COVID-19 MODELING
April 10, 2020

Overview

Presentation Updated Through April 9, 2020

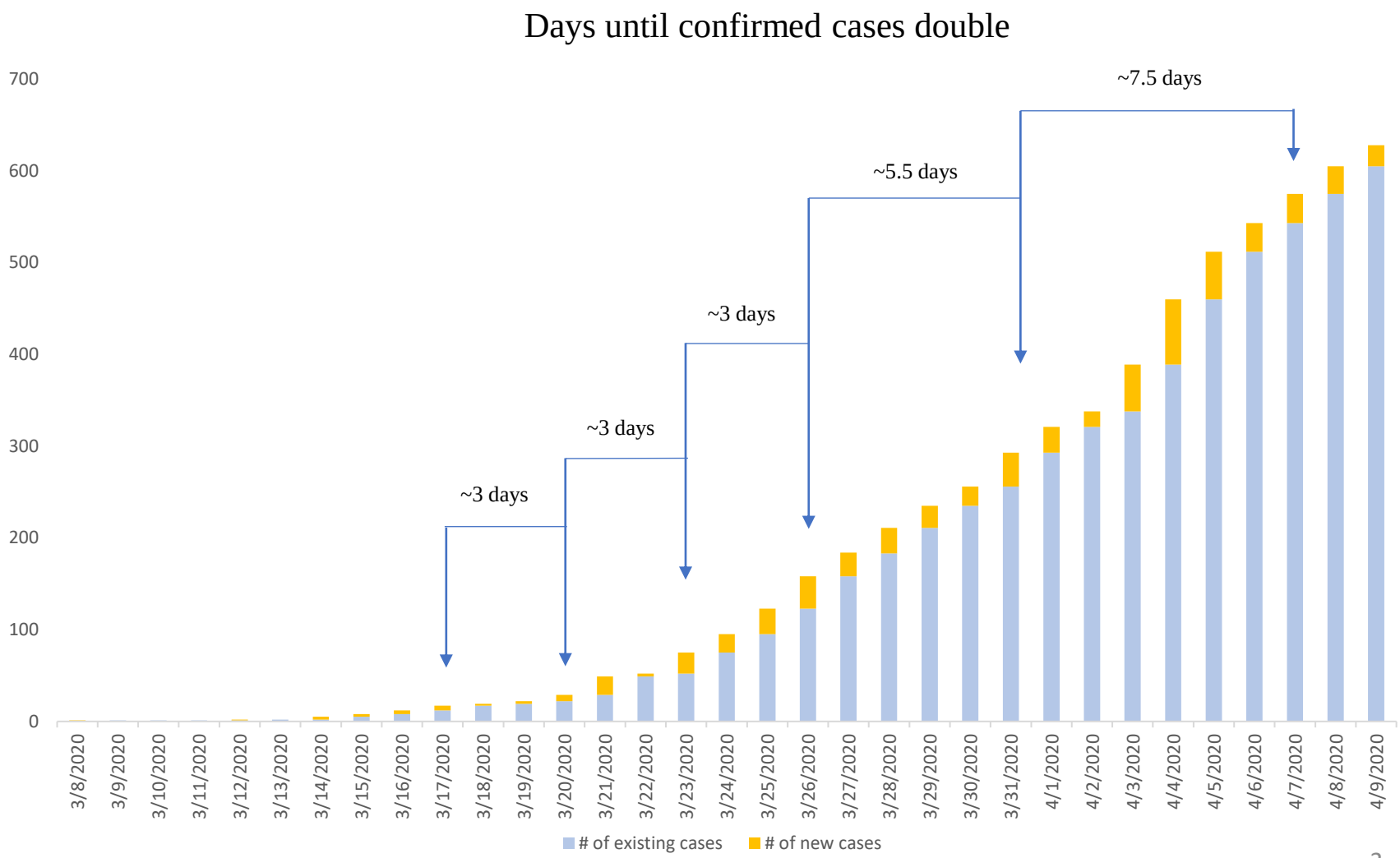
- **Goal**: Develop multiple forecasting perspectives
  - Oliver Wyman – Helen Leis
  - Columbia University – Professor Jeffrey Shaman, Ph.D.
  - Northeastern University – Professor Alessandro Vespignani, Ph.D.

- **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: Medical Surge Planning**
  - Tracking the available staffed hospital beds
  - Tracking the available ICU beds
  - Tracking the available ventilators
  - Tracking the supply of PPE

Vermont's Daily COVID-19 Confirmed Case Growth

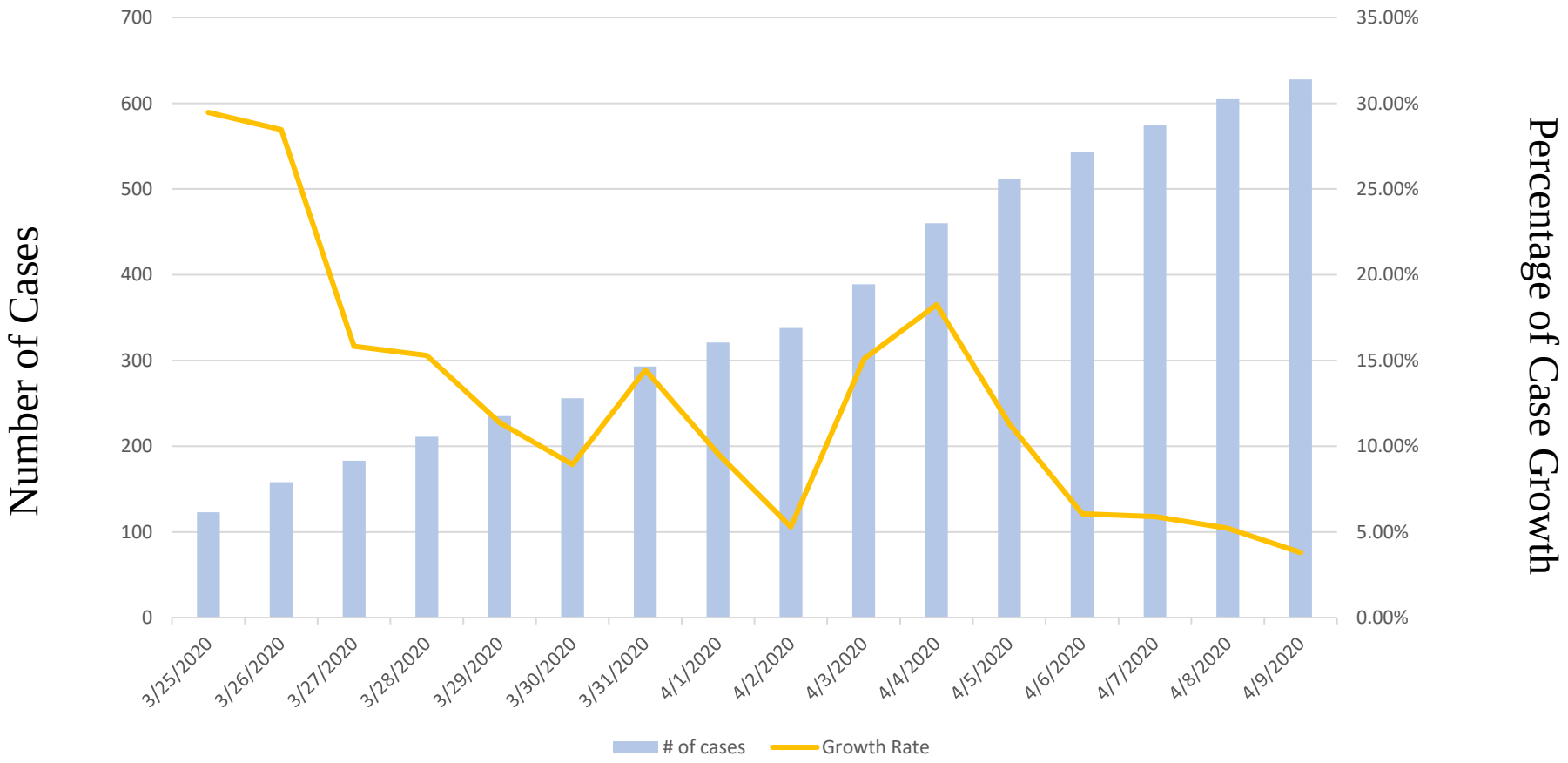
Source: Vermont Department of Health



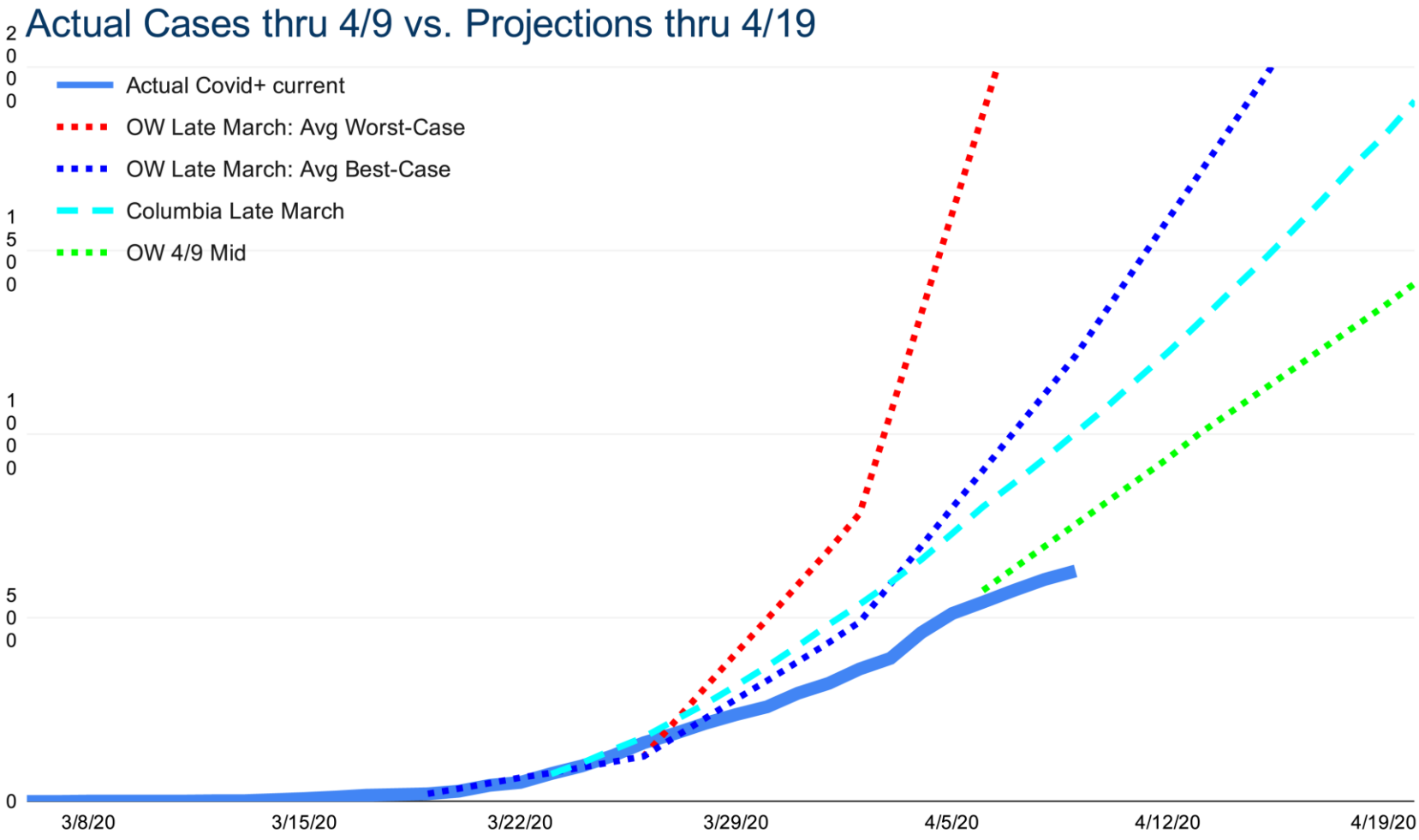
Vermont's Daily Growth Rate Compared to Total Cases

Source: Vermont Department of Health

Note: This chart notes the stability of Vermont's case growth rate as we approached and surpassed 100 confirmed cases.



Close Look at Forecasting vs. Actual Case Count



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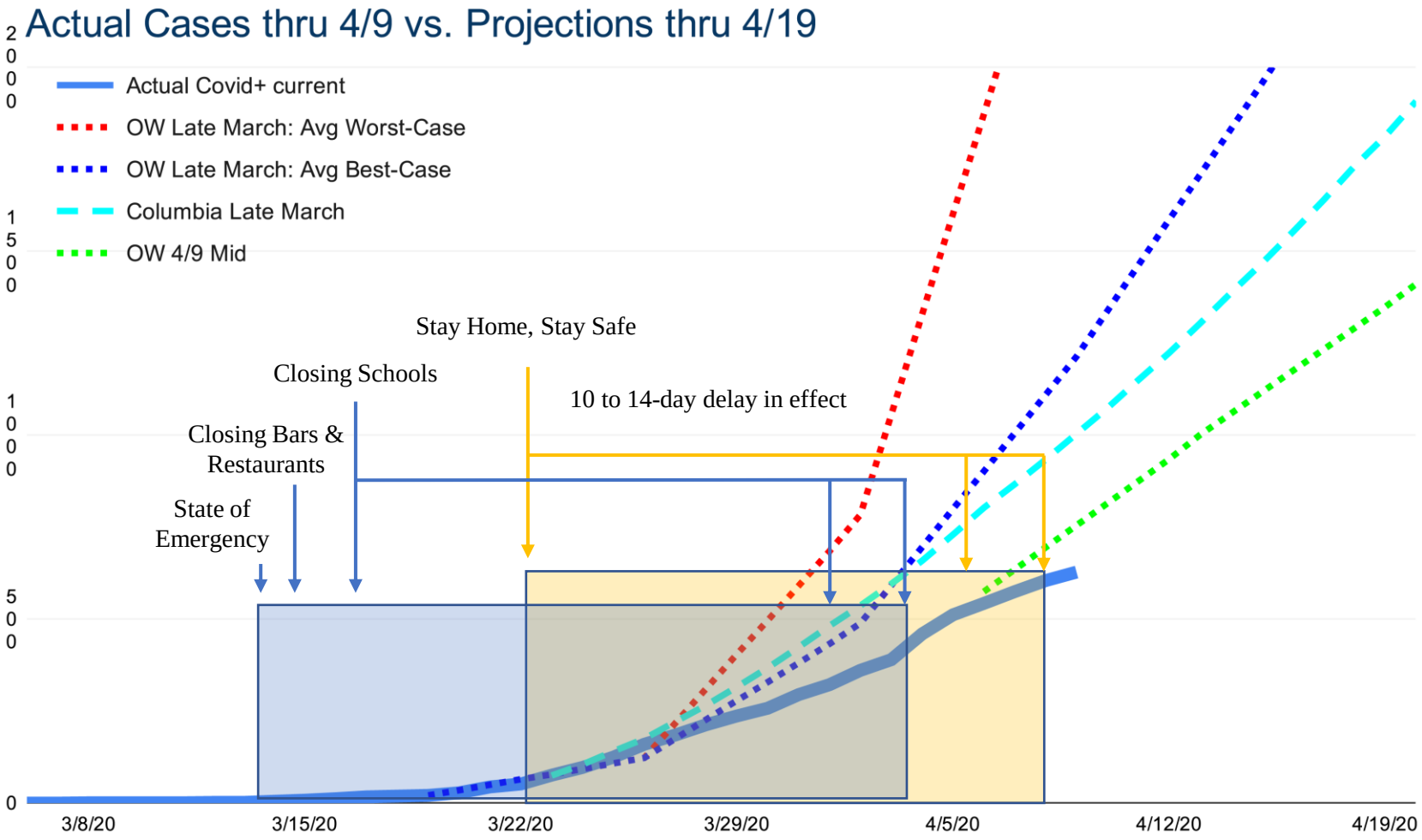
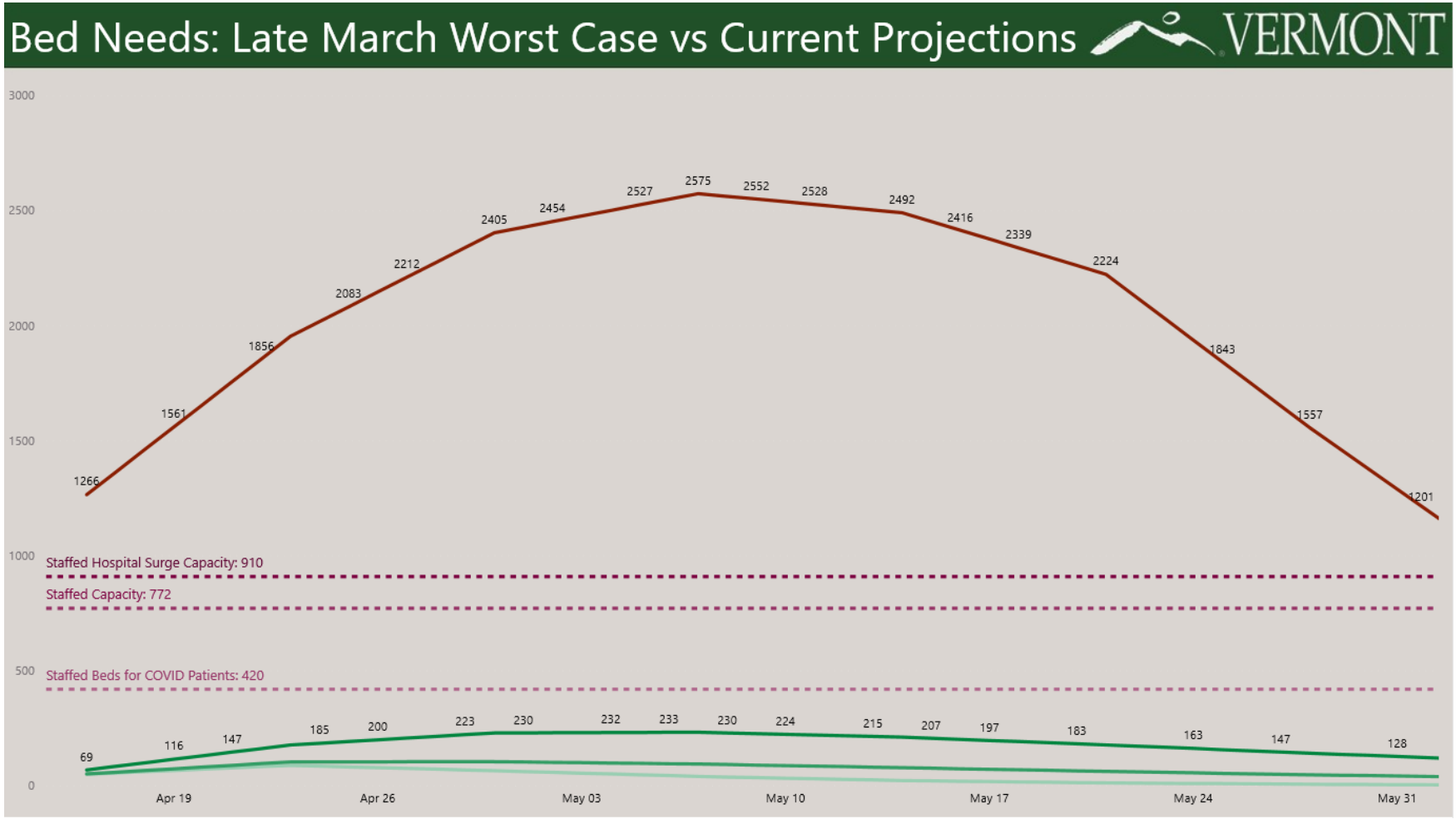


Comparison: Hospitalization Late March vs. April 9th Trajectory



Modeling is for planning purposes only
Not representative of definitive outcomes

Hospitalization Needs – April 9th Trajectory

Medical/Surgical Bed Needs

VERMONT

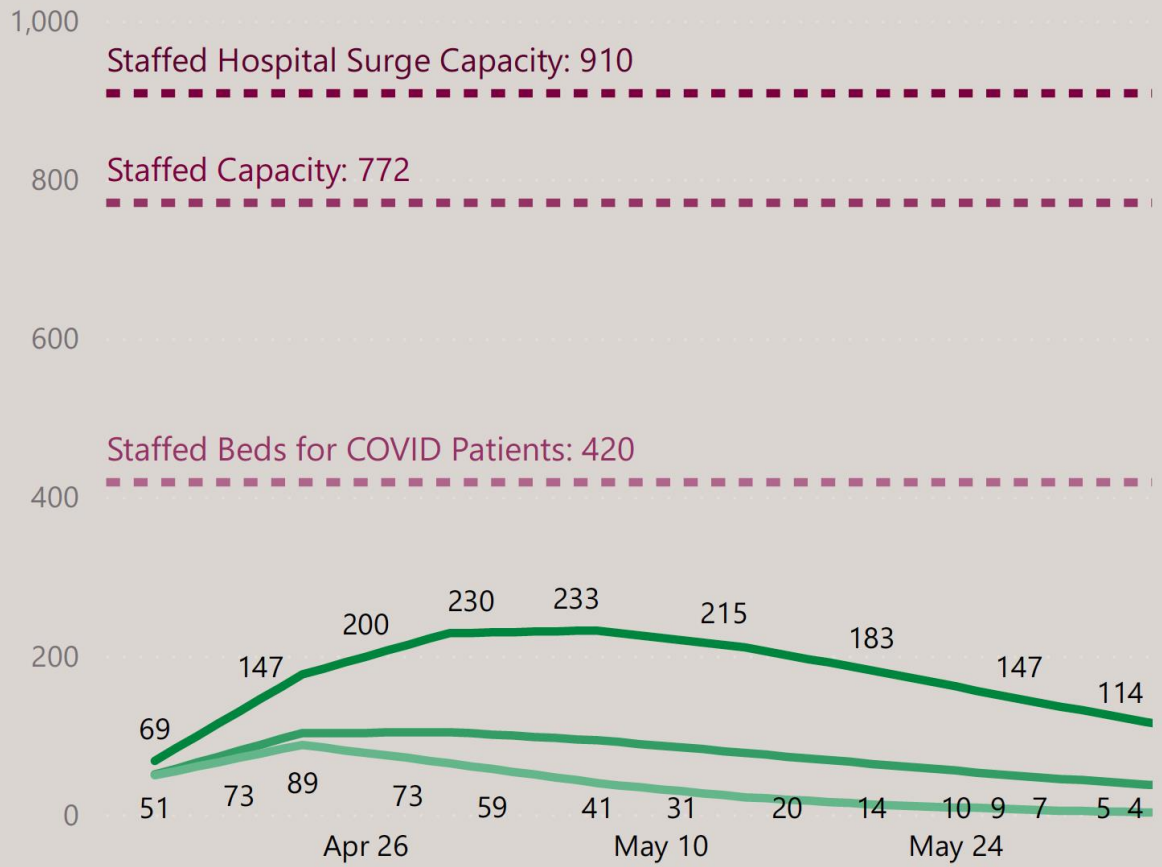
910
Total Hospital Capacity with Surge

138
Staffed Hospital Surge Capacity

352
Additional Staffed Capacity

420
Staffed Beds for COVID Patients

Scenario	Out of Beds	Max Needs
Low	Never	89
Mid	Never	105
High	Never	233



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ICU Needs – April 9th Trajectory

ICU Bed Needs

VERMONT

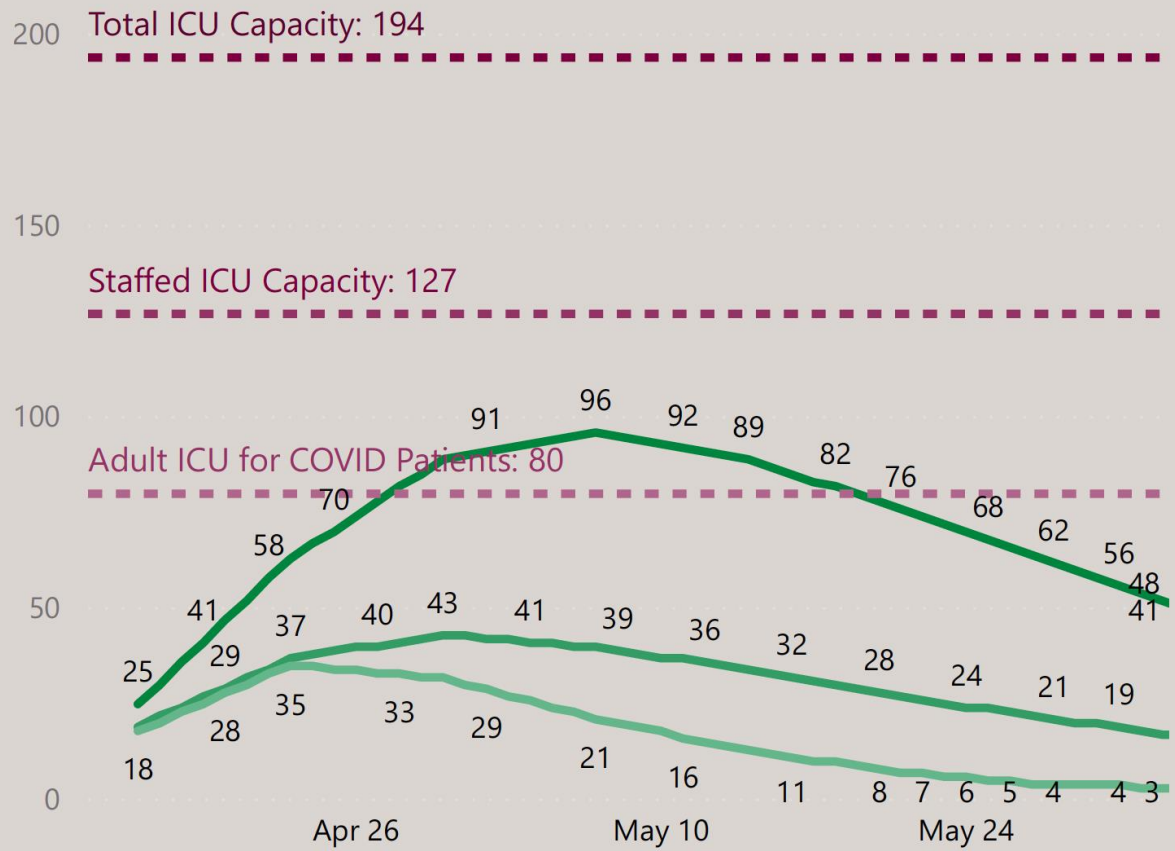
194
Total ICU Capacity

67
ICU Surge Capacity

47
Addtional ICU Capacity

80
Adult ICU for COVID Patients

Scenario	Out of ICU	Max Needs
Low	Never	35
Mid	Never	43
High	Never	96



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Ventilator Needs – April 9th Trajectory

Ventilator Needs

VERMONT

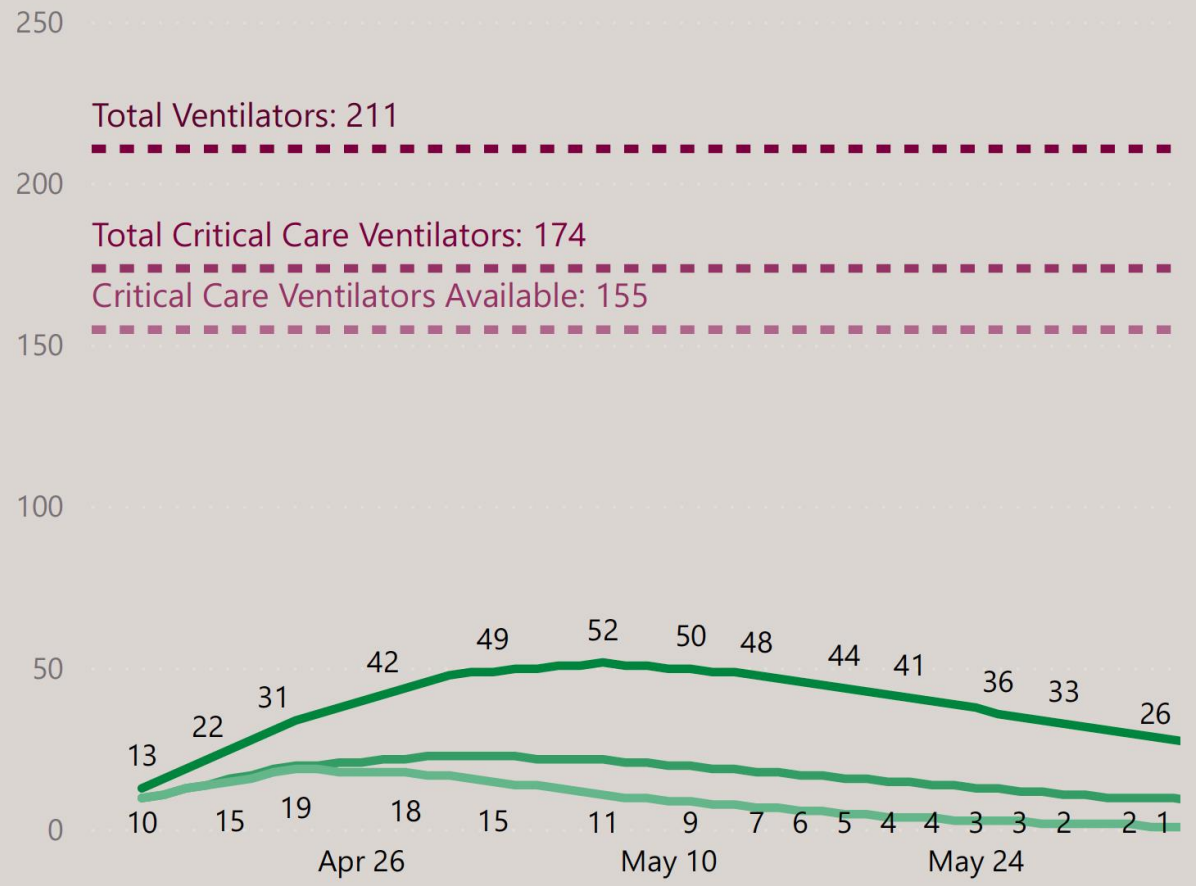
211
Total Ventilators

37
Other Ventilators

19
Additional Critical Care Ventilators

155
Critical Care Ventilators Available

Scenario	Out of Vents	Max Needs
Low	Never	19
Mid	Never	23
High	Never	52



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Personal Protection Equipment Analysis

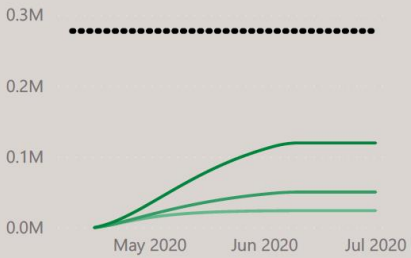
Personal Protective Equipment Dashboard

VERMONT

N95 FFP Respirators

277.95K

QOH

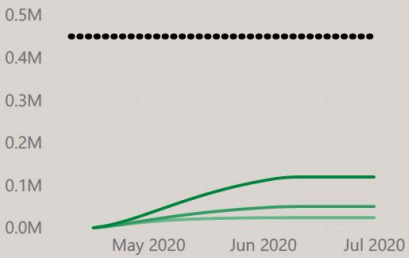


Scenario	Out Of Stock Date	Total Future Consumption
Low	Never	24,674
Mid	Never	50,934
High	Never	120,250

Surgical Masks

450.35K

QOH

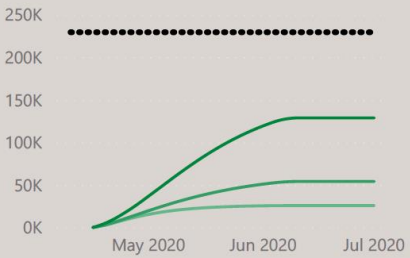


Scenario	Out Of Stock Date	Total Future Consumption
Low	Never	24,674
Mid	Never	50,934
High	Never	120,250

Body Protection

230.15K

QOH

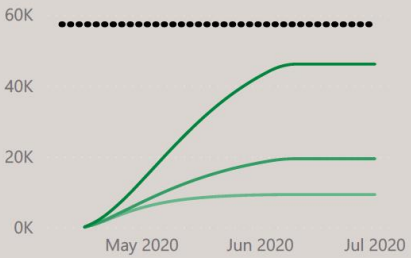


Scenario	Out Of Stock Date	Total Future Consumption
Low	Never	26,572
Mid	Never	54,852
High	Never	129,500

Face Protection

57.46K

QOH



Scenario	Out Of Stock Date	Total Future Consumption
Low	Never	9,490
Mid	Never	19,590
High	Never	46,250

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