

# **COVID-19 Modeling**

## **August 10, 2021**

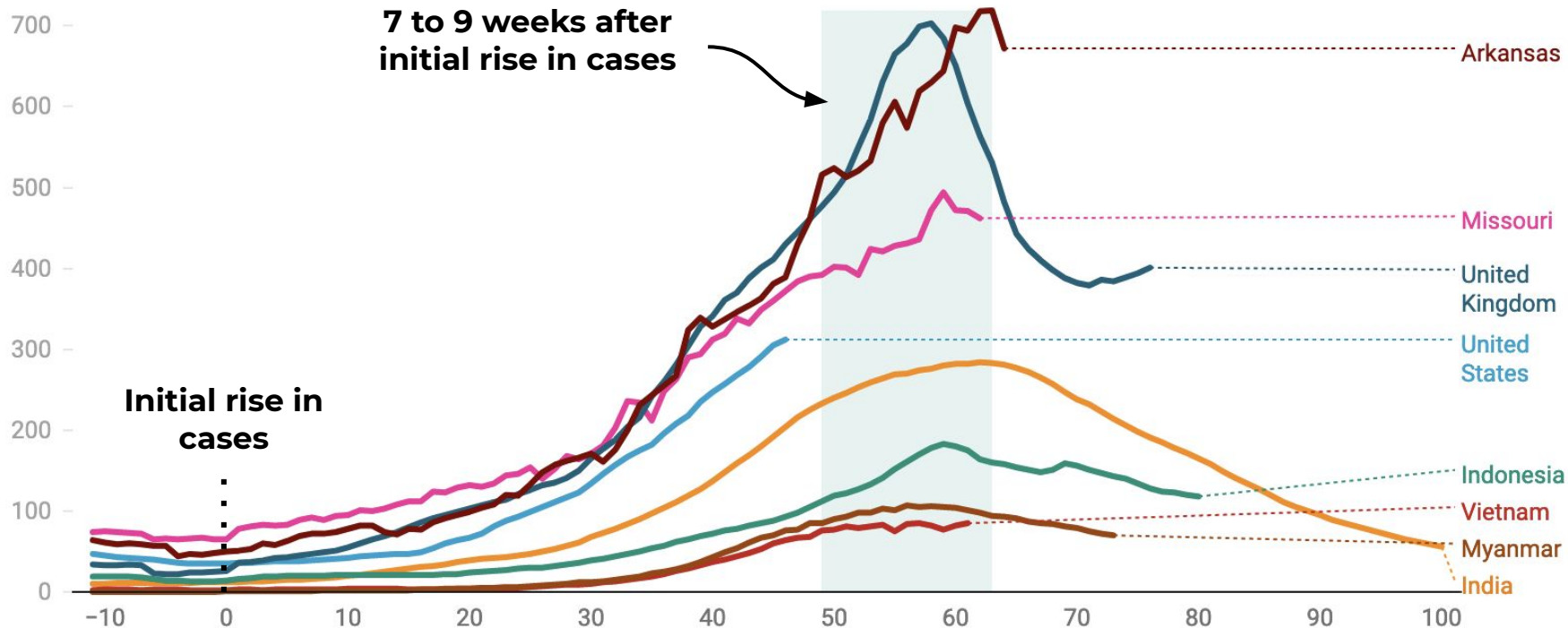
Presentation available at:  
[dfr.vermont.gov](https://dfr.vermont.gov)

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# Delta Variant Driven Peaks Across the Globe

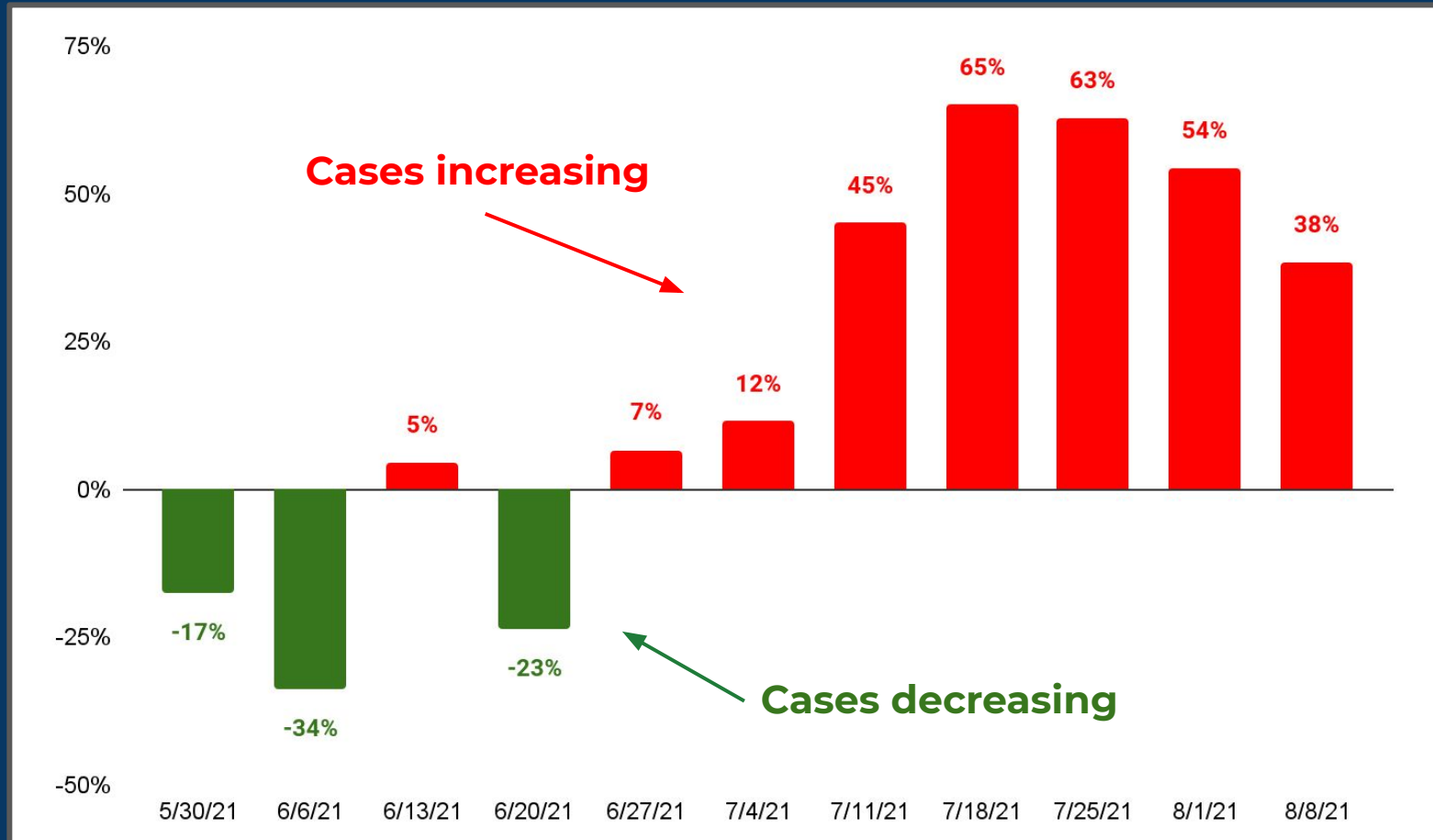
Day 0 is set to correspond with the beginning of a jurisdiction's case growth.



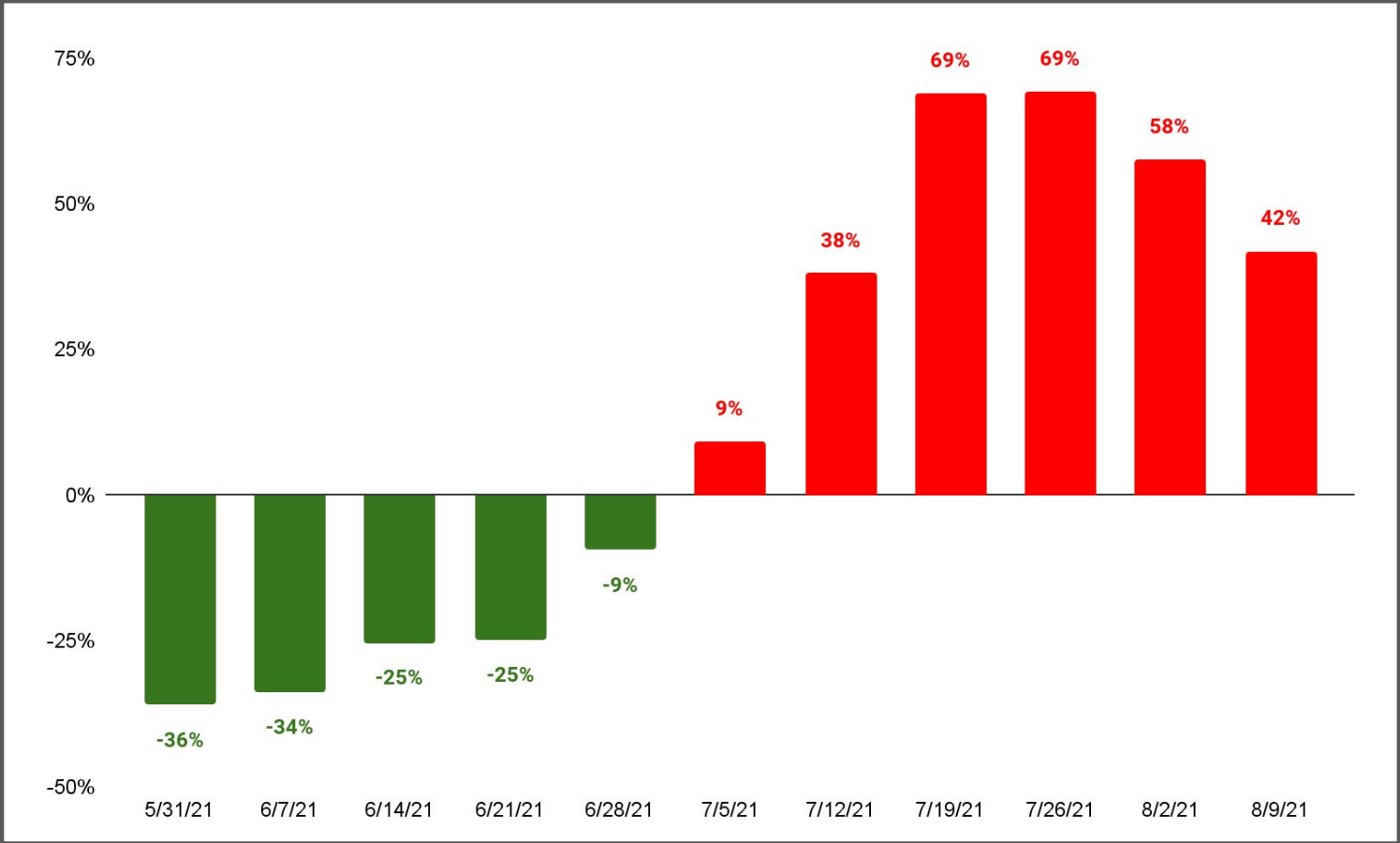
COVID-19 infections per million (7-day averages).

Source: CDC and Our World in Data

# Change in National Weekly Case Growth

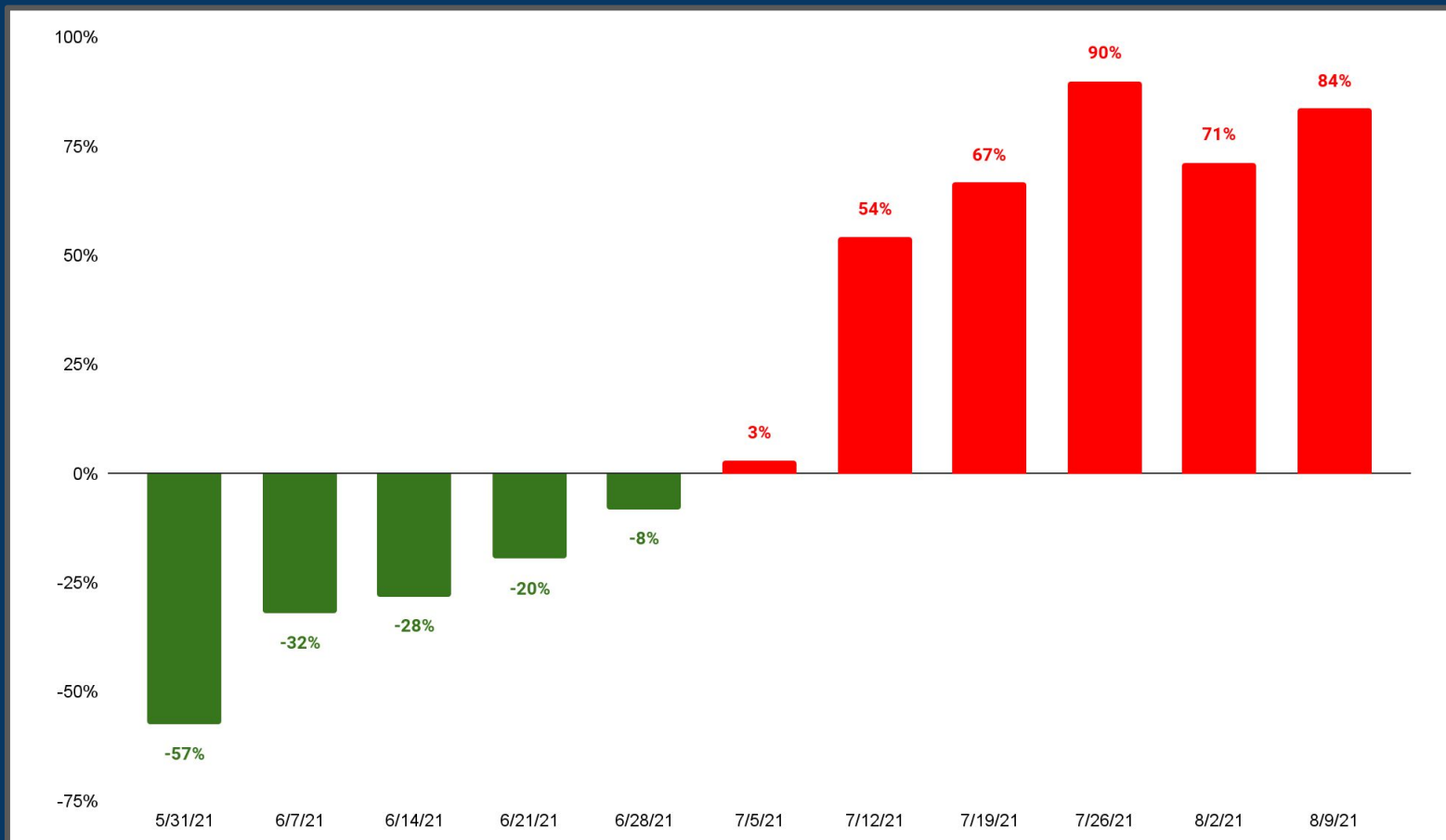


# Change in Northeast Regional Weekly Case Growth



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

# Change in Vermont Weekly Case Growth



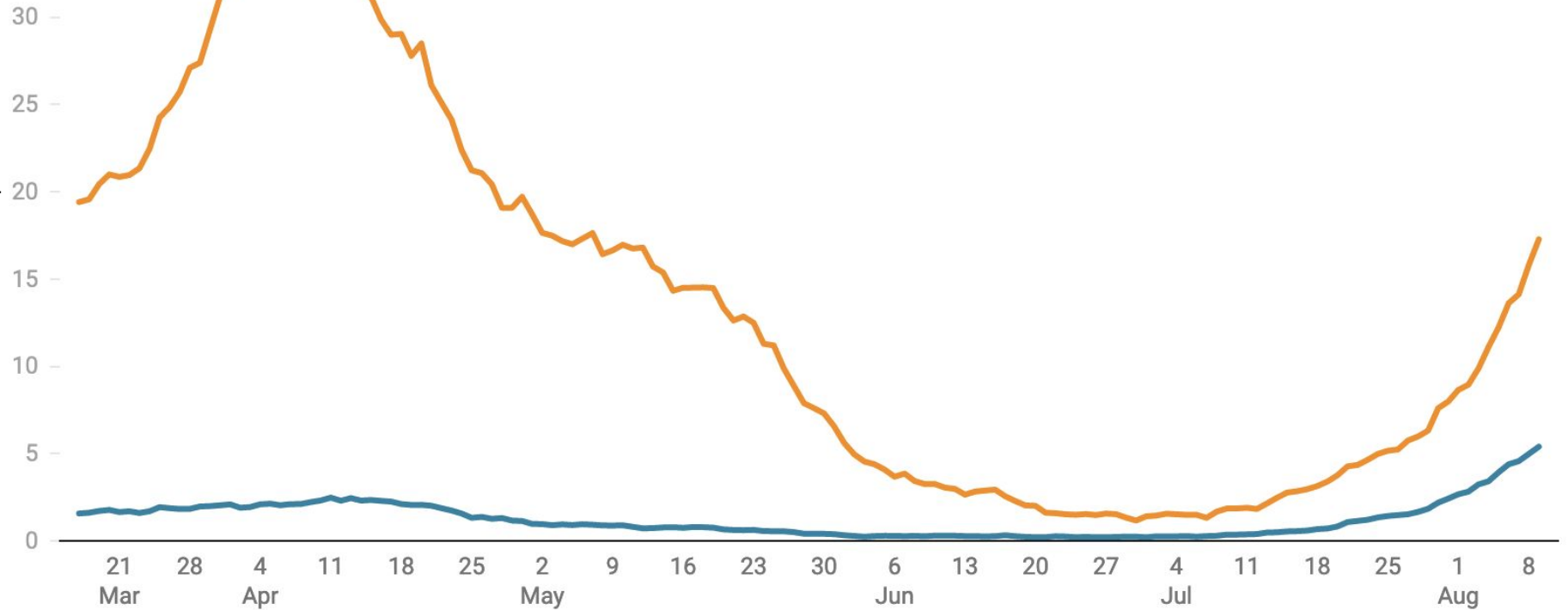
Source: State Health Departments & CTV National News (Quebec)

# Vermont Case Data

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

Among Not Fully Vaccinated    Among Fully Vaccinated

COVID Cases per 100K

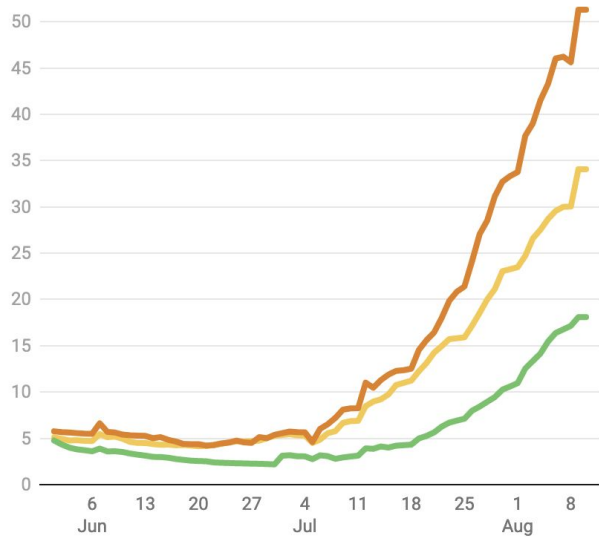


Source: Vermont Department of Health—August 9, 2021; “fully vaccinated” defined as 14 days following final dose

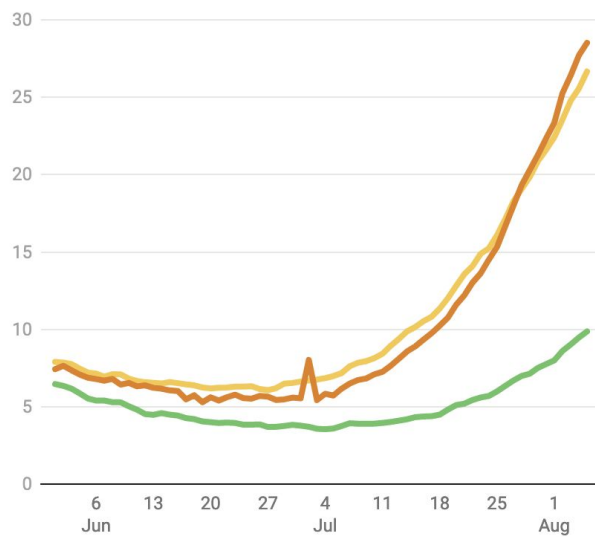


# Infections, Hospitalizations, & Deaths by Percentage of State Population Vaccinated

■ <40% Started Vaccination   
 ■ 40-60% Started Vaccination   
 ■ 60%+ Started Vaccination



Infections per 100K



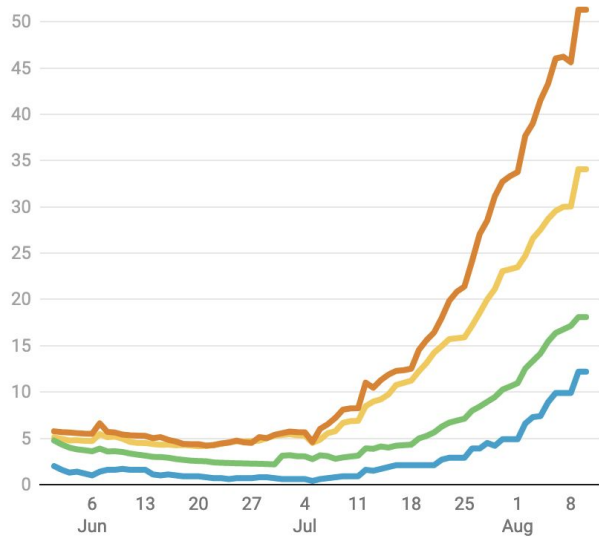
Hospitalizations per 100K



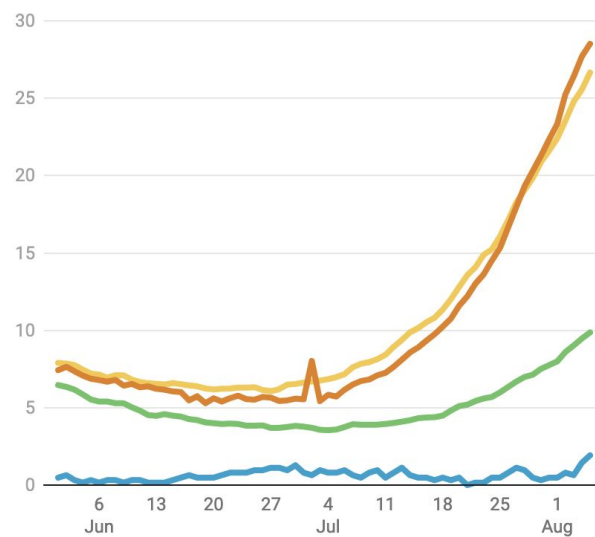
Deaths per 100K

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

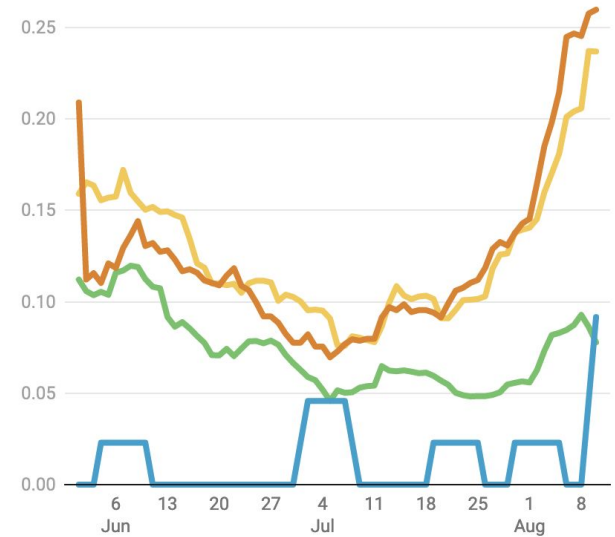
■ <40% Started Vaccination  
 ■ 40-60% Started Vaccination  
 ■ 60%+ Started Vaccination  
 ■ Vermont



Infections per 100K



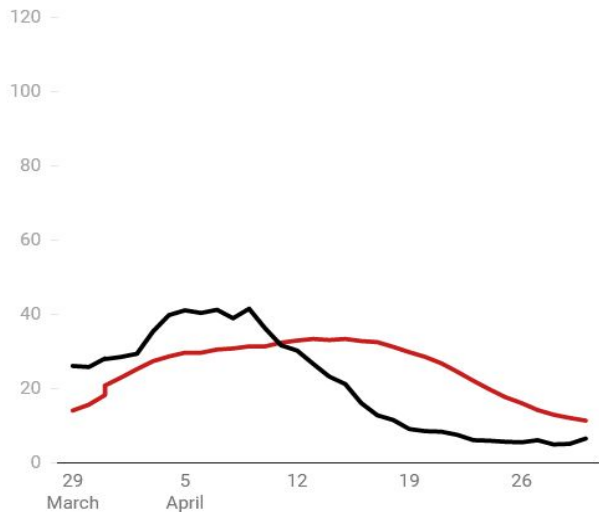
Hospitalizations per 100K



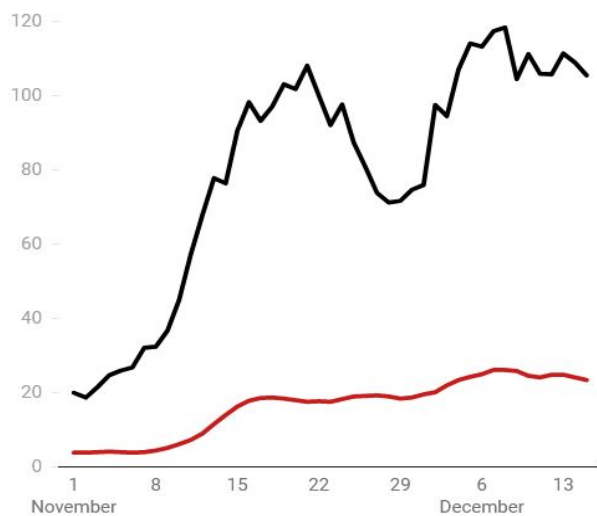
Deaths per 100K

# Comparing Vermont Case Increases with Hospitalizations

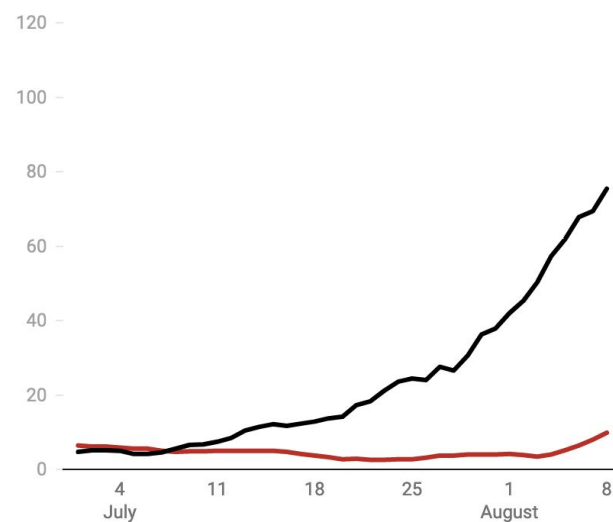
— Cases (7-Day Average) — Hospitalizations (7-Day Average)



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

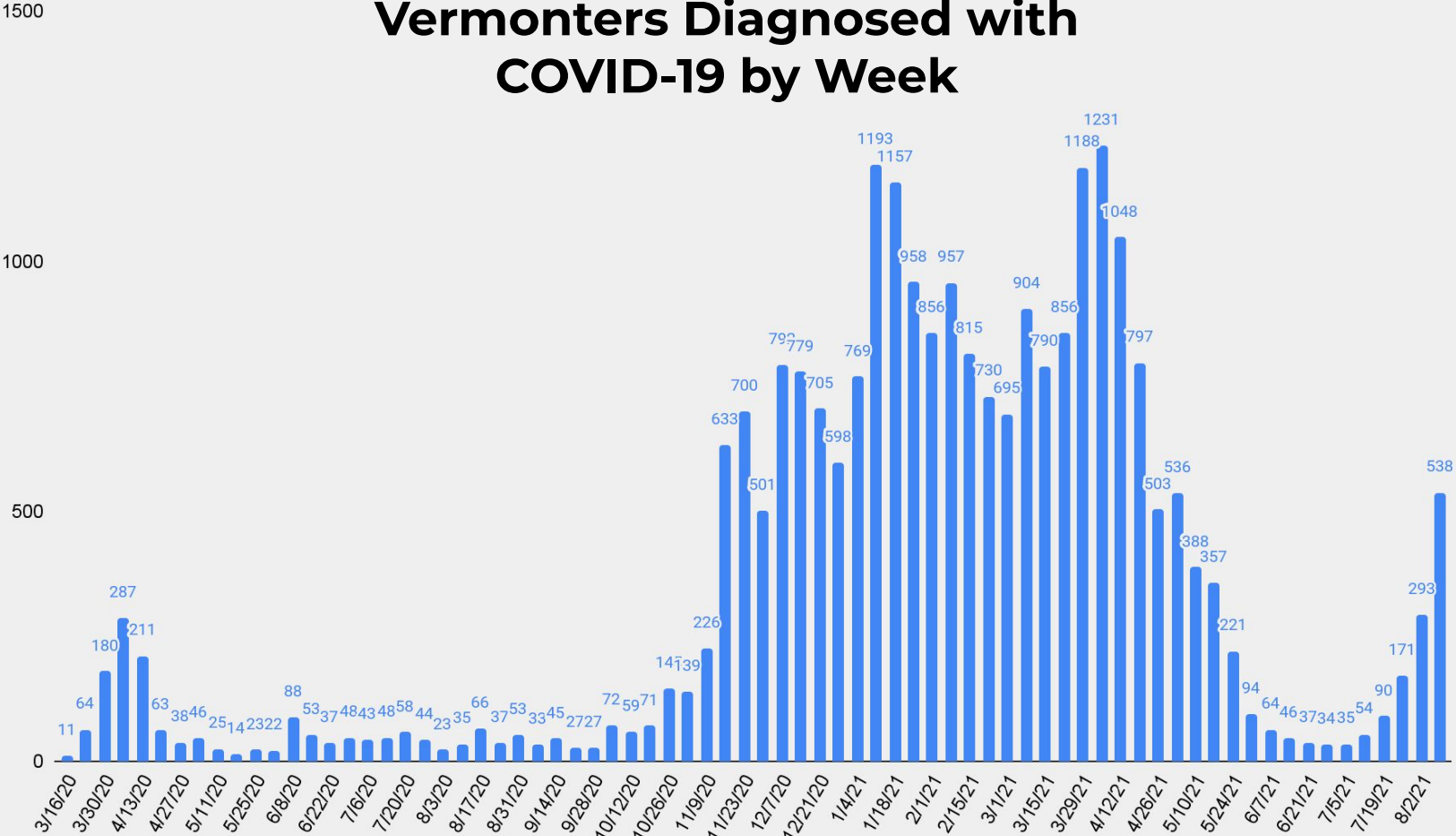


**Winter Case Increase**  
(November 1, 2020 to December 15, 2020)



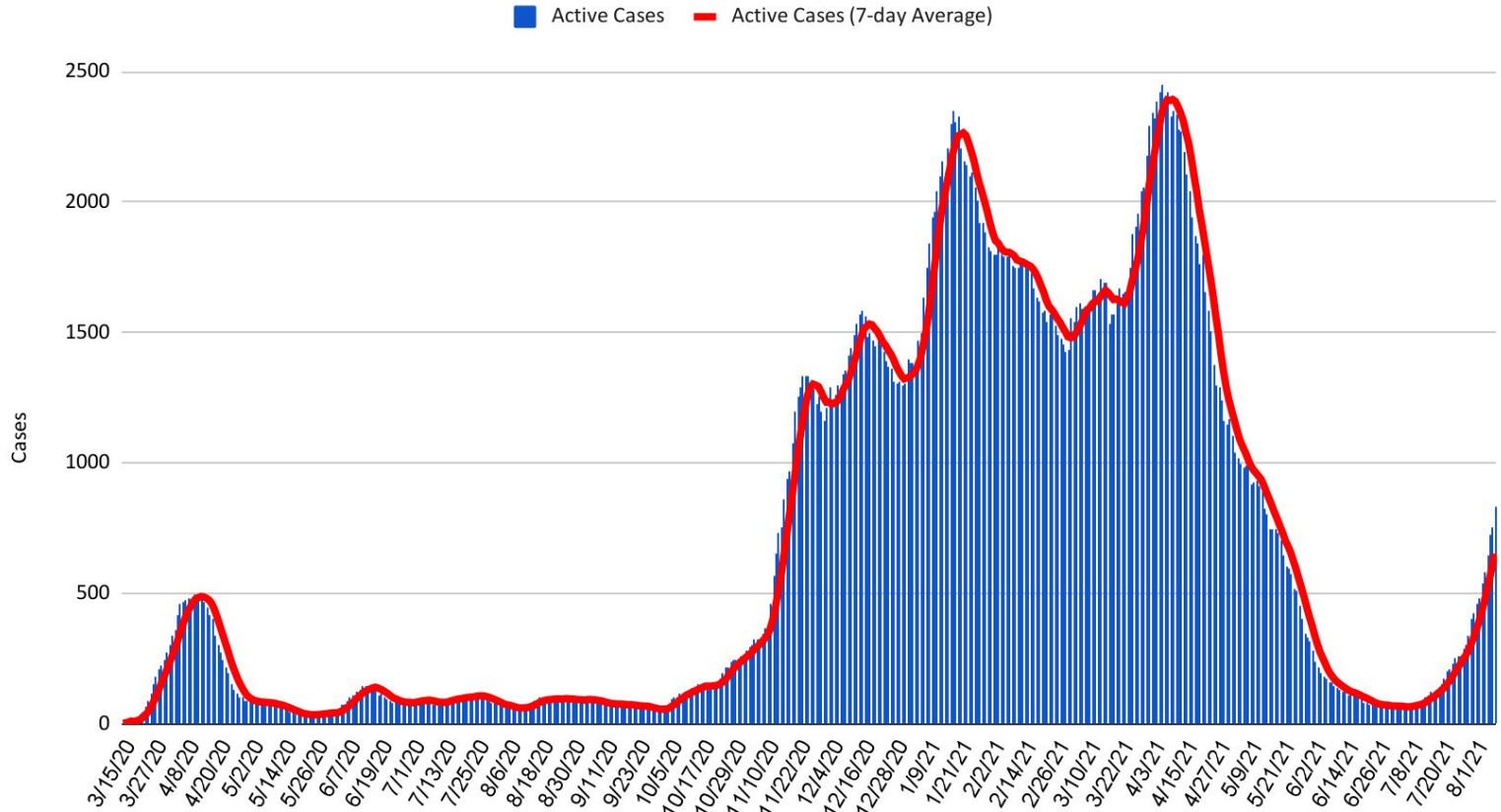
**Current Case Increase**  
(July 1, 2021 to August 9, 2021)

# Vermonters Diagnosed with COVID-19 by Week



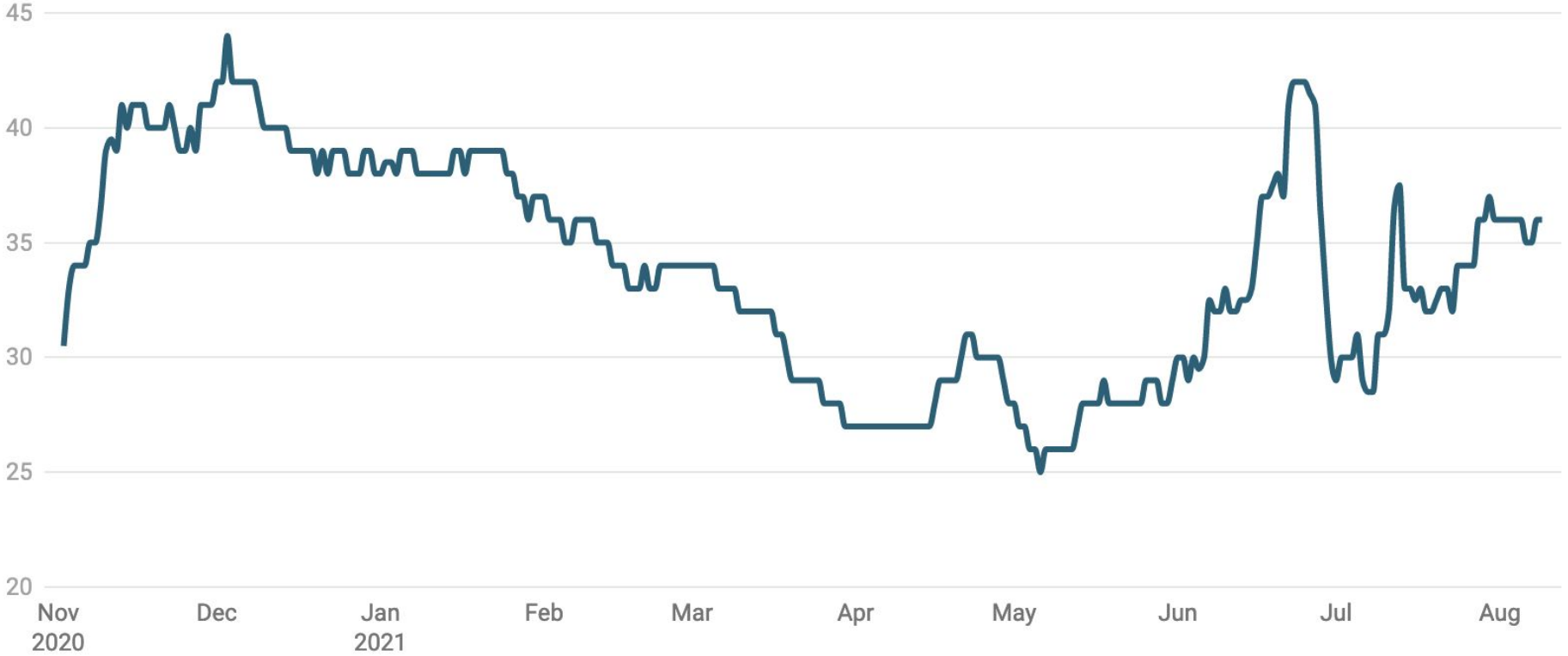
Source: Vermont Department of Health (week calculated as Tuesday to Monday)

# Estimated Active Cases of COVID-19 in Vermont



# Age of Infected Vermonters

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

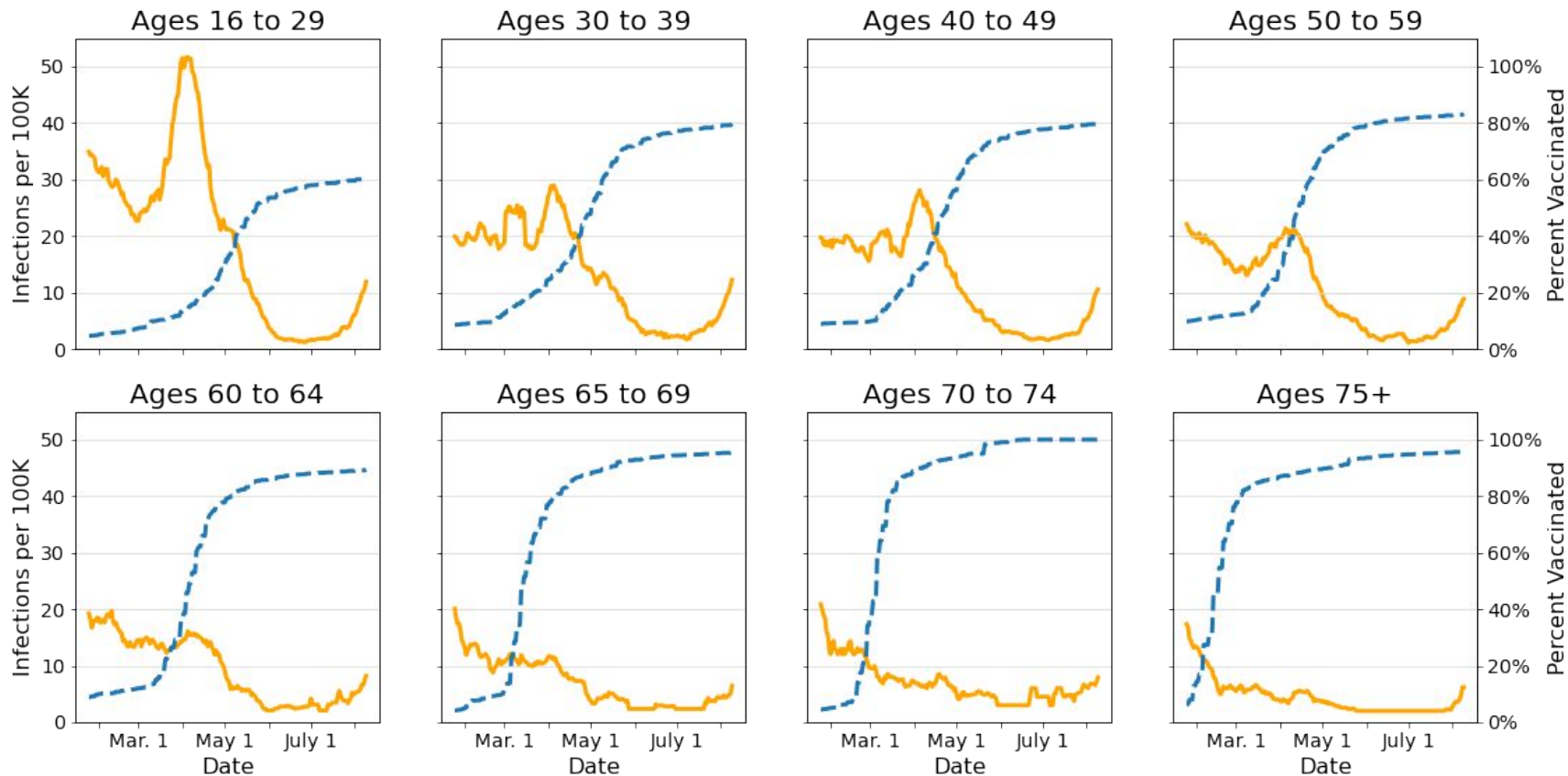


Source: VDH—August 10, 2021

# Vermont Case Rate & Vaccination by Age Band

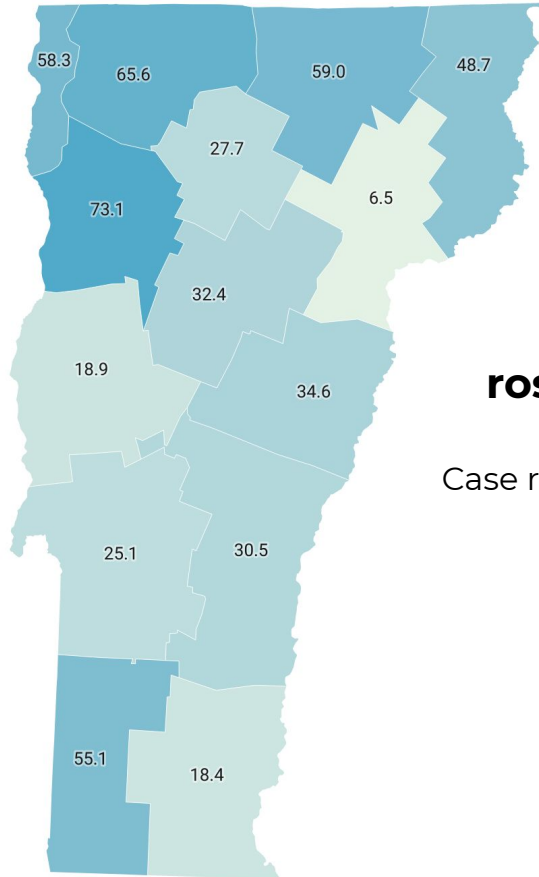
— New Infections per 100K (14-Day Average)

— Percent Received First Vaccine Dose



# Vermont Weekly Cases by County (per 100,000)

Results Reported July 27 to August 2

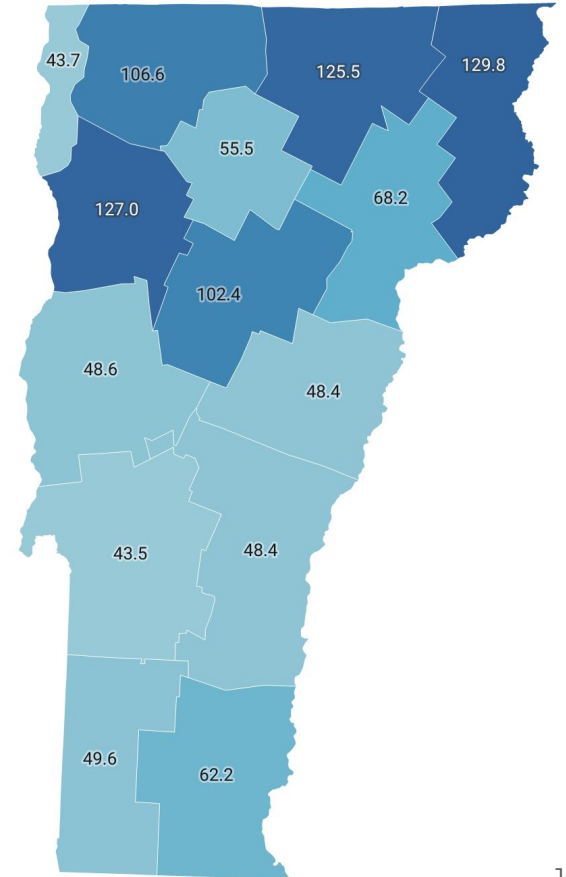


Covid-19 case rates  
**rose again** this past week

Case rates rose in **12 counties** this week;  
all counties reporting cases

# Vermont Weekly Cases by County (per 100,000)

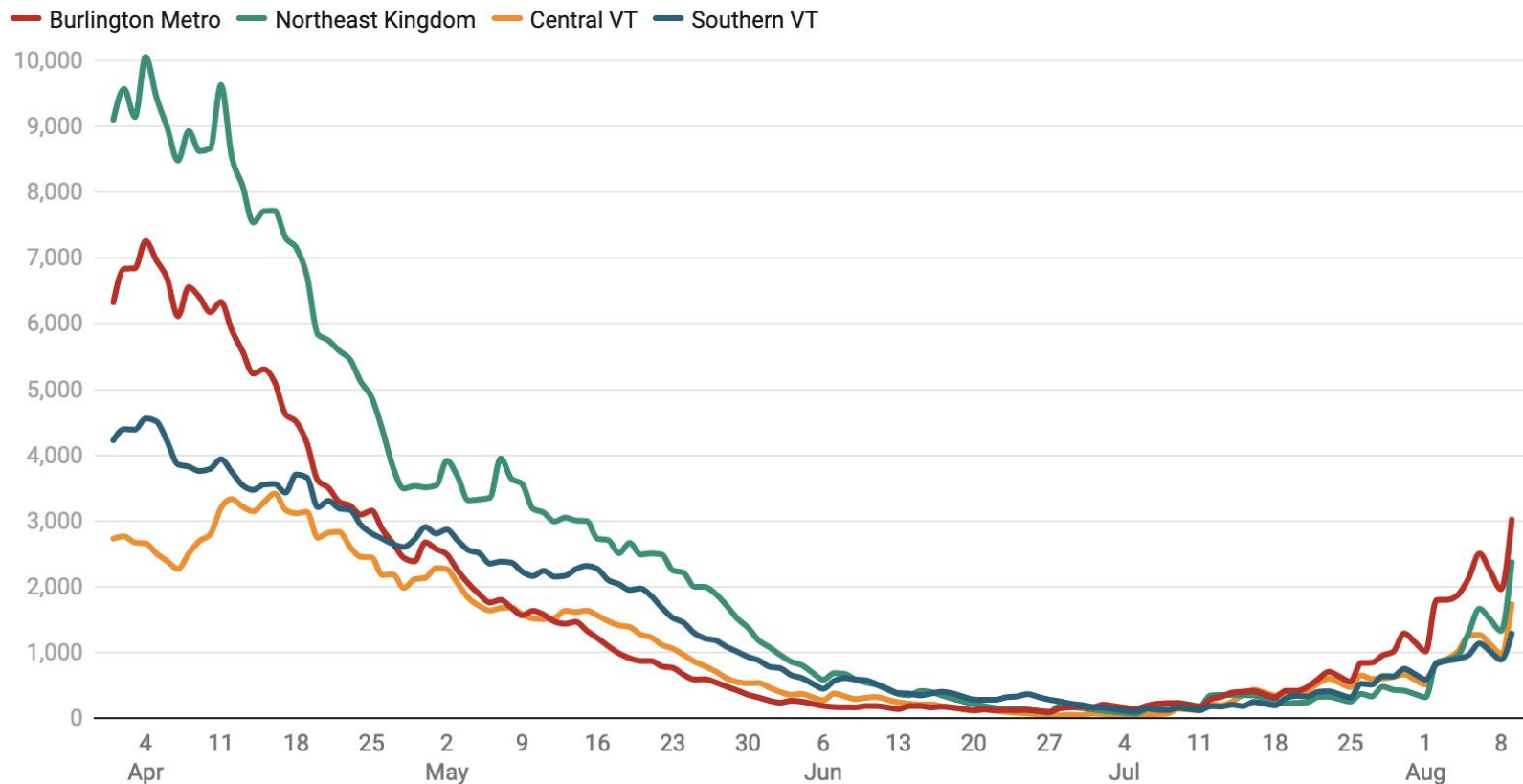
Results Reported August 3 to 9



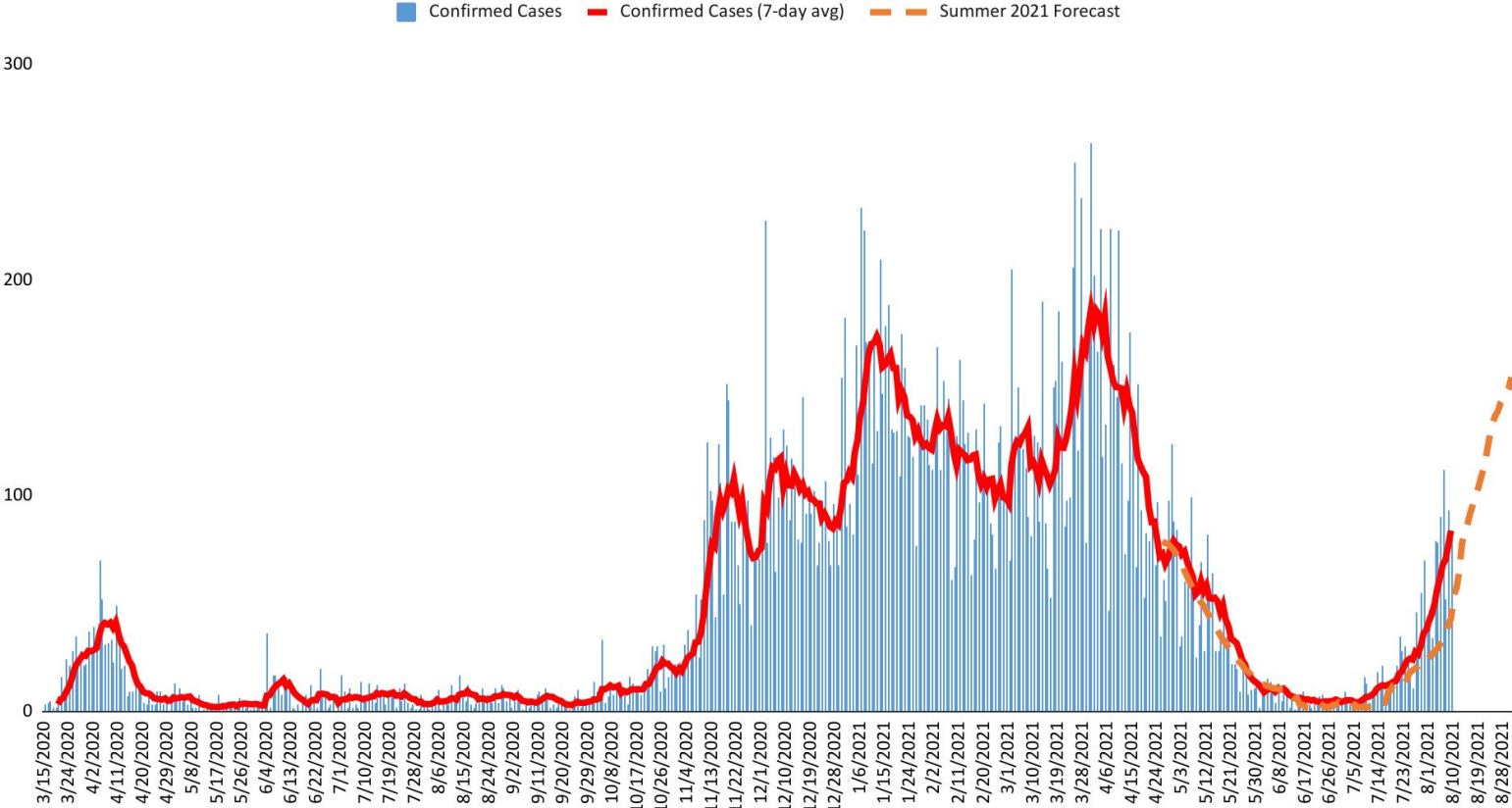


# Active COVID Cases per Million in Vermont Regions

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).



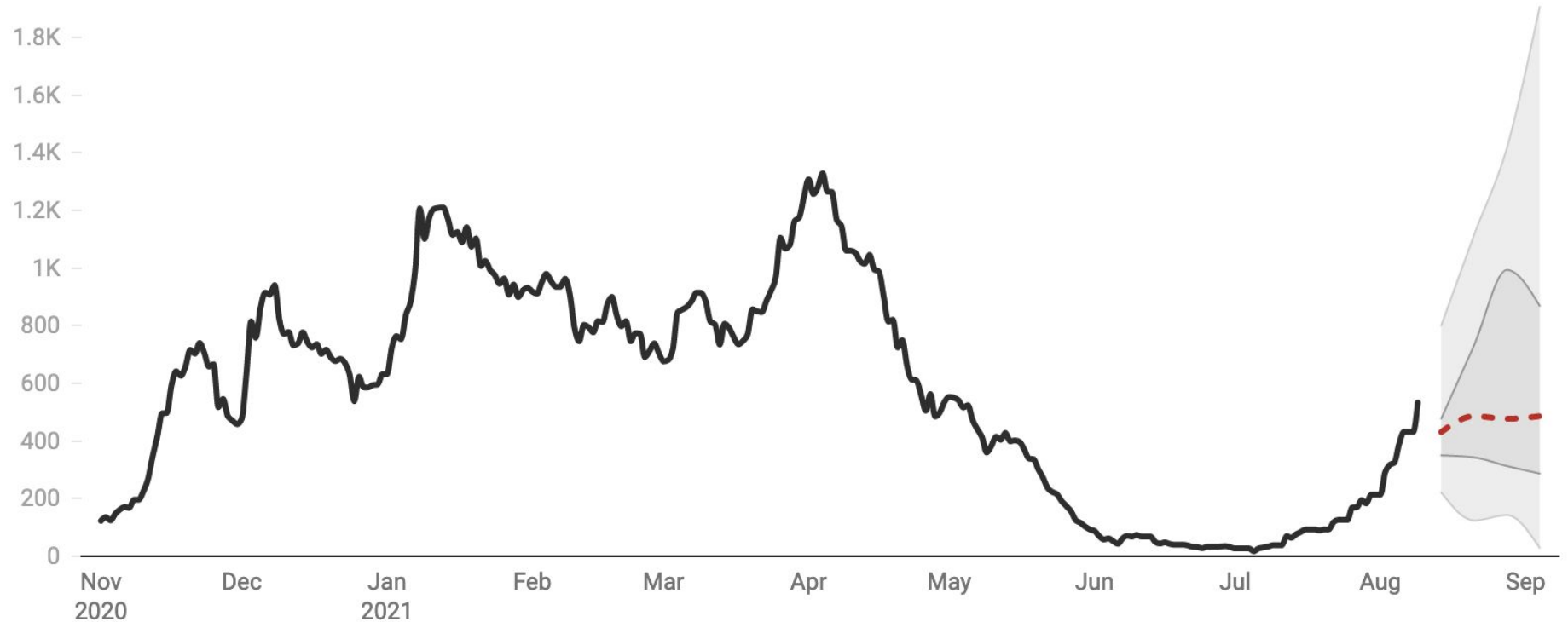
# Vermont Forecast



Source: Johns Hopkins University Data, VDH, & Oliver Wyman Forecast Model—Actual through August 10, 2021

# VT Weekly COVID-19 Infections Forecast

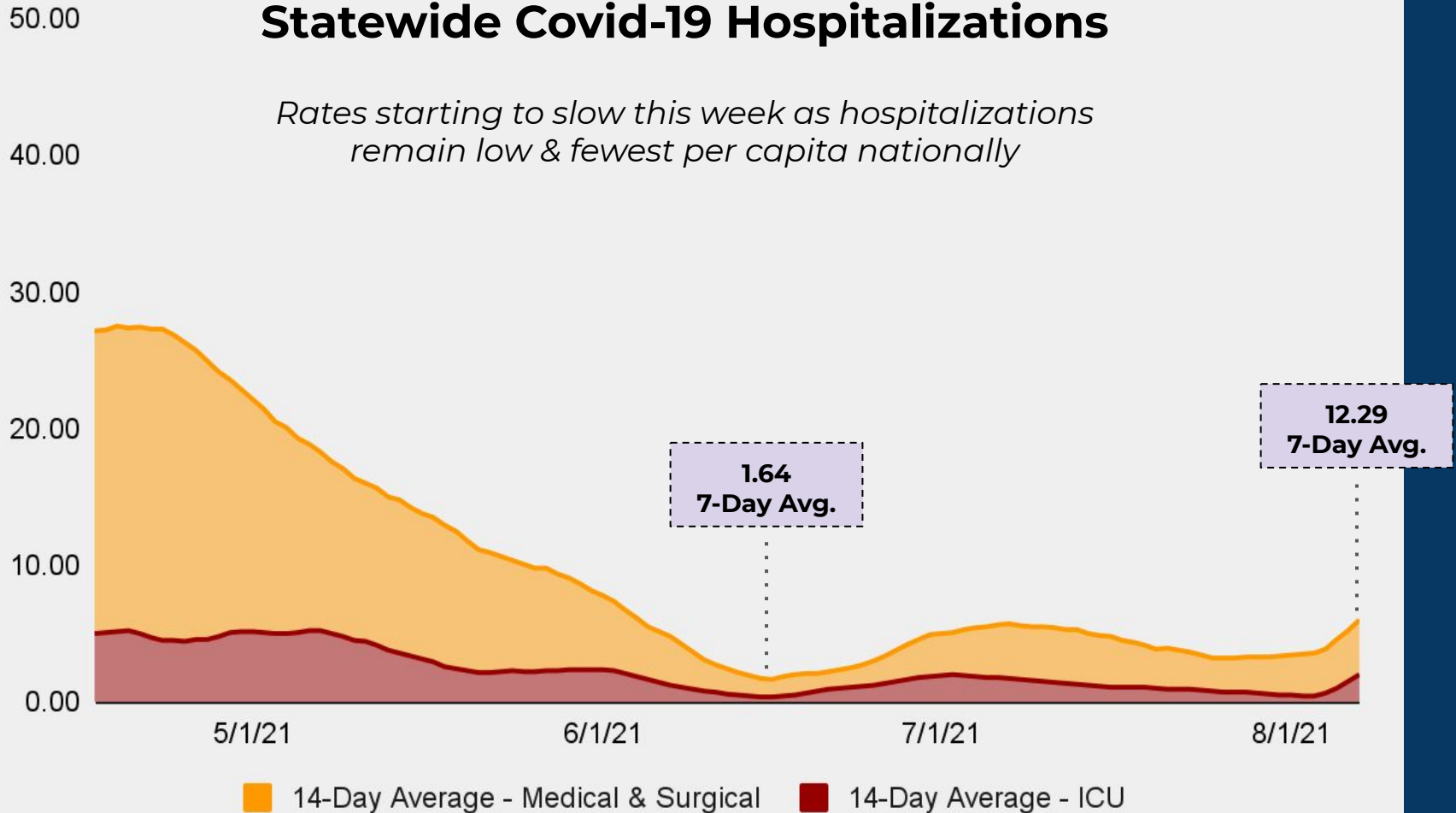
Calculated as a 7-day sum. Gray bands represent 50% and 95% confidence intervals. Since projections are only released once a week, the actual number may appear to over or undershoot the forecast.



# Vermont Hospitalization Data

# Statewide Covid-19 Hospitalizations

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



# Vermont Fatality Data

# Vermont Covid-19 Deaths by Week

30

20

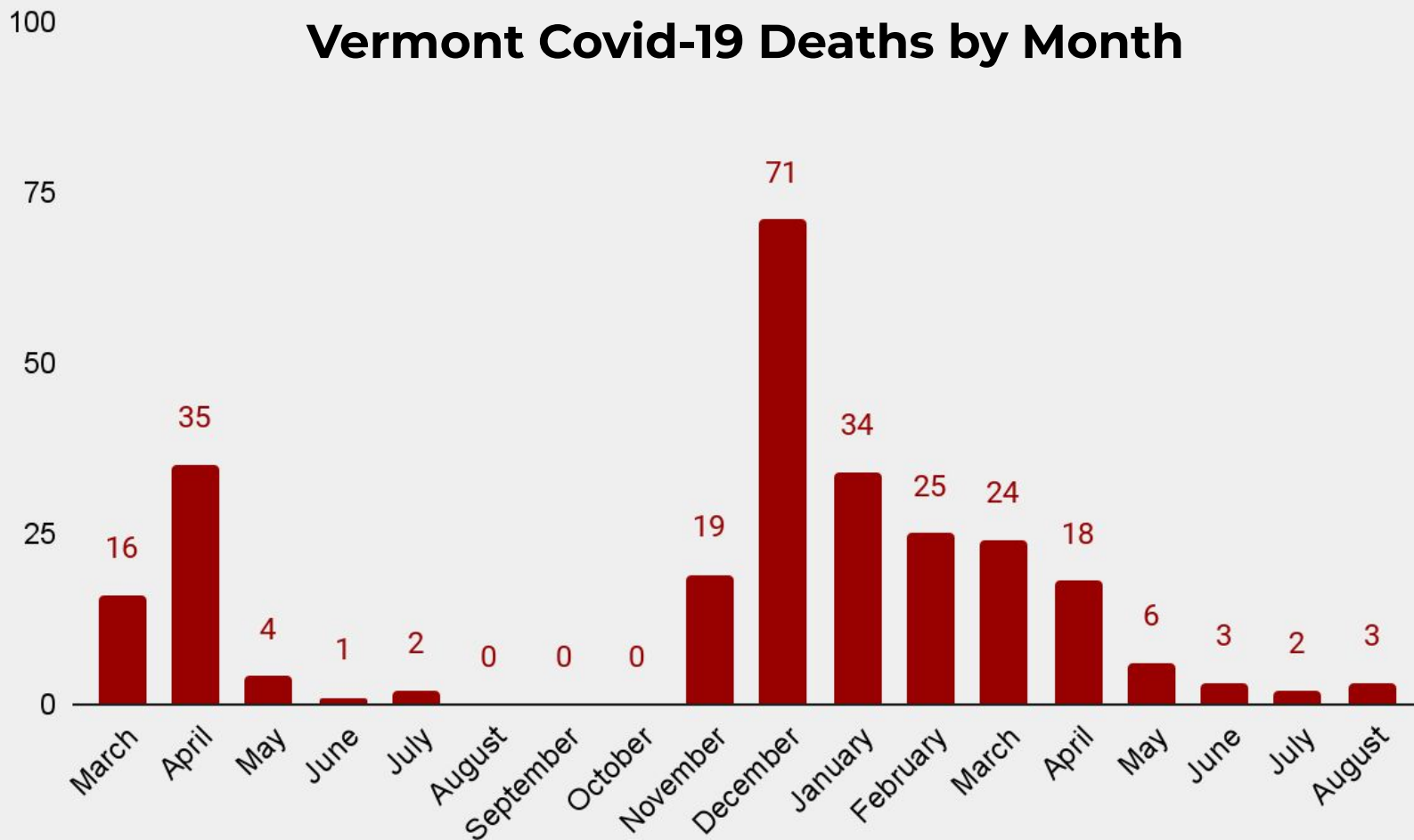
10

0



Source: Vermont Department of Health—August 10, 2021 (week ending)

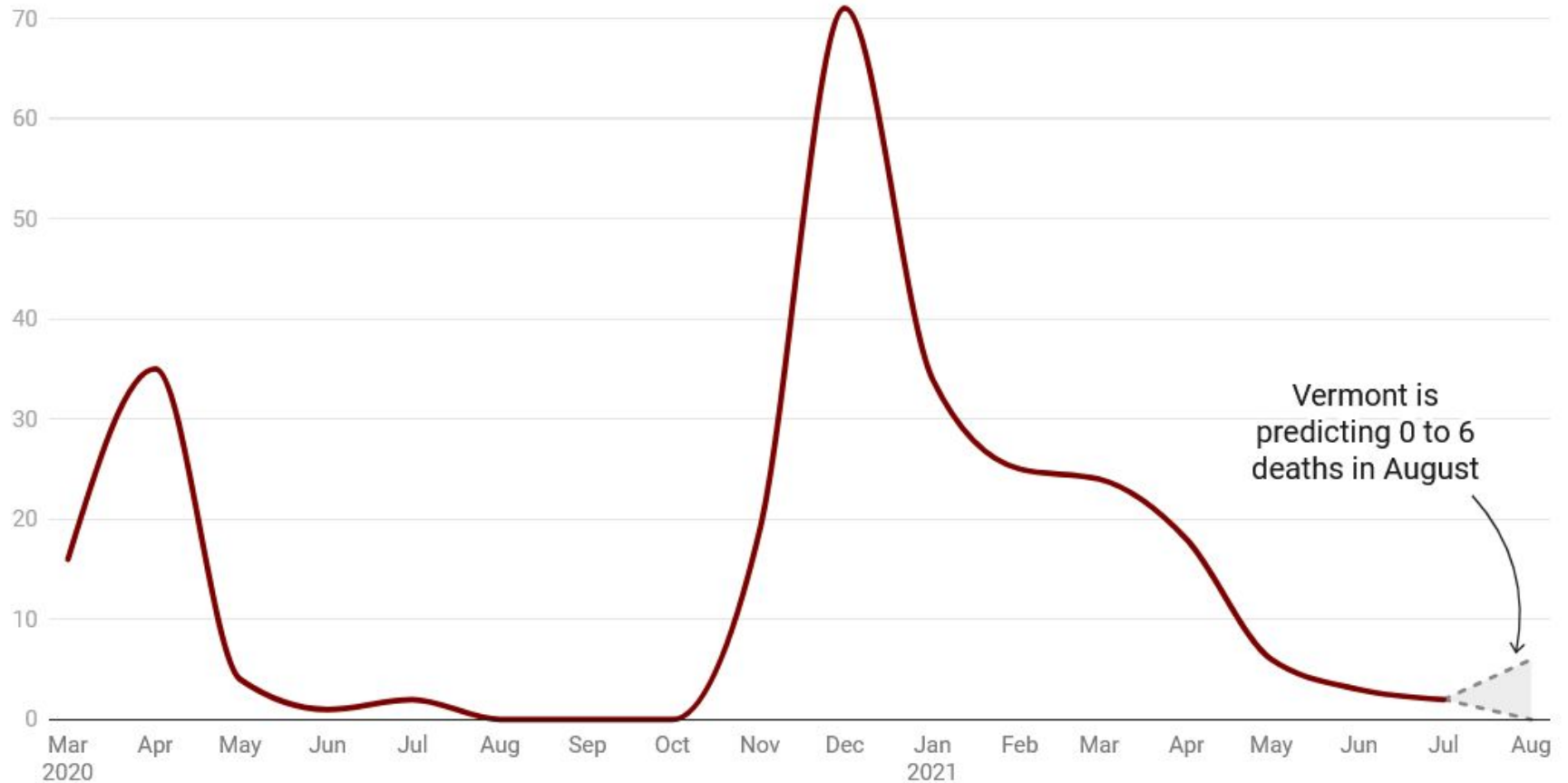
## Vermont Covid-19 Deaths by Month



Source: Vermont Department of Health—August 9, 2021; deaths attributed to month in which death occurred rather than reported



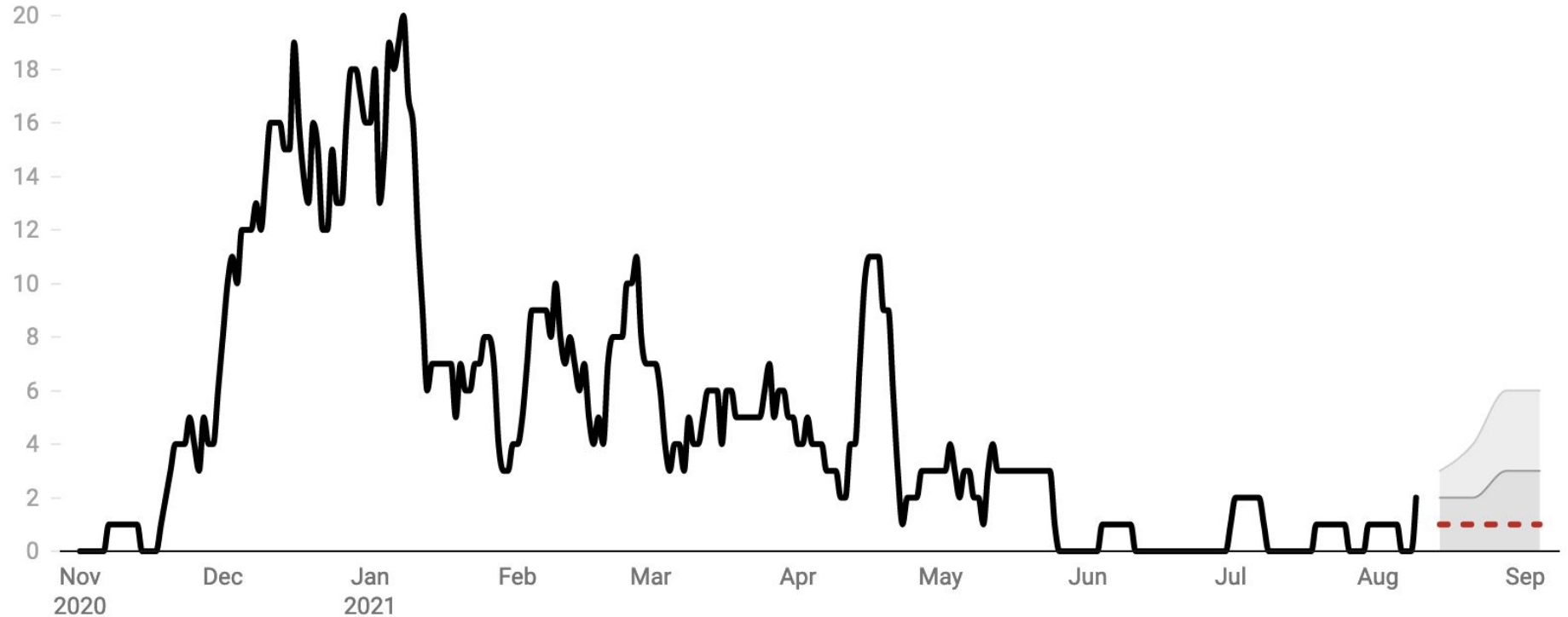
# Vermont COVID-19 Deaths by Month



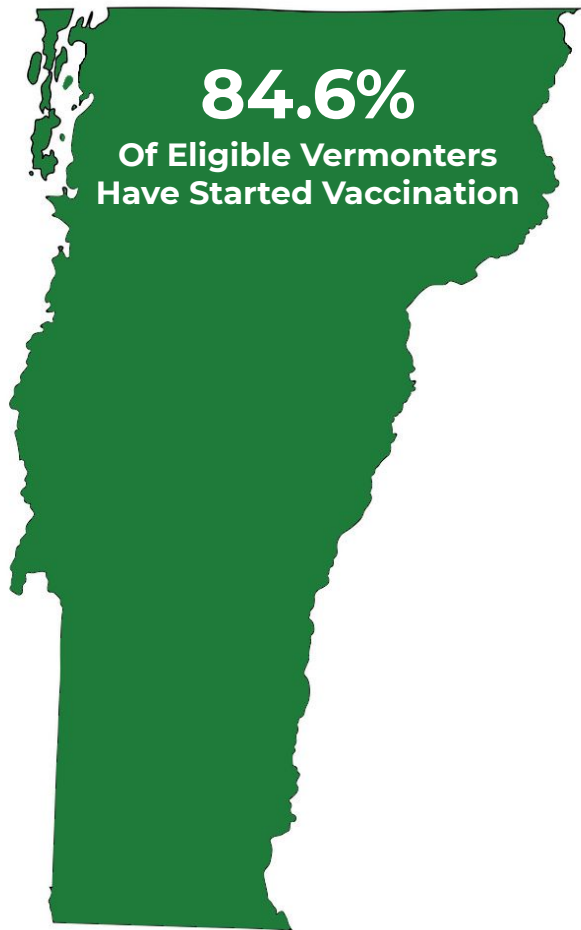
Source: Vermont Department of Health—August 3, 2021

# 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.



# Vermont Vaccination Data



# Vermont Vaccination

**+2,763**

Since Last Week

**465,912**

Vermonters with  
at Least 1 Dose

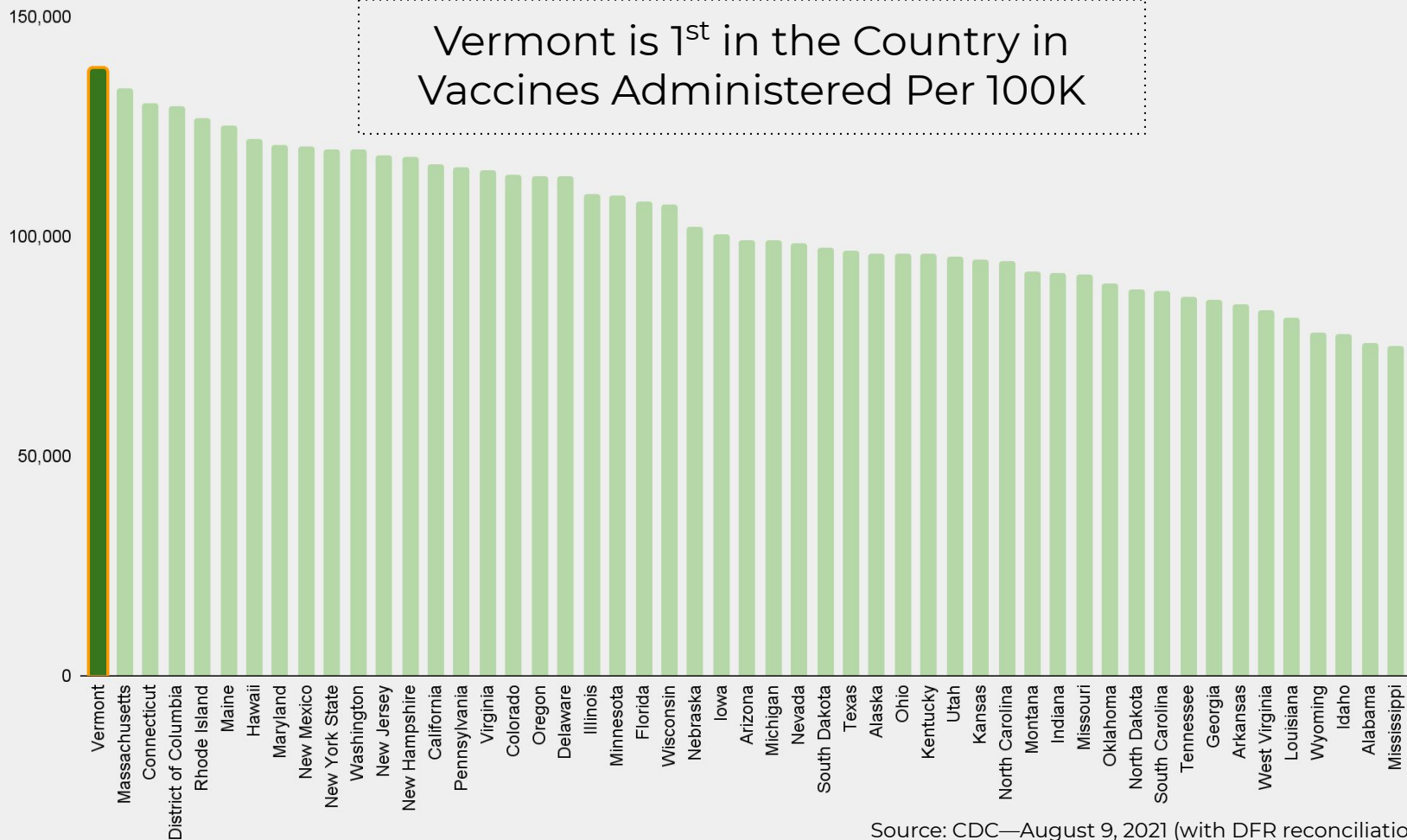
**85,038**

Eligible Vermonters  
still to be vaccinated

# Vermont CDC Vaccine Scorecard

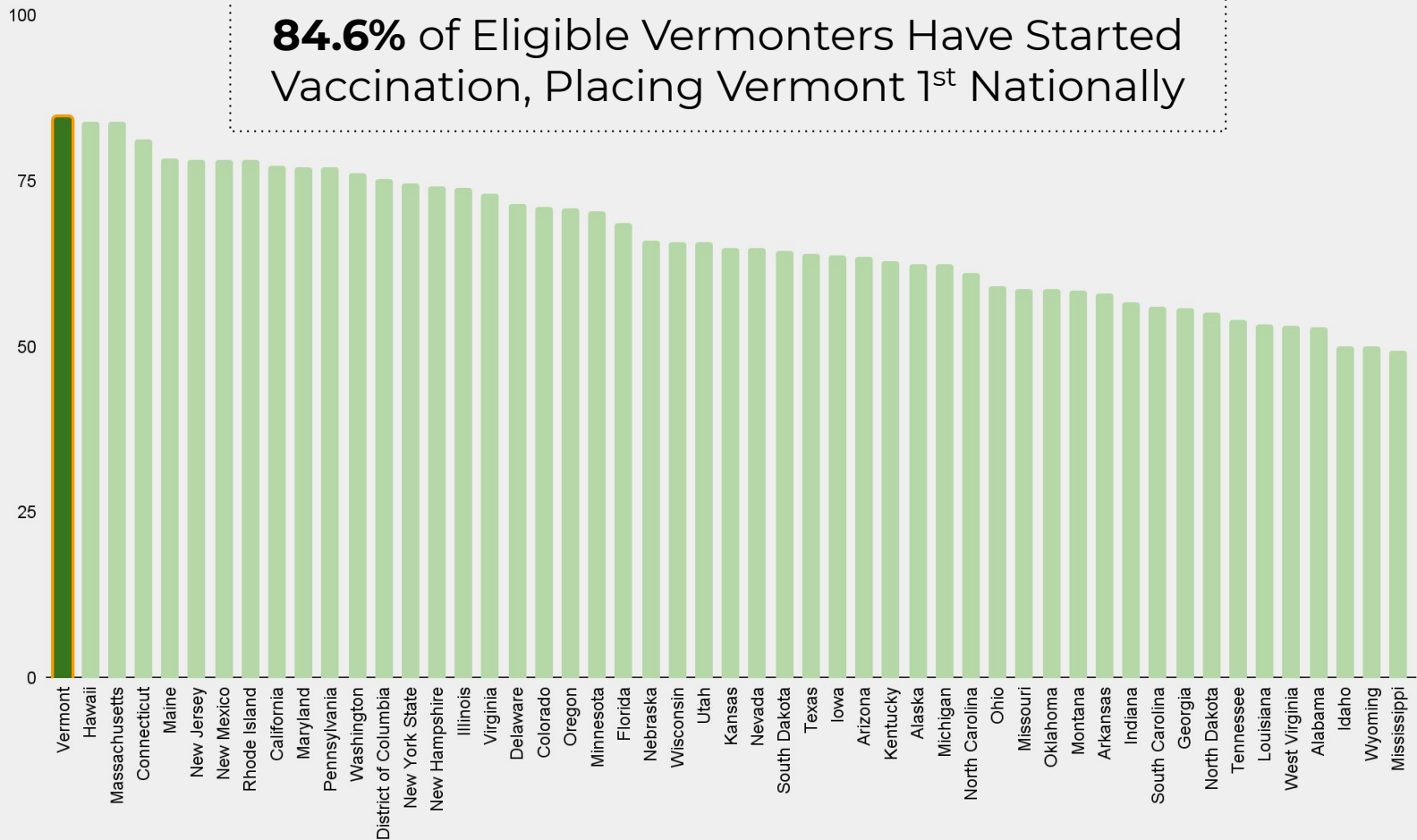
Metric	Figure	State Ranking
<b>Doses Administered per 100K</b>	<b>138,071</b>	<b>1</b>
<b>% At Least 1 Dose (Eligible)</b>	<b>84.6%</b>	<b>1</b>
<b>% Fully Vaccinated (Eligible Population)</b>	<b>75.4%</b>	<b>1</b>
<b>% At Least 1 Dose (Full Population)</b>	<b>74.7%</b>	<b>1</b>
<b>% Fully Vaccinated (Full Population)</b>	<b>66.6%</b>	<b>1</b>
<b>Doses Administered 65+ per 100K</b>	<b>203,592</b>	<b>1</b>

Vermont is 1<sup>st</sup> in the Country in  
Vaccines Administered Per 100K



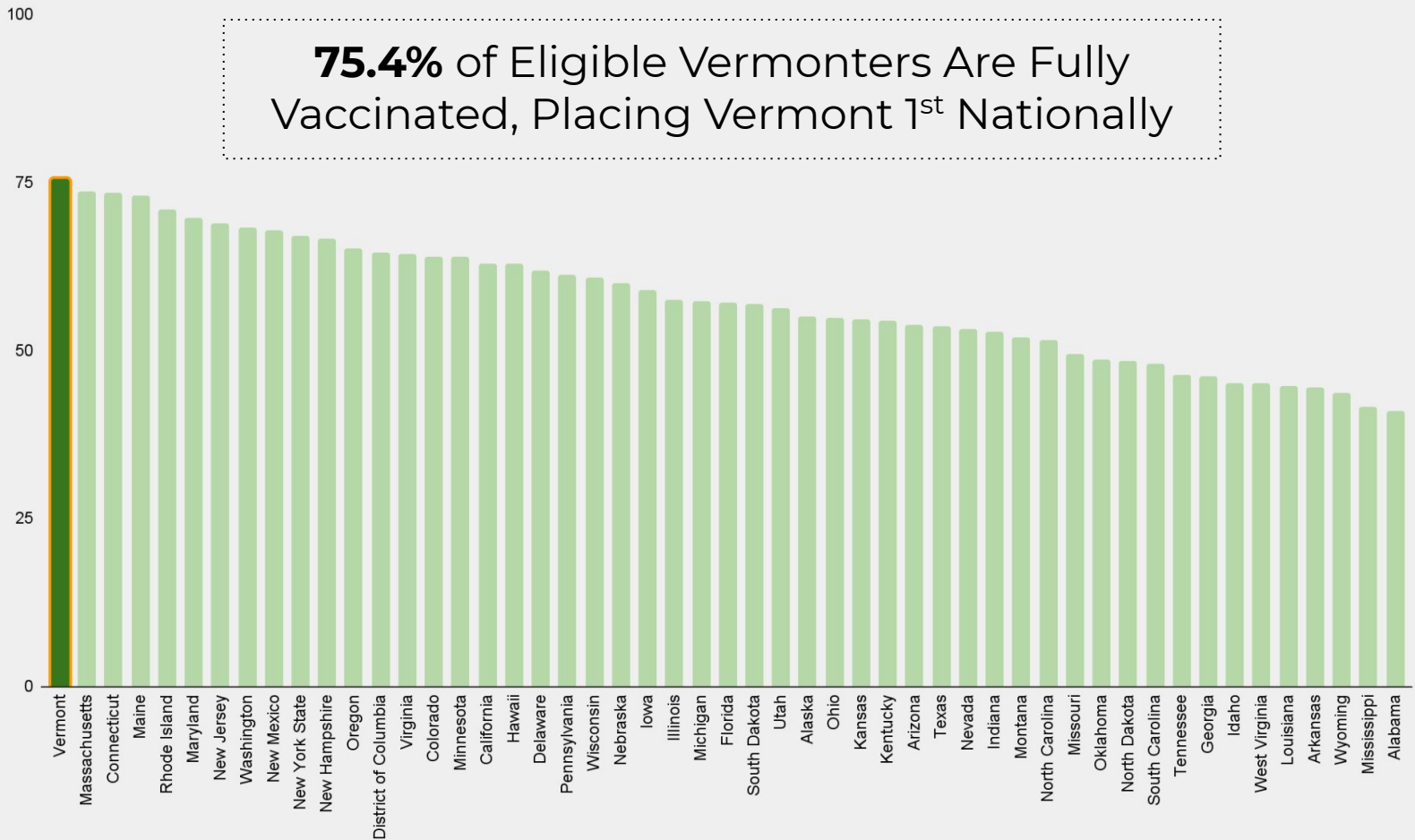
Source: CDC—August 9, 2021 (with DFR reconciliation)

**84.6%** of Eligible Vermonters Have Started Vaccination, Placing Vermont 1<sup>st</sup> Nationally



Source: CDC—August 9, 2021 (with DFR reconciliation)

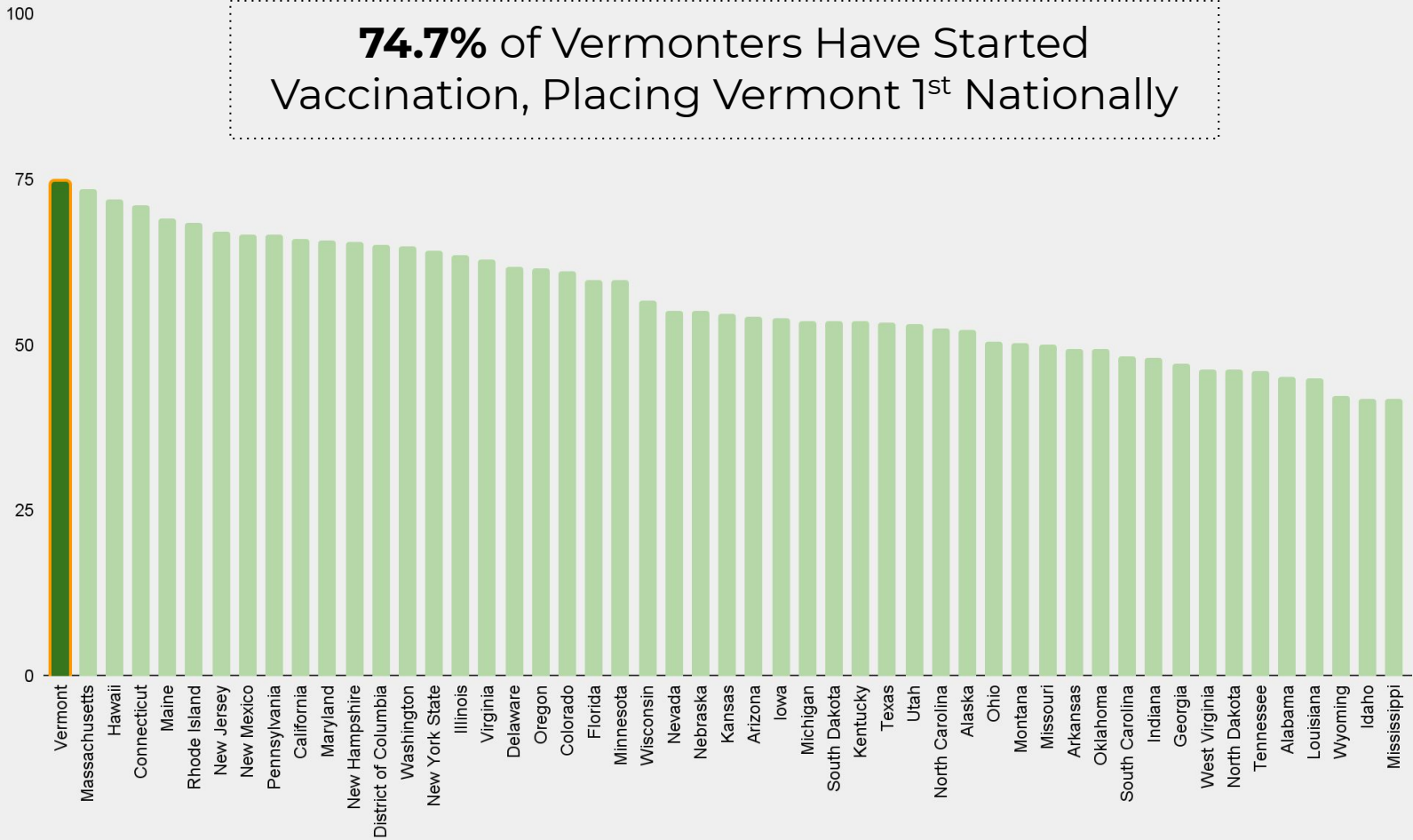
**75.4%** of Eligible Vermonters Are Fully Vaccinated, Placing Vermont 1<sup>st</sup> Nationally



Source: CDC—August 9, 2021 (with DFR reconciliation)

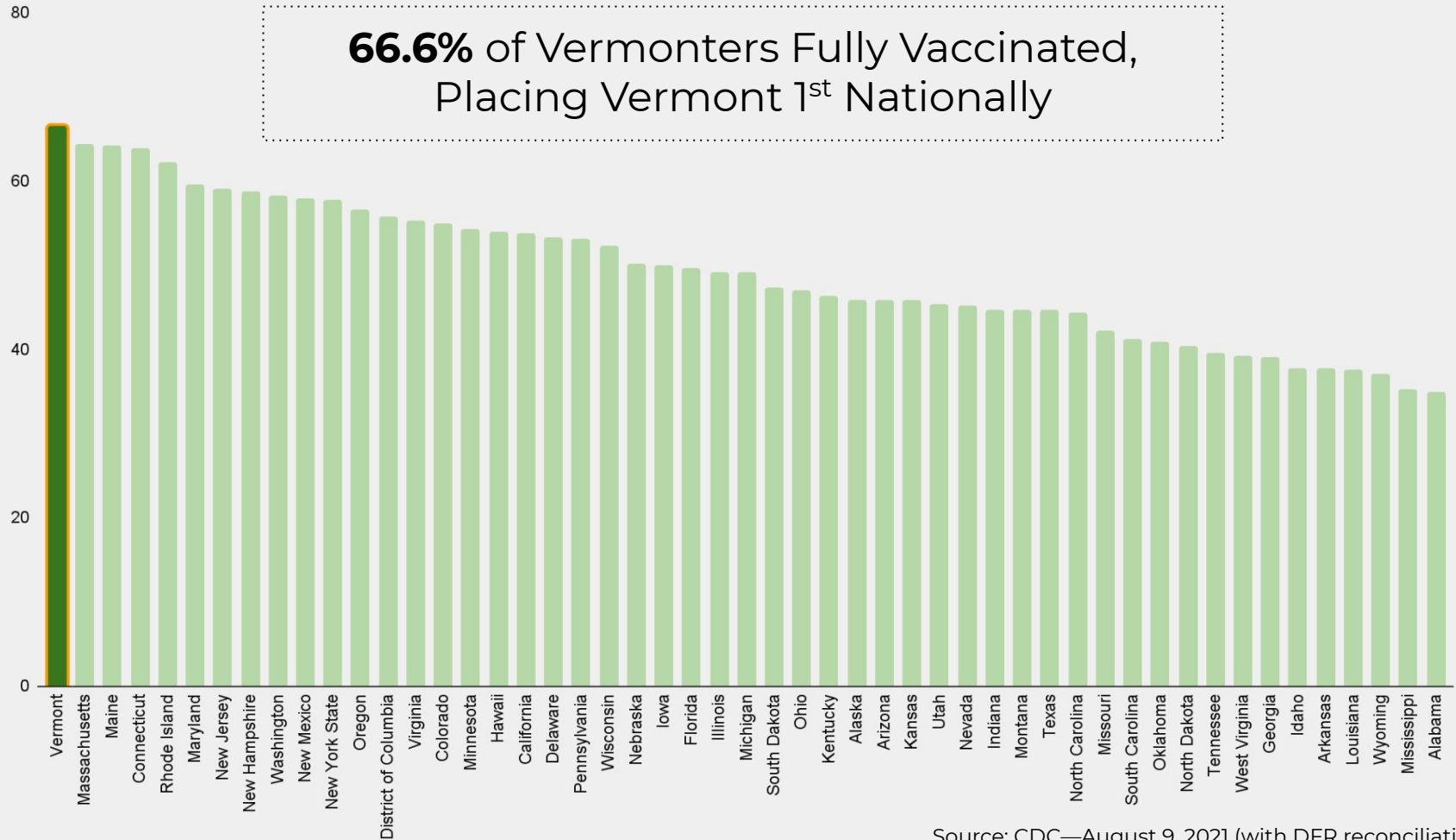


**74.7%** of Vermonters Have Started Vaccination, Placing Vermont 1<sup>st</sup> Nationally

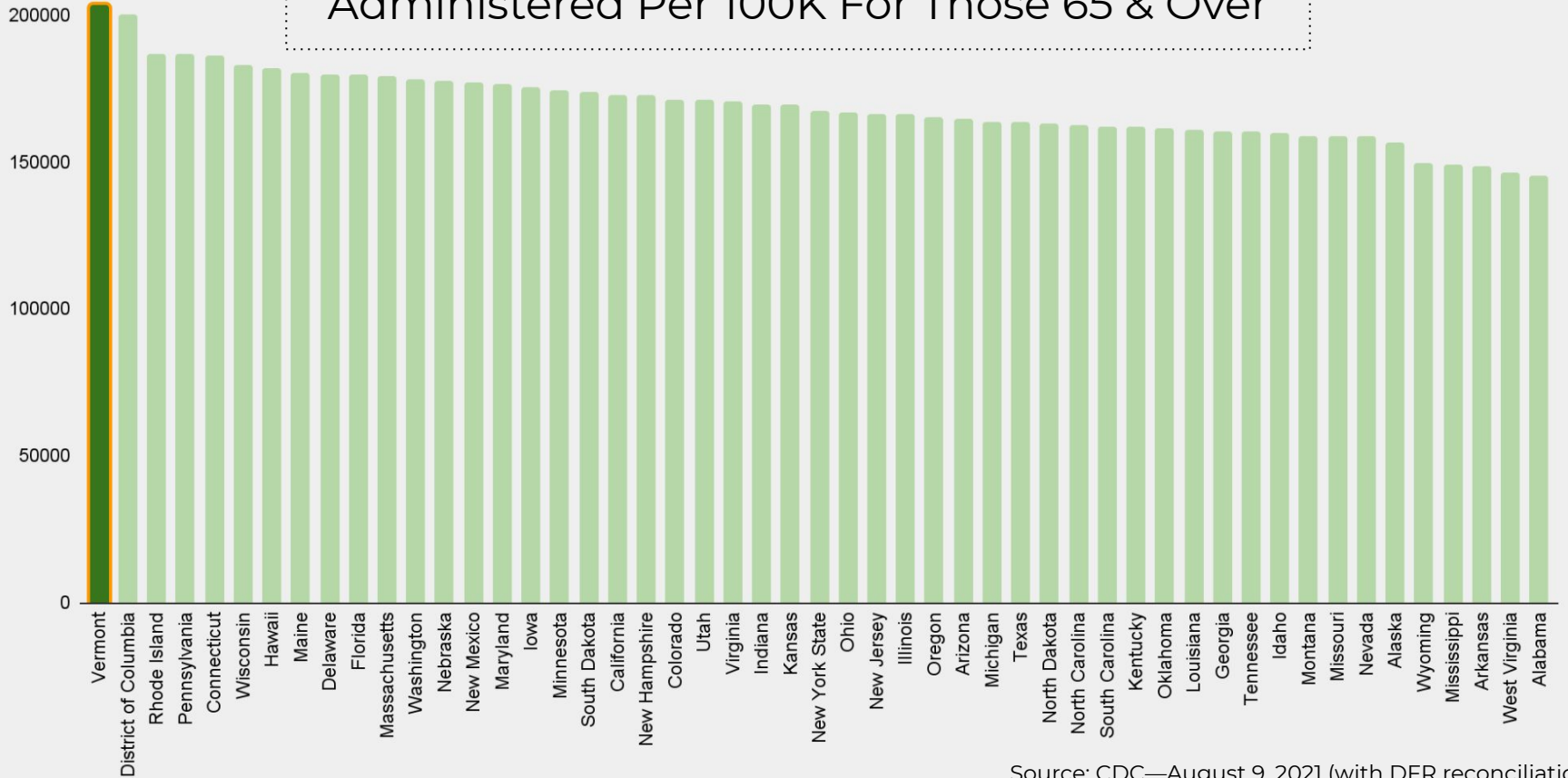


Source: CDC—August 9, 2021 (with DFR reconciliation)

**66.6%** of Vermonters Fully Vaccinated,  
Placing Vermont 1<sup>st</sup> Nationally



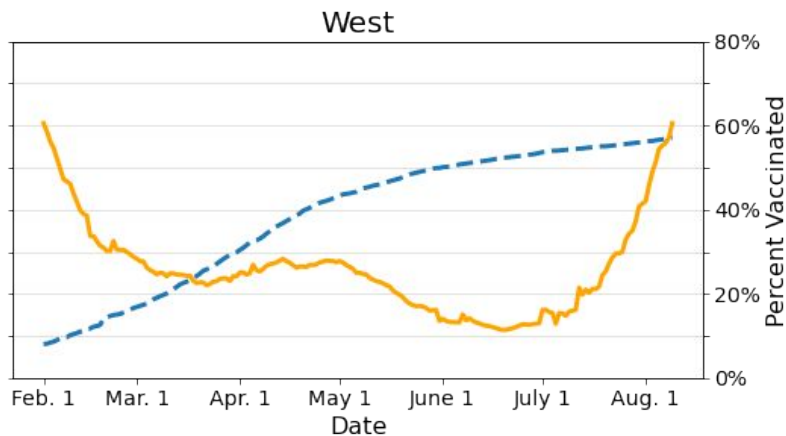
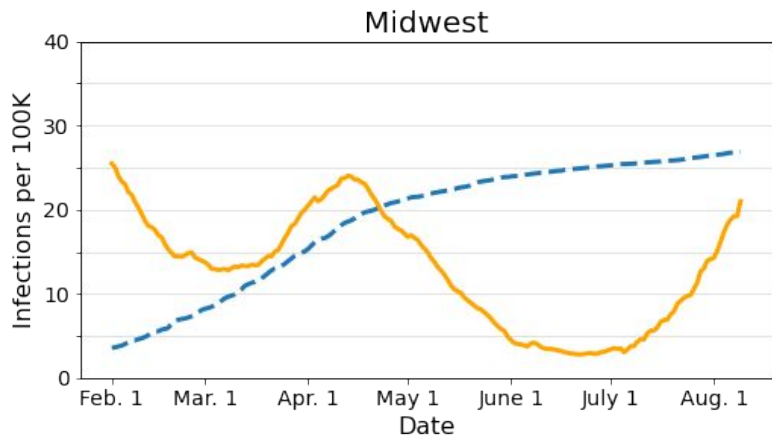
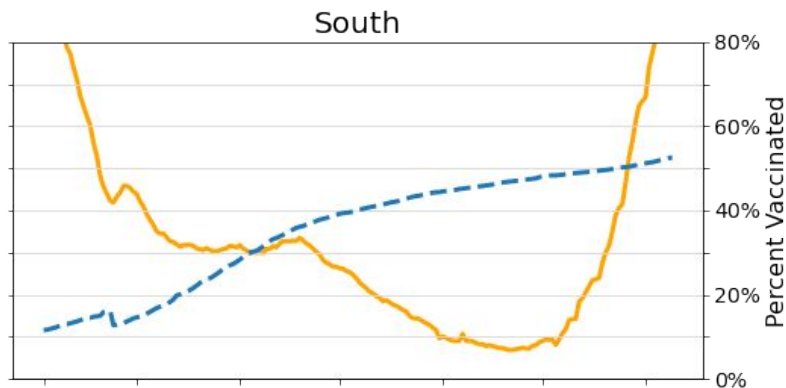
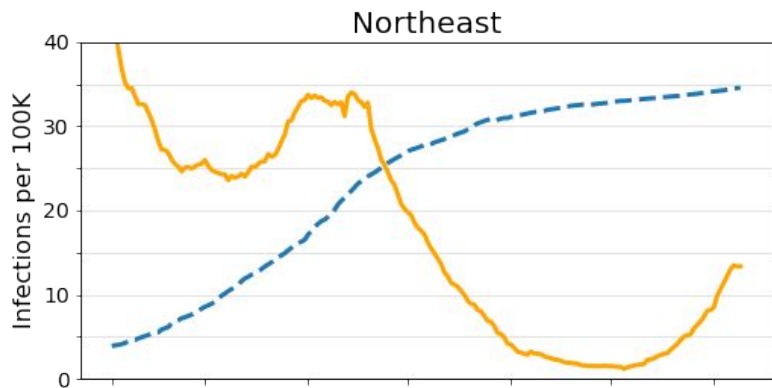
Vermont is 1<sup>st</sup> in the Country in Vaccines Administered Per 100K For Those 65 & Over



Source: CDC—August 9, 2021 (with DFR reconciliation)

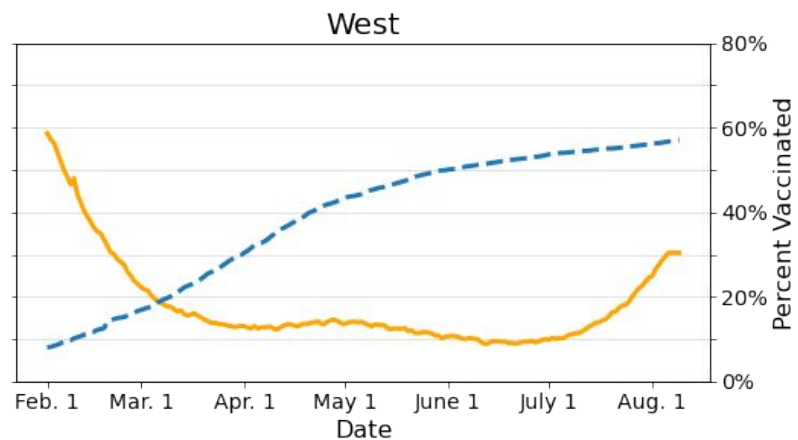
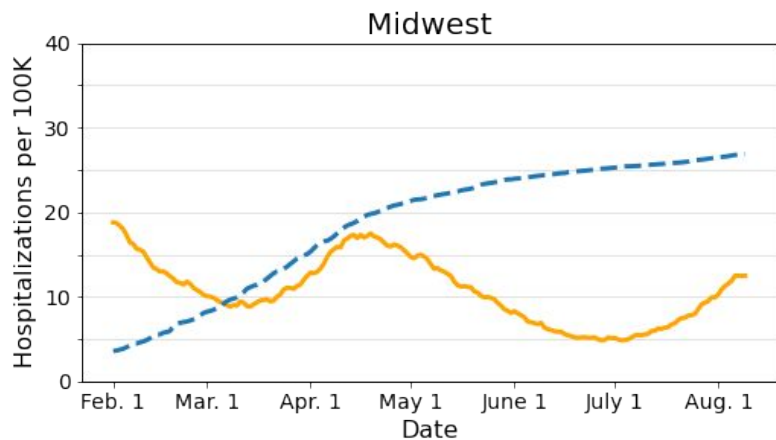
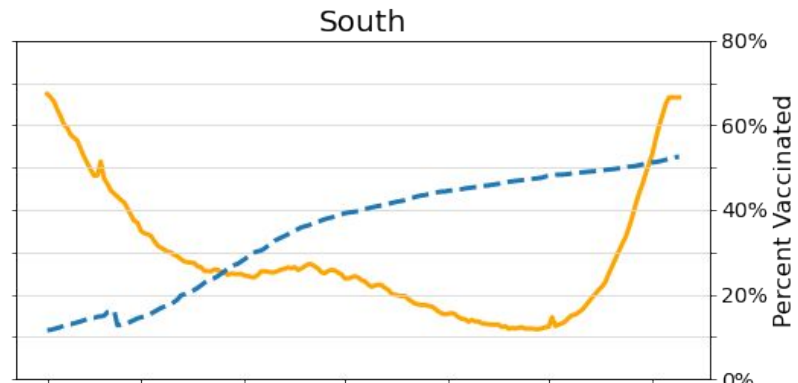
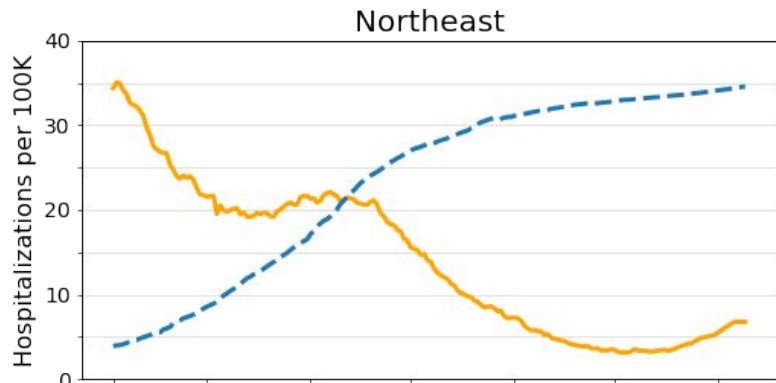
# US Census Region Case Rate & Vaccination

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



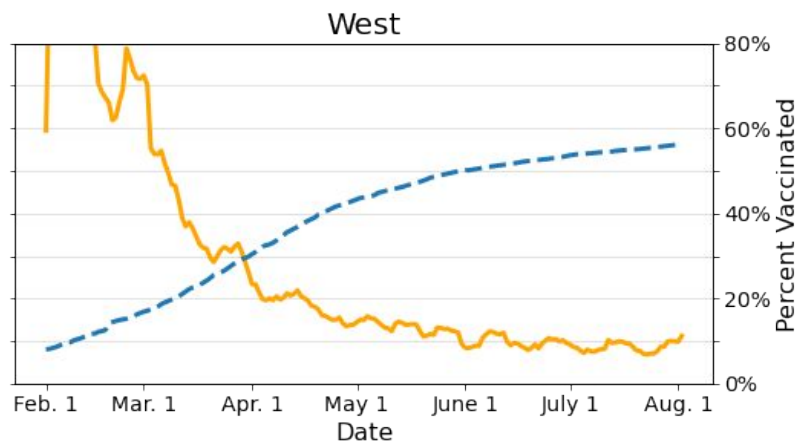
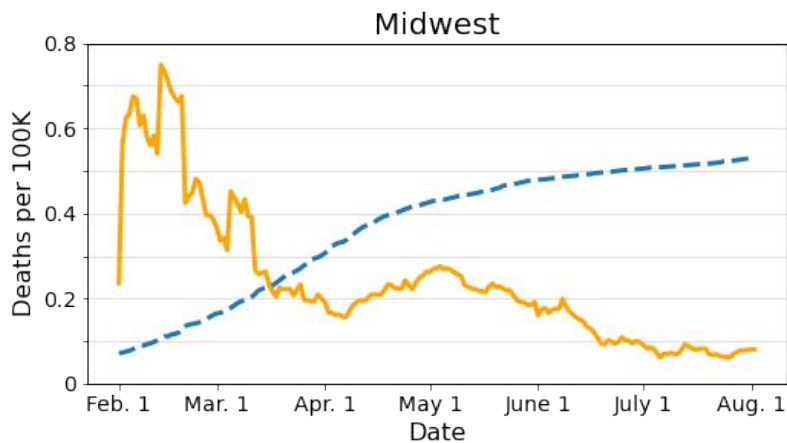
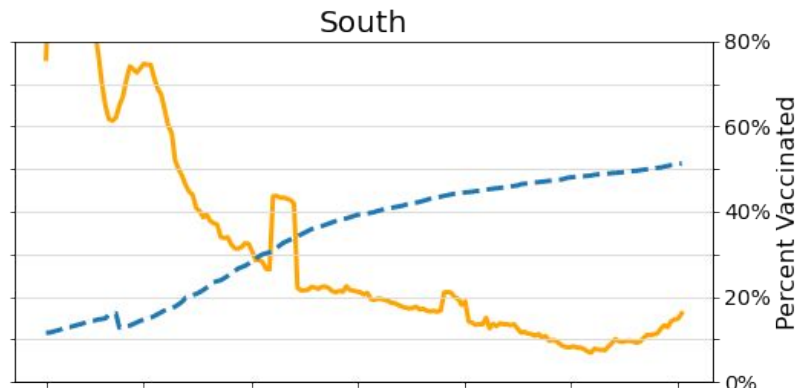
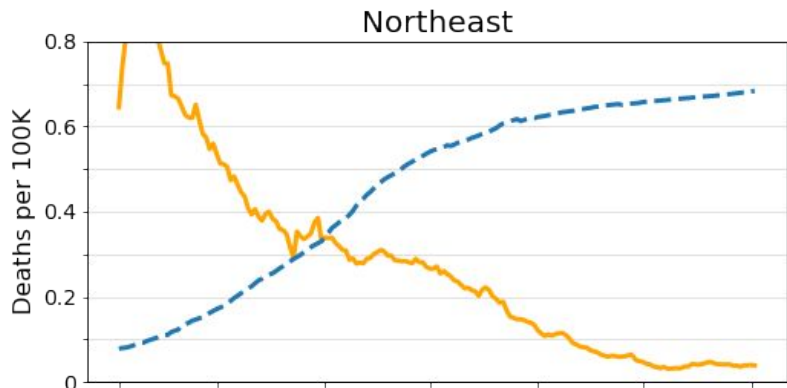
# US Census Region Hospitalizations & Vaccination

— Hospitalizations per 100K (14-Day Average)  
- - Percent Received First Vaccine Dose



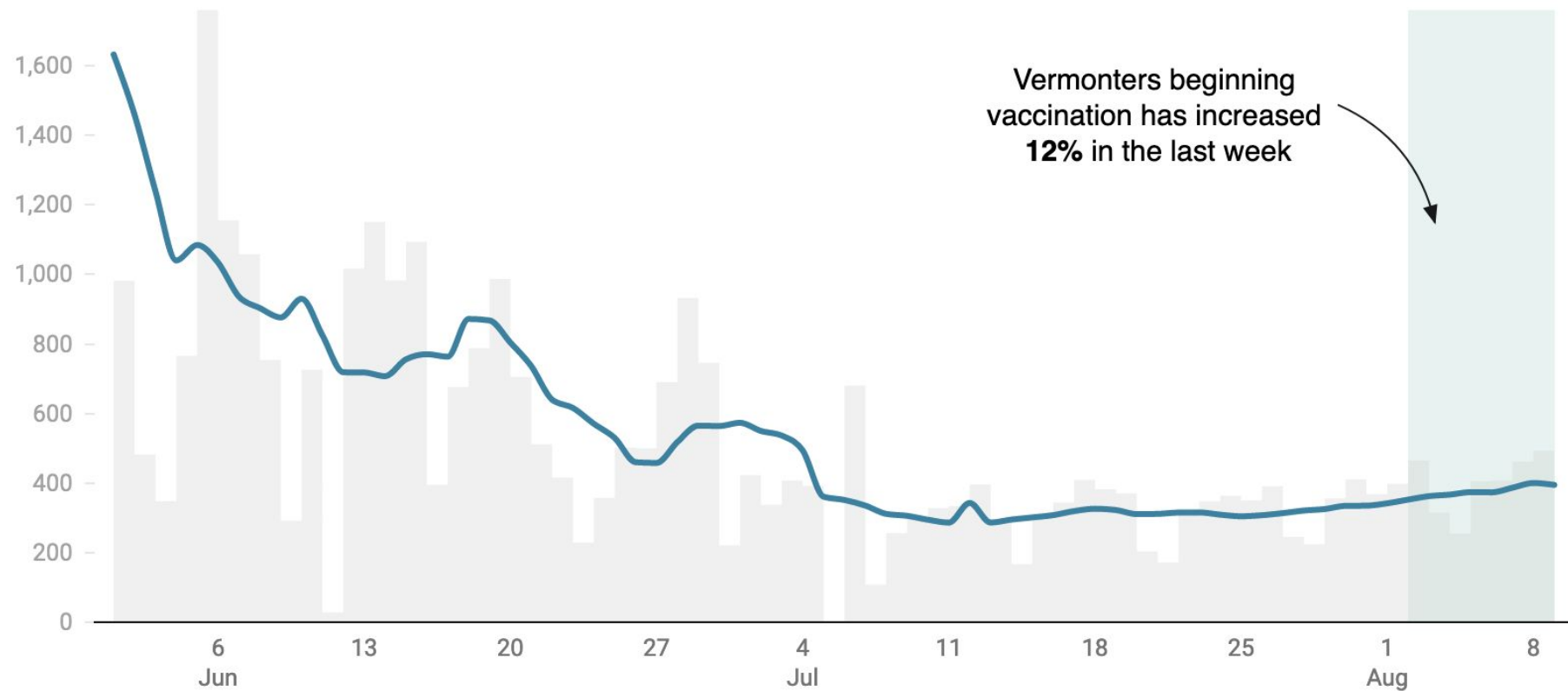
# US Census Region Deaths & Vaccination

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



# Vermonters Initiating Vaccination by Day

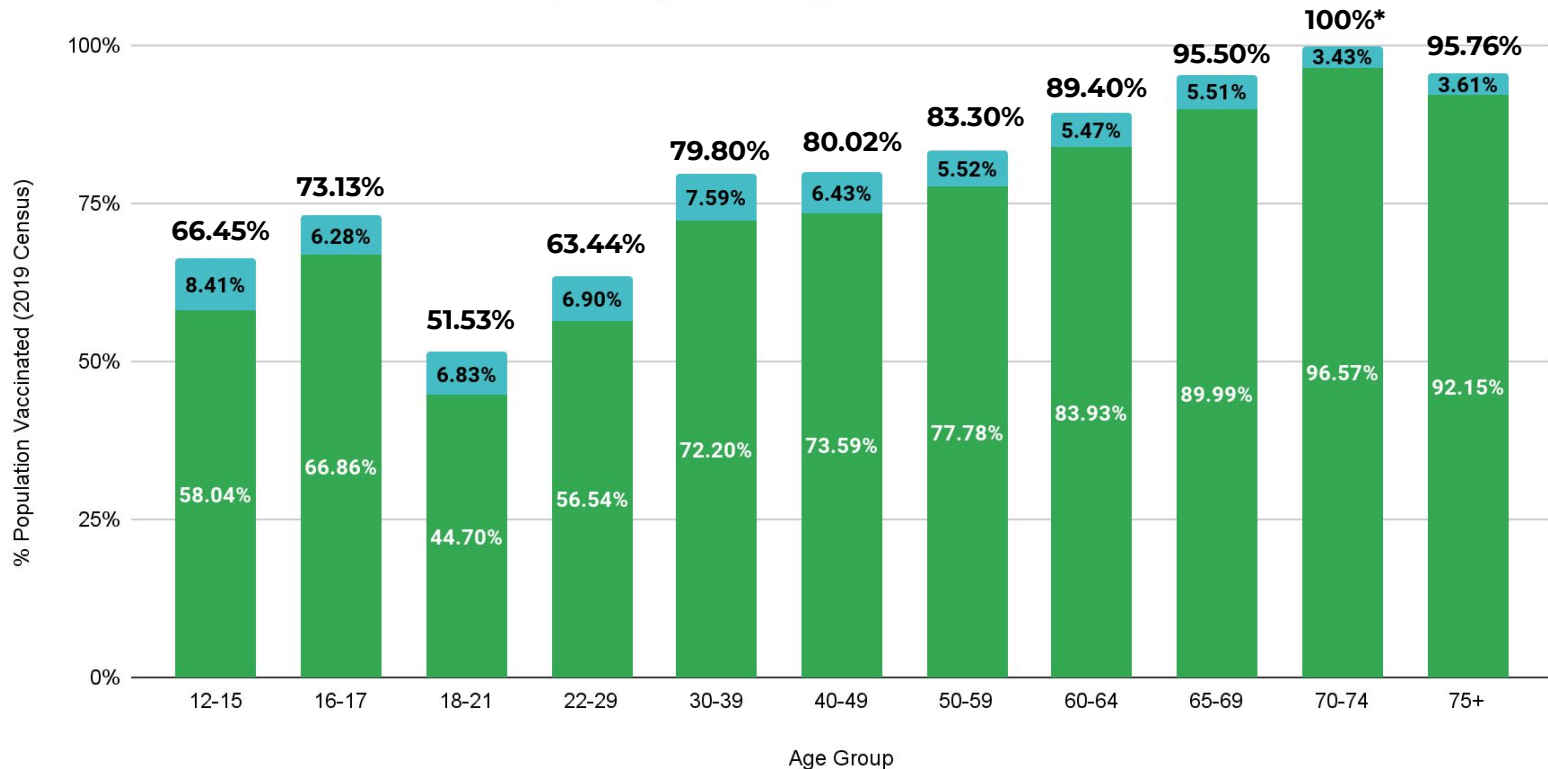
— New Vaccinations (7-Day Average)



# Vermont Vaccination Progress

By Age Band

Partially Vaccinated Fully Vaccinated



Source: Vermont Dept. of Health—August 10, 2021; \*based on 2019 census estimates, population denominator believed to have expanded 2020-2021



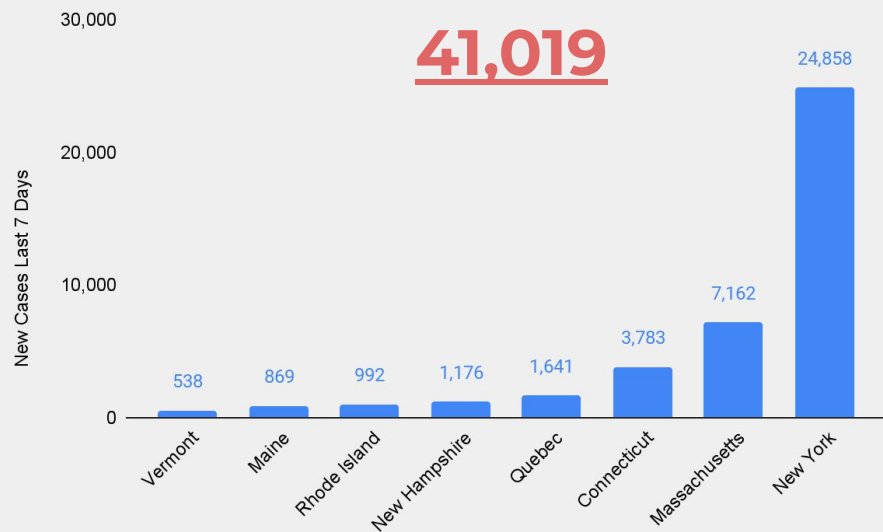
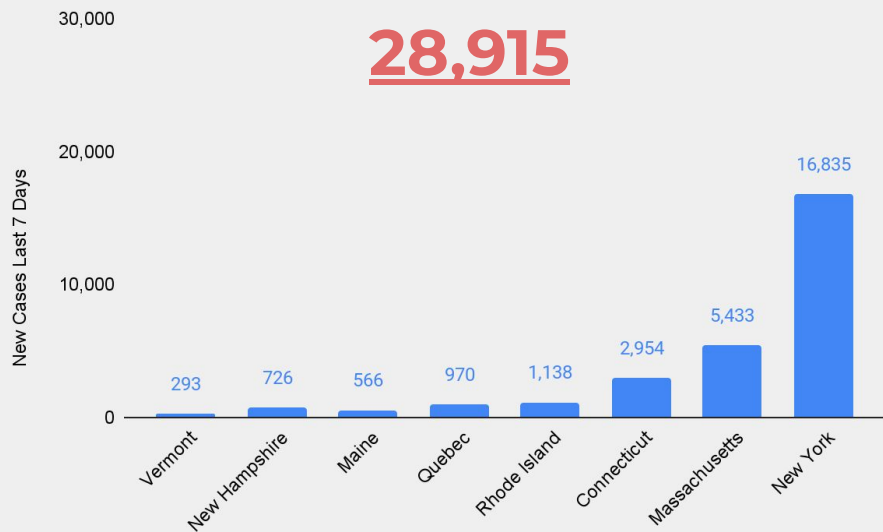
# Regional Data

# Regional Cases

**41.82% Increase in New Cases**

New Cases July 27th to August 2nd

New Cases August 3rd to August 9th



# Weekly Regional Cases

250000

200000

150000

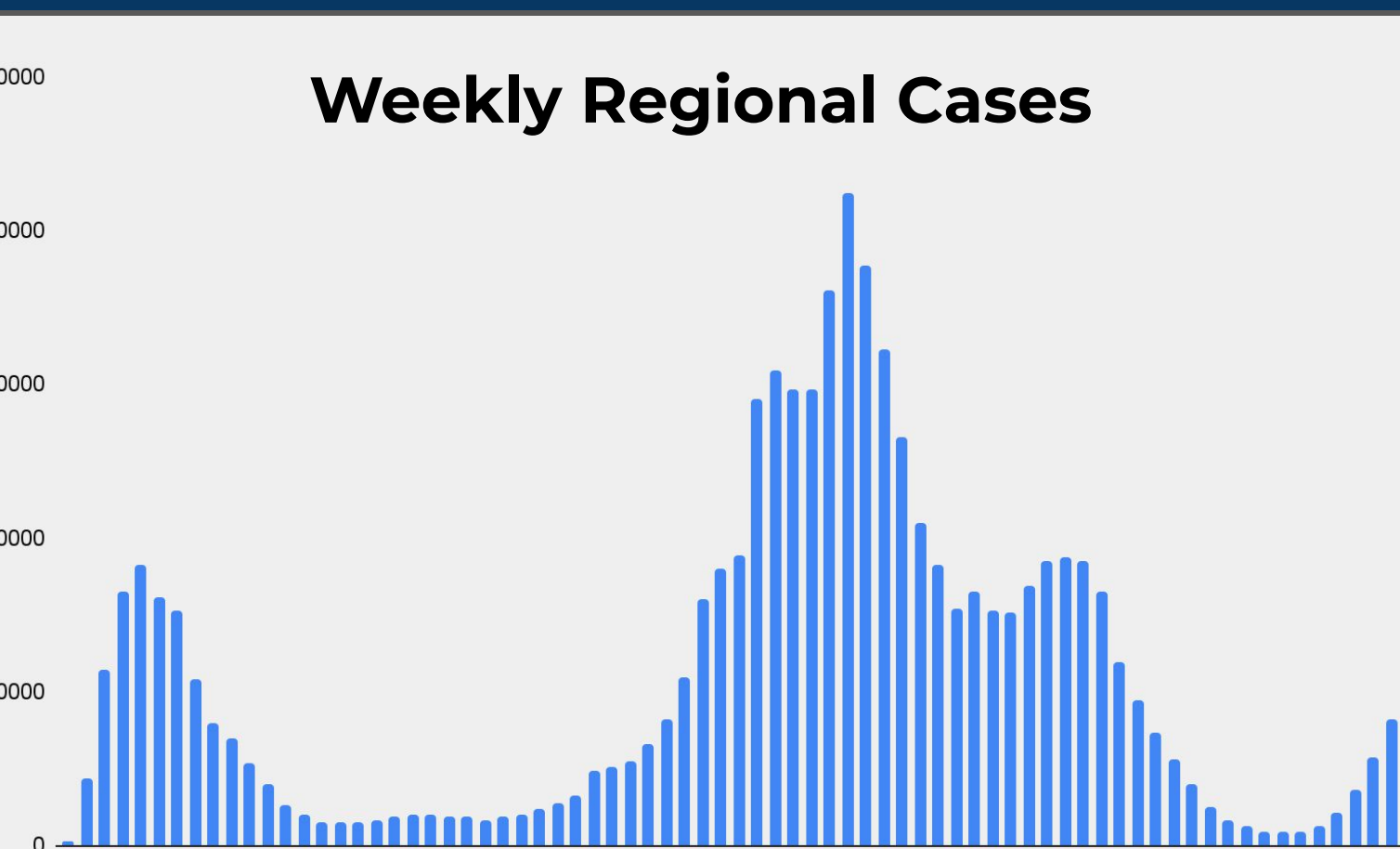
100000

50000

0

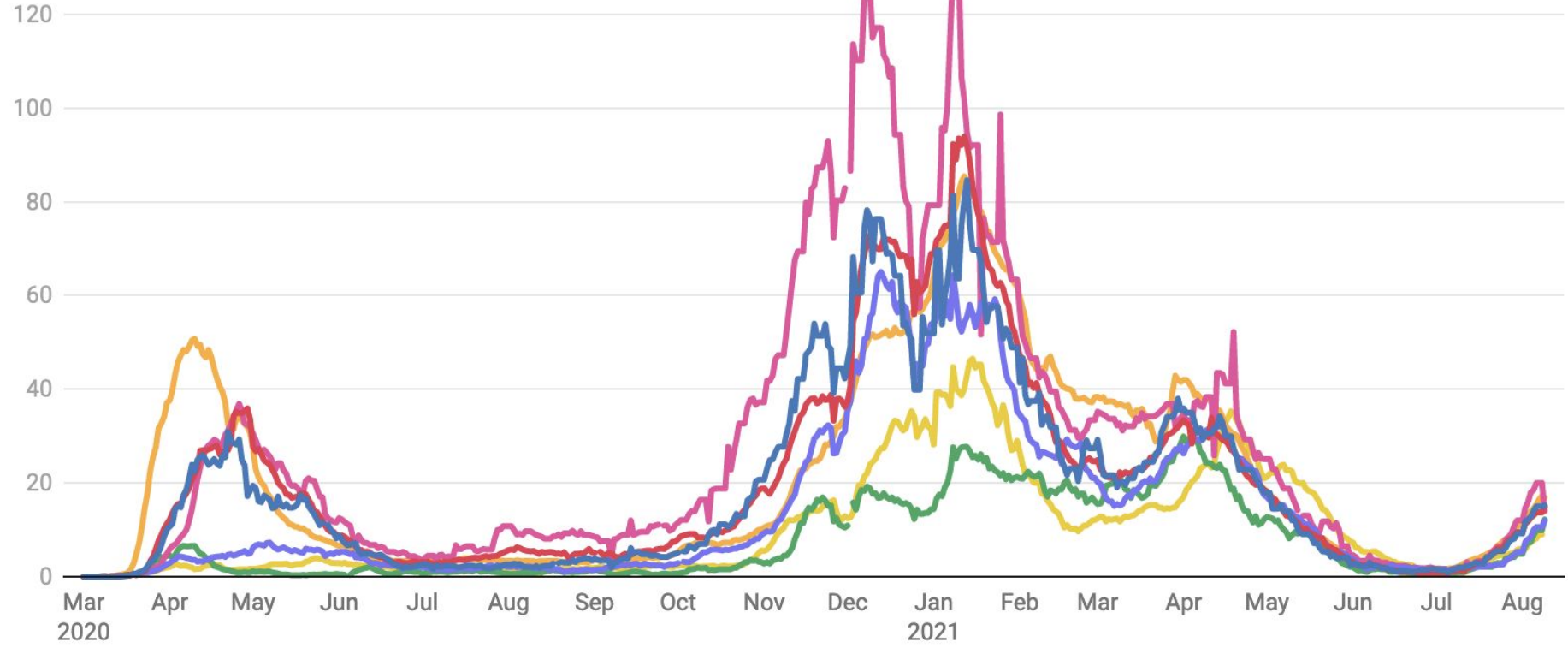
3/16/20 4/6/20 4/27/20 5/18/20 6/8/20 6/29/20 7/20/20 8/10/20 8/31/20 9/21/20 10/12/20 11/2/20 11/23/20 12/14/20 1/4/21 1/25/21 2/15/21 3/8/21 3/29/21 4/19/21 5/10/21 5/31/21 6/21/21 7/12/21 8/2/21

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



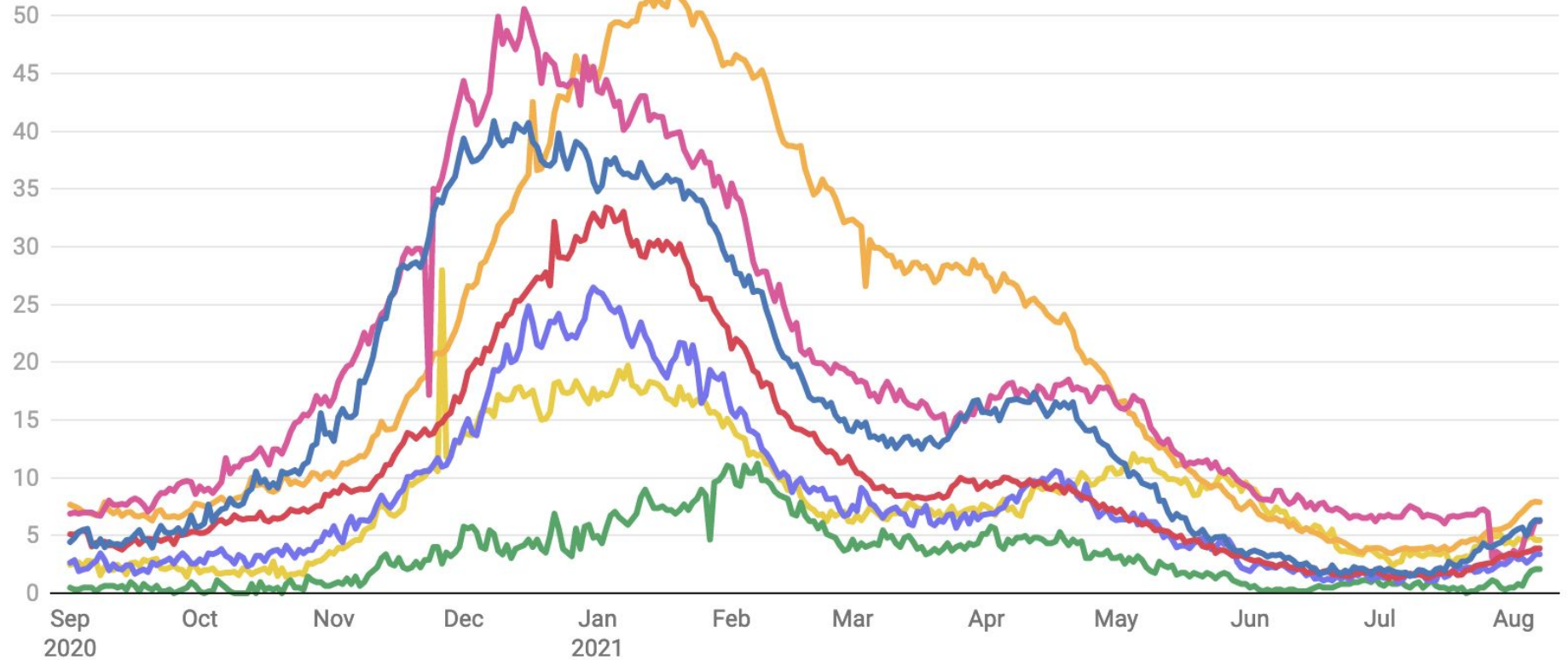
# COVID Infections per 100K (7-Day Average)

— CT — MA — ME — NH — NY — RI — VT

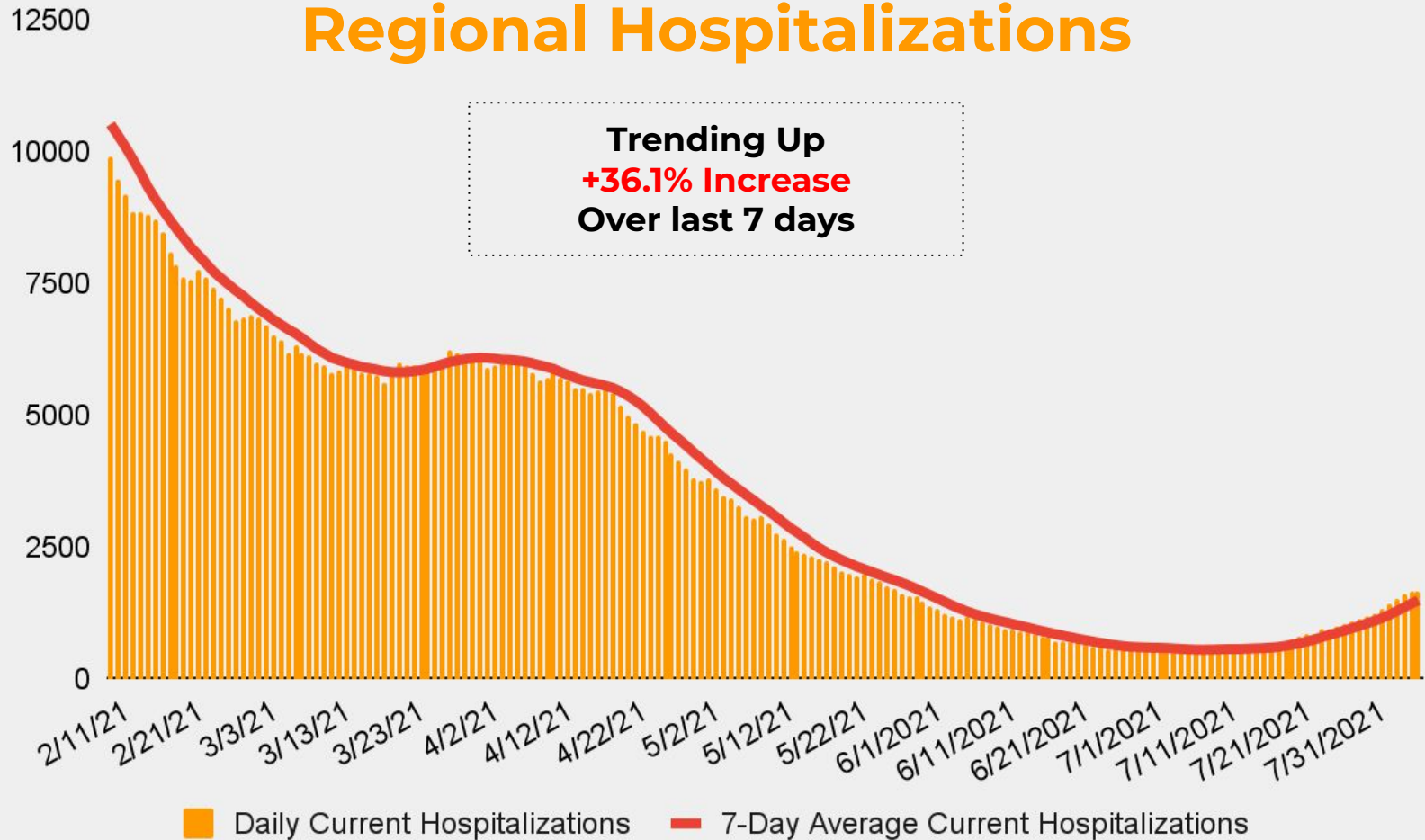


# COVID Hospitalizations per 100K

CT MA ME NH NY RI VT

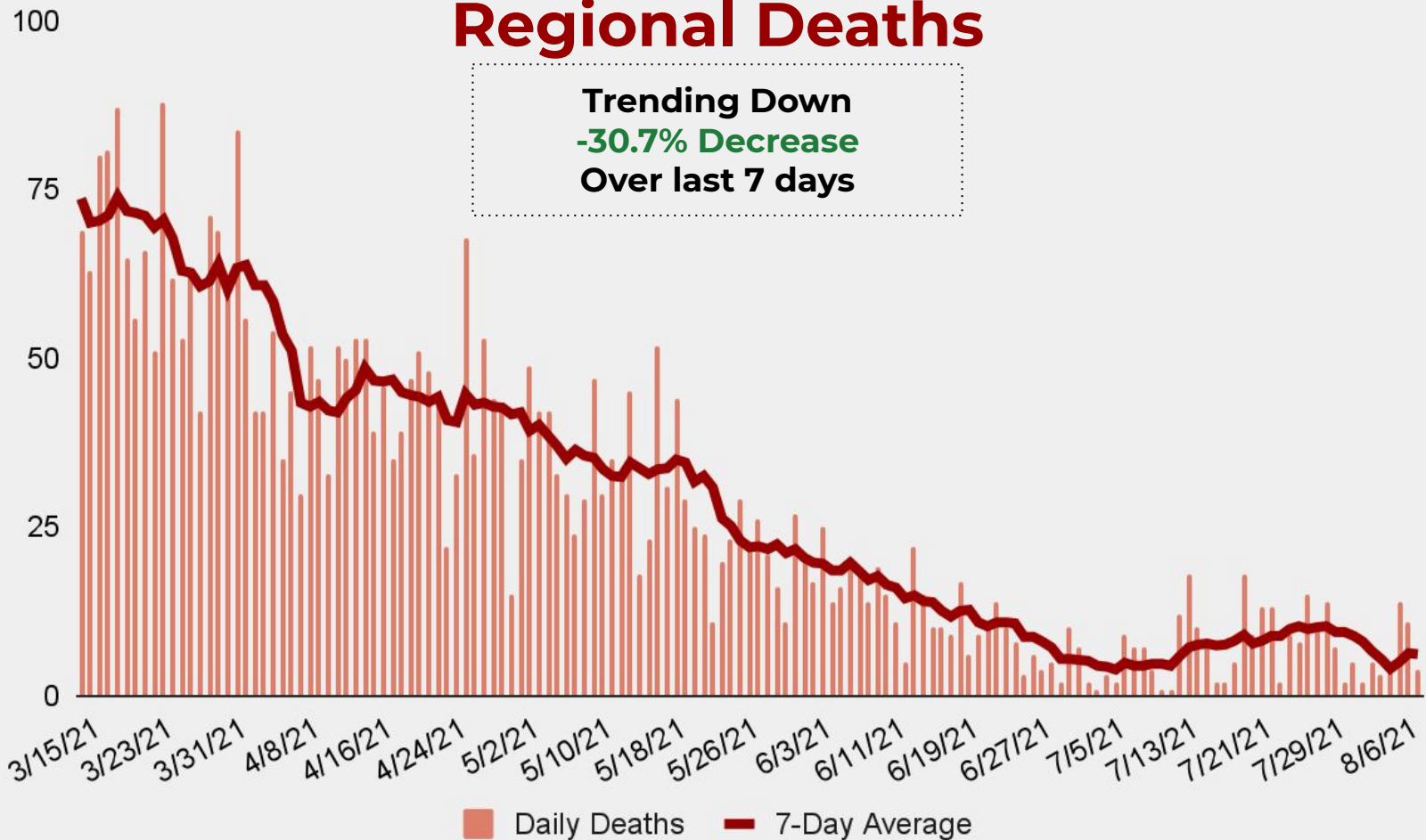


# Regional Hospitalizations



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

# Regional Deaths

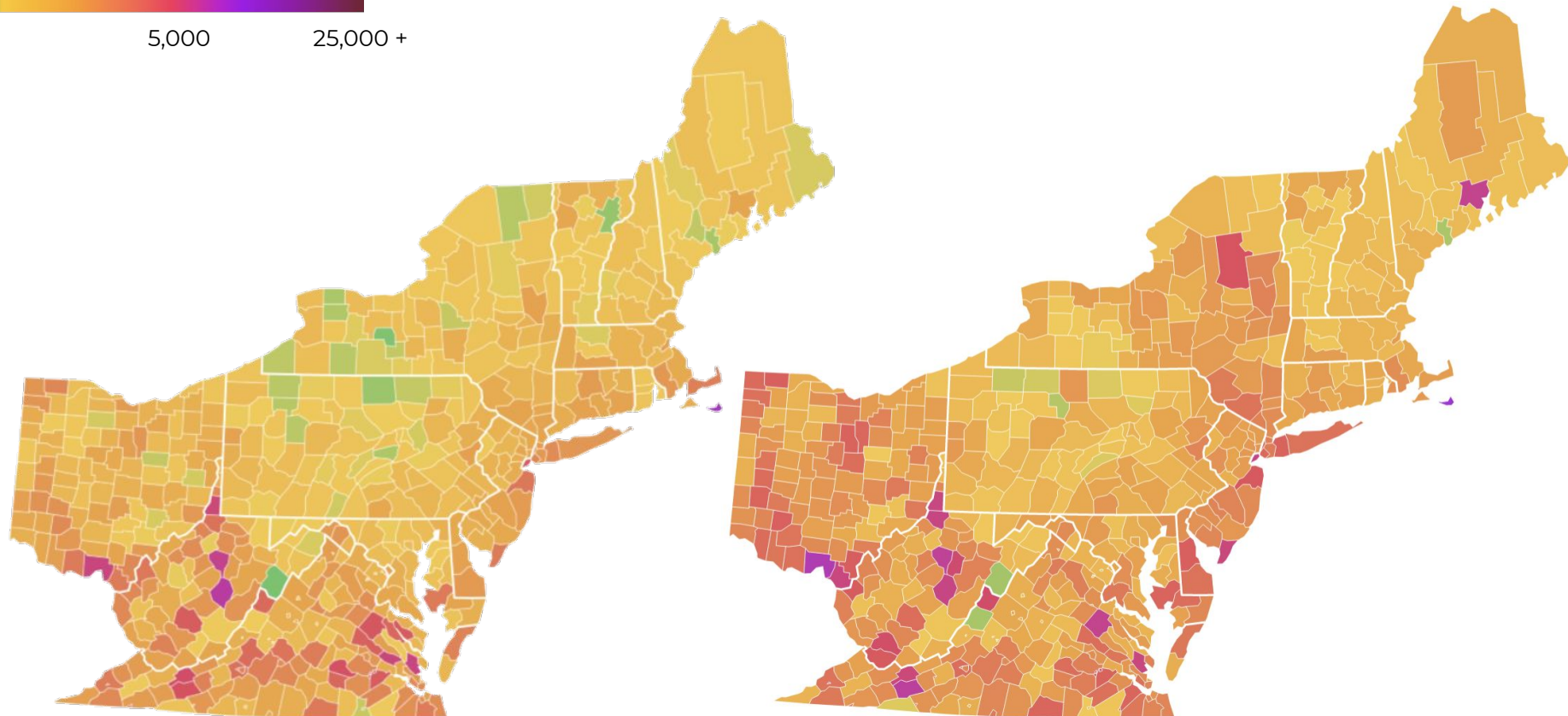


Source: CDC (7-Day Average in CT, ME, MA, NH, NY, RI & VT)—August 8, 2021

# Active Cases per Million



0                      5,000                      25,000 +



Last Week  
August 3rd

Today  
August 10th

Source: Johns Hopkins University—August 10, 2021

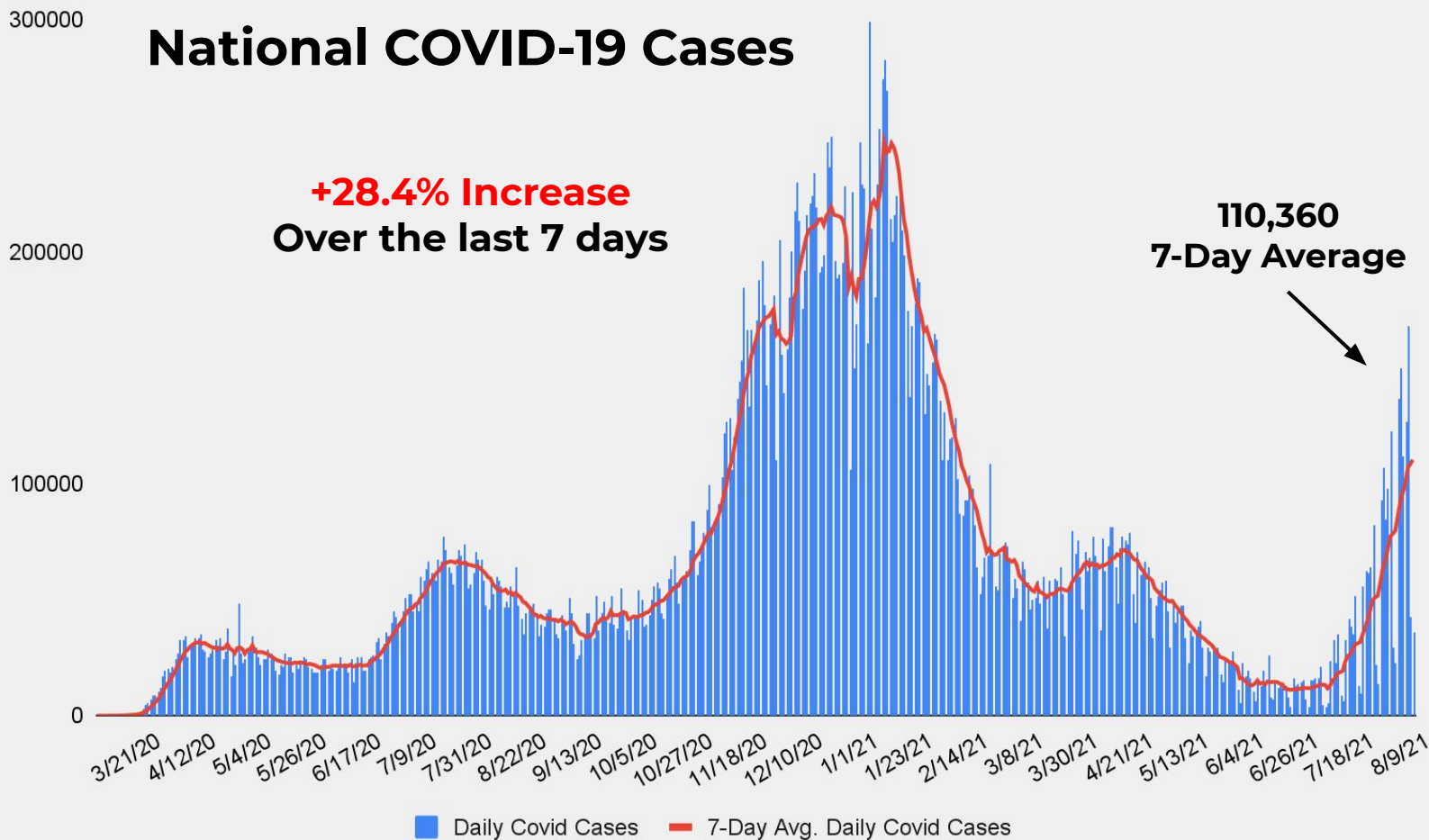


# National Data

# National COVID-19 Cases

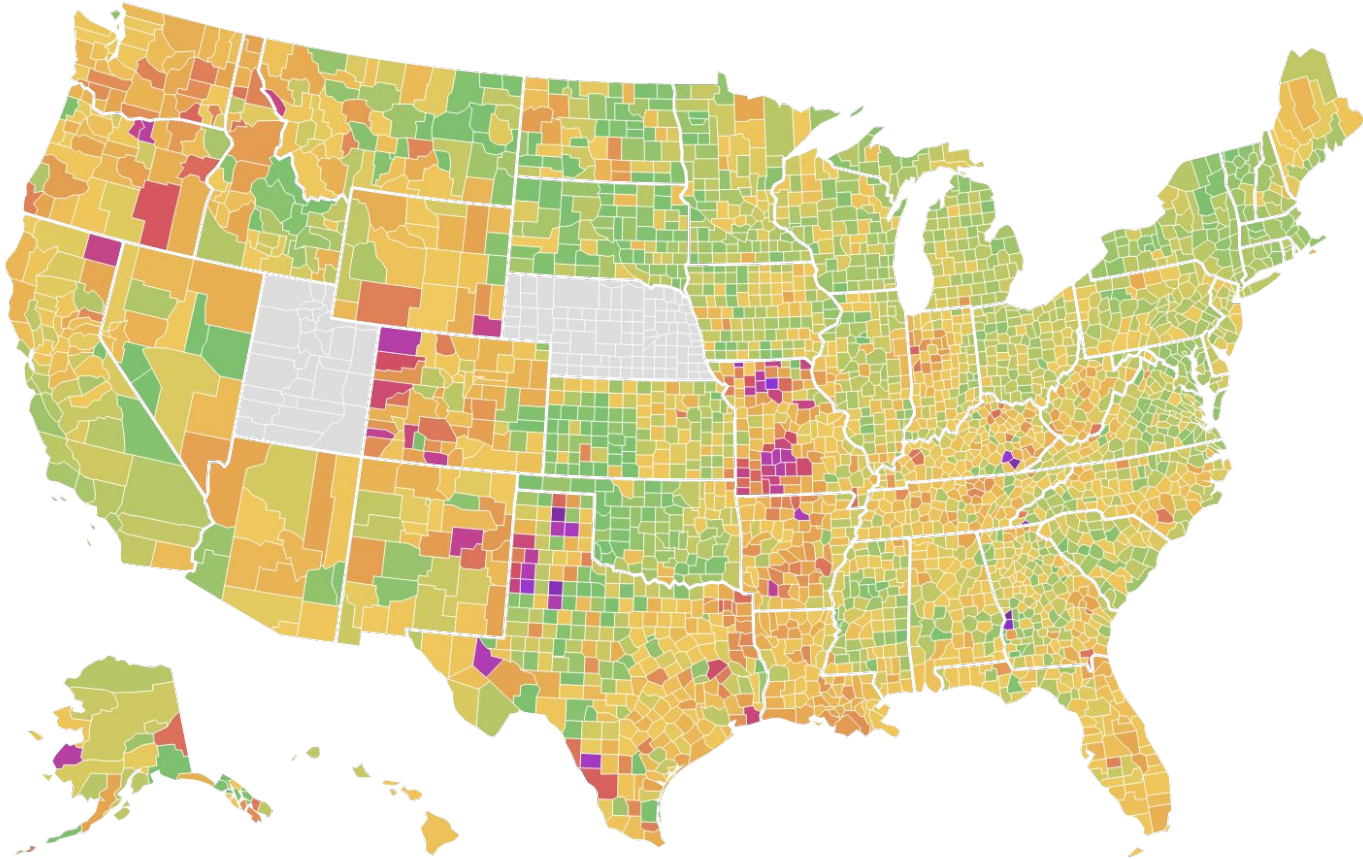
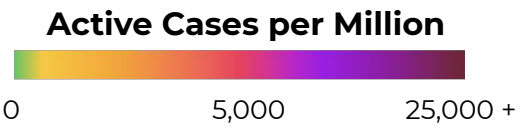
**+28.4% Increase  
Over the last 7 days**

**110,360  
7-Day Average**



Source: Covid Tracking Project; NYT & CDC—August 9, 2021

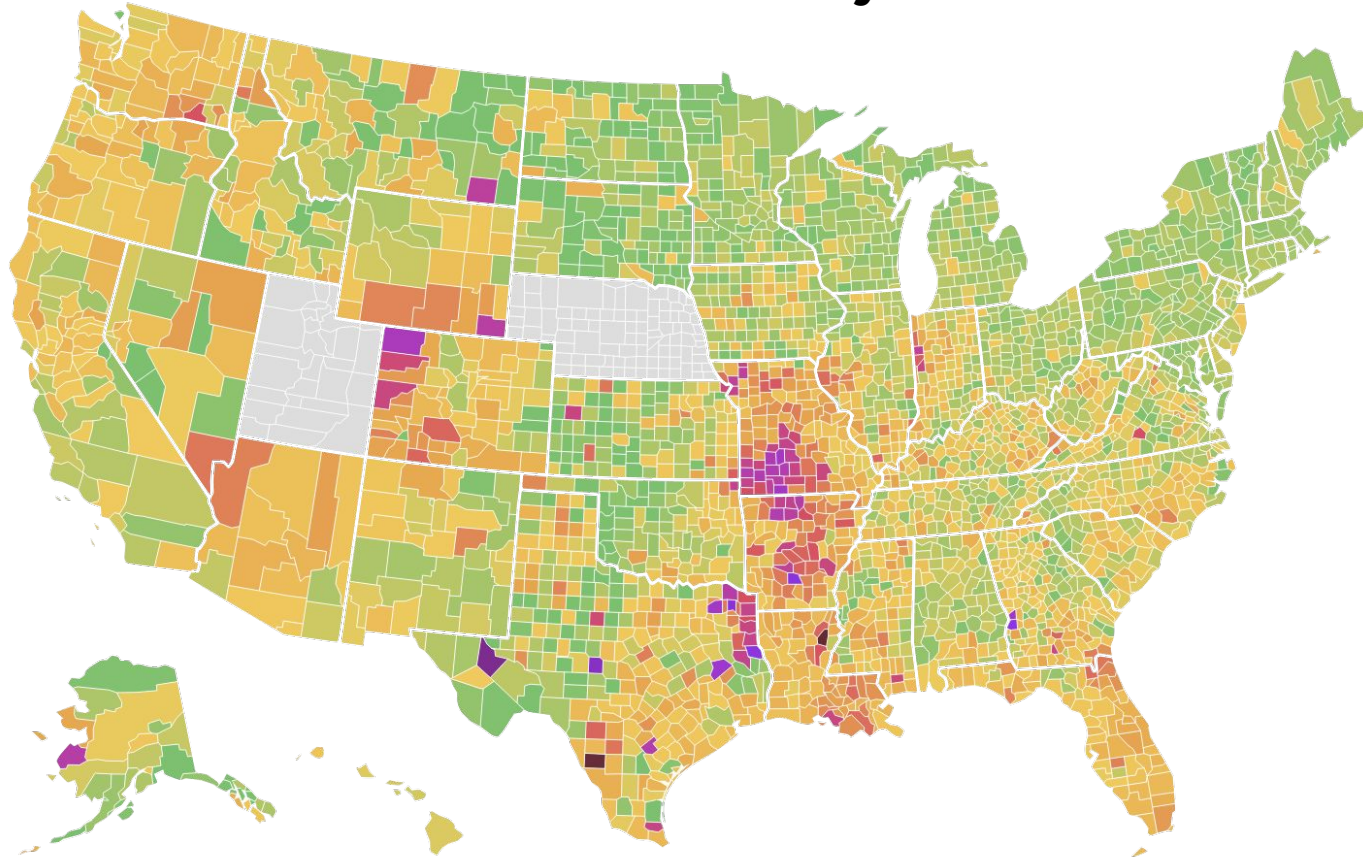
# Beginning of Delta Spread June 22



## Active Cases per Million



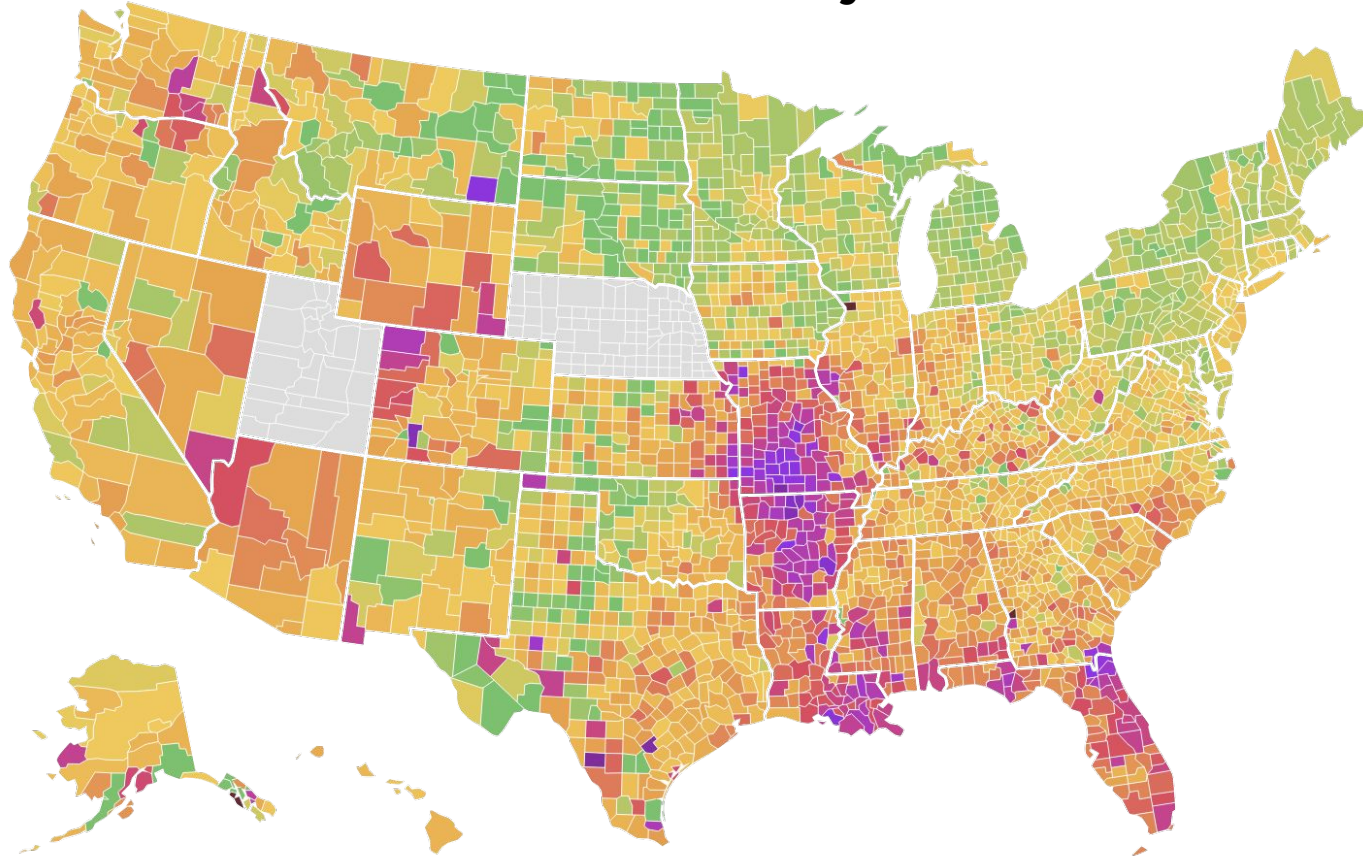
# Delta Spread July 6



## Active Cases per Million



# Delta Spread July 20

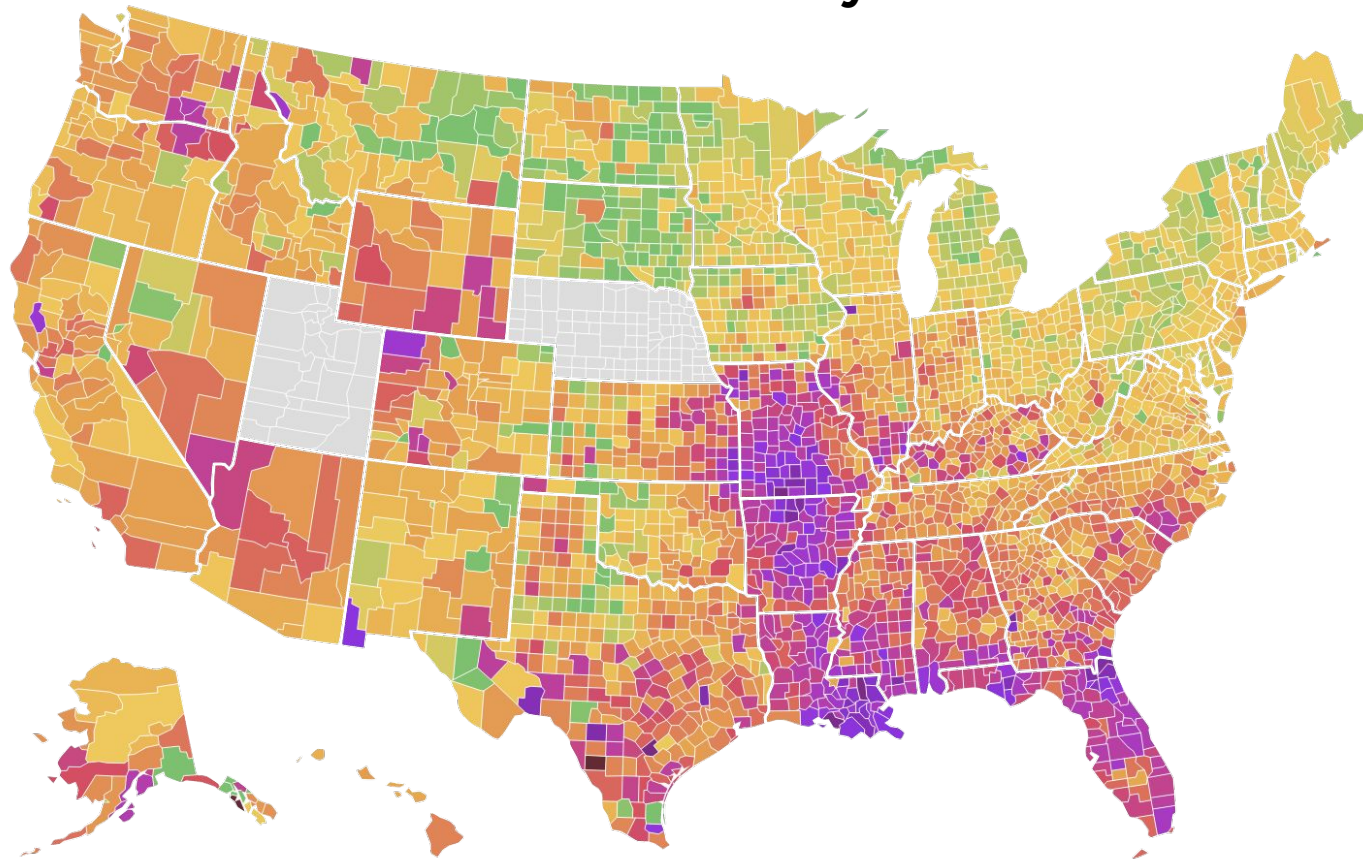


## Active Cases per Million



# Delta Spread

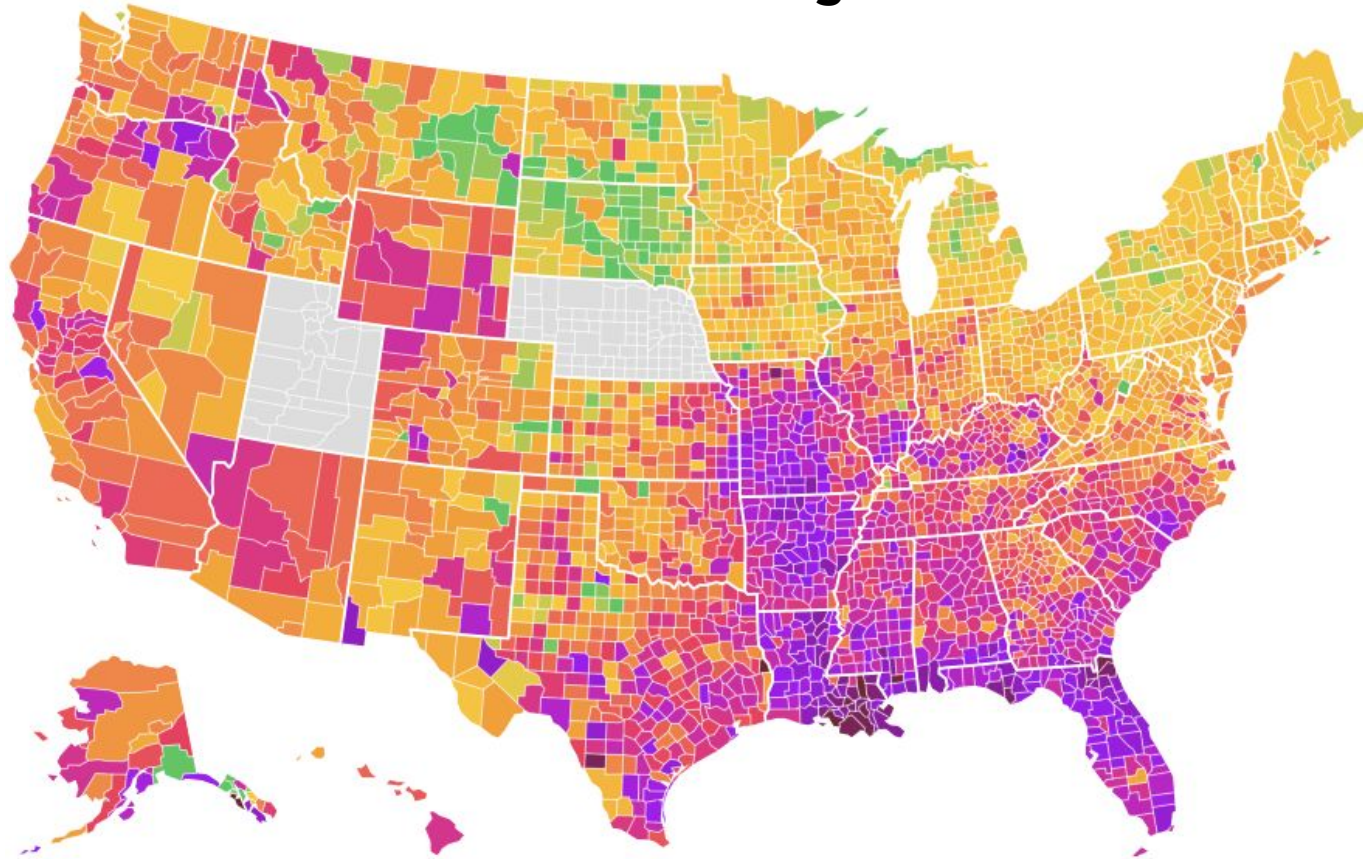
## July 27



## Active Cases per Million



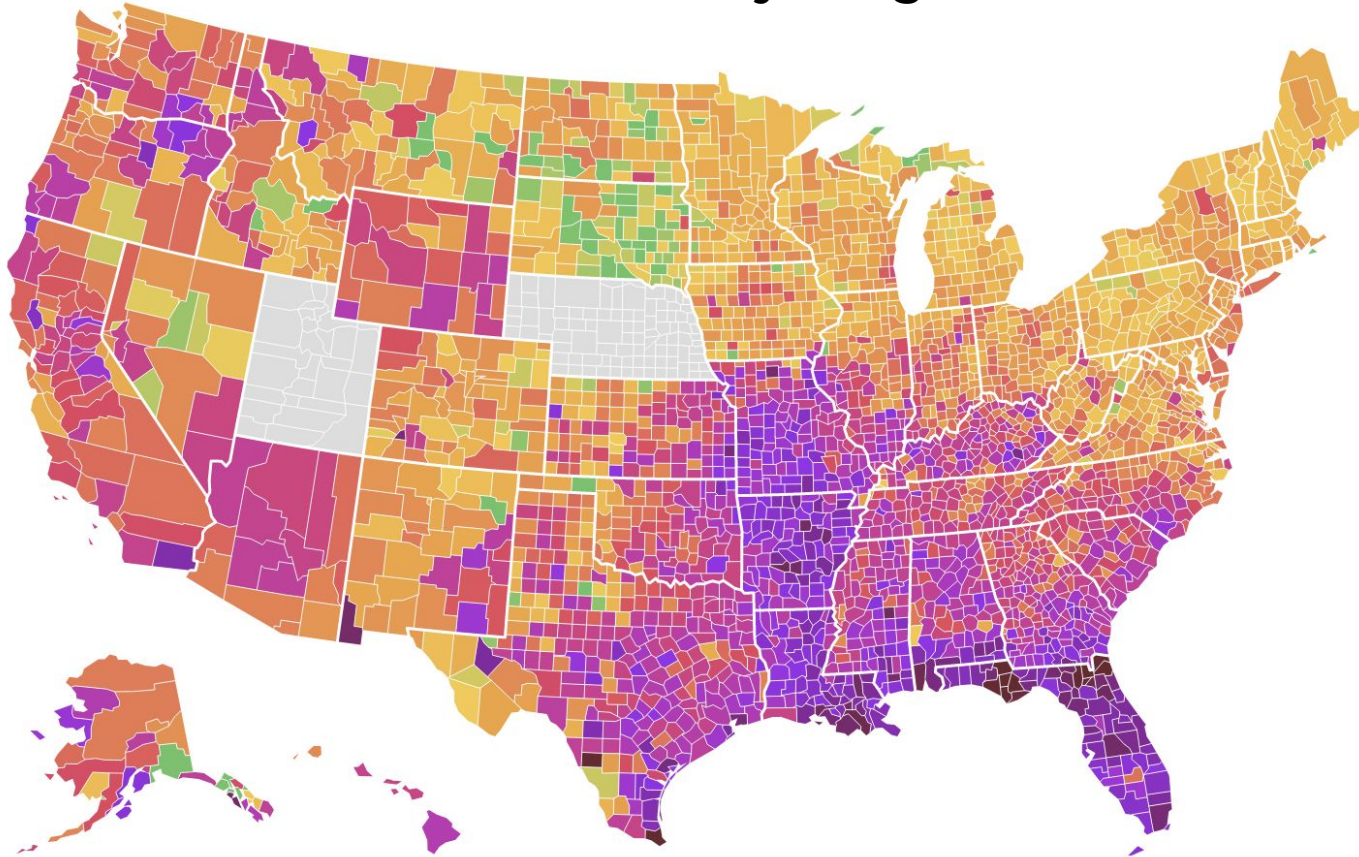
# Delta Spread August 3



## Active Cases per Million

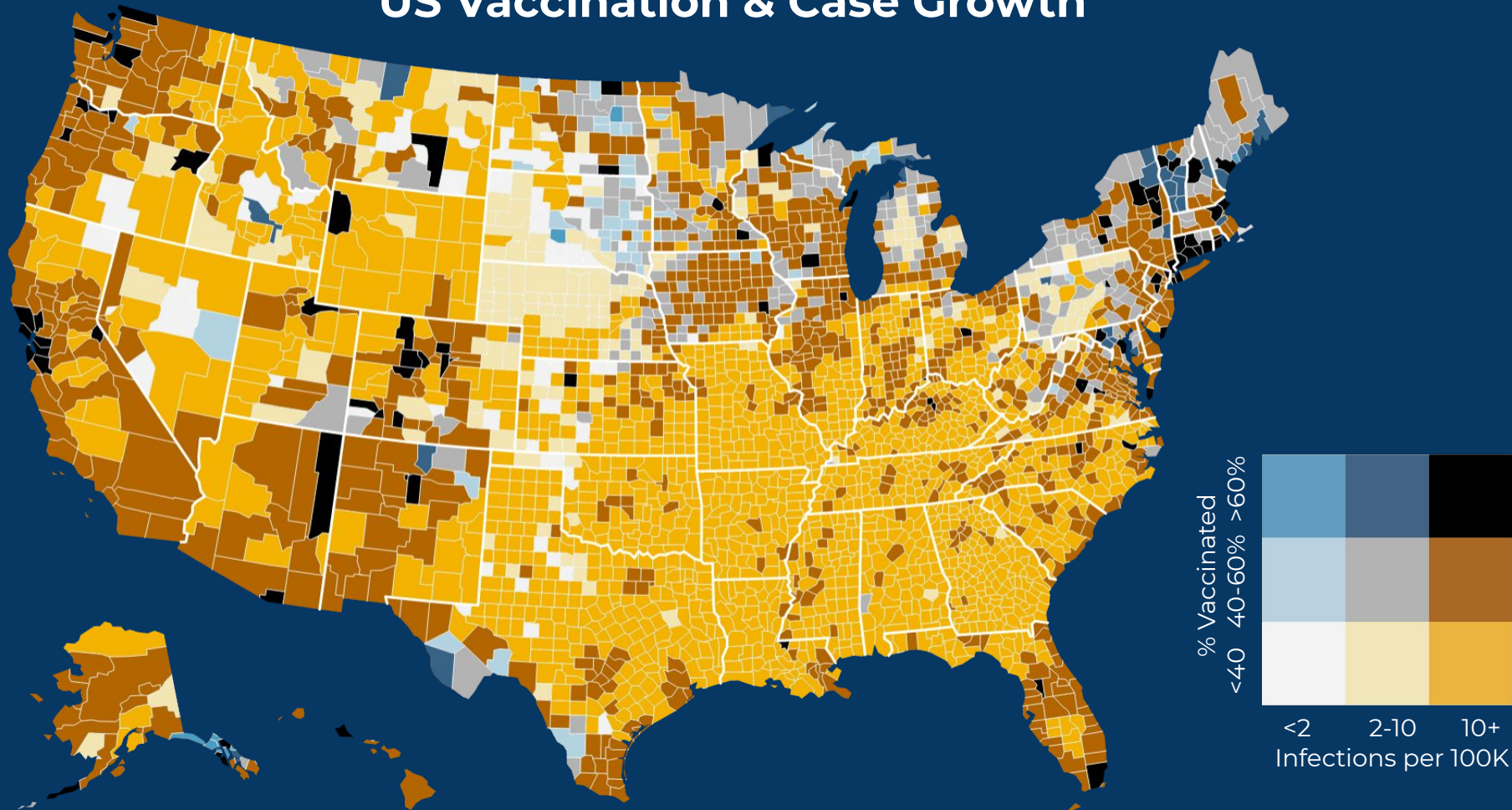


## Delta Spread Today—August 10



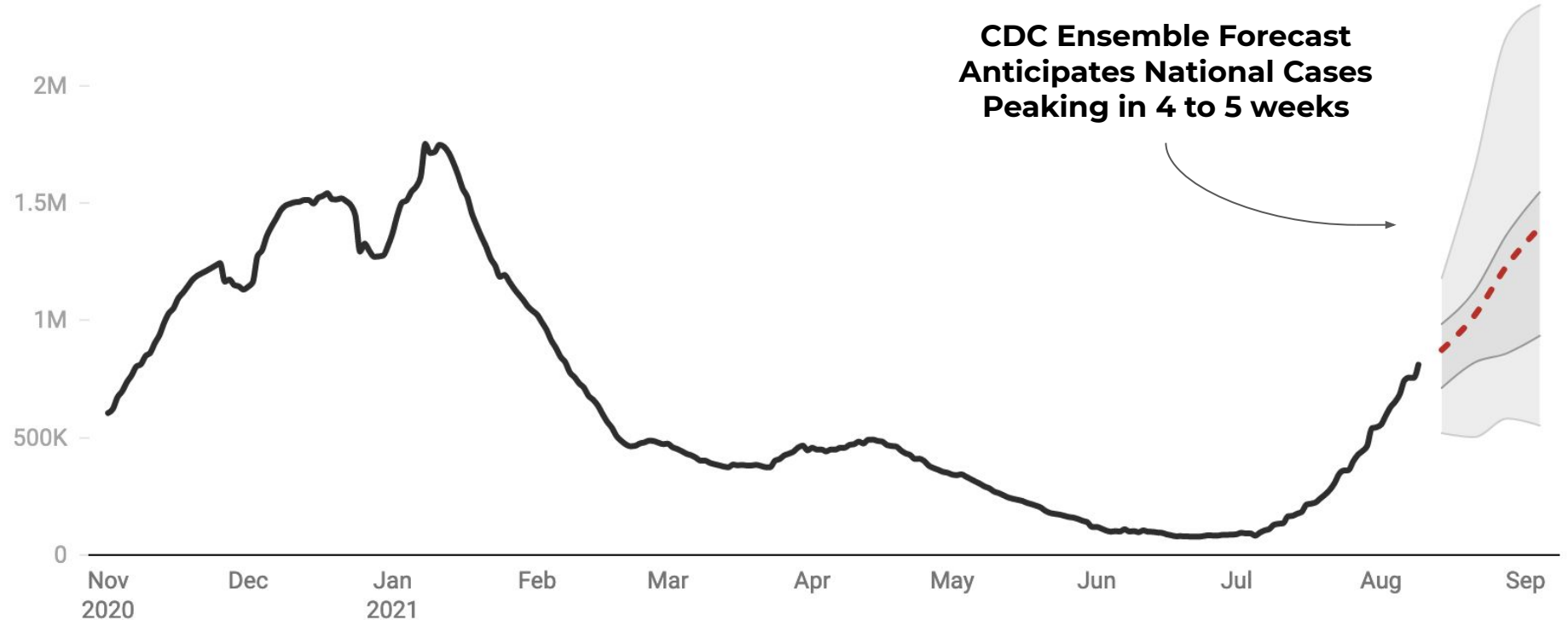


# US Vaccination & Case Growth



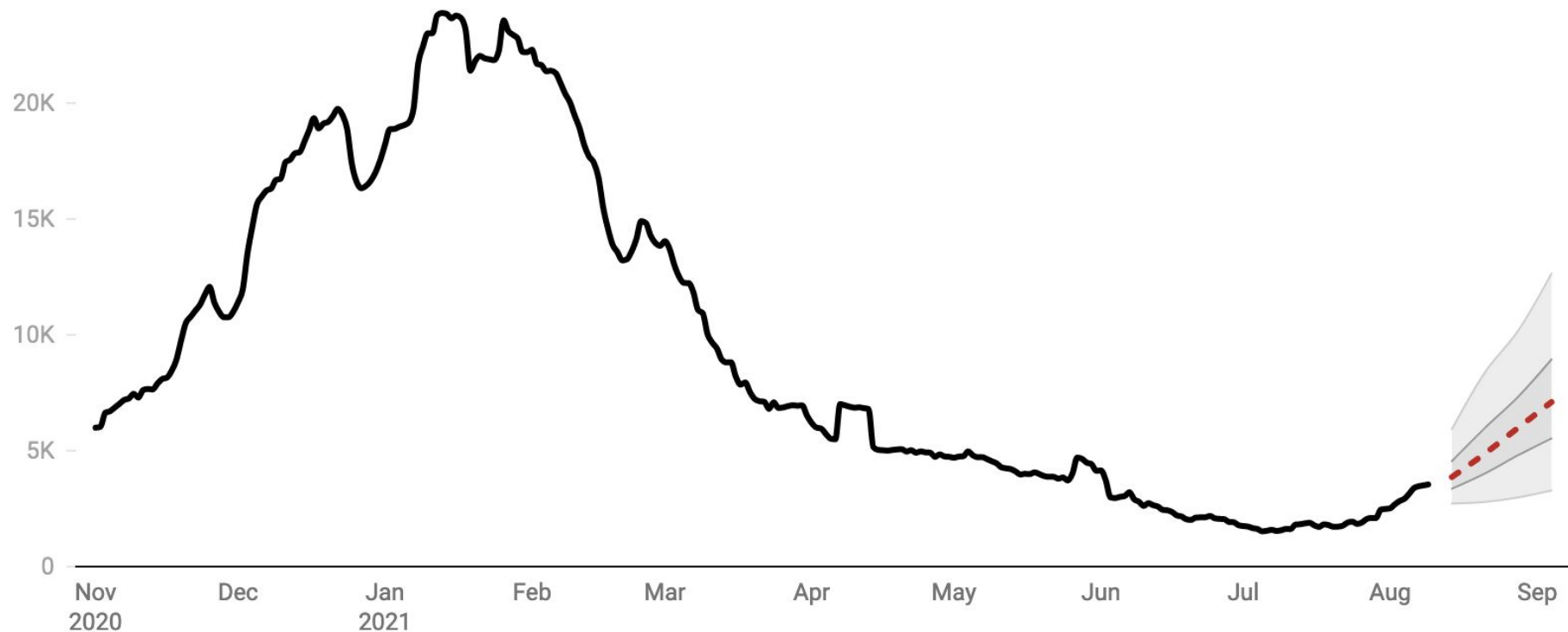
# US Weekly COVID-19 Infections Forecast

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.



# US Weekly COVID-19 Deaths Forecast

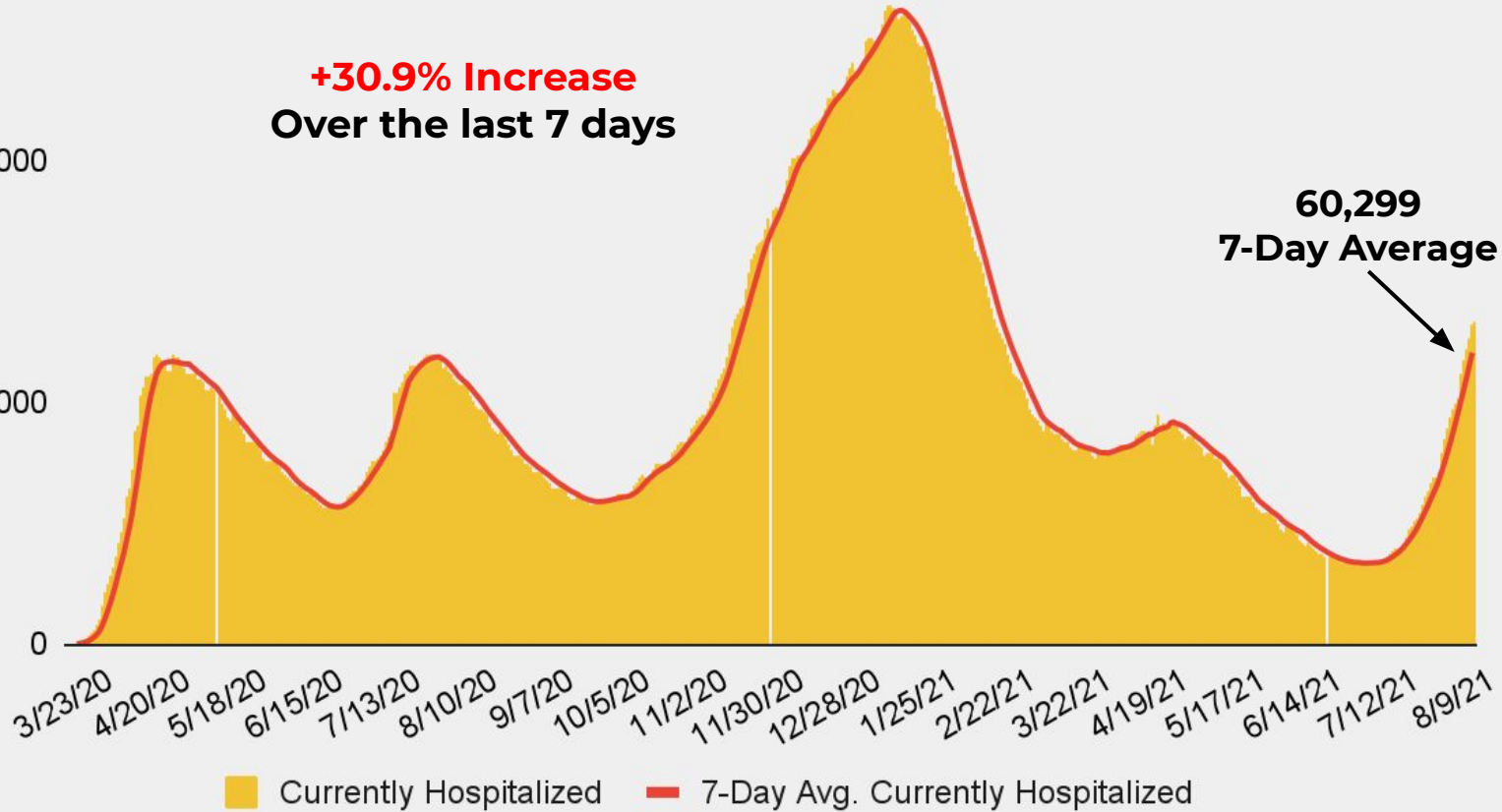
Calculated as a 7-day sum. Gray bands represent 50% and 95% confidence intervals. Since projections are only released once a week, the actual number may appear to over or undershoot the forecast.



# National COVID-19 Hospitalizations

**+30.9% Increase  
Over the last 7 days**

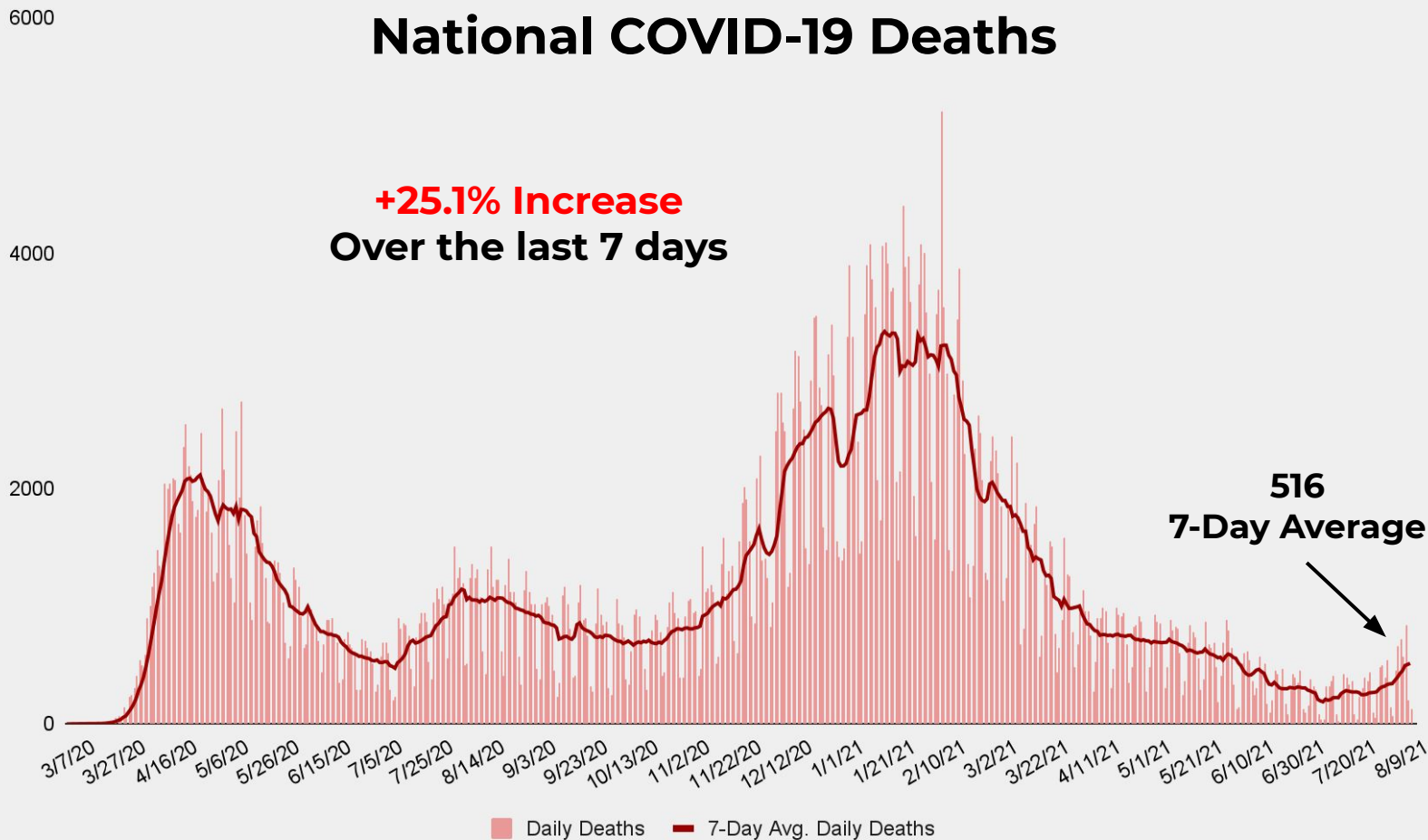
**60,299  
7-Day Average**



Source: Covid Tracking Project; NYT & CDC—August 9, 2021

# National COVID-19 Deaths

**+25.1% Increase  
Over the last 7 days**



Source: Covid Tracking Project; NYT & CDC—August 9, 2021

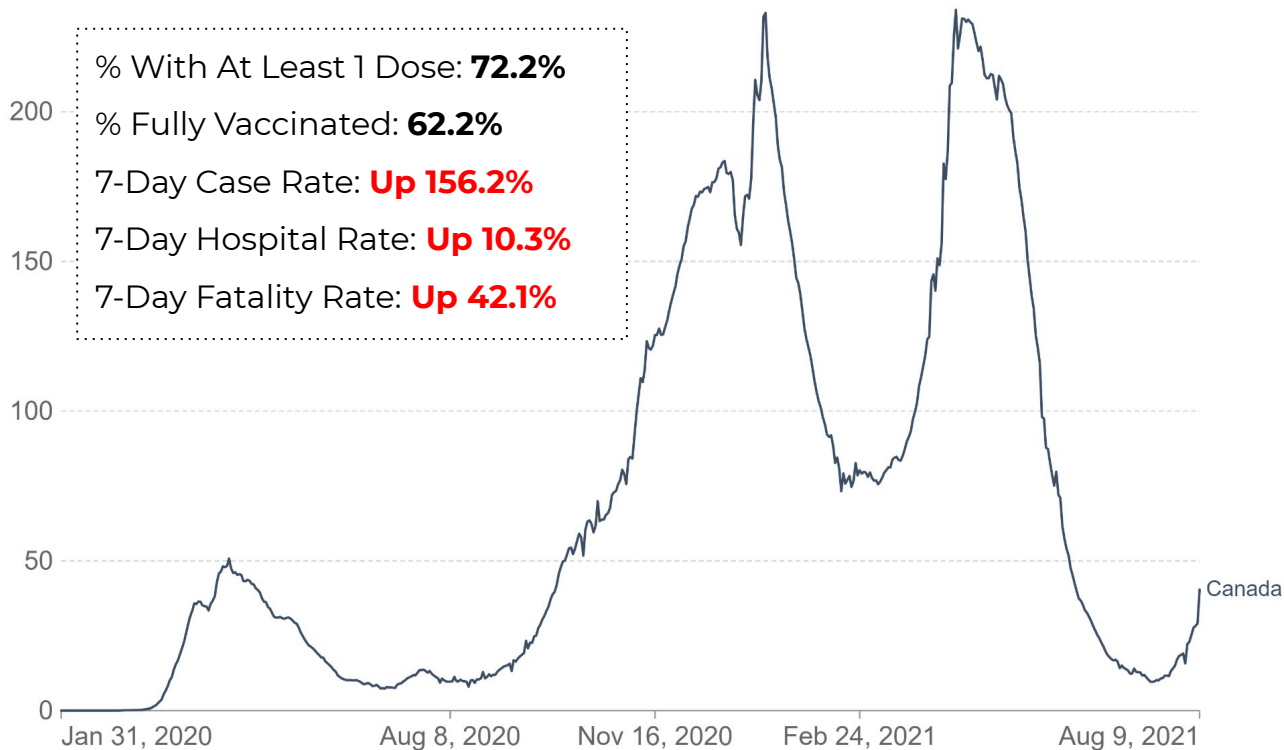
# Canadian Covid-19 Trends

# Canadian COVID Trends

## Daily new confirmed COVID-19 cases per million people

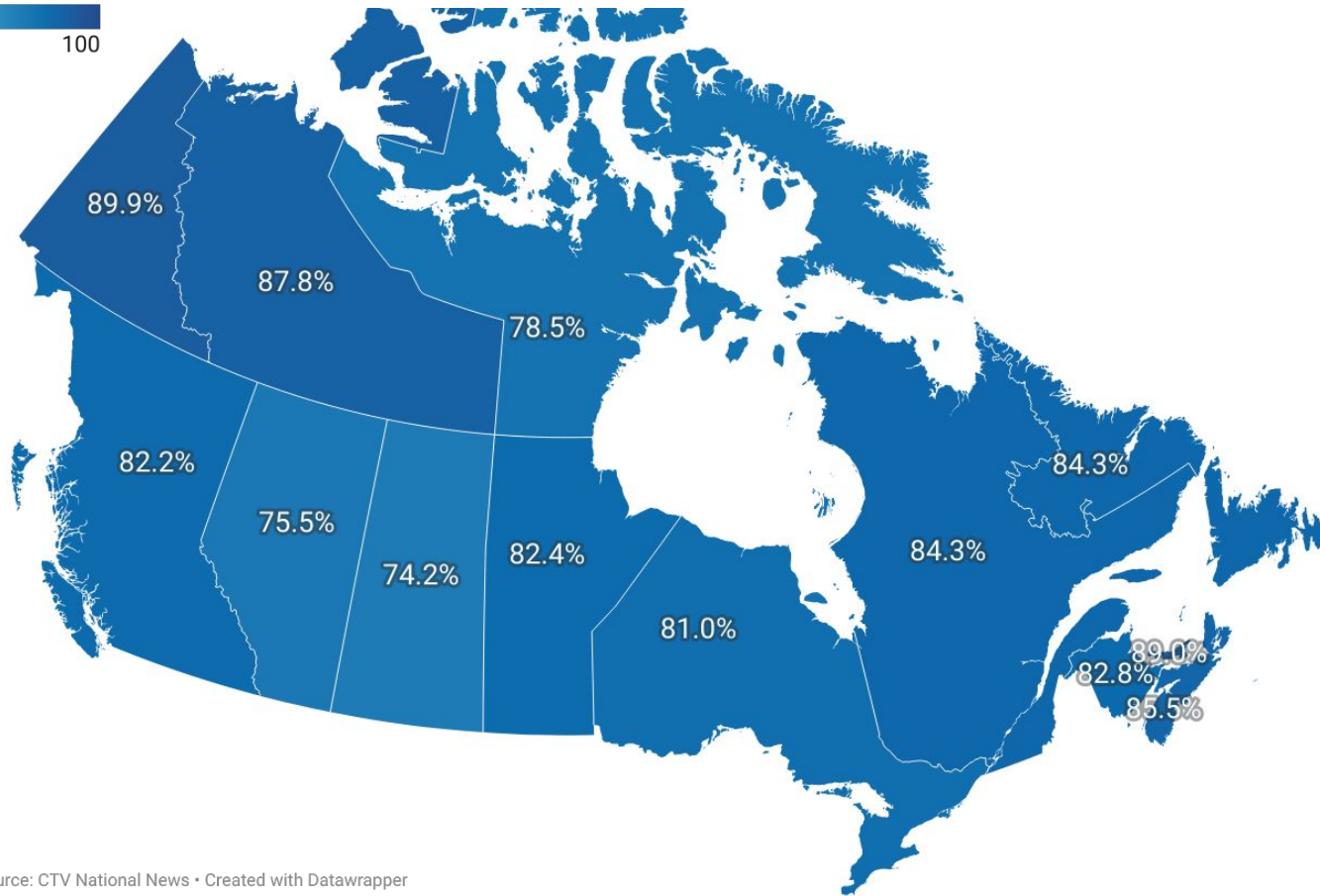
Shown is the rolling 7-day average. The number of confirmed cases is lower than the number of actual cases; the main reason for that is limited testing.

Our World  
in Data



# Canadian Province Vaccination Progress

Percent Eligible (12+) with at least 1 dose





# 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

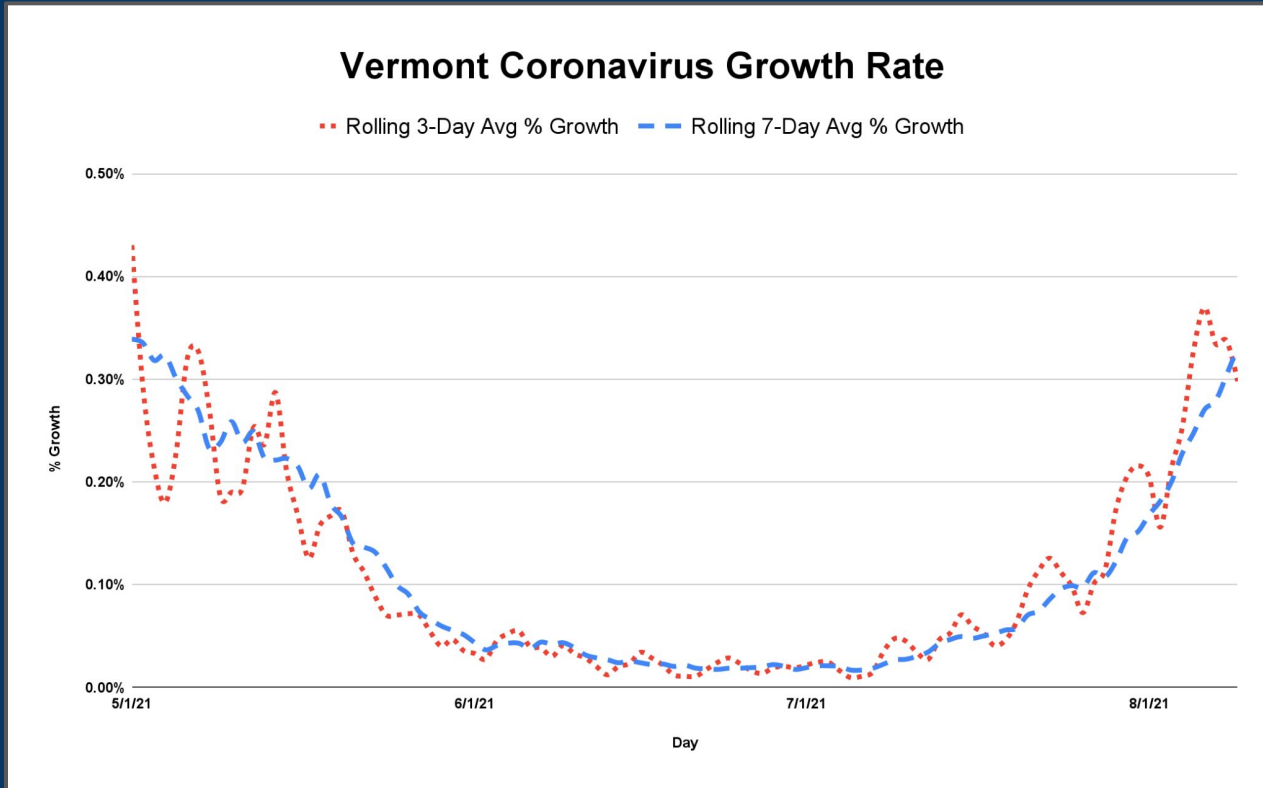
## Data Point 1: Syndromic Surveillance

- **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.*

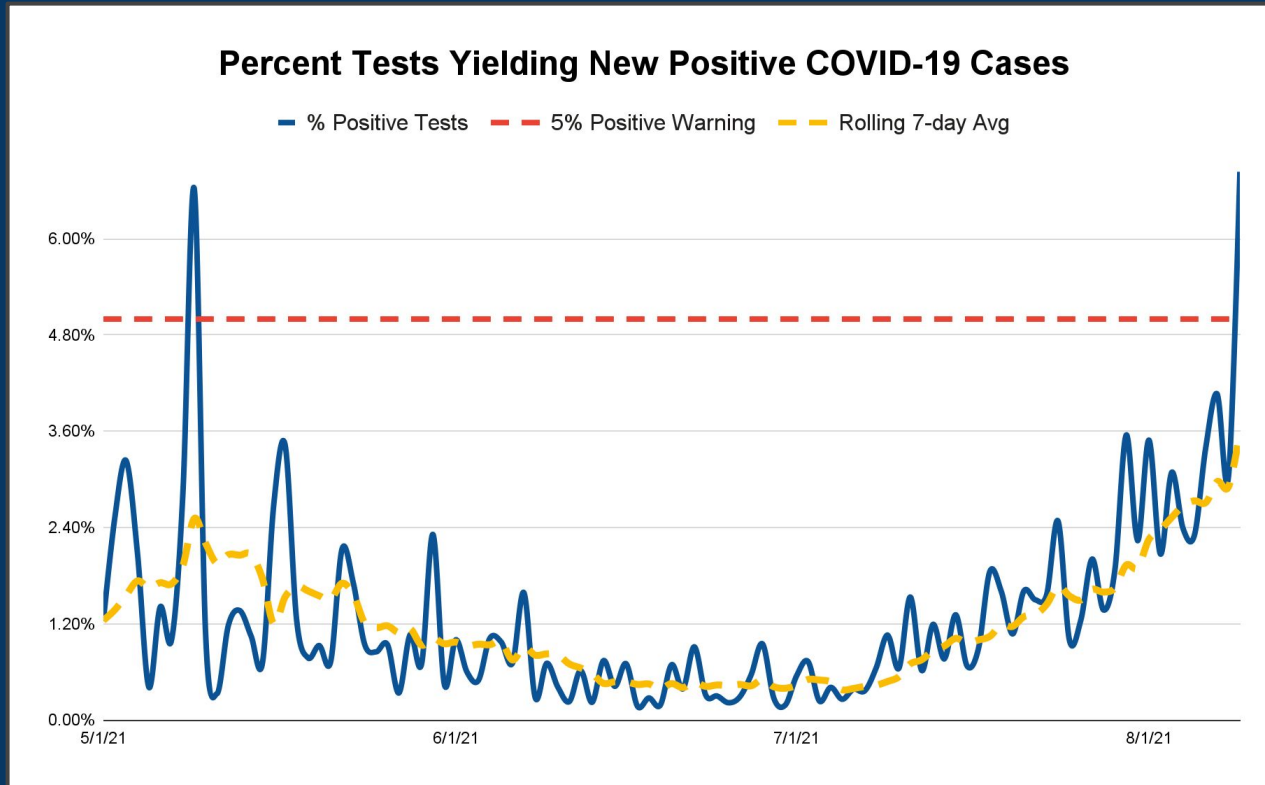
## Data Point 2: Viral Growth and Reproductive Rates

- **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



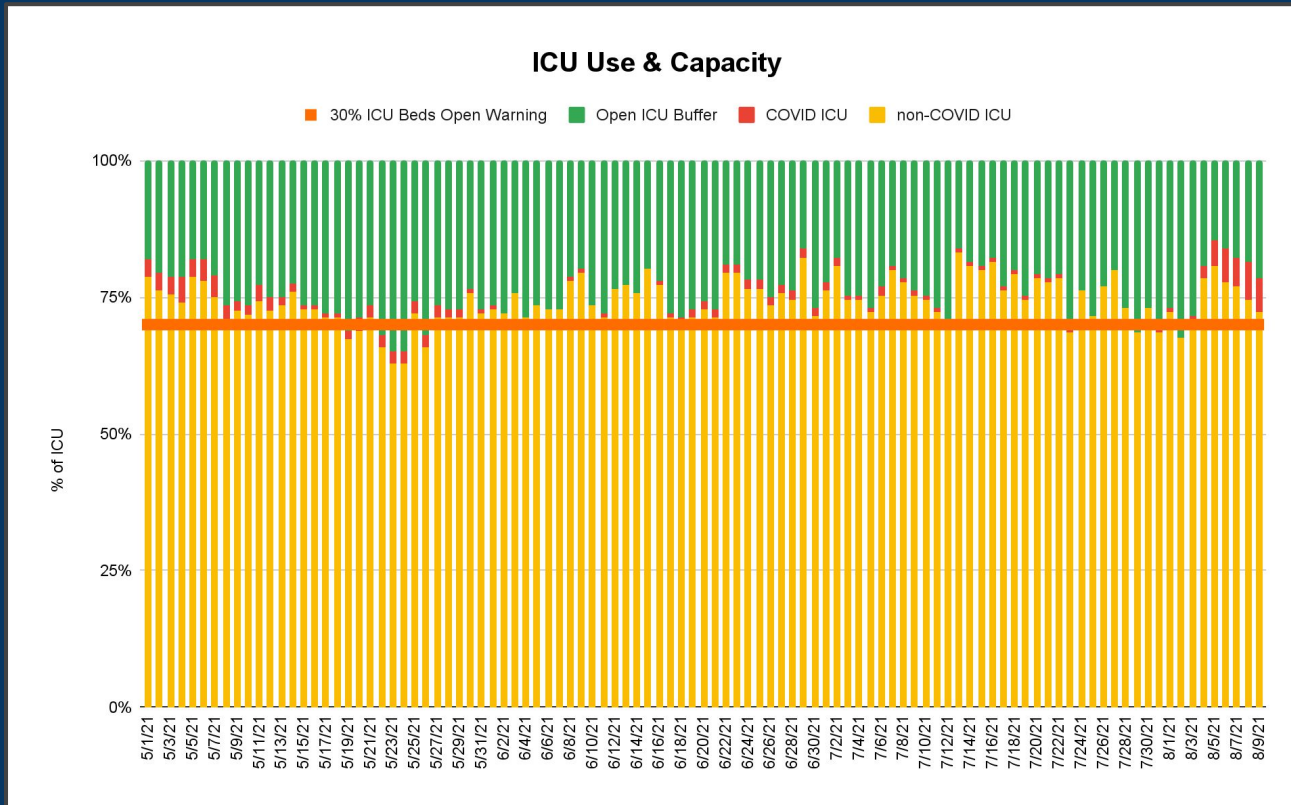
# Data Point 3: Percentage of New Positive Tests

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



# 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%



# Vermont Testing

