
Planning for Evacuation and Sheltering of Vulnerable & Medically Fragile Populations During the Post-Vaccine Period of a Compound Hurricane-Pandemic Threat

After-Action Report (AAR) summarizing results of a workshop hosted on September 27, 2021

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December 15, 2021

WORKSHOP OVERVIEW

Workshop Name	Planning for Evacuation and Sheltering of Vulnerable and Medically Fragile Populations during the Post-vaccine Period of a Compound Hurricane-Pandemic Threat
Workshop Date	Monday, September 27, 2021
Scope	Workshop conducted virtually through Zoom breakout sessions and asynchronously through a Miro online whiteboard (https://miro.com/app/board/o9J_lw49y2k=/)
Objectives	Discuss planning for hurricane evacuation and sheltering of vulnerable and medically fragile populations including key issues and challenges given changing requirements and guidance, remaining questions, and lessons learned.
Threat or Hazard	Compound threat stemming from the occurrence of a tropical cyclone during a global health emergency such as the COVID-19 pandemic in the post-vaccine period
Scenario	A major hurricane triggers a large-scale evacuation within, across, and beyond a region, requiring county and municipal governments to open emergency shelters and facilitate evacuation during the COVID-19 pandemic. Vaccines are available but the population is not fully vaccinated. The threat of infection from variants remains. The issue of mask mandates and vaccination has become political and conflict-ridden.
Sponsor	National Science Foundation-funded Social Science Extreme Events Research (SSEER) Network and the CONVERGE facility at the Natural Hazards Center at the University of Colorado Boulder (NSF Award #1841338) CONVERGE COVID-19 Working Groups https://converge.colorado.edu/resources/covid-19/working-groups
Participating Organizations	National, state, and local emergency and disaster planners and responders, public health professionals and officials, policy makers, researchers, nonprofits, advocacy groups, social services, community members, and others.
Point of Contact	Wie Yusuf, PhD, Old Dominion, School of Public Service and University Institute for Coastal Adaptation and Resilience. jyusuf@odu.edu Project website: https://sites.wp.odu.edu/hurricane-pandemic/

EXECUTIVE SUMMARY

The CONVERGE COVID-19 Working Group's Workshop on Planning for Evacuation and Sheltering of Vulnerable and Medically Fragile Populations during the Post-vaccine Period of a Compound Hurricane-Pandemic Threat was held virtually on September 27, 2021. The 137 workshop participants represented federal, state, and local governments, the nonprofit sector and advocacy organizations, businesses, and academic institutions. Participants primarily represented functional areas of emergency management, planning, and public health. Geographically, the workshop participants came from 20 states, primarily along the Eastern seaboard plus the U.S. Virgin Islands and Canada.

Breakout discussions revolved around 4 questions and concluded with a 2-minute open question burst where participants could raise remaining or unanswered questions. The four discussion questions were:

- What changes are being considered or are underway to address COVID-19 and account for vaccinations and COVID variants in hurricane preparedness planning / operations for the 2021 season?
- How have preparedness and response approaches changed compared to last year? What has remained the same?
- How could unforeseen or frequent changes in government recommendations and mandates related to COVID-19 impact your planning and operations?
- What are the sheltering and evacuation concerns of the public? What changes have been adopted to address these concerns? How will these changes be communicated to the population before an imminent storm?

Participants in the breakout sessions identified 12 key issues:

1. Many communities continue to utilize the same evacuation and sheltering practices from the 2020 Atlantic Hurricane season
2. Reliance on congregate shelters with COVID-19 mitigation strategies
3. Limited use of non-congregate shelters due to lack of authorization, funding, and hotel availability
4. Congregate shelters are the primary mass sheltering option
5. Masks, testing, and vaccination are widely available but while testing is generally required masks and vaccines will generally not be required
6. Staffing capacity issues need to be addressed including staff shortage, need for specialized skills
7. Ensuring shelter staff health and wellbeing
8. Transportation challenges remain
9. Conflicting guidance creates confusion and mixed messaging
10. Mixed public messaging is a challenge
11. Multiple messages need to be communicated including conveying shelter safety, informing preparedness and response, and managing public expectations
12. Messaging need to overcome partisanship and politics

1.0 BACKGROUND AND OBJECTIVES

This workshop had 137 participants from 20 states plus the U.S. Virgin Islands and Canada (see Figure 1). Workshop participants also included faculty and researchers associated with six universities from multiple academic disciplines. Participants primarily represented state and local governments, and functional areas of emergency management, planning, and public health.

Figure 1. Map of states represented by participants

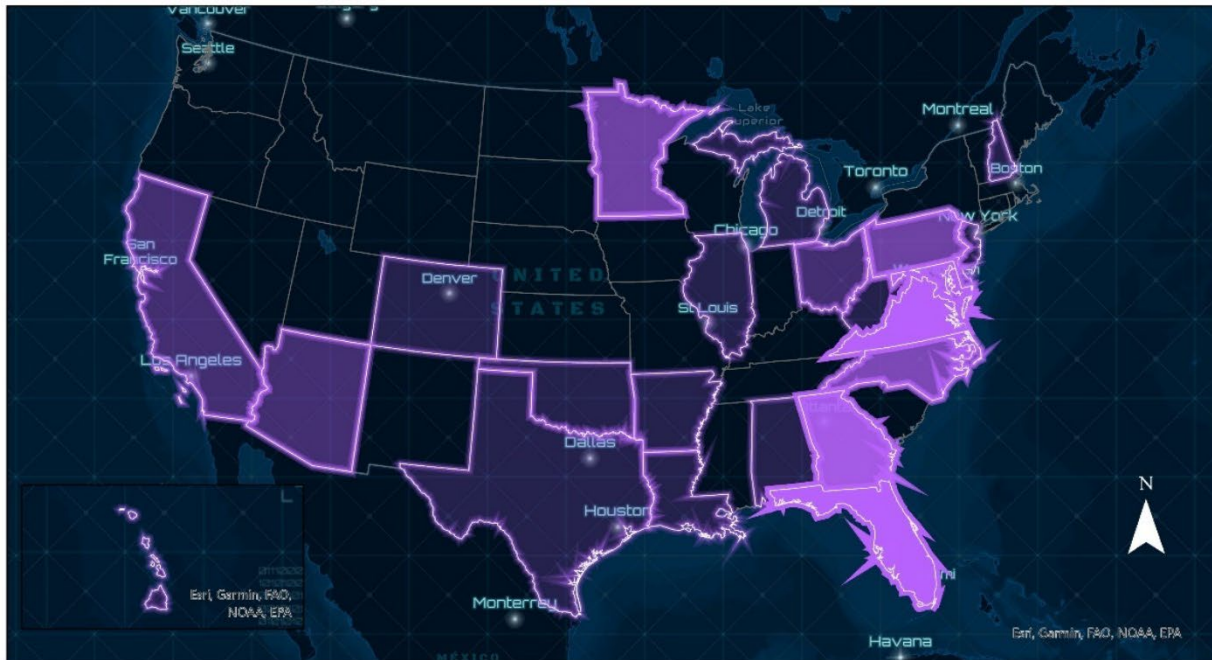


Table 1. Affiliations of workshop participants

State government	42.40%
Local government	32.20%
Researcher	13.60%
Advocate for vulnerable populations	6.80%
NGO/volunteer organization	5.90%
Federal government	3.40%
Business	2.50%
First responder	1.70%
Other	5.9%

Note: Percentages do not add up to 100% as workshop participants could identify multiple affiliations.

Table 2. Functional areas of workshop participants

Emergency management/services	68.6%
Planning	33.1%
Public health	31.4%
Education	13.6%
Research	12.7%
Human services	11.0%
Social services	10.2%
Public safety	9.3%
Communication	7.6%
Health care	6.8%
Environmental and occupational health	3.4%
Transportation	1.7%
Critical infrastructure	1.7%
Other	5.1%

Note: Percentages do not add up to 100% as workshop participants could identify multiple functional areas.

1.1 Discussion Topics and Questions

A key portion of the workshop focused on seven concurrent breakout group discussions. The 137 workshop participants were randomly assigned to breakout rooms. Breakout groups discussed questions and issues related to changes in hurricane evacuation and sheltering for vulnerable populations for the 2021 Atlantic Hurricane season during the period following mass vaccination and the breakout of the Delta variant. The breakout discussion ended with a 2-minute question burst, encouraging participants to share concise single issues, pressing concerns, and outstanding questions.

These 7 concurrent breakout discussions, simultaneously moderated, included five questions and discussions:

1. What changes are being considered or are underway to address COVID-19 and account for vaccinations and COVID variants in hurricane preparedness planning / operations for the 2021 season?
2. How have preparedness and response approaches changed compared to last year? What has remained the same?
3. How could unforeseen or frequent changes in government recommendations and mandates related to COVID-19 impact your planning and operations?
4. What are the sheltering and evacuation concerns of the public? What changes have been adopted to address these concerns? How will these changes be communicated to the population before an imminent storm?
5. 2-minute question burst

2.0 SUMMARY OF KEY ISSUES

Key evacuation and sheltering issues raised by participants, as drawn from the discussion included:

- **Key Issue 1:** Many communities continue to utilize the same evacuation and sheltering practices from the 2020 Atlantic Hurricane season
- **Key Issue 2:** Congregate shelters with COVID-19 mitigation strategies
- **Key Issue 3:** Limited use of non-congregate shelters
- **Key Issue 4:** Congregate shelters are the primary option
- **Key Issue 5:** Masks, testing, and vaccination
- **Key Issue 6:** Addressing staffing capacity issues
- **Key Issue 7:** Staff health and wellbeing
- **Key Issue 8:** Transportation challenges remain
- **Key Issue 9:** Conflicting guidance creates confusion and mixed messaging
- **Key Issue 10:** Mixed public messaging is a challenge
- **Key Issue 11:** Multiple messages need to be communicated
- **Key Issue 12:** Messaging to overcome partisanship and politics

3.0 THE CURRENT APPROACH TO PLANNING AND RESPONSE TO HURRICANE EVACUATION AND SHELTERING DURING THE COVID-19 PANDEMIC

- Mix of communities that have returned to pre-pandemic policies, plans, and practices, while others continue under the hurricane-pandemic assumptions.
- Some states were ready to return to normal, pre-pandemic hurricane evacuation and sheltering practices.

As vaccines were being administered, states were like, “Let’s go back to normal hurricane planning. Let’s not necessarily get to this pandemic-hurricane planning.”

- Others recognized that the population is not fully vaccinated and expressed concern about overlap between the vaccinated and the unvaccinated residents who would seek public shelter.

I still think we have to treat this as if we’re still in the pandemic because of the potential overlap. Yes, we’re pretty much doing like we did last year.

Availability of vaccine and rapid testing have impacted planning and response

- Vaccines are now available, but many communities do not have sufficiently high vaccination rate. Not being able to move the needle on the vaccination rate was identified as a key concern for planning. Two issues and their potential impacts were considered: (1) asking about vaccination status and separating vaccinated and unvaccinated evacuees; and (2) providing vaccines at the shelters.
- Participants recognized that people might not show up to the shelter if vaccine shots are required or provided.

I would like to think that we could just put a shot in everybody’s arms as they walk in the door, but I have a feeling nobody would be walking in the door.

- Vaccine boosters are also available, but there does not seem to be much agreement at the federal level about the need for boosters. This uncertainty also might have implications for perceptions about vulnerability of those who have not received the vaccine and exposure during sheltering.

Would people who even got vaccinated now be afraid of going to a shelter even if they were vaccinated because there’s a perception “Well, I haven’t gotten my booster yet. I could be putting myself in harm’s way. I don’t want to get COVID?”

- There is also greater availability of rapid tests that can be deployed in mass shelters.

Participants described the current situation as an awkward phase or one where we are in-between normal and not normal

- Initial vaccination push made people comfortable and assume return to normal, but information has changed or is changing about how vaccinated people should behave.
- Most states had robust vaccination programs. But the COVID-19 variants (the Delta variant specifically) have changed the landscape and some participants suggesting that we might need to shift back to practices in place in the early phases of the pandemic.

Now, we're living in this weird in-between between normal and not normal and what is the future of normal.

We're into the phase of thinking that things were getting better, but we are now back where we were in the early phases of the pandemic.

4.0 POLICIES AND PRACTICES THAT HAVE REMAINED THE SAME AS THE 2020 ATLANTIC HURRICANE SEASON (PRE-VACCINE)

4.1 Key Issue 1: Many communities continue to utilize the same evacuation and sheltering practices from the 2020 Atlantic Hurricane season

Many communities continue to utilize the same evacuation and sheltering practices identified during the 2020 Atlantic Hurricane season as the COVID-19 pandemic was taking hold in the U.S.

- Changes to policies and practices that involve COVID-19 mitigation strategies undertaken in 2020 remain valid.

We don't have significantly robust changes from last year.

We haven't changed much from the 2020 season to 2021.

I think we're much better than where we were last year as far as the planning. We did the bulk of our planning in adapting to COVID last year. So, we really haven't changed that much [this year].

- Furthermore, no new tools, solutions, or knowledge have been developed to prompt changes from last year's policies and practices.

We don't have any new tools, so we are forced to rely on the same tools that we had last year... It's still the same set of guidance that we're working with and the same tools that we have to respond.

All those protocols ... we're still using in everyday life. We haven't come up with anything new and better that we can apply to sheltering so that's where we're at.

4.2 Key Issue 2: Congregate shelters with COVID-19 mitigation strategies

Several participants referred to the changes made the previous year for congregate shelters with COVID-19 mitigation strategies such as distancing, separate spaces for isolation and quarantine, COVID testing, health screenings, masks, and hand sanitizers.

- Maintaining social distance requires increasing the square footage per person in congregate shelters. Accommodating the increased square footage per person requires larger shelter space, either using larger buildings or increasing the number of shelters.

Last year (2020) we had the same planning considerations as we pretty much do for this year since COVID started. [We now] have to worry about 60 square foot in our shelter spaces and the absolute huge amount of money it cost to safeguard everyone with all the different concerns that we have.

- Given specific needs for shelter space to balance infection control and needs of those seeking shelter, some localities have limited availability of facilities that can be used as public shelters.
- Many communities had previously struggled with shelter capacity, which has been exacerbated by the need for social distancing. This has resulted in further reduced shelter capacity.

We've been looking at buildings and seeing what the intake is like in terms of disease spread... but we're limited in terms of the buildings that can be used for special needs shelters. Those have to meet certain electrical, etc. to house special needs folks.

- Using health screenings was the primary approach to identify and potentially segregate those who may be symptomatic or are infected.

FDOH has triage questions to ask for certain criteria regarding symptomatic individuals and that if they are symptomatic, that they set them up in isolation tents. That might be a little different where they were trying to just spread people out; they're actually sorting people in two different areas if they are at all symptomatic.

- But other participants pointed to how they learned from last year's experience and, based on some lessons learned, implemented some changes to improve congregate sheltering practices
 - Not using temperature screening for people to enter the shelter. Temperature checks were creating bottlenecks and greater concentration of people in the first entry point of the shelter.

5.0 POLICIES AND PRACTICES THAT HAVE CHANGED FOR THE 2021 ATLANTIC HURRICANE SEASON

5.1 Key Issue 3: Limited use of non-congregate shelters

The primary change for 2021 was the limited use of non-congregate shelter. Non-congregate shelters were strongly considered, included in response plans, and implemented in 2020, primarily due to alignment with federal guidance, funding for non-congregate options, and the availability of hotel rooms.

- Many localities were planning to rely on congregate sheltering and offering limited non-congregate option only if it is needed for high-risk populations.
- There were two primary factors contributing to limited use of non-congregate shelters: (1) lack of authorization or funding for non-congregate shelters, and (2) lack of non-congregate shelter options.

One of the things we did last year, we tried to put together a non-congregate sheltering plan. But challenges of funding and availability this year.

Whereas last year that was our primary tactic for sheltering partly due to the alignment at the federal level and the availability of hotel rooms and the funding.

- Lack of authorization and/or funding for non-congregate shelters
 - In some communities, public health orders issued in 2020 required provision of non-congregate shelters. In 2021, non-congregate shelters are no longer required.
 - In 2020, FEMA funding provided for non-congregate sheltering. In 2021, states and localities are not providing their own funding to pay for non-congregate shelters.

We did have the declaration to use non-congregate sheltering [in 2020], but we don't have that at this point. We do for COVID, but not for a hurricane response. If something comes up, then maybe we may put something in place, but right now we don't have that which limits our ability.

"[non-congregate sheltering] is a preferred method because it is from our health emergency declaration. Up until probably about a month ago, that declaration required that we do everything we could to make non-congregate sheltering primary. Now, they've adjusted the language to be, if there's any way we could do it and to do that, but I think the availability is not what we have last year.

Really, the only change is – the only major change is that we are not required per public health order to do non-congregate sheltering this year. We are assuming congregate sheltering, non-congregate if as needed for high-risk populations.

Last year, we had coverage from FEMA and others for non-congregate sheltering, but now that has kind of went away. The county is reluctant to offer us a couple of hundred thousand dollars for a floor of a hotel. So, congregate sheltering for hotels just kind of went by the wayside.

- Lack of availability of non-congregate options, such as hotel rooms.
 - In 2020 hotels were not busy and hotel rooms were plentiful and available for use as non-congregate shelters.
 - In 2021, the rebound of the tourism economy has reduced the availability of hotels and the ability to use them as a primary method for non-congregate sheltering.

Because of the uptick in tourism at least in the early part of the season, the option for hotels went down. So, their availability for non-congregate sheltering because of the sense that the pandemic was over at least during the summer really could complicate it.

One of the concerns this year [is] just the lack of non-congregate shelter capacity. Last year hotels really weren't as busy as they were because of the lockdowns and now it's kind of opposite problem.

- Furthermore, many hotels are not willing to participate as shelters primarily due to concerns about reduced revenues or that their hotel rooms would be used to house evacuees infected with COVID-19.

When we reached out to our hotels... we were lucky to find maybe two hotels who would actually do it because they didn't want COVID in their hotel. Then also, when they wanted to do it, they wanted us to buy a whole floor because the hotels fill up very quick when there's a hurricane coming. So, they didn't want to promise us an entire floor of hotels and then I send them one or two people and then they miss out on that revenue from people evacuating.

Most of our hotels, they don't want to take COVID patients. We don't have a huge amount of hotels anyway.

- Some participants indicated non-congregate shelters remains a preference.

I think it's important to try to avoid congregate sheltering if there's any way possible to do that

- Other participants identified logistical challenges with reliance on non-congregate shelters.
 - Non-congregate shelters using hotel rooms may result in evacuees spread out in multiple hotels dispersed across a wide geographical area makes it challenging, compared to a single congregated shelter facility, to maintain

visibility of all evacuees, to deliver services during sheltering, and to get them to a safer, more sustainable place after that mass sheltering phase.

[We] observed with the Hurricane Laura response and how many people were in non-congregate shelters in Louisiana. In the immediate, it's safer for everyone to be isolated with their households, but I think from a sheltering perspective, it made it very challenging for the service providers - whether it's addressing people's physical health needs, their mental health needs and their individual dietary needs. It requires significant more resources to provide those services, as well as to maintain the coordination and just to enable the delivery of services.

5.2 Key Issue 4: Congregate shelters are the primary option

Congregate shelters are the primary option for sheltering during a hurricane in 2021, with consideration for separating evacuees into different spaces within the congregate sheltering facility as needed. Participants considered separate spaces within congregate shelters to segregate the general population from those being isolated or quarantined and to separate the vaccinated from the unvaccinated.

This year, congregate sheltering is our primary tactic. We're maintaining the same standards that we established last year in terms of additional square footage, screening, separate isolation area.

The real challenge that we're facing right now is that we're going to have to designate and staff three separate shelter areas: general population, isolated people and quarantined people.

- Separate shelters for the vaccinated. Some participants considered designating an entire building for those that could provide evidence of vaccination.
- Separate shelters for those who have tested positive. Some participants considered having a separate shelter for those who have been exposed or that are positive.
 - But there were broader concerns about using a public building (e.g., a school) for a COVID-positive shelter.
 - The State of Florida provided localities with shelter tents that could be used to separate those who have been identified as COVID-positive. However, this raised concern that everyone would want to be able to shelter in their own tent and would claim to be COVID-positive.

[We] use our schools as our shelter and that was a huge issue with our schools that they were going to allow that. If a COVID-positive patient was in there, fine, but we were not going to advertise it as a COVID-positive shelter because they basically said the parents would not send their kids back to that school because in their minds, they're thinking that entire school now is completely covered in COVID.

For us, walking into a shelter if you're presenting sick, we're going to try to do our best to keep you away from everyone else. The State of Florida provided us with some shelter tents, but when somebody sees that they get their own tent everybody is going to be sick.

5.3 Key Issue 5: Masks, testing, and vaccination

COVID vaccination and testing

- Participants indicated they plan to conduct COVID testing on site before evacuees enter the shelter. Rapid testing upon arrival would be done for those who are symptomatic or unwell.
- However, some participants expressed concerns over the reliability of rapid testing, which depends on the expertise of the person conducting the test. Other participants will have health professionals do the rapid testing.

We have some issues with reliability of some rapid tests and they're only as good as the person who performs them... if it's a false negative and you do not isolate that person, you're stuck with all those contacts. If it's a false positive and you isolate the person with others with COVID or cohort them, you're still going to have cases spread.

We have plans to have the community health centers to come in and do rapid testing if needed in our shelters when we open up.

We did open a shelter and our medical station did COVID testing on people as they were coming through the door... we did have a separate area for quarantining people if they were going to be positive to isolate them from everyone else.

- Participants were mixed on the issue of vaccination. Some stated they would not ask about vaccination status. Others plan to offer the vaccine at the shelters.

We're screening for COVID, we'll isolate if we can at the facility, the shelter and things like that but we're not going to ask if you're vaccinated or not.

We have to provide vaccinations and testing at all of our hurricane shelters.

Offering the vaccine at the shelters is primarily the only change from last year.

Masking policies in the shelters were mixed, with masks being required in some and encouraged in others.

- Participants that indicated masks would be required also noted that they would not turn away those who refuse to wear a mask.

- Special needs shelters or those serving medically-vulnerable populations will require masks but also have designated areas for masked and non-masked individuals.

Masks are required to enter a congregate shelter, but at the same time we don't want that to be a reason why someone would be denied access to having a safe refuge.

We're going to insist on the mask wearing [but] we're not going to enforce it. We're going to insist on it, and we will have the space to isolate people and do the testing.

- Perception on how evacuees respond to the masked policy is mixed.
 - One participant noted that, based on their recent shelter operations, the issue of a mask mandate is not a primary concern for evacuees whose focus are on finding a safe space.
 - Another participant pointed to different responses among residents about wearing masks within the shelters.

My understanding from all of our recent shelter operations is that it really doesn't come up very often. The people that are coming to shelters are scared and they come to a safe place. I think, oftentimes, the polarized nature that this topic may have for some members of the public that we see on the news just isn't manifesting inside of the shelters that I've awareness of.

Masks are highly encouraged in our shelters, but maskers and non-maskers are upset that we're not requiring a mask. So, yes. There's a lot of controversy. "Why don't you have masks?" "I'm not coming to your shelter because I'm not wearing my mask" or "I'm coming to your shelter because you don't require a mask."

6.0 WORKFORCE AND STAFFING

6.1 Key Issue 6: Addressing staffing capacity issues

Staff shortage and adequacy of shelter staff.

- Staffing and shelter workforce was identified as a constant challenge and maintaining staffing levels continues to be exacerbated by the COVID-19 pandemic. Distancing requirements for COVID-19 means more shelter space and more staff to manage the shelters.
 - Staff remain hesitant to work in a shelter and risk exposure to COVID-19.
 - Participants questioned whether staff would show up to work the shelters.

Well, we certainly lost staff that felt that they were vulnerable. So that population that felt they were vulnerable to COVID vaccinated or not, don't want to come to a shelter and work in a shelter.

We recently did a virtual staffing exercise in Virginia at the state level with all of our state partners that have responsibilities in the shelter. We just wanted to get a baseline of what staffing would look like in COVID. We had a pretty good response for our agency, but we were still short. All our state partners were short. No one was able to completely staff. In our scenario, we opened up three different sites. All of our sites are at college campuses. So, we had three different college campuses open with a total of six facilities between them and we were not able to fully staff that and that's only a tiny, tiny, tiny fraction that would be housed there with COVID restrictions so that was less than 1,700 people.

- Need for shelter staff with specialized skills and training.
 - Specific skillsets are needed for working in shelters during COVID-19 and given the needs of evacuees, including understanding of infectious disease, mediation and conflict resolution, communication, and cultural competence.
 - Shelters also have specific functional needs for nursing and medical care. Given the general demand for these functions, one participant pointed to needing to rely on states and federal governments to enact contracts or utilize other mechanisms to provide the needed nursing or medical skilled workforce at shelter sites.
 - Participants note that compared to last year they have had more time to work on training and implement job tools to support their shelter workforce.
 - Some point to staff having the ability to meet the shelter operational needs.

Our staffs are incredible at managing trouble and managing challenges that are ongoing and continuous and multifaceted.

- Mandatory vs. voluntary staff for shelters.
 - Some participants reported a shift from mandatory shelter assignments for agency staff to voluntary staffing. For example, in Virginia, mandated shelter job duties were changed to voluntary to accommodate individual health risks.
 - Better quality of staffing is provided when people who really want to support your mission show up (i.e., volunteer shelter staff).
 - Participants pointed to the need to reconcile need for staff from specific departments but only wanting people who are willing to serve.

We just changed all this last year. We went from mandatory staffing to voluntary staffing due to labor regulations... [recognizing] the perceived health risk of individuals because our staff are people too and we have to be respectful of their issues and concerns in doing this.

We needed to tell folks that yes, we need so many people from your departments to provide for shelter staff. Of course, we only want those that are able to do it. We're not going to force people that feel there are risks.

- Other participants indicated a reverse of mandating shelter staff, primarily due to lack of staff. For example, in Broward County, shelter staffing was initially voluntary but now staff are assigned a specific activation role.

We had to mandate shelter duties.... we didn't have the shelter folks.

- Incentivizing shelter staff
 - Participants discussed having to provide incentives to shelter staff. Staff who were vaccinated were more willing to work in shelters, but the unvaccinated staff are less willing to work. But vaccinated staff who work the shelters don't think it's fair that others don't want to come in and are not made to work shelters. Additional incentives were needed to compensate.
 - Shelter staff were also provided with go-kits to make them more comfortable working in the shelters.

We did have to give them an incentive this year to work because they don't want to work. We gave an extra 40 hours of paid time-off if you show up the entire hurricane season at your pre-assigned location.

We gave shelter staff comfort go-kits, mask and hand sanitizers, for them for sheltering which made them feel a little more comfortable.

- Lack of support from traditional partners/volunteers
 - Shelter operations also often rely on volunteers such as from the Red Cross or Community Emergency Response Teams (CERT). However, as

experienced last year, volunteer availability was limited due to concerns about COVID-19.

We don't have much assistance from non-profits in shelter operations... we rely on CERT and initially there was hesitancy of some CERT groups of being in hot zones (high COVID-19 infection rates).

6.2 Key Issue 7: Staff health and wellbeing

Health and wellbeing of staff remains a concern in 2020. Participants raised questions about ensuring health and safety of staff supporting hurricane evacuation and sheltering

- Psychological health of staff remains important as the increased workload and uncertainty of COVID-19 contribute to burnout.
 - The same staff supporting hurricane evacuation and sheltering were also the same staff supporting the intensive vaccine mission.
 - Staff turnover and even mass exodus of those leaving the medical profession has increased the workload on remaining staff.
 - The Delta variant further exacerbated staff burnout in all areas.

The special needs shelters are staffed by the county health departments. During the initial and vaccination response of COVID, the staff were heavily utilized in order to do all these things, and we're seeing a big turnover, especially in the nursing staff. Not only a turnover, but a mass exodus. So, the concern is these fewer staff that we have left, what is the mental health status or burnout they're experiencing? And how will that impact the shelters once they're called up for a hurricane?

- One participant raised the concern about health and safety of other key personnel.
 - An example provided was a situation where staff at the Hurricane Center get sick and have to be quarantined in the middle of peak hurricane season.

7.0 TRANSPORTATION

7.1 Key Issue 8: Transportation challenges remain

- There were minimal changes to transportation for 2021. The evacuation routes remained the same. COVID-19 mitigation strategies are being implemented – some distancing, facemasks, hand sanitizers.
- One different compared to 2020 is the availability of transportation operators and associated labor. Lack of operators and labor was a concern last year, but transportation companies have returned in 2021.
- However, concern about ability to evacuate remains due to inadequate transportation options, need for specialized transportation (e.g., to accommodate wheelchairs, etc.), congestion, and parking capacity that will primarily impact underserved geographic locations and underserved populations.

Last year we had concerns about the number of buses or any transportation because labor was limited and some of these companies that provided transportation maybe went to bankrupt or they weren't operating. But this year it's different... we see there was some type of recovery.

The transportation piece... is potentially a nightmare in multiple ways. We have congested roadways to worry about, parking capacity to worry about and how many people don't have adequate transportation to begin with in certain areas. So, a lot of those folks, of course, tend to be in underserved geographic locations and are members of underserved populations.

8.0 IMPACT OF UNFORESEEN OR FREQUENT CHANGES IN GOVERNMENT RECOMMENDATIONS AND MANDATES

8.1 Key Issue 9: Conflicting guidance creates confusion and mixed messaging

Conflicting guidance from government authorities at different levels creates confusion and mixed messaging among agency staff, partners, and the public.

- Conflicting guidance on vaccine boosters
 - Example: boosters after 6 months or after 8 months
 - A lot of people felt comfortable once they were vaccinated, but now there is mixed information from different sources. Questions are being asked – Do I get the booster? When do I get a booster? – but no clear answers.
 - As information changes and guidance updated, the public is unsure about which guidance to follow.
 - Concern about vaccine boosters might continue into later in the hurricane season and impact future hurricane seasons.

If we get a very late-season storm... this might be something for the next couple of seasons. We're probably going to still be fixated on "When should I get my COVID booster?" "Should I get my COVID booster every year?" for the foreseeable future.

- Conflicting guidance and information on vaccine and mask mandates
 - Questions about authority and whether governments and other organizations can require the vaccine and/or masks. This has implications for whether a public shelter, even one operated by the Red Cross, can require masks and allowed to turn away people for non-compliance with the mask requirement.

There were questions at the state level as far as authority, that were still unanswered, about the authority of the state or of the Red Cross [and] whether they are allowed to require masks, or if they were allowed to turn away people for non-compliance.

As far as changing guidance, I think we've seen a lot of that during COVID especially since we have different levels of guidance. For example, locally, at the state, and federal levels. In Florida in particular, we've had changes in guidance as far as masks and vaccinations. I think it does provide quite a bit of confusion to the general public as far as messaging and requirements to shelters.

- Time is needed to translate or interpret orders into specific guidance for agencies and lower level governments, and getting the guidance to the agencies or governments.

- Extra steps are needed to translate or interpret orders into specific guidance for agencies and lower level governments, and getting the guidance out. This takes time and staff.
- Answering questions and providing clarification on orders, mandates, and guidance are also time consuming.

Public health orders changed here within the last month or two and it took a while for that to get filtered out. It took a while for us to understand it and interpret it at the state level. Our state emergency management agency tried to put together frequently-asked questions to go out with that guidance to the locals but that took weeks so that cut into their planning time to adjust their operations.

- Changing guidance also requires review of policies, plans, and practices, and adjustments as appropriate to accommodate the new mandates and orders or revised guidelines.

People have to ask questions. They have to digest and figure out what that's going to mean for their operation and what they're going to do and as they do that, that's just sort of eating up time to readjust their plans and so forth and as that trickles throughout the system, it eats up a lot of time.

9.0 PUBLIC MESSAGING AND COMMUNICATION

9.1 Key Issue 10: Mixed public messaging is a challenge

Mixed messaging to the public can be a challenge.

- Mixed or inconsistent messaging across jurisdictions or within the same city and county causes confusion among the public.

The messaging is somewhat all over the place.

The mixed messaging even across jurisdictions... from city to city or city to county can be a challenge to try and direct people to the shelters and let them know what they need to have with them and what they need to practice to stay safe.

9.2 Key Issue 11: Multiple messages need to be communicated

Multiple messages need to be communicated for preparedness and response.

- Messaging that shelters are safe.
 - Concern that people will not evacuate because they are afraid to go to a shelter because of possible exposure to COVID-19. Instead, they stay home or elsewhere where they may be more at risk.
 - Participants noted the importance of assuring people that it is safe to go to a shelter during the pandemic to increase the likelihood of evacuation.
 - A key message is to inform people about the mitigation measures being used to ensure safety within shelters.
 - Message this safety issue as part of preparedness – so people know they can plan to go to a shelter – and when shelters are opening.
- Messaging to inform preparedness and response of businesses and residents.
 - Example: Communication to get people to sign up for special registries for special needs shelters. Notification about signing up is included in utility bills and other ways to encourage registration. Registration has been lower this season. A participant noted concern that this might indicate people do not plan to go to special needs shelters despite being vulnerable.
 - Example: Communication that emphasizes the importance of evacuating out of harm's way. If people do not want to go to a shelter, they still need to evacuate to stay with family or friends, a hotel, etc. but away from the at-risk area.
- Messaging about public expectations of shelters.
 - People are still unclear about what to expect in the shelter and how shelter hygiene and safety are ensured, which may be causing hesitancy to evacuate.
 - People need to know what to bring to the shelters.

- Information about vaccine and mask requirements in the shelters need to be shared.

9.3 Key Issue 12: Messaging to overcome partisanship and politics

Messaging needs to overcome partisanship and politics.

- The COVID-19 pandemic has illustrated how partisanship and politics can impact how information is disseminated and received.
- This has introduced a new layer of complexity in managing disasters, especially around evacuation and sheltering.
- Taking a conservative approach to messaging. A participant noted that most communications around evacuation and sheltering have been very cautious and reserved.
- A participant emphasized the need to understand, in terms of pre-disaster planning, the issues that divide the community and which messengers could help communicate key messages in a bipartisan or apolitical way.

Nobody wants to get caught with their pants down. Suddenly a regulation will change then you've got to re-message everybody. What if things get worse? We don't know what's going on with the Delta variant. I think there's just enough uncertainty out there that people are sort of afraid of messaging. They're afraid of amplifying something that it's sort of quicksand and nobody wants to step in that.

How do I bring together, in a bipartisan way, key messengers that would be willing to set their politics aside in order to convey the most essential and compelling messaging around disaster preparedness and particularly around evacuation?

- Need to rely on different messengers, ways to communicate, and sources of information.
 - Utilize politically diverse messengers to share information to overcome the issues seen with COVID-19 information dissemination.
 - Example: Using existing social networks and communication technologies such as WhatsApp groups to reach people who have language barriers, do not watch mainstream news, or do not have access to mainstream evacuation messaging alerts and notifications.

[It] is really critical for emergency managers at local levels to be really thinking about who their messengers are and trying to make sure that there are politically diverse messengers so that we don't have the kind of mixed messaging like we're getting on COVID right now.

We're finding it's extremely useful to have existing social networks, even WhatsApp chats that actually helped evacuate people on time because these are people who, for whatever reason, especially linguistic access issues, do not watch mainstream news, do not have access to that kind of mainstream evacuation messaging alerts and notification. For example, for the Spanish-speaking population, WhatsApp

messages to a group of 40 households in Nevada County in California actually helped them evacuate... it was creative. It was innovative and much required.

10.0 OTHER SHELTER LOGISTICAL ISSUES

- Centralization of sheltering operations to facilitate coordination and allocation of resources
 - One participant noted the advantages of being able to centralize resources and management of shelters across a state. This allows for allocation and movement of staff according to needs and coordination of other shelter supplies and resource needs centrally.

Various localities have different resources so what you're going to find in our rural mountain southwest is going to be very different than what you'll see along the seaboard. Lonesome Pine Hospital has 32 beds. So, when that 32-bed for five counties capacity is reached, we're going to have to travel a good long ways until you get to another facility. What this looks like in different communities is varied because we have a lot of different types of geography and populations but having everybody under one umbrella makes it a little bit easier for us... to move nurses ... put them on a bus and take them down to Virginia Beach if I needed to because they're all my staff.

- Supplies and logistics
 - Participants raised concerns about the impacts of COVID and/or hurricanes on the supply chain that provides for shelters.
 - Example: Ports could be damaged by a big storm which could hurt the speed at which supplies are available.
 - Example: Do shelter staff need to think differently about food supply for shelters? Will they be able to get access to food and other supplies to get to the right shelters at the right time.
 - Traffic due to evacuation can also prevent trucks coming into the area to resupply.
 - One participant pointed to logistics and warehousing capabilities of their team to manage supplies needs.

Our logistics team is – they're a warehouse. They could go run a warehouse somewhere. They are logistic masters now. It's unbelievable. They've handled millions of dollars of PPE and things like that. They still have millions of items on hand and several warehouses now and they drive forklift trucks now and everything.

- Long-term sustainability
 - Participants expressed concern that, while staff are doing a great job, it might not be sustainable given burnout and fatigue.
 - Participants raised questions about sustainability of shelter operations and funding given public expectation for use of non-congregate sheltering.

So, using COVID funds right now to do things like put people up in individual hotel rooms instead of a mass shelter as an attempt to kind of mitigate some of that COVID risk that's impacted at the same time, but being very aware of the fact that money is not going to be around forever. So, what happens next year, the year after, the year after, now that public expectations may have shifted? What's going to happen in future hurricane evacuations now that they've set this precedent? So, how is that going to impact future evacuation efforts and sheltering efforts now that they've taken these steps directly in response to COVID? How is this going to change things moving down the road?

- Shadow evacuation
 - Shadow evacuation creates traffic challenges and take up shelter space.
 - Messaging to the public that those not in an evacuation zone or at risk to storm surge should stay and not evacuate.
 - Encourage residents to assess their risks and their homes. Provide information on what to include in assessment and the precautions and protections for their homes.
 - Focus on making mitigation of homes a priority.
 - Federal Alliance for Safe Homes (FLASH) provides videos and other resources.

11.0 ADDITIONAL CONSIDERATION AND REMAINING QUESTIONS

Partnerships and networks

- Responding to COVID-19 spurred various partnerships that expanded into and leveraged for other emergency management areas such as hurricane evacuation and sheltering.
 - Participants highlighted different partnerships they have developed that can support sheltering and evacuation, Example: Partnering with nonprofits and NGOs to reach diverse and vulnerable groups for the vaccine mission, and for food provisioning.

COVID helped us build partnerships with nonprofits and NGOs in our community. For example, in the vaccine initiatives, we work with nonprofits, like our migrant labor associations and homebound patient associations and advocacy groups to get those kinds of services for people during the pandemic. Now, with those relationships we can leverage for other emergencies like hurricanes. So, if we need to reach that specific population during evacuation, now, we have some of those groups better identified and more of a working relationship since we've been working with them and for the last year. So, they make it a little bit easier for us to make use of that and reach people that we might not have been able to reach before because of those new partnerships.

We've networked with them [Feeding America] and find out where their sites are, which ones have temperature control and things like that, to work with them for whole community feeding.

- Participants raised questions about how bringing in those partner organizations have helped with hurricane preparedness and evacuation planning.
- Participants pointed to agreements with hospitals to shelter advanced care patients who could not be cared for in special needs shelter.

We have about 220 to 240 folks that qualify for the advanced care at a hospital [rather than a special needs shelter]. We spread them out amongst the hospitals depending on the evacuation level. Evacuation level D, I lose three more hospitals than I had at evacuation level C.

- Other expressed concern about the ability for long-term healthcare facilities to shelter their residents and sheltering their people because they're having problems with their agreements for evacuation location.
- What are implications for EMAC? Communities depend on others coming from outside to provide support via EMAC. But in the future, how reluctant are people going to be to send their staff to another locality or state during a pandemic? Are

they going to be more hesitant because they are afraid that their workforce is going to come back sick?

What we still want to know more about or gap in knowledge to inform future planning and practices

- Do we understand the population that shelters? Can we plan given their characteristics/situation? Do we understand how people plan for evacuation?
 - In planning shelter operations, how do we consider the segmentation of the population? Who potentially are more vulnerable based on where they come from? Do we consider the mix or the composition of the vulnerable population and how they're expecting to evacuate and shelter? What does that process look like?
 - Example: Movement of people that happened with COVID-19. People new to the coast might not know about hurricane preparedness and response. And communities don't know much about the characteristics of their new residents and how they decide to evacuate and shelter.
 - Example: Communities that have not had recent experience with hurricanes might underestimate their vulnerability and be underprepared. How might this impact evacuation?

A lot of people moved to Florida during COVID because it was wide open and it was warmer and if you're going to be stuck inside – sequestered or quarantined – you might as well be in a sunny climate. They do not know yet what a big hurricane looks like and that is another consideration. We used to know our populations a little bit. Then the biggest problem that we have is discerning ahead of time who might come to the shelter. We puzzle over this in many ways.

Our population by and large is of the opinion that those sorts of things [hurricanes] don't really happen here. I think that we will under evacuate and wind up with a lot of very last minute problems where we are not going to be able to get responders and transportation out to people to rescue them in flooded streets, enclosed bridge tunnels. I live in eastern region of Virginia on the coast and we have bridge tunnels that essentially make evacuation almost impossible out of this area. They're not anxious to put that to the test in a storm so I think that we will under evacuate. Even if they're just going to the local shelters, I think it will be very, very challenging. People here really just are of the mindset that they have written it out so many times, we have missed the radar so many times and everybody just, generally speaking, seems to feel like we're going to continue to have that kind of luck.

- Have we conducted surveys or collected feedback from evacuees to understand preferences and experiences of staying in different kinds of shelters this past year?

- Will the need for evacuation or sheltering overcome concerns that medically fragile people and their caregivers have about infection control? Will fewer people come to a shelter because of fear?
- Did any state or agency see significant changes in their overall shelter participation rates from prior years due to COVID?
- Planning for future hurricane-pandemic scenarios
 - We still need to know more about the populations that didn't get vaccinated for various reason. What are their perceptions of the ongoing nature of the pandemic? Do they actually think there's a pandemic happening? Do they act differently than they did last year?
 - Vaccine mission is going on simultaneously with hurricane evacuation and sheltering. What if we are in the middle of the vaccine mission and a hurricane hit? Given scarcity and needs for specific logistics for vaccine, we would also need to secure vaccines during a hurricane. How would that be accomplished? How to run vaccine mission and sheltering simultaneously?

It's interesting to know how we'd be able to do this [evacuation and sheltering] concurrent with all these other things going on... What if we do have a major booster operation that's probably going to be happening around the latter half of the hurricane season, would we now have to consider transporting vaccine doses out of harm's way to try to protect them?" because I remember during the ice storm in Texas, those stories about how a lot – again, this was reported in the media so I don't know if things were changing when everything kind of got – if the situation changed or clarify me if I'm wrong but from what we were told, there were cases where vaccine doses were being thrown out. There were obviously cancellations in appointments. Because of power being lost to some of these hospitals or wherever they were doing vaccines at that point, it was they were losing doses which were considered critical at that time.

If we had to open a congregate shelter in Virginia in the next several weeks, when we're rolling out [the vaccine mission] and there's an anticipation of 5 to 11-year-old vaccinations, that would be really difficult.

- What public health practices, if any, will be standardized for sheltering in the future?

The final 2-minute question burst identified remaining or unanswered questions shared by participants. These questions can be organized into 6 broad categories.

Staffing

- One of the problems is somebody is going to go volunteer at a shelter and be the only one there and be stuck there for a long time with no relief so how do we make sure that that's not happening and communicate that? Any other ways to reduce that staffing footprint but also provide the support that is needed for staff?

- How do we respond when there is an outbreak in terms of staff or people there? Do we have a set plan and is it well-communicated for the psychological safety of everyone?
- How do we ensure staff and volunteers are trained for working with persons with disabilities and are there other ways such as telehealth, backpack medical teams, that we can support folks who remain?
- How do we support and protect our shelter staff, our emergency staff? What would be most helpful? From those who worked in shelters, what do you wish you'd had?
- Is there a way to incentivize or reward or support or build morale in the physical energy of staff by providing them with higher quality food?
- Are there example MOUs that can be shared with others that are being used right now with different types of staff?
- What are we doing also for the staff who would be assigned to the public shelters during COVID? They're not really nurses or doctors, they're just people like you and me. What type of protection would that staff have if we separate the people and children who are positive or asymptomatic?
- How do you get people to buy into being vaccinated and continuously masked in a shelter environment?
- The issue that we're having with some of our MRCs is the age group they're in is the COVID group that's most up until recently, mostly at risk. So, if they're over 65, they're weighing: Is there enough PPE? Do we have the right PPE? What is my risk? Some don't seem to mind at all, but many have said we are not going to be able to work this summer in that kind of a congregate environment yet. How can we reassure them and provide for them to be safe?
- How do we incentive people to work in shelters, especially during COVID?
- How do we respond to staff who choose not to come in because they're scared of catching COVID-19?
- What are some ideas of incentives to get workers at shelters?
- What are the metrics used to understand the increase of volunteers needed?
- How do we prevent burnout among shelter staff?
- How can we make sure that everyone who wants training or needs training would be able to get it before the hurricane season?
- What are those gaps that are in our staffing plans? I've heard about training which we could talk about more and heard about supplies, right? So again, in terms of the staff having what they need from that perspective. What are the gaps in our plans right now?
- What liability does the county or government have when recruiting students, for example or any volunteer? Are there certain legal parameters that need to be in place when we do that?
- How can staffing needs be managed if additional COVID outbreaks require additional medical staff?
- How can we set things up in a way that everyone has a role in disaster response? How can we have a workforce that's sustainable?
- How do we prepare our hotel staff better? Are we using hotel staff?

Shelter operations

- If we provide vaccines in the shelters, how should we separate, if at all, the newly vaccinated since they would not yet have immunity?
- How will cleaning services be changed or amended regarding COVID?
- How can we increase shelter capacity? With non-congregate sheltering? With appropriate staffing.
- What kind of best practices we've gotten from this lay across all jurisdictions, of course, and what kinds of things, I guess, would stick around, even if COVID is no longer here or if we're kind of back to our normal disasters without pandemics, what practices we've adopted during COVID that are now - make themselves permanent evacuations and sheltering?
- What transportation challenges need to be addressed to help sheltering be more inclusive?
- What else can be done with these communities to assist them with realistically designing their own family preparedness plans? Can we really be the end all be all for everyone?
- For general population shelters so many people just show up randomly. Is it still a goal to have registration for general population shelters or are they just leaving it like normal? How do they do it every year?
- What is the feasibility of telehealth resources and consultation for people that other supports that may not physically be people in the shelters? Is that feasible? Is there anything like that in your plans with the shelters? Do schools have that capacity? Do Hotels have that capacity?
- How do we handle the latecomers?
- How can we better meet the needs of people who are reluctant to go to shelters for whatever reason?
- When people don't come to the shelters because they assume they're okay and I'm speaking of people who may have specific medical needs, what's the plan to respond to them via transportation or whatever when their power does go out?

Masks, testing, and vaccination

- The public, if they came to a reception center for a shelter, would certainly want to be tested, and having the COVID positive separated from the non-COVID positive, and I think there'd be a public demand about vaccinated versus non vaccinated, which makes this whole process a lot more difficult to do as far as space needed. How do we do that? What do we do with people that don't want to test? How do we separate them?
- What are best practices for using rapid tests in the shelter environment?

Vulnerability

- There's been a massive economic impact of COVID. How we deal with a growing population of people who may be feeling those economic effects of the pandemic for long after the pandemic itself is done?
- How many people are still experiencing financial distress due to economic impact of COVID and will that still affect their decision about sheltering?
- Will it be even harder for people to go back home after the storm if they don't have resources?

Communication and messaging

- What are the considerations for messaging, education, accessibility, etc. for the influx of refugees, specifically in Florida? Possible challenges: Language barriers, risk perception, cultural competency, etc.
- What information do people need in order to make the decision to evacuate sooner?
- Is there a greater role for information and communication technologies (ICTs) to enable more effective and inclusive evacuation and sheltering?
- How can there be communication of the health and safety guidelines that will be followed at shelters so that people have a level of comfort in making that decision for their families?
- Is there a communication strategy for shelters to give that population accurate information that may calm and be reassuring rather than just not really knowing what's going on?
- I wonder if we've learned anything about what's worked or not worked in terms of sharing COVID information and risk perceptions, vaccine information. How does that correspond with venues for sharing disaster preparedness information?
- What are the sheltering and evacuation concerns of the public? What changes have been adopted to address these concerns? How will these changes be communicated to the population before an imminent storm?
- I wonder if we've learned anything about what's worked or not worked in terms of sharing COVID information and risk perceptions, vaccine information. How does that correspond with venues for sharing disaster preparedness information?

Future planning

- How can we adopt an agile, flexible policy planning in terms of evacuation and sheltering? We know that there are some populations are going to be hit according to the path of the hurricane. If that composition may change, how we can adapt the evacuation and sheltering to meet those segments of the population as it changes depending upon the type of impact that are associated in a hurricane?
- What needs to happen in the long term for shelter planning? When we have these kinds of co-occurring disasters. I was hearing that Miami Dade emergency manager saying that for instance charter schools are not built up to the code that they cannot use them like they can use public schools. Maybe that indicates that

needs to be on a longer term changing and longer term thinking for shelters. What are these longer term needs?

- Are we doing enough to involve the people that have worked in shelters to brainstorm new and different ways to deal with these new challenges?

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