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Municipal Capacity to Respond to COVID-19: Implications for Improving Community Resilience in Maine

by Vanessa R. Levesque, Eileen Johnson, and Kathleen P. Bell

Abstract

In this article, we explore how 50 Maine municipalities communicated their response to COVID-19 in the earliest stages of the pandemic. Our study answers two questions: (1) What information and resources did Maine municipalities communicate about COVID-19? and (2) What characterizes a more robust communication response? Analyzing digital communications from March through July 2020, we found almost all municipalities in our sample communicated basic information about altered town operations. Some towns provided more robust responses that evolved over time and included nuanced messages about COVID-19, a sense of community, and collaborations with partners. While smaller, more rural municipalities may have fewer residents and resources, many showed a larger-than-expected capacity to pivot quickly and rally together to respond to COVID-19 and communicate about that response.

the effectiveness of local responses (Saja et al. 2018). Are there networks in place to ensure food security when normal means of accessing food are disrupted, and how do people find out about them? To what degree are local businesses affected, and are there local efforts to help them stay afloat? Are there mechanisms for maintaining community and connection so residents can draw on each other and solve problems together when in-person contact is limited? These are just several of many community-level responses that can affect how Maine municipalities may differ in their ability to support their residents and visitors through a global challenge such as

the COVID-19 pandemic.

In this paper, we explore the digital communication responses to COVID-19 of 50 Maine municipalities to advance understanding of local efforts and to glean insights about community resilience in Maine. Our work is guided by two questions: (1) What information and resources did Maine municipalities communicate about COVID-19? and (2) Did some municipalities provide a more robust communication response than others? If so, what characterizes those responses?

INTRODUCTION

The COVID-19 pandemic presents us with a wicked problem that is complex, global, difficult to address, and urgent, such that not responding harms our well-being now and into the future (Grizzle et al. 2020; Weber and Khademian 2008). It is tempting to look towards national actions to address such all-encompassing complex challenges, and, indeed, the US federal government's response to the pandemic has been substantial (Dzigbede et al. 2020). However, while national- and state-scale responses are indeed essential, municipal-level actions often provide opportunities to tailor responses to the local context and to build community resilience (Berkes and Ross 2013; Cucuzza et al. 2019). Emergency response in the United States is designed to be bottom up such that local governments provide direct assistance, with state and federal governments providing resources and oversight, although there are tensions within this system (McDonald et al. 2020). The degree to which disasters such as the COVID-19 pandemic affect communities is as dependent on context-specific responses to the challenges as on the events themselves. Municipal communication can improve

MUNICIPAL RESPONSES TO COVID-19 PANDEMIC

Municipalities faced immediate changes to their normal operating procedures at the start of the pandemic, needing to comply with stay-at-home health mandates while continuing to provide municipal services (Jang et al. 2021). Initial research suggests that some local governments in the United States provided significant leadership and support at the start of the pandemic, such as finding innovative and safe ways to house homeless populations and financing loans to local businesses to

help maintain the local economic base (Dzigbede et al. [2020](#)). Similarly, Canadian municipalities were found to fairly consistently undertake actions such as declaring a state of emergency, transitioning public meetings to online platforms, and closing town libraries and recreation facilities, although there was more variation in managing natural areas and transit options (Armstrong and Lucas [2020](#)). Studies to date, however, tend to focus on limited geographic areas and limited municipal services, with a focus on larger cities (e.g., McDonald et al. [2020](#)). A recent Maine Municipal Association ([2021](#)) report confirms that Maine local governments play an essential role during crisis situations. They responded in varying degrees to pandemic-related impacts to residents, businesses, housing costs, and government budgets, while also calling on the role of community in persevering. How smaller US towns, and Maine municipalities in particular, are able to respond to the challenges posed by COVID-19 are yet to be fully explored.

Community Resilience

Community resilience is a useful conceptual foundation for analyzing municipal digital communication responses to the COVID-19 pandemic. While the concept of resilience has been debated and described in many ways, for the purpose of this study, we consider resilience to be the ability of a municipality to withstand, respond to, and recover from stressors and adverse events (Cutter [2016](#); Saja et al. [2018](#)). More specifically, we embrace the framing of community resilience as a combination of four capacities: economic development, social capital, community competence, and information and communication (Norris et al. [2008](#)). Economic development capacity refers to the ability of a community to generate economic wealth through a diversity of industries and to distribute that wealth equitably across various demographic groups (Sherrieb et al. [2010](#)). Social capital is often described as the features of a social organization that enable a community to cooperate for mutual benefit, which include social support, social participation, and community bonds (Aldrich and Meyer [2015](#)). Community competence is the capacity to undertake collective decision-making and action, drawing on a community's ability to engage in group processes and collaborate to solve problems. Lastly, information and communication refers to availability of accurate, trusted information and recommendations, the development of common meaning, and the infrastructure

for communicating that information, including through the media (Norris et al. [2008](#)). Communication is often viewed as a central aspect of resilience given its intersection with the other resilience capacities (Houston et al. [2015](#)).

Exploring Maine municipal responses to the impacts of the COVID-19 pandemic through the lens of these four factors—economic development, social capital, community competence, and information and communication—advances understanding of community resilience in Maine and beyond. Studies of community resilience often use county-scale data (Cutter et al. [2014](#)) and therefore overlook municipal contributions and dynamics. In addition, rural communities face distinctly different challenges from urban centers in preparing for, responding to, and recovering from significant events (Johnson et al. [2019](#); Levesque et al. [2021](#)). Being able to characterize how smaller municipalities have demonstrated the capacities for resilience can inform policies and programs intended to improve resilience of other communities in rural states like Maine.

Maine Municipal Resilience

Assessing community resilience in Maine needs to take into account the nature of Maine municipalities as primarily small, rural, dependent on natural resource economies, reliant upon volunteer boards, and with a strong tradition of local governance (Cucuzza et al. [2019](#); Levesque et al. [2021](#); McGreavy et al. [2018](#)). Overall, Maine municipalities vary in their degree of resilience as assessed for climate change, with a majority of towns demonstrating limited capacity, especially smaller, more rural towns (Haeuser [2020](#)). However, some Maine towns are able to take actions that contribute to the state's social and environmental well-being (Johnson et al. [2019](#); Levesque, Bell, and Calhoun [2017](#)), and prior work provides some insights on how some Maine municipalities have advanced the four capacities for resilience.

Economic development

Municipal policy making, infrastructure investments, and participation in regional economic development networks shape economic development strategies that can enhance resilience. For example, Maine municipalities have adopted policies such as incentive zoning, mixed-use zoning, and infill development to promote a diverse economic base and local economic development in ways that improve equity or environmental conditions (Cucuzza et al. [2019](#); Levesque, Bell, and Calhoun [2017](#)). Further, municipalities

influence broader regional economic development strategies, as they support residents and businesses and shape connections between places, sectors, and markets (Crawley and Hallowell [2020](#); GERC [2020](#); Maine DECD [2019](#)).

Social capital

The role of social capital has been explored to a limited degree in Maine community resilience (Johnson et al. [2019](#)). Studies have identified the role of citizen committees as key drivers for policy making (Levesque, Bell, and Calhoun [2017](#); McGreavy et al. [2018](#)), and have shown the ability of small Maine towns to promote a sense of community (Cucuzza et al. [2019](#)).

Community competence

The type of governance structures and availability of professional staff influence the capacity of Maine municipalities to make decisions, engage in group processes, and collaborate to work on sustainability and resilience issues, with town meetings and lack of planning expertise resulting in fewer resilience actions (Johnson et al. [2019](#); Levesque, Bell, and Calhoun [2017](#)). Further, limited professional capacity is often a barrier for progress on climate mitigation and adaptation policy (Jansujwicz et al. [2021](#)). In fact, smaller municipalities in Maine may be especially dependent upon their ability to collaborate and create networks with external entities to compensate for fewer internal staff and financial resources (Levesque et al. [2017](#)).

Communication and information

Research in Maine has identified a few key aspects of communication to ensure information is more likely to be accessible and incorporated into decision-making. For example, information communication must be relevant, sensitive to local cultural values, and informed by likely responses to different communication messages (McGreavy et al. [2012](#)). Some Maine towns may struggle in their capacity to maintain records of communications within committees and other decision-making bodies or in sharing data and information about relevant topics. Further, relational communication between different entities working together to address key problems can influence the capacity of Maine communities to address challenges (McGreavy et al. [2018](#)).

We assert that robust responses to unexpected events with devastating impacts, such as a global pandemic, include a dimension of each of these four interacting

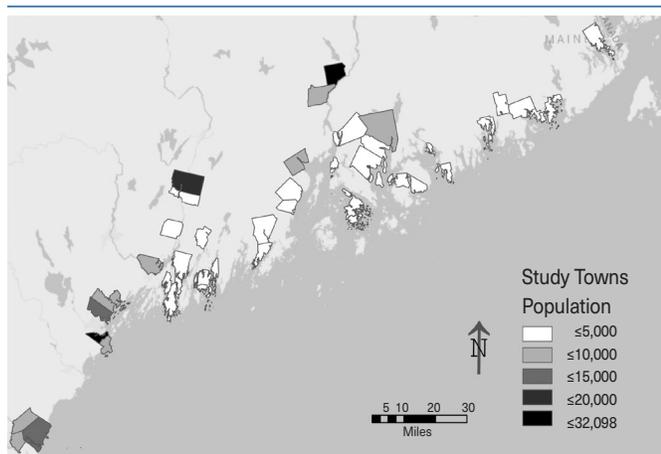
factors. Communication, in particular, may be a primary capacity in adaptive action: information becomes vital in emergencies, communication enables community members to articulate needs, and the creation of shared meaning builds connectedness that is essential for resilience (Norris et al. [2008](#)). Accordingly, our investigation of municipal responses to COVID-19 includes consideration of (1) the information and resources communicated by Maine municipalities and (2) the characterization of distinct communication responses.

INVESTIGATING COMMUNITY RESPONSE TO COVID-19

We explored the ways in which 50 Maine coastal municipalities communicated COVID-19 information, resources, and responses in the earliest stages of the pandemic (March 2020 through July 2020), when understanding of the impacts of the pandemic was rapidly changing and responses at a federal and state level were in flux. The first phase of our research project, reported here, focused on coastal communities to build upon our existing research programs aimed at understanding community resilience to climate change events along Maine's coast. The second phase of this study will compare inland and coastal community responses. We selected the communities for this study from Maine's Coastal Zone using a proportional sampling approach to represent small (<1,000), medium (1,000–8,999), and larger (\geq 9,000) communities in three regions: southern counties (York and Cumberland Counties), midcoast counties (Sagadahoc, Lincoln, Kennebec, Waldo, Knox), and Downeast counties (Hancock, Penobscot, and Washington) (Figure 1). As to be expected, demographic, housing, and other characteristics vary considerably across our sample of coastal towns (Table 1). These 50 towns demonstrate all the common forms of government in Maine: town meeting (48 percent), town meeting plus a town manager (28 percent), mayor (14 percent), town manager (8 percent), and tribal nation (2 percent). Finally, the 50 towns in our sample have experienced a wide range in their numbers of COVID-19 cases (as of June 2021): 0–5 cases (11 percent); 6–19 cases (11 percent); 20–49 cases (27 percent); 50–99 cases (14 percent); and greater than 100 cases (37 percent).

To assess municipal digital communication responses, we downloaded all available official (government) electronic communications from a municipality, including

FIGURE 1: Towns Included in Study



Esri, HERE, Garmin, OpenStreetMap contributors, and the GIS user community

Note: A list of towns is available online (<https://digitalcommons.library.umaine.edu/mpr/vol30/iss2/8/>).

town webpages, Facebook sites, school district webpages, official letters, and town newsletters. We did not include information provided through a subscription e-mail to residents (information that residents could only access if they signed up for emails generated by the town). We focused on information that was easily accessible from the town website or through an official town Facebook page. All documents were imported into NVivo software, which allows researchers to identify and highlight themes in the

data. These themes were both pre-identified from the literature (e.g., social capital, collaboration) and emerged from the data itself (e.g., tourism during the pandemic). We developed a codebook of these themes and identified all instances of these themes in the downloaded documents.

RESULTS

Municipalities Vary in Their Responses to COVID-19

In the face of an unprecedented pandemic with no guidance on what type of information municipalities should be communicating, municipal response varied in communication format, frequency of communication, who specifically communicated information, and content of information.

Communication format

Communication formats included content on pre-existing town websites, creation of a COVID-19-specific webpage, Facebook posts related to COVID-19, town newsletters, and letters from elected or professional staff (Table 2). Seventy percent of the towns provided information across multiple formats. The most prevalent format for digital communications about COVID-19 was on town websites, through the town’s home webpage (64 percent), by including information on specific webpages (such as webpages dedicated to voting information), or by developing specific COVID-19 webpages dedicated to providing information only related to the pandemic (44 percent). The second preferred method of communication was Facebook (46 percent). Over half the towns that did not provide any content on their town’s website used Facebook for sharing information about COVID-19. In addition, in many towns that had no COVID-19 information on their municipal website, the affiliated school districts provided web-based information about COVID-19. Letters from elected officials or town employees were used by 28 percent of the sample. Towns that provided communications through letters also used multiple communication formats (i.e., webpages, Facebook), and the letters provided

TABLE 1: Demographic Information of 50 Sample Towns

Town characteristic	Mean	Minimum	Maximum
Population (year-round residents)	4,570	26	32,098
Median Household Income (\$)	61,842	28,854	119,679
Population ≥ 65 (%)	24	11	42
Population ≤ 14 (%)	14	0	25
Bachelor’s degree or above (%)	38	16	69
Housing units	2,443	153	15,678
Seasonal housing (% of units)	23	0	88
Median housing value (\$)	241,958	65,300	466,700
Land area (sq miles)	24	1	79

Sources: US Census Bureau American Community Survey 5-year estimates (2014–2018), County Subdivisions (Manson et al. 2020).

TABLE 2: **COVID-19 Information by Communication Format**

Communication format	% sample towns
COVID-19 content on pre-existing town website	64
Dedicated COVID-19 webpage	44
Facebook posts pertaining to COVID-19	48
Letters from elected officials	12
Letters from professional staff	16
Letters from school officials	20
Newsletter with COVID-19 content	10
Use of more than one format	70

the same information as could be found elsewhere. The least common format for communicating about COVID-19 was a town newsletter (10 percent).

Frequency of communication

Frequency of updates to town websites was difficult to ascertain unless the changes were dated. However, in cases where we could determine date of posting (through date on a Facebook page, date of a letter, or a dated town newsletter), we found that some communities provided regular, sometimes as often as weekly, communication on COVID-19 impacts and available resources. Other municipalities appeared to provide additional information as needed (e.g., how to vote during the pandemic), while other municipalities seemed to provide few if any updates to the initial basic COVID-19 communications.

Who communicated information

For many municipalities, it is not clear who was communicating information, but for those communities where we were able to identify the source, information came from a wide range of individuals. For example, approximately half of the letters were signed by elected officials and half by municipal staff. Elected officials included mayors or members of select boards or boards of assessors. Employees who provided communications included town managers, health officers, emergency management agency chiefs, school superintendents, and district or school nurses. This variation in individuals and perspectives may have implications for what kind of

response and message was provided and what might have been omitted.

Content

The content of information provided varied widely in breadth and depth (Table 3). Due to the shut downs that occurred in late March and early April, the most common type of information communicated by towns was about the status of town offices, how to conduct town business during the shutdown, and health requirements associated with access to town services once town offices opened. Most towns also provided some information about the health effects of COVID-19, such as how to recognize symptoms and how to stay healthy. Additionally, almost as many municipalities linked to external sites that contained COVID-19 guidance. This information was provided as direct links and sometimes also summarized in town communications: “The US and Maine Centers for Disease Control are resources for information on COVID-19, symptoms, spread, and what you can do to help prevent the spread.”

Given the sudden change from in-person municipal services to digital services, it was also common for towns to explain how residents could find information, attend public meetings, or contact officials, such as references to cable TV programs or how to access zoom meetings. While hardly any towns discussed how COVID-19 affected access to general assistance, a mandated municipal service, a majority of communities did communicate information on how residents could meet basic needs, especially addressing food insecurity. Towns linked to local and regional food pantries, as well as to school websites that explained delivery of summer meals to students, with some towns providing an extensive list of resources that address food insecurity and shelter. And, due to the sudden onset of COVID-19 during the school year, it was also common to see information about school closings and remote learning, as well as alternative ways to celebrate the end of the school year.

Beyond providing specific guidance or instruction, a majority of towns included language pertaining to social capital, referencing social support, the importance of community bonds during the pandemic, and how residents could access support systems. For example, towns often acknowledged the shared challenges faced by the community and encouraged community building by using language such as, “We are all in this together.” Other towns

TABLE 3: Prevalence of Topics Communicated by Towns

Prevalence	Topic
Most common (40–50 towns)	<ul style="list-style-type: none"> • Town operations • Health impacts
Common (30–39 towns)	<ul style="list-style-type: none"> • External guidance (links to state or federal guidance related to COVID-19) • Information and communication (how residents can get town-provided information and communicate with town officials) • Basic needs (food security and housing) • School impacts • Social capital (importance of community and how to stay connected)
Less common (20–29 towns)	<ul style="list-style-type: none"> • Nature and outdoor recreation (role of nature in staying healthy and how to access outdoor areas) • Voting under COVID-19 restrictions • Mental health guidance (direct advice and how to access additional help)
Least common (10–19 towns)	<ul style="list-style-type: none"> • Local economic issues for businesses and residents • Collaborative efforts (how a town works with others to address challenges) • Tourism (guidance for seasonal residents; information for visitors) • Equity (acknowledgment of, or specific assistance to, disempowered groups, such as translations of documents)

stressed helping fellow community members, as mentioned by one municipal official, “What I have seen during these difficult months in our communities, is people working together, helping out their neighbors and supporting the common good.”

A subset of communities provided extensive information and resources beyond the topics listed above, and we found that their messaging was nuanced and comprehensive. Some municipalities described the importance of nature and outdoor recreation as essential to combatting the isolation and mental health impacts of the pandemic or explained restrictions on accessing outdoor spaces: “The weather will be improving soon, and we hope that residents will continue to be able to get exercise and enjoy the

outdoors in the midst of these unprecedented times.” Others described specific methods of voting safely during the pandemic. Additionally, almost half the towns discussed mental health during lockdowns and how to access additional mental health resources.

Finally, a minority of towns mentioned important, but not commonly discussed, topics. Some towns discussed how they were collaborating with other entities to address COVID-19-specific challenges and the innovative strategies that were the result of these new collaborations, such as partnerships for delivering food supplies. Some towns communicated their effort in supporting local business, such as facilitating commerce with local businesses, developing collaborative messages on health and safety to enable local businesses to remain open, or providing links to economic resources provided by other entities. These towns also provided resources addressing economic issues faced by residents, often by sharing links for state and federal programs. A small number of towns geared messages to tourists and seasonal residents, often trying to balance the importance of seasonal visitors while needing to ensure the health and safety of year-round residents. There was very limited messaging on the topic of equity as associated with the impacts of the pandemic, such as resources for disabled individuals or information provided in multiple languages.

What Characterizes a Robust Response?

There are four primary characteristics of the more robust communication responses from Maine municipalities in the first months of the COVID-19 pandemic: (1) nuanced, complex messaging; (2) repurposing of existing structures followed by expanded capacities; (3) active building of community and social capital; and (4) use of collaborations to address challenges.

Nuanced, complex messaging

Some towns provided more complex messages that captured multiple issues. For example, some discussed the nuanced connections between individual health and community well-being and how that affected local business operations. These more nuanced messages often included some of the less common topics mentioned earlier such as messaging specifically to tourists and seasonal residents, mental health resources, and the role of nature and outdoor recreation in combatting the effects of COVID-19. As the communities in our sample were all within the coastal

zone, balancing the economic impacts and health implications of tourism and influx of seasonal residents placed these communities in a challenging situation regarding messaging. A number of communities crafted messages specifically for seasonal residents that acknowledged their membership in the community, but that asked they consider the health and safety of the broader community when making travel plans. These nuanced messages communicated awareness of the complexity of the problem as well as the ongoing effort of town officials to address the impact of a pandemic on local populations.

Repurposing existing structures followed by expanded capacities

More robust responses also showed innovation in using existing structures in town to address immediate needs in the early days of the COVID-19 pandemic. For example, some towns initially used school bus routes to deliver meals to families to address food insecurity. Another example was towns that used their existing Facebook pages to put their COVID-19-related announcements, even if they had not yet updated anything on their official town website. However, over time, some municipalities stopped there, while others expanded their capacities, creating new COVID-19-specific webpages, new collaborations, and more effective ways to reach vulnerable populations. These new, expanded efforts indicate a capacity to adapt and grow strategies for addressing emerging challenges.

Community and social capital

Another characteristic of a robust response was a community's investment of time and effort to build social connections in their responses. Beyond the communication of general guiding principles on health and safety, municipal communications included language around community building and the concept that residents were "all in this together." These towns crafted language around the importance of community, maintaining and building connections, and sharing resources to support individuals and businesses. A number of these communities included messaging on the role that a sense of community could play in helping residents to deal with the isolation and mental health impacts of the pandemic and provided specific ways for community members to volunteer to help others in need.

Collaborations

The final characteristic of a robust response was communication about collaborations that were working on mitigating the impacts from the COVID-19 pandemic. Some of the collaborations crossed town departments that do not traditionally work together or included entities that were outside of town government; some were existing collaborations that pivoted to focus on responding to the pandemic. In other places, new collaborations formed in the early months of the pandemic, such as two towns that developed a joint newsletter, or a town that collaborated with local businesses and nonprofits to provide a holistic approach to public health in a new weekly newsletter. Some towns communicated their cooperation with other entities in determining the best ways to address current challenges. Even if these cooperative efforts were established emergency management protocols, these messages provided residents with information about the extent of local expertise working on their behalf.

DISCUSSION AND IMPLICATIONS

What should be expected of municipalities in terms of communication to residents during the first three months of a pandemic? These communications came at a time when communities faced a change in how to conduct business, when a legislative act—An Act To Implement Provisions Necessary to the Health, Welfare and Safety of the Citizens of Maine in Response to the COVID-19 Public Health Emergency—allowed municipal business to be conducted remotely. Dr. Nirav Shah, director of the Maine Center for Disease Control and Prevention, conducted daily public briefings that provided municipal officials with critical information (Russell 2020), and towns needed to decide how to act in light of that information. Despite the challenges, almost all municipalities in our sample communicated consistent information on how residents could access town business including instructions on accessing remote meetings and acquiring emergency support. Beyond this fundamental information, there was a range of communication responses across the 50 sample communities. Exploring this variation helps us understand the responses that communities may be capable of providing during unanticipated and unprecedented events.

We found that some Maine small rural towns could indeed respond quickly about a wide range of topics and

communicate across multiple formats with frequent updates. For example, 70 percent of towns were able to provide COVID-19-related information across multiple formats in the first months of the pandemic. Similarly, most of our sample municipalities went beyond minimum content of explaining how residents could access essential municipal services to provide information on a broad range of COVID-19-related topics. The towns with the most robust response promoted social capital within their towns, collaborated with others to increase community competence, and developed new ways to communicate key information, all of which are capacities that contribute to resilience. In the next steps of this research, it will be essential to better understand what prepared or encouraged these towns to do so.

Similarly, for those municipalities that provided little information, with no reference to community, collaboration, economic assistance, or other key resilience factors, it is important to learn what limited their responses. It may be that some municipalities lack digital services infrastructure and trained personnel that would be essential for the town to pivot from traditional in-person services to online communications and resources regarding essential municipal functions. Policy actions that focus on funding and building capacity for digital services within municipal governments could be important for improving the towns' ability to communicate during disasters like the COVID-19 pandemic. It may also be that a lack of funds limited some municipalities' responses. Within our sample, 52 percent of the communities received funding from the Keeping Maine Healthy program overseen by Maine CDC and designed to support local public health education and prevention programs. It would be helpful to know if the municipalities with a minimal communication response to COVID-19 also lacked the capacity to apply for and receive these grants. Further, it is important to recognize that the number of COVID-19 cases varied widely across communities and that municipal responses could reflect these differences, with some communities tailoring their response to the incidence of COVID-19 in their area.

One finding that stood out was how many municipalities (68 percent of our sample) devoted language to building and supporting social capital in their communities. These references included connecting residents to volunteer opportunities, celebrating community, and encouraging mutual aid, all of which demonstrate an

awareness of the important role that people-to-people bonds play in a community's ability to respond to and recover from a disaster (Aldrich and Meyer 2015). The ways in which social capital can be translated to and encouraged within digital platforms is an area of emerging interest (NASEM 2021). Similarly, collaboration builds networks within towns and with external entities, further strengthening social capital and community competence. While further research can illuminate the areas where strong support networks are lacking, we pose that efforts to build resilience in Maine must consider how to build and rely on social capital prior to disasters, so town leaders and residents are able to do so during challenging times as well. One potential avenue for this would be providing greater support to regional entities such as planning commissions and nonprofits that assist municipalities to build social capital and local capacity within and outside municipal boundaries.

Relatedly, with the exception of one community, communities that used multiple communication formats and incorporated comprehensive messaging across multiple themes had either a town manager or administrator. This professional capacity, however, was also often matched with nonprofit and volunteer support and engagement in communications, suggesting again that social networks may be a key ingredient in rural community resilience. A future examination could explore how to best identify and support local networks for strengthening social capital as part of building resilience and how municipal staff facilitate these networks within and across communities. A recent report by the National Academies of Sciences has called for the need for more research on the role of social capital as a dimension of community resilience (NASEM 2021).

While our study provides initial insights and ideas about community resilience in action, we are also limited in what we can conclude. This initial study focused on Maine's coastal zone, and it could be that different patterns and themes would emerge in inland areas; a second phase of this research that is currently underway broadens the sample to include these other areas of Maine. In addition, we focused on the digital communication and information aspect of resilience response; the degree of other capacities can only be estimated based on what was communicated, and there may well be other municipal responses, such as collaborative decision-making, that some towns did not communicate in digital formats. The second phase of this

research is pairing website scraping with interviews of municipal officials and a broader statistical analysis of municipal responses to gain a more complete understanding of municipal resilience in Maine, as well as the reasons why municipalities communicated in the ways that we found.

This study provides a snapshot of municipal communication responses to a global pandemic during early months when little was known and the state entered a lock-down, yet towns had to continue to provide essential services and keep residents informed. We found that almost all municipalities in our sample were able to provide basic information about town operations and that some went much beyond that. While smaller, more rural municipalities may have fewer residents and resources, many showed a larger-than-expected capacity to pivot quickly and rally together to respond to the COVID-19 pandemic and communicate about that response. Understanding what a robust response looks like in a rural state can help us develop policies and programs for improving municipal capacity to respond in other Maine towns or to other types of challenges. Our next steps will be to determine what enabled municipalities' responses and how we can assist other towns who demonstrated a more limited capacity to communicate important information. As Maine continues to advance policies and programs to address public health, economic, and environmental issues, strategies for improving municipal capacity to respond to challenges and opportunities are critical.

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