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Variable trust in public health messaging during the first year of the COVID-19 pandemic in Southeast Alaska

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Public health messaging in the United States during the COVID-19 pandemic has been variable in effectiveness. Different levels of governmental institutions have different goals and methods; it is unclear how messaging from these disparate levels is received, trusted, and implemented. We investigate the degrees of trust of Alaska Native and non-Alaska Native people in Southeast Alaska for the U.S. federal, Alaska state, and local Southeast Alaskan governments to parse how Southeast Alaskans feel about relative preparation, actions, and public health messaging. We use data collected in two waves of a regional survey: the first in April-June 2020, and the second in November 2020-February 2021. Results indicate that trust in the federal government was significantly lower than in the Alaska state government for each time period, and trust in both federal and state government significantly decreased between the two periods. Trust in the local governments of Southeast Alaska were significantly higher than both state and federal levels, and increased between the two survey waves, albeit insignificantly. We discuss potential drivers of these observations and outline how this can be leveraged for more comprehensive research into how relatively small communities with a large Native presence perceive public health messaging from different sources.

KEYWORDS

COVID-19 pandemic, public health, trust, information sources, Southeast Alaska, survey analysis

1. Introduction

Public health messaging in the U.S. has changed dramatically throughout the course of the COVID-19 pandemic. There has been extensive research in communication sciences about how well various approaches to public health messaging work, and in the last couple of years it has become clear that effective messaging is essential for impactful pandemic responses (Nan et al., 2022). It is less clear, however, how public health messaging from different levels of government are received, trusted, and implemented by their target populations and how trust in government has changed throughout the pandemic as public health guidelines and mandates have evolved.

It is important to distinguish the level of government communicating a public health message because many dimensions of the COVID-19 pandemic became highly politicized, such as social distancing (Fazio et al., 2021), masking (Scoville et al., 2022), vaccination (Abbas, 2022; Bolsen and Palm, 2022), increasing social inequalities (Hardy et al., 2021),

and inequalities in many other health outcomes, such as maternal health (Kim et al., 2020). How and which authority figures within governmental institutions disseminate public health information is central to the public's opinions of those messages and how likely they are to adhere to pandemic-related guidance (Baumgaertner et al., 2018; Dong et al., 2022). Existing polls show higher levels of trust in the U.S. for local and state government authorities compared to those in the federal government (O'Leary et al., 2021). Critically, the objectives, methods, and reception of different levels of government—federal vs. independent state or localities, for example—could be very different from one another. Additionally, there is considerable variation in pandemic outcomes in different populations, especially Indigenous peoples compared to non-Indigenous groups (Alves et al., 2022). Differences in pandemic experiences *within* populations may signal further dimensions of complexity in how and why some people trust in some authorities over others. As a result, trust in public health messaging and government authorities might be expected to vary across different populations and locales.

One of the primary challenges to communication during the COVID-19 pandemic is the massive influx of information that has been generated and spread through social media since the beginning of 2020. This has been characterized as the COVID-19 “infodemic,” or the mass transmission of (mis)information through various channels that makes it difficult for the public to organize and implement guidance in a meaningful way (Zarocostas, 2020). Clear and accurate public health guidance is critical to curbing the impacts of acute stressors like a novel pandemic pathogen. If large research and policy agencies (such as the World Health Organization, the Centers for Disease Control and Prevention, public health departments, and government authorities) seek to gain trust, it is critical that such organizations are informed about the levels of trust that residents do (or do not) have in them. Levels of trust may have public health consequences; trust in such institutions has been linked with adherence to self-protective measures, such as how likely individuals were to wear masks or to social distance in early days of the COVID-19 pandemic, or more recently, whether or not to get vaccinated (Han et al., 2021). Additionally, online activity regarding the pandemic has been a site for polarization, fed in part by intentional efforts to pollute the information environment with disinformation and misinformation (Matthews et al., 2021).

In this short research report, we investigate how a sample of people in Southeast Alaska perceived the preparation, messaging, and actions of three different levels of government (U.S. federal, Alaska state, and Southeast Alaska local) during two critical time periods during the first year of the COVID-19 pandemic. Previous research using in-depth qualitative interviews with Alaska Native people of three island communities in Southeast Alaska showed that they were most prone to lean on one another and prioritize community-centered responses, especially ones that drew upon traditional knowledge and cultural values (van Doren et al., 2023). The overarching aim of this research is to better understand whose authority on public health communications Southeast Alaskans trusted the most, and how this trust changed over the pandemic. Additionally, we seek to generate new avenues of inquiry for investigating the impacts of trust and mistrust in authorities during pandemic responses.

Here we ask three primary questions: (1) Which level of government do Southeast Alaskans trust in its preparation, actions, and public health messaging? (2) Are there differences between the attitudes of Alaska Native vs. non-Alaska Native people in Southeast Alaska about which level of government is most prepared and delivers the most effective public health messaging? (3) Did levels of trust change during the first year of the COVID-19 pandemic? The answers to these questions will contribute essential information about how not only public health messaging from the government is received, but it will provide finer insights into how people perceive information from federal vs. state vs. local levels, which are fundamentally distinct from one another in their goals and methods. This illumination could ultimately help shape future public health messaging and outreach in Southeast Alaska.

Finally, we must consider that federal responses and guidelines in countries as large (geographically and by population) as the U.S. will likely not be useful or effective for the entire populace, which can weaken peoples' trust over time. It is essential to know if this is happening, and if there are sources people turn to other than the federal government. Investigating the attitudes of a small region with a small population and a relatively large presence of Alaska Native people will provide finer insights that cannot be achieved with larger samples. We consider the research presented here to be an initial investigation into this phenomenon to first discern the broad patterns of changing attitudes throughout a critical time period of the COVID-19 pandemic. These results will be the foundation upon which we will build more research to best identify what kinds of public health messages work in Southeast Alaska, and for whom.

2. Materials and methods

The Sitka Sound Science Center (SSSC) partnered with the RAND Corporation and the Central Council of Tlingit & Haida Indian Tribes of Alaska (CCTHITA) to field research investigating the perceptions and reactions of Southeast Alaskans before and during the COVID-19 pandemic. This research was funded by a rapid-response grant from the National Science Foundation (NSF). All protocols and procedures were approved by RAND's Institutional Review Board (Approval #2020-0320).

Data used in this analysis was collected over the course of two rounds of a survey; the first round was distributed throughout Southeast Alaska in April through June 2020, and the second round was distributed in November 2020 through February 2021. The first round of the survey captures a “pre-pandemic” period in Southeast Alaska. The first cases in this region were few and far between through this season, with the largest number of initial cases appearing in Juneau during these months (never more than three per day, with zero cases on about half the days) (Alaska COVID-19 Information Hub; Petrov et al., 2020). For time one (t_1), the data collected represent attitudes about public health messaging from federal, state, and local levels of government before the first wave of the pandemic truly began in Southeast Alaska.

The second round of the survey was circulated in November 2020 through February 2021 during the peak of Alaska's first major wave of COVID-19 (Alaska COVID-19 Information Hub; Petrov et al., 2021). Additionally, the winter of 2020–2021 was

a tumultuous time throughout the U.S.; there were constantly new COVID-19 guidelines and increasing politicization with the vaccine rollout. Alaskans were some of the first to be widely vaccinated (Foxworth et al., 2021), and in Southeast Alaska specifically, vaccination rates rapidly increased between January and March of 2021 (Alaska COVID-19 Information Hub). The data from time two (t_2) capture the attitudes of Southeast Alaskans during this transformative period of the pandemic. In the first round of the survey in April through June 2020, 11.9% of respondents were Alaska Native individuals, and 88.1% of

respondents were non-Alaska Native. In the second round of the survey in November 2020 through February 2021, 13.1% of respondents were Alaska Native, while 86.9% were non-Alaska Native. The total sample used in this research for t_1 was 706 respondents, and for t_2 there were 408 respondents.

Survey participants were asked to respond to three statements: (1) I feel that the federal government is prepared and providing the right messages to the nation; (2) I feel that the state government is prepared and taking the right actions; and (3) I feel that the local government is prepared and taking the right actions.

TABLE 1 Summary table of the number of responses for each time period and each level of confidence in the levels of government.

Response	April–June 2020 (t_1)			November 2020–February 2021 (t_2)		
	Federal (%)	State (%)	Local (%)	Federal (%)	State (%)	Local (%)
Not at all	425 (61)	80 (12)	98 (14)	279 (69)	128 (31)	57 (14)
To some extent	219 (32)	433 (62)	379 (54)	109 (27)	237 (58)	201 (49)
Certainly	49 (7)	180 (26)	229 (32)	18 (4)	43 (11)	150 (37)

Percent contributions of each level of trust for the different levels in each time period are provided in parentheses.

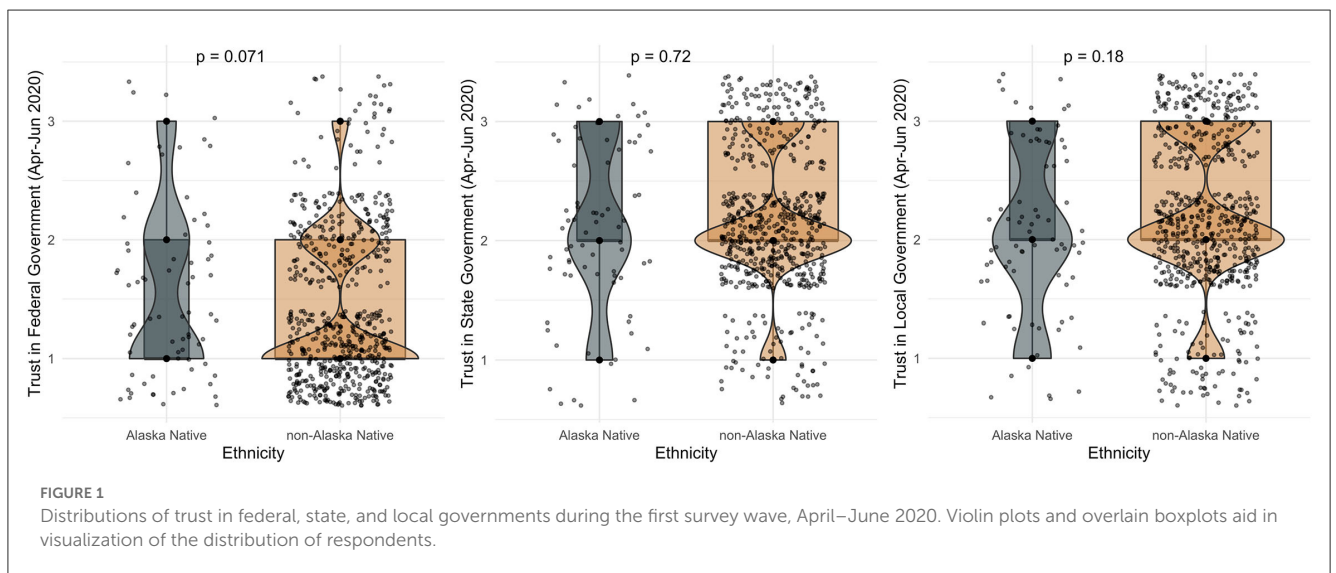


FIGURE 1 Distributions of trust in federal, state, and local governments during the first survey wave, April–June 2020. Violin plots and overlain boxplots aid in visualization of the distribution of respondents.

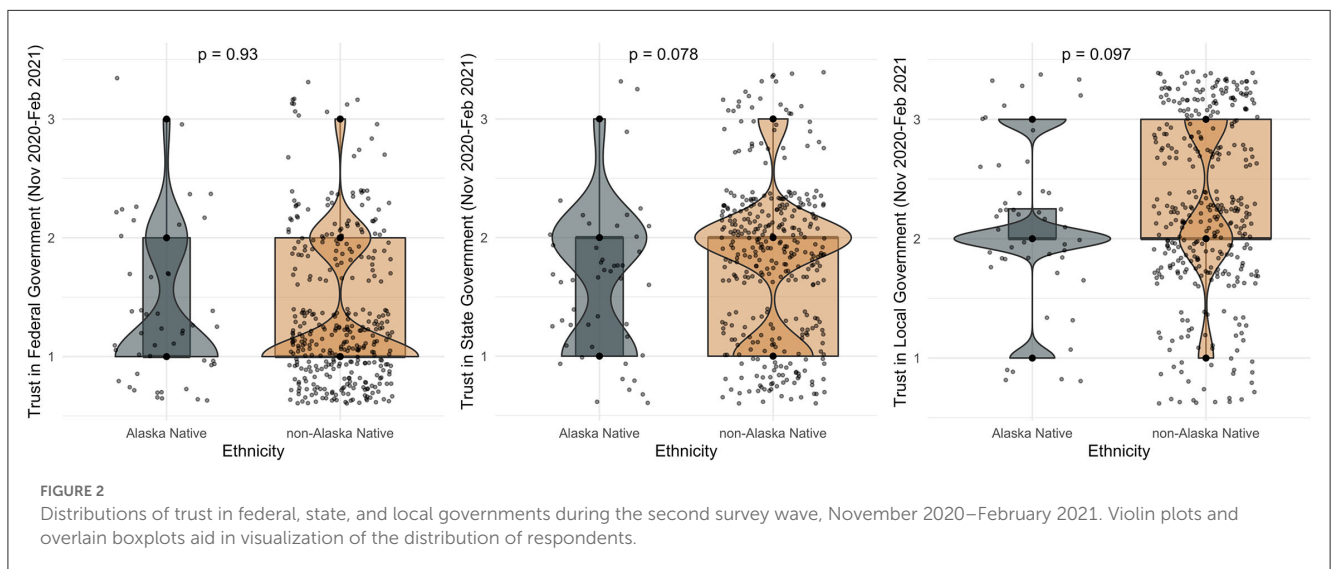


FIGURE 2 Distributions of trust in federal, state, and local governments during the second survey wave, November 2020–February 2021. Violin plots and overlain boxplots aid in visualization of the distribution of respondents.

Participants were asked to respond on a Likert scale with three levels: (1) Not at all; (2) To some extent; and (3) Certainly. Table 1 provides a summary of the number of responses in each level of trust for the different levels of government for both time periods.

The levels of the Likert scale were transformed into numerical values and treated as continuous variables, where “Not at all” equals 1, “To some extent” equals 2, and “Certainly” equals 3. Although there are limitations to this approach, specifically in that there is no guarantee that the ordinal intervals are a constant distance apart from one another, we assume that there is a constant degree of increase between these levels of trust with the smallest number (1) representing the lowest and the largest number (3) representing the highest level of trust.

The distributions in responses between Alaska Native and non-Alaska Native respondents for trust in each level of government within each time period were plotted and analyzed for significant differences with non-parametric Mann-Whitney U tests. We do not assume normal distributions for these responses. The total distributions (the aggregate of Alaska Native and non-Alaska Native responses) were then compared on several levels using non-parametric Mann-Whitney U tests. The comparisons were made as follows: (1) *Changes over time*; (1a) federal (t_1) vs. federal (t_2); (1b) state (t_1) vs. state (t_2); (1c) local (t_1) vs. local (t_2); (2) *Differences between levels within each time*; (2a) federal (t_1) vs. state (t_1); (2b) local (t_1) vs. federal (t_1); (2c) local (t_1) vs. state (t_1); (2d) federal (t_2) vs. state (t_2); (2e) local (t_2) vs. federal (t_2); (2f) local (t_2) vs. state (t_2).

3. Results

Figures 1, 2 show the distributions of the trust in preparation and public health messaging for each level of government stratified by Alaska Native and non-Alaska Native respondents for each round of the survey (April through June 2020 in Figure 1, and November 2020 through February 2021 in Figure 2).

In spring 2020, before COVID-19 was epidemic in Southeast Alaska, trust in the preparation and public health messaging of the federal government was low, with most respondents saying they provided appropriate messaging “Not at all” and “To some extent.” Trust in the preparation and actions of the state were higher, and most participants responded “To some extent” and some responded “Certainly.” Trust was highest in the messages of the local governments of Southeast Alaska out of all three levels. There are no significant differences between the distributions between Alaska Native and non-Alaska Native respondents in the first round of the survey (federal: $p = 0.071$; state: $p = 0.72$; local: $p = 0.18$). The significance values associated with these comparisons indicate that Alaska Native vs. non-Alaska Native attitudes toward the Alaska state government were more similar to one another than they were for the local or federal levels, and that opinions on preparation and messaging of the U.S. federal government differed the most.

In the winter of 2020–2021, trust in the preparation, messaging, and actions of the federal government remained low, trust in the state fell, and trust in the local level remained high. Again, there were no significant differences in the distributions of trust between

TABLE 2 Results of the statistical comparisons of distributions of trust in different levels of government using Mann-Whitney U tests.

Comparisons	Median ^a	Mean	Summary trend	p-value ^b
Federal t_1 vs. Federal t_2	1 1	1.457 1.357	Decreased t_1 → t_2	0.0095**
State t_1 vs. State t_2	2 2	2.144 1.792	Decreased t_1 → t_2	<0.001***
Local t_1 vs. Local t_2	2 2	2.186 2.228	Increased, not sig	0.259
Federal t_1 vs. State t_1	1 2	1.457 2.144	State higher	<0.001***
Federal t_1 vs. Local t_1	1 2	1.457 2.186	Local higher	<0.001***
State t_1 vs. Local t_1	2 2	2.144 2.186	Local higher, not sig	0.143
Federal t_2 vs. State t_2	1 2	1.357 1.792	State higher	<0.001***
Federal t_2 vs. Local t_2	1 2	1.357 2.228	Local higher	<0.001***
State t_2 vs. Local t_2	2 2	1.792 2.228	Local higher	<0.001***

^aThe Likert scale used to collect these data in the surveys was assumed to be continuous for these analyses, so the numerical values refer to the levels of trust: “Not at all” = 1; “To some extent” = 2; “Certainly” = 3. ^bSignificance values: <0.001 = “***”; <0.01 = “**”; <0.05 = “*”; <0.10 = “.”.

Alaska Native and non-Alaska Native respondents at the second time point (federal: $p = 0.93$, state: $p = 0.078$; local: $p = 0.097$). During this round of the survey, however, the attitudes toward the federal government were more similar between Alaska Native people and non-Alaska Native people than they were for the state and local levels, which is a reversal of the pattern observed in the pre-pandemic survey period.

Results of the comparisons between distributions are summarized in Table 2. For each distribution, the mean and median are reported. Since these values are numerical transformations from an ordinal Likert scale, the median values are the most intuitive and meaningful, but reports of the mean values also help show shifting levels of trust on a finer scale. For each comparison, the significance value of the non-parametric Mann-Whitney U test is reported, as well as the summary trend for each comparison.

The trust in preparation, messaging, and actions of the federal and state governments decreased significantly from the first to second rounds of the survey (federal t_1 → t_2 : $p = 0.0095$; state t_1 → t_2 : $p < 0.001$). The trust in the preparation, messaging, and actions of the local governments increased, but this increase was not statistically significant (local t_1 → t_2 : $p = 0.26$). Although respondents reported general approval of the state’s response to the pandemic in spring 2020, the months between spring and winter transformed opinions in Southeast Alaska. At both time points, the

trust in preparation, messaging, and actions of the state were also significantly higher than in the federal government (federal vs. state t_1 : $p < 0.001$; federal vs. state t_2 : $p < 0.001$), but trust in the local level were higher than both federal and state at both time points. All comparisons of local vs. state and federal levels showed trust in local government was significantly higher (all $p < 0.001$) except for local vs. state levels at t_1 , which was not significantly different ($p = 0.14$).

4. Discussion

These results broadly illustrate the dynamic attitudes of Southeast Alaskans toward the public health messaging of the federal, state, and local governments in two critical time periods over the course of the first year of the COVID-19 pandemic. Based on these data and analyses, there is clearly more trust in the preparation, messaging, and guidance of local governments than of state and federal authorities. This is not necessarily surprising for Alaska given its “frontier mindset” and resultant libertarian politics, and how this has shaped migration to the state (Kleinfeld, 2007), as well as the considerable diversity in stakeholder viewpoints found in Alaska (Kämpf and Haley, 2013). Additionally, many of the respondents to the surveys analyzed here are from very small towns (i.e., only a few hundred residents) in Southeast Alaska, such as Craig, Haines, Hoonah, Metlakatla, Petersburg, Skagway, and Yakutat. These are tightly knit communities who may feel as if guidance from the Alaska state government is more directed toward larger towns like Anchorage and Juneau and is not entirely designed for their benefit (Izenberg et al., 2022). Further, trust in federal authorities seems to be lower in more rural and remote areas of the U.S. in general (Hitlin and Shutava, 2022). That said, Alaska has typically held state government in particularly high regard, at least before COVID (Gallup, 2014).

The essential takeaway of this study is the observation that trust in federal and state authorities (but not local authorities) declined over the course of the pandemic. Decline in some federal authorities during the pandemic has been similarly noted in other areas of the U.S. (Pollard and Davis, 2022). Overall, in other contexts, the public’s perception of the quality of information from politicians scored below that of experts, journalists, and other close contacts (van Loenhout et al., 2022). In a qualitative research study in the same context as the current study, van Doren et al. (2023) discuss how Alaska Native communities in Southeast Alaska prioritized community strengths, agency over decisions related to public health messages, and protection of community members rather than themselves. High trust in local Southeast Alaskan governments were attributed to the nature of small, tight-knit communities and the closeness necessary to make political and public health decisions that benefited the entire community; the interviewees expressed no such faith in the federal U.S. government on maintaining similar priorities (van Doren et al., 2023).

Several other studies have investigated trust in public health messaging, preparation, and actions in other locations and for different levels of government, some including longitudinal components to assess levels of trust over time. A large study analyzing COVID-19 outcomes against many socioeconomic

and sociopolitical determinants across 177 countries found that there was a strong relationship between higher levels of trust in governments and fewer COVID-19 infections (COVID-19 National Preparedness Collaborators, 2022). However, most of the existing research investigates these patterns on a national level rather than on a state level or below. For example, Latkin et al. (2020) found that, for a sample of 806 people, the CDC, Johns Hopkins University, and various state health departments all had high levels of trust (80.9, 81.1, and 75.6%, respectively), while only 41.2% trusted the mainstream media and only 30% trusted the White House. Four months later, the same sample reported significant declines in trust in all sources studied, with trust in the CDC and White House falling the most. Elsewhere, this level of public trust in the CDC is corroborated, with 69% of 1,487 respondents saying they had “high” or “complete” trust in the CDC, and 58% of respondents reporting “high” or “complete” trust in the U.S. Health and Human Services (Robinson et al., 2021). The same study found that 58% of respondents also reported “high” or “complete” trust in state health departments and 47% “high” or “complete” trust in governors, where trust in governors was the lowest of all institutions studied (Robinson et al., 2021). Using data collected weekly for a nationally representative sample of U.S. adults, Suhay et al. (2022) found that, from March through October 2020, trust in federal, state, and local governments all declined, while trust in the U.S. federal government was relatively the lowest for the entire time period.

There are few studies that explicitly investigate levels of trust in a state-specific context, that is, how a sample of people from a single state trust various levels of government. A detailed analysis of perceptions of public health messaging in Arkansas found that respondents placed the highest levels of trust in the University of Arkansas for Medical Sciences, federal health institutions (e.g., the U.S. Department of Health, Centers for Disease Control and Prevention, the National Institutes of Health), and the Arkansas Department of Health (trust in source “to a great extent” or “somewhat” 93.5, 89.1, and 89.9%, respectively) (Purvis et al., 2021). As a small piece of a larger study, Trent et al. (2022) found that of 1,204 survey respondents in New York City, NY and 500 respondents in Phoenix, AZ, only 32 and 22%, respectively, reported high or very high trust in information from the national government on COVID-19. Overall, the results outlined in the current study with respondents from Southeast Alaska seem to differ considerably from the results found for Arkansas and align more closely with the relatively lower levels of trust in the federal government in New York City and Phoenix. This is striking, particularly in light of what seemed to be relatively high trust in government among Alaskans in the years before COVID (Jones, 2014).

None of the studies mentioned throughout this discussion consider the perception and trust in different levels of government of Indigenous populations within the cities, states, or nations that are under investigation. The results of the current study do not indicate any statistically significant differences in trust in any level of government between Alaska Native and non-Alaska Native respondents, and we acknowledge that this may be due to the relatively small number of Alaska Native individuals who responded to the surveys. However, nearly 22% of Alaska’s total

population is represented by Alaska Native people, so even though identifying significant differences by stratifying by ethnicity in this way was not a specific aim of this research, future research must take into account the Alaska Native perspective to best understand determinants of trust, interpretation of public health messaging, and actions upon public health guidelines in Alaska. In this vein, it is important to assess within-population variation in trust in government authorities and their dynamic public health messaging to calibrate responses to acute events like infectious disease outbreaks and pandemics.

This study has two primary limitations. First, there is a lot of variation in the non-Alaska Native demographic category, including white, Black, Hispanic, and Asian self-identified social race categories. However, we feel it is important to center Alaska Native identities for this brief analysis. Southeast Alaska (Lingít Aani) is the Native land of Tlingit, Haida, and Tsimshian peoples and there is a large Native presence in the region with a rich history and influential cultural characteristics. The comparison in attitudes between Alaska Native and non-Alaska Native peoples had the potential to yield some important insights into how culture influences trust in government public health messaging. We also acknowledge that the sample of Alaska Native respondents was relatively small compared to the sample of non-Alaska Native respondents, which may influence the results of the significance tests performed. Although there were no statistically significant differences between Alaska Native and non-Alaska Native distributions for any of these comparisons, this is one element of the analysis that can be teased apart with more rigorous ethnographic research that more deeply explores the cultural drivers of these decision-making processes. Further, the variables analyzed in the current research represent only three data points of many collected in two extensive surveys that were not exclusively dedicated to understanding public health messaging, so we regrettably do not have any data on the specific content of messaging toward Southeast Alaskans on any of the three levels. We seek to expand upon the current findings with this limitation in mind to better understand specific sociocultural determinants of trust in public health messaging from different sources in this region. We re-emphasize the value of this analysis as a springboard for generating research questions to investigate the nature of perceptions of public health messaging in Southeast Alaska.

Moving forward, these results may lend themselves to further research that explores how people trust in authority figures (whether they are government authorities or not), if there is cultural consensus on knowledge domains regarding who people trust and why, and understandings of how trust is built and maintained on a local level. There is ample opportunity to leverage the latter, especially in a way that elevates agency—especially of Indigenous groups—to use traditional knowledge and community-driven actions that will provide the best protection for their communities.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving human participants were reviewed and approved by RAND Human Subjects Protection Committee Approval #2020-0320. The patients/participants provided their written informed consent to participate in this study.

Author contributions

TD cleaned the data, performed all data analyses, produced data visualizations, led the drafting of the manuscript, fielded comments from co-authors, and revised the manuscript. RB contributed to grant acquisition for this study, designed the data collection, aided in drafting the manuscript, and provided critical comments. MI designed the data collection, collected data, and provided critical comments. RH contributed to grant acquisition for this study, designed data collection, and provided critical comments. CS designed the data collection, collected data, and provided critical comments. RP contributed to grant acquisition for this study, collected data, facilitated community connections and distributed the survey among Alaska Native communities in Southeast Alaska, and provided critical comments. All authors read and approved the final manuscript.

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Conflict of interest

RB and MI were employed by RAND Corporation.

The remaining authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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