COVID-19 Modeling
April 13, 2021

Presentation available at:
dfr.vermont.gov
COVID Infections per 100K in Vermont (7-Day Average)

Cases have declined 23% this week

Source: Vermont Department of Health—April 13, 2021
Slight decline in active cases in VT
% of Vermont's COVID Infections Aged 0-9 (14-Day Average)

Expected percentage if proportional
% of Vermont's COVID Infections Aged 10-19 (14-Day Average)

Expected percentage if proportional
% of Vermont's COVID Infections Aged 20-29 (14-Day Average)

Expected percentage if proportional
Age of Infected Vermonters Decreasing

Median age of COVID positive individuals in VT over the last 14 days. Green bars represent expanded vaccine eligibility.
COVID Tests per 100K in Last 30 Days Among Vermont and its Neighbors

Note: Maine and Ohio do not report testing data to the CDC
Source: Johns Hopkins University Data, CDC Ensemble, & Oliver Wyman Forecast Model; Note: assumes current vaccine supply
 Vermont Forecast

Source: Johns Hopkins University Data, CDC Ensemble, & Oliver Wyman Forecast Model—April 12, 2021; Note: assumes current vaccine supply
Vermont 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.
Vermont Vaccination Progress
By Age Band

Source: Vermont Dept. of Health—April 13, 2021; excludes those vaccinated through federal entities
Vaccinated & Unvaccinated Vermonters
By Age Band

- Remaining Unvaccinated in Age Band
- At Least 1 Dose

18.4% vaccinated

65+
>87% vaccinated

Source: Vermont Dept. of Health—April 13, 2021; excludes those vaccinated through federal entities
# U.S. COVID-19 Vaccine Willingness

This analysis excludes those who have already received a vaccine.

<table>
<thead>
<tr>
<th>State</th>
<th>Will definitely get a vaccine</th>
<th>Will probably get a vaccine</th>
<th>Will probably not get a vaccine</th>
<th>Will definitely not get a vaccine</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vermont</td>
<td>66.4%</td>
<td>18.4%</td>
<td>7.3%</td>
<td>7.8%</td>
<td></td>
</tr>
<tr>
<td>Connecticut</td>
<td>59.0%</td>
<td>24.5%</td>
<td>12.1%</td>
<td>10.5%</td>
<td></td>
</tr>
<tr>
<td>District of Columbia</td>
<td>71.4%</td>
<td>11.7%</td>
<td>6.4%</td>
<td>10.5%</td>
<td></td>
</tr>
<tr>
<td>Massachusetts</td>
<td>64.2%</td>
<td>17.9%</td>
<td>10.3%</td>
<td>7.6%</td>
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</tr>
<tr>
<td>New Hampshire</td>
<td>68.2%</td>
<td>12.5%</td>
<td>9.0%</td>
<td>10.3%</td>
<td></td>
</tr>
<tr>
<td>Rhode Island</td>
<td>58.5%</td>
<td>19.4%</td>
<td>9.8%</td>
<td>12.1%</td>
<td></td>
</tr>
<tr>
<td>California</td>
<td>52.2%</td>
<td>24.6%</td>
<td>13.2%</td>
<td>9.8%</td>
<td></td>
</tr>
<tr>
<td>New Mexico</td>
<td>57.5%</td>
<td>18.3%</td>
<td>13.4%</td>
<td>9.7%</td>
<td></td>
</tr>
<tr>
<td>Minnesota</td>
<td>57.1%</td>
<td>18.4%</td>
<td>12.4%</td>
<td>12.1%</td>
<td></td>
</tr>
<tr>
<td>Washington</td>
<td>56.4%</td>
<td>18.2%</td>
<td>14.5%</td>
<td>10.9%</td>
<td></td>
</tr>
<tr>
<td>United States</td>
<td>47.6%</td>
<td>22.8%</td>
<td>15.1%</td>
<td>14.3%</td>
<td></td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau — Household Pulse Survey, March 17-29, 2021; survey covers individuals 18+
Vermont Case Rate & Vaccination by Age Band

Source: VDH - April 11, 2021
Vermont Forward
Progress to Goal

Source: Vermont Dept. of Health—April 12, 2021; ranges represent 1+ dose for all Vermonters
Vermont has **91.6%** of its 65+ Population Partially or Fully Vaccinated

**Source:** CDC—April 12, 2021

*New Hampshire vaccine data contains anomalies—65+ jumped from 85% to 101%, now stands at 99.9%*
Vaccine Administration per 100K

Vermont Ranks 4\textsuperscript{th} Nationally

Source: CDC—April 12, 2021
Percentage Population Fully Vaccinated

Vermont Ranks 7th Nationally

Source: CDC—April 12, 2021
Active Outbreaks in Long Term Care Facilities

January 4, 2021: Avg LTCF Outbreak ~38 Cases

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>Total COVID-19 Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>River's Edge Community Care Home, <em>Bennington</em></td>
<td>8</td>
</tr>
</tbody>
</table>

Source: Vermont Department of Health—April 12, 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.
College Cases Equalled ~10% of all Vermont Cases

Fall 2020

College Weekly COVID-19 Cases
Non-College Weekly COVID-19 Cases

Spring 2021

Source: Vermont Higher Education Institution Reporting—April 12, 2021
Viral spread concentrated in northeast Vermont
Active COVID Cases per Million in Vermont Regions

- Burlington Metro
- Northeast Kingdom
- Central VT
- Southern VT
Vaccinations & Case Rates in Vermont Counties

Tracking association between vaccinations and new infections in Vermont, current correlation weak given % population now fully vaccinated

% vaccinated and case rate have a correlation of $\sim -0.16$
Statewide Covid-19 Hospitalizations

6.42% Increase
(Last 7 Days)

Source: Vermont Department of Health—April 12, 2021
Vermont Covid-19 Deaths by Week
Vermont Covid-19 Deaths Decreased in March

Forecasted 10 to 20 Deaths in April
Vermont Weekly COVID-19 Deaths 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 Cases

1.29% Decrease in New Cases

New Cases March 30th to April 5th

New Cases April 6th to April 12

Sources: State Health Departments & CTV National News (Quebec) (RI delayed reporting on 4/12/21 - 7-day average used in lieu)
National COVID-19 Cases

+7.3% Increase
Over the Last 10 Days

-72% Decrease
Since January 11th

Source: Covid Tracking Project; NYT & CDC—April 12, 2021
US 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.

Source: CDC Ensemble Model via COVID Model Hub
National COVID-19 Hospitalizations Flat

+6.9% Increase Over the Last 10 Days

-67% Decrease Since January 12th

Source: Covid Tracking Project; NYT & CDC—April 12, 2021
National COVID-19 Deaths Trending Down

-11% Decrease
Over the Last 10 Days

-73% Decrease
Since January 13th

Source: Covid Tracking Project; NYT & CDC—April 12, 2021
US Weekly COVID-19 Deaths 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 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

**New Hampshire**
K-12: 4,428 (+418)
Higher Ed: 2,848 (+93)

**Vermont**
K-12: 1,170 Cases (+96)
Higher Ed: 776 (+103)

**Maine**
K-12: 2,489 Cases (+525)
Higher Ed: 953 (+81)

Source: ME, NH & VT K-12 Dashboards. K-12 cases from the full school year; Higher Ed. cases from the Spring Semester.
Regional Hospitalizations

Source: Covid Tracking Project (7-Day Average in CT, ME, MA, NH, NY, RI & VT)—April 12, 2021
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—April 13, 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—April 13, 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—April 13, 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%

Source: Vermont Department of Health—April 13, 2021
Vermont Testing

7-Day Rolling Test Average

Source: Vermont Department of Health—April 13, 2021; results reported to VDH daily