COVID-19 Modeling
November 30, 2021

Presentation available at: dfr.vermont.gov
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vermont Case Data</td>
<td>Pg. 3</td>
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<tr>
<td>Vermont Hospitalization Data</td>
<td>Pg. 34</td>
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<tr>
<td>Vermont Fatality Data</td>
<td>Pg. 40</td>
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<td>Vermont Vaccination Data</td>
<td>Pg. 44</td>
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<tr>
<td>Regional Data</td>
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<td>National Data</td>
<td>Pg. 58</td>
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<tr>
<td>Restart Vermont</td>
<td>Pg. 64</td>
</tr>
</tbody>
</table>
Vermont Case Data
Vermont cases have **decreased 12%** over last 7 days & **decreased 16%** over last 14 days

50,000 Confirmed COVID-19 Cases in Vermont

**Note:** decreases in cases linked to reduced testing over Thanksgiving holiday & weekend

Source: Vermont Dept. of Health—November 30, 2021; created with Datawrapper
Week-over-week testing decreased due to the Thanksgiving holiday, with the 7-day average decreasing 32% this week.
Vermont Test Positivity: Delta Wave

Source: VDH—November 30, 2021; created with Datawrapper
Vermont Case Growth Metrics

12% Decrease
Over last 7 days

32% Decrease
Over last 7 days

23% Increase
Over last 7 days

Source: VDH—November 30, 2021; created with Datawrapper
The not fully vaccinated case rate has **decreased 9%** in the last 7 days.

The fully vaccinated rate has **decreased 10%** during the same period.

Source: Vermont Dept. of Health and CDC—November 29, 2021
Those **Not Fully Vaccinated** were **13.5x more** likely to require hospitalization in November compared to those who are **Fully Vaccinated & Boosted**.
Comparing Fall COVID-19 Cases to Deaths

Vermont COVID-19 Cases by Month

- Sep 2021: 5,383
- Oct: 6,601
- Nov: 9,771

Vermont COVID-19 Deaths By Month

- Sep 2021: 50
- Oct: 46
- Nov: 34

Source: VDH—November 30, 2021; Created with Datawrapper
Vermont reported 407 fewer cases this week compared to last week.

Note: decreases in cases linked to reduced testing over Thanksgiving holiday & weekend.
Over the last 7 days, cases have:

- **Decreased 22%** for ages 0 to 24
- **Decreased 12%** for ages 25 to 49
- **Decreased 10%** for ages 50 to 64
- **Decreased 15%** for ages 65+

*Note: decreases in cases linked to reduced testing over Thanksgiving holiday & weekend*
Vermont COVID-19 Cases Fall 2020 vs. Fall 2021

Source: Vermont Dept. of Health—November 30, 2021; created with Datawrapper
New COVID-19 Cases in Quebec, Canada

Sources: CTV National News (Quebec)—November 30, 2021; created with Datawrapper
Average Age of Covid-19 Outcomes by Vaccination Status
July-Present

Infections

<table>
<thead>
<tr>
<th>Vaccination Status</th>
<th>Average Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fully Vaccinated</td>
<td>47.4</td>
</tr>
<tr>
<td>Not Fully Vaccinated</td>
<td>27.1</td>
</tr>
</tbody>
</table>

Hospitalizations

<table>
<thead>
<tr>
<th>Vaccination Status</th>
<th>Average Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fully Vaccinated</td>
<td>70.3</td>
</tr>
<tr>
<td>Not Fully Vaccinated</td>
<td>55.7</td>
</tr>
</tbody>
</table>

Fatalities

<table>
<thead>
<tr>
<th>Vaccination Status</th>
<th>Average Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fully Vaccinated</td>
<td>81.5</td>
</tr>
<tr>
<td>Not Fully Vaccinated</td>
<td>70.4</td>
</tr>
</tbody>
</table>

Source: VDH—Vaccination data from July 1 to November 29, 2021; created with Datawrapper
Vermont had the 21st-highest rate of New COVID-19 cases over the last week.
Vermont had the highest rate of COVID-19 testing over the last week.
Active Cases in Vermont Counties

Active Cases per Million

Source: JHU—November 30, 2021; DFR Active Case Algorithm (per million)
VT COVID-19 Infection Confidence Intervals

Calculated as a 7-day mean. Inner and outer bands represent 50% and 95% confidence intervals, respectively.

Vermont COVID-19 cases not expected to decrease over next 4 weeks

Impact of Thanksgiving gatherings brings uncertainty

Source: CDC—November 30, 2021
VT COVID-19 Death Confidence Intervals

Calculated as a 7-day mean. Inner and outer bands represent 50% and 95% confidence intervals, respectively.

Vermont COVID-19 fatalities not expected to decrease over next 4 weeks

Source: CDC—November 29, 2021
Age of Infected Vermonters

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

Source: VDH—November 30, 2021
Vermont Covid-19 Case Rates by Age (7-Day Average)

Source: VDH—November 29; created with Datawrapper
Vermont Case Rate By Age (7-Day Average)

Source: VDH—November 29, 2021; created with Datawrapper
Median Age of VT Breakthrough Infections by Month

<table>
<thead>
<tr>
<th>Month</th>
<th>Median Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jul 2021</td>
<td>45</td>
</tr>
<tr>
<td>Aug</td>
<td>49</td>
</tr>
<tr>
<td>Sep</td>
<td>49</td>
</tr>
<tr>
<td>Oct</td>
<td>48</td>
</tr>
<tr>
<td>Nov</td>
<td>45</td>
</tr>
</tbody>
</table>

Source: Vermont Dept. of Health—November 29, 2021; created with Datawrapper
Vermont Case Rate & Vaccination by Age Band

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

**Ages 16 to 29**

**Ages 30 to 39**

**Ages 40 to 49**

**Ages 50 to 59**

**Ages 60 to 64**

**Ages 65 to 69**

**Ages 70 to 74**

**Ages 75+**

Source: VDH—November 29, 2021
Vermont Case Rate & Vaccination by Age Band

Source: VDH—November 29, 2021
Case rates dropped in **10 of 14** counties this week.

Thanksgiving holiday may create reporting delays or changes in testing demand.
### Fall 2021 Higher Education Restart

<table>
<thead>
<tr>
<th>Higher Education Institutions Reporting</th>
<th>Enrollment</th>
<th>Students Fully Vaccinated</th>
<th>Students Not Fully Vaccinated (No Exemption Granted)</th>
<th>Students with Unknown Vaccine Status</th>
<th>Students Granted Vaccine Mandate Exemption</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 of 16</td>
<td>28,586</td>
<td>27,201</td>
<td>255</td>
<td>445</td>
<td>685</td>
</tr>
<tr>
<td></td>
<td></td>
<td>95.2%</td>
<td>0.9%</td>
<td>1.6%</td>
<td>2.4%</td>
</tr>
</tbody>
</table>

**Week 1:** 37 cases out of 12,623 tests  
**Week 2:** 36 cases out of 7,434 tests  
**Week 3:** 43 cases out of 3,053 tests  
**Week 4:** 65 cases out of 6,497 tests  
**Week 5:** 36 cases out of 4,878 tests  
**Week 6:** 19 cases out of 4,516 tests  
**Week 7:** 27 cases out of 3,536 tests  

**Week 8:** 63 cases out of 3,668 tests  
**Week 9:** 65 cases out of 4,398 tests  
**Week 10:** 53 cases out of 4,575 tests  
**Week 11:** 132 cases out of 8,404 tests  
**Week 12:** 60 cases out of 6,048 tests  
**Week 13:** 55 cases out of 6,029 tests  
**Week 14:** 17 cases out of 2,066 tests

Source: Vermont Higher Education Institutions—November 29, 2021
Vermont Higher Education Cases By Semester

Source: Vermont Higher Education Institutions—November 29, 2021—Created with Datawrapper; * During the Fall 2020 semester Week 1 started later than Spring and Fall 2021 and therefore reached Thanksgiving Break by Week 11.
### 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>Crescent Manor Nursing Home &amp; Rehab, Bennington</td>
<td>71</td>
</tr>
<tr>
<td>Harbor Village Senior Living, South Burlington</td>
<td>22</td>
</tr>
<tr>
<td>The Pines at Rutland Center for Nursing &amp; Rehab</td>
<td>22</td>
</tr>
<tr>
<td>Margaret Pratt, Bradford</td>
<td>13</td>
</tr>
<tr>
<td>Vermont Veterans’ Home, Bennington</td>
<td>12</td>
</tr>
<tr>
<td>Union House Nursing Home, Glover</td>
<td>12</td>
</tr>
<tr>
<td>Valley Vista, Bradford</td>
<td>12</td>
</tr>
<tr>
<td>The Meadows, Rutland</td>
<td>10</td>
</tr>
<tr>
<td>The Residence at Quarry Hill, South Burlington</td>
<td>9</td>
</tr>
<tr>
<td>Centers for Living &amp; Rehabilitation</td>
<td>8</td>
</tr>
<tr>
<td>Helen Porter Rehabilitation and Nursing, Middlebury</td>
<td>8</td>
</tr>
<tr>
<td>LTCF B</td>
<td>8</td>
</tr>
<tr>
<td>Maple Lane Nursing Home, Barton</td>
<td>6</td>
</tr>
<tr>
<td>Barre Gardens</td>
<td>6</td>
</tr>
<tr>
<td>Elderwood at Burlington</td>
<td>Not Shown</td>
</tr>
<tr>
<td>Our House, Rutland</td>
<td>Not Shown</td>
</tr>
<tr>
<td>LTCF A</td>
<td>Not Shown</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>219</strong></td>
</tr>
</tbody>
</table>

Source: Vermont Department of Health—November 30, 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
Vermont LTCF COVID-19 Cases During Delta Wave

Vermont LTCF cases have **decreased 57%** over last 7 days & **decreased 81%** over last 14 days

*Note: decreases in cases may be linked to reduced testing over Thanksgiving holiday & weekend*
Vermont Hospitalization Data
Statewide Covid-19 Hospitalizations

12% increase in the 7-Day hospitalization average over the past week

71% of hospitalizations among the unvaccinated over the last 7 days

Source: Vermont Department of Health—November 30, 2021
31% Increase in the 7-Day ICU average Over the past week

81% of critical care stays among the unvaccinated over the last 7 days

Source: Vermont Department of Health—November 30, 2021
Vermont ICU Metrics
(7-Day Averages)

32% Decrease
Over last 7 days

24% Increase
Over last 7 days

2% Decrease
Over last 7 days

ICU Beds Available

COVID-19 ICU Beds Occupied

Non-COVID-19 ICU Beds Occupied
Vermont ranks 24th in COVID-19 new hospital admissions in the country over the last week.
Vermont Fatality Data
Weekly Covid-19 Deaths In Vermont

Source: Vermont Department of Health—November 30, 2021 (reporting week ending Tuesday to Monday)
410 COVID-19 Deaths Since the Start of the Pandemic
Vermont had the 10th-fewest COVID-19 deaths per capita over the last week.

Source: CDC—November 29, 2021; Created with Datawrapper
Vermont Vaccination Data
<table>
<thead>
<tr>
<th>Metric</th>
<th>Figure</th>
<th>State Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doses Administered per 100K</td>
<td>179,334</td>
<td>1</td>
</tr>
<tr>
<td>% At Least 1 Dose (5+ Population)</td>
<td>89.6%</td>
<td>3</td>
</tr>
<tr>
<td>% Fully Vaccinated (5+ Population)</td>
<td>76.4%</td>
<td>1 (tied)</td>
</tr>
<tr>
<td>% At Least 1 Dose (Full Population)</td>
<td>85.4%</td>
<td>3</td>
</tr>
<tr>
<td>% Fully Vaccinated (Full Population)</td>
<td>72.9%</td>
<td>1</td>
</tr>
<tr>
<td>% Fully Vaccinated (65 &amp; Over)</td>
<td>98.9%</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: CDC—November 29, 2021
Vermont leads the nation with the percentage of 5 to 11 year olds starting vaccination.

Source: CDC—November 29, 2021
Vermont Vaccination Progress

By Age Band

- Partially Vaccinated
- Fully Vaccinated

% Population Vaccinated (2019 Census)

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Partially Vaccinated</th>
<th>Fully Vaccinated</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-11</td>
<td>39.71%</td>
<td>99.40%</td>
</tr>
<tr>
<td>12-15</td>
<td>71.63%</td>
<td>100.00%</td>
</tr>
<tr>
<td>16-17</td>
<td>74.13%</td>
<td>100.00%</td>
</tr>
<tr>
<td>18-21</td>
<td>51.03%</td>
<td>99.40%</td>
</tr>
<tr>
<td>22-29</td>
<td>63.15%</td>
<td>99.40%</td>
</tr>
<tr>
<td>30-39</td>
<td>79.48%</td>
<td>99.40%</td>
</tr>
<tr>
<td>40-49</td>
<td>80.01%</td>
<td>99.40%</td>
</tr>
<tr>
<td>50-59</td>
<td>82.72%</td>
<td>99.40%</td>
</tr>
<tr>
<td>60-64</td>
<td>88.95%</td>
<td>100.00%</td>
</tr>
<tr>
<td>65-69</td>
<td>95.25%</td>
<td>100.00%</td>
</tr>
<tr>
<td>70-74</td>
<td>96.35%</td>
<td>100.00%</td>
</tr>
<tr>
<td>75+</td>
<td>95.63%</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

Source: Vermont Dept. of Health—November 29, 2021; *based on 2019 census estimates; state data may differ from CDC reporting
## Vermont CDC Booster Scorecard

<table>
<thead>
<tr>
<th>Metric</th>
<th>Figure</th>
<th>State Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of Fully Vaccinated w/ booster dose</td>
<td>34.7%</td>
<td>1</td>
</tr>
<tr>
<td>% of Fully vaccinated 18+ w/ booster doses</td>
<td>37.2%</td>
<td>1</td>
</tr>
<tr>
<td>% of Fully vaccinated 50+ w/ booster doses</td>
<td>50.0%</td>
<td>1</td>
</tr>
<tr>
<td>% of Fully vaccinated 65+ w/ booster doses</td>
<td>63.9%</td>
<td>1</td>
</tr>
</tbody>
</table>
Regional Data
Northeast Regional Cases

11.5% Decrease in New Cases
Note: Normal Testing & Reporting Disrupted By Thanksgiving Holiday

New Cases November 16th to November 22nd

New Cases November 23rd to November 29th

Sources: State Health Dept. & CTV National News (Quebec)
Weekly Northeast Regional Cases

Note: Normal Testing & Reporting Disrupted By Thanksgiving Holiday

Sources: State Health Depts.—November 29, 2021 (includes: CT, ME, MA, NH, NY, QC, RI & VT)
New England hospitalizations increased 15% over last 7 days & increased 38% over last 14 days
New England COVID-19 Cases Per 100K (7-Day Average)

- New England cases **decreased 7%** over last 7 days & **increased 18%** over last 14 days

*Note: Normal Testing & Reporting Disrupted By Thanksgiving Holiday*

Sources: State Health Depts.—November 29, 2021 (includes: CT, ME, MA, NH, RI & VT)
New England COVID-19 Case Trends

7-Day Average Cases Per 100K

- Massachusetts
- Connecticut
- Rhode Island
- Maine
- New Hampshire
- Vermont

Note: Normal Testing & Reporting Disrupted By Thanksgiving Holiday

Sources: State Health Depts.—November 22, 2021 (includes: CT, ME, MA, NH, RI & VT)
Northern vs. Southern New England Case Rate Per 100K

Note: Normal Testing & Reporting Disrupted By Thanksgiving Holiday

Sources: State Health Depts.—November 29, 2021 (Northern NE includes: ME, NH & VT & Southern NE includes: CT, MA & RI)
National Data
U.S. Infections, Hospitalizations, & Deaths

Note: Normal Testing & Reporting Disrupted By Thanksgiving Holiday

23.4% Decrease
Over last 7 days

4.6% Increase
Over last 7 days

28.8% Decrease
Over last 7 days

Infections
(7-Day Average)

Hospitalizations
(7-Day Average)

Deaths
(7-Day Average)

Source: New York Times—November 29, 2021; created with Datawrapper
Infections, Hospitalizations, & Deaths by Percentage of State Population Vaccinated

Source: Covid Act Now—November 30, 2021; 7-day averages; created with Datawrapper
Daily COVID-19 Cases per Million in US Regions

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

Source: JHU—November 30, 2021; 7-day averages; created with Datawrapper
US COVID-19 Infection Confidence Intervals

Calculated as a 7-day mean. Inner and outer bands represent 50% and 95% confidence intervals, respectively.

Source: CDC—November 30, 2021
US COVID-19 Death Confidence Intervals

Calculated as a 7-day mean. Inner and outer bands represent 50% and 95% confidence intervals, respectively.

Source: CDC—November 30, 2021
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
5. Testing Volume
Viral Growth & Reproductive Rates

Vermont Coronavirus Growth Rate

- Rolling 3-Day Avg % Growth
- Rolling 7-Day Avg % Growth

Source: Vermont Department of Health
Source: Vermont Department of Health; 7-day positivity calculated as positive tests last seven days/tests last seven days.
Vermont COVID-19 Testing

Source: Vermont Department of Health; results reported to VDH daily