SUPPORTING PUBLIC INVOLVEMENT IN RESOURCE MANAGEMENT DECISIONS THROUGH INCLUSIVE CONSERVATION

BY

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THESIS

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ABSTRACT

Environmental conservation relies on effective public participation in research, but resource management agencies frequently struggle to engage various stakeholder groups in meaningful ways. My thesis contributes to a burgeoning literature that aims to understand how research and management can become more inclusive for engaging residents in conservation initiatives while staying rooted in theories that guide the conservation social sciences. I sought to: (1) understand how psychological factors affect community perceptions of inclusivity in land management decision-making, and (2) explore how value orientations affect group deliberation of protected areas. My research was conducted with residents of Alaska USA because this state has captivating landscapes and wildlife, as well as a large percentage of federally managed lands, which elicit deep-seated responses from local residents. I drew from a statewide survey to first determine current levels of trust, sources of land management information, and perceptions of inclusivity in land management decision-making. Using structural equation modeling, I then empirically tested the relationships among these variables. My results showed that residents of Alaska did not trust federal land managers or feel included in the decision-making process. Strengthening residents' trust in the morality of the decision-making process is likely to increase perceptions of inclusivity. Next, remotely working with residents from Interior Alaska, I studied human-environment interactions and socialization through an online discussion forum that was entitled the 'Denali Discussion Forum.' In this project, I qualitatively analyzed the text that was generated through residents' discussions during the four-week period of the forum. I also segmented residents into three subgroups that were defined by their value orientations. Results suggested that residents with statistically distinguishable individual values followed different avenues in their discussions about the management of natural resources in Alaska. Overall, this

thesis provides a foundation for resource managers in Alaska to adopt more inclusive conservation methods by addressing resident concerns and incorporating diverse forms of knowledge into the decision-making process.

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CHAPTER 1: INTRODUCTION

Research in the national park system

The creation of parks and protected areas is a strategy that has been used over time to achieve the long-term conservation of nature. These areas provide numerous benefits to communities such as protecting biodiversity, strengthening economies, and enhancing quality of life (Bingham et al., 2019; Dudley & Stolton, 2010; Manning, 1999; Watson et al., 2014). The modern definition of protected areas is a geographic area that is recognized or managed with the goal of achieving nature conservation with the understanding that protected areas have existed throughout human culture (IUCN, 2012). A national park was first established in the late 1800's by the United States, and with the passage of the 1916 Organic Act, and was meant to preserve iconic landscapes that harbor natural and cultural resources, while providing for the enjoyment of future generations (Nash, 2014). Since that time, the American prototype for a federally managed protected area has been emulated worldwide despite the challenges facing protected area managers to balance competing objectives and diverse stakeholder groups (Bushell, 2003; Chape et al., 2005; Davey, 1998; Walkey et al., 1999).

Though parks and protected areas serve as invaluable vestiges of natural and cultural heritage in the U.S., the movement has been critiqued due to concerns about the neglect of local knowledge, displacement of native people from their lands, and restrictions on utilizing resources that communities have relied upon for generations (Agrawal & Redford, 2009; Brockington & Igoe, 2006; Vedeld et al., 2007). Another tension that underpins protected area management is the interest in supporting place-based management decisions coupled with the need for employees to detach themselves by traveling from park to park to advance their career (Everhart, 2019). Moreover, the focus of agencies such as the National Park Service (NPS) on supporting

tourism has resulted in a disproportionate focus on visitor use research rather than studies involving local stakeholders and communities. Indeed, few studies exist that have developed conservation measures for U.S. protected areas that reflect local community concerns (van Riper et al., 2022).

In the state of Alaska, there is a plurality of interests and perspectives among communities surrounding protected areas, as well as a contentious history of resource management, that generate challenging circumstances for management agencies to build in-depth relationships with local residents (Knapp et al., 2014). This issue cannot be disregarded because of the state's large percentage of federal lands (Vincent et al., 2014) and reliance on protected areas to boost the economy (Goldsmith, 2008). Resource managers in Alaska, USA are therefore tasked with balancing the needs of local communities alongside other demands, while explicitly incorporating diverse perspectives in their decision-making. This can be achieved through a process known as 'inclusive conservation' that identifies, compares, and balances diverse voices while developing socially and environmentally sustainable outcomes (Raymond et al., 2022; Tallis & Lubchenco, 2014). Research in the context of Alaska, USA is urgently needed to support public land management agencies in their efforts to support transformation toward inclusive conservation over time.

Research Question

My research focused on understanding residents' perceptions of the resource management process and their visions for the future of U.S. protected areas. Specifically, I evaluated the factors that positively correlated with perceived inclusivity among residents across Alaska, USA from a previously generated database (Chapter 2), probed the discussions of local

residents to reveal how visions for protected area management varied across configurations of groups defined by their values (Chapter 3), and then drew conclusions from these results to guide future research and policy (Chapter 4). My thesis addresses the following two research questions and corresponding objectives:

Research Question 1. What factors impact community perceptions of inclusivity in land management decision-making?

Objective 1a. Examine current levels of community-agency trust.

Objective 1b. Identify what information sources are being used to learn about land management.

Objective 1c. Analyze which dimensions of trust and information sources positively predict perceived inclusivity.

Research Question 2. How do value orientations impact group deliberation of benefits, threats, and management practices within the Denali Region of Alaska?

Objective 2a. Examine the perceived benefits and threats in the Denali Region.

Objective 2b. Link management practices to benefits and threats.

Objective 2c. Compare respondent reflections across subgroups defined by their value profiles.

CHAPTER 2: PERCEIVED INCLUSIVITY AND TRUST IN PROTECTED AREA MANAGEMENT DECISIONS AMONG STAKEHOLDERS IN ALASKA[1]

Abstract

1. The success of conservation initiatives often depends on the inclusion of diverse stakeholder interests in the decision-making process. Yet, there is a paucity of empirical knowledge concerning the factors that explain why stakeholders do—or do not— believe that they are meaningfully represented by government agencies.
2. Our study provides insight into the relationship between trust and stakeholder perceptions of inclusivity in public land management decisions. Here, we focus on the U.S. state of Alaska, where almost two-thirds of the land area is managed by the federal government.
3. We used structural equation modeling to test whether an individual's trust and the information sources used to learn about land management positively influenced perceived inclusivity. We conceptualized trust in terms of four dimensions that reflected an individual's disposition to trust, trust in the federal government, trust in shared values, and trust that agencies adhere to a moral code.
4. We found that survey respondents across the U.S. state of Alaska had a limited disposition to trust others, did not trust federal land management agencies, did not believe agencies shared their values pertaining to protected area management and did not believe that agencies adhered to a moral code.

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5. Beliefs about the morality of agencies were the primary driver of perceived inclusivity in land management decisions, indicating that agencies should focus on solving problems through deliberation and discussion about moral principles rather than by force.
6. Information acquired from professional, community-based, or environmental advocacy exchanges also positively influenced perceived levels of involvement among stakeholders in resource management decisions.
7. These results provide a roadmap for how land management agencies can improve public relations and work toward a model of inclusive conservation around protected areas.

Key Words: Alaska, inclusive conservation, protected areas, public lands, social learning, social science, trust

2.1 Introduction

The irreversible losses of critical ecosystems and increasingly noticeable changes to social-ecological systems have ignited public awareness of nature conservation and garnered support for both dampening global environmental change (Bernstein et al., 2008; Chan et al., 2020; Leiserowitz et al., 2020) and generating more equitable policies that govern the use of natural resources (Mace, 2014; Smith & McDonough, 2001; Tyler & Degoey, 1995). The contentious history of land acquisition and regulations that underpin public opinions about how governments manage resources create even deeper divides between agencies and local communities. Investigations of (mis)representation of stakeholder interests in environmental conservation have consequently gained traction to better understand and enact value pluralism, as well as strive to strengthen the relationships between agencies and their constituencies

(Cebrián-Piqueras et al., 2020; Palomo et al., 2014; van Riper et al., 2020). Indeed, public involvement in land management decisions is instrumental in the success of conservation initiatives and relies on both trust (Smith et al., 2013) and information exchange (Gould et al., 2019; Reed et al., 2010). Although a sizeable body of literature has recognized that successful conservation initiatives need to involve listening for values in community perspectives, power dynamics, and levels of trust (Berkes, 2007; Oldekop et al., 2016; Smith et al., 2013; Staddon et al., 2021; Stern & Coleman, 2015), there is a limited empirical understanding of the combination of reasons why stakeholders hold different perceptions of inclusivity. Here, we examine how factors related to trust and transparency in communication influence beliefs that there is adequate inclusion of residents across the U.S. state of Alaska by land management agencies.

Inclusive Conservation as a Research Agenda

The concept of inclusive conservation originated from a concern that multiple approaches to valuing nature were increasingly contested rather than viewed as complementary (Mace, 2014; Saberwal, 1996; Tallis & Lubchenco, 2014). By dichotomizing goals into a binary system that consists of conservation for either intrinsic or instrumental purposes, scientists have risked overlooking the full complexity of interrelationships between people and nature (Palomo et al., 2014; West et al., 2020). For example, area-based conservation initiatives have been proposed as solutions to pressing global environmental issues including biodiversity loss and climate change (Dinerstein et al., 2019; Wilson, 2016). Indeed, the long-term success of biodiversity conservation across large, interconnected swaths of land requires buy-in from stakeholder groups that espouse an array of values, especially the voices of Indigenous groups that have been historically underrepresented (Glaser et al., 2010). Likewise, local and traditional ecological

knowledge rooted in non-Western understandings of a landscape need to be incorporated into biodiversity conservation (Charnley et al., 2007) in ways that expand the breadth of issues on which there is agreement to shift focus from conflict to appreciation for the whole.

In practice, all values held and expressed by stakeholders cannot be equally served or represented in decision-making, but it is possible to simultaneously achieve outcomes including more effective biodiversity conservation and economic prosperity through societal transformations toward more sustainable futures (Chan et al., 2020). These transformations can, in part, be accomplished through community-based conservation initiatives that link environmental outcomes with community benefits (Kellert et al., 2000; Salafsky & Wollenberg, 2000; Wilson, 2004). However, community-based conservation is not a panacea but rather a starting point for land managers to develop the capacity for more effective stakeholder engagement and build strategies that successfully cope with multiple competing demands on limited resources (Berkes, 2007; Blaikie, 2006). In other words, inclusive conservation works to improve environmental and economic outcomes by reducing tensions that involve a wide range of stakeholders in decision-making processes.

The definition and meaning of inclusive conservation initiatives have varied widely within the conservation sciences (see Table 2.1). Building on previous research in the context of protected areas (ENVISION, 2021; López-Rodríguez et al., 2020), we define inclusive conservation as a process for developing and answering research questions that help to solve resource management problems that emerge from balancing the consequences of different visions for nature conservation. Ideally, a model of inclusive conservation considers the scale of the system being managed, establishes legitimacy with stakeholders through equitable resource management, uses verifiable ecological knowledge, and develops a multicultural conservation

ethic (Berkes, 2004; Farvar et al., 2018; Musavengane & Leonard, 2019). These lofty goals have been theoretically posited in previous research, yet no studies to date have established a psychometric scale for evaluating perceived inclusivity and, therefore, understanding the degree of success achieved by management agencies in their efforts to represent stakeholder interests. Thus, there is a strong need to measure perceived inclusivity, which we define as an individual's perception that they are a valued stakeholder with reasonable influence on local land management decisions.

Table 2.1

Definitions of the term inclusive conservation established in previous research

Definitions	**Source**
"Recognition of the difficulties associated with implementing restrictive policies, and the fact that human land-use practices need not lead to degradation or to a decline in biological diversity, should lead to more inclusive conservation policies within protected areas as well as an expansion of the conservation focus beyond protected-area boundaries" (p.741)	Saberwal (1996)
"Studies for the conservation of historic environments have evolved from the conservation of only physical properties to an inclusive conservation approach concerning cultural properties" (p.105).	Karakul (2011)
"Together, we propose a unified and diverse conservation ethic; one that recognizes and accepts all values of nature, from intrinsic to instrumental, and welcomes all philosophies justifying nature protection and restoration, from ethical to economic, and from aesthetic to utilitarian" (p.27).	Tallis and Lubchenco (2014)
"A more inclusive conservation science (i.e., one that includes methods and insights from the natural sciences, the social sciences, and the humanities) will enable the conservation community to produce more ecologically effective and socially just conservation" (p.65).	Bennett et al. (2017)

Table 2.1 (cont.)

Definitions	Source
"ICCA Consortium recommends that 'inclusive conservation' be understood as conservation where indigenous peoples and local communities are the key actors governing, managing and conserving their lands, waters and other gifts of nature and, as necessary and desired, invite others to collaborate with and support them on community-defined terms" (p.8).	Farvar et al. (2018)
"Promoting more inclusive conservation is complex and requires a broader conservation agenda for more inclusivity and to genuinely tackle issues of poverty. There is a need for conservation groups to also include the previously marginalised in leadership structures and to incorporate indigenous knowledge systems. This will assist in changing the perception of marginalised people that particular persons dominate conservation" (p.135).	Musavengane and Leonard (2019)
"Inclusive conservation involves developing and applying inter- and trans-disciplinary tools and processes to identify, compare and balance the consequences of different visions for how nature should be conserved" (Home page section).	ENVISION (2021)

The idea of perceived inclusivity has been integral to explaining the evolution of public involvement in the United States environmental management system since the turn of the 20th century when many natural resources began to be managed by the federal government. Since 1874, when Yellowstone National Park was established, the concept of a national park circulated around the globe as a model for protecting charismatic landscape wonders such as geysers and waterfalls (Nash, 2014). Over time, conservation ideology has been restructured and challenged by a range of social-ecological factors such as colonialism, democracy, and capital (Buscher & Fletcher, 2020), leading to current Western views of conservation that struggle to deal with the full complexity of engaging people in environmental management decisions (Ludwig et al., 2001). Moving from a philosophical discussion to one of effectiveness, requires that research focus on understanding these ideological transitions, identify meaningful solutions for achieving

an inclusive conservation research agenda, and provide standards for measuring the outcomes of fluidly connected systems of people and their environments (Fazey et al., 2004; Gould et al., 2019; Pullin & Knight, 2001; Raymond et al., 2021; Tallis & Lubchenco, 2014).

Trust as a Key Factor in Conservation

Previous research has suggested that trust instilled in public land management agencies positively influences levels of public involvement (Smith et al., 2013) and, thus, representation in decision-making through inclusive conservation. We define trust as a process where one actor believes in the truth, reliability, and capability of another actor or agency (Stern & Coleman, 2015). There is a strong need to better understand the complexity of trust and its role in explaining how people perceive the opportunities afforded by agencies to express their interests and induce changes in social-ecological systems. For example, Smith et al. (2013) argued there were five dimensions of trust, including an individual's disposition to trust (i.e., an individual's general tendency to trust others), trust in federal governments (i.e., trust bestowed on government agencies), trust in shared values (i.e., perception that personal viewpoints and desired outcomes are also held by the trustee), moral competency (i.e., perception that another individual will adhere to moral codes and perform selfless behaviors accordingly), and technical competency (i.e., perception that an agency is guided by sound science and has the skills to perform necessary tasks). Although these five dimensions of trust are correlated, they remain theoretically distinguishable (Smith et al., 2013). Other authors have distinguished trust in decisions between a trustor and trustee (Molm, 2006), and drawn from social exchange theory (e.g., van Riper et al., 2016) to understand trust and the role of shared values in shaping relationships between the trustor and trustee. This body of work has established a multi-

dimensional conceptualization of trust as a relevant construct for understanding how to solve resource management problems.

Studies focusing on community-agency trust have been conducted in various contexts with results indicating that trust is instrumental to successful resource management (Davenport et al., 2007; Leahy & Anderson, 2008; Payton et al., 2005). When agencies establish and maintain multiple forms of trust with a community, a stable relationship is formed which then increases institutional resilience (Folke et al., 2005; Stern, 2008; Stern & Baird, 2015). Consequently, an agency can carry out its general functions throughout disturbances while leaving room to adapt as new knowledge, skills, relationships, and viewpoints are acquired (Folke et al., 2005). Knowledge exchange and information sharing are also most likely to occur if decision-makers are deemed trustworthy by relevant stakeholder groups (Strauser et al., 2020). Alternatively, a lack of community-agency trust has implications for managing ecosystems. For example, in a study of national parks, trust in land managers was identified as a positive predictor of compliance with park regulations (Stern 2008). Specifically, untrusting residents who lived near the Great Smoky Mountains National Park reported high levels of participation in illegal hunting, harvesting, and fishing. Similarly, Matera (2016) found that angler compliance with marine conservation projects was closely and positively related to their trust in government institutions. However, the process of maintaining stable agency-community relationships varies widely across resource management agencies. In the U.S. National Park Service (NPS) specifically, place-based management decisions are encouraged yet employees need to travel from park to park to advance their career (Everhart, 2019). This high turn-over rate can disrupt local relationships and deteriorate trust established between community members and previous NPS employees.

Information Sources used to Learn about Public Land Management

Previous research has shown that communication between land managers and local residents is crucial for developing and maintaining public trust (Davenport et al., 2007; Stern, 2008). Therefore, establishing a process for inclusive conservation requires careful consideration of information sources, which we define as the place of origin for information disseminated to individual and groups, along with the channel that is used to deliver that information (Tucker & Napier, 2001). Consistency in community-agency communications is also vital to sustain trusting relationships (Kubo & Supriyanto, 2010) and ensure the success of protected areas that support biodiversity conservation (Hausmann et al., 2020; Pollnac et al., 2001). However, regularity in how agencies remain in contact with adjacent communities does not guarantee healthy relationships, as these communication networks can be strained by numerous barriers. For example, a lack of community knowledge (Shackleton et al., 2016) or misalignment between public concerns and agency priorities (Schenk et al., 2007; Wald et al., 2019) can result in failed attempts at communication. Therefore, land managers are tasked with the difficult challenge of providing adequate knowledge to communities, while also offering meaningful opportunities for the community to shape and guide their own decision-making (Tam et al., 2021). For this reason, there is a strong need to better understand the interrelationships between forms of learning and perceptions of inclusivity.

Two frameworks have been established to describe how land management information can be disseminated and absorbed by local residents to improve community-agency relationships and more effectively achieve conservation goals. First, conventional learning focuses on a one-way transmission of information whereby agencies disseminate information to prompt individual learning independently of an environment (National Academies of Sciences & Medicine, 2017).

Such methods of communication assume that the rejection of scientific information is driven by a lack of stakeholder knowledge. This model has been criticized because it assumes a "one-size-fits-all" approach that does not acknowledge people have pre-existing and variable degrees of knowledge (Allum et al., 2008). Also, the lasting effects from this kind of information dissemination are likely weaker as compared to a model that incorporates lived experiences. In its place, a second framework within the conservation sciences has emphasized the importance of social learning which is conceptualized as a shared process among stakeholders (Bandura, 1977; Schusler et al., 2003) that involves behavioral adaptation and a response to context-specific information (McElreath et al., 2005; Morgan et al., 2012). This method of communication requires the creation of dialogue among stakeholders and land managers, which can broaden one's personal viewpoint of environmental issues and increase the perceived legitimacy of information produced (Cash et al., 2003; Culwick et al., 2019; Eriksson et al., 2019; Pahl-Wostl et al., 2008). While both methods have been utilized to varying degrees, there is a gap in empirical knowledge of how various forms of learning – ranging from formal to informal outlets – relate to public perceptions of inclusivity in land management decisions.

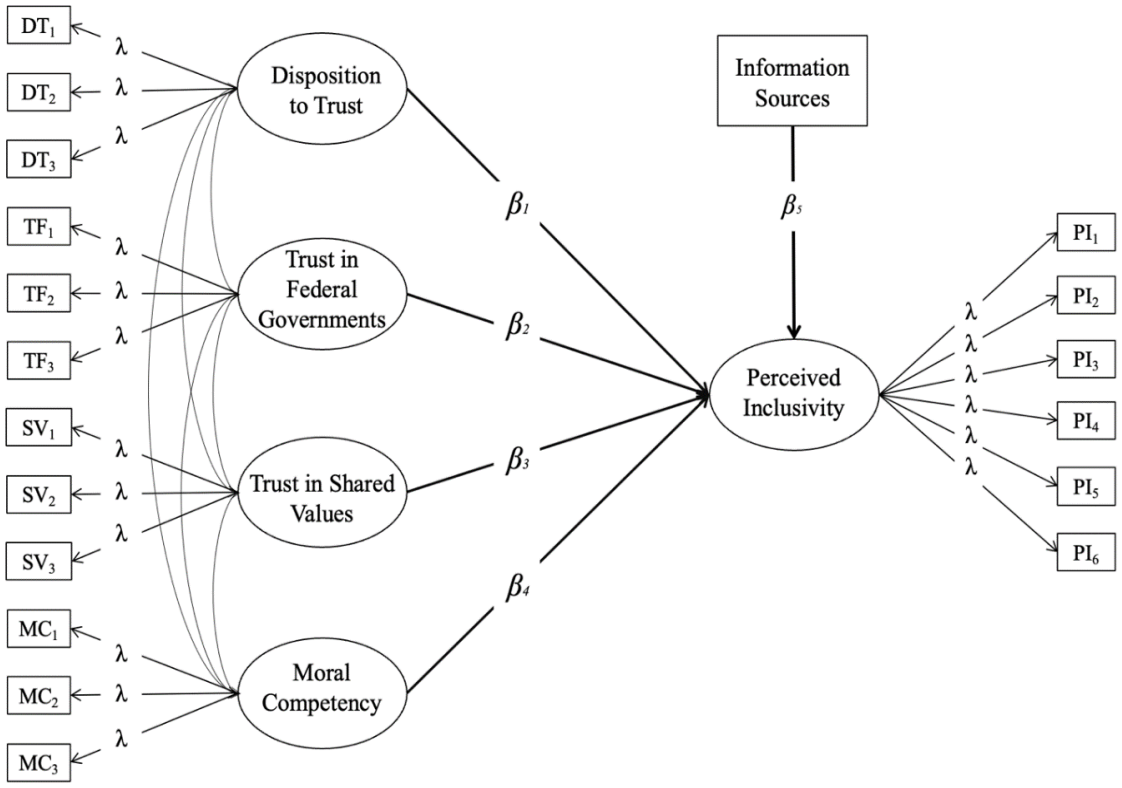
The current study

We examined here how the process of building trust and knowledge influenced Alaskan residents' perceptions of public land management decisions and whether residents felt included in those decisions. While inclusivity has been represented as part of the process (Lawrence et al., 1997), we position this construct as an outcome to test the relationships posited by Smith et al. (2013) between trust and inclusive participation in decision-making. We hypothesized that all four dimensions of trust would be positive predictors of perceived inclusivity (see Figure 1).

Furthermore, given past work that showed positive correlations between environmental awareness and civic engagement (Knapp et al., 2021; Stern et al., 1999), we hypothesized that more information sources would be a positive predictor of perceived inclusivity in public land management. To explain perceived inclusivity more completely, we used structural equation modeling techniques to test relationships among a suite of variables.

Figure 2.1

Hypothesized model of the theoretical relations among factors that predict perceived inclusivity



2.2 Methods

Study Area

Our research was conducted with residents living throughout the U.S. state of Alaska, which is comprised of 41 million hectares of arctic and subarctic landscapes. In this largely rural landscape, the economy is predominantly stimulated by natural resource extraction, federal government jobs, seafood exports, and industrial tourism (Goldsmith, 2008). Visitors and residents alike are often attracted to Alaska due to the vast amount of public open space, with uniquely characteristic landscapes and wildlife (Stamberger et al., 2018). In turn, the tourism industry has caused increased development to support the large influx of seasonal visitors. Almost two-thirds of the total land area in Alaska is managed by the U.S. federal government (Vincent et al., 2014). A contentious history of land acquisition and management by the federal government has continued to generate significant challenges even today (Knapp et al., 2014). As a result of the high proportion of federal public lands and many competing state and local interests, Alaska is an ideal site to examine public land management and inclusive conservation.

Collection of Survey Data and Sampling Design

We collected data June - August 2020 via an online survey administered to a panel of Alaskan residents through a Qualtrics interface (see questionnaire included as Supporting Information). Given that our research aimed to understand the "average" Alaskan resident, Qualtrics criteria were chosen to reflect the 2010 Census on the basis of gender and age. When a respondent initiated the survey, they were asked to indicate their gender, age, and zip code. Once proportional quotas for gender and age were met, access to the survey was restricted to those groups so that demographic categories were not oversampled. The survey process was initiated

with a total of 920 individuals. Of the people who navigated to the online survey, a total of 189 people did not begin the survey process. From the submitted responses, 170 people were not eligible due to their primary residence being outside of the state, 114 people could not be validated as Alaskan residents, and seven people were excluded due to speeding through the survey. The final sample included 398 residents. Survey respondents gave written informed consent, as part of human subjects research approval provided by the University of Illinois at Urbana-Champaign Institutional Review Board #18679.

Survey Measures

We measured perceived inclusivity using six survey items. These questions were inspired by Arnstein's (1969) description of citizen participation and updated to reflect the overarching themes of inclusive conservation from the current conservation sciences literature. Respondents were asked to indicate how much they agreed or disagreed with a statement on a 5-point Likert scale from (1) "Strongly Disagree" to (5) "Strongly Agree." We used an exploratory factor analysis (EFA) to examine the dimensionality of the scale we developed to measure perceived inclusivity, because it had not been tested in previous research. We used a robust maximum likelihood extraction to generate parameter estimates and varimax rotation to clarify the relationship among factors. Results from the EFA indicated that one factor emerged with 45.5% of the variance being explained. The perceived inclusivity scale had an acceptable internal consistency ($\alpha = 0.83$).

We measured the two hypothesized drivers of perceived inclusivity. To measure trust, we drew from past research to examine four dimensions (Barber, 1983; Smith et al., 2013): (1) an individual's disposition to trust, (2) trust in federal governments, (3) trust in shared values, and

(4) trust in moral competency. We asked respondents to express how much they agreed or disagreed with statements on a 5-point Likert scale. We measured information sources by asking respondents to identify the information sources they used to learn about protected area management using a dichotomous (yes/no) scale. All sources were identified in consultation with partners in the NPS and 10 local community members who served on an Executive Committee throughout the project. All the identified sources spanned formal (i.e., public agencies, government officials, scholarly articles, professional societies, online newspapers, public meetings, government websites, and webinars) and informal mechanisms for gaining information (i.e., family and friends, social media, hunting organizations, and environmental groups).

Modeling Process

We used a covariance-based two-step structural regression modeling process with a robust maximum likelihood estimation procedure to test the direct effects of trust and learning on perceived inclusivity (Anderson & Gerbing, 1988). We calculated the factor loadings for each survey item to verify that all items exceeded the 0.40 threshold established in previous research (Hair et al., 2006). Model fit was assessed using a χ^2 value, however, given this indicator's sensitivity to sample sizes larger than 200 (Kline, 2011), other fit statistics were also referenced, including the root mean square error (RMSEA) $\leq$0.07 (Steiger, 2007), comparative fit index (CFI) $\geq$0.90 (Bentler, 1990), and standardized root mean square residual (SRMR) $\leq$0.07 (Hu & Bentler, 1999). We used the lavaan package 0.6-8 in RStudio Version 1.3.1093 for our statistical analysis (Rosseel, 2012).

We assessed missing data patterns in our perceived inclusivity and trust constructs. A total of 2.3% of trust items and 12.1% of the perceived inclusivity items were missing or marked

as “not applicable” in the survey questionnaire. Therefore, we took steps to determine if the missing items were missing at random (MAR), missing completely at random (MCAR) or missing not at random (MNAR). Little’s (1988) test indicated the trust survey items were not MCAR ($p < 0.01$), while the perceived inclusivity were MCAR ($p > 0.24$). Results indicated the missing data patterns for trust were likely MAR. Given this finding, the full-information maximum likelihood (FIML) method was applied to all scales account for our different missing data patterns (Allison, 2003).

We analyzed the twelve learning source variables (i.e., public agencies, government officials, scholarly articles, professional societies, friends and family, social media, online newspapers, hunting organizations, environmental groups, public meetings, government websites, and webinars) with a principal component analysis (PCA) to reduce the dimensionality of the data and increase interpretability. We retained the resulting components from the PCA with an eigenvalue greater than 1.0 (Kaiser, 1960). We interpreted the components based on their variable loading scores, with the assumption that variables producing the largest scores for each component had a larger influence when defining the component’s characteristics.

2.3 Results

Survey Sample

The gender distribution of survey respondents was 60.3% male and 39.7% female (see Table 2). The majority (73.6%) identified as White, followed by American Indian/Native Alaskan (13.3%), Asian (8.0%), other (4.8%), Black/African American (4.0%), and Pacific Islander (2.0%). A total of 3.3% preferred not to answer this question. Respondents could select multiple options to indicate their racial identity. The sample of respondents included in this study

was well educated, with every two out of 10 (21.1%) reporting a four-year college degree or higher. A total of 23.6% reported earning a two-year college degree, with 33% earning a vocation/trade school certificate, 34% earning a high school diploma, and 2.01% reporting less than high school. The majority (69.4%) earned less than $100,000 by household annually and the average age was 44.5 years (*SD* = 15.2). The majority (50.3%) of respondents lived in Anchorage, followed by Matanuska-Susitna (15.1%), Fairbanks-North Star (8.8%), Kenai Peninsula (8.5%), and Juneau (5.3%). The remaining 12% of respondents lived throughout the state of Alaska.

Table 2.2

Socio-demographic characteristics of Alaska residents who responded to the household survey administered during the summer of 2020

Variable	N	%
Gender Distribution		
Male	240	60.30
Female	158	39.70
Race		
American Indian/Native	53	13.32
Asian	32	8.04
White	293	73.62
Black/African American	16	4.02
Pacific Islander	8	2.01
Other	19	4.77
Prefer Not to Answer	13	3.27
Educational Attainment		
Less than high school	8	2.01
High school graduate	137	34.42
Vocation/Trade school certificate	61	15.33
Two-year college degree	94	23.62
Four-year college degree	23	5.78
Graduate degree	61	15.33

Table 2.2 (cont.)

Variable	N	%
Annual Income		
Less than $24,999	68	17.09
$25,000 - $49,999	86	21.61
$50,000 - $99,999	122	30.65
$100,000 - $149,999	54	13.57
$150,000 - $199,999	26	6.53
$200,000 - $249,999	8	2.01
$250,000 or more	7	1.76
Age (M, SD)	(44.5, 15.2)	

We found that residents of Alaska held relatively low levels of trust towards federal land management agencies and did not believe they were included in decision-making (see Table 3). Respondents agreed with negatively worded items which measured their disposition to trust (M = 2.41, SD = 0.97), suggesting that residents did not have a general tendency to trust others. Respondents also expressed disagreement with all other statements measuring dimensions of trust examined in this study. Specifically, trust in federal governments was the lowest of the measured dimensions (M = 2.27, SD = 1.05), followed by shared values with federal land management agencies (M = 2.65, SD = 0.97), and the moral competency of federal land management agencies (M = 2.78, SD = 1.08). Residents of Alaska expressed disagreement with the survey items that measured perceived inclusivity as well (M = 2.81, SD = 1.12).

Table 2.3

Survey items measuring trust and perceived inclusivity reported by survey respondents in Alaska

Scale items [a]		λ	Mean (S.D.)
Disposition to Trust [b] *(α =0.78)*			**2.41 (0.97)**
DT1	You can't be too careful when dealing with people	0.71	2.29 (0.91)
DT2	People are almost always interested only in their own welfare	0.75	2.57 (1.05)
DT3	One has to be alert or someone is likely to take advantage of you	0.76	2.37 (0.90)
Trust in Federal Governments *(α = 0.86)*			**2.27 (1.05)**
TF1	The U.S. Federal Government efficiently spends money	0.79	2.20 (1.05)
TF2	The U.S. Federal Government is effective in solving problems	0.87	2.33 (1.05)
TF3	I can trust the U.S. Federal Government to do what is right	0.83	2.30 (1.04)
Trust in Shared Values *(α = 0.90)*			**2.65 (0.97)**
SV1	Federal agencies that manage public lands support my views	0.82	2.72 (0.95)
SV2	Federal agencies that manage public lands think like me	0.92	2.58 (0.95)
SV3	Federal agencies that manage public lands have similar goals to mine	0.88	2.65 (0.99)
Moral Competency *(a = 0.73)*			**2.78 (1.08)**
MC1	Federal employees are not self-serving in decision-making	0.70	2.78 (1.03)
MC2	Public land managers from the federal government really care what happens to me	0.82	2.47 (1.02)
MC3	Federal employees are sensitive to the local economic impacts of tourism and recreation	0.57	3.09 (1.10)
Perceived Inclusivity *(α = 0.83)*			**2.81 (1.12)**
PI1	I have contributed to decision-making processes around management of public lands near my home	0.54	2.54 (1.17)
PI2	There are opportunities for me to help govern public lands near my home	0.70	2.97 (1.09)
PI3	My viewpoint is reflected in the current public land policies of federal agencies near my home	0.77	2.76 (1.00)
PI4	Decision-making is shaped by collaboration across different interests within my community	0.67	3.29 (1.03)
PI5	I am involved with organizations that play a role in public land management near my home	0.52	2.41 (1.15)
PI6	The viewpoints of my community are reflected in the current public land policies of federal agencies near my home	0.72	2.89 (1.03)

a. Mean values were coded on a Likert scale where 1 = "Strongly Disagree" and 5 = "Strong Agree." Differences between means read from left to right: α, Cronbach's alpha; λ, factor loadings; S.D., standard deviation.

b. Reverse coded survey items.

Principal component analysis

The PCA reduced the twelve information source variables into seven components accounting for 69% of the variance in information sources of Alaskan residents (see Table 4). From these seven components, we identified three distinguishable components (1) Public Information Sources (C1); 2) Community Information Sources (C2); and 3) Environmental Information Sources (C7). Component C1 described information sources from professionals or agencies well-informed in land management practices. Individuals with high C1 scores obtained their information about land management from government officials, public agencies, professional societies, and scholarly articles; whereas lower C1 scores indicated information was obtained from social media, friends, and family. Component C2 described information sources from personal relationships and community members. Individuals with high C2 scores obtained their information from friends, family, and hunting organizations; however, those with low C2 scores obtained information from online newspapers and social media. Individuals with high C7 scores were defined by primarily obtaining information from environmental groups.

Table 2.4

Principal component analysis of land management information sources

	C1	C2	C7
Component Name	Public Information Sources	Community Information Sources	Environmental Information Sources
Public Agencies	**0.47**	0.10	-0.22
Government Officials	**0.58**	-0.04	-0.25
Scholarly Articles	**0.40**	-0.16	-0.23
Professional Societies	**0.44**	-0.09	0.20
Friends and Family	**-0.48**	**0.60**	-0.22
Social Media	**-0.50**	**-0.46**	0.05
Online Newspapers	-0.06	**-0.64**	0.08
Hunting Organizations	0.03	**0.40**	-0.05
Environmental Groups	0.19	0.27	**0.80**
Public Meetings	0.26	0.09	0.23
Government Websites	0.17	0.06	-0.22
Webinars	0.12	0.01	0.03
Variation Explained (%)	12.83	10.63	8.44
Eigenvalue	1.54	1.28	1.01

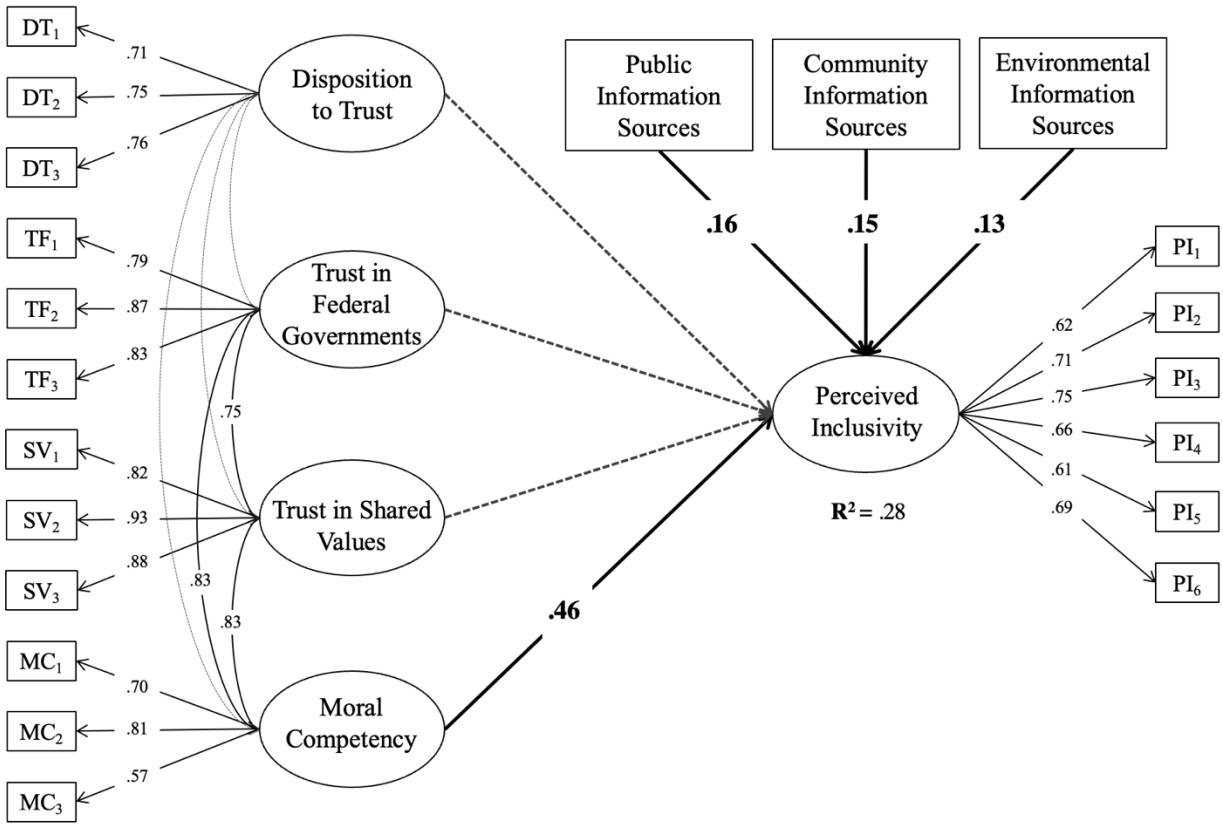
Note. Variables with loadings greater than 0.40 or less than -0.40 for the respective component are shown in bold.

Structural regression modeling results

Results from our two-step structural regression model evaluated the psychometric properties of our survey scales. Fit indices from the confirmatory factor analysis (CFA) showed that the model fit the sample data well ($\chi^2 = 278.13$; df = 125; RMSEA = 0.056; CFI = 0.94; SRMR = 0.44) (see Figure 2). All scales measuring trust were reliable given Cronbach α coefficients ranging from 0.73 to 0.90 and composite reliability scores ranging from 0.74 to 0.91. Also, all factor loadings were $\geq$ 0.40 so we proceeded to estimate a structural regression model.

Figure 2.2

Results from the latent variable path analysis



Our hypothesized path model showed good fit ($\chi^2 = 365.19$; df = 182; RMSEA = 0.05; CFI = 0.94; SRMR = 0.05). Consistent with our hypotheses, we found moral competency to be a positive predictor of perceived inclusivity among survey respondents ($\beta = 0.46$), indicating the belief—or disbelief—that land management agencies adhered to a moral code drove the perception of inclusion in decision-making. Three information source constructs also accounted for the pattern of variation in perceived inclusivity. As information learned from professional ($\beta = 0.16$), community ($\beta = 0.15$), and environmental advocacy sources ($\beta = 0.13$) increased, so too did the degree to which residents felt included in resource management decision-making.

2.4 Discussion

Inclusive conservation is a process focused on understanding stakeholder visions for how nature should be conserved and improving the effectiveness of resource management strategies. To understand the reasons why perceptions of inclusivity existed within a population, we used a latent variable structural equation model to test how four dimensions of trust (Smith et al., 2013) and information sources (Reed et al., 2010; Tucker & Napier, 2001) shaped how residents in the U.S. state of Alaska viewed their involvement in resource management decisions. Our results indicated that trust and information sources accounted for a moderate degree of variation in reported levels of perceived inclusivity. Specifically, moral competency and three information sources (i.e., Public Information Sources, Community Information Sources, Environmental Information Sources) were helpful explanatory variables that we suggest should be carefully considered by protected area decision-makers in Alaska.

The Dimensionality of Trust and its Effects on Perceived Inclusivity

Public support for land management decisions is instrumental in the success of conservation initiatives and hinges on trustworthy relationships between trustors and trustees (Smith et al., 2013; Stern, 2008). In line with previous research (Liljeblad, 2005), we confirmed that trust was a multi-dimensional construct. Although trust in shared values, the federal government, and moral competency were correlated exogenous variables, not all of our hypotheses were supported. Specifically, an individual's disposition to trust others did not covary with the other three dimensions established by Smith et al (2013). In line with Goto (1996), we also observed that stakeholder dispositions (as compared to other forms of trust) were processed differently by survey respondents. It could be that an individual's disposition to trust is an

antecedent to other trust concepts, particularly in contexts where knowledge is high. Because most of the Alaskan landmass is managed by the federal government, residents may have formed their (lack of) trust in agencies in response to personal experience, rather than relying on their general disposition to trust that is used in the absence of knowledge (Leahy & Anderson, 2008). From the dimensions of trust that we measured, moral competency was the only dimension that positively correlated with perceptions of inclusivity. This finding indicated that residents were more likely to believe they were included in policy outcomes when land managers had the ability to make sound decisions and effectively engage stakeholders in deliberation about their future.

Previous research has emphasized the importance of transparency and stakeholders knowing how decisions are made (Nie, 2003; Smith & McDonough, 2001; Staddon et al., 2021). In the context of Alaska, moral competency is likely deemed an important quality in this process, because it signals that key conflicts (e.g., tensions over subsistence hunting and ambivalence toward tourism; Johnson & van Riper, 2021) will be equitably addressed. While all values held by stakeholders cannot be equally served by land managers, agencies can support a process that involves the co-creation of policy outcomes in ways that reflects diverse stakeholder interests (Lind & Tyler, 1988; Stern & Coleman, 2015; Vaske et al., 2007). Indeed, trusting community-agency relationships can ease conflict resolution and encourage voluntary compliance with protected area regulations, thereby positively influencing environmental stewardship (Stern, 2008a; Young et al., 2016).

Communicating with Stakeholders about Resource Management

Communication allows people to transmit their values and expertise on which trust is built (Calvet-Mir et al., 2015; Stern, 2008). Our study underscores the importance of information

sources that people use to learn about protected areas as part of a strategic process whereby stakeholders acquire information within a collaborative learning context and then make behavioral adaptations in their efforts to communicate. While Alaskan residents built an understanding of public land management from a wide variety of sources, three groups emerged from our PCA and similarly influenced perceptions of inclusivity. Thus, both formal and informal information sources were important and reflected variation in reliance on structured processes and socialization for acquiring knowledge. In this vein, social learning has been highlighted in previous research as a process for fostering collaborative relationships among stakeholders (Schusler et al., 2003) and increasing an agency's adaptability (Pahl-Wostl et al., 2007; Pelling et al., 2008). However, our results indicate that social exchanges (i.e., acquiring information from friends, family, hunting organizations, and environmental groups) are one of several forms of learning that support feelings of inclusion among stakeholders. A successful communication strategy for protected areas should, therefore, generate different spaces for individuals to build on their socially acquired information alongside information generated by institutions (Tam et al., 2021; Hausman et al., 2020).

Future Management Practices and Policy

Despite close physical proximity to a protected area, residents can feel excluded from decision-making about resources they rely on for well-being and quality of life (Carroll & Hendrix, 1992; Johnson & van Riper, 2021), which can lead to behaviors that negatively impact conservation efforts (Matera, 2016; Stern, 2008a). By strengthening communication networks with communities, land managers can alleviate sources of conflict, offer support, and facilitate knowledge exchange (Davenport et al., 2007; Heyman & Stronza, 2011). Local and traditional

knowledge that is meaningfully integrated into resource management can further strengthen community-agency trust and identify shared conservation goals (Charnley et al., 2007). This allows for salience and resilience of protected areas used to address pressing global environmental issues (Mitchell et al., 1997).

We observed that residents of Alaska built knowledge about land management through a wide range of sources that spanned a communication network. Due to the abundance of rural communities and remote contexts in Alaska, financial barriers and time constraints may constrain fluid in-person communication. As a result, managers might strategize by adopting different technologies for virtual communication and prioritizing relationships with stakeholders that subscribe to difference value systems (van Riper et al., 2020). For example, preservation-oriented agencies like the NPS could prioritize engagement with organizations (e.g., hunting cooperatives) that involve resource extraction. In-person listening sessions and updating agency resources in response to what is learned from these sessions would help to illustrate how contrasting perspectives are being weighed, considered, and incorporated into decisions. Given previous research showing trust, communication, and participation are intertwined (Calvet-Mir et al., 2015), management agencies therefore have an opportunity for greater success in increasing levels of trust with these types of community-agency communication strategies.

We observed that multiple dimensions of trust were empirically distinguishable and helpful for understanding perceived inclusivity. This observation aligned with the extant literature (e.g., Smith et al., 2013) and signified that the different dimensions of trust each provide an opportunity for improving community-agency interactions. However, given the positive correlations between several dimensions of trust, it is important to consider how they are interrelated. It could be that residents involved in land management conflict reported managers

lacked ethical decision-making (i.e., trust in moral competency was low) whereas the underlying issue was that the two parties did not align in their values (i.e., trust in shared values was low). Future work should explore how individuals distinguish between unethical decision-making and misaligned values to disentangle these complexities. Additionally, due to the importance of moral competency as a driver of perceived inclusivity it would benefit agencies to work with local stakeholders to improve the perceived fairness of the decision-making process, while keeping in mind that there are multiple forms of trust (Stern & Coleman, 2015). Given that maintaining and improving community–agency relationships is difficult and requires commitment over time, a range of options should be considered to improve the decision-making process and achieve both ecologically and socially desirable outcomes for federally managed lands.

Limitations and Opportunities for Future Research

Perceived inclusivity and its drivers yielded important information, though several limitations warrant consideration. Results from our model indicated that trust in moral competency and three information sources accounted for moderate degrees of variance in our dependent variable, indicating there was a host of other important drivers of perceived inclusivity. Past scholarship has suggested technical competency within an agency is an important dimension of trust (Leahy & Anderson, 2008). However, given its conceptual overlap with moral competency and non-significance in predicting public involvement according to Smith et al. (2013), technical competency was not examined in this study. Our results were also constrained by the methods adopted to answer our research questions. There could be great value in relying on multiple forms of knowledge to guide a research process focused on understanding

stakeholder concerns about inclusion. Allowing respondents to inductively identify the range of factors that shape their decisions would strengthen the quality of outcomes from a research process. Future work should consider adopting mixed methods and relying on different epistemologies for building a more complete understanding of stakeholder interests.

Our model was developed using reliable scales, but future work should continue to refine the measurement of constructs. First, the scope of resource management agencies should be factored into decisions about the object of interest in survey items developed to reflect perceived inclusivity. We suggest that future research adopt the term "federal lands" instead of "public lands," given that residents likely respond differently to state versus federal agencies in the U.S. state of Alaska. Secondly, we evaluated four dimensions of trust established by Smith et al. (2013) while another stream of research has focused on the distinction between trust versus distrust in affecting the democratic outcomes from deliberation on topics of public interest (Parkins, 2010; Parkins et al., 2017). It could be that this alternative binary conceptualization of trust would be informative for future research focused on understanding the process (e.g., opportunity for engagement) and outcomes (e.g., participation and representation) of inclusive conservation.

A broader representation of the American public or another broader context would provide an interesting basis for comparison and help with the generalizability of our research findings. In this study, we focused on Alaskan residents to understand their drivers of perceived inclusivity. However, we do not know if Alaskan residents were unique in their evaluations of inclusivity in federal land management decisions. Past work has shown that the general importance of trust and information sharing for stakeholders remains consistent across various contexts (Cinner et al., 2009; Macura et al., 2011; Payton et al., 2005; Stern, 2008) so it could be

that other states in the U.S. adopt similar positions and concerns. Cross-validating our findings against other contexts with communities who are adjacent to large tracts of federal lands would support broad, evidence-based decisions about management of protected areas.

2.5 Conclusion

Although a growing body of literature has recognized the need for considering local community viewpoints in public land management contexts, there is limited empirical knowledge of the reasons why stakeholders have different perceptions of inclusivity, which can hinder the successful implementation of more inclusive conservation initiatives. Therefore, we provide a theoretically grounded understanding of the multiple challenges and potential solutions facing stakeholder inclusion in protected area decision-making. Our use of structural equation modeling also offers a more refined understanding of the measurement properties of scales that can be adopted in future research. From our modeling results, we posit that perceived inclusivity is an important and powerful process for management of public lands that is inherently tied to trust and information sources. Our specific focus on Alaskan residents reveals the importance of moral competency and identifies which forms of communication positively influence community perceptions of inclusivity. Overall, this article aims to support a collaborative process of inclusive conservation that will be well suited to strengthen connections between stakeholders and agencies focused on biodiversity conservation and other resource management objectives.

CHAPTER 3: VALUE ORIENTATIONS AND THEIR RELATIONSHIP WITH PERCEIVED BENEFITS, THREATS, AND MANAGEMENT PRACTICES IN ALASKA'S DENALI REGION

Abstract: This article reports on results from a longitudinal and experimental study that engaged stakeholders in deliberation around their visions for the future of protected areas in Interior Alaska, USA. Following a regional survey, three groups of stakeholders were assembled according to the relative strength of their value orientations. Each group was engaged in online discussions over time and a thematic analysis of the resulting transcripts was performed to understand: (1) the perceived benefits and threats facing protected areas, and (2) reflections on how public land management agencies should improve decision-making to better incorporate the perspectives of local residents. Results showed that the landscape provided a multitude of benefits, such as natural beauty, opportunities for living an Alaskan lifestyle, and a strong sense of community. Conversely, climate variability, ambivalence toward tourism, and largescale development were the primary threats. Multiple recommendations were shared by residents for how to build meaningful public engagement processes rooted in a philosophy of 'inclusive conservation,' which attempts to solve resource management problems by balancing the consequences of different visions for nature-based conservation solutions. Different patterns emerged across the three groups of residents defined by their value orientations implying that different starting points for deliberation affect the topics of discussion and learning. This suggests that community members with similar values can hold diverse visions for the future, and shared spaces for deliberation are important for enabling people to collectively work through complex challenges. This study suggests that protected area management decision-making should be transformed through the adoption of a value-based framework whereby the guiding

principles and morality of community members are actively weighed and used to direct public participation and policy outcomes relevant to environmental management.

Key Words: Public engagement, Values, Inclusive conservation, Protected areas, Alaska

3.1 Introduction

Protected areas harbor scenic landscapes and biodiversity, as well as provide a variety of benefits to surrounding communities, such as support for local economies, opportunities for recreation and healthy lifestyles, water supplies, and resources that mitigate climate change (Dudley & Stolton, 2010; Manning et al., 2016). However, protected areas face unprecedented threats from global environmental change and shifting socio-ecological dynamics including widespread coral bleaching and increased wildfires (Curnock et al., 2019; Leiserowitz et al., 2020; Molina et al., 2019). Conservation efforts have been historically guided by a philosophy that prioritizes natural resource protection–even if at the expense of displacing local communities (McCracken, 1987; Morrison, 1993; Pimbert & Pretty, 1997)–the full range of stakeholder values and knowledges have been overlooked in decision-making processes (Fletcher et al., 2021; Gadgil et al., 1993; Hill et al., 2020a). As tensions rise due to diverging societal visions for the future of protected areas (Johnson & van Riper, 2021; Palomo et al., 2014), some divides have deepened between land managers and local residents, further complicating the process of achieving equitable and sustainability conservation-related goals (Friedman et al., 2018; Martin et al., 2016; Massarella et al., 2021; Stern, 2008b; West et al., 2006). Transformative research is thus needed to inform salient, evidence-based decisions, particularly work across disciplinary

perspectives that is co-produced with and for local communities (Goodson et al., 2022; Raymond et al., 2022).

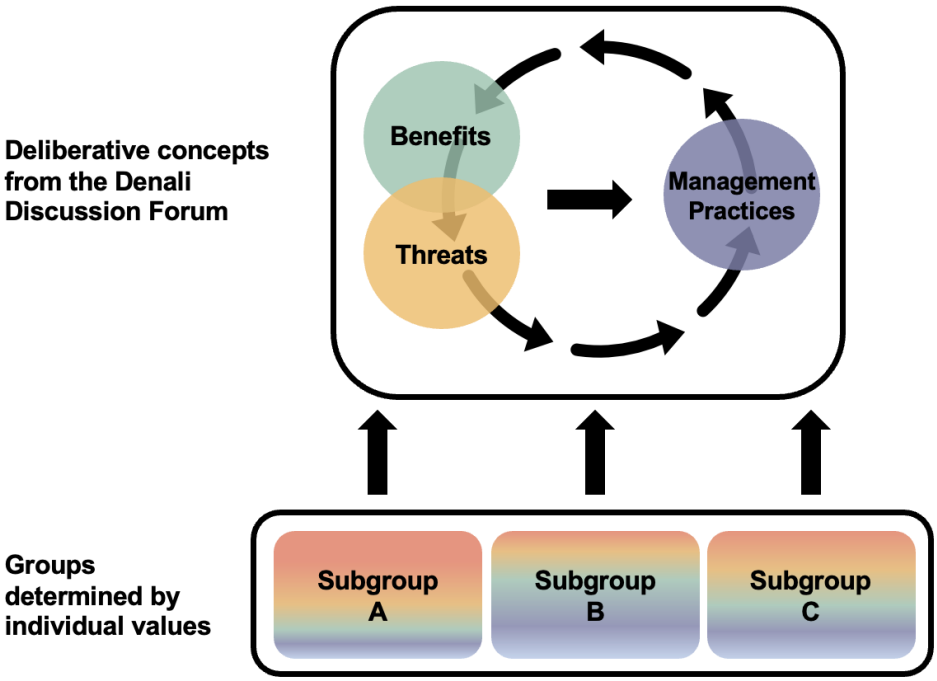
Inclusive Conservation and Participatory Research

Investigations into socially inclusive conservation frameworks and methodologies have been developed to better understand and appropriately respond to various types of knowledge (e.g., scientific, local, and managerial) and community viewpoints (Cebrián-Piqueras et al., 2020; Tallis & Lubchenco, 2014; Watson et al., 2018). Inclusive conservation builds on previously established conservation frameworks such as co-management (Carlsson & Berkes, 2005; Freitas et al., 2020) and multiple valuations of nature (Beery et al., 2021; Turner et al., 2003). Successful implementation of inclusive conservation initiatives requires the development of interdisciplinary tools, trust building, and engagement over time (Raymond et al., 2022). Although a sizeable body of literature has recognized the need for in-depth case studies to support community-based conservation, longitudinal research is rare and even fewer studies are guided by experimental designs (Adie et al., 2020; Brooks et al., 2013; Heberlein, 2012). Thus, our work aims to meaningfully engage residents while addressing these methodological gaps in the literature.

Participatory approaches to the co-production of knowledge that directly interfaces with resource management agencies is a primary mechanism through which land managers and scientists come to understand the plurality of stakeholder perspectives (Moote et al., 1997; Shipley et al., 2020; Stringer et al., 2009). By bringing together diverse audiences to discuss, deliberate, and co-develop regulations that directly respond to stakeholder input, land managers can strengthen conservation programs by integrating community voices into decision-making.

Participatory, or community-based approaches have been utilized to help solve problems in numerous conservation contexts including water management (Bekele et al., 2018; Stanghellini, 2010), land degradation (Schwilch et al., 2009; Stringer et al., 2009), and protected area management (Havard et al., 2015; Störmer et al., 2019). The implications of successful public participation can include community empowerment (Hill et al., 2020b; Pollnac et al., 2001) and reduced levels of conflict between local communities and resource managers (Halvorsen, 2003; Redpath et al., 2013). However, participatory approaches to conservation are not without shortcomings, as they have the potential to intensify conflict, produce biased decisions, and raise administrative expenses (De Vente et al., 2016; Galvin et al., 2018; Matulis & Moyer, 2017). As a result, steps must be taken to determine which participatory approaches are best suited to improve land management decision-making while minimizing conflict.

Figure 3.1. This conceptual model depicts the relationships among key concepts that were evaluated in our research process that engaged residents in the Denali Region. Individual values formed the basis of views that residents expressed throughout the Denali Discussion Forum – that is, individual values were used to organize residents into three subgroups through a cluster analysis and thus provided a basis for understanding residents' visions for the future. Benefits and threats associated with living in the Denali Region were evaluated (Week 1), followed by management practices that residents believed should be adopted in response to the key issues highlighted during the Forum (Week 2). Management practices, in turn, affected benefits and threats through feedback loop that are shown by the dotted lines. Benefits, threats, and management practices are then enclosed in brackets because these key concepts comprised the content that was deliberated upon throughout the Denali Discussion Forum.



Individual Values

Values are core beliefs that transcend specific situations and shape an individual's behavior (Rokeach, 1973; Schwartz, 1994; Stern et al., 1999). Numerous conceptualizations of values have been developed. However, researchers often focus on a framework of three value orientations: altruistic (i.e., concern for the well-being of others), biospheric (i.e., concern for the well-being of the environment), and egotistic (i.e., concern for the well-being of one's self) (Stern & Dietz, 1994; Stern et al., 1999). In an organizational framework established by Schwartz (1994), values were positioned along two motivational axes that span self-enhancement to self-transcendence and conservation to openness to change. Egoistic values, which align with self-enhancement, emphasize achievement and power, and are often negatively correlated with pro-environmental behaviors (Hurst et al., 2013). Conversely, altruistic and biospheric values are associated with self-transcendence, and emphasize equality and the environment, respectively. Because of the outward focus of altruistic and biospheric value orientation, they have positively correlated with pro-environmental behavior (Pradhananga et al., 2017; van Riper & Kyle, 2014). Due to the stability of values and their influence on pro-environmental behaviors, they have been investigated as an important tool for conservation efforts (Adger et al., 2009; Howell & Allen, 2017; Ives & Kendal, 2014; Manfredo et al., 2016).

Hedonic and eudaimonic values serve as extensions of the tripartite values framework and have recently gained traction in the conservation sciences (van Riper et al., 2019; van Riper et al., 2020b; Winkler-Schor et al., 2020). Steg et al. (2014) posited that egoistic and hedonic value orientations comprise the self-enhancement portion of the value motivation axis. Egoistic and hedonic values both emphasize self-improvement, however, a core element of hedonic values is the pursuit of short-term pleasure (Lindenberg & Steg, 2007). Hedonic values are not

thought to be associated with pro-environmental behaviors due to their openness to change (Schwartz, 1994), but motivations for engaging in behavior that benefits the environment may be influenced by pleasure seeking recreational experiences (van Riper et al., 2020b). Alternatively, eudaimonic values, emphasize living a meaningful life and finding fulfillment in activities that promote personal growth and benefit society (Huta & Waterman, 2014; Ryan et al., 2008). Eudaimonic values have only recently been used to better understand conservation problems, and therefore their possible insight into pro-environmental behavior is not fully known (Cleary et al., 2017; Winkler-Schor et al., 2020). Because the importance of living a meaningful life can be tied to relationships with nature (Knippenberg et al., 2018), it is likely that eudaimonic values contribute to pro-environmental behavior (Shin et al., 2022). Although all five values have been studied in conservation contexts, there remains a gap in the literature regarding the role of these values in shaping perceived benefits, threats, and management practices.

Benefits, Threats, and Management Practices

Previous research has adopted a three-tiered framework to understand visions for the future, including benefits, threats, and management practices (Shipley et al., 2018). First, perceived benefits are outcomes from human-environment interactions that positively impact people (Stolton et al., 2015). A growing body of literature has recognized the significance of both tangible and intangible benefits that are provided to people by nature, also known as social values (Harmon, 2004; Ives & Kendal, 2014; Johnson et al., 2019; Raymond et al., 2009). Broadly speaking, past work has focused on typologies around perceived benefits of the environment which include the range of services provided to humans such as material services (He et al., 2008; Karanth & Nepal, 2012), regulating services (Dudley & Stolton, 2003; Dudley et al., 2010), and cultural services (Ament et al., 2017; Stolton et al., 2015). By documenting

perceived community benefits of protected areas, resource management decisions can be executed with an emphasis on both conservation and human well-being (e.g., indicating managers where to focus their attention).

The second element evaluates how residents perceived landscape change with an emphasis on threats, defined as factors that cause the destruction or impairment of resources (Salafsky et al. (2008). Threats to protected areas may include pollution, invasive species, climate change, hunting, and fences (Karanth & Nepal, 2012; Pekor et al., 2019; Salafsky et al., 2008; Schulze et al., 2018; Yang et al., 2015). Identifying threats to protected areas can be used to reduce harm to biodiversity and prevent the overexploitation of irreplaceable resources given that initial changes to ecosystems have disproportionally negative impacts (Monz et al., 2013; Pekor et al., 2019; Schulze et al., 2018). Through a deeper understanding of how community members perceive and articulate threats, land managers will be better positioned to address ecological concerns in ways that build trust between communities and land management agencies. Trust can be weakened between communities and agencies if community concerns are not acknowledged, which can result in perceptions of not being included in resource management decisions, social conflict, non-compliance with protected area regulations, and reduced feelings of inclusivity (Goodson et al., 2022; Matera, 2016; Stern, 2008a).

The third element, land management practices, flows from the intersection of perceived benefits and threats expressed by protected area stakeholders. Here, we define land management as the process taken to influence the composition and configuration of the landscape, which includes maintaining ecological functions and/or human land use (Manning et al., 2017). Several examples include redistributing recreational use patterns (Lawson et al., 2011; Meldrum & DeGroot, 2012), educational programs that promote sustainable use of resources (Leisher et al.,

2012; Marion & Reid, 2007), and prescribed burns (Suffling et al., 2008). All land management practices are guided by conceptual approaches that direct which actions are used to achieve a desired result (Manning, 2011). These management strategies can be classified as either indirect to direct, which refers to if the practice attempts to indirectly influence behavior through decision factors or directly act on the individuals behavior (Manning et al., 2017). Through a better understanding of how residents want to see protected areas managed, decision-makers can identify management strategies and practices that align more closely with community values.

Deliberation as a Tool Identify Overlap in Community Perceptions

Deliberation has provided a basis for addressing research questions around the multiple values of nature by considering fairness, justice, and participation (Bunse et al., 2015; Kenter et al., 2016a; Spash, 2008; van Riper et al., 2018; Zografos & Howarth, 2010). Building on previous work in the context of resource management (Kenter et al., 2016b; Orchard-Webb et al., 2016), we define deliberation as social interaction whereby groups of stakeholders learn from one another, evaluate various viewpoints, adjust their own positions, and thus collectively work toward a consensus-based outcome. This research method promotes inclusive conservation by supporting the resolution of resource management challenges by facilitating negotiation and the process of balancing differing value positions. Specifically, by bringing diverse participants together to deliberate, people have the opportunity to better understand the similarities or differences in their values, which can lead to a compromise where all parties feel heard (Kenter, 2016). Several factors influence the deliberative valuation process, including group membership, the degree of social interaction, power dynamics, and the extent of engagement (Kenter et al., 2016b). Past work has largely focused on (1) how deliberation can activate and shift values

(Raymond & Kenter, 2016; Raymond & Raymond, 2019) or (2) the social values that arise from deliberation (Kenter et al., 2016a; Mavrommati et al., 2021). However, the strength of individual values as a starting point of deliberation and how they shape conversation is not fully understood and is therefore a worthy area of investigation.

Online research methods have gained traction as a successful and timely approach for creating spaces that foster discussion across diverse and geographically dispersed groups of people (Genoe et al., 2016). There are several benefits to research that utilizes online methods to promote a more robust deliberative process, such as engaging people at a regional scale (Comley & Beaumont, 2011; Horrell et al., 2015; Wilkerson et al., 2014) and providing flexibility in how participants respond to discussion prompts (Horrell et al., 2015; O'connor et al., 2008). These factors can help ensure greater equity in the opportunities provided for stakeholders to voice their opinions and accommodations for different learning and communication styles (Andrade et al., 2020; van Riper et al., 2021). Participants in online research can also remain anonymous, which encourages greater openness in the exchange of ideas and mitigates power imbalances that can hinder the deliberative process (Comley & Beaumont, 2011). Conversely, technological obstacles can impede engagement in online research, including limited computer skills and access across populations (DiMaggio & Hargittai, 2001), which decreases the heterogeneity of research samples (Wardropper et al., 2021). Despite these challenges, there is great potential for online methods to enhance and diversify environmental social science research.

The Current Study

We engaged stakeholders in a longitudinal, mixed methods study to examine perceptions of benefits, threats, and management practices within the Denali region of Alaska, USA as part of a facilitated, online discussion called the Denali Discussion Forum. Drawing from a household survey of residents across Interior Alaska, we recruited residents and assigned them to three subgroups according to their responses to a series of questions about their values. Each subgroup was engaged in a facilitated deliberation to understand how residents valued the local landscape and expressed concerns about both the ways it was changing and being managed by protected area authorities. Our objectives were to: (1) examine the perceived benefits and threats in the Denali Region, (2) link management practices to benefits and threats, and (3) compare respondent reflections across subgroups defined by their value profiles.

3.2 Methods

Study Context

We conducted this research with residents living in the Interior of Alaska, which we refer to as the "Denali Region." This subarctic landscape boasts a wide variety of ecosystems including glaciers, alpine tundra, boreal forests, and wetlands. Perhaps most notably, this region is home to Mt. Denali, which is the highest peak in North America (6190 m), as well as Denali National Park and Preserve which covers six million acres and is managed by the US Department of Interior. Other notable protected lands include the Denali State Park (325,240 acres) which is managed by the US state of Alaska and Ahtna lands (1,579,872 acres) which is managed by the Ahtna Land and Resource Department. The Denali Region is inhabited by "the big five" mammals (Skibins et al., 2012), including Grizzly Bears (*Ursus arctos horribilis*),

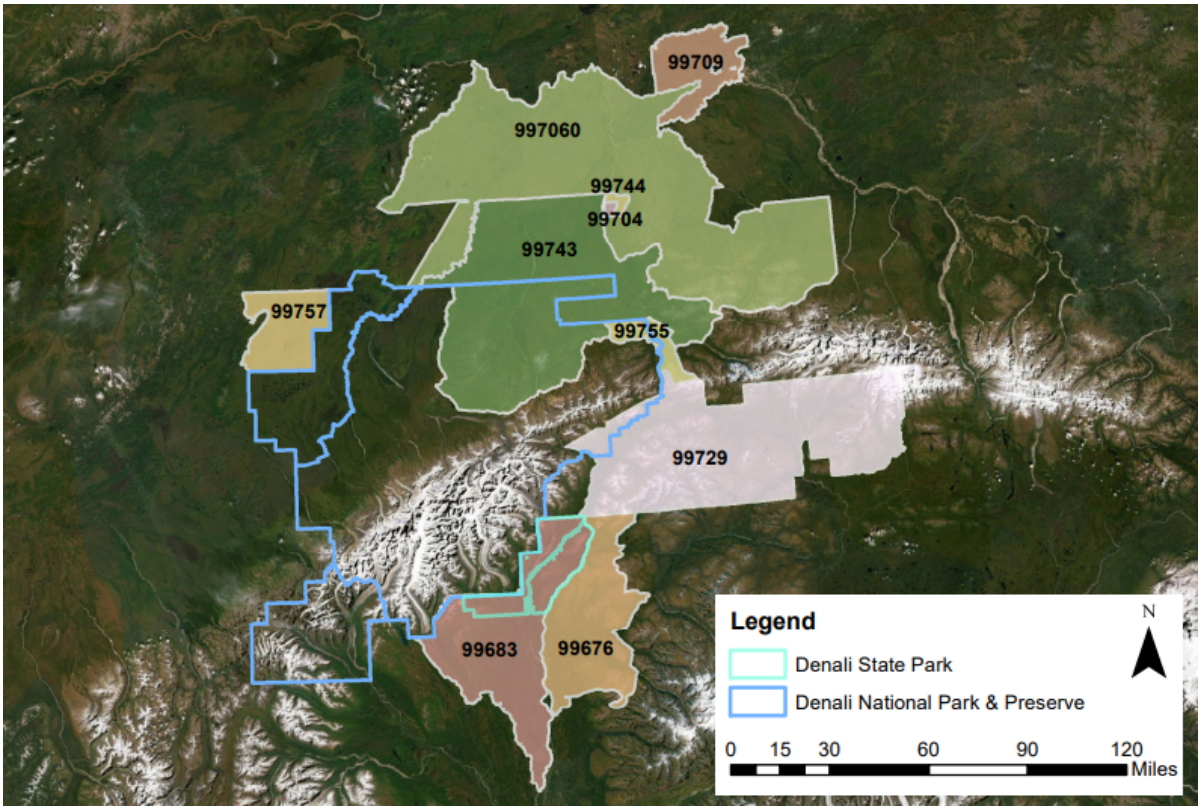
Moose (*Alces alces*), Caribou (*Rangifer tarandus*), Wolves (*Canis lupus*), and Dall Sheep (*Ovis dalli dalli*). Additionally, over half a million tourists are attracted to the area on an annual basis (Fix et al., 2012). Due to the influx of seasonal visitors largely from the Princess Cruise and Holland America cruise ship industry, there have been increased commercial developments tied to tourism. As a result, important questions are being asked about the best ways to preserve the Alaskan landscape and quality of life among residents while maintaining the economic benefits of tourism.

Participant Recruitment and Subgroup Assignments

We recruited study residents through a mailback survey questionnaire of households in Interior Alaska that was administered between June and September of 2020 (citation withheld for blind peer-review). The questionnaire, which broadly examined the experiences and perspectives of residents in the region, was mailed to 3,000 addresses purchased from the U.S. Postal Service through a firm called Marketing Systems Group. This document was sent to 95% of P.O. boxes and household addresses situated along or near the George Parks' Highway between Nenana and Talkeetna, in addition to residents of Lake Minchumina, and a smaller proportion (approximately 10%) of residents living in one zip code west of Fairbanks (n = 332; response rate = 12.28%) (see Figure 3.2). During the survey process, residents were asked to indicate if they were interested in joining an online program to help us learn more about how protected areas and communities are changing in Alaska, USA. A total of 96 residents expressed interest and were considered for inclusion if they provided valid contact information and responded to the necessary survey questions. A total of 47 residents agreed to participate after learning more about the four-week Denali Discussion Forum. From these residents, eight dropped out prior to

the start of the program, and three dropped out during the four-week experiment. A total of 36 residents completed all four weeks and received a $100 incentive for participating in the Denali Discussion Forum, with the three who dropped out after the start of the program receiving only $50 incentive.

Figure 3.2 *Interior Alaska zip codes that were sampled in in 2020 as part of the household survey to identify discussion forum participants.*



We first evaluated responses to a series of survey questions about individual values using a 16-item scale that measured the following dimensions: biospheric, altruistic, egoistic, hedonic, and eudaimonic values. Survey items used to measure biospheric, altruistic, and egoistic values were drawn from Stern et al. (1999) whereas hedonic values were measured using items from

Schwartz (1992) and Steg et al. (2014), with minor changes in wording. Using the same prompt, eudaimonic values were measured by four items (i.e., personal growth, excellence, autonomy, and life satisfaction) that were conceptualized from the Hedonic and Eudaimonic Motives for Activities (HEMA) scale (Huta & Ryan, 2010) and van Riper et al. (2019). Confirmatory factor analysis was used to evaluate the measurement properties of the scale using a maximum likelihood estimation procedure. Model fit was assessed using the root mean square error of approximation (RMSEA) values <0.07, comparative fit index (CFI) values >0.95, and standardized root mean square residual (SRMR) values <0.07 (Kline, 2015). Skewness and kurtosis were not detected (Hair et al., 2010) and reliability was assessed by generating Cronbach's alpha coefficients for each dimension. Standardized factor loading scores above 0.40 were retained and all missing data were accounted for using the full-information-maximum likelihood (FIML) method (Brown 2015).

Three respondent subgroups were identified using the individual value scale. The first two of these groups were formed in response to findings from a K-means cluster analysis. A total of 16 survey items were entered into the cluster analysis and two, three, four, and five cluster solution were considered. A two-cluster solution was selected given differences in pair-wise comparisons generated using ANOVA and considerations of sample size across the cluster options (Hair et al., 1998). The final solution converged after five iterations and the minimum distance between initial cluster centers was 1.359. A cluster membership variable was generated and used as a basis for assigning respondents to the two distinguishable subgroups, which were similar in value composition but varied along a gradient of how strongly their values were held. The third subgroup was "mixed," in that residents from the first two groups were randomly combined post-hoc. This third subgroup was established to test homophily, or how the learning

patterns among a more heterogenous group differed from those that were more similar (Eriksson et al., 2020). These procedures resulted in the following value subgroup assignments: subgroup 1 named “More Pronounced Values” (MPV) (n=15), subgroup 2 (n=11) named “Less Pronounced Values” (LPV), and Value subgroup 3 (n = 13) named “Hybrid.”

Structure of the Online Discussion Forum

Residents were invited to participate in the Denali Discussion Forum over a three-month period starting in October 2020. By December 2020, we initiated participant interactions during three online focus groups framed as “meet and greet” opportunities to engage with the research team and other residents in their subgroup, as well as establish shared goals for participation. A four-week learning program was then launched and facilitated on a password protected website during the following month. Each week, residents were provided with a prompt related to public land management topics (see Table 3.1) and asked to post a response as well as interact with other posts from their peers. Our research team summarized conversations within the subgroups at the end of each week and asked residents to provide feedback on our interpretations. At the end of the program, residents were asked to retake the same household survey that was administered one year prior, in addition to several questions specifically focused on what was learned during the Denali Discussion Forum (van Riper et al., 2021). A final webinar to disseminate findings was held in April 2021. Residents gave written informed consent and were able to select their own username and profile picture to remain anonymous if desired, as part of a human subjects research approval from the [identity removed for blind peer-review] Institutional Review Board #18679. In this study we report out on the results of the first two weeks of the Denali Discussion Forum.

Table 3.1

Weekly prompts presented to residents during the 2021 Denali Discussion Forum.

Weekly Topic	Prompt	Number of Discussion Posts[1]
Week 1: Benefits and Threats to Denali Landscape	What are the benefits of living in Interior Alaska and northern Mat-Su? As the Denali region changes over the next 30 years, what are the major social or environmental threats that you think will negatively impact the landscape's ability to provide these benefits to local communities?	122
Week 2: Management Practices to Address Threats	What are the public land management practices you think will best support the benefits you associate with the landscape? How should management practices change to reduce the threats facing the Denali landscape?	124
Week 3: The Role of Values in Land Management	What are the values that guide your life and how do these values influence your views of public land management in the Denali region? Do other people in your community share your values? To what extent do land management agencies reflect your values in their decision-making?	125
Week 4: Learning to Improve Management	What – if anything – have you gained a better understanding of through the Denali Discussion Forum? How did other people play a role in your learning process and what do you hope they learned in turn? How did your expectations for public land management change after engaging in the discussions?	89

1 This is a sum of the number of discussion posts left during a given week across all three groups.

3.3 Results

Survey sample and values

The gender distribution of the Denali Discussion Forum participants (n=39) was 47.4% male and 52.6% female (see Table 3.2). The majority (84.2%) identified as White, followed by other (15.8%), American Indian / Native (10.5%), Black / African American (5.3%), Asian (2.6%), and Pacific Islander (2.6%). The sample of respondents included in this study was well educated, with every 7 out of 10 (73.7%) reporting a four-year college degree or higher. A total of 10.5% reported earning a two-year college degree, with 5.3% earning a vocation/trade school

certificate, and 10.5% earning a high school diploma. The majority (77%) earned less than $100,000 by household annually and the average age was 47.7 years (*SD* = 12.8). The demographic information was also calculated for LPV (n=15), MPV (n=11), and Hybrid (n=13).

Table 3.2

Socio-demographic characteristics of Alaska residents who participated in the 2021 Denali Discussion Forum

Variable	Pooled (%)	Less Pronounced Values (%)	More Pronounced Values (%)	Hybrid (%)
Gender distribution				
Male	47.4	64.3	36.4	38.5
Female	52.6	35.7	63.6	61.5
Race [a]				
American Indian/Native	10.5	0	9.1	23.1
Asian	2.6	0	0	7.7
White	84.2	85.7	81.8	84.6
Black/African American	5.3	0	0	15.4
Pacific Islander	2.6	0	0	7.7
Other	15.8	21.4	18.2	7.7
Educational attainment				
High school graduate	10.5	7.1	18.2	7.7
Vocation/Trade school certificate	5.3	0	0	15.4
Two-year college degree	10.5	14.3	18.2	0
Four-year college degree	44.7	50.0	45.5	38.5
Graduate degree	28.9	28.6	18.2	38.5

Table 3.2 (cont.)

Variable	Pooled (%)	Less Pronounced Values (%)	More Pronounced Values (%)	Hybrid (%)
Annual Income				
Less than $24,999	8.1	15.4	9.1	0
$25,000 - $49,999	29.7	30.8	45.5	15.4
$50,000 - $99,999	37.8	23.1	18.2	61.5
$100,000 - $149,999	16.2	15.4	18.2	7.7
$150,000 - $199,999	2.7	7.7	9.1	0
$200,000 - $249,999	2.7	7.7	0	7.7
$250,000 or more	2.7	0	0	7.7
Age (M, SD)	(47.7, 12.7)	(49.8, 13.5)	(49.5, 12.2)	(43.7, 12.2)

Note: Two members from the same household both participated in the online forum but only submitted one household survey which was used to calculate demographic information.

[a] Residents were able to select all that applied so values may not equal 100%

Results from our CFA indicated that the model fit for our individual value scale was acceptable (χ^2 = 127.97, df = 67; CFI = 0.96; RMSEA = 0.05 (C.I. = 0.40 – 0.07); SRMR = 0.05). All scales showed adequate reliability given Cronbach alpha coefficients ranging from 0.64 – 0.86 (Hair et al., 2010). We observed that values related to self-transcendence and personal fulfillment were the most important guiding principles in life for the pooled sample (Table 10; Figure 15). Specifically, respondents held the strongest Altruistic (*M*= 4.33, *SD*= 0.84), Biospheric (*M*= 4.32, *SD*= 0.76), and Eudaimonic values (*M*= 4.27, *SD*= 0.66) followed by Hedonic (*M*= 4.01, *SD*= 0.68) and Egoistic (*M*= 2.23, *SD*= 0.86) values.

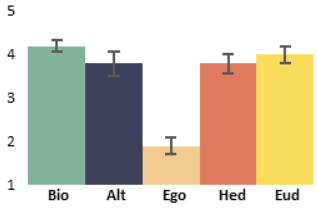
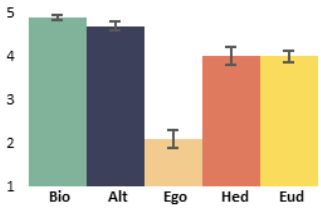
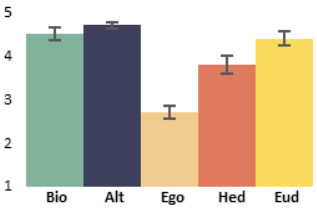
Three group discussions were concurrently facilitated throughout the Denali Discussion Forum. Each subgroup embodied a different set of characteristics, which included variation in values that were used for segmentation and analysis (see Figure 3.2). The LPV subgroup aligned most with biospheric (*M*= 4.27; *SD*= 0.54) and eudaimonic (*M*= 4.04; *SD*= 0.73) values and agreed with altruistic (*M*= 3.83; *SD*= 1.06) and hedonic (*M*= 3.85; *SD*= 0.83) values. Members of

MPV subgroup strongly aligned with biospheric (*M*= 4.92; *SD*= 0.16), altruistic (*M*= 4.76; *SD*= 0.37), hedonic (*M*= 4.05; *SD*= 0.68) and eudemonic (*M*= 4.51; *SD*= 0.44) values. Finally, the hybrid subgroup aligned with biospheric (*M* =4.58; SD= 0.52), altruistic (*M*= 4.78; SD= 0.28), hedonic (*M*= 3.87; SD= 0.73) and eudemonic (*M*= 4.40; SD= 0.55) values to a weaker degree than the MPV subgroup. All three subgroups disagreed with statements that measured egotistic values (LVP *M* =1.9 *SD*= 0.68; MPV *M* =2.1 *SD*= 0.67; Hybrid *M*=2.7 *SD*= 0.51).

To further understand the similarities and differences among groups, several variables were considered. The LPV subgroup was largely (64.3%) male, included the most educated individuals (i.e., 78.6% had a 4-year degree or higher), and contained the oldest respondents (M= 49.8 years). The MPV subgroup (n=11) included the largest portion of female residents (i.e., 63.6% were female) and included the most pre-existing relationships prior to the start of the Denali Discussion Forum. The Hybrid subgroup (n=13) was comprised of the youngest (M= 43.7) and most racially diverse group of residents. The hybrid subgroup also has a fewest number of preexisting relationships prior to the start of the Denali Discussion Forum.

Figure 3.3

Summary of results that show the value profiles of respondents

	Less Pronounced Values (LPV)	More Pronounced Values (MPV)	Hybrid
Overview	Lower scores across all individual values	Higher value scores across all individual values	Individual value scores that fall between LPV and MPV subgroups
Sample (%)	38.5%	28.2%	33.3%
Individual Values			
Pre-Existing Relationships	2nd	1st	3rd
Age	Oldest	2nd Youngest	Youngest
Education	1st	3rd	2nd

Note: Summary of respondents' values Biospheric (Bio), Altruistic (Alt), Egotistic (Ego), Hedonic (Hed), Eudamonic (Eud). Sociodemographics, including age and education, as well as rankings for pre-existing relationships with other group members are displayed across all subgroups.

Examining Benefits and Threats to the Denali Landscape

In Week 1 of the Denali Discussion Forum, residents reflected on the range of benefits provided by the Denali landscape, as well as concerns about how these benefits may be threatened by landscape change across 122 comments. We identified a total of 15 interconnected benefits shared amongst residents, which underscored a commitment to protecting special places (see Table 3.3). Concerns for the landscape were also expressed, most of which centered around mismanagement occurring throughout the region, global environment change, as well as

development that has paralleled increases in industrial tourism and natural resource extraction (see Table 3.4).

Table 3.3

Most frequently cited benefits of the Denali Region during the Denali Discussion Forum

Benefit	Illustrative Quote
Wilderness	"I love the fact that out my back door is literally thousands of miles of wilderness. I love bears and I love living amongst them."
Recreation	"I try never to take for granted the honor and privilege of getting to ski from my literal doorstep for miles on isolated trails…"
Intrinsic Value	"… I value the Wild in ways that are so important that it's difficult to put them into words."
Community	I often tell people that the wilderness and natural beauty of the Denali landscape…is what drew me to this place, but it was the human community…is why my husband and I chose [our home].
Simple Life	"To live simply yet effectively, this is what many crave but few figure out. We live in a place that affords this luxury if so desired."
Solitude	"Benefits for me? Wide open space. Solitude."

Table 3.4

Most frequently cited threats of the Denali Region during the Denali Discussion Forum

Threats	Illustrative Quote
Mismanagement	"I am disgusted to the point of nausea at the impacts that trapping in the Stampede area has taken on wolf populations in the Park."
Climate Change	"[E]specially as permafrost thaws, the plant diversity in Denali changes drastically, something I've noticed even in just my 16 years…"

Table 3.4 (cont.)

Threats	Illustrative Quote
Tourism	"I think it is so important to be able to share the area with people from the lower 48 because I think that only places like it can inspire them to work to conserve it… But I worry that in the process of promoting its conservation, we are losing what makes it special"
Resource Development	"Large scale mining, LG gas, dams are all potential threats to the Denali region."
Population Growth	"All of us have probably witnessed how an increasing population compounds competing interests for land use and access… it often leaves human scars on the land."

LPV Subgroup Discussion: Week 1

The wilderness of the Denali Region was one of the most salient benefits that emerged during the first phase of the Denali Discussion Forum for the LPV subgroup. This included discussions on bodies of water, mountains, and clean air. Generally, conversations regarding the Denali wilderness were intertwined with recreation, as these experiences allowed residents to fully immerse themselves in the landscape and appreciate its magnificence. Beauty aside, a decision to live in rural Alaska comes with an inherent set of challenges, however the LVP group expressed enjoyment derived from self-direction. The freedom to build one's own home, chop firewood, and experience the Alaskan wilderness outside their front door allow for self-direction, but often require living simple life. A simple life is equally celebrated though as Denali is a place "where humans come second to wildlife." Participants also described a tight-knit community that provided a strong support network that has allowed them to call Denali home despite its challenges.

The LPV subgroup also identified several important threats that could have a negative influence on the landscape and, as a result, their way of life. Most prevalently discussed were the

competing interests between residents and resource management agencies or businesses. Due to the size of the Denali Region, it spans the jurisdiction of several agencies which brings “great complexity to issues of regional planning” and therefore frustrates residents seeking action. Furthermore, businesses (i.e., grocery stores, hotels, shops) are being developed in the region which decreases the wilderness and increases interest in further developing the region. Tourism was also a pressing concern as the industry creates a “Disneyland-like environment which sets up a culture of convenience and comfort for visitors,” that contradicts the lifestyle that many residents’ treasure. Finally, members of the LPV subgroup expressed concerns about repeating the mistakes of national parks in the lower 48, as well as the mismanagement of dams or pipelines.

MPV Subgroup Discussion: Week 1

The MVP subgroup also recognized the significance of the Denali wilderness, expressing gratitude for dark skies, rivers, and "not see[ing] human-made intrusions." However, the MPV subgroup frequently associated benefits of the Denali region, such as wildness, with comments about isolation, silence, or low population density. For example, when discussing related benefits such as wildlife and ecological integrity one resident noted “the lack of people has kept Alaska/Denali region relatively wild and pristine.” Recreation was also a popular topic, with mentions of riding snowmobiles, skiing, berry picking, and hunting. When addressing recreational activities, one resident expressed gratitude for "not having to share access with a bunch of yahoos." Lastly, community was frequently discussed with one resident stating, “That combination of privacy and support appears to be common and valued throughout Alaska,” emphasizing the significance of solitude once more.

Two of the largest threats to Denali that were identified by the MPV subgroup included mismanagement and tourism. Mismanagement in the context of MPV subgroup was characterized by conversations of inadequate regulation of motorized vehicles on trail systems, hesitancy for how future population growth in the region will be handled, and the insufficient consideration decision-makers give to wildlife and residents. One resident noted, “I’ve always been greatly disappointed in Alaska Fish & Game Management – they tend to use very old-fashioned ideas to guide their management decisions.” Conversations about tourism were more ambivalent, with favorable acknowledgements of the low impact of cruise line passengers and economic gain, but numerous residents argued that the problem was that "the tourism sector has a lot of sway." Though others maintained that Alaskan residents have “more far-reaching destructive impacts”

Hybrid Subgroup Discussion: Week 1

The Hybrid subgroup mentioned many recreational opportunities that the Denali Region provides its residents such as hiking, skiing, and rafting in addition to the ability to live off the Alaskan land. A subsistence lifestyle as described by residents involved hunting wildlife and berry picking. Though several residents also considered the value of the Denali landscape outside of its delivery of ecosystem services, and argued that Americans have, “a cultural mindset that sees land as a ‘resource’ existing for us to use however we want.” In line with this thinking residents also expressed how they enjoy “living with less” and how there is personal filament gained from “living in an environment that’s not conventionally convenient (by modern standards).” Lastly, residents mentioned the solitude and the “quiet if winter” that the Denali Region provides to its residents.

Climate variability was highlighted by almost every resident in the Hybrid subgroup as a major concern in the area. Shortened winters, changing ecosystems, melting permafrost, and landscape change were frequently cited as examples of the effects of climate change in the region. Climate change was also linked to the threat of mismanagement through conversations of the invasive European spruce bark beetle destroying forests and the ongoing extraction of fossil fuels. Members of the Hybrid subgroup also considered mismanagement as it pertained to wildlife habitat and the absence of Indigenous knowledge in proposed solutions to threats. Tourism, another prominently identified threat, was described by one resident as "pervasive, difficult to regulate, and likely to grow quickly." Others contended that the tourism industry was a "double-edged sword," that brings individuals who could, "spoil many of the pristine aspects of wilderness, but with proper management and guiding, it can be a benefit for conservation in the long run."

Linked Management Practices that Support Benefits and Mitigate Threats

During the next phase of the Denali Discussion Forum, we asked the residents to consider how management practices support important benefits while reducing potential threats (identified during week 1). A total of 17 broad themes related to management practices were identified in Week 2 across 124 discussion posts (see Table 3.5). These discussions largely considered the influences (positive and negative) of management practices on the Denali landscape and deliberation on how to best balance preservation and development of the region in response to ongoing change.

Table 3.5

Most frequently mentioned management practices of the Denali Region during the Denali Discussion Forum

Management Practices	Illustrative Quote
Ecosystems & Landscape	"Take into account entire ecosystems not just chopped up jurisdictional units."
Funding	"Include safeguards against money being able to influence outcomes disproportionately."
Public Engagement	"Outside entities like tribes, boroughs, and businesses can sit on advisory councils or submit feedback, but the advice of such councils is largely nonbinding."
Trails	"When trails are the issue, I support separation of incompatible uses to avoid user conflicts (e.g., keeping snow machines separate from skiing and snowshoeing)"
Rethinking Current Management	"Ours is a system designed to respond to lobbyists, rather than to go out of its way to discern the true public interest, and balance that with the needs of the landscape."
Zoning & Land Use	"I too support an increase in planning (including zoning) here and elsewhere in the state. Watching the mat-su valley just explode, development-wise, in my formative years was very sad."
Tourism	"Regulations that support a small-business tourist economy over industrial tourism may be essential to ensuring… that single actors do not become so economically powerful that they can justify not abiding by environmental best practices…"

Week 2: LPV Subgroup Discussion

One of the most extensively discussed subjects among the LVP subgroup was ecosystem and landscape management which mirrored Week 1 discussions on cherishing the Denali Region wilderness. Discussions included management practices to reduce landscape scarring by limiting motorized vehicle use, establishing buffer zones surrounding the national park, and generally prioritizing preservation over recreation. Residents also emphasized that public participation should be at the heart of land management procedures, but that currently "it can be all too easy

for the public's voice to get lost in the process." Residents would prefer to see more inclusive conservation practices in which decision-makers "incorporate our multiple viewpoints into decision making about resource management," rather than focus only on the economic incentives. The LVP subgroup also discussed the important role of enforcing pre-existing policy and environmental education within the context of land management in the Denali region. While freedom was valued in Alaska, there was a paradoxically strong emphasis on enforcing regulations that protected the environment. Despite this tension, residents expressed frustrations that formal regulations were not always enforced due to a lack of funding and a high turnover rate of among land managers.

Week 2: MPV Subgroup Discussion

In Week 1 members of the MPV subgroup acknowledged the general unease in the region for practices such as zoning but recognized that it may be necessary to protect the landscape that they value. In Week 2 these ideas were built upon by discussing how resource management agencies should move to a "proactive", "holistic", and "adaptab[le]" model for managing ecosystems, as opposed the current paradigm for managing ecosystems which was perceived to be reactive. The MPV subgroup would like to see trail management addressed before the problem escalates. Residents would prefer that the manager strike a balance between providing well-managed trails while avoiding establishing a trail network that fragments natural areas. One idea is to create more multi-use trails, but to separate them based on whether they can be used by motorized vehicles to reduce degradation. Finally, tourism, which was identified as a threat in Week 1, was considered as a potential solution to some concerns in Week 2. Specifically,

providing authentic Alaskan experiences (e.g., wildlife sightings) to tourists to foster interagency cooperation and wildlife conservation.

Week 2: Hybrid Subgroup Discussion

Rethinking current management practices was also an important topic of conversation with one resident asking, “How are land management agencies accountable to us as residents?” In response another member of the Hybrid subgroup detailed the structure of the National Park System and stated, “So how is a totally hierarchical institution with political appointees at its head accountable to residents? Unfortunately, the answer is that it’s not.” Other residents began to provide ideas for reconsidering management approaches, such as transitioning to a park system that emphasizes mass transit and cycling trails rather than personal automobiles. Members of the Hybrid subgroup acknowledged that resource management agencies have good ideas that encourage meaningful conservation, but they often lack the funding to carry out these projects. The question was then raised, “how do outdoor rec groups harness this monetary influence in the same way hunting groups, anglers and resource extractors have?” In response, taxes on equipment (i.e., binoculars, hiking boots, and field guides) and tourist activities were proposed. Though much of the remaining conversation from Week 2 centered on residents' strong feelings that the Denali landscape needed to be managed in a way that preserved it for both biodiversity and human well-being.

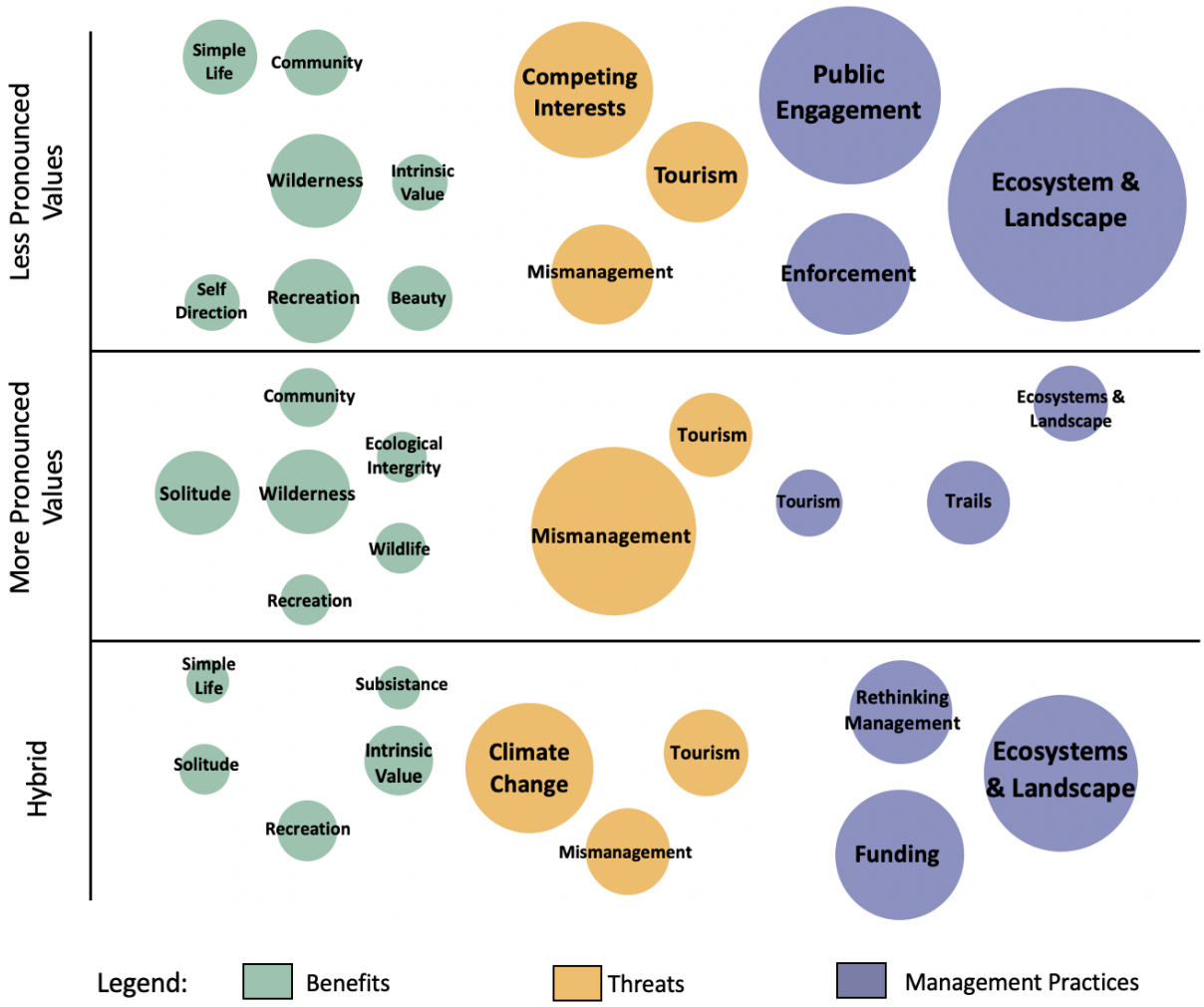
Differences across Value Subgroups

The regularity with which the three value subgroups discussed benefits, threats, and management practices differed during the Denali Discussion Forum (see Figure 3.3).

Specifically, during Week 1 the three groups identified variety of benefits that made the Denali Region a special place to live. There was some overlap in the discussion of benefits, but the most prominent areas of conversation tended to differ, apart from recreation, which was salient across all three subgroups. Despite the variation in the relative importance of Denali's benefits, all three groups agreed that mismanagement and tourism were among the most concerning threats. During Week 2 of the Denali Discussion Forum, there was noticeable variation in how the groups would support existing benefits and reduce threats. The management of ecosystems and landscapes was a point of deep consideration and concern across all three groups, albeit the LPV subgroup addressed this topic nearly three times as often as the Hybrid subgroup. The LPV subgroup also made numerous recommendations about public participation in the management process and greater enforcement of existing regulations. Conversely, conversation around enforcement was almost entirely absent in the other two subgroups. Instead, the MPV subgroup concentrated on indirect management strategies related to tourism and trail use. While the Hybrid subgroup explored the impact of funding on management and debated how to re-work management practices that were in place at the time of the Denali Discussion Forum.

Figure 3.4

Differences between subgroup conversations during Week 1 and Week 2 of the Denali Discussion Forum



Note: Frequency of qualitatively coded themes around benefits, threats, and management practices were used to determine the size of each circle.

3.4 Discussion

We conducted this research to facilitate a deliberative process in which residents were prompted to discuss benefits, threats, and management practices that pertained to the Denali Region of Alaska, USA. Through Denali Discussion Forum residents geographically dispersed

throughout the region were able to consider their own visions for the future, share them with others, and ultimately learn from one another. Our results from this project advance inclusive conservation practices through understanding how values can impact conversations concerning the management of protected areas. Specifically, while all three subgroups recognized a wide range of benefits and identified several key threats, their management responses differ. Overall, our findings highlight online deliberation as an effective method for understanding community perspectives and identifying shared visions among residents that can be incorporated into the decision-making process.

Alignment between Value Orientations and Subgroup Conversation

While the strength of different types of individual values varied, altruistic and biospheric values were among the most prevalent individual values across all subgroups. This indicated that the residents that participated in the Denali Discussion Forum were driven by their concerns for other members of their community as well as the natural world (Stern & Dietz, 1994). This is consistent with the findings of a survey of individual values conducted throughout Alaska, which found that residents generally held high altruistic, biospheric, and eudaimonic values (Andrade et al., 2022).

Altruistic values were evident throughout the Denali Discussion Forum, though they were not communicated uniformly throughout all three subgroups. For example, the LPV and MPV subgroups frequently acknowledged the importance of community as a benefit, whereas the hybrid group only mentioned it a few times despite having the strongest altruistic values. This could be because the Hybrid grouping had the strongest egotistic values, which may have redirected their conversation to other issues such as subsistence, solitude, and a simple life,

which are more directly related to a concern for one's own well-being (Stern et al., 1999). Similarly, altruism was expressed differently in management preferences. The LPV group emphasized public engagement to increase the diversity of voices influencing decisions. The MPV group expressed managing trails so they could continue to be used by residents for generations to come. Finally, the Hybrid subgroup considered restructuring management so that agencies were held accountable so that they served a wider range of interest.

When we compare the value orientations of the three subgroups to the most frequently identified benefits, threats, and management practices we also find clear biospheric ties across all three subgroups conversations. Residents resoundingly appreciated the Denali Region for its wilderness or intrinsic value, identified threats pertaining to natural resource degradation, and proposed management practices to protect the Denali Region ecosystem. Though the specific approaches to preserving benefits and managing threats may vary across subgroups this common thread is important to take note of because biospheric and altruistic values provide the most stable basis for pro-environmental behavior (De Groot & Steg, 2009). Consequently, the residents' strong biospheric values can be leveraged by managers due to their positive effects on resource management such as increased willingness to pay for restoration initiatives (Obeng & Aguilar, 2018) and increased likelihood of adhering to conservation-based policies (Han et al., 2018).

Other Considerations for Subgroup Conversation Differences

Our study included three subgroups defined by individual values to evaluate how the composition of group would influence the identification of benefits, threats, and management practices. but other factors are likely to have influenced the dialogues as well. Bandura (1977)

introduced social learning theory to explain how both internal motivators (e.g., attitudes, values, and norms) and environmental factors shape an individual's learning and behavior. More recent conceptualizations in the field of environmental psychology have coalesced around social learning as process in which people learn from one another in ways that benefit social-ecological systems (Pahl-Wostl et al., 2007; Pahl-Wostl et al., 2008; Tàbara & Pahl-Wostl, 2007). This dynamic interaction amongst residents most certainly influenced conservations in the Denali Discussion Forum as residents gained not only new information, but an awareness of how their perceptions coincided or contrasted with those of others. Furthermore, we observed variation in gender ratios and the number of previous relationships among the three subgroups which may have contributed to environmental concern and quality of the deliberation respectively (Blocker & Eckberg, 1997; Kenter et al., 2016b; McCright & Xiao, 2014). Therefore, we recognize the need for future research to further disentangle the threads of online deliberation, group composition, and social learning.

Management Implications

Although residents live near protected areas in the Alaska, they may still feel alienated from decision-making process concerning resources that they utilize on a daily basis (Goodson et al., 2022; Johnson & van Riper, 2021). As a result of situations like these, inclusive conservation has been advocated as a method to solve challenges of exclusion within social-ecological systems (Tallis & Lubchenco, 2014). However, managers are not always clear how to carry out this process because inclusive conservation can take numerous forms and balancing a range of stakeholder visions can be challenging. After carrying out the Denali Discussion Forum, we align ourselves with past researchers (Kenter et al., 2016a; Orchard-Webb et al., 2016; Reed et

al., 2010) who have recommended deliberation and social learning as a process to successfully engage stakeholders. By creating an online discussion managers can learn where there is common ground among stakeholder priorities and how stakeholders would like to see management processes improved. In the context of the Denali Discussion Forum, we discovered that residents from all subgroups value wilderness and the lifestyle (i.e., recreation, solitude, and a close-knit community) that the Denali Region provides. However, those benefits are threatened by the mismanagement of natural resources and the overwhelming influence of tourism. In response to these benefits and threats, they would like to see genuine public participation in the decision-making process and direct management activities that mitigate environmental deterioration.

3.5 Conclusion

Despite a growing body of literature recognizes the importance of engaging local community perspectives in land management contexts, the impact of group composition on deliberative processes of resource management remains unclear. Therefore, we provide a longitudinal and experimental study which offers insight into the perceived benefits and threats facing protected areas, as well as reflections on how management practices could be improved. The results from our qualitative analysis between subgroups suggests that individuals with similar value orientations can have differing perspectives for the future particularly when it comes to management practices. Despite these disparities in management practices, each subgroup was attempting to achieve similar outcomes: (1) preventing the loss of natural resources and (2) improving Denali Region management through more inclusive conservation measures. Overall, the objective of this article is to advocate for future collaborative approaches

that strengthen relationships between stakeholders and resource management agencies in order effectively solve conservation and human well-being concerns.

CHAPTER 4: CONCLUSION

The aim of my thesis is to understand how a range of factors such as trust, information sources, values, and social learning influence residents' views of their involvement in natural resource management surrounding protected areas in Alaska, USA. Specifically, my research seeks to understand the current state of community-agency relationships, as well as the role of trust and information sources in shaping residents' perceptions of inclusivity. I answered my research questions during the COVID-19 pandemic, and as such, engaged communities remotely and through reading the literature.

My first thesis chapter demonstrated that residents had a limited disposition to trust others, did not trust federal land management agencies, did not believe agencies shared their values pertaining to protected area management, did not believe that agencies adhered to a moral code, and did not perceive to be included in land management decisions. Moral competency and having a range of communication strategies for sharing information were particularly useful for understanding what factors positively influenced perceptions of inclusivity.

The next phase of my research in Chapter 3 focused on residents from the Denali Region of Alaska to understand how community members identified benefits, threats, and management practices. By separating residents into subgroups defined by their value orientations, I examined how the composition of collectives affected deliberation about resource management topics. From this research, I concluded that people with similar values can hold diverse visions for the future, but shared spaces for deliberation also help people collectively work through complex challenges rooted in dissimilar views.

Future research and resource management agencies focused on improving inclusive conservation initiatives can benefit from this body of work by building on the data gathered here

to address knowledge gaps. In Chapter 2, I empirically quantified resident perceptions of inclusion in federal land management decision-making. While perceptions of inclusion among stakeholders are frequently discussed, no research has attempted to empirically investigate this idea. Our results indicated that trust and information sources accounted for only a moderate degree of variation in reported levels of perceived inclusivity. Future studies could build on the limitations of these findings to advance knowledge of other factors that contribute to perceptions of inclusivity such as justice (Martin et al., 2016). Furthermore, this study aligns with previous research that has emphasized the need for maintaining transparent and ethical practices to improve community perceptions of inclusivity (Nie, 2003; Smith & McDonough, 2001; Staddon et al., 2021). In the context of Alaska, USA, building trust will need to take place over time due to the current low levels of trust. Addressing this would likely require 1) managers showing residents how local and Indigenous knowledge is actively being utilized in decision-making and 2) supporting continued social science research through the hiring of a full-time social scientist. I contend that through collaborations among scientists, resource managers, and stakeholders, trust in resource management ethics can be improved with co-development and co-creation of knowledge. This, in turn, will likely allow for wider adoption of inclusive conservation practices.

Chapter 3 builds on the idea of strengthening community trust by providing residents with space to deliberate on management practices (Kenter et al., 2016b; Orchard-Webb et al., 2016). Due to the enthusiasm of residents throughout participation in the Denali Discussion Forum, it would be beneficial for researchers to adopt a similar process for learning through online forums and testing the efficacy of different platforms for understanding community perspectives, as well as integrating perspectives into resource management decision-making. Because the similarity of the three subgroups' value orientation posed a limitation for this study,

future researchers should try to involve more varied groups to strengthen scientific understanding about the advantages of online platforms for successful deliberation. Furthermore, when identifying subgroups of residents with dissimilar value orientations, researchers should explore different methods for subgroup identification because while K-mean cluster analysis guarantees convergence, it is sensitive to outliers. Understanding the audience's perceptions of success when deliberating through online platforms and in-person forums is another crucial comparison. Importantly, these results would provide management with a means to demonstrate to residents their readiness to take public feedback into account and enhance the public engagement process.

The research covered in my thesis has important implications for future management and policy outcomes within and outside of the Alaska, USA. Broadly, my thesis raised visibility of Alaskan residents at both the state and regional levels to amplify their voices and interests in resource management. This, in my opinion, is a crucial first step since it begins to address the core issues of inclusive conservation by highlighting of diverse resident voices through an international collaboration of scientists. As a researcher, I was also able to advance empirical understanding of perceived inclusivity, so that resource managers can more effectively build relationships with residents and improve management practices by considering different forms of knowledge. By encouraging managers to utilize local residents' expertise in addition to the technical knowledge produced by environmental social science research (van Riper et al., 2020a), more influence can be given to residents in the decision-making process. Furthermore, managers and policymakers can use the results from the social sciences to better understand the distinct differences in management practices that can exist among stakeholders, while using deliberation to find consensus. Within Alaska, my hope is that my thesis research serves as step in the direction to connect residents with federal resource managers, while providing managers

with survey results, quotes, and summaries of community discussions that highlight inclusive conservation practices as a means to achieve ecologically and socially desirable outcomes on public lands.

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A Survey of Residents in Alaska:

Understanding your experiences and preferences for public land management

Alaska is a great place to live, yet there are many changes influencing the landscape. To understand how residents like you are responding to these changes, the University of Illinois is partnering with local organizations to learn more about your opinions and experience. You are one of a small number of people chosen for this study, because you live in the region. Your response is important to us. Results from this research will be made publicly available and shared with community leaders and decision-makers. All personal information will be kept confidential and your participation is voluntary.
Please answer each question carefully and save any additional comments for the final page. This questionnaire will take about 20 minutes to complete.

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What is your gender? ❒ Female ❒ Male

What is your age? _____

What is your home zip code? _____

Section 1 of 4: Your Background and Behavior

In this section, we ask you to provide information about yourself and your behaviors related to the environment.

1. **How many <u>years</u> have you been living in Alaska?** _____Years

2. **How many <u>times</u> in your life have you visited Denali National Park?** _____Times

3. **How many <u>times</u> in your life have you visited public lands in Alaska?** _____Times

4. **How many <u>times</u> have you visited public lands in Alaska in the last 12 months?** _____Times

5. **Where have you learned about issues related to public land management in the area where you live?** (✓all that apply)

❒ Public agencies	❒ Environmental groups	❒ Social media
❒ Government officials	❒ Government websites	❒ Webinars
❒ Scholarly articles	❒ Online newspapers	❒ Public meetings
❒ Professional societies	❒ Hunting/trapping organizations	❒ Friends and family
❒ Prefer not to answer		

6. How frequently have you engaged in the following activities over the\ <u>past 12 months?</u>	Very Rarely	Rarely	Occasionally	Frequently	Very Frequently	Prefer Not to Answer
a. Took measures like re-purposing products to reduce my waste	❒	❒	❒	❒	❒	❒
b. Avoided traveling out of town for non-local products	❒	❒	❒	❒	❒	❒
c. Looked up scientific information about the environment	❒	❒	❒	❒	❒	❒
d. Participated in a policy process like a public comment period that affected the environment	❒	❒	❒	❒	❒	❒
e. Donated money with the intention of benefiting the environment	❒	❒	❒	❒	❒	❒
f. Wrote a letter or email about an environmental issue	❒	❒	❒	❒	❒	❒
g. Encouraged other people to attend an event related to the environment	❒	❒	❒	❒	❒	❒
h. Talked to other people about the environment	❒	❒	❒	❒	❒	❒
i. Learned from other people like longtime residents or Elders to solve an environmental problem	❒	❒	❒	❒	❒	❒

Section 2 of 4: Views on Public Land Management and Place

We would like to better understand your views on decision-making processes about public land management, trust in that process, and the reasons why public lands and places near your home are important to you.

7. We would like to understand how you believe <u>your perspective is represented</u> by federal organizations that oversee public lands near your home. To what extent do agree with the following statements?	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Prefer Not to Answer

a. I have contributed to decision-making processes around management of public lands near my home	❒	❒	❒	❒	❒	❒
b. There are opportunities for me to help govern public lands near my home	❒	❒	❒	❒	❒	❒
c. My viewpoint is reflected in the current public land policies of federal agencies near my home	❒	❒	❒	❒	❒	❒
d. Decision-making is shaped by collaboration across different interests within my community	❒	❒	❒	❒	❒	❒
e. I am involved with organizations that play a role in public land management near my home	❒	❒	❒	❒	❒	❒
f. The viewpoints of my community are reflected in the current public land policies of federal agencies near my home	❒	❒	❒	❒	❒	❒

8. We would like to understand the extent to which residents' perspectives are reflected in decisions being made about Denali National Park and Preserve. How could the process for including your opinions in decision-making be improved?

9. We would like to understand why you think the landscape around your home is different from other places. Please use the space below to describe why, if at all, the place where you live is special.

10. There are many ways a place could be considered distinctive. Below we describe some of the ways you might think about the place where you live. To what extent do you agree with <u>each</u> of the following statements about why this place is special?	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Prefer Not to Answer
a. **Economic:** A place to earn income for employment	❒	❒	❒	❒	❒	❒
b. **Subsistence:** A place to harvest food or other resources to sustain my life and that of my family	❒	❒	❒	❒	❒	❒
c. **Education:** A place to learn about, teach, or research the environment and people	❒	❒	❒	❒	❒	❒
d. **Recreation:** A place where I can pursue recreation activities	❒	❒	❒	❒	❒	❒
e. **Family:** A place where I can spend time with my family	❒	❒	❒	❒	❒	❒
f. **Rejuvenation:** A place where I can feel better physically and/or mentally	❒	❒	❒	❒	❒	❒
g. **Sense of community:** A place where I have close relationships with other members of my community	❒	❒	❒	❒	❒	❒
h. **Heritage:** A place with history and traditions that are passed down to future generations	❒	❒	❒	❒	❒	❒
i. **Spirituality:** A place that is sacred, religious, or spiritually significant	❒	❒	❒	❒	❒	❒
j. **Aesthetics:** A place that has attractive scenery, sights, sounds, or smells that cannot be experienced anywhere else	❒	❒	❒	❒	❒	❒
k. **Ecological Integrity:** A place that has intact ecosystems with the ability to support and maintain ecological processes	❒	❒	❒	❒	❒	❒
l. **Wildlife:** A place inhabited by wildlife unique to Alaska	❒	❒	❒	❒	❒	❒

11. We would like to understand how much you trust different people and organizations in Alaska. To what extent do you agree with the following statements?	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Prefer Not to Answer
a. You can't be too careful dealing with people	❒	❒	❒	❒	❒	❒
b. People are almost always interested only in their own welfare	❒	❒	❒	❒	❒	❒

c. One has to be alert or someone is likely to take advantage of you	❒	❒	❒	❒	❒	❒
d. The U.S. Federal Government efficiently spends money	❒	❒	❒	❒	❒	❒
e. The U.S. Federal Government is effective in solving problems	❒	❒	❒	❒	❒	❒
f. I can trust the U.S. Federal Government to do what is right	❒	❒	❒	❒	❒	❒
g. Federal agencies that manage public lands support my views	❒	❒	❒	❒	❒	❒
h. Federal agencies that manage public lands think like me	❒	❒	❒	❒	❒	❒
i. Federal agencies that manage public lands have similar goals to mine	❒	❒	❒	❒	❒	❒
j. Federal employees are not self-serving in decision-making	❒	❒	❒	❒	❒	❒
k. Public land managers from the federal government really care what happens to me	❒	❒	❒	❒	❒	❒
l. Federal employees are sensitive to the local economic impacts of tourism and recreation	❒	❒	❒	❒	❒	❒

12. I am morally obligated to minimize environmental impacts on public lands near my home.

❒	❒	❒	❒	❒	❒
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Prefer Not to Answer

13. I would feel guilty if I negatively impacted public lands near my home.

❒	❒	❒	❒	❒	❒
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Prefer Not to Answer

14. People like me should be proud if they can limit their impact on public lands near my home.

❒	❒	❒	❒	❒	❒
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Prefer Not to Answer

Section 3 of 4: Your Values, Environmental Concern, and Personality

We would like to better understand your values, concerns about the environment, and personality. This information is helpful to understand the things you care about most. Please only provide the information that you are comfortable sharing.

15. These questions are about your personal values. Please rate the extent to which you consider each value to be a guiding principle in your life.	Unimportant	Of Little Importance	Moderately Important	Important	Very Important	Prefer Not to Answer
a. **Protecting the environment**: preserving nature	❒	❒	❒	❒	❒	❒
b. **Unity with nature**: fitting into nature	❒	❒	❒	❒	❒	❒
c. **A world of beauty**: beauty of nature and the arts	❒	❒	❒	❒	❒	❒
d. **Equality**: equal opportunity for all	❒	❒	❒	❒	❒	❒
e. **Social justice**: correcting injustice, care for others	❒	❒	❒	❒	❒	❒
f. **A world at peace**: free of war and conflict	❒	❒	❒	❒	❒	❒
g. **Authority**: the right to lead or command	❒	❒	❒	❒	❒	❒
h. **Social power**: control over others, dominance	❒	❒	❒	❒	❒	❒
i. **Influential**: having an impact on people and events	❒	❒	❒	❒	❒	❒
j. **Fulfilment of desire**: food, fun, pleasure	❒	❒	❒	❒	❒	❒
k. **Enjoying life**: pursuing hobbies, leisure, socializing	❒	❒	❒	❒	❒	❒
l. **Reducing worries**: seeking comfort and relaxation	❒	❒	❒	❒	❒	❒
m.**Personal growth**: development of new skills, learning, or gaining insight into something	❒	❒	❒	❒	❒	❒
n. **Pursuit of excellence**: attaining a personal ideal in life	❒	❒	❒	❒	❒	❒
o. **Autonomy**: deciding your own future and doing what you believe in	❒	❒	❒	❒	❒	❒
p. **Satisfaction with life**: finding meaning, value, and relevance to a broader context	❒	❒	❒	❒	❒	❒

16. My own actions influence the conditions of public lands near my home.

❑ Strongly Disagree	❑ Disagree	❑ Neutral	❑ Agree	❑ Strongly Agree	❑ Prefer Not to Answer

17. I have the ability to limit environmental impacts on public lands near my home.

❑ Strongly Disagree	❑ Disagree	❑ Neutral	❑ Agree	❑ Strongly Agree	❑ Prefer Not to Answer

18. There are many ways I can help benefit the environment in public lands near my home.

❑ Strongly Disagree	❑ Disagree	❑ Neutral	❑ Agree	❑ Strongly Agree	❑ Prefer Not to Answer

19. There are many different perspectives on how society should be organized. How strongly do you agree with the following statements?	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Prefer Not to Answer
a. When I have problems, I try to solve them on my own	❒	❒	❒	❒	❒	❒
b. I prefer tasks where I work something out on my own	❒	❒	❒	❒	❒	❒
c. The freedom of an individual should not be limited	❒	❒	❒	❒	❒	❒
d. There are limitations in life that we have to accept whether we want to or not	❒	❒	❒	❒	❒	❒
e. There is no use in doing things for other people – you only get taken advantage of	❒	❒	❒	❒	❒	❒
f. I would not participate in civic action groups. Those in power do what they want anyway	❒	❒	❒	❒	❒	❒
g. It is important to preserve our customs and traditions	❒	❒	❒	❒	❒	❒
h. I prefer clear instruction from my supervisors about what to do	❒	❒	❒	❒	❒	❒
i. In a family, adults and children should have different degrees of influence on decisions	❒	❒	❒	❒	❒	❒

j. Firms and institutions should be organized in a way that everybody can influence important decisions	❒	❒	❒	❒	❒	❒
k. In the case of important issues for a family, everyone should contribute to decisions	❒	❒	❒	❒	❒	❒
l. Important questions for our society should not be decided upon by experts, but by the people	❒	❒	❒	❒	❒	❒

20. We would like to understand more about your concern for the environment. How strongly do you agree with the following statements?	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Prefer Not to Answer
a. It bothers me when I think about the environmental conditions in which our children and grandchildren will probably have to live in	❒	❒	❒	❒	❒	❒
b. If we continue down the same path, we are heading toward an environmental catastrophe	❒	❒	❒	❒	❒	❒
c. Decision-makers are doing far too little to protect the environment	❒	❒	❒	❒	❒	❒
d. To protect the environment, we should all be willing to reduce our current standard of living	❒	❒	❒	❒	❒	❒
e. In my opinion, many environmental threats are exaggerated	❒	❒	❒	❒	❒	❒
f. There are limits on growth that our industrialized world has already exceeded or will soon reach	❒	❒	❒	❒	❒	❒

21. These questions are about your personality. Please rate the extent to which you agree with the following statement: "I see myself as someone who…"	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Prefer Not to Answer
a. Tends to be quiet	❒	❒	❒	❒	❒	❒
b. Is dominant, acts as a leader	❒	❒	❒	❒	❒	❒
c. Is full of energy	❒	❒	❒	❒	❒	❒
d. Is compassionate, has a soft heart	❒	❒	❒	❒	❒	❒
e. Is outgoing, is sociable	❒	❒	❒	❒	❒	❒
f. Is sometimes rude to others	❒	❒	❒	❒	❒	❒
g. Assumes the best about people	❒	❒	❒	❒	❒	❒
h. Is respectful, tends to treat others with respect	❒	❒	❒	❒	❒	❒
i. Tends to be disorganized	❒	❒	❒	❒	❒	❒

j. Has difficulty getting started on tasks	❒	❒	❒	❒	❒	❒
k. Is reliable, can always be counted on	❒	❒	❒	❒	❒	❒
l. Keeps things neat and tidy	❒	❒	❒	❒	❒	❒
m. Worries a lot	❒	❒	❒	❒	❒	❒
n. Tends to feel depressed, blue	❒	❒	❒	❒	❒	❒
o. Is emotionally stable, not easily upset	❒	❒	❒	❒	❒	❒
p. Is temperamental, gets emotional easily	❒	❒	❒	❒	❒	❒
q. Is fascinated by art, music, or literature	❒	❒	❒	❒	❒	❒
r. Has little interest in abstract ideas	❒	❒	❒	❒	❒	❒
s. Is original, comes up with new ideas	❒	❒	❒	❒	❒	❒
t. Has little creativity	❒	❒	❒	❒	❒	❒

Section 4 of 4: About You

Our final questions are about your socio-demographic characteristics. Please enter only the information that you are comfortable sharing.

22. What is the name of the community where you live? _____

23. "Subsistence" is when residents use wild, renewable resources (such as hunting or gathering) for personal consumption.

a. Do you identify as a subsistence user? ❒ Yes ❒ No

b. How important is subsistence to you?

❒ Not at all Important ❒ Slightly Important ❒ Moderately Important ❒ Very Important ❒ Extremely Important ❒ Prefer Not to Answer

24. With which racial group(s) do you identify? (Please ✓all that apply)

❒ American Indian and Alaska Native ❒ Asian ❒ White ❒ Black or African American ❒ Pacific Islander

❒ Other: ❒ Prefer Not to Answer

25. What is your annual household income before taxes? (Please ✓ one)

❒ Less than $24,999	❒ $25,000-$49,999	❒ $50,000-$99,999	❒ $100,000-$149,999
❒ $150,000-$199,999	❒ $200,000-$249,999	❒ $250,000 or more	❒ Prefer not to answer

26. What is the highest level of education you have completed? (Please ✓one)

❒ Some high school	❒ High school graduate or GED	❒ Two-year degree
❒ Bachelor's degree	❒ Professional certificate	❒ Graduate degree
❒ Prefer not to Answer		

Thanks for your participation!

If you have any additional thoughts about this study, please share them here.

In you have any questions or would like a copy of the final report, please contact:

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