

COVID-19 County Hospital Workforce Estimator

www.gwhwi.org/tracker-county-workforce.html

The advent of the COVID-19 Omicron variant on top of the Delta variant has led to a new surge in hospitalizations. As a result, a growing number of hospitals are likely to experience significant workforce strain over the next 30 days, according to the [County Hospital Workforce Estimator](#) developed by the [Fitzhugh Mullan Institute for Health Workforce Equity](#) (Mullan Institute) at the George Washington University in collaboration with [Premier Inc.](#) and the [National Association of County and City Health Officials](#) (NACCHO).

The Mullan Institute estimates that between now and May 18, 2022, 5.50% of counties will experience hospital workforce staffing strains due to COVID-19 hospitalizations. Using new county-level projections of COVID-19 hospitalizations and ICU occupancy provided by Premier, we estimate 149 counties will need to implement crisis workforce strategies due to intensivist to ICU patient counts of 24 or greater. This involves tiered staffing strategies that integrate non ICU trained personnel to provide critical care services in what is sometimes referred to as “battlefield promotions”. Additionally, 24 counties will need contingency workforce strategies, such as higher patient counts per team, float pools, and overtime due to high COVID-19 hospital occupancy. Some counties in the contingency group may also need to adopt crisis staffing strategies due to pre-existing workforce constraints.

We also identified 2,244 counties that are expected to be able to maintain conventional workforce strategies due to lower than 6% COVID-19 hospital occupancy, though contingency workforce strategies may be required due to pre-existing workforce constraints. An additional 729 counties either did not have a hospital or did not have enough data to assess potential COVID-19 related workforce strain.

COUNTY-LEVEL ESTIMATES

Users can select a county to view the peak county-level projected COVID-19 hospitalizations and COVID-19 intensive care unit (ICU) bed counts are estimated to occur in the next 30 days, the estimated number of available intensivists (critical care physician specialists) in the county, and how that translates to the number of intensivists available per 12-hour shift. This information is used to estimate the ICU patient to intensivist ratio and the percent COVID-19 hospital occupancy for the county.

149

counties will need crisis workforce strategies

24

counties will need contingency workforce strategies

2,244

counties are expected to maintain conventional workforce strategies

729

counties do not have a hospital/data to assess workforce strain

WHY DOES THIS MATTER?

County-level hospital workforce strain estimates provide additional information to county executives and other local leaders regarding the existing health workforce's adequacy to care for COVID-19 hospitalized patients and other patients in need of intensive care services. County executives can implement new emergency social distancing guidelines that may prevent future cases from developing as projected and mitigate expected hospital workforce strain. For example, IHME estimates a [significant reduction in COVID-19 mortality](#) would occur if 95% of the population started wearing masks (up from 76% now.)

Hospital administrators may benefit from having insight into the anticipated local COVID-19 hospitalizations and resulting workforce strain outside their hospital catchment area. Further, when multiple counties experience high COVID-19 hospitalizations simultaneously, there is [greater competition to recruit traveling nurses](#) or other health workforce team members to supplement the existing workforce temporarily.

The Society for Critical Care Medicine has outlined [tiered](#) staffing strategies for surges in COVID 19 caseloads, but these place a significant strain on the existing health workforce. Using a tiered approach, an intensivist provides oversight to multiple health care provider teams that care for up to 24 patients each. Critical care nurses may have as many as six patients each in these scenarios necessitating reinforcement from other non-ICU nursing staff. These tiered staffing models deviate significantly from standard practice where intensivists [typically oversee](#) much smaller numbers of patients in a given shift, and ICU nurses are responsible for only one or two patients simultaneously.

ADJUSTING WORKFORCE STRAIN THRESHOLDS

Based on Premier members' feedback, the 25% COVID-19 hospital capacity threshold was selected as a marker that hospitals may need to implement contingency workforce strategies. The crisis workforce threshold was based on the Society for Critical Care Medicine's [tiered staffing model](#) of having intensivists oversee multiple teams caring for 24 patients. However, users can adjust the workforce strain thresholds used in this modeling to examine how the number of counties projected to experience workforce strain will vary with higher or lower COVID-19 hospitalization thresholds selected (default setting is 25%) or higher or lower ICU patients per intensivist counts (default setting is ≥ 24 per intensivist). Additionally, users can adjust intensivist attrition rates to account for workforce losses due to [burnout](#), [health care worker COVID-19 infections](#), and other factors (default setting is 0%).

METHODS

The projections provided here are estimates calculated using the best available data and may differ from known caseloads in some instances. Premier provided the 30-day county-level COVID-19 hospitalization and ICU occupancy projections. The nonlinear model is trained using [historical Health and Human Services COVID-19 hospitalization data](#) to learn the relationship between county demographics and COVID-19 hospitalization rates. County-level demographics and behavioral variables used in the model include U.S. Census data on county population by gender, age, race; U.S. Census Small Area Income Poverty Estimates Program county-level estimates of poverty, urban influence, and density; definitive data on hospital type and bed count; and, Harvard Dataverse 2016 county-level election results. Upper and lower bounds reflect the significant uncertainty about how things may change due to the vaccine roll-out, new COVID-19 variants, and other factors influencing social distancing policies and behaviors. The county-level COVID-19 hospital and ICU projections will be updated weekly as new HHS data becomes available.

County-level estimates of the percent of hospitalized patients with COVID-19 are calculated using Premier, Inc's daily projections of county-level COVID-19 hospitalizations divided by Definitive Healthcare's data on historical county-level hospital occupancy.

The number of ICU patients per intensivist was calculated by adding the projected COVID-19 ICU bed count to historical ICU occupancy data from Definitive Healthcare. IQVIA provided county-level estimates of the intensivist supply. The intensivist supply was then adjusted to reflect providers working four 12-hour shifts per week.