

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

October 28, 2020 Update

County DHS COVID-19 Predictive Modeling Team:

Roger J. Lewis, MD, PhD;¹ Juliana Tolles, MD, MHS;¹ M. Claire Jarashow, PhD, MPH;² Fei Wu, PhD;³ Joe Marion, PhD;⁴ Kert Viele, PhD;⁴ Todd Graves, PhD;⁴ Henry Shin;¹ Frederic Schoenberg, PhD;⁵ Andrea Bertozzi, PhD;⁵ Tom Belin, PhD⁵

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



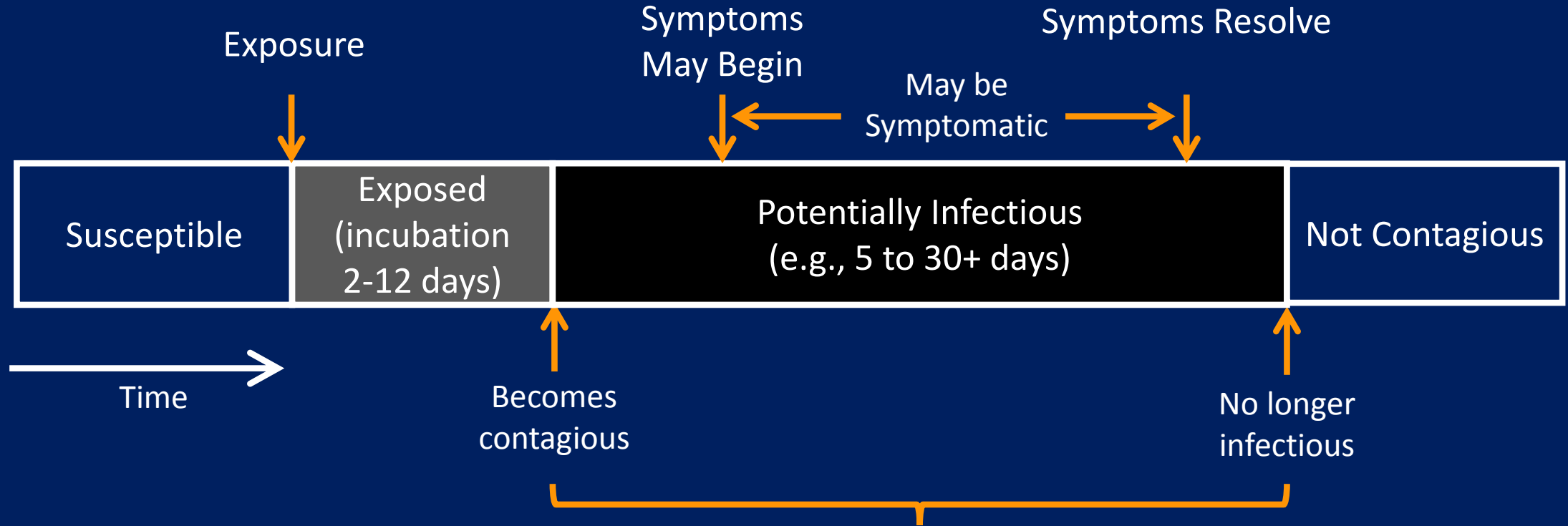
Key Findings of the October 28th Update

- This update includes data on hospital visits and volume through October 26, 2020.
- While the underlying model is unchanged, the projections for the total fraction of persons in Los Angeles County experiencing infection with COVID-19 have been extended to March 31, 2021.
- Key findings:
 - The number of new patients with COVID-19 requiring hospitalization each day across Los Angeles County appears to be unchanged or slightly reduced from last week.
 - The estimated transmission number (“R”) is 0.95 with an uncertainty of 0.84 to 1.05. Last week the estimate was 1.04 with an uncertainty of 0.97 to 1.11. If R is below 1 the number of cases will decrease over time.
 - Based on the current estimate for R, it is likely that the number of cases will go down. The current number of hospital beds, ICU beds, and ventilators in Los Angeles County are likely adequate over the next 4 weeks.
 - The model suggests about 1 in 1000 Los Angeles County residents are currently infectious to others and that about 1 in 6 have had COVID-19.

How Many in Los Angeles are Infectious to Others?

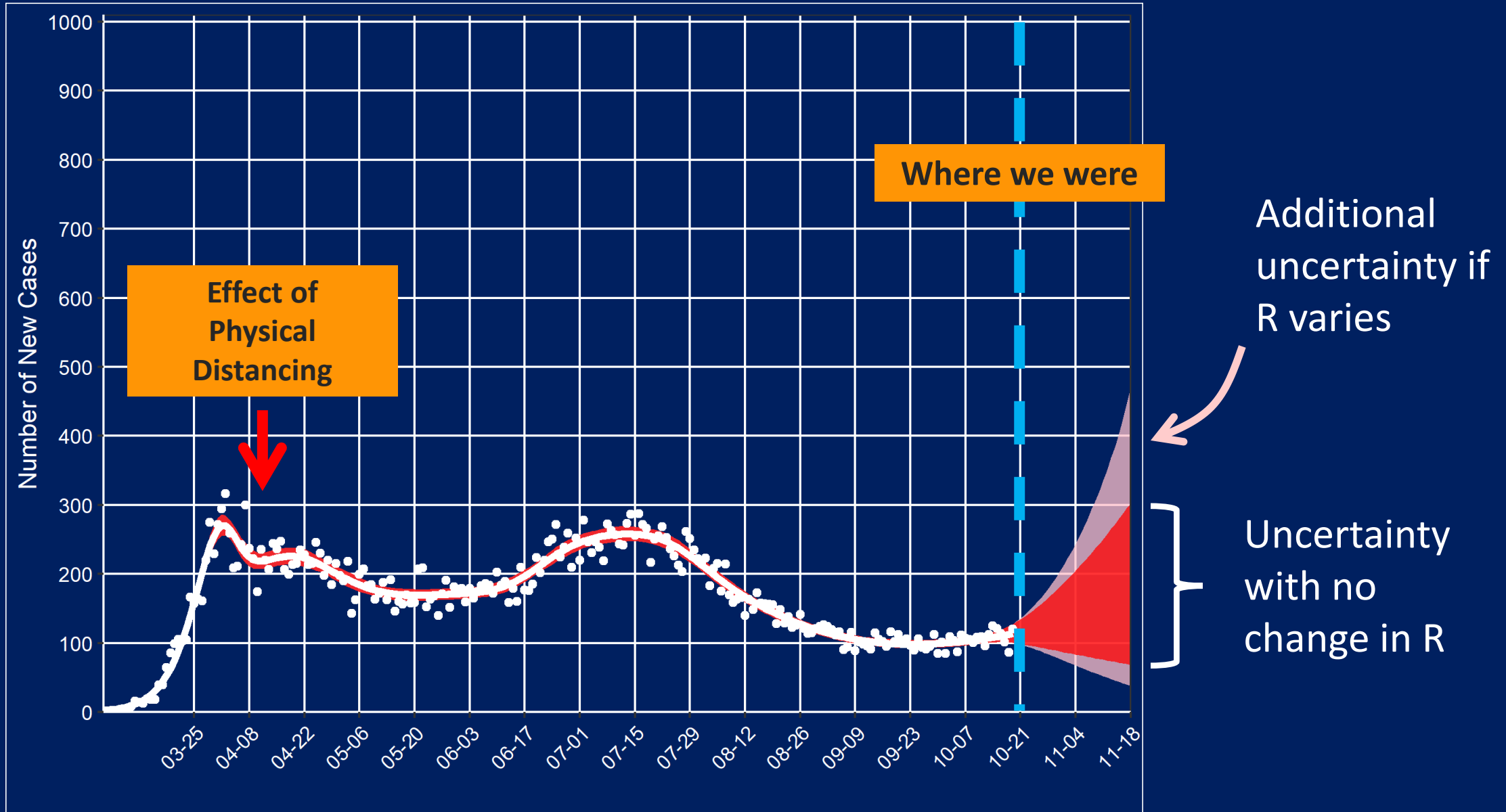
- The DHS team's epidemic model estimates the number of people in Los Angeles County who:
 - Are still **susceptible** to infection if exposed;
 - Have been **exposed** and are incubating, but not infectious;
 - Have COVID-19 and are **infectious** to others, though they may have no symptoms; and
 - Have had COVID-19 and either **recovered** or died, so they are no longer infectious
- The model suggest that about 0.10% (uncertainty of 0.04% to 0.18%) of everyone in Los Angeles County is currently infected and infectious to others.
- This suggests about 1 in 1000 (between 1 in 2300 and 1 in 600) Los Angeles County residents are currently infectious to others. Last week this estimate was 1 in 650.

A Patient's Journey | COVID-19

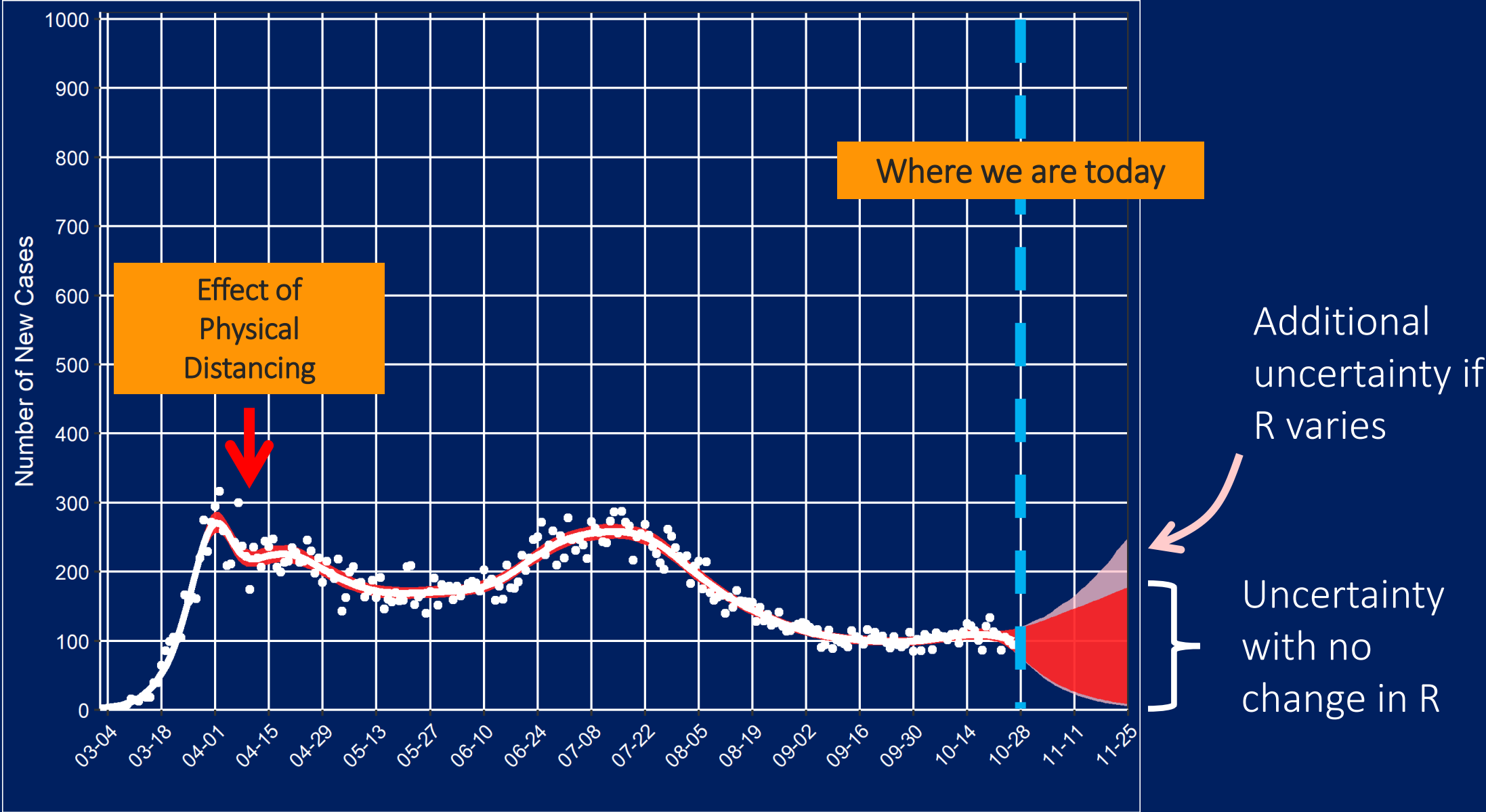


Goal of physical distancing, public use of cloth face coverings, quarantine, isolation and similar actions is to reduce the number of new susceptible people exposed during this time

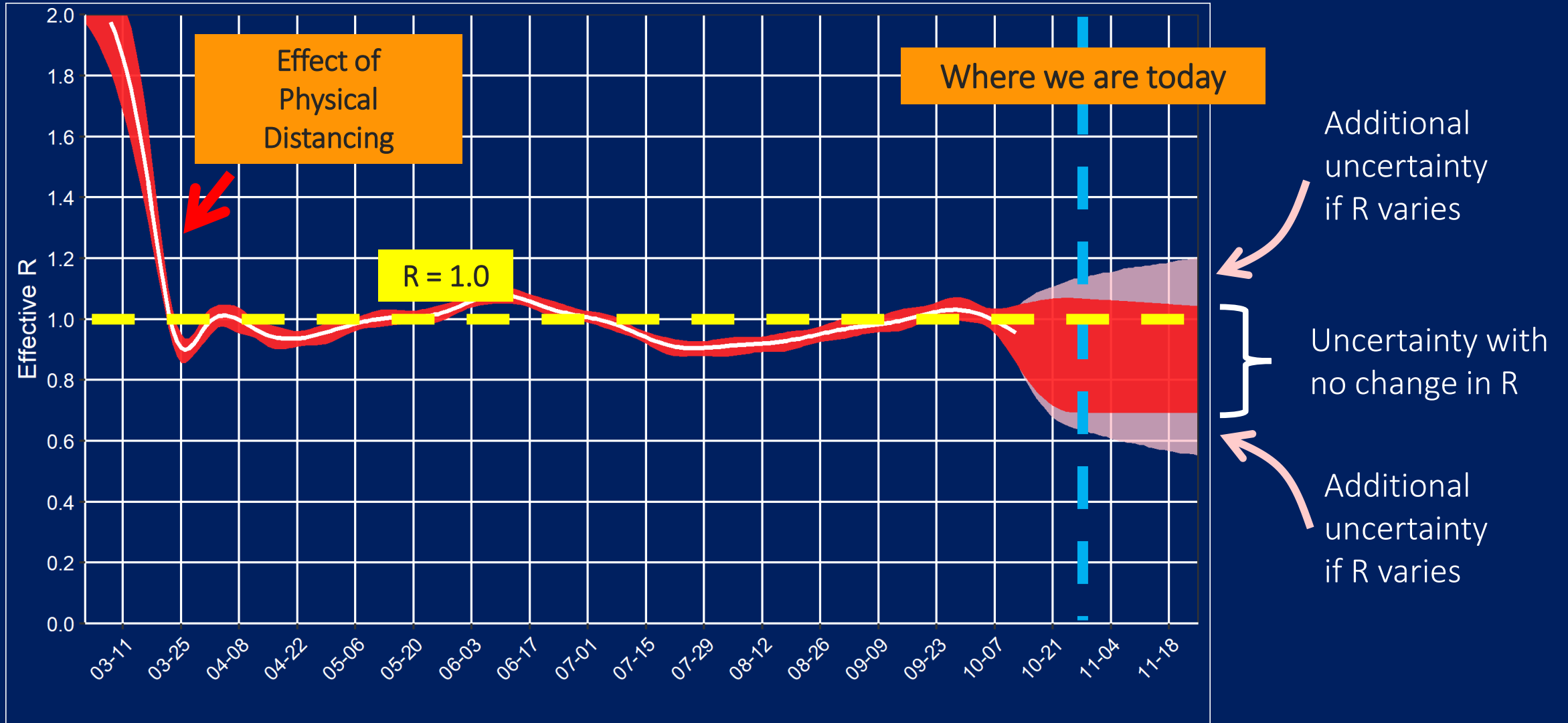
Hospital New Patient Projections: From Last Week



Hospital New Patient Projections

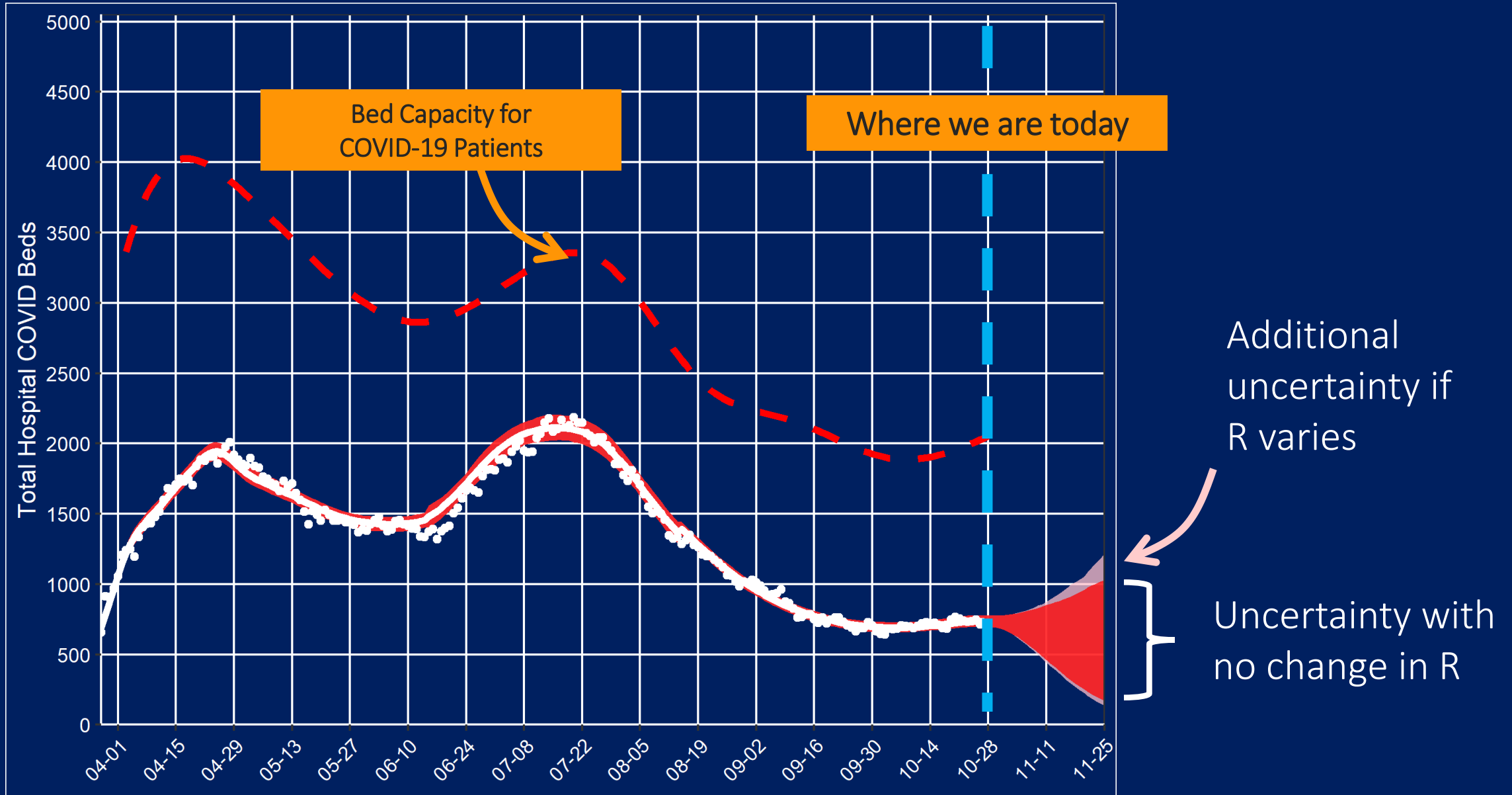


Effective Transmission Number “R”

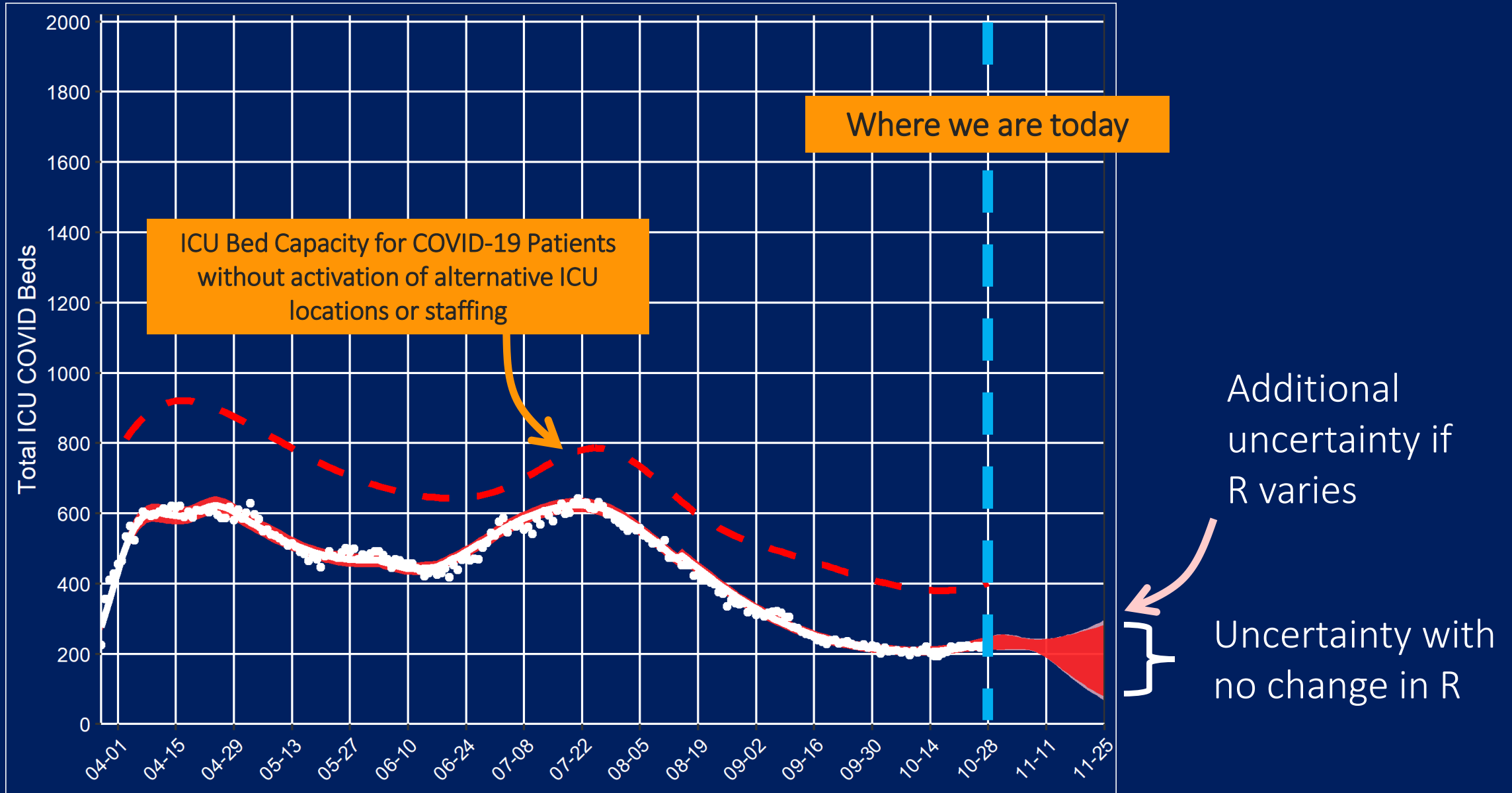


Note: We have adjusted the R that we present to account for the fraction of the population that is presumed to be immune to reinfection. At the beginning of the pandemic, this fraction was essentially zero so this would not have made any difference. But as more people have been infected, and are presumed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

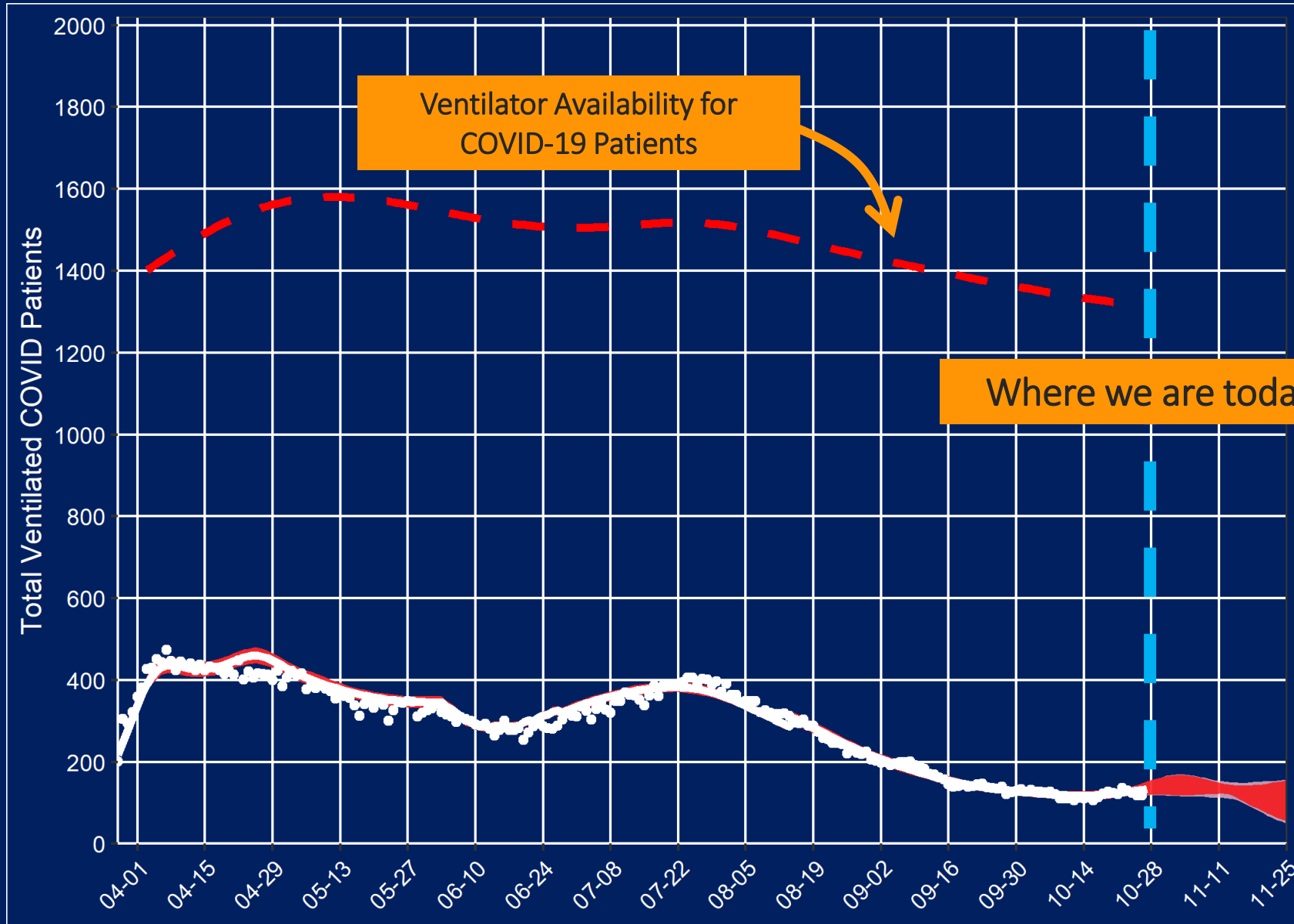
Predictions of Demand in LA County | Hospital Beds



Predictions of Demand in LA County | ICU Beds



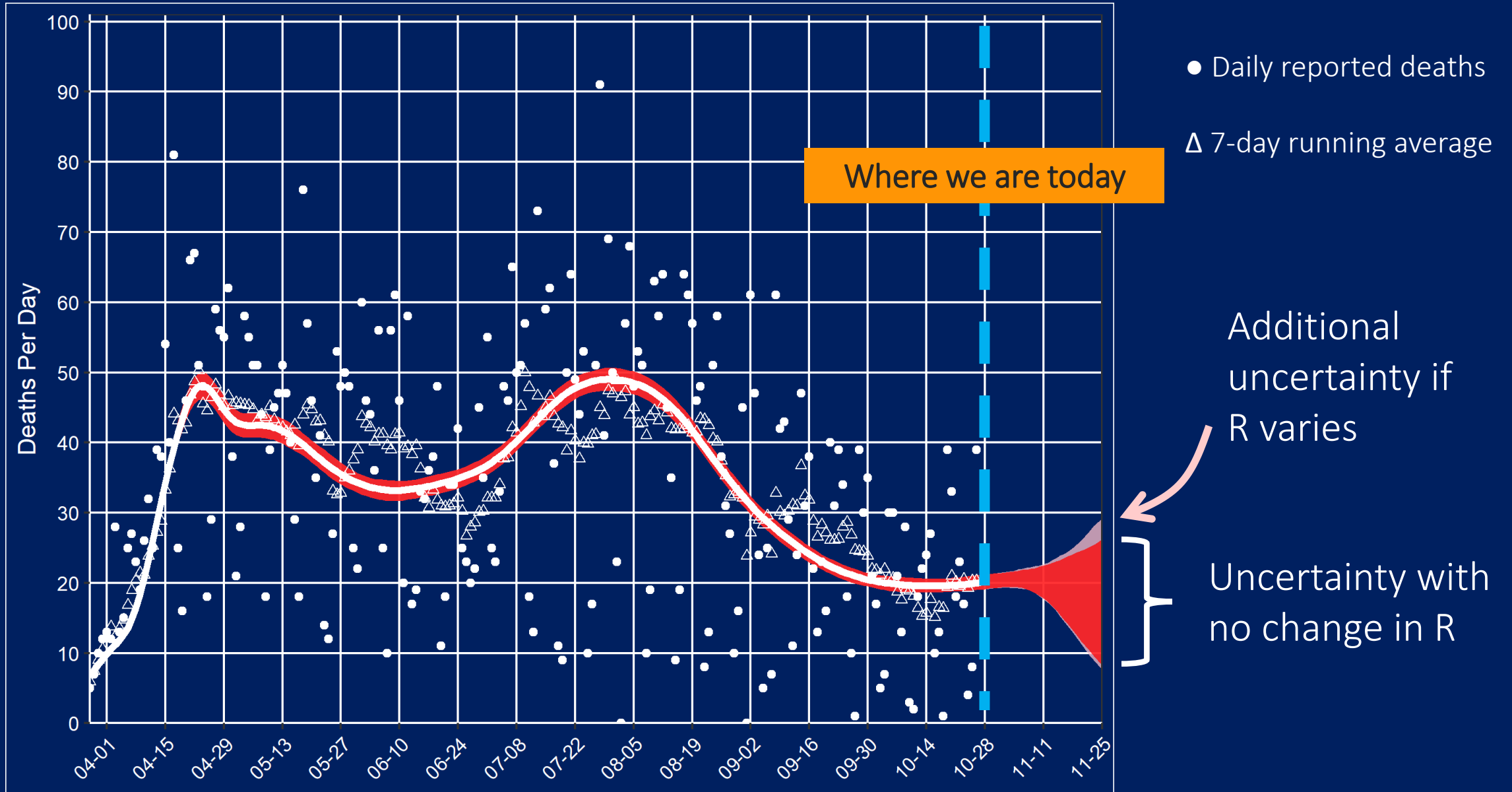
Predictions of Demand in LA County | Ventilators



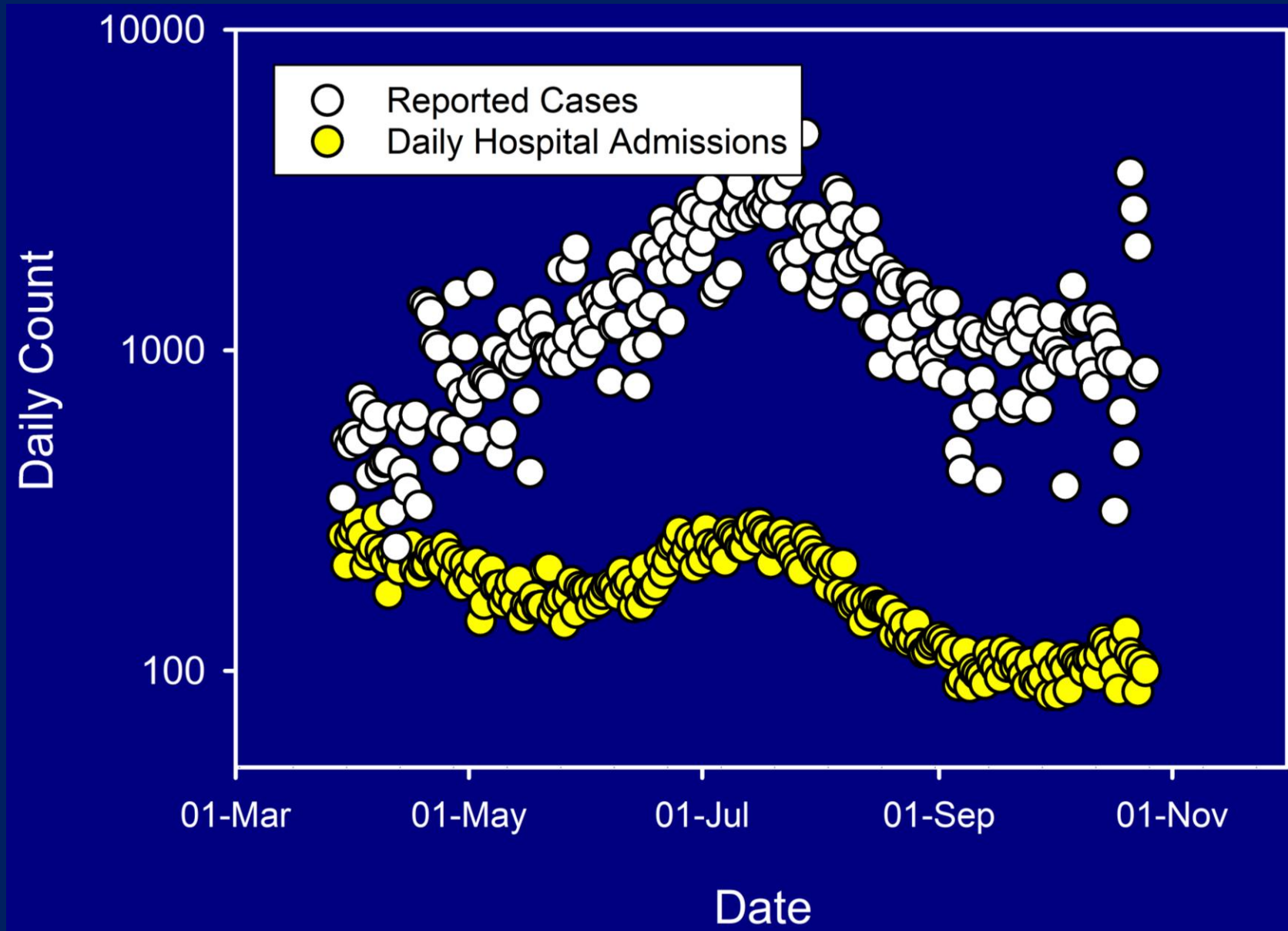
Additional uncertainty if R varies

Uncertainty with no change in R

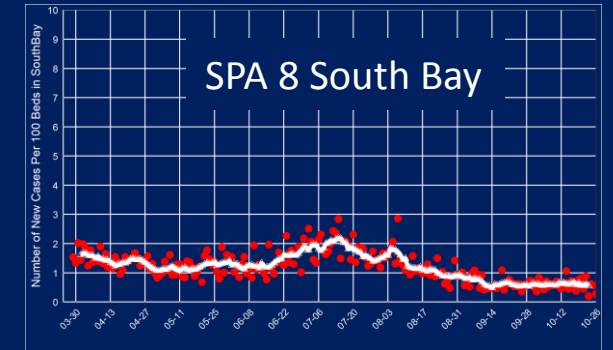
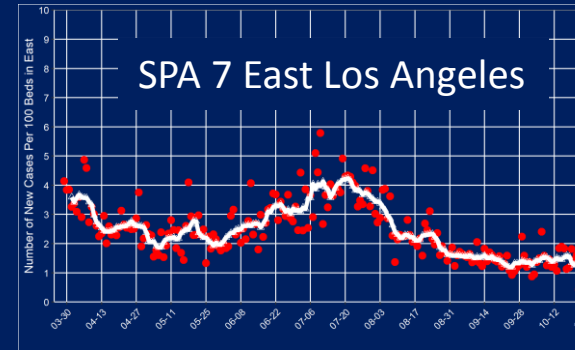
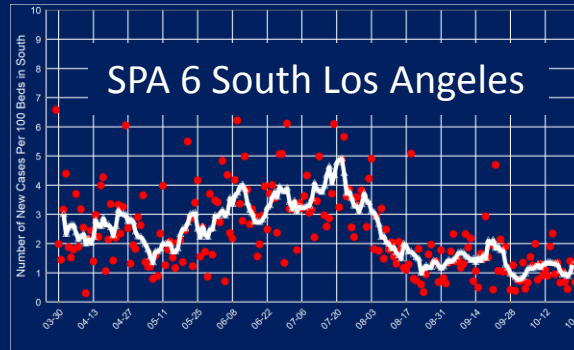
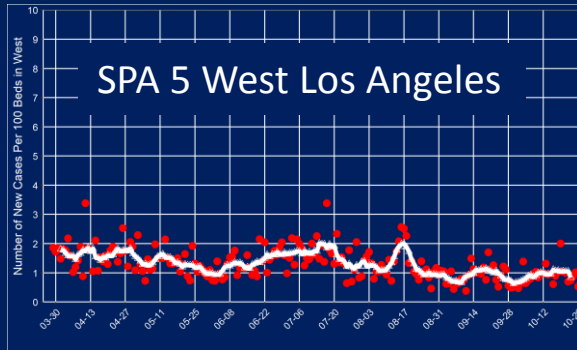
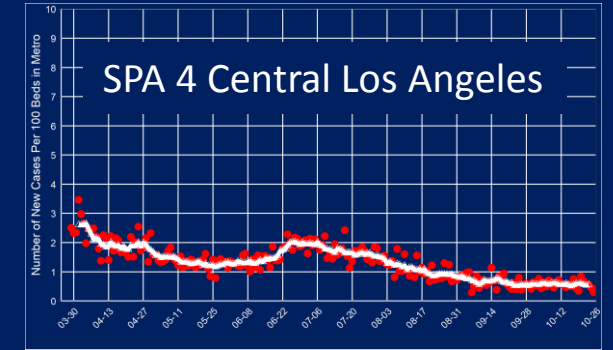
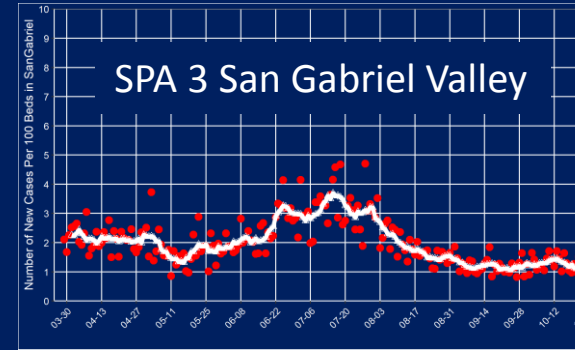
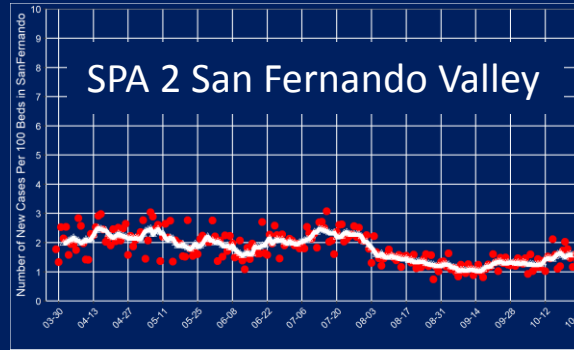
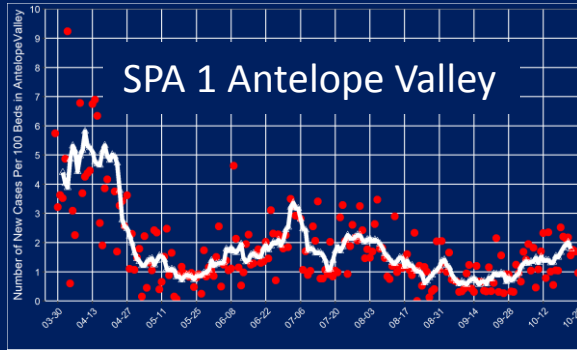
Predictions of Daily Mortality LA County



Hospital Admissions are a Varying Fraction of New Cases



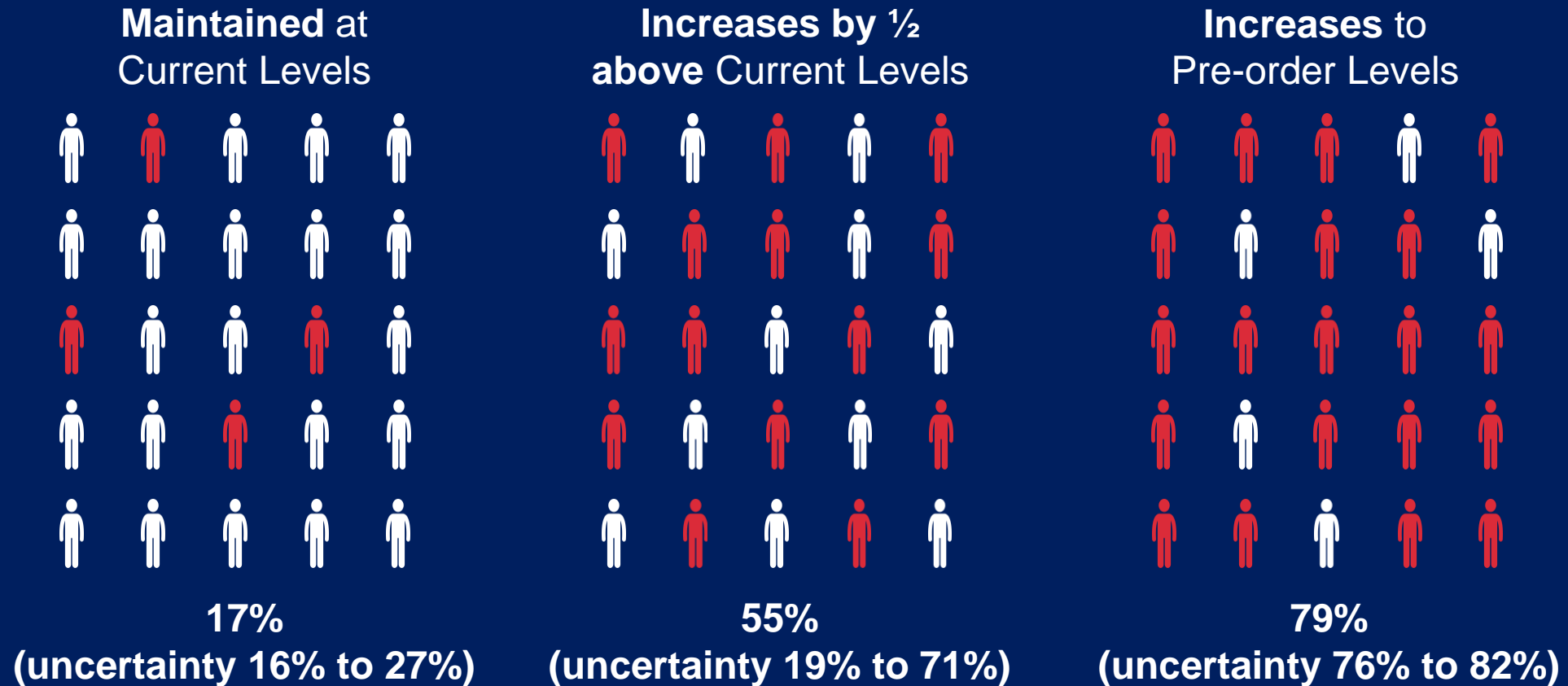
Daily New COVID-19 Hospitalizations by Service Planning Areas (SPAs), per 100 Hospital Beds



- The transmission of COVID-19 in Los Angeles County is changing over time, with different patterns in different geographic areas
- More detailed geographical analysis is required to identify specific communities needing additional support in identifying cases and limiting spread

Effect of Behaviors to Control Transmission

If transmission....



... of LA County residents will have been infected by March 31, 2021 *

**(This includes adults and children)*