

Sg2 COVID-19 Surge Demand Calculator Version Change Log

Sg2 COVID-19 SURGE DEMAND CALCULATOR V6.1 UPDATE (12/10/2020)

Scenario Enhancements

- Addition of inputs for scenario modeling of resurgence of COVID-19 based on changes in social distancing measures:
 - Up to 30 date/magnitude input entries for changes in social distancing measures
- Modeling enhancements that allow for:
 - Incorporating population adjustment based on potential in-migration or out-migration within the market population by age cohort
 - Allowing for adjustments for up to 3 hospitalization rates beginning with flexible date inputs
 - Ability to enter secondary hospital-related inputs including:
 - Secondary non-ICU ALOS and corresponding start date
 - Secondary % of COVID-19 hospitalizations that are ICU admissions and corresponding start date
 - Secondary COVID-19 ICU ALOS
 - Secondary COVID-19 non-ICU ALOS after ICU stay
 - Secondary % of COVID-19 ICU cases that require ventilator utilization and corresponding start date
 - Secondary estimated days of mechanical ventilation for COVID-19 patients
- Option to incorporate the potential impact of COVID-19 reinfections, including impact on hospitalization rate

Visual Enhancements

- Input entries for Section 5, or changes within the reproductive rate, can be found on a secondary inputs tab, “Reproductive Rate Change Inputs,” which allows users to enter up to 30 changes in the reproductive rate.

Sg2 COVID-19 SURGE DEMAND CALCULATOR V5.1 UPDATE (7/01/2020)

Scenario Enhancements

- Addition of inputs for scenario modeling of resurgence of COVID-19 based on changes in social distancing measures:
 - Additional input date/magnitude entries for changes in social distancing measures
- Modeling enhancements that allow for:
 - Social distancing measures to either increase or decrease each inputted impact on effective reproductive rate
 - Additional modeling scenarios for each additional social distancing measure to account for potential variation across each social distancing step

Visual Enhancements

- Previously, graphical depictions of surge scenario impact on the weekly, daily and extended output tabs included COVID-19 ADC *Without* Social Distancing and Infected COVID-19 Population *Without* Social Distancing to help estimate what initial surges may look like without social distancing practices. Since social distancing practices have been widely adopted, the outputs for the potential surge without social distancing measures were removed from the output tabs as they are no longer relevant for modeling purposes.
- To streamline the output tabs, data from the previous extended output tab are incorporated into the daily output tab.
- Each average daily census (ADC) surge scenario impact graph on the output tabs incorporates the ADC and infected population curves for the 2 additional scenarios.
- The daily and weekly output tabs include 2 additional reproductive rate summary tables based on the additional scenarios.
- Visual differentiation between the 3 scenarios is depicted by color: green for scenario 1, blue for scenario 2 and orange for scenario 3.

Sg2 COVID-19 SURGE DEMAND CALCULATOR V4.1 UPDATE (4/25/2020)

Methodological Changes

- Sequential social distancing impacts are now formulated as an additive sum. Previously, sequential social distancing impacts resulted in total impact equal to magnitude of last social distancing impact entry (stay-at-home order).
- Initial stay-at-home social distancing initiatives are now divided between immediate and gradual impacts, better reflecting the changing reduction in effective reproductive rate over time observed in international and national data.
- Formulaic change to underlying equations found in Weekly Output tab, allowing calculations within this tab to now run using Office 2016 and older versions.

Scenario Enhancements

- Addition of inputs for scenario modeling of “resurgence” of COVID-19 based on relaxation of social distancing and potential, follow-on social distancing reinstatements:
 - Additional input date/magnitude entries for the relaxation of social distancing measures
 - Additional input date/magnitude for reinstatement of social distancing measures

Visualization Enhancements

- Addition of error messaging to guide users in appropriate input ranges for social distancing impacts within inputs tab:
 - If social distancing dates are not in sequential order (eg, if relaxing of stay-at-home order is before enactment of stay-at-home order), error message prompts correction.
 - If relaxing-stay-at-home date is populated when enacting-stay-at-home date is not populated, error message prompts correction.
 - If appropriate negative or positive values are not entered for social distancing impacts, error message prompts correction.
- Update of “scenario dates” tables on weekly, daily and extended output tabs to include:
 - Date of each social distancing implementation.
 - R_0 references for each social distancing date.
 - Running percentage of population infected.

Sg2 COVID-19 Surge Demand Calculator Change Log v6.1

Sg2 COVID-19 Surge Demand Calculator Overview and Methodologies

Note: If social distancing date is not entered or impact is set to 0%, relevant fields within “scenario dates” table are left blank. Addition of estimated day-over-day % of total population infected along running timeline in the daily and daily (extended) output tabs

- Reformatted output graphs to use projected calendar dates vs numbered days or weeks
- Updated the extended and weekly outputs to show out to 400 days
 - Related table and graphs updated to show up to 400 days
 - Related graphs formatted to show tick marks every 2 weeks

Sg2 COVID-19 SURGE DEMAND CALCULATOR V3.1 UPDATE (4/07/2020)

- Addition of user entry of flexible R_0 value governing initial infection rate for model; guidance on R_0 selection provided based on data testing for New York City, NY; Chicago, IL; San Francisco, CA; and Albany, GA
- Addition of entry of first date of community-acquired COVID-19 hospitalization as a new anchor point for date-driven chronological timeline output, see Methodology Documentation
- Addition of input requests for local social distancing approaches and timings, as model now incorporates these mitigation steps to reduce underlying infectious spread, and thus projected hospital demand dynamically, see Methodology Documentation
 - Direct reduction of beta function in SIR model, see Methodology Documentation
- Addition of social distancing adherence entry to allow flexibility in time delay of social distancing policy enacted and observed reduction in infections
- Updated guidance language on input tab and Methodology Documentation based on current US experiential evidence:
 - New York City is showing a steady 25% of COVID-19 admissions requiring critical care (ICU).
 - New York City is showing 80% to 90% of COVID-19 ICU cases needing mechanical ventilation.
 - Seattle, WA, reported 9-day ALOS for COVID-19 ICU stay (ICU portion of stay only)
- Change of “hardwired” delay from infection to hospitalization from 5 to 7 days
- Change of output weekly reporting from midpoint of weekly ADC to weekly high value to better align data between weekly and daily output tabs
- For locked calculator versions, inclusion of unlocked, free text rows in output tabs for user entry of actual data for comparison purposes

Sg2 COVID-19 SURGE DEMAND CALCULATOR V2.1 UPDATE (3/29/2020)

- Adjusted SIR model input of infectious period from **10 to 8 days**, per latest literature. See updated methodology section for details and sources.
- Addition of flexible input for % of hospitalizations that are ICU admissions. Language on recommend values added.
- Addition of flexible input for % of ICU cases that require ventilator utilization. Language on recommended values added.
- Expansion of ventilator ALOS drop-down options.
- Addition of Calculator Output (Daily) reporting added. This output tab contains daily COVID-19 ADC projections and daily shortage/surplus projections. It is intended to be used to triangulate local COVID-19 ADC trends and doubling rates so that an end user can:
 - Identify a likely near-term scenario surge fit based on market behaviors, and
 - Identify a reasonable timing range to projected local peak surge.

Sg2 COVID-19 Surge Demand Calculator Change Log v6.1