Projections of Hospital-based Healthcare Demand due to COVID-19 in Los Angeles County
April 5, 2021 Update

Los Angeles County DHS COVID-19 Predictive Modeling Team (alphabetical):

Tom Belin, PhD;[1] Andrea Bertozzi, PhD;[1] Nishchal Chaudhary, MS;[2] Todd Graves, PhD;[3]
Jeffrey Guterman, MD, MS;[4] M. Claire Jarashow, PhD, MPH;[5] Roger J. Lewis, MD, PhD [*Team Lead*];[4]
Joe Marion, PhD;[3] Frederic Schoenberg, PhD;[1] Megha Shah, MD, MPH, MS;[5]
Juliana Tolles, MD, MHS;[4] Elizabeth Traub, MPH;[5] Kert Viele, PhD;[3] Fei Wu, PhD[6]

1. University of California, Los Angeles
2. City of Long Beach
3. Berry Consultants, LLC, Austin, TX
4. Los Angeles County, Department of Health Services
5. Los Angeles County, Department of Public Health
6. Los Angeles County, Office of the Chief Information Officer

Key Findings of the April 5ᵗʰ Update

- This update includes data on hospitalizations through April 2, 2021.
- The underlying statistical prediction model is unchanged from last week.
- Key findings:
    - The daily number of <u>newly hospitalized</u> patients with positive tests for COVID-19 across Los Angeles County has continued to gradually decrease.
    - Some patients newly hospitalized for reasons other than COVID-19 may have a positive COVID-19 test from a prior infection up to 3 months ago and be included in our data. This could result in estimates for new transmission and for the value of R that are too high.
    - Patients requiring hospitalization for reasons other than COVID-19 illness, who happen to have a positive COVID-19 test from prior infection, tend to have lower lengths of hospital stay and less need for intensive care or mechanical ventilation. This leads to a slight overestimation in our predictions of the need for these hospital resources as seen on Slides 7-9.

Key Findings of the April 5th Update (continued)

- Key findings (continued):
    - Based on recent hospitalization data, reflecting transmission that occurred in mid March, the estimated transmission number ("R") at that time was 0.92 with an uncertainty of 0.83 to 0.98. This is virtually identical to our estimate one week earlier of 0.95 with an uncertainty of 0.87 to 1.03.
    - Based on the pattern in hospitalizations, and the resulting estimate for R, the demand for hospital-based services including hospital beds, ICU beds, and ventilators over the next 4 weeks is likely to continue to decrease or be stable. We expect daily mortality to decrease or be stable as well over the same time interval.
    - We expect the supply of hospital beds, ICU beds, and ventilators over the next 4 weeks to be adequate.
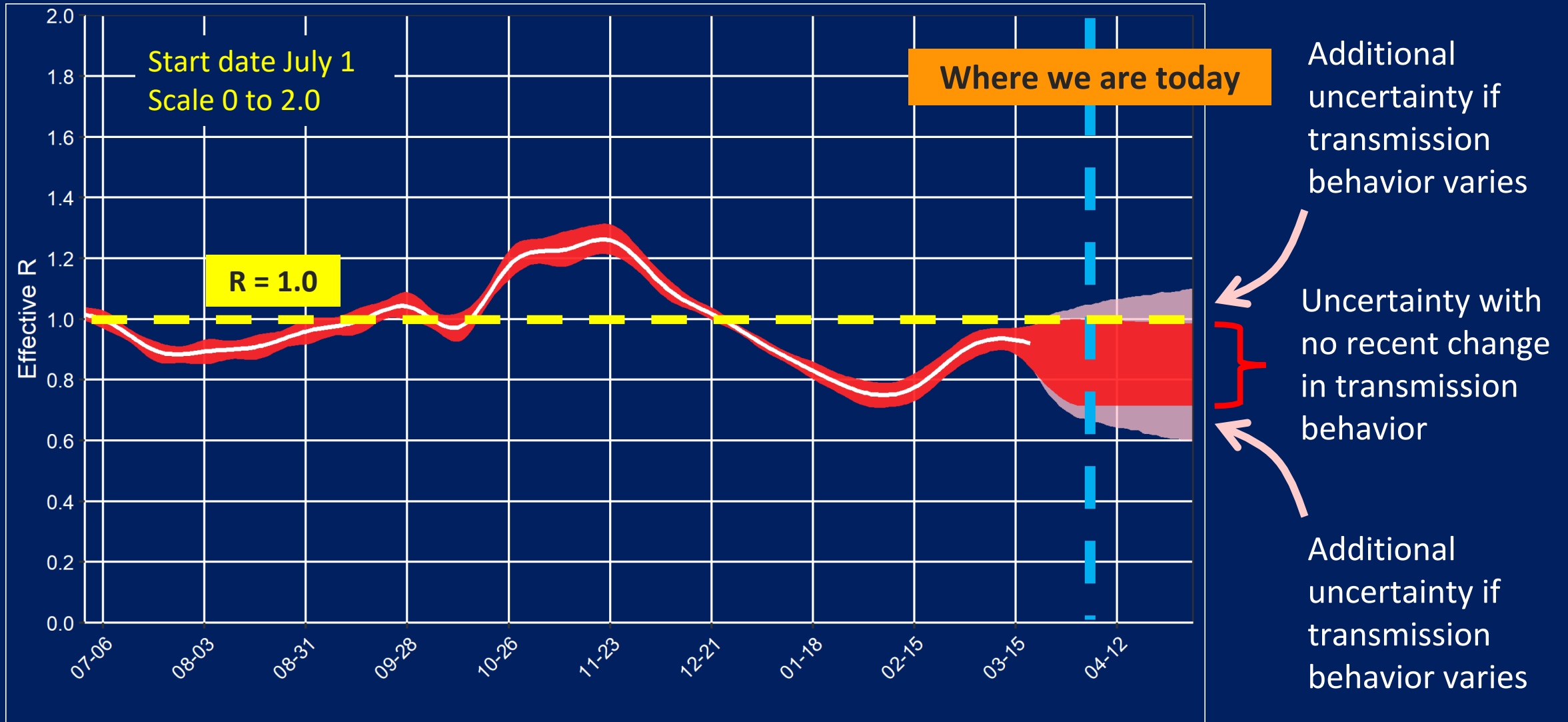
How Many in Los Angeles are Infectious to Others?

- The DHS team's epidemic model estimates the number of people in Los Angeles County who:

  - Are still susceptible to infection if exposed;

  - Have been exposed and are incubating, but not infectious;

  - Have COVID-19 and are infectious to others, though they may have no symptoms; and

  - Have had COVID-19 and either recovered or died, so they are no longer infectious

- The model suggests that about 0.08% (uncertainty of 0.04% to 0.13%) of everyone in Los Angeles County is currently infected and infectious to others.

- This would suggest about 1 in 1300 (between 1 in 2500 and 1 in 780) Los Angeles County residents are currently infectious to others. One week ago, this estimate was 1 in 940.

- Approximately 3 in every 8 persons in Los Angeles County has been infected with COVID-19 since the beginning of the pandemic.

Hospital New Patient Projections

Start date July 1
Scale 0 to 1000/day

Where we are today

Number of New Cases

Additional uncertainty if transmission behavior varies

Uncertainty with no recent change in transmission behavior

07-13 08-10 09-07 10-05 11-02 11-30 12-28 01-25 02-22 03-22 04-19

Effective Transmission Number "R"

Start date July 1
Scale 0 to 2.0

Where we are today

R = 1.0

Effective R

2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0

07-06 08-03 08-31 09-28 10-26 11-23 12-21 01-18 02-15 03-15 04-12

Additional uncertainty if transmission behavior varies

Uncertainty with no recent change in transmission behavior
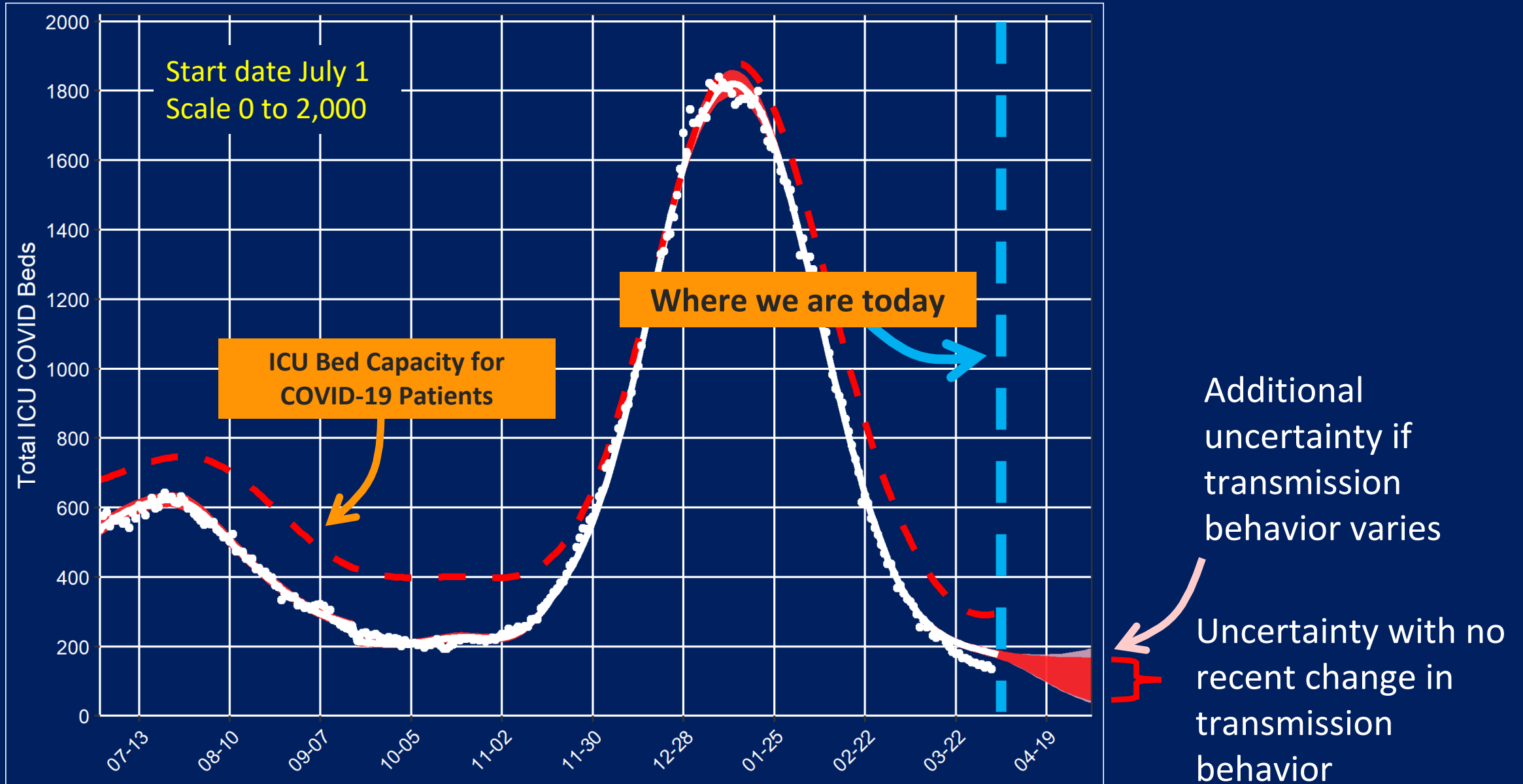
Additional uncertainty if transmission behavior varies

Note: The effective transmission number R is reduced by the partial herd immunity due to persons who have either experienced and recovered from COVID-19 or have been immunized.
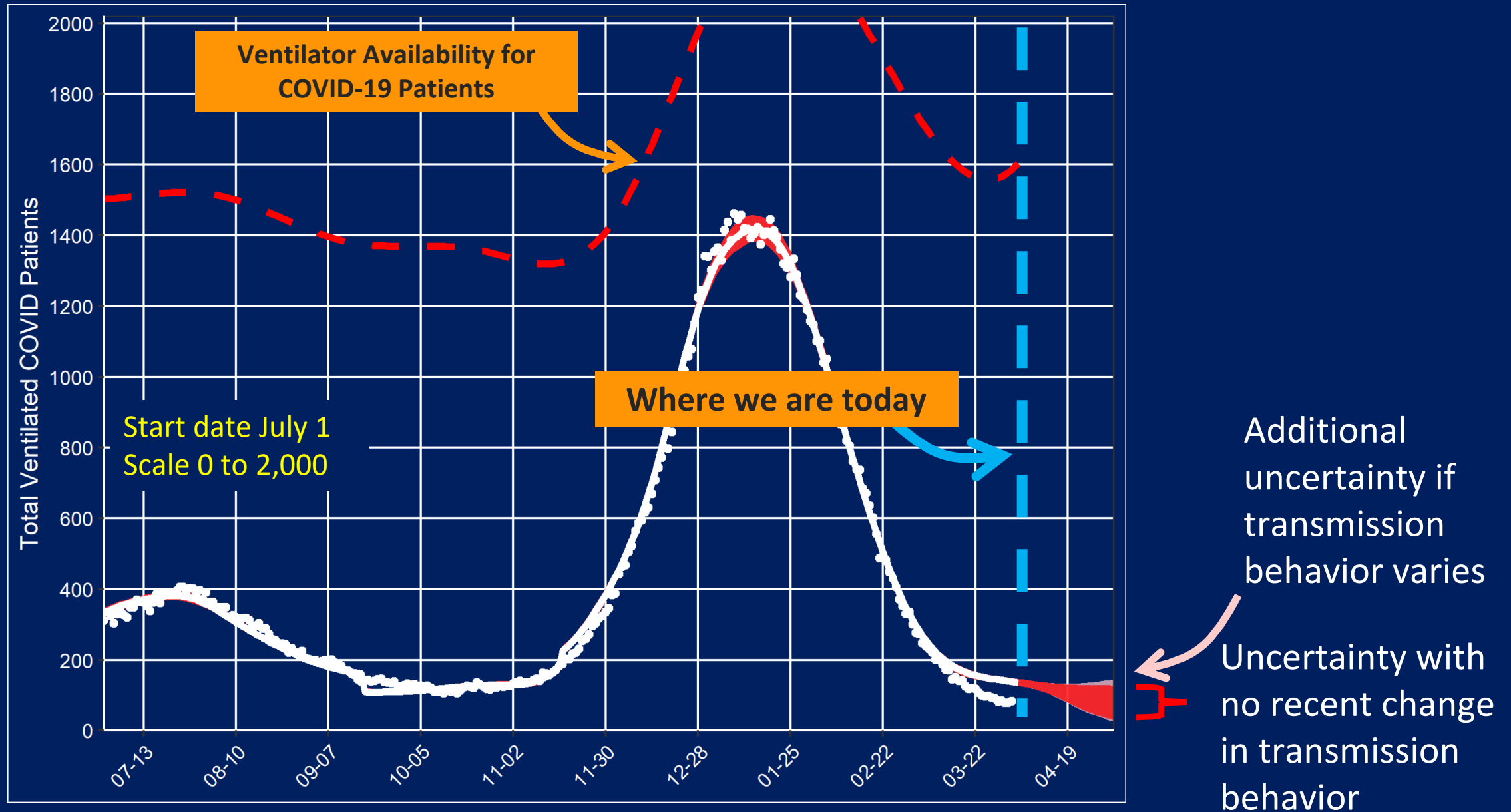
Predictions of Hospital Bed Demand
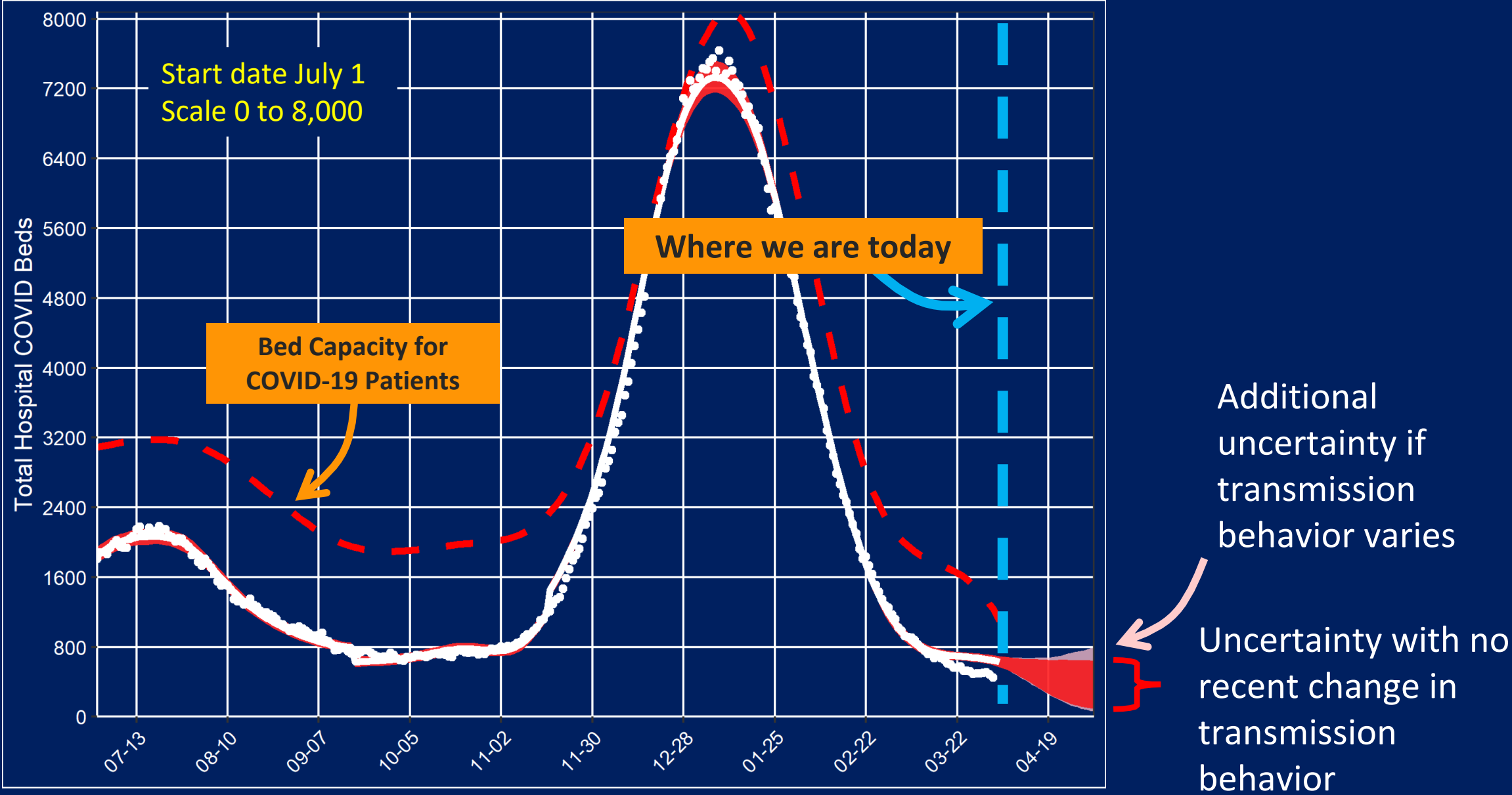
Predictions of ICU Bed Demand

Predictions of Ventilator Demand