COVID-19 Modeling
August 3, 2021

Presentation available at:
dfr.vermont.gov

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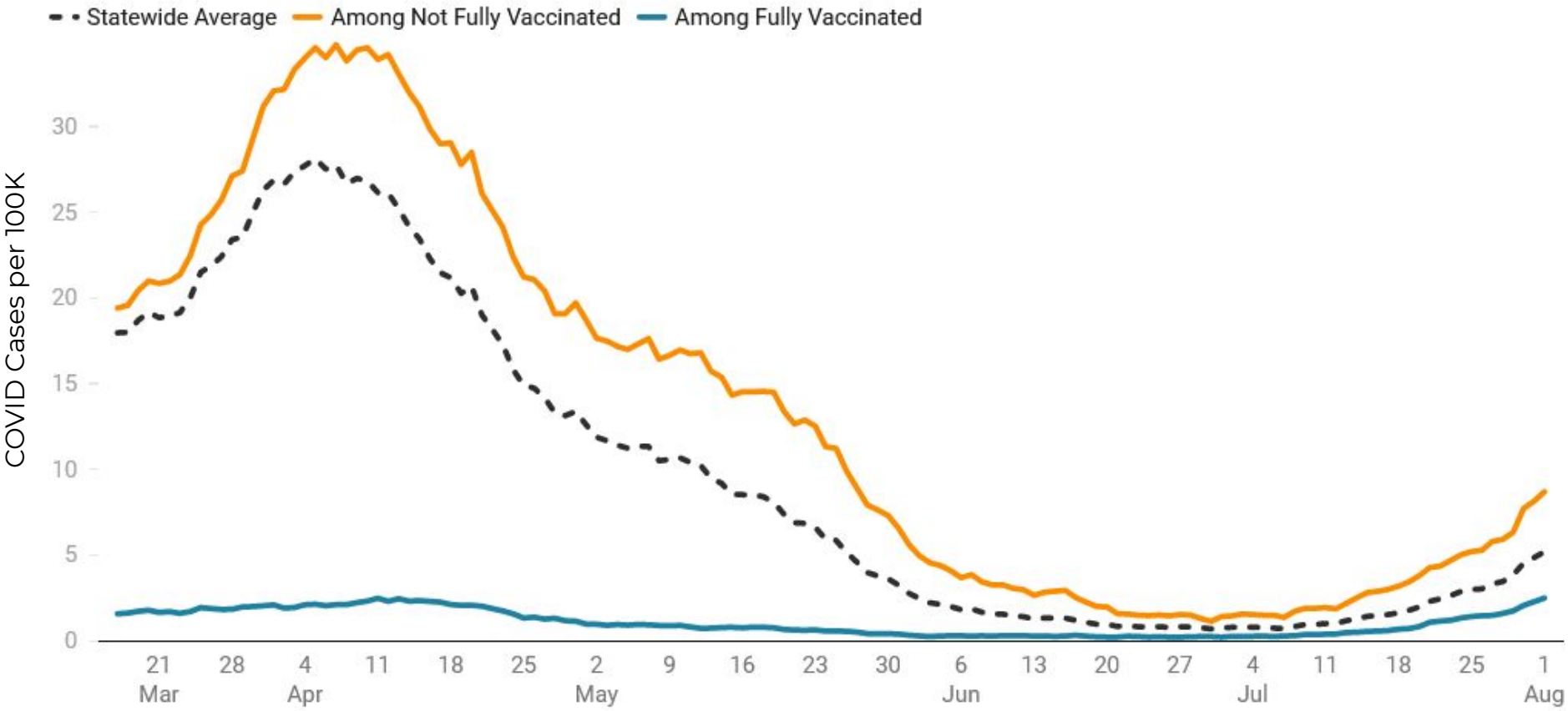
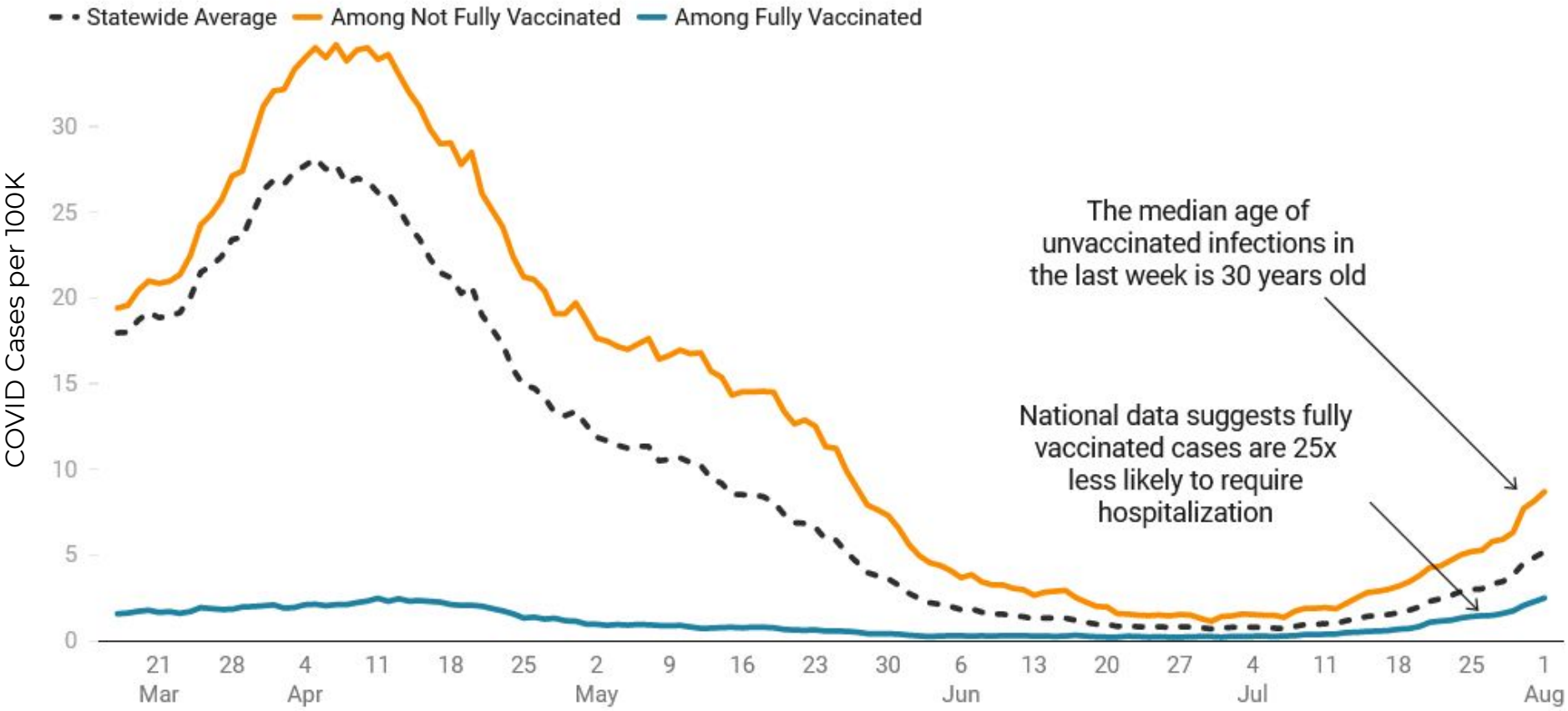
Vermont Case Data

Vermont COVID-19 Cases per 100K (14-Day Average)



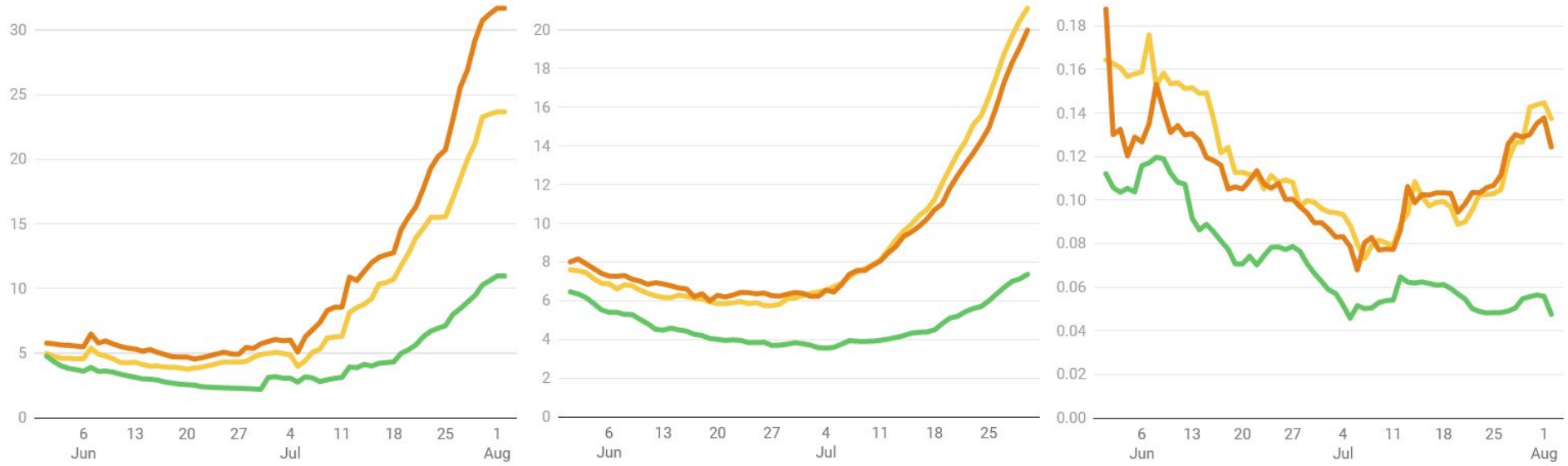
Source: Vermont Department of Health—August 3, 2021; "fully vaccinated" defined as 14 days following final dose

Vermont COVID-19 Cases per 100K (14-Day Average)



Source: Vermont Department of Health—August 3, 2021; "fully vaccinated" defined as 14 days following final dose

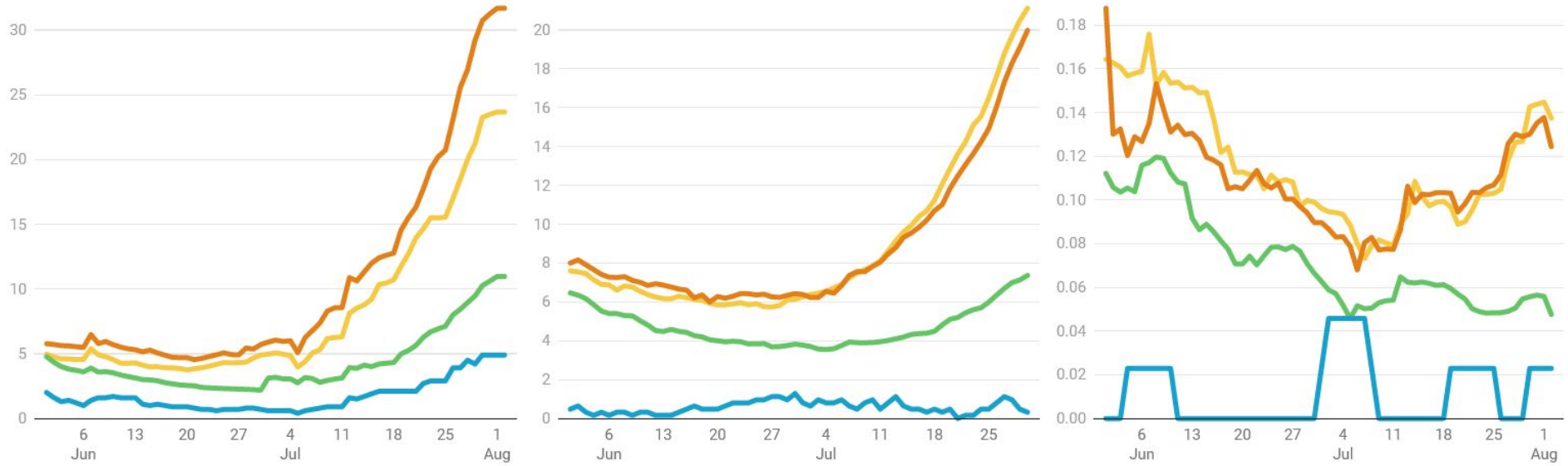
Infections, Hospitalizations, & Deaths by Percentage of State Population Vaccinated



Infections per 100K | Hospitalizations per 100K | Deaths per 100K

Source: Covid Act Now—August 3, 2021; Measures last 14 days; 16 states <40%, 17 states 40-60%, 20 states 60%+ vaccination

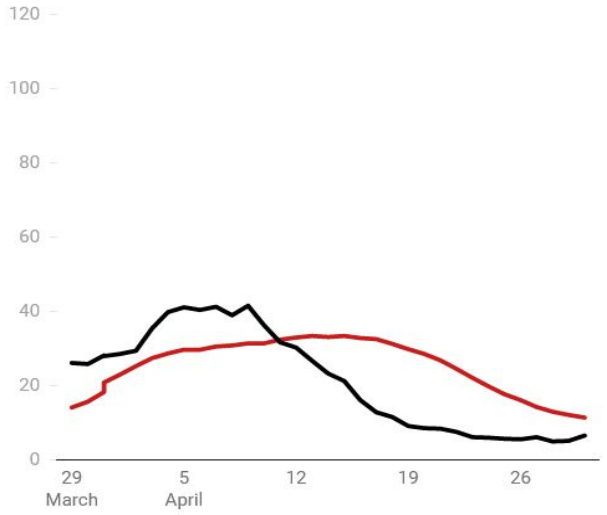
Infections, Hospitalizations, & Deaths by Percentage of State Population Vaccinated



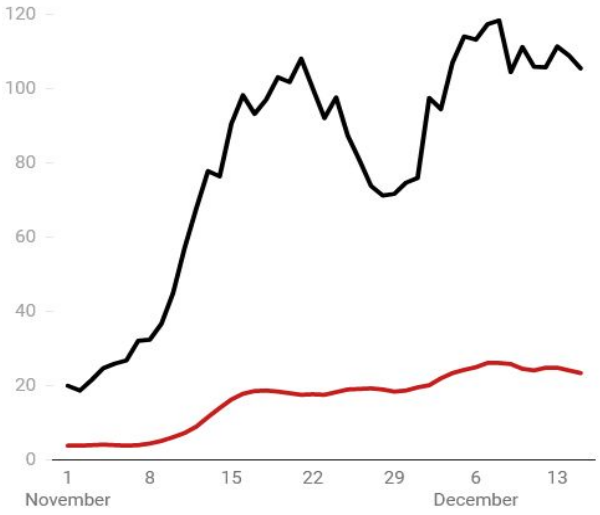
Infections per 100K | Hospitalizations per 100K | Deaths per 100K

Source: Covid Act Now—August 3, 2021; Measures last 14 days; 16 states <40%, 17 states 40-60%, 20 states 60%+ vaccination

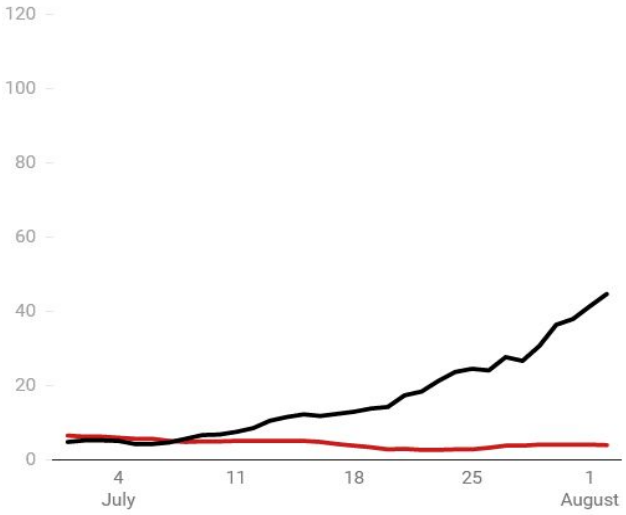
Comparing Vermont Case Increases with Hospitalizations



Initial Case Increase
(March 29, 2020 to April 30, 2020)



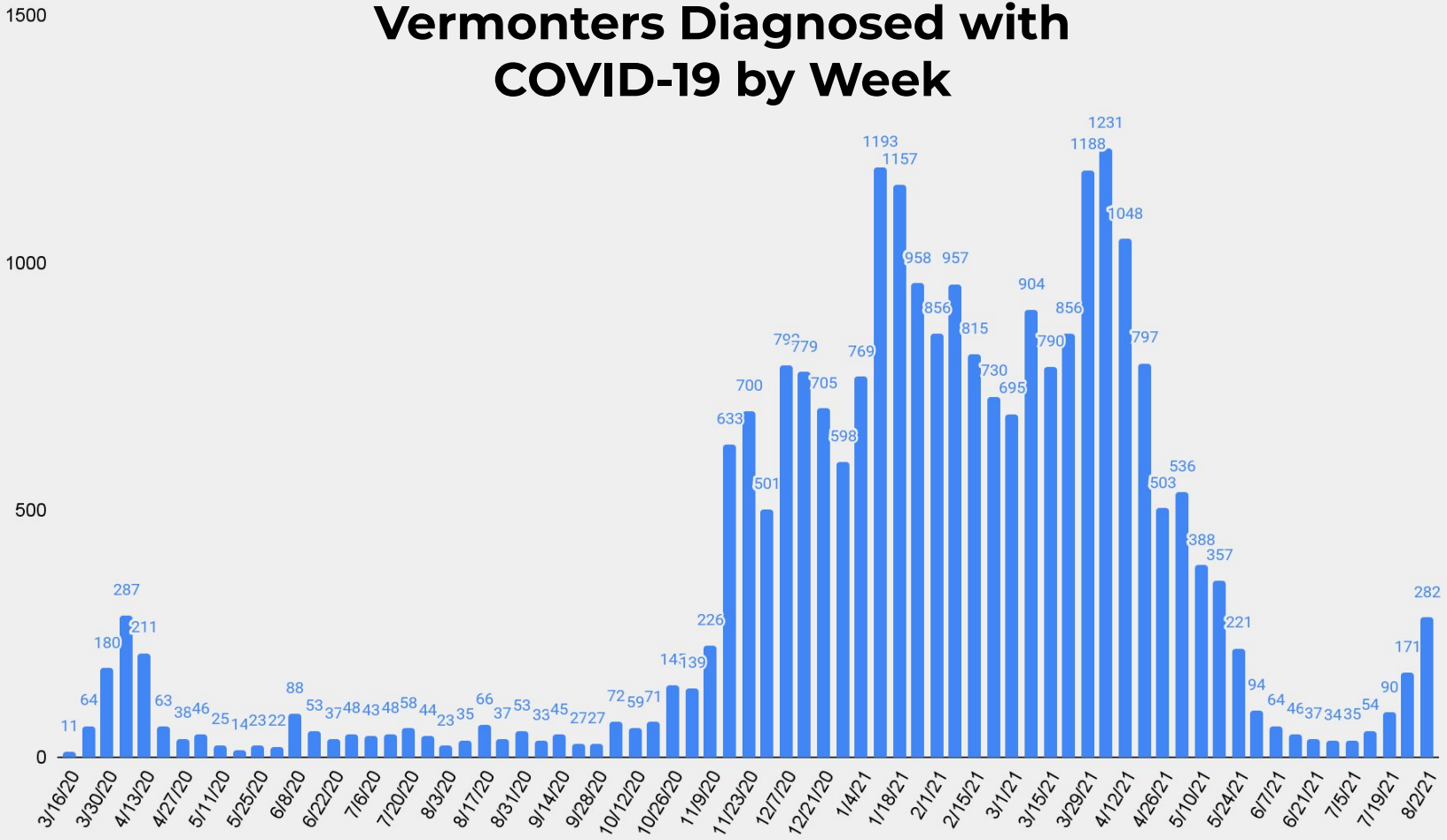
Winter Case Increase
(November 1, 2020 to December 15, 2020)



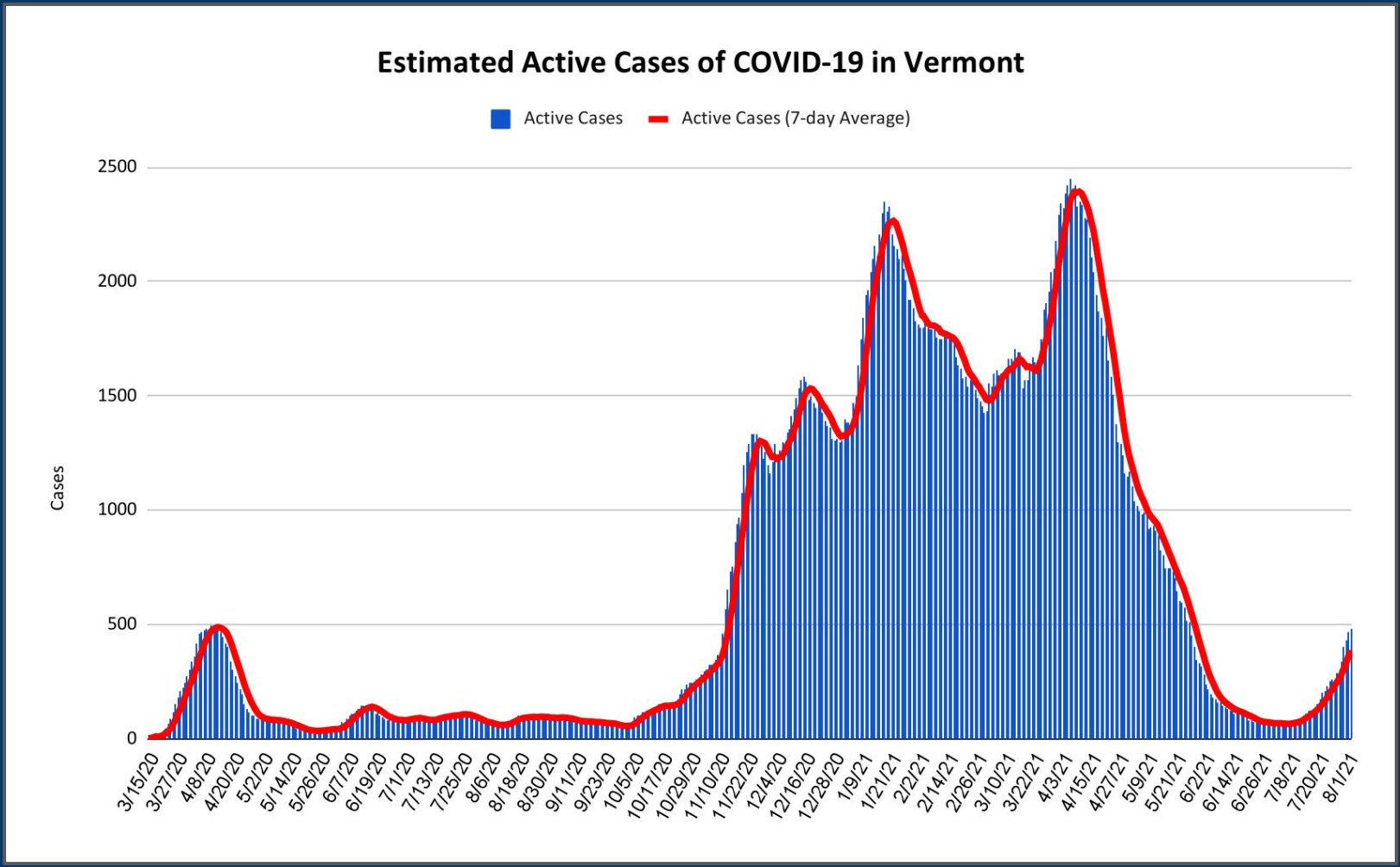
Current Case Increase
(July 1, 2021 to August 3, 2021)

Source: Vermont Department of Health—August 3, 2021

Vermonters Diagnosed with COVID-19 by Week



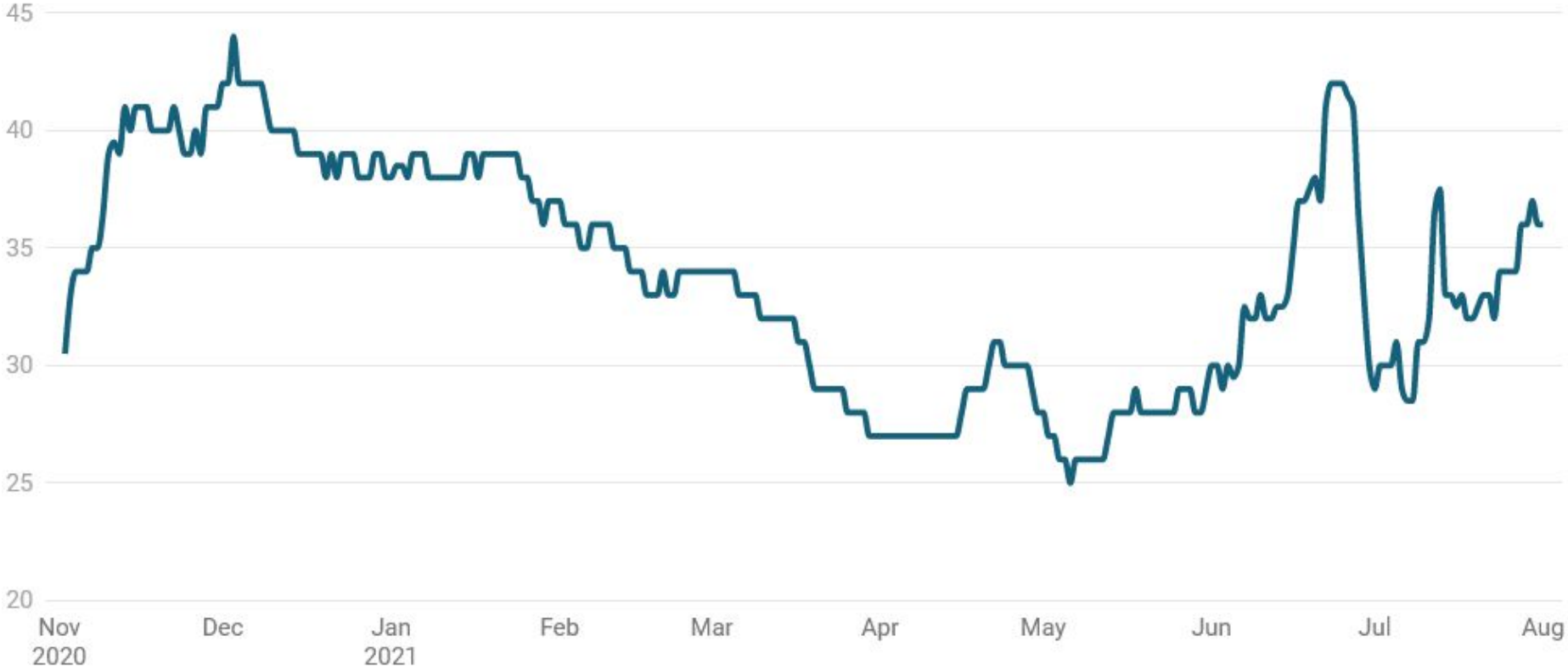
Source: Vermont Department of Health (week calculated as Tuesday to Monday)



Source: Vermont Dept. of Health—August 3, 2021

Age of Infected Vermonters

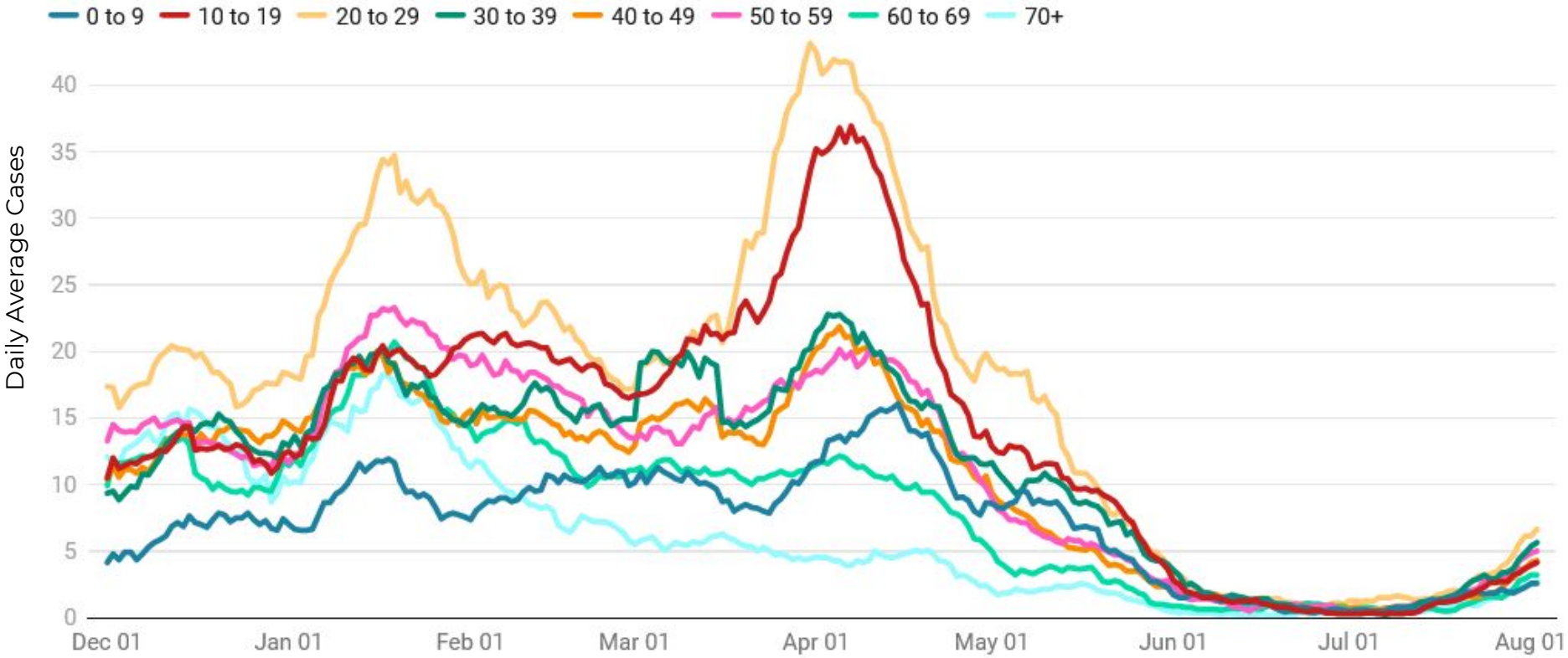
Median age of COVID positive individuals in VT over the last 14 days.



Source: VDH—August 2, 2021

Vermont Cases by Age Band

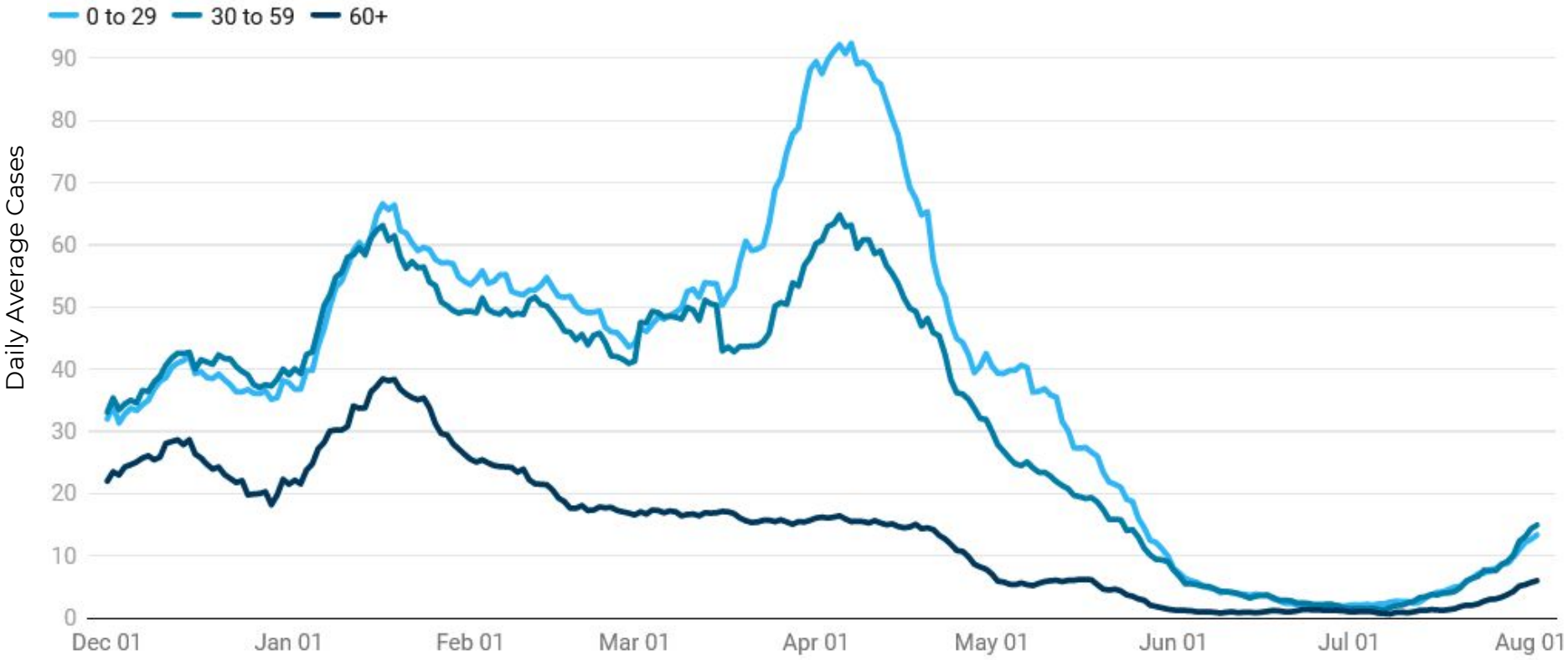
14-day Averages



Source: VDH—August 2, 2021

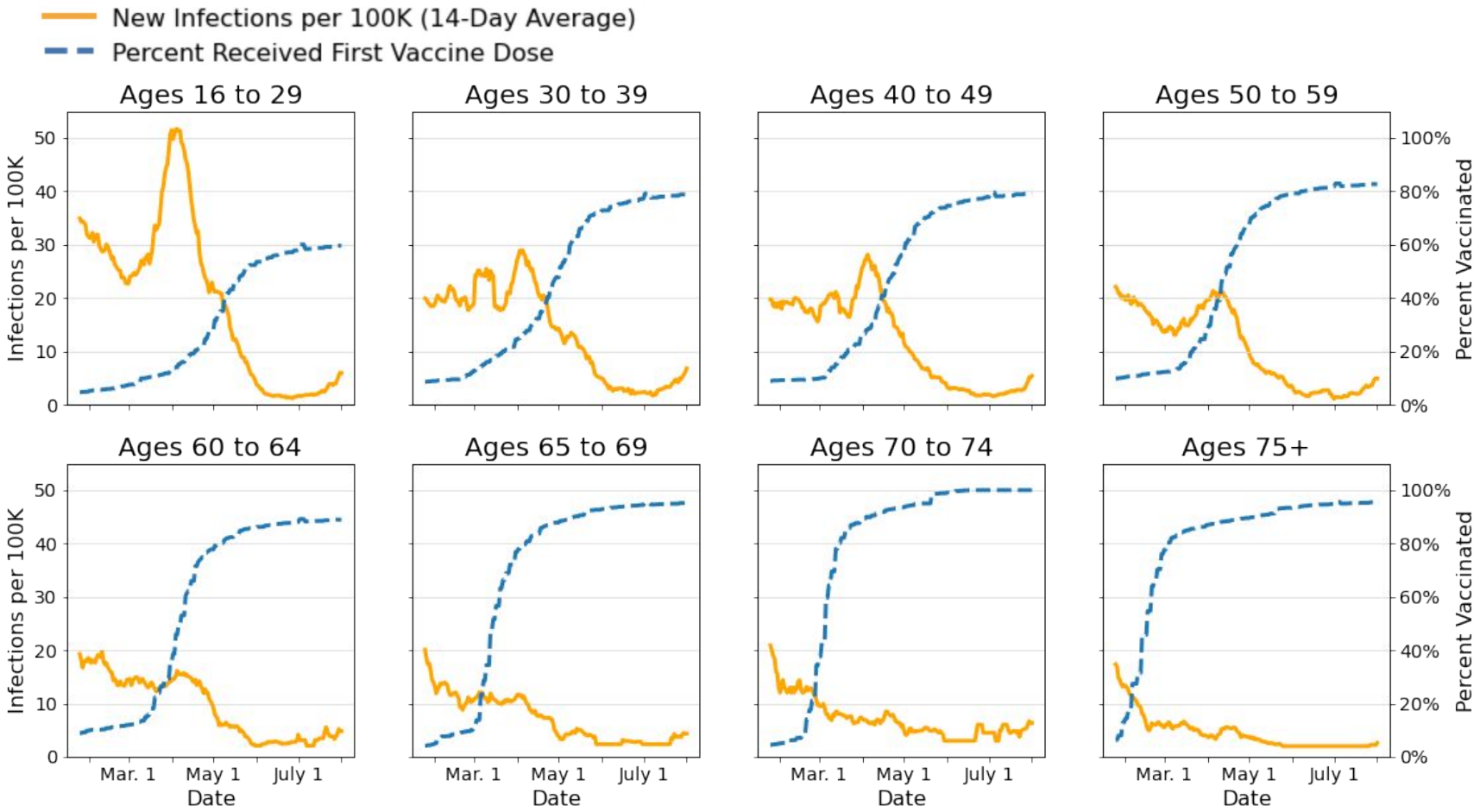
Vermont Cases by Age Band

14-day Averages



Source: VDH—August 2, 2021

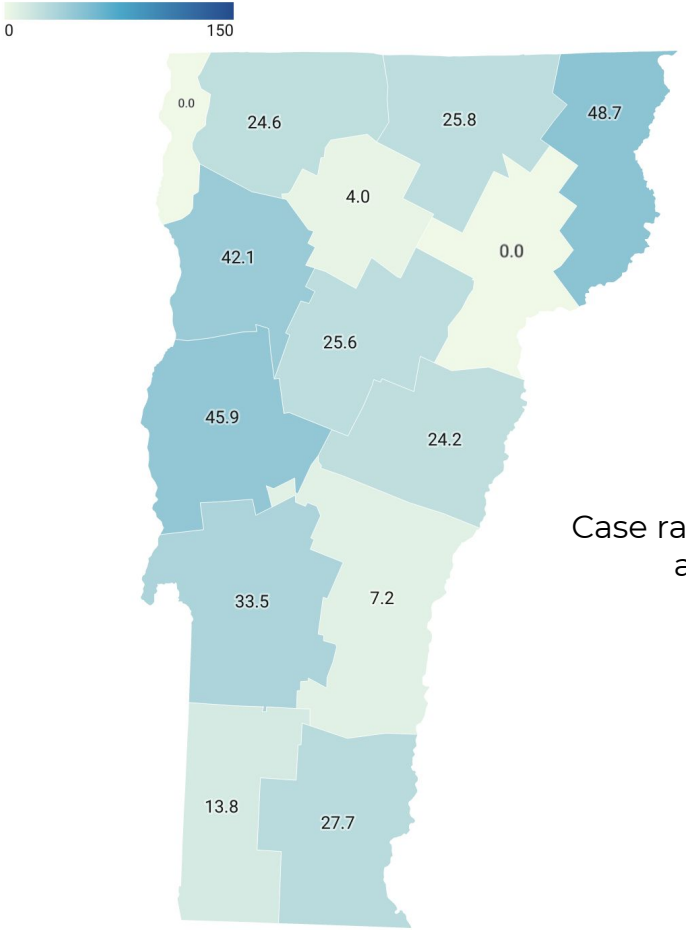
Vermont Case Rate & Vaccination by Age Band



Source: VDH—August 2, 2021

Vermont Weekly Cases by County (per 100,000)

Results Reported July 20 to 26



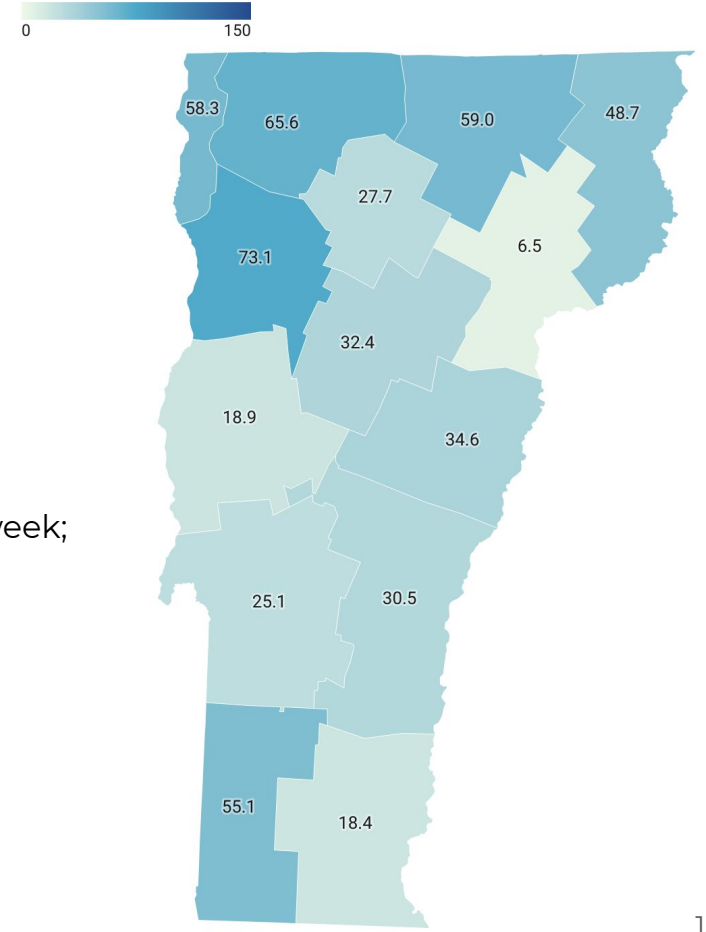
Map: Vermont DFR COVID Modeling Team • Source: Vermont Dept. of Health • Created with Datawrapper

Covid-19 case rates
rose this past week

Case rates rose in **10 counties** this week;
all counties reporting cases

Vermont Weekly Cases by County (per 100,000)

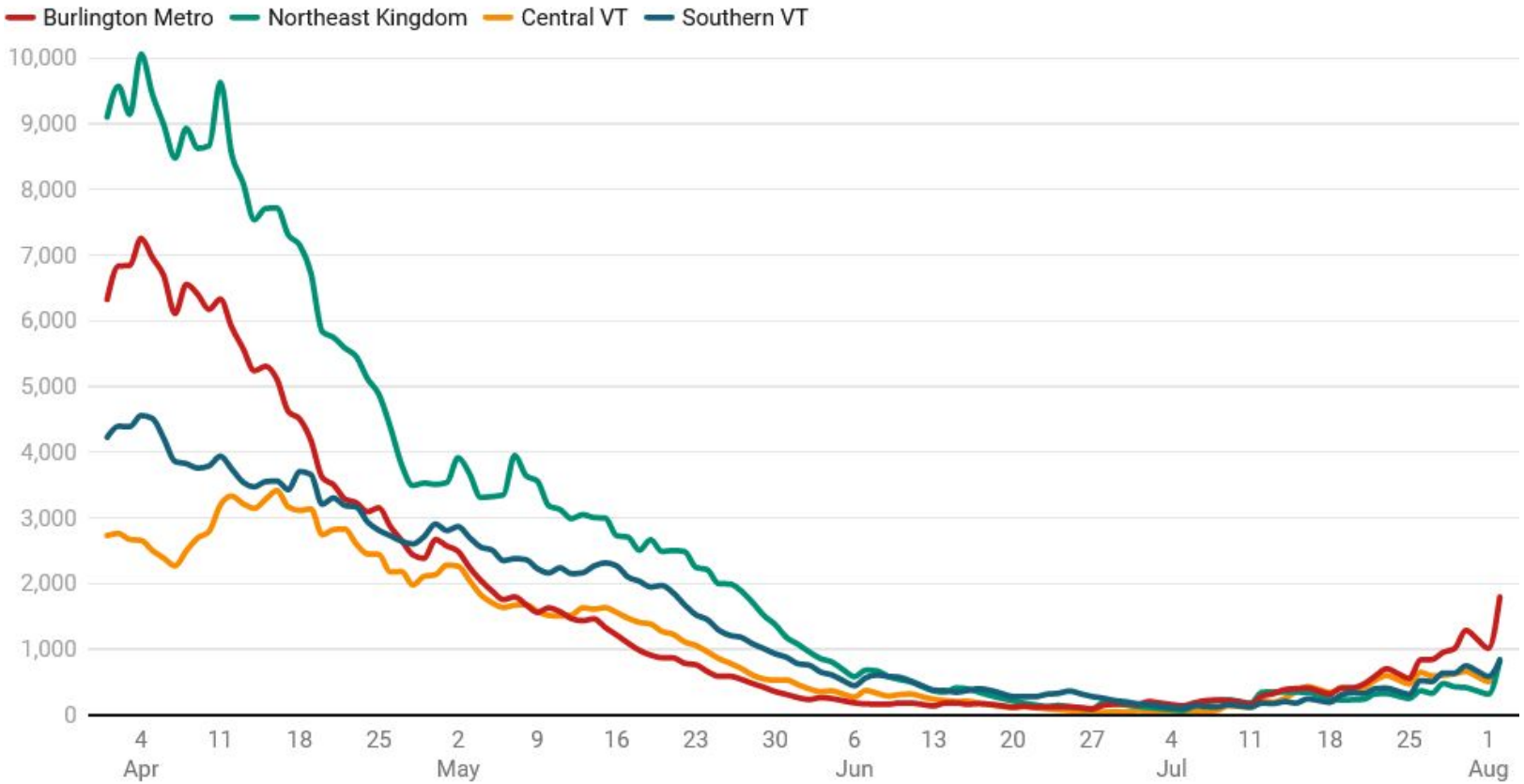
Results Reported July 27 to August 2



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

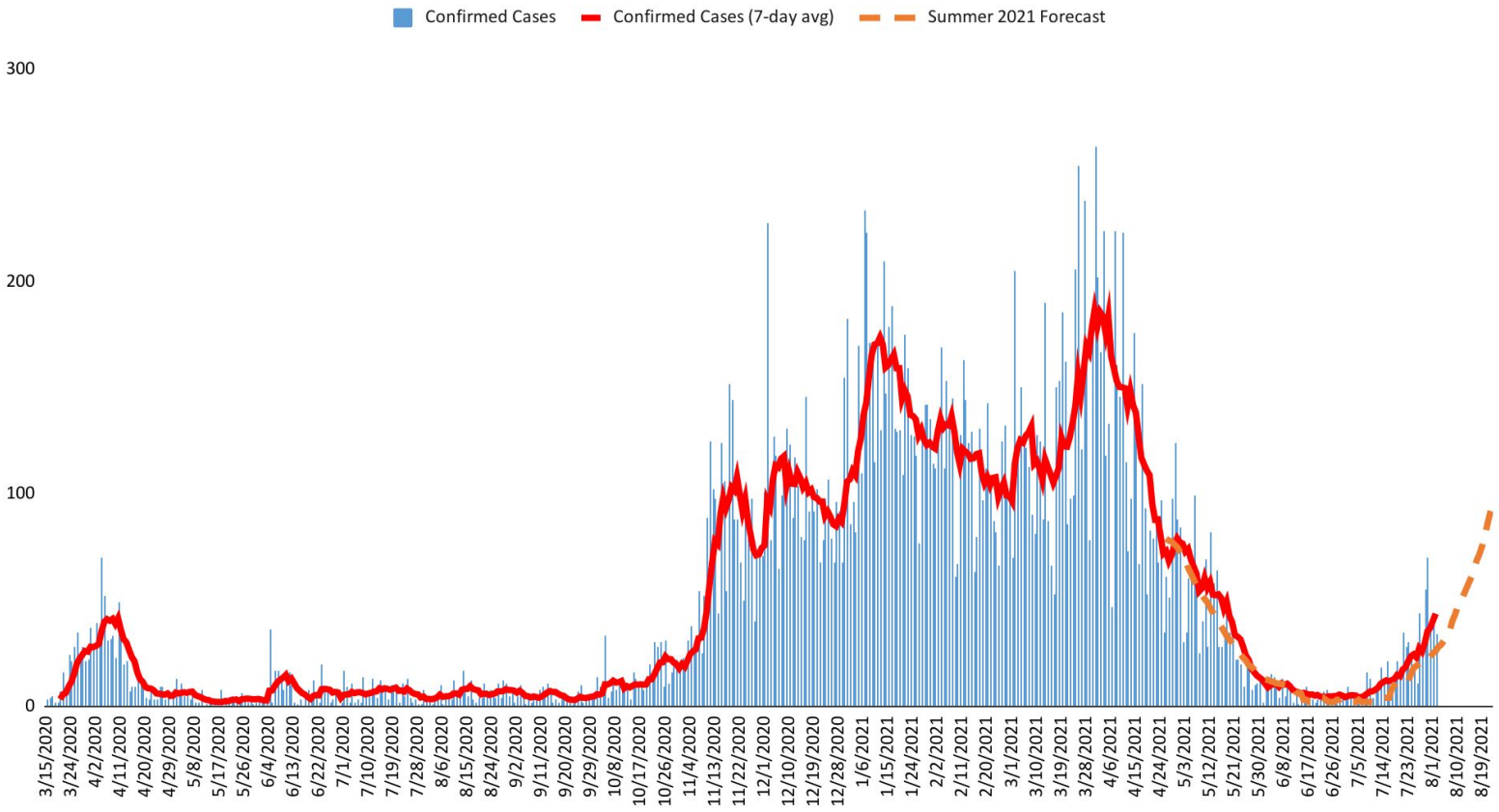
Active COVID Cases per Million in Vermont Regions

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 2, 2021

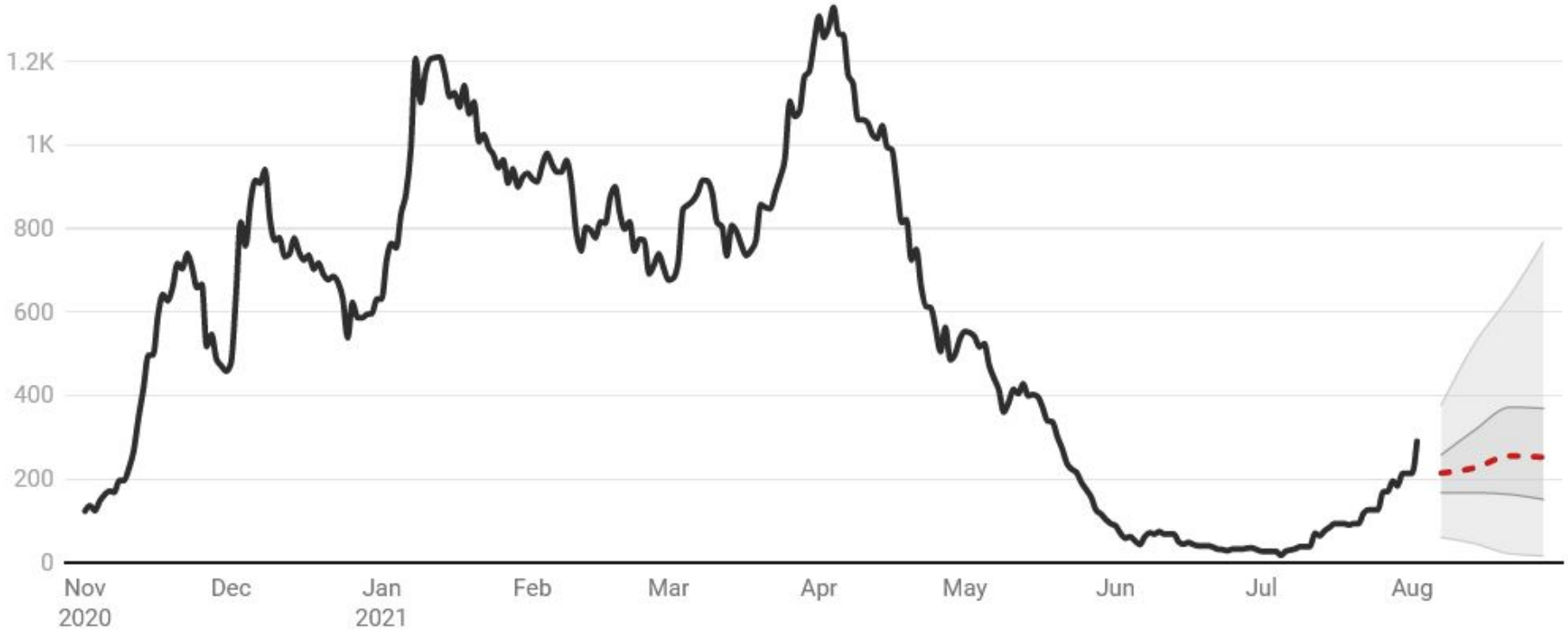
Vermont Forecast



Source: Johns Hopkins University Data, VDH, & Oliver Wyman Forecast Model—Actual through August 3, 2021

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.

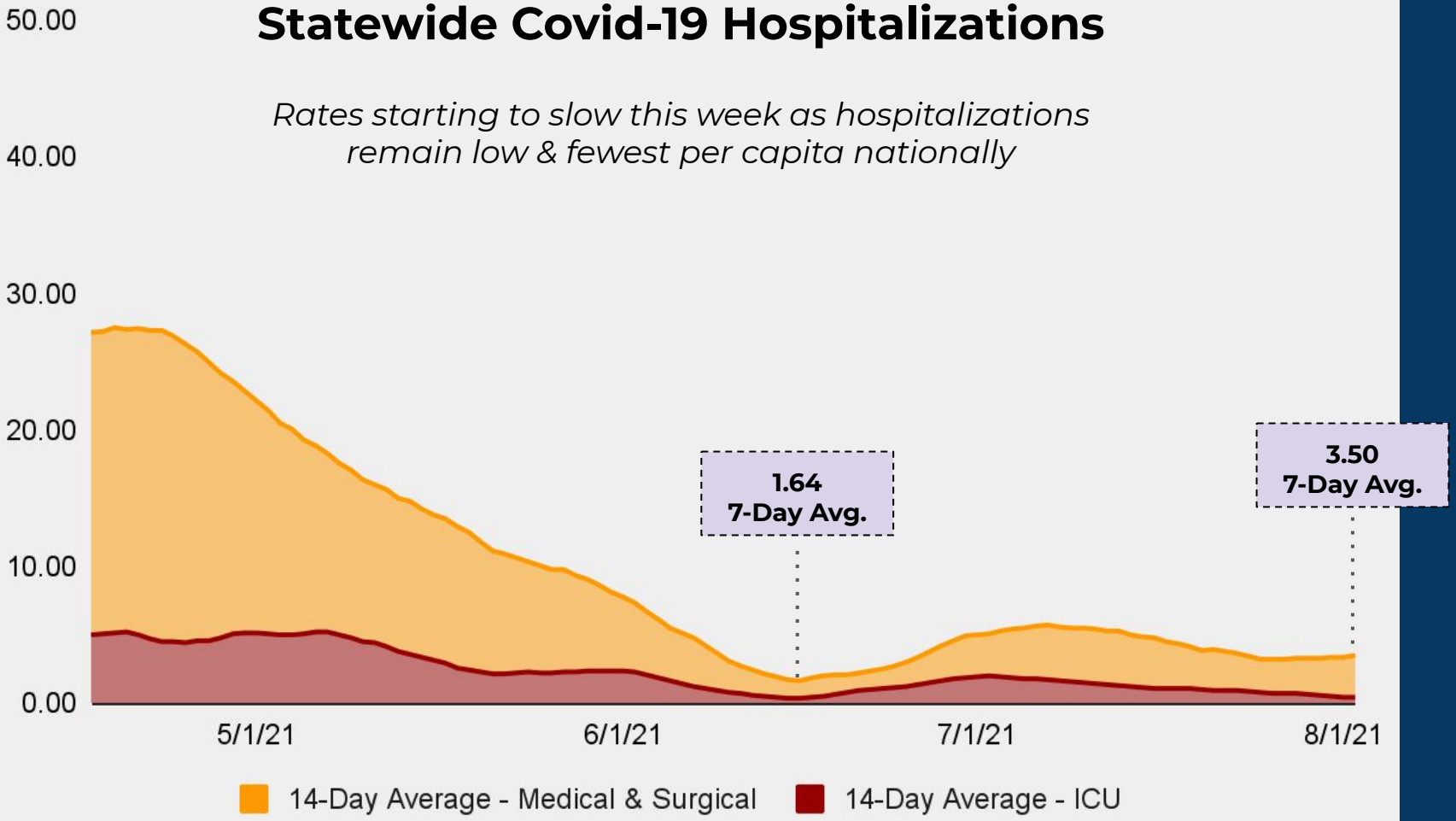


Source: Centers for Disease Control and Prevention—August 3, 2021

Vermont Hospitalization Data

Statewide Covid-19 Hospitalizations

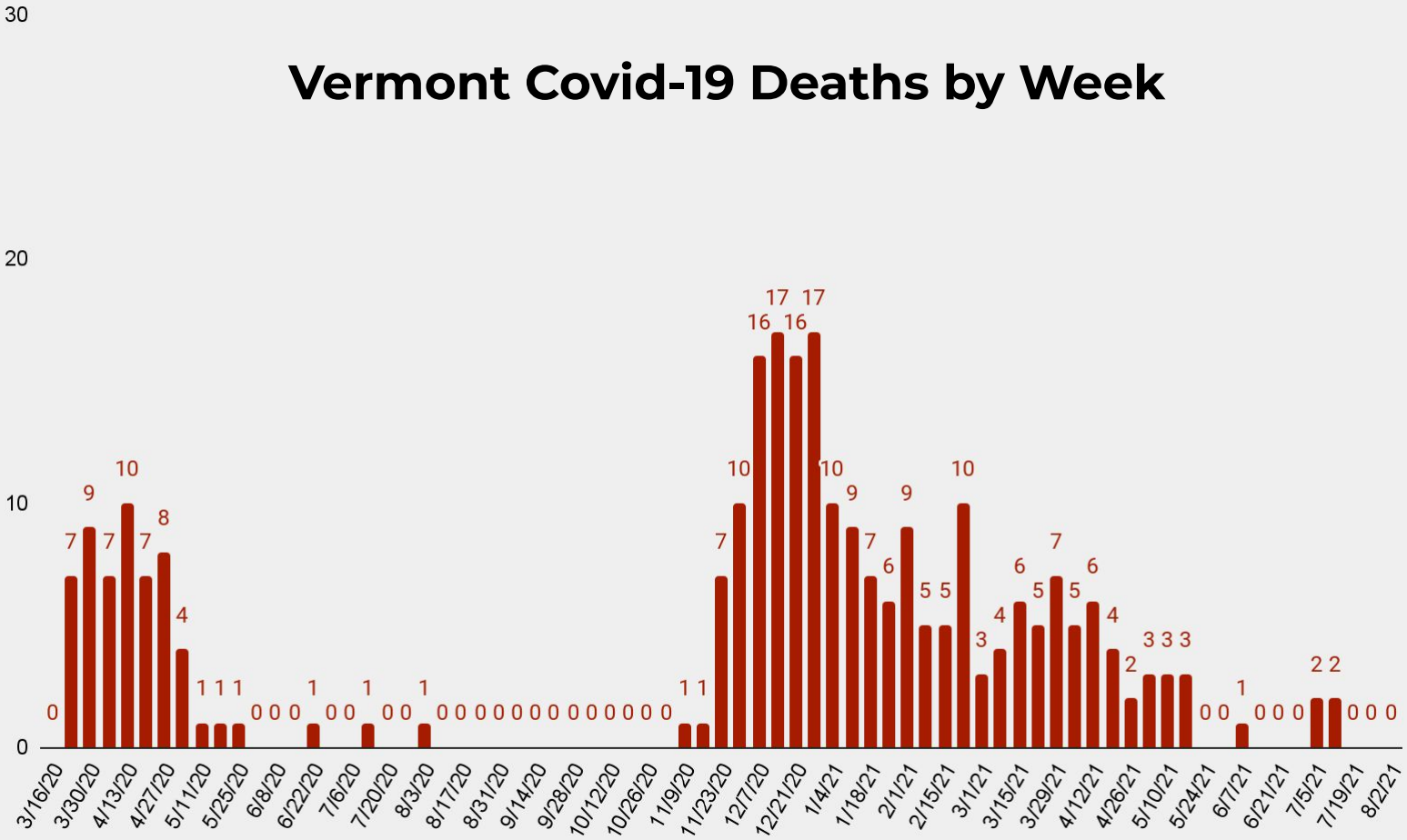
Rates starting to slow this week as hospitalizations remain low & fewest per capita nationally



Source: Vermont Department of Health—August 3, 2021

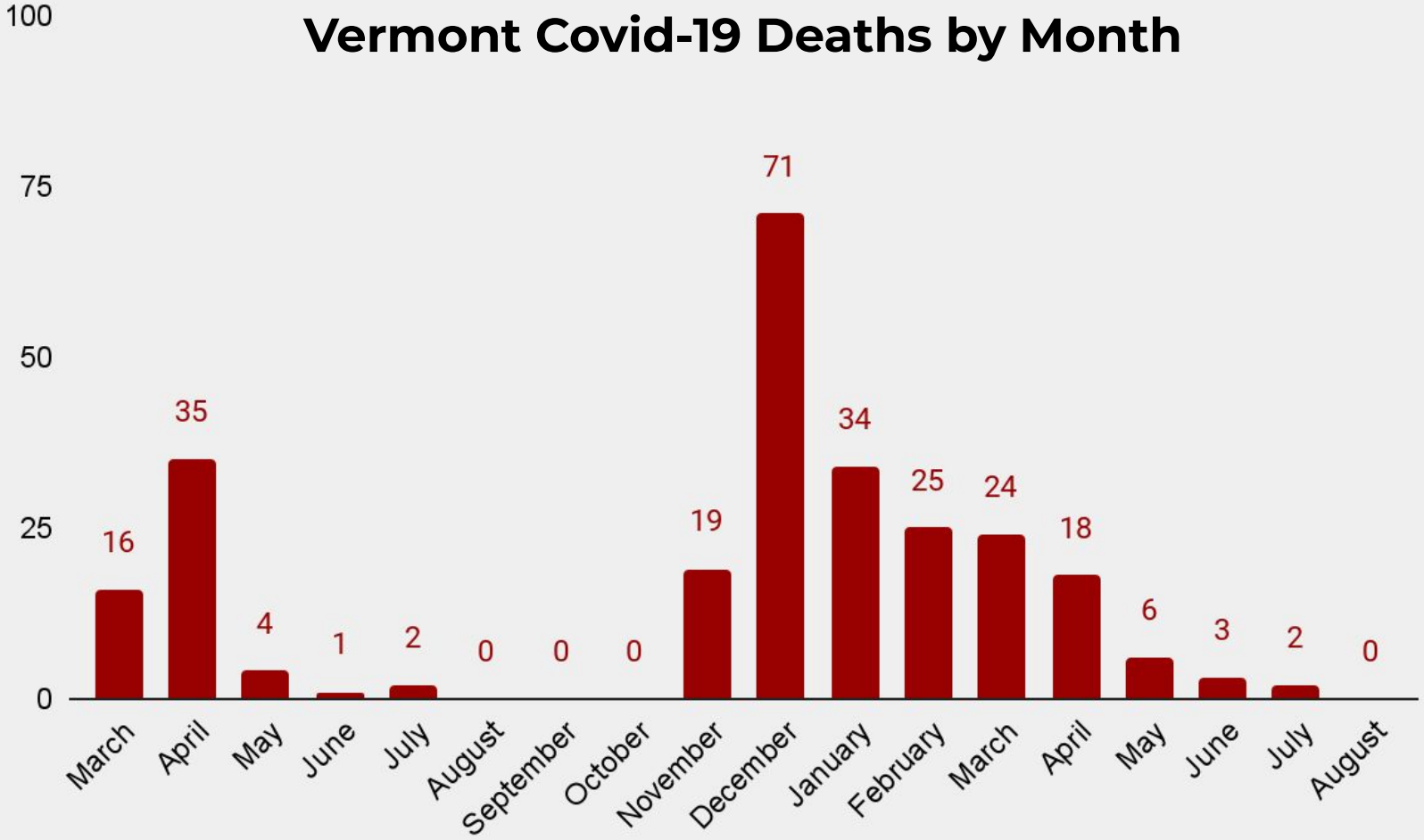
Vermont Fatality Data

Vermont Covid-19 Deaths by Week

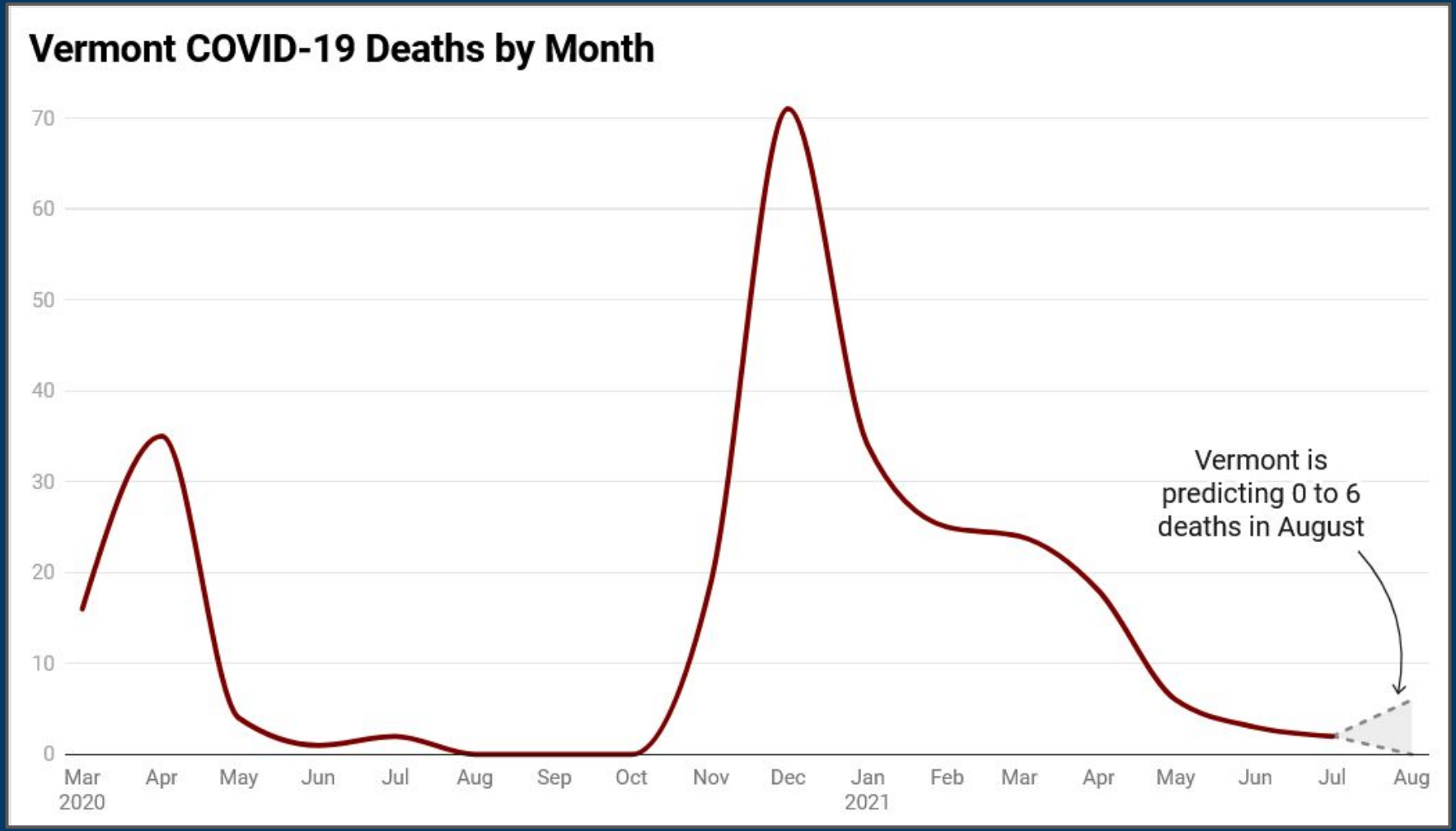


Source: Vermont Department of Health—August 2, 2021 (week ending)

Vermont Covid-19 Deaths by Month



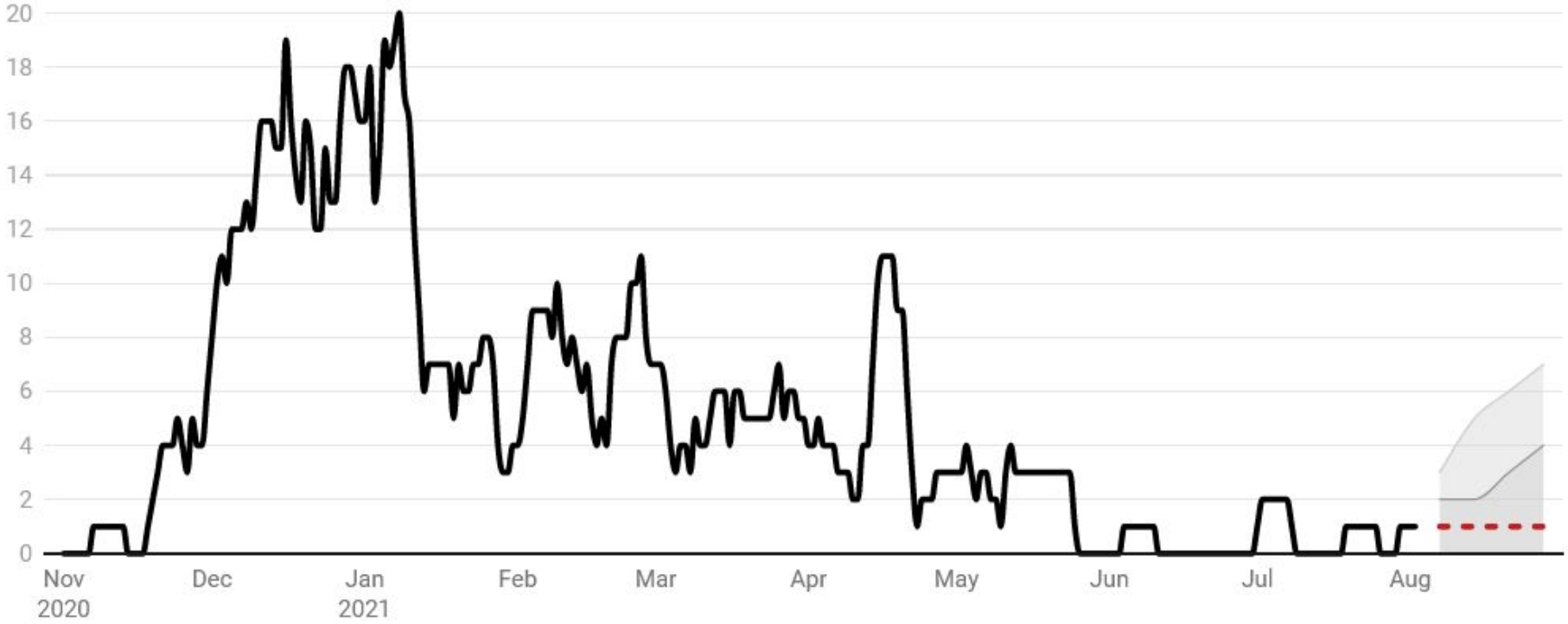
Source: Vermont Department of Health—August 3, 2021; deaths attributed to month in which death occurred rather than reported



Source: Vermont Department of Health—August 3, 2021

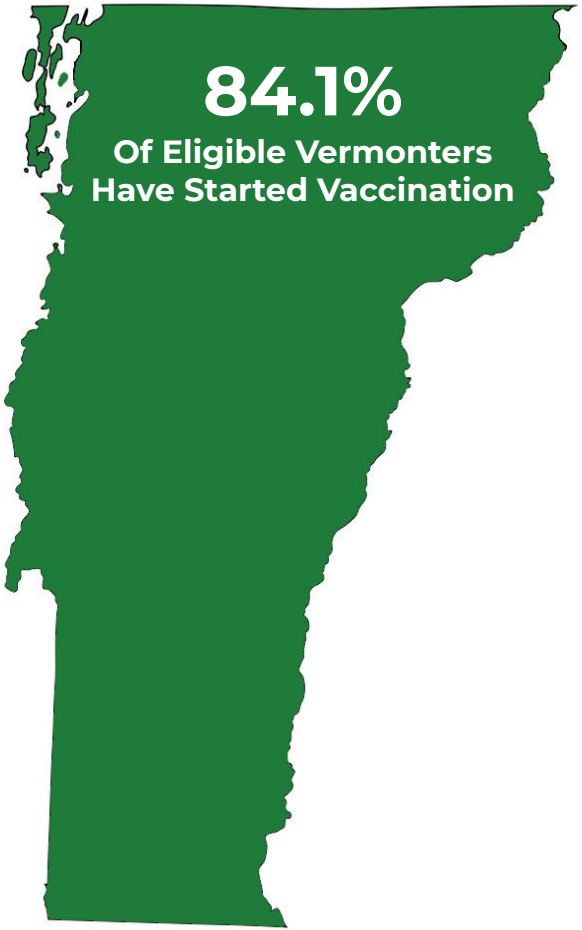
VT Weekly COVID-19 Deaths Forecast

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 3, 2021

Vermont Vaccination Data



Vermont Vaccination

+2,467
Since Last Week

463,149
Vermonters with
at Least 1 Dose

87,801
Eligible Vermonters
still to be vaccinated

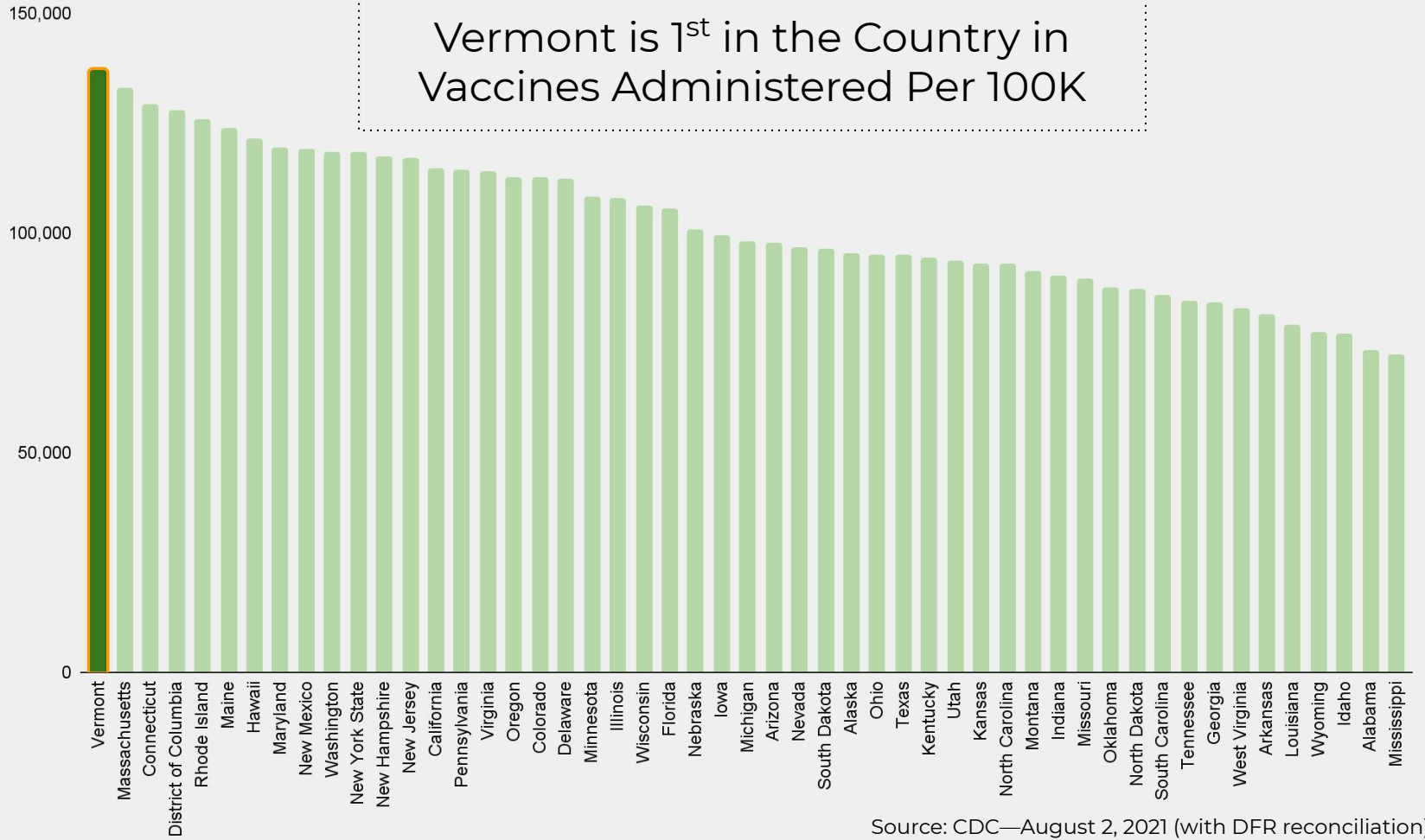
Source: CDC—August 2, 2021 (with DFR reconciliation)

Vermont CDC Vaccine Scorecard

Metric	Figure	State Ranking
Doses Administered per 100K	137,280	1
% At Least 1 Dose (Eligible)	84.1%	1
% Fully Vaccinated (Eligible Population)	75.0%	1
% At Least 1 Dose (Full Population)	74.3%	1
% Fully Vaccinated (Full Population)	66.2%	1
Doses Administered 65+ per 100K	201,080	1

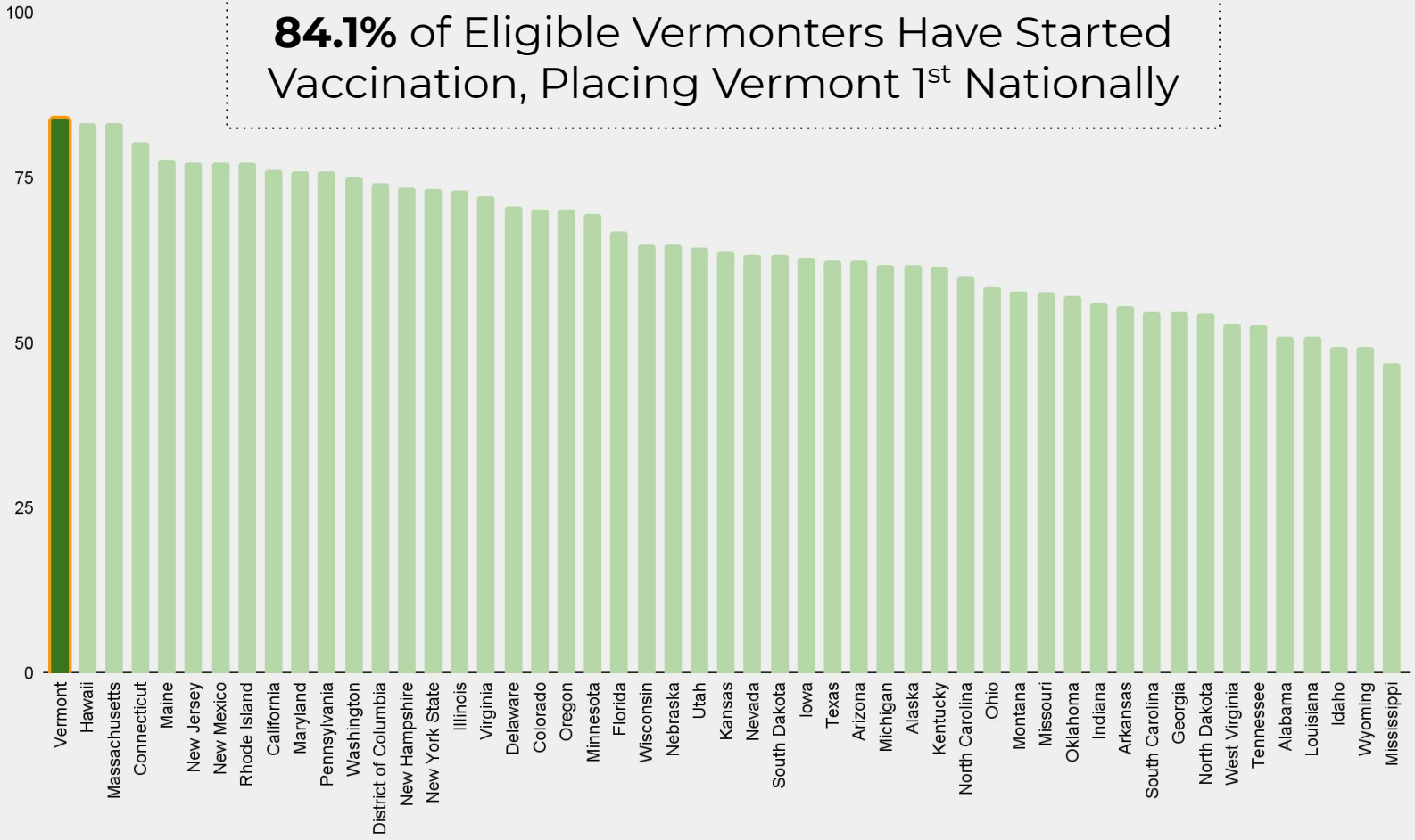
Source: CDC—August 2, 2021 (with DFR reconciliation)

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



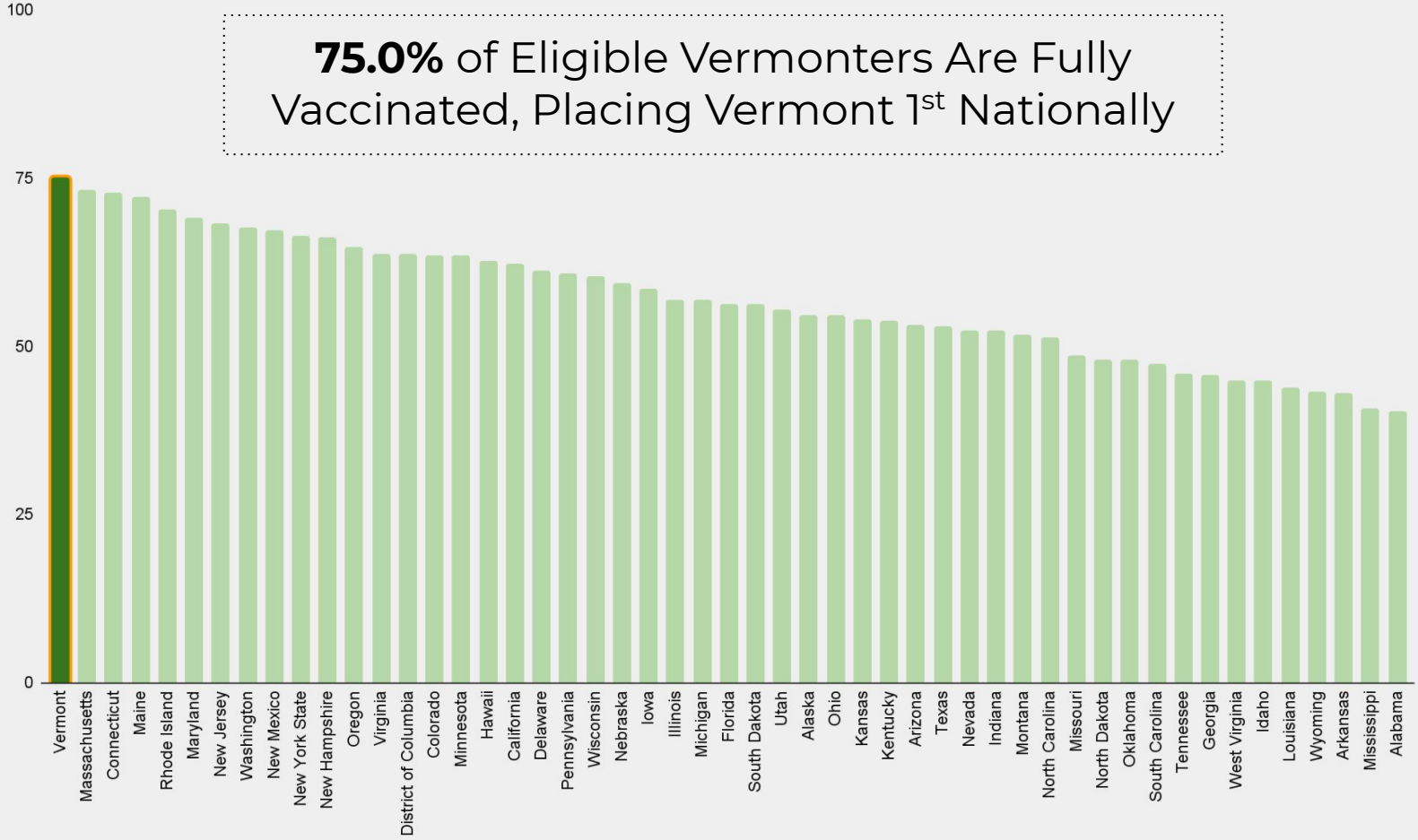
Source: CDC—August 2, 2021 (with DFR reconciliation)

84.1% of Eligible Vermonters Have Started Vaccination, Placing Vermont 1st Nationally



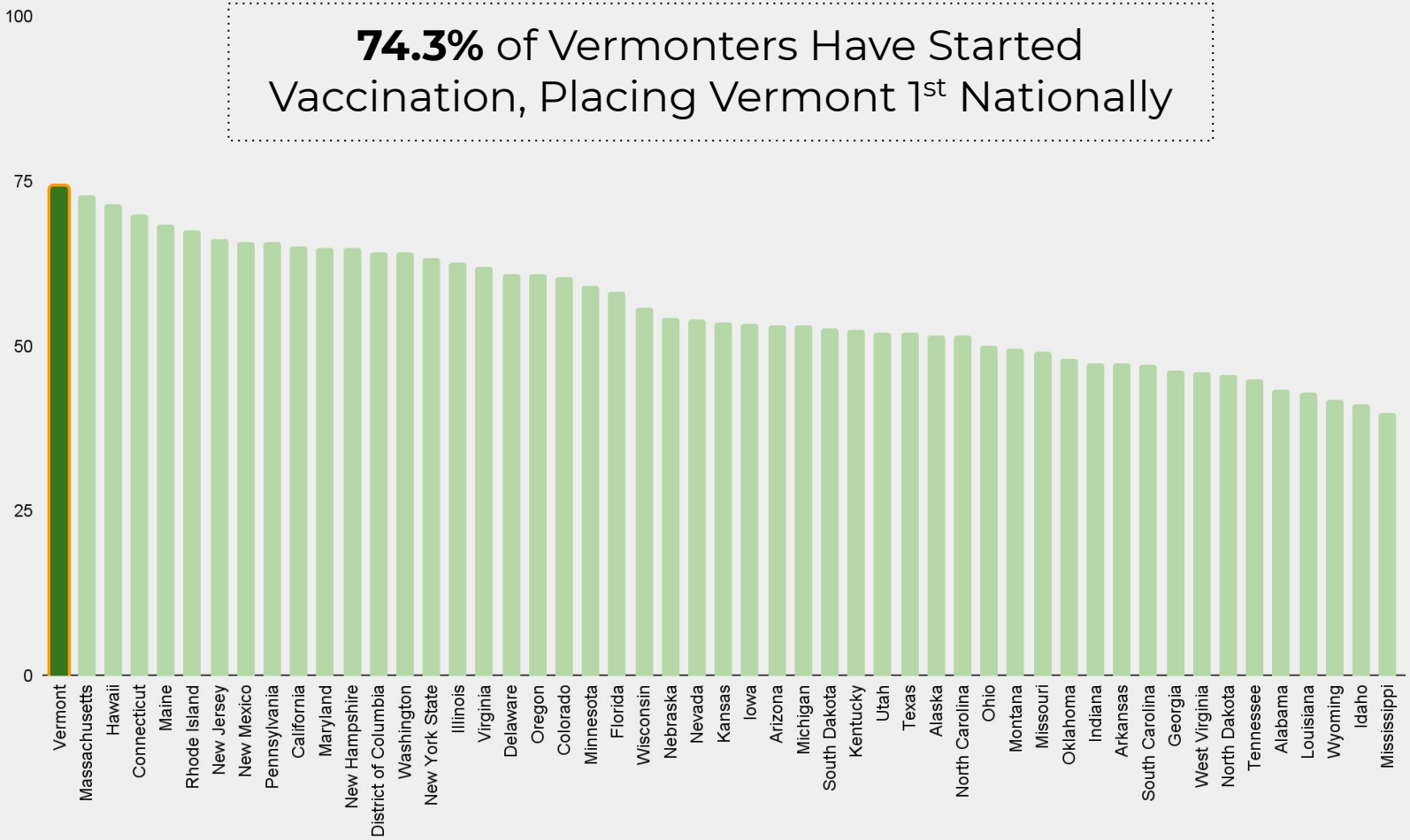
Source: CDC—August 2, 2021 (with DFR reconciliation)

75.0% of Eligible Vermonters Are Fully Vaccinated, Placing Vermont 1st Nationally



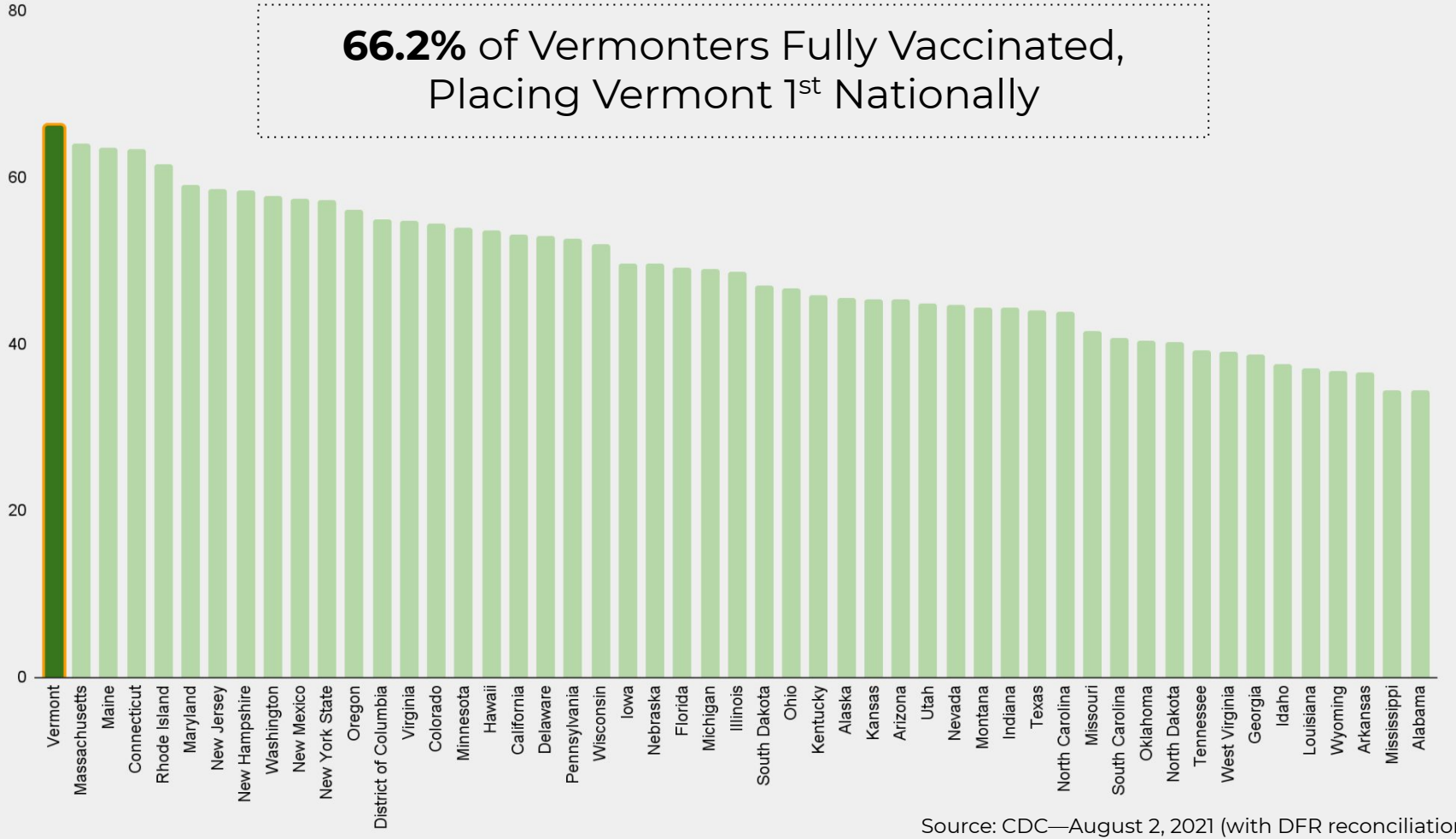
Source: CDC—August 2, 2021 (with DFR reconciliation)

74.3% of Vermonters Have Started Vaccination, Placing Vermont 1st Nationally



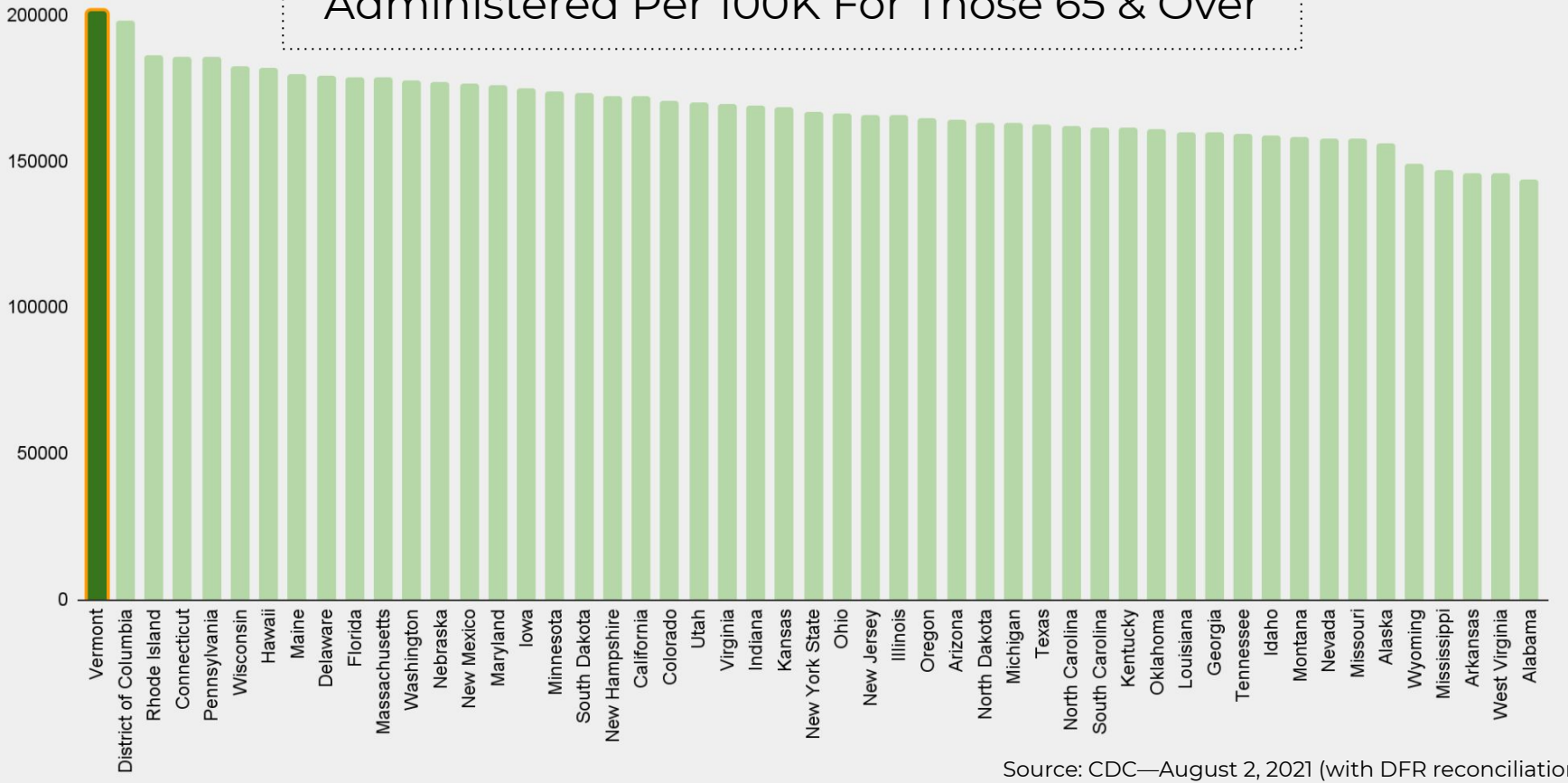
Source: CDC—August 2, 2021 (with DFR reconciliation)

66.2% of Vermonters Fully Vaccinated, Placing Vermont 1st Nationally



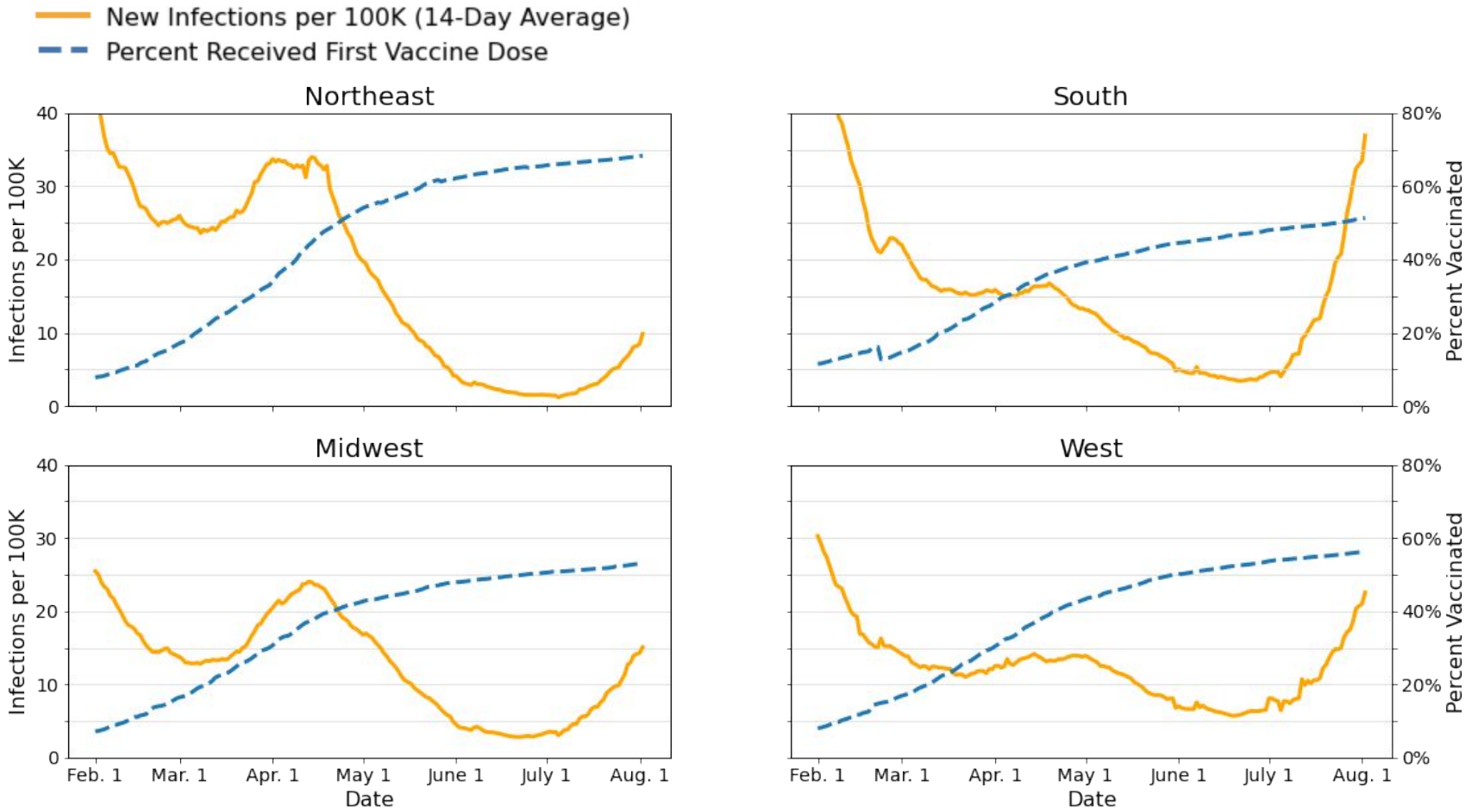
Source: CDC—August 2, 2021 (with DFR reconciliation)

Vermont is 1st in the Country in Vaccines Administered Per 100K For Those 65 & Over



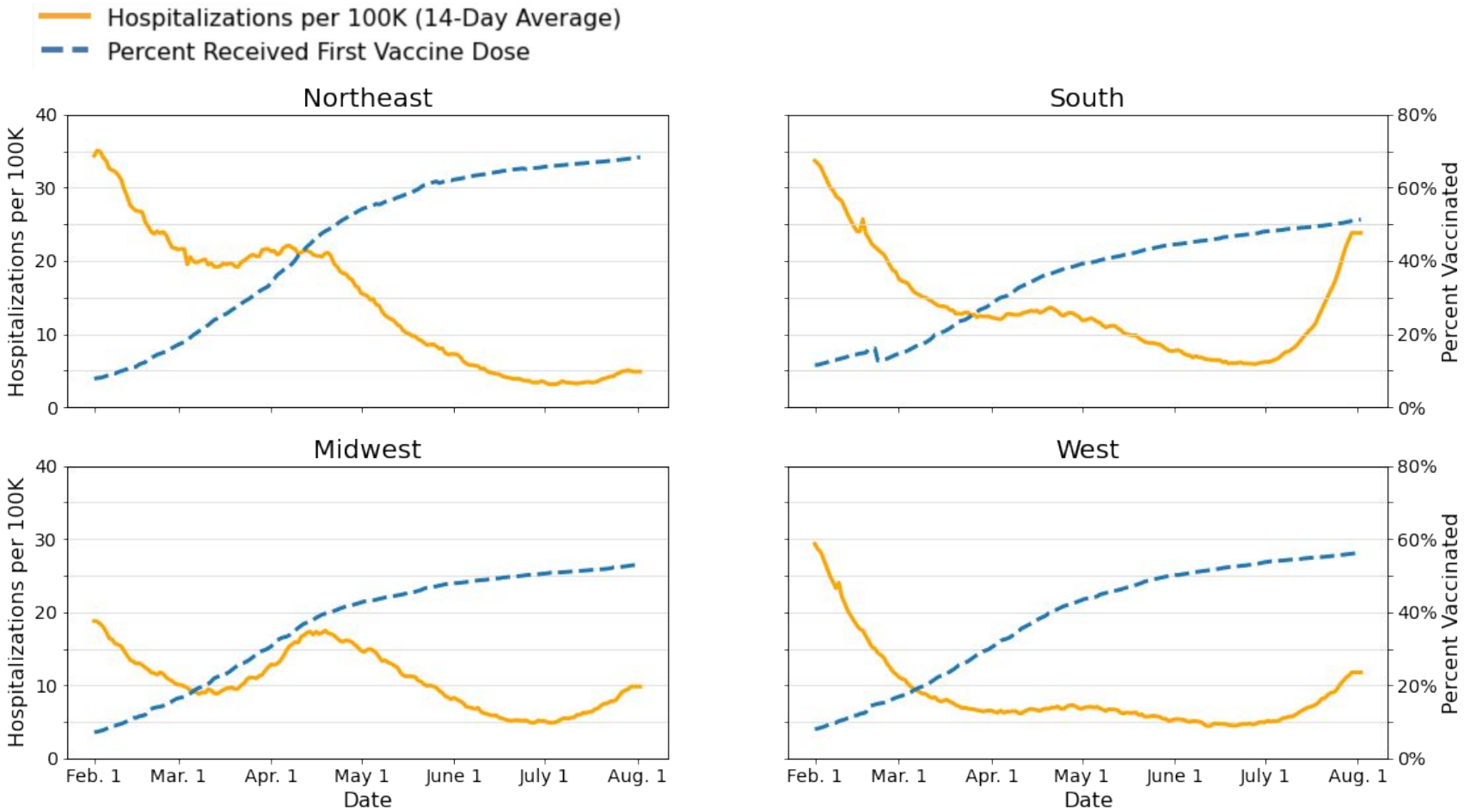
Source: CDC—August 2, 2021 (with DFR reconciliation)

US Census Region Case Rate & Vaccination



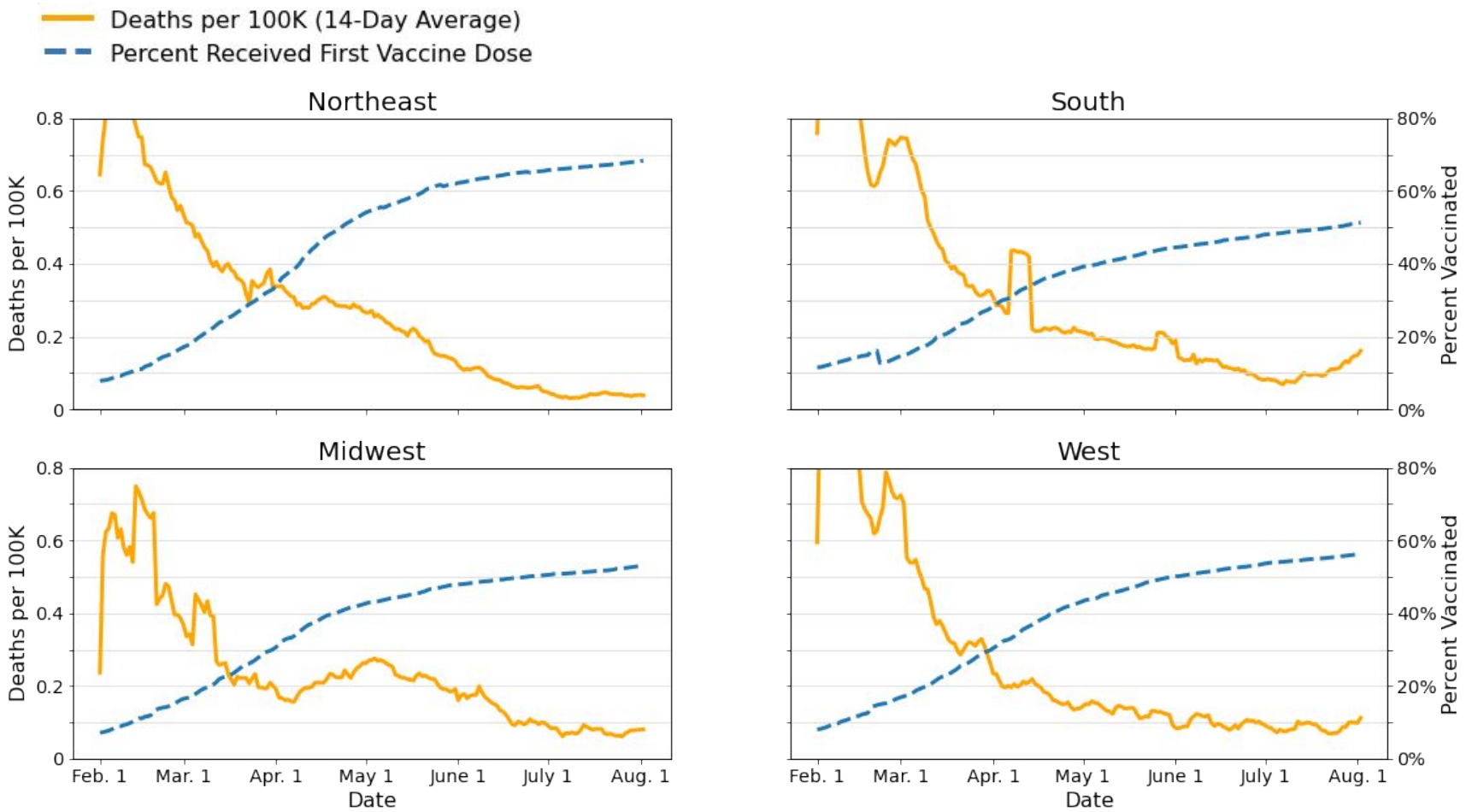
Source: Covid Act Now—August 2, 2021

US Census Region Hospitalizations & Vaccination



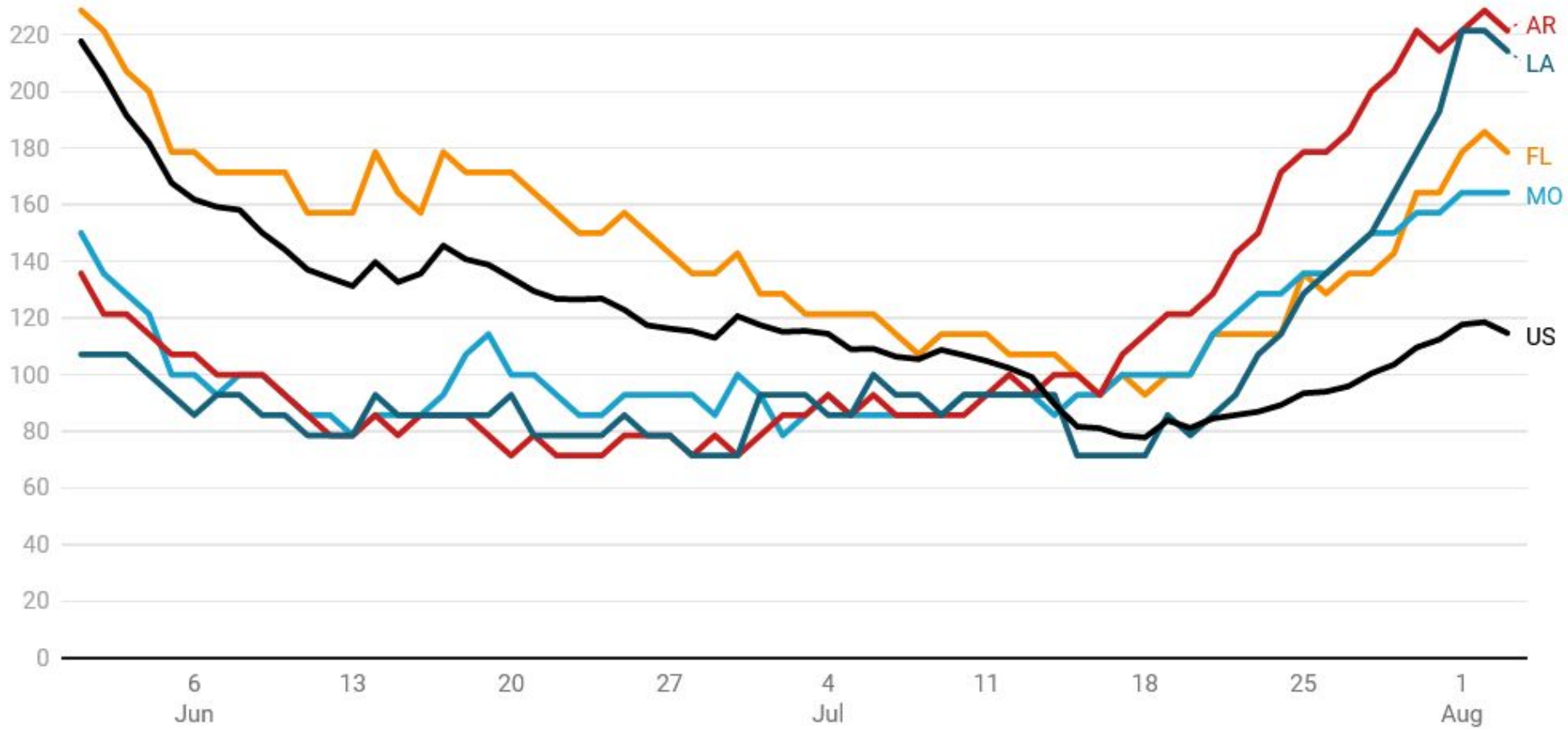
Source: Covid Act Now—August 2, 2021

US Census Region Deaths & Vaccination



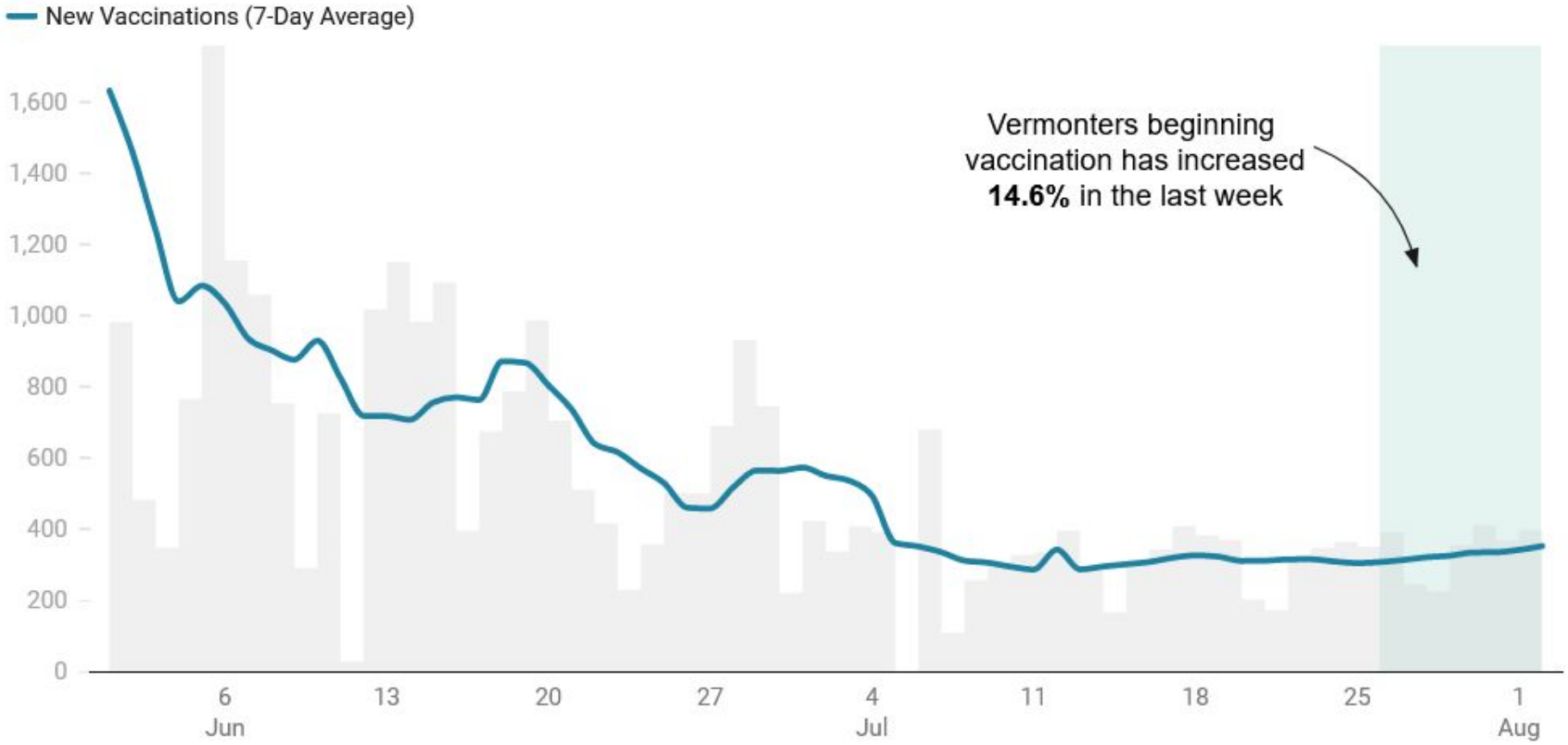
Source: Covid Act Now—August 2, 2021

New First Doses per 100K (14-Day average)

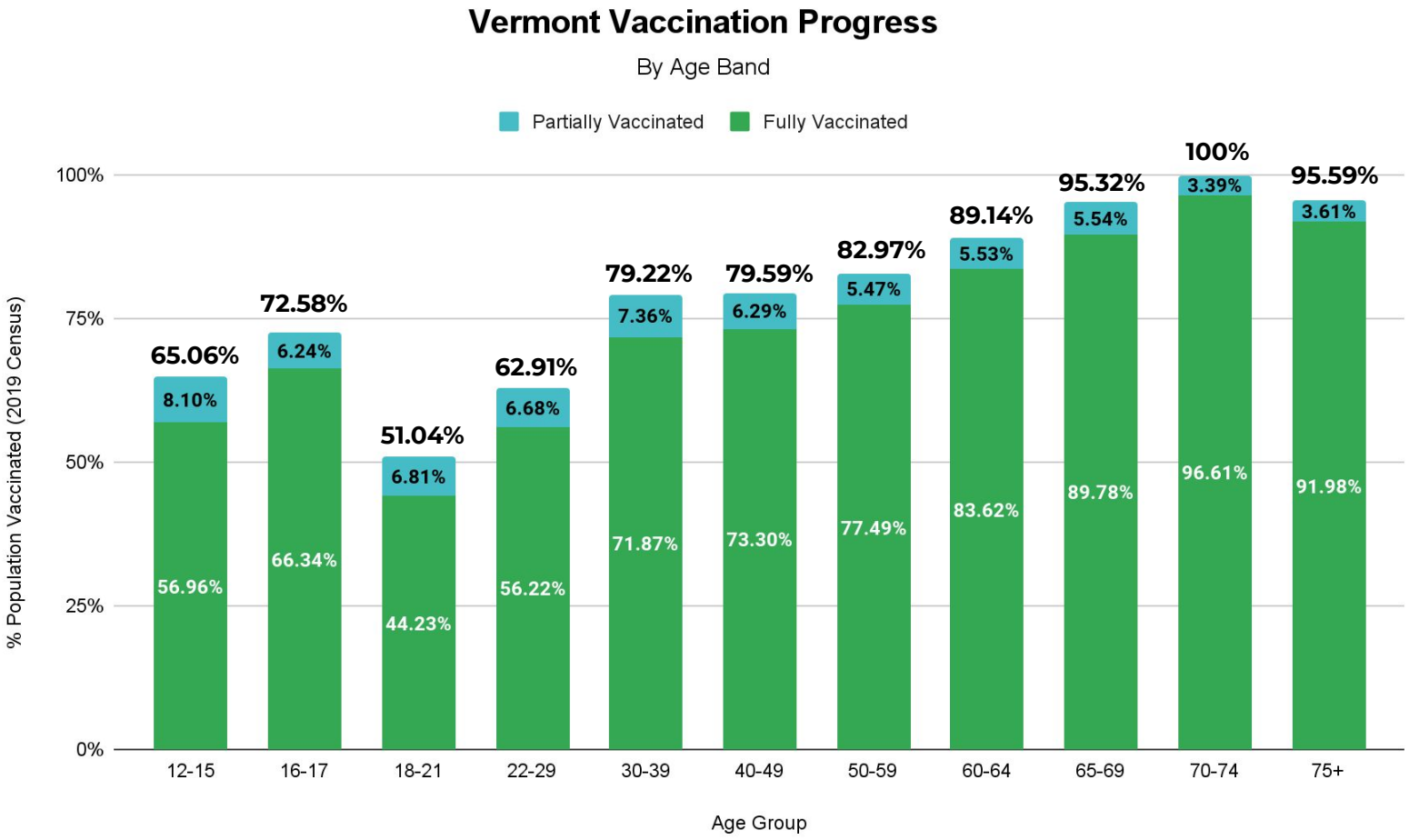


Source: CDC—August 2, 2021

Vermonters Initiating Vaccination by Day



Source: CDC—August 2, 2021



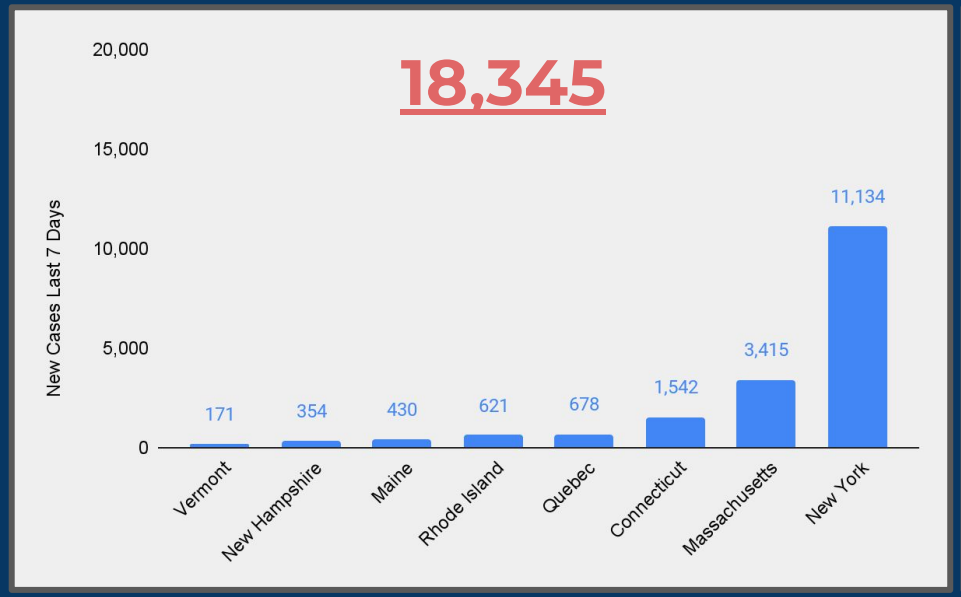
Source: Vermont Dept. of Health—August 3, 2021

Regional Data

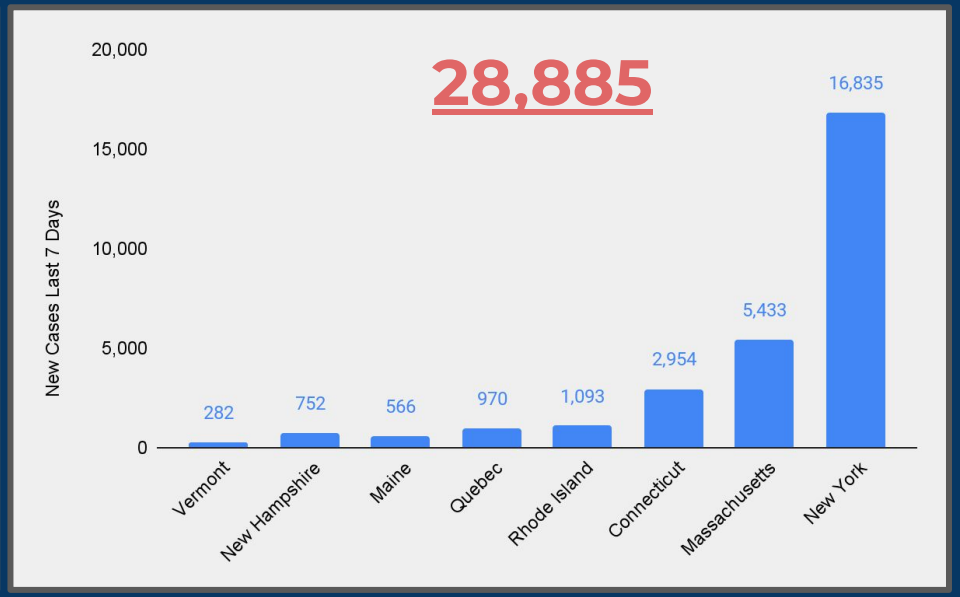
Regional Cases

36.49% Increase in New Cases

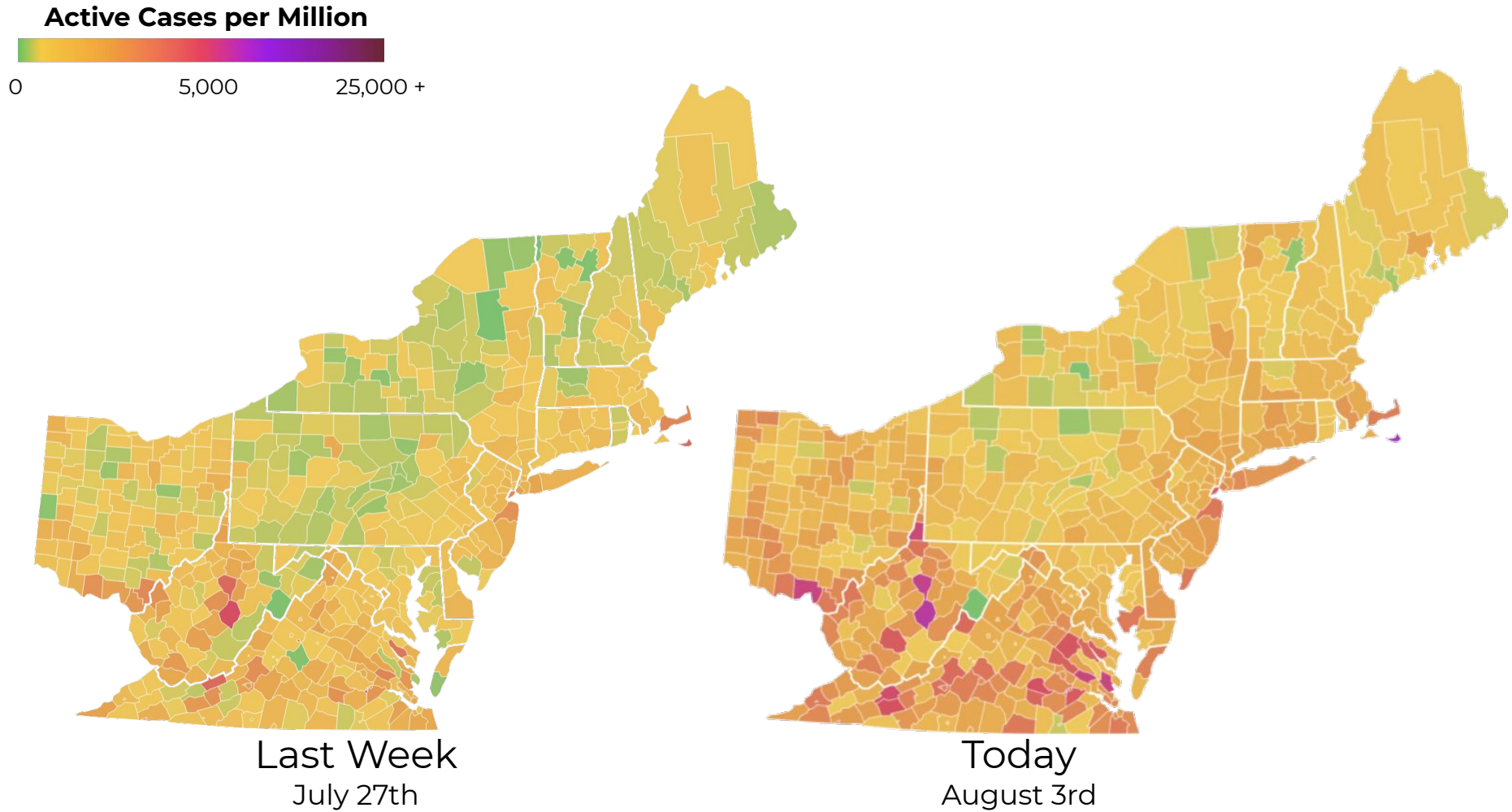
New Cases July 20th to July 26th



New Cases July 27th to August 2nd

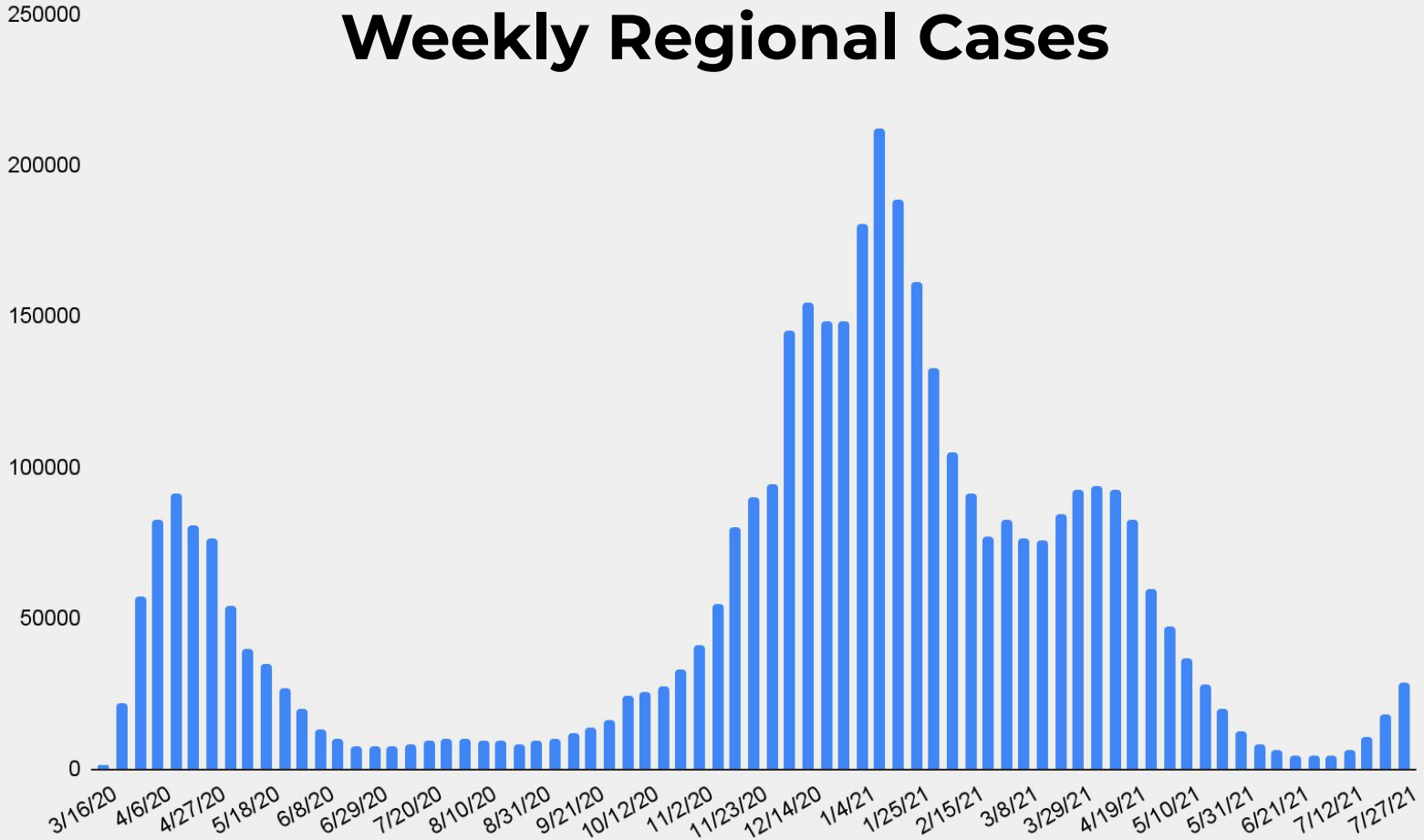


Sources: State Health Departments & CTV National News (Quebec)



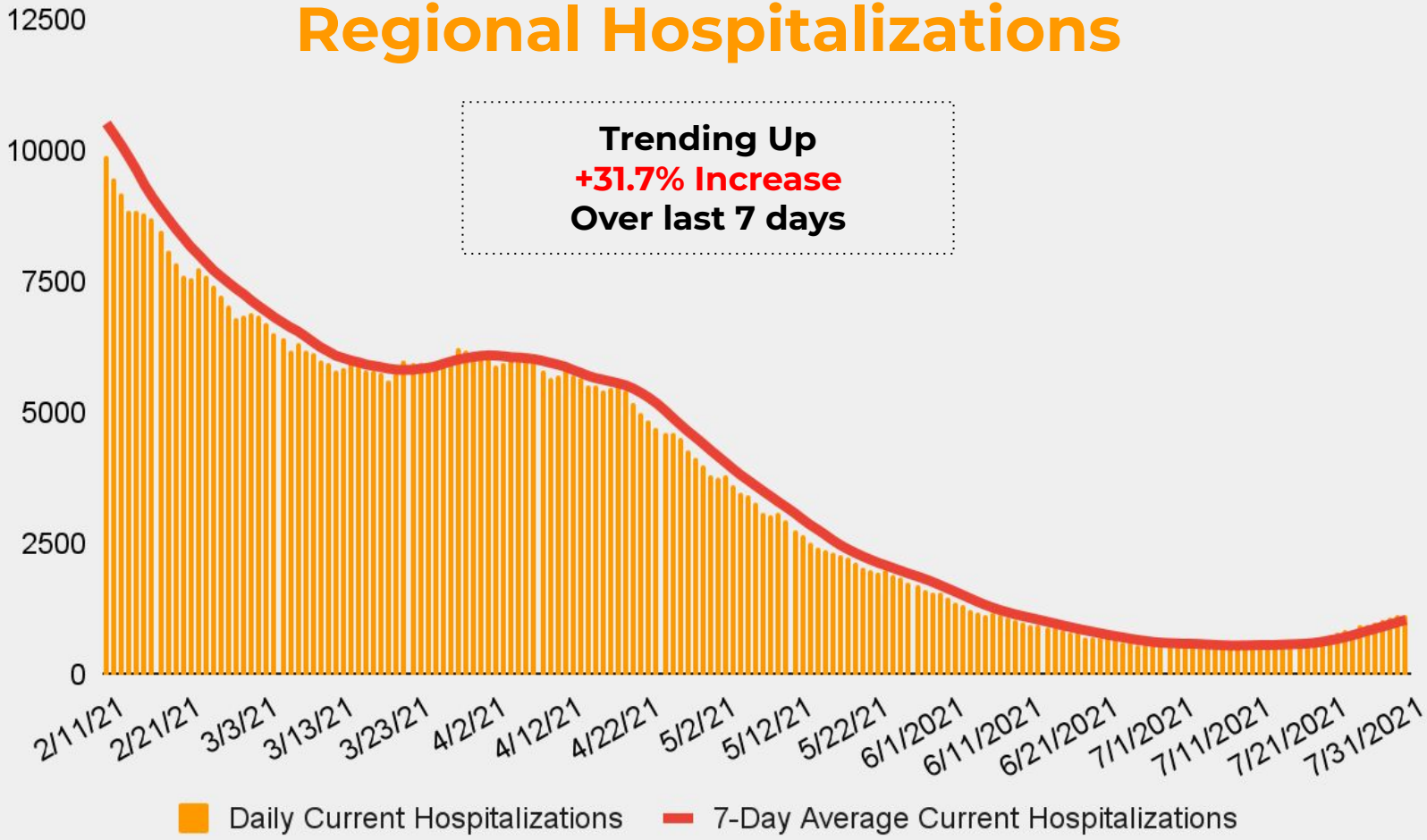
Source: Johns Hopkins University—August 3, 2021

Weekly Regional Cases



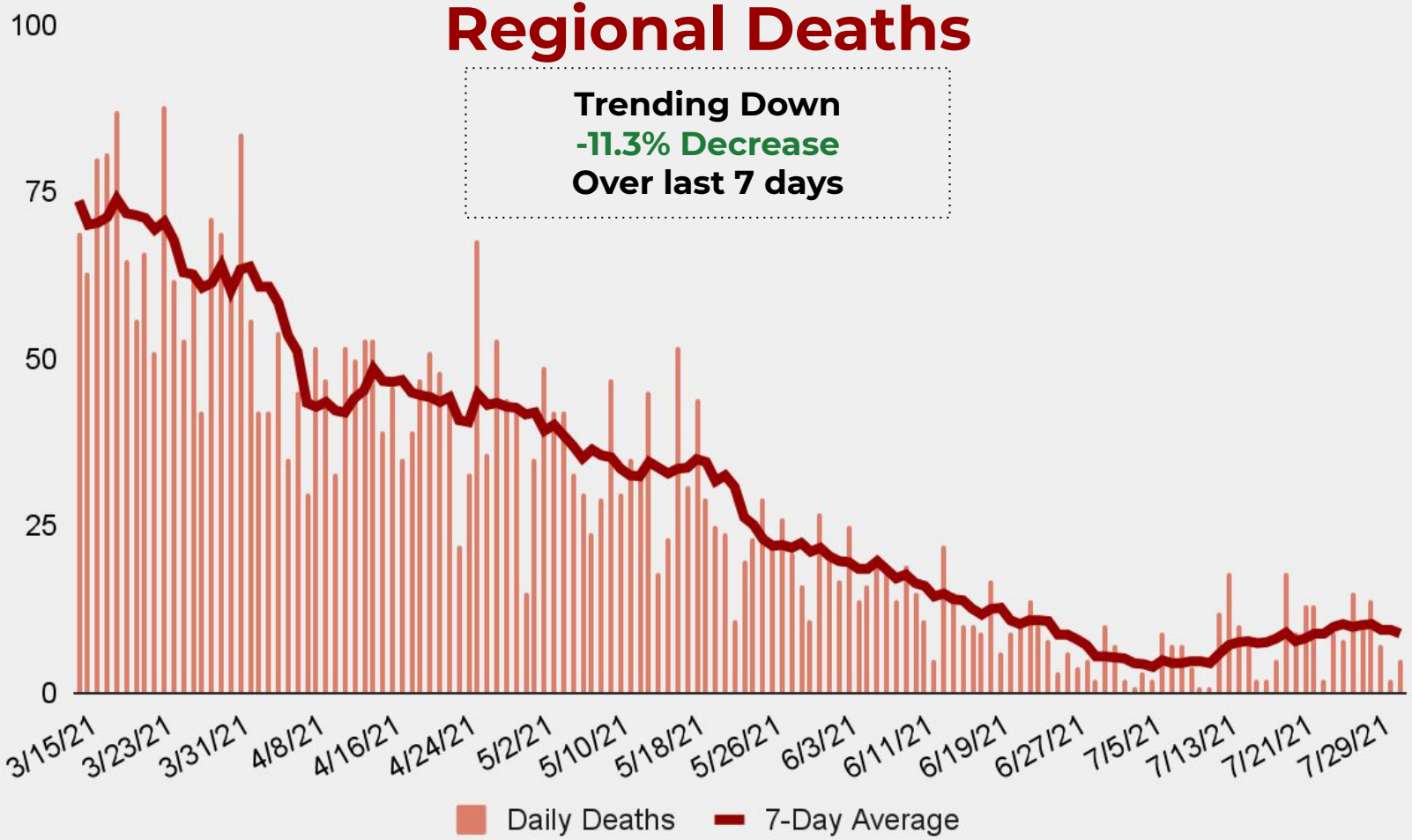
Sources: State Health Departments & CTV National News (Quebec) (includes: CT, ME, MA, NH, NY, QC, RI & VT)

Regional Hospitalizations



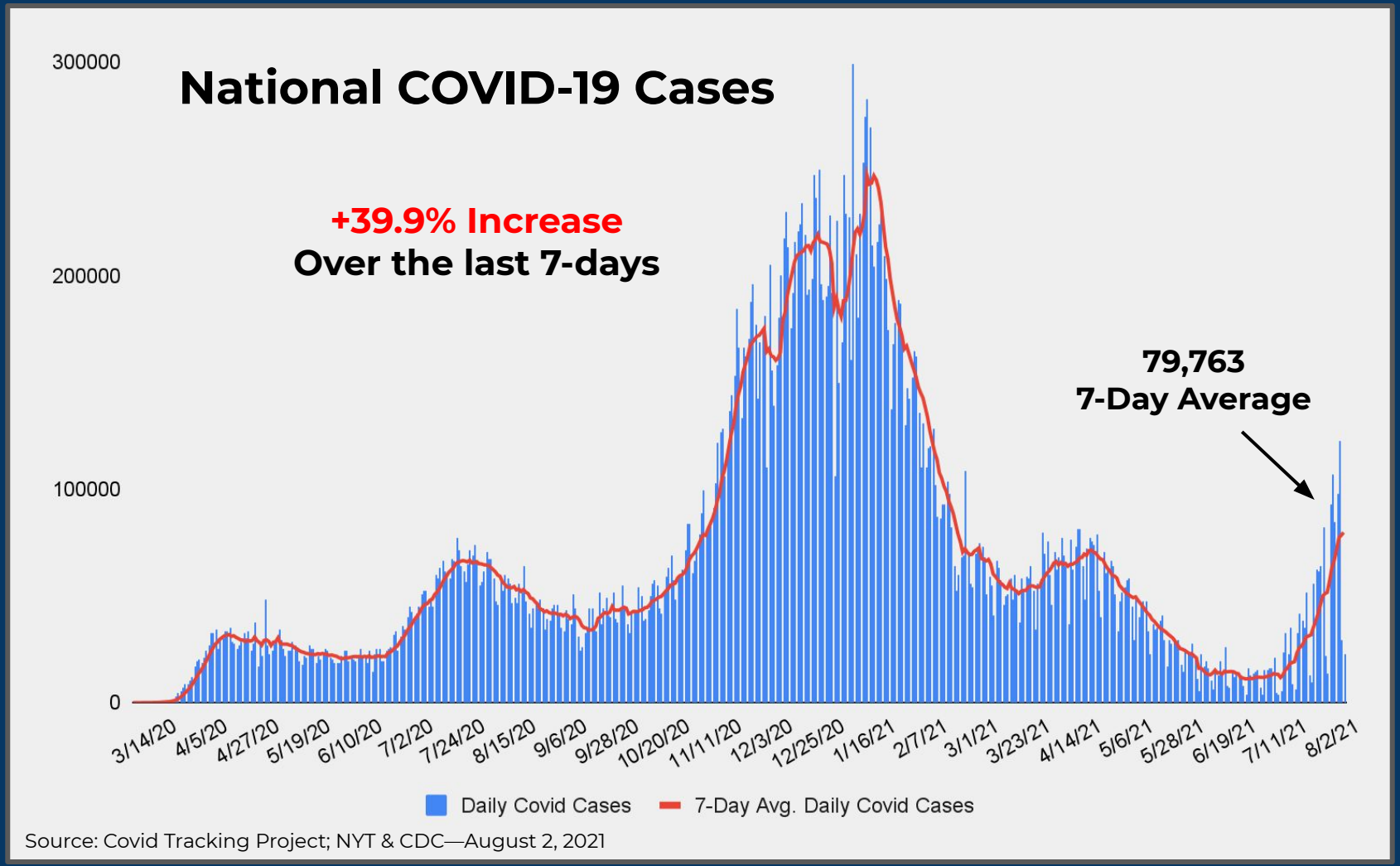
Source: Covid Act Now (7-Day Average in CT, ME, MA, NH, NY, RI & VT)—July 31, 2021

Regional Deaths

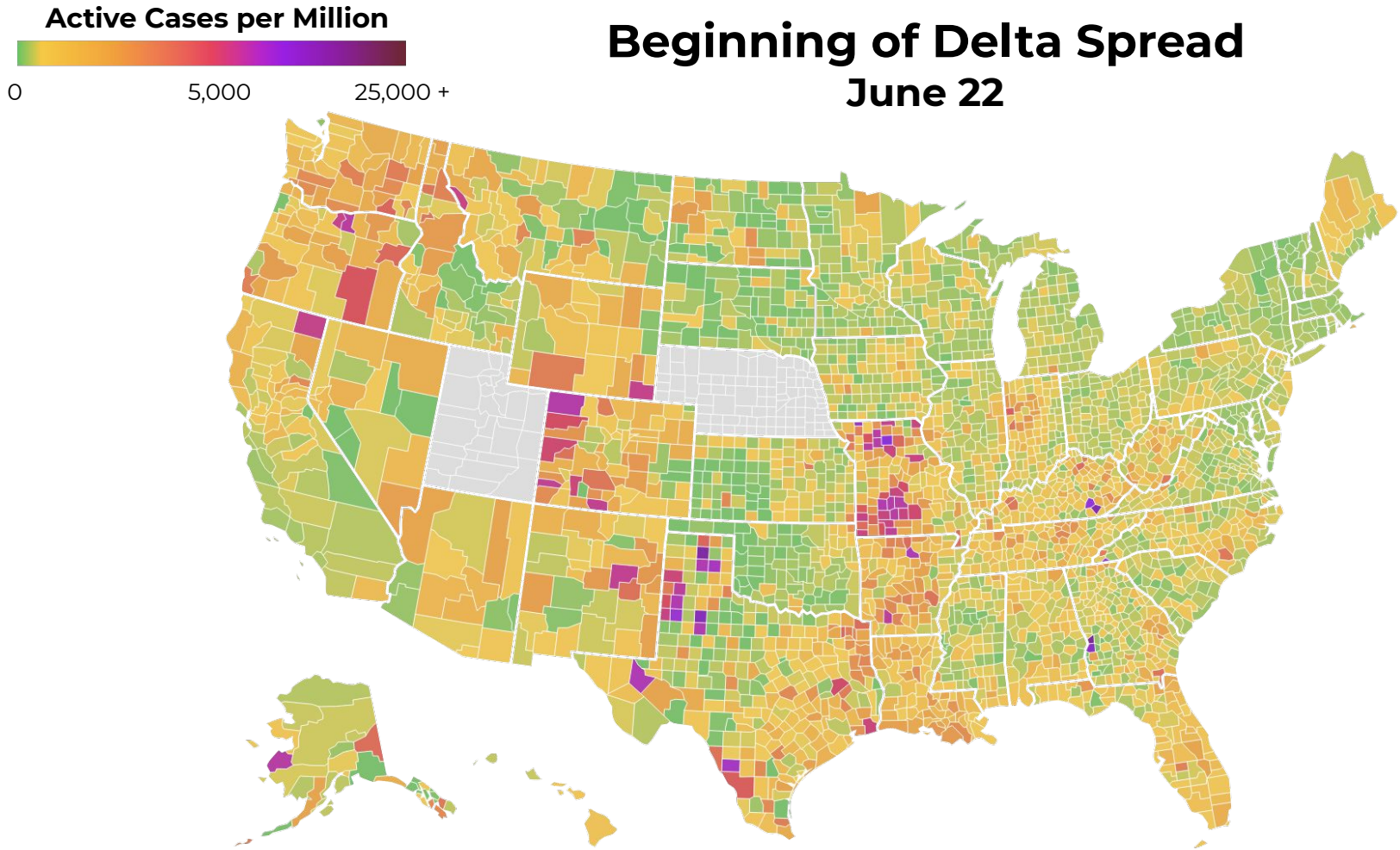


Source: CDC (7-Day Average in CT, ME, MA, NH, NY, RI & VT)—August 1, 2021

National Data


National COVID-19 Cases
+39.9% Increase
Over the last 7-days
79,763
7-Day Average
300000
200000
100000
0
3/14/20
4/5/20
4/27/20
5/19/20
6/10/20
7/2/20
7/24/20
8/15/20
9/6/20
9/28/20
10/20/20
11/11/20
12/3/20
12/25/20
1/16/21
2/7/21
3/1/21
3/23/21
4/14/21
5/6/21
5/28/21
6/19/21
7/11/21
8/2/21
Daily Covid Cases
7-Day Avg. Daily Covid Cases
Source: Covid Tracking Project; NYT & CDC—August 2, 2021

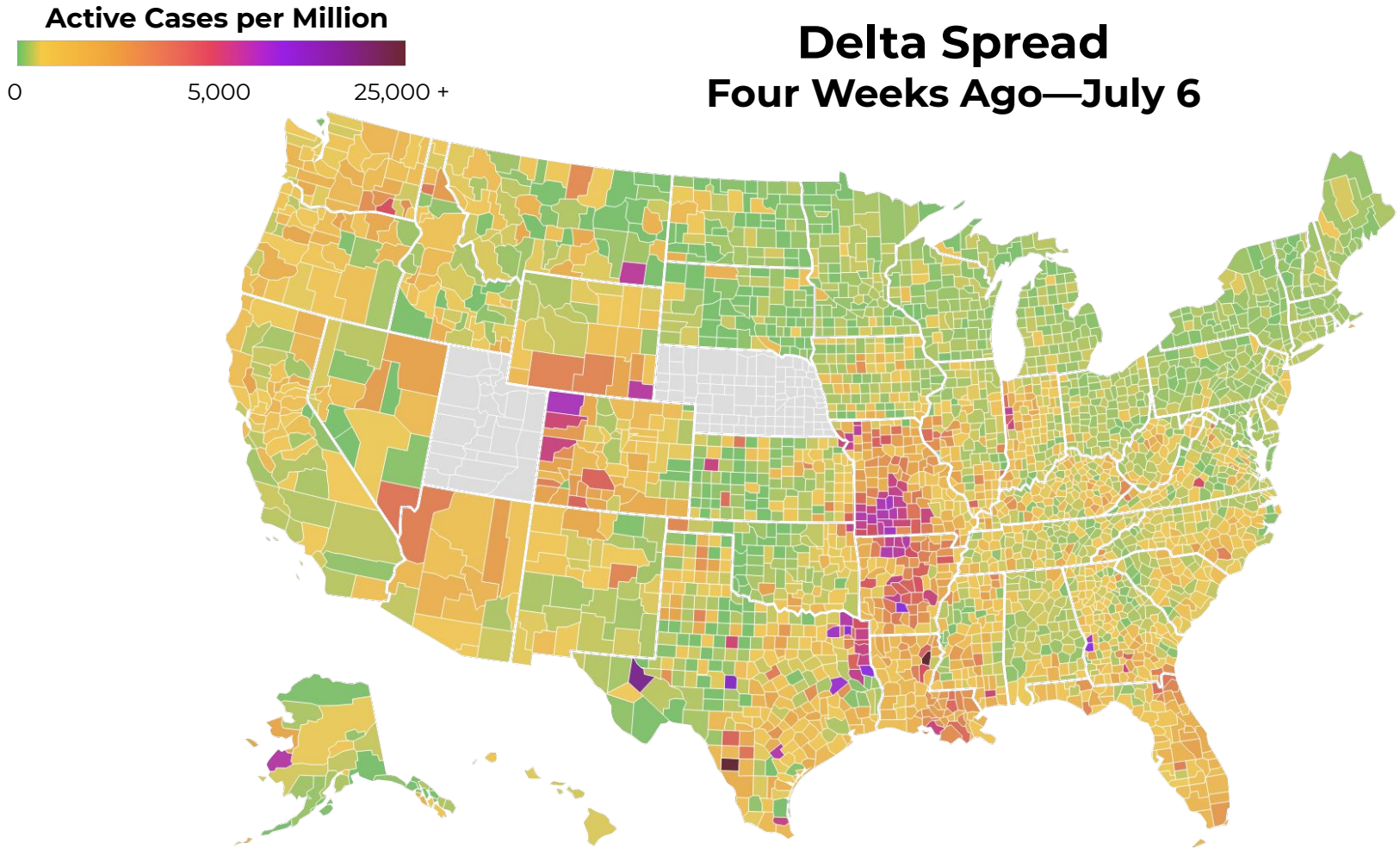
Beginning of Delta Spread
June 22



Source: Johns Hopkins University

Delta Spread

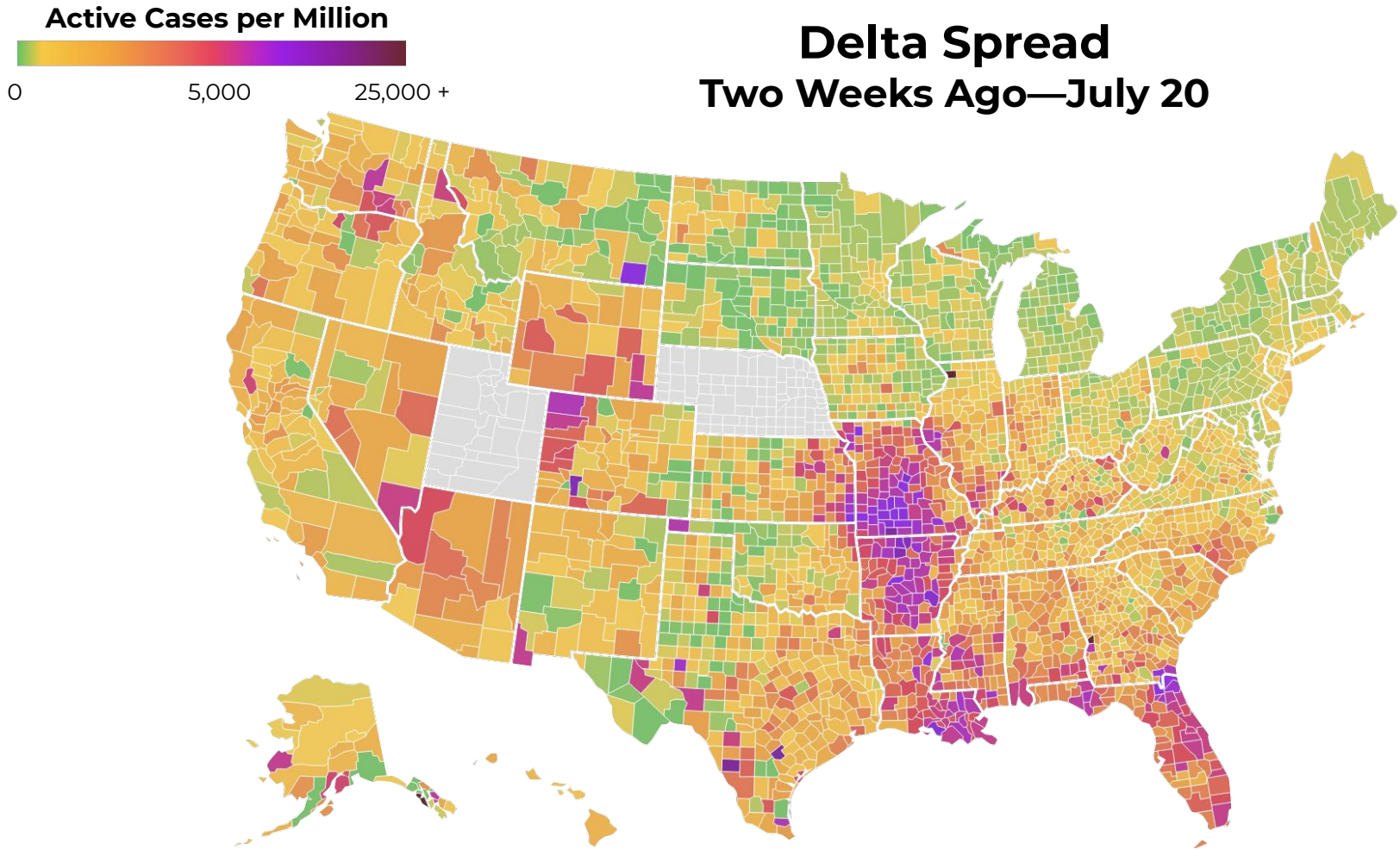
Four Weeks Ago—July 6



Source: Johns Hopkins University

Delta Spread

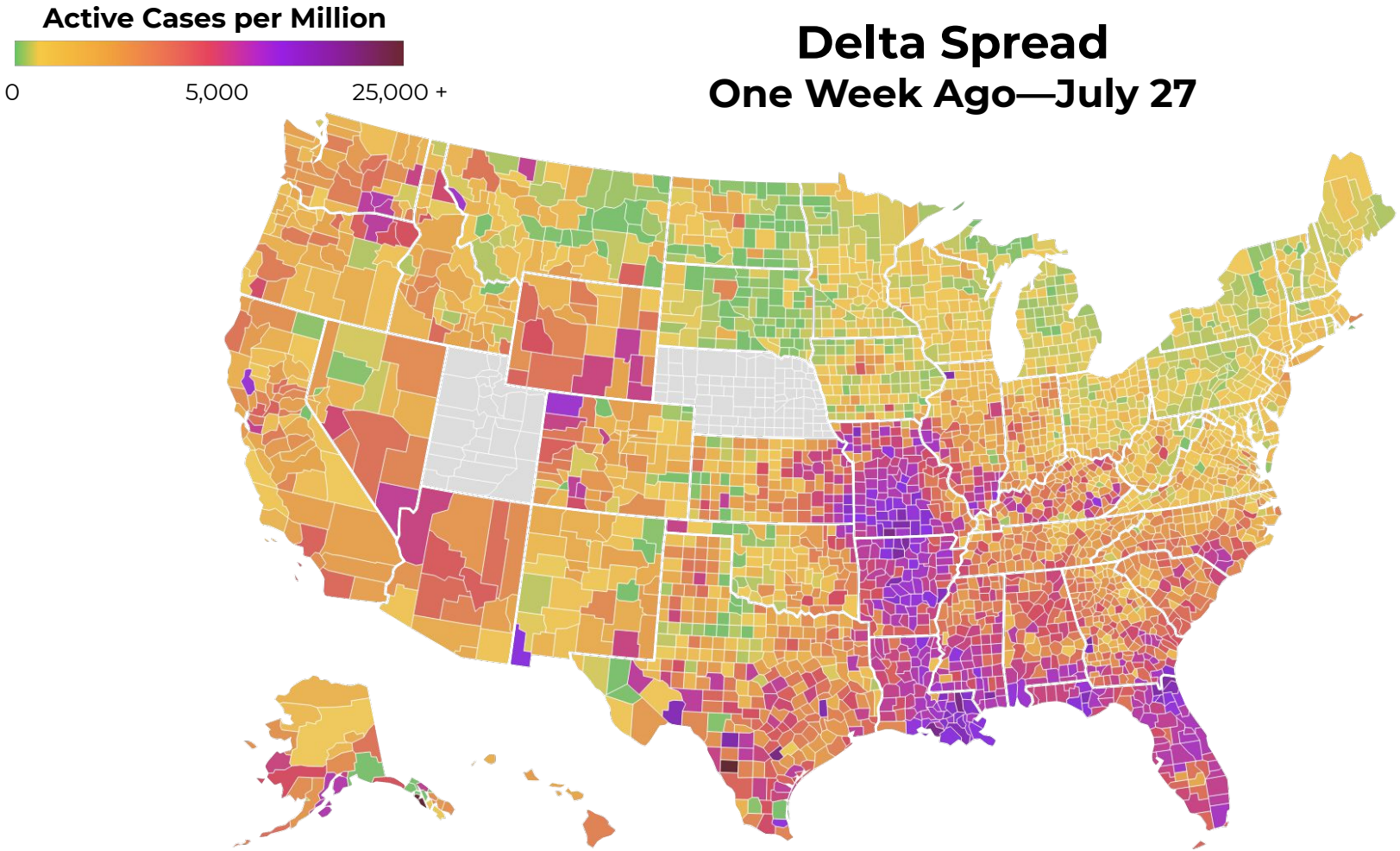
Two Weeks Ago—July 20



Source: Johns Hopkins University

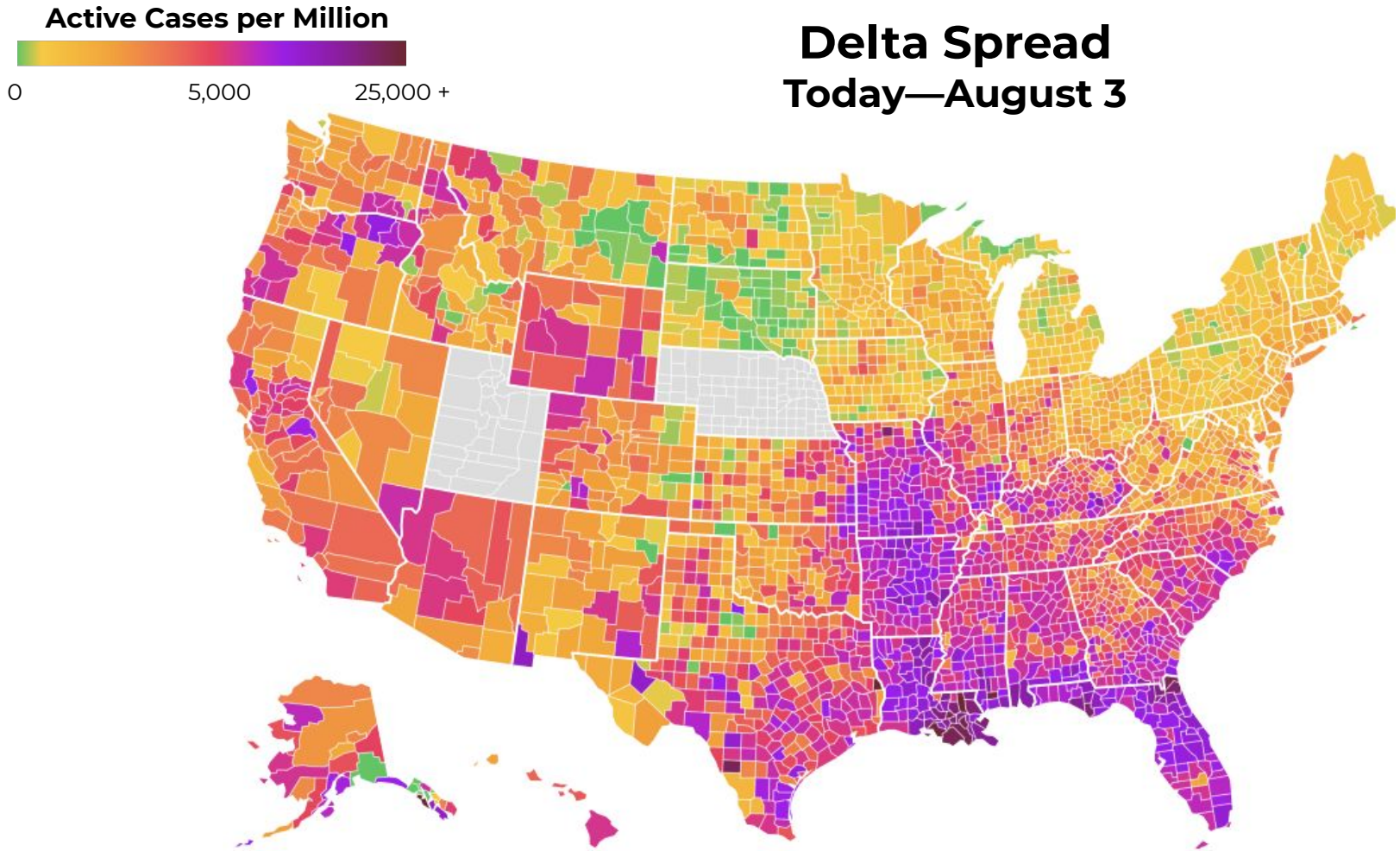
Delta Spread

One Week Ago—July 27



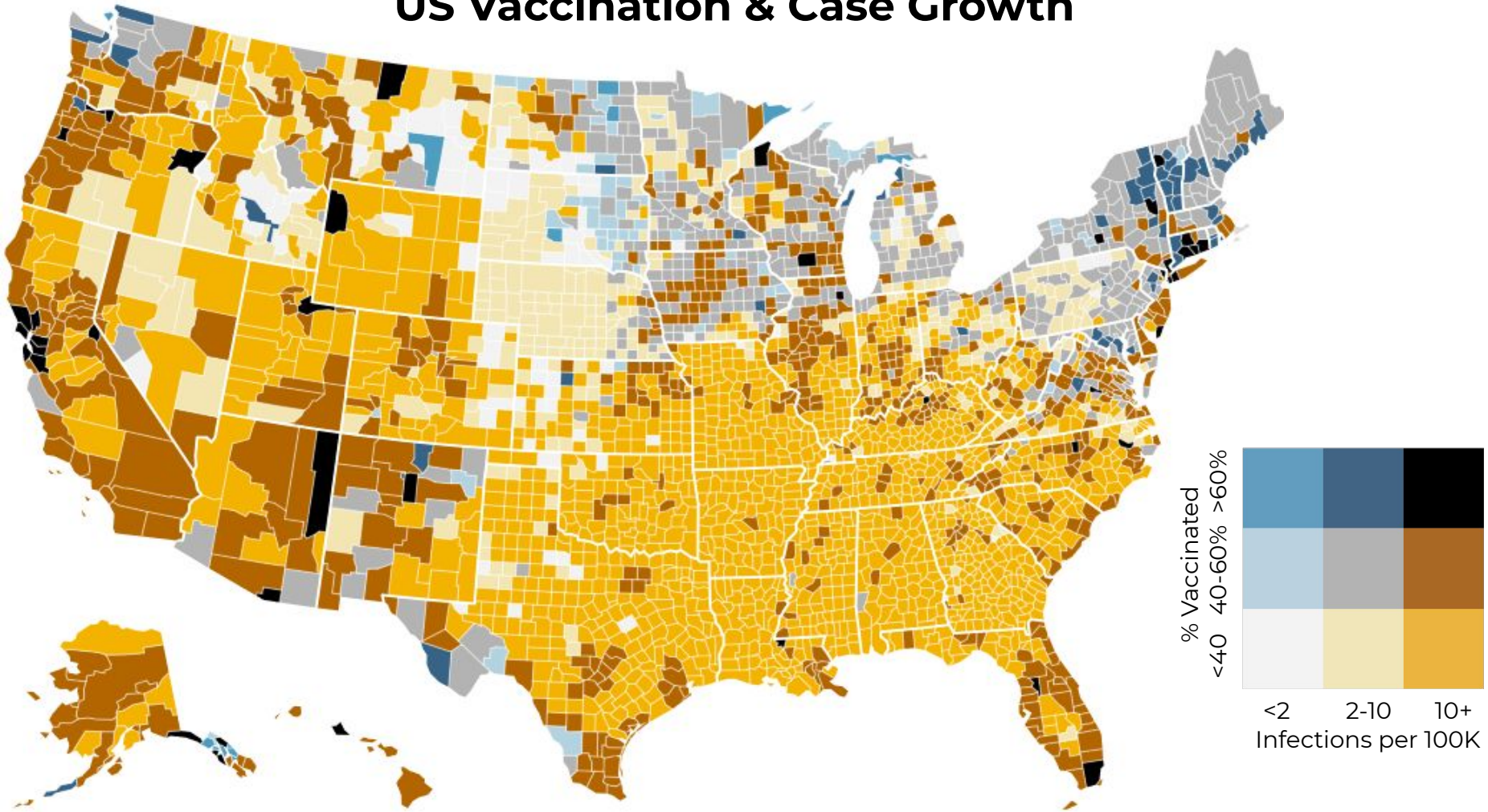
Source: Johns Hopkins University

Delta Spread
Today—August 3



Source: Johns Hopkins University—August 3, 2021

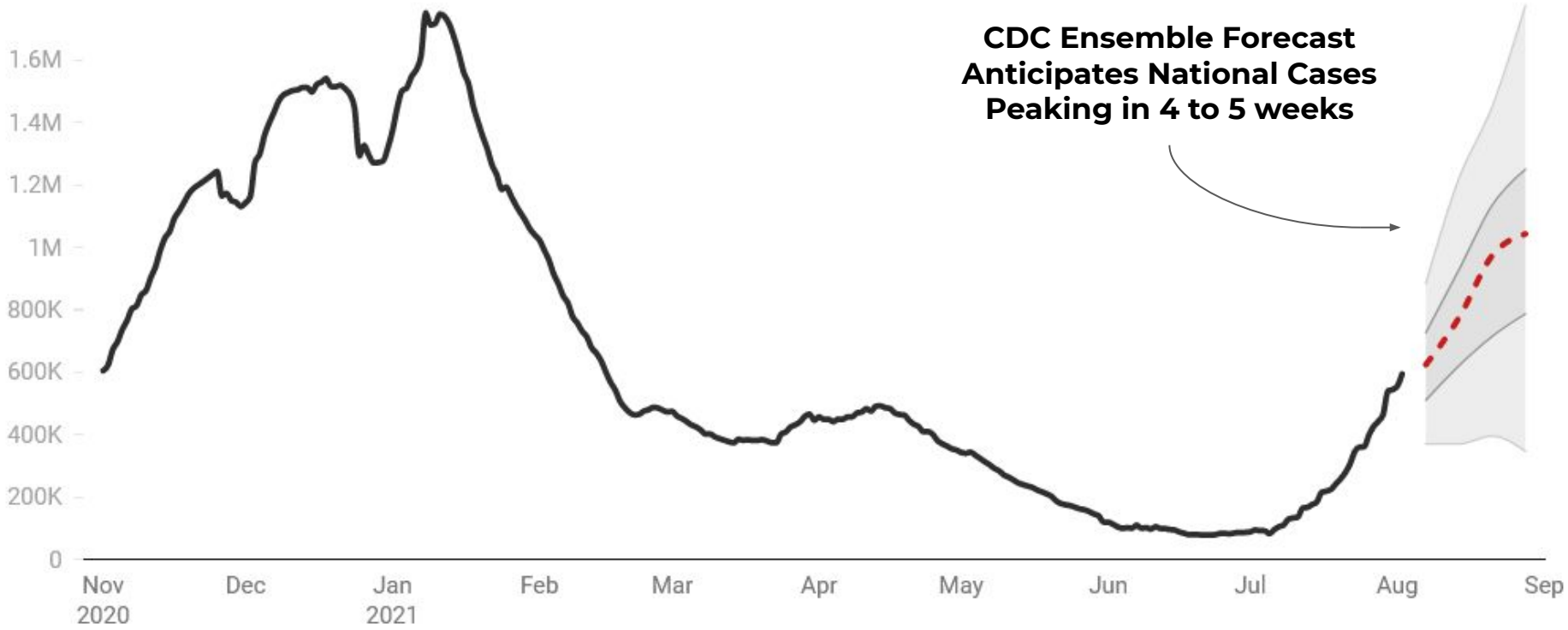
US Vaccination & Case Growth



Source: Covid Act Now—August 2, 2021

US Weekly COVID-19 Infections Forecast

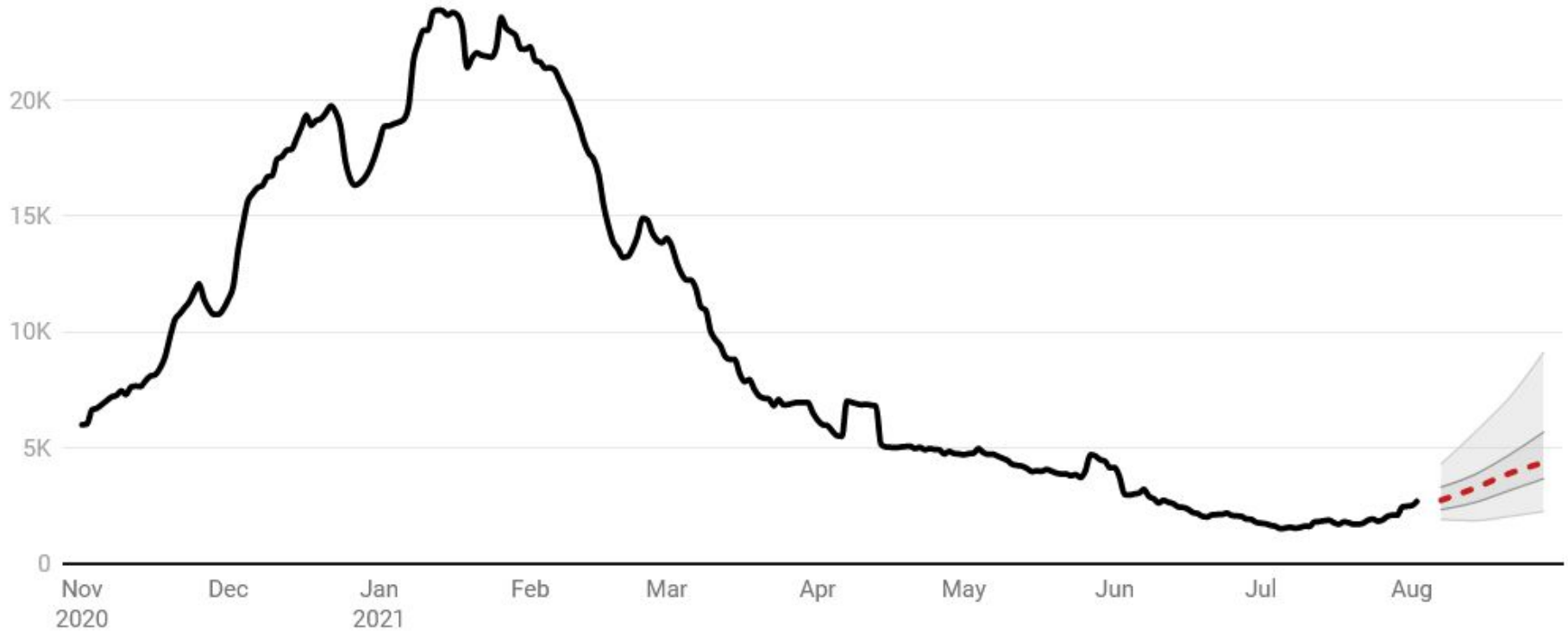
Calculated as a 7-day sum. Gray bands represent 50% and 95% confidence intervals. Since projections are only released once a week, the actual number may appear to over or undershoot the forecast.



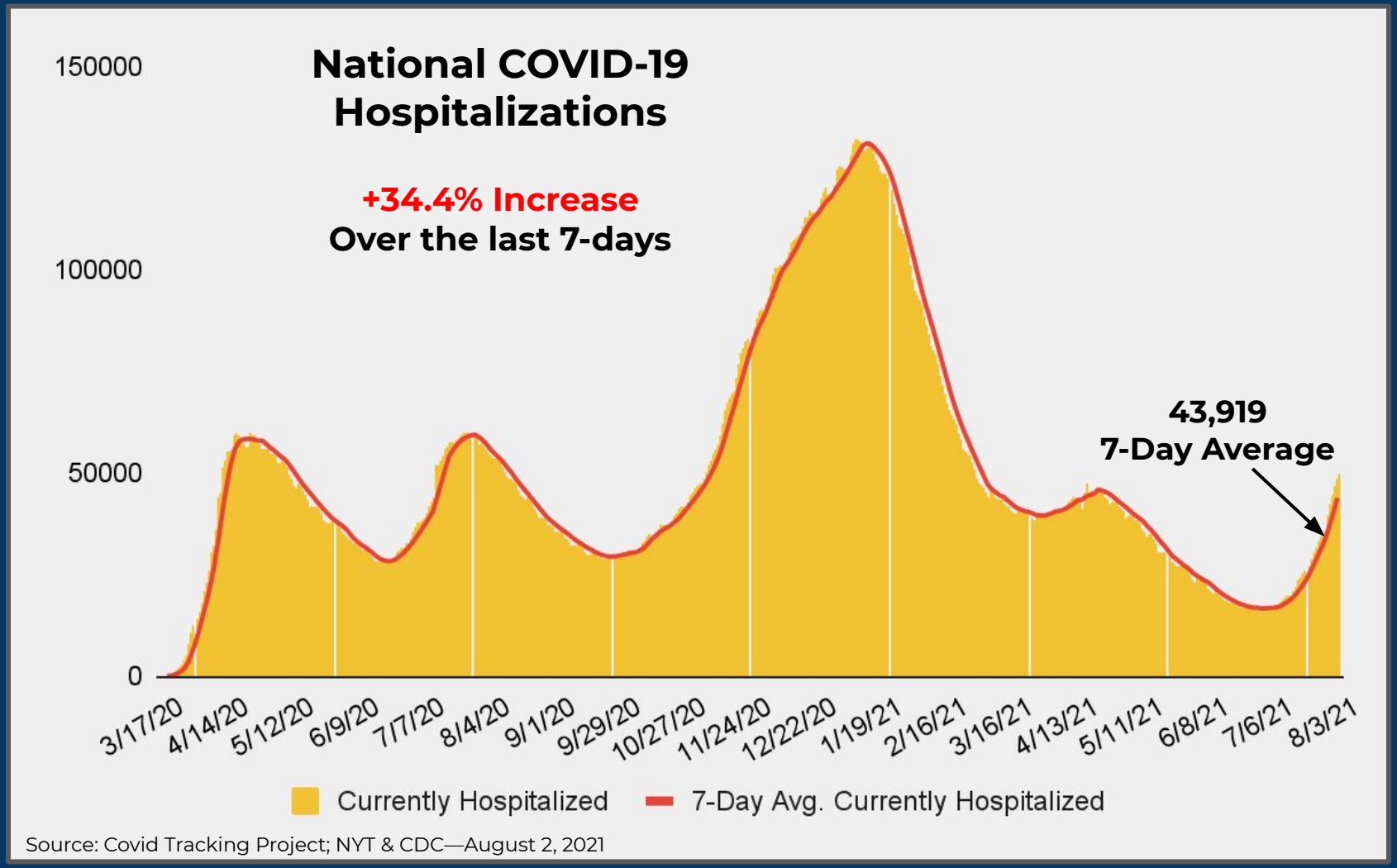
Source: Centers for Disease Control and Prevention—August 3, 2021

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.

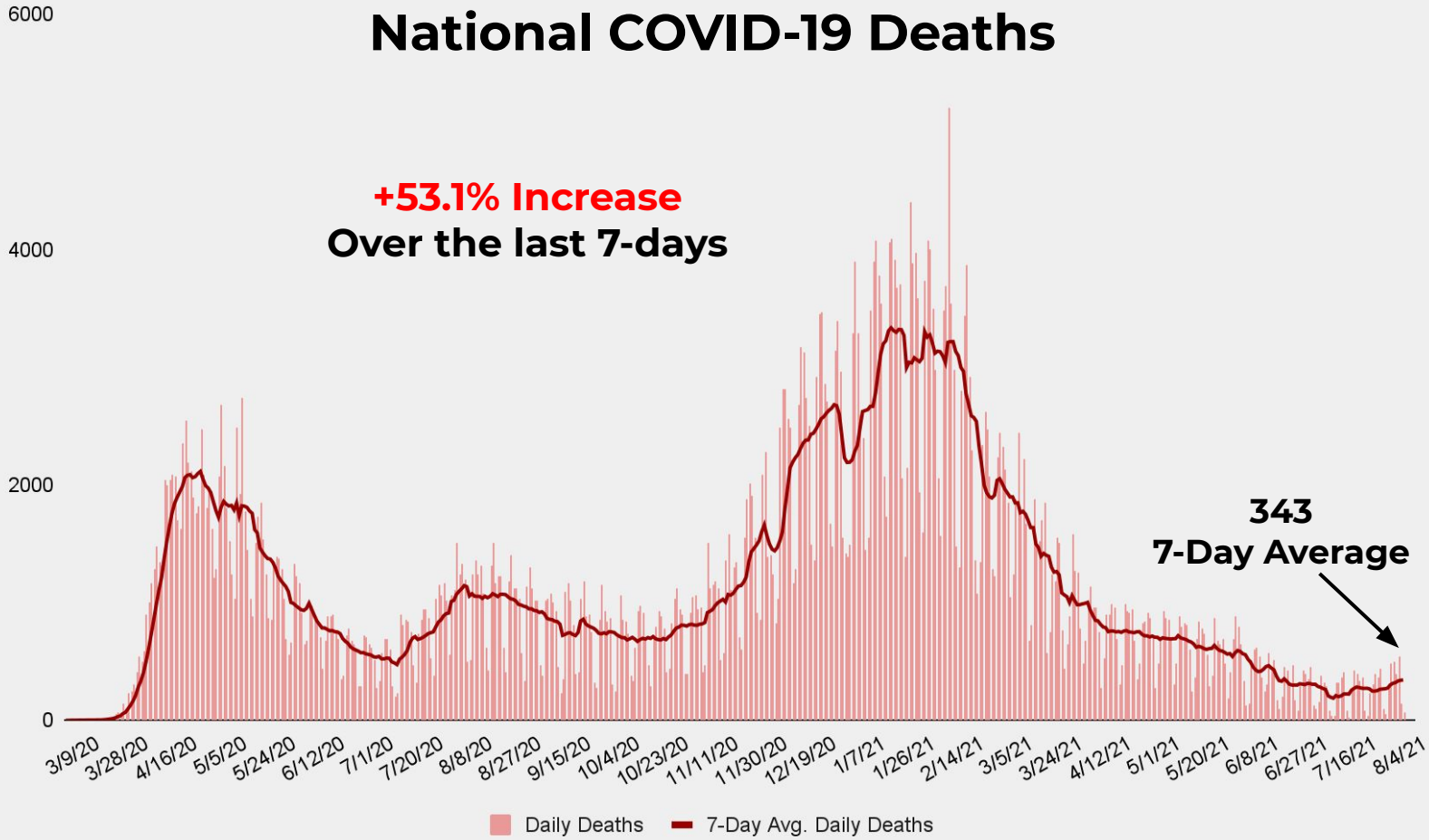


Source: Centers for Disease Control and Prevention—August 3, 2021



Source: Covid Tracking Project; NYT & CDC—August 2, 2021

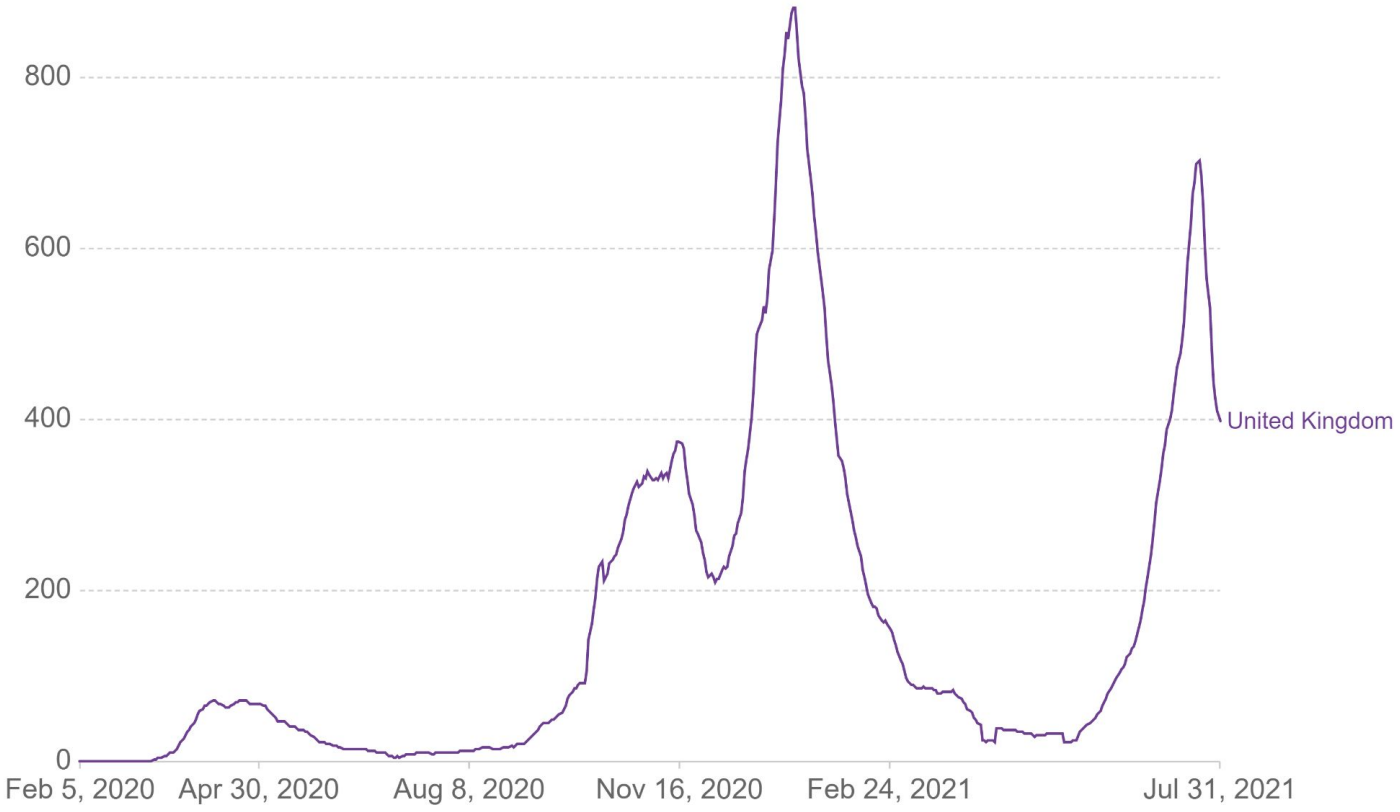
National COVID-19 Deaths



Source: Covid Tracking Project; NYT & CDC—August 2, 2021

Daily new confirmed COVID-19 cases per million people

Shown is the rolling 7-day average. The number of confirmed cases is lower than the number of actual cases; the main reason for that is limited testing.



Source: Johns Hopkins University CSSE COVID-19 Data

CC BY

Canadian Covid-19 Trends

Canadian COVID Trends

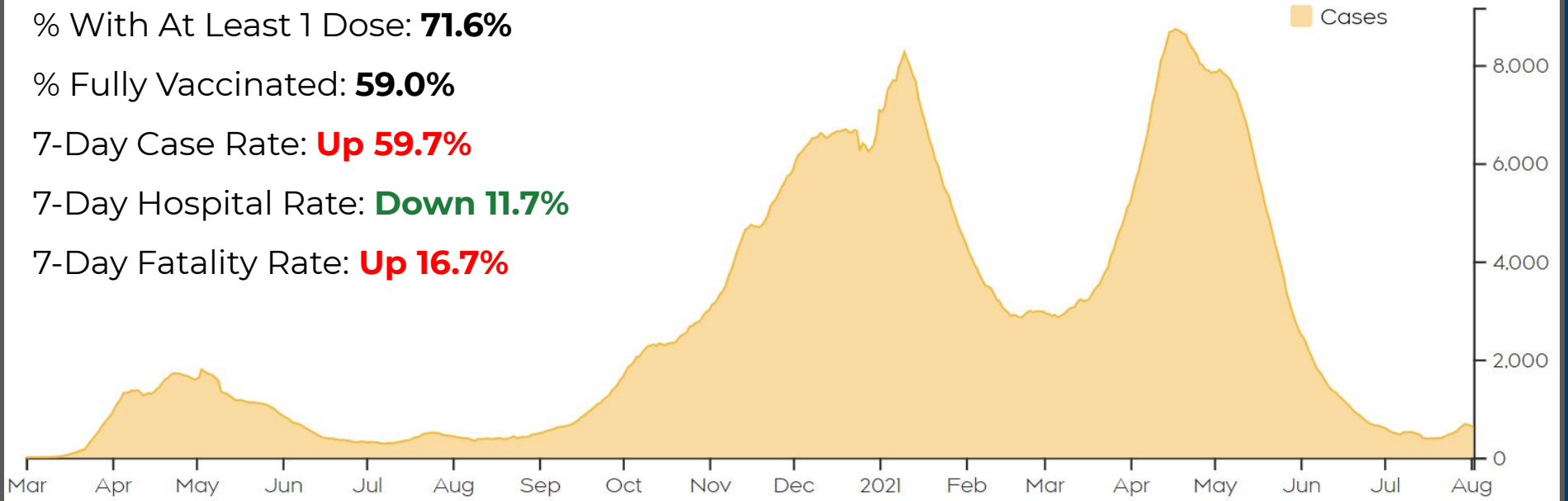
% With At Least 1 Dose: **71.6%**

% Fully Vaccinated: **59.0%**

7-Day Case Rate: **Up 59.7%**

7-Day Hospital Rate: **Down 11.7%**

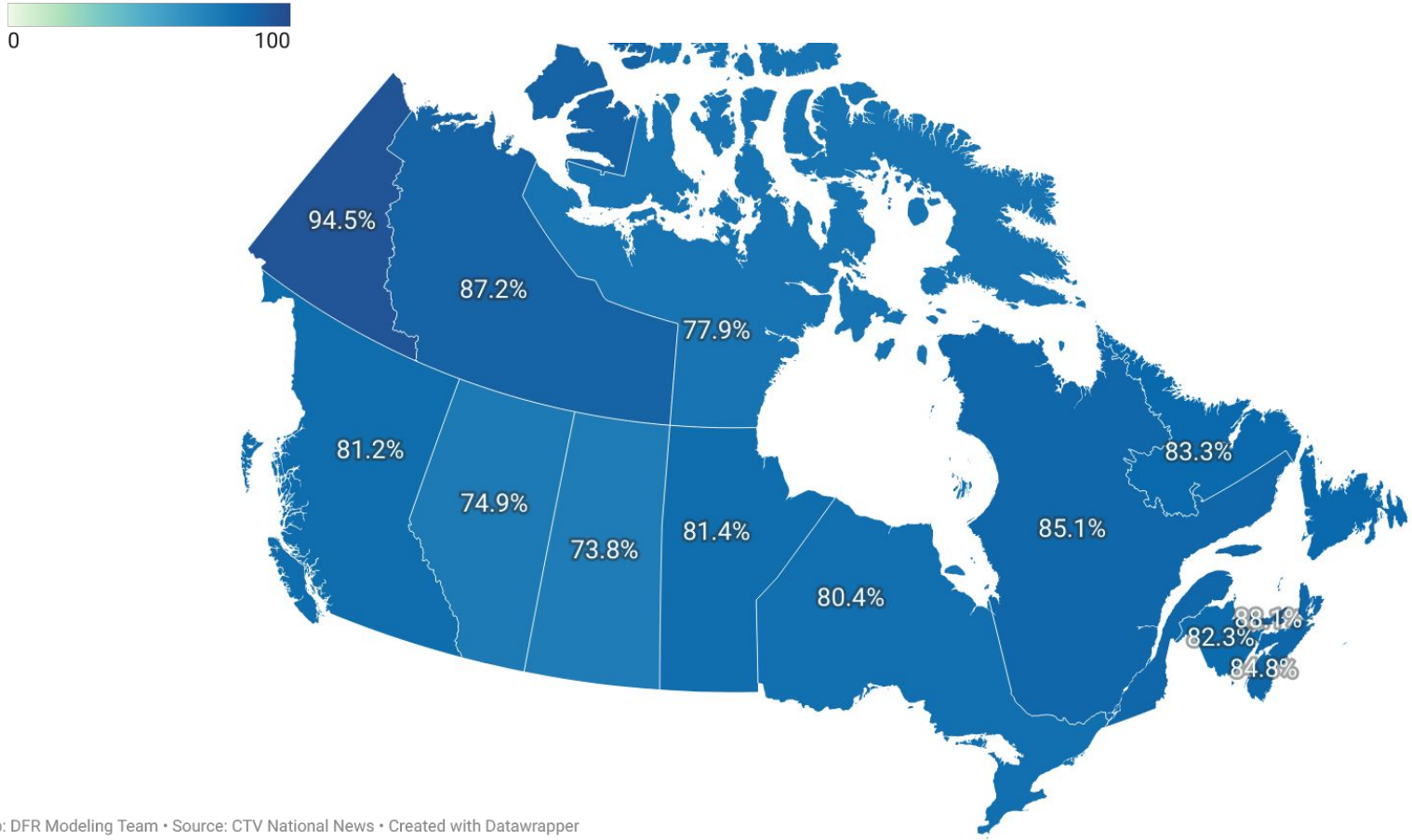
7-Day Fatality Rate: **Up 16.7%**



Sources: CTV National News & Our World in Data—August 2, 2021

Canadian Province Vaccination Progress

Percent Eligible (12+) with at least 1 dose



Map: DFR Modeling Team • Source: CTV National News • 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

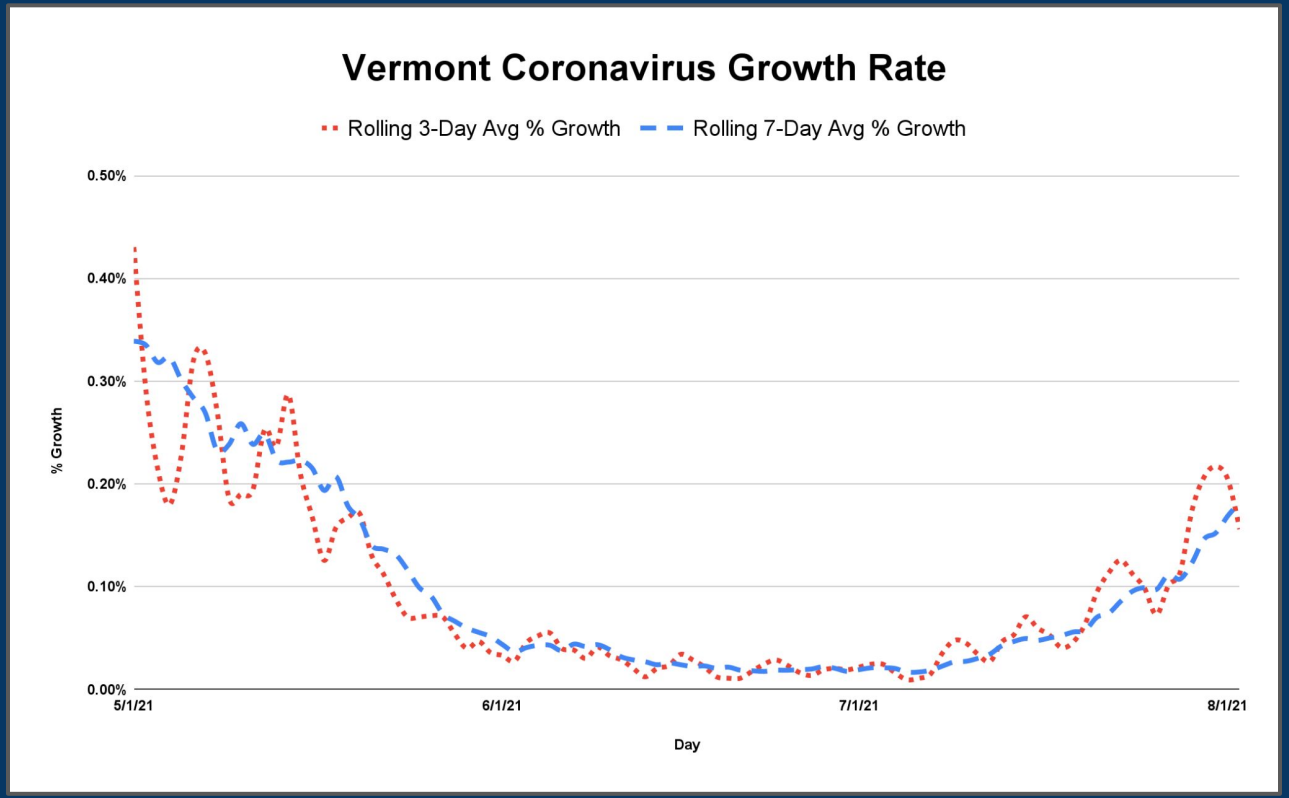
Data Point 1: Syndromic Surveillance

- **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.

Data Point 2: Viral Growth and Reproductive Rates

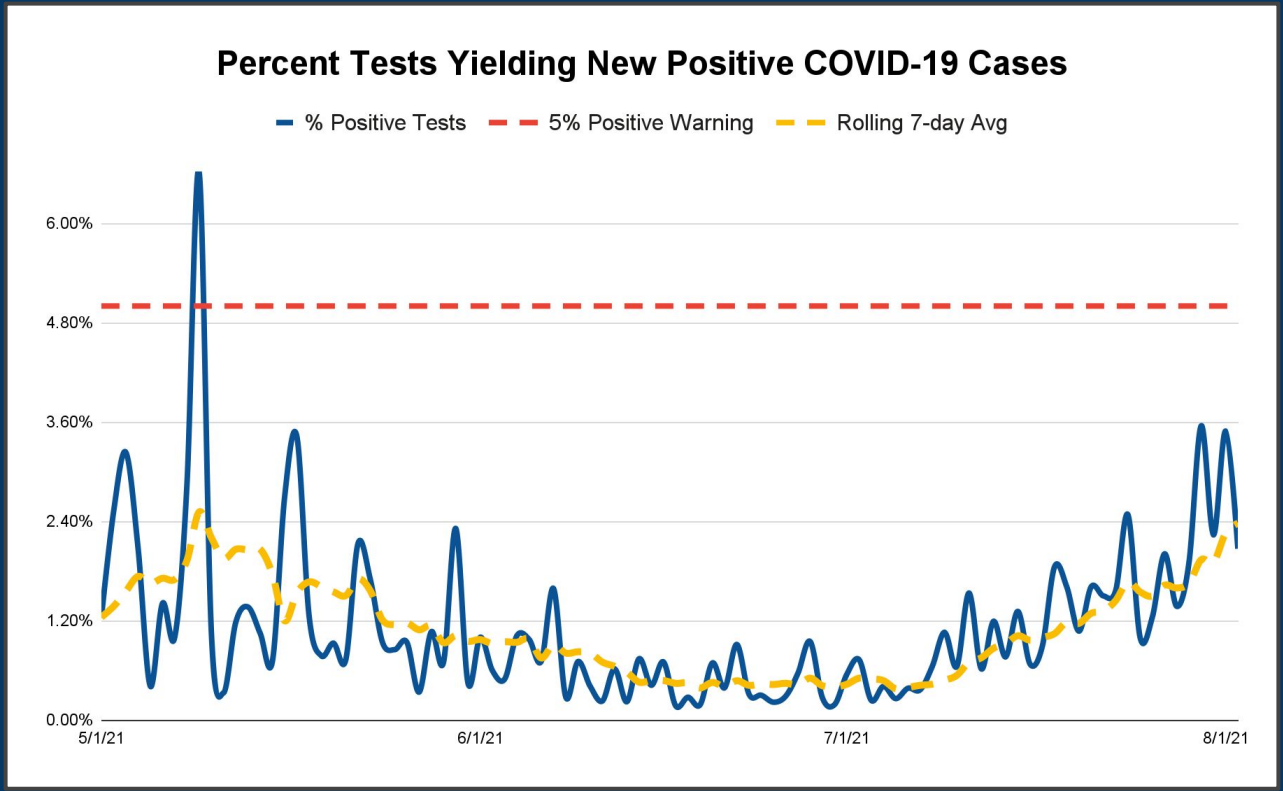
- **Summary:** Case growth measured by daily, 3-day, 7-day, and effective reproductive rate (R_t)
- **Warning Flags:** Sustained viral growth that would lead to <30% open ICU beds



Source: Vermont Department of Health—August 3, 2021

Data Point 3: Percentage of New Positive Tests

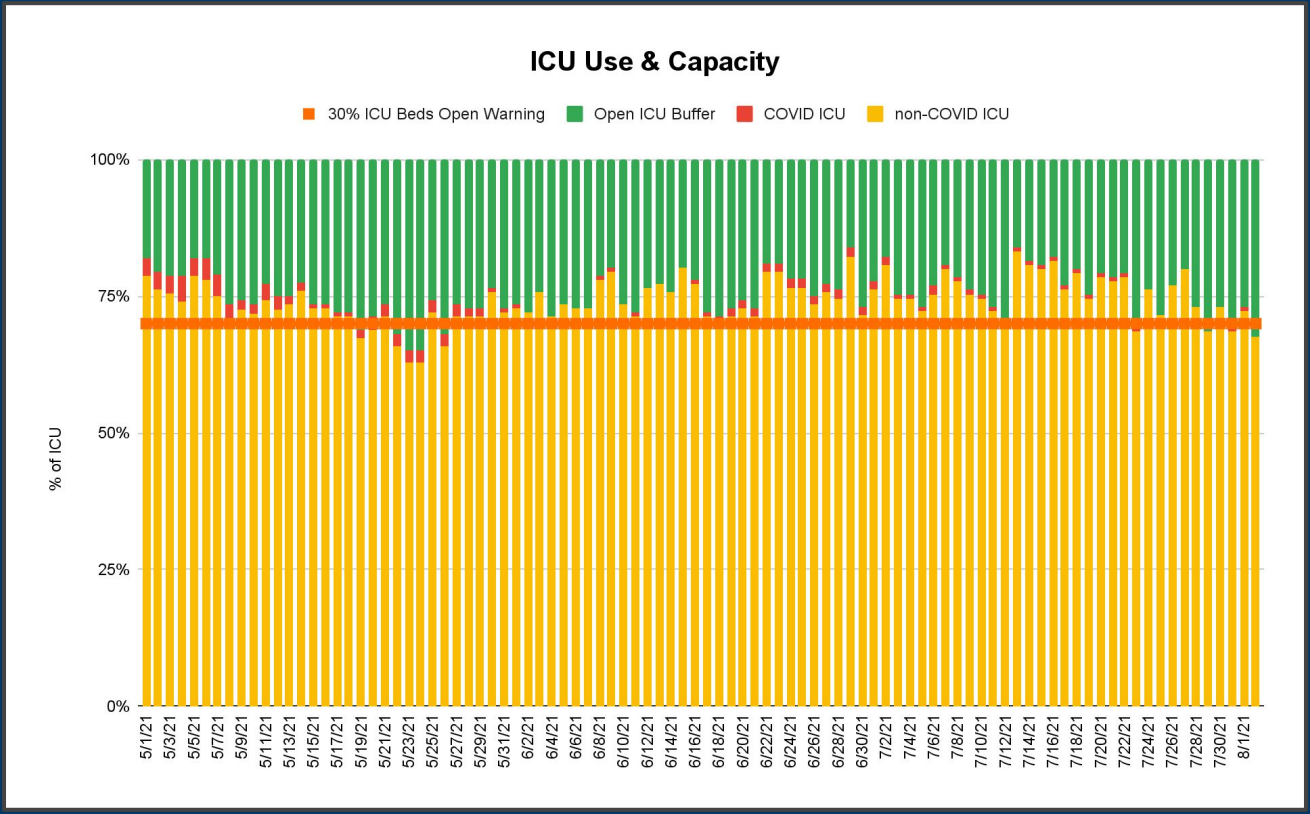
- **Summary:** Percent of tests resulting in a new positive case
- **Warning Flags:** New positives represent >5% of daily results



Source: Vermont Department of Health—August 3, 2021

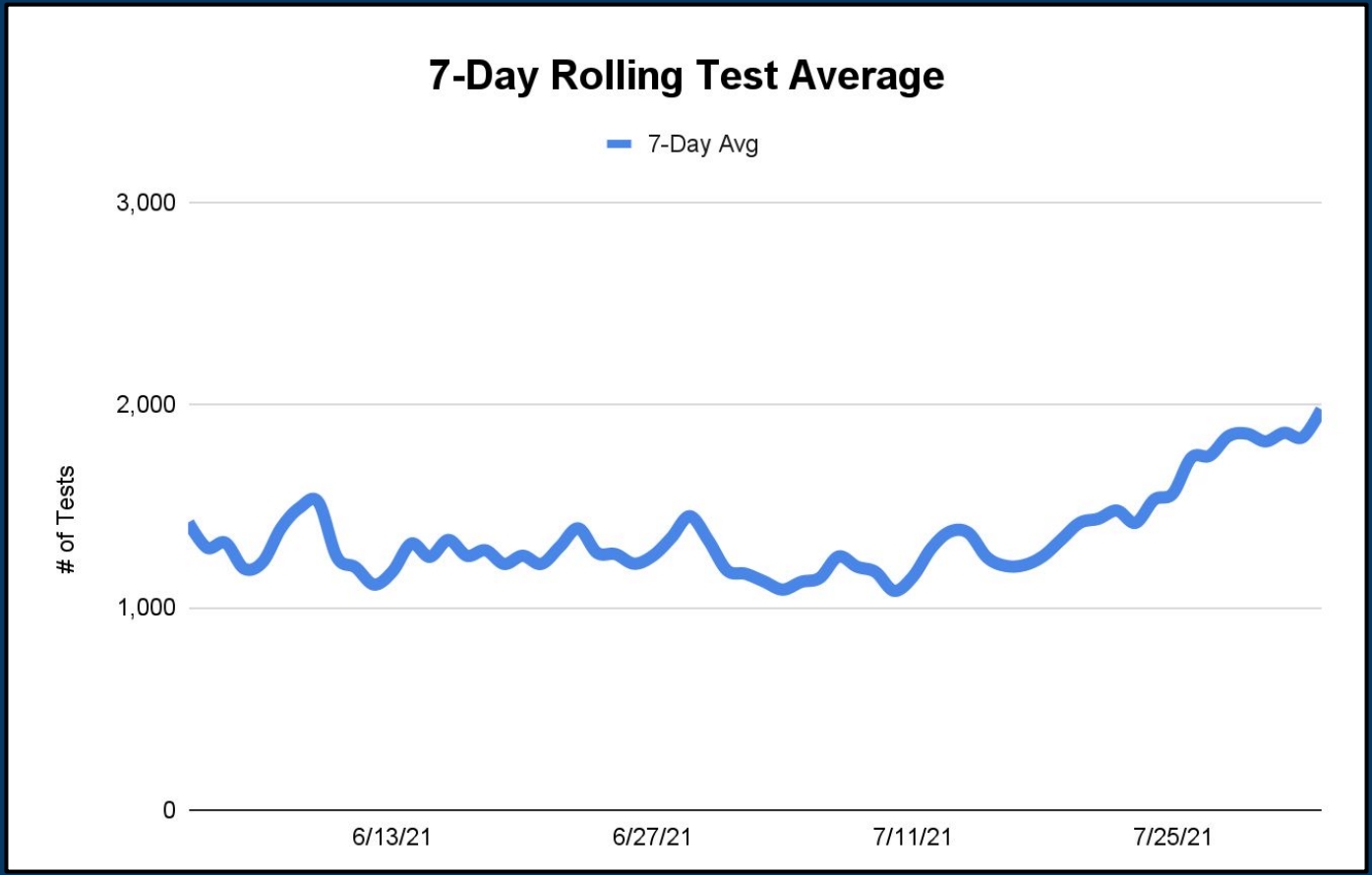
Data Point 4: Hospital & Critical Care Beds

- **Summary:** Number of occupied and unoccupied medical surgical and ICU beds
- **Warning Flags:** Reduction in ICU open beds to less than 30%



Source: Vermont Department of Health—August 3, 2021

Vermont Testing



Source: Vermont Department of Health—August 3, 2021; results reported to VDH daily