COVID-19 and Local Emergency Management Operations

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As the COVID-19 pandemic spread across the globe, local (county and municipal) emergency management departments in the United States were thrust to the forefront in addressing the needs of its citizenry. Doing so likely involved the use of Comprehensive Emergency Management (CEM) principles and planning efforts to address the pandemic. This paper outlines how respondents to a May/June 2020 survey of lead local emergency management department professionals nationwide used a variety of tools to address the evolving demands of the pandemic. The results suggest that a majority of local departments report having preparation and response means designed to address a pandemic in place prior to the outbreak of COVID-19, but the use of specific efforts to confront the virus varied from place to place, as do attitudes regarding the impact of the pandemic on the daily operations of the local emergency management agency.

Keywords: COVID-19, coronavirus, emergency management, Federalism, homeland security, pandemic

INTRODUCTION

With COVID-19 spreading across the globe during the first half of 2020, the United States federal, state, and local governments attempted to rapidly coordinate an effective means to respond to the multitude of demands from the emerging pandemic. The global scale forced all actors to search for, obtain, and disburse supplies while simultaneously altering how/where their organizations functioned on a daily basis for an unknown amount of time. This is different from a localized disaster, such as a tornado or hurricane, where a specific geographic region is impacted to some degree and can ask for assistance from others that were not impacted as severely, if at all, via mutual aid. In the case of COVID-19, everyone is fighting the same fight at the same time but for a variety of reasons they are not following the same path to respond to the demands of the pandemic.

Comprehensive Emergency Management (CEM) principles suggest that local jurisdictions should consider all potential hazards when developing a disaster plan. In theory, this includes potential pandemic outbreaks. Just this century the world has seen the impact from several viruses including SARS, MERS, Ebola, and H1N1 (Swine Flu) among others. However, the image of the response to COVID-19 portrayed via most American media outlets is one of an unprepared, chaotic, and disorganized response at all levels of government. The purpose of this study is to consider the response to the pandemic from the perspective of those on the ground, namely the lead official in local (county and municipal) emergency management departments. A national survey of these officials conducted in May/June 2020 asked respondents about

their pandemic planning efforts before and after the onset of COVID-19 and how CEM tools/principles were used in the early months of the pandemic. The respondents also considered how the time and effort spent on addressing the COVID-19 pandemic altered their ability to mitigate, prepare for, respond to, and/or recover from other natural or purposeful disasters. The paper will add perspective to the developing mass of information regarding government intervention in response to the COVID-19 pandemic, as well as highlight some of the potential hurdles in coordination and response within the American federalist system of governance. But most importantly it will address questions the literature raises regarding the use and potential effectiveness of CEM tools in response to a pandemic at the local level.

RELEVANT LITERATURE REVIEW – PANDEMIC PLANNING AND EMERGENCY MANAGEMENT

Pandemics are not exactly a new phenomenon. Public health officials have long warned that a global pandemic threat was on the horizon. As such, the United States federal government undertook efforts to prepare for pandemic influenza strains several times since the turn of the century. The most recent update to the National Pandemic Plan was in 2017, and addressed means to mitigate potential contagions, how to communicate with the public, as well as foster the acceleration of testing and vaccinations should they become necessary. The document also calls for comprehensive efforts to share information and planning between public sector officials at all levels and the national health care infrastructure (U.S. Department of Health and Human Services, 2017; Homeland Security Council, 2005). States, per requirements of the Disaster Relief Fund, developed their own plans specifically for this sort of event in an effort to address possible social and economic impacts, as well as to maximize capacity of the health care system among other policy areas which fall under the purview of state and local officials (National Governor's Association, 2006; Lister and Stockdale, 2007; Lister, 2008).

As modern communication technology developed, we are privy to information about the spread of a contagion much quicker than in the past. Reports of hospitalizations and fatalities related to symptoms from what became known as COVID-19 began in late 2019 (Osterholm and Olshaker, 2020). In early 2020, many areas within China began to lockdown in an effort to control the spread of the virus. But it was far too late, and by March 2020 much of the world, including the United States, dusted off their pandemic plans and began to institute some form of enhanced control over the social, transportation, education, and commercial systems within and between nations.

In the United States, the evolving response to the pandemic followed traditional paths within the realm of federalism. While the federal government played a part by dealing with macroeconomic issues, providing funding for state and local efforts, as well as facilitating means to combat the virus via a prophylaxis, state and local actors have primary responsibility for hands-on actions to limit the spread of the virus, supply resources/assistance to those in need, and share information about the pandemic's impact on life in general (Capano et. al., 2020; Kettl, 2020; Congressional Research Service, 2007). To do this, political actors (governors and mayors) stepped to the forefront when communicating with the public (Sadiq et. al., 2020), but much of the actions supporting pandemic-related political measures to address the virus fell to first responders such as police, fire, EMS, public health, and emergency management departments at the state and local level. These officials relied upon previously developed all-hazards plans and/or methods to address large-scale catastrophic incidents within their jurisdiction to confront the demands of the pandemic.

Local level emergency management and emergency managers have been a main focus of numerous studies. Malone (2018) found that county level emergency managers do not mind if their work goes unnoticed so long as their county recovers from disastrous events. Jensen et al (2014) suggest county emergency managers spend the least amount of time working on recovery when compared to mitigation, preparedness, and response. Jensen and Youngs (2014) examine the implementation of the National Incident Management System (NIMS) at the county level. Hildebrand (2015; 2017; 2019) considered the opinions of local emergency management officials regarding federal policy demands that emanated after the September 11 attacks, such as NIMS, the National Response Plan (NRP) and its replacement policy the National Response Framework (NRF), as well as the Incident Command System (ICS). None of this work

examines any impacts on the size of the county or the location (urban/rural/suburban) of the county or municipality specifically. Counties have typically been treated in a "one size fits all" manner. Outside of Drabek (1987) and Jensen (2009), very little research exists on how population or location impact emergency management.

Many aspects of CEM are relevant to local pandemic planning and response in a manner similar to any other disaster. Even if pandemics are not explicitly mentioned in the local disaster plan, similar means to address mass-casualty incidents such as triage of those impacted and efforts to limit travel in specific areas would be relevant to pandemic response. Local actors also have to consider how to deal with high-risk populations and those with limited socio-economic means (Angel and Mudrazija, 2020; Benavides and Nukepezah, 2020; Dzigbede et. al., 2020). Moving government services off-site to emergency operations centers or virtual environments is another relevant part of pre-existing plans that has been vital during the current pandemic as experts stressed social distancing and working from home (Dzigbede et. al., 2020).

However, Sasangohar and colleagues (2020) suggest that while CEM all-hazards principles exist within pandemic response, the demands and impact are unique and much more widespread than other types of disasters. The authors point out the lack of experience/training, length of the onset/duration, geographic impact, economic effects, and other logistical issues as reasons why a pandemic differs from other natural or purposeful disasters. Additionally, leadership and involvement from police and fire officials is much more limited in response to a pandemic as compared to a natural disaster, making concepts of information sharing and collaboration even more important (Cook and Cohen, 2008). As Kirlin (2020) claims, actors at all levels of government needed to have better means to work together throughout the event, but also better access to data and information to guide their decision-making processes. However, in the early days of the COVID-19 pandemic, state and local officials found themselves in competition with one another for any available personal protective equipment (PPE) to supply to their health care workers and first responders (Balogun, 2020).

METHODOLOGY

In May/June 2020, the authors fielded a Qualtrics-based survey of local emergency management officials nationwide. The invitation to participate in the survey was e-mailed to potential respondents up to four different times on a weekly interval. The authors used publicly available state-provided contact information sheets to develop a nationwide master list of as many potential respondents as possible. Information was available for 47 states via this method, with contact information for the remaining states found on county/municipal webpages. These respondents are identified as the lead local emergency management official in their respective jurisdictions. However, they may have one of a variety of titles, such as Chief or Director of local emergency management operations, or they may serve in multiple roles within their jurisdiction, including Police or Fire Chief, Mayor, Town Manager, or County Judge.

However, some of the e-mail addresses from these lists were not always up to date for a variety of reasons, including the change of servers/address host or simply from turnover in the position. In that situation, the authors returned to local government webpages to verify and update the information. Some invitations to participate also ran into firewalls that prevented the message from reaching the local official.

In total, the authors were able to use credible e-mail contact information for 4,262 local emergency management officials from across the United States. Of those, 677 responded, producing a 15.9% response rate. This response rate is lower than Hildebrand's studies (2015; 2017; 2019; 2020), as well as other similar emergency management studies. However, this survey is unique from others in that it was sent out at a time when *all* respondents were dealing with an immediate crisis, whereas in previous surveys it can be expected that some respondents were dealing with an incident, but not everyone at that point in time. In this case, the respondents represent all 50 states, and the majority serve counties (469) while the balance are from municipal jurisdictions (208).

RESULTS – PANDEMIC PREPAREDNESS, RESPONSE, AND RECOVERY EFFORTS BEFORE COVID-19

The survey asked local emergency managers about the pandemic planning efforts their localities had in place prior to outbreak of COVID-19. Roughly three out of four respondents stated their disaster plans included means to address pandemic planning and response. However, this number falls to 51% when considering long-term recovery efforts. Table 1 outlines these responses below.

TABLE 1
REPORTED PANDEMIC DISASTER PLANNING EFFORTS

	Yes	**No**
Pandemic Preparation Efforts in Disaster Plan Before January 2020 (n=664)	510 (76.8%)	154 (23.2%)
Pandemic Response Efforts in Disaster Plan Before January 2020 (n=658)	490 (74.5%)	168 (25.5%)
Pandemic Recovery Efforts in Disaster Response Plan Before January 2020 (n=653)	337 (51.6%)	316 (48.4%)

These results suggest that a majority of locations took the threat of a pandemic seriously. Although reporting efforts regarding immediate preparation and response in the short-term is significantly higher than long-term plans for recovery from a pandemic. Several factors could be at play with that response, including the general potential impact from a pandemic being unknown when planning for it well in advance; namely you do not know what you would be recovering from or the extent of the impact from the contagion.

The survey allowed respondents to explain their response to the questions in an open-ended format. The following are representative quotes from officials that reported including pandemics as part of their local disaster plans. Many respondents cited past experiences from previous viral threats as relevant to their efforts at the outset of the COVID-19 pandemic.

- "Our plans included hazard mitigation planning- there was discussion of pandemic, but it was centered around vaccine or medication administration. This pandemic has brought the emergency management division to the forefront or emergency response- FD/PD and TH are looking to the EM to address and handle any issues relative to the pandemic."
- "All of our response plans and recovery are the same as before and we did include plans for the SARS"
- "Plans are in place from the H1N1 issue, so it was a matter of adjusting the plans to fit the new Covid 19 issue. The plan identified the medical partners, so issues that were of that nature were handled by them unless things were needed that can be provided by emergency management."
- "We initially leaned forward in the beginning of March 2020 and brushed off the current pandemic response plan for the county. We brought together the major stakeholders, reviewed internal response operating procedures, identified response gaps, and formulated an initial response effort predicated on mitigation efforts. In hindsight, we should have started our mitigation and response plan in February."

Some respondents noted specific characteristics of the pandemic that they were not prepared for in their responses. This includes details on working with other departments (such as public health) to coordinate resources, having employees work from home, work at a distance from one another if in person, and having the proper equipment to deal with potential viral transmission.

- "Should have developed plans & had the tools necessary for city employees to work from home"

- "All of our preexisting plans and procedures have had to be modified to include PPE and "social distancing". For example, our rescue personnel must now "gear up" (PPE) for all calls. And, absent severe uncontrolled bleeding and breathing problems, try to do an initial "secondary exam" at the doorway before entering… and then only one responder at a time goes to the patient until need is determined."
- "Pre-planning. Pre-planning. Pre-planning. We've never worked in a situation where strategy is developed by HHS/Department of Public Health/Local Board of Health but the tactics are delivered to the ground by emergency management. We need to have more BOH input into plans at all levels so we can speak a common language in the future."
- "We were not ready even though there were plans and a few resources in place to respond. The plans were general response plans and did not address some of the issues that quickly came up. Resources were few and mostly outdated. We did have a tabletop before the incident blew up but was based on the last influenza outbreak. We had some MOU's but not the right ones."
- "Preparation should have included a COOP/COG plan, PPE stockpile, amended sick leave policy, technological solutions to help distance employees that must report to work daily, preemptive meetings with officials so everyone was on the same page in advance."

RESULTS – USE OF CEM TOOLS FOR THE COVID-19 PANDEMIC

Table 2 outlines when the respondents performed CEM-based actions related to a potential pandemic, if they did so at all. The specific actions that were included in the survey were identified from a sample of state pandemic plans, and the results varied significantly. Roughly 84% of respondents noted working with local health departments/hospitals and having a continuity of government plan developed at some point in time. On the other side, more the two-thirds of respondents did not stockpile anti-viral medication or have a plan for checkpoints within their jurisdiction at any point in time. In some instances, such as developing information releases about pandemics, more than half of the respondents reported doing this after the onset of COVID-19, while approximately 23% did so before the pandemic started. More than half of the respondents reported performing a pandemic-related exercise or participating in training on the subject prior to January 2020. In both instances, doing so since the onset of the pandemic fell off significantly (approximately 9% and 17% respectively) since the real-world experience of dealing with a pandemic began.

TABLE 2
PANDEMIC-SPECIFIC PREPAREDNESS, RESPONSE AND RECOVERY ACTIONS (N=677)

	Performed Specific Action Before January 2020	**Performed Specific Action Since January 2020**	**Performed Specific Action Both Before and Since January 2020**	**Did Not Perform Specific Action**
Preparedness				
Conducted a Pandemic-Related Exercise	344 (50.8%)	60 (8.9%)	21 (3.1%)	252 (37.2%)
Participated in Pandemic-Related Training	376 (55.5%)	113 (16.7%)	50 (7.4%)	138 (20.4%)
Continuity of Government Plan for Jurisdiction	364 (69.8%)	133 (21%)	73 (9.3%)	107 (15.8%)

Planned for Pandemic with Local Health Departments/Hospitals	379 (56%)	105 (15.5%)	87 (12.9%)	106 (15.7%)
Stockpiled Anti-Viral Medication	67 (9.9%)	141 (20.8%)	4 (0.6%)	465 (68.7%)
Stockpiled Personal Protective Equipment for Staff Use	186 (27.5%)	280 (41.4%)	91 (13.4%)	120 (17.7%)
Developed Pandemic-Specific Mutual-Aid Agreements with Peer Jurisdictions	235 (34.7%)	145 (21.4%)	32 (4.7%)	265 (39.1%)
Response				
Developed Information Releases About Pandemics for the General Public	114 (16.8%)	364 (53.8%)	45 (6.6%)	154 (22.7%)
Developed Pandemic-Specific EAS Messages and/or Media Fact Sheets	121 (17.9%)	323 (47.7%)	49 (7.2%)	184 (27.2%)
Planned Checkpoint Locations	77 (11.4%)	134 (19.8%)	17 (2.5%)	449 (66.3%)
Planned Resources to Restrict Public Mobility	94 (13.9%)	200 (29.5%)	24 (3.5%)	359 (53%)
Planned Resources to Restrict Access to Public Facilities	114 (16.8%)	345 (51%)	51 (7.5%)	167 (24.7%)
Planned Mass-Testing Locations	151 (22.3%)	242 (35.7%)	75 (11.1%)	209 (30.9%)
Planned Mass-Vaccination Locations	328 (48.4%)	77 (11.4%)	76 (11.2%)	196 (29%)
Recovery				
Provided Personal Protective Equipment to the General Public	36 (5.3%)	309 (45.6%)	16 (2.4%)	316 (46.7%)
Planned Resources to Assist Special Needs/High Risk Constituents	180 (26.6%)	189 (27.9%)	95 (14%)	213 (31.5%)
Planned Resources to Assist Constituents of Limited Means or Access to Health Care	127 (18.8%)	177 (26.1%)	74 (10.9%)	299 (44.2%)

Tables 3, 4, and 5 below shows crosstab data the CEM-related efforts undertaken by jurisdictions that reported having means for preparedness for, response to, and recovery from a pandemic(respectively) as part of their disaster plan. In each phase of the hazard cycle there were actions that multiple departments

undertook whether the departments considered pandemics as part of their disaster plan or not prior to the onset of COVID-19, and other actions that were not as widespread in use. Within the preparedness phase (Table 3), one action that stands out is the stockpiling of anti-viral medication; nearly half of the respondents reported having pandemics as part of their disaster plan but did not undertake this action. There could be multiple reasons for this from cost to efficacy to the timeframe from purchase to expiration, but this is the only preparedness action that less than half of the respondents undertook that also reported including pandemics in their disaster plan. It is also noteworthy that many of the preparedness actions, such as having a plan for continuity of government, mutual aid agreements with peers, and working with local public health officials are not pandemic-specific actions and fall in line with all-hazard CEM principles.

TABLE 3
CROSSTAB DATA OF CEM PANDEMIC PREPAREDNESS ACTIONS AND WHEN THE LOCAL DEPARTMENT INCLUDED A PANDEMIC AS PART OF THEIR DISASTER PLANNING EFFORTS (N=677)

	Local Department Had a Pandemic Plan Before 2020 and Performed CEM-Based Action	**Local Department Did Not Have a Pandemic Plan Before 2020 and Performed CEM-Based Action**	**Local Department Had a Pandemic Plan Before 2020 and Did Not Perform CEM-Based Action**	**Local Department Did Not Have a Pandemic Plan Before 2020 and Did Not Perform CEM-Based Action**
Conducted a Pandemic-Related Exercise	372 (56%)	53 (8%)	138 (20.8%)	101 (15.2%)
Participated in Pandemic-Related Training	438 (66%)	101 (15.2%)	72 (10.8%)	53 (8%)
Continuity of Government Plan for Jurisdiction	449 (67.6%)	121 (18.2%)	61 (9.2%)	33 (5%)
Planned for Pandemic with Local Health Departments/Hospitals	462 (69.6%)	109 (16.4%)	48 (7.2%)	45 (6.8%)
Stockpiled Anti-Viral Medication	179 (27%)	33 (5%)	331 (49.8%)	121 (18.2%)
Stockpiled Personal Protective Equipment for Staff Use	437 (65.8%)	119 (17.9%)	73 (11%)	35 (5.3%)
Developed Pandemic-Specific Mutual-Aid Agreements with Peer Jurisdictions	343 (51.7%)	69 (10.4%)	167 (25.2%)	85 (12.8%)

Table 4 considers specific actions from within the response phase of the hazard cycle that are related to pandemics. Once again, there are multiple actions in which more than half of those that considered pandemics as part of their disaster plan undertook, and these actions are not all specific to just pandemics. Restricting access to public facilities and providing messaging about the issue is something that occurs in response to almost any kind of disastrous event that a local department would address. Although nearly

one-third of the respondents that did not have a plan also did not perform pandemic specific actions at the time of the survey, including planning for mass-testing and mass-vaccination sites. Two actions of note with less than half of local departments that reported including pandemic in their disaster plan and performing the specific CEM-bases action were two controversial actions that some states did ultimately initiate in response to COVID-19; planning checkpoint locations and restricting public mobility. Texas, Delaware, Florida, and Rhode Island all restricted travel at their state borders, and forced those from out-of-state to quarantine for two weeks upon entrance into their state (Povich, 2020); actions that fall into both of these categories.

TABLE 4
CROSSTAB DATA OF CEM PANDEMIC RESPONSE ACTIONS AND WHEN THE LOCAL DEPARTMENT INCLUDED A PANDEMIC AS PART OF THEIR DISASTER PLANNING EFFORTS (N=677)

	Local Department Had a Pandemic Plan Before 2020 and Performed CEM-Based Action	**Local Department Did Not Have a Pandemic Plan Before 2020 and Performed CEM-Based Action**	**Local Department Had a Pandemic Plan Before 2020 and Did Not Perform CEM-Based Action**	**Local Department Did Not Have a Pandemic Plan Before 2020 and Did Not Perform CEM-Based Action**
Developed Information Releases About Pandemics for the General Public	402 (61.1%)	116 (17.6%)	88 (13.4%)	52 (7.9%)
Developed Pandemic-Specific EAS Messages and/or Media Fact Sheets	384 (58.3%)	107 (16.3%)	106 (16.1%)	61 (9.3%)
Planned Checkpoint Locations	187 (28.4%)	40 (6.1%)	303 (46%)	128 (19.5%)
Planned Resources to Restrict Public Mobility	258 (39.2%)	58 (8.8%)	232 (35.3%)	110 (16.7%)
Planned Resources to Restrict Access to Public Facilities	390 (59.3%)	115 (17.5%)	100 (15.2%)	53 (8.1%)
Planned Mass-Testing Locations	374 (56.8%)	90 (13.7%)	116 (17.6%)	78 (11.9%)

Planned Mass-Vaccination Locations	389 (59.1%)	88 (13.4%)	101 (15.4%)	80 (12.2%)

As opposed to the other phases, the reported use of recovery phase actions shown in Table 5 were not nearly as widespread. Only 40% of respondents that had pandemics as part of their disaster plan also considered the needs of high-risk populations in the long-term. Roughly one-third considered constituents with limited means to access health care, and less than that provided PPE to the general public. Conversely, those places that did not include pandemics as part of their disaster plan performed these actions at a greater rate than the actions within the other phases of the hazard cycle. All of these results are aligned with the limitations highlighted by past research which considers the importance of functions for those with limited socio-economic means as part of disaster planning (Angel and Mudrazija, 2020; Benavides and Nukepezah, 2020; Dzigbede et. al., 2020).

TABLE 5
CROSSTAB DATA OF CEM PANDEMIC RECOVERY ACTIONS AND WHEN THE LOCAL DEPARTMENT INCLUDED A PANDEMIC AS PART OF THEIR DISASTER PLANNING EFFORTS (N=677)

	Local Department Had a Pandemic Plan Before 2020 and Performed CEM-Based Action	**Local Department Did Not Have a Pandemic Plan Before 2020 and Performed CEM-Based Action**	**Local Department Had a Pandemic Plan Before 2020 and Did Not Perform CEM-Based Action**	**Local Department Did Not Have a Pandemic Plan Before 2020 and Did Not Perform CEM-Based Action**
Provided Personal Protective Equipment to the General Public	189 (28.9%)	169 (25.9%)	148 (22.7%)	147 (22.5%)
Planned Resources to Assist Special Needs/High Risk Constituents	261 (40%)	198 (30.3%)	76 (11.6%)	118 (18.1%)
Planned Resources to Assist Constituents of Limited Means or Access to Health Care	224 (34.3%)	148 (22.7%)	113 (17.3%)	168 (25.7%)

RESULTS - COVID-19 IMPACT ON OTHER PREPAREDNESS, RESPONSE, AND RECOVERY DISASTER EFFORTS

Since all emergency management professionals were forced into action responding to the COVID-19 pandemic, it suggests their attention and ability to prepare for/respond to other natural, accidental, or

purposeful events could be hindered in some fashion. Respondents were queried whether they felt the pandemic response impacted department activities in a significant manner. Table 6 outlines the results, and approximately 30% of all respondents said COVID-19 significantly or very significantly affected their department's efforts in other areas.

TABLE 6
REPORTED COVID-19 IMPACT ON OTHER DISASTER PREPAREDNESS/RESPONSE/RECOVERY

	Very Significantly Impacted Department Efforts	Significantly Impacted Department Efforts	Moderately Impacted Department Efforts	Slightly Impacted Department Efforts	Did Not Impact Department Efforts
Overall (n=662)	64 (9.7%)	132 (19.9%)	199 (30.1%)	180 (27.2%)	87 (13.1%)
Municipalities (n=205)	21 (10.2%)	43 (21%)	56 (27.3%)	62 (30.2%)	23 (11.2%)
Counties – Overall (n=457)	43 (9.4%)	89 (19.5%)	143 (31.3%)	118 (25.8%)	64 (14%)
Counties – Urban (n=12)	1 (8.3%)	4 (33.3%)	3 (25%)	3 (25%)	1 (8.3%)
Counties –Suburban (n=179)	18 (10.1%)	25 (14%)	71 (39.7%)	42 (23.5%)	23 (12.8%)
Counties – Rural (n=266)	24 (9%)	60 (22.6%)	69 (25.9%)	73 (27.4%)	40 (15%)

*County demography classification based on Pew Research Center (Parker et. al., 2018) and National Center for Health Statistics' Urban-Rural Classification Scheme (2013)

The following comments are representative of those respondents that stated COVID-19 has "significantly" or "very significantly" had upon their day-to-day operations. These comments range in opinion from having limited capacity, feeling that the efforts from the federal and state government were overbearing, and not having strong connections with other local departments that have a role in pandemic response (such as Public Health organizations).

- "The local and state government has made every aspect of my job more difficult to achieve. By putting more responsibility on my department and restrictions on everything has made it almost impossible to complete in the order we have been trained to work. It's now obvious people who make these decisions on what we can wear and where we can go and when we can go there have absolutely no clue how to accomplish anything in an organized manner. This is proof elected officials are exactly that just elected officials. Not professionals who should be telling trained professionals how to do their jobs."
- "I am a department of one so COVID has taken over the majority of my work day that I find it difficult to find the time to continue planning and preparation for other possible disasters and other Emergency Preparedness functions. COVID, County Logistics of PPE and other supplies and County Continuity of Operations planning has taken priority over many other emergency preparedness planning. Training and Exercises have been put aside except for the occasional on-line training webinars if you can find time to complete one."
- "Unfortunately, on the National as well as the State level government chose a "one size fits all" approach to COVID-19. The damage done to our fragile economy was much worse than the effects of the pandemic."

- “The largest impact is the media's opinion of wearing masks has made the department have to wear masks anytime visible by the public to prevent bad press, even when zero contact with other people. Masks are very annoying and distracting when trying to respond to situations when the situation does not necessitate the mask.”
- “Covid has slightly impacted our ability to respond and recover. The Governor has ensured that the citizens of [the state] are distrustful of Government. Our agency cannot implement programs or assist the population without most participants thinking that it is a grab for information or another "infringement on their freedoms". We flattened the curve that was never a curve in the first place and our citizens are losing confidence in the response.”
- “Department only impacted afterward because of the fear that has been generated by public health misleading the people of their areas of responsibility. Media/Social Media reacted horribly to the situation which made things worse. We have since resumed normal operations because the numbers do not justify the recommendations or actions. Lost trust in the public health. Media should be ashamed!”
- “The negative impact has been restriction placed on us by state government and health departments in restricting movement and our ability to perform certain functions and still meet the restrictive criteria of Executive Orders.”
- “The pandemic has consumed resources that would normally be used for traditional emergency response. Additionally, financial hardships created by the pandemic may result in reduced public funding for the Fire Department.”
- “Even though there were 15 years of planning for a pandemic, I think that our Sheriff's Office was the only entity that had a plan. As far as emergency management goes, we always knew we would have to go into a virtual environment for our response. Thankfully, Zoom appeared. We didn't have such a platform pre-planned. We had also feared, for 15 years, that our health dept's would not coordinate with us. And they lived up to our fears. That was the greatest impact that COVID had on emergency management. The Health Dept. not working with us in an equal or collaborative or coordinated manner. That more than anything, paralyzed us as emergency managers.”
- “Taking extra precautions takes more time, that being said I believe it's a necessary evil. I feel as though we prepared for a non specific pandemic we were not ready for what we are experiencing now.”
- “No one was prepared to have the economy closed. Business and individual persons have been long-term affected by the closure of the Country. We cannot, ever again, close the economy as a preventative measure.”
- “Our OEM is 100% volunteer, and ~80% of the volunteers are retired, many in their 70's and some in their 80's. Due to increased vulnerability these folks mostly stood down and were unavailable for tasks that we took on.”
- “The fiscal implications are devastating and enduring when compared to a smaller urban environment where 'mom-and-pop' type restaurants and novelty stores flourish. Additionally, along with the 12,400 permanent residents, we inhabit an additional 8,000 university students. Since the closer of the university, several small merchants have closed their doors with intensions of never reopening.”
- “At one time I had worked very closely with the Public Health Officer on pandemic planning. Once she left her position and now two Health Officers later, [the county] has unfortunately made the decision to reverted back to working in silos. The pandemic has not created the problem but has for those of us that understand, it has identified a lack of understanding of what working together means and a reluctance on the part of Public Health to understand that there are other pieces to the pandemic puzzle than just Public Health.”
- “The Covid-19 Pandemic was an "all hands on deck" response from our Operational Area and accompanying local government departments. The "battle rhythm" our OA undertook in

response to this pandemic was daunting to say the least. The abundance of regular conference calls, webinars, Zoom/GoTo meetings and the like put all other EM duties on the back burner."

- "This has been a unique response model in that this disaster was first declared at the federal, then state and finally the local level. This entire event has been managed from the top down so to speak. Until this event, all disasters have been local events and managed locally. The demands for resources have always been within the capabilities of stockpiles. This event is unique in most aspects."
- "Yes, the Pandemic has greatly impacted our E911 Communication Center. We have a Dispatch Supervisor that has tested positive and the entire center are exposed. It has caused a total disaster. We had to shut down the entire the center and transfer our calls to another center in another county."
- "Many other projects have been suspended temporarily, including terrorism and dam failure evacuation planning. Should we have another disaster on top of this one, it will complicate evacuation, sheltering, and supply chain interruptions, and we don't have that figured out yet."
- "Our community's level of preparedness for other disasters is significantly weakened. People are unemployed, need food assistance, housing assistance, health assistance. People of color and low income continue to be extremely impacted by this disaster and future ones."
- "I think the effort the government has put into this has been way over stepped. I say that because you cannot be the end all solution and give everything away as we are doing. My opinion of emergency management is assist agencies with their efforts not to hand them a blank check. The COVID has created allot of unnecessary/redundant work for our office."
- "The ongoing pandemic has caused not only financial burdens on the local EMA office, it has created additional fractions against the EMA office by the local elected leaders. EMAs are either accepted and supported, or they are ridiculed and admonished as the doom and gloom waste of tax dollars. Sadly, the local EMA office is viewed as the latter, with decreased budgets, staff cuts and ridicule for being unable to accomplish basic support for the community. As they say, make a mess, then blame the mess, for being messy."

Those that felt a more minimal impact from the pandemic on daily operations generally cited the lack of resource availability, the reduction in training availability, and the changing nature of information regarding the virus as why. Others also pointed to changes in funding or having to redirect resources into the procurement of equipment. Some respondents also noted that other events, such as a tornado, took place in their jurisdiction since the onset of COVID-19, and aside from small changes like wearing masks it was business as usual. The comments that follow are representative of those that claim COVID-19 had a "moderate" or "slight" impact on preparation, response, and recovery efforts to other disasters:

- "We have three staff members. While I was responding to an F3 tornado that affected the county during this time, the other staff was continuing to address COVID-19 issues."
- "COVID-19 has not really impacted us with the exception of potential burnout of the staff. Since March, we have also responded to two flash flooding events (one was a 500 year event) and also responded to an EF0 tornado."
- "Emergency Management by nature, is designed to be scalable and flexible. This has certainly been tested during this event."
- "The only impact that has occurred is that we cannot hold exercises and meetings as normal."
- "Our plans included hazard mitigation planning- there was discussion of pandemic, but it was centered around vaccine or medication administration. This pandemic has brought the emergency management division to the forefront or emergency response- FD/PD and TH are looking to the EM to address and handle any issues relative to the pandemic."
- "We have actually seen a decrease in EMS calls"
- "Covid-19 affected us by the fact that supplies were extremely hard to find and receiving the supplies took us longer than it normally would."

- "All in house (in person) training has been suspended until further notice. This affects our departments ability to be ready to respond to any type of emergency. We operated on the philosophy that "if you don't use it you lose it" mentality and train every month to keep our skills as up to date as possible. By not performing hands on training we run the risk of not being able to perform our job to the best of our abilities."
- "The mitigation efforts were not affected. Preparedness was hindered due to issues in supply chain- in the early weeks of the COVID 19 outbreak many of the supplies and Recommended PPE became unavailable. Response was not curtailed at all. Recovery is affected by changing information and best practices as well as what assistance will be available."
- "All emergency planning was completed and adopted following the guidelines of the National Response Framework based an emergency starting with the locals and escalating with exhaustion of local resources. Pandemics are "top down" driven by the Health Department of CDC. This has circumvented emergency management"
- "We learned very quickly after having an evacuation for an unrelated matter that previous facilities that would house displaced families would no longer accept people out of fear for the COVID-19 virus."
- "We actually had an EF-2 tornado hit in our county on March 31st damaging several homes. While covid-19 did require extra precautions to be used by responders and volunteers (especially anyone who was from outside the community because at the time we had only a few positive cases) the response/recovery went on about like it would have regardless of the virus."
- "Our department stock piled a lot of PPE after H1N1 but a lot of it started to go bad after several years and they never replaced the stock pile. While we are now in a good spot with our PPE opening up a shelter would require us to use more not to mention figuring out how to properly isolate those with COVID and those that are high risk in a shelter. While we had plans for a pandemic and had done exercise it had been several years since they were updated"
- "We were in the process of working on a training exercise but were forced to cancel due to Covid-19. The Hazard Mitigation plan Update has been put on hold until later in the year."
- "Resources are depleted - shelter supplies used for Homeless COVID-19 Shelter operations. Body bag cache depleted. PPE (Gloves, Tyvek suits, face shields, N-95 masks and boots) cache depleted. Chlorine disinfectant cache depleted."
- "I am a one person, 20 hour a week department. All my time is spent on Covid 19 since the middle of March. The county I work in is rural and has limited resources. This endeavor has been like trying to fix something with an empty tool box."
- "We are trying to modify our plans on how we would respond to a disaster or terrorism while trying to maintain social distancing or having to house large numbers of citizens in a shelter."

Those that felt limited impact from the pandemic on their workload generally considered three different paths in their comments: limited (if any) direct impact/no positive cases at that point in time in their jurisdiction, limited resources to handle the pandemic to begin with, or general satisfaction with their department and community at-large handled everything thrown at them as of response time. These comments reflect the feelings of those that felt COVID-19 had "no impact" on daily operations within their department:

- "Due to the fact that our county is the second smallest in [the state], and the town itself that has the majority of the population is around 300 we have been lucky that we have not had any positive cases. We have garnered supplies in the event that we will need them if/when we do have a cluster present itself, but otherwise, we have been navigating through COVID and dealing with spring storms and flooding as normal."
- "The Emergency Management Director position in my town is a volunteer position with responsibilities taking minimal time other than during an actual emergency situation. here have been no Covid-19 cases in my town (45 sq miles) and only two cases in adjacent towns (one in

each of two towns). My activities have been primarily education via a Facebook page that was initiated early in the pandemic cycle"

- "Our local OEM participated in webinars and conference calls at the county, state and federal levels. Small towns have the knack of pulling together in any kind of crisis. We tried to stay on top of issues as they presented themselves. We are pretty proud of how we have handled this Pandemic."
- "We were able to respond to all incidents as pre-planned. We were able to assist in getting an adjoining county with a natural disaster and have been on stand by with what ever they might need, this is on top of our Pandemic efforts."
- "The current pandemic has not impacted us in the same way it would a more urban area. Our residents are used to working together for the good of the community. We have a bigger social safety net with extended families and friends helping each other and not relying on the government for day to day support."
- "I do not feel the pandemic has impacted my department because there are no active cases in my county. Other than having to wear a mask and stay away from others, my job has continued as normal."
- "I am a department of one. I am already limited so this did not change or impact my abilities in a rural EM setting. If anything, it brought key team players together in a way that we have not operated together before and built a better bond within our county."
- "The Emergency Management Agency trains, plans and focuses on this exact situation; the possibility of multiple responses at once. Our day to day is to be ready for more than one, or cascading disaster response."
- "Our county EMA, starting back in 2006 - 2007 had created and exercised a Pandemic Response Plan. In 2009 we got real-world experience in the H1N1 Outbreak. We assisted the Health department in facilitating 16 Points of Distribution (PODS) delivering vaccine to approximately 8000+ people. As recently as 2018 we did a tabletop pandemic response and Medical Countermeasures Dispensing exercise. In the 2019 COVID-19 Pandemic we organized our county into a Unified Area Command, preparing to support each other county-wide should the infrastructure capabilities be impacted by responders getting sick. Luckily, so far it has not been a problem."

To further examine COVID-19 impact on other disaster efforts, Table 7 examines the impact of COVID-19 on other disaster preparedness, response, and recovery with a specific focus on a CEM and pandemic preparedness planning prior to the globalization of the pandemic. Table 8 exchanges pandemic preparedness planning with pandemic response planning, and Table 9 does the same with pandemic recovery planning.

TABLE 7
CROSSTAB DATA OF COVID-19 IMPACT ON OTHER DISASTER PREPARATION/ RESPONSE/RECOVERY EFFORTS AND IF THE LOCAL DEPARTMENT INCLUDED PANDEMIC PREPARATION AS PART OF THEIR DISASTER PLANNING EFFORTS PRIOR TO JANUARY 2020

	Local Department Had a Pandemic Preparation Plan Before January 2020 (n=497)	**Local Department Did Not Have a Pandemic Preparation Plan Before January 2020 (n=152)**
Very Significantly Impacted Operations	48 (9.7%)	15 (9.9%)
Significantly Impacted Operations	100 (20.1%)	27 (17.8%)
Moderately Impacted Operations	151 (30.4%)	45 (29.6%)
Slightly Impacted Operations	132 (26.6%)	44 (28.9%)
Did Not Impact Operations at All	66 (13.3%)	21 (13.8%)

TABLE 8
CROSSTAB DATA OF COVID-19 IMPACT ON OTHER DISASTER PREPARATION/ RESPONSE/RECOVERY EFFORTS AND IF THE LOCAL DEPARTMENT INCLUDED PANDEMIC RESPONSE AS PART OF THEIR DISASTER PLANNING EFFORTS PRIOR TO JANUARY 2020

	Local Department Had a Pandemic Response Plan Before January 2020 (n=477)	**Local Department Did Not Have a Pandemic Response Plan Before January 2020 (n=166)**
Very Significantly Impacted Operations	48 (10.1%)	15 (9%)
Significantly Impacted Operations	92 (19.3%)	33 (19.9%)
Moderately Impacted Operations	146 (30.6%)	48 (28.9%)
Slightly Impacted Operations	127 (26.6%)	48 (28.9%)
Did Not Impact Operations at All	64 (13.4%)	22 (13.3%)

TABLE 9
CROSSTAB DATA OF COVID-19 IMPACT ON OTHER DISASTER PREPARATION/ RESPONSE/RECOVERY EFFORTS AND IF THE LOCAL DEPARTMENT INCLUDED PANDEMIC RECOVERY AS PART OF THEIR DISASTER PLANNING EFFORTS PRIOR TO JANUARY 2020

	Local Department Had a Pandemic Recovery Plan Before January 2020 (n=327)	Local Department Did Not Have a Pandemic Recovery Plan Before January 2020 (n=311)
Very Significantly Impacted Operations	31 (9.5%)	30 (9.6%)
Significantly Impacted Operations	62 (19%)	61 (19.6%)
Moderately Impacted Operations	107 (32.7%)	86 (27.7%)
Slightly Impacted Operations	83 (25.4%)	92 (29.6%)
Did Not Impact Operations at All	44 (13.5%)	42 (13.5%)

As displayed in Table 7, while a larger number of jurisdictions had pandemic preparedness and response in their plans prior to January 2020, the overall impact of COVID-19 on other disasters preparedness, response, and recovery follows the same bell curve. For example, 43% of jurisdictions with no pandemic preparedness planning and 40% of those with pandemic preparedness planning reported only "slightly" or "not at all" when asked about the COVID-19 impact on other disaster preparedness, response, and recovery. Similarly, on the other end of the spectrum, 30% of jurisdictions with and 28% without preparedness pandemic planning reported "significant" or "very significant" impacts on other disaster preparedness, response, and recovery.

Table 8 suggests a similar trend with pandemic response planning being a part of or not being a part of CEM planning prior to January 2020. COVID-19 either "slightly" impacted or had no impact on 40% of those jurisdictions with pandemic response planning in their CEM and 42% of jurisdictions without plans in place. Following the same pattern of preparedness planning, 29% of jurisdictions experienced "significant" or "very significant" impacts on other disaster operations regardless to their CEM pandemic response planning or lack thereof. An eleven to thirteen percentage point change is observed across all four measures with jurisdictions experiencing fewer impacts on other disaster operations compared to those experiencing more impacts on other operations.

Perhaps the most interesting finding focuses on pandemic recovery planning prior to January 2020. Unlike pandemic preparedness and response planning, pandemic recovery planning was much less common. 77% of surveyed jurisdictions had pandemic preparedness plans and 74% had response plans. As shown in Table 9, that number drops to 51% having pandemic recovery plans; however, the percentages concerning impacts on other operations remain in line with the findings for preparedness and response planning. On face value, this may seem strange. Why would jurisdictions give less attention to recovery? This is a finding that needs to be explored further; however, there is one potential factor that can be mentioned here. The World Health Organization has long been considered the standard-bearer for pandemic planning and preparedness, especially for influenza. The World Health Organization's *Pandemic Influenza Preparedness and Response: A WHO Guidance Document* (World Health Organization, 2009) provides only two pages dedicated to what they term the "post-pandemic period." The majority of the remaining pages are focused upon preparedness and response. This could signal to jurisdictions, states, or even countries that the focus need not be on recovery, but rather, it should remain on preparedness and response.

CONCLUDING REMARKS

The purpose of federalism is to have state and local actors address any policy issue in a manner that is reflective of the demands and need of their populace. The differing manners in which political actors chose to shut down various sectors of their economy and of life in general is a feature of the federalist system, and is reflective of the culture of their state, their interpretation of what they can control under state/local law, the relative spread of the virus within their jurisdiction, and their personal partisan politics (Goelzhauser and Konisky, 2020). The comments herein from local emergency management officials follow the same path and are reflective of similar ideas/concerns that political leaders expressed since the onset of the COVID-19 pandemic.

The results also demonstrate the wide array of CEM-related means that local departments used in response to the onset of the pandemic. Efforts that are traditionally used to prepare for and/or respond to natural, accidental, or purposeful incidents such as training, exercises, and coordination with other departments were used in preparation for the pandemic, while communications with the public and plans for triage, and the mass-distribution of testing and vaccines were developed and placed into action. What is also significant is how many of these local officials seemingly took the pandemic in stride and there was little-to-no difference how COVID-19 impacted their operations between those who did and did not include pandemics in their disaster plans. This highlights the flexibility of those on the street-level who respond to the demands of the jurisdiction whenever the need arises.

Since the survey used in this study took place only a couple of months into the pandemic, it would be interesting for future research to consider how recovery efforts developed over time. Past research and experience have shown that recovery phase functions do seemingly lag compared to the other hazard cycle phases (Bullock et. al., 2020; Edwards, 2008; Jensen et. al., 2014; Quarantelli, 1999), and testing could determine if the same sort of experiences as those seen after other disastrous events occurred in the time since the onset of the pandemic.

Additionally, it would be interesting to see how departments that experienced some other type of event as the pandemic was ongoing, such as a hurricane or similar weather-related phenomena dealt with the demands of social distancing, quarantines, and similar aspects of pandemic life when providing shelter to those in need, along with providing equipment, testing, and vaccines. Responding to these additional demands, even if it is something the jurisdiction deals with on a normal basis, would test how significantly COVID-19 impacted daily operations.

REFERENCES

Angel, J., & Mudrazija, S. (2020). Local Government Efforts to Mitigate the Novel Coronavirus Pandemic Among Older Adults. *Journal of Aging & Social Policy*, *32*(4–5), 439–449.

Balogun, J. (2020). Lessons from the USA Delayed Response to the COVID-19 Pandemic. *African Journal of Reproductive Health*, *24*(1), 14–21.

Benavides, A.D., & Nikpezah, J. (2020). How Local Governments are Caring for the Homeless During the COVID-19 Pandemic. *American Review of Public Administration*, *50*(6–7), 650–657.

Bullock, J., Haddow, G., & Coppola, D. (2020). *Introduction to Emergency Management*. Butterworth-Heinemann.

Capano, G., Howlett, M., Jarvis, D., Ramesh, M., & Goyal, N. (2020). Mobilizing Policy (In)Capacity to Fight COVID-19: Understanding Variation in State Responses. *Policy and Society*, *39*(3), 285–308.

Cook, A., & Cohen, D. (2008). Pandemic Disease: A Past and Future Challenge to Governance in the United States. *Review of Policy Research*, *25*(5), 449–471.

Drabek, T.E. (1987). *The Professional Emergency Manager: Structures and Strategies for Success. Program on Environment and Behavior Monograph #44*. Boulder, CO: Institute of Behavioral Science, University of Colorado.

Dzigbede, K., Willoughby, K., & Gehl, S.B. (2020). Disaster Resiliency of US Local Governments: Insights to Strengthen Local Response and Recovery from the COVID-19 Pandemic. *Public Administration Review*, *80*(4), 634–643.

Edwards, F. (2008). Obstacles to Disaster Recovery. *Public Manager*, *37*(4), 66–71.

Goelzhauser, G., & Konisky, D.M. (2020). The State of American Federalism 2019-2020: Polarized and Punitive Intergovernmental Relations. *Publius: The Journal of Federalism*, *50*(3), 311–343.

Hildebrand, S. (2015). Coerced Confusion? Local Emergency Management Policy Implementation After September 11. *Journal of Homeland Security and Emergency Management*, *12*(2), 273–298.

Hildebrand, S. (2017). Controlling Disasters: Local Emergency Management Perceptions About Federal Emergency Management and Homeland Security Actions Since September 11, 2001. *Journal of Emergency Management*, *15*(5), 291–309.

Hildebrand, S. (2019). Are We Better Off? Emergency Management Policy Implementation Since September 11. *Journal of Emergency Management*, *17*(6), 439–453.

Hildebrand, S. (2020). Representative Bureaucracy in Emergency Management: Attitudes About Contemporary Emergency Management Policy and Politics in Local Agencies. *Journal of Homeland Security and Emergency Management*, *17*(3), 1–36.

Jensen, J. (2009). NIMS in Rural America. *International Journal of Mass Emergencies and Disasters*, *27*(3), 218–249.

Jensen, J., & Youngs, G. (2014). Explaining Implementation Behaviour of the National Incident Management System (NIMS). *Disasters*, *39*(2), 362–388.

Jensen, J., Bundy, S., Thomas, B., & Yakubu, M. (2014). The County Emergency Manager's Role in Recovery. *International Journal of Mass Emergencies and Disasters*, *32*(1), 157–193.

Kettl, D. (2020). States Divided: The Implications of American Federalism for COVID-19. *Public Administration Review*, *80*(4), 595–602.

Kirlin, J. (2020). COVID-19 Upends Pandemic Plan. *American Review of Public Administration*, *50*(6–7), 467–479.

Lister, S. (2008). *The Public Health and Medical Response to Disasters: Federal Authority and Funding*. Congressional Research Service. Retrieved March 11, 2021, from https://fas.org/sgp/crs/misc/RL33579.pdf

Lister, S., & Stockdale, H. (2007). *Pandemic Influenza: An Analysis of State Preparedness and Response Plans*. Congressional Research Service. Retrieved March 11, 2021, from https://fas.org/sgp/crs/homesec/RL34190.pdf

Malone, M. (2018). Public Service Motivation of County-Level Emergency Managers. *Journal of Emergency Management*, *16*(6), 387–395.

National Governor's Association. (2006). *Preparing for a Pandemic Influenza*. Retrieved March 11, 2021, from https://www.nga.org/wp-content/uploads/2020/02/Pandemic-Influenza-Primer.pdf

Osterholm, M., & Olshaker, M. (2020). Chronicle of a Pandemic Foretold: Learning From the COVID-19 Failure Before the Next Outbreak Arrives. *Foreign Affairs*, *99*(4).

Parker, K, Horowitz, J.M., Brown, A., Fry, R., Cohn, D., & Igielnik, R. (2018). *Demographic and Economic Trends in Urban, Suburban, and Rural Communities*. Retrieved December 26, 2020, from https://www.pewsocialtrends.org/2018/05/22/demographic-and-economic-trends-in-urban-suburban-and-rural-communities/

Povich, E. (2020). *Border Checkpoints Discourage Travel Between States*. Stateline – Pew Trusts. Retrieved March 19, 2021, from https://www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2020/04/08/border-checkpoints-discourage-travelers-between-states

Quarantelli, E. (1999). *The Disaster Recovery Process: What We Know and Do Not Know From Research*. Disaster Research Center – University of Delaware Preliminary Paper #286. Retrieved March 23, 2021, from https://udspace.udel.edu/bitstream/handle/19716/309/PP%20286.pdf?sequence=1

Sadiq, A., Kapucu, N., & Hu, Q. (2020). Crisis Leadership During COVID-19: The Role of Governors in the United States. *International Journal of Public Leadership*, *17*(1), 65–80.

Sasangohar, F., Moats, J., Mehta, R., & Peres, S.C. (2020). Disaster Ergonomics: Human Factors in COVID-19 Pandemic Emergency Management. *Human Factors*, *62*(7), 1061–1068.
U.S. Center for Disease Control National Center for Health Statistics. (2014). *2013 NCHS Urban-Rural Classification Scheme for Counties*. Retrieved December 26, 2020, from https://www.cdc.gov/nchs/data/series/sr_02/sr02_166.pdf
U.S. Department of Health and Human Services. (2017). *Pandemic Influenza Plan 2017 Update*. Retrieved March 11, 2021, from https://www.cdc.gov/flu/pandemic-resources/pdf/pan-flu-report-2017v2.pdf
U.S. Homeland Security Council. (2005). *National Strategy for Pandemic Influenza*. Retrieved March 11, 2021, from https://www.cdc.gov/flu/pandemic-resources/pdf/pandemic-influenza-strategy-2005.pdf
World Health Organization. (2009). *Pandemic Influenza Preparedness and Response: A WHO Guidance Document*. Retrieved February 18, 2021, from https://www.who.int/influenza/preparedness/pandemic/publication/en/