COVID-19 Modeling
August 31, 2021

Presentation available at: dfr.vermont.gov
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Change in National Weekly Case Growth

Source: CDC, NYT, & Covid Tracking Project
Change in Northeast Regional Weekly Case Growth

Source: State Health Departments & CTV National News (Quebec)
COVID-19 $R_t$ in Vermont

Source: Covidestim—Covid-19 Nowcasting—August 30, 2021
Estimated vs Detected COVID-19 Cases in Vermont

This figure shows the number of cases as well as an estimate of the true number of infections.

Source: Covidestim—Covid-19 Nowcasting—August 30, 2021
Vermont Case Data
Vermonters Diagnosed with COVID-19 by Week

Source: Vermont Department of Health (week calculated as Tuesday to Monday)
Testing increased **54%** over last week

(17.5% increase excluding UVM day 0 testing)

Source: Vermont Dept. of Health—August 30, 2021
Vermont Weekly Positivity Rate

Weekly Positivity Rate Fell With Increased Testing

Source: Vermont Dept. of Health—August 30, 2021
Change in Vermont Weekly Case Growth

Source: Vermont Dept. of Health (Tuesday to Monday)
Vermont Case Growth Trends

Daily growth rate change in Vermont's 14-day case average

Source: Vermont Dept. of Health—August 30, 2021
The unvaccinated case rate has increased 40% in the last 14 days.

The vaccinated rate has increased 30% in the same period.

Source: Vermont Dept. of Health and CDC—August 30, 2021
Since early July, hospitalizations among those not fully vaccinated have been 6x higher than among those fully vaccinated.
Covid-19 Among Fully Vaccinated People in Vermont

- 423,508 fully vaccinated
- 1,550 tested positive (0.36%)
- 36 hospitalized for Covid-19 (0.009%)
- 13 died due to Covid-19 (0.003%)

This square is proportional to vaccinated Vermonters’ Covid-19 outcomes

100x magnification

Source: Vermont Department of Health and CDC; percentages calculated using CDC total fully vaccinated; data from January 1, 2021 to August 28, 2021; magnification 100x areal/10x linear
Infections, Hospitalizations, & Deaths by Percentage of State Population Vaccinated

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

Source: Covid Act Now—August 23, 2021; Measures last 14 days; 16 states <40%, 17 states 40-60%, 20 states 60%+ vaccination
Age of Infected Vermonters

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

Source: VDH—August 31, 2021
Vermont Case Rate & Vaccination by Age Band

Source: VDH—August 24, 2021
Vermont Case Rates By Age (7-Day Average)

- 0 to 11 Year Old Case Rate
- Over 12 Year Old Case Rate

Source: VDH—August 30, 2021
Covid-19 case rates generally increased this past week.

Washington County seeing highest case rates in Vermont.
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).

Source: VDH & DFR Active Case Algorithm — August 31, 2021
## 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>14 (of 16)</td>
<td>25,350</td>
<td>23,404</td>
<td>769</td>
<td>764</td>
<td>413</td>
</tr>
<tr>
<td></td>
<td>92.3%</td>
<td>3.0%</td>
<td>3.0%</td>
<td>1.6%</td>
<td></td>
</tr>
</tbody>
</table>

**Week Number 1:** 32 positive cases out of 10,347 tests
## 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>Cedar Hill Skilled Nursing Facility, <em>Windsor</em></td>
<td>29</td>
</tr>
<tr>
<td>Maple Lane Nursing Home, <em>Barton</em></td>
<td>24</td>
</tr>
<tr>
<td>Ethan Allen Residence, <em>Burlington</em></td>
<td>24</td>
</tr>
<tr>
<td>Maple Ridge Memory Care, <em>Essex Junction</em></td>
<td>14</td>
</tr>
<tr>
<td>Vermont Veterans Home, <em>Bennington</em></td>
<td>13</td>
</tr>
<tr>
<td>Harbor Village, <em>Burlington</em></td>
<td>Not Shown*</td>
</tr>
<tr>
<td>Mansfield Place, <em>Essex</em></td>
<td>Not Shown*</td>
</tr>
<tr>
<td><strong>Total (of facilities shown)</strong></td>
<td><strong>104</strong></td>
</tr>
</tbody>
</table>

Source: Vermont Department of Health—August 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
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: CDC Ensemble Model—August 23, 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: CDC Ensemble Model—August 30, 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: CDC Ensemble Model—August 30, 2021
Vermont Hospitalization Data
Statewide Covid-19 Hospitalizations

Hospitalization rate increasing, but Vermont continues to have fewest hospitalizations per capita nationally

On average, 72% of all recent hospitalizations among the unvaccinated

Source: Vermont Department of Health—August 30, 2021
On average, 56% of all recent critical care stays among the unvaccinated.
New Hospitalizations per 100,000 Residents, by Age

Source: US Dept. of Health & Human Services; 7-day average
Vermont Fatality Data
Weekly Covid-19 Deaths In Vermont

Source: Vermont Department of Health—August 30, 2021 (week ending)
Monthly Covid-19 Deaths In Vermont

Deaths & Cases in August

<table>
<thead>
<tr>
<th>Age Band</th>
<th>Deaths</th>
<th>Total Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-18:</td>
<td>0</td>
<td>730</td>
</tr>
<tr>
<td>19-49:</td>
<td>2</td>
<td>1,493</td>
</tr>
<tr>
<td>50-69:</td>
<td>6</td>
<td>685</td>
</tr>
<tr>
<td>70+:</td>
<td>8</td>
<td>297</td>
</tr>
</tbody>
</table>

Source: Vermont Department of Health—August 30, 2021; deaths attributed to month in which death occurred rather than reported.
Revised Vermont forecast predicting 15 to 18 total deaths in August

Source: Vermont Department of Health (revised up from 0 to 6 deaths at the start of August)
Highly vaccinated Northeast states have among the lowest fatality rates in August.
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 30, 2021
Vermont Vaccination Data
Vermont Vaccination

86.1% Of Eligible Vermonters Have Started Vaccination

+2,761 Since Last Week

474,467 Vermonters with at Least 1 Dose

76,483 Eligible Vermonters still to be vaccinated

Source: CDC—August 30, 2021
<table>
<thead>
<tr>
<th>Metric</th>
<th>Figure</th>
<th>State Ranking</th>
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</thead>
<tbody>
<tr>
<td>Doses Administered per 100K</td>
<td>139,976</td>
<td>1</td>
</tr>
<tr>
<td>% At Least 1 Dose (Eligible Population)</td>
<td>86.1%</td>
<td>2</td>
</tr>
<tr>
<td>% Fully Vaccinated (Eligible Population)</td>
<td>76.9%</td>
<td>1</td>
</tr>
<tr>
<td>% At Least 1 Dose (Full Population)</td>
<td>76.1%</td>
<td>1</td>
</tr>
<tr>
<td>% Fully Vaccinated (Full Population)</td>
<td>67.9%</td>
<td>1</td>
</tr>
<tr>
<td>% Fully Vaccinated (65 &amp; Over)</td>
<td>94.4%</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: CDC—August 30, 2021
Vermont is 1st in the Country in Vaccines Administered Per 100K

Source: CDC—August 30, 2021
86.1% of Eligible Vermonters Have Started Vaccination, Placing Vermont 2nd Nationally

Source: CDC—August 30, 2021
76.9% of Eligible Vermonters Are Fully Vaccinated, Placing Vermont 1st Nationally

Source: CDC—August 30, 2021
76.1% of Vermonters Have Started Vaccination, Placing Vermont 1st Nationally

Source: CDC—August 30, 2021
67.9% of Vermonters Fully Vaccinated, Placing Vermont 1st Nationally

Source: CDC—August 30, 2021
94.4% of 65 & Over Vermonters Fully Vaccinated, Placing Vermont 1st Nationally

Source: CDC—August 30, 2021
Vermonters initiating vaccination decreased 11% in the last week.
Vermont first state to reach 75%
Vermont Vaccination Progress
By Age Band

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Partially Vaccinated</th>
<th>Fully Vaccinated</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-15</td>
<td>70.68%</td>
<td>8.67%</td>
</tr>
<tr>
<td>16-17</td>
<td>75.76%</td>
<td>7.06%</td>
</tr>
<tr>
<td>18-21</td>
<td>52.93%</td>
<td>52.93%</td>
</tr>
<tr>
<td>22-29</td>
<td>65.16%</td>
<td>7.35%</td>
</tr>
<tr>
<td>30-39</td>
<td>81.48%</td>
<td>7.96%</td>
</tr>
<tr>
<td>40-49</td>
<td>81.28%</td>
<td>6.61%</td>
</tr>
<tr>
<td>50-59</td>
<td>84.25%</td>
<td>5.55%</td>
</tr>
<tr>
<td>60-64</td>
<td>90.27%</td>
<td>5.42%</td>
</tr>
<tr>
<td>65-69</td>
<td>96.18%</td>
<td>5.36%</td>
</tr>
<tr>
<td>70-74</td>
<td>100%*</td>
<td>3.29%</td>
</tr>
<tr>
<td>75+</td>
<td>96.72%</td>
<td>3.54%</td>
</tr>
</tbody>
</table>

Source: Vermont Dept. of Health—August 31, 2021; *based on 2019 census estimates; state data may differ from CDC reporting
Regional Data
Regional Cases

10.4% Increase in New Cases

New Cases August 17th to August 23rd

- Vermont: 794
- Maine: 1,136
- Rhode Island: 2,038
- New Hampshire: 1,895
- Quebec: 3,124
- Connecticut: 3,993
- Massachusetts: 9,574
- New York: 31,420

Total: 53,974

New Cases August 23rd to August 30th

- Vermont: 968
- Maine: 1,724
- Rhode Island: 2,130
- New Hampshire: 2,352
- Quebec: 3,679
- Connecticut: 4,659
- Massachusetts: 10,941
- New York: 33,143

Total: 59,596

Sources: State Health Departments & CTV National News (Quebec)
National Data
National COVID-19 Cases

+4.1% Increase
Over the last 7 days

156,806
7-Day Average

Source: Covid Tracking Project; NYT & CDC—August 30, 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.
National COVID-19 Hospitalizations

+6.4% Increase Over the last 7 days

100,357 7-Day Average

Source: Covid Tracking Project; NYT & CDC—August 30, 2021
Vermont has among the lowest percentage of hospital beds in use for Covid-19 in US

Source: HHS—August 30, 2021
National COVID-19 Deaths

+22.3% Increase
Over the last 7 days

1,296
7-Day Average

Source: Covid Tracking Project; NYT & CDC—August 30, 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.
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.
Percentage of New Positive Tests

Source: Vermont Department of Health
Hospital & Critical Care Beds

ICU Use & Capacity

- Open ICU Buffer
- COVID ICU
- non-COVID ICU

% of ICU

Source: Vermont Department of Health
7-Day Rolling Test Average