

Projections of Hospital-based Healthcare Demand due to COVID-19 in Los Angeles County

January 13, 2021 Update

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;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, PhD⁶

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 January 13th Update

- This update includes data through January 11, 2021.
- There has been a minor technical change to the ventilator demand model to improve the accuracy in fitting historical data.
- Key findings:
 - The number of new patients with COVID-19 requiring hospitalization each day across Los Angeles County increased markedly in December. This daily number has remained very high but has appeared to level off. We have not yet fully seen the effect of transmission in the period from around Christmas to New Years.
 - Based on the available information that only reflects transmission leading up to Christmas, the estimated transmission number ("R") at that time was 0.97 with an uncertainty of 0.93 to 1.00. This is virtually identical to last week, when the estimate for one week earlier was 0.97 with an uncertainty of 0.93 to 1.01.

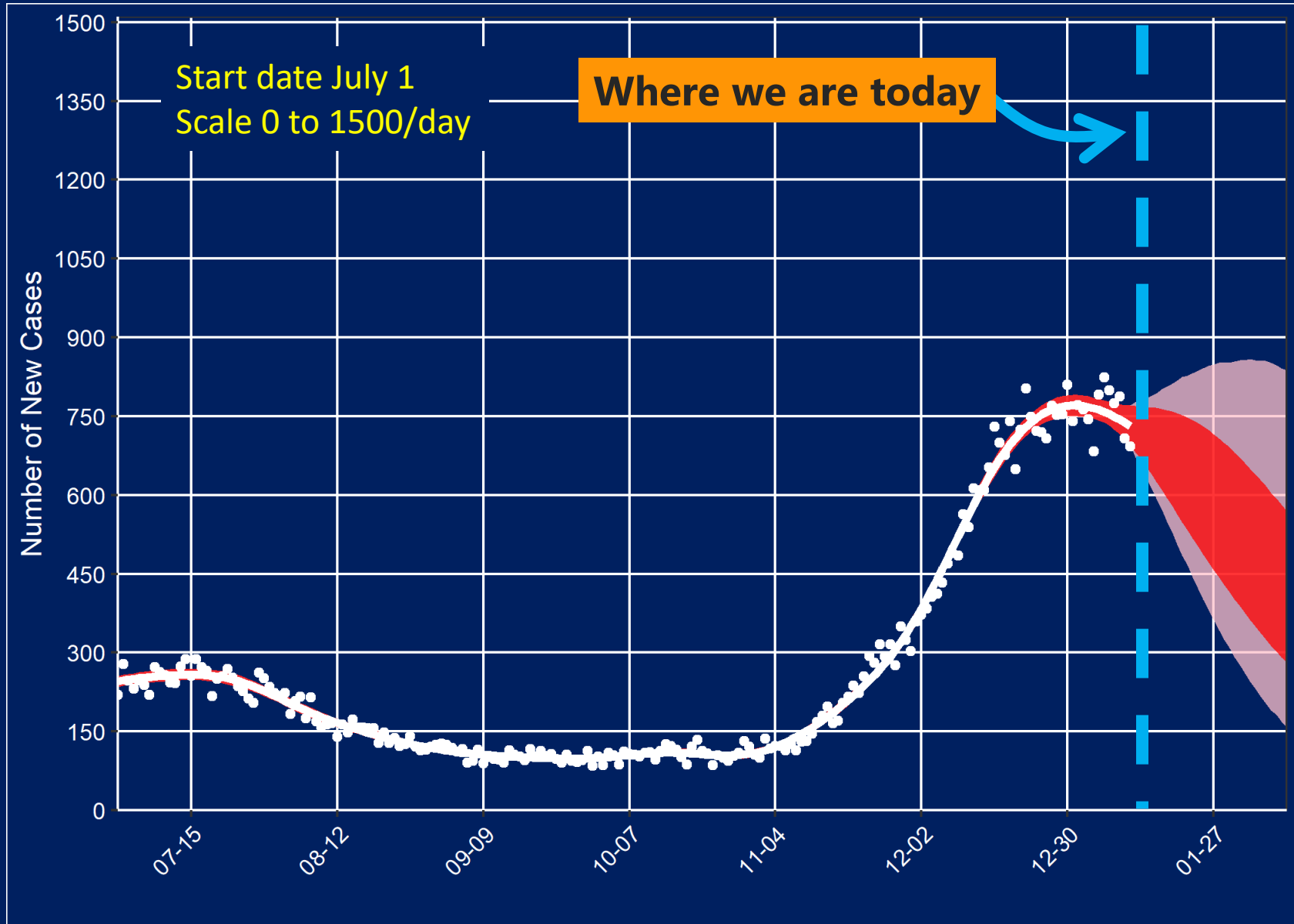
Key Findings of the January 13th Update (Continued)

- Key findings (Continued):
 - Because of the time required for new exposures to result in illness severe enough to require hospitalization, the extent of transmission occurring during the last 10 days in December through New Year's remains unclear. This makes it difficult to reliably predict demand for hospital-based services.
 - However, even if transmission during the last 10 days in December and early January remained relatively controlled with an R near 1, we would expect a continued very high demand for hospital-based services with a very limited supply of hospital beds and continued shortages in ICU beds over the next 4 weeks. The number of ventilators in Los Angeles County is likely adequate over the next 4 weeks.

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—if transmission did not increase over the holidays—that about 0.89% (uncertainty of 0.61% to 1.20%) of everyone in Los Angeles County is currently infected and infectious to others.
- This would suggest about 1 in 115 (between 1 in 165 and 1 in 80) Los Angeles County residents are currently infectious to others. One week ago, this estimate was 1 in 125.
- Approximately 1 in 3 persons in Los Angeles County has been infected with COVID-19 since the beginning of the pandemic.

Hospital New Patient Projections: If No Higher Holiday Transmission

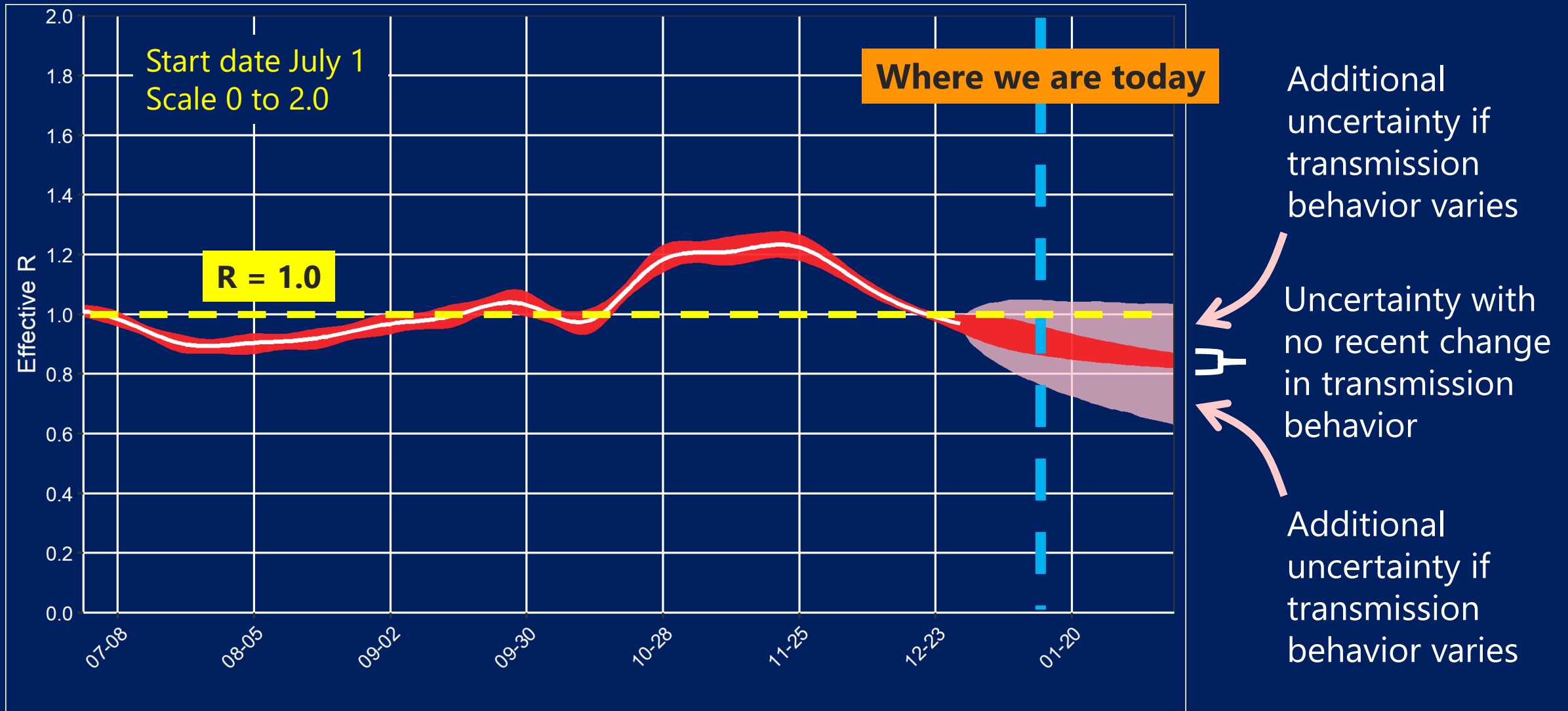


The number of new hospitalizations will be higher if there was a large increase in transmission during the holiday season

Additional uncertainty if transmission behavior varies

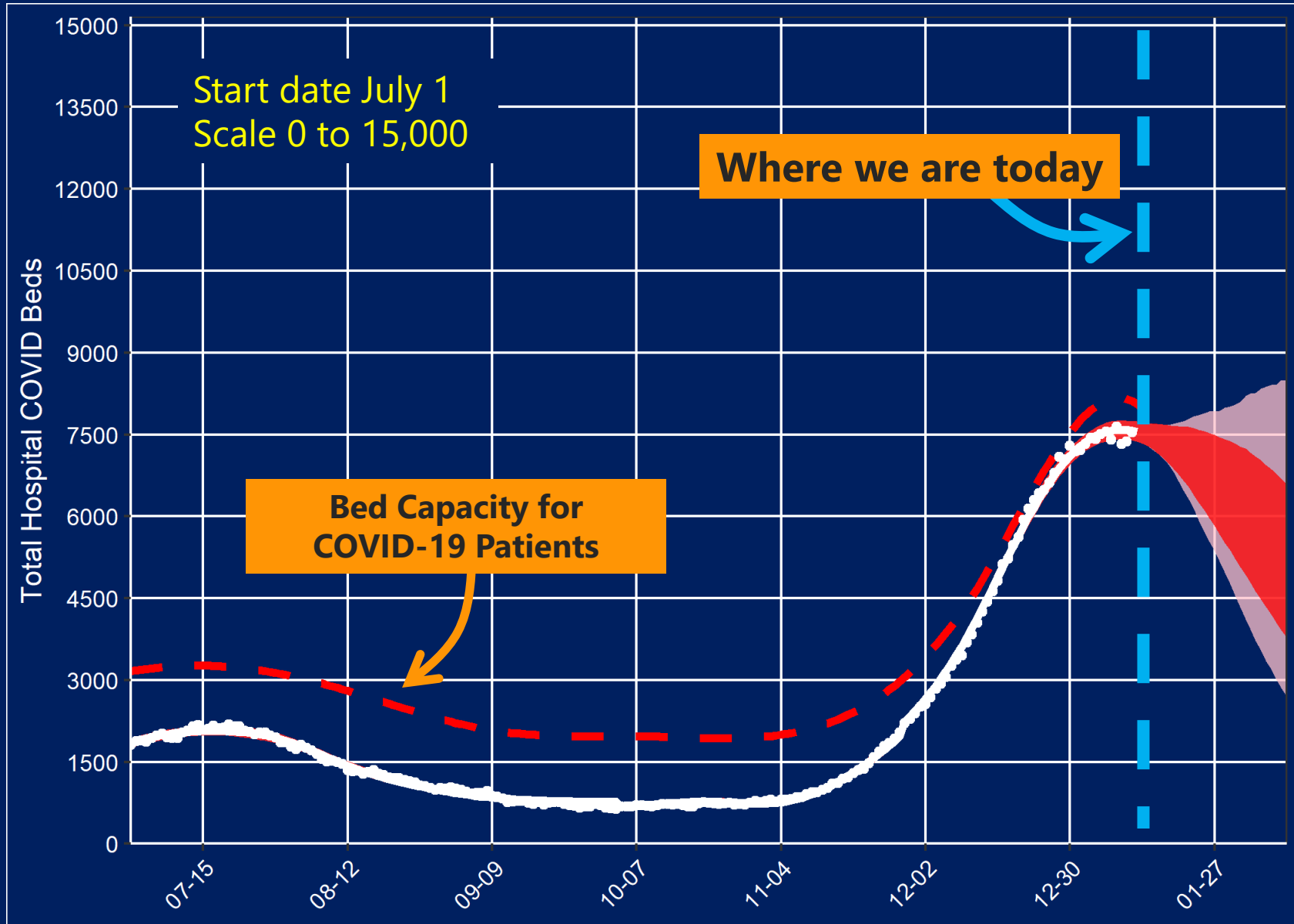
Uncertainty assuming no increase in transmission over the holiday season

Effective Transmission Number "R": If No Higher Holiday Transmission



Note: We have adjusted the R that we present to account for the fraction of the population that is presumed to be immune to reinfection. At the beginning of the pandemic, this fraction was essentially zero so this would not have made any difference. But as more people have been infected, and are presumed to have immunity, we are presenting an R that includes this factor.

Predictions of Hospital Bed Demand: If No Higher Holiday Transmission

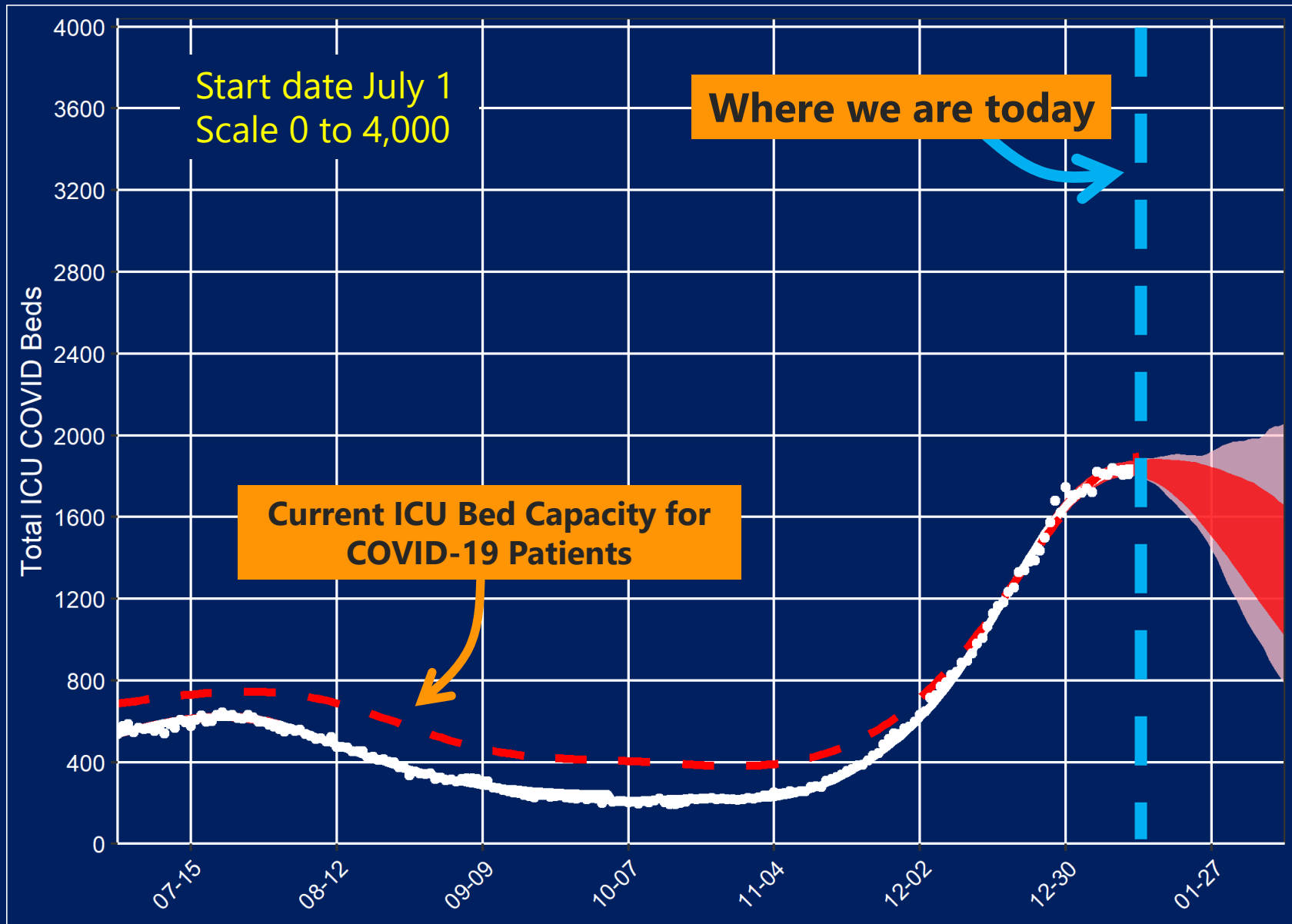


The hospital census will be higher if there was a large increase in transmission during the holiday season

Additional uncertainty if transmission behavior varies

Uncertainty with no recent change in transmission behavior

Predictions of ICU Bed Demand: If No Higher Holiday Transmission

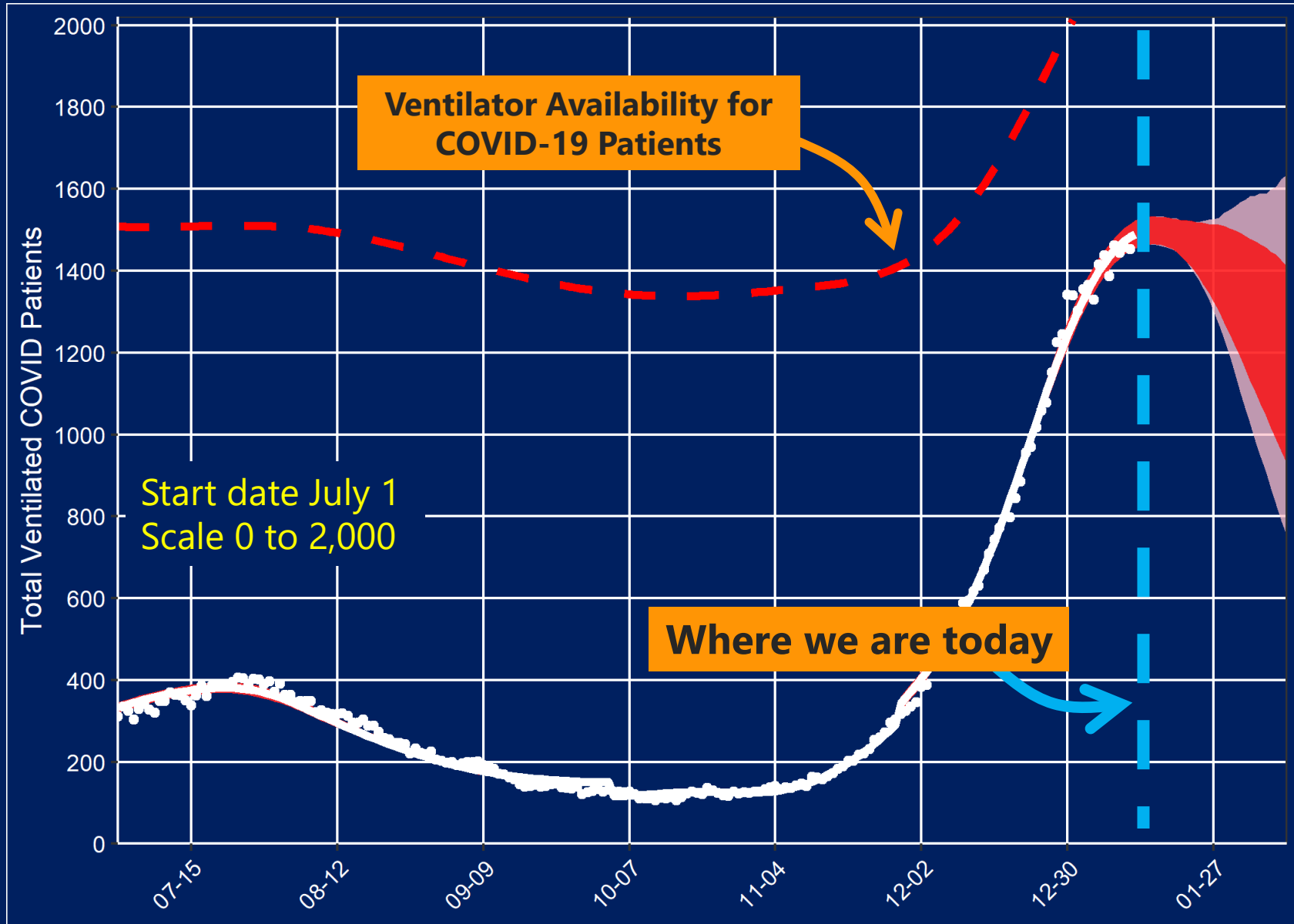


The ICU census will be higher if there was a large increase in transmission during the holiday season

Additional uncertainty if transmission behavior varies

Uncertainty with no recent change in transmission behavior

Predictions of Ventilator Demand: If No Higher Holiday Transmission

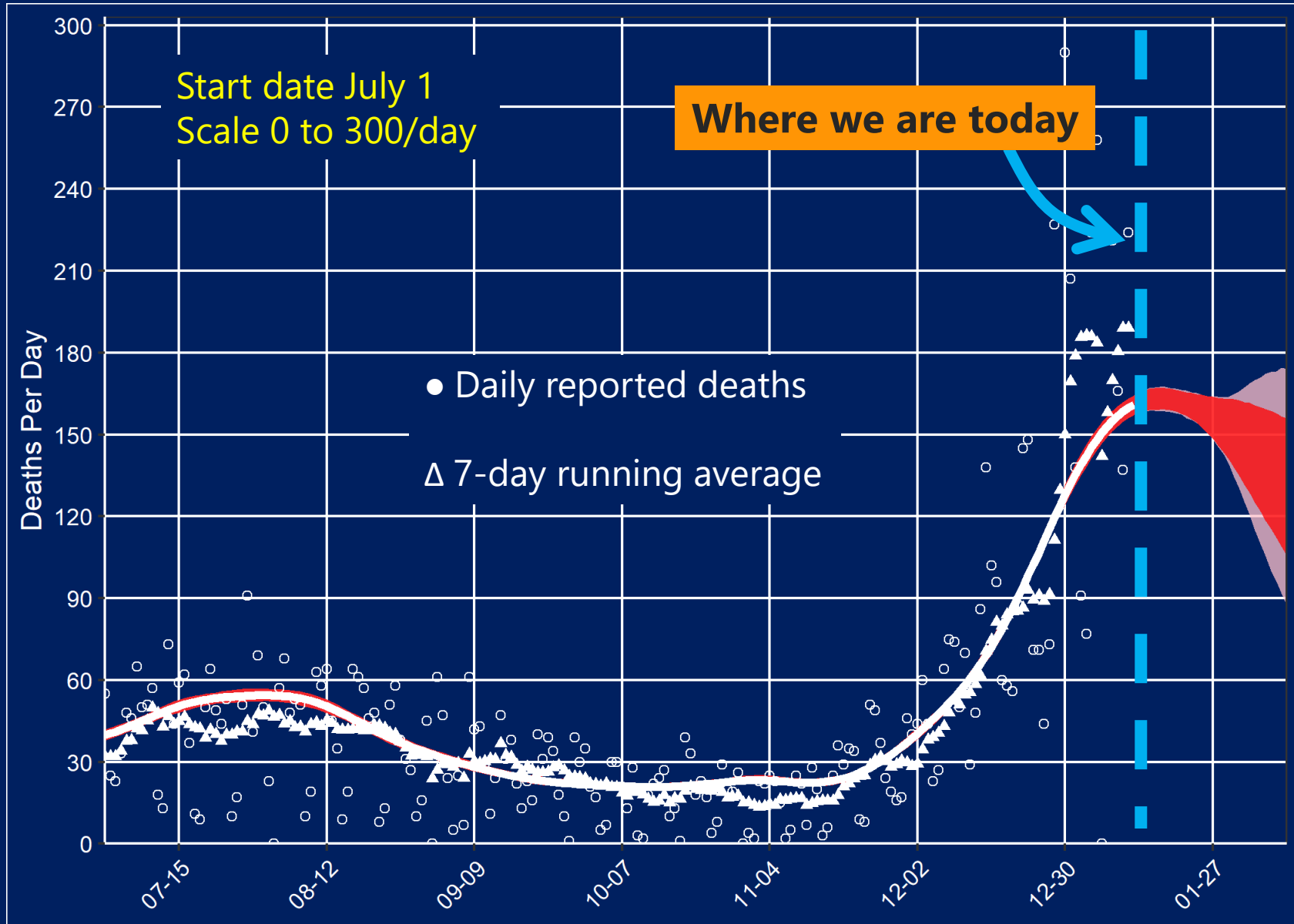


Ventilator demand will be higher if there was a large increase in transmission during the holiday season

Uncertainty with no recent change in transmission behavior

Additional uncertainty if transmission behavior varies

Predictions of Daily Mortality: If No Higher Holiday Transmission



Daily mortality will be higher if there was a large increase in transmission during the holiday season

Uncertainty with no recent change in transmission behavior

Additional uncertainty if transmission behavior varies