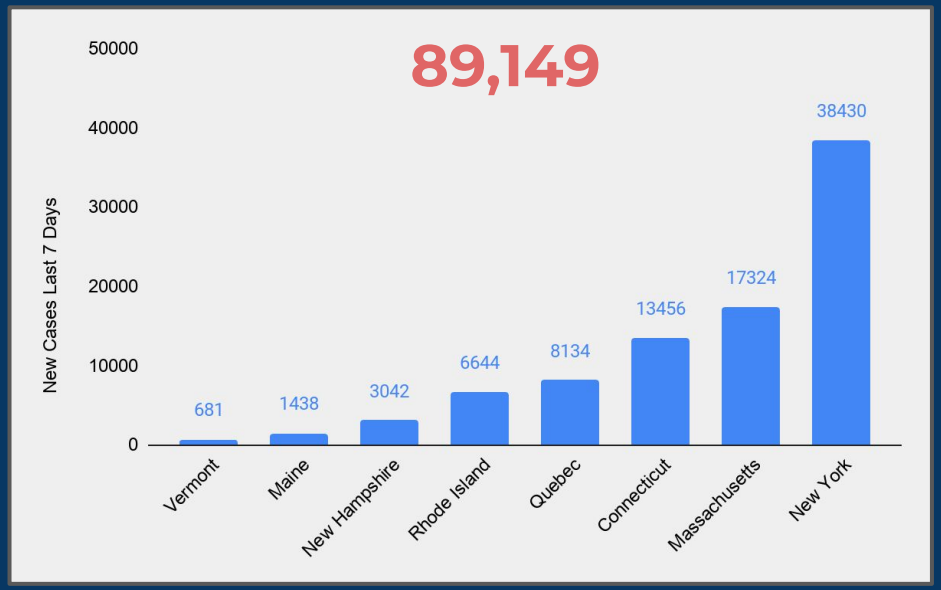
COVID-19 Modeling
December 1, 2020

Presentation available at:
dfr.vermont.gov

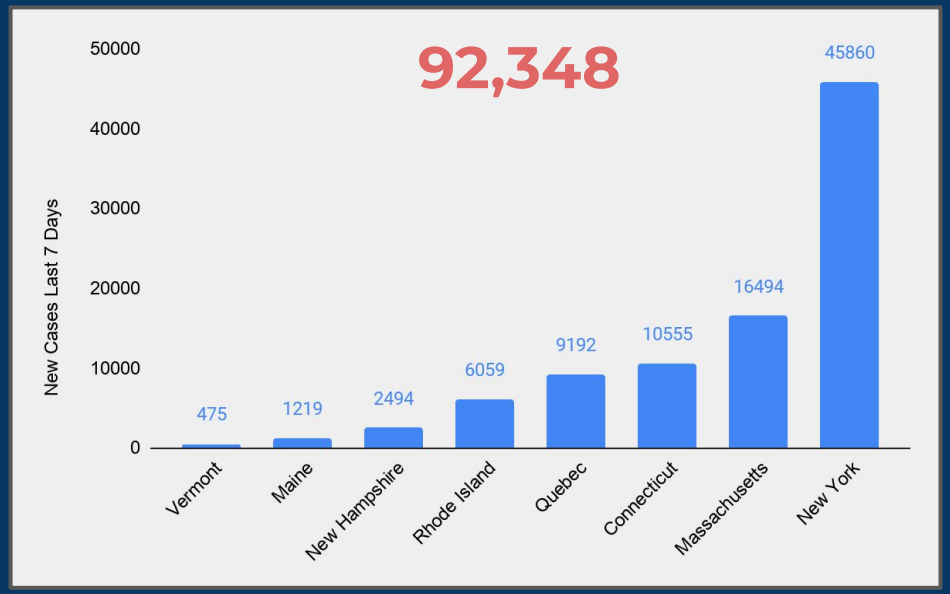
Regional Case Growth

3.59% Increase in New Confirmed Cases

Positive Cases Nov. 17th to Nov. 23rd

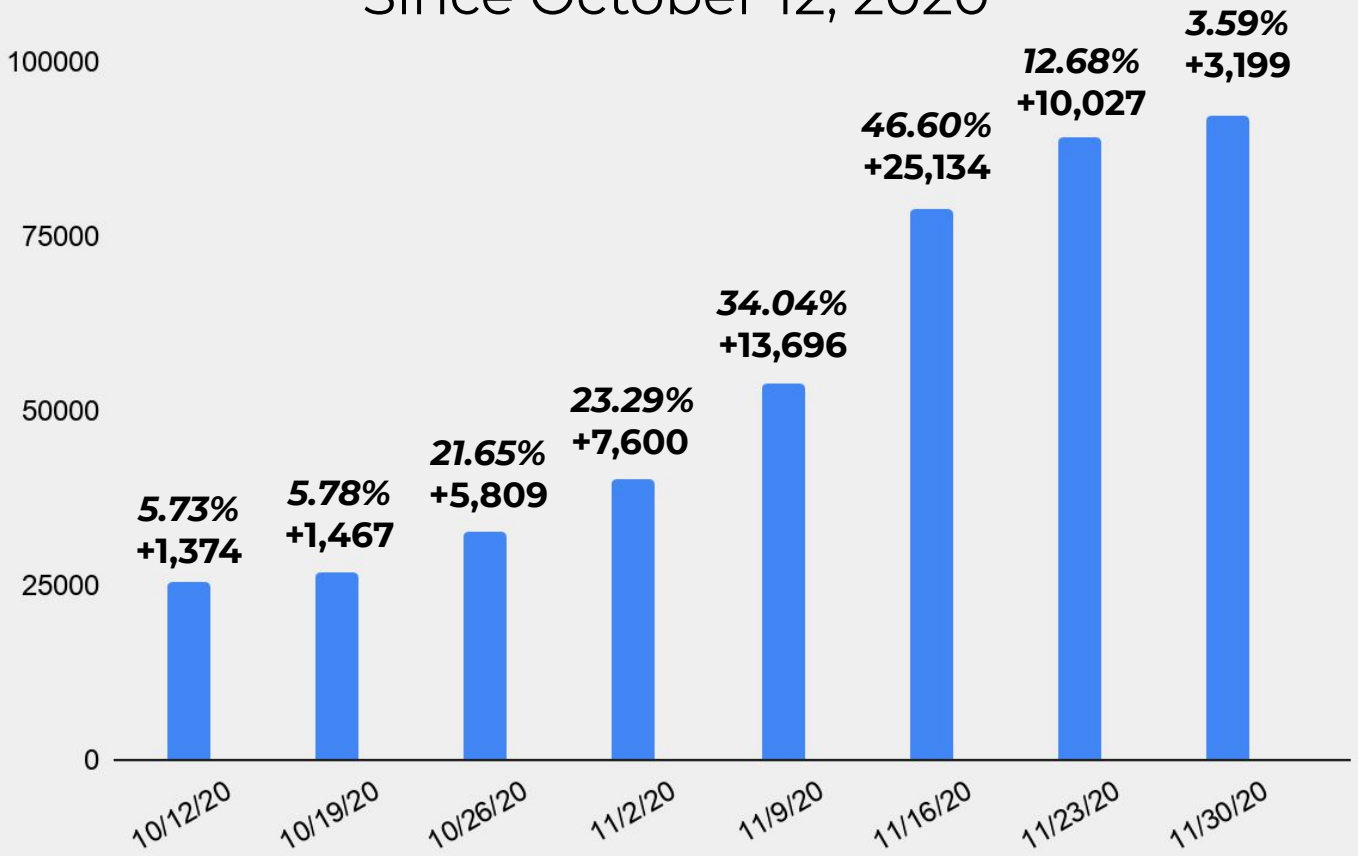


Positive Cases Nov. 24th to Nov. 30th



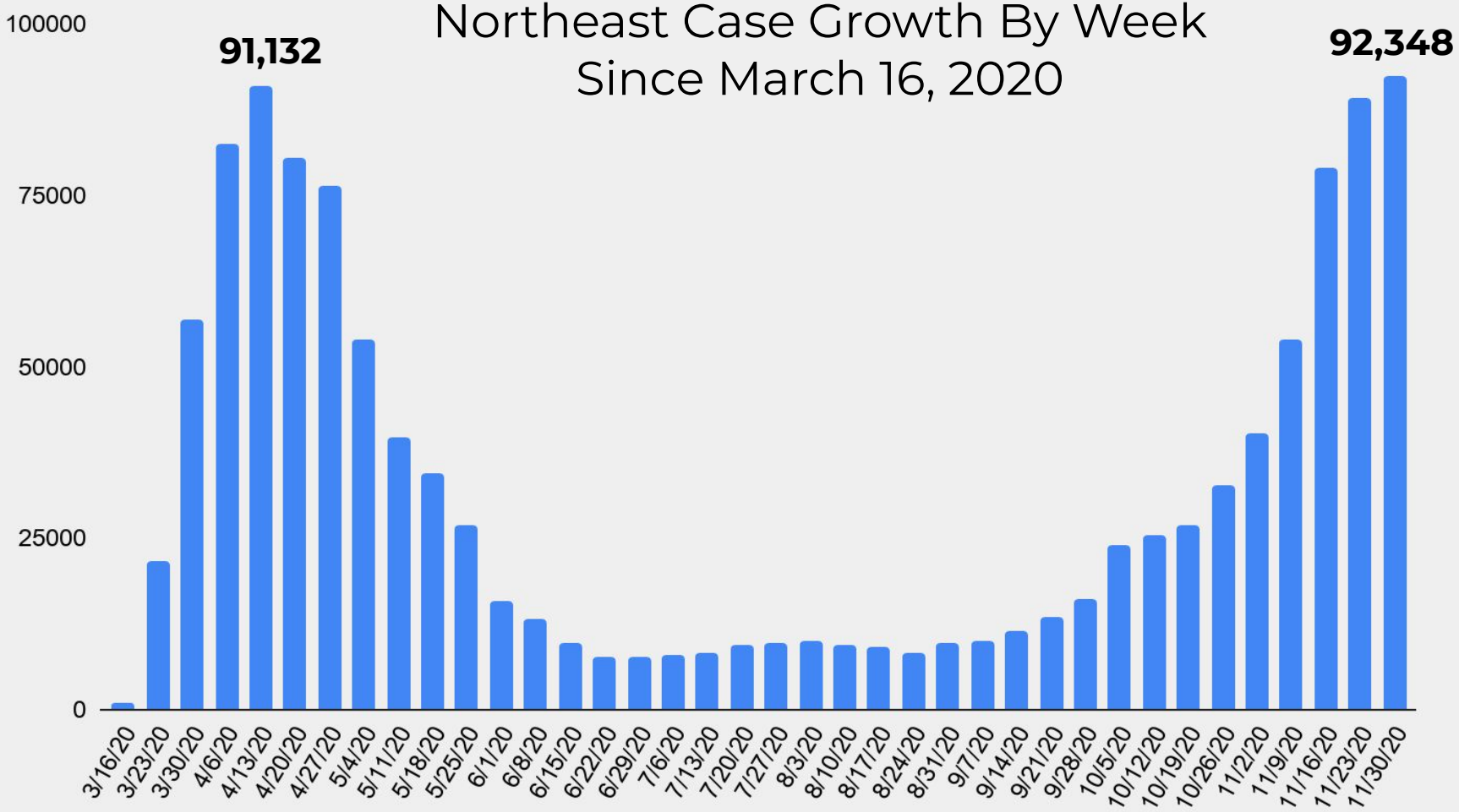
Sources: State Health Departments & CTV National News (Quebec)

Northeast Case Growth By Week Since October 12, 2020



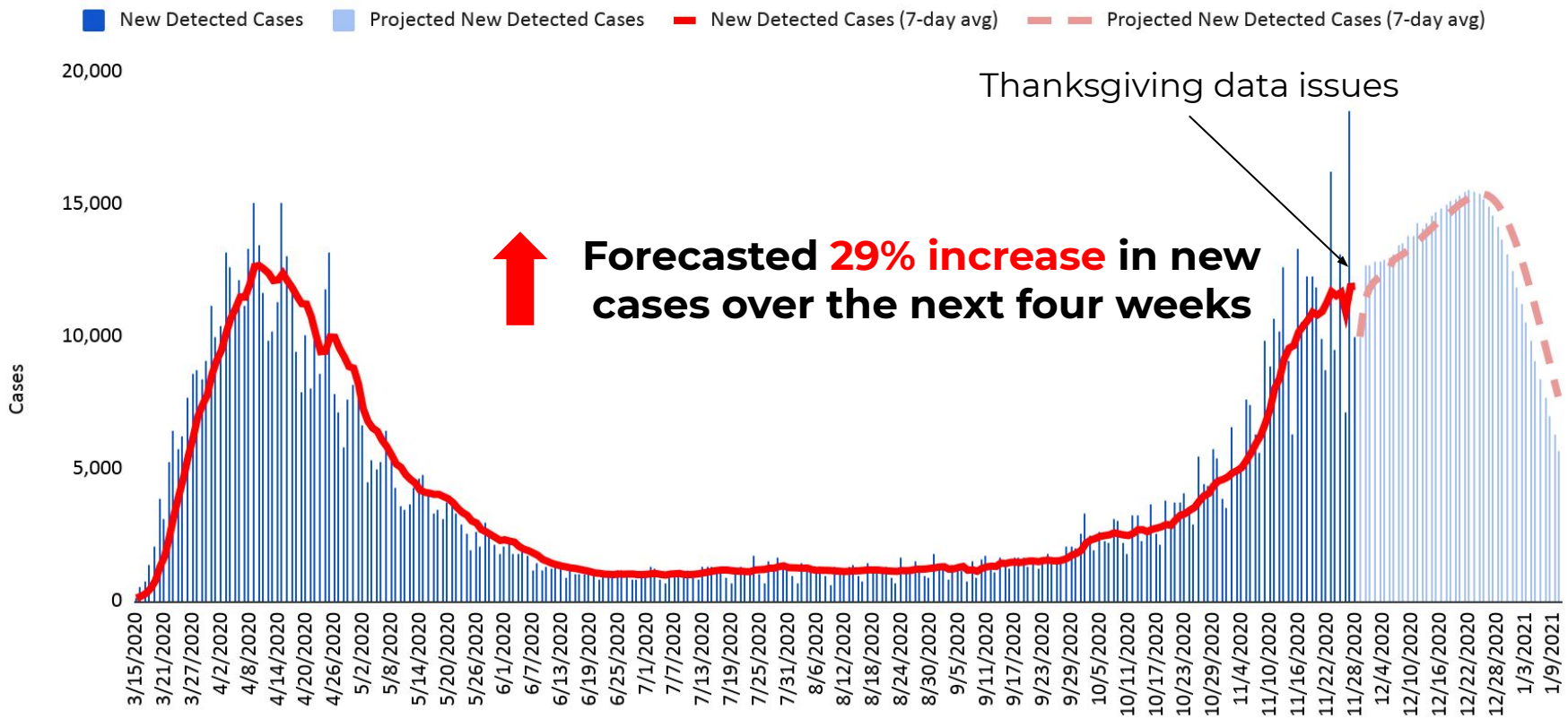
Sources: State Health Departments & CTV National News (Quebec)

Northeast Case Growth By Week Since March 16, 2020



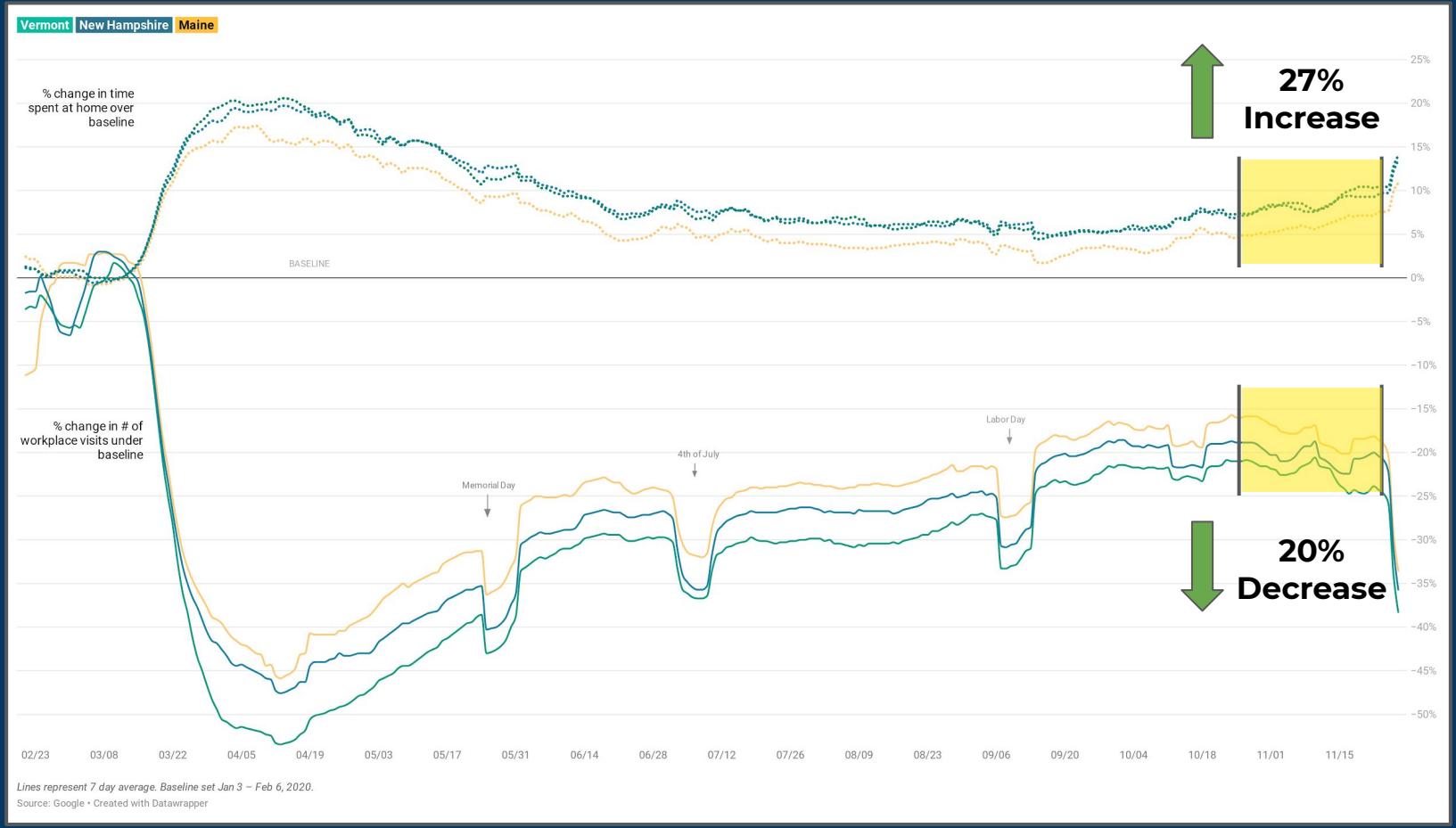
Sources: State Health Departments & CTV National News (Quebec)

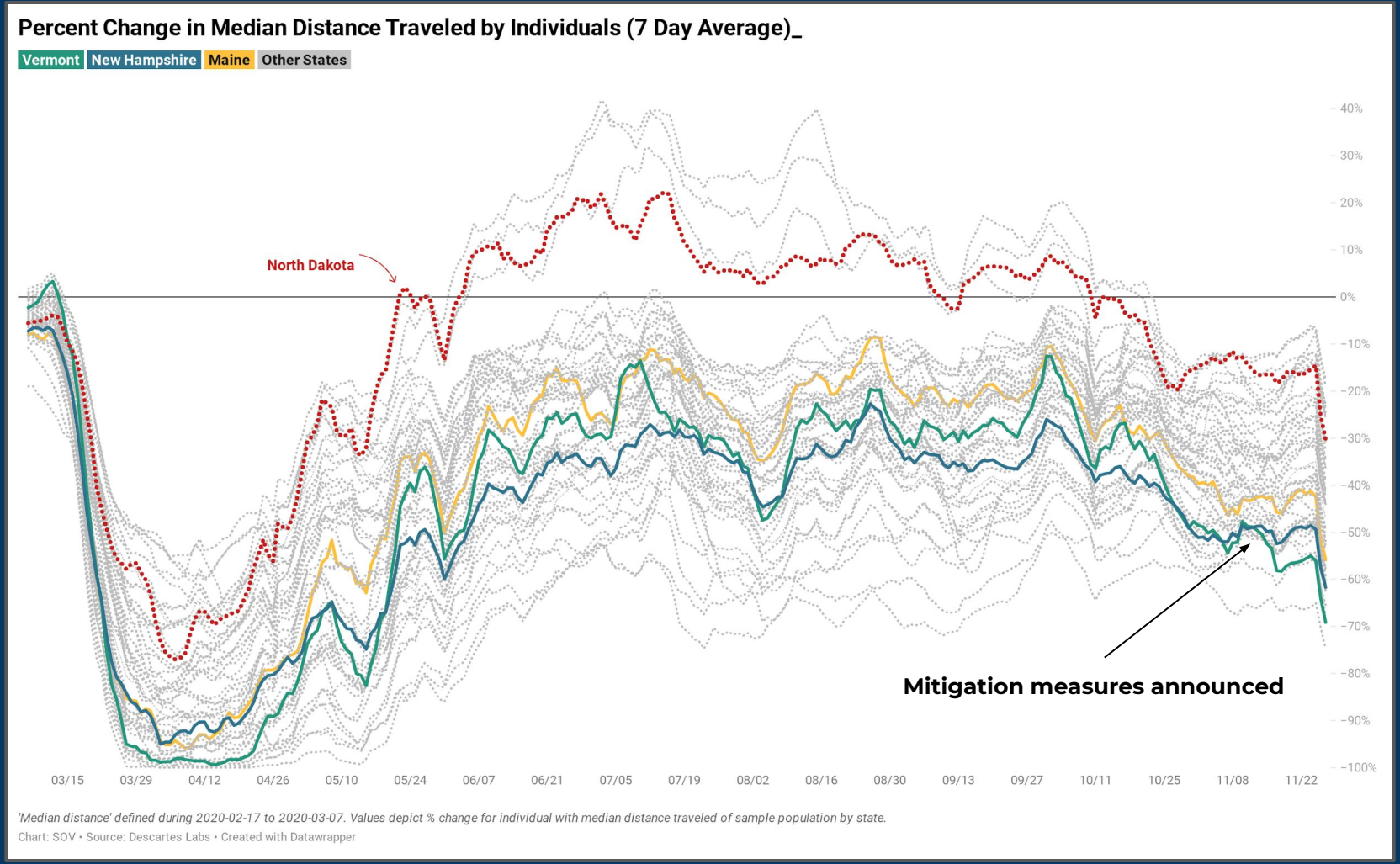
Northeast Forecast

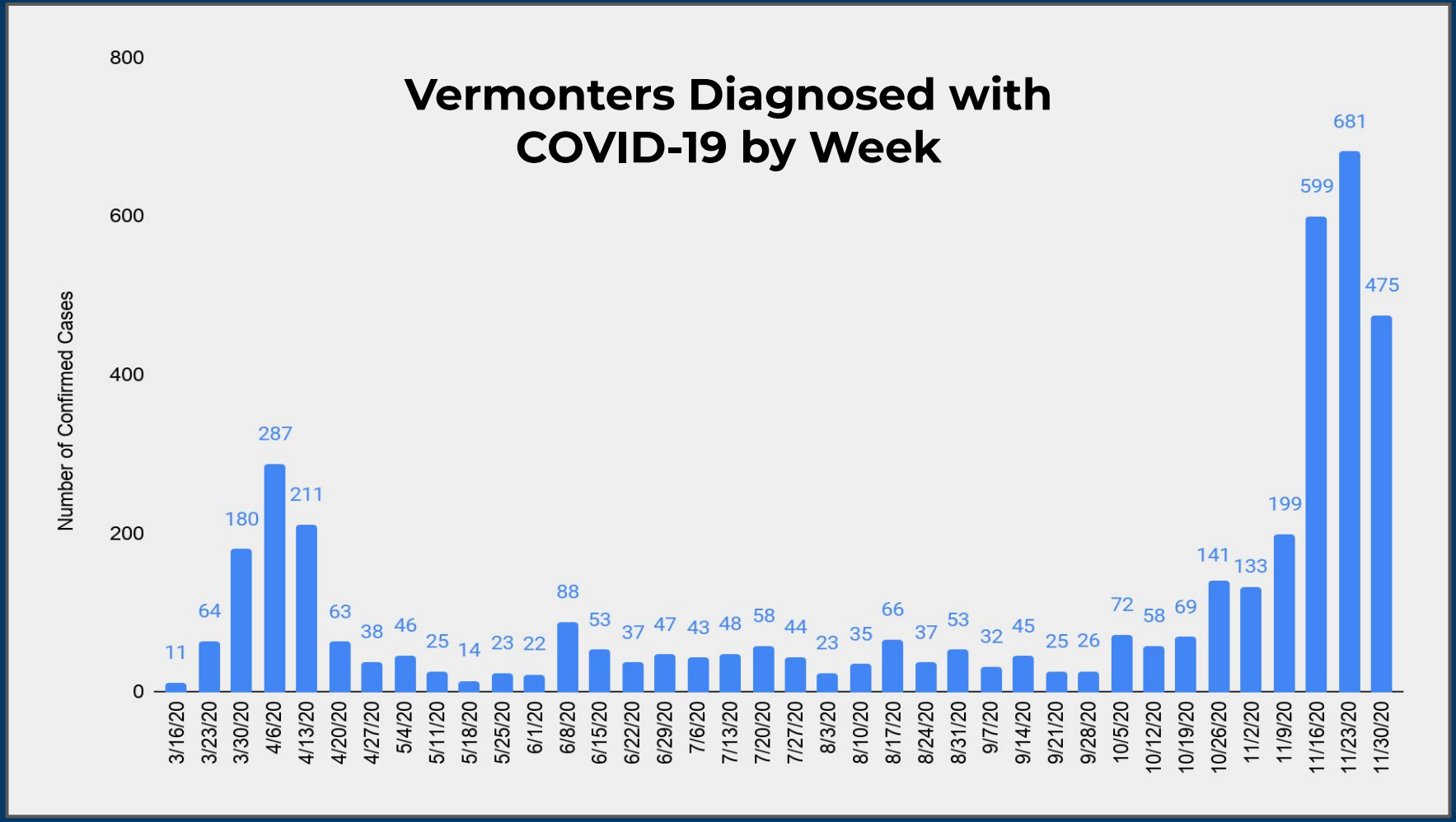


Source: Johns Hopkins University Data & Oliver Wyman Forecast Model - November 30, 2020 (New England & New York)

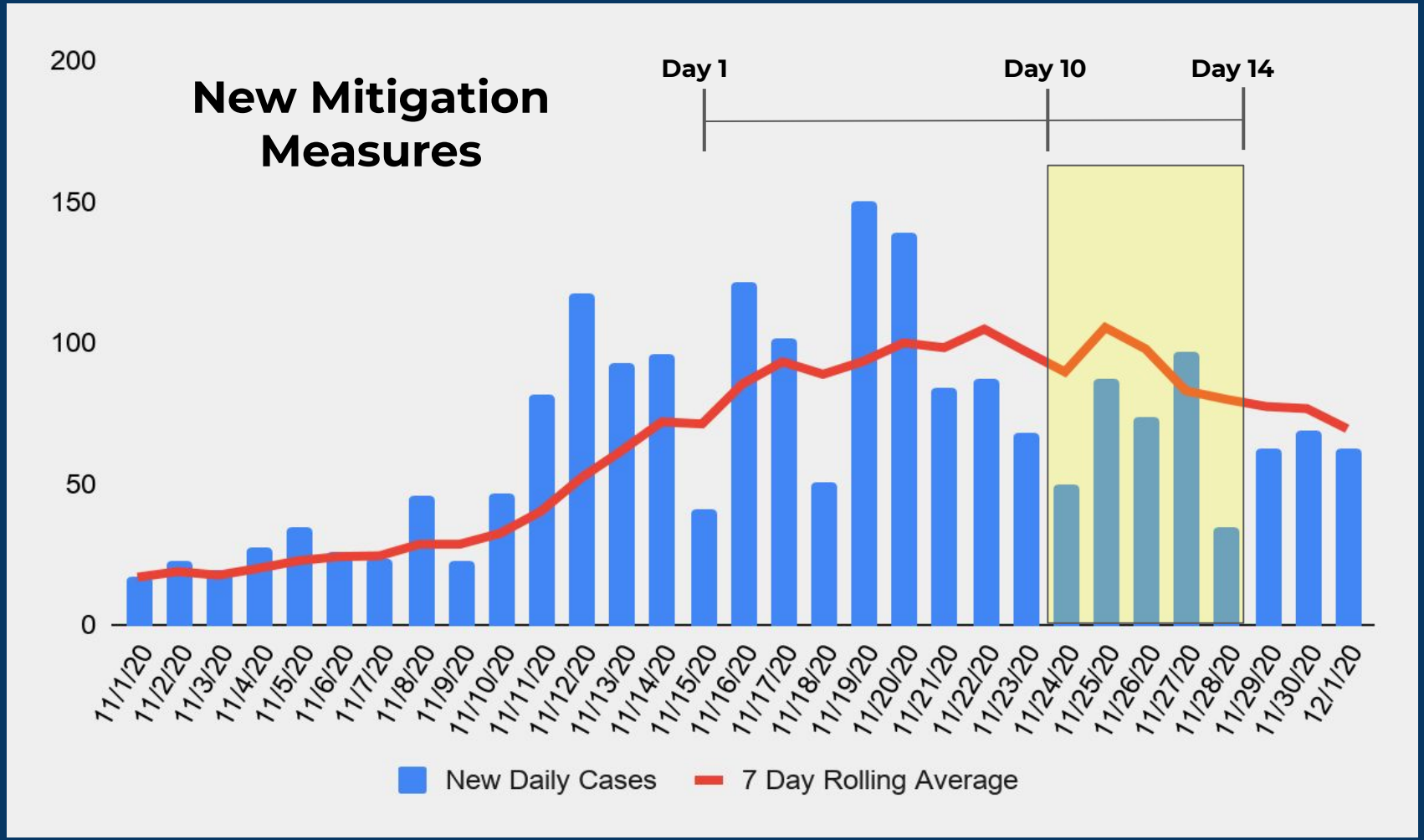
Home & Workplace Mobility




Percent Change in Median Distance Traveled by Individuals (7 Day Average)_
Vermont
New Hampshire
Maine
Other States
North Dakota
Mitigation measures announced
40%
30%
20%
10%
0%
−10%
−20%
−30%
−40%
−50%
−60%
−70%
−80%
−90%
−100%
03/15
03/29
04/12
04/26
05/10
05/24
06/07
06/21
07/05
07/19
08/02
08/16
08/30
09/13
09/27
10/11
10/25
11/08
11/22
'Median distance' defined during 2020-02-17 to 2020-03-07. Values depict % change for individual with median distance traveled of sample population by state.
Chart: SOV • Source: Descartes Labs • Created with Datawrapper



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



Source: Vermont Department of Health

Thanksgiving 2020 vs 2019
Out-of-State Travel into Vermont

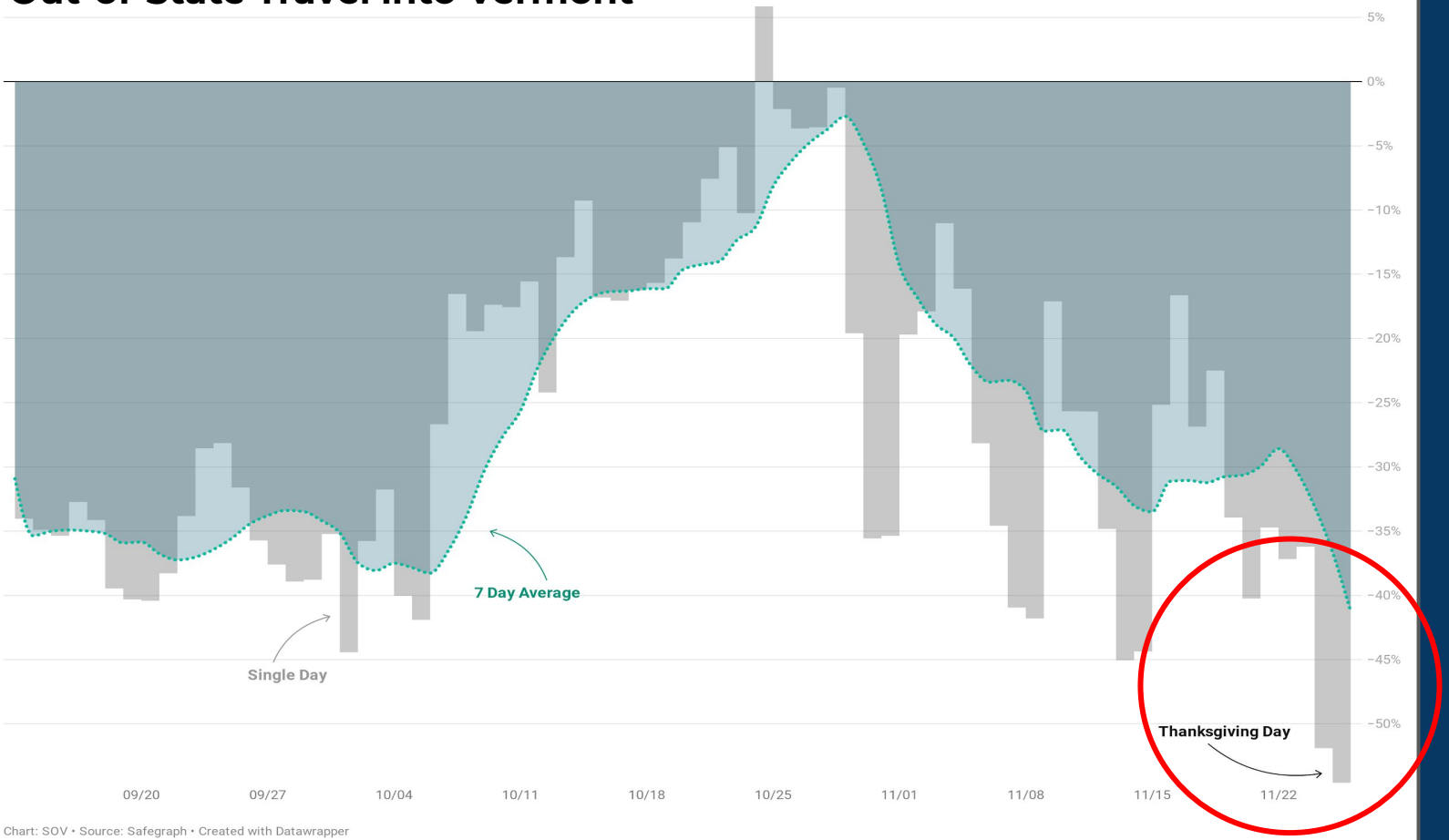


Chart: SOV • Source: Safegraph • Created with Datawrapper

U.S. and Vermont Air Travel Thanksgiving Week 2020 & 2019

TSA Screening Nationwide

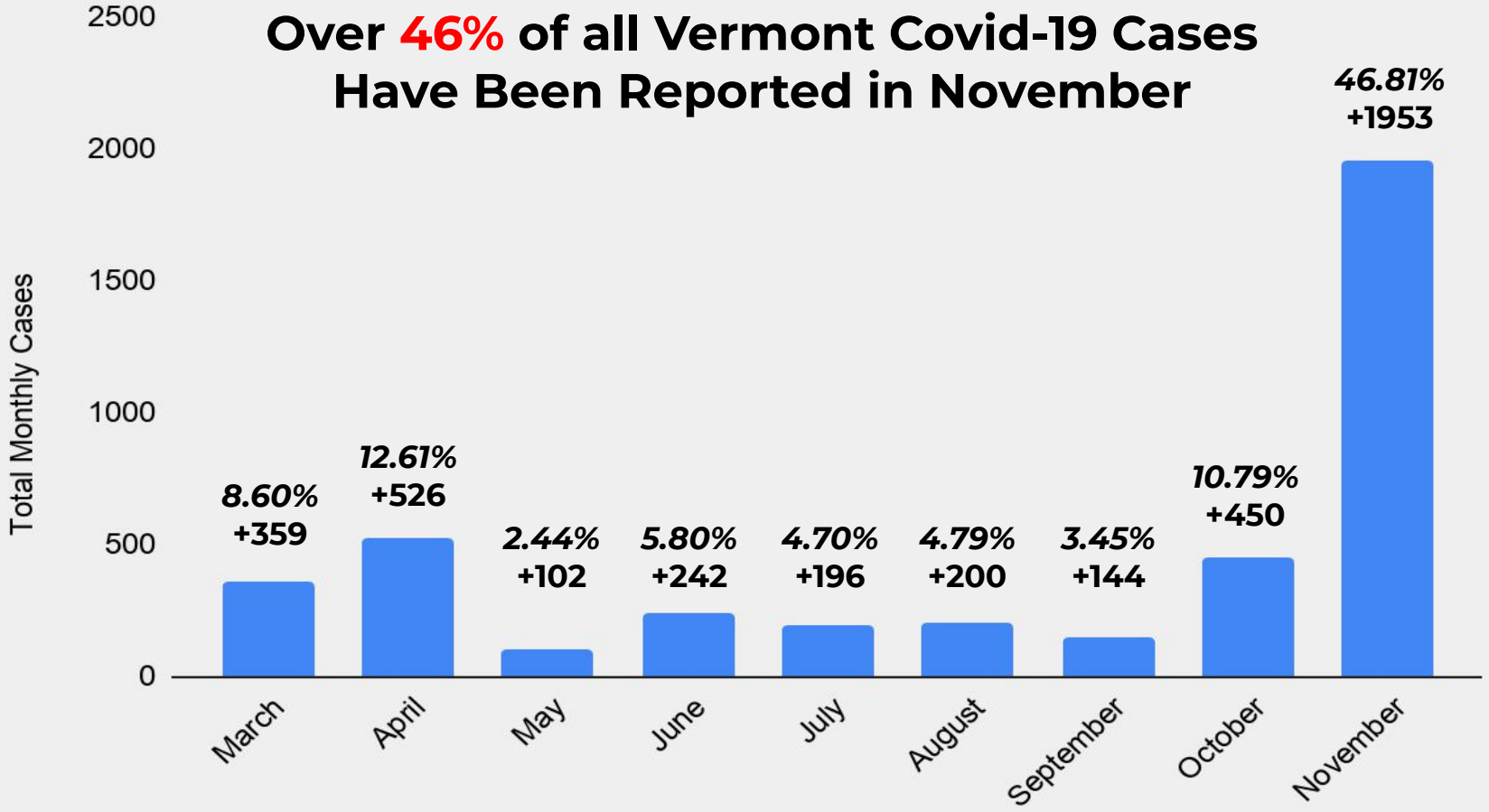
60% Reduction

BTV International Airport Passengers

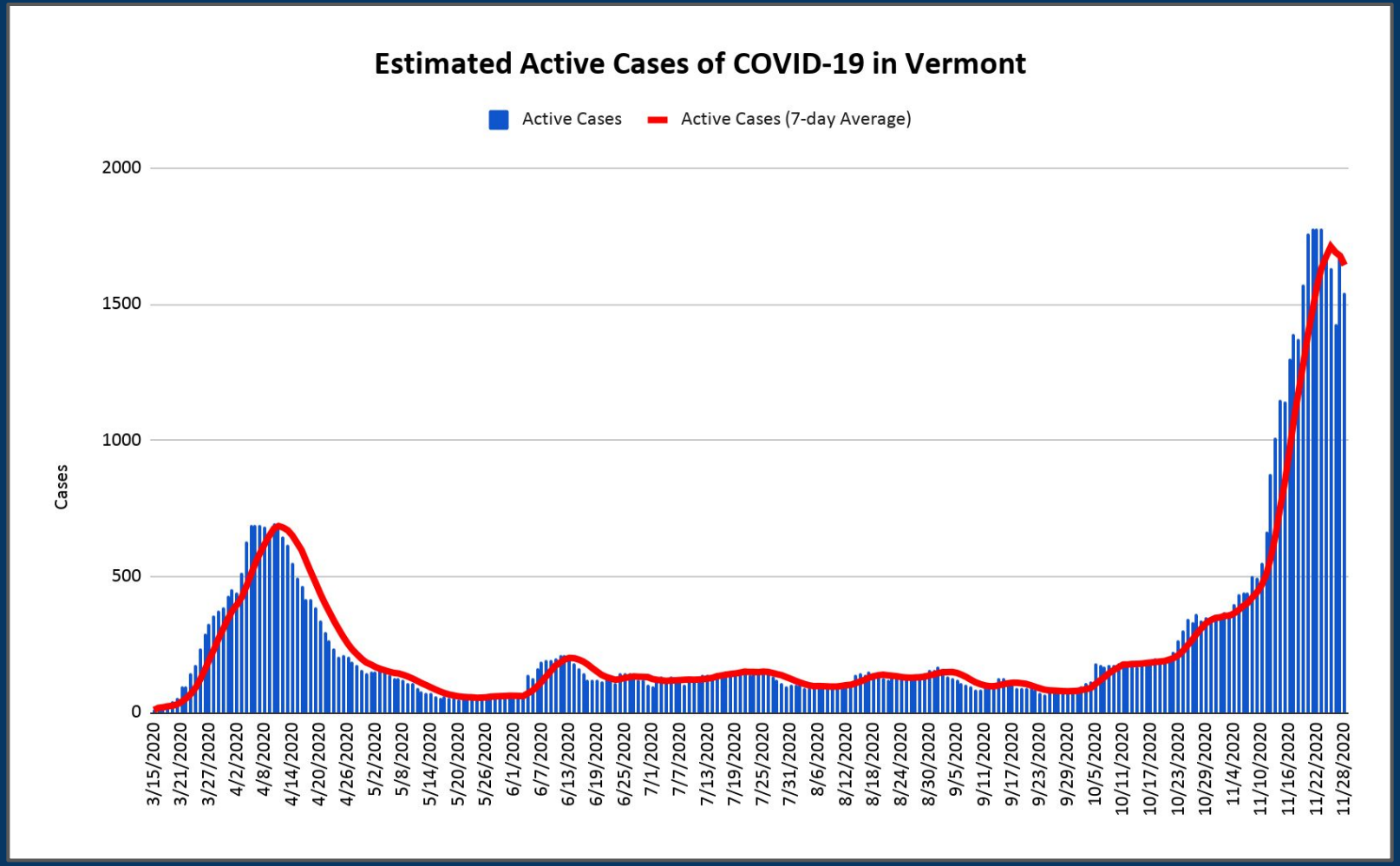
77% Reduction

Source: US Transportation Safety Administration; Burlington International Airport (measured Sunday to Saturday of Thanksgiving Week)

Over 46% of all Vermont Covid-19 Cases Have Been Reported in November



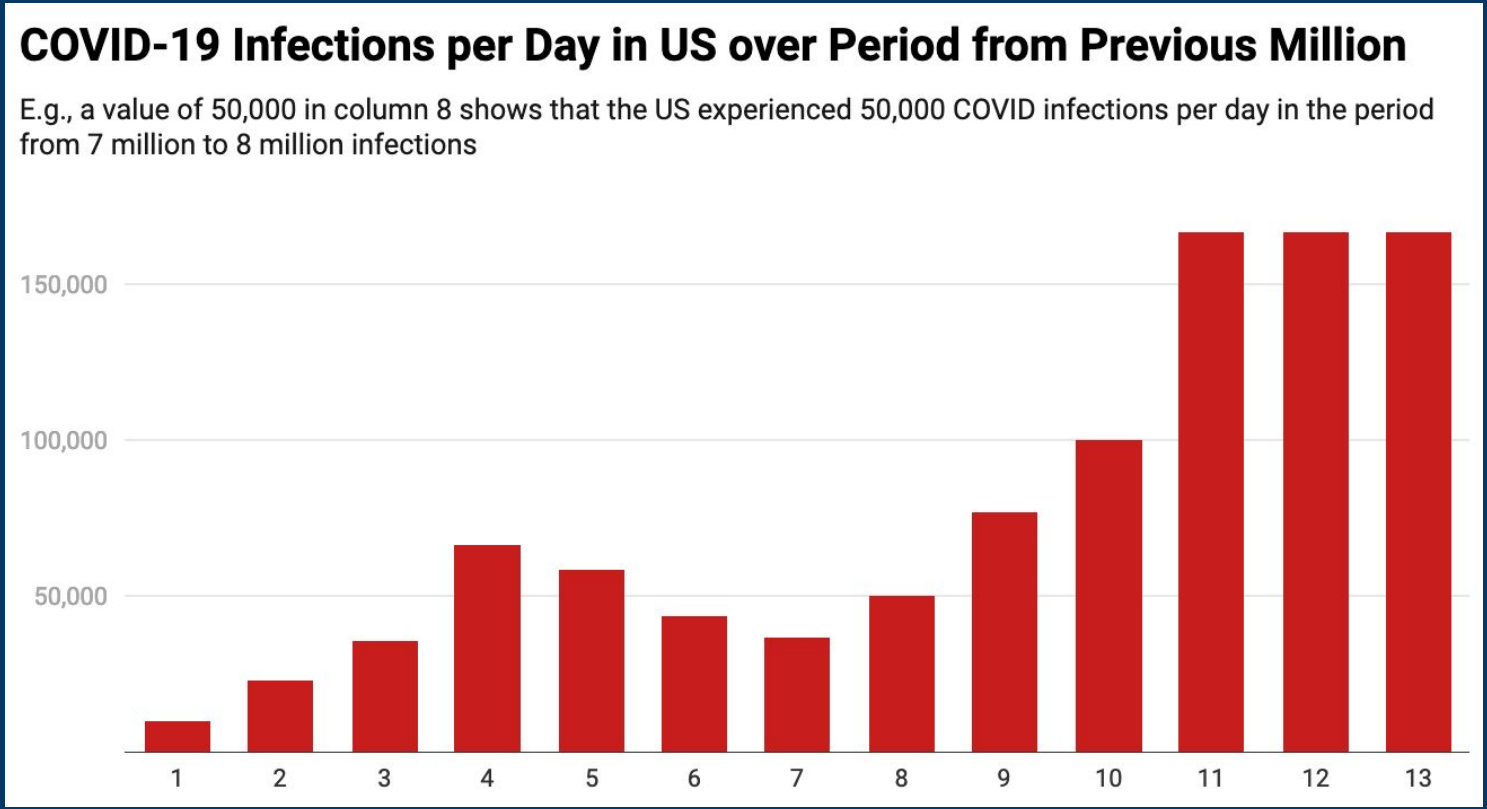
Source: Vermont Department of Health, December 1, 2020



Source: Oliver Wyman Active Case Estimate - November 29, 2020

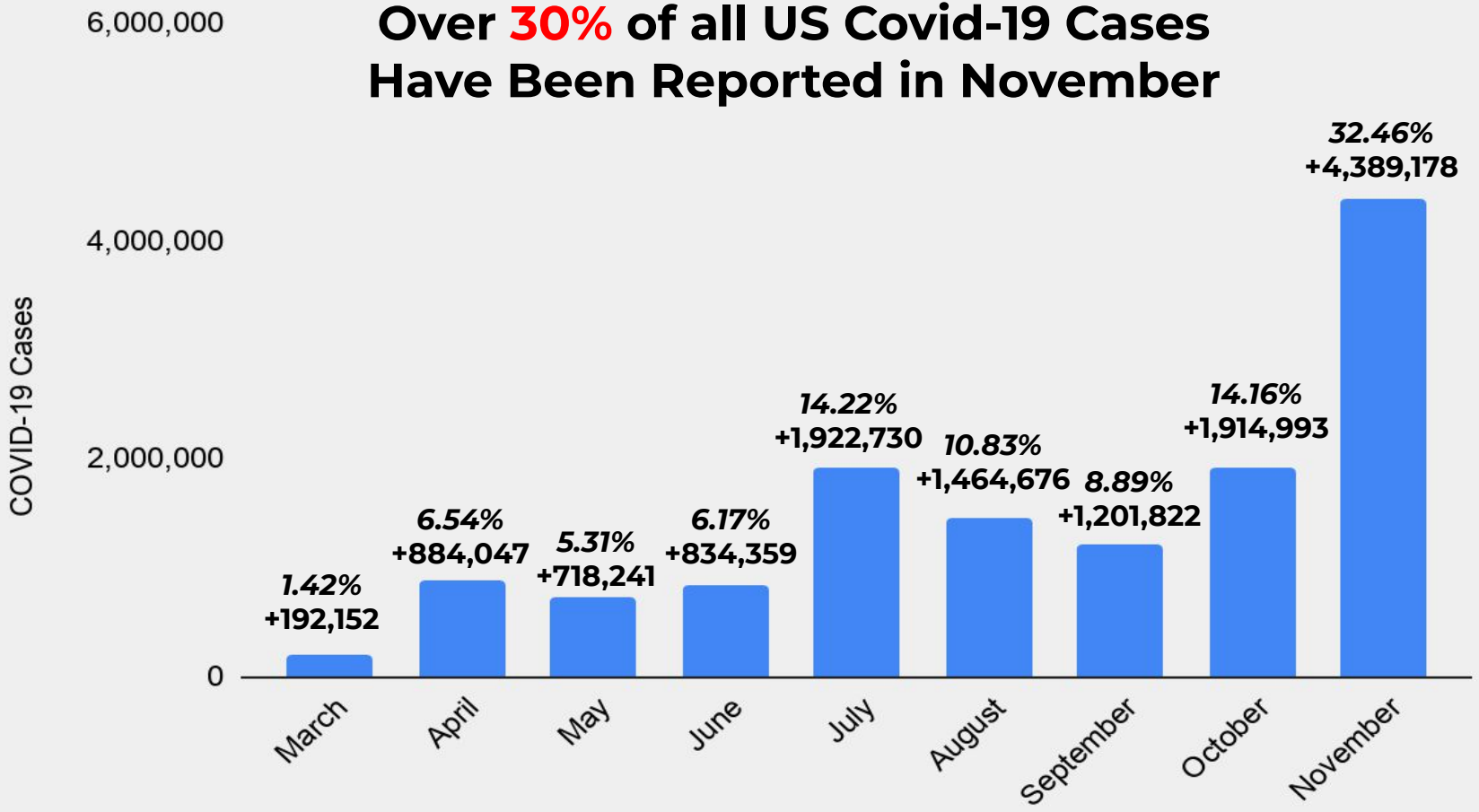
13 Million+ U.S. Cases

December 1, 2020



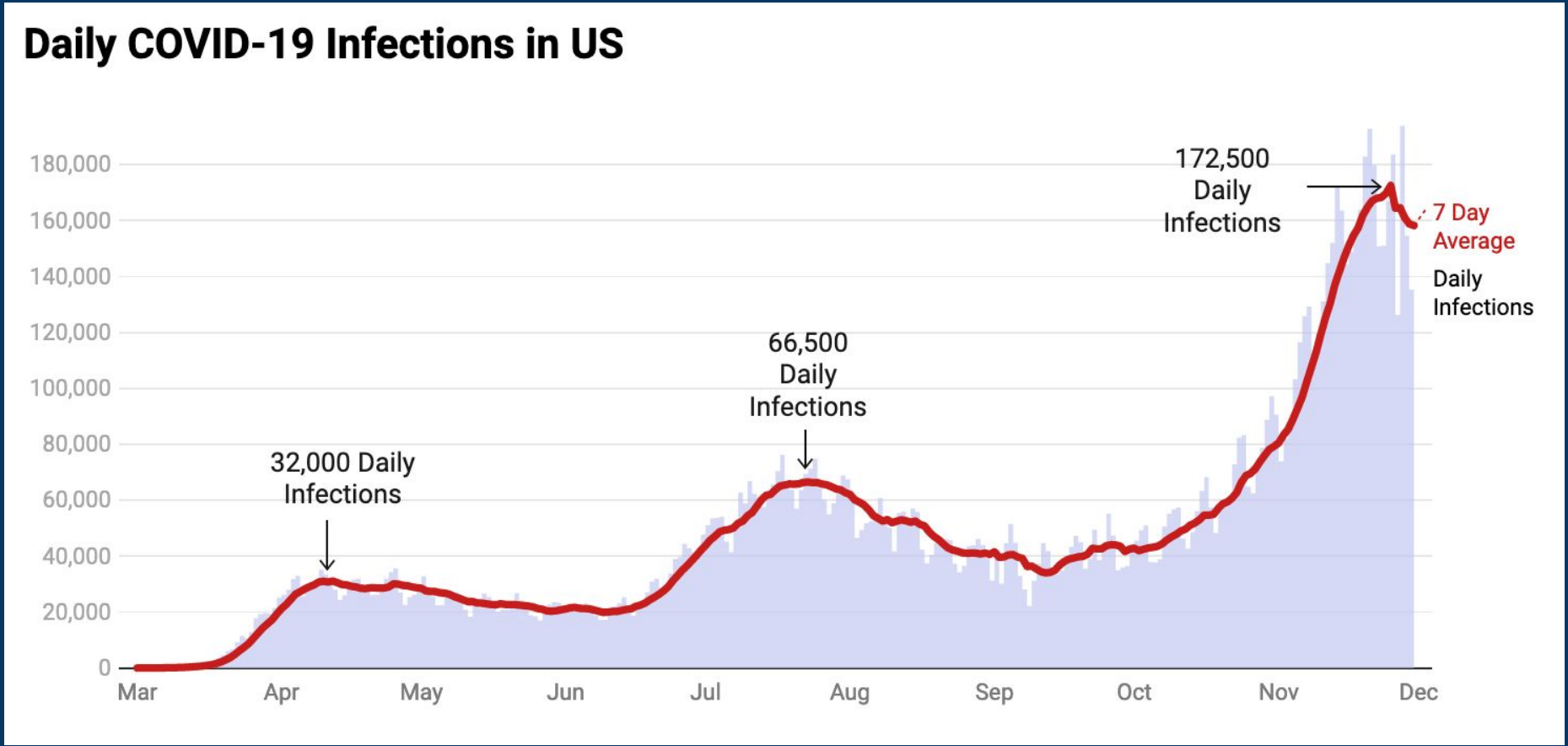
Source: Johns Hopkins University, December 1, 2020

Over 30% of all US Covid-19 Cases Have Been Reported in November



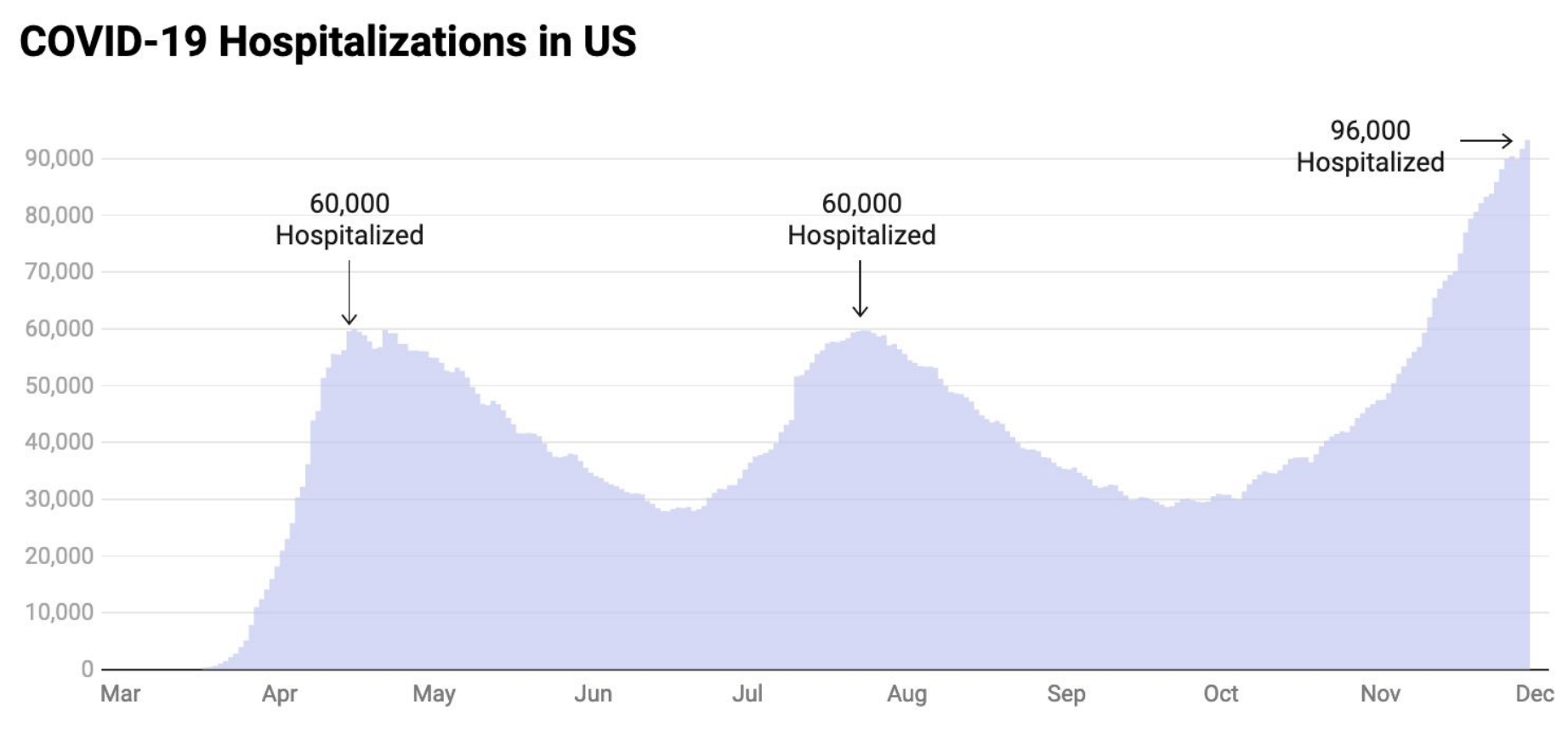
Source: Johns Hopkins University, December 1, 2020

U.S. Case Growth



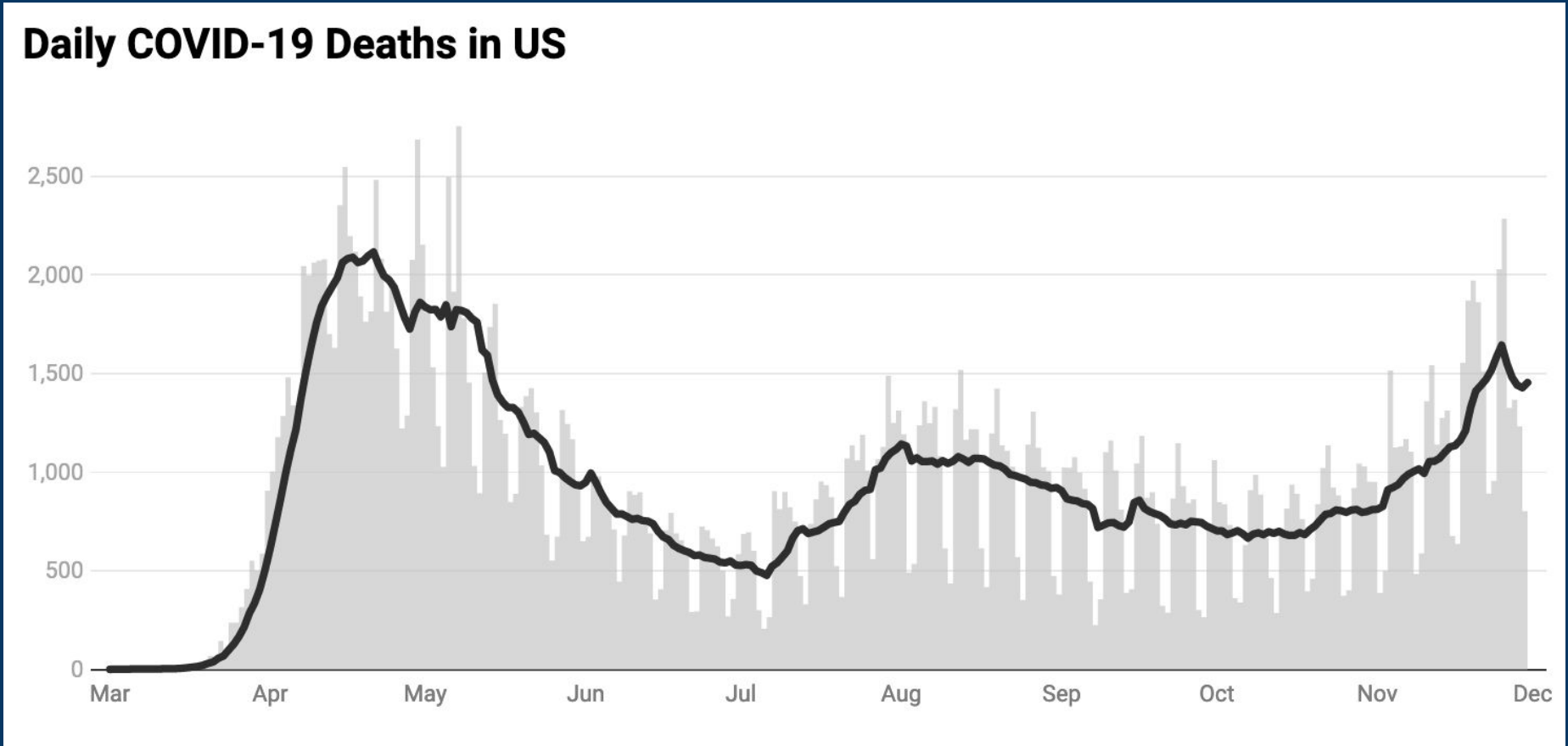
Source: Covid Tracking Project, November 30, 2020

U.S. Hospitalization Growth

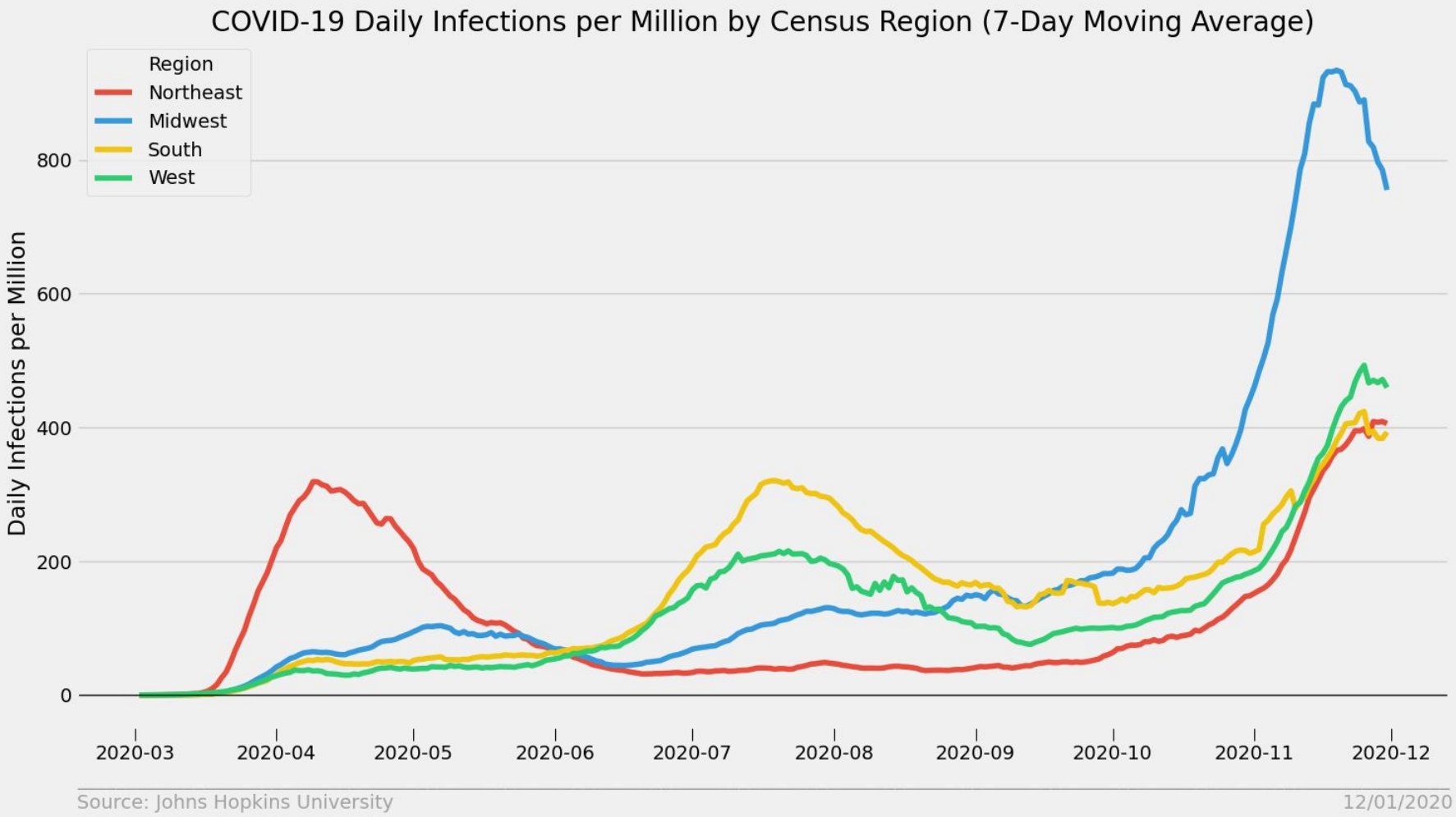


Source: Covid Tracking Project, November 30, 2020

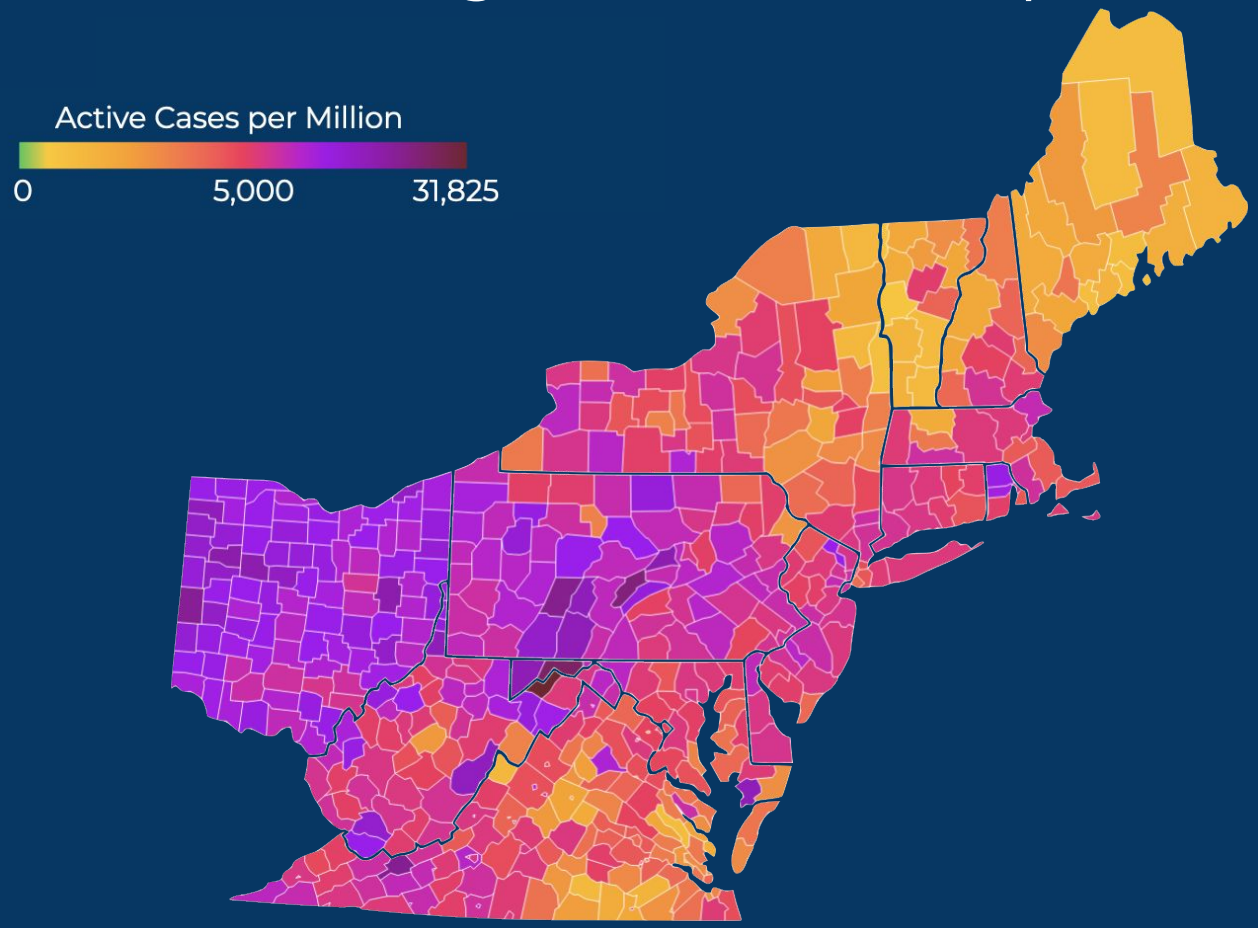
U.S. Covid-19 Deaths



Source: Covid Tracking Project, November 30, 2020


COVID-19 Daily Infections per Million by Census Region (7-Day Moving Average)
Region
Northeast
Midwest
South
West
Daily Infections per Million
0
200
400
600
800
2020-03
2020-04
2020-05
2020-06
2020-07
2020-08
2020-09
2020-10
2020-11
2020-12
Source: Johns Hopkins University
12/01/2020

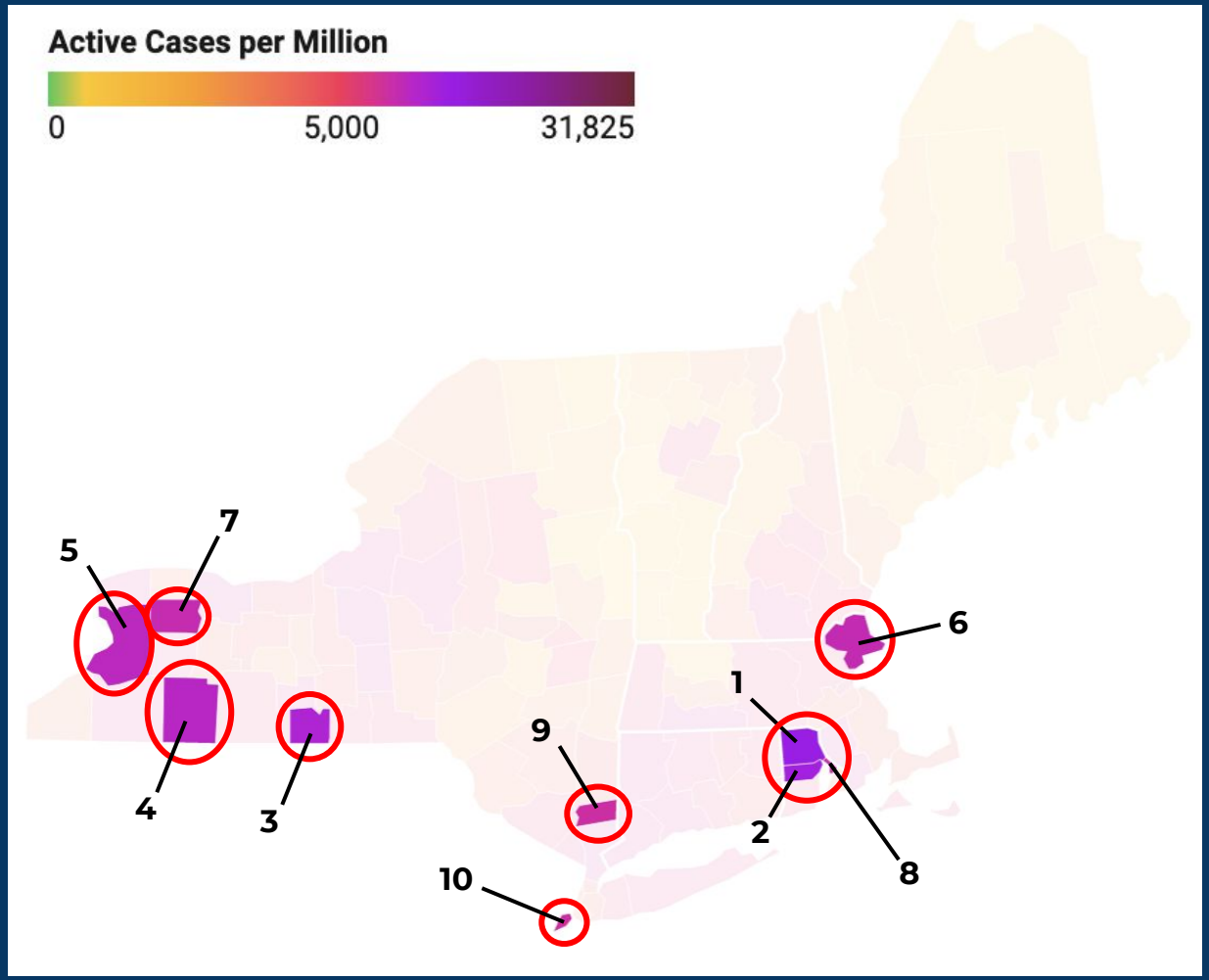
Regional Heat Map



Regional Map as of November 30th

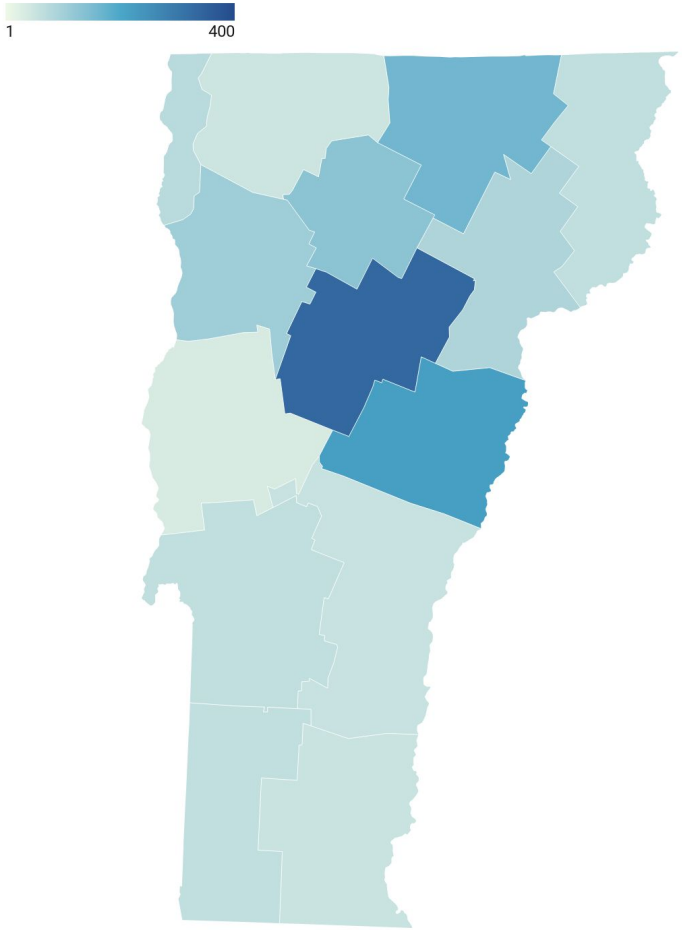
New York & New England Ranking by Active Case Per Million

1) **Providence (RI): 15,071**
2) **Kent (RI): 13,125**
3) **Chemung (NY): 12,327**
4) **Allegany (NY): 11,428**
5) **Erie (NY): 11,034**
6) **Essex (MA): 10,282**
7) **Genesee (NY): 10,098**
8) **Bristol (RI): 9,445**
9) **Putnam (NY): 9,377**
10) **Richmond (NY): 9,316**



Vermont Weekly Cases by County (per 100,000)

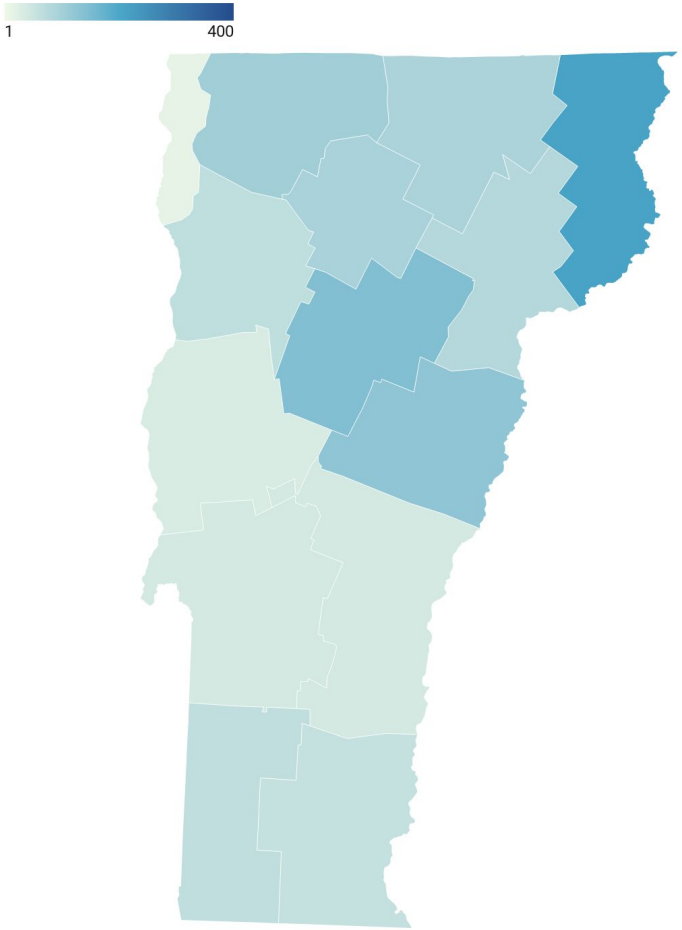
Results Reported November 17 to 23



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

Vermont Weekly Cases by County (per 100,000)

Results Reported November 24 to 30



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

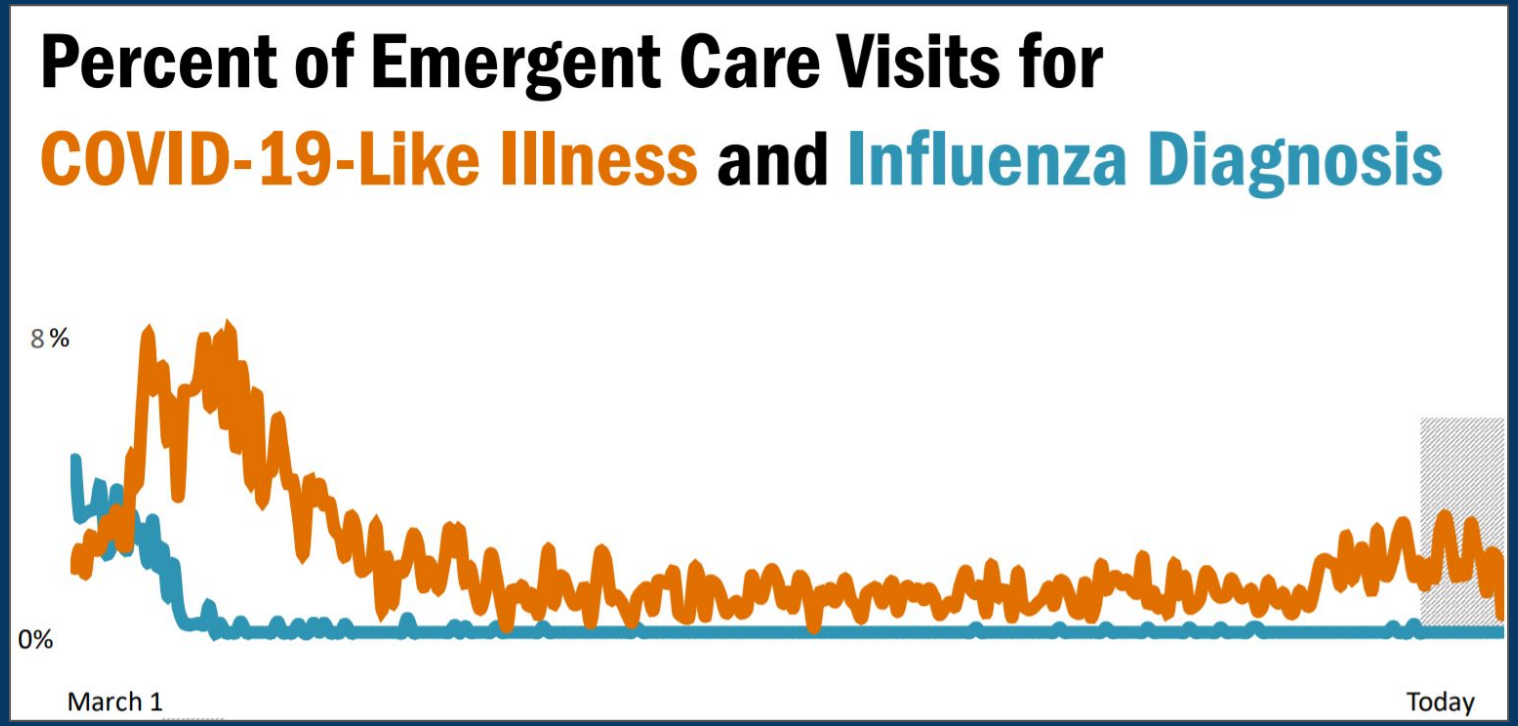
RESTART VERMONT

Reopening Metrics

1. Syndromic Surveillance
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

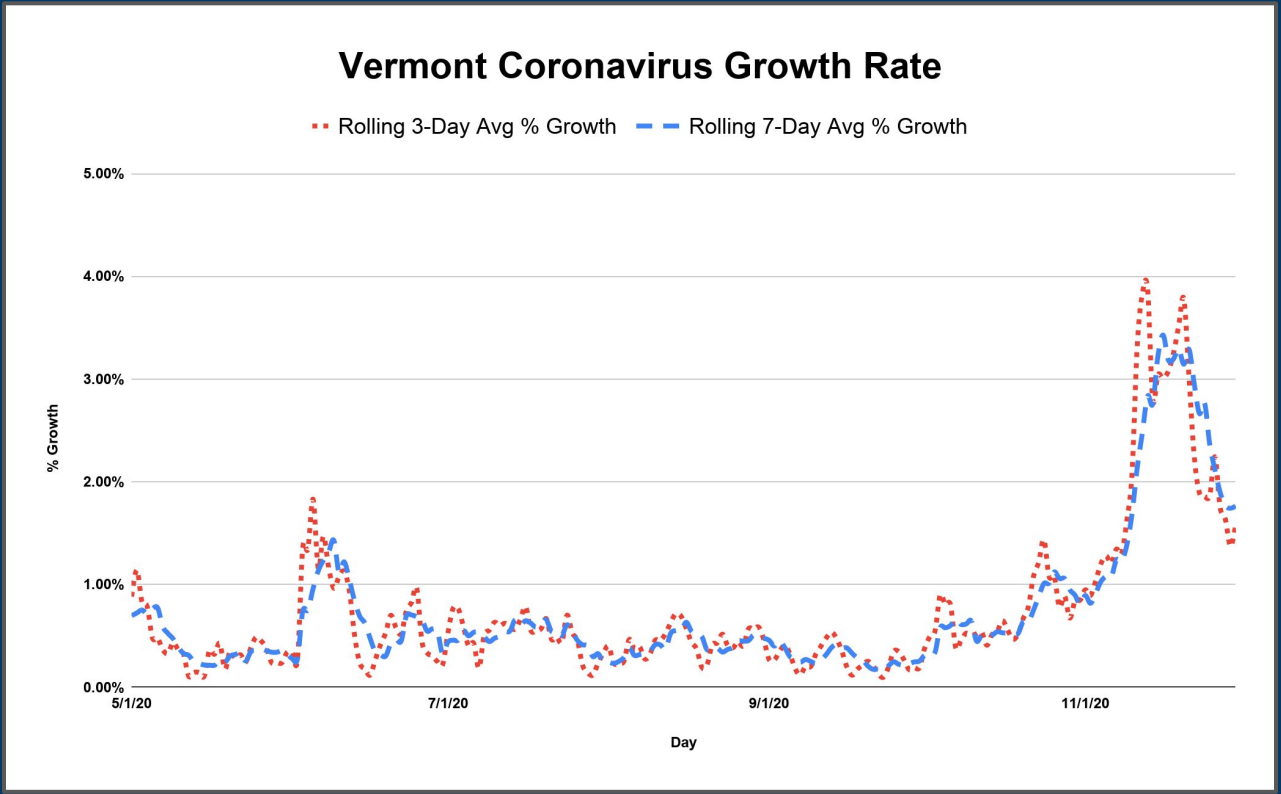


Source: Vermont Department of Health—December 1, 2020

**Data from UVMHN may be incomplete or delayed*

Data Point 2: Viral Growth and Reproductive Rates

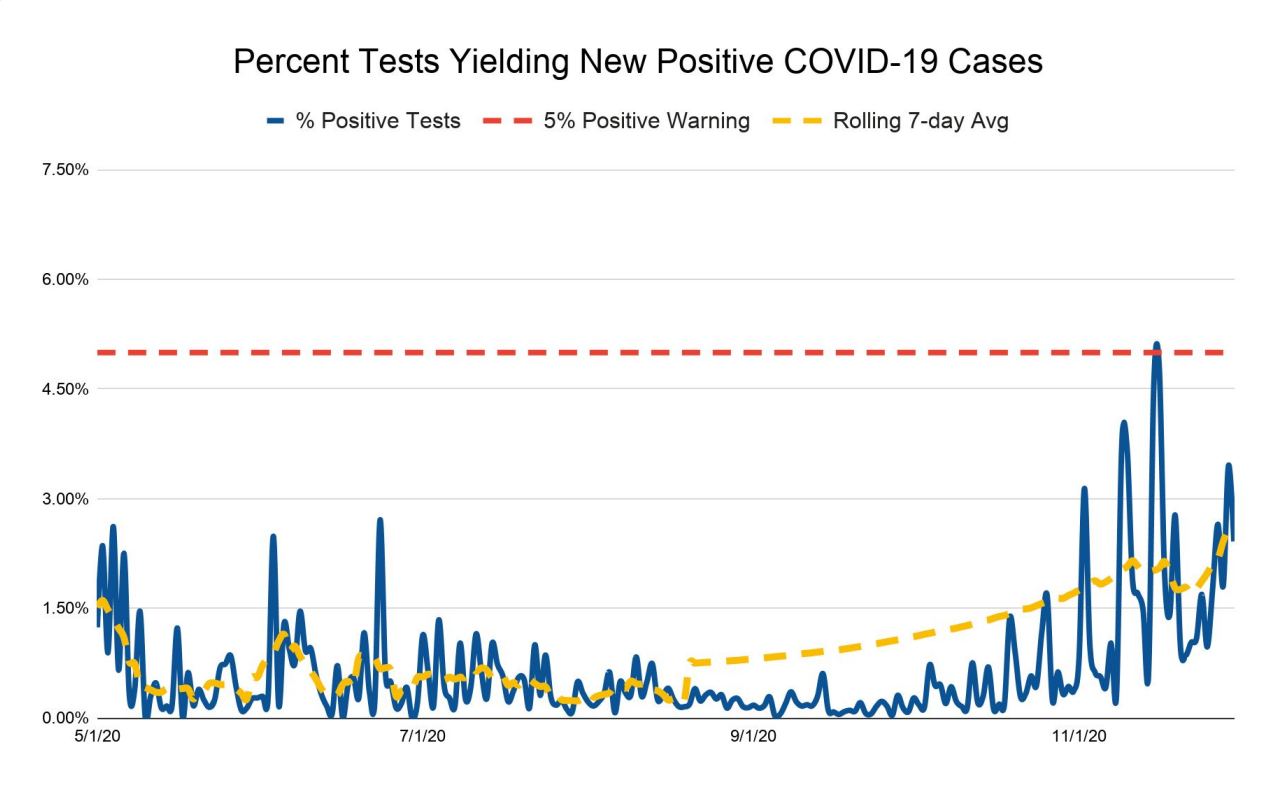
- **Summary:** Case growth measured by daily, 3-day, 7-day, and effective reproductive rate (R_t)
- **Warning Flags:** Sustained viral growth that would lead to <30% open ICU beds



Source: Vermont Department of Health—December 1, 2020

Data Point 3: Percentage of New Positive Tests

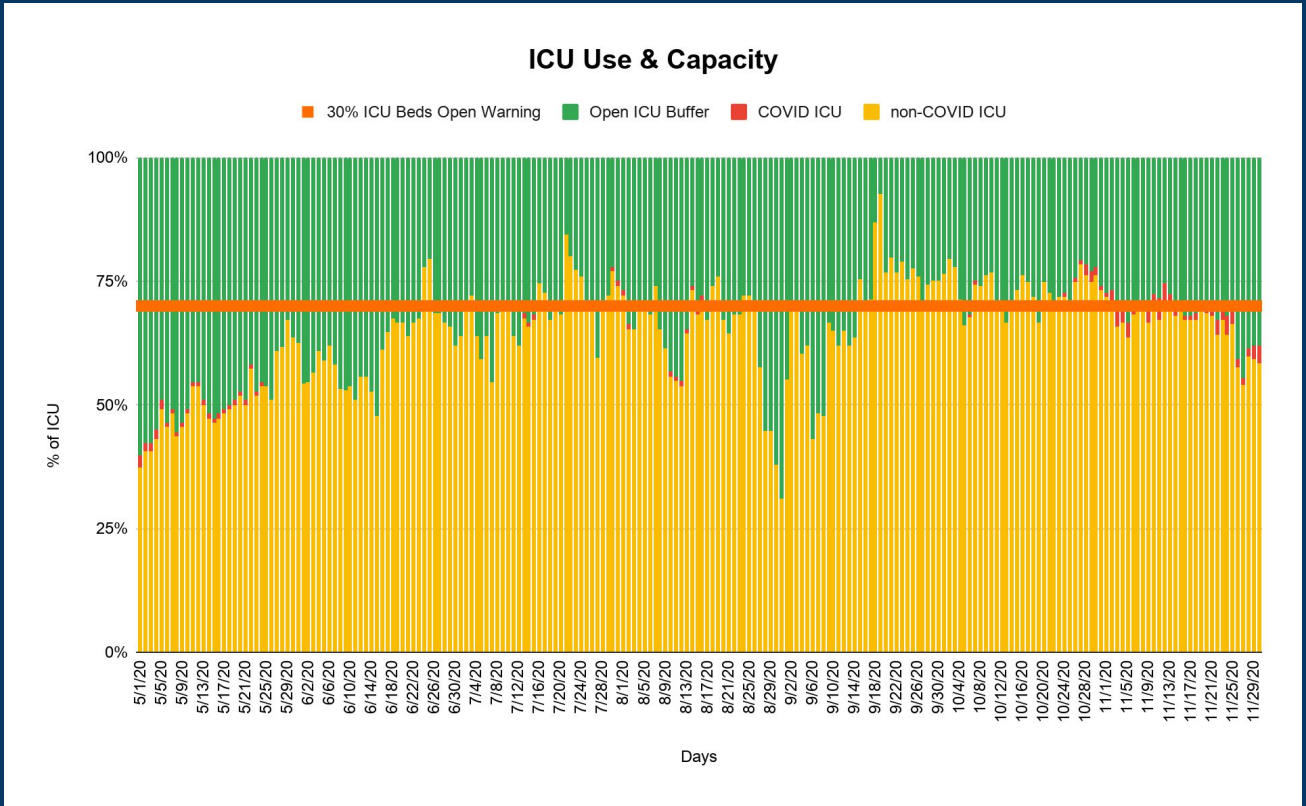
- **Summary:** Percent of tests resulting in a new positive case
- **Warning Flags:** New positives represent >5% of daily results



Source: Vermont Department of Health—December 1, 2020

Data Point 4: Hospital & Critical Care Beds

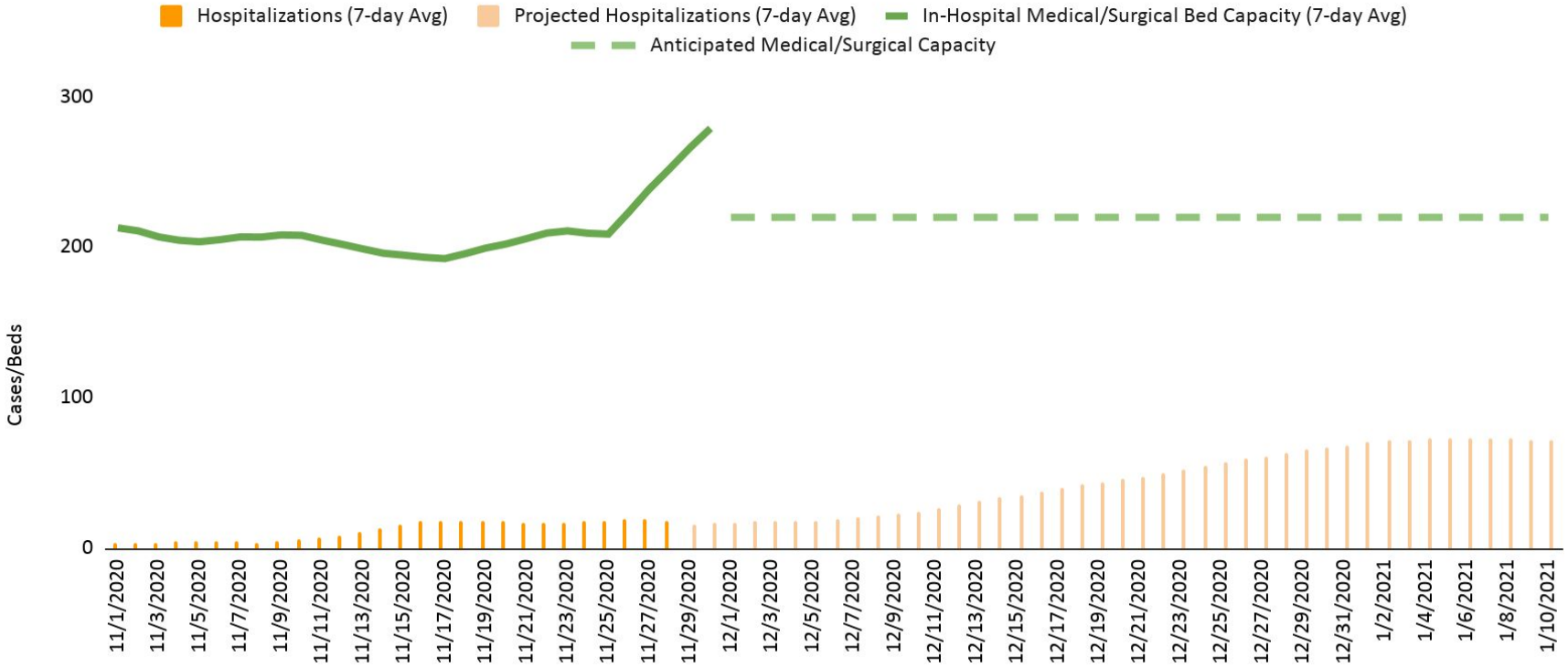
- **Summary:** Number of occupied and unoccupied medical surgical and ICU beds
- **Warning Flags:** Reduction in ICU open beds to less than 30%



Source: Vermont Department of Health—December 1, 2020

Vermont Hospital Capacity Forecast

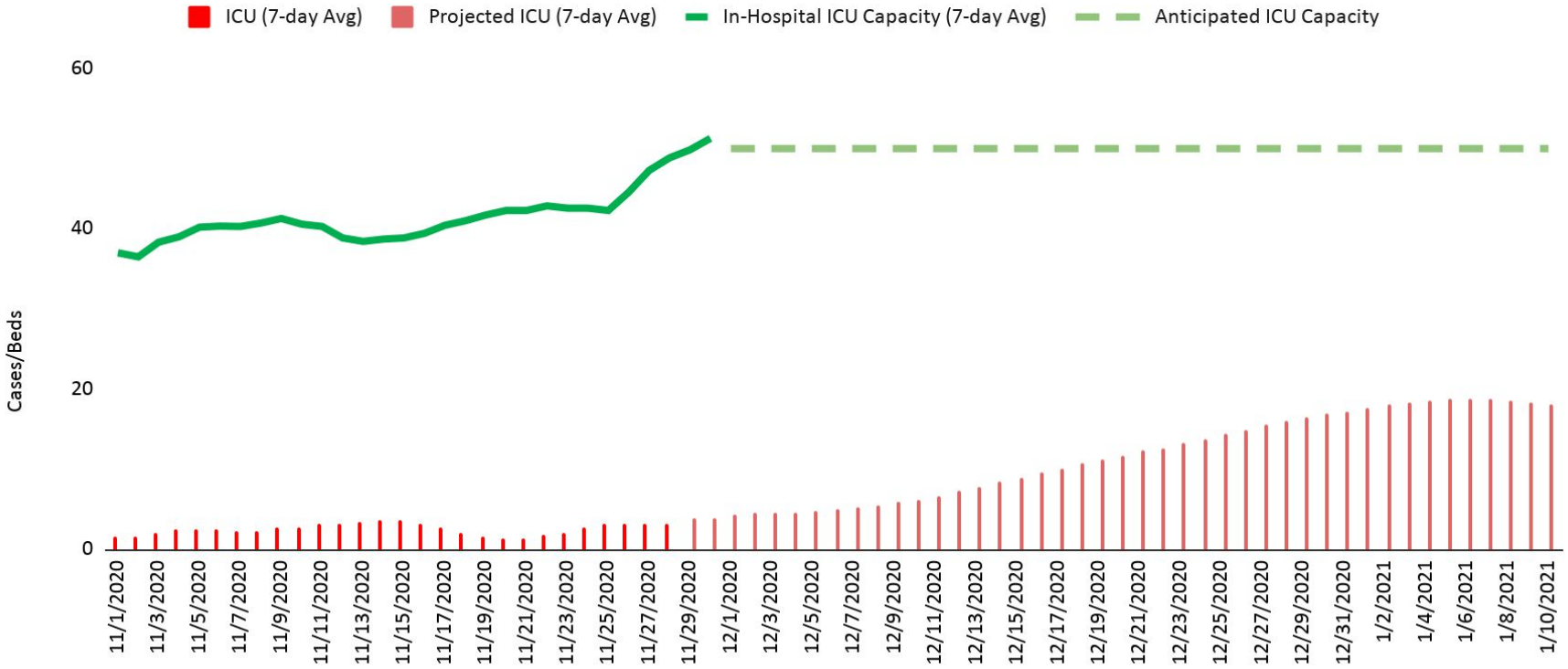
Forecasts Assume 3% Hospitalization



Source: Oliver Wyman Forecast Model - November 30, 2020

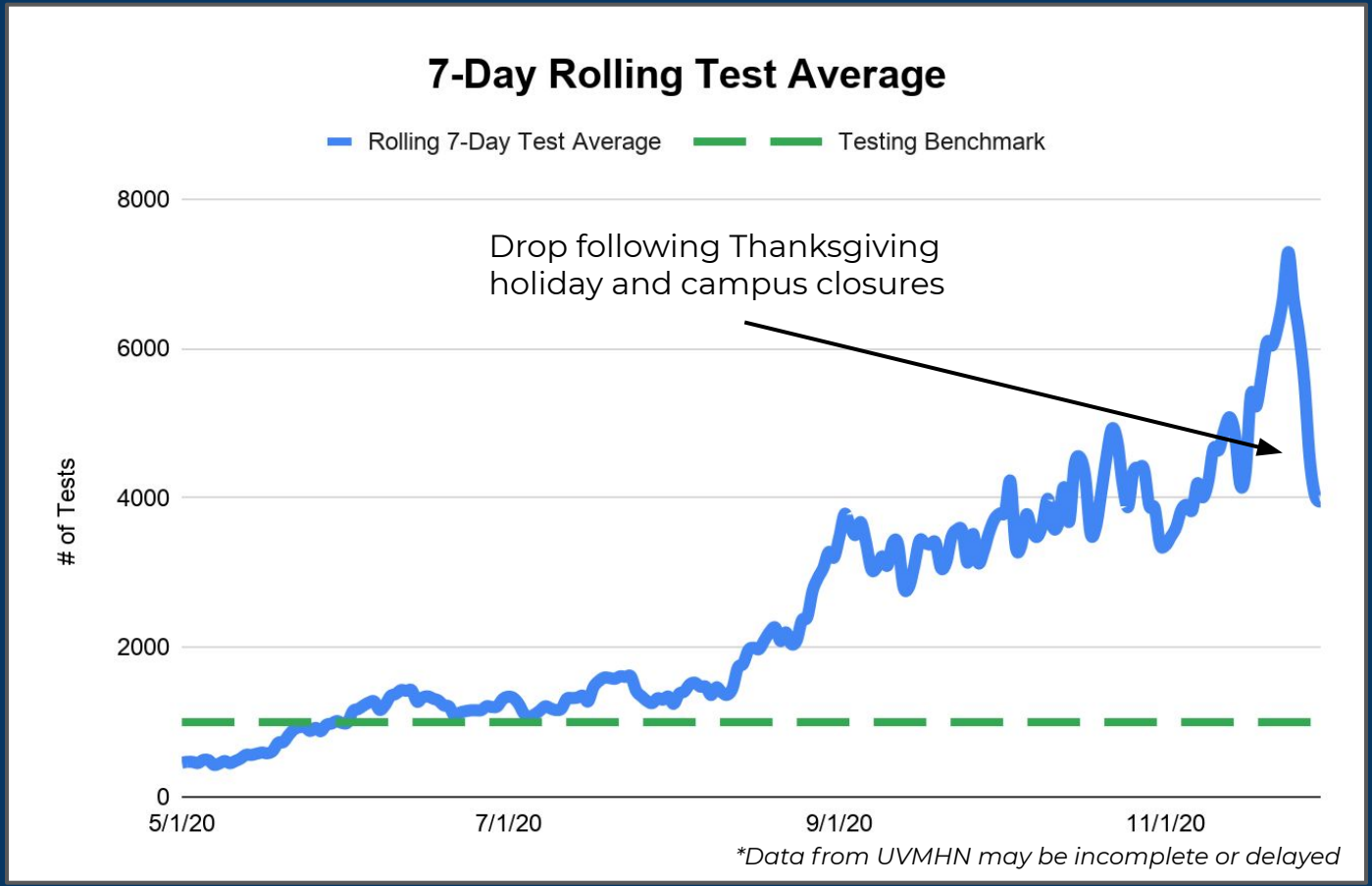
Vermont ICU Capacity Forecast

Forecasts Assume 3% ICU Rate



Source: Oliver Wyman Forecast Model - November 30, 2020

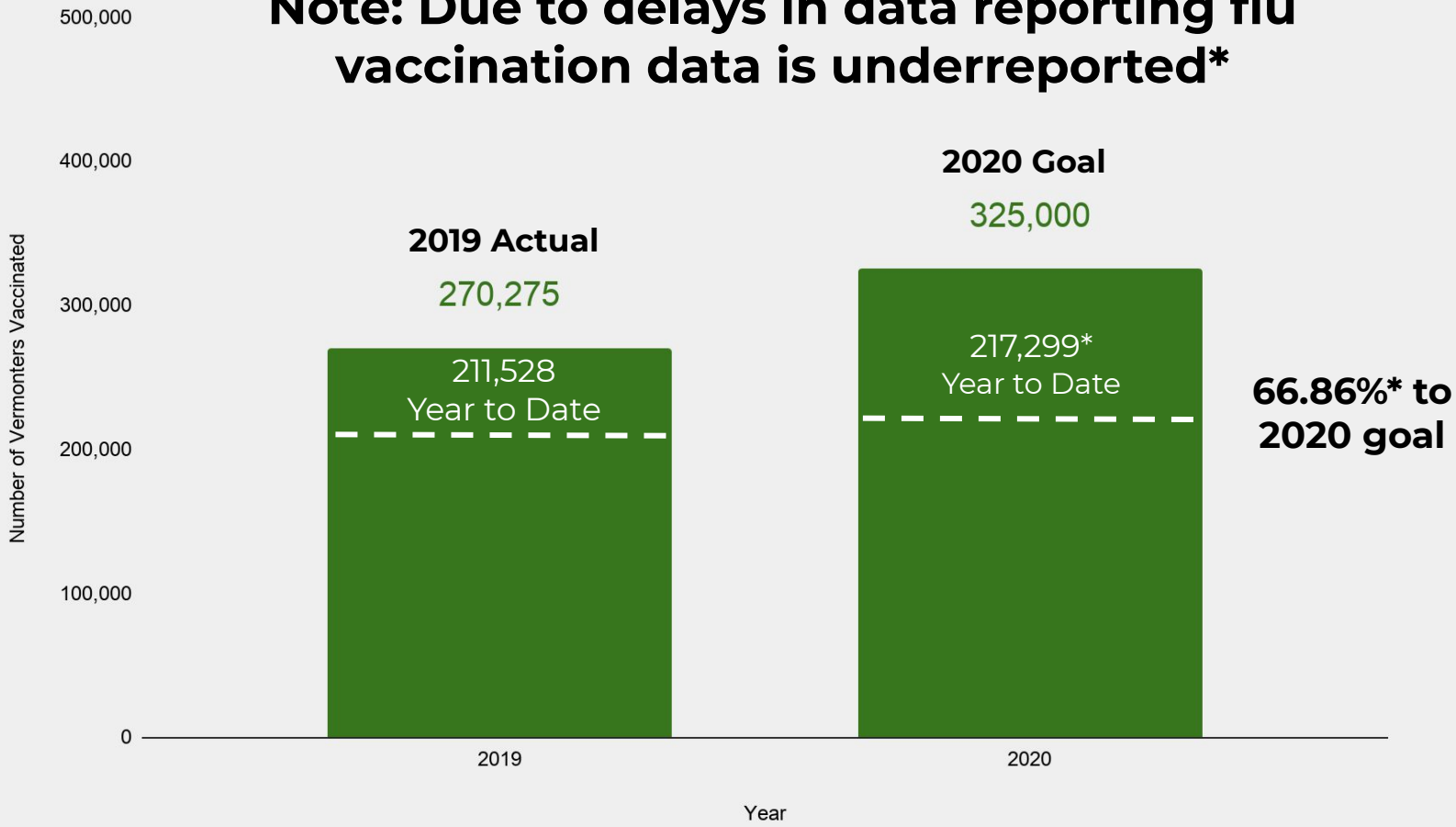
Vermont Testing



Source: Vermont Department of Health—December 1, 2020; results reported to VDH daily

Vermont Flu Vaccine Data

Note: Due to delays in data reporting flu vaccination data is underreported*



Data from UVMHN incomplete or delayed; underreported by 25-33%

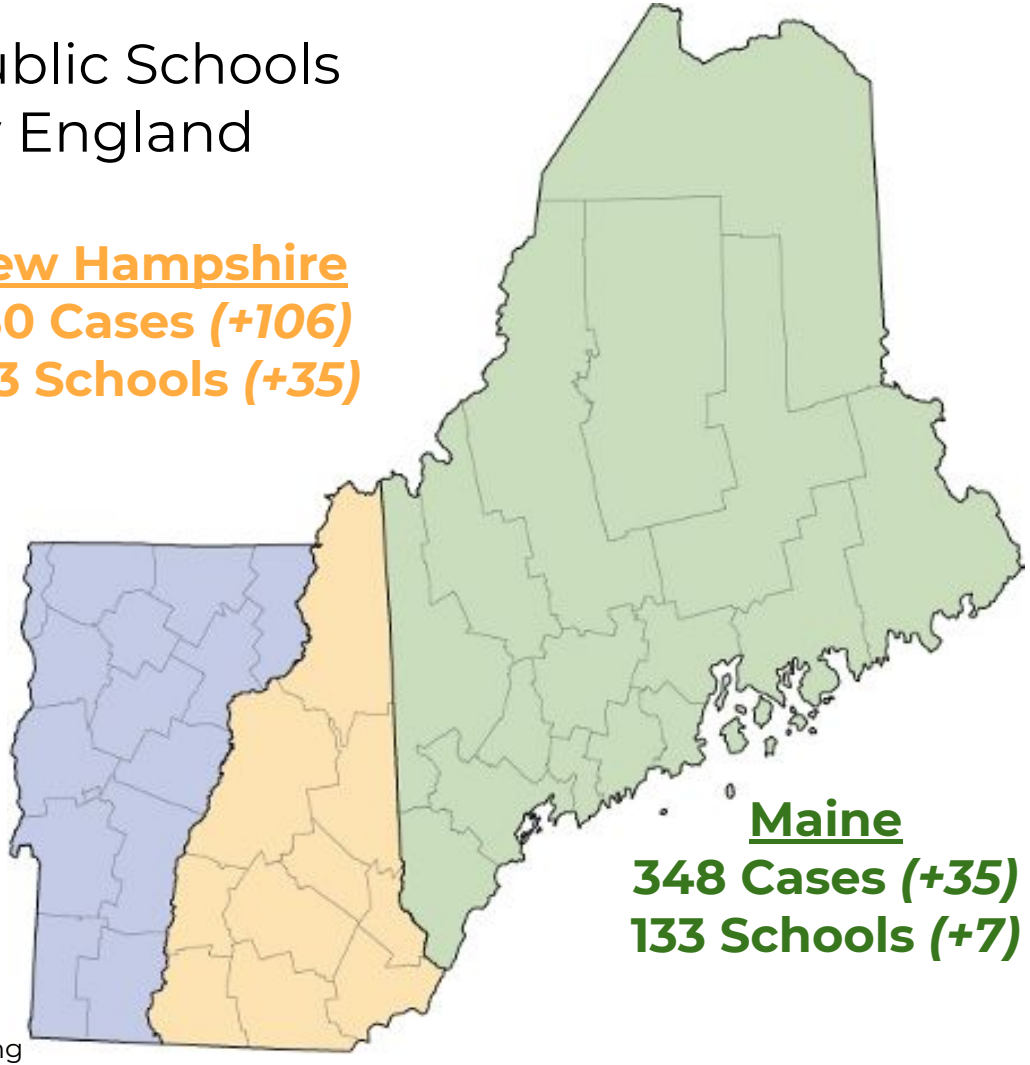
Source: Vermont Department of Health & ADS; Immunization Registry; Measured from July 1 to November 22, 2019 & 2020

K-12 & Higher Education Update

Covid-19 Cases in K-12 Public Schools Across Northern New England

New Hampshire
680 Cases *(+106)*
283 Schools *(+35)*

Vermont
128 Cases *(+18)*
84 Schools *(+10)*

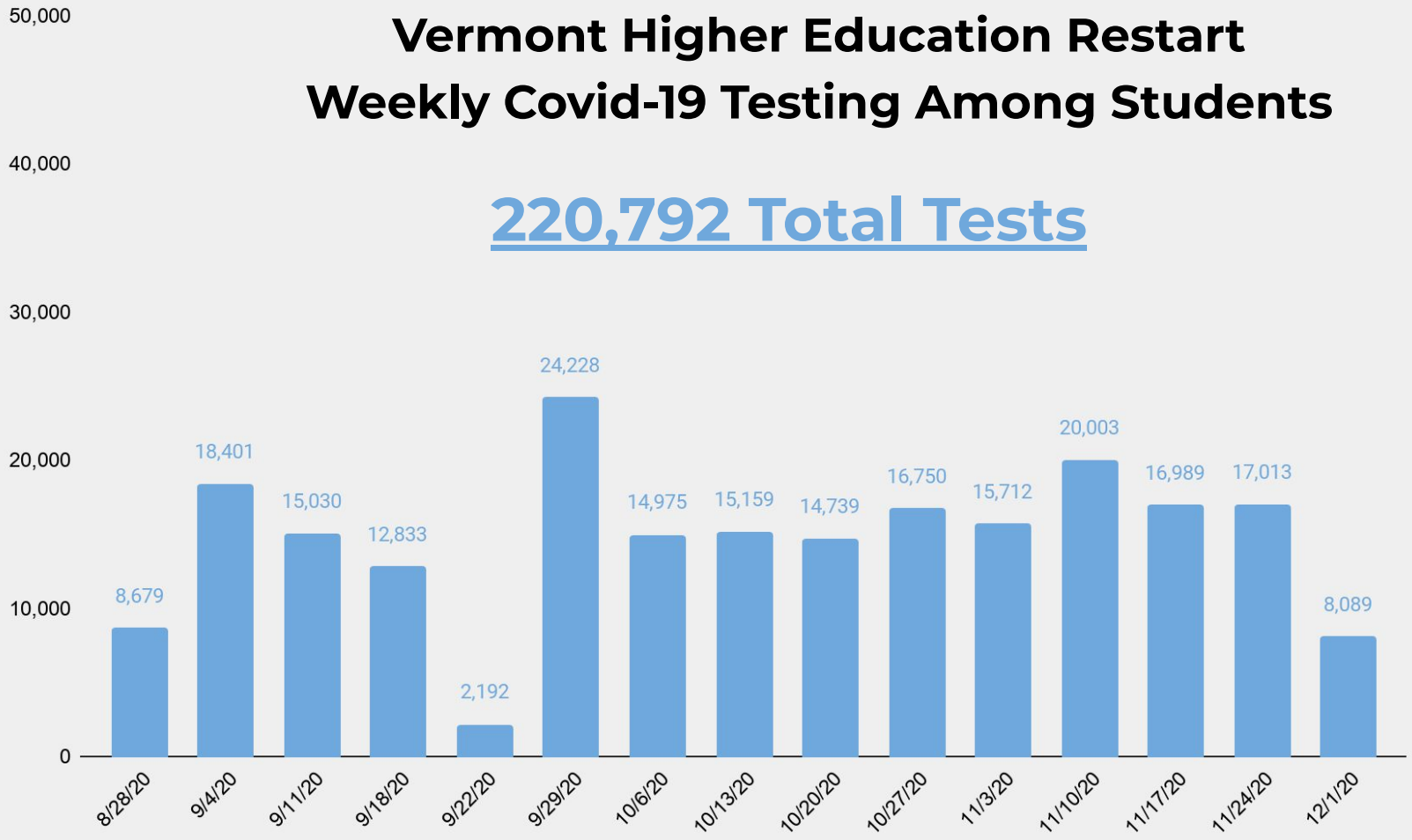


Maine
348 Cases *(+35)*
133 Schools *(+7)*

Source: VT and NH K-12 Dashboards; ME public reporting

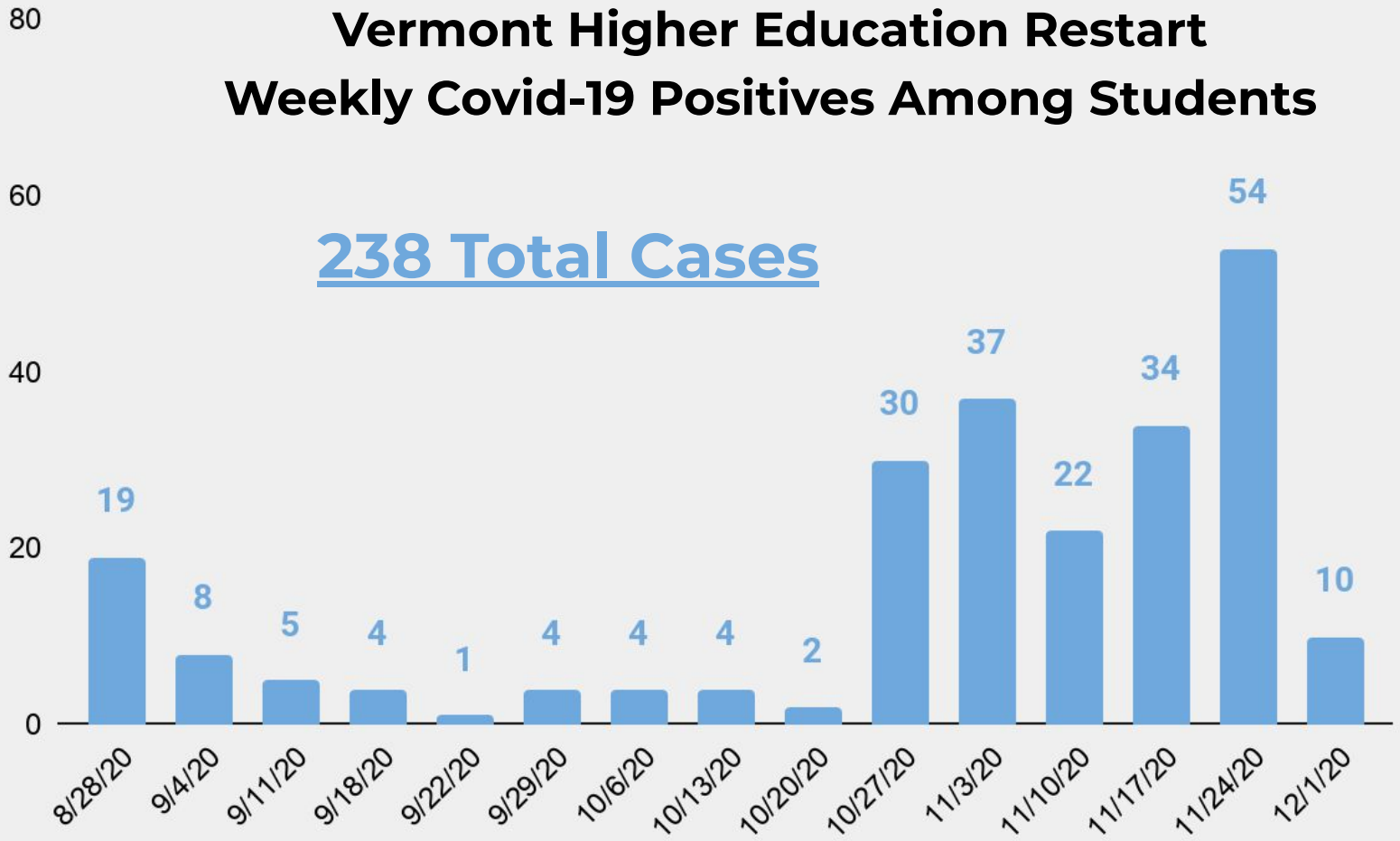
Vermont Higher Education Restart
Weekly Covid-19 Testing Among Students

220,792 Total Tests



Source: Vermont Colleges and Universities (presentation switched to Tuesday on September 22, 2020)

Vermont Higher Education Restart
Weekly Covid-19 Positives Among Students



Source: Vermont Colleges and Universities (presentation switched to Tuesday on September 22, 2020)

Northern New England Higher Education Update

	Total Tests	Positives	Positivity Rate
New Hampshire*	435,153 *+13,798*	776 *+70*	0.18%
Maine*	150,089 *+5,576*	269 *+51*	0.18%
Vermont	220,792 *+8,089*	238 *+10*	0.11%

* Includes NH & ME colleges & universities that publicly provide COVID-19 testing data.

Vermont Higher Education Restart
Institution Data as of December 1, 2020

College / University	Total Tests	Student Positives	Employee Positives	Dashboard / Public Information
Middlebury College	13,699	5	2	https://www.middlebury.edu/office/midd2021/covid-reporting-dashboard
University of Vermont	145,077	102	16	https://www.uvm.edu/returntocampus/uvm-weekly-testing-report
Norwich University	16,735	16	1	https://www.norwich.edu/news/psa
Northern Vermont University	5,331	11	1	https://www.northernvermont.edu/nvu-during-covid-19
Castleton University	1,406	3	0	https://www.castleton.edu/covid-19-coronavirus-updates/covid-19-test-results/
Vermont Technical College	561	6	1	https://www.vtc.edu/update-on-the-covid-19-coronavirus/
Saint Michael's College	9,489	79	0	https://www.smcvt.edu/return-to-campus/
Sterling College	212	0	0	https://sterlingcollege.edu/coronavirus-2019/
Champlain College	18,130	9	0	https://view.champlain.edu/champlain-college-covid-19-testing-dashboard/
Bennington College	7,434	4	0	https://www.bennington.edu/covid-19-updates-and-information
Vermont College of Fine Arts	165	0	0	Does not have a public dashboard at this time
Vermont Law School	7	0	0	Remote learning for Fall 2020 - Some students using campus facilitites
Landmark College	2,396	2	2	https://www.landmark.edu/student-life/health-counseling-wellness/covid-19/covid-19-dashboard
Albany College of Pharmacy	150	1	0	https://www.acphs.edu/health-safety
Totals	220,792	238	23	

Note: Goddard College & Community College of Vermont are remote for Fall 2020

Active Outbreaks in Long Term Care Facilities

Facility Name	**Total COVID-19 Cases**	**Change from Prior Week**
Rutland Health & Rehab, *Rutland*	54	+13
Four Seasons Care Home, *Northfield*	39	+1
Elderwood at Burlington, *Burlington*	25	new
Saint Albans Healthcare & Rehab Center, *Saint Albans*	14	new
Berlin Health & Rehab, *Berlin*	13	+6
Valley Vista, *Bradford*	8	+1
Residence at Quarry Hill, *South Burlington*	8	+5
Averill Place, *Barre*	5	+1
Total	**166**	**+66**

Source: Vermont Department of Health - November 30, 2020 (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)*