

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

December 16, 2020 Update

County DHS COVID-19 Predictive Modeling Team:

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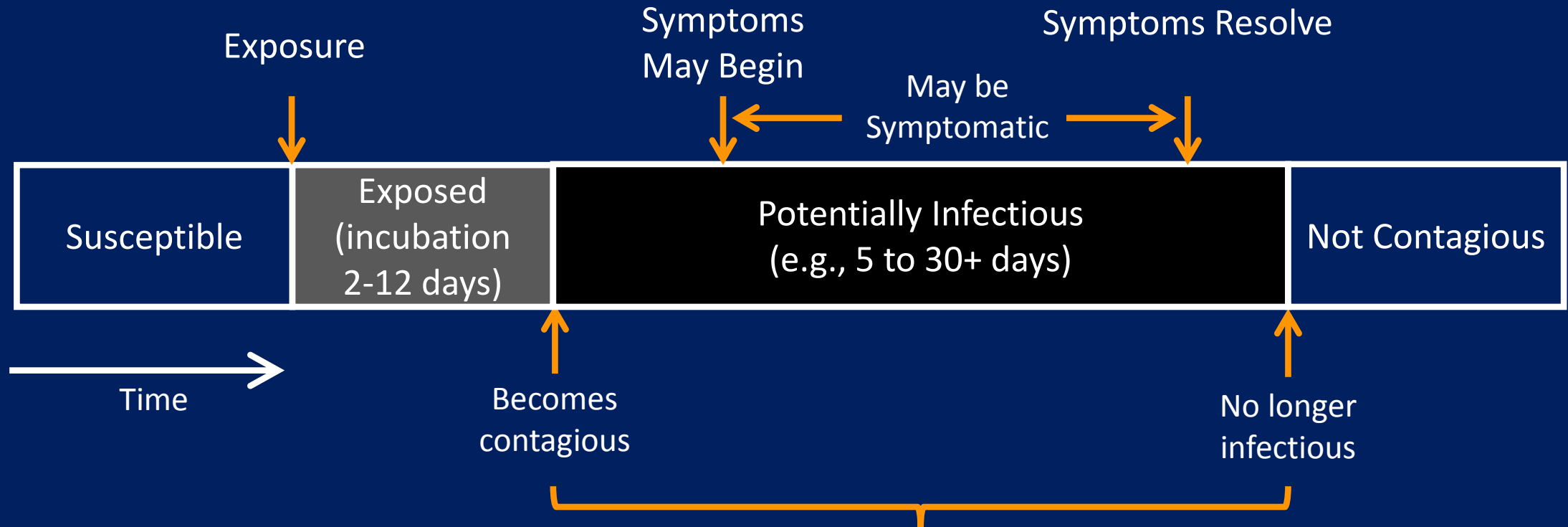
Key Findings of the December 16th Update

- This update includes data through December 14, 2020.
- Because of the increase in COVID-19 hospital utilization and to focus on recent changes, the vertical and horizontal scales on multiple graphs have been changed.
- Key findings:
 - The number of new patients with COVID-19 requiring hospitalization each day across Los Angeles County has continued to increase rapidly.
 - The estimated transmission number (“R”) is 1.20 with an uncertainty of 1.13 to 1.26. This is a marked increase from last week, when the estimate was 1.14 with an uncertainty of 1.09 to 1.21. When R is above 1, cases will increase over time.
 - Based on the current estimate for R, and assuming no change in transmission behavior, the number of cases will continue to increase, with **shortages** in the number of hospital beds and especially ICU beds over the next 4 weeks. The number of ventilators in Los Angeles County may become inadequate over the next 4 weeks as well.
 - The model suggests about 1 in 80 Los Angeles County residents are currently infectious to others and that about 1 in 4 have had COVID-19.

How Many in Los Angeles are Infectious to Others?

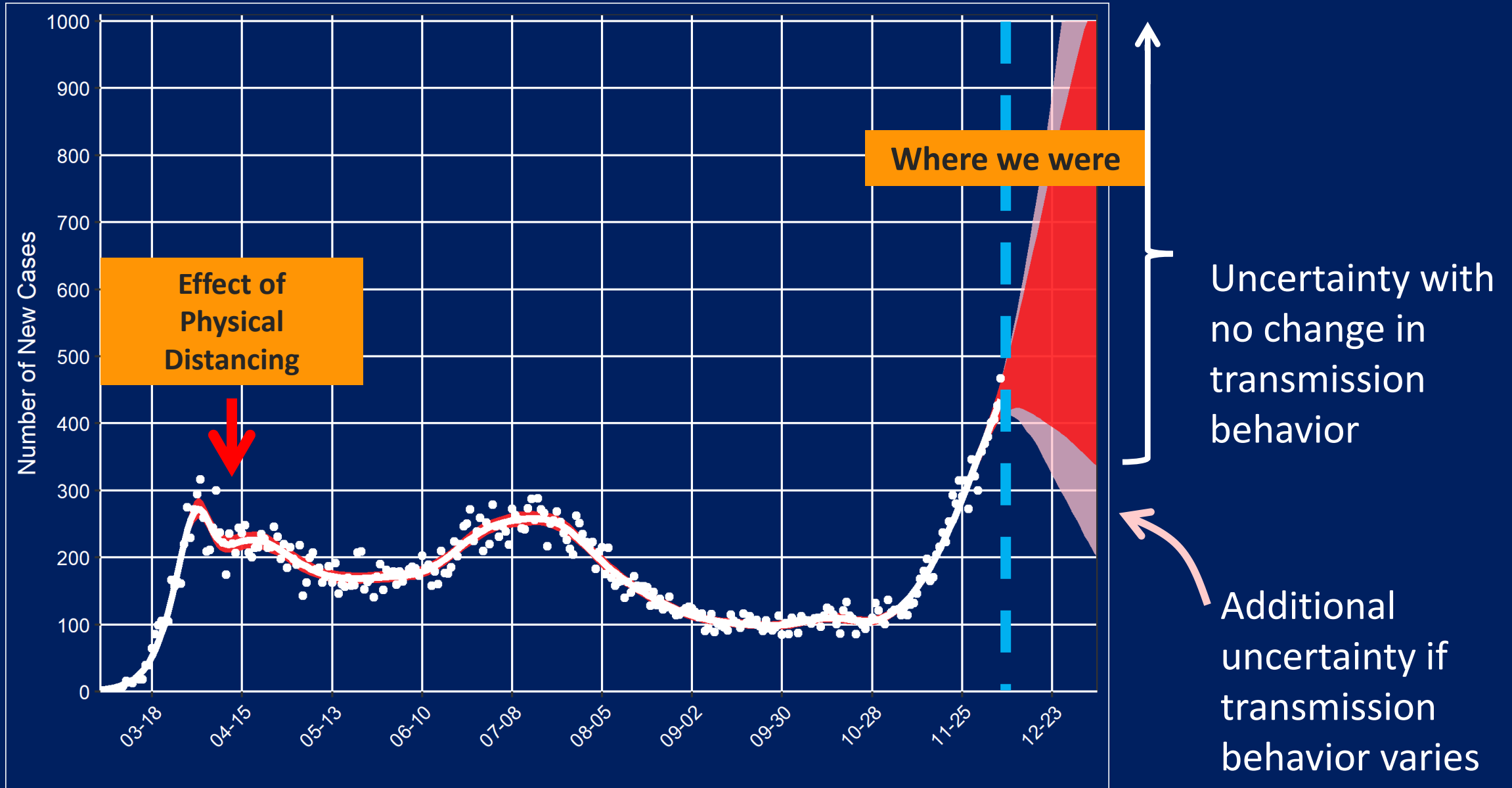
- The DHS team's epidemic model estimates the number of people in Los Angeles County who:
 - Are still **susceptible** to infection if exposed;
 - Have been **exposed** and are incubating, but not infectious;
 - Have COVID-19 and are **infectious** to others, though they may have no symptoms; and
 - Have had COVID-19 and either **recovered** or died, so they are no longer infectious
- The model suggest that about 1.23% (uncertainty of 0.85% to 1.70%) of everyone in Los Angeles County is currently infected and infectious to others.
- This suggests about 1 in 80 (between 1 in 120 and 1 in 60) Los Angeles County residents are currently infectious to others. Last week this estimate was 1 in 140.

A Patient's Journey | COVID-19

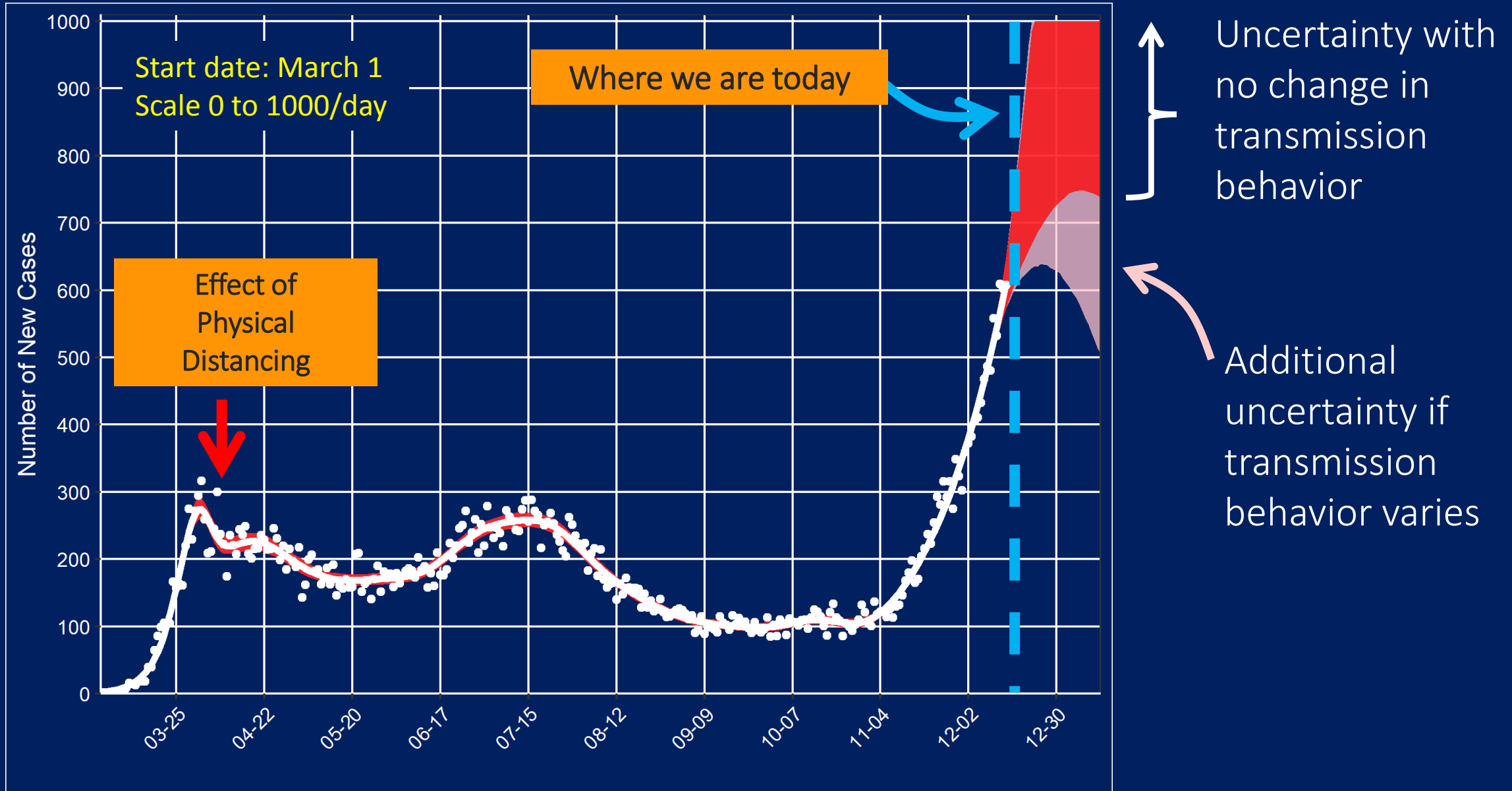


Goal of physical distancing, public use of cloth face coverings, quarantine, isolation and similar actions is to reduce the number of new susceptible people exposed during this time

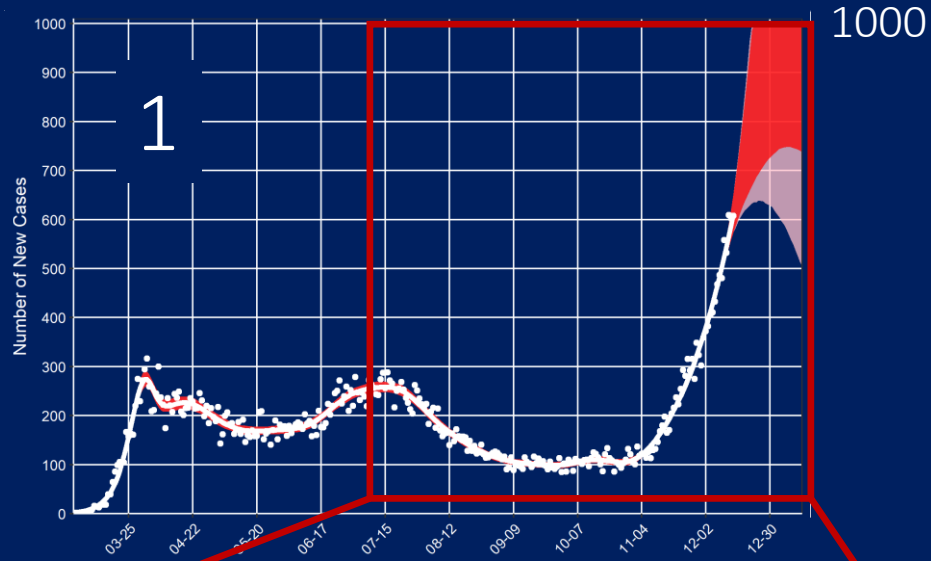
Hospital New Patient Projections: From Last Week



Hospital New Patient Projections: Same Scale as Last Week

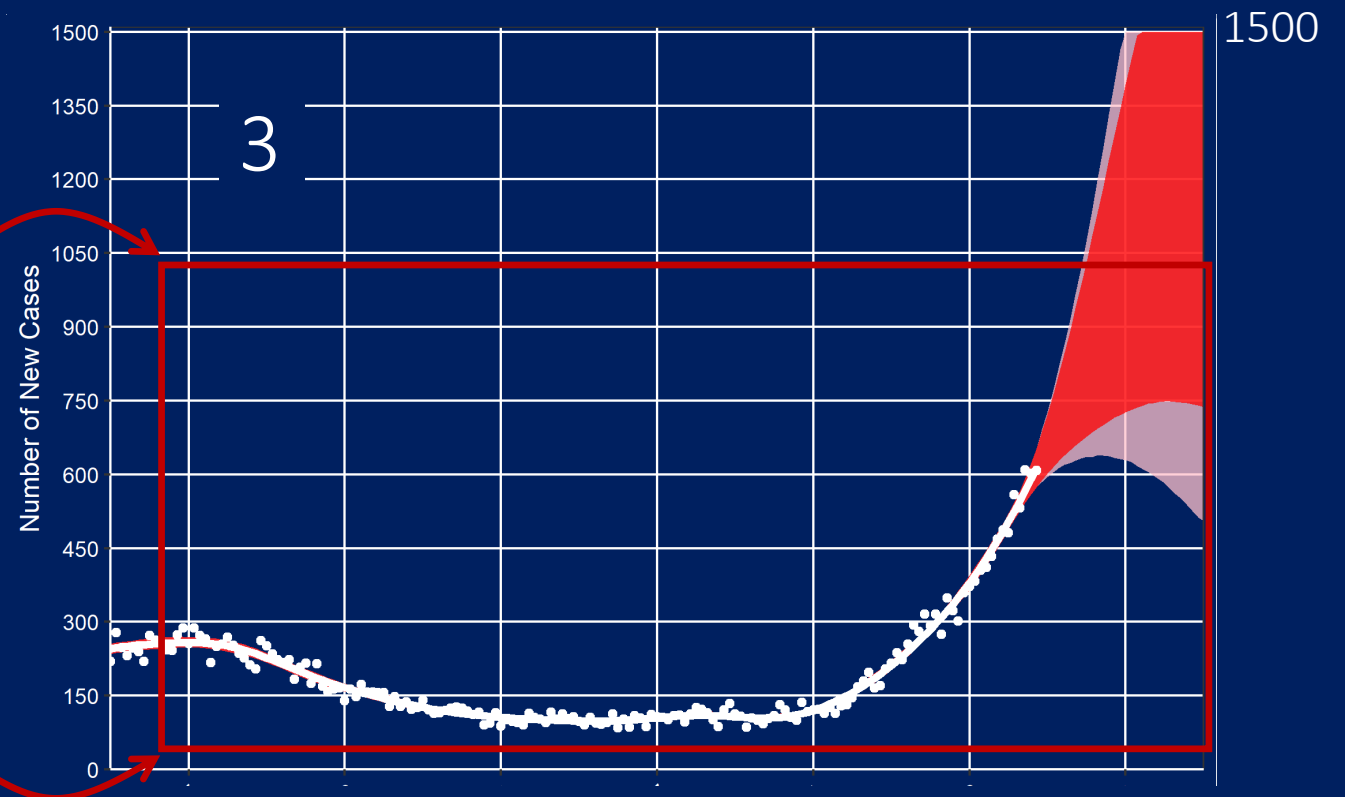
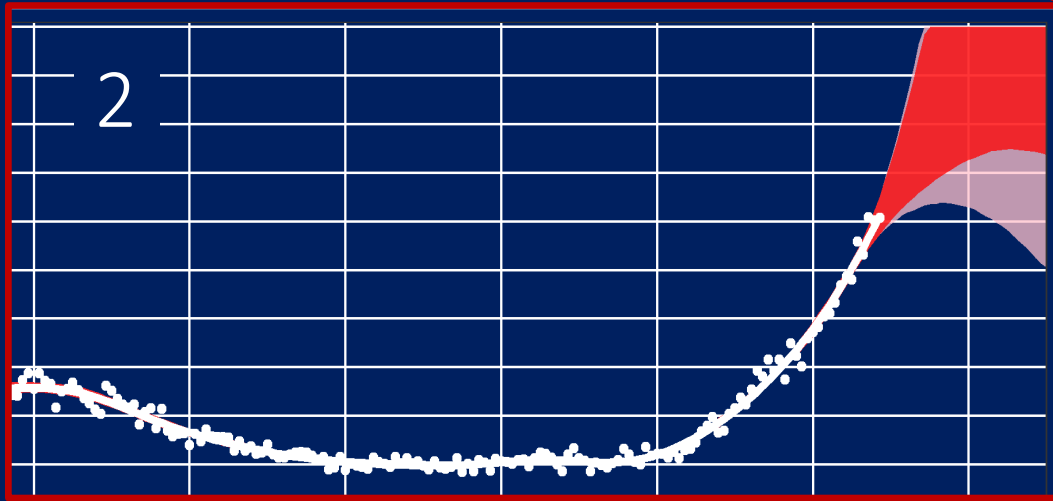


Changes in Scales to Make Room for Current Cases and Projections

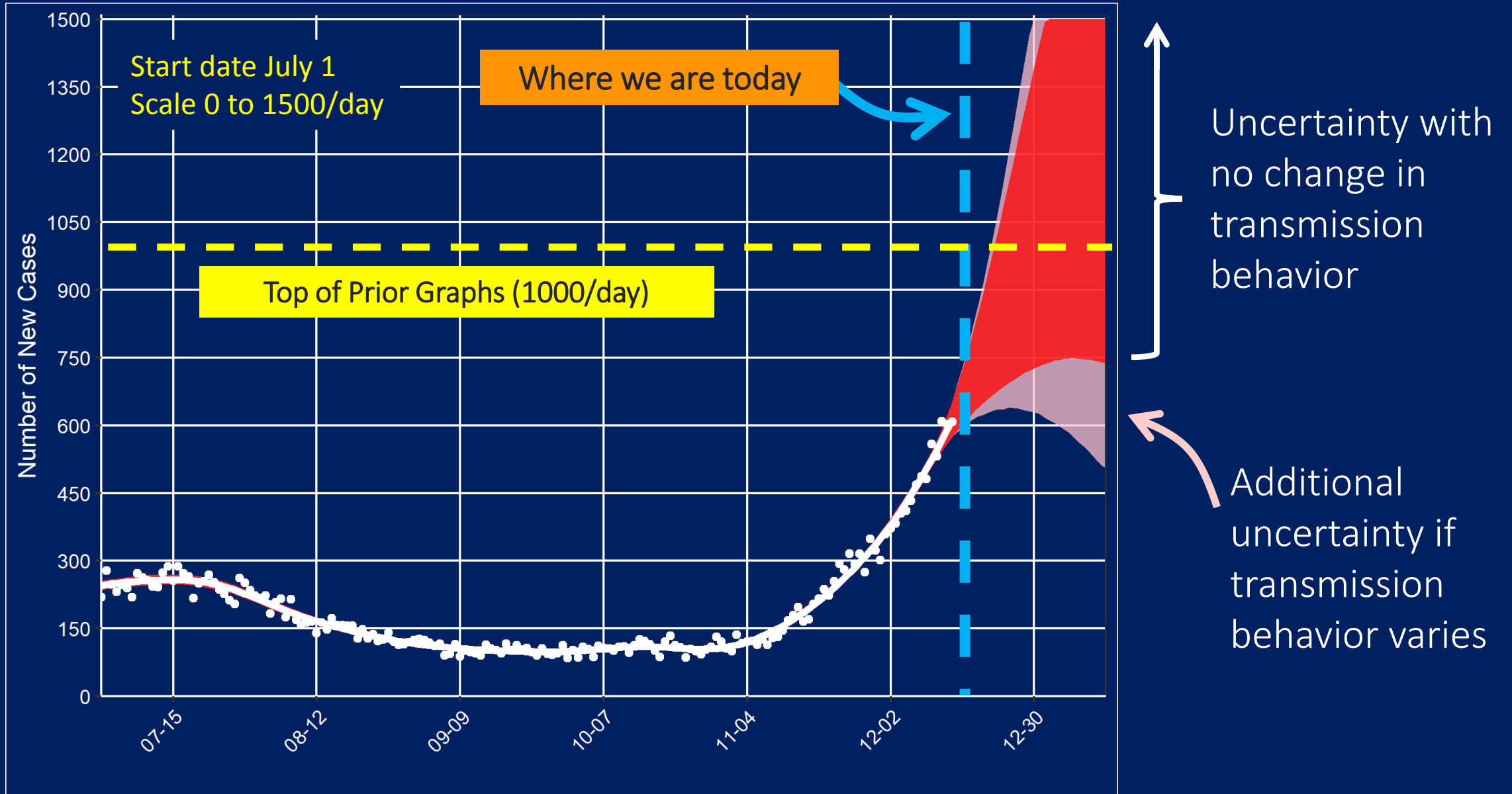


Example Graphic: Daily Admissions

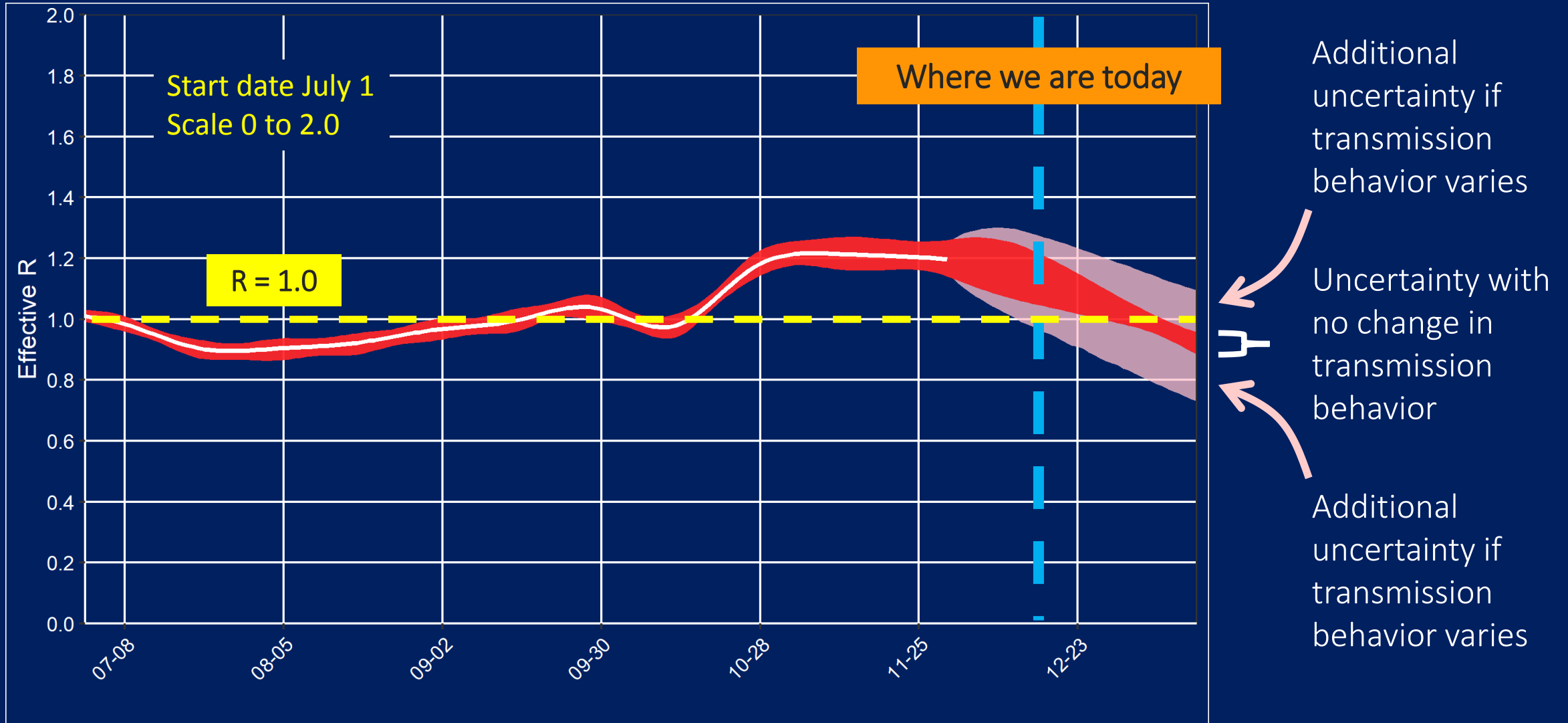
1. Original time scale from beginning of epidemic to present, showing up to 1000 admissions per day
2. Expanded time scale to focus on more recent changes in the epidemic
3. **New format:** Larger vertical scale to show cases or predictions of up to 1500 admission per day



Hospital New Patient Projections | Scale 0 to 1,500/day

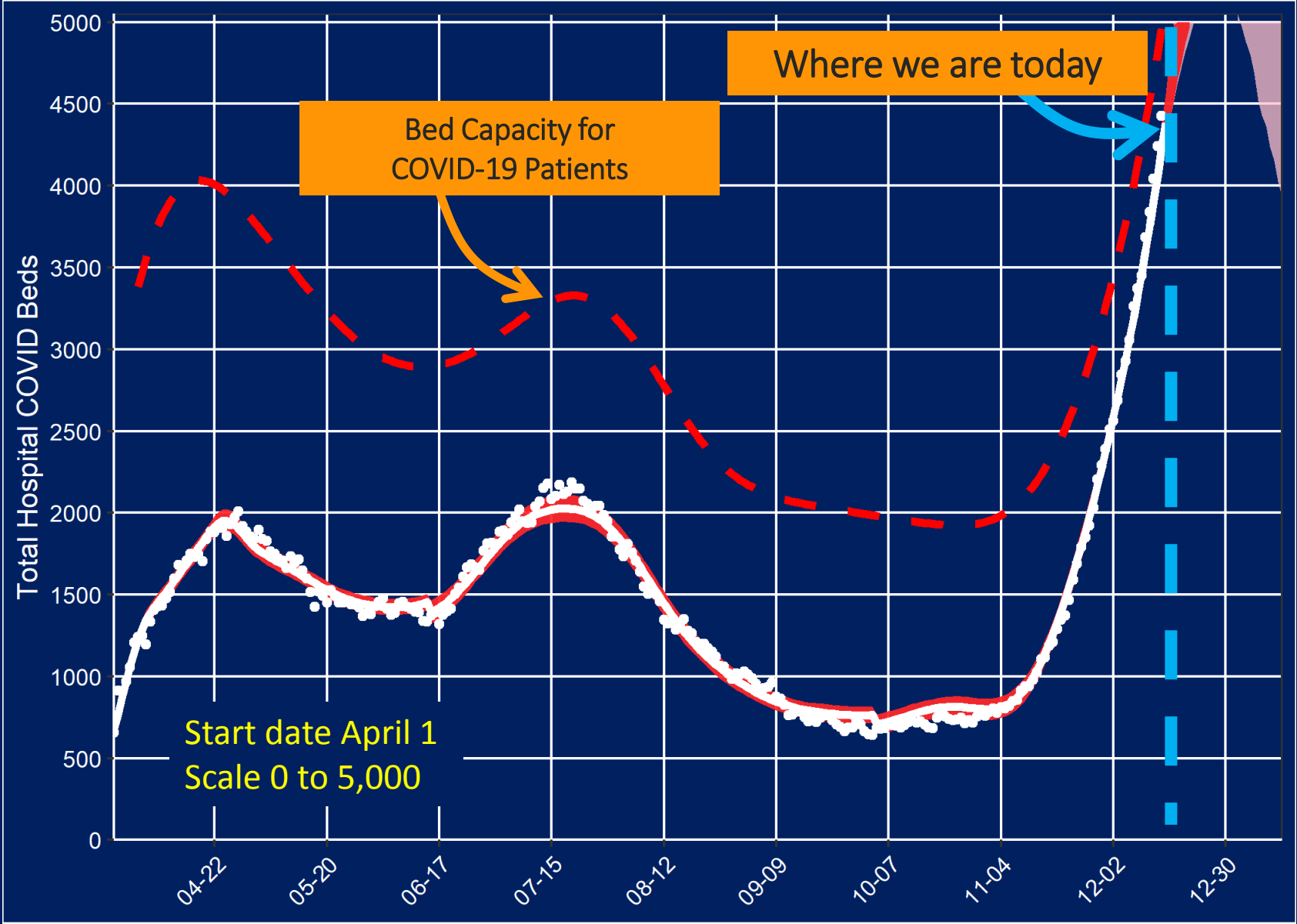


Effective Transmission Number “R”



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.

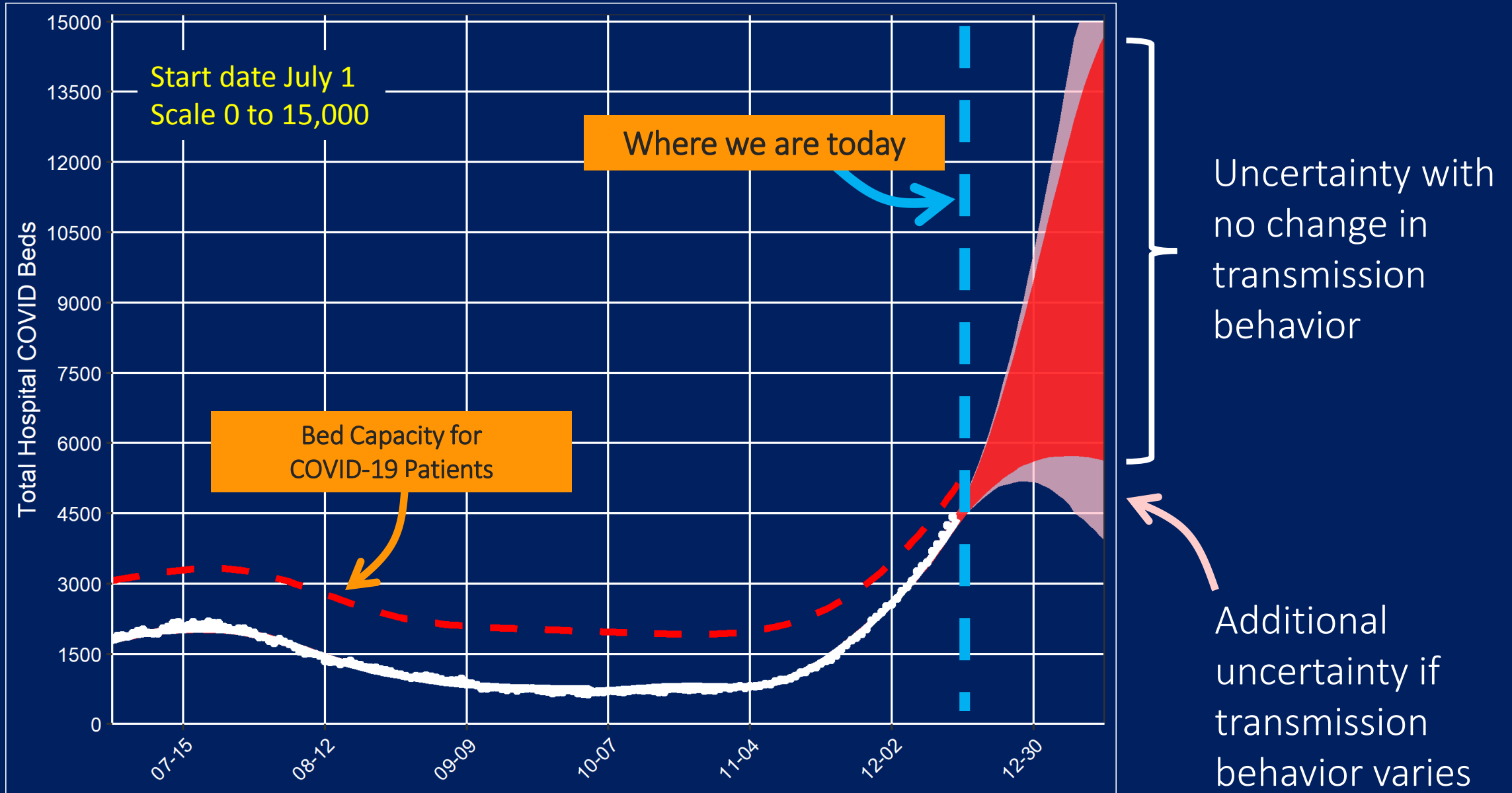
Predictions of Hospital Bed Demand | Scale 0 to 5,000



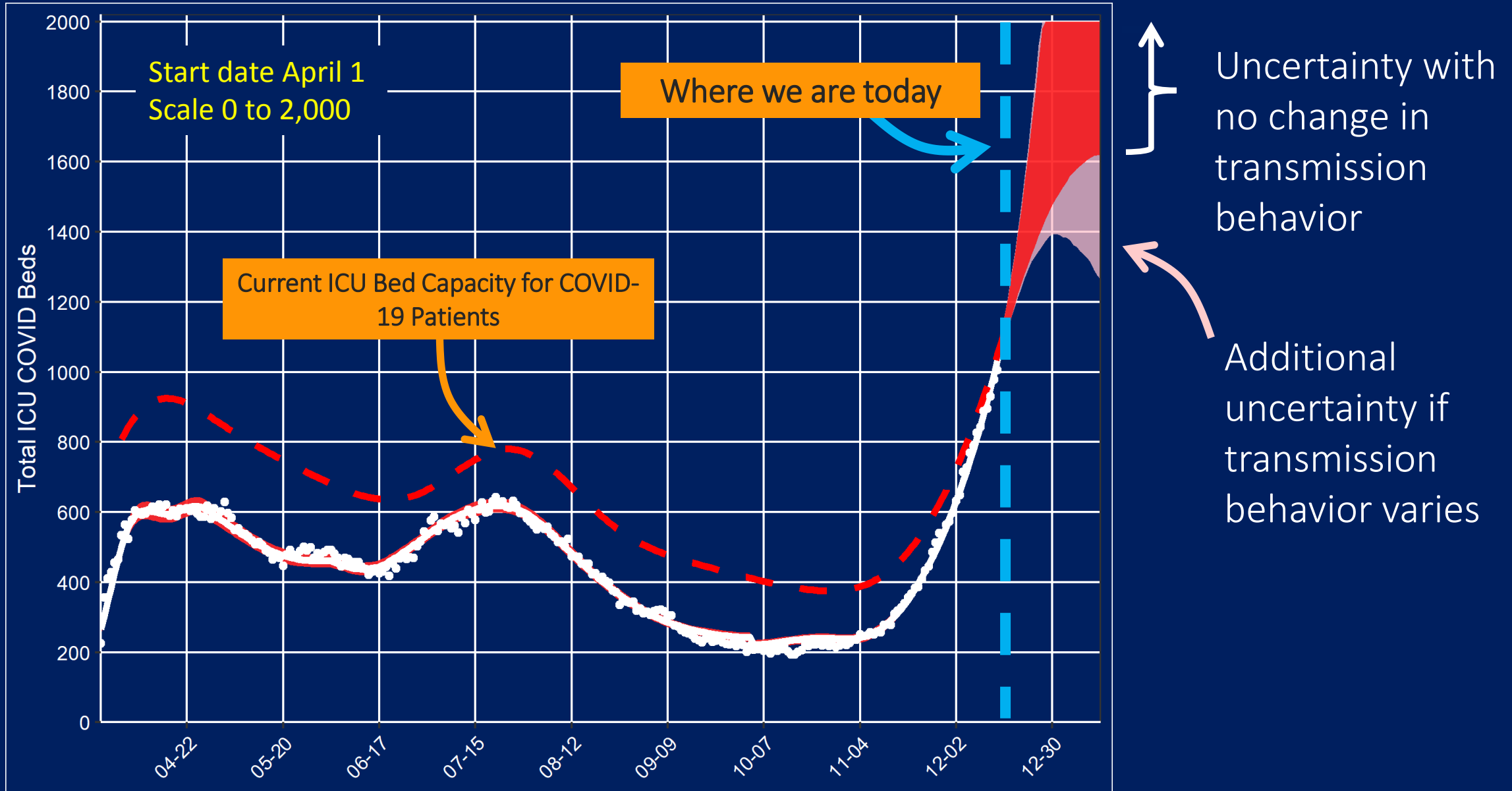
Predicted hospital bed demand is off top of graph

Additional uncertainty if transmission behavior varies

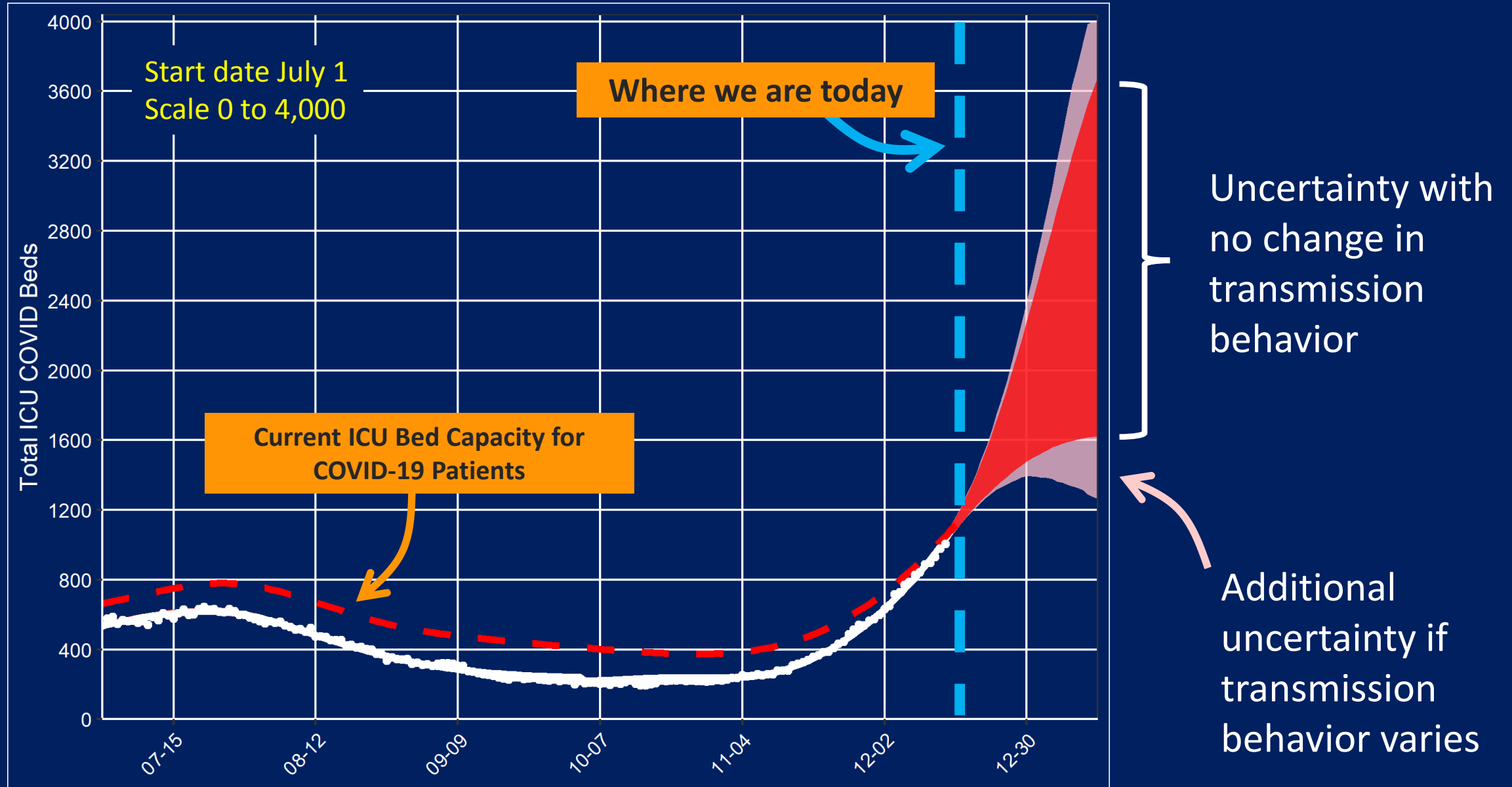
Predictions of Hospital Bed Demand | Scale 0 to 15,000



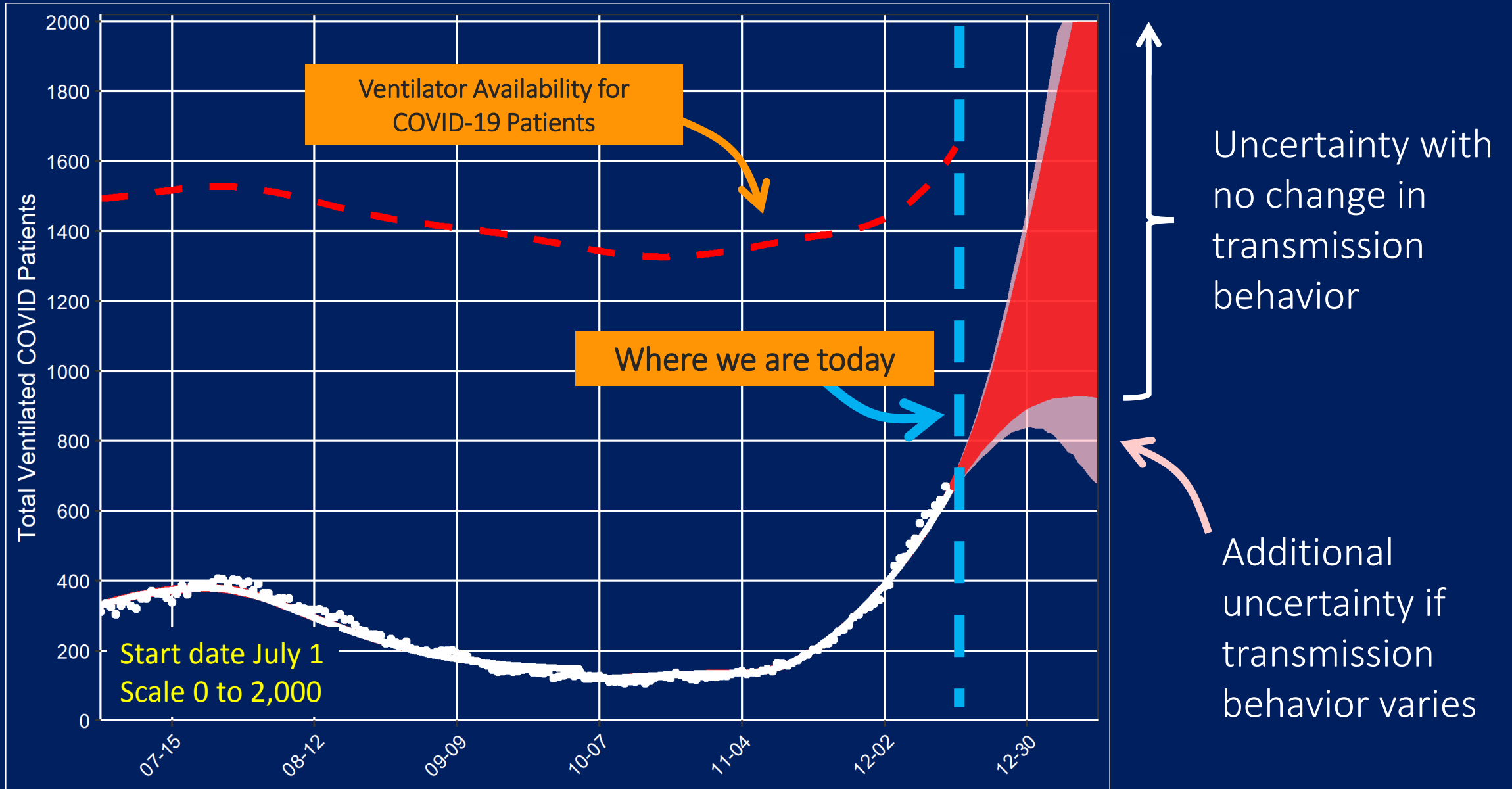
Predictions of ICU Bed Demand | Scale 0 to 2,000



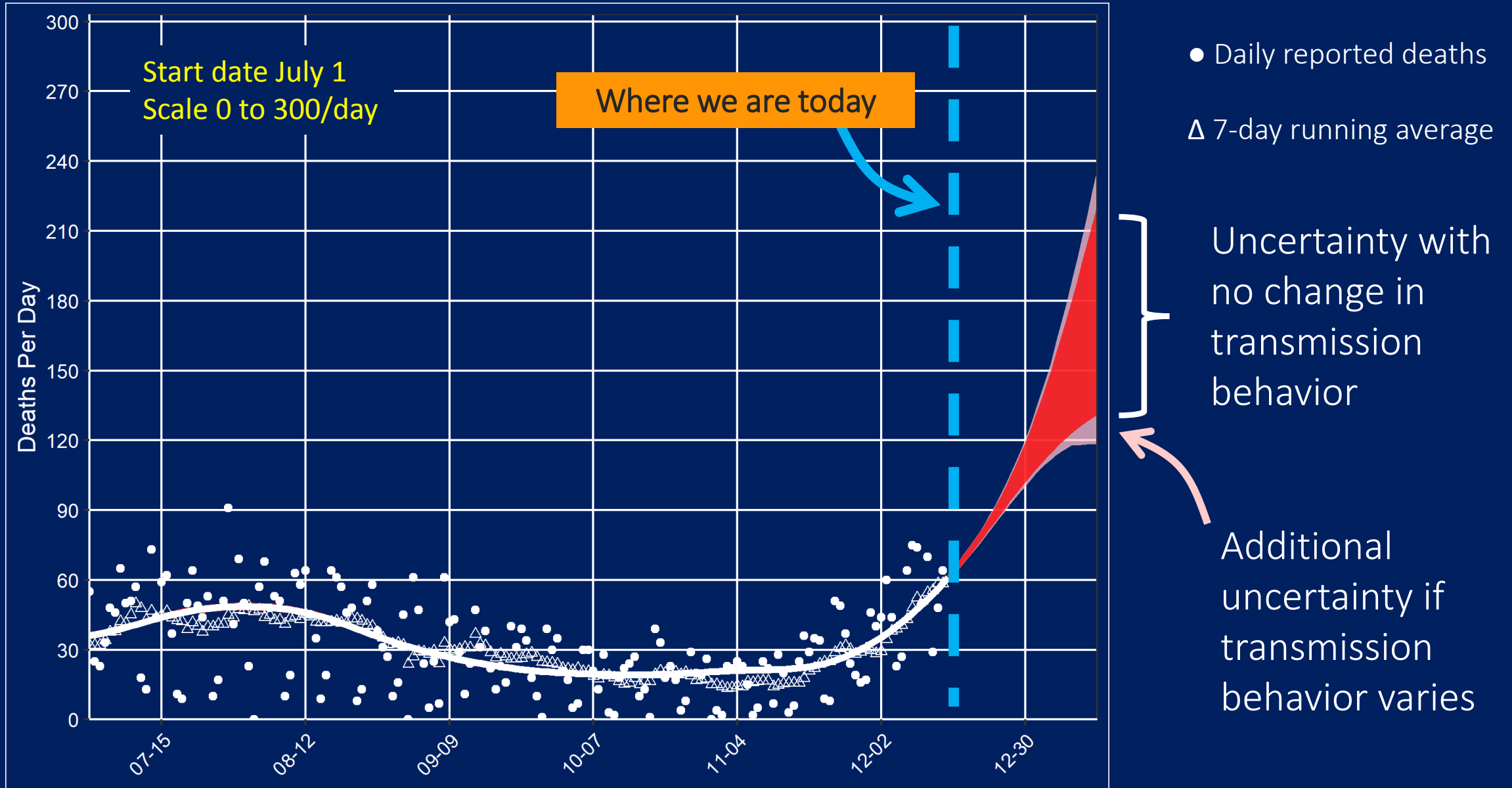
Predictions of ICU Bed Demand | Scale 0 to 4,000



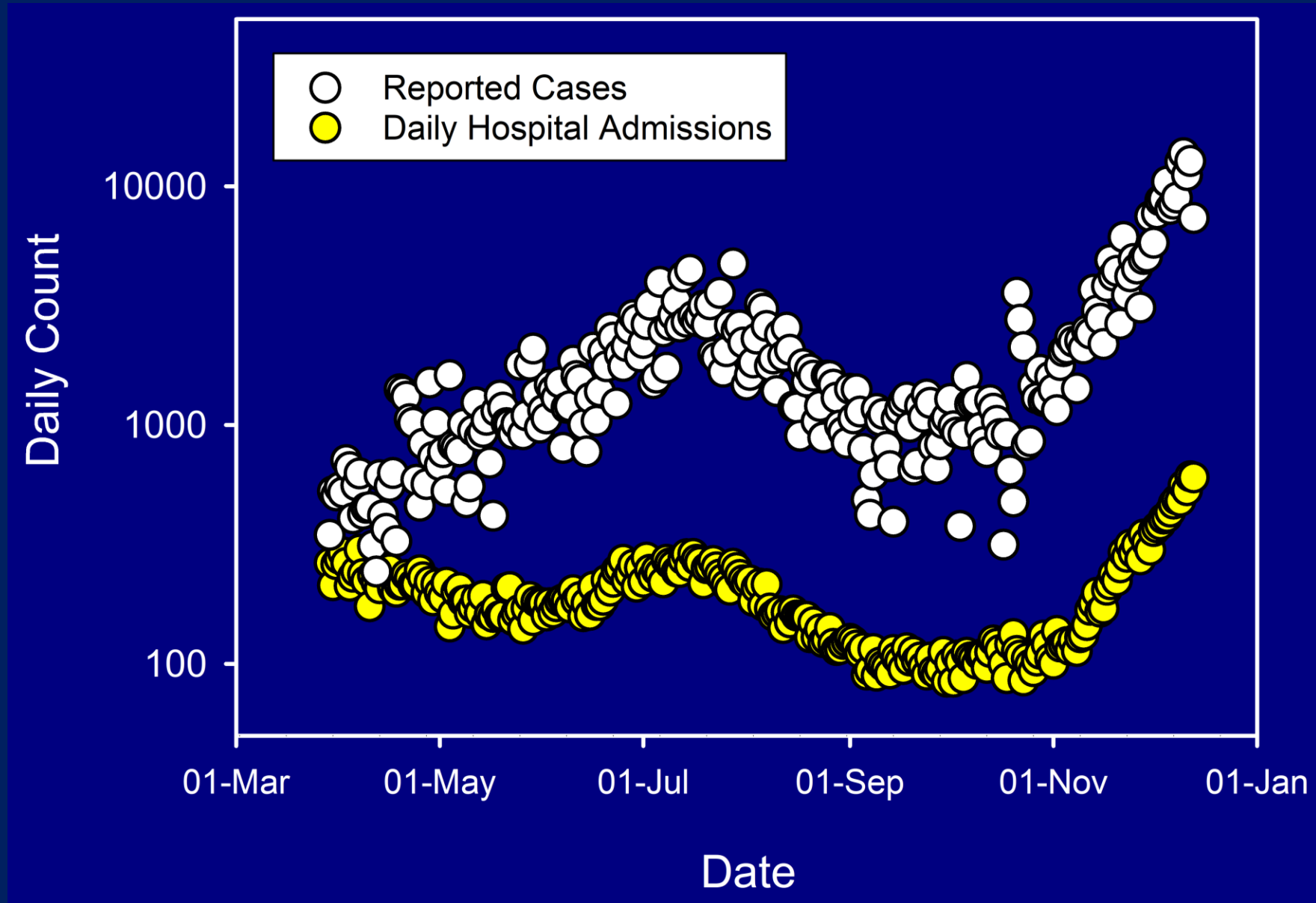
Predictions of Demand in LA County | Ventilators



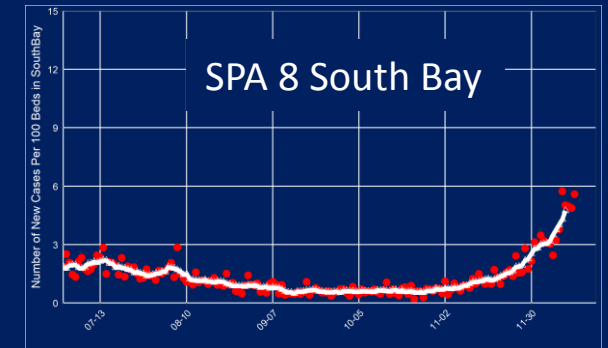
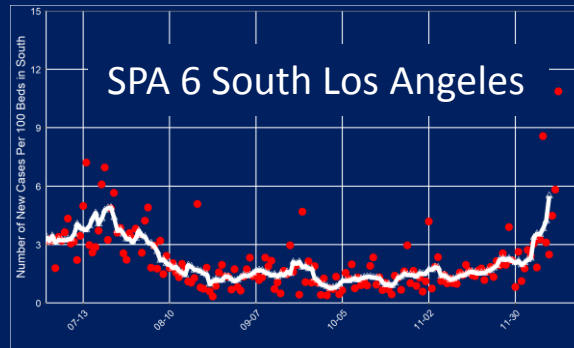
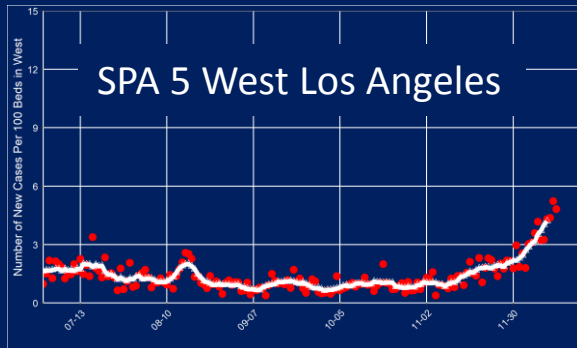
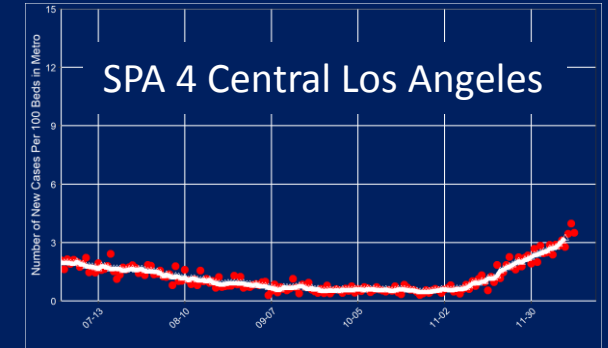
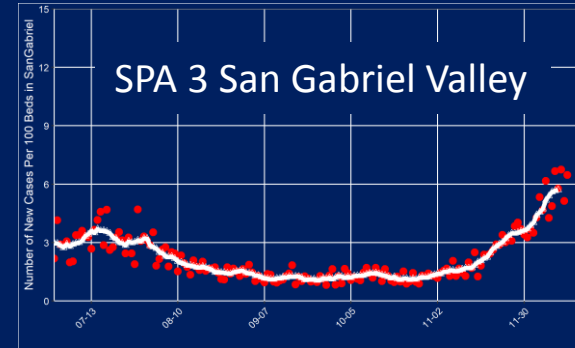
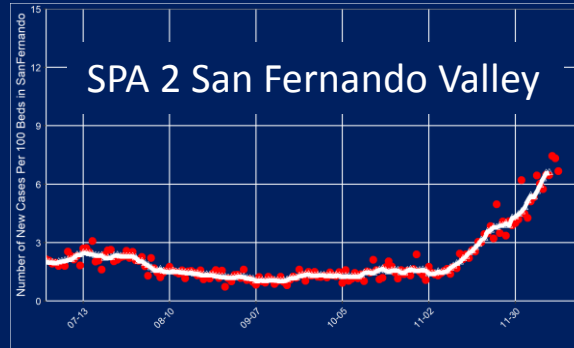
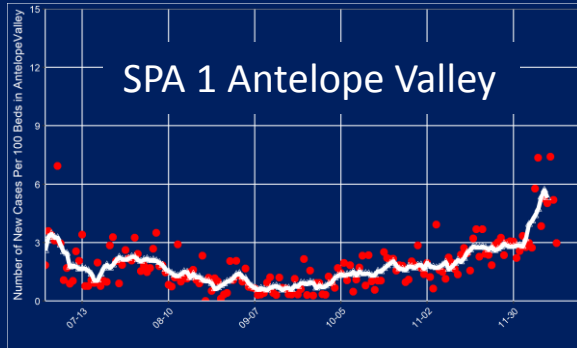
Predictions of Daily Mortality | Scale 0 to 300/day



Hospital Admissions are a Varying Fraction of New Cases



Daily New COVID-19 Hospitalizations by Service Planning Areas (SPAs), per 100 Hospital Beds | Scale 0 to 15

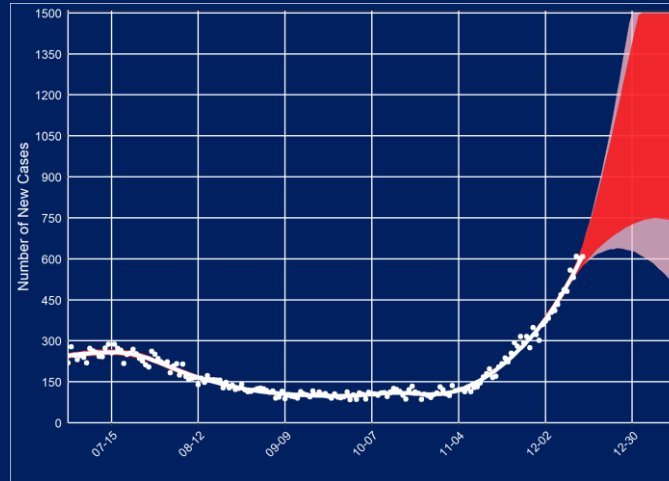


- Prior scale was 0 to 10 daily COVID-19 admissions per 100 hospital beds
- The transmission of COVID-19 in Los Angeles County is changing over time, with different patterns in different geographic areas
- More detailed geographical analysis is required to identify specific communities needing additional support in identifying cases and limiting spread

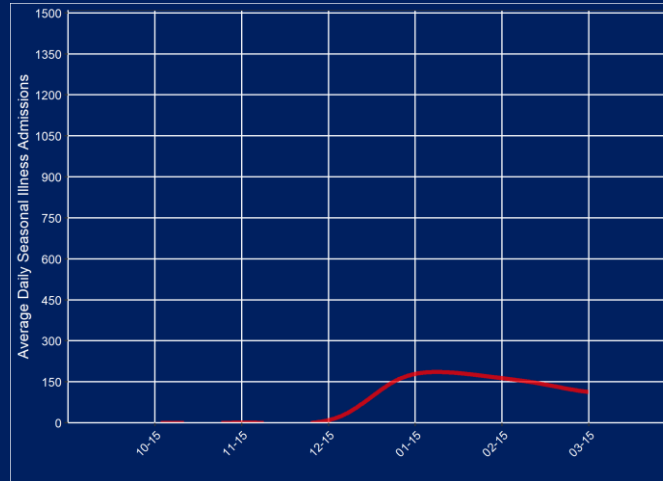
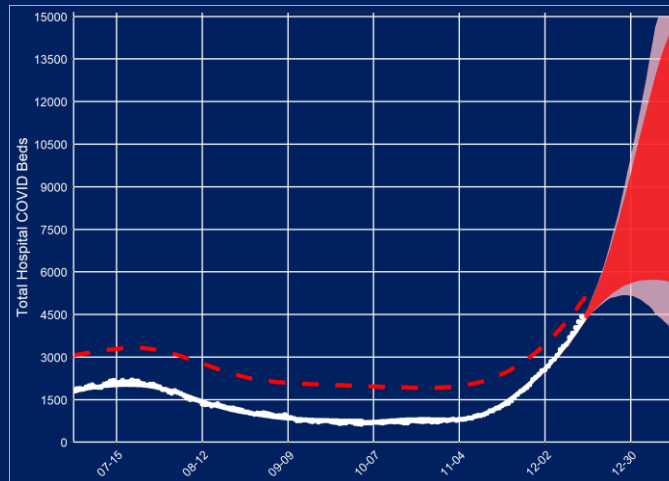
What about Influenza?

- We have not yet seen significant influenza activity in Los Angeles County. The usual seasonal increase in utilization of hospital beds from influenza-associated illnesses is shown below. Influenza-associated illnesses typically lead to a demand for hospital beds similar to the current demand for patients with COVID-19. These estimates will be updated when influenza activity is detected.

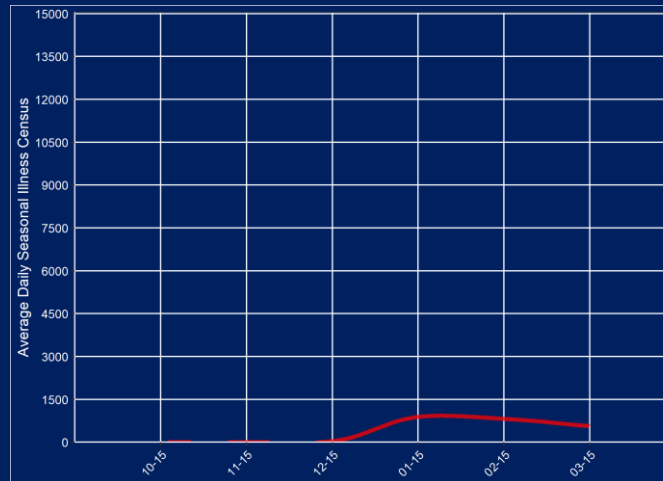
- Daily hospital admissions for COVID-19



- Hospital bed utilization for COVID-19



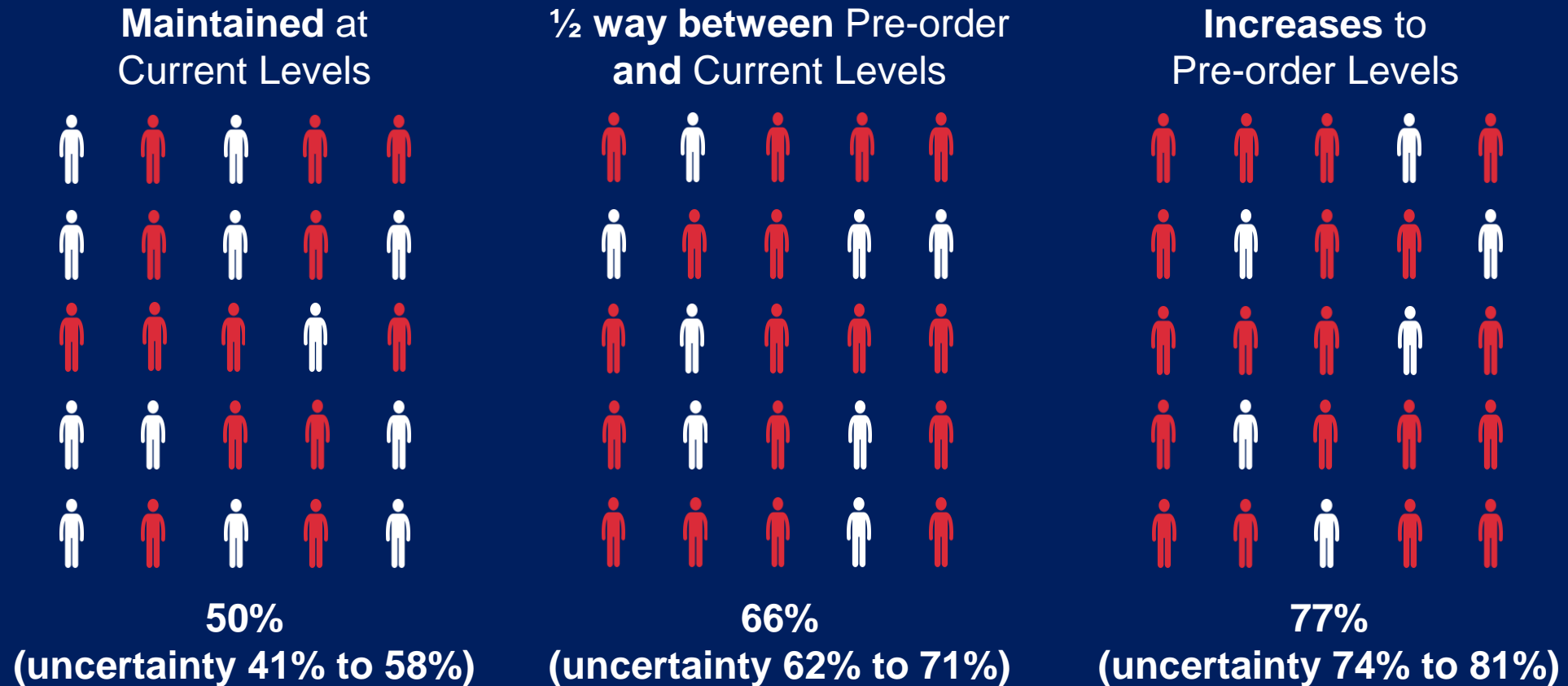
- Typical daily hospital admissions for influenza-associated illnesses



- Typical hospital census of patients with influenza-associated illnesses

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)*