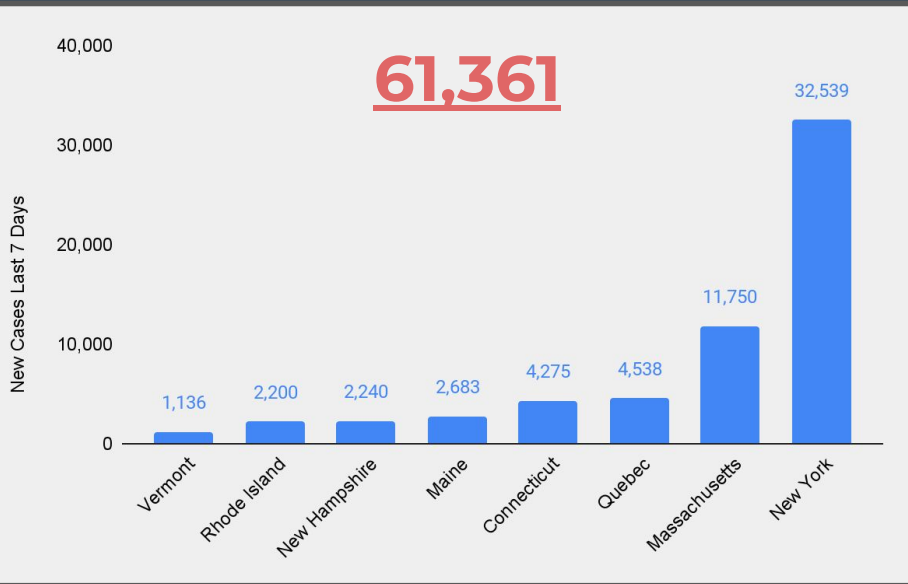
Regional Data

Regional Cases

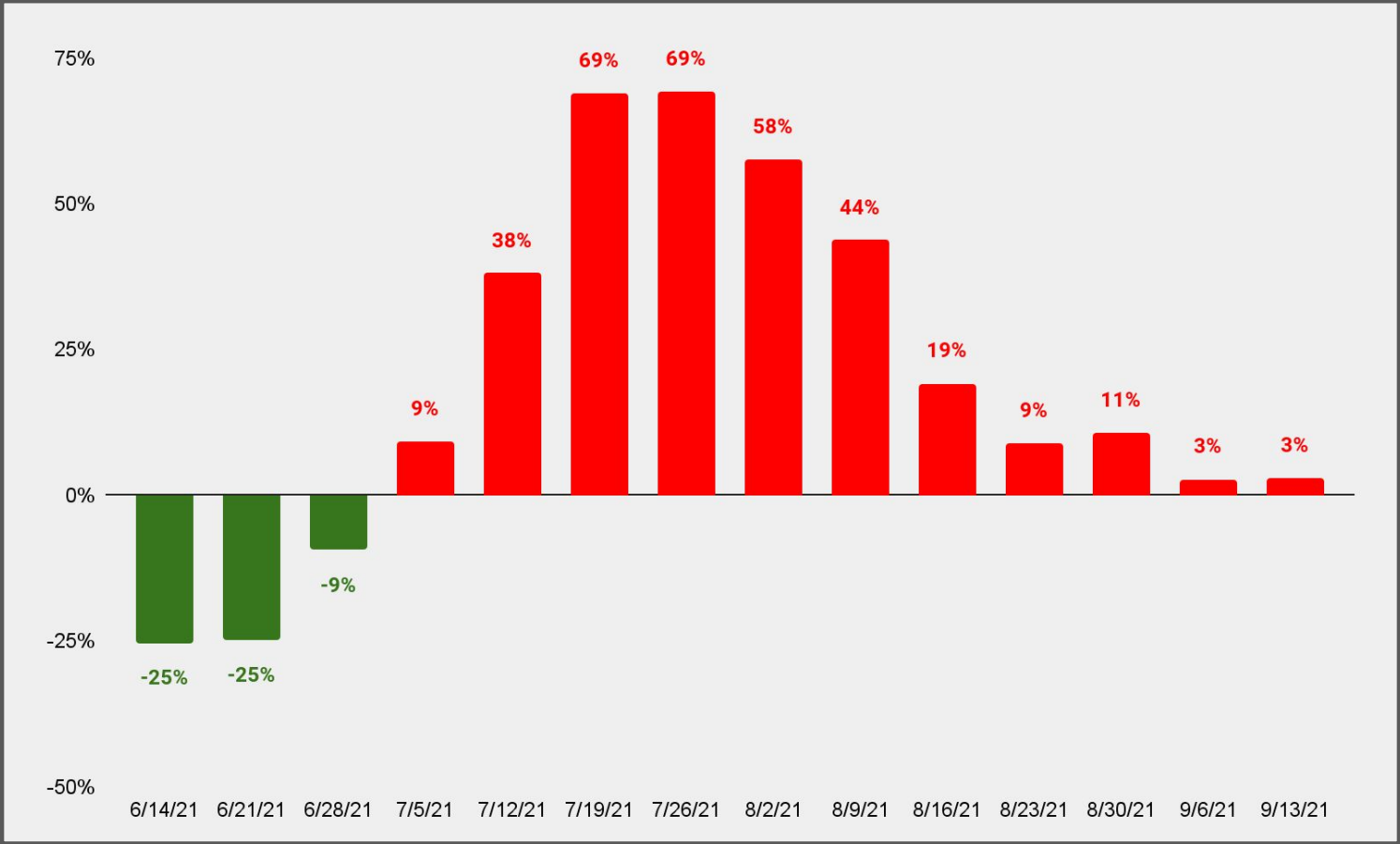
3.0% Increase in New Cases

New Cases August 31st to September 6th

New Cases September 7th to September 13th



Change in Northeast Regional Weekly Case Growth



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

Weekly Regional Cases

250000

200000

150000

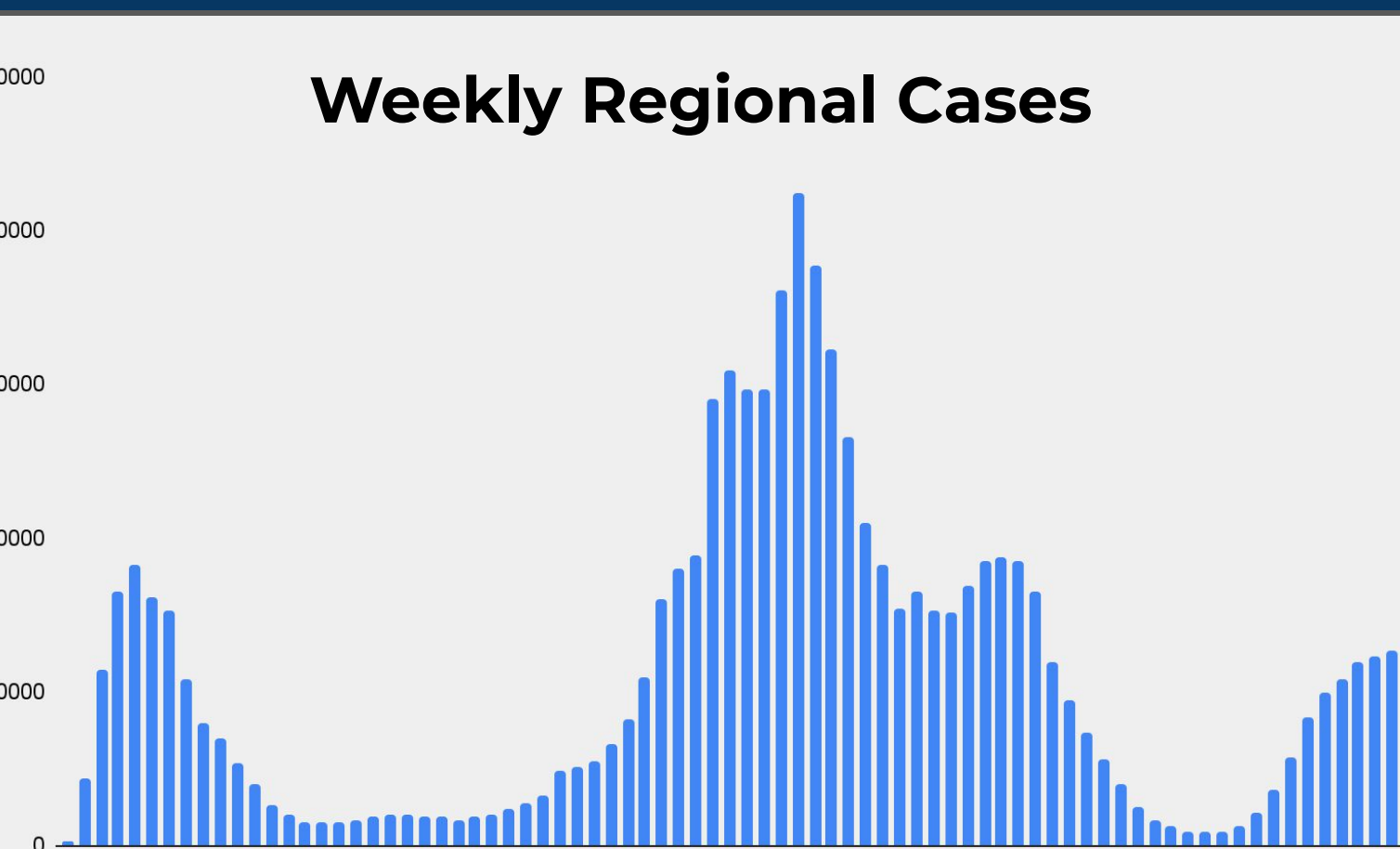
100000

50000

0

3/16/20 4/13/20 5/11/20 6/8/20 7/6/20 8/3/20 8/31/20 9/28/20 10/26/20 11/23/20 12/21/20 1/18/21 2/15/21 3/15/21 4/12/21 5/10/21 6/7/21 7/5/21 8/2/21 8/30/21

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

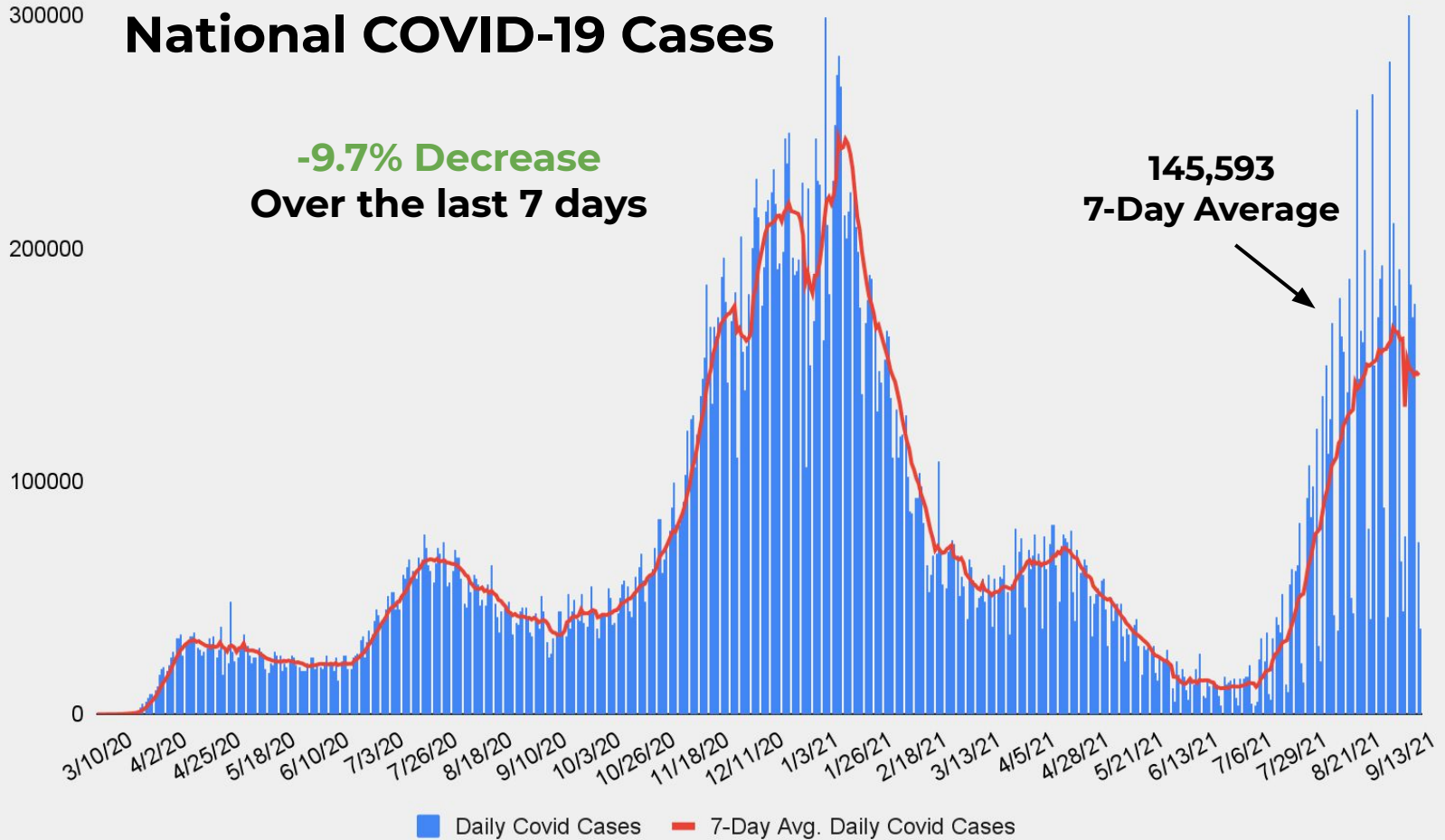


National Data

National COVID-19 Cases

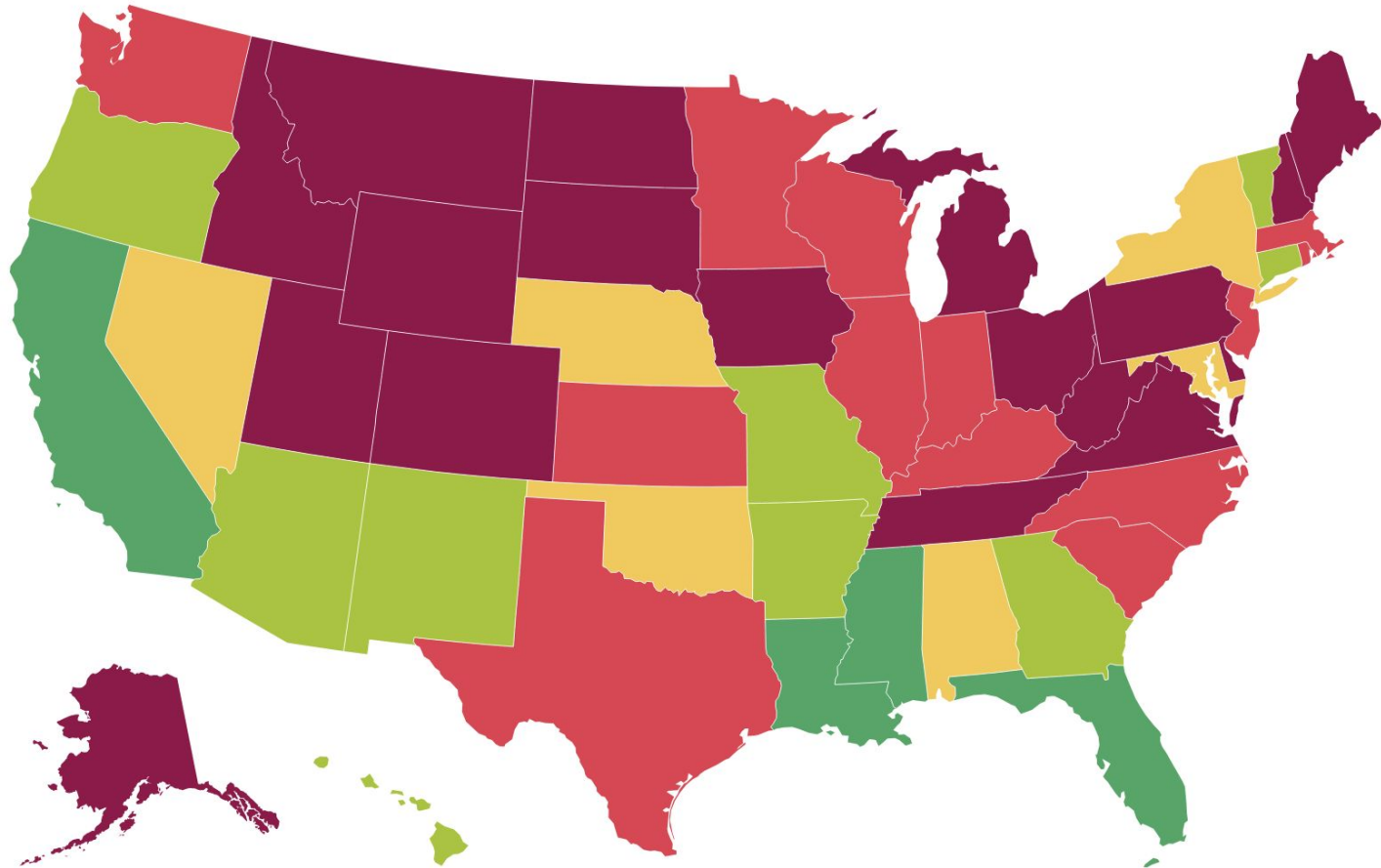
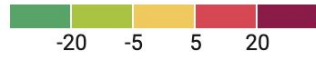
**-9.7% Decrease
Over the last 7 days**

**145,593
7-Day Average**



Source: Covid Tracking Project; NYT & CDC—September 13, 2021

Week Over Week Percent Change in COVID-19 Infections



Source: VDH & JHU—September 13, 2021; created with Datawrapper

Change in National Covid-19 Growth

— % Growth Change (7-day Avg)

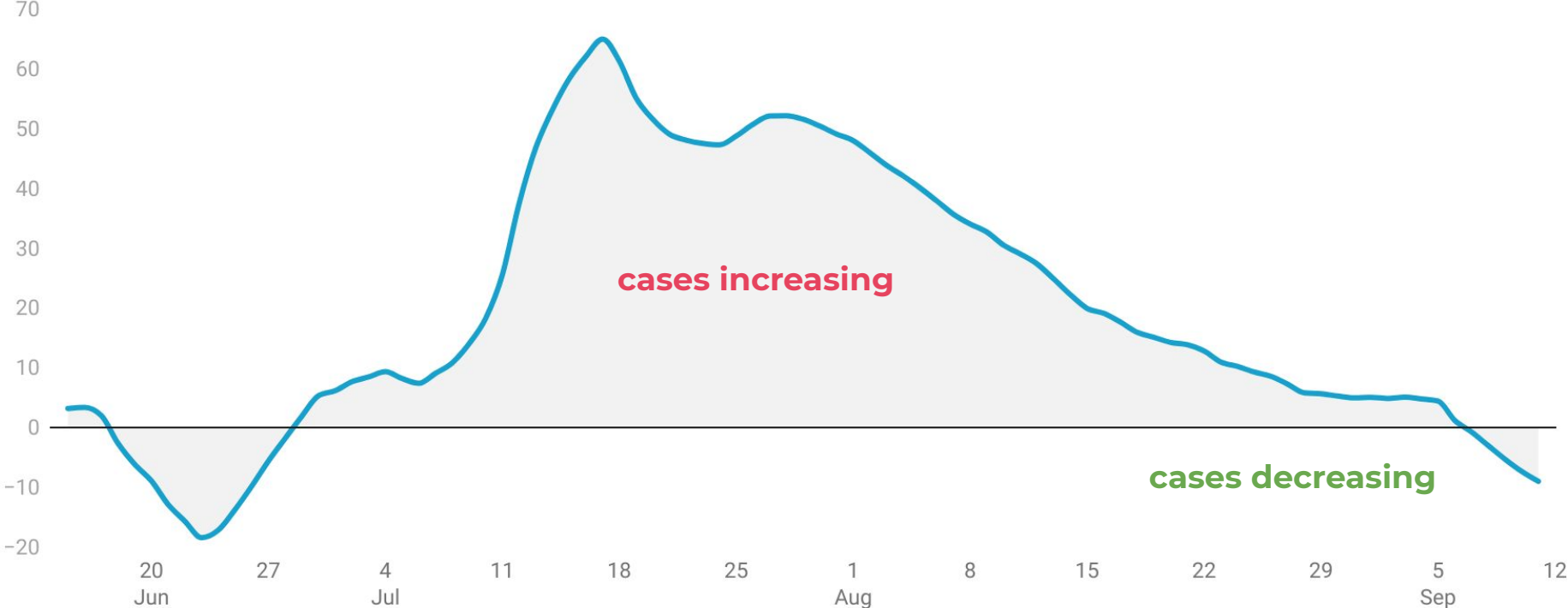
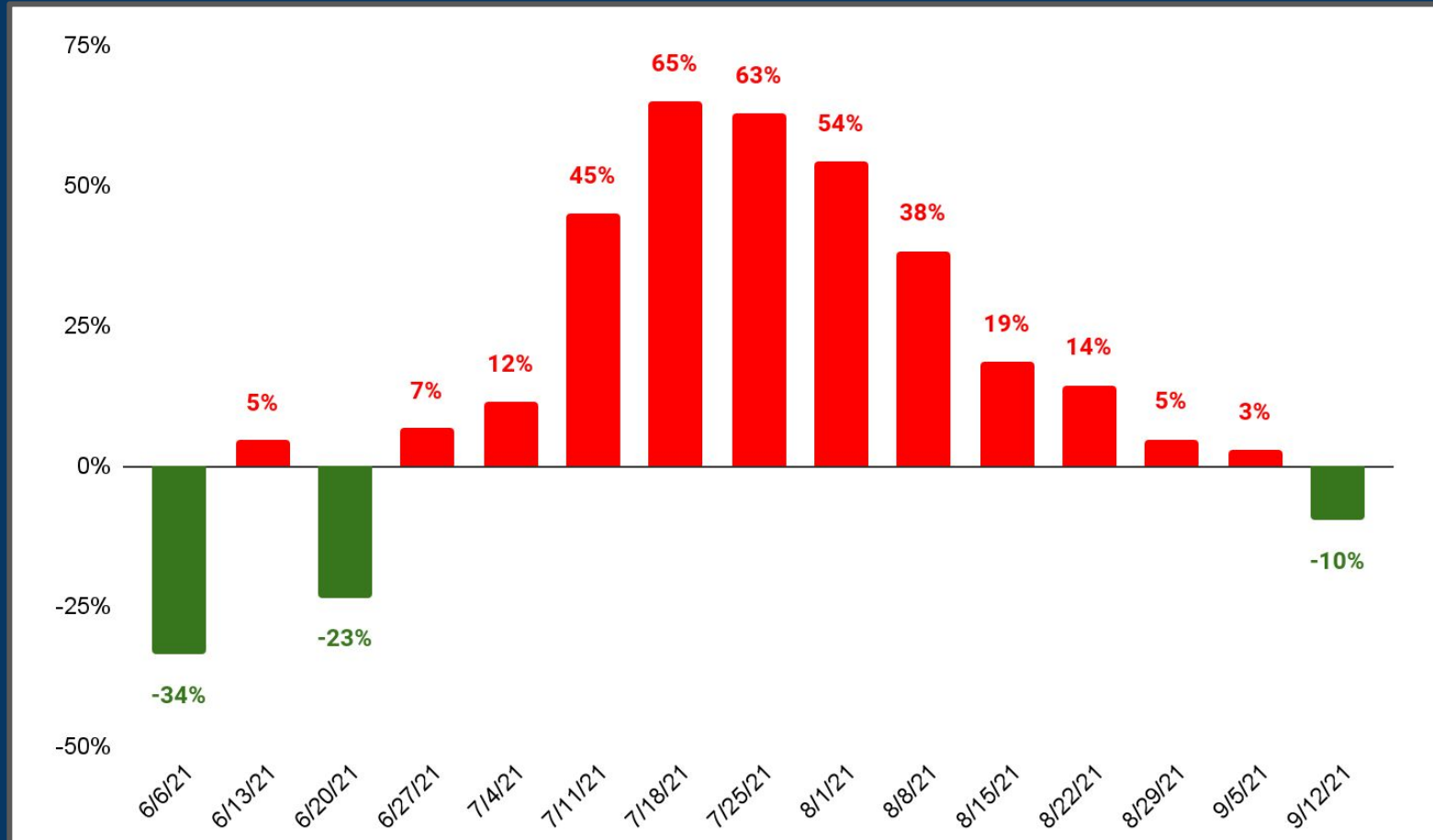


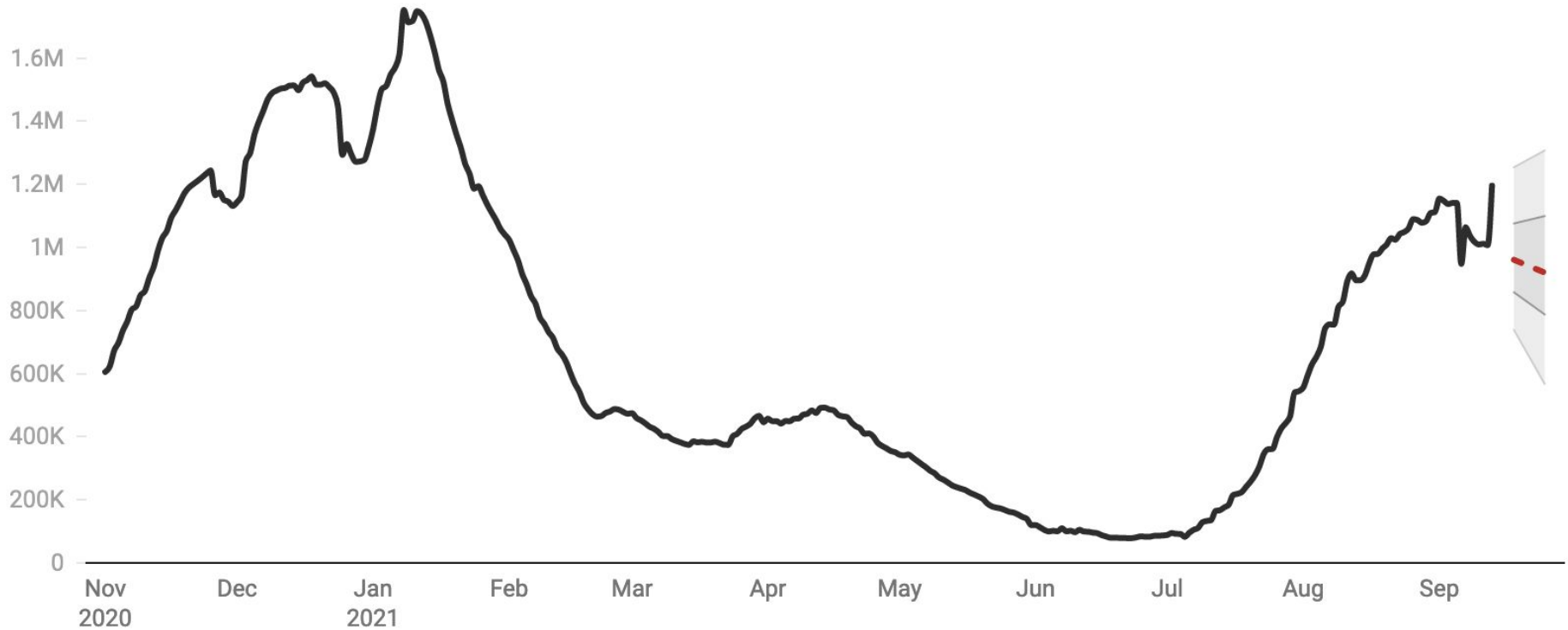
Chart: Vermont DFR Modeling Team • Source: CDC • Created with Datawrapper

Change in National Weekly Case Growth



US Weekly COVID-19 Infections Forecast

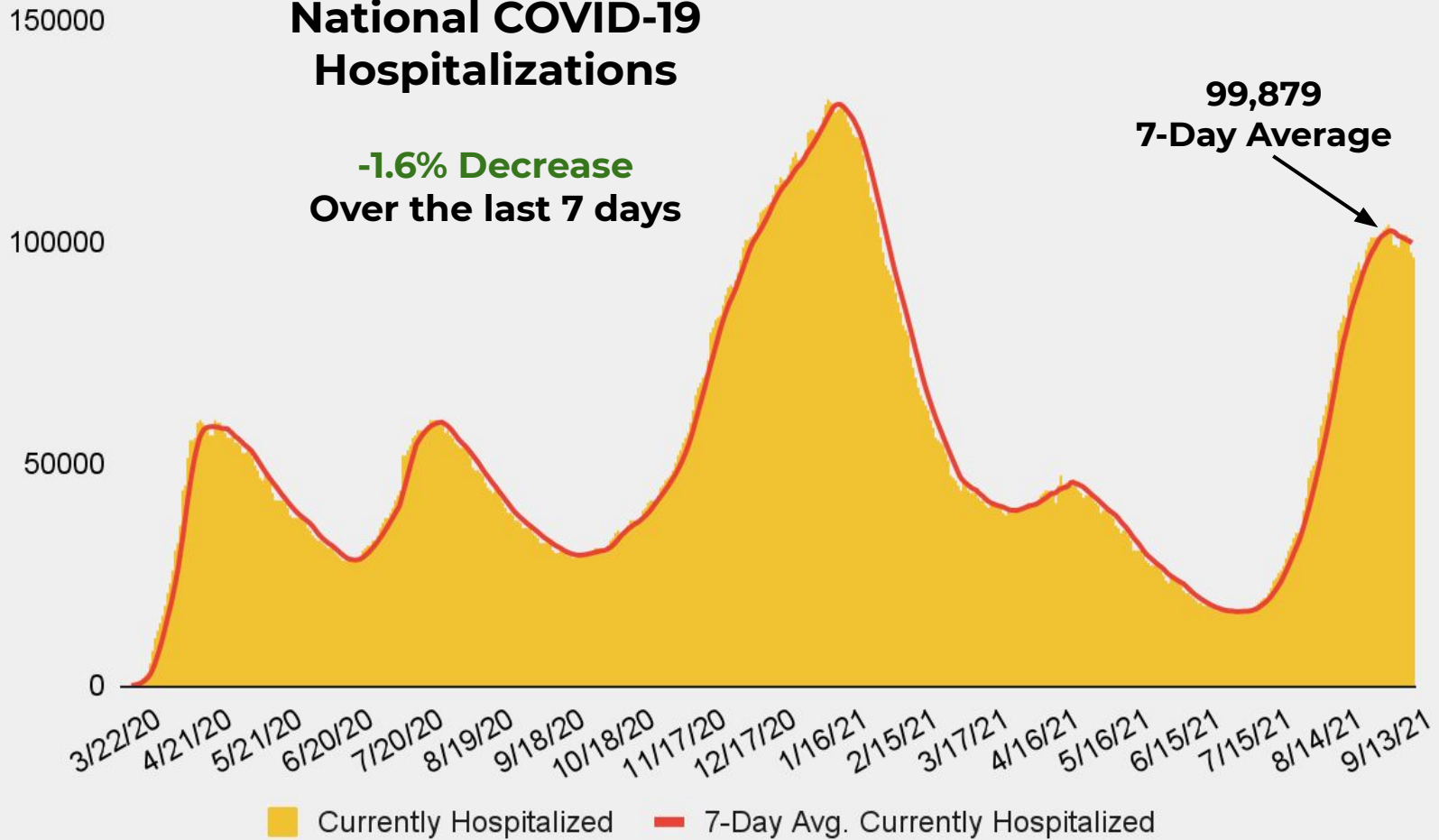
Calculated as a 7-day sum. Gray bands represent 50% and 95% confidence intervals. Since projections are only released once a week, the actual number may appear to over or undershoot the forecast.



National COVID-19 Hospitalizations

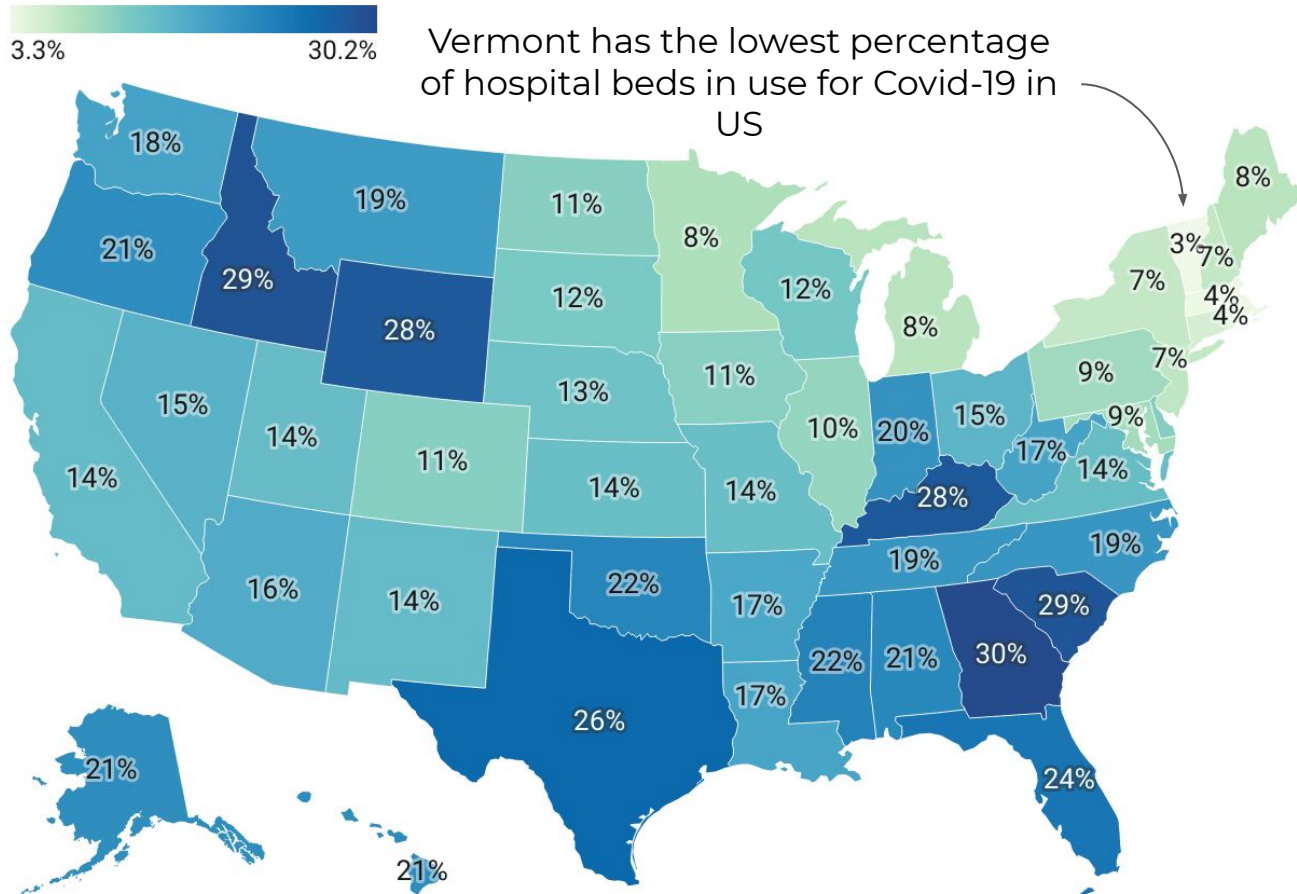
-1.6% Decrease
Over the last 7 days

99,879
7-Day Average



Source: Covid Tracking Project; NYT & CDC—September 13, 2021

Percent of All Hospital Beds Used for COVID-19

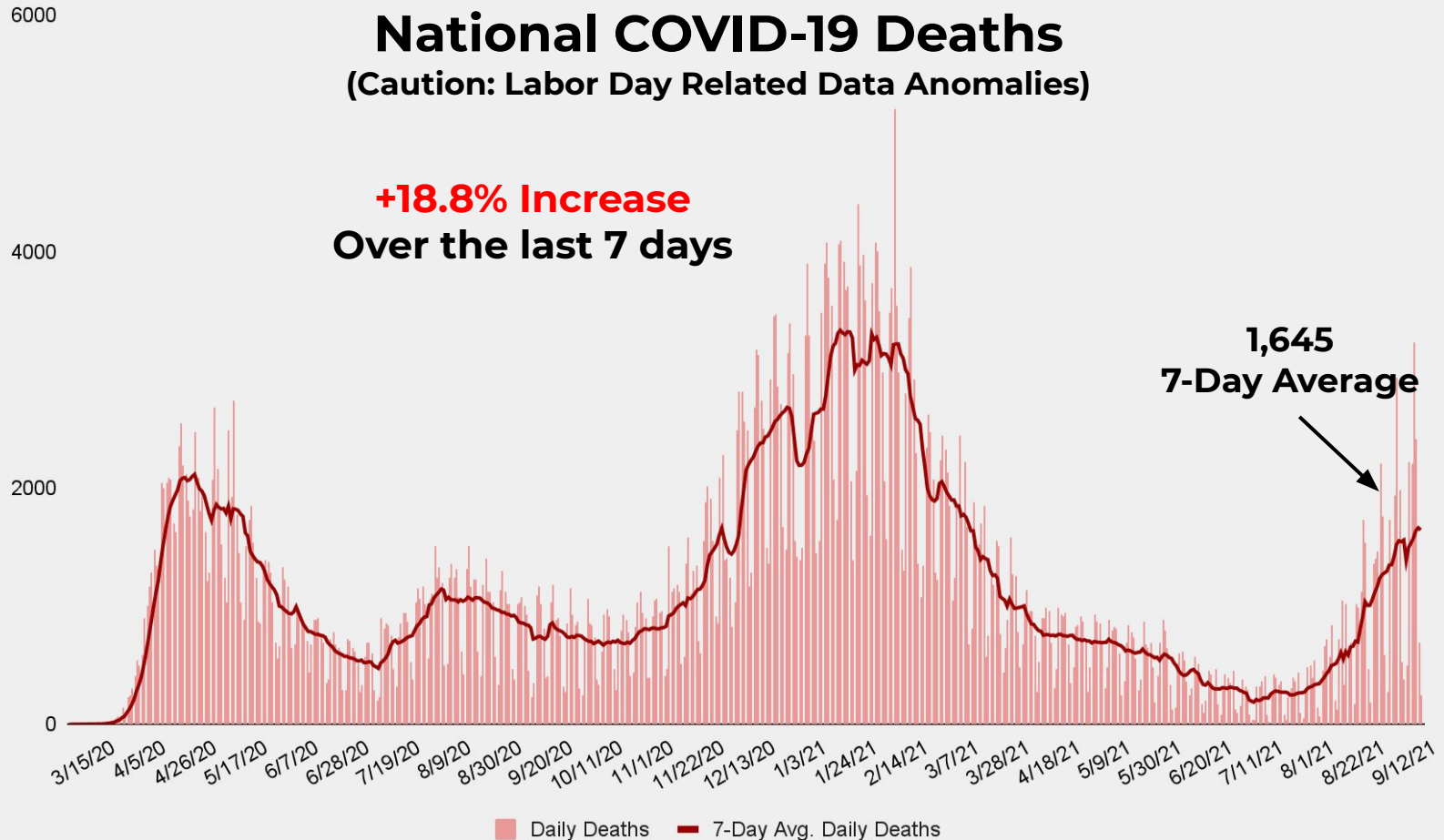


National COVID-19 Deaths

(Caution: Labor Day Related Data Anomalies)

+18.8% Increase
Over the last 7 days

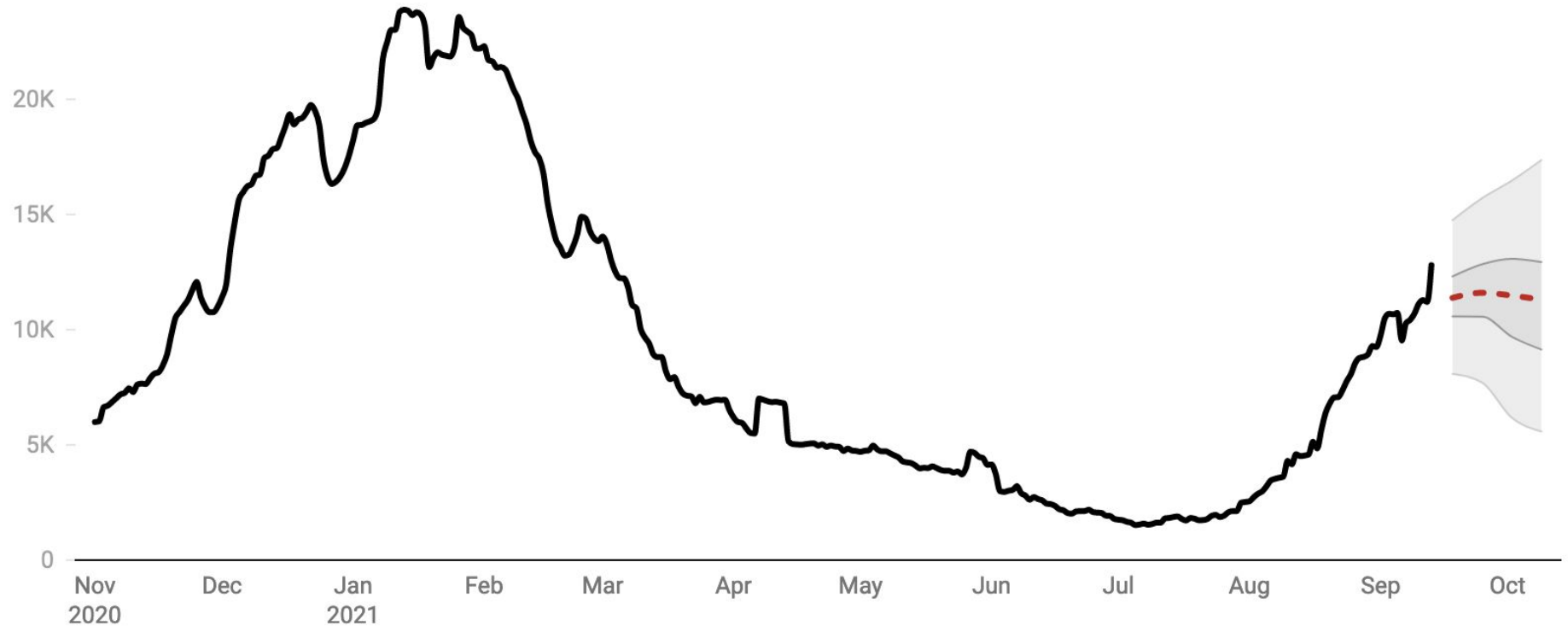
1,645
7-Day Average



Source: Covid Tracking Project; NYT & CDC—September 13, 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

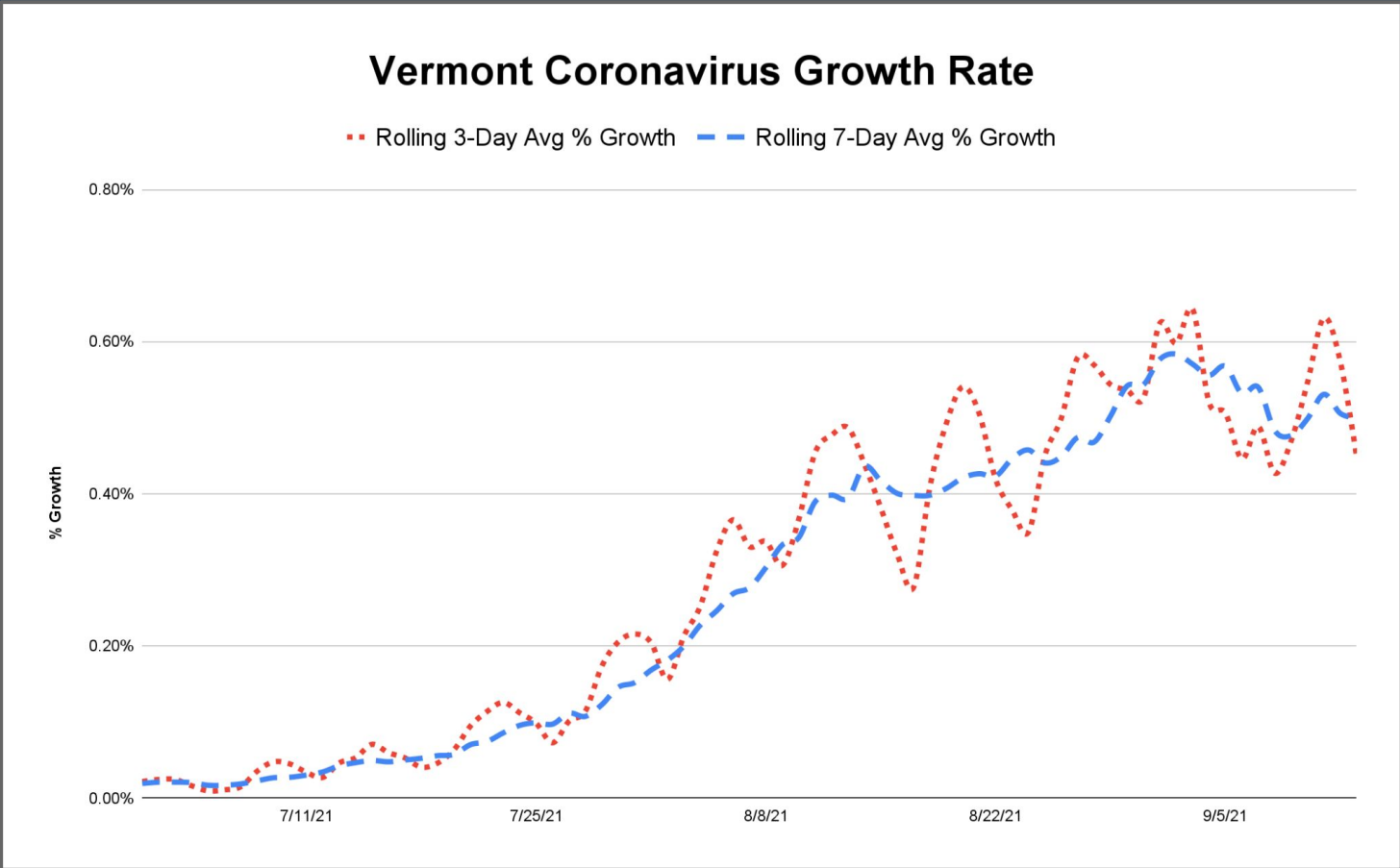
1. Syndromic Surveillance (*retired*)
2. Viral Growth & Reproductive Rates
3. Percentage of New Positive Tests
4. Hospital & Critical Care Bed Capacity

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

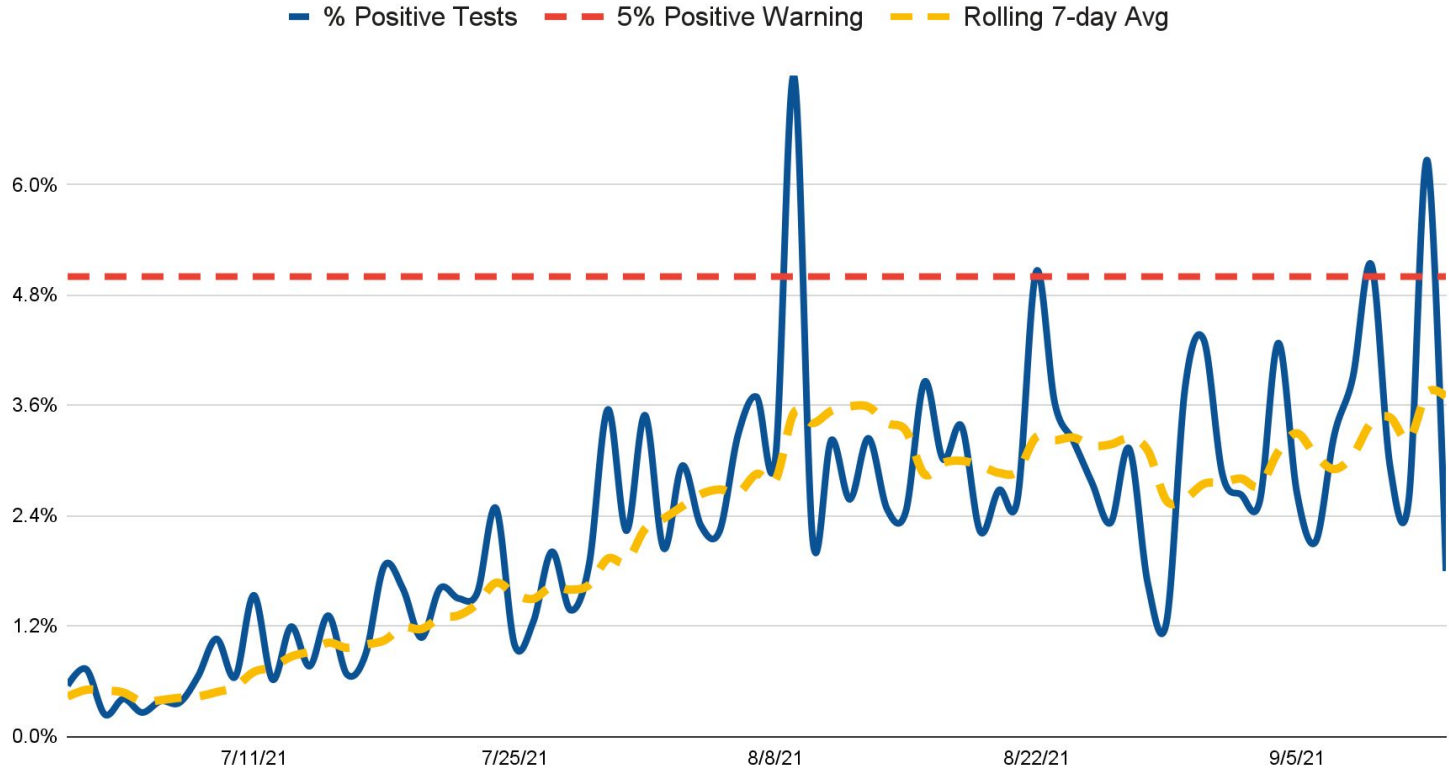
Vermont Department of Health no longer updating syndromic surveillance on a weekly basis.

Viral Growth & Reproductive Rates

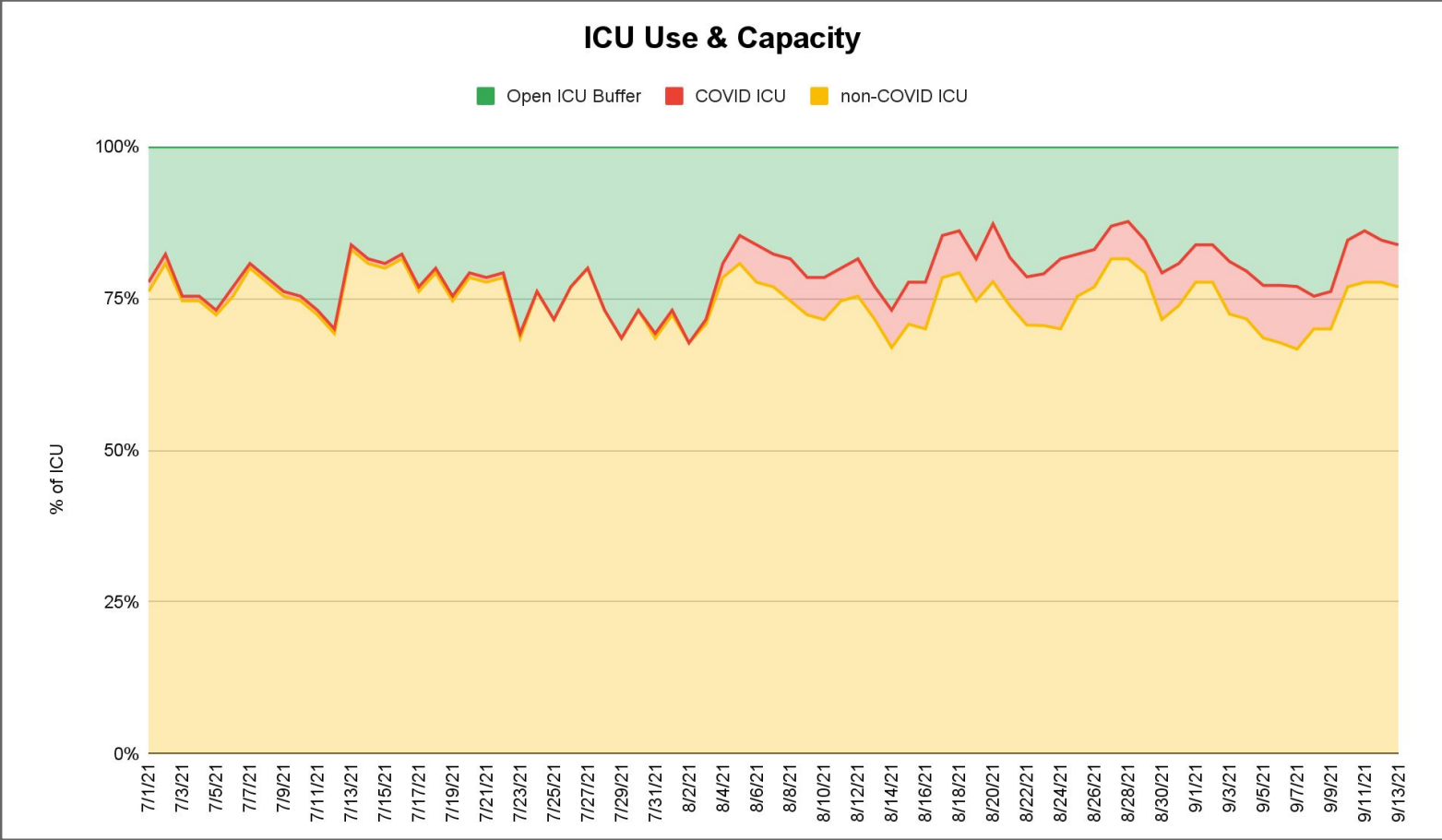


Percentage of New Positive Tests

Percent Tests Yielding New Positive COVID-19 Cases



Hospital & Critical Care Beds



Source: Vermont Department of Health

Vermont Testing

