COVID-19 MODELING
May 1, 2020
Overview
Presentation Updated Through May 1, 2020

•Goal: Develop multiple forecasting perspectives
  • Oliver Wyman – Helen Leis
  • Columbia University – Professor Jeffrey Shaman, Ph.D.
  • Northeastern University – Professor Alessandro Vespignani, Ph.D.
  • University of Washington – Institute for Health Metrics and Evaluation (IHME)
  • UVM – Larner College of Medicine – Department of Microbiology & Molecular Genetics – Translational Global Infectious Disease Research (TGIR) Group – John Hanley, PhD

•Forecasting is imprecise:
  • Focus on the near term: Forecasting is much less predictable the further out you model
  • Focus on ranges rather than specifics: Forecasts are represented as a range of possible outcomes (i.e., likely, best & worst)
  • Consistent refinement: Continually updating with new data and new assumptions
  • Appropriate Perspective: Ultimately forecasts are developed for planning purposes and are not representative of definitive outcomes

•Ultimate Purpose of Forecasting:
  • Phase 1: Medical Surge Planning
  • Phase 2: Support Restart Vermont and Monitor Key Trends
Positive Trend: Mobility Data Indicates Strong Social Distancing Adherence

Vermont

Northern New England

Source: Descartes Labs – April 27, 2020
Vermont: Time Until Confirmed Cases Double

Source: Vermont Department of Health and Department of Financial Regulation Forecast

- Not estimated to double for ~84 days
- ~7.5 days
- ~5.5 days
- ~3 days

Graph showing the number of new cases and existing cases over time.
United States: Time Until Confirmed Cases Double
Source: Johns Hopkins University

Vermont doubling at 12-week rate
New England: Time Until Confirmed Cases Double
Source: Johns Hopkins University

<table>
<thead>
<tr>
<th>State</th>
<th>Doubling Rate (in weeks)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vermont</td>
<td>12</td>
</tr>
<tr>
<td>Connecticut</td>
<td>4</td>
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<tr>
<td>Maine</td>
<td>4</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>3</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>2</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>2</td>
</tr>
<tr>
<td>New York</td>
<td>4</td>
</tr>
</tbody>
</table>
Vermont’s Daily Growth Rate Compared to Total Cases
Source: Vermont Department of Health

14-day Case Growth Rate + Trendline

- Rolling 3-Day Avg % Growth
- Confirmed Covid+

Percentage of Case Growth vs. Number of Cases
Positive Trend: Actual Results Are Better Than Forecasts

Confirmed Cases to May 1 // Projections to May 7

Sources: Oliver Wyman (OW) April 24, 2020 Model & Vermont Department of Health
Positive Trend: Reduction in Hospital Demand

Hospitalization Metrics since March 23rd

Source: EMResource
*PUI stands for person under investigation
Positive Trend: Decline in Active Cases in Vermont

Yellow – Known Cases   Green – 50% Not Tested   Blue – 75% Not Tested

Source: Department of Financial Regulation Active Case Scenario Generator – April 30, 2020
Positive Trend: Percent of Confirmed Positive Tests

Percent Positive since March 23rd

Source: Vermont Department of Health
Social Distancing Timing & Effect

10 to 14-day delay

Confirmed Cases through April 22 // Projections through May 7

- Confirmed Covid+
- OW 3/25: Avg Worst
- OW 3/25: Avg Best
- OW 4/9 Update
- OW 4/16 Update
- OW 4/23 Update

Stay Home, Stay Safe

Closing Schools

Closing Bars & Restaurants

State of Emergency

Source: Oliver Wyman (OW) April 22, 2020 Model
Social Distancing Timing & Effect
10 to 14-day delay

Case Growth Post-Restart

Source: Vermont Department of Health