

Challenges for the disaster workforce during a compound hurricane–pandemic

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ABSTRACT

The COVID-19 pandemic has created new workforce considerations for emergency management community in addressing cumulative and cascading disasters. This research identifies how emergency management planning for both the changing dynamics of COVID-19 and the upcoming hurricane season may change under a compound threat. Many jurisdictions have faced challenges in providing adequate staffing of shelters before the pandemic. Now, fatigue among staff further exacerbates these challenges as resources are stretched thin. Six workshops, involving 265 national, state, and local leaders, staff, experts, and advocates from 22 states, and a range of disciplines (disaster planning, public health, social services, academia, and healthcare), were convened to identify concerns and potential strategies to address staffing, training, logistics, and support. Strategies proposed to increase the number and skill set of staff available involve increased reliance upon volunteers and nonprofit organizations. Mental health resources, personal protective equipment, sanitation supplies, and defining roles within emergency shelters were recommended to reduce fatigue and redistribute responsibilities. Findings illuminate additional research avenues regarding assessing the underlying stressors

contributing to the planning process and effective means of implementing these interventions to bolster emergency management shelter operations during a prolonged pandemic and in the future.

Key words: disaster response workforce, COVID-19, disaster management

INTRODUCTION

The nature of disaster planning has changed during the response to COVID-19. Coastal communities face the concurrent threats of a hurricane and pandemic, which may result in a worsened public health emergency. Considerable risk of morbidity and mortality may occur should mass sheltering be required when the threat of a hurricane is imminent. This research addresses two research questions related to the disaster workforce to meet sheltering needs during a compound threat: (1) How has the COVID-19 pandemic affected the disaster workforce needed to respond to a compound hurricane–pandemic threat? (2) What are disaster workforce concerns of emergency management and mass care professionals planning for hurricane sheltering during the COVID-19 pandemic?

Meeting the needs of more complex disasters call for changes in the disaster workforce required for

effective mass sheltering. Given the whole community approach to emergency management under the US National Response Framework, this disaster workforce encompasses paid government (local, state, and federal) and nonprofit staff who undertake preparedness efforts, in addition to volunteers who support a variety of evacuation and sheltering activities.^{1,2}

Federal, state, and local governments already have a multitude of plans and guidelines designed to deal with various disaster scenarios. However, most of these pre-existing plans and established mutual aid agreements do not consider compounding threats, such as a hurricane and population displacement occurring amidst a pandemic or the possibility of prolonged disasters. Multidisaster resource allocation constraints and potential disruptions need to be considered when planning for simultaneous disasters.³ The situation is unprecedented. The COVID-19 pandemic, when coupled with environmental, infrastructure, and socioeconomic stressors, creates compound risks that, to a greater degree, threaten communities at a time when governments' abilities to address any one threat alone is hampered.⁴⁻⁶ According to FEMA Administrator Pete Gaynor, "It's complicated on a good day . . . COVID-19 makes it a little bit more complicated."⁷

The COVID-19 pandemic is expected to change how local, state, and federal agencies respond to the threat of hurricanes, especially in terms of the evacuation of residents and the provision of public shelters.^{5,6,8-13} The prolonged government response to COVID-19, the unique health and hygiene needs for mitigating the spread of the virus, and the economic impacts of the pandemic pose additional challenges in terms of the disaster workforce needed to effectively respond to mass sheltering operations. Extant literature recognizes the challenges of sheltering during a hurricane but not concurrently during a pandemic. The sparse literature on flexible surge capacity—ie, human and material resources that can be activated—states that new resources required to address major or combined disasters are restricted by existing infrastructure, which may extend the timelines for adaptation. Nonprofessional staff with related education are part of these nontraditional but acceptable

resources. Engaging and connecting this expanded resource base to emergent needs requires accessible public health and education on the disaster(s) and means to integrate additional support.¹⁴ This study addresses two interlocking concerns that affect the capacity of emergency managers to access the appropriate human resources for a hurricane-pandemic: (1) inadequate disaster workforce in terms of sufficient numbers of staff and volunteers with relevant training and expertise; and (2) this current disaster workforce is fatigued and operating at less than full capacity. The next section describes the disaster workforce context and then discusses these two interlocking concerns.

The disaster workforce

The US National Response Framework recognizes that all disasters are fundamentally local, and that city, county, tribal, and state governments have primary responsibility and authority to manage disasters.^{1,15} The role of the federal government is to then support state and local authorities by providing resources if the local capabilities are overwhelmed.

Local government staff is the backbone of the disaster workforce, with state and federal staff primarily providing financial support and resources to supplement local capabilities. In addition to emergency management staff members who have sustained roles throughout disaster management, other local government staff is assigned mandatory roles in shelter operations.¹⁵

Disaster response requires partnerships and collaborations across governments, and with nonprofit and other nongovernmental organizations.^{1,2,16} Volunteers also comprise a large proportion of the disaster workforce. Many states and localities have agreements in place with Voluntary Organizations Active in Disasters (VOADs) such as the American Red Cross and Salvation Army to provide the staffing that supports the provision of public shelters and mass feeding for clients seeking refuge. Volunteers with local Community Emergency Response Teams and the Medical Reserve Corps play important roles in sheltering operations providing support for set-up, coordination of transport, staffing shelters, and

assisting clients with special medical needs. Faith-based organizations are another vital contributor to the response, along with Community Organizations Active in Disasters (COADs) that provide volunteer staff, facility space, and resources needed to support disaster response and recovery efforts.¹⁷

Workforce (in)adequacy

The COVID-19 pandemic requires responses not only from emergency management but also from public health. Local, state, and federal agency staff have had to support everyday operations, while the delivery of public services coincides with simultaneously meeting the demands of the pandemic response.^{15,18} The rapidly changing nature of the COVID-19 pandemic resulted in highly variable and, at times when surge capacity was exceeded, incompatible work demands.¹⁹ The prolonged nature of the COVID-19 public health crisis has severely taxed the emergency management and disaster workforce of states, localities, and the federal government.^{15,20} The pandemic has impacted the government's fiscal condition and resource base, forcing some local and state agencies to implement workforce reduction strategies.^{18,21,22}

Members of vulnerable and marginalized populations are disproportionately affected by the pandemic, and these inequities are more prevalent when the pandemic is coupled with a tropical storm or hurricane event.²³⁻²⁵ Additional staff may be needed to meet the needs of affected populations. Middaugh suggests that mass sheltering would be an unlikely response option during a pandemic.²⁶ However, when catastrophic natural disasters require opening public shelters, procedures will need to incorporate infection control practices, including having staff with medical and public health training and expertise.²⁶ For example, the same staff working continuously through the COVID-19 pandemic may need to shift their priorities to support hurricane response and recovery efforts. Government employee shortages are compounded by the expanded need for staff with specialized skills, thus having implications for the adequacy of the disaster workforce needed to respond during a hurricane. Local and state governments have established mutual aid agreements to supplement their response

capacity,^{2,27} but they most likely cannot rely on other governments for staffing and resources since they are experiencing similar challenges due to the pandemic.

Assistance and support from nonprofit organizations are “arguably even more important when state capacity is weakened by crises, disaster, or the lack of resources,” such as is the current case with hurricane response during a pandemic.²⁷ Established relationships with local COADs and VOADs, including their resources, staff, and volunteers, play an important and visible role in setting up and running public shelters.¹⁷

However, like government agencies, nonprofit and community organizations have been engaged in the pandemic response.¹⁸ They face new challenges in their involvement with the response during this public health threat, including the need for infection control, surveillance and contact tracing, food distribution, and healthcare provision. These same staff and volunteers may then be asked to step up and provide support throughout the disaster cycle during the hurricane season.¹⁸ The volunteer base for many community support efforts has also been affected by the pandemic as those who tend to volunteer are in the age groups most vulnerable to COVID-19.²⁸⁻³⁰ Fear of infection has already affected volunteer activity and may severely impact the number of individuals willing to risk possible exposure by volunteering in a shelter.³¹

Workforce compassion fatigue and burnout

As the previous discussion has shown, government agencies and other organizations responding to the threat of a hurricane during the current pandemic have access to a limited disaster workforce to support critical activities for transport and mass care operations. Of additional concern is that prolonged stress and exhaustion from responding to the COVID-19 pandemic leading to compassion fatigue and eventually burnout among disaster workers. The converging forces of work overload, changing work responsibilities, and decreased social support due to social distancing practices have created an emotional and psychological toll for essential workers.³² This can affect disaster workforce availability and the quality of the response during hurricane response activities.

Researchers and practitioners recognize that disaster work is stressful and exhausting, and prolonged engagement in disaster preparedness, response, and recovery efforts can, over time, cause burnout. The COVID-19 pandemic is already imposing an emotional and physical toll on healthcare workers.^{33,34} Healthcare workers face challenges associated with the pandemic response, such as limited resources, longer shifts, excessive workloads, disruptions to sleep, inadequate personal protective equipment, and related occupational hazards associated with COVID-19 exposures.³⁵⁻³⁷ Research from previous disasters has shown that demands and stressors of additional disaster response roles, such as time pressures, moral dilemmas, time-sensitive decision-making, and physical danger, exacerbate physical and mental fatigue, along with stress and anxiety.³⁸⁻⁴⁰

Staff and volunteers who have been involved in the COVID-19 pandemic response may also experience compassion fatigue, broadly defined as a “reduced capacity for empathy as manifested through emotional, behavioral, physical, spiritual, interpersonal, and cognitive reactions” of anyone in the helping profession.^{41(p1)} Put simply, compassion fatigue is the “cost of caring” that has been recognized as afflicting police officers, emergency room staff, social workers, and many other frontline professionals who work with persons who are injured, traumatized, or ill.^{42(p1),43,44} Prolonged, chronic, and debilitating compassion fatigue may then lead to burnout.⁴¹

Stress, exhaustion, compassion fatigue, and ultimately burnout can impede providers’ ability to complete tasks during disaster response.⁴⁵ For example, staff who experience burnout due to excessive and prolonged stress and emotional exhaustion may disengage from work, become more cynical, exhibit greater emotional exhaustion, or be more negative in their perceptions of effectiveness and efficiency.^{43,44,46} As such, the protracted burden of first coping with the COVID-19 pandemic, coupled with the added expectations of fulfilling hurricane response roles, may heighten the frequency and severity of compassion fatigue and burnout among disaster staff and volunteers.

METHODS

The research questions are answered by convening experts from a wide range of community settings, functions, and sectors to discuss issues and challenges related to sheltering during a compound hurricane–pandemic threat. In May and June 2020, a CONVERGE COVID-19 Working Group organized a series of six online workshops to bring together experts from across disaster response, public health, and community networks to discuss the sheltering of vulnerable populations during the upcoming hurricane season coupled with the COVID-19 pandemic. Workshop participants included 265 federal, state, and local government staff; community leaders; academic and research experts; and business and non-profit service providers representing functions and disciplines such as public health, emergency management, logistics, communications, social services, and disaster response.

The online workshops were organized according to six topics and designed to identify knowledge gaps, needs, and concerns related to the upcoming hurricane season under the COVID-19 public health crisis. The workshop methodology was reviewed by the respective University Institutional Review Boards and determined as not human subjects research. Workshop participants were evenly distributed and randomly assigned to breakout discussion groups during each workshop for 90 minutes. Each breakout group had a moderator who facilitated the discussion and a note-taker. Each breakout room discussion was recorded and transcribed for accuracy and further qualitative analysis. Comments from the online chat were also captured. The breakout groups all answered the same discussion questions. Example discussion questions include: (1) What are the staffing needs of shelters under “normal” conditions, and how might these staffing needs change under COVID-19 conditions? (2) What is the current capacity to staff shelters in the case of an evacuation situation in 2020? (3) What are the most pressing psychological concerns for shelter staff, volunteers, and clients for the upcoming hurricane season? How are these concerns exacerbated by COVID-19? The moderator and note-taker were responsible for writing a detailed summary

based on the discussion in their breakout group. For each workshop, an After Action Report was compiled from emergent themes from these summaries of each breakout group. The detailed summaries, After Action Reports, transcription of breakout discussions, and online chat comments were further analyzed by the research team to identify key themes relevant to answering the research questions.

RESULTS AND DISCUSSION

The project identifies three issues from practitioner and subject matter expert perspectives and describes the potential impacts. These are discussed in relation to the resources and strategies suggested to reconcile capacity and demand.

Complexity of mass sheltering during a hurricane–pandemic

The management of sheltering operations is complex, touching upon facilities management, staffing, resources and supplies, logistics, security, and care for clients, among other critical tasks. Management of sheltering operations under the current public health crisis adds another layer of complexity. Specifically, workshop participants highlighted that risk perceptions within the general population, as well as among disaster workers, are altered under the COVID-19 environment. These risk perceptions permeate the management of sheltering across nearly every domain and, as workshop participants noted, meant that management and operational approaches need to be adjusted to this new reality.

Facilities. Workshop participants pointed out that social distancing requirements would significantly reduce the planned capacities of shelter venues. However, the demand for shelters, especially under a potentially catastrophic hurricane event, may increase. To reach a supply-demand equilibrium requires the identification of additional venues to expand sheltering capacity. An increase in the number of sheltering venues would require additional personnel for shelter staffing. In addition, shelter design requires reconfiguration to ensure infection control and safety. Under original sheltering plans,

the movement of clients and staff within the shelter did not consider directional flows or social distancing. Workshop participants recognized that new congregate shelter design plans were needed to accommodate social distancing recommendations and provide an isolation area for individuals exhibiting symptoms. The segregation of particularly vulnerable populations, such as older adults and those with comorbidity, requires additional shelter design consideration.

Expanded skillsets and competencies. Participants also identified the need to expand the disaster workforce and for staff and volunteers with a broader range of skill sets and competencies that could be met by providing additional training for shelter operations. For example, the COVID-19 environment requires special attention to hygiene and recurrent cleaning of surfaces, equipment, bedding, and utensils. Shelter staff and volunteers must be trained on required hygiene and sanitation practices. These mitigation policies and practices must be frequent and closely monitored, requiring a compliance and reporting regimen that, in turn, must be consistently staffed and managed. More staff with healthcare training or expertise may be needed to address infectious disease screening, treatment, or risk when co-occurring chronic diseases are present.

Another challenge raised by workshop participants is that fear is at an all-time high; racial tensions, violence, and other inequities have contributed to mistrust; and the political environment is polarized and charged. Therefore, the job of managing and overseeing large groups of people within a congregate shelter may feel less safe and more stressful than ever before. There is a need to engage new partners and bring new workers to the table who have the people skills and cultural competence to manage shelters in such an environment and to provide person-centric and family-centered services.

Inadequate workforce

Participants recognized that a limited workforce will be available to staff these shelters, and that individuals who are already burned out from a months-long pandemic may also be the ones asked to staff the

shelters. Trained staff and volunteers are the pillars of shelter operations and the successful management of these coordination efforts. Staff and volunteers also come from the communities that shelters intend to serve. Thus, many risk perceptions and cross-pressures experienced by the populations at-large are also relevant to the shelter staff. Workshop participants noted that they expect there will be hesitancy or the inability of some shelter staff and volunteers to be present for duties given concerns about contracting COVID-19. Furthermore, workshop participants noted that government agencies have undertaken workforce reduction strategies that have reduced the number of government staff available to fulfill shelter roles. While these staff may have mandatory shelter roles, participants stated that they anticipate fewer staff will report for shelter duties.

Workshop participants also raised concerns about the availability of short-term volunteers. Volunteer workers are a critical component of many shelter staffing models. The pandemic has complicated the use of volunteers, as many are retired and at higher risk of illness due to their more advanced age.⁴⁷ Not having these valuable human resources available can be very detrimental to disaster response in areas where maximum shelter capacity could not be achieved even before the COVID-19 pandemic. As discussed by workshop participants, shelter staffing is a problem even before the pandemic, and the COVID-19 pandemic has exacerbated the shelter staffing deficit.

In addition, the presence of shelter staff and volunteers with past sheltering operation experience is essential to continuity. Junior or less experienced staff and volunteers are generally mentored and trained by more experienced personnel. However, this 'natural' continuity in training may be interrupted during the 2020 hurricane season due to COVID-19. Workshop participants pointed to more seasoned, experienced staff and volunteers potentially being more susceptible to the coronavirus, thus depressing their presence in shelters due to it being a higher-risk environment for contracting the disease.

Overall, workshop participants recognized that the increased needs of populations within shelters, coupled with the inadequacy of shelter staff and

volunteers, will mean the ratio of those managing and providing services will increase significantly relative to the number of clients served. The simultaneously increased workload to implement and maintain safe sheltering procedures with decreased personnel—staff and volunteers—may further confound an ongoing crisis.

Overwhelmed workforce with reduced capacity

In addition to the reduced numbers of staff and volunteers who can be drawn from to support disaster response, workshop participants noted that those who comprise the disaster workforce have already been asked to do so much. Throughout the online workshops, participants described a hurricane–pandemic disaster workforce that has, and continues to, experience elevated levels of burnout, exhaustion, and fear. Participants expressed that those who comprise the disaster workforce were already feeling overwhelmed and exhausted before the hurricane season had even begun. These chronic stressors raised concerns about whether and how staff and volunteers would be willing and able to respond to an acute sheltering event, let alone a large-scale operation.

Potential solutions and paths forward

Workshop participants noted concerns about workforce shortages that were further exacerbated by the increased complexity of sheltering protocols for COVID-19 infection control and significant concerns about contracting the virus. They further recognized that the public health, healthcare, and emergency response workforce have been working in overdrive since early 2020 when the pandemic began. With the heightened threat of an active hurricane season, they acknowledged that this disaster workforce would be asked to do even more work with fewer resources. The disaster workforce characterized by reduced numbers and lower response capacity, in turn, affects the ability to effectively implement logistical changes that are needed to mitigate risk during COVID-19.

As such, workshop participants also focused on how these concerns and challenges regarding the disaster workforce can be addressed. Some participants shared strategies they were considering for infection

control within shelters that would protect shelter staff and volunteers. Recognizing the inadequacy of staff and capabilities, other participants suggested the need to better understand the job roles, requirements, and risk profiles, while matching staff and volunteers with the positions that would be most appropriate for them. For example, disaster workers categorized as vulnerable to COVID-19 can be assigned emergency preparedness and response roles that do not require face-to-face interaction with or physical proximity to others. These may include working in call centers, preparing shelters before they activated, organizing supplies, and assisting with contact tracing. Others with appropriate training or skills may be able to provide telehealth or counseling services.

Management strategies were also offered as ways to increase workforce capacity for quality services and to mitigate workers' stress, burnout, or compassion fatigue. These included offering additional and specialized training, adopting reflective supervision, making adjustments to shift hours, and providing worker housing. For example, providing resources to shelter staff and volunteers to help manage their psychological health before arriving at the shelter will allow for more effective emotion regulation strategies during this critical period. Participants mention that offering mental health first aid training is useful for staff to provide the workforce with the tools needed for self-care and to support the psychological well-being of residents.

Workshop participants also offered some glimmers of hope. As explained by participants, community members are highly engaged in public welfare because even while mitigation measures have required physical distancing, COVID-19 has highlighted the interconnectedness of all community members and raised awareness of needs in the community. While research based on previous pandemics has determined that volunteerism is reduced during a pandemic, the greater connectedness identified by our workshop participants offers a starting point for relying on community members to help themselves and others, rather than relying solely on staff and volunteers supporting disaster preparedness, response, and recovery.

COVID-19 has also turned the spotlight on vulnerable populations, increasing awareness of the specific needs of these at-risk populations in their hurricane evacuation decision during a pandemic. People are more cognitive of their health behaviors and how personal actions impact others' well-being. What better time to drive home the message that all of us are "in this together" and "we all play our role" in the event of a natural disaster? Workshop participants noted some communities have become more resilient to adverse events due to their experiences with the response and long-term recovery from previous hurricanes. Examples highlighted include Rebuilding Together Tampa Bay and Rebuild Bay County (Florida), serving as long-term disaster recovery organizations that are a testament to continued engagement and resilience building through citizens, businesses, civic groups, and policymakers at the local levels. As the disaster workforce serves in both response and recovery operations during a pandemic, the potential need to quarantine after a hurricane response operation, limiting social interactions, and challenges using virtual platforms in a disaster-stricken community to assist in recovery were posed as potential challenges.

CONCLUSION

This project answered two timely questions: (1) How has the COVID-19 pandemic affected the disaster workforce needed to respond to a compound hurricane–pandemic threat? and (2) What are disaster workforce concerns affecting the planning for hurricane sheltering during the COVID-19 pandemic? In summary, a group of experts painted the picture of a disaster response workforce that may be resource-limited and inadequate to meet the increased complexity of mass sheltering during a hurricane–pandemic response. Concerns include fewer staff and volunteers available and an existing workforce already overwhelmed due to the pandemic with reduced capacity to respond to a tropical storm or hurricane. This project highlighted that a compound hurricane–pandemic threat introduces a multitude of new challenges. Responding to these changing demands requires a holistic approach to addressing the logistical challenges of shelter operations,

increased demand on a diminished disaster workforce, and the dynamic interplay between them.

These experts also offered strategies and solutions to address some of the disaster workforce challenges others are experiencing. These were presented in the results as high-level discussion, recognizing that specific answers and approaches adopted by different communities vary depending on their situations. The research team leveraged workshop results to identify areas of immediate need to build upon the strategies and solutions offered by experts in the workshop. These results led to the creation of various products, such as a Disaster Workforce Planning Quick Guide and Job Hazard Assessment Tool, just-in-time training for Special Needs Shelter Operations and Disaster Worker Self-Care, and the deployment of a Disaster Workforce Survey to measure burnout and role strain.

The discussion in the workshops and the results described also raised additional questions that warrant further research (Table 1). The collaborative research approach of combining the knowledge and experiences of disaster planners, public health, social service providers, and many others with relevant expertise provides a model for continued practice-informed research. Among the questions raised during the workshops and identified by the experts as being significant gaps include:

- How do shelter staff and volunteers perceive and balance risks in making the decision to work at a shelter?
- What motivates people to staff and volunteer at shelters? How does the pandemic affect this motivation?
- What are the critical stressors during the sheltering process that may threaten the psychological health and well-being of staff and volunteers?
- How can online training for shelter staff and volunteers be developed (cross-training, functional training, infectious disease control, special needs, etc.) and delivered?

Table 1. Research questions related to disaster planning during and after COVID-19

Health and infection control

- How does organizational decision-making regarding evacuation and sheltering protocols simultaneously consider institutional and risk factors such as health risks, hazards risks, employees' perceptions of risk, and past experiences?
- How can telehealth technologies be integrated into evacuation and shelter operations during a hurricane-pandemic event?
- How are medications acquired, distributed, and administered to populations within a (congregate and noncongregate) shelter environment?
- What are the protocols for initial and periodic screening of staff, volunteers, and evacuees within the shelter environment?

Shelter operations

- What data and analytical approaches (frameworks, models, simulations, decision trees) are needed to support planning for shelter operations, including transportation, staffing, infectious control, and food distribution under COVID-19?
- How has COVID-19 impacted the availability of evacuation transportation assets (such as buses and drivers) and shelter workforce (staff and volunteers)?

Workforce and shelter staffing

- How do shelter staff and volunteers perceive and balance risks in making the decision to work at a shelter?
- How can online training for shelter staff and volunteers be developed (cross-training, functional training, infectious disease control, special needs, etc.) and delivered?
- What accommodations, resources, and additional staffing may be necessary for sheltered populations with different needs?
- What motivates people to staff and volunteer at shelters? How does the pandemic affect this motivation?
- What protocols and additional staffing may be necessary to maintain and enforce infection control measures for disease surveillance, safety, and security in general population shelters?

Psychological health and well-being of response workers and the public

- What are the critical stressors during the evacuation and sheltering process that may threaten staff, volunteers, and clients' psychological health and well-being?

Table 1. Research questions related to disaster planning during and after COVID-19 (continued)

- What stressors (chronic and acute) in the evacuation and sheltering process are introduced or exacerbated due to COVID-19?
- How can shelter staff balance the need to protect their and others' psychological health during a compound hurricane–pandemic threat with necessarily limited time and resources?

Largely, the workshops served as a channel for emergency management personnel to express concerns, ask questions, and share their resources and recommendations. The blend of response levels and experience present at the workshops revealed the comradery among the disaster workforce and the limited opportunities to share beneficial resources. The researchers fostered this communication through facilitated discussions, the dissemination of After Action Reports, and collection of resources from various agencies to make available to participants.

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