COVID-19 Modeling
June 22, 2021

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

Cases are down 97% since April 1st and 20% in the last week

Source: Vermont Department of Health—June 21, 2021
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: Johns Hopkins University Data & Oliver Wyman Model—June 21, 2021
Age of Infected Vermonters

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

Source: VDH—June 21, 2021
Vermont Cases by Age Band

14-day averages

Source: VDH—June 21, 2021
Vermont Case Rate & Vaccination by Age Band

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

Ages 16 to 29
- Graph showing infection rate and vaccination percentage by age band.

Ages 30 to 39
- Graph showing infection rate and vaccination percentage by age band.

Ages 40 to 49
- Graph showing infection rate and vaccination percentage by age band.

Ages 50 to 59
- Graph showing infection rate and vaccination percentage by age band.

Ages 60 to 64
- Graph showing infection rate and vaccination percentage by age band.

Ages 65 to 69
- Graph showing infection rate and vaccination percentage by age band.

Ages 70 to 74
- Graph showing infection rate and vaccination percentage by age band.

Ages 75+
- Graph showing infection rate and vaccination percentage by age band.

Source: VDH—June 21, 2021
Vermont K-12
Weekly Covid-19 Cases

Source: Vermont Department of Health—June 21, 2021
## 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>None</td>
<td>None</td>
</tr>
</tbody>
</table>

*Last updated June 21, 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.
Active Cases per Million

Last Week
June 15th

Today
June 22nd
Covid-19 case rates declined again last week.

No new cases in 5 Vermont counties; very low case rates across the state.
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 — June 21, 2021
Forecast predicts continued low levels of new cases into July
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

29.2% Increase*
(Last 7 Days)

47.5% Decrease
(Last 14 Days)

Source: Vermont Department of Health—June 21, 2021; *Percentages volatile given small sample size - average moved from 1.71 to 2.21
COVID-19 Hospitalizations By Month

Average Age

January: 66.5
February: 64.7
March: 58.9
April: 55.7
May: 51.2
June: 60.2

Source: Vermont Department of Health—June 21, 2021
Vermont Fatality Data
Vermont Covid-19 Deaths by Week

Source: Vermont Department of Health—June 21, 2021
Vermont Covid-19 Deaths by Month

Source: Vermont Department of Health—June 21, 2021
Vermont COVID-19 Deaths by Month

Vermont is predicting between 0 and 5 deaths in June.
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.
Vermont Vaccination Data
### Vermont CDC Vaccine Scorecard

<table>
<thead>
<tr>
<th>Metric</th>
<th>Figure</th>
<th>State Ranking</th>
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<tr>
<td>Doses Administered per 100K</td>
<td>131,785</td>
<td>1</td>
</tr>
<tr>
<td>% At Least 1 Dose (Eligible)</td>
<td>81.3%</td>
<td>1</td>
</tr>
<tr>
<td>% Fully Vaccinated (Eligible Population)</td>
<td>71.3%</td>
<td>1</td>
</tr>
<tr>
<td>% At Least 1 Dose (Full Population)</td>
<td>71.8%</td>
<td>1</td>
</tr>
<tr>
<td>% Fully Vaccinated (Full Population)</td>
<td>62.9%</td>
<td>1</td>
</tr>
<tr>
<td>Doses Administered 65+ per 100K</td>
<td>197,652</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: CDC—June 21, 2021 (with VDH reconciliation)
Vermont is 1st in the Country on Vaccines Administered Per 100K

Source: CDC—June 21, 2021 (with DFR reconciliation)
81.3% of Eligible Vermonters Have Started Vaccination, Placing Vermont 1st Nationally
71.8% of Eligible Vermonters Are Fully Vaccinated, Placing Vermont 1st Nationally

Source: CDC—June 21, 2021 (with DFR reconciliation)
71.8% of Vermonters Have Started Vaccination, Placing Vermont 1st Nationally

Source: CDC—June 21, 2021 (with DFR reconciliation)
62.9% of Vermonters Fully Vaccinated, Placing Vermont 1st Nationally

Source: CDC—June 21, 2021 (with DFR reconciliation)
Vermont is 1st in the Country on Vaccines Administered Per 100K For Those 65 & Over

Source: CDC—June 21, 2021 (with DFR reconciliation)
US Census Region Case Rate & Vaccination by Age Band

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

- **South**
  - New Infections per 100K (14-Day Average)
  - Percent Vaccinated

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

- **West**
  - New Infections per 100K (14-Day Average)
  - Percent Vaccinated

Source: Covid Act Now—June 22, 2021
Congratulations, Vermont!
The First State to Vaccinate 80% of its Eligible Population

81.3%
Of Eligible Vermonters Have Started Vaccination

+5,156
Since Last Week

447,728
Vermonters with at Least 1 Dose

Source: CDC—June 21, 2021 (with DFR reconciliation)
Vermonters Initiating Vaccination by Day (First Dose)

Source: CDC—June 21, 2021
Cases, Hospitalizations and Deaths in States by Vaccination Coverage

New cases per 100,000 residents

Hospitalizations per 100,000 residents

New deaths per 100,000 residents

Source: CDC, HHS—June 21, 2021
People Vaccinated with At Least One Dose
This analysis includes nations with a population of 250,000 residents or more.

Source: Our World in Data—June 21, 2021
Canadian Covid-19 Trends
Canadian COVID Trends

% With At Least 1 Dose: 66.7%
% Fully Vaccinated: 19.6%
7-Day Case Rate: Down 28.6%
7-Day Hospital Rate: Down 22.1%
7-Day Fatality Rate: Down 19.7%

Source: CTV National News—June 21, 2021
United Kingdom & the Delta Variant
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.
Delta variant now dominant in England

Rolling 7 day average of daily cases in England

- Blue: Other
- Orange: Delta variant (B.1.617.2 - first detected in India)

Variant cases estimated using proportion found in sequences analysed by COG UK
Source: BBC analysis of COG-UK and gov.uk data
Most Common Variants in the United States, by Percentage of Sequenced Cases

- B.1.1.7 (Alpha)
- B.1.526
- B.1.617.2 (Delta)
- P.1 (Gamma)
- Other

Source: CDC—June 22, 2021
Tracking Vermont & New England Reopening
Full Reopening Has Not Increased New England Case Counts

Daily COVID Infections per 100K (7-Day Average) as a Function of Days After Reopening

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

Reopening Day

Source: State Health Departments—June 21, 2021
Regional Data
Regional Cases

24.9% Decrease in New Cases

New Cases June 8th to June 14th

<table>
<thead>
<tr>
<th>State</th>
<th>New Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vermont</td>
<td>46</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>186</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>263</td>
</tr>
<tr>
<td>Maine</td>
<td>333</td>
</tr>
<tr>
<td>Connecticut</td>
<td>374</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>738</td>
</tr>
<tr>
<td>Quebec</td>
<td>1,153</td>
</tr>
<tr>
<td>New York</td>
<td>3,150</td>
</tr>
</tbody>
</table>

New Cases June 15th to June 21st

<table>
<thead>
<tr>
<th>State</th>
<th>New Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vermont</td>
<td>38</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>144</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>169</td>
</tr>
<tr>
<td>Maine</td>
<td>255</td>
</tr>
<tr>
<td>Connecticut</td>
<td>292</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>510</td>
</tr>
<tr>
<td>Quebec</td>
<td>899</td>
</tr>
<tr>
<td>New York</td>
<td>2,384</td>
</tr>
</tbody>
</table>

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)

New cases down 95% over last 11 weeks
Change in 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

Vermont
K-12: 1,402 (+1)
Higher Ed: 1,167 (Final)

New Hampshire
K-12: 6,537 (+109)
Higher Ed: 3,353 (Final)

Maine
K-12: 4,750 (Final)
Higher Ed: 1,229 (Final)

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

Trending Down
-14% Decrease
Over last 7 days

Source: Covid Act Now (7-Day Average in CT, ME, MA, NH, NY, RI & VT)—June 21, 2021
Regional Deaths

Trending Down
-23% Decrease
Over last 7 days

Source: CDC (7-Day Average in CT, ME, MA, NH, NY, RI & VT)—June 21, 2021
National Data
National COVID-19 Cases

23% Decrease
Over the last 7 days

New cases at
14-month low

Source: Covid Tracking Project; NYT & CDC—June 21, 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

10% Decrease
Over the last 7 days
Hospitalizations at
14-month low

Source: Covid Tracking Project; NYT & CDC—June 21, 2021
National COVID-19 Deaths

30% Decrease
Over the last 7 days

Deaths at
14-month low

Source: Covid Tracking Project; NYT & CDC—June 21, 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.

Source: Centers for Disease Control and Prevention—June 21, 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
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—June 22, 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—June 22, 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—June 22, 2021
Vermont Testing

Source: Vermont Department of Health—June 22, 2021; results reported to VDH daily

Note: lower testing as more Vermonters fully vaccinated & campuses close