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

May 14, 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]

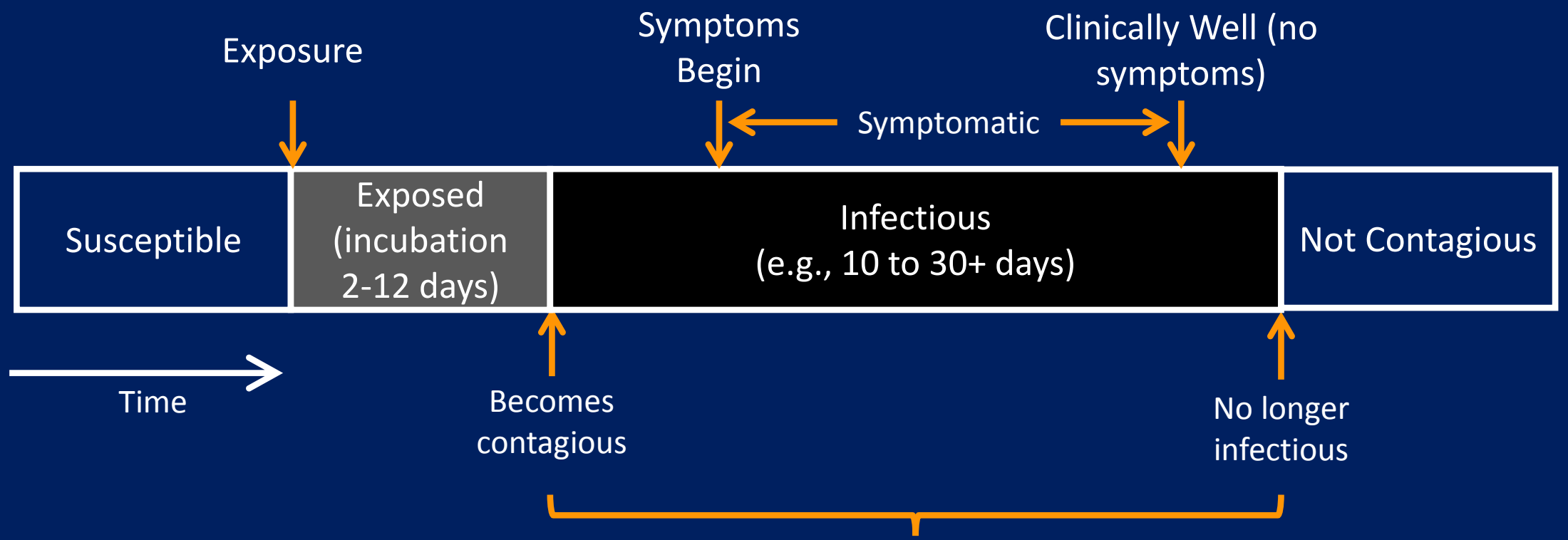
1. Los Angeles County, Department of Health Services
2. Los Angeles County, Department of Public Health
3. Los Angeles County, Office of the Chief Information Officer
4. Berry Consultants, LLC, Austin, TX
5. University of California, Los Angeles

Health Services
LOS ANGELES COUNTY

Key Findings of the May 13th Update

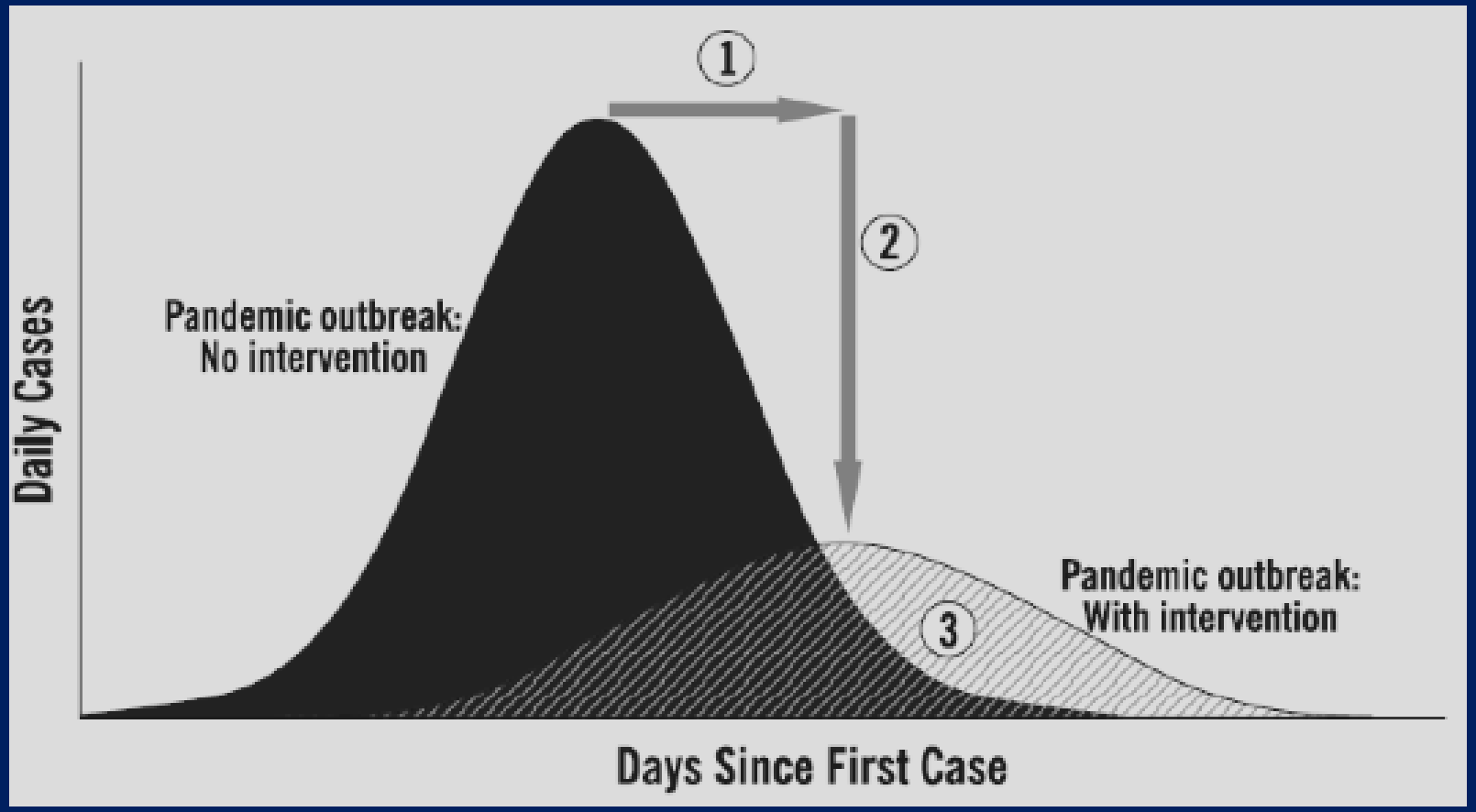
- This update includes data on hospital visits and volume through May 10, 2020.
- The model has been modified to allow for changes in transmission associated with relaxation of physical distancing requirements. This is reflected in a wider range of future possibilities regarding new cases, hospital demand and mortality.
- Key findings:
  - The overall volume of hospital-based care for patients with COVID-19 appears generally stable, within the model uncertainty, consistent with prior predictions;
  - Prior to the relaxation of physical distancing requirements, it appears the effective transmission number, commonly called "R," was likely less than one. This value would be associated with a decrease in cases over time.
  - It is not yet known what effect the relaxation of physical distancing requirements will have on transmission of COVID-19. If transmission increases, modeling predicts that an increase in patient volume at healthcare facilities would occur after delay of approximately 2-4 weeks.
  - The number of hospital beds, ICU beds, and ventilators in Los Angeles County appears adequate to meet the projected need for the care of additional COVID-19 patients over the next 4 weeks, unless there is a marked increase in transmission.

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*

Goal of Public Health Response

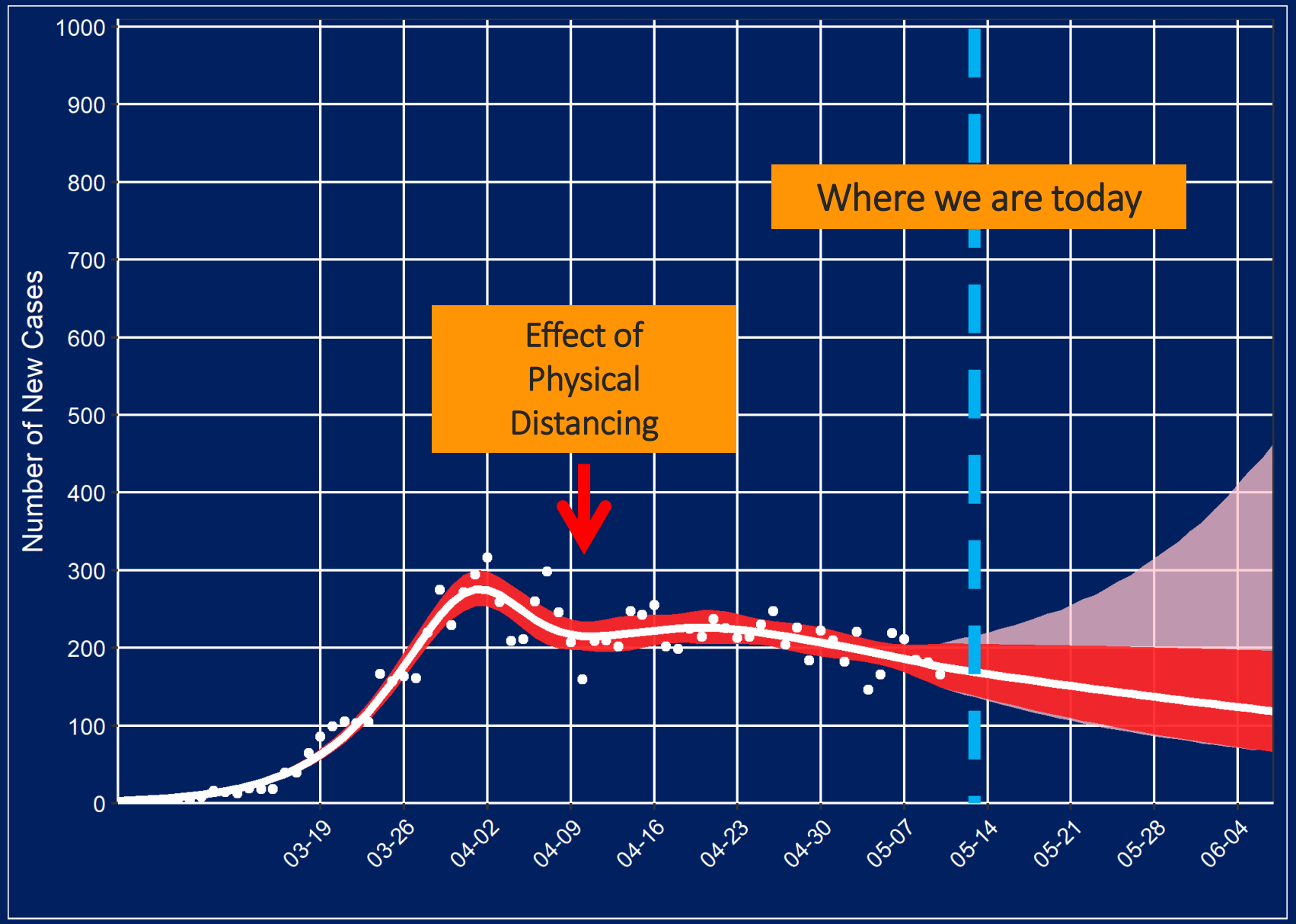


Source: CDC 2007

Effects of physical distancing & public health interventions:

1. Delay peak in demand, increased time to prepare
2. Decrease peak demand, increased ability to surge
3. Decrease total population infected

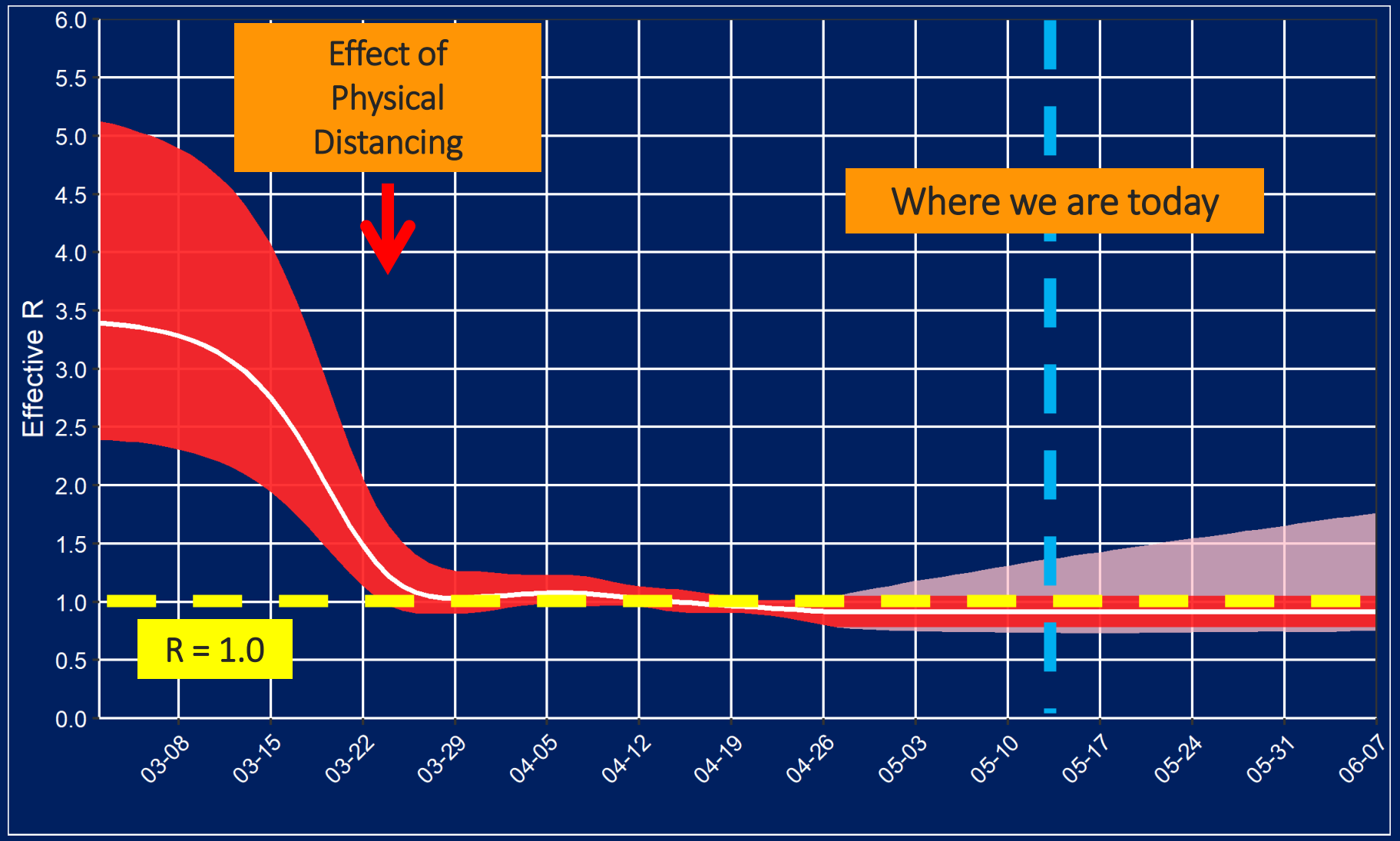
Hospital Patient Projections



Uncertainty if R increases

Uncertainty with no change in R

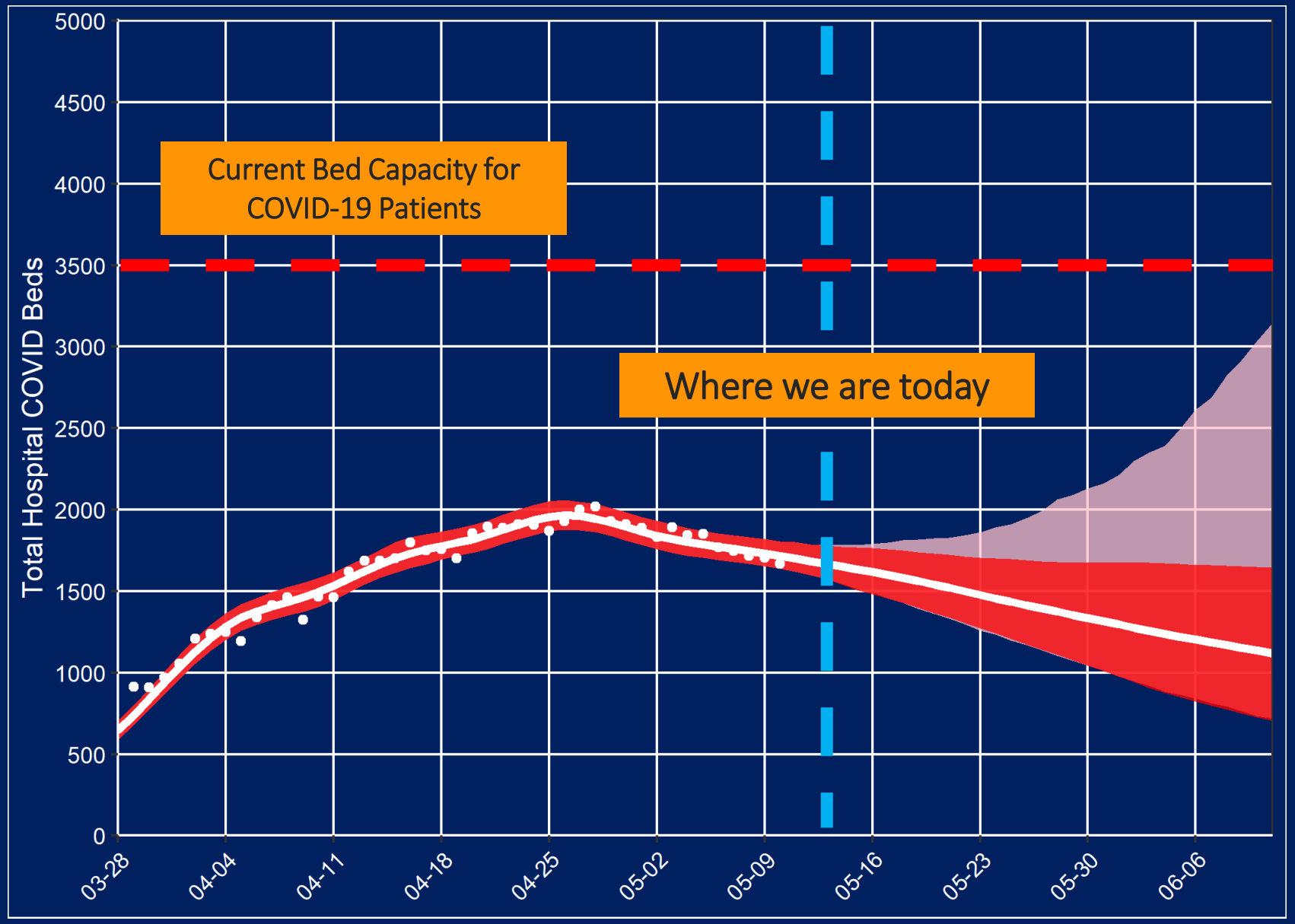
Effective Transmission Number “R”



Uncertainty if R is increasing

Uncertainty with no change in R

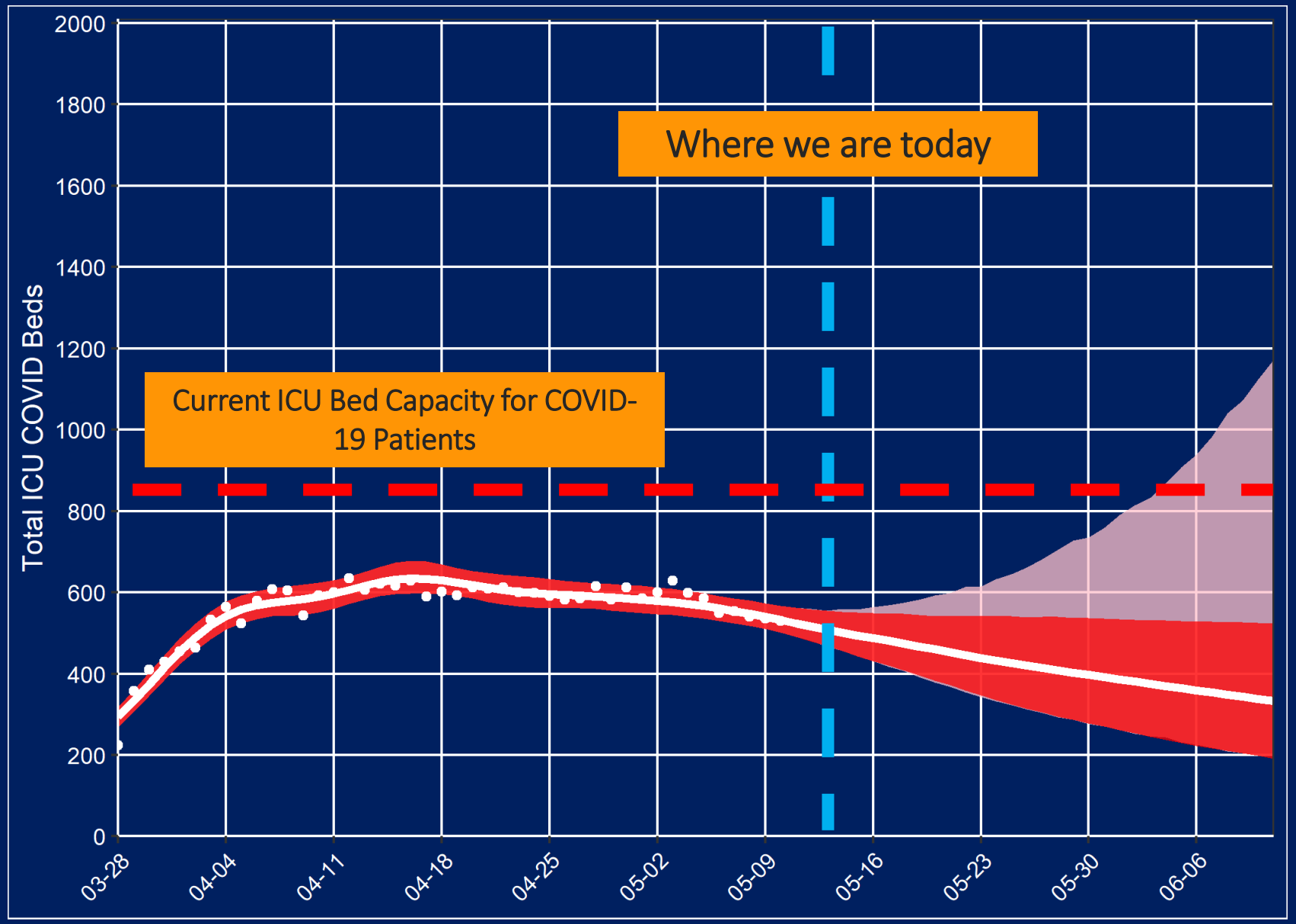
Predictions of Demand in LA County | Hospital Beds



Uncertainty if R increases

Uncertainty with no change in R

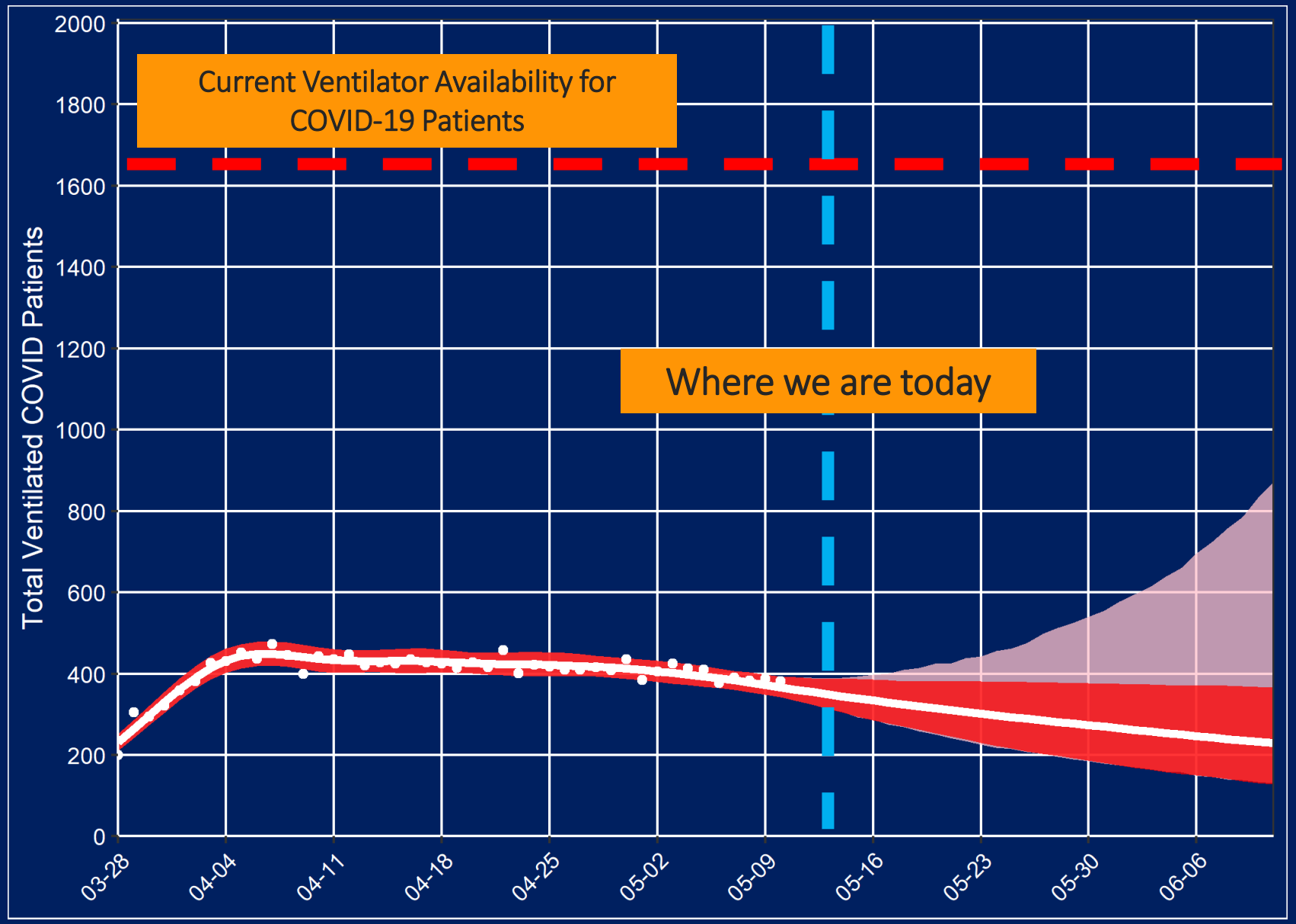
Predictions of Demand in LA County | ICU Beds



Uncertainty if R increases

Uncertainty with no change in R

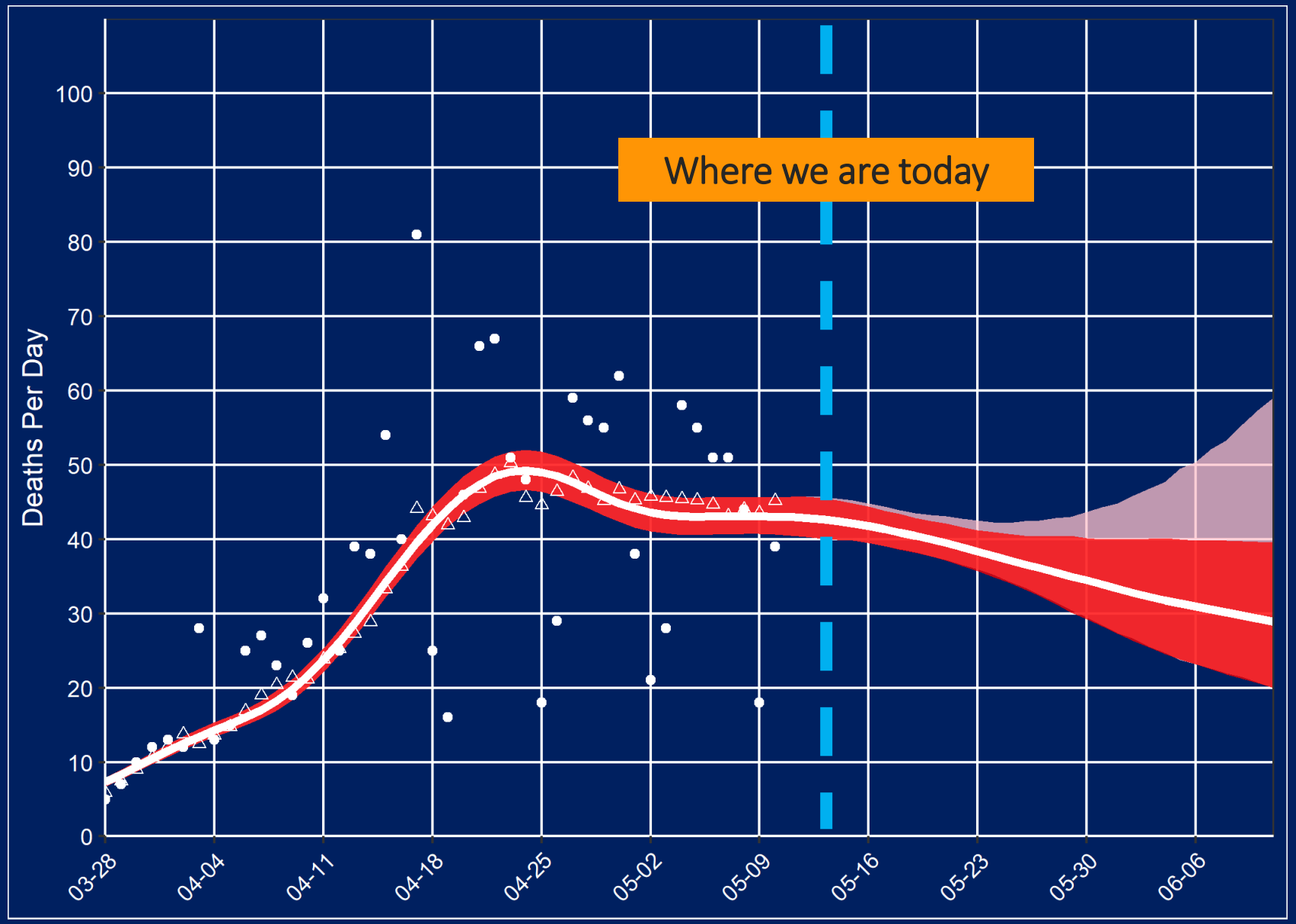
Predictions of Demand in LA County | Ventilators



Uncertainty if R increases

Uncertainty with no change in R

Predictions of Daily Mortality LA County



Uncertainty if R increases

Uncertainty with no change in R