DOI: 10.1111/puar.13711

VIEWPOINT



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Evaluating the "whole community" concept based on the national response to COVID-19

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Revised: 25 September 2022

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Abstract

This article summarizes an 18-month study of the national response to the COVID-19 pandemic as viewed from the individual perspectives of a team of local emergency management professionals. The research project evaluated the COVID-19 response based on a concept articulated by the Federal Emergency Management Agency (FEMA) and Centers for Disease Control and Prevention (CDC) as a "whole community approach" to disaster preparedness and public health, which became the de facto organizing structure for the COVID-19 national response. The research project identifies significant deficiencies in implementation of that concept, and offers some recommendations for defining a true "whole community approach" to public health and safety as a mitigation strategy against future national-scale civic emergencies.

Evidence for practice

During the U.S. response to the COVID-19 pandemic, federal, state, and local emergency managers mobilized alongside public health officials to deal with a national health emergency that touched every community in the nation. The response was jointly coordinated by the Federal Emergency Management Agency (FEMA) and the Centers for Disease Control and Prevention (CDC) under a concept known as "whole community response." This Viewpoint article offers an evaluation of the first 18 months of the COVID-19 response based on the lived experiences of a team of professional emergency managers at FEMA's Emergency Management Institute (EMI). Key findings of the study included the following:

- During the period of this evaluation from March 2019 to October 2021, there was a lack of communication and coordination between responding agencies at all levels—federal, state, and local—and frequently mixed messages between federal and state governments.
- The lack of coherent, consistent guidance from the federal government resulted in the delegation of critical operations to the states, with no unified command or purpose.
- Integration of community partners to include non-governmental organizations (NGOs), private sector entities, and community leaders was not a priority and represented a significant lost opportunity for mobilization of an effective national response.
- Identification, classification, and protection of personnel essential to the continuity of community operations, public services, and local economies was not understood as a limiting factor in the effective response to a long-duration event such as a pandemic.

The recommendations, findings, and conclusions in this report are the work of the authors and do not necessarily reflect the views or policies of FEMA, CDC, NIST, or other agencies of the United States Government. Moreover, the study reflects the personal experiences of the members of the research team during the COVID-19 response, and are not necessarily representative of the broader experiences of their respective agencies and organizations.

 There is clear need for enduring engagement between federal agencies (notably, FEMA, Department of Health and Human Services (HHS), and CDC) and state/municipal governments, the private sector, and local communities, and a dedicated national strategy for restoring, building, and sustaining public trust.

BACKGROUND

In 2011, the Federal Emergency Management Agency (FEMA) initiated the "whole community" approach to disaster preparedness and response as a means for engaging the private sector, local agencies, and civil society in building disaster-resilient communities. In 2013, the Centers for Disease Control and Prevention (CDC) adopted a similar concept for public health. This approach emerged as a foundation of the national response to the COVID-19 pandemic and FEMA's role as lead federal coordinating agency (CDC, 2020; Gaynor, 2020; FEMA, 2011). However, the COVID-19 crisis revealed fundamental challenges in implementing such a national strategy in individual cities and communities. Experience during this three-year national ordeal has provided ample evidence that implementation of a "whole community" approach will require research, investment, public engagement, and coordination well beyond the current campaign of social distancing, sheltering in place, personal hygiene, respiratory protection (i.e., face masks), and vaccination of a majority of the population. For example, a 2008 study by the National Academy of Sciences Institute for Health cited three shortcomings in previous community-based public health strategies:

- Lack of diversity in community voice, support, and participation to achieve sustainable results;
- Failure to engage other community-development strategies with the potential to influence the determinants of health outcomes (e.g., housing, safety, education, and civic engagement); and
- Lack of a platform for governance, management, and financing that assures continuity of response from prevention to early detection to treatment to evaluation (Cohen, 2008).

More recently, a study was conducted from 2019– 2021 by a multi-agency, multi-disciplinary research team of professional emergency managers enrolled at the National Emergency Management Executive Academy (NEMEA) at the FEMA Emergency Management Institute (EMI) in Emmitsburg, Maryland (Dunaway, et al, 2021). The objective of the research effort was to examine the early phase of the regional and community-level response to the COVID-19 pandemic.¹

The report's principal recommendation is the need for an ongoing, long-term strategy of outreach, collaboration, and planning involving FEMA, CDC, the National Institutes of Health (NIH), the Department of Health and Human Services (HHS), and other federal response agencies, acting in collaboration with state and local emergency management, public health and supporting agencies, and private sector entities and citizen-engaged partnerships. This planning and exercise approach has been successfully adopted among federal, state, and local authorities in preparedness drills and planning events such as the "Great Shakeout" series of earthquake drills in western states; the "Hurricane Pam" exercises in Louisiana and the Gulf Coast; and in other regional exercises sponsored through the FEMA National Exercise Program.² A similar national program for response to large-scale public health emergencies could examine requirements, approaches, policies, and data requirements, sources, and metrics for national preparedness and risk mitigation. Most importantly, the strategy could focus on building an enduring national program for public health and safety as the foundation for a true "Whole Community Approach" against pandemics and other large-scale crises and disasters requiring coordinated effort across the federal and state, local, territorial, and tribal levels (SLTTs).

RESEARCH APPROACH

During the initial planning for this COVID-19 research project in February 2019, the EMI team assumed a hypothetical "worst-case scenario" public health crisis that would likely last 6-8 months with an infection and mortality rate (conservatively) estimated at double the highest recent influenza outbreak in 2017-or about 90 million infections (i.e., 45 million imes 2) and 122,000 influenza-associated deaths (61,000 imes 2) (CDC, 2019). Those planning assumptions were quickly exceeded, and the study was consequently extended to cover the initial 18 months of the pandemic response. During that period, U.S. COVID-19 infections and deaths equaled 66,715,937 and 845,633, respectively (CDC, 2020), surpassing even the U.S. experience during the 1918-1919 Spanish Influenza, estimated to have caused 675,000 deaths (Ewing, 2021). [As of 23 September 2022, U.S. cases from COVID-19 totaled 95,795,378 and deaths totaled 1,050,631 (CDC COVID Data Tracker 2022)].

During the unfolding national crisis, the members of the research team were, themselves, responsible for coordinating response operations in their local communities, and—given the demands of those operations—elected to change the project approach to an evaluation in real time of the pandemic impact and response as viewed from their positions at local responding agencies. Five factors affecting local outcomes were selected for evaluation:

1. Communications both between and within agencies;

- 2. Training and multi-agency coordination under the National Incident Management System (NIMS)
- 3. Logistics and supply chain impacts for critical supplies;
- 4. Integration and coordination of the multi-agency response; and finally
- 5. Challenges generated by a federal coordination structure executed through a federalist system of states and local jurisdictions.

Research and data collection were conducted on-site at individual agencies by members of the research team and then synthesized collectively over phases coinciding with the scheduled meetings of the NEMEA class between February 2020 and September 2021. Figure 1 summarizes the schedule for the research project, which, owing to the COVIDimposed delays in the NEMEA course, evolved in four phases over the initial 18 months of the pandemic response.

The overall goal of the project was to offer a local/agency perspective on the management of the national pandemic, and thereby, to provide FEMA leadership with some "data points" for future planning, and perhaps inform the FEMA after-action review (AAR) process as it moved beyond the initial assessment. The research team included members representing the following organizations and perspectives, each of whom had significant experience in emergency management and represented a separate organizational perspective and jurisdiction, and a different community or region of the country. (See Disclaimer in Endnote 1).

- FEMA liaison to the National Capital Region, Washington, DC
- · Department of Veterans Affairs, State of New Jersey
- Adventist Health/White Memorial Hospital, Los Angeles, California
- Connecticut Department of Emergency Services and Public Protection, Division of Emergency Management and Homeland Security
- · Department of Health, Palm Beach County, Florida
- Department of Facility Maintenance, City & County of Honolulu, Hawaii
- Samsung Electronics, America (former Principal, Emergency Management, Cadmus Group)
- Smart Cities Infrastructure Program, National Institute of Standards and Technology (former Director, Louisiana Business Emergency Operations Center).

FINDINGS AND RESULTS

During the 18-month project, the members of the research team identified a range of common problems in the national response to COVID-19 leading to general consensus among the members, notwithstanding the diversity in the position description, responsibilities, geographic location, and jurisdiction among them. The analysis was based on perceptions from local/regional and state experience relatively early in the COVID response (the initial 18 months) and was therefore limited in scope.

Nevertheless, the outcomes of the study provide insight into the response to COVID-19 and perspective on the nuts and bolts of local implementation of a national strategy for a crisis that affected every community in the country. Based on the analysis of the five areas of focus, the research team identified the following shortcomings in the national response to the COVID-19 pandemic.

Communications

- There was a significant lack of communication and coordination between responding agencies and partners at all levels.
- There was a general lack of recognition of which agencies and partners were critical to response to a national-scale, long-duration crisis like a pandemic.
- There were frequent mixed messages from among federal agencies and between federal and state governments.

Training

- There was a need for greater familiarity with the NIMS and Incident Command System (ICS) among agencies at every level.
- There was inconsistent planning and training for the specific threat of a pandemic, lack of which inhibited cooperation between emergency management and public health.
- There is a general need for coordinated inter-agency, cross-disciplinary training at all levels.

Financial/logistics & supply chain

- Personal Protective Equipment (PPE) was in short supply. The Strategic National Stockpile (SNS) had not been rotated or stock restored and consequently failed to meet the demand.
- There was a general failure to prioritize the delivery of PPE, medical supplies, and COVID-19 testing and vaccination measures, particularly within underserved communities.
- Classification of essential versus non-essential personnel for continuity of public services and local economies had not been analyzed as a potential limiting factor in crisis response.

Integration/coordination

- Integration of agencies and community partners to include the private sector, non-governmental organizations (NGOs), and community leaders was not considered a priority, and was a significant factor in the failed implementation of a national strategy.
- There was a clear need for a unified information dashboard to provide national situational awareness to health departments and emergency management

Project	Dates	Tasks
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Phase 1	Project planning:	Team formation; problem definition; work assignments.
	24-27 Feb 2020	Confirm Project Statement.
Phase 2	Individual on-site research	Review and problem analysis from individual perspectives.
	28 Feb 2020—16 May 2021	Team briefings of individual work and aggregation of results.
	Progress review:	Project reassessment and planning.
	17-21 May 2021	Create draft outline of case study and project presentation.
Phase 3	Complete on-site research	Review of draft outline and integration of individual research
	22 May-15 Aug 2021	products. Refine case study overview and project presentation.
	Progress Review:	Analysis and comparison of research outcomes based on
	16-19 August 2021	evaluation of current real-world events (i.e., COVID-19
		response).
Phase 4	Project completion and	Evaluation of individual research products and integration into
	compilation of results:	final project presentation.
	13-16 Sep 2021	Completion of final project report.
Final Report	16 Sep 2021	Presentation of results and debrief to FEMA leadership.

FIGURE 1 Project schedule and approach.

agencies for coordination across and within jurisdictions during a large-scale crisis.

Federal versus federalist response

- The lack of coherent, consistent guidance from the federal government necessitated the assumption of critical operations by the states without the customary unified command.
- Deviation from the National Response Framework (NRF) (FEMA 2019) was executed without sufficient planning. That is, FEMA was designated as Lead Federal Agency for the pandemic response, despite HHS being specified as the national coordinator for a public health crisis under FEMA Emergency Support Function #8 of the NRF.

Figure 2 summarizes the significant findings and Lessons Learned from the study.

Key recommendations from the EMI study

In particular, two key areas stood out as needing focused attention and a long-term strategy to ensure the nation and its public health and safety communities can capably manage any future complex national-scale disaster.

Coordination between emergency management and public health

Conduct joint AAR among FEMA, HHS, and CDC supported by an independent study conducted by a separate agency (e.g., the National Academies of Science, Engineering, and Medicine (NASEM)). Similar joint AARs

should be conducted by every state, region, and jurisdiction.

- Establish a regime of annual table-top training exercises (TTXs) dedicated to public health crisis management with participation from national to state to local levels.
- Develop a framework for guidance, best practices, and doctrine for managing public health crises, with input from local/regional public health entities and emergency managers.

Restoration of public trust

- Establish a national campaign of civic engagement within emergency management at all levels and jurisdictions to expand understanding and diversity in community voice, support, and participation.
- Involve other community-development strategies and responsible local agencies with potential to influence public health and safety (e.g., housing, education, private sector, NGOs, and State, Local, Tribal, and Territorial (SLTT) authorities.
- Develop a common dashboard for coordination of national-level crises, and provide a platform for governance, management, financing, and continuity of response. [These outcomes were similarly noted in Cohen, 2008].

These key recommendations are supported by a word cloud analysis of the findings of the EMI study that emphasizes the most frequently used words as the larger text and smaller highlighted words as the less frequently used in the document. Word clouds are a computer visualization technique used in text mining methods of document summarization with recent tools incorporating artificial intelligence techniques such as MonkeyLearn.³ Figure 3 illustrates the most frequently used words to

Key Lessons Learned

Communications

- There was a lack of communications and coordination between agencies and partners at all levels ...
- And a similar lack of recognition of which agencies/partners were critical to response & recovery

ASPA

· Mixed messages were delivered from across federal agencies and between federal / state government

Training

- There was widespread lack of familiarity with ICS / NIMS, which inhibited unity of effort between Emergency
 Management and Public Health. This deficiency exists at all levels and jurisdictions
- There has been a regrettable, long-standing failure to plan and train for the threat of national/global pandemic
- · There is a general need for coordinated interagency and cross-disciplinary training at all levels

Financial / Logistics & Supply Chain

- PPE was in short supply, SNS had not been rotated nor stock restored with consequent failure to meet demand
- There was no understanding of Essential vs. Non-Essential personnel required to ensure continuity of public safety, civil society, and the sustainability of local economies
- There was no prioritized delivery of PPE, testing equipment, or medical supplies, and no ability to ramp up production

Integration / Coordination

- There was no integration of agencies and community partners-e.g., NGOs; private sector; community leadership
- COVID has demonstrated the need for an integrated dashboard for Public Health emergencies for information sharing
 among public health, emergency management, and civic leadership to ensure a unified national response

Federal vs. Federalist

- · Lack of coherent, consistent guidance from the Federal government resulted in delegation of operations to States
- Failure to comply with NRF: i.e., NIH as lead federal agency for public health emergencies (per 42 USC 24.7.d)
- · Cultural/Political obstacles must be addressed to resolve challenge of centralized vs. de-centralized U.S. response







reveal trends or patterns uncovered in the text analysis of this EMI study (see Figure 4).

As a basis for visual reference and comparison, Figure 4 provides a similar word cloud analysis generated from the FEMA Initial Assessment Report (FEMA, 2021a; 2021b).

TOWARD A TESTBED FOR WHOLE COMMUNITY PREPAREDNESS

As noted previously, both FEMA and CDC had advocated a "whole community approach" to public safety and

private sector partners executive summary united statefederal operations covid-19 operations covid-19 pandemic private sector federal agency DONCEM Commany of recommendations resources u.s. department operational task force public health eme ommendations coronavirus task force department of health fema region DDC major dis pandemic responsemedical supplies kev findina coordinating structure gresponse operations executive order covid-19 response issessment report voluntary agreement stafford act defense production acgency response section federal responsederal government human services white house project airbridge

FIGURE 4 Word cloud analysis of the Federal Emergency Management Agency (FEMA) Initial Assessment Report, 2021.

Wireless communications and broadband/5G applications	Data governance and city platforms and dashboards
Transportation systems, autonomous vehicles, supply chain	Cybersecurity and privacy for private and public sectors
Public utilities for energy, waste, and water management	Smart Building technologies and IoT applications
Public safety, security, and communications	Precision agriculture and rural productivity
Resilience, sustainability, and adaptability	Smart regions strategies; multi-agency capacity-building
Community health and well-being, equity, and integrity	Education, workforce development, quality of life

FIGURE 5 Technology Sectors of the National Institute for Standards and Technology (NIST) Global Community Technology Consortium (GCTC).

public health well before the COVID-19 pandemic. Nevertheless, the national response has illustrated both the current deficit in whole community conceptualizationmuch less planning and operations-and the urgent need to develop a national strategy to integrate federalstate-local preparedness and response during nationalscale events. As a potential non-intrusive "testbed" for such a process, the results of this research effort are being incorporated into the framework for public health, safety, and community resilience of the Global Community Technology Challenge (GCTC), a federal Smart Cities program sponsored by the National Institute of Standards and Technology (NIST). The GCTC is a nationwide publicprivate partnership of cities and communities, local and state government agencies, and private-sector for-profit and non-profit entities, with the goal of improving community safety, security, economic vitality, and overall quality of life through the integration of advanced technologies into city operations and infrastructure. NIST

coordinates this nationwide partnership in collaboration with other federal agencies and offices that sponsor smart city-related projects and research activities. The GCTC is organized into twelve technology sectors or working groups as illustrated in Figure 5.

In 2022, NIST published a methodology for identifying Key Performance Indicators in smart communities by analyzing the components, intersections, and relationships among city and community infrastructure and assessing the direct and indirect benefits gained by adopting advanced technologies. The document establishes a "Framework for Holistic KPIs in Smart Cities and Communities" based on three levels of analysis—technology integration, infrastructure services, and community benefits. (Griffor, et al, 2022). A major focus area of the GCTC has been in enhancing disaster resilience and sustainability, and more recently, the impact of large-scale events on future Smart City initiatives and defining the contribution that NIST/GCTC could make to improving national preparedness and security in a post-COVID era. To that end, GCTC has launched a program to define technology applications, analyses, key performance indicators, and adaptive decision architectures that could support a national "Whole Community Approach to Public Health and Safety for Smart Cities." This would essentially apply a holistic analysis of the 12 GCTC technology sectors in Figure 5, with specific emphasis on the lower left-hand three (Public safety and communications; Resilience and sustainability; Community Health and well-being).

	TEN QUESTIONS FOR FRAMING A "WHOLE COMMUNITY" RESPONSE
1.	What can a review of community planning and response to an unprecedented, "Black Swan" event like the COVID-19 pandemic reveal, and how should a formal AAR be structured?
2.	What is the relationship between the federal strategy for "whole community" public health and safety and its translation to actionable policy at the community level?
3.	What limitations or obstacles prevented the development of coherent COVID strategy at local and regional levels, and which obstacles might be resolved through effective federal policy?
4.	Who are the critical members of the community who should be engaged and involved in defining the requirements for a "whole community approach" to public health and safety?
5.	How can financial support be positioned and implemented so that a rapid restart of economic activity can resume after a crisis (graceful degradation and phased restoration)?
6.	What common or general guidelines can be gained from the review of one organization's efforts at mitigating a large-scale event that are applicable in different regions?
7.	What are common areas of intersection of interest/process/goals for regional emergency management, and what unique characteristics are not transferrable?
8.	What data is required for research on this large-scale, multi-dimensional problem, and what are the sources of that data? Are there restrictions on access to the data and how can they be managed?
9.	What data streams and presentations should comprise a "community dashboard" for COVID-19 or other public health crises during future emergencies?

10. How can the "building of trust" be established as a central objective of a community response to enable a "whole community" strategy for public health and public safety emergencies?

FIGURE 6 Ten guestions for framing a Whole Community national strategy.

Observations from the FEMA Initial Assessment Report

FEMA coordinated with private sector partners to expand access to scarce resources but lacked a consistent strategy across the operation for involving the private sector. (p. 9);

The lack of an SLTT partner-specific engagement plan at HQ with targeted messaging for specific stakeholders and groups created communications challenges in identifying, relaying, and addressing the needs of partners. (p. 10).

Recommendation 2.5.A. Articulate a long-term strategy for engaging the private sector and coordinating across HQ, regions, and field in future disaster responses. The strategy should be consistent with ESF-14 and build on lessons learned from the pandemic. (pp. 62, 75).

Recommendation 2.5.C. Develop a plan for integrating the private sector comprehensively in preparedness across the agency to include planning, organization, equipment, training, and exercises at HQ and the regions. (p.75).

Conclusions ... The private sector and non-governmental organizations have a critical role to play in readying the nation for disasters. FEMA must invest in new capabilities for collaboration and pursue innovative solutions for the toughest problems. (p. 133).

The goal would be to gain further perspective—which this research project has initiated—on current and future requirements to enable communities to prepare for, respond to, and recover from complex threats to national security affecting community welfare. Figure 6 offers ten research questions to frame the development of a "Whole Community" strategy from experiences gained from this analysis of the COVID-19 pandemic and response. A NIST-sponsored workshop is currently in planning to examine these issues and begin developing a Framework for Whole Community Public Health and Safety for Smart Cities.

SUMMARY

In September 2020, FEMA completed a preliminary assessment of the COVID-19 response and its role as lead federal agency (FEMA, 2021b). A key finding of the report states, "The global scope of the pandemic outstripped assumptions made in existing policies, plans, and procedures..." (FEMA, 2021b, p. 29). Appendix A to that report contains a comprehensive list of Findings and Recommendations identified during the agency's initial review. Several of those that are directly relevant to the findings of this EMI report are captured in Figure 7.

As a possible sign of progress in addressing the inadequacies in the U.S. COVID response, FEMA published in December 2021 a "Strategic Plan 2022–2026" that emphasizes community outreach and engagement, equity in disaster response and outcomes, and a "whole community" approach to building climate resilience. However, the document does not cite FEMA's own Pandemic Response Initial Assessment Report," or directly address any lessons learned during the agency's management of the national pandemic response. Nor does it directly address interagency coordination with CDC, NIH, HHS, or other public health response agencies as a strategic priority. A single paragraph in the document offers the broad observation that

> "Disaster mitigation, preparedness, response, and recovery are not the responsibility of just one agency. Rather, these functions are a shared responsibility requiring coordination of federal agencies, private and social sectors, state, local, tribal, and territorial governments, and other partners." (FEMA Strategic Plan, 2021b, p. 25).

Ultimately, FEMA's assignment as Lead Federal Agency for a public health crisis may be viewed as a grand experiment that has highlighted a national "failure of imagination." Specifically,

• There was a systemic disregard for the seriousness of the potential threat of global pandemic exemplified by

the disestablishment by the White House of the National Security Council (NSC) Directorate for Global Health Security and Bio-Defense in May 2018 (later restored by Executive Order in January 2021).

- There was likewise a failure to learn from experience and extrapolate to a "Maximum of Maximums"-scale crisis based on both recent and historic events (e.g., SARS/ H1N1/H5N1/1950s Polio Epidemic/1917 Influenza/ etc.)
- There was a notable lack of consistent guidance from the highest level(s) of government ... leading to a hesitancy to commit to decisions and act — at all levels of government.
- Finally, there is a clear need for an enduring engagement by FEMA/CDC and other federal agencies with state and local government, the private sector, and civil society to build a national strategy for restoring, building, and sustaining public trust over the long term.

The COVID-19 pandemic has demonstrated that biological threats are real and have the potential for significant citizen mortality and sustained damage to the economy, cultural vitality, and cohesiveness of society, and ultimately to national security. This research project provided a local perspective on the response to the global COVID-19 pandemic, leading to the conclusion that successful management of a national-scale public health crisis depends heavily on general public health and emergency management capabilities regularly administered and exercised by various authorities, and effectively coordinated by multiple organizations at the federal, state, and local levels. That general strategy had not been implemented before the COVID-19 crisis, and the unfortunate results have been evident at every level of government in virtually every community in the nation.

Based on the lessons learned through this project, this EMI research team recommends a more thorough analysis be conducted, involving outreach beyond the customary intra-agency AAR of incident response. Owing to the extraordinary demands placed on the civil population, the business sector, schools, local agencies, and virtually every sector of society, a true post-event analysis of the national response to COVID-19 will necessarily require active engagement with local government, the private sector, and a broad swath of the civilian population. A multi-agency, multi-region assessment on the scale of the *9/11 Commission Report* is clearly called for in order to prevent a similar outcome in any future pandemic or national crisis.

In the final analysis of the COVID-19 response, the public and local authorities were not effectively engaged as a source of talent, capabilities, or influence to help shape and manage a national campaign. While recognizing the obvious competing political interests and challenges at play during COVID-19 (which the authors of this report have assiduously avoided), there was an equally obvious opportunity for building a message that would engage the public as citizens and allies, and not simply as victims, patients, or liabilities. This is the core message of a "Whole of Community" approach to disaster preparedness and response and should be vigorously pursued as a national mitigation and preparedness strategy well in advance of the next pandemic.

Postscript

In September 2022, the Lancet Commissions published a report, "Lessons for the Future from the COVID-19 Pandemic," that provides an extensive analysis and critique of the global pandemic response ranging from inadequacies in multi-national coordination, to failures in the adoption of essential medical and public health protocols and preventive measures at regional, national, municipal, and individual levels (Sachs et al., 2022). Many of the regional and local failures in planning, coordination, and execution identified in the Lancet Commissions reportas well as in the FEMA Initial Assessment Report-were witnessed first-hand by the authors of this EMI report. Though obviously limited in scope by comparison, this report provides a community-level perspective on many of the conclusions of both the FEMA Interim Report and the Lancet Commissions report.

ACKNOWLEDGEMENTS

This paper was the outcome of research conducted by the 2019–2021 cohort of the National Emergency Management Executive Academy at Emmitsburg, Maryland. The research team included Michael Dunaway, Erik Gaull, Paul Malool, Henry Paszczuk, Christopher O'Rourke, Garrett Ogawa, Freddy Rodriguez, and Kenneth Wall.

The EMI report and this paper are dedicated to the first responders, emergency managers, medical professionals and hospital staff who worked tirelessly during the COVID-19 pandemic to protect their communities.

ENDNOTES

- ¹ The National Emergency Management Executive Academy (NEMEA) is a FEMA executive leadership program that annually admits cohorts of 25–30 senior members of the nation's emergency management community. The program is typically conducted in a series of four week-long sessions from January through September of a given year. However, due to the COVID-19 pandemic, the 2021 graduating class entered the EMI program in February 2019 and did not complete the course of study until October 2021, a period spanning the first eighteen months of the COVID-19 national response. As a requirement of the curriculum, each NEMEA cohort produces a series of professional research studies that are presented to FEMA leadership at the end of the course. In 2021, this research team of emergency management professionals examined regional and community-level responses to the COVID-19 pandemic. That report is summarized in this article.
- ² Great Shakeout Earthquake Drills (https://www.shakeout.org/ whoisparticipating/); "Hurricane Pam" Planning Exercises (https://iem.com/ planning-exercise-results-in-usable-plans-the-fictional-hurricane-pam/); FEMA National Exercise Program (https://www.fema.gov/emergencymanagers/planning-exercises/about/faq). All accessed on 20 Sep 2022.

³ MonkeyLearn https://monkeylearn.com/word-cloud.

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How to cite this article: Dunaway, Michael, and Brenda Bannan. 2023. "Evaluating the "Whole Community" Concept Based on the National Response to COVID-19." *Public Administration Review* 83(5): 1394–1403. <u>https://doi.org/10.1111/</u> puar.13711