COVID-19 Modeling
March 23, 2021

Presentation available at:
dfr.vermont.gov
Vermont Vaccination Progress
By Age Band

90% of Vermont fatalities among these three age bands

% Population Vaccinated (2019 Census)

Age Group

- 16-29: 10.89% Fully Vaccinated, 7.54% Partially Vaccinated
- 30-39: 20.11% Fully Vaccinated, 14.17% Partially Vaccinated
- 40-49: 20.67% Fully Vaccinated, 13.94% Partially Vaccinated
- 50-59: 21.13% Fully Vaccinated, 12.92% Partially Vaccinated
- 60-64: 23.89% Fully Vaccinated, 12.20% Partially Vaccinated
- 65-69: 66.26% Fully Vaccinated, 9.44% Partially Vaccinated
- 70-74: 85.83% Fully Vaccinated, 24.78% Partially Vaccinated
- 75+: 85.59% Fully Vaccinated, 66.37% Partially Vaccinated

Source: Vermont Dept. of Health—March 23, 2021
New Daily Doses Administered

COVID-19 Vaccinations in Vermont

Source: Vermont Department of Health — March 22, 2021
Vermont Ranks 2\textsuperscript{nd} Nationally with 81.6\% of 65+ Partially or Fully Vaccinated

Source: CDC—March 22, 2021
Percent 65+ with 1 or more doses

Source: CDC — March 21, 2021
Vermont Ranks 6th

Source: CDC—March 22, 2021
Percentage Population Fully Vaccinated

Vermont Ranks 17th Nationally

Source: CDC—March 22, 2021
Vermonters Diagnosed with COVID-19 by Week

Source: Vermont Department of Health (week calculated as Tuesday to Monday)
COVID Infections in Vermont (14-Day Average)

Over the last five weeks, cases have remained between ~100-120 per day on a 14-day average.
Falling Infections in Vermont's Long Term Care Facilities

Daily COVID infections in VT (7-Day Average)

Infections Among non-LTCF Residents
Infections Among LTCF Residents
Cases remain high statewide, but are extremely low in long term care facilities
Active Outbreaks in Long Term Care Facilities

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>Total COVID-19 Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pines Rehab and Health Center, Lyndonville</td>
<td>10</td>
</tr>
<tr>
<td>Vermont Veterans Home (2), Bennington</td>
<td>9</td>
</tr>
<tr>
<td>Franklin County Rehab Center, St. Albans City</td>
<td>Not Shown</td>
</tr>
<tr>
<td>The Pines at Rutland Center For Nursing &amp; Rehab, Rutland</td>
<td>Not Shown</td>
</tr>
</tbody>
</table>

Source: Vermont Department of Health—March 22, 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 or fewer than 5 active cases.
Age of Infection Decreases

Median age of COVID positive individuals in VT over the last 14 days. Green bars represent expanded vaccine eligibility.
Statewide Covid-19 Hospitalizations

16% Decrease Over Last 7 Days
62% Decrease Since February 8th

Source: Vermont Department of Health—March 23, 2021
Cases Among Individuals 70 & Older Leading to Hospitalization by Month

- March: 26 cases
- April: 37 cases
- May: 0 cases
- June: 4 cases
- July: 1 case
- August: 1 case
- September: 0 cases
- October: 5 cases
- November: 41 cases
- December: 26 cases
- January: 65 cases
- February: 38 cases
- March: 20 cases
Vermont Covid-19 Deaths Expected to Decrease in March

Forecasted 7—15 Deaths in March
Higher Education Restart

College Cases Equalled ~10% of all Vermont Cases

Fall 2020

<table>
<thead>
<tr>
<th>Date</th>
<th>College Weekly COVID-19 Cases</th>
<th>Non-College Weekly COVID-19 Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/22/20</td>
<td>26</td>
<td>68</td>
</tr>
<tr>
<td>9/29/20</td>
<td>23</td>
<td>55</td>
</tr>
<tr>
<td>10/6/20</td>
<td>4</td>
<td>69</td>
</tr>
<tr>
<td>10/13/20</td>
<td>4</td>
<td>115</td>
</tr>
<tr>
<td>10/20/20</td>
<td>2</td>
<td>102</td>
</tr>
<tr>
<td>10/27/20</td>
<td>30</td>
<td>204</td>
</tr>
<tr>
<td>11/3/20</td>
<td>37</td>
<td>34</td>
</tr>
<tr>
<td>11/10/20</td>
<td>22</td>
<td>598</td>
</tr>
<tr>
<td>11/17/20</td>
<td>118</td>
<td>645</td>
</tr>
<tr>
<td>11/24/20</td>
<td>34</td>
<td>840</td>
</tr>
<tr>
<td>12/1/20</td>
<td>54</td>
<td>792</td>
</tr>
<tr>
<td>12/8/20</td>
<td>91</td>
<td>866</td>
</tr>
<tr>
<td>12/15/20</td>
<td>61</td>
<td>754</td>
</tr>
<tr>
<td>12/22/20</td>
<td>84</td>
<td>642</td>
</tr>
<tr>
<td>1/5/21</td>
<td>39</td>
<td>39</td>
</tr>
<tr>
<td>1/12/21</td>
<td>40</td>
<td>863</td>
</tr>
<tr>
<td>1/19/21</td>
<td>57</td>
<td>732</td>
</tr>
<tr>
<td>1/26/21</td>
<td>118</td>
<td>732</td>
</tr>
</tbody>
</table>

Spring 2021

<table>
<thead>
<tr>
<th>Date</th>
<th>College Weekly COVID-19 Cases</th>
<th>Non-College Weekly COVID-19 Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/22/20</td>
<td>26</td>
<td>68</td>
</tr>
<tr>
<td>9/29/20</td>
<td>23</td>
<td>55</td>
</tr>
<tr>
<td>10/6/20</td>
<td>4</td>
<td>69</td>
</tr>
<tr>
<td>10/13/20</td>
<td>4</td>
<td>115</td>
</tr>
<tr>
<td>10/20/20</td>
<td>2</td>
<td>102</td>
</tr>
<tr>
<td>10/27/20</td>
<td>30</td>
<td>204</td>
</tr>
<tr>
<td>11/3/20</td>
<td>37</td>
<td>34</td>
</tr>
<tr>
<td>11/10/20</td>
<td>22</td>
<td>598</td>
</tr>
<tr>
<td>11/17/20</td>
<td>118</td>
<td>645</td>
</tr>
<tr>
<td>11/24/20</td>
<td>34</td>
<td>840</td>
</tr>
<tr>
<td>12/1/20</td>
<td>54</td>
<td>792</td>
</tr>
<tr>
<td>12/8/20</td>
<td>91</td>
<td>866</td>
</tr>
<tr>
<td>12/15/20</td>
<td>61</td>
<td>754</td>
</tr>
<tr>
<td>12/22/20</td>
<td>84</td>
<td>642</td>
</tr>
<tr>
<td>1/5/21</td>
<td>39</td>
<td>39</td>
</tr>
<tr>
<td>1/12/21</td>
<td>40</td>
<td>863</td>
</tr>
<tr>
<td>1/19/21</td>
<td>57</td>
<td>732</td>
</tr>
<tr>
<td>1/26/21</td>
<td>118</td>
<td>732</td>
</tr>
</tbody>
</table>

Source: Vermont Higher Education Institution Reporting—March 22, 2021
Orleans and Essex at +290 per 100K while Orange County at 14 per 100K
Hospital & ICU Capacity Forecasts

Vermont Hospital Forecast
- Med-Surg Beds + Covid
- Current Total Med-Surg Capacity
- Elevated Med-Surg Level
- Med-Surg Beds baseline occupancy

Vermont ICU Forecast
- ICU bed baseline occupancy
- ICU beds baseline + COVID
- Elevated ICU bed level
- Total current ICU capacity

Source: Oliver Wyman Forecast Model—March 22, 2021; GNYHA Hospital Surge framework
Vermont Forecast

Source: Johns Hopkins University Data & Oliver Wyman Forecast Model—March 22, 2021; Note: assumes current vaccine supply and no variant-specific impact
National COVID-19 Cases

+2.3% Increase
Over the Last 10 Days

-78% Decrease
Since January 11th

Source: Covid Tracking Project & CDC—March 22, 2021
National COVID-19 Hospitalizations Trending Down

6% Decrease Over the Last 10 Days

69% Decrease Since January 12th

Source: Covid Tracking Project & CDC—March 22, 2021
National COVID-19 Deaths Trending Down

24% Decrease
Over the Last 10 Days

68% Decrease
Since January 13th

Source: Covid Tracking Project; NYT & CDC—March 22, 2021
Daily COVID-19 Infections in US Regions

Calculated as a 7-day moving average. Definitions of North, Midwest, South, and West taken from the U.S. Census bureau.

- North and Midwest
- South and West
Percent Change in Weekly COVID-19 Infections

-20 -5 5 20

[Map showing the percent change in weekly COVID-19 infections across the United States.]
Regional Cases

10.85% Increase in New Cases

New Cases March 9th to March 15th

76,837

New Cases March 16th to March 22nd

84,069

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

Sources: State Health Departments & CTV National News (Quebec) (includes: CT, ME, MA, NH, NY, QC, RI & VT)
Covid-19 Cases in K-12 Schools & Colleges Across Northern New England

**Vermont**
- K-12: 846 Cases (+86)
- Higher Ed: 673 (+118)

**New Hampshire**
- K-12: 3,329 (+455)
- Higher Ed: 2,356 (+212)

**Maine**
- 2,739 Cases (+46)
- Higher Ed: 689 (+66)

Source: ME, NH & VT K-12 Dashboards, ME media reports - K-12 cases from the full school year; Higher Education cases from the Spring Semester.
National Weekly COVID-19 Infections Forecast

Calculated as the 7-day sum of new infections. 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.
Regional Positivity Rate
(7-Day Average)

Source: Covid Tracking Project (7-Day Average in CT, ME, MA, NH, NY, RI & VT)—March 22, 2021
Regional Hospitalizations

Trending Down

Source: Covid Tracking Project (7-Day Average in CT, ME, MA, NH, NY, RI & VT)—March 22, 2021
Regional Active Per Capita Case Forecast

Active Cases per Million (DFR Algorithm)

Source: Johns Hopkins University Data & Oliver Wyman Forecast Model—March 22, 2021; assumes current vaccine supply and no variant-specific impact
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—March 23, 2021
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—March 22, 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—March 22, 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%

![ICU Use & Capacity Graph](image)

Source: Vermont Department of Health—March 22, 2021