

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

June 29, 2020 Update

County DHS COVID-19 Predictive Modeling Team:

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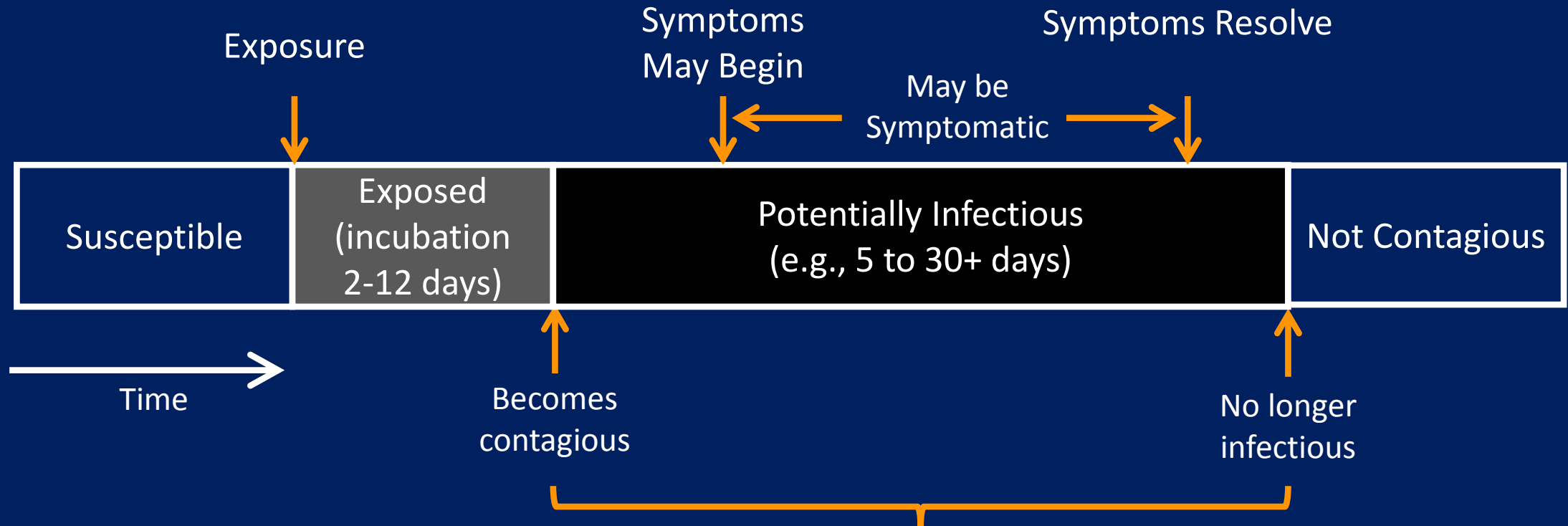
Key Findings of the June 29nd Update

- This update includes data on hospital visits and volume through June 25, 2020.
- Beginning last week, the model reports the effective transmission number (“R”) with an adjustment for the fraction of the population that is now presumed to be immune to reinfection.
- Key findings:
 - The number of new patients with COVID-19 requiring hospitalization across Los Angeles County has increased substantially. This is a change in the trajectory of the epidemic.
 - The effective transmission number (“R”) is now estimated to be 1.26 with an uncertainty of 1.13 to 1.41, reflecting increased transmission that occurred 2 to 4 weeks ago.
 - This increase in transmission is, in a general way, due to greater mixing of individuals who are still susceptible to infection in a manner that facilitates exposure (e.g., close physical proximity without the use of a mask or facial covering).
 - If the trajectory continues, the current number of available ventilators in Los Angeles County is most likely adequate over the next 4 weeks. The current number of available hospital beds may become inadequate in the next 2 to 3 weeks. The number of ICU beds—our most limited resource—is likely to become inadequate in the near future. Both situations will require hospitals to implement their surge plans to accommodate the additional expected patient demand.
 - The model suggests that about 1 in 140 Los Angeles County residents are currently infected and infectious to others.

How Many in Los Angeles are Infectious to Others?

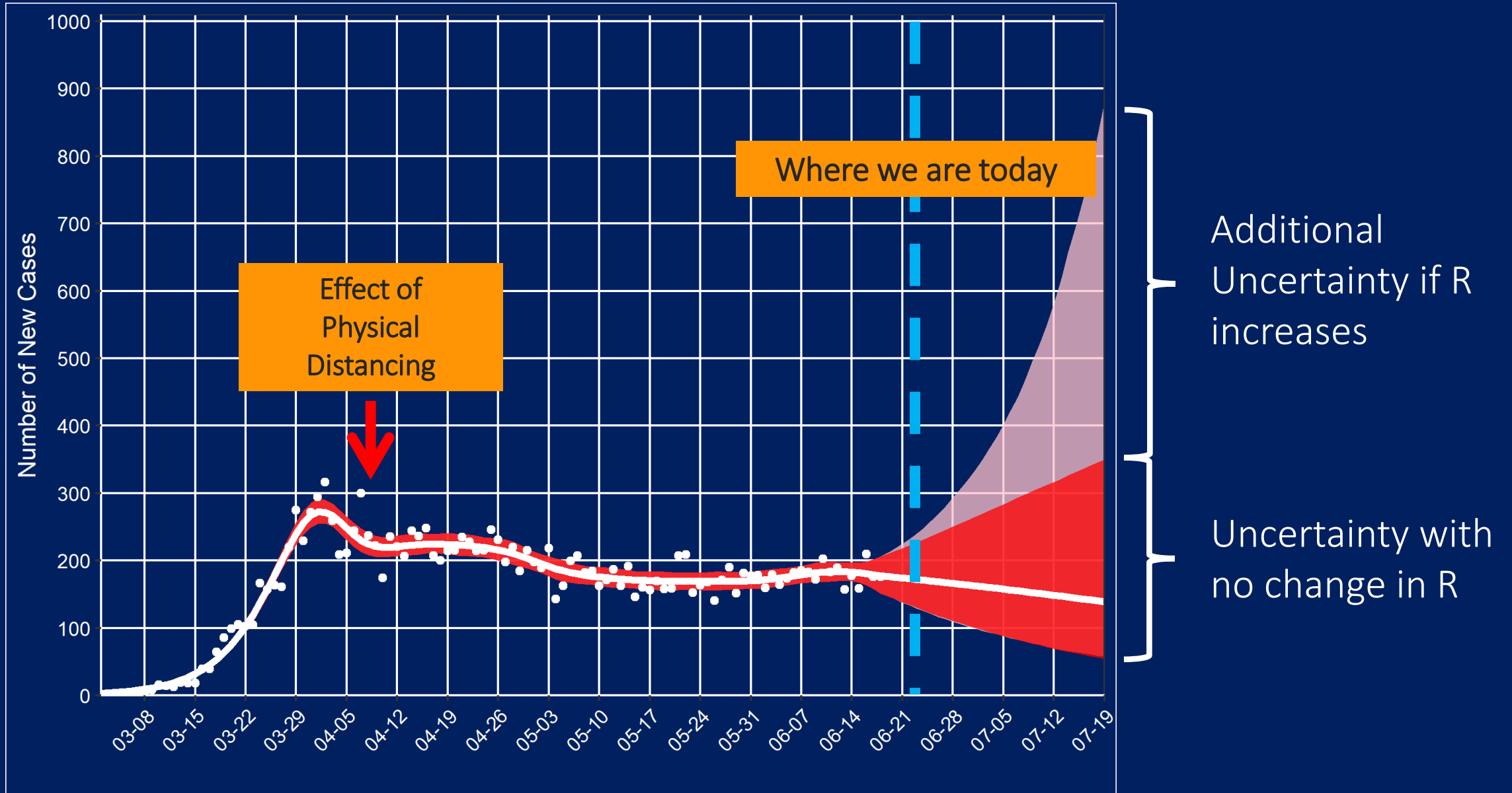
- The DHS team's epidemic model estimates the number of people in Los Angeles County who:
 - Are still **susceptible** to infection if exposed;
 - Have been **exposed** and are incubating, but not infectious;
 - Have COVID-19 and are **infectious** to others, though they may have no symptoms; and
 - Have had COVID-19 and either **recovered** or died, so they are no longer infectious
- The model suggest that about 0.71% (uncertainty of 0.43% to 1.16%) of everyone in Los Angeles County is currently infected and infectious to others. This suggests about 1 in 140 (between 1 in 90 and 1 in 230) Los Angeles County residents are currently infectious to others. Last week this estimate was 1 in 400.
- A typical large busy store is likely to have multiple infectious persons enter and shop every day

A Patient's Journey | COVID-19

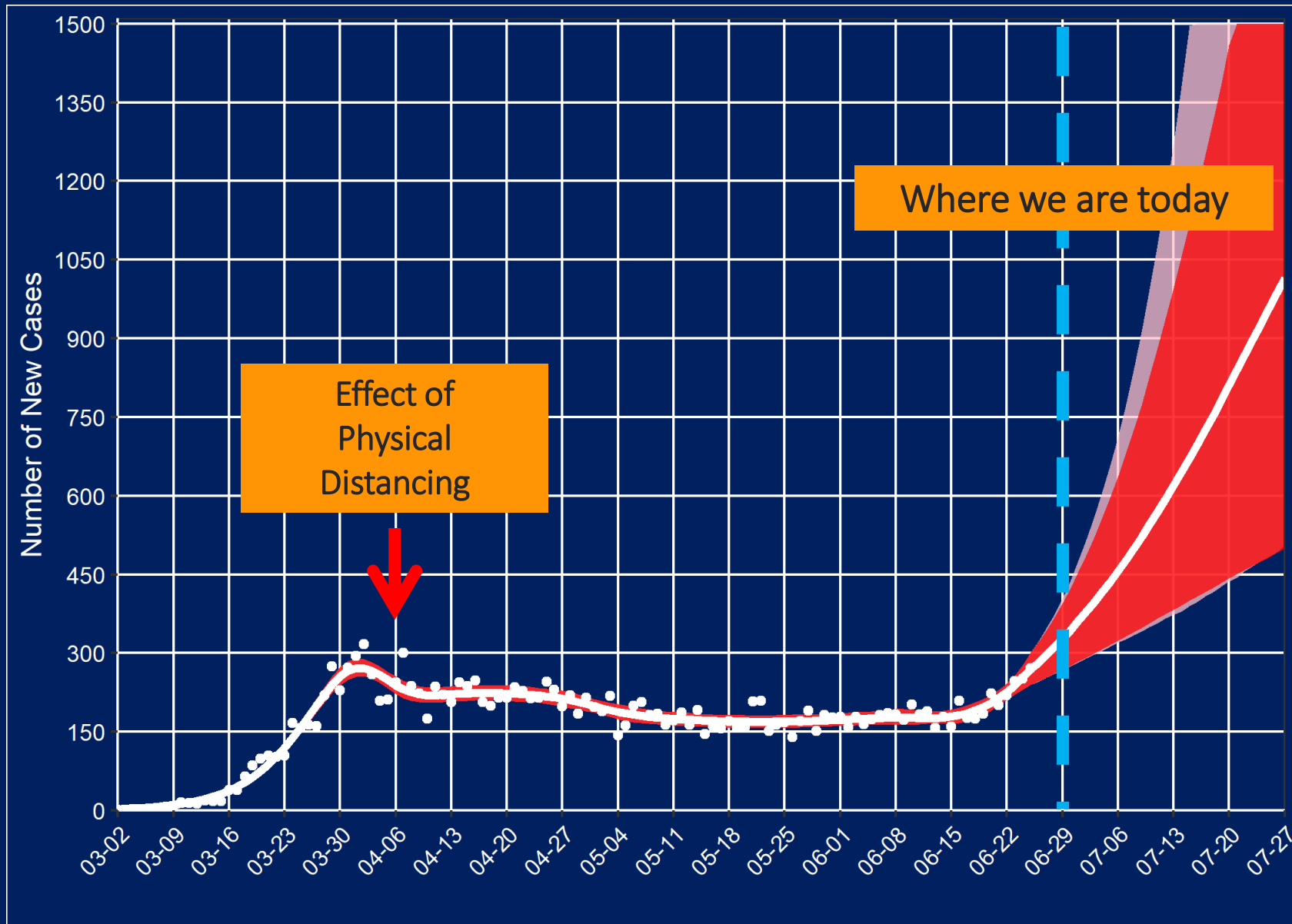


Goal of physical distancing, public use of cloth face coverings, quarantine, isolation and similar actions is to reduce the number of new susceptible people exposed during this time

Hospital New Patient Projections: From Last Week

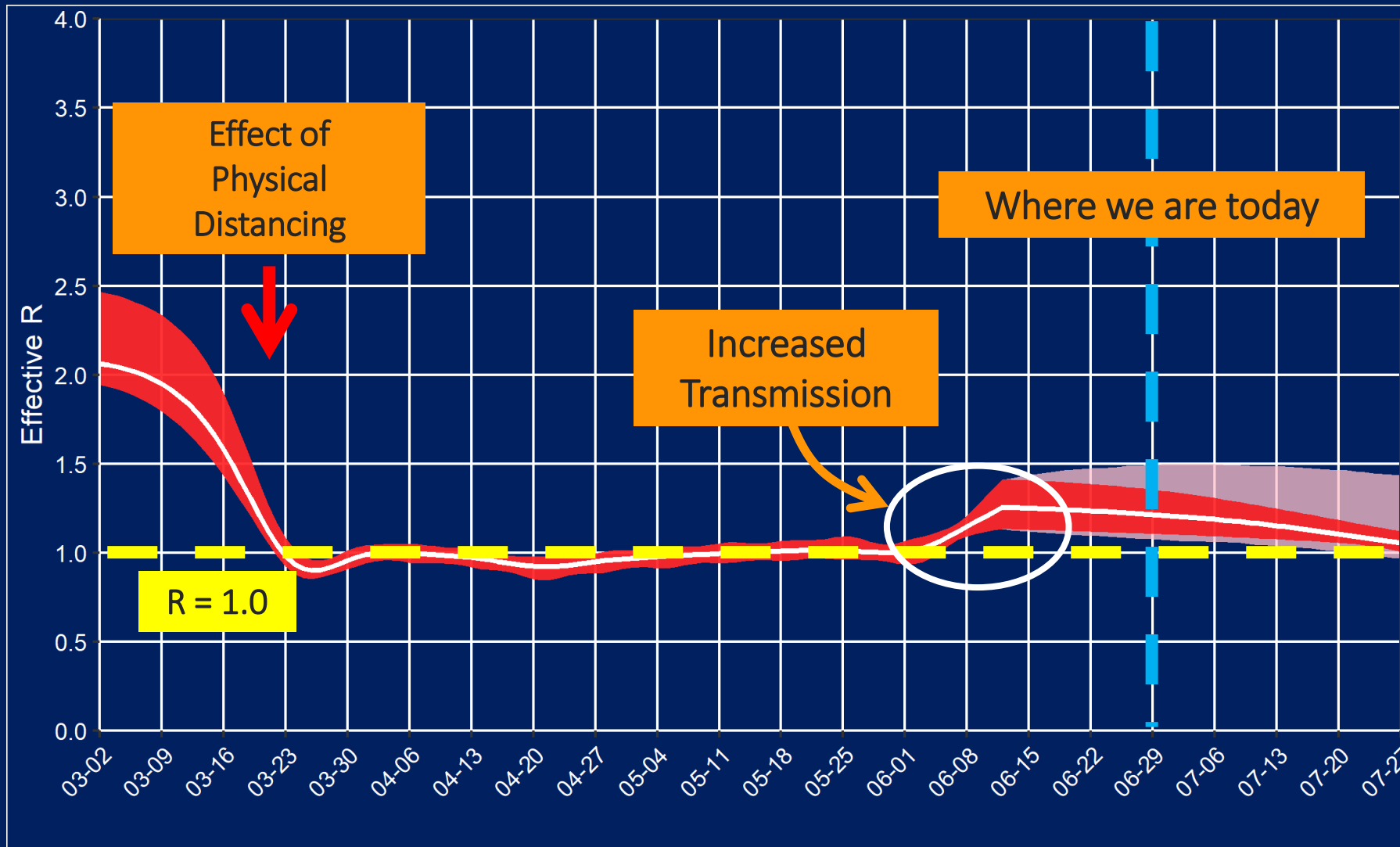


Hospital New Patient Projections



Uncertainty with
no change in R

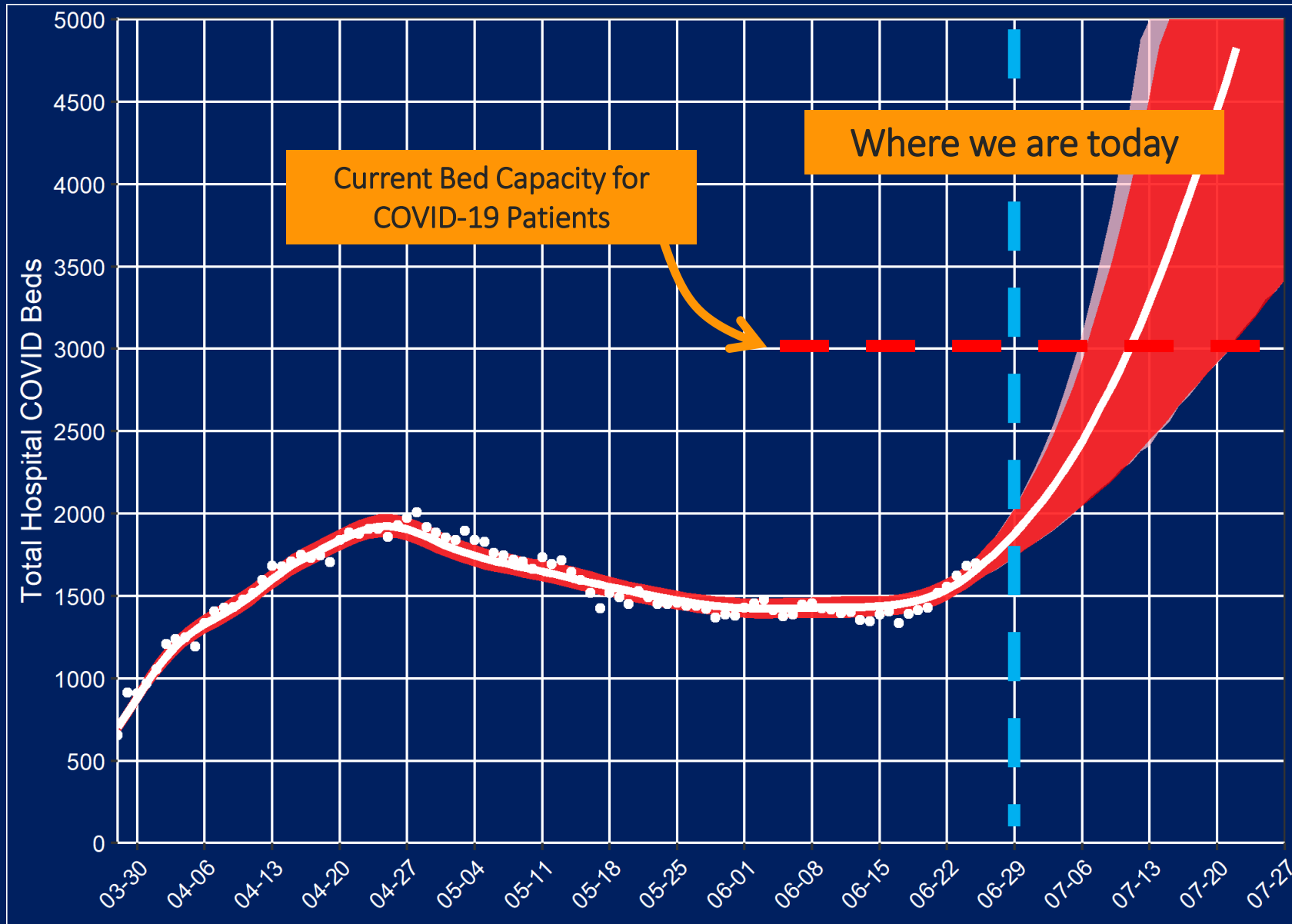
Effective Transmission Number "R"



Additional uncertainty if R increases further
Uncertainty with no change in R

Note: We have adjusted the R that we present to take into account the fraction of the population that is presumed to be immune to reinfection. At the beginning of the pandemic, this fraction was essential 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

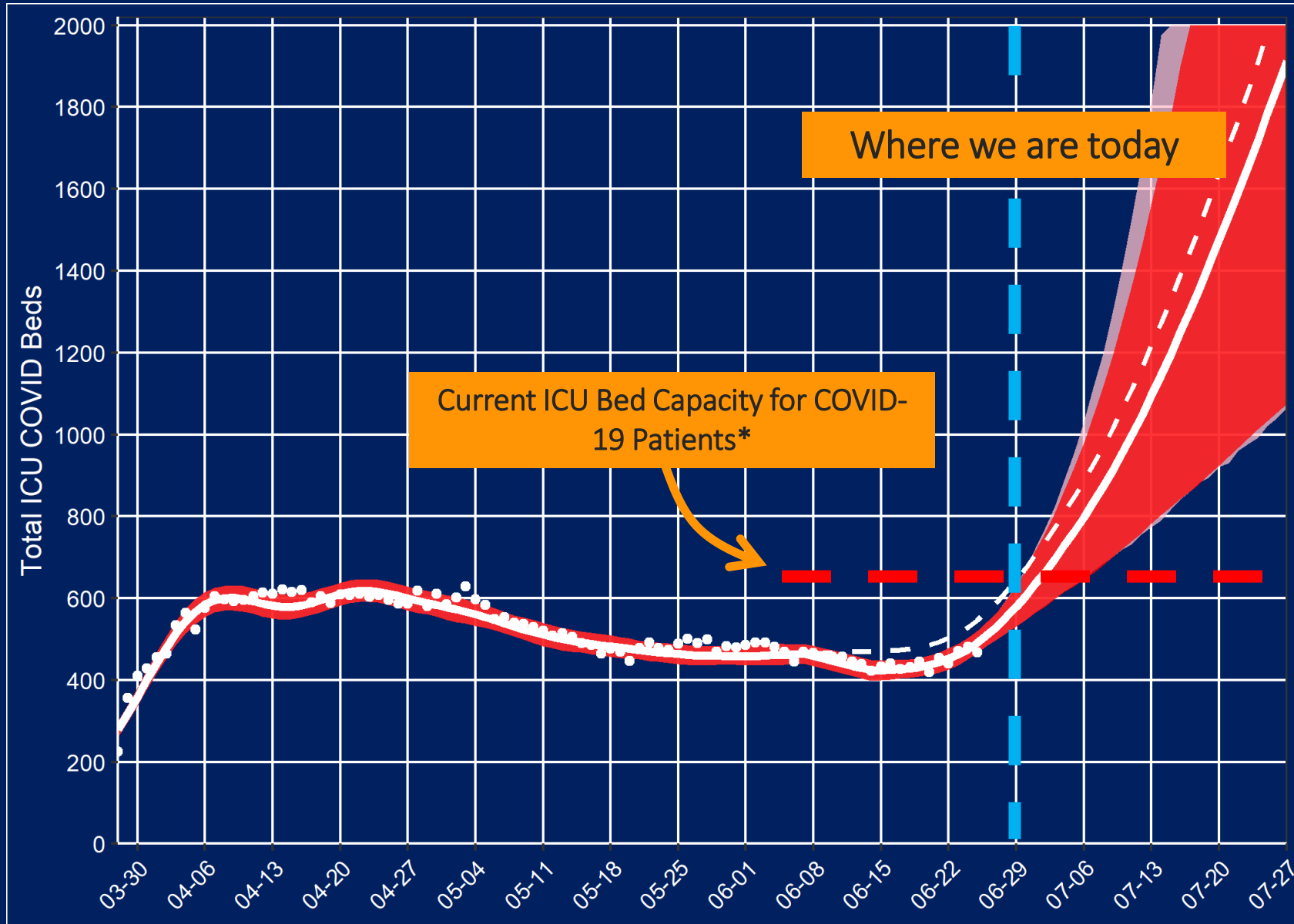


Uncertainty with
no change in R

Changes in the Epidemic and Medical Care

- The COVID-19 epidemic in Los Angeles County is affecting a younger population, on average, than before
- We have learned that, for some patients with COVID-19, it is possible to care for them effectively without placing them in the ICU or using mechanical ventilation
- Because of these changes, there has been a slight decrease in the utilization of ICU beds and ventilators relative to the number of patients requiring hospital admission for COVID-19
- This change is now shown as a new projection for the number of ICU beds and ventilators that we expect to be required in the future
 - The new projection for ICU bed utilization is a 10% decrease from what would have been expected early in the epidemic with the same number of hospital admissions
 - The new projection for ventilator utilization is a 15% decrease from what would have been expected early in the epidemic with the same number of hospital admissions
 - These adjustments will be reevaluated in the weeks ahead

Predictions of Demand in LA County | ICU Beds



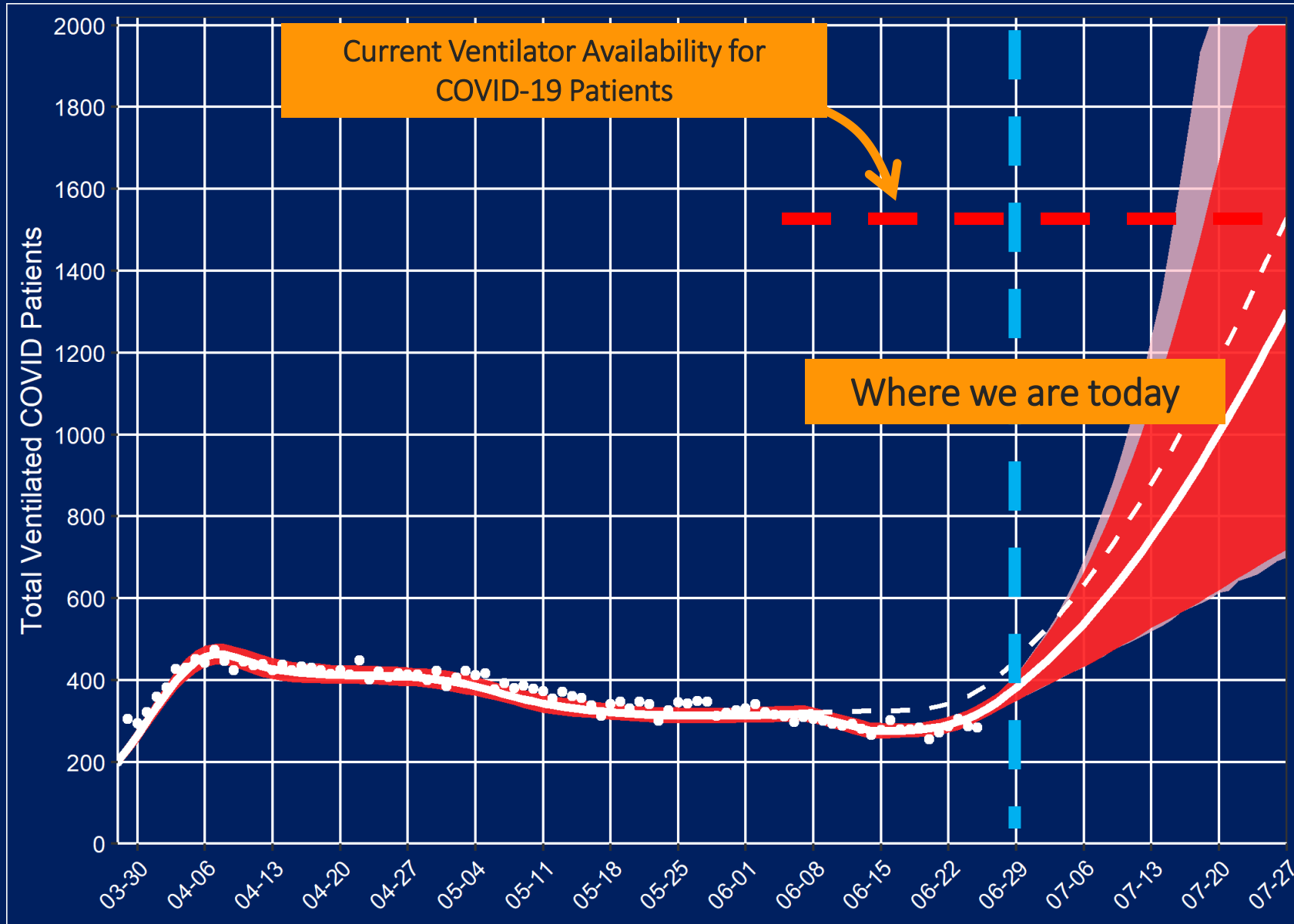
↑
Uncertainty with no change in R

*ICU Bed Capacity as reported on June 25, without activation of alternative ICU locations or staffing

— Predicted demand based on change in patterns of care over time

- - - Initial demand prediction model

Predictions of Demand in LA County | Ventilators



Current Ventilator Availability for COVID-19 Patients

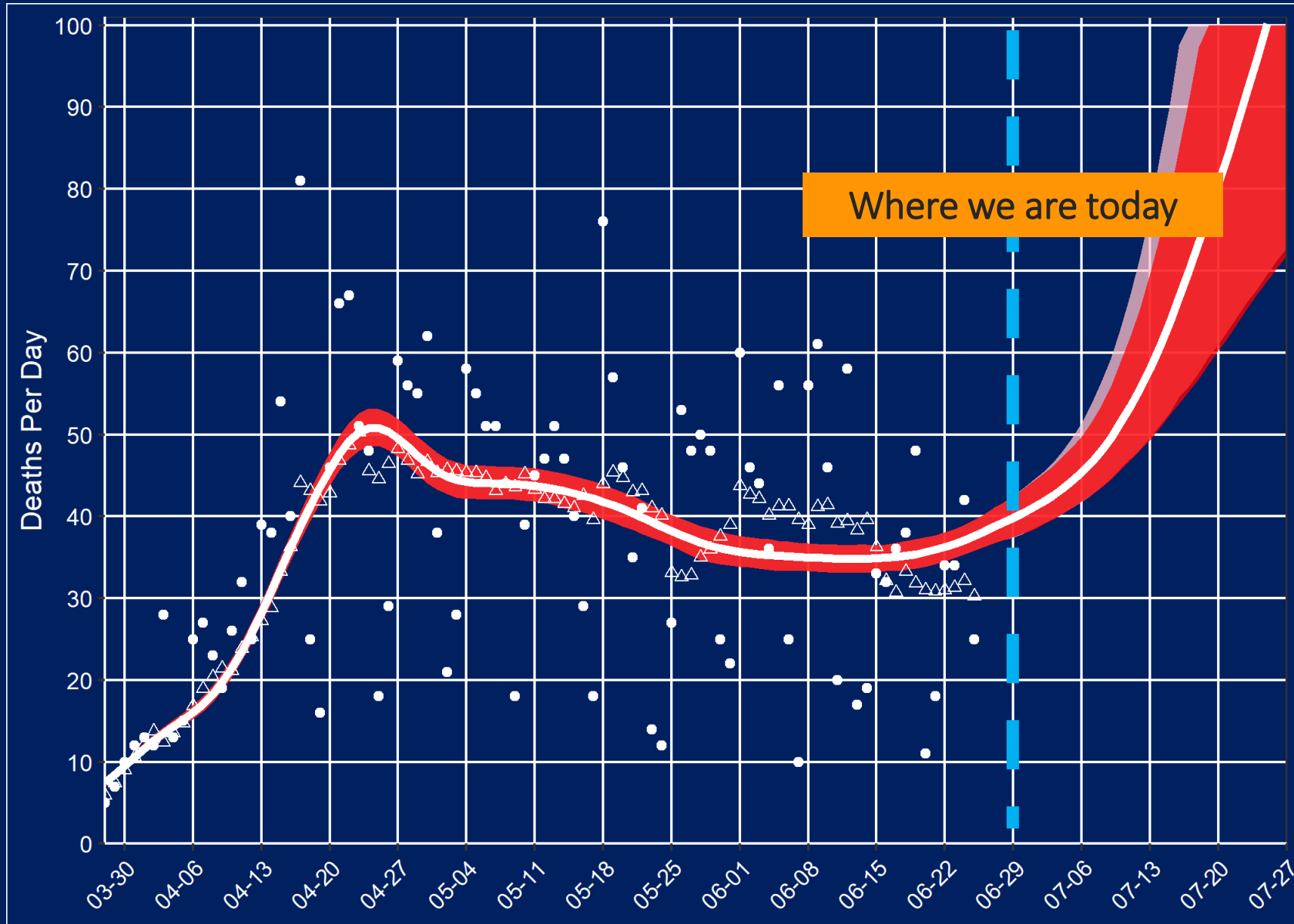
Where we are today

Uncertainty with no change in R

Predicted demand based on change in patterns of care over time

Initial demand prediction model

Predictions of Daily Mortality LA County

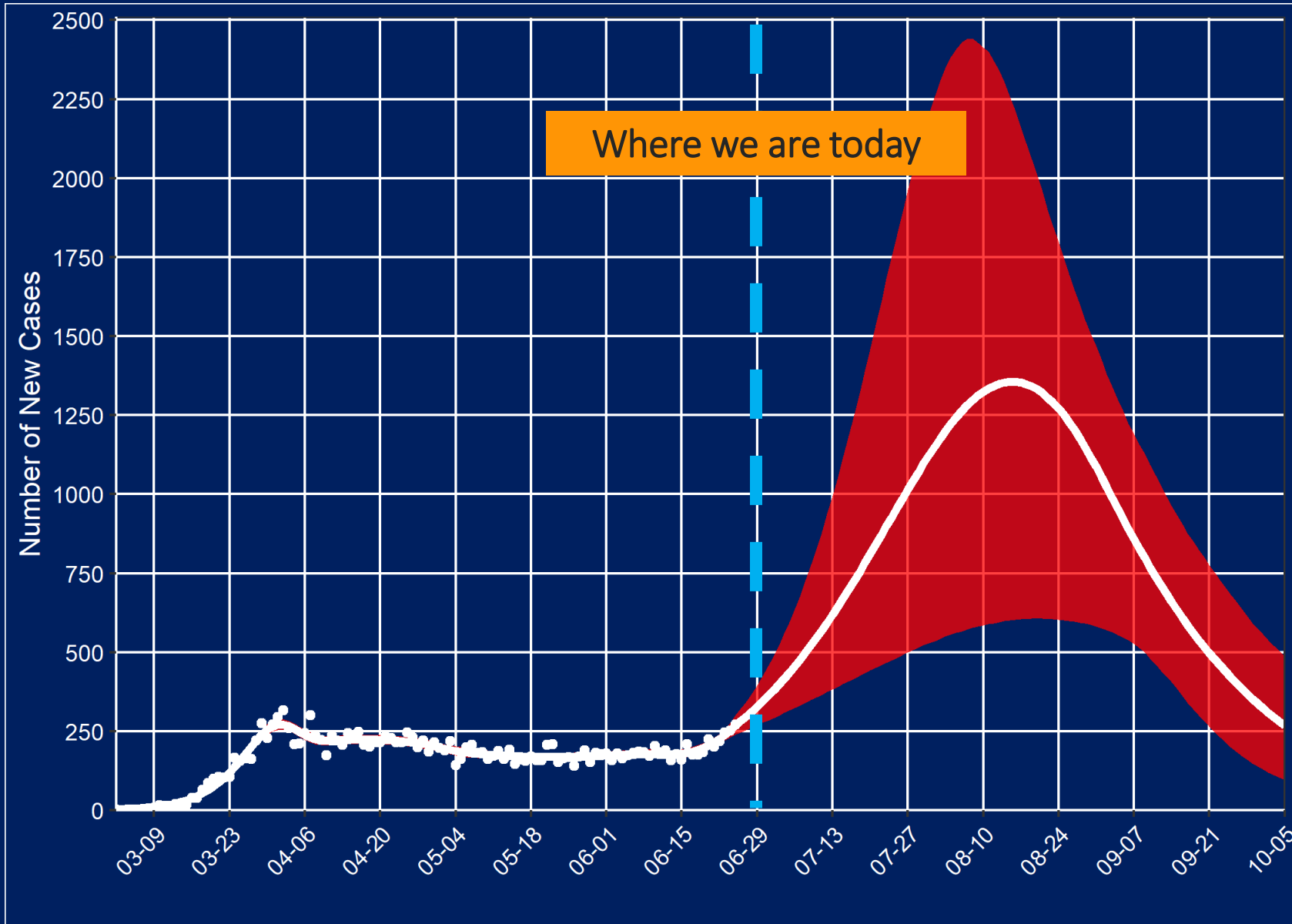


Where we are today

↑
Uncertainty with no change in R

- Daily reported deaths
- △ 7-day running average

An Example of a Long-Term Prediction | Daily Patients



Assumes:

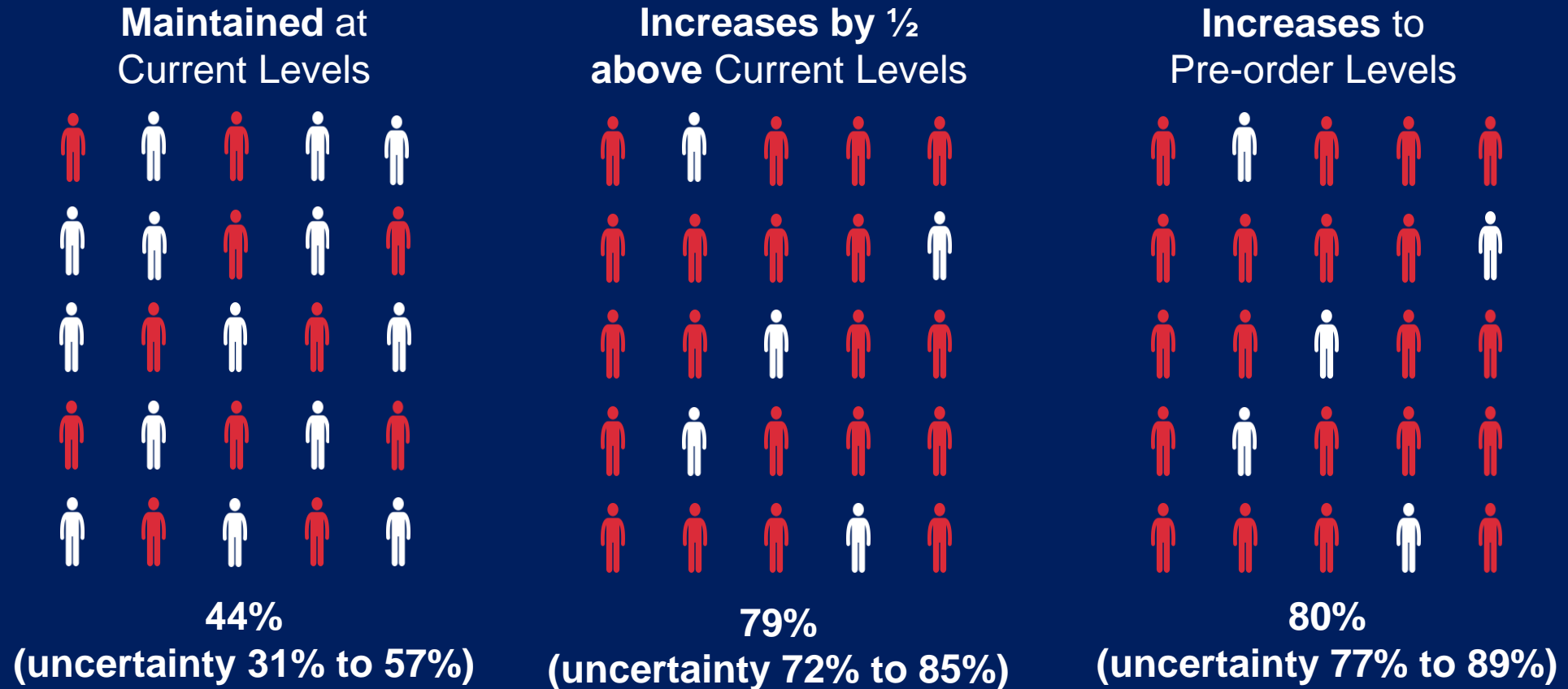
- 1 in 40 infected persons require hospital admission
- The rate of transmission is constant except for the effect of immunity in the community



Uncertainty with no change in R

Effect of Behaviors to Control Transmission

If transmission....



... of LA County residents will have been infected by December 1, 2020 *

**(This includes adults and children)*