Emergency Management, Climate Change, and Complex Governance in the Arctic

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The Governance of Emergency Management (EM) Incidents in the Arctic Alaska:

An Institutional Analysis

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Abstract

The increasingly long ice-free season in the Arctic, a consequence of climate change, coupled with the increased maritime activity that is enabled by ice-free seasons, is posing significant challenges for emergency preparedness in Arctic Alaska. These challenges are compounded by the complex institutional and governmental arrangements that characterize the management of resources and emergency response in Alaska. Governance in Alaska is far more challenging than one would expect in a state of about 750,000 people. Stakeholders in this field include the federal and state governments, local governments that differ in some respects from the form of local government in other states, Alaska Native corporations at the regional and village level, as well as other private interests. Planning for a maritime response is particularly challenging since the region has no deep-water ports, and the largest community in the Arctic Alaska, Utqiaġvik (formerly Barrow) is not much larger than 4,000 people. The combination of remoteness, the lack of substantial emergency preparedness and support infrastructure, and the sparse population of the Arctic Alaska makes planning for emergencies challenging. This more complete assessment of the governance structure of emergency management incidents, at a time where melting sea ice is leading to much more maritime traffic and thus increased risk of incidents, and as climate change is reducing community resilience to natural phenomena overall, may allow for actions that better meet the needs of the community or communities affected.

Keywords: Arctic governance; emergency management; emergency response; institutional analysis and development (IAD)

Introduction

The management of emergencies in the Arctic Alaska is governed by formal institutions as well as informal norms. An "institutional analysis" of the emergency management system in the Arctic must understand both the formal institutions involved in emergency management as well as the informal institutions that work to coordinate the efforts of governments, private businesses, local residents, and interest groups, among others. Taken together, the combination of formal institutional actors and the norms that govern these actors' interactions form a governance system. To understand these roles, we apply the Institutional Analysis and Development (IAD) framework initially developed by Elinor Ostrom and her colleagues. We outline legal governance structures and actors, then shift to stakeholders and how interests overlap or conflict among the stakeholders. This gives a better understanding of how the unique context of the Arctic Alaska is governed in cases of emergencies and who is affected. The outcome measures discussed include accountability and consistency with the values of local community residents.

Although many scholars have studied the effects of climate change in the Arctic Alaska, most studies focus on adaptations to climate change (see, for example, Hovelsrud et al., 2011). Climate change is clearly having significant effects in Alaska. One of the most challenging of these potential problems is to better understand the need for emergency response and management capabilities in the Arctic. This understanding is made necessary by at least three factors. First, climate change, by itself, is changing the nature of human activity in the Arctic. Second, longer ice-free seasons in the Arctic may allow for more maritime activity in the region, such as shipping, oil and gas exploration and production, and tourism, enabled by the ability to navigate Arctic waters for a longer period every year. Third, because of this longer ice-free

season and the concomitant increase in maritime activity, the strategic importance of the Arctic

has increased, with the United States, Canada, and Russia, in particular, seeking to assert their

sovereignty in the region through increased commercial and naval activity. All three of these

drivers of increased activity mean that maritime emergencies will become more frequent and

more consequential in the Arctic. Arctic nations and interests in the region must be prepared to

respond to a range of emergencies, such as a disabled cruise ship or an oil spill. With all these

drivers of increased activity in the Arctic, it is timely to understand the governance of emergency

management in this region.

Our analysis is grounded in research on the governance of emergency management,

which emphasizes the networked, collaborative nature of emergency management (e.g. Kapucu

& Garayev, 2013; Koliba, Mills, & Zia, 2011). We are focused on the particular confluence of

actors and stakeholders in the Arctic Alaska as well as the state of Alaska more broadly. Indeed,

in this analysis, we treat "Alaska" and "the Arctic" as interchangeable terms, because much of

the state, while not being wholly located above the Arctic Circle, shares similar attributes with

communities in the Arctic, such as extreme weather and physical isolation from other

communities and the commercial centers of the state.

We begin the analysis by describing the Institutional Analysis and Development (IAD)

framework, a framework developed and advanced by Elinor Ostrom and a worldwide

community of scholars of the public policy process. We then apply the IAD to Alaska's

governance structure in general, and its emergency management structure in particular. In the

latter instance, we ask: *Who are the actors and stakeholders in the governance of emergency*

management incidents in the Arctic Alaska? What interactions result from this confluence of

actors in the realm of governing emergency management incidents? Given this governance

structure, how might the potential outcomes be measured using accountability and adherence to local values?

The Institutional Analysis & Development (IAD)

For decades, the study of public policy and governance relied on a set of assumptions that, in practice, proved incomplete in helping us to understand why we have the policies we have, and how they work. When political scientists began to study what we now call the *policy process*, they created very simple models to categorize the various activities that are undertaken to make and implement policy. By the early 1970s, political science textbooks taught that there was a policy process that started with problems coming to the attention of policy makers, reaching the agenda, solutions being proposed, one solution being selected, implemented, and then evaluated. This step-by-step formulation of the policy process came to be known as the "textbook model" (Nakamura, 1987) or the "stages heuristic" (Sabatier, 1991), and Sabatier, in particular, criticized the stages heuristic as being inadequate as a theory of the policy process. In particular, the stages heuristic did not aid in the creation of testable hypotheses that would help explain how, when, and why policies change. In response to calls for improved theories, models, and frameworks (Schlager & Cox, 2017), a number of theories, frameworks, and models of the policy process have been developed (see, in particular, the volume edited by Weible and Sabatier (2017)). One of these frameworks is the Institutional Analysis and Development (IAD) framework.

In developing the IAD, Ostrom sought to counter the idea, made popular in Garret Hardin's "Tragedy of the Commons" (1968), that a "common pool resource," such as a common grazing ground, would inevitably become overused to the point of exhaustion, as individual users

of the common would have no incentive not to maximize their individual use of the resource. Ostrom sought to explain how complex governance systems could evolve in communities to address common pool resource allocation problems, such as in the management of fisheries, pastures, or forests. What Ostrom and her colleagues learned is that such systems are not often characterized by a hierarchical, command-and-control model of regulation. Rather, these resources can often be managed by the cooperative effort of various actors who adhere to a body of norms or rules that Ostrom called "institutions." Unlike the traditional political science definition of institutions as governmental organs such as the legislature or bureaucracy, Ostrom's institutions are the rules that emerge as people interact with each other to manage a common pool resource.

While the IAD is typically applied in contexts of the governance of common pool resources, we argue that it is appropriate to draw on IAD concepts in the Alaska emergency management context. The governance of emergency management resources is in many ways the management of a common resource—emergency response capacity—that affects more than just those directly in command of these resources, and their successful deployment is often dependent on the actions of the broader community. Understanding the various implications of different types of emergencies which would lead to a different combination of relationships and interested parties can be achieved using the IAD.

The benefit of using the IAD framework in this context is its consideration of both institutional and physical aspects of a governance issue (Ostrom, 2011). Institutional aspects refer to the relationships, whether formal or informal, and rules, such as political structures. Physical aspects pertain to the geographic environment: geography, climate, the distribution of natural resources, and, of particular importance in the Alaska context, the sheer geographic

extent of the state. The IAD framework aids in the identification of structural variables relevant to the situation; the situation here is the potential for an emergency incident. Within the action arena, there are individuals with roles who make decisions based on the information they have, possible outcomes, their level of control or power, and the weighing of costs and benefits (Ostrom, Gardner, & Walker, 1994).

Central to the IAD is the action situation which encompasses the relevant actors and the situation of interest (Ostrom, 2011). Within the action situation, interactions between actors and resultant outcomes can be explored. While one might assume that the emergency itself would be the action situation, because we are not simply exploring one emergency with a narrowly defined set of desired outcomes, we can define the action situation as dealing with a *range* of different potential emergencies and a range of actors and their responses in both formal and informal institutions. In short, the action situation is the need to prepare for a potential maritime emergency in the Arctic.

According to Kiser and Ostrom (1982), questions to consider according to the IAD include: *Who is the decision maker? Who is affected by the decisions made at the community level? What institutional arrangements guide decisions?* In this context, a large-scale emergency which would need to activate the response of many various actors is the action situation. Another important aspect of the action situation is the actors that engage with each other in the action situation. The next section looks at the attributes which set the stage for the interaction of the relevant actors.

Internal & External Attributes Influencing Governance & Stakeholder Structure

Both internal and external attributes of the community and institution of emergency response (ER) affect how emergency management is governed, as well as who the stakeholders are. To set the stage for the later discussions of these groups, this section first reviews the biophysical variables, or physical attributes of Alaska, including economic characteristics. Second, we review the community structure in terms of demographics, cultural arrangements, and division of resources. Finally, we discuss the rules-in-use, or the norms by which emergency response operates in Alaska.

Biophysical Variables

The size and extent of Alaska are key to understanding the structure in which emergency management operates. Alaska is the third least-populous state in the United States, with an estimated 737,428 residents in 2019. The state, two and a half times the size of Texas, is by far the least densely settled state in the union (Cohen & Barnes, 2017). While the state's population is small, there are a number of urban areas, most notably Anchorage: close to 300,000 people live in the Anchorage metropolitan area, around 30,000 people live in Fairbanks, and about 32,000 live in the City and Borough of Juneau, leaving the remainder of the population to be distributed among small towns and villages. Most of these settlements are not located on roads, and access to these communities is by watercraft or aircraft in the summer, and, in the winter, aircraft are a primary form of transport, with some communities using frozen rivers as temporary highways. Keeping in mind that the population centers in Alaska are far from the Arctic and

near-Arctic communities, emergency management is more challenging in Alaska than in most states. Consider, for example, that Anchorage is 725 air miles from Utqiaġvik (formerly known as Barrow[1]), almost exactly as far as LaGuardia Airport in New York is from O'Hare Airport in Chicago. Anchorage is 571 miles from the state capital, Juneau, although there are more state employees in Anchorage than in the capital city, and the Alaska Division of Homeland Security and Emergency Management, in the state Department of Military and Veterans Affairs, is headquartered at Fort Richardson, near Anchorage.

Alaska has long been characterized by its extraction economy. At the time of statehood, the state's economy rested heavily on logging, fishing, and mining. While a small oil field in the Cook Inlet region was discovered in the 1950s, the dominant role of oil in the state's economy starts with the discovery of substantial oil reserves on the North Slope of the state, the coastal plain north of the Brooks Range. In 1969, the state of Alaska sold oil leases for $900 million-- $6.9 billion in current dollars. The Trans-Alaska Pipeline, built to transport that oil to the ice-free port of Valdez, was completed in 1977.

Natural resources, including the land of Alaska itself, are highly valued by its residents (Cerveny, 2005). Most of these resources are governed by a combination of market and regulatory (or bureaucratic) processes, such as oil, gas, minerals, fisheries, and timber (when classifying by types of resource management, namely market, community-based, co-management, or bureaucracy (Imperial & Yandle, 2005)). Much of the Alaska economy is based on oil production, aviation, fishing, tourism, and the military (Cohen & Barnes, 2017).

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[1] The city council voted, in late 2016, to rename Barrow to the Inupiaq name, Utqiaġvik.

Demographically, the state is about a third non-white. The white, primarily urban population is ideologically conservative with a considerable libertarian strain, although there are pockets of Anchorage, Southeast Alaska, and rural Alaska that lean more liberal politically. There are interest-based conflicts over the development of natural resources, such as conflicts between the resource extraction economy, the subsistence needs of rural Alaskans, and general environmental protection concerns. These conflicts may suggest that Alaskans lack a common understanding on the nature and appropriateness of economic development, environmentalism, and the protection of the rights of indigenous people to maintain a subsistence lifestyle. Despite these conflicts, there is a definite sense of Alaska culture, values, and shared understanding of a strong resistance to outsiders and a preference for local decision making with respect to Alaska's resources (McBeath & Morehouse, 1994). Yet to the contrary, most decisions are made by outsiders by way of locally based agents.

Alaska's political culture is generally highly individualistic, and residents of the state—particularly those who are not members of indigenous groups, often resent federal or "Outside" interference (Cohen & Barnes, 2017), despite the state being particularly dependent on federal funds to support economic development and infrastructure (McBeath & Morehouse, 1994). Alaska's long-serving members of Congress have been instrumental in winning federal resources for the state. In particular, Senator Ted Stevens, a Republican, served in the United States Senate from 1968 to 2009, while incumbent Representative Don Young, also a Republican, has been serving since 1973, making him the second most senior member of the House. In contrast to the individualistic strand among many Alaskans, Alaska Natives are group-oriented (or culture-

group focused) and have certain protections of the federal government as well as regional corporations which act on behalf of their communities.

Alaska's popular image, driven mainly by new discoveries of natural resources, is of a land of opportunity and individualism (McBeath & Morehouse, 1994). In terms of division or distribution of resources (Imperial & Yandle, 2005; Ostrom et al., 1994), the Alaska Permanent Fund, created to manage the state's growing oil wealth (McBeath & Morehouse, 1994), has helped level incomes to some extent through annual dividend payments, although it has not reduced economic inequality in the state as much as some have argued (Berman, 2018; Matthews, 2018; Wohlforth, 2017). Economic inequality in Alaska has been rising in recent decades (Economic Policy Institute/Center on Budget and Policy Priorities, 2012), following national trends.

Emergency response structures, as in many places, are shaped and managed by government, with participation from the private sector. Yet the size of the communities in the Arctic areas as well as their isolation means relatively low emergency management capacity in terms of the amount of resources available locally, as well as manpower necessary due to smaller EM staffs. This remoteness and lack of infrastructure already intended for EM or which could be repurposed in an emergency leads to high reliance on flying injured to the hospitals in Anchorage, for example. Yet is there a way to increase infrastructure in the Arctic Alaska in a way which would be beneficial to the communities year-round, as well as increase their ER capabilities?

Rules-in-use in Emergency Management in the Arctic Alaska

Rules-in-form are those formal, written rules that are in the record, and that are meant to structure public policies (Crawford & Ostrom, 1995). The innovation that the IAD introduced is the idea of "rules-in-use," which characterize the way in which policies are actually implemented, regardless of what the formal structure suggests (Crawford & Ostrom, 1995). How stable the set of operating rules are depends on whether there is a shared understanding around them (Ostrom, Gardner, & Walker, 1994). What rules and practices can we characterize Alaska's emergency management system by? The rules in place for the state in general, instituted by the Alaska Division of Homeland Security & Emergency Management, operate at the state level but also serve to support local communities (Alaska Department of Military and Veterans Affairs, 2010b). The need for guidance for small, remote communities is particularly acute in Alaska. Dealing with the unique emergencies and circumstances faced by most of these communities' location in the Arctic compounds the need for specific consideration and different emergency planning concerns and procedures.

Consider, for example, the system of emergency alerts used in Alaska. The federally mandated Emergency Alert System (EAS) is in place, which can be activated by national, state, or local authorities (Alaska Department of Military and Veterans Affairs, 2010c). In Anchorage the alert goes out to radio and television, sharing warnings, emergency shelter locations, and recommended actions (Municipality of Anchorage, n.d.). A recent tsunami alert demonstrated the unique difficulties with the operation of the federal EAS in the state of Alaska, as the alert was not repeated, as it should have been during emergency broadcasts, and some mobile phones did not receive it (Grove, 2018; Hopkins, 2018). While some of these problems have been addressed, this example demonstrates the problem Alaska faces: the state has very dispersed

population to which an emergency warning may have to get out to quickly, and tests and incidents such as this demonstrate limitations of the warning system (Hopkins, 2018; see Tyshchuk & Wallace, 2012 for an extended discussion of ways to address these limitations).

Enforcement of the rules as well as possible sanctions for violations of the rules is also relevant to an institutional analysis (Ostrom, Gardner, & Walker, 1994). Who has the responsibility to enforce the rules of emergency management in Alaska? What sanctions are in place which they can leverage? The difficulty with these questions stems from a lack of sanctions in ER. There is no good way to police or censure actions, even if there is a clear entity in charge in a specific type of emergency. Therefore, there is leadership without enforcement, with only the threat of potential lawsuits, although this would be after the emergency and thus may not be of concern to a particular entity who does not see it as their responsibility to cooperate with the response. For example, with the *Exxon Valdez* oil spill which involved the collision of an oil tanker with a reef in Prince William Sound in 1989, planning for such a spill, or even a spill of anywhere near this magnitude, was not taken seriously prior, and in the aftermath no responsibility was taken and there was no clear leader in the response efforts. This led to delayed response, losing precious time when the spill might have been stemmed to a larger extent than it was (Harrald, Marcus, & Wallace, 1990). Enforcement in emergency response is largely lacking.

Formal, Legal Governance Structure of Emergency Management in the Arctic

Alaska

International Actors

Alaska's geographical position makes it an important part of the United States' geopolitical position (Cohen & Barnes, 2017). But the United States has been characterized as a "reluctant" Arctic power (Huebert, 2009) that has not fully embraced the value and importance of the Arctic in ways that Canada and Russia, most prominently, have. Indeed, "now that the Arctic is transforming due to climate change, resource development, globalization, and geopolitical factors, the United States can no longer ignore the Arctic" (Huebert, 2009, p. 1). Alaska as part of the Arctic makes international considerations necessary. Conflicts could develop over natural resource exploitation in the region, and the United States began to build up military presence in the Arctic Alaska because of this possibility (Huebert, 2009). For example, Russia has been conducting mining while China also claims to be an Arctic power. This represents the potential for emergency over a conflict about resources, highlighting international tensions. But is it also important to consider international assistance that may coalesce around an incident in the Arctic, particularly if such an incident illustrated threats to multiple states' interests.

As an example of international roles in emergency response, the Arctic Council published an agreement in 2013 regarding oil pollution preparedness and response. Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden, and the United States are signatories (Arctic Council, 2013). The agreement's purpose is "to strengthen cooperation, coordination and mutual assistance among the Parties on oil pollution preparedness and response in the Arctic in order to protect the marine environment from pollution by oil" (Arctic Council, 2013, p. 2). Further, the

Arctic Council operates a working group on emergency response called the Emergency Prevention, Preparedness, and Response (EPPR). As an example of their work, this group conducted an international exercise in Finland in 2018 focusing on oil spill response (EPPR, n.d.).

Federal Actors

The legacy of Alaska's purchase from Russia in 1867 is reflected in the very prominent role the federal government plays. More than 12 federal agencies oversee about 60 percent of its lands (Cohen & Barnes, 2017). Throughout its history as a territory and as a state, Alaska has been particularly reliant on the federal government to support its people and industries. As in any state, the Federal Emergency Management Agency (FEMA) could support emergency management led by the state. Currently, FEMA has no organic assets in the Arctic to directly respond to an emergency, yet they serve as the primary federal response coordinator. For resources, the state will be heavily dependent on military and Coast Guard assets, often in a first-responder capacity which is unique compared to the Lower 48. For example, the Alaska Rescue Coordination Center at Joint Base Elmendorf Richardson (JBER) has long supported search and rescue efforts, particularly in aviation accidents. FEMA is working on building a new coordination center at JBER to handle resources for the first 48-96 hours of an emergency. Along with the Coast Guard, the U.S. Air Force parachute jumpers (PJs) are tasked with responding to small (special forces) as well as large scale search and rescue/recovery operations. The National Oceanic and Atmospheric Administration's Office of Response and Restoration provides an online mapping tool to help facilitate emergency response and is also focused on working with indigenous communities to protect their resources and lifestyle (NOAA, 2019). More broadly,

the NOAA is focused on promoting responsible stewardship of the Arctic, preparedness given shifting climate issues, and increasing international cooperation (NOAA, 2014).

As would be typical of other states, additional federal actors who could play a role in the case of a longer term emergency response include: the National Guard (direct response if called in), American Red Cross (in addition to sending medical resources, they also may coordinate volunteers on the ground), U.S. Army Corps of Engineers (if assistance needed with infrastructure, for example), Department of Transportation Federal Highway Administration (if roads severely impacted), U.S. Health and Human Services (if medical-related issues ongoing), U.S. Department of Homeland Security (if security issues after the incident are possible), U.S. Department of Energy (if power structures affected), U.S. Department of Housing and Urban Development (HUD) (if community housing severely affected), U.S. Department of the Interior (U.S. Geological Survey, National Park Service, and U.S. Fish and Wildlife Service for more geographic or environmental incidents such as an oil spill), and Federal Communications Commission (if communication systems are affected in the aftermath) (FEMA, 2016).

Yet many of these federal-level groups would not be as likely to be called in to assist with Alaska-specific disasters, as for example with the Highway Administration, the vast majority of Alaska is accessible only by small plane rather than road. Thus, having assistance with additional planes to service a remote area, in the instance of a stranding of a mass number of people, might be a more likely scenario of federal assistance requested by Alaska's state and local levels of government. Thus, these actors *could* be involved in an emergency response in the Alaska Arctic, yet the remoteness and sparse population of these areas means they are much less likely to assert themselves in an emergency scenario. The key federal actors in Arctic Alaska emergency response (ER) are therefore military and Coast Guard (in an instance of maritime

emergency response) actors. This is particularly the case when looking at more immediate response structures, rather than longer term recovery actors.

State Actors

The state-level emergency management (EM) agency in Alaska is the Division of Homeland Security & Emergency Management (DHS&EM) in the Department of Military and Veterans Affairs (DMVA). The DHS&EM is divided into two areas within their Operational Section: the State Emergency Operations Center (SEOC) and the Response Section (State of Alaska, 2010b). The role of the SEOC is gathering information to assist state efforts to respond to a disaster, accounting for state response costs, supporting local communities with direct response to an emergency (State of Alaska, 2010b). The Response Section is tasked with supporting the management of the incident at the local level, with the goal of reducing the impact (lives, property, and the environment) (State of Alaska, 2010b).

The State Emergency Response Commission (SERC) may activate if the scale of the emergency is sufficiently large. The Alaska Department of Military and Veterans Affairs (DMVA), as the agency in which the state's emergency management agency is housed, prepares for, responds to, and supports recovery from emergencies and disasters (Department of Military and Veterans Affairs, n.d.). The Alaska Department of Environmental Conservation assists the DMVA and DHS&EM as called for in the state-level Emergency Operations Plan (EOP) by supporting first responders, communities, local and tribal governments, as well as other state agencies and federal-level agencies (Department of Environmental Conservation, 2019).

According to the State of Alaska's Emergency Operations Plan (EOP), a number of state agencies play a role in response to different types of emergencies (State of Alaska, 2011). For example, in an emergency which results in mass casualties, the coordinating agency is the Department of Health and Social Services (DHSS). In the leading role, the DHSS completes tasks such as coordinating the transport of the injured, tracking basic medical asset availability within the state, and activating the State Mental Health Emergency Plan. In addition, the DMVA's SEOC and Department of Public Safety are state actors who participate. Specifically, the SEOC implements elements of the plans in place as applicable, as well as orders medical aid from the Lower 48 if necessary, while the Department of Public Safety notifies next of kin for those injured and deceased (State of Alaska, 2011). The structure of state actors responsible for responding to a mass care incident is similar to that of a mass casualty incident, but with the added actor of the Department of Education and Early Development (DEED), which is involved to coordinate the use of schools as shelters. In this type of incident, DHSS is still coordinating, with the specific additional task of ensuring there are enough resources to meet health care needs in the shelters (through coordination with the Red Cross). Finally, the Department of Public Safety provides law enforcement resources at the shelters (State of Alaska, 2011).

Within the Alaska Department of Public Safety, the Alaska State Troopers and the Wildlife Enforcement Troopers may play a role depending on the nature of the emergency. The State Troopers assist local agencies with search and rescue operations, for example (Alaska Department of Public Safety, n.d.-a). While the Alaska Wildlife Troopers enforce state wildlife laws and regulations, these troopers are fully commissioned State Troopers and provide law enforcement presence in the remote areas of Alaska, so they may be in a first responder capacity. Also, they are often asked to assist law enforcement entities at the federal, state, and local level

17

(State of Alaska, n.d.-a). Related, the Alaska State Park Rangers may be asked to assist law enforcement agencies in the event of an emergency. If there were to be a maritime fire incident, the Coast Guard would be the most involved actor. Within the Alaska Department of Public Safety, the Fire Marshal's Office is mainly regulatory rather than operational (Alaska Department of Public Safety, n.d.-b). At the local level, there have been attempts to provide training on firefighting to villages, such as by the Northwest Arctic Borough Fire Department (2019), but this capacity to fight fires mainly falls to the borough or a higher level of government given scarcity of resources and training.

In the case of an oil spill incident, the Alaska Regional Response Team is a group comprised of federal and state on-site coordinators for oil spill responses, made up of individuals from groups including the EPA, Coast Guard, Alaska Department of Environmental Conservation (ADEC), DHHS, and FEMA (Alaska Regional Response Team, n.d.). This team advises the on-scene federal coordinator (FOSC) yet is intended to provide an opportunity for all levels of government (federal, state, and local) to participate in a pollution incident response (Alaska Regional Response Team, n.d.). This group is an example of an attempt to incorporate actions at various levels on the hierarchy of government in emergency management.

Finally, although not directly relevant to emergency response, the Alaska Industrial Development and Export Authority is focused on expanding industry for the financial benefit of Alaskans. This is an example of a seemingly unrelated state agency when discussing emergency management, yet their mission may lead to an increase in potential accidents. For example, by advocating for more cruise ship activity in the area, there is an increased potential for wrecks and also more intrusion upon local communities which may face a lack of resources to cope with this influx should a ship become stranded in the area.
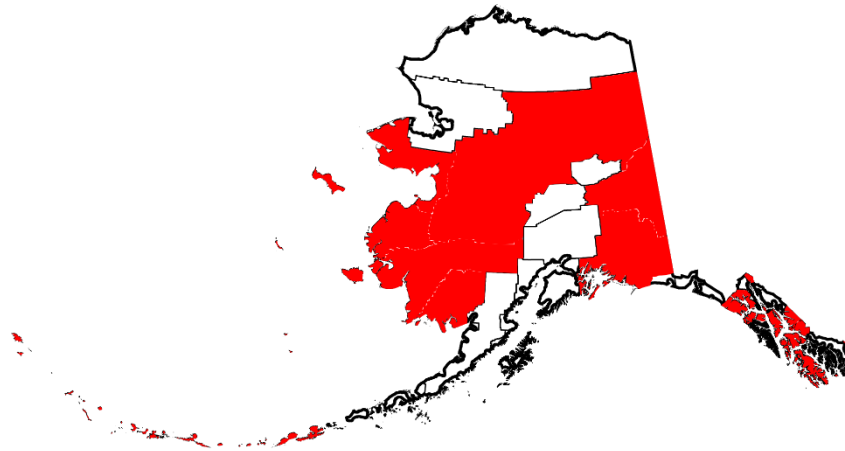
Borough

In Alaska, boroughs are local level governments similar to, but not precisely the same as,

counties. While in most states, the entire extent of the state is organized in counties, not all

Alaskans live in a borough. There are 19 boroughs in Alaska; all communities outside these areas

are contained in what the state constitution calls the "unorganized borough" (State of Alaska,

2017). Some boroughs, like in Anchorage and Juneau, consolidated with their city; Anchorage is

known as the Municipality of Anchorage. Boroughs are municipal corporations like cities, yet

are regional, making them larger in scope (Alaska Department of Commerce, Community, and

Economic Development, 2015). There are Offices of Emergency Management located at the

borough level, and boroughs as well as communities have their own Emergency Operations

Plans (EOPs) (State of Alaska, 2017). For example, the Kenai Peninsula OEM has both

Community Emergency Response Teams (CERT) and Local Emergency Planning Committees

(LEPC) components; CERTs are trained groups of volunteers who can respond to an emergency

when it overwhelms the governmental response structure, while LEPCs are responsible for

preparing emergency response plans for any community hazards, whether natural or manmade

(Kenai Peninsula Borough, 2019). Bristol Bay and the North Slope boroughs both have their own

police departments, so these would also operate similar to police departments at the local level in

case of emergency as first responders.

For those communities within the borough who determine they need assistance from a

higher level of government in responding to an emergency, they must first appeal to the

government of their borough (State of Alaska, 2017). In turn, the borough may request state

assistance if the response is beyond its capacity (State of Alaska, 2017). Over half the land area

of Alaska falls in the unorganized borough, but just over 81,000 people—about 11 percent of the

state's population—lives in the unorganized borough. For these people, emergency management responsibilities fall directly to the state government initially since there is no borough government. Thus, if an incident occurred within this area (see figure 1), then the local government if applicable, and in turn one level up the state government, would be in charge of the response. It is noteworthy that much of Arctic Alaska is contained within either the North Slope or Northwest Arctic boroughs; the city of Nome, a community along the Bering Strait, is in the Unorganized Borough.

Figure 1. Unorganized borough in Alaska shown shaded in red.

(Public Domain, https://commons.wikimedia.org/w/index.php?curid=561106)

Local & Regional Actors

At the local level, there are cities, villages, Native corporations, and regional organizations. Cities are part of the borough in which they are located (Alaska Department of Commerce, Community, and Economic Development, 2015). The responsibility of declaring an emergency falls to the local community (State of Alaska, 2017). If the community is within a borough, the request for assistance first goes to the borough level, which will then turn to the

state for assistance; the state, in turn, will turn to the federal government for assistance. Communities in the unorganized borough are provided direct assistance from the state (State of Alaska, 2017). Cities generally have their own Emergency Operations Plan (e.g. Municipality of Anchorage, n.d.). Villages may also have an EOP, although not all do (State of Alaska, 2017). Additionally, there are Local Emergency Planning Committees (LEPC), totaling 21 throughout the state (Department of Military and Veterans Affairs, 2010a).

Frequently in the United States, law enforcement officers become part of the initial response to a disaster or emergency. Yet in Alaska, given the large geographic areas involved, urgent responses can take considerable time. Particularly in the Arctic region of Alaska, regions may be impassable except by plane. This lengthens the time of response to an emergency by first responders and increases the amount of resources which need to be located near areas in which emergencies are likely to occur. In addition, the Arctic Alaska suffers from a lack of law enforcement, with public funding low for personnel. For instance, at least 70 local communities in Alaska had no local police at some point during this year, indicating a trend of "chronic shortage of officers" (DeMarban & Hopkins, 2019).

Villages of a substantial size generally have their own emergency response plans (State of Alaska, 2017). There may be specific village actors, such as the Alaska Village Electric Cooperative which may be asked to respond to village-level power outages. In terms of an emergency management role, the tribal organizations generally have their own emergency response plans (EPA, 2004). For example, Kawerak, Inc., a non-profit organization headquartered in Nome, has its own Environmental Program with emergency preparedness elements to further the interests of the people and tribes in the area (Kawerak, Inc., 2018).

Local governance and sovereignty are strongly valued in Alaska. Tribal governance became less prominent in Alaska after the enactment of the Alaska Native Claims Settlement Act (ANCSA) of 1971 (Kimmel, 2014). This is because the tribes are landless, with the Alaska Native Corporations as land and resource owners. The indigenous peoples of Alaska—generally known as Alaska Natives—exercise a great deal of their influence through the regional corporations established under ANCSA. According to the Alaska Federation of Natives (2018), there are 23 regional organizations within 12 areas/regions in the state of Alaska. Of these, the Arctic Slope, NANA, Bering Straits, and Doyon corporations fall within the region considered the Arctic Alaska (Alaska Department of Labor & Workforce Development, 2012; Alaska Travel Industry Association, 2019a). The Alaska Native Corporations were intended to provide Alaska Natives with a voice in economic development and natural resource use in their regions. These corporations have become major actors in the Alaska economy, and their interests, as corporations, in supporting natural resource development can conflict with individuals' and communities' interests in natural resource protection to protect traditional and subsistence lifestyles.

Under federal law, Alaska Natives enjoy legal protection for their rights for subsistence and self-determination, leading to conflicts between Alaska Natives and state laws (McBeath & Morehouse, 1994). This conflict may be apparent in a case of emergency response by the state that fails to consider or consult affected regional corporations. Another important group is the Alaska Federation of Natives (AFN). Their overarching goal is to, "enhance and promote the cultural, economic, and political voice of the entire Alaska Native community" (Alaska Federation of Natives, 2018). AFN membership includes 191 tribes, 171 village corporations, 12 regional corporations, and 12 regional nonprofit and tribal consortiums (Alaska Federation of

Natives, 2018). Therefore, the Federation must also be included in consideration of emergency management response similar to and alongside regional corporations.

Confluence of Governance in Arctic Alaska Emergency Management

As Clement (2010) points out, the IAD is often focused on only local actions in application, yet theoretically it is well-suited to understanding the interactions between various levels of government. The actor formally in command in the response to a particular emergency mainly depends on the nature of the event. For example, for elements of emergencies that involve a mass fatality, mass casualty, mass care incident, or health and medical services, the Department of Health and Social Services coordinates the state response. If evacuation is necessary, the Department of Military and Veterans Affairs would be in charge. Yet for elements of an emergency involving public works, the Department of Transportation and Public Facilities would be responsible (State of Alaska, 2011). These are all instances of state command; yet a smaller scale incident, or one for which the locale does not request assistance, would have a lower level of government agency in charge.

Generally, emergency management is organized as a top-down process (Schafer et al., 2008), and Alaska is no different. Alaska is different, though, when it comes to the unique levels of government and the different patterns of interaction due to differing norms. Once higher levels of government are appealed to in the appropriate order – local appealing to borough, borough appealing to state, and so on up the chain – those entities serve to coordinate actors and resources at lower levels of government. But, like any complex governance situation, emergency management and response is not wholly a command-and-control process. Bottom-up aspects

manifest when community values are respected, stakeholders are considered, and the community affected takes a decision-making role. When these interests are ignored, response can be hindered, as the coordination of people and assets is inefficient at best, and, at worst, leads to conflicts that impede response.

There are many possibilities in terms of what actor will provide a particular resource given the circumstances of the incident. For example, according to the State of Alaska (2017, p. 45), "In the event of an emergency, your community will likely experience shortages of critical resources. These resources may be available through mutual aid agreements; borough, State, or Federal governments; or the private sector including village or regional corporations." This demonstrates the multitude of actors who may be turned to in an emergency response.

The role of informal norms

Informal norms also play an important part in determining who responds to an emergency. For example, although not mandated by law to be responsible for the cleanup of the *Exxon Valdez* spill, informal groups become active and form part of the response, such as individuals who had boats and fish for their livelihood and wished to protect the resources of Alaska from further damage (Rodin et al., 1992). (It should be noted that this was highly controversial, though, as many locals opted not to do so as they saw it as a payoff from Exxon and many of the individuals who did participate were ostracized.) This is part of the valuing of the land held by many Alaskans culturally (Cerveny, 2005). The informal norm of response may be to do everything the community can to help, yet lack of ability to deal with such an influx might render the community unable to help, particularly given the resource structure in the Arctic with finite resources for the long winter season. Related, collaboration and coordination

are critical in emergency management response (Chen et al., 2008; Waugh & Streib, 2006).

Thus, in addition to the actors with formal roles who might be expected to collaborate in the case of an emergency considered here, it should also be considered that according to informal norms, members of communities affected and even those unaffected may join in the efforts. Yet this involvement highly depends on the circumstances of the emergency.

An example of cooperation between levels of government

The Newtok Planning Group (NPG) was established in 2006 with the goal of combatting climate change (Himes-Cornell & Kasperski, 2015; State of Alaska, n.d.-b). Although not concerned with emergency management exclusively, this group serves as an example of effective collaboration among different levels of government when these relationships are formalized. This group was organized by the Division of Community and Regional Affairs and has been working on projects mainly related to a relocation plan for the village of Newtok to a new village they are constructing, Mertarvik, due to erosion and flooding of the current village location (State of Alaska, n.d.-b). The group credits its success to collaboration among Newtok (local level), state agencies, federal agencies, and non-governmental organizations (NGOs) (State of Alaska, n.d.-b). In terms of members, the Newtok Village Council and Alaska Native Corporation are represented at the village level, ten departments at the state level are represented, 11 departments at the federal level, and seven nonprofits (State of Alaska, n.d.-d).

In terms of the emergency response planning of the Newtok Planning Group, quick and efficient reduction of loss of lives and property as a result of a natural disaster is prioritized (State of Alaska, n.d.-c). Here, the focus is on natural disasters as a result of the changing climate. Therefore, the Newtok Planning Group is an example of an effective model that might

be adopted in other communities in the Arctic Alaska. Having this group in place would make coping with an incident in the immediate area much more successful due to already established relationships between all the levels of government, as well as private organizations. This would make it more likely that the values of those affected might be heeded and increase the ability of holding responders accountable due to longer relationship ties.

Stakeholders in the Arctic Alaska

This section explores local residents and Alaska Natives, then interest groups generally. There could be additional stakeholders who may appear in reaction to an emergency, such as national groups who choose to get involved if the scale of the event is large enough. The actions taken by various stakeholders are also likely to increase, as they become more active when disaster strikes (Stallings & Quarantelli, 1985). This follows the literature on focusing events, where an increase in attention to an issue may expand the range of potential actions taken to address the problems revealed by that event (Birkland, 1998). Therefore, the following discussion is a broad overview of those with a stake in emergency response in the Arctic Alaska for a variety of different types of emergency incidents.

Local Residents

It is important to consider Alaska Native individuals and communities as stakeholders, rather than just as institutional actors in disaster response. How are the needs as well as rights of local residents, including Alaska Natives, incorporated into an incident response?

There has been a recent movement advocating for a shift from the traditional top-down emergency management to incorporation of the community into a matching bottom-up movement, coalescing into collaborative network governance (Kapucu, Arslan, & Demiroz, 2010; Schafer et al., 2008). This encourages collaboration in emergency planning between traditional local responders (police, fire, etc.) and business owners and other community residents (Schafer et al., 2008). In the Alaska context, collaboration, rather than strict adherence to command-and-control, is especially important given nature of the risks and the nature of the communities that face risks in the Arctic. These communities can easily be harmed by outsiders, such as federal government actors, making emergency response decisions without consideration of these values. An example of this is ignorance of the effect an oil spill has on the subsistence lifestyle of Alaska Natives in the region (Rodin et al., 1992). Actors from outside the community must remain sensitive to cultural norms, which place a high value on having lived in Alaska for a long time—perhaps one's whole life—compared with the experiences of more recent arrivals, who are perceived as coming to the state to take advantage of new economic opportunities. This was clearest during the pipeline construction days of the 1970s and the advent of increased oil revenues in the late 1970s and early 1980s. Alaska continually sought to enforce local-hire provisions requiring that jobs building and maintaining the pipeline should go to Alaskans first, and the state went so far as to develop a scheme where the payments of dividends from the Alaska Permanent Fund were based on the length of one's residency in the state, and which required a lengthy period of residency in the state to qualify for the dividend (McBeath & Morehouse, 1994). While this provision was ruled unconstitutional by the U.S. Supreme Court (*Zobel v. Williams,* 457 U.S. 55, 1982), these examples reflect the very important role of "Alaskanness" and authentic Alaska experience in the state's political culture.

Interest Groups

        Some interest groups are purely economically driven, such as those focused on tourism. An example of this is the Alaska Travel Industry Association (ATIA) which focuses on promoting Alaska to potential visitors and promoting the tourist industry as a major economic contributor as well as force in the state (ATIA, 2019b). By advocating increasing visits, they are increasing the risk of an incident, such as collision, medical emergencies, and so on that may occur in the Alaska Arctic. More specifically, oil and gas represent the tension between economic and environmental concerns present in Alaska. The oil and gas industry plays a role in the attempted expansion of acts which put the Arctic and sub-Arctic Alaska at greater risk of suffering an incident that could be detrimental. The industry has pushed for the opening up of more lands, both state and federal, for drilling and more resource development (Keil, 2014). For example, the Arctic National Wildlife Refuge was opened up for exploration and development in late 2017 (Hardin & Rowland-Shea, 2018). It should also be noted, though, that there are groups specifically dedicated to countering the efforts of oil and gas industry, such as the Alaska Oil and Gas Conservation Commission. Related, environmental groups are active, such as Defenders of Wildlife (2018) and the Alaska Wildlife Alliance (see Huff, 2015 for a more comprehensive list).

        There is not always a tension between economic and environmental goals, though. Many interest groups in Alaska relate to the protection of the environment for purposes of saving the livelihood of the people. For example, the Alaska Marine Conservation Council (2012) arranged focus groups to understand the changing needs of fishermen, marine industries, and coastal residents. There are also fisheries management councils, such as the North Pacific Management Council (Carroll, 2006). Similarly, the Alaska Federation of Natives concentrates on working for

causes that will most benefit Alaska Native people in the state. There are also native

organizations related to specific causes such as the Alaska Native Tribal Health Consortium and

the Alaska Eskimo Whaling Commission. These groups are likely to mobilize in the case of any

emergency which threatens livelihood, coastal residents, and the health of Alaska Natives.

Confluence of Interests in Arctic Alaska Emergency Management

As institutions may simultaneously constrain and enable different individuals or groups

(Bromley, 2006), in addition to the past section on the governance of emergency management, it

is also necessary to consider stakeholders and how the governance structure relates to, or

influences, this.

The number of involved interest groups greatly depends on the nature of the emergency.

For example, in the case of an oil spill, most notably the *Exxon Valdez* spill in the Prince William

Sound of Alaska, the oil industry, and advocates of expanding resource development and

cultivating private business of this kind in the area, become very involved. Advocates for the

environment and animal rights (such as Defenders of Wildlife at the national level) also become

very active, in addition to those fishers whose livelihood depends on clean water. Similarly, the

Alaska Native interest groups and the Alaska Eskimo Whaling Commission also have a stake in

ensuring that the contamination does not influence their constituents, or at least that the effect is

mitigated. Yet in the event of a wreck of a cruise ship, the confluence of interest groups may be

much smaller. The Alaska Travel Industry Association, concerned about tourism, would be

prominent. Yet the other noted groups may not be as concerned about the incident, except

perhaps the Alaska Federation of Natives if the incident led to an overflow of tourists in a local Alaska Native community.

Desired Outcomes of Emergency Management Actions

In the most basic sense, tangible outcomes desired from emergency management operations include saved lives, resources, and infrastructure. Yet there is also the need to consider the intangible outcomes, namely the more value-laden elements (Frey, 1997; Ostrom, 2005). These are much more difficult to quantify, but include loss of livelihood or forced relocations, a loss of a culturally important structure, and so on. Next, we discuss how to evaluate these outcomes.

There are frequently tradeoffs between efficiency and equity (Imperial & Yandle, 2005). For example, how do we respond to an emergency in a way which would best allocate resources relates to efficiency, yet at the same time, are certain individuals who are affected by the emergency worse off financially, even if there are fewer residents in that community, who might better be prioritized in a response? Of the many potential evaluative criteria for outcomes, such as efficiency and equity, of specific interest here is conformance to the values of local actors (Ostrom, 2011). Namely, how well do the actors and actions taken within the action situation adhere to the values held by Arctic Alaska residents? Also of interest is accountability in the process (Ostrom, 2011). Are actors held accountable for the role they take on in responding to an emergency? What accountability mechanisms are present to ensure this?

Cultural resources are potentially destroyed when an emergency occurs, and it has been found that responders may cause further harm to those affected due to a lack of comprehension of their cultural importance (Spennemann, 1999). For example, disconnect from values of local actors was present in part of Exxon's response to the Valdez spill. They shipped fish in to feed Alaska Natives in a community affected by polluted water, yet this was viewed as very culturally insensitive, since there was no consideration of their loss of their entire way of life of gathering food from the land (Rodin et al., 1992). This is a clear example of where conformance to the values of local actors was not adhered to. This may be due to an over-emphasis on efficiency of response – namely, how can we help the most people and communities suffer the least damage? Yet these evaluations are not mutually exclusive. One can be accountable and respect the values of the local communities while still evaluating the best use of the resources available.

Discussion of IAD, Governance Structure, and EM

This paper's usage of IAD to describe the Arctic Alaska, specifically internal and external attributes, the formal legal governance structure, and stakeholders, leads to the finding that a recent movement toward network governance of emergency management (Helbing, Ammoser, & Kuhnert, 2006; Kapucu, 2005) is compatible with that of the Arctic Alaska governance structure. First, IAD is a framework around understanding common pool governance issues. Here, we demonstrated how the IAD elements can apply to the governance of emergency management generally. Although this encompasses various types of emergencies, and is thus a hypothetical action situation, IAD highlights well the different parts of governance of EM. It allows us to understand how these parts work together and coalesce in successful response, as

well as where responses fall short. For example, in the case of the *Exxon Valdez* oil spill, there were issues with lack of responsibility taken for command of the response in the immediate aftermath. According to IAD, sanction and enforcement power is important. Thus, the lack of these elements allowed for this issue to arise in the spill aftermath.

Second, analyzing the Emergency Operations Plans (EOPs), particularly that of the state of Alaska, the formal legal governance structure already involves a networked approach. Further, this aligns well with the structure of these communities, with the village embedded within a borough, or the unincorporated borough, with a chain of appeals to higher levels of government for emergency response aid in place. In the case of appeal to a state agency, for example, this entity may directly assist the locality through resources or personnel, alongside local responders.

Finally, IAD suggests how informal norms operate, as well as interest groups. These sections highlighted the importance of consideration for the local level (villages or towns) and special interests such as subsistence living that arise in the Arctic Alaska context. By considering these needs and incorporating these actors in ER in a networked fashion, the results can conform to the desires of local actors, while still leveraging the resources of larger communities and entities such as the state and federal government.

Conclusion: Governance of Emergency Management Incidents in the Arctic Alaska

This paper uses the Institutional Analysis and Development (IAD) to evaluate a hypothetical action situation of an emergency in the Arctic Alaska. This exercise led to the consideration of both internal and external attributes which shape the action situation, the formal

governance structure, and stakeholders. Finally, we discussed the desired outcomes and how these may, or even should, be evaluated. The emphasis here is on the values of the local residents and how applicable a recent movement toward a collaborative network emergency response (ER) is in this context. Failures of ER in the past, most notably the Exxon Valdez spill, demonstrated the lack of consideration for local residents and how a response driven by industry and private organizations can be especially problematic. By preemptively creating groups such as the Newtok Planning Group, the needs of the local communities can be considered fully in an emergency situation, while coordination among governmental actors and private organizations and individuals is better facilitated.

To conclude, the Alaska Arctic context has a multitude of actors who may become involved in an emergency situation, either in the short-term response or longer-term recovery. The IAD elements demonstrate the relevant actors, stakeholders, and values present in the Arctic Alaska. This shows how compatible this region is in terms of governance structure with the emerging move toward network governance in EM. Understanding these various interests and actors allows for a better grasp on the way forward for ER in Alaska, particularly the Arctic, as climate change makes this an even more pressing and frequent issue.

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