COVID-19 Modeling
December 15, 2020

Presentation available at: dfr.vermont.gov
300,000+ Deaths
In the United States

First 50,000 Deaths ~55 Days
Second 50,000 Deaths ~30 Days
Third 50,000 Deaths ~66 Days
Fourth 50,000 Deaths ~55 Days
Fifth 50,000 Deaths ~61 Days
Sixth 50,000 Deaths ~23 Days

Source: Covid Tracking Project, December 14, 2020
COVID-19 Deaths by Week In Vermont

100 Deaths

Source: Johns Hopkins University (Deaths as reported by week calculated as Wednesday to Tuesday)
Memorial Day
Fourth of July
Labor Day
Indigenous Peoples Day
Thanksgiving

Out-of-State Visitors to Vermont 2019 vs 2020
Estimate of visitors uses 7-day average # of mobile devices from out of state.

12/10/2020
Chart: State of Vermont - Source: Safegraph - Created with Datamapper
Vermont was the third least mobile state in the country when measured in terms of travel into the state during the week of Thanksgiving.
Thanksgiving Surge

7 Days

7 to 19 Days

8.25% Increase

Daily Case Count

7 Day Moving Average
<table>
<thead>
<tr>
<th>State</th>
<th>Percent Increase Between 12/3 to 12/14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maine</td>
<td>99.97%</td>
</tr>
<tr>
<td>California</td>
<td>90.60%</td>
</tr>
<tr>
<td>Virginia</td>
<td>72.12%</td>
</tr>
<tr>
<td>South Carolina</td>
<td>65.38%</td>
</tr>
<tr>
<td>Georgia</td>
<td>56.58%</td>
</tr>
</tbody>
</table>

Source: Johns Hopkins University
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

Source: Oliver Wyman Active Case Estimate - December 14, 2020
Forecasted 70% increase in new cases over the next three weeks
Regional Case Growth

5.94% Increase in New Confirmed Cases

Positive Cases Dec. 1st to Dec. 7th

New Cases Last 7 Days

Vermont: 722
Maine: 2033
New Hampshire: 5018
Rhode Island: 9220
Quebec: 10805
Connecticut: 18549
Massachusetts: 31693
New York: 65148

Positive Cases Dec. 8th to Dec. 14th

New Cases Last 7 Days

Vermont: 771
Maine: 2581
New Hampshire: 5806
Rhode Island: 7830
Quebec: 12359
Connecticut: 18148
Massachusetts: 33124
New York: 71075

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)
Regional Heat Map

Northeast Case Growth By Week Since October 12, 2020

Sources: State Health Departments & CTV National News (Quebec)
COVID-19 Hospitalizations in US

Source: Covid Tracking Project, December 14, 2020
U.S. Covid-19 Deaths

Daily COVID-19 Deaths in US (7-Day Average)

Source: Covid Tracking Project, December 14, 2020
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 15, 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 15, 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
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 15, 2020*
Vermont ICU Capacity Forecast

Forecasts Assume 3% ICU Rate

- ICU (7-day Avg)
- Projected ICU (7-day Avg)
- In-Hospital ICU Capacity (7-day Avg)
- Anticipated ICU Capacity

Source: Oliver Wyman Forecast Model - December 15, 2020
Drop following Thanksgiving &
campus closures

Source: Vermont Department of Health—December 15, 2020; results reported to VDH daily
Covid-19 Cases in K-12 Public Schools Across Northern New England

**New Hampshire**
1,023 Cases (+158)
334 Schools (+15)

**Vermont**
195 Cases (+37)
[100 Schools (+16)]

**Maine**
651 Cases (+126)
174 Schools (+16)

Source: VT and NH K-12 Dashboards; ME public reporting
## Active Outbreaks in Long Term Care Facilities

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>Total COVID-19 Cases</th>
<th>Change from Prior Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elderwood at Burlington, Burlington</td>
<td>116</td>
<td>+25</td>
</tr>
<tr>
<td>Rutland Health &amp; Rehab, Rutland</td>
<td>66</td>
<td>+3</td>
</tr>
<tr>
<td>Saint Albans Healthcare &amp; Rehab Center, Saint Albans</td>
<td>63</td>
<td>+27</td>
</tr>
<tr>
<td>Four Seasons Care Home, Northfield</td>
<td>41</td>
<td>0</td>
</tr>
<tr>
<td>Berlin Health &amp; Rehab, Berlin</td>
<td>34</td>
<td>+5</td>
</tr>
<tr>
<td>Our Lady of Providence, Winooski</td>
<td>22</td>
<td>+22 (New)</td>
</tr>
<tr>
<td>Residence at Quarry Hill, South Burlington</td>
<td>11</td>
<td>+1</td>
</tr>
<tr>
<td>Converse Home Assisted Living, Burlington</td>
<td>11</td>
<td>+11 (New)</td>
</tr>
<tr>
<td>Valley Vista, Bradford</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>372</strong></td>
<td><strong>+94</strong></td>
</tr>
</tbody>
</table>

Source: Vermont Department of Health - December 14, 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)
Flu vaccinations up 7.9% from same time 2019*

Source: Vermont Department of Health & ADS; Immunization Registry; Measured from July 1 to December 6, 2019 & 2020

*Data from UVMHN incomplete or delayed

Source: Vermont Department of Health & ADS; Immunization Registry; Measured from July 1 to December 6, 2019 & 2020