COVID-19 Modeling
August 24, 2021

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

Source: CDC, NYT, and Covid Tracking Project

Cases increasing:
- 5% (6/6/21)
- 7% (6/13/21)
- 12% (6/20/21)
- 45% (7/4/21)
- 65% (7/11/21)
- 63% (7/18/21)
- 54% (7/25/21)
- 38% (8/1/21)
- 19% (8/8/21)
- 14% (8/15/21)

Cases decreasing:
- -17% (5/30/21)
- -34% (6/6/21)
- -23% (6/13/21)
- 0% (6/20/21)
- 7% (6/27/21)
- 12% (7/4/21)
- 45% (7/11/21)
- 65% (7/18/21)
- 63% (7/25/21)
- 54% (8/1/21)
- 38% (8/8/21)
- 19% (8/15/21)
- 14% (8/22/21)
Change in Northeast Regional Weekly Case Growth

Source: State Health Departments & CTV National News (Quebec)
Change in Vermont Weekly Case Growth

Source: Vermont Dept. of Health
Delta Variant Driven Peaks Across the Globe

Day 0 is set to correspond with the beginning of a jurisdiction's case growth.

7 to 9 weeks after initial rise in cases

COVID-19 infections per million (7-day averages).
Source: CDC and Our World in Data
Vermont Case Data
The unvaccinated case rate has increased **28%** in the last 7 days.

The vaccinated rate has increased **18%** in the same period.

Source: Vermont Department of Health—August 23, 2021; “fully vaccinated” defined as 14 days following final dose.
Covid-19 Among Fully Vaccinated People in Vermont

- 420,672 fully vaccinated
- 915 tested positive (0.22%)
- 23 hospitalized for Covid-19 (0.006%)
- 10 died due to Covid-19 (0.002%)

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

100x magnification

Source: Vermont Department of Health and CDC; infection and hospitalization data from 8/14/21, fatality data 8/23/21; percentages calculated using CDC total fully vaccinated for respective dates (417,827 & 420,672). Data from January 1, 2021 to August 13, 2021; magnification 100x areal/10x linear
Infections, Hospitalizations, & Deaths by Percentage of State Population Vaccinated

Source: Covid Act Now—August 23, 2021; Measures last 14 days; 16 states <40%, 17 states 40-60%, 20 states 60%+ vaccination
Vermonters Diagnosed with COVID-19 by Week

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

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

Source: VDH—August 24, 2021
Vermont Case Rate & Vaccination by Age Band

Source: VDH—August 24, 2021
Covid-19 case rates held mostly steady this past week.

Small increase statewide with Bennington 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).
## 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>13 (of 16)</td>
<td>24,552</td>
<td>22,027</td>
<td>1,442</td>
<td>734</td>
<td>349</td>
</tr>
<tr>
<td></td>
<td></td>
<td>89.72%</td>
<td>5.87%</td>
<td>2.99%</td>
<td>1.42%</td>
</tr>
</tbody>
</table>
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>Maple Lane Nursing Home, Barton</td>
<td>25</td>
</tr>
<tr>
<td>Ethan Allen Residence, Burlington</td>
<td>15</td>
</tr>
<tr>
<td>Maple Ridge Assisted Living and Memory Care, Essex Junction</td>
<td>13</td>
</tr>
<tr>
<td>Vermont Veterans Home, Bennington</td>
<td>9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>62</strong></td>
</tr>
</tbody>
</table>

Source: Vermont Department of Health—August 23, 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 -- count included in total cases*
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.
Vermont Hospitalization Data
Statewide Covid-19 Hospitalizations

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

On average, 64% of all recent hospitalizations among the unvaccinated

Source: Vermont Department of Health—August 23, 2021
Statewide Covid-19 Critical Care Usage

On average, 52% of all recent critical care stays among the unvaccinated

Source: Vermont Department of Health—August 23, 2021
New Hospitalizations per 100,000 Residents, by Age

United States

Vermont

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

Source: Vermont Department of Health—August 17, 2021 (week ending)
Vermont Covid-19 Deaths by Month

Source: Vermont Department of Health—August 23, 2021; deaths attributed to month in which death occurred rather than reported.
Vermont COVID-19 Deaths by Month

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)
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 23, 2021
Vermont Vaccination Data
Vermont Vaccination

85.6% Of Eligible Vermonters Have Started Vaccination

+3,086 Since Last Week

471,706 Vermonters with at Least 1 Dose

79,244 Eligible Vermonters still to be vaccinated

Source: CDC—August 23, 2021
Vermont CDC Vaccine Scorecard

<table>
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<th>Metric</th>
<th>Figure</th>
<th>State Ranking</th>
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</thead>
<tbody>
<tr>
<td>Doses Administered per 100K</td>
<td>140,893</td>
<td>1</td>
</tr>
<tr>
<td>% At Least 1 Dose (Eligible Population)</td>
<td>85.6%</td>
<td>1</td>
</tr>
<tr>
<td>% Fully Vaccinated (Eligible Population)</td>
<td>76.4%</td>
<td>1</td>
</tr>
<tr>
<td>% At Least 1 Dose (Full Population)</td>
<td>75.6%</td>
<td>1</td>
</tr>
<tr>
<td>% Fully Vaccinated (Full Population)</td>
<td>67.5%</td>
<td>1</td>
</tr>
<tr>
<td>% Fully Vaccinated (65 &amp; Over)</td>
<td>94.1%</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: CDC—August 23, 2021
Vermont is 1st in the Country in Vaccines Administered Per 100K

Source: CDC—August 23, 2021
85.6% of Eligible Vermonters Have Started Vaccination, Placing Vermont 1st Nationally

Source: CDC—August 23, 2021
76.4% of Eligible Vermonters Are Fully Vaccinated, Placing Vermont 1st Nationally

Source: CDC—August 23, 2021
75.6% of Vermonters Have Started Vaccination, Placing Vermont 1st Nationally

Source: CDC—August 23, 2021
67.5% of Vermonters Fully Vaccinated, Placing Vermont 1st Nationally

Source: CDC—August 23, 2021
94.1% of 65 & Over Vermonters Fully Vaccinated, Placing Vermont 1st Nationally

Source: CDC—August 23, 2021
US Census Region Case Rate & Vaccination

Source: Covid Act Now—August 24, 2021
US Census Region Deaths & Vaccination

Northeast

Deaths per 100K (14-Day Average)

Percent Received First Vaccine Dose

South

Midwest

Deaths per 100K

West

Deaths per 100K

Date

Feb. 1 Mar. 1 Apr. 1 May 1 June 1 July 1 Aug. 1 Sep. 1

Source: Covid Act Now—August 24, 2021
Vermonters Initiating Vaccination by Day

New Vaccinations (7-Day Average)

Vermonters beginning vaccination increased 11% in the last week

Source: CDC—August 23, 2021
Vermont Vaccination Progress
By Age Band

Source: Vermont Dept. of Health—August 24, 2021; *based on 2019 census estimates; state data may differ from CDC reporting
Regional Data
Regional Cases

8.97% Increase in New Cases

New Cases August 10th to August 16th

49,536

New Cases August 17th to August 23rd

53,978

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

Sources: State Health Departments & CTV National News (Quebec) (includes: CT, ME, MA, NH, NY, QC, RI & VT)
Regional Hospitalizations

Trending Up
+16.1% Increase
Over Last 7 Days

Source: Covid Act Now (7-Day Average in CT, ME, MA, NH, NY, RI & VT)—August 23, 2021
Regional Deaths

Trending Up
-22.1% Increase
Over Last 7 Days

Source: CDC (7-Day Average in CT, ME, MA, NH, NY, RI & VT)—August 22, 2021
National Data
National COVID-19 Cases

+12.4% Increase
Over the last 7 days

149,675
7-Day Average

Source: Covid Tracking Project; NYT & CDC—August 23, 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.
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.
National COVID-19 Hospitalizations

+14.1% Increase Over the last 7 days

Currently Hospitalized  7-Day Avg. Currently Hospitalized

Source: Covid Tracking Project; NYT & CDC—August 23, 2021
National COVID-19 Deaths

+62.2% Increase
Over the last 7 days

1,008
7-Day Average

Source: Covid Tracking Project; NYT & CDC—August 23, 2021
Canadian Covid-19 Trends
Canadian COVID Trends

Daily new confirmed COVID-19 cases per million people
Shown is the rolling 7-day average. The number of confirmed cases is lower than the number of actual cases; the main reason for that is limited testing.

- % With At Least 1 Dose: **73.2%**
- % Fully Vaccinated: **65.6%**
- 7-Day Case Rate: **Up 31.0%**
- 7-Day Hospital Rate: **Up 38.3%**
- 7-Day Fatality Rate: **Up 153.3%**
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.
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
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
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
Vermont Testing