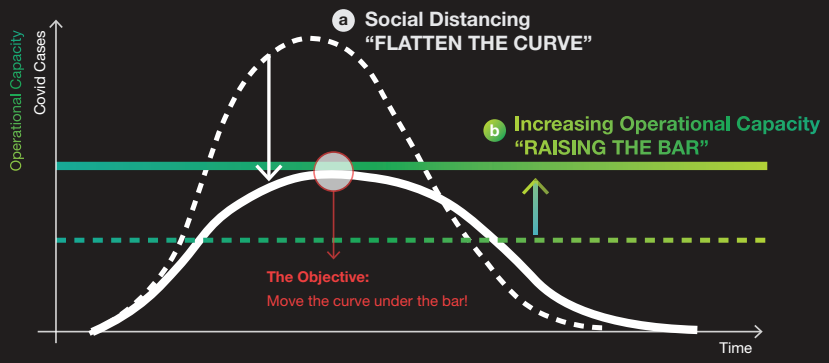
Parametric Geospatial Model for Increasing Healthcare Operational Capacity for COVID-19 Response

Raising the bar

Increasing healthcare operational capacity quickly—in addition to social distancing and other policy measures—is a major factor in a pandemic response.



To increase capacity there are two strategies:

1 Expand capacity of current hospitals

Immediate increase of additional capacity within existing hospitals

2 Develop temporary facilities

Rapid development of temporary facilities to cope with the surge of cases

...but developing temporary facilities requires 3-4 weeks. Thus, the central question becomes:

HOW MANY** temporary facilities do we need to bring online and **WHEN?

Parametric Model Capabilities

IBI can leverage the data of any city, county, state, province, region or country within hours to provide the following solutions:

PLAN THE RESPONSE
IBI's parametric pandemic capacity model allows decision-makers to effectively plan their responses to the current health crisis based on existing COVID-19 case projections and data.

UNDERSTAND THE WHEN AND WHERE OF TEMPORARY FACILITIES
The model visualizes the need of and the dates for bringing temporary facilities (high school gyms, convention centers, etc.) online.

ALLOCATE HEALTHCARE RESOURCES
The model can be used to define the allocation and distribution of any healthcare resources (staff, ventilators, masks, oxygen, etc.) based on the projected caseloads.

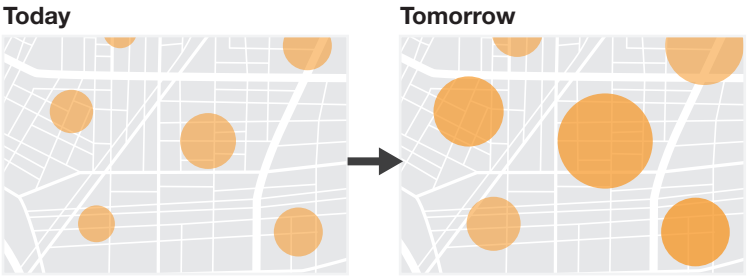
RUN DIFFERENT SCENARIOS
The model enables the analysis of custom "what if?" curves providing the ability to plan for best and worst case scenarios in a matter of minutes.

Data, Parameters and Solutions

1

ANALYZING THE COVID-19 CASE TRENDS

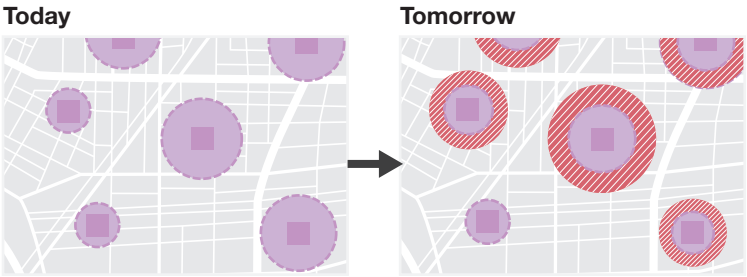
The data being collected by public agencies is efficiently streamed into the model keeping COVID-19 case information up to date, visualizing the projected future cases.



2

UNDERSTANDING HOSPITAL CAPACITIES

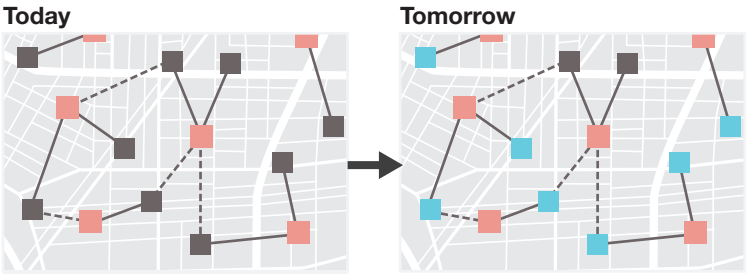
Using hospital data (beds, staff, equipment) the model assesses the current and future capability of the facilities to deal with nearby cases and includes a distribution algorithm to allocate patients to nearby faciltiies with capacity.



3

IDENTIFY TEMPORARY FACILITY OPPORTUNITIES

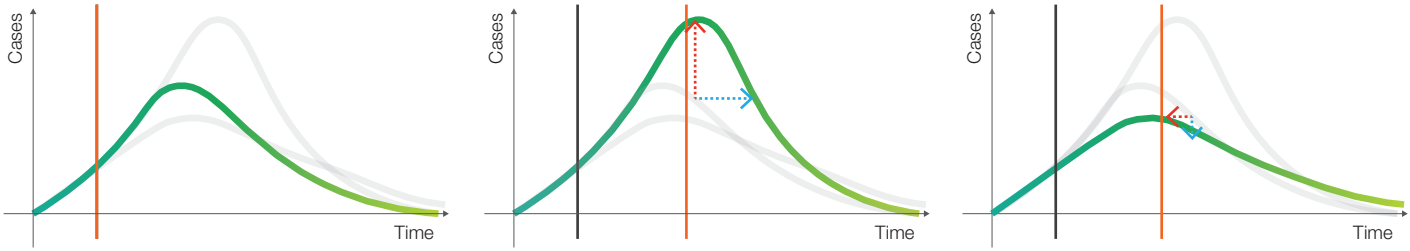
As hospitals reach capacity, our model intelligently distributes patients to nearby temporary facilities (schools, convention centers, etc.) and provides the date that these facilities need to begin conversion to meet the demand.



The flexibility of the model allows additional layers of data (masks, oxygen, ventilators, staffing, etc.) to be included quickly—minutes or hours, not days.

Multiple curve analysis

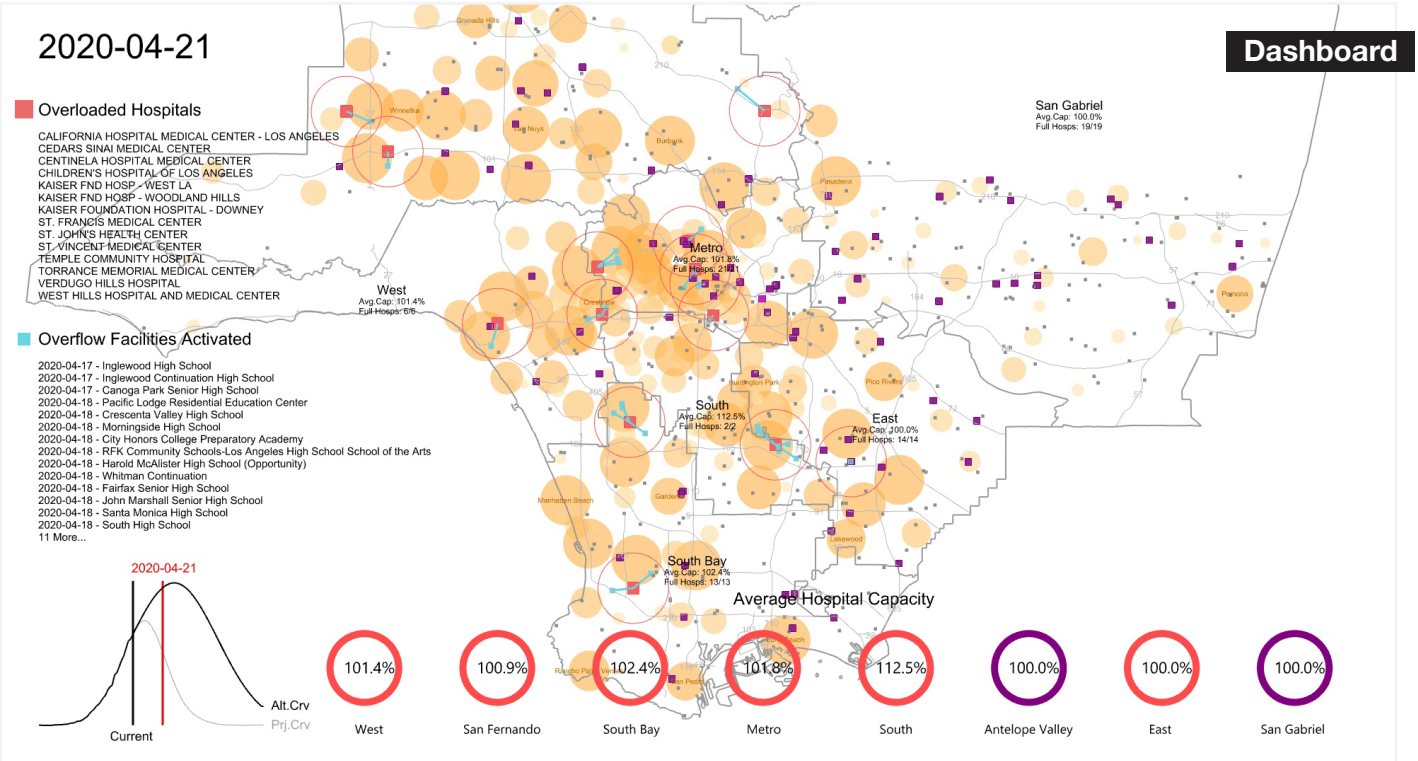
The model can use any curve generated by health experts or it can use custom curves to simulate alternate "what if" scenarios, changing **severity** and **timing** as needed.



Now | **Tomorrow—Increased Case Load** | **Tomorrow—Reduced Case Load**

Current Scenario

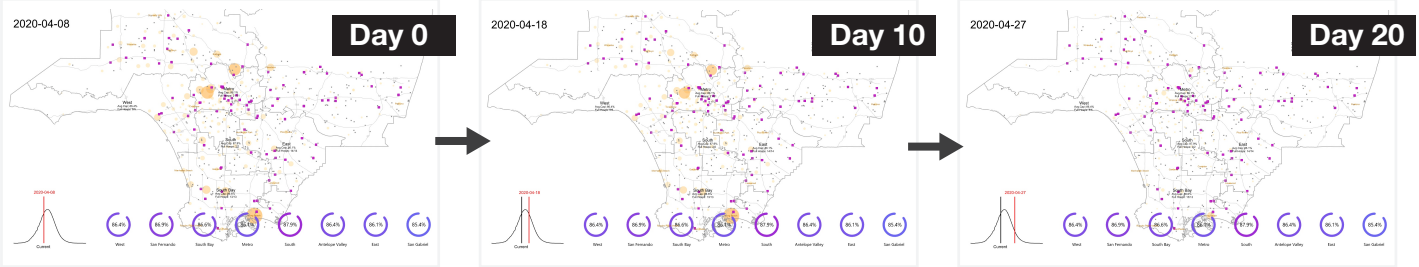
The model uses data collected by public agencies, updating it as new data becomes available.



Future Case and Capacity Projections

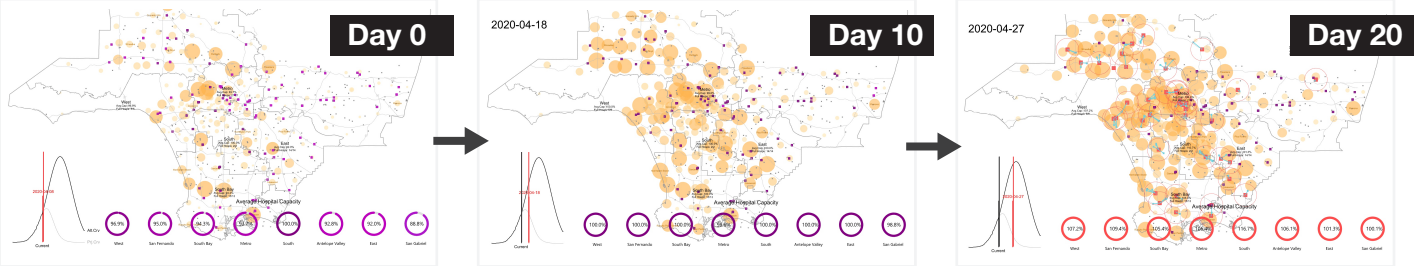
By layering the projected spread of the virus with the future capacity of healthcare facilities, decision makers can provide informed, evidence-based solutions.

BASELINE SCENARIO



From Day 0 to Day 20, the current hospital system has the capacity to deal with all emergent cases, even during the peak of the curve.

ALTERNATE WORST CASE SCENARIO



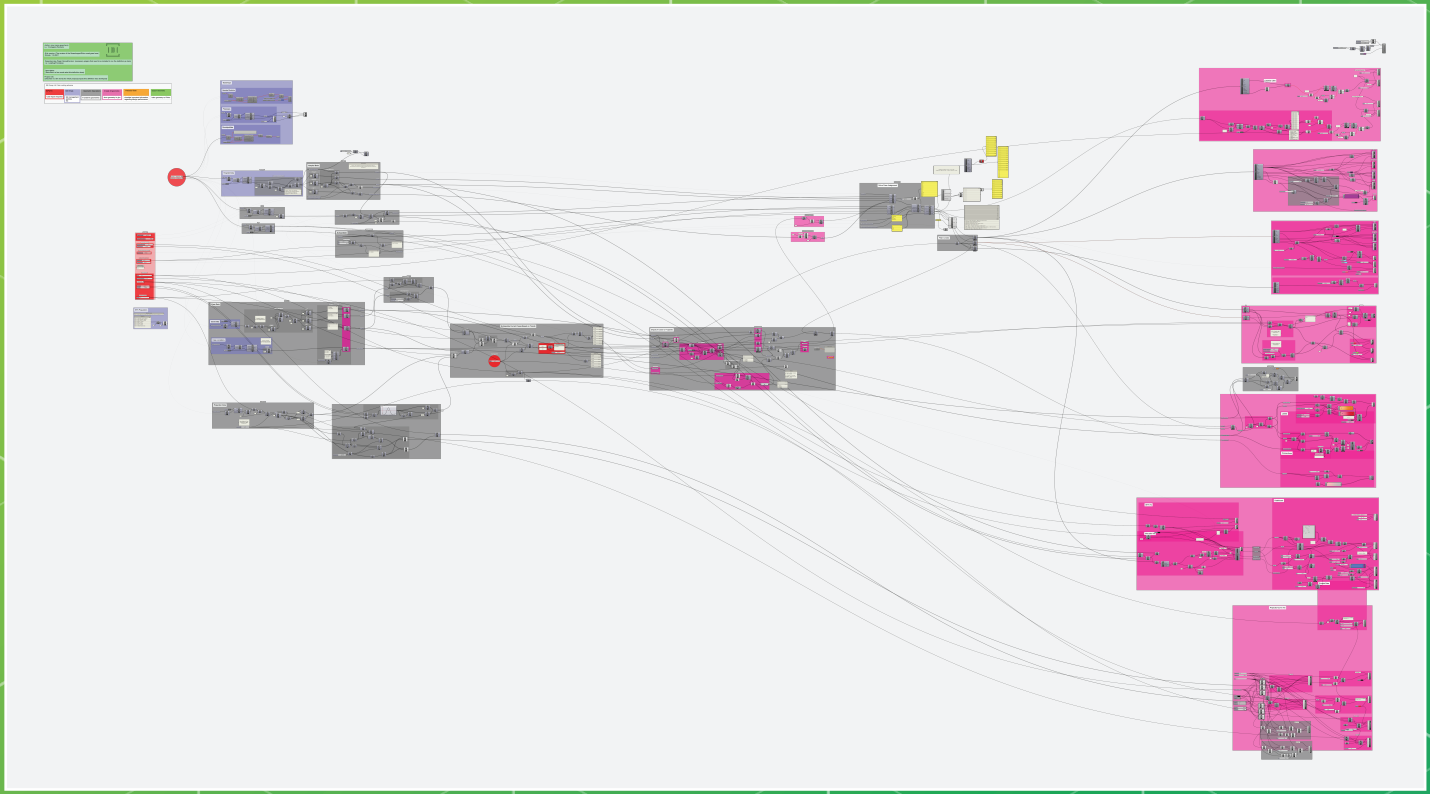
In Day 0, the system is experiencing some load that can be covered within the current hospital capacity.

By Day 10, the system is being stressed, but patients can be distributed throughout the hospital network.

By Day 20, the system is overloaded and additional facilities need to be brought online.

start building temporary treatment facilities... **...that are needed here.**

The algorithmic model powering the analysis



*We have the **model**, you have the **data**.*
*With both, we can define the right **investment***
*for the right **place** at the right **time**.*

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