

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

December 23, 2020 Update

County DHS COVID-19 Predictive Modeling Team:

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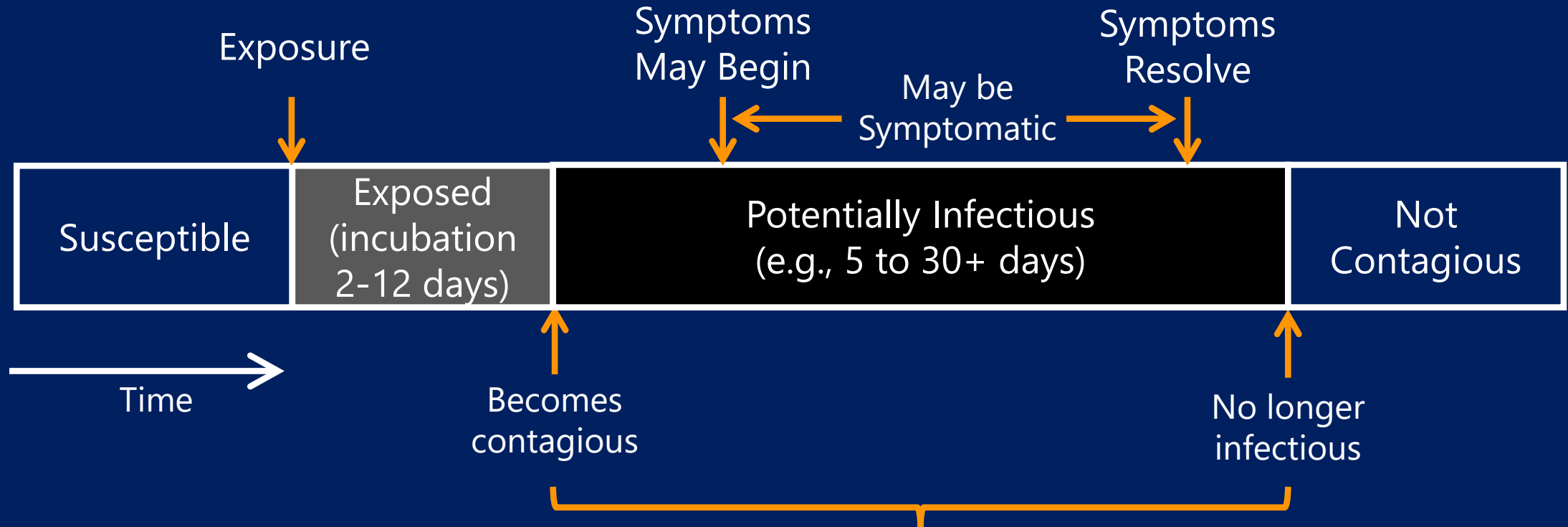
Key Findings of the December 23th Update

- This update includes data through December 21, 2020.
- We have retained last week's vertical and horizontal scales and now report cumulative total hospitalizations and mortality associated with the current surge.
- Key findings:
 - The number of new patients with COVID-19 requiring hospitalization each day across Los Angeles County has continued to increase.
 - The estimated transmission number ("R") is 1.11 with an uncertainty of 1.06 to 1.17. This is a decrease from last week, when the estimate was 1.20 with an uncertainty of 1.13 to 1.26. 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 **likely shortages** in the number of hospital beds and especially ICU beds over the next 4 weeks. The number of ventilators in Los Angeles County appears adequate over the next 4 weeks.
 - The model suggests about 1 in 95 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?

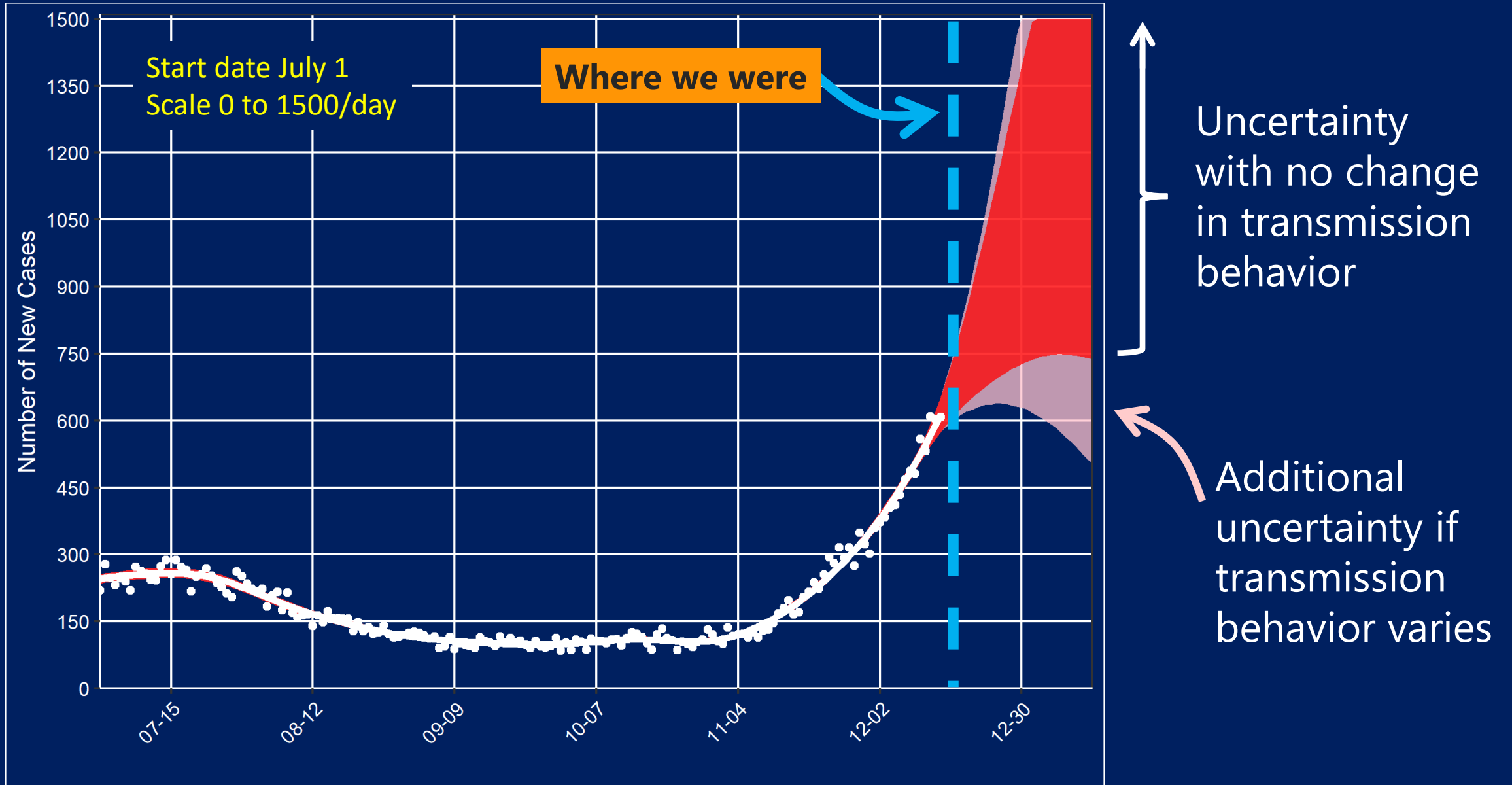
- The DHS team's epidemic model estimates the number of people in Los Angeles County who:
 - Are still **susceptible** to infection if exposed;
 - Have been **exposed** and are incubating, but not infectious;
 - Have COVID-19 and are **infectious** to others, though they may have no symptoms; and
 - Have had COVID-19 and either **recovered** or died, so they are no longer infectious
- The model suggest that about 1.05% (uncertainty of 0.66% to 1.57%) of everyone in Los Angeles County is currently infected and infectious to others.
- This suggests about 1 in 95 (between 1 in 150 and 1 in 60) Los Angeles County residents are currently infectious to others. Last week this estimate was 1 in 80.

A Patient's Journey | COVID-19

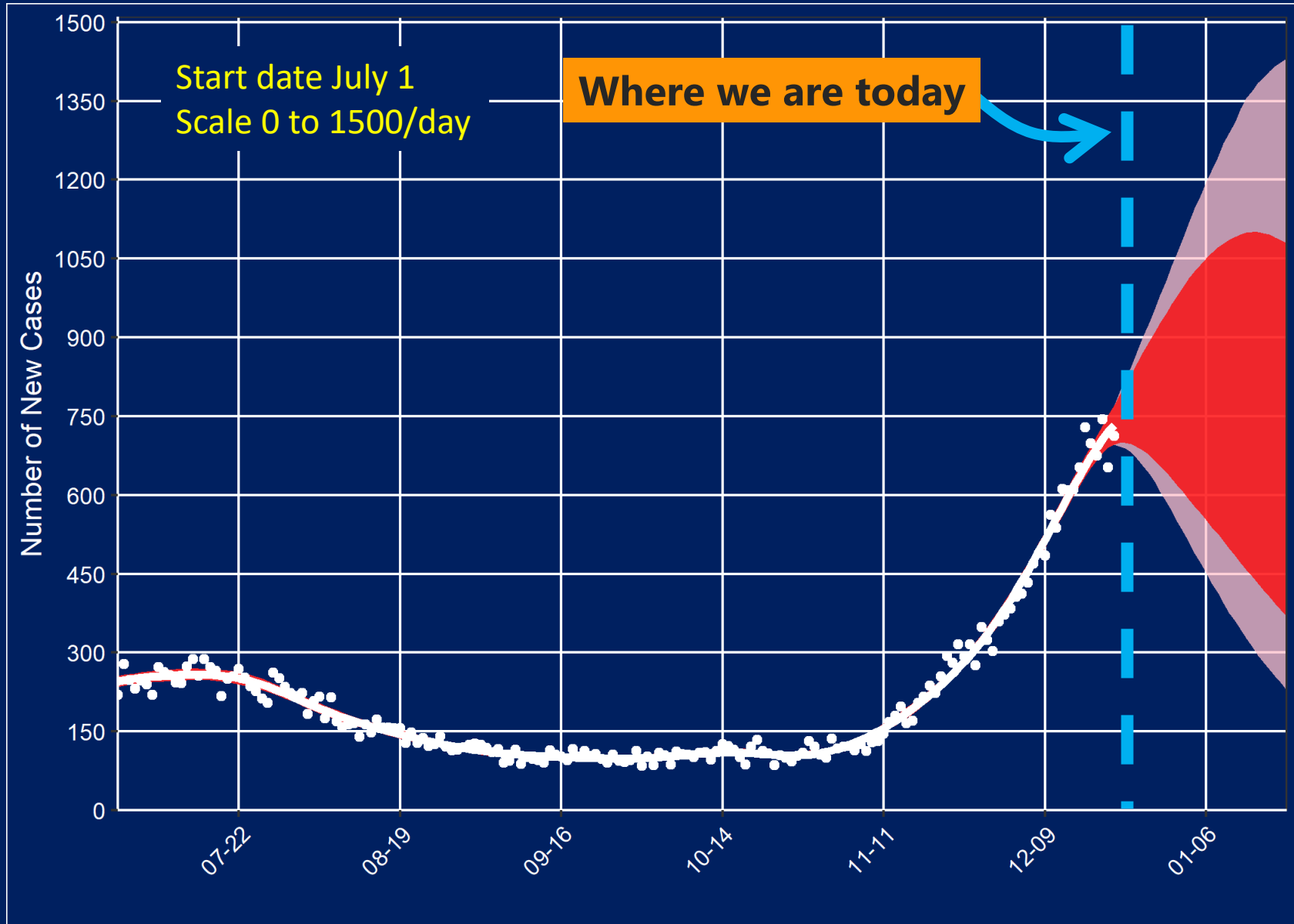


Goal of physical distancing, public use of cloth face coverings, quarantine, isolation and similar actions *is to reduce the number of new susceptible people exposed during this time*

Hospital New Patient Projections: From Last Week



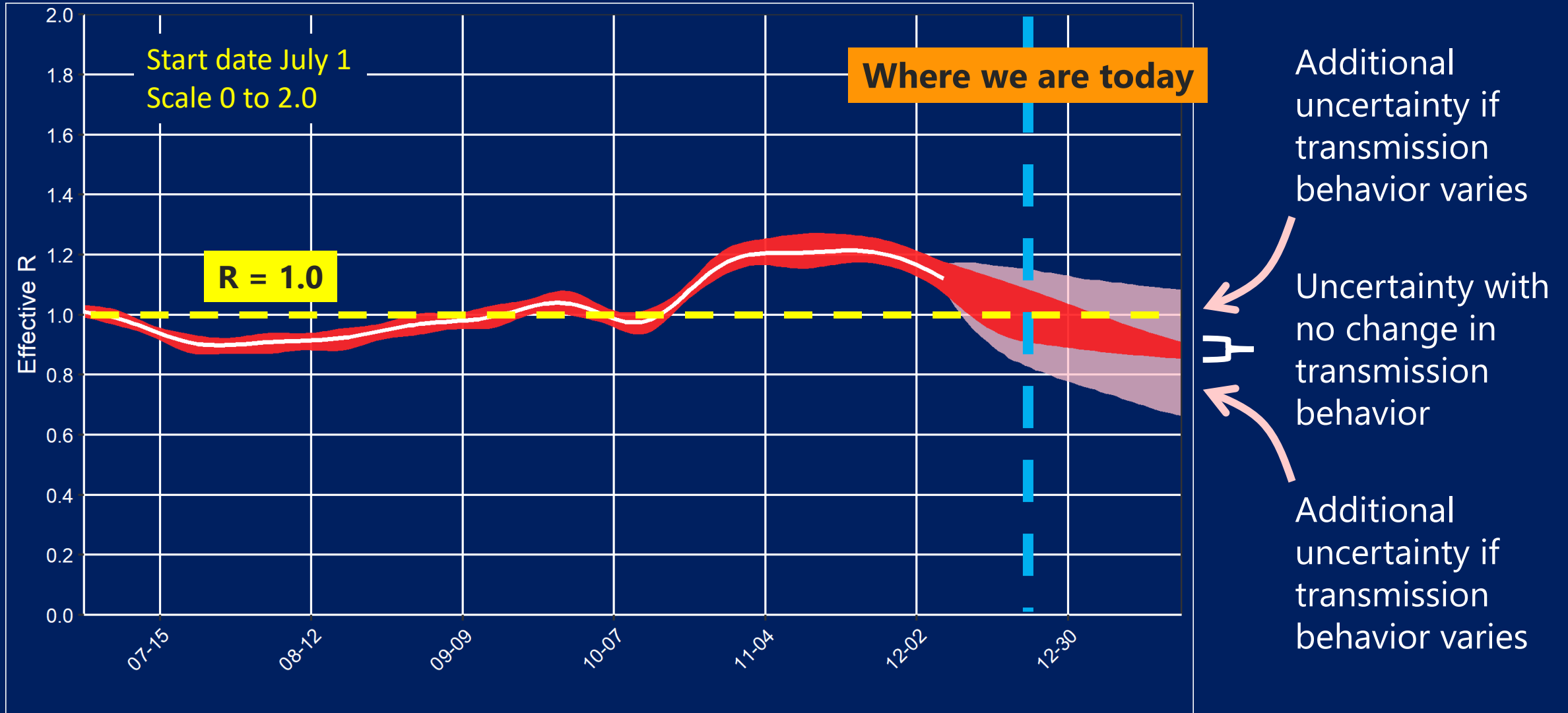
Hospital New Patient Projections



Additional uncertainty if transmission behavior varies

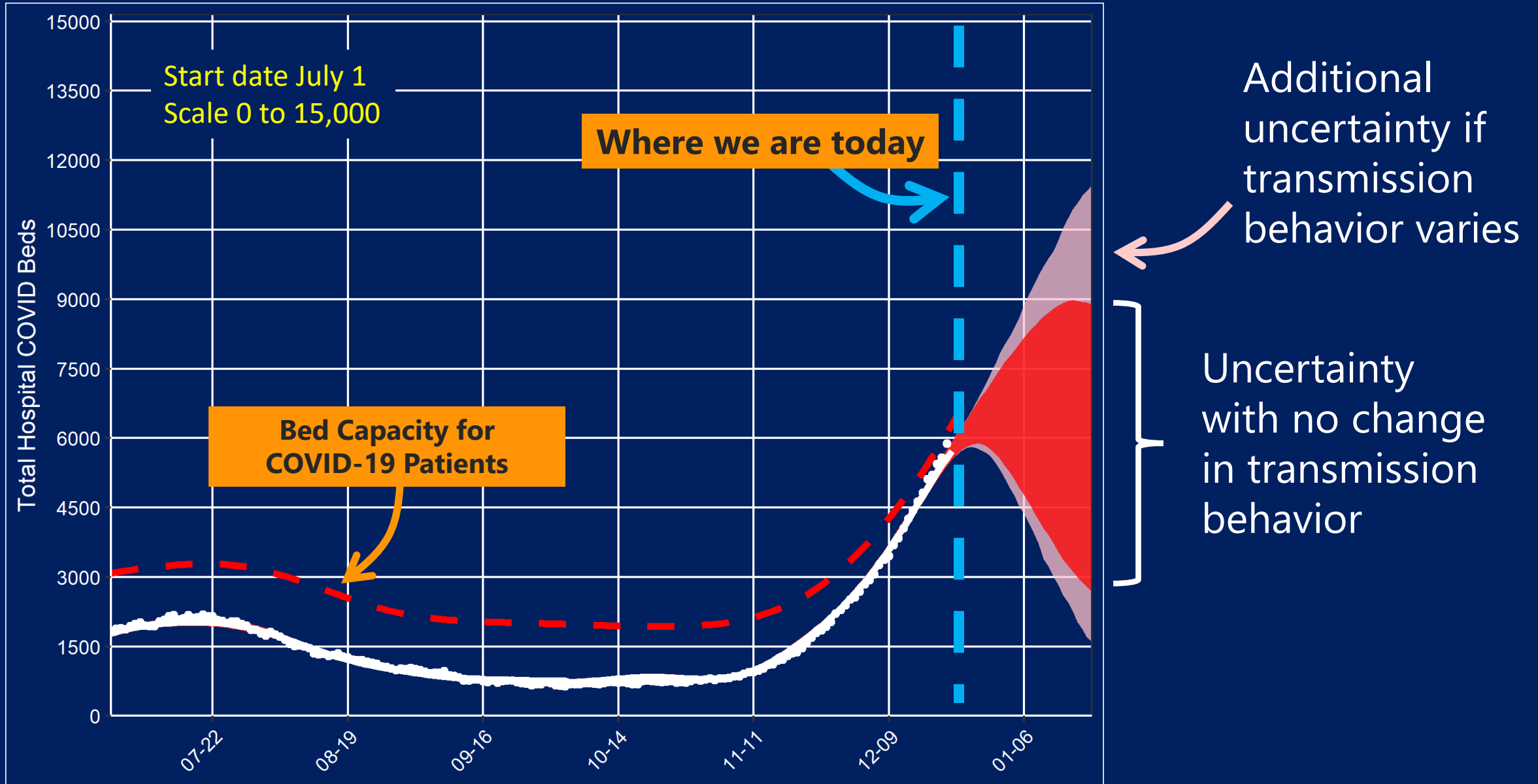
Uncertainty with no change in transmission behavior

Effective Transmission Number "R"

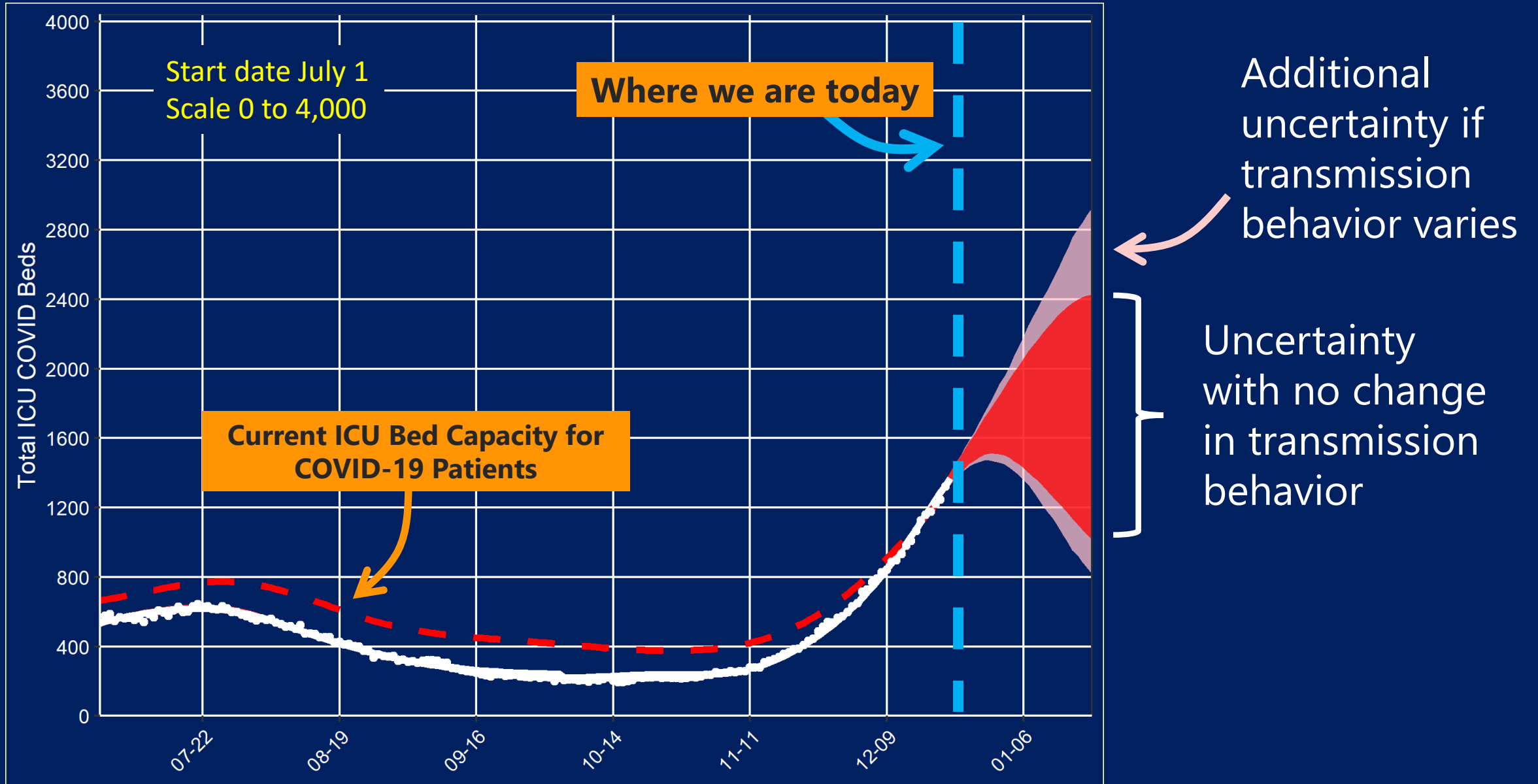


Note: We have adjusted the R that we present to account for the fraction of the population that is presumed to be immune to reinfection. At the beginning of the pandemic, this fraction was essentially zero so this would not have made any difference. But as more people have been infected, and are presumed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

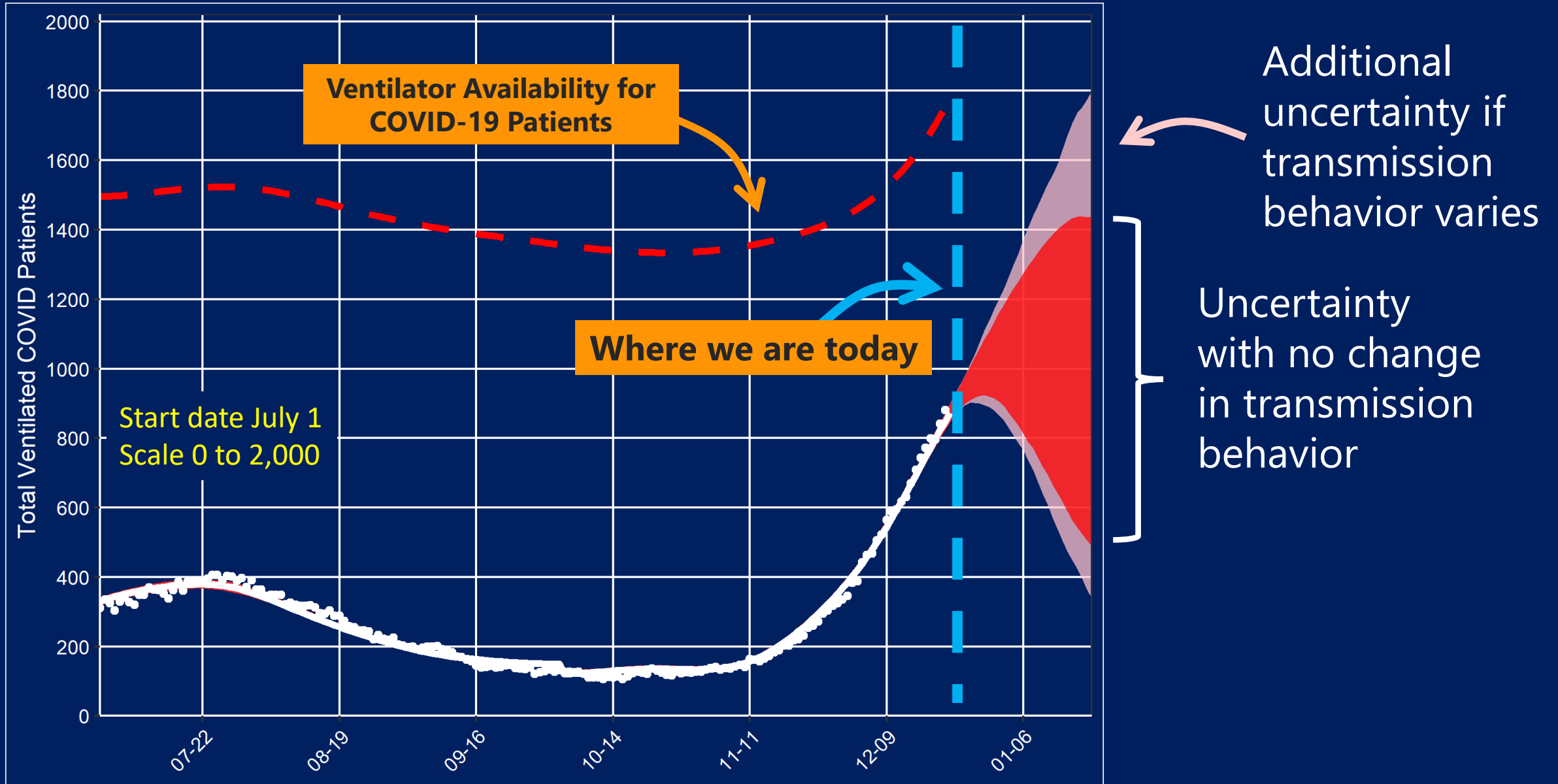
Predictions of Hospital Bed Demand



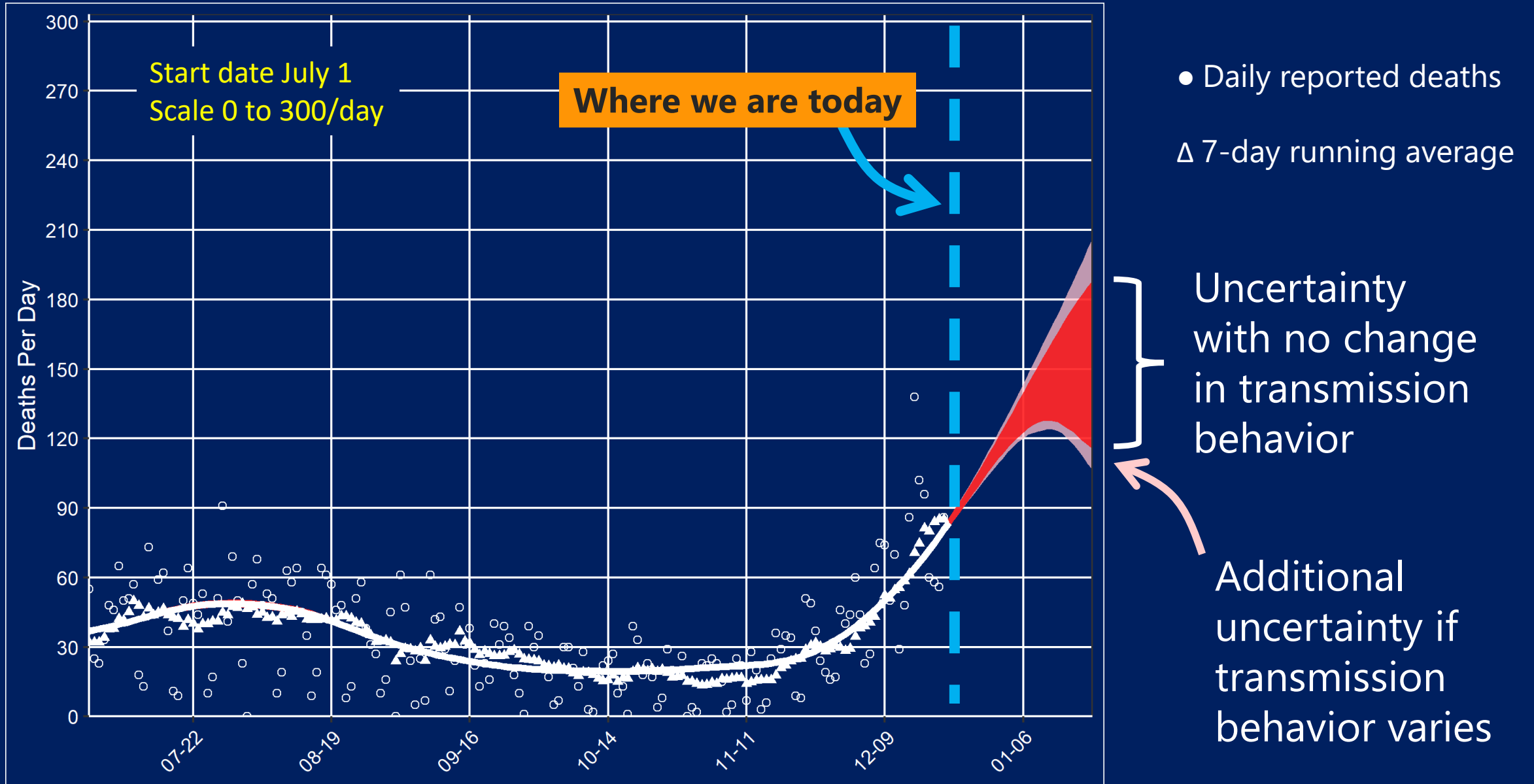
Predictions of ICU Bed Demand



Predictions of Ventilator Demand



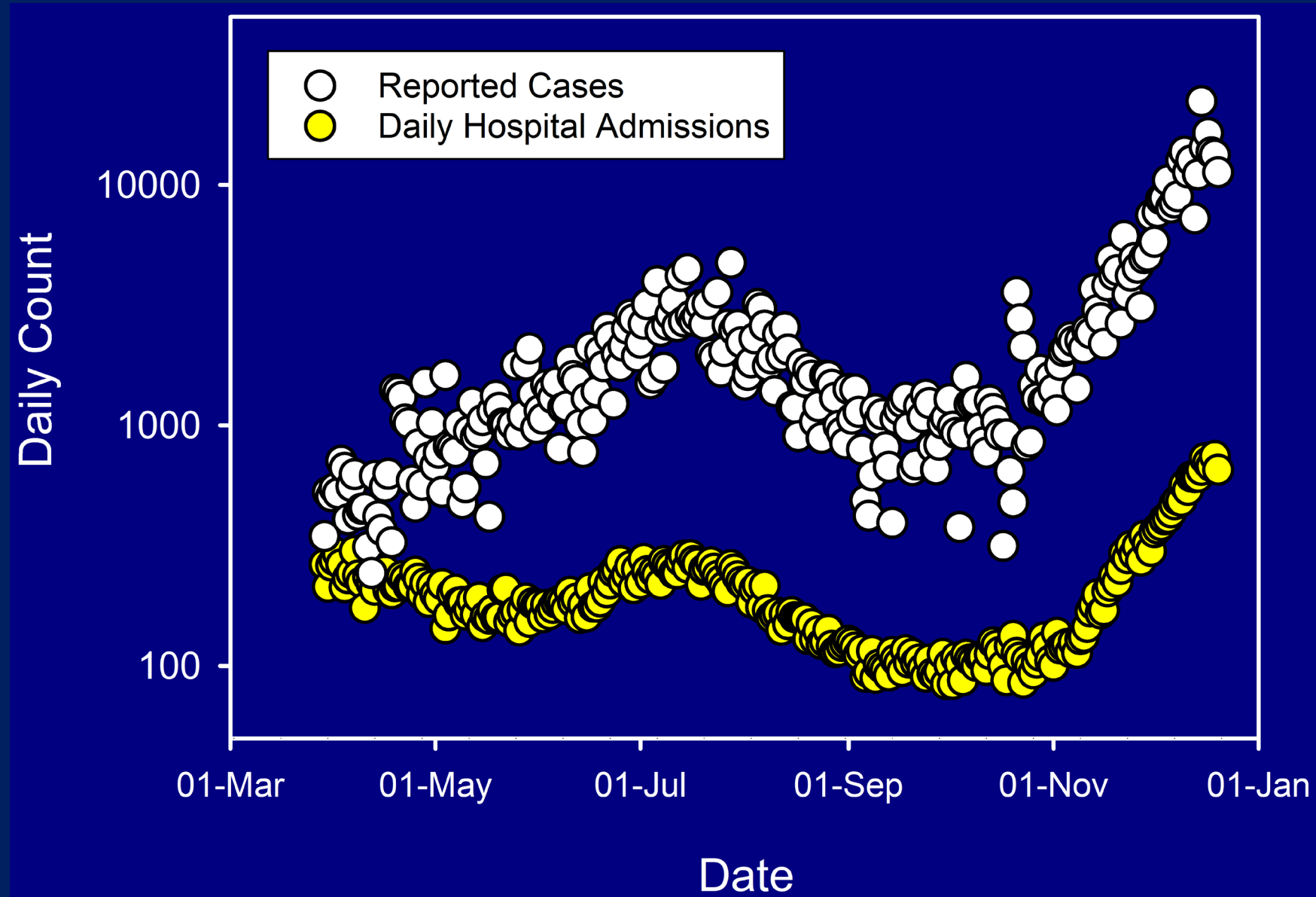
Predictions of Daily Mortality



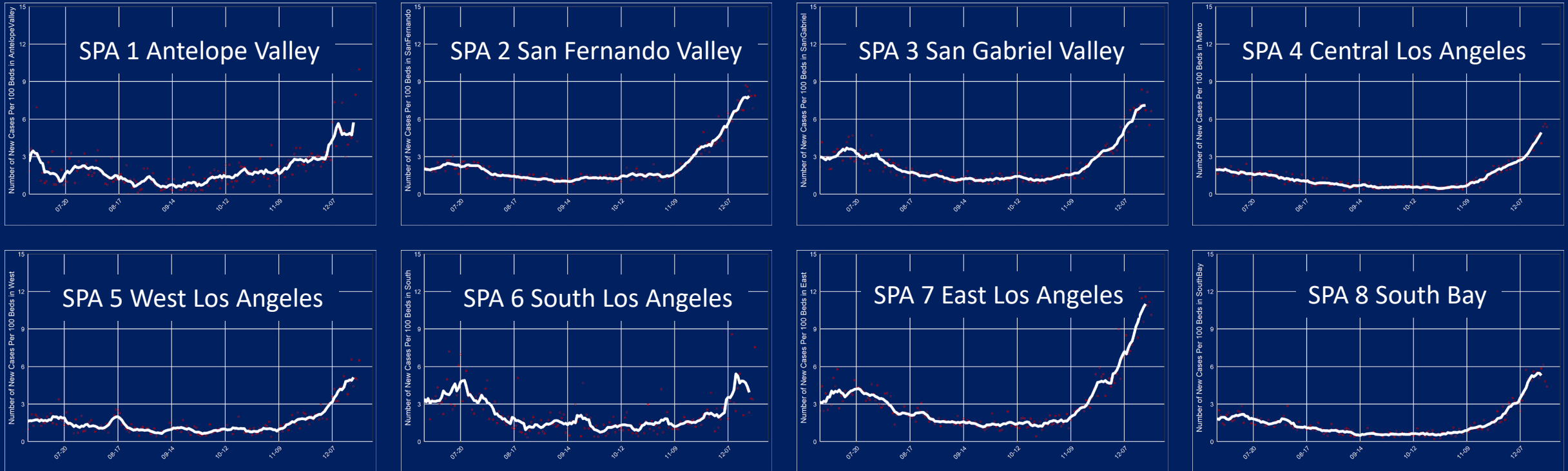
How Many People will be Hospitalized or Die in the Current Surge?

- During the current surge, from November 1, 2020 through January 31, 2021, the epidemic prediction model estimates that:
 - 51,000 people in Los Angeles County will require hospitalization for COVID-19, with an uncertainty of 38,500 to 67,250; and
 - 8,700 people in Los Angeles County will die from COVID-19, with an uncertainty of 7,100 to 10,600.

Hospital Admissions are a Varying Fraction of New Cases



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

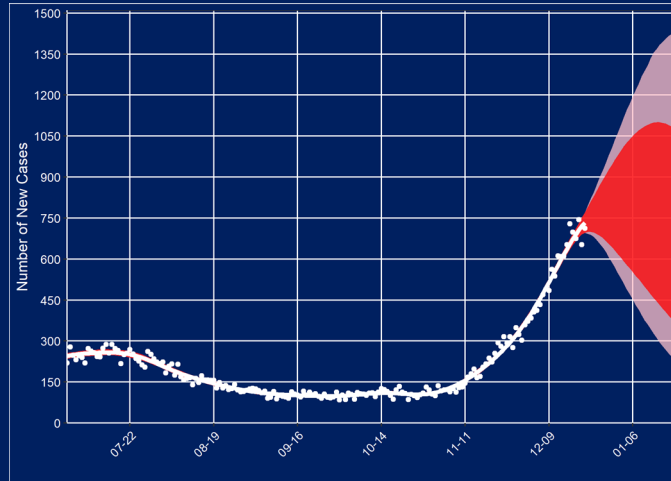


- The transmission of COVID-19 in Los Angeles County is changing over time, with different patterns in different geographic areas
- More detailed geographical analysis is required to identify specific communities needing additional support in identifying cases and limiting spread

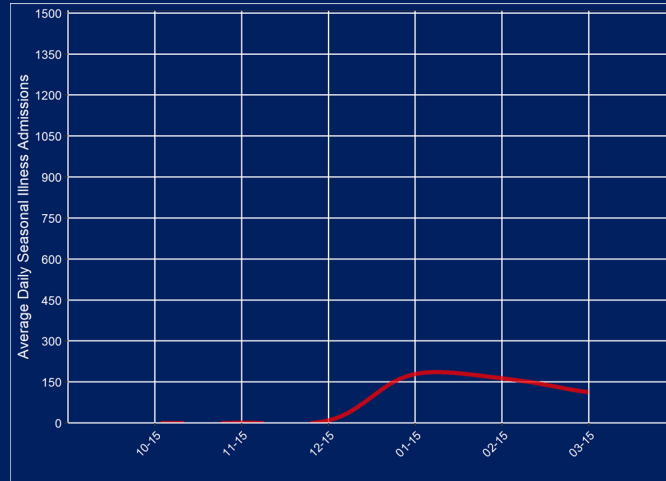
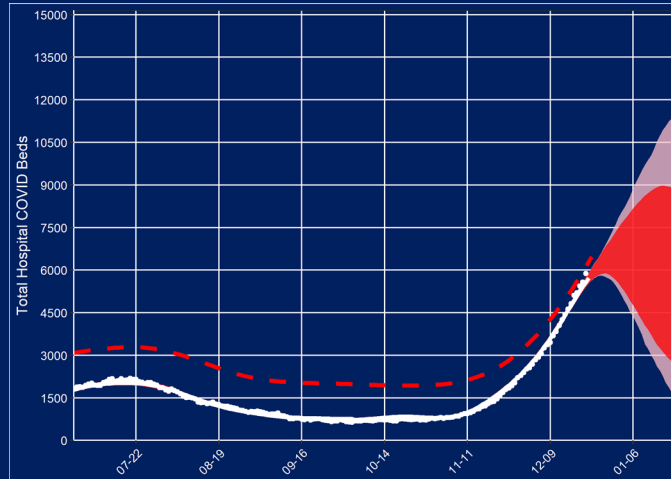
What about Influenza?

- 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.

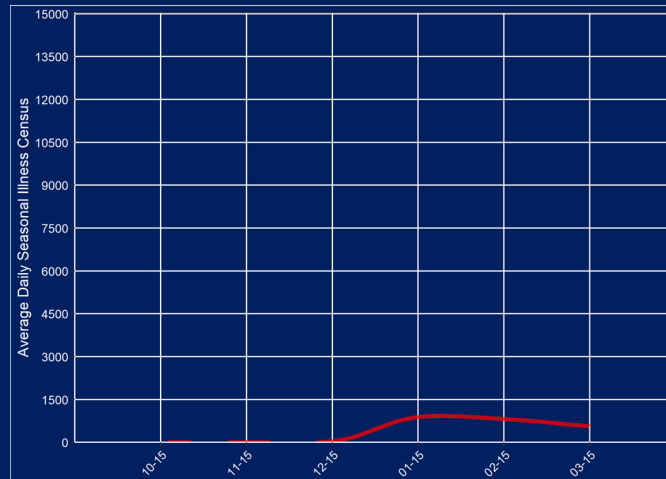
- Daily hospital admissions for COVID-19



- Hospital bed utilization for COVID-19



- Typical daily hospital admissions for influenza-associated illnesses



- Typical hospital census of patients with influenza-associated illnesses