

Tribes of Washington State: factors influencing presence and quality of climate adaptation and hazard mitigation plans

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**Abstract**

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Climate adaptation and hazard mitigation planning is becoming increasingly necessary for tribes across the United States. In Washington, tribes span a gradient of ecosystems all with their own climate challenges. This study analyzes the factors that influence both the presence and quality of both climate adaptation and hazard mitigation plans of Washington tribes. Factors influencing presence and quality are internal capacity, external capacity, and exposure (Birkland 2015, Dolšak and Prakash 2018, Glavovic and Smith 2014). Influencing factor (independent variable) data was gathered from publicly available information and existing plans that are publicly available were then evaluated based on a set of criteria from the Federal Emergency Management Agency (FEMA) for process scores and the University of Oregon Pacific Northwest Tribal Climate Change Network for content scores. The average process score for climate adaptation plans was 19.4 and 22.0 for hazard mitigation plans, out of a total 30 points. The average content score for climate adaptation plans was 16.0 and 16.8 for hazard mitigation plans, out of a total 28 points. A difference of means was calculated at the 0.05 significance level

to determine the relationship between each independent variable and plan presence and the null hypothesis failed to be rejected for each independent variable. Then, a linear regression was utilized to estimate regression coefficients between independent variables and plan process score and plan content score. It was found that external capacity has an estimated regression coefficient of -2.8 and a p-value of 0.01 and the number of departments has an estimated regression coefficient of 3.6 points and a p-value of 0.06. No other regression coefficients were significant at 0.10 or higher levels.

## **Introduction**

Tribal nations are some of the most vulnerable, if not the most vulnerable populations in the entirety of the United States when it comes to the impacts of climate change (Whyte 2013; Maldonado 2014). In Washington State, salmon are listed as a First Food for all 28 federally recognized tribes (CRTIFC). First Foods are culturally significant and salmon are increasingly threatened by climate impacts in the Pacific Northwest (Mantua et al. 2009), which has influenced climate planning to become a larger priority for tribes in Washington state, along with other community impacts: health, economy, planning, public safety, and other environmental concerns.

Climate adaptation planning takes many forms in localized areas, like tribal reservations, and one of the more accessible and earlier forms is hazard mitigation planning (FEMA 2016). Climate adaptation planning aims to reduce the overall vulnerabilities, thereby increasing resilience, of a population or community (Dolšak and Prakash 2018). Hazard mitigation planning similarly seeks to identify and address risks from natural hazards and develop actions to reduce the impacts of these risks on people, property, and environment (FEMA 2019). In the Pacific Northwest, climate change is increasing the frequency of disaster-like events (i.e. flooding, drought, wildfires, heat waves) (Van Aalst 2006, Mote et al. 2014) making hazard mitigation planning an even more viable option in lieu of, or in concert with, climate adaptation planning. For the purposes of this study, hazard mitigation plans will be considered climate adaptation plans and will be referred to as such.

Planning for climate adaptation and hazard mitigation have similar goals: to reduce the impacts of natural events on the community and landscape (Glavovic and Smith 2014). Hazard mitigation planning focuses primarily on reducing impacts of extreme, disaster-like events and

maintaining community resilience post-event. Climate adaptation planning is geared toward mitigating the cumulative impacts of climate change on a community and landscape (U.S. Climate Resilience Toolkit n.d.). Both forms of planning are inherently proactive, resilience-focused. They identify key vulnerabilities and facilitate more efficient responses. As the climate continues to change, the risk of natural disasters is also increasing (Glavovic and Smith 2014), requiring climate adaptation planning to take more and more lessons from natural hazards planning. However, the processes through which both plans are created differs because most tribal hazard mitigation plans are eligible to be funded by FEMA through the Hazard Mitigation Planning Grant (FEMA), which requires plans to follow a certain set of criteria to secure grant funding. Climate adaptation planning has many different guidelines and no centralized funding source that requires specific criteria. Even without a governing body for climate adaptation plans, there are a set of best practices that inform the creation of these plans: hazard identification, vulnerability assessment, delineation of planning options, planning and prioritization, and an action plan (U.S. Climate Resilience Toolkit n.d.).

In addition to these best practices, community engagement in the planning process significantly improves the quality of these adaptation plans (Moser and Pike 2015). Climate adaptation planning best practices mirror the FEMA guidelines for hazard mitigation plans, and as the risk of natural disasters increases with a changing climate, the two planning practices convene on nearly identical planning topics. For the purposes of this study, hazard mitigation and climate adaptation planning were both evaluated to provide insights on factors that influence the quality of the plans that are present in tribal nations within the boundaries of Washington State.

As previously mentioned, Native American tribes and nations are increasingly exposed to climate change, resulting in an increased vulnerability.

As Native American scholars describe:

*“Water is sacred. This is tradition. In contrast to the non-tribal utilitarian view of water, Native Americans revere water and water is life. It is integral to many Native American practices such as purification and blessing rituals and is used to acknowledge all relations and to establish connection to Mother Earth and Father Sky. Water is a holistic and integrating component connecting continents, humans, animals, and plants through a continuous cycle of liquid, solid, and vapor states. Without water, life would not exist as we know it. Water is the one thing we all need, all of us, all of life. As Native Americans, we honor and respect the tradition of water and must protect it always.”* (Cozetto et al. 2013).

Tribes in Washington all have differing levels of vulnerability and exposure, but all face higher exposure and vulnerability than other populations within the state (Maldonado et al. 2016). Climate exposure is the “presence of people, assets, and ecosystems in places where they could be adversely affected by hazards,” while climate vulnerability is the “propensity or disposition of assets to be adversely affected by hazards. Vulnerability encompasses exposure, sensitivity, potential impacts, and adaptive capacity,” (U.S. Climate Resilience Toolkit 2019). For the purposes of this study, exposure data was utilized because there was not data universally available for the vulnerability of Washington tribes.

As sovereign nations and federally recognized tribes, the 28 federally recognized tribes of Washington have the authority to plan for the future of their communities as well as to receive federal funding for their planning efforts (i.e. FEMA hazard mitigation planning funding). Tribes recognized only by the state government face more barriers to implementing their own plans and

policies primarily due to their ineligibility for federal funding. These tribes are not included in this study. There is an old adage that states “All disasters are local”, and the same is true for climate adaptation planning: the more minute the vulnerabilities are that are addressed in planning, the more resilient the community can be because a higher level of hazard sensitivity is addressed (U.S. Climate Resilience Toolkit 2019) and the process of climate adaptation is a fundamentally local process (Bours et al. 2015). Tribal reservations are small, localized jurisdictions with a high level of both vulnerability and exposure as well as the governance authority to plan for the future of their communities. Additionally, the tribes of Washington span a myriad of ecosystems, each facing their own climate challenges: coastal, high precipitation, low precipitation, and all along the urban to rural spectrum.

Planning, of any form, requires resources to initiate the process and further resources to ensure the quality of the plan. Birkland defines the policy process as a system that requires input from the governmental structure, the social environment, the political environment, and the economic environment (Birkland 2015). These inputs are then processed via a policymaking system that then produces an output (Birkland 2015). For this study, governmental structure is defined as the internal capacity of an individual tribe via its departments, programs, and projects; the social environment is captured as social capital, or the number of external partners working together with a tribe to aid in the policymaking/planning process; the political environment are considered a non-issue in the state of Washington because of the democratic leanings of the state (New York Times 2017); and, finally, economic resources are considered via a proxy for tribal revenue of casino square footage.

This study aims to determine the relationships between independent variables, including internal capacity, external capacity, and climate exposure of each Washington tribe, and

dependent variables, including presence and quality of climate adaptation and hazard mitigation plans.

## **Methods**

This study uses a cross-sectional research design (Creswell 2014) to assess resource barriers to climate change policies in federally recognized tribal nations in Washington state. Climate adaptation and hazard mitigation plans of tribes in Washington state were analyzed using evaluative criteria based on existing literature. Data for the analysis were accessed from tribes' websites, the Department of Energy, the Environmental Protection Agency, the Indian Gaming Industry, and the Affiliated Tribes of Northwest Indians. This data was utilized to measure the internal capacity (number of departments, programs, projects within a tribe as well as the economic resources available to the tribe) as well as external capacity (partnerships).

### Dependent Variable: Climate plans

This study employs two dependent variables, a dichotomous variable denoting presence or absence of a plan and a continuous variable measuring the quality of plans that have been implemented by Washington tribes. The quality captures two different aspects: quality of the process that is documented in the plans and the quality of the content that is included in the plans. The study examined both climate adaptation and hazard mitigation plans, as both provide broadly the same functions for their communities.

### *Plan Evaluation*

Evaluation of climate adaptation and hazard mitigation plans was divided into two distinct categories: process evaluation and content evaluation. The evaluation mechanisms are left as separate entities due to the disparate nature of process and content: process can indicate the availability of internal resources while content tends to indicate the availability of external resources (i.e. influences from contributing partners) or the vulnerabilities faced by the tribe. Since vulnerability varies across tribes, the criteria for content evaluation were selected for their universality or their applicability to Washington tribes.

The process evaluation criteria were derived from FEMA’s Local Mitigation Plan Review Tool and FEMA’s Tribal Mitigation Plan Review Guide. These review guides are to ensure that all hazard mitigation plans meet the requirements set forth in the Stafford Act and Title 44 of the Code of Federal Regulations. The review criteria focus almost exclusively on the process through which the plan was created, and these processes are considered best practices when it comes to climate adaptation planning as well (Moser and Pike 2015). This section of the scoring criteria has a total score of 30 points. Table 1 lists the criteria that were utilized for the scoring of plan process. An ordinal system of ranking for each criterion (0 = criterion not met, 1 = topic briefly mentioned, 2 = the criterion was addressed in great detail) was utilized. With 15 criteria, the maximum possible score for plan process was 30.

Table 1: Plan Process Evaluation Criteria

<b>Process criteria</b> <i>(total possible score = 30)</i>
<b>1. Planning process</b>
1.1 Does the Plan document the planning process, including how it was prepared and who was involved in the process?

1.2 Does the Plan document an opportunity for neighboring communities, local, and regional agencies involved in hazard mitigation or climate adaptation activities to be involved in the planning process?

1.3 Does the Plan document how the public was involved in the planning process during the drafting stage? (i.e. was there an outreach strategy?)

1.4 Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information?

1.5 Does the Plan include a discussion on how the planning process was integrated, to the extent possible, with other ongoing tribal planning efforts as well as other FEMA programs/initiatives?

1.6 Is there a description of the method and schedule for keeping the Plan current?

1.7 Does the Plan include a discussion of how the tribal government will continue public participation in the Plan maintenance process?

## **2. Hazard identification and risk assessment**

2.1 Does the Plan include a description of the type, location, and extent of all natural hazards?

2.2 Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events?

2.3 Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability?

## **3. Hazard mitigation strategy (climate adaptation strategy)**

3.1 Does the Plan include a discussion of the tribal government's pre- and post-disaster hazard management policies, programs, and capabilities to mitigate the hazards in the area, including an evaluation of tribal laws and regulations related to hazard mitigation as well as to development in hazard-prone areas?

3.2 Does the Plan include goals to reduce/avoid long term vulnerabilities to the identified hazards?

3.3 Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of hazards?

3.4 Does the Plan contain an action plan that describes how the actions identified will be prioritized and implemented?

3.5 Does the Plan describe a process by which the tribal government will incorporate the requirements of the mitigation plan into other planning mechanisms, when appropriate?

As Tang et al. (2010) suggest, process criteria are not sufficient and need to be augmented by content evaluation. However, the categories of evaluation set forth by Tang et al. were focused predominantly on suburban and urban local jurisdictions. The majority of tribes in Washington State are located along a more suburban to rural gradient (University of Washington 2011) and so the criteria listed there were largely not applicable. Therefore, this study employed criteria suggested by guidelines developed by the University of Oregon's Tribal Climate Change Project (Lynn 2013).

The University of Oregon's Tribal Climate Change Project published "A Tribal Planning Framework – Climate Adaptation Strategies by Sector" (Lynn 2013), which serves as a starting point for tribes in the planning stages of climate adaptation strategies for a wide range of sectors and resources. Not all the resources or sectors in this were pertinent to tribes in the Pacific Northwest, or in Washington State, so those sectors that were explicitly stated as being either imperative to Pacific Northwest tribes or universally important were added to the content evaluation mechanism. Non-relevant sectors and resources were removed from the scoring criteria because it would cause tribes for whom the sector or resource is not relevant to score lower, simply because it was either not a priority or it was completely irrelevant to the tribe. For these reasons, the content evaluation criteria is divided into the following sections: water, planning and infrastructure, economic development, health, and emergency management and public safety.

Water is a universal need and, for many tribes and indigenous peoples across the United States, water is sacred or culturally significant. Planning and infrastructure was an area of adaptation that plays a large role for Pacific Northwest tribes because of the changing amounts of stormwater that are predicted in the area, tribal infrastructure is at risk of being overwhelmed (NCAI 2017). Another universal concern was economic development – as stated by the University of Oregon Tribal Climate Change Project, “A higher likelihood of extreme weather means that tribal buildings and infrastructure are at a higher risk of weather-related damage, affecting the stability of tribal investments and leading to a higher likelihood of tribal expense accrual related to the repair and/or relocation of affected structures. It is important to assess which buildings and infrastructure are most vulnerable, and consider which planning and adaptation measures will be most cost-effective and sustainable. Similarly, when planning new businesses and investments, it is important to do so with climate change impacts in mind. Site selection, design and construction can take projected climate change impacts into consideration to avoid costly damages and high operation costs in the future.” Health is always a universal concern and, as it relates to climate change, can lead to increased mortality through extreme weather and temperature events, a change in distribution of culturally significant foods and plants, as well as potential emotional trauma and other mental health effects due to the stresses of climatic change (Norton-Smith et al. 2016). As extreme weather events increase, emergency management and public safety is also of universal concern and disaster response and recovery planning will be critical to the continuity of tribal government (Glavovic and Smith 2014).

The University of Oregon Tribal Climate Change Project has also published “Guidelines for Considering Traditional Knowledges in Climate Change Initiatives” (Climate and Traditional Knowledges Workgroup 2014; Hatfield 2017) that outline the importance of traditional

knowledges in tribal climate change plans, programs, and projects. For this reason, an element of explicit traditional knowledges, or traditional ecological knowledges (TEK) was added to the content criteria to capture this critical aspect of climate change initiatives. TEK was not listed as process because the TEK influences the substantive content of the plans and is also not a FEMA requirement. This study developed content evaluation criteria (see Table 2) based on the above literature. As before, plans were coded on listed criteria using an ordinal system (0,1,2). With 14 criteria, the maximum score for plan content was 28.

Table 2: Plan Content Evaluation Criteria

<b>Content criteria</b> <i>(total possible score = 28)</i>
<b>1. Traditional Ecological Knowledge (TEK)</b>
1.1 Does the Plan include TEK (or recognize it was used) to identify natural hazards and community vulnerabilities?
<b>2. Water and environment</b>
2.1 Is there a water resources plan included in the overall climate adaptation/hazard mitigation plan?
2.2 Does the Plan propose measures to improve overall environmental resilience to climate change?
<b>3. Planning and development</b>
3.1 Does the Plan identify areas of land use or infrastructure that could be adversely affected by climate change?
3.2 Does the Plan include climate change considerations for land use planning and development?
3.3 Does the Plan include stormwater management strategy?

3.4 Does the Plan ensure that vulnerable spaces and species are protected and not further impacted by development?
<b>4. Economic development</b>
4.1 Does the Plan address strategies businesses can implement to protect themselves from the impacts of climate change?
4.2 Does the Plan identify sectors of the tribal economy that could be adversely affected by climate change?
<b>5. Health</b>
5.1 Does the Plan identify vulnerable populations that could be adversely affected by climate change?
5.2 Does the Plan identify strategies to safeguard vulnerable populations from negative health effects from climate change?
<b>6. Emergency management and public safety</b>
6.1 Does the Plan identify potential increases in community-wide disasters that could increase with a changing climate?
6.2 Does the Plan identify potential strategies to mitigate the impacts of these disasters?
6.3 Does the Plan identify how these response efforts are coordinated?

Independent Variables: Factors influencing existence and quality of plans

The independent variables for this study falls into three categories: extreme weather exposure, internal capacity, and external capacity.

### *Extreme weather exposure*

Data from the University of Washington Climate Impacts Group were utilized to identify key areas of exposure that are universally applicable to tribes across the state of Washington.

The exposure indicators consist of projected temperature change (degrees Fahrenheit), projected change in precipitation (inches per year), and projected change in consecutive heat days (days above 84 degrees Fahrenheit). It should be noted, however, that sea level rise and coastal exposures are not included in this list as those hazard areas are not experienced by all tribes within the state.

### *Internal capacity*

Tribal economies tend to fall into two generalized categories: fossil-fuel based or casino-based (Tiller, 1996). To measure these elements of capacity, the study used the Energy Information Administration's fossil fuel data (<https://www.eia.gov/state/maps.php>) and State Commerce's databases for square footage of casinos as a proxy for casino-driven income. There is very little discourse surrounding tribal economics and their impact on adaptation and mitigation policies. Higher economic resources likely result in more money to allocate towards governmental or administrative functions, thereby increasing the capacity for policy change and implementation. Knowing what, if any, importance economic resources play in the policy process for tribes is key to understanding how best to develop climate change policies.

Tribes in Washington state do not have any fossil-fuel based economies and so casino square footage was utilized as a proxy for tribal revenue; there were only 6 tribes that did not have any casino square footage. In addition, the study included federal funding that could be used for climate adaptation and/or hazard mitigation planning. There included: Bureau of Indian

Affairs (BIA) fiscal year 2018 Natural Resources total funds, BIA fiscal year 2018 Tribal Resilience, and the Department of Energy (DOE) weatherization funds.

### *External capacity*

Social resources, for the purpose of this study, are defined as social support or social movements insofar as climate change policy change is concerned (Fisher 2014; Clark and Harris 2011; Wotkyns & Gonzalez-Maddux 2014). The literature thus far has examined several partnerships: tribe-tribe, tribe-citizen, and tribe-federal government partnerships. However, there is little empirical information regarding the relationship between presence of social resources/partnerships and the policies tribes are able to implement. Studies on the use of coalition-building within tribes to create policy exist for selected tribes, but relationship has not been quantitatively estimated.

All tribes in Washington are members of the Affiliated Tribes of Northwest Indians (ATNI), a network that helps to connect tribes to climate planning resources if they so desire. Therefore, all tribes in Washington have a baseline of external capacity via ATNI. For tribes with plans, we can also identify specific partners that have collaborate in the preparation of the plan. This study measures this element of external capacity using the count of such collaborators.

### Data collection

#### *Internal capacity: Plans, projects, programs, departments*

For each federally recognized tribe in Washington state, data was collected in a controlled manner. Starting with a tribal website, all listed departments were examined. If one of the relevant departments (DNR, EPA, EMD, LUP, WM, DOE) were listed on the tribal website, it was then coded as a “1”, for present. If any were absent, they were coded as “0” for absent.

Within each present department, online archives of policies were searched for programs, projects, and plans and all subsequently coded as either a 1 or a 0.

To ensure that all projects were taken into account, the Department of Energy Tribal Energy Atlas (National Renewable Energy Laboratory 2018) was utilized to assess if any weatherization projects were completed that were not listed on the website. Other projects were searched for through the EPA, federal DNR, the Institute for Tribal Environmental Professionals (ITEP), and the Affiliated Tribes of Northwest Indians (ATNI). Any relevant funding source for projects was noted.

*Internal capacity: Funding and economic resources*

Funding data from BIA Natural Resources Totals for the 2018 fiscal year were utilized along with the 2018 fiscal year Tribal Resilience Funding Totals. Fiscal year 2018 was the baseline for this data as it provides the most recent snapshot of internal capacity. While many of the plans were created before fiscal year 2018, implementation of climate adaptation plans requires adequate internal capacity to continue.

The DOE Tribal Energy Atlas was also utilized to calculate any and all weatherization funding for the tribes. This indicates internal capacity to adapt to changing temperatures and, as weatherization projects can take years to implement, all past funding data was included in this count.

Beyond external funding that is designed to increase internal capacity, casino square footage was utilized as a proxy for tribal revenue. All square footage data was retrieved from the National Indian Gaming Commission.

*External capacity*

With all Washington state federally recognized tribes being members of the Affiliated Tribes of Northwest Indiana, such participation cannot explain variation in plan presence or quality. Therefore, this study only employs number of external partners collaborating in existing plans as a measure of external capacity.

### *Exposure data*

All exposure data was gathered from the University of Washington's Climate Impact Group and the Tribal Climate Tool that is available online. The data used were modeled on a low emissions scenario and the model years were 2010-2039. The model years from 2010-2039 were utilized instead of the longer term predictions because policy action tends to happen when threats are imminent (Dunn 2015; Birkland 2015).

Three measures were utilized to capture exposure: the annual average temperature increase (degrees Fahrenheit), the increase in warm days above 86 degrees Fahrenheit (number of days), and the change in annual precipitation (inches). These indicators were chosen because they are available for the entire state. Though sea level rise is an important issue for some tribes, the analysis did not include it as it does not pertain to non-coastal tribes.

### **Findings**

Out of the 28 federally recognized tribes in Washington State, 7 tribes currently have climate adaptation plans in place, 6 have climate adaptation plans in progress and 6 have hazard mitigation plans in place. Of these tribes, only one has both a climate adaptation and a hazard mitigation plan in place. For all analyses, tribes with plans in progress were treated as having no plans.

### Evaluation results

The process scores across both climate adaptation and hazard mitigation ranged from 6 to 30 (30 maximum possible) with the average process scores of 20.7 points. Content scores ranged from 6 to 26 points (28 maximum possible), with the average content scores of 16.4.

For climate adaptation plans, the average process score was 19.4 and the content score was 16.0. Hazard mitigation plans had an average process score of 22.0 and an average content score of 16.8.

Table 3: Average scores

	Process average	Content average
Climate plans	19.4	16.0
Hazard plans	22.0	16.8

### Analysis

A difference of means, two-tailed t-test assuming unequal variance was performed to estimate if independent variables differ between tribes with and without plans. The only variable with a marginally statistically significant difference of means was the number of departments (p-value of 0.06).

Regression coefficients of independent variables hypothesized to impact plan quality (internal capacity and external capacity) were estimated utilizing a univariate linear regression. Due to a very small number of tribes with publicly available plans (10 tribes), these findings should be viewed as preliminary. The regression coefficients are listed in Table 4.

Table 4: Regression coefficients

	Internal capacity					External capacity
	Departments	Programs	Projects	Casino sq.ft	Total funding	
Process	2.0	2.1	0.90	-2.7	-1.5	-3.5
Content	3.8*	2.3	-5.9	5.9	-1.3	-2.8**
Notes: * $0.10 \leq p < 0.05$ ; ** $0.05 \leq p < 0.01$						

Two capacity measures have statistically significant relationships with plan content: an increase in the number of departments by one is associated with an increase in content by 3.6 points (statistically significant at the 0.06 level). Additionally, an increase in the number of external partners by one is associated by a decrease in plan content quality by 2.8 points (statistically significant at the 0.01 level). Again, the number of observations for these results is very low (10 observations) and these results should be used with extreme caution.

## Discussion

There was no statistical significance between the presence of plans and any of the predicted independent variables based upon the difference of means. Exposure may not be the driving cause for planning, because actual exposure and overall vulnerability is much more nuanced. The exposure mechanism that was utilized in this study focused on exposure factors that affect the entire state of Washington. However, we know that sea level rise is a major threat to many of the coastal tribes in addition to exposure to changing tides. Additionally, tribal nations across the United States and beyond are face a higher vulnerability due to the existing

and historic socioeconomic disparities that are at risk of being exacerbated by climate change. Simply by comparing exposure to hazards between Washington tribes does not account for all vulnerability factors that could influence the presence of a plan.

The relationship that was found to be statistically significant, that between external capacity and plan content, could be perceived as a bit contentious and should be used with caution considering the number of observations was only 10. Conventional wisdom within the academic world says that more collaboration during the creation of a plan increases the quality of said plan. However, the plans that did have external collaboration were found to decrease in content quality by 2.8 points for every additional collaborator. These collaborative plans were typically technically-heavy with a big emphasis on the expertise that the collaborators provided. However, this emphasis detracted from the plan's ability to address all aspects of the community's needs to plan for climate adaptation or hazard mitigation. Best practices for climate adaptation planning states that plans should address the entire community's vulnerabilities - the plans with external collaboration were very focused on the collaborators' area(s) of expertise, rather than the challenges faced by the entire community.

The link between an increased number of departments within a tribe and the presence of a plan as well as the increased content score indicates that this measure of internal capacity is potentially indicative of the tribe's functional internal capacity. A larger sample size would help to determine the relationships between departments and plans as well as programs, projects, and funding.

Increasing external input to the plan decreased the quality of content while an increased internal input increased the quality of content. As the saying goes, "all disasters are local," – and planning for them takes local effort. Narrowing the scope of a plan and reducing its breadth

(quality) of content could, in the long run, undermine the intended impact of a climate adaptation/hazard mitigation plan: decrease community vulnerability and increase overall resilience. Moving forward, collaborating institutions should be aware of the impact that their input can cause on the content of plans and work to create more holistic plans that encompass the entirety of a community.

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