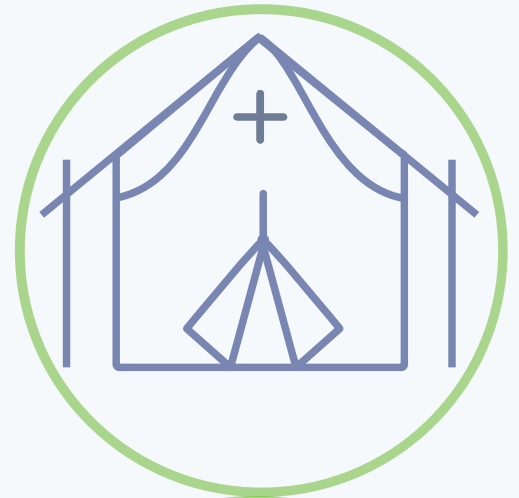


COVID Response Tactics Sharing (CRTS)

2020



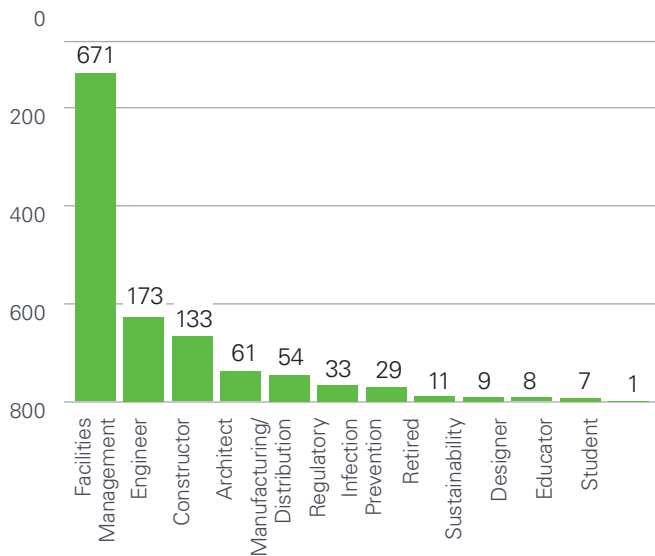
COVID Response Tactics Sharing (CRTS)

The COVID Response Tactics Sharing (CRTS) project surveyed respondents on COVID crisis surge-related preparation and recovery activities, as well as strategy and lessons learned for the future. This report is the first in a series on the CRTS and may help the HFM field to better prepare for similar crises in the future.

Who were Survey Respondents?

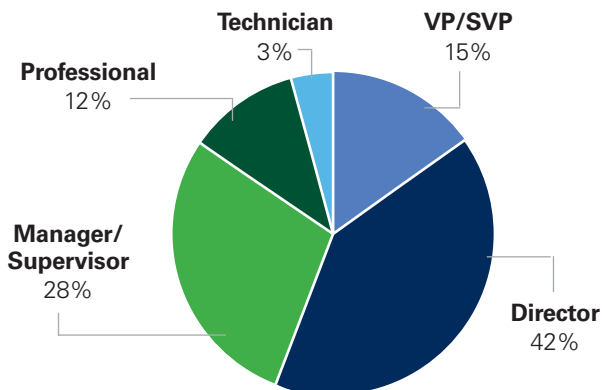
1190 individuals representing 12 different roles from the health care engineering field participated in the CRTS survey. The largest role groups were Facilities Managers and Engineers who reported working within a single health care organization. Most participants across all roles were manager/supervisor level or higher (**85.9%**).

PARTICIPATION BY ROLE



75% reported working directly within, or for, a specific hospital/health care system. Of those, **50%** stated that their duties or management activities spanned across more than one hospital.

PARTICIPATION BY ROLE LEVEL



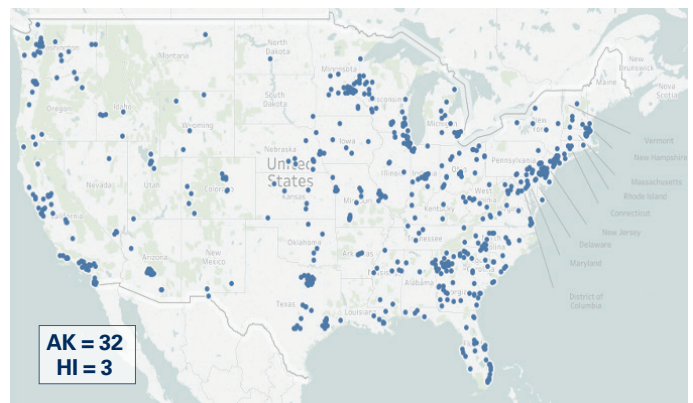
PARTICIPATING HOSPITAL STATS



Hospitals reported:

- A median of 350 beds
- Equal representation from all types of hospital settings: urban, suburban, and rural

NATIONWIDE PARTICIPATION



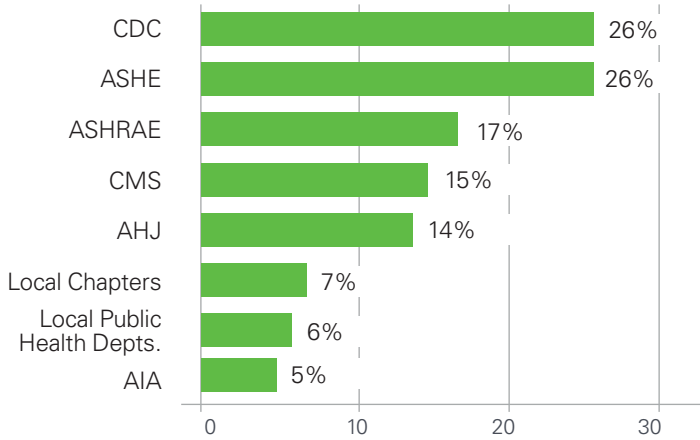
Each dot on the map to the right represents one respondent's work zip code, all roles are represented on this map. Even though a portion of respondents chose not to provide their zip code and are not included on the map, our initial sample illustrates satisfactory national representation. Because we strive to create a correct and actionable report for our members, we continue to collect data.

The remainder of this document focuses on the activities of Facility Managers and Engineers working within health care facilities (n = 844). Findings are representative of data collected through July 27, 2020. Stay tuned for additional reports by role and other topics.

The COVID Crisis Emerges – Early Action

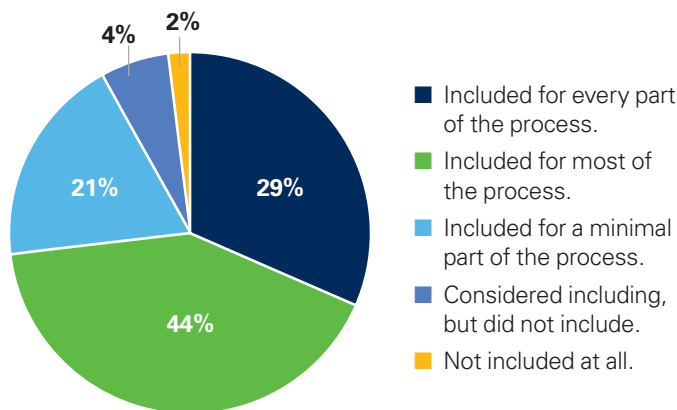
The COVID crisis required great resilience, proactivity, and timely decision making. Facility managers and engineers immediately took action to prepare their hospitals, and consulted expert resources when researching surge related solutions. The CDC (26%) and ASHE (26%) were the most often consulted resources.

Most Commonly Referenced Sources of Information



73% of respondents stated that the facility management (FM) department was included in most or every part of the decision-making processes related to preparing their hospitals for potential surges and other COVID-related threats.

How much was FM leadership included in decision-making?



Organizational Furloughs & Pay Reductions (Due to COVID-Related Factors)

- **8% laid off at least one staff member.**
 - 30% still have staff members laid off.
- **26% furloughed at least one staff member.**
 - 68% still have staff members furloughed.
- **21% reassigned at least one staff member.**
 - 77% still have staff members working in reassigned areas.
- **4% loaned out at least one staff member.**
 - Most reassignments & loan-outs were from shutdown hospital areas (surge centers, MOBs) to physical hospitals, mobile testing, door screening and other surge prep.
- **14% implemented salary reductions for at least one staff member.**
 - On average, 31% reduction in pay.
 - Salary reductions most often occurred for those in higher positions.
 - 29% still have staff working under reduced pay.

Maintaining Operations During Active Surge Preparation...

Over **90%** of respondents did not cease any of their normal daily operations. The few paused activities included new non-COVID-related construction projects (**21%**), aesthetic improvements (**<10%**) and general maintenance activities (**<5%**).



COMMONLY PERFORMED (IN-HOUSE) SURGE PREPARATION ACTIVITIES

- Added protective barriers to potential interaction spaces.
- Made patient flow changes to promote social distancing.
- Increased morgue and telehealth capacities.
- Modified medical equipment.
- Relocated large furniture and patient equipment outside of patient rooms.
- Reduced seating in patient areas.
- Separated entry points for COVID-suspected patients, other patient types and staff.

... While Maximizing Available Clinical Care Space

Approximately **87%** of respondents needed additional patient care space and found creative ways to reconfigure nonclinical spaces within the hospital walls.



Most often used spaces (in order of prevalence):

- Medical office space/buildings
- Parking decks/lots
- Gift shops/lobbies
- Outdoor parking areas
- Shell spaces
- Ambulance bays
- Auditoriums
- Chapels
- Conference rooms
- Staff sleep rooms
- Unused activity spaces
- Unused patient floors
- Waiting areas
- ER "Family Room"
- Main entrances
- Old emergency departments

Protecting Staff & Patients Against COVID Spread

FMs created OR anterooms and reconfigured patient rooms, entire hospital wings and floors.

37% of respondents added patient rooms, accounting for an **additional 22,467 patient treatment beds**.



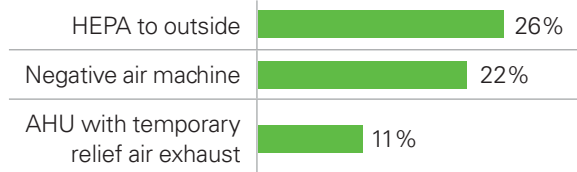
PATIENT ROOMS

RECONFIGURED BY

37%

All reconfigured into negative spaces

TOP METHODS:



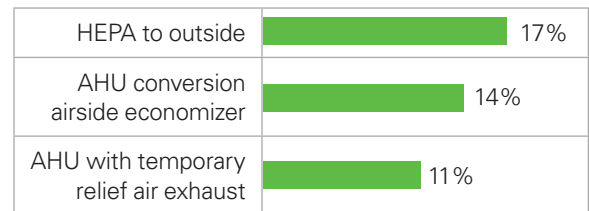
HOSPITAL FLOORS

RECONFIGURED BY

22%

Of which 77% reconfigured into negative spaces.

TOP METHODS:



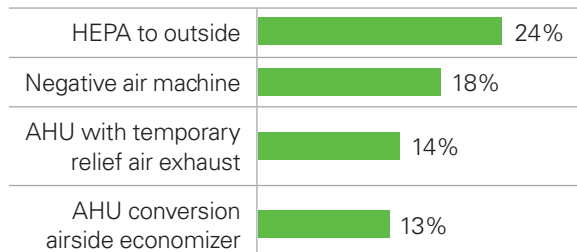
HOSPITAL WINGS

RECONFIGURED BY

23%

Of which 77% reconfigured into negative spaces.

TOP METHODS:

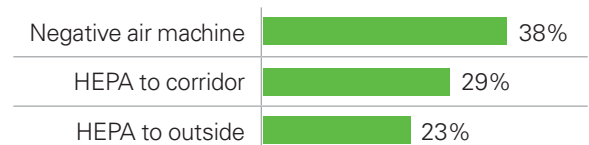


OR ANTEROOMS

CREATED BY

15%

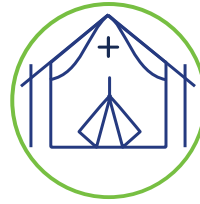
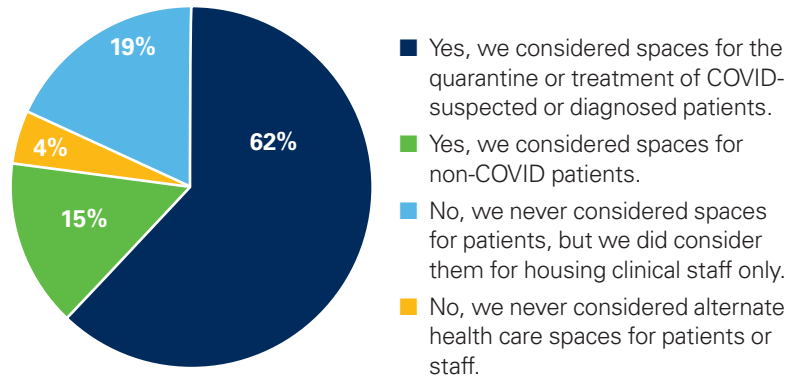
TOP METHODS:



Alternate Care Sites

Approximately **77%** of respondent organizations considered, or seriously considered acquiring or building alternate care sites.

Did you consider an alternate care site to handle potential COVID patient surge?



APPROXIMATELY

1/3

of respondent organizations obtained portable tents for the testing and treatment of COVID patients.

Of those who considered an alternate care site, the sites most often considered were (in order of prevalence):

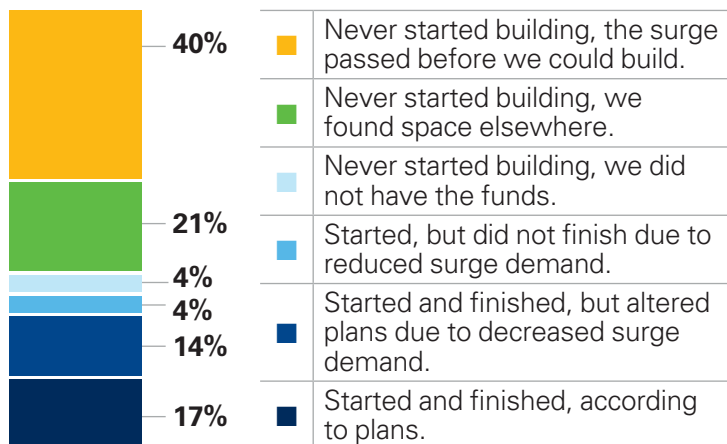
- Hotels
- Gymnasiums
- Schools
- Community centers
- Convention centers
- Abandoned hospitals
- Sporting arenas
- Event centers

Who Designed and Built Alternate Care Sites?

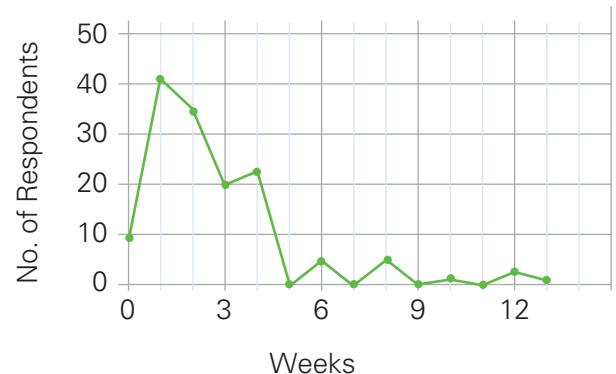
Approximately **15%** of respondent organizations **designed** at least one alternate care site, converting non-health-care spaces. Designs most often used gymnasiums (**18**), abandoned hospitals (**16**), convention centers (**12**), sporting arenas (**12**), parking garages (**11**), schools (**6**) and hotels (**6**).

A total of 110 respondents started construction on their designed alternate care sites, and of those **104 completed construction**.

What statement best describes the construction activities of your designed alternate care site?



How long did it take you to complete construction?



Construction Costs & Time

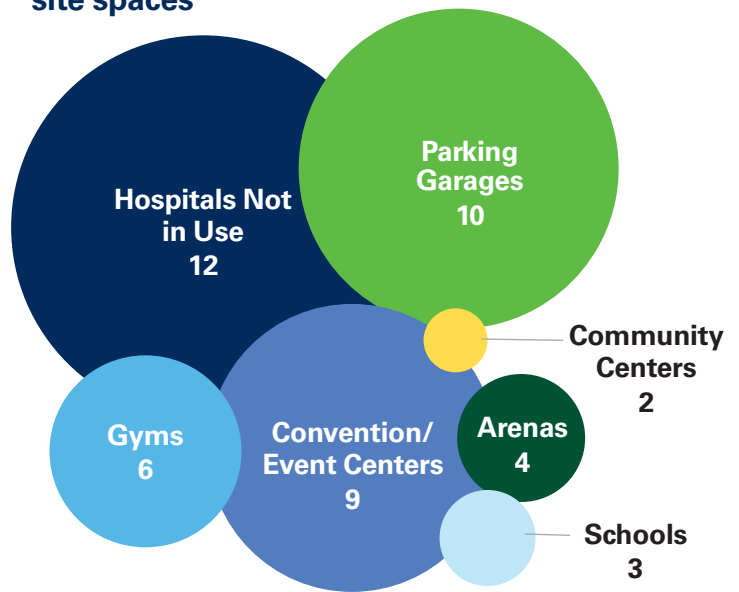
- Partially completed projects cost an **average of \$50,000** (median \$50,000).
- Fully completed but altered plan projects cost an **average of \$2,838,571.43** (median \$232,500).
- Fully completed according to plan projects cost an **average of \$1,465,687.50** (median \$22,500).

Alternate Care Sites: Engineering Specifications

Engineering Specifications

- 69% of newly built patient spaces were partitioned rather than isolated.
- Pressure requirements of newly built spaces were:
 - 26% positive spaces.
 - 41% negative spaces, open pods.
 - 24% negative spaces, individual patient space vs. block of cubicles.
 - 16% positive building, but negative space.
- Approximately **½ of designed spaces provided medical oxygen**, using either gas containers or liquefied oxygen cylinders, but **less than ¼ provided medical air, or vacuum systems**.
 - Of those that did, 79% tied the air into the hospital medical air system.

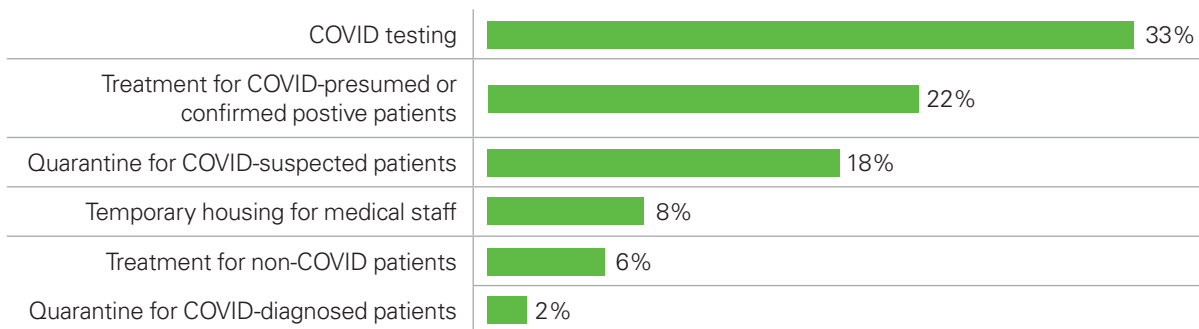
Most commonly constructed alternate care site spaces



Alternate Care Sites: Utilization

Approximately **40% of constructed alternate care sites housed patients**. Most often, the space was used to perform COVID testing, treat COVID suspected or positive patients, or quarantine-suspected patients.

What were alternate care sites used for?

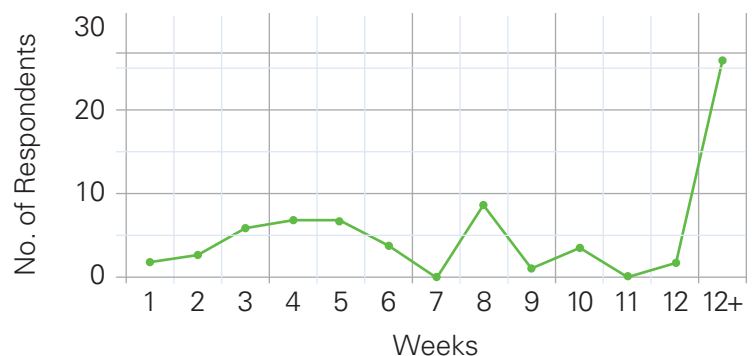


Duration of Alternate Care Sites in Operation

- Most alternate care sites were in operation for more than 12 weeks; at the time of data collection, approximately 40% were still in use.



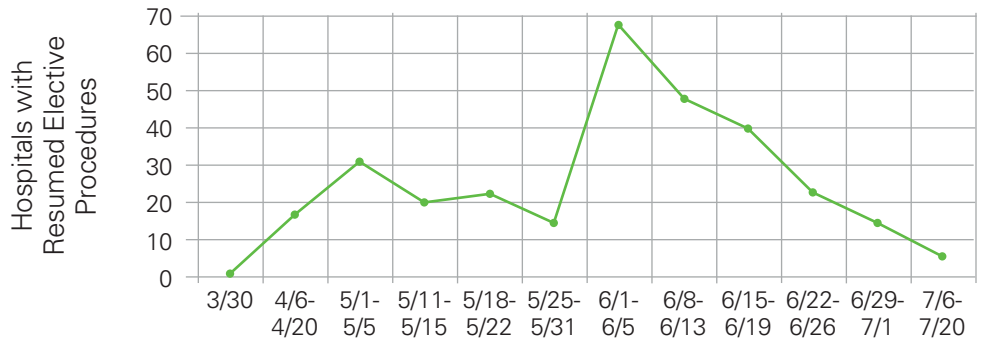
On average, 93 beds were occupied during the surge with up to 104 beds at surge peak.



Recovery Planning: Reinstatement of Elective Procedures

Most hospitals put an immediate hold on elective procedures, ensuring all resources were used to treat COVID patients. At the time this survey was published, all respondent organizations have reinstated elective procedures, with the largest amount of reinstatements occurring in the early weeks of June.

Reinstatement of Elective Procedures



Recovery Planning: Deciding When (and If) to Return to Normal Operations

Does your organization have an official “go condition”?

Slightly over half of respondents stated that they had no agreed upon benchmark or “go condition” that clarifies exactly when their organization can enter the official recovery phase.

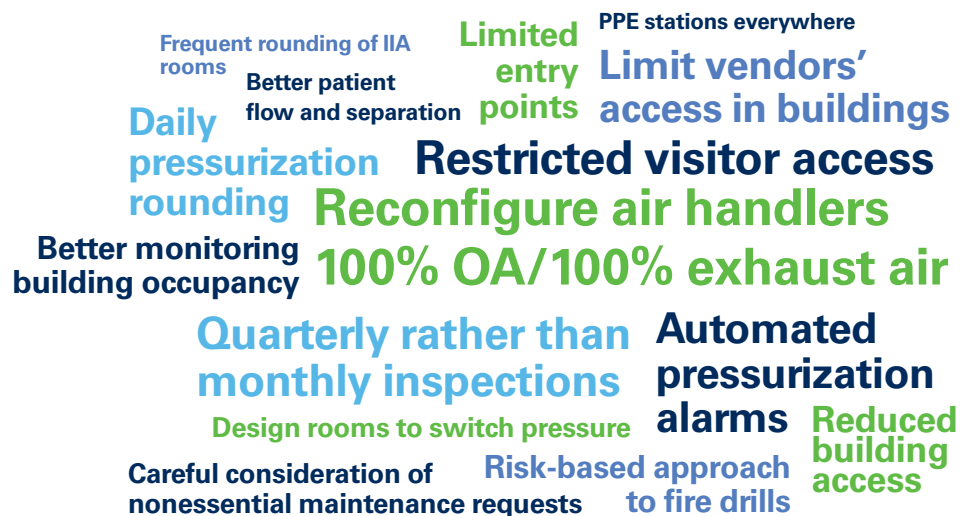


Recovery Planning: HFMs’ “New Normal”

FMs were tasked with continuing daily operations, while ensuring that the health care environment did as much as possible to reduce the impact of the COVID pandemic. Respondents were asked which newly implemented or paused processes they think should continue in the future.

Many hospitals also prepared their within-organization spaces for surge. 20% of respondents stated that they planned on returning the space back to its original use, and the majority had not made that decision as of yet. None of the respondents reported a date or timeline by which these changes would be made.

What processes were started that you think should be continued?*



* The word cloud above is a visual representation of the most common respondent answered themes to the question, “What processes should remain as permanent after the crisis?” Font size indicates theme strength.

Deciding What to Do with Alternate Care Sites

One hundred and ten alternate care sites were built, and over 1/3 of respondents obtained at least one portable tent. Approximately 60% of respondents who expanded patient care space outside of hospital walls to meet potential surge demands intend to return the space to its original use.

When asked what respondent organizations are considering doing with these structures, respondents reported*:

| | |
|---|-----|
| Unsure | 200 |
| Decommissioning space | 121 |
| Storing/maintaining as future alternate care site | 41 |
| Turned into pharmacy/storage warehouse | 15 |
| Was never our space — leased or county or city owned | 9 |
| Making the space permanent | 9 |
| Demolish space | 3 |

*Respondents chose multiple categories if they were considering doing more than one action.

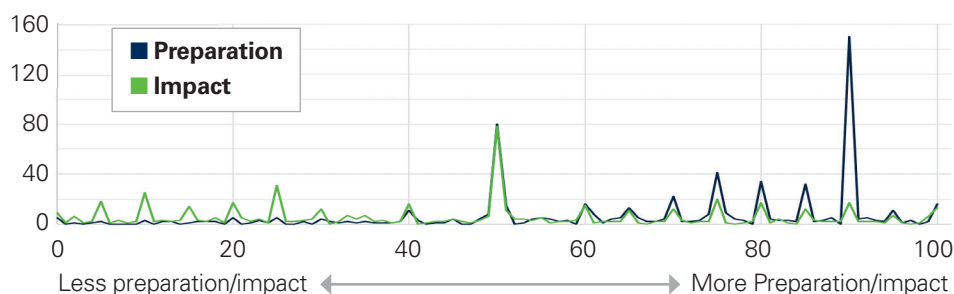
Recovery Planning: Reflecting on the Surge Experience

The world was not prepared for the COVID crisis, and the entire field has had to course correct as new information became available. Decision-makers based early emergency surge planning on mathematical models that projected potential patterns of COVID spread across the United States. HFM professionals worked to prepare their facilities for potential patient surge, without truly knowing what the real surge impact would like for their own individual organizations.

The survey revealed huge diversity in member perceptions of surge timing and impact across the United States. Specifically, respondents were asked to consider themselves as compared to others on two experiences: the amount of surge preparation they engaged in compared to other facilities in the nation, and the level of impact the patient surge on their facility as compared to others in the nation. Respondents chose a number between 0 and 100, where 0 meant that they felt, compared to others, they had engaged in no preparation or had no surge impact, and 100 where the members felt, as compared to others, they prepared the most, or were impacted the most by COVID patient surge.

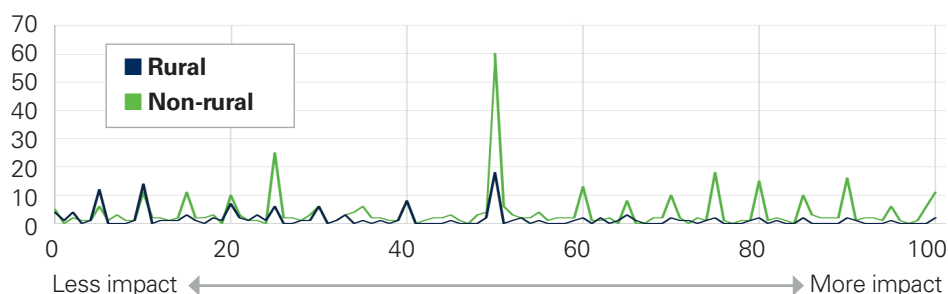
Surge preparation and impact (all)

Respondents were asked to rank their surge preparation and surge impact on a scale of 0-100 compared to others



As a rule, respondents tended to believe that they prepared significantly more than they were impacted. Sixty-six percent of respondent's preparation comparison scores were 79 and below, and 66% of the impact scores were 57 and below. Furthermore, rural hospitals also reported significantly lower impact scores (an average of 15 points lower) than non-rural hospitals.

Surge impact (Rural and non-rural)



However, several things might explain these findings. For example, preparation and surge impact ratings could be related to regional differences in COVID disease burden, timing of surges as related to the timing of survey completion, or other hospital or regional factors.

COVID Response Tactics Sharing: Lessons Learned (So Far)

This special report presents concrete information on respondents' decision-making processes and activities related to the COVID-19 crisis. In addition to the individual findings, the report also highlights higher-level themes and key take-aways garnered from the entire combined data set and open-ended comments, presented as bulleted points below. Together, these findings and themes can support the field's future preparedness efforts.

THEME 1: Working through frustration, uncertainty and reduced access to resources.

COVID-19 is the first pandemic the United States has seen in over 100 years. Thus, there was no reliable forecasting for exactly how long the crisis would last, how quickly the patient surge would come and how intense the patient burden would be. Given these uncertainties and the need to be prepared for the worst-case scenario, many organizations had to take immediate action. One early theme that emerged from the CRTS responses was the general feeling of frustration linked to uncertainty and reduced access to resources (staffing reductions, lack of access to critical supplies and mechanical equipment).

- However, given that most of the field has been through surge preparation at least once at this point, organizations should have a better understanding of what to expect, and have amassed additional resources to help with future needs.
 - Organizations may want to explore ways to increase supply storage space so they may stockpile, while ensuring fire safety.
-

THEME 2: Understanding the importance of communication and input in decision-making.

Several respondents linked frequent and effective communication and the level of facility management's input in early decision-making to successful surge planning, fewer wasted resources and reduced levels of frustration.

- The relationship between facilities management, clinical staff and infection prevention departments is paramount. Organizations should work to have structured, regularly occurring, bidirectional communication between these groups. Organizations may also consider cross-training and official collaborations to capitalize on lessons learned and strengthen team building.
-

THEME 3: Game time decision-making resulting in good ideas, but little value.

Respondents shared their own COVID crisis activities as well as their perception of how useful and appropriate these activities were in hindsight. Commonly discussed less-than-valuable solutions included anterooms, outdoor surge space tenting and temporary staff housing.

- Some members described anterooms to enter units as a waste of resources, and suggested that a better solution would be to change entire floors. Experts suggested that the rush to create anterooms was probably due to the lack of clear and consistent guidance from the Centers for Disease Control, and that alternative methods to providing mass isolation should be considered. Furthermore, it is important to get facilities management staff input (as referenced in Theme 2) so that any option considered takes into account facility infrastructure capacities.
- The reported utility of temporary tents was polarized: some respondents viewed them as extremely useful clinical spaces, but respondents from humid or storm-prone areas tended to perceive these spaces as unacceptable. Emergency plans should consider regional weather patterns and whether the temporary tent solution should be maintained as a last resort only while a more permanent solution is developed.

- Respondents also reported clinical staff non-acceptance of both temporary tenting and temporary staff housing spaces. The frustrations were higher when respondents reported considerable financial, labor or technology resource investments in the solution. Getting buy-in and acceptance from the staff is imperative. Organizations should broach these topics as they revise their emergency plans, and actively probe for barriers against clinical acceptance of engineering solutions. In some cases, these conversations will help clinicians to change their processes, and in other cases, these conversations will make it clear that the suggested facility management solution may need to be reconsidered.

THEME 4: Pain points in daily operations during COVID.

Many respondents also described engineering and daily operations challenges that were unique to new or altered COVID crisis operations. Some examples of problems that continue to plague health care engineers include maintaining air quality after converting substantial portions of an existing building to negative pressure, enforcing social distancing in elevators, and creating appropriate and readable patient wayfinding signage.

- The urgency of the COVID crisis required immediate action and impromptu decision-making. Given that the crisis will continue into the foreseeable future, professionals may want to critically reevaluate their earlier engineering and process-related facility changes. Under less urgent and stressful circumstances, professionals can consider more economical and efficient solutions.
- Unfortunately, there is little that can be done to enforce social distancing in elevators. Organizations may want to emphasize the importance of masking and social distancing through community education. The American Hospital Association has published resources and messaging to assist in this endeavor. Organizations may consider broadcasting social distancing messaging on television monitors near elevator banks and along patient flow pathways. Organizations may also promote the usage of stairs rather than elevators for ambulatory patients, reducing the number of patients using elevators. Facilities managers might consider connecting with their local preventive medicine, family practice, or population health clinics to obtain these resources.
- Patients presenting for treatment are often anxious, in pain or distracted. The COVID crisis can amplify this anxiety and confusion due to additional rerouting and patient flow changes, the loss of visitor informational and social support, and general fears around the virus. To ensure the effectiveness of wayfinding signage, organizations may want to involve patients in the process of signage selection and placement. Organizations may consider conducting a focus group where patients discuss and choose from different signage prototypes (wording, text size, location), or a more realistic piloting process where different sturdy temporary signs are each posted for a short time periods, and the prototype with the least patient confusion is selected as permanent signage.

THEME 5: Successes and strategies for the future.

Those that perceived their own preparedness strategy and activities as successful most often cited advanced planning, interdepartmental coordination and early facility management input.

- Some organizations explicitly noted the importance of accurate and updated drawing documentation and implementation of reliability-centered maintenance (RCM).
- The importance of a detailed and comprehensive emergency operations plan (including flexible surge capacity floor plans) cannot be overstated. In addition, given the globalization of our economy and ease of international travel, some respondents suggest active monitoring of potential world health events, regular tabletop exercises using these potential scenarios and Incident Command System drills. Organizations also noted that emergency preparedness plans for other types of disasters were helpful in surge preparations, so members may consider revising those plans to suit communicable disease emergencies. Best practice may include the assembly of a multidisciplinary team of architects, engineers and contractors that work together to design, document, adjust and redocument an updated emergency plan. Furthermore, organizations may want to create a master contract that also mobilizes this team into action if the needs arises.

- Finally, many respondents described how this experience has made them consider permanent design and engineering changes, for example, sectionalizing supply and exhaust ductwork, or building hospitals that have negative pressure rooms at the edge of departments, rather than in the middle.
-

ASHE thanks all who have participated in this project so far. Health care engineering professionals can still participate in the CRTS survey by clicking [here](#). In addition, facilities management professionals that have already taken the survey, but have experienced additional surge activity and wish to update their responses, can contact ASHE's Researcher Lisa Walt at ashe.research@aha.org.



American Society for Health Care Engineering

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