COVID-19 Modeling
August 3, 2021

Presentation available at: dfr.vermont.gov
# Table of Contents

<table>
<thead>
<tr>
<th>Vermont Case Data</th>
<th>Pg. 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vermont Hospitalization Data</td>
<td>Pg. 19</td>
</tr>
<tr>
<td>Vermont Fatality Data</td>
<td>Pg. 20</td>
</tr>
<tr>
<td>Vermont Vaccination Data</td>
<td>Pg. 25</td>
</tr>
<tr>
<td>Regional Data</td>
<td>Pg. 40</td>
</tr>
<tr>
<td>National Data</td>
<td>Pg. 46</td>
</tr>
<tr>
<td>Canadian Trends</td>
<td>Pg. 59</td>
</tr>
<tr>
<td>Restart Vermont</td>
<td>Pg. 62</td>
</tr>
</tbody>
</table>
Vermont Case Data
Vermont COVID-19 Cases per 100K (14-Day Average)

- Statewide Average
- Among Not Fully Vaccinated
- Among Fully Vaccinated

Source: Vermont Department of Health—August 3, 2021; “fully vaccinated” defined as 14 days following final dose
Vermont COVID-19 Cases per 100K (14-Day Average)

- Statewide Average
- Among Not Fully Vaccinated
- Among Fully Vaccinated

The median age of unvaccinated infections in the last week is 30 years old.

National data suggests fully vaccinated cases are 25x less likely to require hospitalization.

Source: Vermont Department of Health—August 3, 2021; “fully vaccinated” defined as 14 days following final dose.
Infections, Hospitalizations, & Deaths by Percentage of State Population Vaccinated

- Infections per 100K
- Hospitalizations per 100K
- Deaths per 100K

Source: Covid Act Now—August 3, 2021; Measures last 14 days; 16 states <40%, 17 states 40-60%, 20 states 60%+ vaccination
Infections, Hospitalizations, & Deaths by Percentage of State Population Vaccinated

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

Infections per 100K

Hospitalizations per 100K

Deaths per 100K

Source: Covid Act Now—August 3, 2021; Measures last 14 days; 16 states <40%, 17 states 40-60%, 20 states 60%+ vaccination
Comparing Vermont Case Increases with Hospitalizations

![Graphs showing case and hospitalization increases over time.]

- **Initial Case Increase** (March 29, 2020 to April 30, 2020)
- **Winter Case Increase** (November 1, 2020 to December 15, 2020)
- **Current Case Increase** (July 1, 2021 to August 3, 2021)

Source: Vermont Department of Health—August 3, 2021
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 2, 2021
Vermont Cases by Age Band

14-day Averages

Source: VDH—August 2, 2021
Vermont Cases by Age Band

14-day Averages

0 to 29  30 to 59  60+

Source: VDH—August 2, 2021
Vermont Case Rate & Vaccination by Age Band

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

Ages 16 to 29

Ages 30 to 39

Ages 40 to 49

Ages 50 to 59

Ages 60 to 64

Ages 65 to 69

Ages 70 to 74

Ages 75+

Source: VDH—August 2, 2021
Covid-19 case rates **rose** this past week

Case rates rose in **10 counties** this week; all counties reporting cases
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).
New forecast continues to predict low case counts over the next two weeks.
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

Rates starting to slow this week as hospitalizations remain low & fewest per capita nationally

Source: Vermont Department of Health—August 3, 2021
Vermont Fatality Data
Vermont Covid-19 Deaths by Week

Source: Vermont Department of Health—August 2, 2021 (week ending)
Vermont Covid-19 Deaths by Month

Source: Vermont Department of Health—August 3, 2021; deaths attributed to month in which death occurred rather than reported
Vermont COVID-19 Deaths by Month

Vermont is predicting 0 to 6 deaths in August

Source: Vermont Department of Health—August 3, 2021
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 3, 2021
Vermont Vaccination Data
Vermont Vaccination

84.1% Of Eligible Vermonters Have Started Vaccination

+2,467 Since Last Week

463,149 Vermonters with at Least 1 Dose

87,801 Eligible Vermonters still to be vaccinated

Source: CDC—August 2, 2021 (with DFR reconciliation)
## Vermont CDC Vaccine Scorecard

<table>
<thead>
<tr>
<th>Metric</th>
<th>Figure</th>
<th>State Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doses Administered per 100K</td>
<td>137,280</td>
<td>1</td>
</tr>
<tr>
<td>% At Least 1 Dose (Eligible)</td>
<td>84.1%</td>
<td>1</td>
</tr>
<tr>
<td>% Fully Vaccinated (Eligible Population)</td>
<td>75.0%</td>
<td>1</td>
</tr>
<tr>
<td>% At Least 1 Dose (Full Population)</td>
<td>74.3%</td>
<td>1</td>
</tr>
<tr>
<td>% Fully Vaccinated (Full Population)</td>
<td>66.2%</td>
<td>1</td>
</tr>
<tr>
<td>Doses Administered 65+ per 100K</td>
<td>201,080</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: CDC—August 2, 2021 (with DFR reconciliation)
Vermont is 1st in the Country in Vaccines Administered Per 100K

Source: CDC—August 2, 2021 (with DFR reconciliation)
84.1% of Eligible Vermonters Have Started Vaccination, Placing Vermont 1st Nationally

Source: CDC—August 2, 2021 (with DFR reconciliation)
75.0% of Eligible Vermonters Are Fully Vaccinated, Placing Vermont 1st Nationally

Source: CDC—August 2, 2021 (with DFR reconciliation)
74.3% of Vermonters Have Started Vaccination, Placing Vermont 1st Nationally

Source: CDC—August 2, 2021 (with DFR reconciliation)
66.2% of Vermonters Fully Vaccinated, Placing Vermont 1st Nationally

Source: CDC—August 2, 2021 (with DFR reconciliation)
Vermont is 1st in the Country in Vaccines Administered Per 100K For Those 65 & Over

Source: CDC—August 2, 2021 (with DFR reconciliation)
US Census Region Case Rate & Vaccination

Source: Covid Act Now—August 2, 2021
US Census Region Hospitalizations & Vaccination

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

Northwest

South

Midwest

West

Source: Covid Act Now—August 2, 2021
US Census Region Deaths & Vaccination

Deaths per 100K (14-Day Average)

Percent Received First Vaccine Dose

Northeast

South

Midwest

West

Source: Covid Act Now—August 2, 2021
New First Doses per 100K (14-Day average)

Source: CDC—August 2, 2021
Vermonters Initiating Vaccination by Day

New Vaccinations (7-Day Average)

Vermonters beginning vaccination has increased 14.6% in the last week

Source: CDC—August 2, 2021
Vermont Vaccination Progress
By Age Band

Source: Vermont Dept. of Health—August 3, 2021
Regional Data
Regional Cases

36.49% Increase in New Cases

New Cases July 20th to July 26th

New Cases July 27th to August 2nd

Sources: State Health Departments & CTV National News (Quebec)
Active Cases per Million

Source: Johns Hopkins University—August 3, 2021
Weekly Regional Cases

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

Trending Up
+31.7% Increase
Over last 7 days

Source: Covid Act Now (7-Day Average in CT, ME, MA, NH, NY, RI & VT)—July 31, 2021
Regional Deaths

Trending Down
-11.3% Decrease
Over last 7 days

Source: CDC (7-Day Average in CT, ME, MA, NH, NY, RI & VT)—August 1, 2021
National Data
National COVID-19 Cases

+39.9% Increase
Over the last 7-days

79,763
7-Day Average

Source: Covid Tracking Project; NYT & CDC—August 2, 2021
Active Cases per Million

Beginning of Delta Spread
June 22

Source: Johns Hopkins University
Delta Spread
Four Weeks Ago—July 6

Source: Johns Hopkins University
Delta Spread
Two Weeks Ago—July 20

Source: Johns Hopkins University
Active Cases per Million

Source: Johns Hopkins University—August 3, 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.

CDC Ensemble Forecast Anticipates National Cases Peaking in 4 to 5 weeks
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

+34.4% Increase
Over the last 7-days

Source: Covid Tracking Project; NYT & CDC—August 2, 2021
National COVID-19 Deaths

+53.1% Increase
Over the last 7-days

Source: Covid Tracking Project; NYT & CDC—August 2, 2021
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.

Source: Johns Hopkins University CSSE COVID-19 Data
Canadian Covid-19 Trends
Canadian COVID Trends

% With At Least 1 Dose: **71.6%**
% Fully Vaccinated: **59.0%**
7-Day Case Rate: **Up 59.7%**
7-Day Hospital Rate: **Down 11.7%**
7-Day Fatality Rate: **Up 16.7%**

Sources: CTV National News & Our World in Data—August 2, 2021
Canadian Province Vaccination Progress

Percent Eligible (12+) with at least 1 dose

Map: DFR Modeling Team • Source: CTV National News • Created with Datawrapper
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

![Vermont Coronavirus Growth Rate](image-url)

Source: Vermont Department of Health—August 3, 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—August 3, 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—August 3, 2021
Vermont Testing

7-Day Rolling Test Average

Source: Vermont Department of Health—August 3, 2021; results reported to VDH daily