

**THE COMPARISON OF QUALITATIVE AND QUANTITATIVE
APPROACHES FOR MEASURING TRADITIONAL FOOD SHARING IN
COMMUNITIES ON THE NORTH SLOPE OF ALASKA**

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FOR MEASURING TRADITIONAL FOOD SHARING IN COMMUNITIES ON THE
NORTH SLOPE OF ALASKA

A
THESIS

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ABSTRACT

The primary objective is to compare the strengths and weaknesses of qualitative and quantitative approaches for measuring food sharing in Alaskan North Slope communities. Traditional food sharing is nested within the subsistence livelihood and the measurement of subsistence harvests should include how harvests are shared and distributed. Information on traditional food sharing in the communities of Wainwright and Kaktovik on the North Slope of Alaska was collected through semi-structured interviews and participant observation, and in turn analyzed using ATLAS.ti, a qualitative data analysis software program. Quantitative data was provided by the Survey of Living Conditions in the Arctic (SLiCA) study. Chi-square significance tests, as well as a two-step cluster analysis were conducted using SPSS (Statistical Package for the Social Sciences), in order to characterize household types receiving traditional foods. Both qualitative and quantitative approaches were compared in their ability to measure the system of food sharing, food sharing changes, food sharing as a social indicator of community well-being, and the resilience of traditional food sharing within Alaskan North Slope communities. Ultimately, this information will be used to improve future studies, which focus on measuring the social patterns of traditional food sharing and changes in food sharing within the subsistence system.

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CHAPTER 1 INTRODUCTION

1.1 Thesis Purpose

The purpose of this research is to analyze the concept of traditional food sharing as carried out by the Iñupiat people on the North Slope of Alaska (Figure 1.1), comparing qualitative and quantitative approaches. This analysis examined the use of each approach to monitor social-ecological conditions and change, with traditional food sharing viewed as an integral part of the Alaska Native¹ subsistence livelihood. Here livelihood is defined as, “a strategy undertaken by individuals or social groups to create or maintain a living” (Chapin III et al., 2009, p. 348).

The Iñupiat people of the North Slope consider sharing and subsistence to be inseparable (Bodenhorn, 1989). Magdanz et al. (2002) argued that subsistence harvesting cannot be measured without also taking into account how the harvests are being shared and distributed. Food sharing is regarded as a cultural norm by the Iñupiat and measures of sharing may also serve as a social indicator of change (TemaNord, 2010). The act of food sharing is a customary tradition which is passed on from generation to generation (Loon, 1989). As social and economic changes surface in rural communities in Alaska, it is important to measure their potential effects (Freeman, 1997; Kruse et al., 2009; TemaNord, 2010).

In the past, food sharing was a cultural adaptation that helped to provide sustenance to family groups that were in need. Food sharing also reflected the

¹ The term ‘Alaska Native’ is a legal description that has been used to refer to the indigenous groups of Aleuts, Eskimos, and Indians who have lived in Alaska for thousands of years (Anders, 1983). Alaska Natives are comprised of Iñupiat Eskimo, Yup’ik Eskimo, Athabaskan Indian, Eyak, Tlingit and Haida, Aleuts, Tsimshian and Alutiit/Sugpiat.

cooperation and cohesiveness within hunting parties and communities, especially practices around the highly socially oriented bowhead whale (*Balaena mysticetus*) hunts (Spencer, 1953). Not only has food sharing been considered an important cultural norm, it may also be regarded as a source of resilience for Alaskan rural communities undergoing rapid social-ecological change (Kofinas et al., 2010)



Figure 1.1 Map of the North Slope Region Highlighting the Study Communities of Wainwright and Kaktovik (circled in red) (www.north-slope.org, 2000)

1.2 Thesis Objectives

This thesis has three objectives. The overarching purpose is to compare qualitative and quantitative approaches for measuring food sharing in Alaskan North Slope communities, while considering the strengths and weaknesses of each approach. Both qualitative and quantitative approaches are used and evaluated to explain this component of the system.

The second objective is to convey findings on food sharing from a qualitative study I conducted in the two North Slope communities of Wainwright and Kaktovik (Figure 1.1) and the findings on food sharing from a quantitative analysis I performed

using data made available through the Survey of Living Conditions in the Arctic (SLiCA) study. Conclusions from both studies will be used as the basis for an assessment of the strengths and weaknesses of the measurement approaches to explain food sharing.

The third and final objective is to explore the concept of subsistence and food sharing in the North Slope region of Alaska within a resilience framework. Resilience theory (Walker et al., 2004; Gunderson & Pritchard, 2002; Chapin III et al., 2009) seeks to explain the capacity of social-ecological systems to absorb change while retaining governing properties (Folke et al., 2006), and offers the opportunity to study North Slope subsistence sharing of traditional foods with the application of concepts such as vulnerability, adaptation, sustainability and transformation. Because the production, distribution, and consumption components of subsistence are considered as part of a social-ecological system, the sharing of subsistence foods plays a critical role within the distribution aspect of the system.

1.3 The Research Problem

In this section, I will present the rationale for my study and present some of the complexities involved with studying subsistence systems. Subsistence as it occurs in Alaska is a dynamic system, incorporating the component of sharing as a major form of distribution. In the sections below, I focus on aspects of the research problem to be addressed in this study, primarily the importance of food sharing, how it is linked to subsistence, and some of the issues that have resulted in defining and documenting it.

1.3.1 Capturing the Concept of Subsistence

The subsistence way of life is very much a part of the social fabric of Alaskan rural communities. Within Alaska Native cultures, the harvesting of subsistence foods is inextricably intertwined with social interactions. Social interactions may be in the form of extended families spending time at fish camps during the summer, young hunters learning harvesting skills from their older relatives, or individuals sharing their harvest successes with community members (Wolfe & Walker, 1987). Subsistence includes a cultural value system of sharing, which Alaska Natives have maintained since before contact with Russians and Europeans. When an Alaska Native speaks out in protection of his or her subsistence way of life, it is in defense of cultural values of which harvesting (hunting, fishing, gathering) of traditional food is only one component (Logsdon, 1979).

The term subsistence conceptually includes the behaviors, motivations, attitudes, beliefs and products of the individuals who participate in it. Subsistence systems within rural Alaska can be classified as an economic system, but it is also a social and cultural system. Here I define *system* based on the anthropological orientation, where it is “a smoothly integrated set of mutually adjusted parts that change in coordination with one another and is informed by an overriding unitary logic” (Whitehead, 2000, p. 57). As with any system, whether it is an ecosystem or in this case the subsistence system, it would be foolish to assume that by studying one component, one could understand it. It is important to recognize the function subsistence plays within a rural community’s social, economic, and other cultural organizations (Kruse, 1979). This recognition is

crucial, especially because of the importance subsistence plays in Alaska Native cultures, and the rate of change these cultures are experiencing.

1.3.1.1 Competing Views of Subsistence

The issue of subsistence in Alaska has historically been and is presently a topic of contention. The word subsistence holds many meanings for the diverse user groups of Alaska's wild fish and wildlife populations. Merriam-Webster's dictionary (<http://www.merriam-webster.com/dictionary/subsistence>) representing the Euro-American perspective, defines subsistence as the minimum (i.e. of food and shelter) necessary to support life or a source or means of obtaining the necessities of life. Subsistence is also defined as "the minimum standard of living that allows for satisfaction of the minimum basic needs of life, both physical and customary" (Sharif, 1986, p. 556). The Euro-American definition of subsistence portrays the concept as being static, versus a dynamic system that incorporates cultural and historical meanings.

Currently, the Alaska State Subsistence Law defines subsistence uses of fish and wildlife resources as:

The noncommercial, customary and traditional uses of wild, renewable resources by a resident domiciled in a rural area of the state for direct personal or family consumption as food, shelter, fuel, clothing, tools, or transportation, for the making and selling of handicraft articles out of non-edible by-products of fish and wildlife taken for personal or family consumption, and for the customary trade, barter, or sharing for personal or family consumption (AS 16.05.940 [30]).

The federal definition of subsistence is in section 803 of the Alaska National Interest Lands Conservation Act (ANILCA) and it similarly states:

The term “subsistence uses” means the customary and traditional uses by rural Alaska residents of wild renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of non-edible byproducts of fish and wildlife resources taken for personal or family consumption; for barter, or sharing for personal or family consumption; and for customary trade (Norris, 2002, p. 97).

Alaska Natives, on the other hand, have tended to view subsistence more broadly, regarding it as a cultural and spiritual activity as well as a way of life, where hunting and fishing is only a component (Norris, 2002). As one Alaska Native put it, “Subsistence is not only a cultural activity; it is the foundation of several of the Native groups in Alaska, without which their cultures would die. It is also the necessary economic base for their very existence” (Yupiktak Bista, 1974, p. 8). Subsistence hunting, fishing, and harvesting activities are done with the belief that it is a manifestation of the cultural value of sharing (Kancewick & Smith, 1991). When an Alaska Native goes out hunting or fishing, it is not with the aim of only feeding himself or herself, it is with the intention of feeding their nuclear family, their extended family, and community members who may be in need (Bodenhorn, 1989).

The management of subsistence resources is a complicated undertaking, but in order for these resources to be properly managed, it is vital for the data to represent this

broader importance of subsistence. As employment opportunities within a rural community change, along with its social living conditions, the subsistence system will follow suit. While managing for the narrower definition of subsistence would be easier from a management perspective, it would also overlook the broader implications of subsistence and hence be practically ineffective.

No matter what definition is used for subsistence, each user group (e.g. Native Alaskan, Alaska Native, policy makers and resource managers) feels they have the right to harvest or manage subsistence resources, and many times groups do not agree on how the management should occur. Within the federal mandates of the Alaska Native Claims Settlement Act (ANCSA) and ANILCA, there exists no detailed definition of subsistence and this further complicates how subsistence is managed.

1.3.1.2 More Than Pounds of Meat and Fish Harvested

This section provides a literature review on what is currently known about subsistence systems. Agencies such as the Alaska Department of Fish & Game (ADF&G) Division of Subsistence and the National Park Service Cooperative Park Studies Unit have conducted many studies primarily focusing on subsistence production and consumption. The purpose of these studies was to collect data on “territory or land use, species, harvest levels, annual cycles, technology, and direct consumption and utilization” (Worl, 1982, pp. 49-50). The majority of these studies overlooked the distribution function of subsistence economies and focused instead on the need for subsistence harvest baseline data within rural communities (Wheeler & Thornton, 2005).

Subsistence systems in Alaskan rural communities can be classified as part of a socioeconomic system, one based on the economic, social, and cultural dependence on fish and wildlife resources (Wolfe & Ellanna, 1983). Cash inputs into the system aids subsistence activities through the purchasing of hunting equipment and subsistence food sharing occurs to a high extent between households and communities. Subsistence products are sometimes bartered or traded for other products or in exchange for services, with bartering commonly (although not always) structured along kinship lines. In Alaska Native societies, economic exchange and social networks are a part of the same subsistence system (Worl, 1982).

Subsistence economies basically provide for the three main functions: production, distribution, and consumption. Production consists of harvesting preparation and the actual harvesting of traditional foods. Distribution involves the division, allocation, and exchange of goods and services among individuals within a community (Worl, 1982; Magdanz et al., 2002). Past studies show that social norms of a community govern how distribution occurs and distribution may transpire in two ways (Bodenhorn, 1989). Distribution occurs initially among members of a hunting party and upon return to the community, and secondary distribution is fulfilled in the sharing of the harvest with relatives and community members (Bodenhorn, 1989; Worl, 1982). Secondary distribution may occur in formal acts such as community-wide ceremonies, such as whaling feasts or potlatches or informally as dinner invitations (Bodenhorn, 2000). Alaska Native cultures have an assortment of traditional distribution rules ranging from formal to informal. For instance, many times elders and families lacking

capable hunters receive traditional foods due to distribution obligations. Were it not for the effective distribution system, much of the production system would lose its purpose (Lonner, 1986). Consumption including the use of by-products for handicrafts is the final process. It also involves the sharing of traditional foods, as foods are eaten with family and community members inside and outside of the household.

Subsistence production and distribution activities continue to exist within a social context (Condon et al., 1995). Evolutionary models have predicted the loss of the kinship-based component of the subsistence system (harvest and distribution), but this has not yet come to pass (Wheeler & Thornton, 2005). The assumption was that modern-wage economies would weaken kinship ties related to subsistence production and distribution. Yet, subsistence systems are in fact a succession of social activities, from the time a resource is harvested all the way to when it is consumed (Bodenhorn, 1989). Both the acts of harvesting and consuming reinforce kinship and social ties. Production and consumption are quite distinct, but also similar in that what is harvested is shared by the hunter and much of what is received is further shared by the recipient (Jorgensen, 1990).

Research on the distribution and exchange of traditional foods has been sorely lacking for most regions of Alaska. Moreover, the relationship between how the sharing of traditional foods contributes to community cohesiveness is not well understood. This study will provide information on how food distribution on the North Slope is occurring and the critical role food sharing plays in overall community well-being.

Two important pieces of legislation affecting the definition and measurement of subsistence are the Alaska Native Claims Settlement Act (ANCSA) and the Alaska National Interest Lands Conservation Act (ANILCA). These pieces of legislation had a strong effect in prompting the use of harvest surveys to assess fish and wildlife resource use within Alaskan rural communities. These surveys were important in that they provided data critical for the management of a healthy resource base (Fall, 1990). Yet, initial surveys strictly captured the consumption of wild resources (Fall, 1990; Wheeler & Thornton, 2005). Only more recent studies have focused on resource distribution in order to better understand subsistence systems (Magdanz et al., 2002).

1.4 Alternative Research Approaches - Determining the Best Method

In order to represent subsistence systems more fully, it is important to document both the amount of fish and wildlife resources being harvested (*production*), while representing the *distribution* of these resources throughout a community or a region in a way that captures potential changes to these systems. Subsistence harvest surveys have been used consistently to quantify fish and wildlife resource production in regions of Alaska, but the measurement of consumption and distribution in the form of sharing has only been investigated in recent years. It is important to use the most appropriate methods for documenting subsistence and the changes within the social-ecological system. Consequently, the main goal of this study is to compare qualitative and quantitative approaches for measuring traditional food sharing within Alaska and to understand the strengths and weaknesses of each approach.

1.4.1 Qualitative Analyses

Qualitative research is defined as “research that involves analyzing and interpreting texts and interviews in order to discover meaningful patterns descriptive of a particular phenomenon” (Auerbach & Silverstein, 2003, p. 3). Qualitative research is strongly associated with the social sciences, anthropology being one of them (Bernard, 2006). The hunting and gathering societies of Alaska were of prime interest to anthropologists and many studies documented the importance of their subsistence livelihood, as well as their other components of traditional life. The method of ethnography was commonly used by anthropologists and ethnography is defined as:

The study of people in naturally occurring settings or ‘field’ by methods of data collection which capture their social meanings and ordinary activities, involving the researcher participating directly in the setting, if not also the activities, in order to collect data in a systematic manner (Brewer, 2000, p. 6).

Historical ethnographic documentation of these traditional livelihoods has provided baseline data for the subsistence studies of the modern era. The ADF&G Division of Subsistence initially had the primary focus of performing baseline community studies, mainly looking at subsistence production, and their efforts were ethnographic in nature. During a baseline study, researchers would make an effort to participate in subsistence activities whenever possible (Fall, 1990). Towards the late 1980s, due to a shrinking budget, baseline studies shifted to focus on harvest assessments of a specific resource, therefore taking a more quantitative approach (Wheeler & Thornton, 2005).

Based on ANCSA and other federal legislation guidelines, federal agencies began documenting the subsistence use of fish and wildlife resources by Alaska Natives primarily in areas where federal land protection was being considered. The Cooperative Park Studies Unit of the National Park Service contributed to the existing Alaska subsistence ethnographic literature. Historical and cultural studies entailed researching subsistence patterns of rural communities and the effects newly created national parks would have on their subsistence way of life (Norris, 2002). Additionally, the Bureau of Land Management Socioeconomic Studies Program has funded research on subsistence economies within the Arctic and western regions of Alaska (Worl, 1982).

The ethnographic studies conducted by both state and federal agencies provided detailed descriptions about a community's subsistence livelihood. In addition to what species were harvested, these studies were able to capture specific cultural nuances related to techniques in harvesting certain species and the social interactions involved with these harvests. Yet, qualitative research in the form of ethnography is limited due to its small sample sizes. Therefore, it is weak in its ability to portray dynamics across an entire community and to other communities. Hence, qualitative studies lack the ability to present a broad range of perspectives and provide generalizable information.

1.4.2 Quantitative Research

Quantitative research typically involves the development of hypotheses and the testing of these hypotheses. Quantitative data consists of “numerical records that result from a process of measurement and on which basic mathematical operations can be carried out (Singh, 2007, p. 407). In the social sciences, the observations of peoples’

actions, their interview texts, and their survey responses are converted to numbers and quantitatively analyzed (Bernard, 2006). Subsistence harvest surveys have traditionally been the most commonly used quantitative research method by both Federal and State agencies in Alaska. Quantitative research provides land managers an assessment of the amount of use a resource undergoes and therefore its level of importance within a specific area. Harvest amounts over time can also characterize subsistence trends. The State Board of Game makes resource management decisions based off fish and wildlife population estimates, and along with harvest level assessments, regulations are created to ideally prevent overuse of a resource in specific areas. Quantitative research methods have value in providing an understanding of subsistence resource production and will continue to be of use with subsistence resource studies in Alaska.

1.4.3 Comparison of the Two Approaches

This study will highlight the tradeoffs associated with using qualitative and quantitative approaches in understanding traditional food sharing and the role it plays within subsistence systems. The comparison is undertaken with the purpose of improving the ability of research to capture the concept of food sharing and subsistence systems at large.

This aspect of the thesis contributes to an on-going debate between qualitative and quantitative oriented researchers, with quantitative approaches typically associated with positivist worldviews and qualitative to emotionalism. The term *positivism* is based on the idea that “the social world exists externally, and that its properties can be measured through objective methods, rather than being inferred subjectively through

sensation, reflection, or intuition” (Easterby-Smith et al., 1991, p. 22). Qualitative, on the other hand, has been linked to the concept of *emotionalism*, “a model of social research in which the primary aim is to generate deeply authentic insights into people’s experiences” (Silverman, 2006, p. 118). Despite their associated labels, it is important to consider which approach would be most appropriate for the research question at hand.

Research for this thesis started with a conceptual model of subsistence dynamics and hypothesized relationships regarding sharing. Assumptions were made related to traditional food sharing and the qualitative research employed is not framed in a purely interpretive perspective. Thus, this discussion of quantitative vs. qualitative does not address the nature of reality, but rather the ability of each method to measure hypothesized models. Following from this assumption, my comparison of qualitative and quantitative approaches reveals strengths and weaknesses of both approaches and suggests that a “mixed methods” approach (Creswell & Plano Clark, 2007), where both approaches are integrated, can provide an improved understanding of the subsistence system at large, specifically the component of traditional food sharing.

1.5 Organization of the Thesis

Chapter 1 presents the purpose and objectives of my thesis, as well as the rationale for this study, and a background description on the origin of subsistence studies.

Chapter 2 defines commonly used terms related to food sharing among hunting and gathering societies and explanatory theories on the role of food sharing within these

societies, specifically focusing on the Iñupiat of the North Slope. Also within Chapter 2, I present the key concepts of resilience theory as related to the North Slope subsistence food sharing system. Lastly, I provide a brief overview of the qualitative and quantitative approaches used in this study and basic comparisons of the two.

Chapter 3 provides background information on the Northwest Arctic and Bering Strait regions, and the history of the North Slope region. While all three of these regions were included in the Survey of Living Conditions in the Arctic study (quantitative study), I am focusing on the North Slope region for my qualitative study. I present information on legal and political issues related to subsistence, including the establishment of the Native Corporations and the North Slope Borough, and describe the wage economy and subsistence culture of the region. Finally, I will describe the history, current day events, and the wage and subsistence economies of the North Slope communities of Wainwright and Kaktovik.

Chapter 4 describes the qualitative method used to obtain and analyze the data related to food sharing, the general demographics of community respondents, and my qualitative research findings. A discussion focusing on how the analysis aids in the understanding of food sharing conditions on the North Slope follows.

Chapter 5 centers on my data analysis of food sharing using variables from the Survey of Living Conditions in the Arctic study. The results and a discussion of these results are then presented.

Chapter 6 concludes the study with a comparison of qualitative and quantitative approaches, with a discussion of the most effective way to measure food sharing as it is

occurring on the North Slope. This comparison leads to a discussion of the strengths and weaknesses of each approach as they relate to monitoring food sharing as a social indicator of social-ecological conditions and change. Lastly, I explore the potential benefits of integrating the two approaches using a “mixed methods” approach.

CHAPTER 2 THEORY AND METHOD

2.1 Introduction

This chapter provides a review of the theory and method used in the study. I will first define and discuss key terms related to the general concept of sharing, and review relevant literature, including ethnographic research on the topic. I will also introduce theories focused on why both past and present day hunting and gathering societies share, as represented in the literature. These theories will be presented as they relate to the North Slope, Alaska context and additionally, the general framework of resilience theory will be introduced. Lastly, I will give a short overview of the qualitative and quantitative methods I used for this study, including my methods for comparing them.

2.2 Definitions of Food Sharing Terms

The study of sharing has been addressed by several disciplines, including economic anthropology (Plattner, 1989), evolutionary theory (Henrich & Henrich, 2007), and game theory (Axelrod, 1984). Within the food sharing literature, there are commonly used, but often confused terms. These include sharing, demand sharing, general reciprocity, balanced reciprocity, delayed reciprocity, and negative reciprocity, which I define below.

The very general term *sharing*, according to Price (1975), means “allocation of economic goods and services without calculating returns within an intimate social group” (p. 4). Economic anthropologists primarily focused on sharing as it relates to food and were most interested in understanding how the meat from large animal kills

were distributed in hunting and gathering cultures (Hunt, 2000). The North Slope Iñupiat and their cultural traditions have been widely studied by anthropologists (Spencer, 1959; Chance, 1966; Milan, 1964; VanStone, 1960; Bodenhorn, 1989). There is an Iñupiat cultural belief that sharing first occurs when an animal chooses to give itself to a hunter and will continue to do so by the hunter's action of sharing the harvest with others (Bodenhorn, 2000). The hunter understands he or she is not giving up his catch by sharing because he never owned it to begin with (Fienup-Riordan, 1986). On the North Slope, communities distinguish food sharing as an expression of their cultural identity as an Iñupiat and also see it as being one of the positive things about living in their communities (Bodenhorn, 2000). Sharing is strongly prevalent throughout rural Alaskan communities and in fact, Bodenhorn (2000) argues many of the common food sharing terms used do not capture the complexities of food sharing occurring within North Slope communities. Moreover, there is overlap in the use of food sharing terms and how they relate to acts of sharing within the Iñupiat culture.

2.2.1 Demand Sharing

Demand sharing occurs when people believe they have the right to a share of a harvested animal and out rightly will ask for it (Woodburn, 1998). The cultural norm of sharing resides within the community and the donor is obligated to share with the recipient who is exacting the claim. In such circumstances, the provider would not be classified as generous because the act of giving is requested and expected (Woodburn, 1998; Peterson, 1993). It was thought that the Northwest Alaskan Iñupiat were aware of this obligation, yet regarded sharing as something one does naturally (Burch, 2006).

Among the Iñupiat of the North Slope region, food is commonly shared with relatives who request or demand specific traditional foods.

2.2.2 General Reciprocity

General reciprocity is frequently used to describe how traditional hunting and gathering societies share food. Sahlins's (1972) in his book "Stone Age Economics" defines this term as "transactions that are putatively altruistic being marked by a weak obligation to give back with an indifference to quality and quantity of the return." Similarly, Plattner (1989) defined general reciprocity as an "exchange relationship balanced only in the long run, where the maintenance of the relationship is more important than any short-run gain and where the norm of the relationship is altruism" (p. 212). In the case of generalized reciprocity, the provider continues to give despite the fact that the recipient is unable to return the favor, in other words making it a one-way flow at the time of the giving act. Although transfers are one-sided, Hunt (2000) argues that there is a sense among the providers that the transfer evens out. Bodenhorn (1988) notes that among the Iñupiat people of the North Slope, there is the notion that somehow the sharing of food evens out in the end, and people do not feel the need to keep score. A prime example of *generalized reciprocity* within North Slope communities is the act of sharing traditional foods with the elders, the needy, and the widows who are not in a position to give in return. This type of sharing could be viewed as the bestowing of a pure gift of food. Luton (1985) found that some active hunters will actually give more than they receive and this will be commonplace throughout every community.

Bodenhorn (2000) reports that portions of an animal distributed to a hunter will likely translate into an act of sharing when it comes into their possession or physically into their house. Parts of the animal may be shared (distributed) with family members or cooked as a meal for guests. The options of what to do with one's portion are limitless; a person can decide how much they are going to give, to whom and in what context, just as long as they share what they have received.

Traditional foods are items that are frequently observed to have been extensively and systematically shared among North Slope Iñupiat (Bodenhorn, 2000). Sharing generally occurs between relatives, but as mentioned previously many families also share with elders and single mothers who are of no relation and who are unable to hunt for themselves (Bodenhorn, 1988). Bodenhorn (2000) suggests sharing maintains the ties that bind family members, friends, and communities with each other, and in its truest form is not based on the idea of reciprocity.

2.2.3 Balanced Reciprocity

Balanced reciprocity differs from general reciprocity, and is defined by Plattner (1989) as a relationship “where the balance is calculated and where fair exchange is the norm” (p. 212). This balance means the item received has a customary equivalent which is returned without delay and a direct exchange is made (Sahlins, 1972). It is balanced in the sense that the relationship relies on a two-way flow. Should the receiving end fail to reciprocate within a certain amount of time, relations will most likely become weakened. An example of balanced reciprocity occurred during Iñupiat messenger feasts where individuals traded goods with partners from different areas and

on both sides, there was an obligation to maintain a reciprocal balance (Burch, 1970).

Another example of balanced reciprocity would be in the provisioning of shares.

2.2.3.1 Shares

Shares, as defined by the North Slope Iñupiat, are distributed to those who have contributed to the hunting effort and hunters involved have a right to a share (Bodenhorn, 2000). In general, the allocation of shares is a one time transaction, fulfilling an obligation between two parties, while sharing may continually occur throughout any length of time. A person may earn a share of the harvest through different actions, as long as the specific deed benefits the subsistence production in some way (Bodenhorn, 1988). Access to subsistence resources is not evenly diffused across a community and some households may have an active hunter who is unable to hunt due to a lack of equipment or equipment in need of repair. Relatives and friends may loan out equipment to such a hunter and will in return receive a share of whatever is harvested (Bodenhorn, 2000). A share is also given to a person who helps to butcher an animal whether it is out in the field or once the animal is brought back to the community (ibid).

Bodenhorn (2000) notes that the hunter does not own the carcass of the animal he has harvested out right, and a set of rules must be followed, consequently shares are allocated depending on the species. For example, bowhead whale (*Balaena mysticetus*) harvests by far have the most complex rules for the division of shares. The whaling crew that is the first to strike a whale is entitled to the largest share of the whale (Nelson, 1982). The parts of the whale that are divided are the meat and *maktak*, the

baleen, the flippers and tail, and various organs such as the heart, intestines, tongue, and kidney (Bodenhorn, 2000; Luton, 1985; Worl, 1980). Each whaling crew that assisted with the hunt and the towing of the whale will receive a share. The captain is obligated to make sure each member of his whaling crew receives an equal share, as well as people who were not a part of the hunt, but who donated material goods or loaned out equipment to the crew (Jorgensen, 1990). The captain is also responsible for the communal sharing of the whale during specific times of the year (i.e. *Nalukataq*, Thanksgiving, and Christmas) and his share must be completely distributed before the next year's spring hunt (Bodenhorn, 2000).

Past research shows that there are less formalized rules for sharing other animals that are harvested, but similar to the bowhead whale, a share of the harvest is given if help is provided. Animals harvested utilizing a boat such as bearded seals (*Erignathus barbatus*) and walrus (*Odobenus rosmarus divergens*) are divided equally, with the boat owner receiving a share for the use of his boat. When caribou (*Rangifer tarandus*) are hunted in groups, in most cases everyone receives an equal share of the meat products. Ivory and skins off of harvested animals go to the person who is responsible for the actual harvest of that animal (Bodenhorn, 2000). Fish that are caught in a net and group harvested are divided equally, while fish caught with a rod and reel are considered individual property (Bodenhorn, 1988). Ducks and geese which are cooperatively hunted are shared equally (ibid). There are no set of rules of how further sharing should be done once a share is given.

If one were to look at balanced reciprocity in purely a spiritual context within the Iñupiat culture, sharing traditional foods could also fall within the definition of this term. Instead of the reciprocal relationship lying between the provider and the recipient of the food, the balance occurs between the animal from which the food originally came and the hunter who is sharing (Bodenhorn, 2000). Once again, the animal will allow itself to be taken by a hunter who generously provides traditional foods for others within the community.

2.2.4 Delayed Reciprocity

Related to balanced reciprocity is the term *delayed reciprocity* where sharing in the present may generate future sharing interactions, which will continue over time (Woodburn, 1988). Delayed reciprocity depends on the ability to store food resources and distribute them at a later date (Bodenhorn, 1989). An example of delayed reciprocity exists to some degree on the North Slope, with the tradition of sharing food with the elders who had provided food when they were young and in their elder years are now receiving from others (Jorgensen, 1990). The same could also be said for families in need, who may be undergoing difficult times at the moment, but will share their resources once they are able to. The distribution of bowhead whale (*Balaena mysticetus*) products during *Nalukataq* (the spring whale festival), Thanksgiving, and Christmas by whaling captains to the community at large could also fall into the sphere of delayed reciprocity.

2.2.4.1 Delayed Reciprocity Example: Ceremonial Sharing

No other animal harvested on the North Slope is held in higher esteem than the bowhead whale. Once a whale is harvested and brought back to shore, some of the *maktak* (whale skin and blubber) is boiled and served along with coffee to the people who are helping with the butchering (Bodenhorn, 2000). Meat, *maktak*, and certain organs are sent back to the whaling captain's house and the rest of the community is invited over for a meal. The successful harvesting of a bowhead whale by a whaling captain and his crew necessitates a celebration during which meat and *maktak* will be shared with the entire community. Prepared foods are also served when whaling season ends at a feast called *Apugauti* and generosity from the whaling crew abounds (Bodenhorn, 2000).

The main celebration of a successful whale harvest is the *Nalukataq*, meaning "blanket toss" in Iñupiaq. The event occurs during the spring and is otherwise known as the spring whaling festival, giving thanks to the whale for a safe harvest (Luton, 1985). The whaling captain and crew who harvested the whale prepare a grand feast at which anyone in attendance receives a share. Frozen whale meat, *maktak*, *mikigaaq* (whale meat and *maktak* fermented in whale blood), and a variety of other foods are served according to the number of people within one's family (Bodenhorn, 2000). Visitors from outside the community are also welcome to help themselves to a portion of the whale's tail. The entire community including outside visitors have an undeniable right to a share of the whale, as a way of honoring the animal which has given itself to the whaling crew (Bodenhorn, 2000).

It is common for out of town guests to visit during *Nalukataq* and it is a social event in which everyone partakes, whether it is with the provisioning of traditional foods by way of hunting, helping with the cooking, or just socializing and eating. Much time is spent visiting with friends and relatives and the sharing of food and stories are as meaningful as the actual ceremony itself (Luton, 1985). In addition to the distribution of food, there is also a blanket toss activity for which the festival is named. A blanket made of bearded seal skins is attached via ropes to wooden props and people line around the edges of the blanket, pumping it in order to send a person high up into the air (Brower, 2004). It is common for people to throw candy while they are being tossed, for the onlookers to retrieve.

Once people have rested from the festivities earlier in the day, a traditional dance is usually held in the school gymnasium or outside, if the weather is good. The dancing can last through the night and people of all ages participate. In a sense, the dancing may be seen as an assertion of group solidarity; solidarity of groups of friends and family and of the community (Luton, 1985).

In each of the coastal communities that harvest bowhead whales, communal festivals are also held for Thanksgiving and Christmas, in which whale meat and *maktak* is served by the successful whaling captain and his crew. These feasts are community efforts organized by the local church and prepared foods are also provided by community members (Bodenhorn, 2000). Active hunters may donate traditional foods to the church as well (Luton, 1985). The distribution of food is similar to the *Nalukataq* and each family is given an equal share. Successful whaling crews hunting

in the fall do not host *Apugauti* or *Nalukataq* feasts and therefore they share larger portions of their whales at Thanksgiving and Christmas (Brower, 2004). The sharing of traditional foods and spending time with family and friends is a significant component of holiday feasts.

2.2.5 Negative Reciprocity

Both general reciprocity and balanced reciprocity contrast with the term *negative reciprocity*, defined as “selfishness with no attention to balance in the relationship” (Plattner, 1989, p. 212). Actions towards getting something for nothing are taken and synonymous ethnographic terms such as “haggling,” “chicanery,” and “theft” are indicative of negative reciprocity (Sahlins, 1972). Selling traditional foods for profit could be termed negative reciprocity, as it is looked down upon by North Slope Iñupiat society in general. Furthermore, traditional foods are harvested with the intent they will be shared and within the Iñupiat culture, stinginess and greed is resented and abhorred (Burch, 2006).

2.3 Why Share? Explanatory Theories of Food Sharing

There are several existing theories on why hunting and gathering societies have traditionally shared harvested foods. These theories can also be used to explain why modern hunting and gathering communities continue to share their subsistence foods. In this section I describe each of the theories and relate them to the Iñupiat of the North Slope.

2.3.1 Survival

Successful hunting and gathering across a vast landscape and securing adequate amounts of food resources were highly unpredictable during humanity's early history (Plattner, 1989). The likelihood of finding game and successfully bringing it back to camp was never guaranteed, especially in Arctic regions where animal migrations were seasonal and weather conditions were harsh. Group hunting increased the likelihood of hunting successes and food sharing among the hunters provided insurance against individual hunting failures; the sharing of food was a way of coping with risk (Plattner, 1989; Ingold, 1986; Kaplan and Hill, 1985).

The Arctic as a region has been described as an inhospitable, unpredictable place where survival requires experimentation and adaptation (Bodenhorn, 1989). The Iñupiat people of the North Slope understood that survival was not assured and a person had little control over the natural course of events (Chance, 1990). The history of the Iñupiat has been one of constant presence of unforeseen circumstances and yet they have maintained their ability to endure in their home region. According to many anthropologists, this ability to survive has been largely in part due to the act of sharing (Sahlins, 1972). Eileen Panigeo-Maclean, an Iñupiat from Barrow was quoted in Chance (1990) as saying, "Sharing is what has made our culture strong. Only through sharing have we survived as a people in this land" (p. 139). This holds true for the North Slope, where the risk of survival is great and therefore the sharing of food is extensive (Gould, 1982). It was commonplace for people to depend on one another during times of resource scarcity, yet some say food sharing decreased during such

times (Burch, 1988). There is existing controversy within the literature pertaining to food sharing among the Iñupiat and whether food sharing increased or decreased during times of resource scarcity. For example, Burch (1988) states during periods of resource paucity, household sizes contracted and food resources were shared only with immediate members of the household. In contrast, Luton (1985) mentions increased widespread food sharing during times of resource scarcity. Either way, it is important to note in the past, food sharing increased the chances of survival and even today, food is provided to those who cannot provide for themselves, such as the elderly and the sickly (Nelson, 1982).

2.3.2 Kinship Links

The sharing of food with one's kin has been researched extensively and from a socio-biological perspective is attributed to increasing human fitness and directly benefiting reproductive success (Hamilton, 1964). By sharing meat and other resources, there is a higher likelihood of surviving and passing along one's genes. The results of a study conducted by Ziker and Schnegg (2005) indeed reflected that food sharing through the provisioning of meals occurred more frequently with related households than with non-related households, mostly in the form of generalized reciprocity. Among Alaska Natives, the sharing of equipment and resources are recorded to occur most frequently among close kin (Jorgensen, 1990).

North Slope Iñupiat social structure was traditionally dependent on the extended family and this social institution continues to this day, despite the creation of nuclear family households due to the increased availability of housing (Chance, 1966). A

nuclear family household consists of a father, a mother, and children, while an extended family household includes near relatives such as grandparents, in addition to the nuclear family (www.merriam-webster.com). Jorgensen (1990) found that the recognition of a person's extended family and camaraderie with relatives has persisted throughout the years because of participation in subsistence activities and the sharing of foods. Both nuclear and extended family members tend to hunt together and benefit from each other's skills and generosity. Chance (1990) notes that daily food sharing is like the glue that keeps families together. In the past, families relied on family relations during severe shortages of food, and exchanges were reciprocal in nature.

2.3.3 Social Cohesion

Gould (1982) states that the key to survival in the Arctic was hunting in groups. On the North Slope group hunting was essential in the pursuit of large marine mammals such as bowhead whales, walrus (*Odobenus rosmarus divergens*), and bearded seals (*Erignathus barbatus*) (Milan, 1964). While hunting in a modern context for bearded seals no longer requires large hunting parties due to the use of current equipment such as rifles and motorboats, bowhead whale harvesting continues to rely on the cooperation of multiple whaling crews within each community. More whaling crews means there is a stronger capacity to sight whales, tow whales in, and an availability of aid should emergency situations arise (EDAW, Inc. & Adams and Russell Consulting, 2008).

The bounty of successful large mammal harvests is shared among hunting members and this helps to build cooperative alliances within the village social structure (Nelson, 1982). Group bonds created through cooperative hunting are solidified by the

need to collectively hunt large marine mammals and through the process of sharing (Kruse, 1982; Nelson, 1982). The social practice of sharing food stressed the importance of a hunter's obligation to the hunted animal, his family and to the community's well-being (Collings et al., 1998).

Working in Wainwright, Nelson (1982) and Luton (1985) found that Iñupiat shared according to informal customs and formal rules, placing emphasis on equity and maximizing the benefits to the entire community (Nelson, 1982; Luton, 1985). Spencer (1959) observed that the Iñupiat social structure focused on reducing individual risk through the maintenance of social relationships and insuring cooperation.

Throughout the world, food sharing was seen as a cooperative act, especially in hunting and gathering societies. An individual who endures a cost (e.g. money, time, labor, and food) in order to benefit another person or a group of people is said to be committing an act of cooperation (Henrich & Henrich, 2007). Cooperation may occur between people who are friends, relatives, or even strangers, although cooperation truly only works when two parties routinely interact (Hallpike, 1975). Hunters are expending time and energy to acquire meat, which in turn benefits the community at large, especially families who contribute little to no subsistence resources (Henrich & Henrich, 2007). Within traditional Iñupiat society, cultural norms like sharing and cooperation were a part of their social fabric (Chance, 1990).

2.3.4 Prestige and Public Esteem

The sharing of foods can bestow indirect benefits to the person who is distributing goods by bringing prestige to him and to his family. Ideally over time, this

person will acquire a good reputation as an admirable hunter and provider to his family and the community (Henrich & Henrich, 2007). In the community of Wainwright, there are positive attitudes towards sharing and families who have consistently given food to others have been regarded with high esteem (Jorgensen, 1990). Often times, the social recognition of sharing is valued more than the actual acquiring of the resource itself (Nelson, 1982). The respect given to Iñupiat whaling captains was highly dependent on the distribution of food to kin and non-kin alike (Spencer, 1959).

Through ceremonial acts of sharing with the community, recognition is given to the hunter who successfully returns with a food resource. The hunter is identified to the rest of the community and to some degree other hunters are encouraged to hunt because of the prestige it may bring to them (Peterson, 1993). Food distribution via large displays advertises the prowess of the hunter to a larger audience and there is a greater potential for recipients to become future social partners (Ziker & Schnegg, 2005; Henrich & Henrich, 2007).

There is a certain amount of thankfulness and gratitude which comes from community members during the distribution process and at the feasts for successful whaling captains on the North Slope. To some extent, prestige is attributed to the whaling captain who distributes products from the bowhead whale and his generosity is looked upon with great favor (Nelson, 1982). Successful hunters are in a position of continually handing out the products of their achievements, yet they also occasionally receive food products from others (Whitehead, 2000).

2.4 Linking Subsistence Sharing to Resilience Theory

The concept of a coupled social-ecological system acknowledges the relationship between ecosystems and social systems; ecosystems encompassing biological processes and social systems comprised of human institutions which interpret and define the use of natural resources (Berkes & Folke, 1998). It is because of this interrelationship that the social element and ecological component benefit from being simultaneously studied and the comprehension of the entire system contributes to sustainable resource management (Folke et al., 2005). A central objective of my research is to explore sharing within a resilience framework. Therefore in the sections below, I discuss the basic concepts of resilience theory, providing examples of each as related to food sharing in the North Slope region of Alaska.

2.4.1 Sharing as a Measure of Resilience

In this research, I assume that community and household levels of sharing represent an important indicator of social-ecological resilience (Kofinas et al., 2010). Resilience is defined as “the magnitude of disturbance that can be absorbed before a system changes to a radically different state” but includes “the capacity of a system to self-organize and the capacity for adaptation to emerging circumstances” (Carpenter et al., 2001, p. 765; Folke, 2006, p. 253). The role of sharing in buffering against resource scarcity, contributing to cultural identity, and marking the distinction between indigenous and non-indigenous subsistence systems, suggest its role as sources of Iñupiat resilience. Because social-ecological systems are not in a state of equilibrium and can’t be managed as such (Chapin III et al., 2009), it is important to monitor

sharing to account for the status of subsistence systems, trends of change, and the implications of those changes. Ideally, this information should become part of adaptive governance in the system (Kofinas, 2009). Understanding the best method for monitoring change, therefore is a critical step in developing such a governance system, and indirectly contributes to a system's capacity to cope with change.

2.4.1.1 Social-Ecological Resilience in the Context of the North Slope Subsistence Sharing System

The North Slope region is a strong example of a social-ecological system, which has undergone historical disturbances, creating embedded vulnerabilities, yet demonstrating adaptive capacity to recover from past disturbances and conceivably show resilience in the face of future disturbances (Figure 2.1). As North Slope Iñupiat society adjusts to changing social-ecological conditions such as climate change and the availability of subsistence resources, the practices of subsistence activities including food sharing will also follow suit (National Research Council, 1993). In the event of off-shore oil development and profound impacts from climate change, there will be cultural transformations of an undetermined nature (Fienup-Riordan, 1986).

The North Slope subsistence system, while low in biological diversity, is none the less complex. The subsistence system is one based on social, economic, ecological, and other cultural structures which are intertwined. A disturbance to one component could have a greater effect to other components. Ecological factors create opportunities and constraints to hunters and fishers, while cultural norms dictate the interactions between the availability of resources and subsistence practices (Norris, 2002; Usher &

Bankes, 1986). The harvesting of resources changes from year to year, depending on the resource base and therefore community resource dimensions change as well (Pedersen et al., 1985). For example, in the early 1970's, a decrease in caribou on the North Slope led management agencies to reduce allowable harvesting. Recent research using historical data illustrated how there was an increase in sharing of subsistence resources during this period in the community of Anaktuvuk Pass, as a way of buffering against the resource shortfall (Martin, 2010).

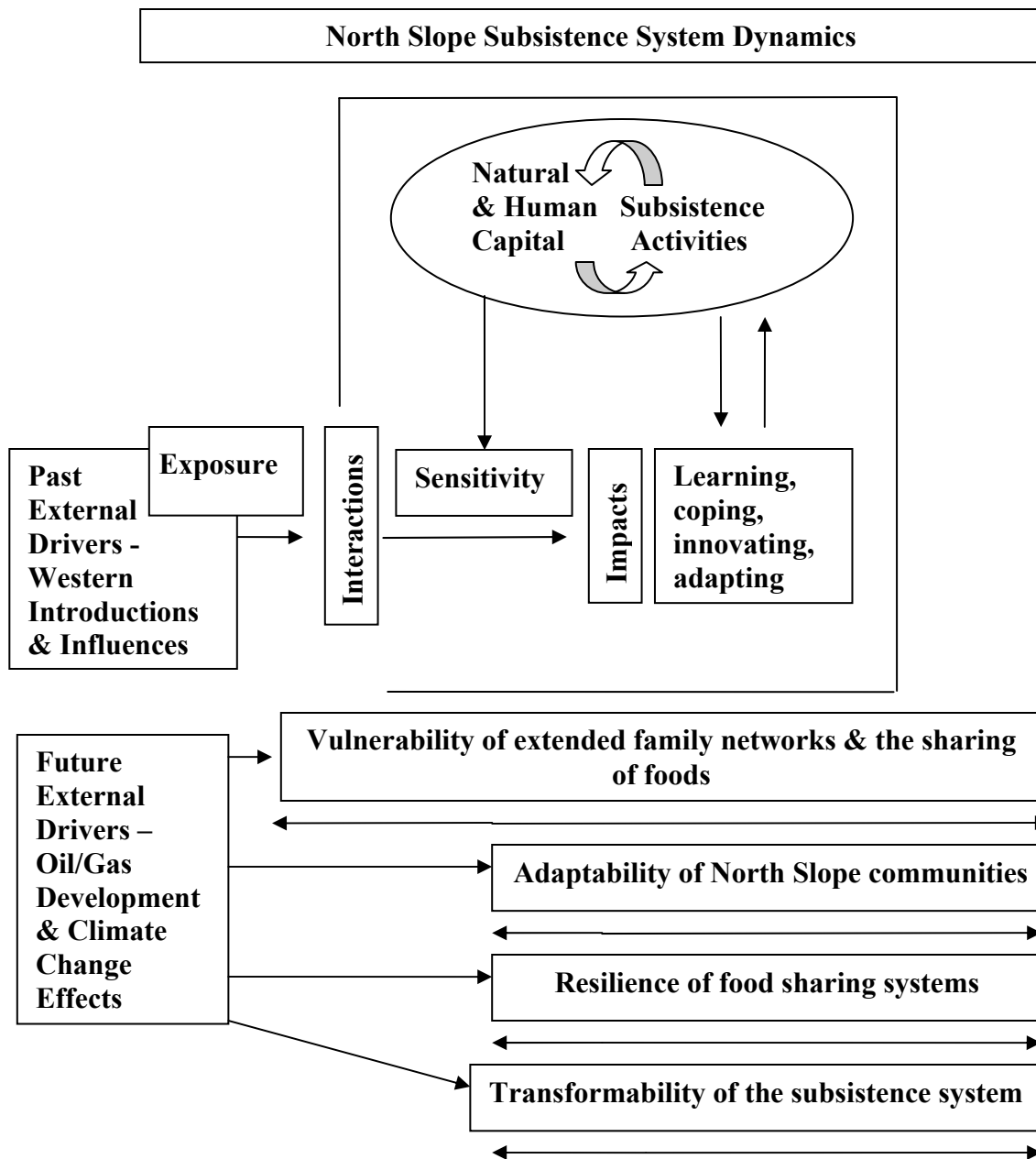


Figure 2.1 Resilience Theory Conceptual Model (Adapted from Chapin III et al., 2009).

Past disturbances to the social-ecological system includes the arrival of commercial whaling vessels in the middle to late 1800s and the introduction of Western technology to the North Slope in the form of rifles and other goods. This technology benefited the subsistence livelihood by easing the likelihood of procuring game, yet at the same time, it also weakened the need for sharing and cooperation, which was strongly coupled with group hunting activities (Bodenhorn, 1988). Commercial whalers introduced diseases and generated widespread famines by overhunting bowhead whales, walrus, and caribou; both of which instigated the separation of families through migrations avoiding sickness and starvation (Bodenhorn, 1989). Extended kinship relations continued to deteriorate and the arrival of the missionaries dramatically altered the social institutions which upheld Iñupiat society. A new set of ideals were introduced and physical survival was no longer solely dependent on kin-based relationships, as interactions with non-kin increased (Bodenhorn, 1989).

Despite the hardships of famine and disease on the North Slope, the Iñupiat people have persevered and maintained extended family networks, and therefore resilient social bonds which contribute to social well-being (Bodenhorn, 1989). This reestablishment is a portrayal of resilience and a key one at that, because kinship and exchange ties maintain the vitality of subsistence systems (Spencer, 1953). The interactions of individuals and households through the harvesting and sharing of subsistence resources are the primary means by which a community is able to sustain itself against future impacts such as oil/gas development and climate change (Callaway et al., 1999).

Among the Iñupiat people, extended networks are a highly utilized resource in and of themselves, where technological equipment and traditional skills are pooled for subsistence activities (Jorgensen, 1990). In a study conducted by Bodenhorn (1988) in Barrow, all twenty-seven households interviewed were dependent on other households for traditional foods, and this was regardless of the fact that a household was classified as young, old, single, married, with an active hunter, or a full-time worker. Sharing was prevalent among all households through daily activities. Entire communities rely on subsistence use areas through the acts of a committed hunter who shares his harvest with other households in the community (Worl & McMillan, 1982). The sharing of resources allows households lacking their own means of acquiring food resources the facility to maintain both cultural traditions and social bonds, especially during times of hardship.

2.4.2 Vulnerability

Of critical importance is the recognition of past disturbance effects and the ability to identify the causes of existing vulnerabilities within the system (Adger, 2006). Vulnerability can be defined as the degree to which a system, subsystem or system component is likely to experience harm due to exposure to a hazard, either a perturbation or a stress/stressor (Turner et al., 2003). Vulnerability is commonly understood to consist of exposures, sensitivities, and adaptive capacity. The North Slope region has undergone multiple historical disturbances and continues to undergo events which have made Iñupiat households sensitive, placing the region in a susceptible position to future stressors, while testing their resilience and adaptive

capacities. The magnitude of some of these socio-cultural events has persisted and in addition, there is the potential development of new vulnerabilities.

It is important to acknowledge that the Iñupiat people of the North Slope have experienced periods of instability in their not so distant past, and they might not view their region as being vulnerable to future disturbances. The concept of vulnerability may be perceived or experienced differently from the people who are making the classifications of who is vulnerable (Kasperson et al., 2005). Researchers may distinguish a specific phenomenon as being the cause of a certain vulnerability, when in reality communities see other impacts as having greater relevance, thus often times vulnerabilities may be considered culturally specific (Adger, 2006).

It was observed by VanStone (1960) that most societies transitioning from their customary cultural institutions to modernized institutions have also transitioned from models of cooperation and sharing to individualistic patterns. The passing of the Alaska Native Claims Settlement Act and the creation of for-profit corporations has potentially set forth a new ideology of individualism and competition, which could slowly degrade the cultural tradition of cooperation (Anders, 1983). On the North Slope, Bodenhorn (1989) states Western influences have introduced social options and forms of production (e.g. wage labor) that are no longer reliant on extended family networks and have made it unnecessary for people to rely on kinship ties to the extent that was needed in the past in order to survive. However, it is important to keep in mind the resilience of kinship bonds maintained through Iñupiat cultural activities such as food sharing.

The extended family was and often still is the traditional unit in which subsistence activities are performed, with various family groups working as productive assemblages (Worl, 1982). Subsistence activities were carried out to obtain resources for entire families and this included the preparation and preservation process of subsistence (Jorgensen, 1990). A decline in subsistence activities in the form of less cooperative hunting and distribution has weakened the traditional social unit (Chance, 1990; Worl, 1982). However, the performance of subsistence activities with the ability to own subsistence equipment continues to allow smaller family groups to acquire their traditional foods.

Government programs and the availability of additional homes have decreased household sizes, and increased the number of nuclear family households (Jorgensen, 1990). Households are comprised of people residing together and it forms the main social unit where subsistence activities are performed (Jorgensen, 1990). The shrinking of extended family units into nuclear households is a concern where it involves subsistence distribution and kinship ties; obligations may first fall towards the immediate household unit as oppose to the extended family network (Fienup-Riordan, 1986). In the past, the interdependence of extended family groups was strengthened through distribution and exchange, as well as consumption and sharing.

2.4.2.1 Future Oil and Gas Development Effects on Vulnerability

The first wave of oil production on the North Slope arrived with the discovery at Prudhoe Bay in 1968. The second wave of production could occur with the detection of oil/gas in the outer continental shelf (OCS) area in both the Chukchi and Beaufort seas,

believed by oil companies to contain large reserves (Luton, 1985). The onshore locality of the Arctic National Wildlife Refuge has the potential of containing additional oil reserves and oil companies are also interested in accessing this area (EDAW, Inc. & Adams and Russell Consulting, 2008). Should off-shore oil production commence and the Arctic National Wildlife Refuge be opened up to oil development, the possibility exists for social implications to subsistence and sharing.

In the recent past, oil revenues had strengthened the wage economy and many residents on the North Slope have since then become accustomed to having employment options. However, it is predicted that should oil revenues decline, wage employment will follow suit and Alaska Native residents will migrate outside of the borough looking for work elsewhere (Jorgensen, 1990). Some of these residents may include active hunters who participate in both the wage economy and subsistence livelihood and this could weaken kinship ties due to lower amounts of traditional foods being harvested and distributed (Kruse, 1982). Decreasing wage employment may also affect the subsistence tradition by way of declining amounts of subsistence equipment being purchased, causing a reduction in subsistence harvesting (Kruse, 1982). Overall, this creates a challenge on a system which is reliant on “balanced” access to the cash economy and subsistence activities (Wenzel et al., 2000).

Any threat to the environment from oil industries poses a threat to subsistence and its accompanying livelihood (Jorgensen, 1990). The availability of subsistence resources is crucial in that the foods are shared and the products they provide are used for handicrafting and gifting (Jorgensen, 1990). In the event that subsistence resources

become adversely affected by oil development, opportunities for sharing could decrease, with the focus being on the immediate needs of the nuclear family (Fienup-Riordan, 1986).

Traditionally, the cultural values of Alaska Natives were directly related to their natural surroundings and the social relationships within the community. Oil development could have profound impacts on subsistence resource production and distribution, which could weaken the cultural values of sharing and cooperation among extended family members (Worl, 1982). The social norm of food sharing may no longer be taught to the younger generations, as there would be limited resources to hunt and gather (Worl, 1982).

2.4.2.2 Future Climate Change Effects on Vulnerability

Climate change has additional and potentially deleterious effects on subsistence resources and hence the sharing of these same resources among households and communities throughout the North Slope. In this region of Alaska, resources are accessible for limited periods throughout the year and it is highly critical for subsistence users to obtain sufficient food supplies during this time period (Plattner, 1989). Climate change could create harvest disruptions such as shifts in the migratory routes of seasonal subsistence resources, therefore affecting how resources are acquired and how they are distributed. Worl (1982) argues as hunting efforts become modified, cooperation levels may also be altered, in turn affecting kinship networks.

The availability of multiple subsistence resource selections allow communities several choices should an urgent situation arise, and climate change patterns may have

negative impacts on the variety of food resources available (Jorgensen, 1990). Weather and ice conditions may become variable due to climate change and could easily impede modes of travel, while reducing resource amounts available to subsistence hunters. For example, stormy seas curtail marine mammal hunting and a lack of snow cover prevents snow machine travel inland to hunt caribou (Luton, 1985). The effects of climate change may be uneven, as certain subsistence resources may be affected while others may not. Subsistence resources are usually hunted when they are in their most prime condition and with climate change, this option may become obsolete, with resource users acquiring fish and game, when they are easily accessible (Luton, 1985).

Climate change could directly affect subsistence food sharing through the limitations placed on the amounts of resources acquired. Similar to oil development effects, if subsistence resources were to be obtained in lower numbers, the distribution of these resources may or may not primarily go to the immediate family. If climate change disturbances were so great that resources became unavailable to an entire community, there will be an increased dependency on distant kin and intercommunity distribution networks (Worl, 1982; Fienup-Riordan, 1986; Luton, 1985). In the unforeseen event of a region-wide resource scarcity, food requests to kin, friends, and trading partners in outside communities will increase, possibly depleting food reserves within those communities (Luton, 1985). Kinship relationships could be strengthened with a reestablishment of old ties through food sharing, but if requests were to continue over a considerable period of time, this could place strain on relationships (Fienup-Riordan, 1986).

2.4.3 Adaptive Capacity

Adaptive capacity is defined as the “capacity of human actors, both individuals and groups, to respond to, create, and shape variability and change in the state of the system” (Chapin III et al., 2009, p. 341). In past history, communities were never truly isolated from one another; they interacted through traveling, trading, sharing, and learning (Lonner, 1986). This in turn increased their ability to adapt to unforeseen circumstances. Communities and their subsistence systems inherently have adaptive strategies which have allowed for their continued existence (Callaway et al., 1999). Some of the adaptive strategies that have been incorporated in communities of the North Slope are dependence on mixed economies, modern technology, use of multiple harvest areas, and sharing networks (Bosworth, 1995). It is important to recognize current adaptations and whether they are of benefit to the system (Adger et al., 2005). Barter and exchange systems provide resources between communities during times of need (Pedersen et al., 1985). Kinship links have been and continue to be sources of aid during difficult times. Adaptive capacity depends on a viable social system fully capable of responding to unforeseen disturbances (Freeman, 1985). Of equal importance is that outside institutions currently in place and responsible for continued flexibility remain intact, without hindering existent adaptive strategies (Bosworth, 1995). For example, kinship ties have been strengthened through past legislation creating high schools in rural communities and allowing Alaska Native children to remain in their home communities for their schooling (Bodenhorn, 1989).

In a larger sense, the Iñupiat historically had to adapt to the changing cycles of critical food resources and changes within their surroundings. Adaptation to these changes and to the challenging Arctic environment has for the people of this region created a system where the economic, social, and cultural institutions are connected to the land and the sea (Caulfield, 1983).

2.4.4 Sustainability

The North Slope borough seeks to maintain oil development on its lands, while protecting its subsistence resources for its people. Some may say so far this delicate balance has been sustained, but will it be able to continue into the future with increasing oil explorations? The term sustainability is defined as “the use of the environment and resources to meet the needs of the present without compromising the ability of future generations to meet their own needs” (Chapin III et al., 2009). The ability to sustain the subsistence livelihood with increased oil/gas development and in conjunction with the “mixed” economy is in question (Dryzek, 1983). The purpose of a study conducted by Ganapathy (1996) was to understand the subsequent trade-offs and interactions between oil/gas development and the subsistence culture. Studies such as Ganapathy’s as well as this study, are beneficial to understanding the sustainability of the subsistence system of which sharing is a strong component, when it is influenced by oil/gas development.

2.4.5 Transformability

Walker et al. (2004) defines transformability as “the capacity to create a fundamentally new system when ecological, economic, or social (including political) conditions make the existing system untenable” (p. 3). The petroleum-based economy

on the North Slope is not considered infinite and as oil production subsides, the alternative could lead to a revival of the subsistence economy, with small scale resource developments (Morehouse & Leask, 1980). A study conducted by EDAW, Inc. & Adams and Russell Consulting (2008) in the community of Kaktovik had observed that the majority of subsistence harvesters participated directly in the wage economy, with a few participating solely in wage labor. The study also concluded that the mixed economy is a dynamic system and will not remain in equilibrium; the system could become less dependent on wage employment should the need arise (EDAW, Inc. & Adams and Russell Consulting, 2008). This could be the case given the history of the North Slope and the coming and going of previous wage economies, which in turn necessitated people retaining their hunting skills (Bodenhorn, 1989).

Should oil/gas development coupled with climate change have long-term negative effects on subsistence resources, a cultural transformation of a different kind could occur. For North Slope Iñupiat society, this could mean a loss of cultural celebrations of successful harvests, possibly leading to modern celebrations relating to school activities (Fienup-Riordan, 1986). A long-term harvest disruption could also have detrimental effects on the traditional methods of resource distribution, as well as the exchange of goods and services (Fienup-Riordan, 1986).

The subsistence systems in rural communities have changed and evolved over many years and they will most certainly continue to evolve. Harvesting skills and knowledge have changed, transportation options have increased, while altering human choices about amounts of resources needing to be harvested, as well as food preferences

(Jorgensen, 1990). The social-ecological system will likely change and researchers need to find a way to monitor that change. I suggest that examination of food sharing is a good indicator of the system's resilience.

2.5 Study Methods: Overview

In this section, I provide a brief description of the qualitative and quantitative approaches used in this study and my methods for comparative analysis using the two approaches. My findings about each approach and their strengths and weaknesses in measuring the concept of food sharing within North Slope communities will be synthesized in Chapter 6 of my thesis.

2.5.1 Qualitative Approach

During 2008 and 2009, I conducted semi-structured interviews in the North Slope communities of Barrow, Wainwright, and Kaktovik. These interviews were carried out with individual respondents and groups of respondents. The interview questions were organized in such a way as to gain an understanding of the existing food sharing norms within the North Slope region. All of the interviews were digitally recorded, then transcribed and analyzed using ATLAS.ti version 5.3, a computer software program commonly used for qualitative data analysis. This program was utilized in order to identify and classify food sharing codes and themes within the data.

2.5.2 Quantitative Approach

For the quantitative methods component of my research study, I used a subset of data from the Survey of Living Conditions in the Arctic, otherwise known as SLiCA. This survey was a collaborative international project between researchers and

indigenous people, focusing on measuring and understanding changing living conditions across the Arctic (Kruse et al., 2009). SLiCA was a comparative study with Iñupiat, Yup'ik, Inuit, and Saami peoples from the United States, Canada, Greenland, Norway, Sweden, and Finland and indigenous peoples of the Kola and Chukotskiy Peninsulas in Russia (Andersen et al., 2002).

2.5.3 A Comparison between the Two Approaches

The data analyses from both the qualitative and quantitative studies were compared and evaluated according to how well they measure the concept of food sharing. The main points of comparison I evaluated were the system of food sharing, food sharing changes over time, food sharing as an indicator of community well-being, and food sharing as a source of resilience within Alaskan North communities. There are limitations in the comparison between the two methods due to the fact that my qualitative approach focused on the North Slope region, while the quantitative approach combined the North Slope, Northwest Arctic, and Bering Strait sub-regions into one region. However the comparison will be useful in order to better understand the food sharing system and how its complexities can best be captured.

2.6 Conclusion

In this chapter, I presented a literature review of common food sharing terms, as well as theoretical approaches linked to concepts of sharing. These approaches described why both past and present day hunting and gathering societies commonly shared and continue to share their food resources. An analysis of the North Slope region's subsistence sharing system as a social-ecological system related to resilience

theory was also included in this chapter. Lastly, a brief overview of both my qualitative and quantitative data sources was provided in addition to the comparative approach that will be undertaken in the final chapter of this thesis. The presentation of this information raises the question of whether a quantitative or qualitative approach for monitoring traditional food sharing is the better approach. In the chapters that follow, I explore this question, and later consider the possible benefits of deriving a mixed methods approach for future analyses.

CHAPTER 3 STUDY REGIONS AND COMMUNITIES

3.1 Introduction

The beginning of this chapter will provide a brief background on the Alaska regions of the Northwest Arctic and the Bering Straits, which were used in the Survey of Living Conditions in the Arctic study. I will also present historical information on the North Slope region, as well as background information on the communities of Wainwright and Kaktovik, where I conducted my qualitative field research. The information presented is of importance because the history of both the region and the two communities have contributed to their present day circumstances, related to food sharing within their respective subsistence systems (Burch, 1998).

3.2 Northwest Arctic and Bering Strait Regions

The Northwest Arctic region is a borough, with Kotzebue being its regional center and the Northwest Arctic Native Association (NANA) as its regional corporation. The region includes the ten villages of Ambler, Buckland, Deering, Kiana, Kivalina, Kobuk, Noatak, Noorvik, Selawik, and Shungnak. The Northwest Arctic region is mainly comprised of Iñupiat people and it has a “mixed” local economy made up of subsistence, wage employment, and transfer payments.

The Bering Strait region was not incorporated as a borough and thus does not have a borough government. The town of Nome is the regional center and this region is comprised of the communities of Brevig Mission, Council, Diomedes, Elim, Gambell, Golovin, King Island, Koyuk, Mary’s Igloo, Saint Michael, Savoonga, Shaktoolik, Shishmaref, Solomon, Stebbins, Teller, Wales, and White Mountain. The local

corporation for this region is the Bering Straits Native Corporation (BSNC) and the local economy is “mixed,” comprised of wage employment, transfer payments, and subsistence activities. Both Siberian Yup`ik communities from Saint Lawrence Island and Central Yup`ik communities are included within this region.

In both regions, rural communities are located either along major rivers or the coast (Martin, 2005). The regional centers have human populations substantially larger than their rural counterparts and small hospitals, Native corporation offices, and government administrative centers are located there. Each of the rural communities within the region has schools, post offices, and health clinics.

3.3 North Slope History and the Iñupiat

The Arctic Slope of Alaska, also called the North Slope region, has been inhabited by the Iñupiat people for at least 11,000 years (Anderson, 1984). Archaeological and genetic research has provided more information on the time of arrival of the earliest peoples to the New World, although there is much speculation about Iñupiat people’s true geographical origin (Anderson, 1984). The Iñupiat are thought to be descendants of nomadic Asiatic people who crossed the Bering Land Bridge from Siberia (Spencer, 1959).

Historically, there were bartering and trading interactions between coastal and inland peoples on the North Slope and customary trading places existed, where people met their trading partners to exchange goods (Spencer, 1959). The North Slope Iñupiat commonly held a major trade fair at *Nigliq* on the Colville River Delta and primary trading resources were bowhead whale (*Balaena mysticetus*) meat and blubber and

dried caribou (*Rangifer tarandus*) skins (Chance, 1990). It was through trade, that partnerships and cooperative institutions were formed, by which both commercial goods and renewable resources could be exchanged formally and informally (Spencer, 1959).

The Iñupiat people of the North Slope first began interacting with white explorers as early as 1778, when Captain James Cook led an exploration along the Arctic coast as far as Icy Cape, halfway between Point Lay and Wainwright (Schneider & Libby, 1979). It was the crew of Captain Frederick Beechey who became the first set of Europeans to reach Point Barrow in 1826 (Milan, 1964). Other expeditions soon followed in the 1800s, but they had no pronounced impacts on the Iñupiat culture in comparison to commercial whaling, which ensued shortly thereafter (Bockstoce, 1978).

The venture of commercial whaling on the North Slope began in 1848, when Captain Thomas Roys' vessel, the "Superior," was able to move through the Bering Strait into the Arctic Ocean (Bockstoce, 1978). Many more whaling ships then made their way into the Chukchi and Beaufort Seas in the 1880s. These whaling ships were targeting bowhead whale, mainly for its oil, but also for its baleen which was used for women's corsets and skirt hoops (Bockstoce, 1978). The town of Barrow expanded, gradually becoming the service center of the North Slope, while nomadic settlement areas both inland and on the coast decreased in size.

The arrival of commercial whalers from New England and elsewhere had a marked impact on the Alaska Native population through the introduction of alcohol and diseases (Chance, 1966). For both maritime and inland people, alcohol and diseases proved to be the main avenue of cultural change and led to a period of cultural

disorganization. Starvation was also a common occurrence during the whaling period as whale, walrus, and caribou populations were decimated by commercial whaling fleets. Interior peoples also traveled to the coasts, enticed by the availability of goods, which meant increased competition with the Iñupiat people for subsistence resources. By 1907, the demand for baleen had decreased substantially, with the price dropping by nearly 75 percent and soon the whaling industry came to a close, returning the Iñupiat people to a transformed way of life (Gusey, 1983).

It is important to note it was during the time of the whaling industry that the Iñupiat people were exposed to Western traditions for a considerable length of time (Chance, 1990). They participated in the whaling industry by selling their labor as a commodity for assistance with the whale harvests and by selling whale products harvested on their own (Chance, 1990). As time went on, some Iñupiat slowly engaged with the wage economy while maintaining their subsistence way of life. The effect was to create a “mixed” economy that combined cash and hunting. However, subsistence sharing and trading with partners remained the major form of production and distribution (Spencer, 1959; Chance, 1990).

Other agents of change soon followed commercial whaling, including the reindeer industry, the fur industry, and the arrival of the missionaries. As early as 1892, reindeer herding was introduced by Sheldon Jackson during his career as Special Agent of Education for Alaska, in order to address the decline in food resources on the North Slope (e.g. caribou and bowhead whales) (Chance, 1990). Reindeer herds were imported from Siberia and Scandinavia, with Saami herders sent to teach the local

people the necessary herding skills. Alaska Native herders were responsible for taking care of their assigned herds and in return would receive a share of the animals they herded as compensation. This time 1892 to 1930, was another period of adjustment for the Iñupiat people of the North Slope, in the form of an introduced species and an economic source.

After World War I, trapping fox pelts quickly became the main commerce on the North Slope. Storekeepers bought the furs and by the 1920s, payment was made in cash and no longer exchanged for goods (Spencer, 1959). Fur companies had also started to set up posts at various locations on the coasts. Successful fur trappers could earn several thousand dollars a year and were then able to purchase subsistence equipment such as shotguns and rifles, which benefited their subsistence activities (Chance, 1990). Fur trapping allowed many Native hunters the same freedoms as their customary subsistence practices, but the fur trapping era ended with the arrival of the Great Depression of 1929.

Between the period of the Great Depression and the end of World War II, Spencer (1959) had observed within Iñupiat society a continuation of cooperation and interpersonal dependence. By custom, a successful hunter was expected to share his catch with community members who were less fortunate. The sharing of wild foods furthered cooperation between both kin and non-kin groups within communities.

During the middle to late 1930s, development in the form of missions, schools, and trading posts increased in Barrow and other North Slope communities.

Missionaries were a dramatic source of change across the region. They were sent by the

Bureau of Education and were in charge of not only teaching the Iñupiat children, but also overseeing the reindeer herding industry and providing medical services (Chance, 1990). They also prohibited certain cultural practices, for example abolishing the *qargi*, or men's houses, in which social activities and dances traditionally took place (Chance, 1990).

Further changes ensued when various disease outbreaks such as influenza, measles, and tuberculosis began to negatively affect the Alaska Native population following contact with explorers, whalers, and missionaries (Chance, 1990). Populations of Iñupiat people were either completely decimated or chose to relocate to new areas during the late nineteenth century and well into the twentieth. Changes also took place due to the creation of welfare and educational programs by the U.S. Bureau of Indian Affairs.

Shortly after World War II, with the initiation of post-war defense policies, the federal government took a strong interest in energy resources on the North Slope and began building infrastructure (Jorgensen, 1990). Local people were hired and it was common for many of the North Slope Iñupiat to serve in the Alaska Territorial Guard or to join other divisions of the U.S. military. Distant Early Warning (DEW-Line) stations were built all across the North Slope, with the purpose of detecting Soviet missiles during the Cold War (Chance, 1990). The development of these stations also increased wage employment opportunities and sparked economic growth throughout the North Slope region.

In 1944, the U.S. Navy carried out oil exploration in an area which was to be called the Naval Petroleum Reserve Number 4 and what is now known as the National Petroleum Reserve-Alaska (NPRO) (Tussing, Rogers, & Fisher, 1971). This area is located near Barrow and was explored for oil, natural gas, and similar resources. A cash economy began to emerge as employment opportunities increased and it produced a significant population growth for the Barrow area (Rogers, 1970).

3.4 Native Corporations and the North Slope Borough

One of the provisions of ANCSA was the creation of village and regional corporations that were in charge of managing corporation lands and capital for their shareholders (Arnold, 1978). The Arctic Slope Regional Corporation (ASRC), a for-profit regional corporation was formed under ANCSA and each of the North Slope communities also founded their own local village corporation. ANCSA granted the Arctic Slope Regional Corporation 4.6 million acres and \$22.5 million, of which the eight village corporations received portions (Bodenhorn, 1989).

Iñupiat community leaders intent on forming their own regional government succeeded in 1972, when the North Slope Borough was established. The borough incorporates 89,000 square miles or approximately 15 percent of the state of Alaska; the region ranges from Point Hope in the west to Kaktovik in the east (Morehouse & Leask, 1980). The North Slope Borough is the only non-tribal, Native controlled regional government in the United States.

The borough eventually became a home-rule government in 1974, allowing for taxing authority. Taxing authority enabled the borough to receive Prudhoe Bay oil

production revenues. In 1979 the borough had a taxable base of around 5 billion dollars (Morehouse & Leask, 1980). This tax base provided the funding to develop a \$370 million capital improvements program, where public service facilities could be built in Barrow and the other communities (Hess, 1993). The building of public infrastructure such as health clinics, new schools, and water/sewer systems, along with its maintenance generated a substantial increase in jobs available for the residents of the North Slope. Based on an expanded job market and an improved living standard, local people were enticed into remaining residents of the region. In spite of the introduction of Native owned corporations at the regional and local levels, and a substantial increase in the level of local engagement with the cash economy, the Iñupiaq subsistence livelihood seems to have been maintained along with its cultural tradition of sharing (Langdon, 1986).

3.5 The Wage and Subsistence Economies

The dual economies of wage and subsistence have existed side by side on the North Slope as far back as the period of commercial whaling (VanStone, 1960). The “mixed economy” of wage and subsistence initially began on the North Slope through trade, where Iñupiat traded products obtained through subsistence activities for highly desired Western supplies and goods. However, once a prominent cash economy emerged with the jobs gained through the onset of oil and gas development, the need to engage in subsistence activities became pressured in terms of time availability due to employment obligations (Luton, 1985). Yet, residents of the North Slope were able to balance their subsistence way of life with wage employment, aided by the establishment

of a subsistence leave program through employers such as the North Slope Borough and Native corporations. The use of equipment such as 4-wheelers and snow machines allowed increased productivity and a more efficient use of time (Ganapathy, 1996; Lonner, 1986). However, while there has been increased subsistence production through the use of modern equipment, there has also been an increase in the need for cash in order to maintain and obtain this equipment (Worl, 1982; Nowak, 1975).

Through the North Slope Borough's Capital Improvements Program (CIP), public sector employment opportunities for local residents increased substantially during 1976 and 1988. As employment opportunities grew, it was largely assumed that the wage economy would become more desirable to the Iñupiat and would eventually replace the subsistence way of life (National Research Council, 1993). A survey conducted in 1988 showed that the median Iñupiat household income increased from \$21,744 to \$32,500 (Kruse, 1991). However, research studies had indicated otherwise and instead showed that there were periods of time available for both wage employment and subsistence (Luton, 1985; Nowak, 1975). For example, in the late 1950s the village of Point Hope successfully combined the wage economy with its subsistence livelihood (VanStone, 1960). The wage economy was used to satisfy the need for material goods, while subsistence activities provided traditional foods and strengthened cultural ties.

North Slope communities continue to place a high value on their ability to engage in both the wage economy and subsistence way of life. In 1988, a study of North Slope residents showed that men working full-time jobs (12 months a year)

engaged in slightly more subsistence activities than those with less than full-time work (Kruse, 1991).

There are various explanations why North Slope Iñupiat continued to participate in subsistence activities despite the fact that there were job opportunities available. One possibility could be wage employment is considered lacking in its ability to provide an acceptable amount of support. The average employment activity for male Iñupiat is still below the national average (Kruse, 1991). Although there were jobs available on the North Slope, service jobs are mainly taken by non-Iñupiat in-migrants (ibid). Another reason could be that wage employment opportunities have never been consistent (Lonner, 1986). There may be the fear in the back of the average Iñupiat's mind that the current wage economy will not last forever, especially since it is based off of a non-renewable resource such as oil and its market (Kruse, 1991; Lonner, 1986). The belief may exist that eventually people need to continue to be engaged in subsistence activities to meet all of their needs. This theory may seem out of line with the general idea that most Iñupiat are by nature opportunistic and would seem to gravitate towards opportunities, instead of dually relying on a less efficient subsistence economy (Willmott, 1960). Perhaps the reasons for continued participation in subsistence activities relate to the role of subsistence in cultural identity and its maintenance of traditions that are valued and perceived as enjoyable by people.

The subsistence way of life may also provide intangible benefits, which wage employment is unable to. For instance, subsistence activities may be attractive to Iñupiat men because of their benefits of social interaction, personal challenges, and time

away from the village (National Research Council, 1993). However, subsistence activities embody cultural values and allows for their expression through acts of sharing, while also permitting local residents to relax and enjoy their natural surroundings (ibid). There still exists a connection between the Iñupiat and their natural environment despite their involvement with the wage economy. And in many ways, the land and sea contribute to the overall mental health and well-being of the Iñupiat people.

The wage economy differs from the subsistence economy substantially in the way it is carried out and the amount of social interaction that is involved. There is a strong reliance on individual effort in order for the wage economy to be successful, whereas the majority of subsistence activities are based on cooperative group efforts (VanStone, 1960). Hunting, fishing, and gathering that occur within communities are commonly undertaken in extended family groups as social activities. Most members add to the overall subsistence productivity of their family and therein resides a major difference between wage and subsistence economies. It is more common for subsistence products versus store-bought goods to be shared widely among family members, but many times they are also shared with non-kin relations (Bodenhorn, 1989). On the other hand, employment earnings are not shared so freely with family members and thus may result in weakening family relationships (Magdanz et al., 2002; Bodenhorn, 1988).

Finally, it is important to note that during the arbitration process of the Alaska Native Claims Settlement Act, Alaska Native leaders fought very strongly for two

components to be incorporated within the Act. First, a cash settlement would not be accepted if it did not include title to a generous land base which could provide for subsistence hunting and fishing. And secondly, Alaska Native leaders argued for the protection of their subsistence way of life through the idea of provisions going to the corporations representing the interests of the Native peoples (Anders, 1983). Alaska Native leaders saw the value of both the wage economy and the subsistence livelihood and therefore had the desire to accept one (a “new” source of well-being) and retain the other for their people. The subsistence way of life holds cultural meaning, including the extensive sharing of traditional foods, strengthening social interactions and relationships.

3.6 Subsistence Livelihood

The North Slope village economy was historically dependent on locally available renewable natural resources consisting of terrestrial and marine mammals, birds, fish, and plants. These resources were valued for their ability to sustain the Iñupiat people, but they also possessed spiritual and medicinal values. Renewable resources were harvested and used for food and hand-crafted products and at the same time were central for the social practice of sharing.

The traditional norms of Iñupiat subsistence generally do not allow for significant accumulation of harvested resources (Ganapathy, 1996). Whaling captains who store whale meat and *maktak* for later distribution at community feasts are not accruing traditional foods for themselves. Renewable resources are harvested and stored for the needs of the household, but are also distributed to community members

and households in need. The Iñupiat subsistence culture involves the harvesting of fish and wildlife resources, the organization of processing and storing, the distributive methods of sharing, and finally the consumption patterns of these resources (Luton, 1985). Each of these components were regulated by Iñupiat cultural norms and had a strong function in supporting the overall subsistence system.

Transfer payments are also a very important part of subsistence livelihoods across the North Slope. Permanent residents of the State of Alaska receive an oil dividend check annually and at the regional level, the Arctic Slope Regional Corporation provides oil revenue dividends to each of its shareholders. The Olgoonik Corporation in Wainwright and the Kaktovik Iñupiat Corporation in Kaktovik, each provide dividends to their local residents at the community level. Transfer payments are often times used to purchase subsistence equipment to supplement the subsistence livelihood.

3.7 Study Communities

As a part of this research I worked with the North Slope communities of Wainwright and Kaktovik. Despite both being located in the North Slope region, they have distinctive histories and characteristics. I will first describe the village of Wainwright.

3.7.1 The Village of Wainwright /Ulġuniq/

The village of Wainwright is located on the coast of the Chukchi Sea at 70 degrees, 40 minutes north latitude and 159 degrees, 50 minutes west longitude, approximately 300 miles above the Arctic Circle (Figure 3.1). The community is

situated on a slight peninsula formed by the Chukchi Sea and the Kuk River Inlet. This river, along with other rivers provides local people access to go up inland to fish and hunt (Luton, 1985). Wainwright is about 90 miles southwest of Barrow, the northernmost point of the United States and the main hub for the North Slope Borough and the Arctic Slope Regional Corporation.

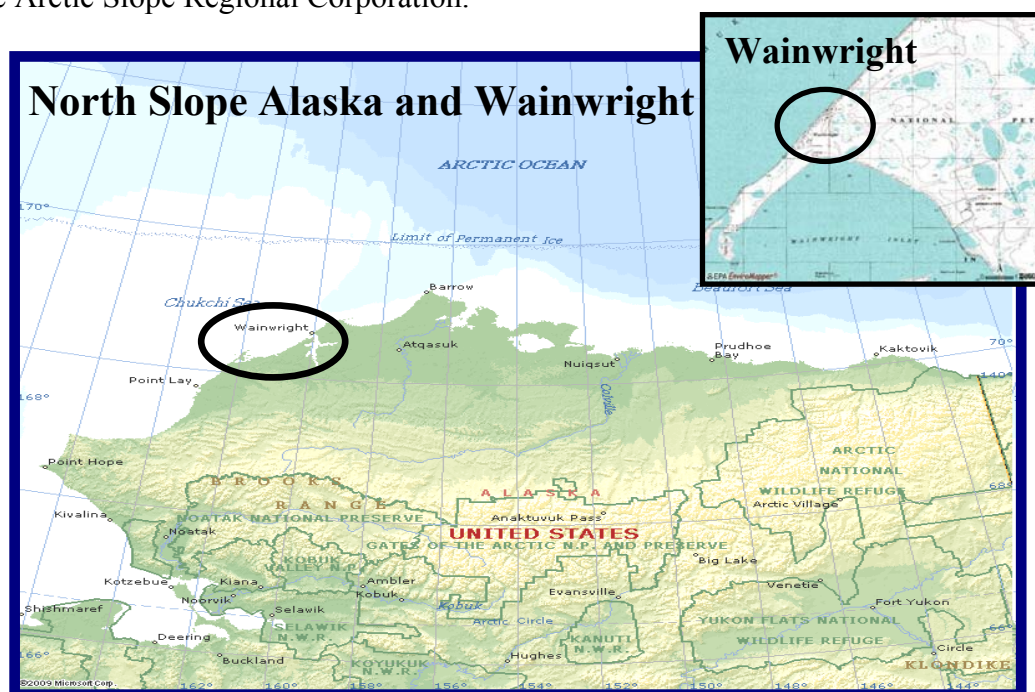


Figure 3.1 Map of Wainwright, Alaska
 (www.bing.com/maps, 2010) and (www.city-data.com/zips/99782.html, 2010)

3.7.2 History of Wainwright

There were people living in the area of present-day Wainwright for centuries. This original settlement was made up of the Kuugmiut, people of the Kuk River and the Utuqqaqmiut, people of the Utuqqaq River (Ivie & Schneider, 1978). There was also a group of people along the coast called the Sideromiut and they may have also

contributed to the village population. In 1882, the coastal area where Wainwright is located, had a population of roughly 80 people (Ray, 1885).

The Kuugmiut mainly occupied the area surrounding the Kuk River and the coastal areas near Wainwright, while the Utuqqaqmiut resided near the Icy Cape and Utuqqaq River regions (Luton, 1985). The Kuugmiut people focused largely on maritime resources, although travel inland along the Kuk River was fairly common. The Utuqqaqmiut people were known to follow caribou herds into the interior, and in comparison to the Kuugmiut hunted sea mammals less frequently. These two groups may have increasingly intermarried as populations fluctuated due to disease outbreaks caused by contact with non-Native explorers and whalers. Trade was also vital between the inland and coastal Iñupiat groups, as much needed inland products such as caribou skins could be traded for sea mammal oil that was vital for both heating and lighting (Luton, 1985).

The village of Wainwright was established in 1904 mainly due to the building of a school house. The structure was supposed to have been constructed closer to the inlet (at Thomas Point), but the building materials were off-loaded where present-day Wainwright is now located (Milan, 1964). School teachers were hired by the Bureau of Education and sent to Wainwright to teach the village children, as well as establish and manage the U.S. Post Office.

Two stores were established in the late 1930s within the village, one owned by an entrepreneur named Arthur James Allen and the other by the Midnight Sun Trading Company (Milan, 1964). With these stores came the year round availability of goods

and this consequently encouraged more people to settle in Wainwright. As with the other villages across the North Slope, Wainwright also experienced the boom and bust of the fur trading industry. Trading posts were a common venture and provided a cooperative avenue between the local white people and the Iñupiat (Schneider & Libbey, 1979).

In 1904, a reindeer herder's station was built at Wainwright inlet. Local reindeer herders were hired by the Wainwright Reindeer and Trading Company, under the authority of the Bureau of Education to manage and maintain the reindeer assigned to them (Bodfish, 1991). Between 1918 and 1934, herds grew to healthy population sizes, increasing from about 2,300 to 22,000 animals (Chance, 1966). To some degree, reindeer herding provided an additional means for the local people to travel and learn more about their area and its subsistence resources. However, reindeer herding soon went the way of commercial whaling, with the last herd disappearing in the 1950s due to overgrazing, predation, and disease.

Among the communities on the North Slope, Wainwright was fortunate to have access to naturally-occurring coal reserves. People within the area would harvest coal by dog team and use it to heat their homes. During the late 1880s before the village was founded, informal coal mines were opened which attracted local people to the area and in turn, coal was marketed to the steam whaling ships passing through the area (Jorgensen, 1990).

The population of Wainwright was continually in flux between 1890 and 1970, rising and falling with the industrial tides of coal mining, whaling, reindeer herding, and

fur trading. Despite the establishment of a reindeer station in 1904, the population did not increase substantially until the school was expanded in the early 1920s (Jorgensen, 1990). In the late 1940s and early 1950s, the population decreased as residents moved to Barrow looking for work (Luton, 1985).

3.7.3 Current Day Wainwright

Travel to Wainwright by airplane became increasingly more common in the 1970s, when electric landing lights were installed on the gravel runway in 1970 (Brosted, 1975). In addition, supplies were also delivered by ship once a year via the North Star III. This supply ship would provide the co-operative stores, Bureau of Indian Affairs schools, and private customers with an assortment of pre-ordered goods.

A co-operative village power station was established in 1967-1968, running on oil and in turn supplying electricity to local residents. Originally, the people of Wainwright used to cut blocks of ice out of a nearby lagoon in order to meet their needs for water, but a water treatment and supply station has since replaced this method (Brosted, 1975). Additionally, the community has a health clinic, a school with grades K-12, fire station, search and rescue office, solid waste facility, a hotel with a restaurant, two village stores (one now run by the Olgoonik Village Corporation), and two churches. Within the main part of town, there are also modest office buildings for the Village Council, Olgoonik Corporation, and the city of Wainwright. Residents of Wainwright also enjoy the comfort of modern housing with electricity and plumbing.

After Barrow and Point Hope, Wainwright currently has the third largest population within the North Slope region and is predominantly Iñupiat. From 1960 to

1970, Wainwright's population increased 19.68 percent and from 1970 to 1980, it increased by 22.2 percent (Rex, 1994). The increase in population size during this time is strongly attributed to wage employment provided by the North Slope Borough's Capital Improvement Projects program (Braund & Associates, 1993). The availability of jobs and a better standard of living gave local people incentives to remain in, or return to the community (Luton, 1985).

In 2003, the population was approximately 556 people, with a work force of 221, which is a significant increase compared to the earlier years prior to the start of the North Slope Borough's Capital Improvement Projects program (The North Slope Borough, 2010). Household composition had also changed significantly, from being headed by older couples to relatively young couples in their 20s and early 30s (Luton, 1985). These young couples were mainly unmarried and either with or without children. An increase in available housing provided younger couples the opportunity to live outside of their parent's and grandparent's homes (Luton, 1985).

3.7.4 The Mixed Economy in Wainwright

The village of Wainwright would be classified as having a mixed economy of subsistence and wage employment (Luton, 1985). Many residents either have full-time jobs or part-time seasonal jobs, with the majority being employed through positions created by the North Slope Borough, Village Council, Village Corporation, or the City of Wainwright. Yet the local people of Wainwright are able to maintain subsistence activities such as bowhead whale hunting, caribou hunting, and other subsistence pursuits. To some degree, the two ways of living complement each other (Jorgensen,

1990). Wage labor provides the ability to purchase subsistence equipment items such as all-terrain vehicles, snow machines, and motorized riverboats.

In a 1992 harvest survey conducted by the North Slope Borough, Department of Wildlife Management, marine mammals comprised approximately 51 percent of the overall harvest for Wainwright (Fuller & George, 1997). It is estimated that in an average year, marine mammals would ordinarily contribute more to the overall harvest, since in 1992 no bowhead whales were harvested (Fuller & George, 1997). Bowhead whales are usually harvested as early as mid-April to as late as early June, depending on ice conditions (Kassam & Wainwright Traditional Council, 2001). In years where no bowhead whales are taken, Wainwright residents rely on other North Slope communities for bowhead whale meat and *maktak*. Wainwright residents also hunt for other marine resources such as walrus (*Odobenus rosmarus divergens*), beluga whale (*Delphinapterus leucas*), and bearded seal (*Erignathus barbatus*) (Fuller & George, 1997). Walrus are harvested from mid-June to September, beluga in the summer from late June to early July, and bearded seals from as early as spring until the fall (Kassam & Wainwright Traditional Council, 2001).

Results from a survey conducted from 1988 to 1990, demonstrated that Wainwright residents harvested at least 46 species of fish, birds, and marine and terrestrial mammals (Braund & Associates, 1993). Marine mammals comprise the bulk of the community's total harvest, at approximately 69 to 70 percent (ibid). Terrestrial mammals contribute the second largest amount, averaging around 24 percent (ibid). Caribou are the single most important terrestrial species for Wainwright, with 748 being

harvested in 1992, representing approximately 87,514 edible pounds (Fuller & George, 1997). Caribou are harvested primarily in August and September, before they head into rut (Kassam & Wainwright Traditional Council, 2001). Waterfowl are also strongly harvested and a number of species are taken, such as: black brant (*Branta bernicla nigricans*), king eider (*Somateria spectabilis*), common eider (*Somateria mollissima*), and white-fronted geese (*Anser albifrons*) (Fuller & George, 1997). Black brant are commonly hunted from May to mid-July, in late August, and throughout September (Kassam & Wainwright Traditional Council, 2001). Both king and common eiders are hunted during their spring migration and white-fronted geese are harvested during their spring and fall migrations (ibid).

Rainbow smelt (*Osmerus mordax*) are by far the most common fish species harvested and are actively caught in the winter months of January and February, where they reside in large numbers in the lagoon close to the village (Fuller & George, 1997). Fishing is a fairly popular subsistence activity for Wainwright residents and about half of the village participates in this activity. Results from the 1988-90 survey, revealed the majority of Wainwright households are participating to varying degrees in the subsistence tradition, with about 88 percent taking part in at least one subsistence activity (Braund & Associates, 1993). It is assumed that spring whaling and caribou hunting engages a high level of participation by Wainwright residents.

There is local interest in the possibility of oil and gas development both onshore and off-shore in Wainwright. In general, there is support for off-shore oil development

and overall there is an interest in expanding current job opportunities, while also maintaining the subsistence way of life.

3.7.5 The Village of Kaktovik/*Qaaktuġvik*/

Kaktovik is predominantly an Alaska Native community located on the northeast corner of Barter Island; the two place names are used interchangeably (Figure 3.2). Barter Island is a barrier island about four miles across and situated in the Beaufort Sea, just within the Arctic National Wildlife Refuge (Jacobson & Wentworth, 1982). The island is 63 miles west of the Canadian border and 310 miles east of Barrow at 70 degrees, 7 minutes north latitude and 143 degrees, 40 minutes west longitude.

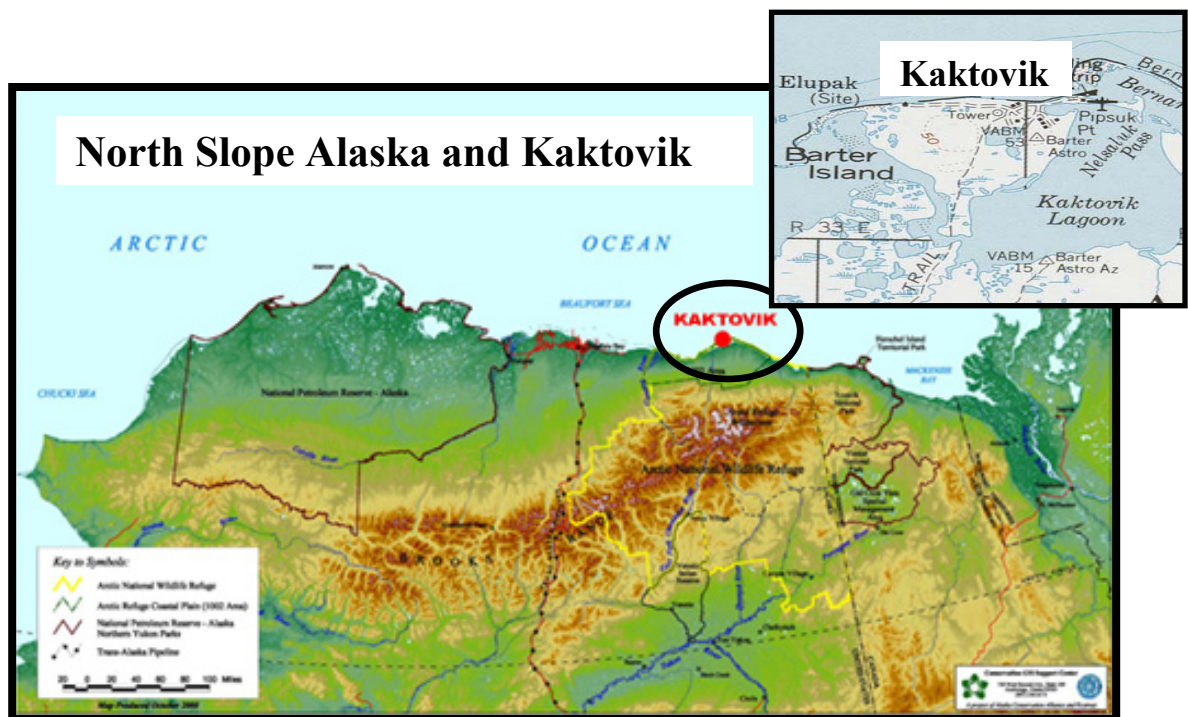


Figure 3.2 Map of Kaktovik, Alaska (<http://www.kaktovik.com/ourland1.html>, 2010) and (http://www.lib.utexas.edu/maps/topo/250k/txu-pclmaps-topo-us-barter_island-1983.jpg, 2010)

3.7.6 History of Kaktovik

In the Iñupiaq language, Kaktovik or *Qaaktuġvik* means “the seining place”. Kaktovik for hundreds of years was the traditional site of trade and cultural exchange between Canadian Inuit and various Iñupiat/Inuit groups across the Arctic Slope region (Libbey, 1983). Gwich’in Athabascan people living to the south were also known to have visited Kaktovik to trade for coastal resources and non-local goods such as tea, sugar, and tobacco. Kaktovik was not established as a permanent settlement until 1964 and prior to that, nomadic hunting groups had traversed the landscape and sea searching for subsistence resources such as caribou, marine mammals, Dall’s sheep (*Ovis dalli dalli*), fish and waterfowl.

Many explorations of this region took place in the early to mid-1800s, by men such as John Franklin and Thomas Simpson (Nielson, 1977). The presence of Iñupiat at Kaktovik was documented, as well as elsewhere along the coastline. As in the Chukchi Sea, commercial whaling also ensued in the Beaufort Sea during the 1890s and early 1900s. Whalers traveling to Herschel Island and the MacKenzie region in Canada commonly used Kaktovik as a stopover (Nielson, 1977). Even with the constant passages of European explorers and American whaling vessels, contact with the Iñupiat was minimal in comparison to the interactions in Barrow. Life in Kaktovik during this period remained fairly similar to its past, despite contact with white local traders and Presbyterian missionaries from Barrow (Chance, 1990).

In 1923, Tom Gordon established the first trading post east of the current village of Kaktovik and thus introduced the community to the fur trapping market and the cash

economy (Jacobson & Wentworth, 1982). More people from the area began moving to Kaktovik once the trading post was founded, but the majority still maintained a semi-nomadic life, supplemented by the trapping economy. People had seen hard times prior to the arrival of the trading post and were now able to purchase supplies with store credit earned from trapped furs.

It was during the 1920s under the funding of the Bureau of Indian Affairs that reindeer also were brought into the Kaktovik area (Chance, 1990). Active reindeer herders stayed out on the land, watching their herds for months at a time and were able to maintain their hunting traditions in addition to herding for wages. Reindeer herding in the Kaktovik area ended around the late 1930s or early 1940s, primarily due to a weak market economy for reindeer meat.

The market economy of fur trading ended in the late 1930s and after the end of World War II in 1945, the United States Air Force took an interest in the Kaktovik area as a site for development of an airstrip and hangar facility, as well as a Distant Early Warning (DEW-line) radar station (Nielson, 1977). Between 1953 and 1957, the construction of these sites provided employment for local residents, while also causing several village relocations (Nielson, 1977). During the initial process, local residents were hired on as construction workers and later as maintenance and repair men. In 1962, the average DEW-line employee was earning \$600 a month or more in Kaktovik (Chance, 1966). In addition to this, the U.S. Coast and Geodetic Survey began mapping the Beaufort seacoast bringing the opportunity for some wage employment. The

immediate introduction of Western culture generated shock waves throughout the village, a community that had lived primarily in isolation.

With the establishment of a school in August 1951 and the increasing availability of jobs, the population grew with people either returning to Kaktovik from Barrow or from Herschel Island, Canada. The 1950 U.S. Census had counted 46 people, but by 1951, there were eight families totaling 86 people. By the spring of 1953, the population had increased to 140-145 people (Jacobson & Wentworth, 1982).

3.7.7 Current Day Kaktovik

The year 1972, marked the beginning of the North Slope Borough's Capital Improvement Projects (CIPs), which were responsible for much of the region's modern infrastructure developments. A majority of the current housing in Kaktovik was built in 1973, all of which receive electricity from the local power plant and running water treated by a sewage treatment facility (EDAW, Inc. & Adams and Russell Consulting, 2008). Several housing construction projects through federal programs, such as the U.S. Department of Housing and Urban Development (HUD), have added more modern dwellings in the past twenty years.

Kaktovik has similar infrastructure to the other North Slope Borough communities. There is a K-12 grade school, a health clinic, police and fire stations, a post office, two grocery stores, two hotels, and a community center (EDAW, Inc. & Adams and Russell Consulting, 2008). Additionally, there are office buildings for the Village Corporation, the city of Kaktovik, and the Village Coordinator and Teleconference center.

There were 286 residents in Kaktovik in 2003, with a labor force of 98 people (The North Slope Borough, 2010). In 2000, 53 percent of the population was composed of males and the remaining 47 percent was female. Also in 2000, 39 percent of the population was under the age of 20 and 7.5 percent was over the age of 65. The community during the year 2000 had 95 houses, of which 89 were occupied (EDAW, Inc. & Adams and Russell Consulting, 2008).

3.7.8 The Mixed Economy in Kaktovik

The establishment of the North Slope Borough created an economy in Kaktovik that mixes both wage labor, business, and subsistence activities. The modern infrastructure that developed in Kaktovik during the 1970s and 1980s requires management and maintenance based on a labor force. Full-time employment opportunities exist in Kaktovik with the North Slope Borough, Kaktovik Iñupiat Corporation (KIC), or the City of Kaktovik (EDAW, Inc. & Adams and Russell Consulting, 2008). Temporary construction projects and the North Slope Borough mayor's job program offer the availability of seasonal work, and there is also limited employment available with private sector jobs and businesses, which include a hotel, an air carrier service company, and a village store.

Seasonal work is appealing to a certain segment of the population that enjoys the flexibility of participating in subsistence activities (EDAW, Inc. & Adams and Russell Consulting, 2008). Most seasonal work is offered during the summer, where long days allow employees the opportunity to hunt once they get off of work. On the other hand,

permanent full-time employees limit their subsistence activities to the weekends, vacations, and sometimes after work during the summer months.

A 1992 survey showed that Kaktovik residents were actively engaged in the wage economy with 78.6 percent having some sort of employment during the study year and 44.2 percent having year round employment (Pedersen, 1995). On average, employment for each adult was about 7.9 months out of the year and the average number of jobs held per person was 1.4 (ibid). At least 85.1 percent of households had approximately 1.9 adults employed and within each household, there was an average of 2.8 jobs held (ibid). The majority of jobs (53 percent) were with local government entities, while the local school, private services, and retail included the rest (EDAW, Inc. & Adams and Russell Consulting, 2008). The survey also estimated the average household income was \$55,688, with the per capita income estimated at \$18,176. Unearned incomes such as pension checks, social security, Alaska Permanent Fund dividends, and regional/village corporation dividends were estimated as an additional \$2,789.65 per capita or about 15 percent of the per capita household income.

Subsistence resources continue to be of considerable importance in Kaktovik's rural economy. Kaktovik is located in a prime subsistence area, with easy access to terrestrial and marine resources. In a joint study conducted by Minerals Management Service and the Alaska Department of Fish and Game, Division of Subsistence in 1993, the average Kaktovik household used approximately 16 different kinds of locally harvested resources and harvested approximately 8.6 resources, while sharing 7.7 different resources (Pedersen, 1995). Additionally, the average household in Kaktovik

also received approximately 10.5 different types of resources from other households within the community.

The typical Kaktovik household in 1993 used around 2,713.3 pounds of harvested resources (Pedersen, 1995). This high amount was attributed to a successful whaling season, where three bowhead whales were harvested. In total, bowhead harvests supplied 63 percent of the estimated harvest for the community in that year (Pedersen, 1995). During years where bowhead whales are not harvested, other resources such as caribou and bearded seals may be more actively hunted. Kaktovik only hunts bowhead whales in the fall, during the months of September and October. This small time frame means whaling is limited, whereas fishing and hunting can be relied upon all year round.

Bearded seal is also an important marine resource, whereas walrus are rarely harvested because Kaktovik lies to the north of their migration route (Fuller & George, 1997). Caribou are the most common terrestrial species harvested. Sometimes animals from the Porcupine Caribou Herd may calve in areas near Kaktovik or in the eastern part of the Arctic National Wildlife Refuge, while the Central Arctic Caribou Herd may calve in the western part of the refuge (Pedersen et al., 1985). Annually, the community harvests between 43 and 172 animals, averaging 126 caribou in six years (Pedersen, 1990). Caribou are hunted mainly during the month of July (Brower et al., 2000). Both Dall's sheep and muskox (*Ovibos moschatus*) are harvested in areas to the south of Kaktovik annually; Dall's sheep during the months of October through March and muskox primarily in October, November, or March (Brower et al., 2000).

The 1993 study (Pedersen, 1995) showed that of the sampled households in Kaktovik, 96 percent relied upon locally harvested fish and game species to some extent. Households were very much engaged in the subsistence livelihood, as 89 percent of the sampled households attempted to harvest local resources during the study period. The greatest amount of household level subsistence participation was linked with fall whaling, while approximately 40 percent of the households participated in caribou hunting, sheep hunting, and fishing (Fuller & George, 1997). Households within the community were also actively sharing the fruits of their labor, with 92 percent receiving shares of harvested resources from other households and 83 percent giving away harvested resources to other households (Pedersen, 1995). Residents in Kaktovik continued to remain active in their subsistence way of life and this engagement included the traditional act of sharing.

Proposed oil development in the Arctic National Wildlife Refuge represents a considerable source of controversy for residents of Kaktovik. There are local concerns regarding oil development both on and off-shore because of apprehension about potential impacts to subsistence as a way of life for future generations. Yet, there is also great desire for more employment opportunities.

3.8 Conclusion

In this chapter, I have provided some information on the Northwest and Bering Strait regions of Alaska as they represent two of the three regions used in the Survey of Living Conditions in the Arctic study. The third region was the North Slope, where I had focused my qualitative research study. Included in this chapter is historical

information on the North Slope region and the Iñupiat people, with a concentration on the wage economy and subsistence culture. I also provided information on the history, current conditions, and mixed economies of my qualitative study communities of Wainwright and Kaktovik. I presented this detailed information in order to introduce the historical drivers, which led to present-day circumstances, and thus provide a broader picture of both of my study communities.

CHAPTER 4 QUALITATIVE APPROACH

4.1 Chapter Objective

The objective of this chapter is to present my qualitative research methods and research findings. Through the use of semi-structured interviews, I sought to determine the reasons why people share traditional foods, when and with whom people share with, how people share, whether sharing of gear occurs before people go hunting, and if the sharing of traditional foods has changed. I used a qualitative approach to contrast results with the quantitative method presented in Chapter 5. The goal of this comparison is to determine the strengths and weaknesses of each approach for monitoring change in social-ecological systems of subsistence.

4.2 Method

I used semi-structured interviews to document qualitative information about food sharing, following a set of constructed questions (Bernard, 2006). I developed questions based on a review of ethnographies about North Slope communities and food sharing, and in consultation with the staff at the North Slope Borough Department of Wildlife Management (see Appendix A for the questions used).

Interview questions asked about:

- Formal and informal rules for sharing some of the animal species that are harvested in the North Slope region of Alaska?
- Whether there were rules for how one should share and what is shared?
- The occasions when people would share?
- If bartering and trading is a part of subsistence sharing?

- If and how people were sharing equipment, gas, or time?
- If community members had seen changes in the sharing of traditional foods throughout their lifetimes?

The interview questions were pre-tested with North Slope Borough Department of Wildlife Management employees who were Iñupiat residents of Barrow in order to assess the suitability and understandability of the questions. Based on the results of the pre-test and the helpful feedback of respondents, minor modifications were made.

The interview questions, including a copy of the informed consent form, were submitted to and approved by the University of Alaska Fairbanks Institutional Review Board for Human Subjects (# 08-50 accepted June 17, 2008; Appendix B).

During the summer of 2008, I conducted both individual and group interviews with community members in the villages of Wainwright and Kaktovik. On the North Slope, I interviewed a total of 22 people during June and July of 2008. Out of the 22 people interviewed, five people were interviewed in Barrow and three of those were interviewed as a group (Table 4.1). Although Barrow was not one of my study communities and the interviews conducted were pre-test interviews, the information acquired was used in the data analysis because Barrow is an Iñupiat community and because of the good quality of the data. Subsequently, I conducted seven interviews in Wainwright and ten interviews in Kaktovik (Table 4.1). I received assistance from the North Slope Borough Department of Wildlife Management subsistence specialists in both communities in order to schedule interviews with potential respondents.

Subsistence specialists are locally hired individuals who work for the Department conducting subsistence harvest surveys.

Table 4.1 Number of Respondents Interviewed in 2008 and 2009

Community	2008	2009
Barrow	5 respondents	————
Wainwright	7 respondents	14 respondents (6 of the 7 in 2008 + 8 new respondents)
Kaktovik	10 respondents	11 respondents (7 of the 10 in 2008 + 4 new respondents)
Total	22 respondents (14 males, 8 females)	35 respondents (20 males, 15 females)

My sampling objective was to select respondents who were active hunters representing a range of ages, or respondents who were spouses of active harvesters. Active hunters were specifically asked to participate because it was assumed they would know first hand how traditional foods are commonly shared. Similarly, ethnographies from the North Slope of Alaska describe the active role taken by women in distributing harvested animals and fish brought in by their husbands, partners and family members (Bodenhorn, 1990). I used a simple non-probabilistic sampling strategy to select respondents that represent the diversity of residents in the community. North Slope Borough Department of Wildlife Management Subsistence Specialist staff members in both Wainwright and Kaktovik who were familiar with people in their respective communities, took an active role in selecting participants. Because of the Subsistence Specialist orientation towards harvesting, a focus was put on interviewing community residents who were highly engaged in subsistence harvesting and were knowledgeable

elders. The target number for each community was 15 to 20 interviews. The subsistence specialist in Wainwright provided Iñupiaq language translation for one respondent who requested this service. The interviews in Wainwright were primarily conducted in the North Slope Borough Village Coordinator's office, while a few were conducted within the homes of respondents. Interviews conducted in Kaktovik were carried out primarily in people's homes, with a few conducted in the Village Coordinator's office or at the respondent's place of work.

In both communities, the people who agreed to participate in this food sharing study were doing so on a voluntary basis. To some degree, my study relied on whether people interested in being interviewed happened to be in town and available during the research period. There is no way of knowing whether those who chose not to participate in the study differ in their sharing practices from those who participated.

During July of 2009, I returned to Barrow, Wainwright, and Kaktovik in order to present my initial research findings from the previous summer and gain feedback on my understanding of traditional food sharing. When returning to Wainwright and Kaktovik, my goal was to present and receive responses from the people I interviewed during the previous summer. In Wainwright, I was able to conduct follow-up interviews with six of the seven people previously interviewed, and an additional eight people, three of which were in a group interview, making it a total of fourteen people (Table 4.1). In Kaktovik, I interviewed seven out of the ten people previously interviewed, and conducted 4 additional interviews, for a total of 11 interviews (Table 4.1). I also burned the digitized audio recordings of each of the 2008 interviews onto a

compact disk (CDs) and gave each person a copy of their own interview. Both the actions of returning to the community in order to gain feedback and giving out the CDs appeared to be well received by community members.

The digital recordings were transcribed with Express Scribe software (<http://www.nch.com.au/scribe/>). Transcribed interviews were then downloaded into ATLAS.ti version 5.3, a qualitative data analysis software program for systematically coding and annotating data. Qualitative coding is defined as “the process by which segments of data are identified as relating to, or being an example of, a more general idea, instance, theme or category” (Lewins & Silver, 2007, p. 81). Annotation is a method used to note or comment on other materials including codes (Lewins & Silver, 2007). The interviews conducted were focused on a predetermined set of questions, but in the analysis an inductive process was used to generate themes from interviews, allowing codes to emerge as different topics were touched on by respondents (see Appendix C).

I categorized each of the respondents by combined community representation. There was a range in the categories of respondents in regards to age, employment, and their status (Table 4.2). In total, 35 people were interviewed for both 2008 and 2009. I organized the age groups into three categories of 20-39, 40-59, and 60 years and above. Employment was categorized into full-time, part-time or seasonal, and retired, while status was categorized into single, married, or widowed. In regards to age, there were seven respondents within the 20-39 range, eighteen in the 40-59, and ten in the 60 and older range. Within the category of employment, there were 20 full-time workers, eight

part-time or seasonal workers, and seven retirees. And lastly, there were eight single people interviewed, 23 who were married, and four who were widows. The average length of the interviews was approximately 45 minutes.

Table 4.2 Categorical Groups for Both Wainwright and Kaktovik Combined

Age Groups	Employment	Status
20 to 39 years old = 7	Full-time = 20	Single = 8
40 to 59 years old = 18	Part-time or seasonal = 8	Married = 23
60 and above = 10	Retired = 7	Widowed = 4

4.3 Results

My analysis of the interview data generated themes that reflected dimensions of household sharing as a social process, as perceived by the local residents. While some themes were consistent with those that I anticipated beforehand, others emerged and added to my overall understanding of sharing. Below I present the responses to questions, organized by findings for each theme. In my presentation of data, I sought an emic representation, a representation from the perspective of the respondents I had interviewed. Respondents were asked to talk about how their households share traditional foods, although there are places they referred to their communities as a whole.

I have organized the presentation of interview findings by first addressing the question of why people share, identifying respondents' reasons by category. This section is followed by a discussion of how people share, in which I describe results first by species and then by examining various social dynamics and institutions that shape

the sharing process. Finally, I report on respondents' perceptions of how subsistence sharing systems have changed through time.

4.3.1 Why People Share

Respondents reported many reasons why they share traditional foods. In this section I present those reasons, using the categories of maintaining a cultural tradition, avoiding waste, benefiting from good luck, providing a good feeling, giving and taking (balanced reciprocity), forming a relationship with animals, remembering hard times, and having pride (Table 4.3).

Table 4.3 Cited Themes for Why People Share

Reasons “Why People Share”	Number of Respondents who Mentioned Theme	Percent of Total Mentions of Categories by Respondents N = 35	Mentions by Respondents Age Group (%) 20 to 39: N = 7 40 to 59: N = 18 60 & above: N = 10	Mentions by Respondents Employment Group (%) Full-time: N = 20 Part-time: N = 8 Retired: N = 7	Mentions by Respondents Status Group (%) Single: N = 8 Married: N = 23 Widowed: N = 4
Cultural Tradition	16	46	20 to 39: 14% 40 to 59: 67% 60 & above: 30%	Full-time: 45% Part-time: 38% Retired: 43%	Single: 25% Married: 48% Widowed: 50%
Avoiding Waste	15	43	20 to 39: 29% 40 to 59: 39% 60 & above: 60%	Full-time: 40% Part-time: 25% Retired: 71%	Single: 38% Married: 43% Widowed: 50%
Good Luck	13	37	20 to 39: 14% 40 to 59: 44% 60 & above: 40%	Full-time: 35% Part-time: 50% Retired: 43%	Single: 38% Married: 39% Widowed: 50%
Good Feeling	12	34	20 to 39: 43% 40 to 59: 28% 60 & above: 40%	Full-time: 25% Part-time: 25% Retired: 57%	Single: 25% Married: 35% Widowed: 25%
Giving and Taking	8	23	20 to 39: 43% 40 to 59: 28% 60 & above: 0%	Full-time: 15% Part-time: 38% Retired: 0%	Single: 25% Married: 17% Widowed: 0%
Rel. with Animals	7	20	20 to 39: 14% 40 to 59: 11% 60 & above: 40%	Full-time: 10% Part-time: 13% Retired: 29%	Single: 25% Married: 13% Widowed: 0%
Memory of Hard Times	5	14	20 to 39: 0% 40 to 59: 11% 60 & above: 30%	Full-time: 5% Part-time: 0% Retired: 71%	Single: 0% Married: 9% Widowed: 50%
Pride	3	9	20 to 39: 14% 40 to 59: 11% 60 & above: 0%	Full-time: 5% Part-time: 25% Retired: 0%	Single: 13% Married: 9% Widowed: 0%
Total	79	-----	-----	-----	-----

4.3.1.1 Maintaining a Cultural Tradition

Nearly half (46%) of the people interviewed attributed their actions of food sharing to a cultural tradition they were taught by either their parents or grandparents and it was a sentiment expressed very strongly by middle-aged respondents (66%) (Table 4.3). This tradition was imparted through active words and through example.

The lesson of sharing was eloquently put by an active hunter who said:

I want to go back to what I had learned when I was younger, that's how it was imprinted on me, where it was a way of life that I saw. Within my dad and how my dad did things, to me was so obvious of an example of if you have plenty, you need to give and that's how I learned. (NS Interview #5)

Many felt that this was the appropriate way to be brought up and to live, and they were passing on the tradition to their children who would, in turn pass it on to their children.

As one person put it:

They just pass it on from generation to generation. Like me, I learned from my parents and my parents learned from their parents and their parents learned from my great grandparents. It just goes on and now I'm teaching my son and pretty soon as the grandchildren grow, it'll pass on to the grandchildren, so it just keeps going on and on and on. That way, you know, they'll know that Iñupiat were sharing and caring people. (NS Interview #23)

According to many, this tradition is firmly a part of Iñupiat culture. These reasons were explained in this way as, "We know which people don't have food and can't afford to buy food, you hunt for them; it's our culture" (NS Interview #3) and "We never forget them because that's our Native culture" (NS Interview #12).

Respondents noted that the sharing tradition occurs all across the North Slope and sharing is ubiquitous, a tradition that has lasted for as long as people remember, and a tradition that no one wants to see disappear.

The tradition and continuity of sharing is maintained through the teaching of the younger generations. People explained that within the Iñupiaq culture, a young hunter's first harvest of any species is supposed to be given away; the hunter is not allowed to keep any of it. Such ideas were expressed in this way, "When a young hunter goes out and catches his first caribou it is automatically given to the elder; shared. It's a given that anything first that you catch is given away" (NS Interview #5). It is believed that if a hunter gives away his first catch then it would be easier for him to harvest that particular species in the future. This belief was stated in this way:

If I wanted a caribou, I know I can get some, I can get one; it doesn't bother me. But with some people they'll hunt and hunt and hunt and they'll come back empty and I really don't know why they are having such a hard time getting animals. Might be because the first one...the first caribou they caught didn't get distributed out to the elders or even throughout the town. (NS Interview #27)

During an interview, an elder recalled and shared his story of when he caught his first bearded seal (*Erignathus barbatus*):

I was about 11 years old and my brother was 9, we went out with dog team out in the ice in May and we got our first bearded seal. We were too small to...we had a hard time putting it on the sled and it took us all day to get home. Boy, I thought I was going to have some fresh bearded seal, but we were tired, we went home, and my mother fed us and we went to sleep. Next morning I went out, not even a little scrap of that

bearded seal was outside my house, it did get distributed throughout the whole town except for our family. So my father waited for me and we went out the next day and we got another one. (NS Interview #27)

Sometimes a young hunter may not understand the lesson being given when he or she is told that they must give up their freshly harvested animal. For example an elder in Kaktovik had said:

My grandson got his first caribou and asked me why I gave all of his caribou meat away. I told him that when you catch your first animal, you have to give it to all the elders. I got a piece because I am an elder too. He was kind of upset that I gave it all away to everybody and I told him that this is the way you start off your life, by sharing. You can't be greedy with anything, if you're going to be greedy and think like that, you're not going to be a hunter, you're going to be a poor hunter. (NS Interview #7)

The continuation of the tradition of a hunter's first harvest being given away pleases many elders. An elder mentioned this during his interview:

Right now, we have more food, this summer again you know. That's why young people go hunting and get their first caribou and they never stop. When a young boy goes out hunting for his first time and he gets his first animal, he gives the whole thing away to elders. Elders are really taken care of up here in our village. Everybody knows. (NS Interview #12)

Another respondent had said:

When my boys got their first caribou, they shared it with their *aaka* (grandmother), *aapa* (grandfather), and elders. It always goes to the elders; that's what we were taught. So a boy just recently shot his first caribou and went to distribute it to the elders. It made the elders so happy; some of them were even wanting to cry because this kid did that.

He went hunting for them, primarily. (NS Interview #11)

For many of the young hunters who give their first animal away, they are building a relationship with the person whom they share. Items such as shotgun shells and bullets may be provided to young hunters to encourage them to continue with their hunting pursuits.

4.3.1.2 Avoiding Waste

Traditionally within the Iñupiat culture, food resources were shared within one's own family or kinship network. However, once enough food is secured for one's immediate family, food is shared with extended family members, neighbors, and friends to the extent that food is never wasted. "Avoiding waste" was the second most salient reason for sharing (43%) and it was primarily elders (60%), which stated this reason (Table 4.3). A respondent explained it as follows, "So I think that's one of the real important reasons why we share subsistence foods, it's because it's fresh from the land, it's fresh from the sea, fresh from the sky, and you don't want it to spoil, you don't want it to rot" (NS Interview #4). Similarly, another person said, "That's what I do, I try to

get rid of all the good stuff while it's still good. When it gets old, it's no use to give away. When it's fresh, it's good to give it away" (NS Interview #13).

It is very important that traditional foods are not wasted even when they are not fit for human consumption. In this sense, subsistence resources may go towards feeding dogs, which are now rarely used for dog sledding, but serve as alarms when there are polar bears (*Ursus maritimus*) roaming through the community. There is commonly food available for dogs when a whaling captain and his family are cleaning out their ice cellar before the start of whaling season.

Finally, a unique response to the question of why people share came from an elder who was still actively hunting and fishing was expressed as follows:

I share because I like to give when somebody asks for food. I like to hunt. If I am stingy with my food, my stock of food would last forever. I can't eat all of the food I catch and I would have too much and would have no reason to go out hunting and fishing again. Cause you have to eat up and use up whatever you have. (NS Interview #8)

In others words, active hunters are going out to harvest and food is consistently being shared with others, so they have a reason to go out and get more.

4.3.1.3 Benefiting from Good Luck

There is the notion that the more you share, the more you will harvest in the future. The theme "benefiting from good luck" was mentioned by 37 percent of the respondents, primarily by the middle-aged (44%) and by elders (40%). Young hunters

were taught to share and parents would tell them that sharing allows them to harvest more the next time around. This belief is reflected in this respondent's words:

Growing up I was taught to share food with other people and then you will have better luck hunting the next time you go out. That's the story I have heard before. For instance, if I got a caribou and were to share it, I would be able to get more caribou the next time I go out hunting. It's an Inupiat belief. (NS Interview #17)

Another respondent stated this belief as:

It comes back, it does. The way I look at it is when we go out, it becomes easier to catch game. As my mom commented on it, that guy's a good hunter cause he shares. Or there's a word too that the elders use, *signatuitchuaq inuk niqsa yuktuk*, "those that are not stingy are good hunters", so the game is easy to catch for them. (NS Interview #9)

A few people associated the good luck they enjoy, with people sending them good thoughts and prayers. As a case in point, elders may not be able to return in kind what you have shared with them, but they can give back in return through the power of prayer; prayer to keep a hunter safe and to allow a good harvest.

4.3.1.4 Providing a Good Feeling

Thirty-four percent of respondents remarked on how it made them feel good when they shared traditional foods with families or people who they knew may need the help, and this sentiment was remarked on predominantly by younger (43%) and older (40%) respondents (Table 4.3). The good feeling that it gives people is enough of a

reason for some people to share. One young hunter had said, “I get a certain satisfaction of providing for people. And I go and give it to them, they are happy to receive it, happy to get it mostly” (NS Interview #39). Another respondent elaborated on the feeling by saying:

You want to share it, you want to make friends, you want to make people smile, you want to make people feel warm and welcoming. You want to make them know you. You know, where they’re going to recognize you every time they see you, “Hi so and so, thank you for the *maktak*, thank you for the ducks, thank you for the geese.” And it makes you feel good inside. Oh yeah, it’s like make a basket and swish. You know that kind of feeling. (NS Interview #4)

For the people who are receiving from others, they also feel good inside when someone stops by to drop off traditional food. For example, an elder said during an interview, “Today two people you hunt, if first time caribou, he brought us some meat and another one brought us some meat. You know why because my feeling is crying, tears come out. Because they remember that, they never forget it, you know the feeling is thankful” (NS Interview #12).

Lastly, the good feeling it gives people when they share may for some people stem from their ability to relate to the people they are sharing with. For example, a respondent referred to his wife’s sharing:

My wife loves to feed people, no matter who they are. She grew up needy with her father, her mother had passed away. She helped in the

raising of her younger sisters and younger brother. She was the oldest in the family and when she was six years old, she started raising her siblings. She knows what it feels like to be hungry. (NS Interview #5)

For many, just the good feeling of sharing with others provides satisfaction and a reason to continue sharing.

4.3.1.5 Giving and Taking (Balanced Reciprocity)

Many respondents commented on the unpredictable nature of harvesting traditional foods. It was stated that a person can have good fortune one year and the next year may not be so lucky in harvesting subsistence resources. Respondents noted that because of this uncertainty, one needs to share, because you may need to receive from others during harder times. These responses were grouped into the theme of “giving and taking” and 23 percent of respondents mentioned this theme as one reason they shared (Table 4.3). This was additionally a theme that was mentioned by only younger (43%) and middle-aged respondents (28%). It was also stated that the family or person you share with will reciprocate the gesture once they have the ability to harvest resources. It was commonly said, “If you share, if you need something then people will give back, that way you’ll always have something” (NS Interview #6). Or more specifically,

If we know of somebody who has no traditional food and we have plenty to share, we will gladly share with that person, no matter if it is one big bag or one gallon size bag of meat. Then when that individual has something to give away, they won’t forget what we had given them.

When things get better for them, they will give things in return. (NS Interview #18)

In certain situations, the sharing of traditional foods was reported as deliberate, as illustrated in the quote below:

When I came back I had a whole bunch of smoke salmon I brought back with me. Go to those households that I visit frequently that feed me when I go to visit. I give them smoked salmon or whatever kind of goodies that they don't get. That's how I see a fit way to share, is if I visit frequently and I'm over for dinner once or twice a week, that's obviously you're sharing with me cooked food. I'll bring you the food in the raw because I know that I'm eating it, eating dinner at your house. Not necessarily because they're needy per say, it's give and take. (NS Interview #39)

In other words, respondents indicated they remember who has shown hospitality or acts of kindness in the past and will do so in return.

Respondents also reported that a person may casually return traditional foods to someone who had shared in the past. It is when someone has something to give back in return that sharing is reciprocated. For instance:

I have an employee who just recently retired and he's an elder, he's 63. He would have too much of certain foods and he'd ask me if I want some because I've got children you know and my children enjoy Native foods. And I'd say, "Sure." And that's a gift from him. He doesn't expect me

to give anything back, but later on maybe a few months down the line, you know it's caribou hunting season. He'll say, "Do you have any fat caribou?" and I'd say, "Sure, you want some?" and I'll give some to him.

(NS Interview #25)

In this aspect, people are sharing food because they believe that people will share with them at a later time, when they are in need or when someone has plenty to share. Food is also shared when people would like to give back to the people who had shared freely with them in the past.

4.3.1.6 Forming a Relationship with Animals

Twenty percent of the interviews illustrated that the Iñupiat people view their fish and animal resources not just as sources of food, but also as resources that provide both cultural and spiritual sustenance (Table 4.3). The theme of "forming a relationship with animals" emerged and it was primarily elders (40%) who mentioned this theme (Table 4.3). Animals are to be treated with respect and a deep relationship between a hunter and his or her quarry are expressed through hunting, fishing, and sharing. It is believed by some hunters that if an animal is hunted with reverence and distributed through acts of sharing, it will be easier for a hunter to harvest more in the future. Such a perception was succinctly said in this way, "That's what I learned from my family, after you share, animal come to you, no problem" (NS Interview #37). A young hunter echoed this belief by saying:

I believe that it does. It's kind of a karma thing. You're going out to hunt and gather, the animals will know if they will be cleaned and

distributed to those that need it. They know if you've got a good heart and got good intentions to kill that animal, that animal will come to you and give itself to you because he knows you're going to provide for those who need it. (NS Interview #15)

The ability to harvest an animal also extends to whether a whaling crew or hunting party is working well together. It is believed that animals know when there is strife between members of a hunting group. For example, someone said:

If anybody is messed up on how to share, it really becomes a bad thing because we're taught not to fight over animals. And rather than fight over whose portion they got, then they got to really know how to divide the animals. You would think it's superstition or people would say it is superstition but it's not, it's the law of the land and the law of the animals. And that's the way it is you know, if there's any discord or anything over the equipment, it doesn't go well with the animals. (NS Interview #14)

Thus, through respect for others in the hunting group and for the animals harvested, sharing and cooperation play an important role.

4.3.1.7 Remembering Hard Times

For many, one of the nice things about living in a rural community is the fact that people look out for one another. And this was historically a key factor to survival in the Arctic. The history of the Iñupiat on the North Slope prior to the development of trading posts and schools was primarily one of periodic famine. Today, many elders

(30%) can remember those hard times during their childhood and this strong memory affirms their mindset about sharing (Table 4.3). Elders and other community members expressed that they do not like knowing there are families going hungry within their community. The people I interviewed made statements such as, “I wouldn’t want anybody to be hungry. If I make a big pot of soup, I’ll invite anyone to come over and have some” (NS Interview #18), “Still there’s some in our village you know. Just can’t see them go hungry, just have to share what you have from the freezer you know” (NS Interview #37), and “Well yeah, if we hear people are hungry, by golly, they shouldn’t be hungry especially up here” (NS Interview #35). It was common for one elder to send over leftover meals to another elder’s household because this particular household did not cook very much and appreciated receiving traditional foods.

4.3.1.8 Having Pride

Hunters returning to a community from a successful hunt often feel proud that they are able to hunt and provide food for their families and their community. The theme of “having pride” was the least salient reason for sharing, with 9 percent of the respondents mentioning it and respondents were in the younger (14%) and middle-aged (11%) categories (Table 4.3). A couple of the active hunters I interviewed had said the following: “Proud, at least you get to feed somebody who’s less fortunate” (NS Interview #23) and “It’s in the blood and the heart as a Native to share” (NS Interview #21). Another young hunter expressed pride in this way:

I go out and hunt and gather for those who can’t hunt and gather or can’t do it very easily. Those that don’t have access to it but enjoy it; I go out

and hunt for them. Provide for those who can't provide for themselves.

(NS Interview #15)

In most communities, active hunters who share their harvests are well-respected by other community members.

4.3.2 Factors Which Contribute to When People Share

Respondents reported that there are specific occasions for when people share traditional foods and other goods, when there is a required obligation to share, and when the act of sharing is more voluntary. Respondents mentioned sharing traditional foods as well as subsistence equipment, gas, and money in exchange for harvested foods. They spoke of food given during times of celebration and times of mourning. People also acknowledged sharing food with families and communities during times of need or when individuals request a specific food. In this section, I will describe these occasions as they were articulated during the interviews (Table 4.4).

Table 4.4 Factors which Contribute to When People Share

When People Share	Number of Respondents who Mentioned Theme	Percent of Total Mentions of Categories by Respondents N = 35	Mentions by Respondents Age Group (%) 20 to 39: N = 7 40 to 59: N = 18 60 & above: N = 10	Mentions by Respondents Employment Group (%) Full-time: N = 20 Part-time: N = 8 Retired: N = 7	Mentions by Respondents Status Group (%) Single: N = 8 Married: N = 23 Widowed: N = 4
Sharing Before the Hunt	22	63	20 to 39: 57% 40 to 59: 72% 60 & above: 50%	Full-time: 50% Part-time: 75% Retired: 57%	Single: 75% Married: 52% Widowed: 25%
Bartering and Trading	21	60	20 to 39: 57% 40 to 59: 67% 60 & above: 50%	Full-time: 65% Part-time: 38% Retired: 71%	Single: 63% Married: 65% Widowed: 75%
Sharing at Feasts, Community Events, Social Gatherings	19	54	20 to 39: 14% 40 to 59: 72% 60 & above: 50%	Full-time: 60% Part-time: 38% Retired: 71%	Single: 38% Married: 57% Widowed: 75%
Sharing with Other Communities	18	51	20 to 39: 57% 40 to 59: 56% 60 & above: 40%	Full-time: 45% Part-time: 50% Retired: 57%	Single: 50% Married: 57% Widowed: 25%
Sharing when Extra Food is Available	18	51	20 to 39: 71% 40 to 59: 50% 60 & above: 40%	Full-time: 55% Part-time: 50% Retired: 57%	Single: 50% Married: 57% Widowed: 50%
Sharing when Food is Requested	8	23	20 to 39: 43% 40 to 59: 17% 60 & above: 20%	Full-time: 15% Part-time: 38% Retired: 29%	Single: 25% Married: 17% Widowed: 25%
Funeral Services	5	14	20 to 39: 0% 40 to 59: 22% 60 & above: 10%	Full-time: 20% Part-time: 0% Retired: 0%	Single: 0% Married: 17% Widowed: 25%
Total	111	-----	-----	-----	-----

4.3.2.1 Sharing Before the Hunt

Many households in Wainwright and Kaktovik participate in both the wage economy and subsistence livelihood. Individuals who may be too busy due to full-time employment have applied the strategy of loaning out their equipment such as boats and snow machines, and this in turn secures them a share of whatever is harvested. This method is commonly practiced and hunters are quite versed with how the harvest

division should occur. A strong majority of respondents (63%) expressed that they share before the hunt, and this seemed to be a salient practice for all age and employment groups (Table 4.4). It was explained to me in this manner:

Like say we catch 3 caribou and there are two guys in the boat, if the guy owns the boat then it is okay, we just divide the 3 caribou into 1.5. But if we are using somebody else's boat, then the boat owner gets an equal share. (NS Interview #9)

Full-time wage workers may not just be older individuals who own subsistence equipment; they may be younger in age such as with the following example.

My nieces and nephews work during the week, Monday through Friday and only have the weekends off. They will loan me and my family their 4-wheelers during the week, if the caribou happen to be plentiful and nearby during that time; both parties will get a share of the harvested caribou. (NS Interview #18)

This practice of asking other people to hunt during crucial harvesting periods that coincide with Monday to Friday employment occurs for people who can only hunt on the weekends.

The loaning and borrowing of equipment and the purchasing of gas frequently occurs between relatives, for example:

At one time my family didn't have an outboard, my husband bought some gas and told his nephew to go out hunting. His nephew returned and gave the entire bearded seal to us. This is the second time my

husband asked his nephew so we could have seal oil to eat with dried meat in the winter. (NS Interview #18)

Equipment loaning partnerships are also formed between non-relatives and over time these partnerships eventually become strong bonds.

Additionally, smaller items such as food for camping trips and bullets or shotgun shells can be donated in order for a share of the future harvest. People share with the active harvesters who make every effort to hunt, especially when they travel to places that are difficult to access, either because it is risky to travel during certain times of the year or the distances are long. It is during such times when people will provide ample supplies to make traveling easier for the hunter, and in return they will receive a share if the harvest is successful.

In the past, not everyone in the community had subsistence equipment. There may have been only 1 or 2 people who owned boats. Community members would join hunting parties, knowing they would be entitled to a share of the harvest. Two of the older respondents commented on how nowadays there are more people who own equipment, although not everyone has everything they need and it is common for equipment to break down. There could be any number of reasons for why the loaning of equipment allows the owner to receive a share, but the reasons mentioned in my interviews were: 1) the equipment being loaned out is expensive, and 2) a successful harvest should be shared, and 3) the giving of a share signifies thankfulness for the use of someone's equipment (Table 4.5). Significantly, it was not an economic reason (i.e. the high expense of equipment) or a responsibility to repay the loan that was cited as the

most salient reason to give a share to the owner, it was the cultural norm, stated as strictly a successful harvest needs to be shared, which was popularly mentioned (60%) (Table 4.5).

Table 4.5 Reasons Why the Owner of the Equipment will Receive a Share

Reasons Why the Owner of the Equipment will Receive a Share	Number of Respondents who Mentioned Theme	Percent of Total Mentions for Categories by Respondents N = 35
Equipment is Expensive	1	3
A Successful Harvest Should be Shared	21	60
Giving a Share Signifies Thankfulness for the Use of Someone's Equipment	2	6

4.3.2.2 Bartering and Trading

Historically, bartering and trading for animal resources and goods took place at central sites across the North Slope, and Kaktovik was one of these. One informant explained that:

Trading and bartering occurred a long time ago; there were places where people met, Oliktok, near the Colville River Delta, was a bartering and trading place. People from the Interior or inland people went there so they could barter for fur and food. The ones that were living on the coast had a lot of seal oil and a lot of marine food. And the ones in the Interior had a lot of caribou or lake fish, river salmon; different materials. (NS Interview #9)

Within the modern day subsistence system, bartering and trading remains a common event between communities. The theme of “bartering and trading” was the second (60%) most commonly stated theme for when people share and it was mentioned across all age and employment groups (Table 4.4). People in Wainwright and Kaktovik have relatives across the North Slope as well as in other rural and urban communities around the state. In addition, respondents in Kaktovik in particular have relatives in Canada (e.g. in the Northwest Territories). Certain subsistence resources are unevenly distributed across the landscape and some communities are known for a specific resource. For instance, Kaktovik is the only community in the North Slope region to consistently harvest Dall’s sheep (*Ovis dalli dalli*). Trading partnerships between individuals or families have been developed over many years and during one of my interviews, the term “Eskimo trade” was used.

Within the North Slope region, products such as *maktak* and seal oil are traded with inland communities such as Anaktuvuk Pass and Atqasuk for other resources they are able to exchange in large quantities. When asked about bartering and trading, a person responded:

Once in a while when Anaktuvuk Pass needs some whale, they send some caribou up. And when Kaktovik doesn’t have much caribou and we (Wainwright) have lots, they usually send some whale. Not all of the time, but once in a while people trade with them. (NS Interview #10)

Another respondent also talked about the community of Anaktuvuk Pass having good dried meat and trading jars or gallons of seal oil with them since they aren't able to hunt seals.

Trading and bartering frequently occurs with communities outside of the North Slope region, primarily in places where people have relatives and long-time trading partners. An interview respondent who has relatives in the communities of Kotzebue and Noatak indicated: "If our relatives from Kotzebue send us some fish (sheefish, dried fish), then we in turn will send them some *maktak*. We trade with Noatak and other villages in this area *maktak* and whale flipper for dried fish and sheefish" (NS Interview #21). Another respondent explained his current bartering and trading relations with those in other communities in this way:

I trade and barter with some folks in the Anchorage area, or with the Yup'iks, and people in the Interior. I trade for smoked salmon, red salmon, silver salmon, berries, salmonberries, dried meat. We have good friends we trade with or barter with. We trade with Kotzebue and a guy from Chefornek, but he lives in Anchorage; we are good trading partners. We aren't going by age old rules that were established a long time ago, either we are their relatives and we know it is welcomed. Mostly it's through relations, a good friend or partner, relatives. (NS Interview #9)

As was explained in the interviews, people see trading and bartering as a useful way to obtain prepared traditional foods as well as subsistence resources found outside of one's region. For example:

There's some people trading now like with *maktak*. I give them *maktak*, they give me dried fish or fish strips, so we are still trading. Like with blueberries, we give them *maktak*. Cause we don't have blueberries or *akpiks* (salmonberries) around here, so what we like we eat. (NS Interview #13)

Likewise, "The Noatak area loves the *mikigaq*, the fermented whale and *maktak*. They love that and they do trading, like we don't get dried fish and then we trade or they'll send something else you know, what they have" (NS Interview #23).

Customarily, food was reported as being traded for other foods, whereas clothing is usually traded for clothing. The system of bartering and trading does not always have immediate returns, it depends on the seasonal cycle of subsistence harvests. It was mentioned by four respondents that the bartering and trading cycle doesn't make its complete round right away. For instance, "Cause we have that bartering system that doesn't happen instantly, but you might have to wait until 6 months later before you get an exchange of different kinds of food from the Kotzebue area" (NS Interview #27). And more often than not, bartering and trading may not be intentional, but rather occurs as follows, "Sometimes, they'll just send the *maktak* and then other people will just send the blueberries and it ends up being a trade, whether they intended it to be a trade or not" (NS Interview #13).

4.3.2.3 Sharing at Feasts, Community Events, Social Gatherings

Community events and feasts offer strong examples of traditional food sharing, with 54 percent of the respondents mentioning this appropriate time for sharing (Table 4.4). The respondents who mentioned this theme were mainly in the middle-aged (72%) and elder (50%) age category and the full-time (60%) and retired (71%) employment category (Table 4.4). Both the communities of Wainwright and Kaktovik hunt bowhead whales, and successful whaling captains and their crews hold *Nalukataq* each year for their entire community. Not only are whale products such as meat, *maktak*, and *mikigaq* distributed to families within the community, but both traditional and non-traditional foods are served as well. Caribou (*Rangifer tarandus*) or goose soup is commonly served with homemade fry bread and throughout the celebration coffee and tea is offered. Depending on the whaling captain and his family and whatever resources or ingredients are available, fish, cake, or a dried fruit stew may also be served. The amount of food distributed to attendees depends on how many people there are in a person's family, as each person is entitled to a share of each food at the feast.

Community members who may not be a part of the successful whaling crew hosting the *Nalukataq* will sometimes share subsistence resources or ingredients with hosting members. This type of sharing was referenced by one respondent in these words:

People will share with the successful captain white-fronted geese or black brants and even store bought food such as rice and onions for soup.

People will also share with the whaling captain's spouse ingredients needed for soup especially since the crew has to make sometimes 15 to 20 pots of soup for *Nalukataq*. Families may also give the successful whaling crew pots of already made soup, cake, dried fruit, and whatever else is available and they want to share. If *Nalukataq* falls on someone's birthday, the birthday person will share a cake with the whole crew, even if that person doesn't belong to that crew. This has happened many times before. The dates of the *Nalukataq* are announced ahead of time so people know if it's going to land on their birthday. (NS Interview #18)

American holidays such as Thanksgiving and Christmas are also celebrated through community feasts. Unlike the *Nalukataq* however, all community members bring dishes to share and it is a way for people to distribute whatever they have harvested. In Kaktovik, people had mentioned a particular hunter who annually travels into the Brooks Range to hunt Dall's sheep, arriving in most years just in time to share his harvest with the rest of the community at the Thanksgiving feast. In regards to this hunter, another respondent said, "Everybody is happy to have sheep, it's more like a gift from that person to give to the whole village" (NS Interview #32). In Wainwright, families who spent time fishing at their summer or fall camps may share sacks of grayling with the rest of the community at the Thanksgiving feast. People may also bring with them to the feasts what relatives have sent them from other communities, for example sheefish from Kotzebue.

Community events such as basketball playoffs represent an opportunity to hold community potlucks to share traditional foods. This comment was provided by a respondent in Wainwright, “I went to Nuiqsut for my son’s regional basketball playoffs and there was a potluck. There were many Native foods there like fermented walrus (*Odobenus rosmarus divergens*) flipper (*urraq*)” (NS Interviews #17). Many community churches also hold feasts where people bring traditional foods to share with the community and as one individual expressed, “People who don’t have active hunters are happy to have some” (NS Interview #16). The community of Kaktovik had also temporarily created a Healthy Community program where people would come together and share traditional foods. It was described to me in such a manner:

We used to have a Healthy Community program in the community and people would bring all the Native foods to share. It was on the weekends and we would have themes. One day was called “*Quaq* Day” and people would bring *quaq* (frozen meat or fish). It ended up being people would just bring whatever Native foods they wanted to bring. It was about every other weekend and people really enjoyed it. (NS Interview #8)

Traditional foods are shared at community-wide feasts and social events and these are times when people come together to celebrate festive occasions. Gatherings occur throughout the year and traditional foods are available based on the harvesting season.

4.3.2.4 Sharing with Other Communities

Fifty-one percent of the respondents mentioned the theme of “sharing with other communities” and this theme was salient across both age and employment groups

(Table 4.4). In some cases it may be difficult to differentiate between bartering and trading and the sharing of subsistence resources with other communities. However, respondents expressed that traditional foods are regularly shared with other communities who may be undergoing a shortfall in a certain food resource. For example:

A couple of years back, Wainwright didn't get much rain and so the berry season was poor. People in Noatak had a good season for berries (salmonberries, blueberries, and cranberries) and sent people in Wainwright some. (NS Interview #16)

Another example given by a respondent was in relation to Anaktuvuk Pass. She stated, "For a couple of years, Anaktuvuk Pass didn't catch much caribou. A whole plane load from Wainwright was sent with meat already butchered" (NS Interview #16).

On the North Slope, subsistence resources don't always have to be shipped to other communities, they may be sent with someone who is traveling there for a meeting or relatives and friends who may visit a community during times of celebration (e.g. *Nalukataq*). Examples of such cases were commonly expressed, for instance:

If we know of relatives that are heading out to the other villages for a meeting, we will give them food to share with other relatives in those villages. My husband carries with him beluga, bearded seal meat with oil, whale meat to share with relatives from Kotzebue, Anaktuvuk Pass, etc. If there is a meeting coming up and our relatives call requesting

some kind of meat, we will bring however much they need with us. (NS Interview #18)

Nalukataq represents a time of celebration for the successful harvest of a bowhead whale (*Balaena mysticetus*) and visiting relatives and friends are openly welcomed during this festive occasion. Products of the bowhead whale are shared with the entire community including visitors who in turn take back traditional foods to their own communities. As one respondent exclaimed, “When we get a whale, we don’t just eat it alone. We share with people in Fairbanks and Anchorage” (NS Interview #13). People from other communities are also shown generous hospitality during other celebratory feasts such as Thanksgiving and Christmas.

It is understood by the communities of the North Slope that inland communities like Anaktuvuk Pass, Atqasuk, and to some extent Nuiqsut are not able to access ocean resources and therefore the coastal communities will continue to share their resources with these communities. Such a statement was made by a respondent:

Where they have no coastal plain, like Anaktuvuk Pass, we share with them, or Nuiqsut, Atqasuk, where they’re not close by the ocean and then we share it with them. One time when they were having a North Slope Borough assembly meeting, they were complaining that we’re lucky to live by the ocean and inland, that way we harvest both ocean and sea and land animals. And what we harvest, after we divide within the community, then what’s leftover we send to them cause they like to have it too. (NS Interview #23)

Sometimes the timing in the seasonal hunt for some species may conflict with major hunting seasons such as bowhead whale. This was just the case in Wainwright during one year:

Other villages knew that Wainwright's hunting season was late. Whaling crews were out on the sea ice waiting for whales to pass by and during this same time, ducks and geese were migrating through. The seasons had overlapped and they couldn't be in both places at the same time. The men didn't want to abandon bowhead whale hunting in order to go geese hunting. Hunters who had gotten white-fronted geese gave the successful whaling captains geese to have for their *Nalukataq*. It's common for relatives/friends in Barrow and elsewhere to send over ducks/geese to people in Wainwright for their *Nalukataq* and other feasts. (NS Interviews #18)

However, sharing to correct a shortfall in a resource does not continue indefinitely. Once a community has the ability to harvest its own food resources, other communities may no longer feel the need to send certain resources. For example:

Like we used to send a lot of *maktak* and whale meat down to Point Lay community, all these years. They got a whale; they were the only ones that got a whale for a while. And this coming year I'm pretty sure none of our whales are going to be shipped down there cause we know that they got more than their share of the whale. Same with belugas, Point

Lay used to ship a lot of beluga *maktak* to Wainwright, they're not going to do it this year cause they know we got our share. (NS Interview #27)

It may not be expected for subsistence resources to be sent back, but often times they are and these acts of sharing are quite appreciated.

4.3.2.5 Sharing when Extra Food is Available

The majority of the respondents (51%) mentioned sharing food when there is extra available and this was most salient amongst the younger age category (71%) and common across all of the employment group categories (Table 4.4). There is a certain expectation on the North Slope that if someone has harvested enough of a certain resource for their family, then whatever is left should be shared with the community. The needs of the immediate family are always looked after first, with the needs of extended family members or other community members coming second. Many comments (Table 4.4) were made about this topic, such as:

It used to be that maybe there's a lot of caribou or a lot of seals, and you'll try and get as much as you can that you take home on that one trip. Maybe you're too much, you know you get too much, your family will tell you we got more than enough, share it with other person, that's what will happen. (NS Interview #27)

And, "When we have too much meat to store in our cellar or if we think we have enough meat to last until the next season, we will give some of our catch away" (NS Interview #17). This reason for sharing was encapsulated by the statement,

“Everybody, I mean practically everybody shares if they have enough” (NS Interview #30).

The VHF radio has been a welcomed form of technology in Alaskan rural communities, and it is frequently used to communicate information about the distribution of harvested animals. When there is extra food available, it is common for people to announce on the radio that they are welcome to stop by a certain house and take whatever they need. An exception is made for elders, where hunters will actually go and drop off the food. The VHF radio provides a way to mass distribute subsistence resources while they are still fresh, yet it is also acceptable for whaling captains to announce the availability of leftover food while cleaning out their ice cellars.

4.3.2.6 Sharing when Food is Requested (Demand Sharing)

Twenty-three percent of the respondents mentioned sharing food when it is requested from another person and this theme was predominantly mentioned by the younger age group (43%) (Table 4.4). Traditional food may be requested by someone who is craving a specific type of food. This is an example of “demand sharing” as articulated theoretically by Woodburn (1998). It usually occurs with elders and examples were given where elders would specify what they would like to eat and somebody would make the effort to get it to that person. For example:

Just this boating season, my *aapa*'s (grandfather's) brother said, “Man I really want *natchiq*, I really want seal meat.” I told him, “Okay, the one with the white face right?” He said, “Yeah, don't get the one with the black face, they're stink meat.” So I went out, me and the young man

that I normally hunt with. We found a seal on the ice; it was early boating season you couldn't really go very far because of the ice. I found one right on the edge of the ice that we could get right to. Went real slow, got real close to him and we caught him. Walked out on the ice, drug it back to the boat. Brought it back and I had skinned it, cut it all up and I gave a larger share to my *aapa*'s brother who requested the seal meat. (NS Interview #15).

Along these same lines, another respondent notes specific requests for animal parts. "When my husband's aunty was still alive, she liked the eyes of the caribou and so we would take caribou head soup over to her" (NS Interview #18). It could be anyone in someone's family who is craving certain foods, and if there isn't any readily available, a person may go out hunting specifically to provide and share.

People who no longer live in their home community and either live in the urban areas of Alaska or outside of the state crave their traditional foods as well. They may miss the foods they grew up with. Food is sent to them to alleviate their homesickness and allows them to get a taste of the food again. Respondents expressed that all they have to do is ask and most times, people will send them traditional foods.

4.3.2.7 Funeral Services

Sharing food when someone passes away was the least mentioned theme (14%) by respondents and was stated by both middle-aged (22%) and elderly people (10%), as well as full-time employed respondents (20%) (Table 4.4). Funeral services generally mandate large congregations of relatives and friends visiting from different parts of

Alaska and from other states. It is a time where grieving families are in need of considerable support through provisions of food and labor:

When there is a death in the family, the family members don't really have time to cook. They have other relatives or outside community members that come in. Other community members might have fresh caribou or fresh seal so they bring it to the house and the relatives and the people that are grieving with them. (NS Interview #9)

Often times at funerals, people prefer having traditional foods such as caribou soup as opposed to having non-traditional foods. Community members will cook a meal and bring the whole pot over to the people that are grieving and the only thing they expect to get back is an empty pot, since they will most likely receive the same help and consideration during such times.

4.3.3 With Whom do People Share?

Traditional foods are commonly shared with everyone in a community, but there are specific groups of people who exemplify a strong need to receive from others. Elders, relatives, the needy, widows/widowers, and the sick/infirm were named during the interviews by many of the respondents as important categories of people they normally share with (Table 4.6).

Table 4.6 Who People Share With

Who People Share With	Number of Respondents who Mentioned Theme	Percent of Total Mentions of Categories by Respondents N = 35	Mentions by Respondents Age Group (%) 20 to 39: N = 7 40 to 59: N = 18 60 & above: N = 10	Mentions by Respondents Employment Group (%) Full-time: N = 20 Part-time: N = 8 Retired: N = 7	Mentions by Respondents Status Group (%) Single: N = 8 Married: N = 23 Widowed: N = 4
Elders	29	83	20 to 39: 71% 40 to 59: 100% 60 & above: 60%	Full-time: 70% Part-time: 50% Retired: 71%	Single: 88% Married: 70% Widowed: 25%
Relatives	26	74	20 to 39: 57% 40 to 59: 94% 60 & above: 50%	Full-time: 40% Part-time: 63% Retired: 14%	Single: 50% Married: 39% Widowed: 25%
Sharing with the Needy	11	31	20 to 39: 43% 40 to 59: 28% 60 & above: 30%	Full-time: 55% Part-time: 25% Retired: 57%	Single: 88% Married: 48% Widowed: 75%
Widows/ Widowers	9	26	20 to 39: 0% 40 to 59: 33% 60 & above: 30%	Full-time: 30% Part-time: 13% Retired: 57%	Single: 0% Married: 39% Widowed: 50%
Sick or Infirm	3	9	20 to 39: 0% 40 to 59: 6% 60 & above: 20%	Full-time: 5% Part-time: 0% Retired: 43%	Single: 0% Married: 9% Widowed: 25%
Total	80	-----	-----	-----	

4.3.3.1 Elders

When asked who are people sharing their traditional foods with, it was consistently mentioned by respondents that they share with the elders in their community. The majority of respondents (83%) said they share with the elders and this was consistent among respondents in both the age and employment categories, especially among the middle-aged respondents (100%) (Table 4.6). It was stated many times over that elders are provided for first because many of them can no longer hunt and they are the people the rest of the community learns from. An example was given

where the community of Wainwright hadn't harvested walrus in two years, then a boat of young hunters went out and caught their first walrus. Their immediate thought was to give it to the elders first. People will freely share with elders and it may not always be elders to whom they are related. Once the elders in a community are accommodated with a certain type of food, then food is distributed to other households.

4.3.3.2 Relatives

There was very strong agreement amongst respondents regarding the sharing of food with relatives (74%), especially amongst the middle-aged respondents (94%) (Table 4.6). Food is naturally shared with family members who live outside of one's household. This applies whether it is a sibling or a cousin who may not have an active hunter within their own household, or perhaps an older relative who is no longer able to hunt. Relatives are commonly offered foods when they are harvested. Respondents expressed these actions as, "If there's someone within my family, it's a given that they are already going to get a share anyway" (NS Interview #5) and "We always bring my sister in Barrow food or we send her some" (NS Interview #8). Relatives living within the community, who aren't able to acquire their own traditional foods may be able to provide other services as mentioned here:

Cause like my sister she doesn't have a hunter so whenever my husband and us catch. Cause she's always helping when I need a sitter for the girls, she'll take the girls in so we just provide her with meat and stuff. Cause she'll cook for the girls like when I was taking classes, she'll take the girls, cook for the girls. (NS Interview #38)

Family members look out for each other. Contrarily, a person who is alone and without any close relatives nearby is considered someone who should be shared with.

4.3.3.3 Sharing with the Needy

Multiple respondents (31%) reported that they always share with the needy and it was consistent in both the age and employment group categories (Table 4.6). When asked what constitutes a household as being needy, I received two distinctively themed answers. The majority of the people interviewed said a needy household is one without an active hunter and it could be a household with a single mother with children or with elders who no longer hunt. A respondent had put it this way:

A needy household in my mind is say mother and children with no man in the household to go out and hunt, no physically able-body to go and camp and hunt. In my mind that's a needy household or needy family.

(NS Interview #39)

Secondly, others (12 percent) said that a needy household can be classified as one without actively employed family members. These may be the same households that cannot afford subsistence equipment like boats and snow machines, which are critical equipment for harvesting subsistence resources.

All communities on the North Slope (except for Barrow) are classified as rural, with human populations estimated to be around 550 people for Wainwright and 275 people for Kaktovik (http://www.dced.state.ak.us/dca/commdb/CF_COMDB.htm). Most people within these communities are aware of each family's situation and whether certain households may need outside food assistance. As one respondent said:

In a smaller village, it's easier to know who's got and who doesn't, who needs. Like for our village, it's who needs some, who doesn't need some, who's going out hunting and who's not going out hunting. (NS Interview #32).

Food is dropped off many times with no expectation of a return favor; it is left for the person or family to enjoy and to alleviate their hunger.

Needy families may also request food from their community at large via the CB radio. These households have members who don't work or hunt and may already be receiving food from relatives or friends. An example was given in Wainwright from the previous winter, "A couple of families were going hungry and they said they needed food. They got no job, they got no food stamps, or whatever" (NS Interview #23). Hungry families are looked after within a community and it was said, "We don't like to see anyone go hungry. We hear someone's going hungry then of course we go offer, go give them food. So it's through people knowing the situation, knowing they're our own people" (NS Interview #35).

One respondent explained that sharing foods with starving families is a community's way of providing for their less fortunate. According to him:

There's some organizations in town that look after people that don't have anything to put on their table for days at a time, but in our culture if we know that there's families out there that don't have any food...And it hasn't been done in a while, but just a few years ago I heard it on the VHF, so and so's family doesn't have anything to eat, they got no food.

So people would start gathering some food into a location and then they'll bring it over to that family. (NS Interview #27)

Needy families are taken care of by community members who are in a position to provide traditional foods to others. Within communities, there is an existing *informal* system of sharing to those in need.

4.3.3.4 Widows/Widowers

Twenty-six percent of the respondents mentioned sharing with the widows/widowers in their community, and this was salient amongst the middle-aged (33%) and the elderly (30%), while primarily falling in the full-time (30%) and retired (57%) employment categories (Table 4.6). Respondents also noted that households with widows and widowers are looked after by active hunters because many of these households do not have members participating in subsistence harvesting. For example, “I know some people who are widows and I know who they are and I usually take some over especially after the first hunt” (NS Interview #5). Widows and widowers can be young individuals who may have lost their partners due to accidents or unforeseen circumstances and often times they are left with young children to take care of. Traditional foods are provided to these households to address their food needs.

4.3.3.5 Sharing with the Sick or Infirm

Similarly, households with family members who are sick or weakened in health are commonly shared with. “Sharing with the sick or infirmed” was the least mentioned theme, with nine percent of the respondents, and it was mentioned only by the middle-aged (6%) and the elderly (20%), as well as full-time (5%) and retired (43%)

respondents (Table 4.6). These families represent another source of need and nine percent of the respondents indicated that the community responds with the sharing of traditional foods. For example:

When you know somebody is not doing good, you know they're sick or something's wrong, we cook and send food, bring food over to that person that needs it. It's just something that you hear in the community, oh so and so's having hard times, we'll make extra and bring it over to them. (NS Interview #40)

Another respondent added this statement about a person in their community:

So and so has cancer and she's not doing very good, so I try to do my best and have my kids bring some food over to her to eat. Yeah, she's not available right now, so she needs a lot of food and we send some over for her to eat, so she's really happy. (NS Interview #40)

Despite the fact that sick community members may not be able to attend social events, they are not forgotten by the rest of the community. Foods distributed at these events find their way back to the household that has an ailing member.

4.3.4 Species Specific Types of Sharing

Food sharing occurs all year round, whether it is the time for whaling, caribou hunting, or duck hunting. However, respondents noted that sharing can differ, depending on the species. The sharing of traditional foods therefore goes hand in hand with the harvesting of resources, and there are in some cases specific institutions (i.e. rules that shape human behavior) that go along with the distribution of certain species.

In this section, I will provide information about the institutions for sharing from interviews on how people share, based on a few of the species harvested. See Table 4.7 for a list of the specific species harvested and the number of people who had talked about these species.

Table 4.7 Number of People and Specific Species Harvested

Species	Number of People (N = 35)	Percent
Caribou	31	89 %
Fish	29	83%
Bowhead whale	25	71%
Waterfowl	19	54%
Walrus	16	46%
Bearded seal	12	34%
Beluga whale	6	17%

4.3.4.1 Caribou

The majority of the respondents talked about sharing caribou (89%) (Table 4.7). Respondents stated that caribou may be hunted by a single person and whatever is harvested by that person can be kept in its entirety. They noted that it is only when caribou are harvested with others that it will be allocated into shares. Respondents reported that hunters typically know how to divide up caribou that are harvested; even if only one caribou was caught, it would still be evenly shared within the group. It was reported that it is generally assumed that everyone who has gone out on the hunt will

receive a share of the harvest, including the people who followed along, but may not have shot and killed an animal. The act of giving a share to a person who followed was explained by a respondent this way:

If three men were to go out caribou hunting by 4-wheeler, they would all shoot together and would all get a share. Even if a man is unlucky and doesn't catch a caribou, he will get a share just because he followed. They don't want the unlucky person to go home empty. (NS Interview #21)

The person who follows a hunter and/or a hunting party could be a young hunter who is just beginning to learn how to hunt, or it could even be an elder who has the experience and knowledge, but may physically be unable to hunt. For example, a respondent said:

Like my son, he takes his uncle, so he could learn and he's like over 60. "Uncle, you want to follow?" So he could show him which way and which one to catch. Even though he's old and they take care of him, make sure he keeps warm and have coffee and what not. And then they give him a share too, just for following; he don't have to do any work, he just tells them what he knows. Like there's certain things they can catch and certain things they can't catch or they might lose which direction and they don't know which direction to go. And he be there guiding; a leader. And he just tells them what to do in the boat, "Yeah go get this, don't get that, or go this way, go that way." And he gets a share for telling him. (NS Interview #23)

Caribou may be butchered while out hunting or they may be brought back to the community for further butchering. Anyone who helps with the processing will also receive a share of the harvest. The harvesters in the hunting party will receive equal shares of various parts of the animal and meat divisions are done fairly.

4.3.4.2 Fish

Eighty-three percent of the interview respondents mentioned sharing fish species commonly caught in their communities (Table 4.7). Families may travel to their summer camps or cabins where they set nets to catch fish. Anyone who helps to take out fish from a net is entitled to receive a share of the catch. Due to the large numbers of fish caught, it is very common for fish to be shared with the community during the Thanksgiving feast. Families who have caught enough fish for their household generally give out bags of fish to people who may want some.

Wainwright is known for its harvest of rainbow smelt (*Osmerus mordax*) and these fish are shared, traded, or sold to other communities across the North Slope. Rainbow smelt are commonly caught during the winter through the method of jigging. Jigging is basically pole fishing through a hole cut in the ice. Sacks of rainbow smelt are caught and often times shared with the community at the Christmas feast. The first few smelts caught early in the season are almost always shared with the elders.

4.3.4.3 Bowhead Whale

Interviews (71%) indicated that among Iñupiat there is no other animal regarded with such high esteem as the bowhead whale (Table 4.7). In order to honor the whale, there are espoused rules of how the whale should be shared. All of the whaling crews

who helped in the hunt and with the towing of the whale back to the community, receive a share of the whale. Within the whaling crew itself, each crew member will receive an equal share from the entire crew's share. As a whaling captain stated, "No matter whether you are the youngest, the oldest, or the captain of the crew, everyone gets an equal share on all of the whaling crews" (NS Interview #4). Within the community of Wainwright, in addition to dividing up the whale for each of the crews who helped, a share is also set aside for the community itself.

Members of the community who were not on a whaling crew have access to shares of the bowhead through several different mechanisms. People who help with the butchering of the whale will receive a share. Others who may not have the time to physically help with the processing of the whale, may buy gas or food for a whaling crew and in turn will receive a share of the whale. Whale hunting equipment such as darting guns and harpoons may also be loaned out by people in order to receive a share. For example, it was reported that a woman in Wainwright had been loaning out her dad's shoulder gun to her brother-in-law and was receiving shares every year as if she had been going out with the crew. Furthermore, people may also go to the captain's house and help his wife and other women cook the food that will go towards feeding the community on the day the whale is harvested. The thought behind the sharing of the bowhead whale was captured perfectly with this respondent's remark, "When you go hunt something big and people help, you share with them" (NS Interview #8).

It is also the duty of the whaling captain to divide up his share of the whale and provide for the community during the *Nalukataq*, Thanksgiving, and Christmas feasts

(see section 4.3.2.4 above). In Wainwright, the whaling captain receives the “belt”, which is a strip of meat and *maktak* all the way around the belly of the whale. This practice is not followed in Kaktovik. A whaling captain in Wainwright explained the concept of the captain’s belt in his own words:

The captain will get the *tavsi* (belt) which is above the belly button and is about 16 inches wide. The belt may be distributed to the captain’s relatives as soon as they get back to the village from the camp or kept by the captain; it is left at the captain’s discretion. Or the belt may be shared at the *Nalukataq*. A successful captain will always cut a belt for himself off of the whale, except if it is the captain’s first whale. It has always been this way, as long as I have been whaling. (NS Interview #21)

Wainwright and Kaktovik may have other differences when it comes to the captain’s share of the whale, but regardless of these differences, both communities celebrate the successful harvesting of a whale through the act of sharing.

4.3.4.4 Waterfowl

Fifty-four percent of the respondents spoke about sharing waterfowl species common to their local areas (Table 4.7). Families will usually travel out to camps in the spring and hunt for ducks and geese migrating through certain areas. The birds shot are shared equally amongst the people who are hunting; whoever helps with the hunt receives a share. As one respondent had put it:

A whole bunch of people would go over and every time we would catch a duck, we would put it in a big pile and we would end up with a whole bunch, even if you were a good shot or not. By the time we got done shooting and everything, then we'll divide the whole thing amongst everybody, so everybody gets an equal amount. (NS Interview #6)

4.3.4.5 Walrus

Walrus are actively hunted in Wainwright, but not usually harvested in Kaktovik due to the fact that they are rarely seen in the Beaufort Sea area. Forty-six percent of the respondents mentioned sharing successful walrus harvests (Table 4.7). The meat, flippers, hide, and the tusks/teeth are utilized from the animal. The boat owner usually receives the tusks, which are valued for traditional arts and exchange among Alaska Natives. As mentioned, sometimes the person who shot the animal may receive the tusks as well, but the meat and everything else is shared with everybody who assisted with the hunt.

Walrus meat is highly coveted; it is not consistently harvested in large numbers and it was mentioned that “most people like to share with the village, the first walrus caught in the season” (NS Interview #24). Once a family has secured enough walrus meat for themselves, any extra meat will be shared with the rest of the community, with priority given to the elders.

4.3.4.6 Bearded Seals

The sharing of bearded seals was mentioned by 34 percent of the respondents (Table 4.7). Bearded seals are commonly hunted with a group of people mainly

because it has proven to be more effective due to there being more people actively searching, and the chances of harvesting one increases when more hunters go out together. Usually one boat will go out with a few people and rarely does it ever occur where several boats go out looking for bearded seals as a large hunting party. People said the person who shot the seal will provide a share to each person who went out on the boat and the owner of the boat usually gets an extra share for the use of his boat.

4.3.4.7 Beluga Whale

Of the two communities, Wainwright consistently harvests beluga whales (*Erignathus barbatus*), whereas Kaktovik has sporadically harvested beluga whales in the past, but not in large numbers. Beluga whale sharing was the least mentioned by respondents (17%) (Table 4.7). People in Wainwright said beluga whales are harvested by boat crews and there could be as many as eighteen to twenty boats communicating by radio. Through a system of information sharing, hunters are instructing each other on where to maneuver their boats in order to push the belugas into a shallow inlet about five miles west of the village, where it is easier to harvest the animals once they are there.

In Wainwright, beluga whales are usually harvested with the intention of distributing the meat to the entire community. All of the respondents who had spoken about beluga whale hunting and sharing mentioned that every household in the community receives a share of the beluga whales harvested. Households are asked if they want a share and if they indicate “yes”, then they will receive one. The belugas are divided up equally by the harvesters and no household gets more than the other. The

hunters who did the actual harvesting of the animals as well as people who had used their own boats for the harvest will not receive a bigger share. Households that don't want a share can send their share elsewhere.

4.3.5 How People Share

In this section, I will present information on how people commonly share with others. There are two specific themes that emerged from the content analysis and they can be considered casual to some degree (Table 4.8).

Table 4.8 How People Share

How People Share	Number of Respondents who Mentioned Theme	Percent of Total Mentions of Categories by Respondents N = 35	Mentions by Respondents Age Group (%) 20 to 39: N = 7 40 to 59: N = 18 60 & above: N = 10	Mentions by Respondents Employment Group (%) Full-time: N = 20 Part-time: N = 8 Retired: N = 7	Mentions by Respondents Status Group (%) Single: N = 8 Married: N = 23 Widowed: N = 4
Having Guests over for a Meal	23	66	20 to 39: 29% 40 to 59: 83% 60 & above: 60%	Full-time: 55% Part-time: 38% Retired: 43%	Single: 38% Married: 48% Widowed: 50%
Anonymous Food Drop-Offs	3	9	20 to 39: 0% 40 to 59: 17% 60 & above: 0%	Full-time: 10% Part-time: 13% Retired: 0%	Single: 0% Married: 9% Widowed: 25%
Total	26	-----	-----	-----	

4.3.5.1 Having Guests Over for a Meal

The sharing of traditional foods is truly a social event, ranging from the formal distribution of the bowhead whale at the *Nalukataq*, to simply having people over for a meal. Sixty-six percent of respondents mentioned inviting guests over for a meal as an example of how they share foods and the majority were in the middle-aged (83%) and elderly (60%) age categories, while being consistent throughout the employment categories (Table 4.8). When people are invited over for lunch or dinner, the food is

usually laid out and ready to eat. If someone happens to stop by during the middle of a meal, they are encouraged to stay and eat. Foods that are sent from outside the region are also cooked up and people are invited over. For instance in Kaktovik, a person had said, “I got family in Canada, when they send me muskrats, I’ll cook it up and invite everybody over and they’ll eat it; my house is always open” (NS Interview #32).

4.3.5.2 Anonymous Food Drop-offs

The theme of “anonymous food drop-offs” was mentioned the least out of the two themes, by nine percent of the respondents; solely by middle-aged (17%) and both full-time (10%) and part-time (13%) category respondents (Table 4.8). Households that receive food may not always know where the food is coming from and who is sharing with them. Such was the case with this person who said:

Well, through the power of prayer, anyway, you pray for it and out of nowhere somebody brings it to you. Like one time we were in a meeting, some kind of town meeting and somebody left a hind quarter of caribou on my porch. We tried to ask who, but they wouldn’t say who. So that was a gift, I prayed for and it was on my porch. And they won’t say who it was from. And they give it from the heart, you know. (NS Interview #23)

Sometimes food drop-offs may not go according to plan as was described to me by a person I interviewed:

That’s what my husband and I did this spring is we dropped off some ptarmigans to someone’s house and we just had them in a bag and hung

them on her doorknob. And later that night they were still on her doorknob. I mean it was real late and she should have been home hours ago. She was out of town and so we had to go back and get the ptarmigans and wait until she came back into town because nobody else was staying at her house. (NS Interview #40)

Food is shared with no expectation of a return and can be considered a gift to a household who may have been in need.

4.3.6 Changes in Food Sharing

When asked if people had seen any changes in food sharing in their lifetime, ninety-one percent of people had said they had not noticed any changes (Table 4.9).

This sentiment was shared across all of the age groups interviewed, whereas 9 percent of the respondents mentioned they had observed changes in food sharing, all within the middle-aged (11%) and elderly (10%) age group categories.

Table 4.9 Changes in Food Sharing

Changes in Food Sharing	Number of Respondents who Mentioned Theme	Percent of Total Mentions for Categories by Respondents N = 35	Mentions by Respondents Age Group (%) 20 to 39: N = 7 40 to 59: N = 18 60 & above: N = 10	Mentions by Respondents Employment Group (%) Full-time: N = 20 Part-time: N = 8 Retired: N = 7	Mentions by Respondents Status Group (%) Single: N = 8 Married: N = 23 Widowed: N = 4
No	32	91	20 to 39: 100% 40 to 59: 89% 60 & above: 90%	Full-time: 95% Part-time: 75% Retired: 100%	Single: 100% Married: 87% Widowed: 100%
Yes	3	9	20 to 39: 0% 40 to 59: 11% 60 & above: 10%	Full-time: 5% Part-time: 25% Retired: 0%	Single: 0% Married: 13% Widowed: 0%

They reported that people are continuing to share in the way they always have. The elders are continuing to receive from young hunters' first harvests and from other active hunters in the community and the sharing continues. As one respondent said:

The sharing of subsistence foods hasn't changed, not within the whaling culture. When I see my oldest sister, who's in her eighties and lost her husband and her kids don't really do any hunting, she always has food that she likes to eat. Her freezer is always full from other people that always come up to give them meat. And when other people catch what they don't hunt like beluga, we get their share. The sharing has always continued and it hasn't really changed. (NS Interview #5)

All of the people interviewed currently believed that animals are easily harvested and they did not believe that sharing would change if there were fewer animals harvested. In contrast, in the past their ancestors had difficulty hunting and gathering adequate amounts of food. Comments by respondents reflected on their level of satisfaction in the amount of sharing present in their community, indicating that at least 91 percent of the people were quite content with how much was being shared. The ongoing importance of community sharing was described as follows, "Sharing is what keeps the community together and without sharing the community would be split up. If the way of the outsider were to come in and prevail, then sharing would disappear and that's what I am afraid of" (NS Interview #27).

Only three people mentioned how they have seen changes, either directly or indirectly related to food sharing. One ancillary change had to do with the decrease in

traditional community (i.e. collective) hunting of animals such as caribou, walrus, and bearded seal. Community hunts were conventional during the time when dog teams and walking were the dominant method of hunting transportation. They were also coordinated for a deliberate purpose. With more able-bodied people and eyes to search for wandering game, food was shared with the community as a whole. This type of large group hunting contrasts with walrus and bearded seal hunting of today. As described by an elder:

When I was a kid, we used to have big wooden boats that went out hunting and would return full of walrus. Once they came ashore they would have a big cookout of walrus. This would also happen with bearded seal; this doesn't happen anymore. (NS Interview #18)

There was one person who believed the patterns of sharing had changed within their community. This person was in her late forty's and it was mentioned that her generation had grown up learning about the old ways and were connected with the older generation, and this was now slowly fading. This respondent indicated that "She hardly see anybody sharing anymore, there's too much modern technology. If people have enough for their families they'll share, but if they have too little they won't share" (NS Interview #16). It was also perceived that food sharing changes were appearing in the form of people selling their harvests for cash to people who are working full-time. As one respondent said, "Natives up here are changing just like the rest of the world is changing (NS Interview #27).

4.3.7 Flexibility in Food Sharing Rules

In the past, the food sharing traditions of the Iñupiat people were upheld to the highest degree. Today many of these same traditions have been modified to fit the needs of the household. Flexibility in modern-day food sharing rules seems to be allowed to a degree and people are free to bend the rules as they so desire.

I previously described the rule of a young hunter giving away their first harvest. It was traditionally assumed that the harvest would go to an elder either within the family or within the community; for example, “For the young ones when they catch their first animal, we usually have them give it to all the elders” (NS Interview #10). I heard several stories where this was not always the case. For example, a person interviewed had said when his little boy caught his first fish, he wanted to give it to his uncle, who happened to be younger than his father. This action was not corrected since the little boy would always spend time at his uncle’s house and he was still giving away his first catch. Another example was given through this story:

Well it was my sister and this little boy that was named after his grandpa. His grandpa when he was alive, he loved to kiss, he loved to kiss just on the cheek you know; he was a loving person. Anyway after he had died, one of his kids named their son after him and my sister would kiss him all the time, this is you know revenge. So when he caught his first goose, when he finally caught his first goose, his dad thought it was going to go to his grandma. But that little boy wanted to give it to my sister, so they had to give it to her. (NS Interview #29)

A young hunter's first harvest is also supposed to be shared out completely, with none of it going to the immediate family. Despite this being the rule, I had heard a few respondents mention keeping a piece of their child's first harvested animal and a couple of instances where the entire animal was kept by the hunter's family. Such was the case with a respondent who stated:

When my son caught his first duck, it was given away to me and then I in return cooked it for him and then invited him over for supper. That way, we get to share a family dinner, like a Thanksgiving dinner, but it's shared with him no matter what, him and his family anyway. (NS Interview #23)

It was a cultural norm for the owner of the equipment that had been loaned out to receive a share of whatever was caught, whether he was with the hunting party or not. However, two people had mentioned, "People who currently borrow equipment from others may not always provide a share in return and the owner may not be expecting a share or may even go as far as refuse a share for the use of his equipment."

4.4 Discussion

In this section, I will address specific details regarding the information obtained from the interviews. The topics covered will be overall information generalizations related to why, when, and how people in Wainwright and Kaktovik share, as well as with whom they share. I will also provide an overview of the general types of information qualitative interviews can yield in regards to food sharing. Lastly, I will mention recommendations on how this study could be improved in future studies.

4.4.1 Overall Information Generalizations

Respondents in both the communities of Wainwright and Kaktovik gave a wide range of reasons as to why they share traditional foods with others. The reasons for giving and receiving (balanced reciprocity) and avoiding waste can be categorized as economic in nature, while such reasons as the provision of good feelings, having pride, and remembering hard times are primarily based on human emotions. There were also reasons cited that were largely cultural, such as, the maintenance of cultural traditions, maintaining relationships with animals, and benefiting from good luck. By and large, the cultural reasons of maintaining the cultural tradition (46%) and benefiting from good luck (37%) were the most important reasons as to why people share (Table 4.3).

The results from questions which asked “when people share” ranged from times of strong need to periods of celebration. Sharing with other communities during resource shortfalls and during funeral engagements are examples of need, while sharing at feasts and community events can be described as celebratory events. There was a spectrum of sharing responses, from sharing subsistence items before the hunt (63% of respondents) to sharing when food is requested (23% of respondents), and sharing seems to occur during day to day hunting events (Table 4.4).

There seemed to be explicit groups of people whom respondents collectively mentioned as sharing “partners” during their interviews. Despite the fact that sharing appears to be ubiquitous as mentioned in Magdanz et al. (2002), there were definite categories of people whom respondents commonly share with. It was strongly emphasized that people consistently share with the elders in their community (83% of

respondents) and their relatives (74% of respondents), while sharing less with the needy (31%), widow/widowers (26%), and the sick or infirm (9%) (Table 4.6). Each of the food resources harvested have specific norms that regulate how they are shared among both the harvesters and the recipients. Bowhead whales by far have the most elaborate food sharing rules associated with their distribution. The other species are shared mainly according to who had helped in any capacity with the harvest. It is important to note that flexibility exists among food sharing rules as was expressed by the interview respondents.

Ties between communities are strengthened through the sharing of foods and human bonds are fortified as relatives and friends provide traditional foods. Communities are actively looking out for each other during times of need and the process is one of give and take, but also many times one of pure gifting of food or generalized reciprocity. The sharing of traditional foods is a dynamic system and the combined information offered by interview respondents provides insight into if and how resilient the social-ecological system is to change.

4.4.2 Limits to Generalizations

The findings from my qualitative analyses represent the perceptions among a sample of people within two communities. I conducted interviews that sought to explain in a detailed and nuanced way how certain groups of people share. It is not possible to generalize my results for the communities of Wainwright (15 respondents out of a population of 550) and Kaktovik (14 respondents out of a population of 275), by using information given by respondents on how their households share. Due to my

low sample size, I am making a claim as to how sharing occurs among households and communities and thus, I am able to generalize across the participants in my study and not the community itself. It is also important to note that people's perceptions may not necessarily be consistent with their actions.

4.4.3 Contributions of the Qualitative Approach to an Understanding of Sharing

The use of qualitative approaches such as semi-structured interviewing lends a variety of insights into the system of traditional food sharing. The values of respondents based on perceptions of food sharing were captured, including different rationales as to why people continue to share foods with others. The information gathered through this approach presents a picture of how sharing ideally occurs amongst the Iñupiat in Wainwright and Kaktovik. Additionally, the cultural institutions of sharing were depicted through examples of how and when sharing ensues, and most importantly the information was presented through words spoken by the Iñupiat people themselves.

CHAPTER 5 QUANTITATIVE APPROACHES

5.1 Purpose of Chapter

This chapter constitutes the second analysis of the thesis – a study of traditional sharing using quantitative research methods. I assessed how quantitative data from the Survey of Living Conditions in the Arctic (SLiCA) provides information about sharing of subsistence resources among Native households. I drew on data collected through the SLiCA study because it provided food sharing information and it covered my study area. I also transformed some of the basic results from SLiCA in order to pursue a data analysis focused on food sharing. In this chapter, I will describe the study design and methodology of the SLiCA survey, as well as my methods of data analysis and findings, which included descriptive statistics and a cluster analysis. Through this analysis I determined what information the SLiCA survey approach can provide to better understand the characteristics of households, specifically households receiving traditional foods from other households because it was available within the data. These findings are contrasted with the findings from the qualitative approach (Chapter 4) to determine the strengths and weaknesses of each method.

5.2 Study Design and Methodology of the SLiCA Survey

The SLiCA study was spurred by an interest in studying the vulnerability of Arctic communities to environmental, social, and economic changes. Researchers felt there was an urgent need to document current living conditions and compare them among indigenous peoples across the Arctic. Henceforth, a resolution was passed at the

1998 Inuit Circumpolar Conference (ICC) supporting the creation of the SLiCA survey (Kruse et al., 2009).

The main objectives of the SLiCA survey were (1) to create a novel research design for the comparison of Arctic indigenous populations and their living conditions; (2) to compare individual well-being and different political, economic, cultural, and technological settings; (3) to document current living conditions among indigenous peoples in Greenland, Sweden, Norway, and Finland, the Kola and Chukotskiy Peninsulas in Russia, Alaska, and the Northwest and Nunavut Territories, Nunavik, and Labrador in northern Canada; (4) and to inform policy planning and implementation (Andersen et al., 2002).

I was given permission to utilize SLiCA data through the principal investigator of the United States national data set, Dr. Jack Kruse. The use of the data was with the understanding I would follow the SLiCA Data Sharing Guidelines. The data I had used from the SLiCA survey had been previously entered into a software program called Statistical Package for the Social Sciences (SPSS) and was thus analyzed through this program.

The SLiCA Survey was comprised of four main living condition dimensions, with each consisting of subcategories. The dimensions were: **Part A: Family**, a. Family relationships and b. Household economy; **Part B: Background**, a. Mobility, b. Language, and c. Education; **Part C: Lifestyle**, a. Employment, b. Harvest, c. Leisure, d. Spirituality, e. Identity and f. Health; **Part D: Environment**, a. Housing, b. Income and expenses, c. Technology, d. Safety and justice, e. Resource management, f.

Environmental health, g. Political resources and h. Community viability (Andersen & Poppel, 2002). The survey was quantitative and included both subjective and objective measurement questions, with supplemental qualitative information provided by participants (www.arcticlivingconditions.org). The period of reference for the study was twelve months and the units of analysis were based on both households and individuals (ibid).

Within Alaska, there were three sub-regions combined to yield a primary report for the study (Kruse et al., 2009). The three sub-regions were the North Slope, the Northwest Arctic, and the Bering Strait. In order to obtain unbiased estimates and higher levels of reliability for each of the sub-regions, the Statistics Canada sampling method test was used (www.statcan.gc.ca). It was determined that the specific level of reliability required to estimate sample sizes could be calculated through the coefficient of variation (CV) of an estimated proportion, hence 212 interviews were conducted on the North Slope, 204 in the Northwest Arctic, and 247 in the Bering Straits sub-region (www.arcticlivingconditions.org). The three sub-regions were combined into one region yielding a total of 663 household surveys (ibid).

Respondents were selected based on whether they were 16 years or older, Native Alaskan, and living in the household. If several people fit these criteria, then the person chosen as the respondent was the one with the next birthday (ibid). This technique offered an unbiased way of selecting suitable respondents. The interviews were conducted during the winter months of January and February in 2002/2003 and took an average of 90 minutes to complete (ibid).

5.3 Method of Analysis

The data used from the SLiCA survey were from the Alaska region database. Within the SPSS database, there were original variables as well as variables that were transformations of the original. I used these variables in addition to creating new variables, in order to test hypotheses centering on household classifications and their likelihood of receiving traditional foods from other households.

I initiated this part of the research by creating a conceptual model in order to identify household types with a potential of receiving traditional foods (Figure 5.1), generated through information I had collected from interviews during the summer of 2008. In turn, eight hypotheses were constructed from this model pertaining to household types with a high likelihood of receiving traditional food.

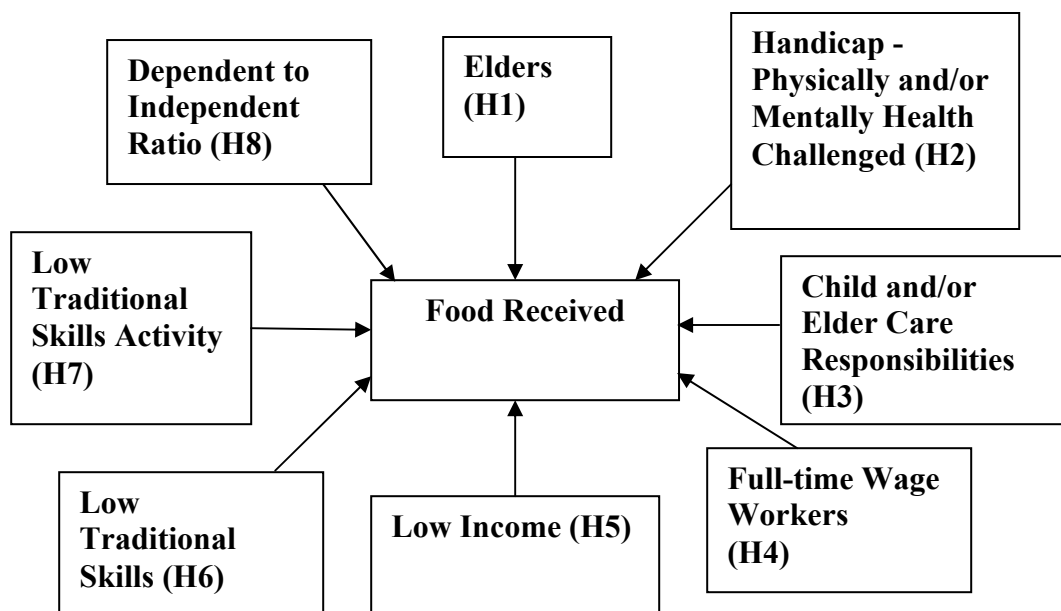


Figure 5.1 Conceptual Model of Household Types Likely to Receive Traditional Foods. (H1-8 refer to Hypotheses 1-8).

My analysis tested the following hypotheses:

Hypothesis 1- *A household with an elder*

H_0 : Households with elders will not have a higher likelihood of receiving more food than non-elder households.

H_1 : Households with elders will have a higher likelihood of receiving more food than non-elder households.

Rationale for inclusion: A majority of people I had interviewed during the summer of 2008 had stated, “We always share with the elders.” It was from this statement that I incorporated households with elders as a factor predicting food sharing.

Hypothesis 2 – *A household with a handicapped, physically and/or mentally health challenged member*

H_0 : Households with a handicapped, physically and/or mentally health challenged member will not have a higher likelihood of receiving more food than households without.

H_1 : Households with a handicapped, physically and mentally health challenged member will have a higher likelihood of receiving more food than households without.

Rationale for inclusion: It was mentioned in my 2008 interviews that “people always share with the needy.” During this analysis, I had interpreted households with a physically and/or mentally health challenged member as being needy households.

Hypothesis 3 - *A household with child and/or elder care responsibilities*

H_0 : Households with high levels of child and/or elder care responsibilities will not have a higher likelihood of receiving more food than households with low levels of these responsibilities.

H_1 : Households with high levels of child and/or elder care responsibilities will have a higher likelihood of receiving more food than households with low levels of these responsibilities.

Rationale for inclusion: I have classified households with high levels of child and/or elder care responsibilities as being needy. With higher levels of child and/or elder care responsibilities, these households may require outside help in regards to food resources.

Hypothesis 4 – *A household with full-time wage workers*

H_0 : Households with members who are full-time and/or part-time wage workers will not have a higher likelihood of receiving more food than households with members who work less than full-time and/or part-time.

H_1 : Households with members who are full-time and/or part-time wage workers will have a higher likelihood of receiving more food than households with members who work less than full-time and/or part-time.

Rationale for inclusion: Households with members who are full-time and/or part-time wage workers are actively engaged in the wage economy and have the resources to purchase subsistence equipment, thereby increasing the chance that they will receive a share of traditional food via the loaning out of equipment.

Hypothesis 5 – *A household with a low total income*

H_0 : Households with a low total income will not have a higher likelihood of receiving more food than households with a high total income.

H_1 : Households with a low total income will have a higher likelihood of receiving more food than households with a high total income.

Rationale for inclusion: Households with a low total income may need help in obtaining food resources due to their low engagement in the wage economy.

Hypothesis 6 – *A household with members with a low number of traditional skills*

H_0 : Households with members who have a low number of traditional skills will not have a higher likelihood of receiving more food than households with members who have a high number of traditional skills.

H_1 : Households with members who have a low number of traditional skills will have a higher likelihood of receiving more food than households with members who have a high number of traditional skills.

Rationale for inclusion: Households with members with a low number of traditional skills may not have the knowledge base to harvest traditional foods and may need help obtaining food resources.

Hypothesis 7 – *A household with members who participated in a low number of subsistence activities*

H_0 : Households with members who participated in a low number of subsistence activities will not have a higher likelihood of receiving food than households with members who participated in a higher number of subsistence activities.

H_1 : Households with members who participated in a low number of subsistence activities will have a higher likelihood of receiving food than households with members who participated in a higher number of subsistence activities.

Rationale for inclusion: Households with members performing low amounts of subsistence activities can be classified as having low engagement in the subsistence livelihood and may need outside help for food resources.

Hypothesis 8 – *A household with a high dependent to independent ratio*

H_0 : Households with a high dependent to independent ratio will not have a higher likelihood of receiving food than households with a low dependent to independent ratio.

H_1 : Households with a high dependent to independent ratio will have a higher likelihood of receiving food than households with a low dependent to independent ratio.

Rationale for inclusion: Households with higher ratios will have additional members who are dependent on working (either wage or subsistence) members. Households with a high dependent to independent ratio can be classified as being needy and may need outside help for food resources.

5.4 Operationalizing the Variables

Independent variables related to each of the hypotheses were operationalized in order to capture the concepts of wage economy, subsistence livelihood, and need (Table 5.1). The amount of traditional food received and the ways in which households were receiving were also operationalized as dependent variables.

Table 5.1 Prototype Conceptual Model

Variables Considered in Conceptual Model Linking Household Type and Level of Receiving
A. Household Level of Receiving
1. Different ways HHs are receiving
2. Amount of traditional food received
B. Wage Economy
1. Grouped HH ratio of FT working members to total HH size & # of members with FT jobs
2. Grouped HH ratio of PT working members to total HH size & # of members with PT jobs
C. Subsistence Livelihood
1. Total HH subsistence activities
2. Amount of subsistence equipment owned
D. Need
1. HH member hampered in daily activities
2. Child elder-care responsibilities
3. Ratio of dependents to independents
4. # of persons 60 and over in HH
5. Total HH income

5.4.1 Dependent Variables

The first dependent variable was derived from SLiCA survey questions A39 through A41 using SPSS (Appendix D). My goal was to create a dependent variable of net received and to determine how much food was actually given to a household (amount received). I cross-tabulated data between A39 – how much of the food eaten in their household was traditional food and A40 – how much food was harvested by their household. The rationale in using these two questions was if there was more traditional food eaten in their household in the last 12 months than was harvested, then extra food had most likely been given to the household by some outside party. A cross-tabulation table was created to determine whether households consumed more traditional food

than they harvested. The “Netreceived” variable was coded from receiving various levels of traditional food beyond what was harvested, i.e., less than or equal to harvest = 1 ($\leq H$), received 1 level more than harvested = 2 (+1H), received 2 to 3 levels more than harvested = 3 (+2-3H). (Table 5.2). Amount received was then cross-tabulated with A41C – received a gift of traditional food and this new computation of “Netreceived” was transformed into “Netreceived2”. The motivation for cross-tabulating only with A41C and not the other two questions A41A (“Did your household receive traditional food in exchange for helping other households?”) and A41B (“Did your household receive traditional food from others, by exchanging one traditional food for another?”), was because this question specifically asks whether food was given to them and not whether food was received via exchange or assistance. I interpreted a gift of food in this survey as an outright gift, where the recipient was not expected to give anything back in return.

Table 5.2 Cross-tabulation of A39 - Proportion of all meat and fish that is traditional food by A40 - Proportion of all meat and fish harvested by the household

A39 Proportion of all meat & fish that is traditional food	A40 - Proportion of all meat and fish harvested by household				
	1 None	2 Less than half	3 About Half	4 More than half	Total
1 0	8	0	0	0	8
2 < 0.5	45	98	0	0	143
3 0.5	14	65	67	0	146
4 > 0.5	21	54	77	191	343
Total	88	217	144	191	640

A second dependent variable reflecting the different ways households were receiving was created from survey question A41, which asked about traditional foods consumed by the respondent's household over the past 12 months and whether their household received traditional foods from others. From this question, I utilized the sub-questions of A41A, A41B, and A41C. The variable reflecting the source of received food for households was coded as follows: 1 = gift only (G), 2 = assist and exchange only (A/E), 3 = gift, assist, exchange (G/A/E), 4 = gift and assist only (G/A), 5 = gift and exchange only (G/E).

5.4.2 Independent Variables

In this section, I will be listing each of the independent variables and explaining how the concepts were operationalized from the SLiCA data. I had generated independent variables of which types of households would have a higher likelihood of receiving traditional foods. Initially, the eight hypotheses utilized eight variables that either already existed in the SPSS database or were created using a combination of variables. For hypothesis 1, I created an elder variable called "Elders", with elders being all respondents 60 years of age and older within the household. Households without elders were coded as 0 and were hypothesized to not be receiving traditional foods from other households. Households with elders were coded as if they had 1 or more elders within the household and were hypothesized to be receiving traditional foods from other households. This variable operationalized one aspect of the concept of need.

The variable of “Handicap – Physically and/or Mentally Health Challenged” for hypothesis 2 was derived directly from survey question D23, which asked respondents whether “they are hampered in their daily activities by any chronic physical or mental health problem, illness, or disability.” If the respondent answered “no” to this question, the household was coded as 0, meaning without handicapped members and hypothesized to not have received traditional foods from other households. If the respondent answered “yes”, the household was coded as 1 and hypothesized to have received traditional foods from other households. It is known from the respondent answer of “yes”, that there is at least one member within the household who could be classified as handicapped. This variable operationalized the concept of need.

Hypothesis 3 used a variable which I called “Child and/or Elder Care Responsibilities” and labeled as “Childeldercare”. This variable was formed through a cross-tabulation between survey questions C17E (“Do any of these reasons for not starting a job last week apply to you? – You had no one to take care of young children or elders at home?”) and A29A-E (“Who in your household normally did each of the following activities in the past 12 months? – Did person number 1-5 supervise your household children?”). This variable was used to capture the total amount of child and elder care responsibility within the household (Table 5.3).

Table 5.3 Cross-tabulation of C17E (Didn't start job, no caretaker for children or elders) by A29A-E (Ratio of caring to all adults)

A29 A-E Ratio of caring to all adults	C17E - Didn't start job last week because had no one to take care of young children or elders				Total
	0 Inappropriate	1 Yes	2 No	9 Not Ascertained	
0	122	10	119	6	257
1	168	32	116	4	320
2	45	8	31	0	84
3	2	0	1	0	3
Total	337	50	267	10	664

Households were coded as 0 if classified as having low to lowest levels of child-eldercare responsibilities (all responses were no), and were hypothesized to not be receiving traditional foods from other households. Households with medium to high levels of child-eldercare responsibilities (all responses were “yes”) were coded 1, and hypothesized to have received traditional foods from other households. This variable operationalized another concept of need.

Hypothesis 4 (households with full-time wage workers) was tested using a variable already within the SPSS database, which was based off of the number of household members with full-time jobs. This variable was coded in two ways, “FullTimejob1” and “FullTimejob2”. “FullTimejob1” was coded as the following: 0 household (HH) members working full-time (FT) = 0, 1 HH member working FT = 1, 2 HH members working FT = 2, 3 to 5 HH members working FT = 3. “FullTimejob2” was coded as 0 HH members working FT = 0, 1 to 2 HH members working FT = 1, 3 to

5 HH members working FT = 2. The rationale for grouping 1 to 2 household members with full-time jobs was to see if there were any differences between “FullTimejob1” and “FullTimejob2”. Even though the original hypothesis did not include part-time (PT) wage workers in a household, I utilized an existing variable looking at the number of household members with part-time work. Variable “PartTimejob” was coded as 0 HH members working PT = 0, 1 HH member working PT = 1, 2 HH members working PT = 2, 3 to 5 HH members working PT = 3. I additionally created another variable to test this hypothesis based on a ratio of the number of household members working full-time to the total number of household members. I created a variable called “FTHouseholdRatio” and it was coded as 0 HH members working = 0 (none), 0.01 to 0.24 = 1 (few), 0.25 to 0.49 = 2 (medium), 0.50 to 0.74 = 3 (medium+), 0.75 to 1.00 = 4 (high). For part-time work, I also created a variable called “PTHouseholdRatio” and it was coded similarly to “FTHouseholdRatio”. For both of these variables, the larger ratios mean there were more household members with either full-time or part-time employment. Each of these variables operationalized the concept of level of household engagement in the wage economy.

The variable for hypothesis 5 (total income) was derived from survey question E21 – “Think about the total household income you and all other members of your household earned or received from other sources for the last 12 months” and labeled as “HHTotalIncome”. The total household income was grouped as: \$5000 or under = 1, \$5001 to 12,000 = 2, \$12,001 to \$23,000 = 3, \$23,001 to \$37,000 = 4, \$37,001 to \$70,000 = 5, above \$70,000 = 6. The categories including \$37,000 and below were

coded as 1 (low income group), while the categories including \$37,001 and above were coded as 2 (high income group) based off of modified U.S. poverty standards (<http://aspe.hhs.gov/poverty/03fedreg.htm>). This variable operationalized another concept of need.

It was determined that hypothesis 6 (household members with a low number of traditional skills) could not be tested due to the fact that there was no variable at the household level within the database which could be used or created.

Hypothesis 7 was tested using an existing variable of “HHSubsistenceActivity” which was a set of grouped values of household members and the number of subsistence activities they performed in the last 12 months. This variable was coded as less than 6 activities = 1, 6 to 9 activities = 2, 10 to 12 activities = 3, more than 12 activities = 4. This variable operationalized the concept of engagement in the subsistence livelihood.

Hypothesis 8 (Dependency Ratio) was tested using the variable called “DependentIndependentRatio”, which was created utilizing survey questions A16A-F (“Who in your household normally did each of the following activities in the past 12 months? – Harvested, hunted, or fished for food for your household?”), A18A-F (“Butchered or preserved harvested food?”), A22A-F (“Worked in a full-time job for pay?”), A23A-F (“Worked in a part-time job for pay?”), and A7A-F (“Ages of each person in the household”). These questions were used to compute the number of “non-producers” within a household, which were people 18 years of age and older who did not contribute to the total amount of subsistence activities performed. The number of

dependents was the sum of people under 18 years of age and the number of non-producers. The number of producers was computed by subtracting the number of dependents from the total household size. A ratio was then computed by dividing the number of dependents by the number of producers. This variable was then recoded into two separate variables of “DependencyRatio1” and “DependencyRatio2”.

“DependencyRatio1” was coded as low – 0 to 2 ratios = 1 and high – 2.33 to 14 ratios = 2, while “DependencyRatio2” was coded as low – 0 to 1 ratios = 1 and high – 1.25 to 14 ratios = 2. Two separate variables were created and utilized in order to test different ratio groupings. These variables operationalize the concept of need.

Three other variables already within the database were also utilized to assess the levels at which households were receiving and the amounts received. These variables were: “OwnEquip”, “BorrowEquip”, and “HHsize”. “OwnEquip” was the amount of subsistence equipment owned by a household and “BorrowEquip” was the number of items borrowed for subsistence activities. Both these variables operationalized the concept of subsistence engagement. “OwnEquip” was coded as 0 to 2 items owned = 1, 3 to 5 items owned = 2, and 6 to 8 items owned = 3 and “BorrowEquip” was coded as no items borrowed = 0, 1 to 2 items borrowed = 1, 3 to 4 items borrowed = 2, 5 to 6 items borrowed = 3, and 7 to 13 items borrowed = 4. “HHsize” was the total number of people in a household and it was recoded as: low – 1 to 3 people in a household = 1, medium – 4 to 6 people in a household = 2, high – 9 to 12 people in a household = 3. These variables all reflect different aspects of household need.

5.5 Chi-Square Significance Tests

I ran chi-square significance tests of each independent variable against the dependent variable of amount received (Appendix E). Hypotheses 7 showed a significant chi-square p-value. Hypothesis 7 predicted that households with members who participated in a low number of subsistence activities in the past 12 months would have a higher likelihood of receiving food than households with members who participated in a higher number of subsistence activities (Chi square = .000, $p < 0.001$). Households receiving one level more than they harvested had members performing less than 6 subsistence activities.

One significant drawback to this approach was that households often fell into multiple categories, and therefore analyzing each type of variable separately was not useful for identifying different types of households and understanding if there were differences in the amounts of traditional food they received. In order to address this question, a sum of household level variables was created with the logic that households which possess more of these characteristics (elders, handicapped, full time jobs), would in turn receive more traditional foods. For example, I rationalized that a household possessing eight of these independent variables would receive more than a household possessing three of these variables. In general, most households possessed between 4 to 6 characteristics, whether or not they differed on how much they received (Figure 5.2). This analysis was inconclusive and I applied a cluster analysis technique, of which will be described later.

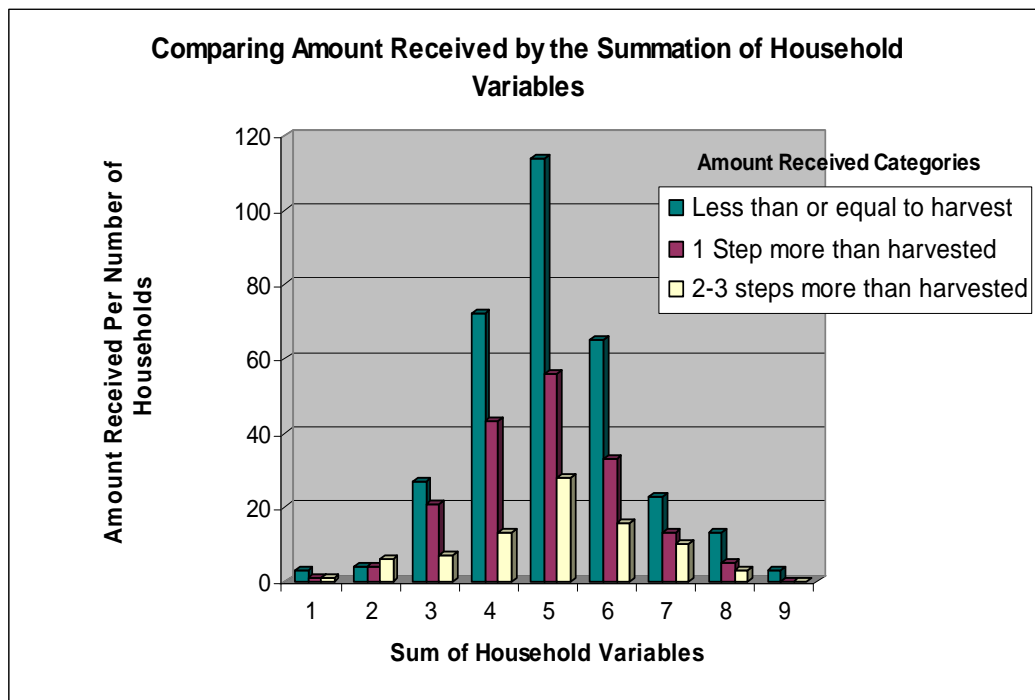


Figure 5.2 Comparing Amount Received by the Summation of Household Variables

I conducted a Pearson chi-square test to identify whether there was a relationship between the sum of household variables and the different ways households are receiving and the amount they receive. There is no significant relationship between the sum of household variables and different ways of receiving (Chi square = 0.573 > 0.10) and also between the sum of household variables and amount received (Chi square = 0.258 > 0.10). These results indicate there is no relationship between the sum of household variables and the different ways of receiving or the amount received.

5.6 Two-step Cluster Analysis

Previous methods of summing independent variables did not classify households as receiving more or less traditional foods. I then decided to use the two-step cluster analysis to define or validate groups of variables that could be indicative of traditional food receiving households. Cluster analysis is a group of methods used to classify cases into relative groups based on their distinctive characteristics (Rapkin & Luke, 1993; Lorr, 1983). It is an exploratory tool helpful in revealing information about the different types of cases within a dataset and their natural groupings (Rapkin & Luke, 1993). The products that emerge from cluster analyses are called groups, classes, categories, or clusters, and the cluster memberships are unknown prior to the analysis (Lorr, 1983). The variables for the cluster analysis should be selected using past research and theory. In my case, I used both literature and data acquired through semi-structured interviews to develop related variables.

5.6.1 Rationale for Using a Two-step Cluster Analysis

I used a two-step cluster analysis procedure with the SLiCA-derived dataset because it was useful for finding natural groupings of cases, while working well with categorical and continuous variables, as well as very large data files. Within my data set, all the variables (dependent and independent), are classified as categorical (nominal). I identified the category groupings for each of the variables using their frequencies and I designated the majority of the variable categories as low, medium, and high. These same set of variables were utilized for the cluster analyses. The unit of analysis was again the household. The variables were tested at a 95% confidence level

and cluster frequencies were generated including Akaike and Schwarz's Bayesian information criterion.

5.6.2 Two-step Cluster Assumptions

The two-step cluster has the two basic assumptions: each variable has a multinomial distribution and the variables in the cluster model are independent of each other. I tested each of the variables and all of the variables had a multinomial distribution, meaning each variable differs by household type. In order to test for variable independence, I ran a Pearson's chi-square between each of the variables. The variables for total household income, households below the U.S. poverty level, amount of items borrowed for subsistence activities, ratio of dependents to independents, and total number of people in the household were correlated with other variables and were dropped from the cluster analysis (Table 5.4).

Table 5.4 Variable Correlations and Pearson Chi-Square P-values (Items in bold were dropped from the cluster analyses)

Correlated Variables		
Variable 1	Variable 2	Pearson chi-square p-values (p < 0.01)
Total household income	Child and/or elder care responsibilities	.000
Households below U.S. poverty level	Household subsistence activities	.004
Subsistence items borrowed	Subsistence equipment owned	.000
Ratio of dependents to producers	Number of household persons 60 and over	.000
Total number of people in the household	Household subsistence activities	.000

It was important to retain variables that operationalized the concepts of engagement in the wage economy, engagement in the subsistence livelihood, and need. I retained variables due to their representation of the three concepts mentioned above (Table 5.1), despite the fact that some of the variables were correlated with other variables. I used both the grouped ratios of full-time and part-time employed household members to total household size because it incorporated the idea of total household size.

5.6.3 Results of Cluster Analysis

The cluster analysis revealed four clusters of households that had similar characteristics around receiving. The cluster distribution was: cluster 1, N = 94, cluster 2, N = 120, cluster 3, N = 179, and cluster 4, N = 145.

The significant variables of Cluster 1 (*Needy Households*), the smallest cluster with 94 households were: low overall engagement in both the wage economy and subsistence livelihood (Table 5.5 and Figure 5.3). This cluster was comprised of households with low engagement in the wage economy (68.1 percent having zero household members working full-time and 59.6 percent having no household members working part-time). These households had low engagement in the subsistence livelihood as well, (68.1 percent performing less than six subsistence activities within the last 12 months and 62.8 percent owning 0-2 subsistence equipment items). The majority of these households (63.8 percent) have one or more elders, 75.5 percent have proportionally higher child and elder care responsibilities than the other three clusters, and 41.5 percent have at least one household member hampered in their daily activities due to being physically or mentally handicapped. Households within this cluster are

receiving substantially more than they are harvesting in comparison with other clusters, 39.4 percent are receiving 1 level more and 27.7% are receiving 2 to 3 levels more.

Table 5.5 Two-step Cluster Analysis Results (Highlighted percentages represent important results)

	Cluster 1 <i>Needy Households</i> (N=94)	Cluster 2 <i>High Wage/ Subsistence</i> (N=129)	Cluster 3 <i>Moderate Employment & Moderate Subsistence</i> (N=179)	Cluster 4 <i>Full-time Employment & Low/Moderate Subsistence</i> (N=145)
Amount Received	≤ harvest: 33.0% +1 H: 39.4% +2-3 H: 27.7%	≤ harvest: 87.6% +1 H: 11.6% +2-3 H: 0.8%	N.S. but ≤ harvest: 52.5% +1 H: 33.0% +2-3 H: 14.5%	N.S. but ≤ harvest: 42.8% +1 H: 37.2% +2-3 H: 20%
Different Ways of Receiving	G: 44.7% A/E: 3.2% G/A: 14.9% G/E: 3.2% G/E/A: 34.0%	G: 11.6% A/E: 6.2% G/A: 7.0% G/E: 21.7% G/E/A: 53.5%	N.S. but G: 33.0% A/E: 6.1% G/A: 15.1% G/E: 16.2% G/E/A: 29.6%	N.S. but G: 33.1% A/E: 5.5% G/A: 11.7% G/E: 12.4% G/E/A: 37.2%
FT Work Ratio # Working FT/# HH Members	None: 68.1% Low: 3.2% Med: 3.2% Med-High: 7.4% High: 18.1%	None: 18.6% Low: 14.0% Med: 17.8% Med+: 42.6% High: 7.0%	None: 12.3% Low: 39.1% Med: 47.5% Med-High: 1.1% High: 0%	None: 0% Low: 6.2% Med: 24.8% Med-High: 43.4% High: 25.5%
PT Work Ratio # Working/# HH Members	None: 59.6% Low: 4.3% Med: 2.1% Med-High: 9.6% High: 24.5%	N.S. but None: 40.3% Low: 10.9% Med: 24.0% Med-High: 12.4% High: 12.4%	None: 17.3% Low: 45.3% Med: 33.0% Med-High: 4.5% High: 0%	None: 59.3% Low: 0% Med: 19.3% Med-High: 21.4% High: 0%
Total HH Subsistence Activities/ year	<6: 68.1% 6-9: 23.4% 10-12: 3.2% >12: 2.1%	<6: 13.2% 6-9: 31.8% 10-12: 33.3% >12: 21.7%	<6: 11.2% 6-9: 66.5% 10-12: 13.4% >12: 8.4%	<6: 50.3% 6-9: 49.0% 10-12: 0.7% >12: 0%
Subsistence Equip. Owned	0-2: 62.8% 3-5: 27.7% 6-8: 9.6%	0-2: 2.3% 3-5: 27.9% 6-8: 69.8%	0-2: 26.8% 3-5: 46.9% 6-8: 26.3%	0-2: 82.1% 3-5: 15.2% 6-8: 2.8%
Handicapped HH Member	No members: 58.5% 1 or more: 41.5%	N.S.	N.S.	N.S.
Elders Members	None: 36.2% One or more: 63.8%	None: 58.1% One or more: 41.9%	N.S.	None: 87.6% One or more: 12.4%
Child-Elder Care Resp.	Lowest care: 18.1% Low care: 75.5% Medium-high care: 6.4%	Lowest care: 73.6% Low care: 24.8% Medium-high care: 1.6%	Lowest care: 54.2% Low care: 30.7% Medium-high care: 15.1%	Lowest care: 77.2% Low care: 15.2% Medium-high care: 7.6%

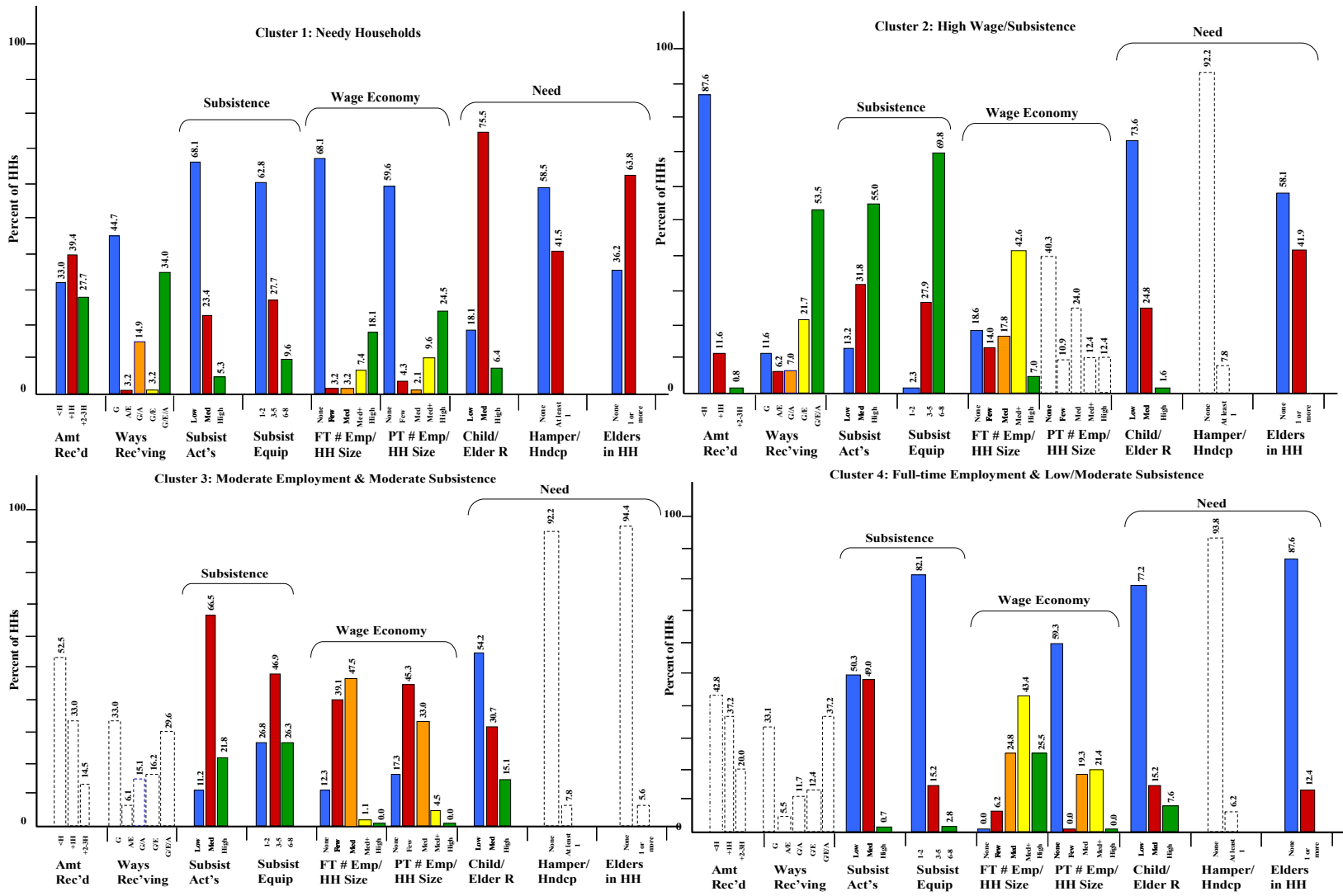


Figure 5.3 Cluster Analysis Graphs

Households receiving 2-3 levels more than harvested were proportionally larger than the other three clusters. These households were receiving in the form of gifts (44.7 percent) and 34 percent via all three ways, as gifts and through assistance and exchange.

Identifying characteristics of Cluster 2 (*High Wage/Subsistence*), with 129 households, were: high overall engagement in both the wage economy and subsistence livelihood (Table 5.5 and Figure 5.3). This cluster can be classified as households with moderate to high levels of engagement in the wage economy relative to the other clusters, with 42.6 percent falling within the 0.50 - 0.74 (med+) full-time employment ratio category and 24 percent within the 0.25 - 0.49 (med) part-time employment ratio category. Households in this cluster also portray strong engagement in the subsistence livelihood, with 31.8 percent participating in 6-9 subsistence activities, 33.3 percent participating in 10-12 activities, and 21.7 percent participating in over 12 activities. The latter two percentage categories were proportionally larger than subsistence engagement for the other three clusters. Additionally, 69.8 percent of this cluster's household own between 6-8 subsistence equipment items. This cluster has low to moderate levels of child and/or elder care responsibilities, with 24.8 percent falling in the low category and 41.9 percent having one or more elders. The majority (87.6 percent) are receiving less than or equal to their harvest. Households are however, still receiving food from others; 53.5 percent are receiving via all three ways (gifts, assisting, exchanging), while 21.7 percent are receiving through gifting and exchanging.

Results of a frequency distribution on total number of people within the household for this Cluster 2 (*High Wage/Subsistence*), showed these households

primarily consisted of between 1-3 or 4-6 people. Household size was larger than Cluster 1 (*Needy Households*) (1-3 people), but comparable to Cluster 3 (*Moderate Employment and Moderate Subsistence*) (4-6 and 9-12 people) and Cluster 4 (*Full-time Employment and Low/Moderate Subsistence*) (1-3 and 4-6 people).

Cluster 3 (*Moderate Employment and Moderate Subsistence*) is the largest cluster, with 179 households (Table 5.5 and Figure 5.3). These households can be classified as households with moderate to high engagement in the wage economy, with 47.5 percent having a full-time employment ratio of 0.25-0.49 (medium) and 39.1 percent with a ratio of 0.01-0.24 (few). For part-time employment ratios, 45.3 percent had a ratio of 0.01-0.24 (few) and 33 percent with a ratio of 0.25-0.49 (medium). The larger ratios mean there were more household members with either full-time or part-time employment. Sixty-six and a half percent fell within the 6-9 subsistence activities category and 46.9 percent were in the 3-5 subsistence equipment items owned category, indicating moderate engagement in the subsistence livelihood. These households had moderate to high levels of child and/or elder care responsibilities, with 15.1 percent having medium to high responsibility levels, which was higher than all the other clusters. Despite the fact that the different ways of receiving and amount received variables were not a significant variable in differentiating clusters, post-hoc test frequencies indicated 33 percent were receiving gifts only, while 29.6 percent were receiving via all three ways (gifts, assisting, exchanging). The majority (52.5 percent) were receiving less than or equal to what they were harvesting, and 33 percent were receiving 1 level more than what they were harvesting.

Finally, Cluster 4 (*Full-time Employment and Low/Moderate Subsistence*), with 145 households, can be classified as households moderately engaged in the wage economy with 43.4 percent having a full-time employment ratio of 0.50-0.74 (medium+) and 21.4 percent having a part-time employment ratio of 0.50-0.74 (medium+), which was proportionally larger than all the other clusters (Table 5.5 and Figure 5.3). These households are characterized by low to moderate engagement in the subsistence livelihood, with 50.3 percent participating in less than 6 subsistence activities and 49 percent participating in 6-9 activities within the last 12 months. Additionally, 82.1 percent owned 0-2 subsistence equipment items which could be classified as very low compared to the other clusters. Households within this cluster have low child and/or elder care responsibilities, with 77.2 percent falling into the lowest care responsibilities category and 87.6 percent having no elders. The amount received and different ways of receiving variable were not significant for this cluster, but post-hoc test frequencies indicated 42.8 percent were receiving less than or equal to their harvests, 37.2 percent were receiving one level more than they were harvesting, 33.1 percent were receiving in the form of gifts, and 37.2 percent were receiving via all three ways (gifts, assisting, exchanging).

I removed the number of subsistence items borrowed variable because of its strong correlation with the subsistence equipment owned variable. In order to further distinguish this variable from the subsistence equipment owned variable, I performed a cross-tabulation between the amount of subsistence equipment owned by the household, and the cluster number. The results of the cross-tabulation are presented in Table 5.6.

Table 5.6 Correlation between Subsistence Equipment Owned and Borrowed

Household Types	Subsistence Equipment Owned	Subsistence Equipment Borrowed
Needy Households	0-2 items	1-4 to no items
High Subsistence/Wage	6-8 items	1-4 to no items
Part-time Employment and Moderate Subsistence	3-5 items	1-4 to no items
Employed/Low Subsistence	0-2 items	1-4 to no items

From this cross-tabulation, I concluded Cluster 2 (*High Wage/Subsistence*) households actively engaged in both the wage economy and subsistence way of life own a large amount of subsistence equipment items, while also borrowing a few (1-4) to none. The owning of subsistence equipment is strongly linked to high subsistence activity within a household. Yet on the other hand, if a household does not actively participate in the wage economy or subsistence activities, the majority of these household types will not own or borrow subsistence equipment items. Therefore, the number of subsistence items owned or borrowed is a reflection of a household's subsistence activities. This variable operationalizes the concept of participation in subsistence activities.

5.6.4 Discussion of Cluster Analysis Results

My goal was to identify the characteristics of households who receive traditional foods from other households and the cluster analyses provided such information. Results suggest that Cluster 1 (*Needy Households*) were “needy” households and they did indeed receive proportionally more traditional foods than the other clusters. This

cluster represented “needy” households in that the majority of them do not have members that work (full-time or part-time), nor do they have members participating in a large number of subsistence activities. These households also may have greater need for traditional foods since at least one member is physically or mentally handicapped, as well as have higher child and/or elder care responsibilities. Magdanz et al. (2002) showed households of single mothers with children and households with retired elders were likely to have low subsistence harvests. Households such as these would not be able to meet their needs if family members from other households did not provide assistance in the form of traditional food sharing as well as other services (Jorgensen, 1990). The majority of households within this cluster have at least one or more elders. The work of Bodenhorn (1989) showed that elder-headed households on average received traditional foods regularly from people who were not related.

Cluster 2 (*High Wage/Subsistence*), actively supports past studies on North Slope Iñupiaq and their wage employment/subsistence livelihood patterns because they demonstrate an effort to engage in a “mixed economy” (Kruse, 1991; Kruse, 1982; Kruse, 1992; VanStone, 1960). Households which were actively engaged in the wage economy seemed to be also strongly engaged in subsistence activities (Magdanz et al., 2002). In a study conducted by Kruse (1991) with North Slope Iñupiat, it was reported in 1988 that forty-five percent of households making \$60,000 or more reported over half of their household food came from subsistence, and this was a higher proportion than any of the other income groups. Active subsistence households that can be

classified as producers have members who work more months out of the year than households who are not actively producing subsistence foods (Magdanz et al., 2002).

High Wage/Subsistence households with certain members working full-time may permit other household members to pursue subsistence activities, thus allowing the household to be actively engaged in both the wage economy and the subsistence way of life (Kruse, 1991). Households in Cluster 2 (*High Wage/Subsistence*) demonstrate members working part-time are also producing substantial traditional food harvests, with individuals engaged in wage employment and the subsistence livelihood (Kruse, 1991). Additionally, it may be that wage employment, whether it is full-time or part-time can provide income to purchase subsistence equipment items which are used for subsistence activities (Braund & Associates, 1993). It is also important to note that the use of subsistence equipment items require an adequate income for the maintenance of such equipment (Nowak, 1975). Although this was the case, it was difficult to distinguish differences between Cluster 3 (*Moderate Employment and Moderate Subsistence*) and Cluster 4 (*Full-time Employment and Low/Moderate Subsistence*) due to the fact that both were moderately engaged in the wage economy, Cluster 3 mainly through part-time employment and Cluster 4 through full-time employment. This is interesting because Cluster 4 (*Full-time Employment and Low/Moderate Subsistence*), which has households primarily working full-time is also comprised of households owning very few subsistence equipment items (0-2).

It is critical to point out that regardless of wage income sources or level of engagement, all four clusters contained a substantial number of households receiving

traditional foods either as gifts or through assistance and exchange. Magdanz et al. (2002) suggests there is an association between giving and receiving, i.e., households that share multiple foods have a greater likelihood to receive multiple resources in return. Households with multiple subsistence equipment items can loan out their equipment, which entitles them to a share of the harvests (Bodenhorn, 1989). This sharing could be classified as an exchange, with the equipment having economic content and the actual objects of exchange being a tangible good (Hunt, 2000). This could very well be the case with Cluster 2 (*High Wage/Subsistence*), where in spite of 87.6% of households receiving less than they harvested, 21.7% were receiving via gifting and exchanging and 69.8% of the households owned between 6-8 subsistence equipment items.

Finally, in a study conducted by Wolfe and Walker (1987), most rural Alaskan communities revealed a pattern where approximately thirty percent of the households harvest seventy percent of the community's subsistence foods. This pattern is true for many of the rural communities across Alaska, even though the traditional foods themselves may differ (Magdanz et al., 2005). My results suggest the question of whether there are a certain percentage of households in every rural Alaskan community which do not actively harvest traditional foods and instead are commonly on the receiving end of harvested resources?

5.7 Quantitative Approach Discussion

The SLiCA survey was used as an example of a quantitative approach to understanding the concept of food sharing. The SLiCA survey's original purpose was

to document current living conditions and compare social indicators of well-being among indigenous peoples across the Arctic regions, but I went a step further to operationalize new variables and analyze a subset of the data in order to assess household types and their levels and ways of receiving traditional foods.

In this study, I specifically focused on the types of households that have a high likelihood of receiving traditional foods as opposed to the types of households which may be providing traditional foods. The survey data provided information related to household variables and the sharing of traditional foods. Hypotheses incorporating these variables were then tested. A chi-square significance test was initially used to identify which household variables were important in determining levels of food amounts received. The results of the chi-square test led to further data exploration using a two-step cluster analysis technique, which was able to identify groups of household characteristics resulting in a higher likelihood of receiving traditional food from other households. The quantitative approach provided a level of rigor through the use of statistical procedures testing the hypotheses, which eventually allowed the acceptance or rejection of these study hypotheses.

I would accept hypothesis 1, stating households with elders have a higher likelihood of receiving more traditional food than non-elder households due to Cluster 1 (*Needy Households*). The majority of these households had 1 or more elders and were indeed receiving more than the other household types, especially in the 2-3 levels more than harvested category. Similarly, Cluster 1 (*Needy Households*) exemplifies hypothesis 2 (HHs with handicapped members) and hypothesis 3 (child and/or elder

care responsibilities) as receiving more than the other household types. Therefore, I accept both hypotheses 2 and 3 as being supported. For hypothesis 4 (HHs with full-time and/or part-time wage workers), I accept the null hypothesis which states “households with members who are full-time and/or part-time wage workers will not have a higher likelihood of receiving more food than households with members who work less than full-time and/or part-time”. The acceptance of the null hypothesis is due to Cluster 2 (*High Wage/Subsistence*), where 87.6% of the households within this cluster are receiving less than or equal to what they are harvesting. Similarly, I reject the null hypothesis for hypothesis 5 (HHs with a low total income) because Cluster 1 (*Needy Households*) reveals households with low engagement in the wage economy and hence low total household incomes, have a higher likelihood of receiving more food. I accept hypothesis 7 (HHs with members participating in low numbers of subsistence activities), as it was exemplified in Cluster 1 (*Needy Households*) as receiving proportionally more than the other 3 clusters. The cluster analysis provided information which is inconclusive as to whether I should accept or reject the null hypothesis for hypothesis 8 (HHs with high dependent to independent ratios).

Overall, the quantitative approach offers a way of analyzing data in order to calculate the probability of null hypotheses being supported. Interpretive statements based on test statistics are objective and thus this quantitative approach provided objective results. It is important to keep in mind that the survey instrument for SLiCA was designed to provide unbiased data as well as the methods for gathering the data. Yet the quantitative approach in this instance did not provide information on the

cultural meanings and values related to why certain types of households are receiving more traditional food than others. The information provided is suggestive of interesting cultural avenues to explore further.

CHAPTER 6 COMPARING TWO APPROACHES

6.1 Objectives of Chapter

The overarching objective of my thesis is to compare the applicability (or utility) of qualitative and quantitative approaches for measuring food sharing in Alaskan North Slope communities. This objective will be addressed in this chapter using findings obtained from each of my study approaches, as well as reviewed literature on the ontology of qualitative vs. quantitative research. Additionally, the research findings of both approaches were evaluated to assess their complementary characteristics related to the measurement of food sharing through a “mixed methods” approach.

The respective strengths and weaknesses within qualitative and quantitative approaches in research have been the topic of a long-standing debate since the mid-nineteenth century (Hammersley, 1992). In general, the social sciences are equated as being more qualitatively oriented and the natural sciences stand as firmly quantitative (ibid). But in some social science fields, such as psychology and sociology, both qualitative and quantitative data have been derived and analyzed from interviews and surveys respectively (Smith & Heshusius, 1986).

The literature on research suggests that the general goals of qualitative and quantitative methods differ. Creswell and Plano Clark (2007) stated that as a general rule, qualitative research seeks to discover individual views on a specific topic, whereas the objective of quantitative research is to discover if an existing theory is supported or refuted by participant data, as well as to develop new theories. In some cases, the fundamental goal of qualitative research is to capture the worldview of the study

subjects, which for many researchers may be crucial in order to understand the subjects' perspectives and to explain behavior (Hammersley, 1992). With the goal of learning from participants and allowing them to offer an "emic" perspective (Creswell, 1998), qualitative research often entails using open-ended questions and a diverse and complex set of responses, while focusing on a single concept in depth (Creswell & Plano Clark, 2007). Quantitative data differ in that researchers can use them to answer questions through the testing of hypotheses comprised of variables to support or refute hypotheses (ibid). While the literature on research methods often portrays the differences between qualitative and quantitative approaches as binary, there are many gradations. For example, it is possible to quantify qualitative data for use in hypothesis testing and use quantitative data to describe and explore a single topic in depth.

The dichotomy between qualitative and quantitative approaches is mainly based on the epistemological differences between the two approaches. Qualitative methods are often times labeled as being subjective and influenced by the researcher's values, while quantitative methods are classified as objective, utilizing statistics for the data analysis process (Halfpenny, 1979). There are tradeoffs in using either approach and in this chapter, I propose the potential of using a mixed methods approach to enhance the understanding of food sharing systems as they relate to resilience theory. Mixed methods research involves the use of both qualitative and quantitative methods in the data collection and analysis process (Creswell & Plano Clark, 2007).

6.2 The Comparison of Qualitative and Quantitative Approaches

In this section, I compared qualitative and quantitative approaches for measuring the concept of food sharing, based on the findings of chapters 4 & 5. I define a research “approach” as the entire research process, including research design, data collection, and analysis. Applying either a qualitative or quantitative method of data collection could confine the methods of analysis and therefore shape research findings (Miles & Huberman, 1994). Drawing from my research findings and insights from relevant literature, the two approaches utilized for this study were evaluated to assess their respective strengths (Table 6.1) and weaknesses (Table 6.2) in measuring: 1) the system of food sharing, 2) food sharing changes over time, 3) food sharing as a social indicator of community well-being, and 4) the resilience of traditional food sharing within Alaskan North Slope communities.

Table 6.1 Strengths of Qualitative and Quantitative Approaches

Strengths	Qualitative	Quantitative
The System of Food Sharing	Offered depth and insight into cultural beliefs/values	Offered breadth and information generalizability
Changes in Food Sharing	Provided perspectives on why changes may be occurring and its effects on community members	Captured overall trends in food sharing over time
Food Sharing – Social Indicator of Community Well-Being	Portrayed the cultural meaning behind food sharing and the role it plays within a community	Proficiently measured food sharing variables linked to social indicators of well-being
Resilience of Food Sharing	Contributed ideas of how food sharing benefits the community during difficult times	Provided a picture of if and how the resilience of food sharing may be changing

Table 6.2 Weaknesses of Qualitative and Quantitative Approaches

Weaknesses	Qualitative	Quantitative
The System of Food Sharing	Lacked overall generalizability	Lacked cultural meanings behind food sharing
Changes in Food Sharing	Generated low sample size and lacked generalizability	Provided limited explanations for change
Food Sharing – Social Indicator of Community Well-Being	Open to bias during the data gathering process	Was deficient in the cultural meanings and values of food sharing
Resilience of Food Sharing	Captures only a specific moment in time (based on respondent memory)	Missing the cultural perspectives of respondents

6.2.1 The System of Food Sharing

The qualitative approach provided information on why and how people in the communities of Wainwright and Kaktovik shared subsistence foods, as well as information about what they are sharing, when they are sharing, and with whom they are sharing. The qualitative approach offered insight into the broader complexities of the food sharing system, including cultural aspects, which were well-captured throughout the interview process. For example, the cultural underpinnings of why people in Wainwright and Kaktovik share their traditional foods with others were expressed as the need to maintain cultural traditions, benefiting from good luck, and avoiding waste. It was shown that in most cases, stated reasons of each individual overlapped with each other. In other words, an individual respondent's rationale for sharing is due to a variety of interrelated reasons, not just a single rationale. The qualitative approach also contributed insight as to peoples' beliefs and spiritual values towards food sharing, such as the importance of young hunters giving away all of their

first harvest, so that they can learn traditional values and become successful hunters in the future. The meaning food sharing holds within peoples' lives was also conveyed in the qualitative approach through statements such as, "That's what keeps the community together, I guess is because of sharing" and "Your heart is not in the right place if you refuse to share". Hence, information offered through this approach provided a rich context and in-depth understanding of sharing as it occurs within two North Slope communities.

Drawbacks associated with the qualitative approach were in its ability to generalize across an entire community or population. I interviewed a total of 15 people in Wainwright and 14 people in Kaktovik during the combined years of 2008 and 2009. In using the qualitative approach, only a small sample of the population was acquired and this sample was most likely lacking in its representation of all types of individuals and households, and thus the communities at large. Hence, in a community as large as Wainwright (approximately 550 people), it would not be accurate to say that sharing occurs only in the way that was described by the respondents that were interviewed. The issue of generalizability is a concern and would be difficult to address, despite the ability to randomly select a representative group of respondents within a community, due to time and cost factors. The respondents interviewed within this particular study may not have been the most knowledgeable about food sharing, but they were willing to be interviewed. This was a sampling issue within my qualitative approach in this research.

It was also difficult to differentiate what was reported by respondents during the interviews and what actually really occurs as behavior. For example, the interview respondents reported they share certain species in specific ways, yet there may be occasions where sharing occurs differently. Such flexibility in sharing could be a source of household or community resilience, and a reflection of the “ecological realities” rural Alaskan communities face. People in both Wainwright and Kaktovik mentioned that they share a certain way that is specific to their family, and other families may not share in the same way. Also, through the qualitative process, I evaluated and interpreted interview data through the generation of codes and themes in ATLAS.ti (see Appendix C) and in that process, could have inserted my biases as a researcher while analyzing the information. To address this problem of validity (Weber, 1996), I conducted follow-up interviews with respondents in order to assess whether a correct interpretation was made. As an alternative method, I could have also used multiple coders to complete an inter-coder reliability test and quantified differences among coders. Still, all methods for limiting coding bias in content analysis are imperfect (*ibid.*).

In contrast, the quantitative approach of my research produced a conceptual model with variables and testable hypothesized causal relationships, enabling the patterns of food sharing to be identified and the extent of sharing to be more precisely measured. Due to its large sample size of 663 households, the SLiCA survey afforded representation of households in 3 sub-regions of Alaska and their levels of receiving. The rich and extensive SLiCA dataset produced a generalizable representation of food

sharing, in the form of household categories with a high likelihood of receiving traditional foods from other households. Cluster 1 “Needy Households” exemplified this generalization by representing household characteristics such as low engagement in the wage economy and subsistence livelihood. These same household characteristics were then associated with households predominantly receiving in the categories of 1 level to 2 – 3 levels more than what they were harvesting. Hence, this approach provided a generalization focused on a specific target population.

On the other hand, the quantitative approach was unable to offer an understanding of the context or setting in which household categories are receiving traditional foods. For example, certain types of households were receiving more traditional foods than others, but the quantitative approach was unable to explain why these households are receiving more. Additionally, this approach summarized information without providing the cultural perceptions of the people included within the study, thus it was unable to offer detailed information into the intricacies of traditional food sharing and initially placed households into meaningless categories. Cultural views of why and how people are sharing foods and intimate knowledge of food sharing, was lacking in the quantitative approach, although it is important to note that the original purpose of the SLiCA survey was to measure living conditions and social well-being.

6.2.2 Traditional Food Sharing Changes over Time

In the study of changes in subsistence food sharing over time, questions such as “What were the levels of sharing that occurred in the past and what are the levels of

sharing occurring now”, “Are households that are in need of food, receiving traditional foods at different levels than previously”, How has the relationship between household type and quantity of sharing changed”, and “Have patterns of sharing for specific species and along kinship lines changed”, are important to ask. In this instance, the quantitative approach is more effective than the qualitative approach in assessing whether food sharing changes are indeed occurring. This is due to the problem of precision in qualitative approaches and the issues of generalizability to the population at large discussed above. For example, I asked respondents in my qualitative study whether they had observed changes in food sharing in their lifetimes, but from the answers could only record people’s perceptions of change. It is also important to note that respondents may perceive questions such as changes in food sharing as threatening and respond with what they believe to be the right answer, but not necessarily the true answer. There may also be political motivations to inflate or understate levels of sharing, a problem that could be present in both quantitative and qualitative approaches. Yet, the qualitative approach can capture peoples’ perspectives on why food sharing changes are transpiring and hence provide in-depth information into mechanisms causing food sharing changes. At the same time, the qualitative approach can evaluate what constitutes change in relation to food sharing through the words of people who are experiencing these changes.

Conversely, questionnaires conducted at multiple points in time are able to measure trends of food sharing, and consequently provide information breadth. Questionnaires can be conducted periodically in order to assess whether reported

changes in food sharing are indeed taking place. With respect to household types receiving traditional foods, this approach can contribute information on whether household classifications are consistent over time or if they transform. In other words, it can be demonstrated whether certain households are consistently on the receiving end, or do they later become providers of traditional foods? It also may be discovered that the food sharing trend is not similar in each rural Alaskan community. For circumstances such as this, quantitative data may validate this trend, without offering a detailed explanation as to why the trend is moving in a certain direction.

6.2.3 Ability to Measure Food Sharing as a Social Indicator of Community Well-being

The use of social indicators to measure well-being in communities across the Arctic region has become increasingly common and important in the face of global change (Kruse et al., 2009; TemaNord, 2010). Indicators are “simple measurements of key phenomena in complex human systems, enabling researchers to track the direction and rate of change occurring” (TemaNord, 2010, p. 22). The fact that the SLiCA survey - an instrument used to assess living conditions and social well-being - included questions about food sharing, points towards the general belief that food sharing among households is an important aspect of overall well-being. Food sharing has played a significant role in social cohesion (Bodenhorn, 1988; Jorgensen, 1990; Hovelsrud-Broda, 2000). Food sharing is comprised of social actions that maintain relationships, while providing a sense of well-being to both the provider and the receiver (Bodenhorn, 2000). It is important to ask if changes in food sharing are an indication of a change in

the overall well-being of a community? If families in need are receiving food from others in the community and are well taken care of, then this inherently is an indicator of social well-being, especially for a culture which prides itself in sharing.

The qualitative approach allowed study participants to convey their meaning of food sharing practices and whether they have observed any changes in food sharing, with 91% of the respondents saying “no” and 9%, saying “yes”. Through the qualitative approach, the importance of food sharing and the role it plays in contributing to social cohesion could be expressed. It is also important to note that qualitative approaches provide a way for community members to offer thoughts on what well-being means to them and the role of food sharing in community well-being. However, the qualitative approach was weak in its ability to provide information related to food sharing as a social indicator of well-being due to the fact that it is difficult to control for researcher bias during the analytical process. For example, there could be a myriad of factors besides food sharing contributing to a household’s overall well-being and it may be difficult to pinpoint and measure the contributing factors through the qualitative process. It would be challenging to ascertain whether food sharing is truly an indicator of social well-being strictly based off of a qualitative analysis because an individual’s experience of well-being is unique and personal and may be difficult to observe and measure.

Conversely, quantitative approaches such as surveys used in SLiCA have the ability to measure food sharing as a social indicator of well-being, in relation to other well-being factors, but it is important to note the difficulties in operationalizing social

well-being indicators. In the case with SLiCA, the social indicators were selected through a collaborative effort between researchers and indigenous councils representing the various arctic regions. The cultural and spiritual values and meanings surrounding the reasons why certain household types were receiving more traditional foods than others was lacking with the quantitative approach and I drew information from literature in order to fill this data gap.

6.2.4 Resilience of Traditional Food Sharing

Since at least the late 1940s, communities within the North Slope region of Alaska have been facing an unprecedented rate of social-ecological change. Prior to the 1960s, there were so called “spurts” of commercial industries, but each pulse came and went, leaving their effects behind with them. The discovery of major oil and gas reserves preempted the oil and gas industry to become a permanent fixture on the North Slope and it may be said that the people are undergoing societal stress due to the rapid pace of change (Kruse et al., 1982).

Social-ecological systems are in constant flux and the subsistence system related to traditional food sharing is no different. An assessment of the resilience of this system is important for communities undergoing rapid social-ecological changes. Qualitative approaches provide the ability to monitor how changes in food sharing are affecting households within a community, but once again overall generalizability for the entire community would not be obtainable due to low sample sizes. In reality, not only would the entire community need to be interviewed, but also extra-community networks of sharing, in order to understand community resilience. Furthermore, data collected

through qualitative approaches capture perspectives at one particular moment in time and therefore would be insufficient for evaluating changes in the resilience of food sharing, unless continual qualitative approaches were applied (costly). Peoples' perspectives of what constitutes change and when change has occurred in their lifetime may also be individualized and difficult to assess.

By comparison, quantitative approaches if conducted frequently over a span of time, could offer a picture of if and how the resilience of food sharing may be changing. Again it is important to keep in mind that the quantitative approach would not be able to capture the effects of these changes from the perspective of the people being surveyed. This approach would also not be able to capture how respondents make sense of the world they are living in and the role food sharing plays within their world, but it would be able to measure a community's ability to adapt to the pulses of change related to the resilience of the system.

6.2.4.1 Food Sharing as an Indicator of Resilience

The cultural norm of food sharing has continued to be of considerable importance within North Slope society. The ideology of sharing is not expressed by residents as an economic choice, but as a strong value for caring for the community and its people. This finding was exemplified by the findings of my qualitative study. Through my qualitative research findings, one can speculate that the sense of community is also strengthened through the sharing of food resources and helping community members in need.

The concept of food sharing can be used to measure a community's resilience to change through its persistence over time, in the form of whether households in need or want of food are receiving from other households. In this section, I will describe four examples of food sharing as a source of resilience, which emerged from both the qualitative and quantitative approaches in this study.

The first example of resilience was that food sharing was found to serve as a social welfare function, where needy families are indeed receiving more traditional foods than other types of households. This finding, based on quantitative data, was corroborated with the qualitative data, as a value of sharing with the needy, given by 31% of the interview respondents (section 4.3.3, Table 4.6 Who People Share With). It was further supported by my Cluster 1 results in my quantitative study, where 67.1% of the households were receiving at least 1 level more than what they were harvesting (section 5.6.3, Table 5.5 Two-step Cluster Analysis Results). Additionally, my qualitative results illustrated that acts of sharing travel far beyond the receiving household, as food is often shared with extended family members. These extended kinship ties outside of one's home community are called upon during times of misfortune. Successful whaling crews will send whale meat and *maktak* to other North Slope whaling communities who have not had a successful season, as well as inland communities who do not hunt whales.

Secondly, food sharing (and subsistence in general) is made more resilient by the "mixed economy," as exemplified by 63% of the interview respondents mentioning sharing of subsistence equipment and in turn receiving a share of successful harvests.

Additionally, the quantitative study revealed through Cluster 2 results, that households strongly engaged in the wage economy are also actively engaged in subsistence activities, while proportionally owning (69.8%) more subsistence equipment (section 5.6.3, Table 5.5 Two-step Cluster Analysis Results). Access to food resources through the use of subsistence equipment items and the existence of a “mixed economy” contributes to the resilience of households within rural Alaskan communities in my study.

The cultural values for sharing traditional foods were so strongly expressed by interview respondents in the qualitative study across all age groups (section 4.3.1 Table 4.3 Cited Themes for Why People Share), despite the history of Western introductions and influences, such as the wage economy and the use of modern subsistence equipment. Food sharing continues to be a vigorously expressed cultural value upheld by the people I interviewed, strengthening the sense of cultural identity, which in turn adds to community solidarity. The sharing of traditional food as a cultural ethic is represented by my qualitative data and food sharing continues to be a way of helping families who may be down on their luck due to equipment failure, hunting slumps, financial hardships, or family subsistence providers falling ill. These households receive gifts of food from relatives and friends within the community, as well as from other communities.

Lastly, the flexibility of sharing as an informal institution contributes to resilience by providing an array of possible strategies. As my research shows, there is diversity of food sharing strategies, which vary from household to household. For

example, as mentioned previously, it is a cultural norm for the owner of the equipment that had been loaned out to receive a share of whatever is caught, whether he is with the hunting party or not. However, respondents mentioned, “People who currently borrow equipment from others may not always provide a share in return and the owner may not be expecting a share or may even go as far as refuse a share for the use of his equipment, because the people borrowing the equipment are in need of the food”. This flexibility could in turn allow households to adapt to changing circumstances within the subsistence system. Furthermore, the formalization of food sharing, as is the case with the distribution of the bowhead whale, can function to sustain this cultural tradition. It would be of interest to see if the present condition of North Slope Iñupiat culture adapts by way of food sharing to impending social-ecological changes.

6.3 Are Both Approaches Needed to Measure Traditional Food Sharing?

Qualitative and quantitative approaches each have their own strengths and weaknesses and a decision of which to use depends on the purpose of the study. Qualitative approaches are useful for certain types of research questions where there is a need for initial exploration of the problem and the subject matter requires extensive information. For research questions requiring greater precision in measurement conditions, quantitative approaches are more suitable. However, the use of these two approaches is not mutually exclusive. Using qualitative approaches in combination with quantitative approaches in some cases has been found to offset the weaknesses that lie within each approach (Creswell & Plano Clark, 2007). The use of both approaches as complementary strategies for answering research questions is termed *mixed methods*

research. It involves the collection, analysis, and integration of both qualitative and quantitative approaches (Creswell & Plano Clark, 2007). The use of mixed methods can require considerable time, resources, and expertise (ibid), but past research shows how it can also yield valuable outcomes (e.g. Kruse et al., 2004).

6.3.1 The Use of a Mixed Methods Approach

In 2009, I presented my preliminary qualitative and quantitative results to the North Slope Borough Department of Wildlife Management and received comments on how I could improve my presentation prior to traveling to Wainwright and Kaktovik, where I was reporting back as a method of verification of findings. At that time, it was suggested when presenting in the communities to make sure I clarified between the qualitative and quantitative results, or in other words, designate the information as two separate studies. That experience aided my understanding of how easy it was for people to misinterpret research findings and how important it is for a researcher to explain ideas thoroughly, so misunderstandings do not surface.

Miles and Huberman (1994) recommend the use of qualitative approaches during the earlier phases of research projects, as an exploratory tool. I used a mixed methods research approach in this study to some degree, in that I utilized my 2008 interview responses in order to inform the initial household classification hypotheses for my quantitative study. I also received feedback from interview respondents in 2009 while presenting my preliminary quantitative results, which proved useful in interpreting and clarifying these initial results.

The qualitative approach uses the researcher as the data gathering instrument and the basic assumption is that the researcher learns about the situation through participation (Miles & Huberman, 1994). I initially observed that people were quite nervous during their interviews and this nervousness could have had an effect on interview responses. This leads me to the question as to whether qualitative or quantitative approaches are more useful in assessing food sharing in cross-cultural settings such as this study? Within the interview structure, it may not always be known as to which questions may be considered personally or culturally sensitive, and qualitative approaches like interviews are not fully anonymous in that a respondent is interviewed in person. Hence, quantitative approaches such as surveys and questionnaires could be ideally utilized as objective research tools and qualitative approaches such as interviews and focus groups could be used as follow-up instruments offering in-depth clarification.

A mixed methods approach in the study of changes in traditional food sharing and community well-being, and the resilience of a social-ecological system could provide a more complete picture of how rural communities respond to changes in their food resource abundance. Qualitative approaches could complement quantitative data by offering explanations of results through participant perspectives (Creswell & Plano Clark, 2007). The point of a qualitative endeavor within such conditions is to qualify the generalizations gained through other data collections methods (such as quantitative). In the case of food sharing, should quantitative results show food sharing changes are

indeed occurring, qualitative approaches could offer insight into why these changes may be taking place and their overall effects on households within a community.

Qualitative research such as the semi-structured interviews I conducted, identified the why, when, and the how of traditional food sharing, but it did not specifically identify how often food sharing occurs. This problem was alleviated in my study with the use of quantitative research, which was used as a tool to measure relationships about receiving among household types. Either approach could be used to measure the frequency of food sharing during periods of resource scarcity. Qualitative or quantitative approaches could be used to assess past behavior to resource scarcity. In this process, a qualitative approach offers insight to what the contents of a quantitatively based survey should be, as well as the specific focus of the research questions. A combination of both approaches could offer insight into the resilience of food sharing in rural Alaskan communities.

Lastly, it may be difficult to determine acts of food sharing in rural Alaskan communities, where sharing is ubiquitous and when gifts of traditional foods have been forgotten by recipients (Jorgensen, 1990). In order to address this issue, it is important to conduct interviews more frequently, regardless of the approach.

6.4 Conclusion

The subsistence system of North Slope, Alaska is a complex social-ecological system comprised first of the harvesting and production of resources, and secondly, the sharing of these resources with others. The resilience of the social-ecological system is related to its adaptive capacity in that the system's ability to adapt to changing

circumstances affords a buffer during times of uncertainty. The social-ecological system of the North Slope subsistence system is constantly in a state of flux, and methods for measuring changing conditions do not always reflect what is actually occurring. It is therefore important for local planning to be based on understanding the meaning of each factor and its place within the overall system.

Because subsistence systems also exhibit complex behavioral patterns, a single description at a specific point will not adequately capture all of the system's drivers and responses. At present, more information is needed regarding the response capacity of subsistence systems on the North Slope, as well as factors which may help communities, households, and individuals successfully respond to system changes. As well, there is a need for further development of research methods that integrate various approaches to improve the understanding of change.

As demonstrated in this research, in order to understand the role food sharing plays within subsistence systems and how it might be monitored for change over time, it is important to consider what qualitative and quantitative approaches each offer in relation to the cultural aspects and perspectives of the people who are a part of the system. Each approach has its own strengths and weaknesses, and it is essential to effectively utilize each approach in a way as to capture a holistic picture of subsistence and traditional food sharing to which it is inextricably tied.

LITERATURE CITED

- Adger, W. N., Arnell, N.W., & Tompkins, E.L. (2005). Successful adaptation to climate change across scales. *Global Environmental Change*, 15(2), 77-86.
- Adger, W. N. (2006). Vulnerability. *Global Environmental Change*, 16, 268-281.
- Anders, G. (1983). The role of Alaska Native corporations in the development of Alaska. *Development and Change*, 14(4), 555-575.
- Andersen, T., Kruse, J., & Poppel, B. (2002). Survey of living conditions in the Arctic: Inuit, Saami and the indigenous peoples of Chukotka. *Arctic*, 55(3), 310-315.
- Andersen, T., & Poppel, B. (2002). Living conditions in the Arctic. *Social Indicators Research*, 58, 191-216.
- Anderson, D. D. (1984). Prehistory of north Alaska. In W. C. Sturtevant & D. Damas (Eds.), *Handbook of North American Indians, Arctic* (pp. 80-93). Washington, D.C.: Smithsonian Institution Press.
- Arnold, R. D. (1978). *Alaska Native land claims*. Anchorage: Alaska Native Foundation.
- Auerbach, C. F., & Silverstein, L. B. (2003). *Qualitative data: an introduction to coding and analysis*. New York: University Press.
- Axelrod, R. M. (1984). *The evolution of cooperation*. New York: Basic Books.
- Berkes, F., & Folke, C. (1998). Linking social and ecological systems for resilience and sustainability. In F. Berkes & C. Folke (Eds.), *Linking Social and Ecological Systems* (pp. 1-25). Cambridge: Cambridge University Press.
- Bernard, H. R. (2006). *Research methods in anthropology: qualitative and quantitative approaches*. Lanham: AltaMira Press.
- Bockstoce, J. R. (1978). History of commercial whaling in Arctic Alaska. *Alaska Geographic*, 5, 17-26.
- Bodenhorn, B. A. (1988). Documenting Iñupiat family relationships in changing times Barrow, Alaska. Barrow: North Slope Borough Commission on Iñupiat History, Language and Culture Commission.

- Bodenhorn, B. A. (1989). *'The animals come to me, they know I share': Iñupiat kinship, changing economic relations and enduring world views on Alaska's North Slope* (Doctoral dissertation). University of Cambridge.
- Bodenhorn, B. A. (1990). I'm not the great hunter, my wife is: Iñupiat and anthropological models of gender. *Etudes/Inuit/Studies*, 14, 55-74.
- Bodenhorn, B. A. (2000). It's good to know who your relatives are but we were taught to share with everybody: shares and sharing among Iñupiat households. In G. W. Wenzel, G. Hovelsrud-Broda, & N. Kishigami (Eds.), *The social economy of sharing: resource allocation and modern hunter-gatherers* (pp. 27-60). Osaka: National Museum of Ethnology.
- Bodfish, W., Sr. (1991). *Kusiq: an Eskimo life history from the Arctic coast of Alaska*. Fairbanks: University of Alaska Press.
- Bosworth, R. (1995). Biology, politics, and culture in the management of subsistence hunting and fishing: An Alaskan case history. In D. L. Peterson & D. R. Johnson (Eds.), *Human ecology and climate change: people and resources in the far North* (pp. 245-259). Washington, D.C.: Taylor & Francis.
- Braund, S. R. & Associates. (1993). *North Slope subsistence study Wainwright, 1988 and 1989* (MMS OCS Study # 91-0073). Anchorage: Author. Retrieved from http://alaska.boemre.gov/reports/1990rpts/91_0073.pdf
- Brewer, J. D. (2000). *Ethnography*. Buckingham: Open University Press
- Brosted, J. (1975). *Ulgunik: a report on integration and village organization in Alaska*. Copenhagen: Brosted.
- Brower, H., Sr. (2004). *The whales, they give themselves: conversations with Harry Brower, Sr.* Fairbanks: University of Alaska Press.
- Brower, H. K., Olemaun, T. P., & Hepa, R. (2000). *North Slope Borough subsistence harvest documentation project: data for Kaktovik, Alaska for the period December 1, 1994 to November 30, 1995*. Barrow: North Slope Borough, Department of Wildlife Management.
- Burch, E. S., Jr. (1970). The Eskimo trading partnership in North Alaska: a study in "balanced reciprocity". *Anthropological Papers of the University of Alaska*, 15(1), 49-80.

- Burch, E. S., Jr. (1988). Modes of exchange in north-west Alaska. In T. Ingold, D. Riches, & J. Woodburn (Eds.), *Hunters and Gatherers* (pp. 95-109). Oxford: Berg Publishers Limited.
- Burch, E. S., Jr. (1998). *The Iñupiat Eskimo nations of northwest Alaska*. Fairbanks: University of Alaska Press.
- Burch, E. S., Jr. (2006). *Social life in northwest Alaska: the structure of Iñupiaq Eskimo nations*. Fairbanks: University of Alaska Press.
- Callaway, D., Eamer, J., Edwardsen, E., Jack, C., Marcy, S., Orlun, A., Patkotak, M., Rexford, D., & Whiting, A. (1999). Effects of climate change on subsistence communities in Alaska. In G. Weller & P. Anderson (Eds.), *Assessing the consequences of climate change for Alaska and the Bering Sea Region* (pp. 59-73). Fairbanks: University of Alaska Fairbanks.
- Carpenter, S., Walker, B., Anderies, J. M., & Abel, N. (2001). From metaphor to measurement: resilience of what to what? *Ecosystems*, 4, 765-781.
- Caulfield, R. A. (1983). *Subsistence land use in Upper Yukon Porcupine communities, Alaska* (Technical report 16). Fairbanks: Alaska Department of Fish and Game, Division of Subsistence. Retrieved October 3, 2007, from <http://www.subsistence.adfg.state.ak.us/techpap/tp016.pdf>
- Chance, N. A. (1966). *The Eskimo of north Alaska*. New York: Holt, Rinehart & Winston.
- Chance, N. A. (1990). *The Iñupiat of Arctic Alaska: an ethnography of development*. Fort Worth: Holt, Rinehart and Winston.
- Chapin, F. S., III, Kofinas, G. P., & Folke, C. (Eds.). (2009). *Principles of ecosystem stewardship: resilience-based natural resource management in a changing world*. New York: Springer.
- Collings, P., Wenzel, G., & Condon, R. G. (1998). Modern food sharing networks and community integration in the central Canadian Arctic. *Arctic*, 51(4), 301-314.
- Condon, R. G., Collings, P., & Wenzel, G. (1995). The best part of life: subsistence hunting, ethnicity, and economic adaptation among young adult Inuit males. *Arctic*, 48(1), 31-46.
- Creswell, J. W. (1998). *Qualitative inquiry and research design: choosing among five traditions*. Thousand Oaks: Sage.

- Creswell, J. W., & Plano Clark, V. L. (2007). *Designing and conducting mixed methods research*. Thousand Oaks: Sage.
- Dryzek, J. S. (1983). *Conflict and choice in resource management: the case of Alaska*. Boulder: Westview Press.
- Easterby-Smith, M., Thorpe, R., & Lowe, A. (1991). *Management research: an introduction*. London: Sage.
- EDAW, Inc. & Adams and Russell Consulting. (2008). *Quantitative description of potential impacts of OCS activities on bowhead whale hunting activities in the Beaufort Sea* (MMS OCS Study # 2007-062). Anchorage: U.S. Minerals Management Service, Alaska Outer Continental Shelf Region. Retrieved from http://alaska.boemre.gov/reports/2007rpts/2007_062/2007_062.pdf
- Fall, J. A. (1990). The Division of Subsistence of the Alaska Department of Fish and Game: an overview of its research program and findings: 1980-1990. *Arctic Anthropology*, 27(2), 68-92.
- Fienup-Riordan, A. (1986). *When our bad season comes : a cultural account of subsistence harvesting and harvest disruption on the Yukon Delta*. Anchorage: Alaska Anthropological Association.
- Folke, C., Hahn, T., Olsson, P., & Norberg, J. (2005). Adaptive governance of social-ecological systems. *The Annual Review of Environment and Resources*, 30, 441-473.
- Folke, C., Hahn, T., Olsson, P., & Norberg, J. (2006). Resilience: the emergence of a perspective for social-ecological systems analyses. *Global Environmental Change*, 16(3), 253-267.
- Freeman, M. M. R. (1985). Effects of petroleum activities on the ecology of Arctic man. In F. R. Engelhardt (Ed.), *Petroleum Effects in the Arctic Environment* (pp. 245-273). London: Elsevier Applied Science Publishers.
- Freeman, M. M. R. (1997). Issues affecting subsistence security in Arctic societies. *Arctic Anthropology*, 34(1), 7-17.
- Fuller, A. S. & George, J. C. (1997). *Evaluation of subsistence harvest data from the North Slope Borough 1993 census for eight North Slope villages: for the calendar year 1992*. Barrow: North Slope Borough, Department of Wildlife Management.

- Ganapathy, U. (1996). *Interactions between wage employment and subsistence lifestyle: oil development on the North Slope, Alaska* (Doctoral dissertation). University of Rhode Island.
- Gould, R. A. (1982). To have and have not: the ecology of sharing among hunter-gatherers. In N. M. Williams & E. S. Hunn (Eds.), *Resource managers : North American and Australian hunter-gatherers* (pp. 69-92). Boulder: Westview Press for the American Association for the Advancement of Science.
- Gunderson, L. H., & Pritchard, L. (2002). *Resilience and the behavior of large-scale ecosystems*. Washington: Island Press.
- Gusey, W. F. (1983). *Bowhead (Balaena mysticetus)*. Houston: Environmental Affairs, Shell Oil Company.
- Halfpenny, P. (1979). The analysis of qualitative data. *Sociological Review*, 27(4), 799-825.
- Hallpike, C. R. (1975). Two types of reciprocity. *Comparative Studies in Society and History*, 17(1), 113-119.
- Hamilton, W. D. (1964). The genetical evolution of social behavior (I and II). *Journal of Theoretical Biology*, 7, 1-16.
- Hammersley, M. (1992). *What's wrong with ethnography?: methodological explorations*. London: Routledge.
- Henrich, N., & Henrich, J. P. (2007). *Why humans cooperate: a cultural and evolutionary explanation*. Oxford: Oxford University Press.
- Hess, B. (1993). *Taking control: the North Slope Borough, the story of self determination in the Arctic*. Barrow: North Slope Borough, Public Information Division.
- Hovelsrud-Broda, G. (2000). "Sharing", transfers, transactions and the concept of generalized reciprocity. In G. W. Wenzel, G. Hovelsrud-Broda, & N. Kishigami (Eds.), *The social economy of sharing: resource allocation and modern hunter-gatherers* (pp.193-214). Osaka: National Museum of Ethnology.
- Hunt, R. C. (2000). Forager food sharing economy: transfers and exchanges. In G. W. Wenzel, G. Hovelsrud-Broda, & N. Kishigami (Eds.), *The social economy of sharing: resource allocation and modern hunter-gatherers* (pp. 7-26). Osaka: National Museum of Ethnology.

- Ingold, T. (1986). *The appropriation of nature: essays on human ecology and social relations*. Manchester: Manchester University Press.
- Ivie, P., & Schneider, W. (1978). *Wainwright: land use values through time in the Wainwright area*. Barrow: North Slope Borough.
- Jacobson, M. J., & Wentworth, C. (1982). *Kaktovik subsistence: land use values through time in the Arctic National Wildlife Refuge area*. Fairbanks: U.S. Fish and Wildlife Service, Northern Alaska Ecological Services.
- Jorgensen, J. G. (1990). *Oil age Eskimos*. Berkeley: University of California Press.
- Kancewick, M., & Smith, E. (1991). Subsistence in Alaska: towards a Native priority. *University of Missouri Kansas City Law Review*, 59(3), 645-673.
- Kaplan, H., & Hill, K. (1985). Food sharing among Ache foragers: tests of explanatory hypotheses. *Current Anthropology*, 26(2), 223-246.
- Kasperson, R. E., Dow, K., Archer, E. R. M., Caceres, D., Downing, T. E., Elmqvist, T., Eriksen, S., Folke, C., Han, G., Iyengar, K., Vogel, C., Wilson, K. A., & Ziervogel, G. (2005). Vulnerable peoples and places. In R. Norgaard & D. Rapport (Eds.), *Ecosystems and human well-being: current state and trends* (pp. 143-164). London: Island Press.
- Kassam, K. A., & Wainwright Traditional Council. (2001). *Passing on the knowledge: mapping human ecology in Wainwright, Alaska*. Calgary: The Arctic Institute of North America of the University of Calgary.
- Kofinas, G. P. (2009). Adaptive co-management in social-ecological governance. In F. S. Chapin, III, G. P. Kofinas, & C. Folke (Eds.) *Principles of ecosystem stewardship: resilience-based natural resource management in a changing world* (pp. 77-101). New York: Springer-Verlag.
- Kofinas, G. P., Chapin, F.S., III, BurnSilver, S., Schmidt, J. I., Fresco, N. L., Kielland, K., Martin, S., Springsteen, A., & Rupp, T. S. (2010). Resilience of Athabaskan subsistence systems to interior Alaska's changing climate. *Canadian Journal of Forest Resources*, 40(7).
- Kruse, J. (1979). *Subsistence: a discussion of relevant concepts and some observations on patterns of change in Alaska*. Presented to the Subsistence Lifestyle in Alaska: Now and in the Future Seminar Series held by the School of Agriculture and Land Resources Management, Fairbanks, Alaska.

- Kruse, J. A. (1982). Subsistence and the North Slope Iñupiat: the effects of energy development. In S. J. Langdon (Ed.), *Contemporary Alaskan Native Economies* (pp. 121-151). Lanham: University Press of America.
- Kruse, J. A. (1991). Alaska Iñupiat subsistence and wage employment patterns: understanding individual choice. *Human Organization*, 50(4), 317-326.
- Kruse, J. A. (1992). *The Alaska North Slope Iñupiat Eskimo and resource development: why the apparent success?* Presented to American Association for the Advancement of Science 1992 Annual Meeting, Chicago, Illinois.
- Kruse, J., Poppel, B., Abryutina, L., Duhaime, G., Martin, S., Poppel, M., Kruse, M., Ward, E., Cochran, P., & Hanna, V. (2009). Survey of living conditions in the Arctic (SLiCA). In V. Møller, D. Huschka, & A. C. Michalos (Eds.), *Barometers of Quality of Life Around the Globe* (pp. 107-134). Springer Social Indicators Research Series. Springer, Dordrecht, The Netherlands.
- Kruse, J. A., White, R. G., Epstein, H. E., Archie, B., Berman, M. D., Braund, S. R., Chapin III, F. S., Charlie Sr., J., Daniel, C. J., Eamer, J., Flanders, N., Griffith, B., Haley, S., Huskey, L., Joseph, B., Klein, D. R., Kofinas, G. P., Martin, S. M., Murphy, S. M., Nebesky, W., Nicolson, C., Russell, D. E., Tetlich, J., Tussing, A., Walker, M. D., & Young, O. R. (2004). Modeling sustainability of Arctic communities: an interdisciplinary collaboration of researchers and local knowledge holders. *Ecosystems*, 7, 1-14.
- Langdon, S. J. (1986). Contradictions in Alaskan Native economy and society. In S. J. Langdon (Ed.), *Contemporary Alaskan Native Economies* (pp. 29-46). Lanham: University Press of America.
- Lewins, A., & Silver, C. (2007). *Using software in qualitative research*. Los Angeles: Sage.
- Libbey, D. (1983). *Kaktovik area cultural resource survey*. Barrow: North Slope Borough Planning Department.
- Logsdon, C. E. (1979). *Subsistence - an overview*. Presented to the Subsistence Lifestyle in Alaska: Now and in the Future Seminar Series held by the School of Agriculture and Land Resources Management, Fairbanks, Alaska.
- Lonner, T. D. (1986). Subsistence as an economic system in Alaska: theoretical observations and management implications. In S. J. Langdon (Ed.), *Contemporary Alaskan Native Economies* (pp. 15-27). Lanham: University Press of America.

- Loon, H. B. (1989). Sharing: you are never alone in a village. *Alaska Fish and Game*, 21(6), 34-36.
- Lorr, M. (1983). *Cluster analysis for social scientists* (1st ed.). San Francisco: Jossey-Bass Publishers.
- Luton, H. H. (1985). *Effects of renewable resource harvest disruptions on socioeconomic and sociocultural systems: Wainwright, Alaska* (MMS OCS Study # 1985-091). Anchorage: U.S. Minerals Management Service, Alaska Outer Continental Shelf Region. Retrieved from http://alaska.boemre.gov/reports/1980rpts/85_TR91.pdf
- Magdanz, J., Trigg, E., Ahmasuk, A., Nanouk, P., Koster, D., & Kamletz, K. (2005). *Patterns and trends: in subsistence salmon harvests, Norton Sound and Port Clarence, 1994-2003* (Technical Report 294). Juneau, Alaska Department of Fish and Game, Division of Subsistence. Retrieved December 12, 2007, from <http://www.subsistence.adfg.state.ak.us/techpap/tp294.pdf>
- Magdanz, J. S., Utermohle, C. J., & Wolfe, R. J. (2002). *The production and distribution of wild food in Wales and Deering, Alaska* (Technical Report 259). Juneau, Alaska Department of Fish and Game, Division of Subsistence. Retrieved December 12, 2007, from <http://www.subsistence.adfg.state.ak.us/techpap/tp259.pdf>
- Martin, S. L. (2005). *Determinants of well-being in Iñupiat and Yupiit Eskimos: do communities matter?* (Doctoral dissertation). University of Texas.
- Martin, S. L. (2010). *Indigenous social responses to imposed regulations in Northern Alaska as a measure of resilience*. Presented to State of the Arctic Conference, Miami, Florida.
- Milan, F. A. (1964). The acculturation of the contemporary Eskimo of Wainwright. *Anthropological Papers of the University of Alaska*, 11(2), 1-95.
- Miles, M., & Huberman, A. M. (1994). *Qualitative data analysis* (2nd ed.). Thousand Oaks: Sage.
- Morehouse, T. A., & Leask, L. (1980). Alaska's North Slope Borough: oil, money and Eskimo self-government. *Polar Record*, 20(1980), 19-29.
- National Research Council, Committee on Arctic Social Sciences. (1993). *Arctic contributions to social sciences and public policy*. Washington, D.C.: National Academy Press.

- Nelson, R. K. (1982). *Harvest of the sea: coastal subsistence in modern Wainwright*. Barrow: North Slope Borough, Coastal Management Program.
- Nielson, J. M. (1977). *Kaktovik, Alaska: an overview of relocations*. Barrow: North Slope Borough Commission on History and Culture.
- Norris, F. (2002). *Alaska subsistence: a National Park Service management history*. Anchorage: Alaska Support Office, National Park Service.
- The North Slope Borough. (2010). *Wainwright*. Retrieved April 5, 2010, from <http://www.co.north-slope.ak.us/villages/wainwright/>
- Nowak, M. (1975). Subsistence trends in a modern Eskimo community. *Arctic*, 28(1), 21-34.
- Pedersen, S. (1990). *Caribou hunting: land use dimensions, harvest levels, and selected aspects of the hunt during regulatory year 1987-88 in Kaktovik, Alaska* (Technical Report 172). Juneau: Alaska Department of Fish and Game, Division of Subsistence. Retrieved June 19, 2008, from <http://www.subsistence.adfg.state.ak.us/techpap/tp259.pdf>
- Pedersen, S. (1995). An investigation of the sociocultural consequences of outer continental shelf development in Alaska (MMS OCS Study # 95-014). In J. A. Fall & C. J. Utermohle (Eds.), *An investigation of the sociocultural consequences of outer continental shelf development in Alaska* (V. Alaska Peninsula and Arctic). Anchorage: U.S. Department of the Interior, Mineral Management Services, Alaska OCS Region. Retrieved from http://alaska.boemre.gov/reports/1990rpts/95_014.pdf
- Pedersen, S., Coffing, M., Thompson, J. (1985). *Subsistence land use and place name maps for Kaktovik, Alaska* (Technical Report 109). Fairbanks: Alaska Department of Fish and Game, Division of Subsistence. Retrieved October 3, 2007, from <http://www.subsistence.adfg.state.ak.us/techpap/tp109.pdf>
- Peterson, N. (1993). Demand sharing: reciprocity and the pressure for generosity among foragers. *American Anthropologist*, 95(4), 860-874.
- Plattner, S. (1989). *Economic anthropology*. Stanford: Stanford University Press.
- Price, J. A. (1975). Sharing: the integration of intimate economies. *Anthropologica*, 17(1), 3-27.

- Rapkin, B. D., & Lake, D. A. (1993). Cluster analysis in community research: epistemology and practice. *American Journal of Community Psychology*, 21(2), 247-277.
- Ray, P. H. (1885). *Ethnographic sketch of the Natives of Point Barrow* (Report of the international polar expedition to Point Barrow, Alaska in response to the resolution of the House of Representatives). Washington: U.S. Government Printing Office.
- Rex, P. C. (1994). *A settlement study of the village of Wainwright Alaska* (Masters thesis). University of Alaska Fairbanks.
- Rogers, G. W. (1970). Change in Alaska: the 1960's and after. In G. W. Rogers (Ed.), *Change in Alaska: people, petroleum, and politics* (pp.3-14). College: University of Alaska Press.
- Sahlins, M. D. (1972). *Stone age economics*. Chicago: Aldine-Atherton.
- Schneider, W., & Libbey, D. (1979). *Historic context of life on the North Slope* (Native livelihood and dependence: a study of land values through time). Anchorage: U.S. Department of Interior.
- Sharif, M. (1986). The concept and measurement of subsistence: a survey of the literature. *World Development*, 14(5), 555-577.
- Silverman, D. (2006). *Interpreting qualitative data* (3rd ed.). Los Angeles: Sage.
- Singh, K. (2007). *Quantitative social research methods*. New Delhi: Sage.
- Smith, J. K., & Heshusius, L. (1986). Closing down the conversation: the end of the quantitative-qualitative debate among educational inquirers. *Educational Researcher*, 15(1), 4-12.
- Spencer, R. F. (1953). *Forms of cooperation in the culture of the Barrow Eskimo*. Presented to Alaska Science Conference 1953 Annual Meeting, Santa Barbara, California.
- Spencer, R. F. (1959). *The north Alaskan Eskimo: a study in ecology and society*. Washington: U.S. Government Printing Office.
- TemaNord. (2010). Arctic social indicators: a follow-up to the Arctic human development report. Copenhagen: Nordic Council of Ministers.

- Turner, B. L., II, Kasperson, R. E., Matson, P. A., McCarthy, J. J., Corell, R. W., Christensen, L., Eckley, N., Kasperson, J. X., Luers, A., Martello, M. L., Polsky, C., Pulsipher, A., & Schiller, A. (2003). A framework for vulnerability analysis in sustainability science. *Proceedings of the National Academy of Sciences of the United States of America*, 100, 8074-8079.
- Tussing, A. R., Rogers, G. W., & Fischer, V. (1971). *Alaska pipeline report: Alaska's economy, oil and gas industry development, and the economic impact of building and operating the trans-Alaska pipeline*. Fairbanks: Institute of Social, Economic and Government Research.
- Usher, P. J., & Bankes, N.D. (1986). *Property, the basis of Inuit hunting rights: a new approach*. Ottawa: Inuit Committee on National Issues.
- VanStone, J. W. (1960). A successful combination of subsistence and wage economies on the village level. *Economic Development and Cultural Change*, 8(2), 174-191.
- Walker, B., Holling, C. S., Carpenter, S. R., & Kinzig, A. (2004). Resilience, adaptability and transformability in social-ecological systems. *Ecology and Society*, 9(2).
- Weber, R. P. (1996). *Basic content analysis*. Newbury Park: Sage.
- Wenzel, G. W., Hovelsrud-Broda, G., Kishigami, N. (2000). Social economy of modern hunter-gatherers: traditional subsistence, new resources. In G. W. Wenzel, G. Hovelsrud-Broda, & N. Kishigami (Eds.), *The social economy of sharing: resource allocation and modern hunter-gatherers* (pp. 1-6). Osaka: National Museum of Ethnology.
- Wheeler, P., & T. Thornton. (2005). Subsistence research in Alaska: a thirty year retrospective. *Alaska Journal of Anthropology*, 3(1), 69-103.
- Whitehead, H. (2000). *Food rules: hunting, sharing, and tabooing game in Papua New Guinea*. Ann Arbor: University of Michigan Press.
- Willmott, W. E. (1960). The flexibility of Eskimo social organization. *Anthropologica*, 2(52), 48-59.
- Wolfe, R. J., & Ellana, L. (1983). *Resource use and socioeconomic systems: case studies of fishing and hunting in Alaskan communities* (Technical Report 61). Juneau: Alaska Department of Fish and Game, Division of Subsistence. Retrieved December 16, 2008, from <http://www.subsistence.adfg.state.ak.us/techpap/tp061.pdf>

- Wolfe, R. J., & Walker, R. J. (1987). Subsistence economies in Alaska: productivity, geography, and development impacts. *Arctic Anthropology*, 24(2), 56-81.
- Woodburn, J. (1988). Introduction. In T. Ingold, D. Riches, & J. Woodburn (Eds.), *Hunters and gatherers: property, power and ideology* (pp. 10-31). Oxford: Berg.
- Woodburn, J. (1998). 'Sharing is not a form of exchange': an analysis of property-sharing in immediate-return hunter-gatherer societies. In C. M. Hann (Ed.), *Property relations: renewing the anthropological tradition* (pp. 48-63) Cambridge: Cambridge University Press.
- Worl, R. (1980). The North Slope whaling complex. In Y. Kotani & W. B. Workman (Eds.), *Papers presented to Alaska Native Culture and History, Second International Symposium, August 1978, National Museum of Ethnology, Osaka, Japan*.
- Worl, R. (1982). *A synopsis of Alaska Native subsistence economies and projection of research needs: subsistence data base, phase II*. Juneau: U.S. Dept. of the Interior, Bureau of Indian Affairs.
- Worl, R. F., & McMillan, P. O. (1982). *Sociocultural assessment of proposed Arctic National Wildlife Refuge oil and gas exploration: final report*. Anchorage: Arctic Environmental Information and Data Center, University of Alaska.
- Yupiktak Bista. (1974). *A report on subsistence and the conservation of the Yupik lifestyle: does one way of life have to die so another can live?* Anchorage: Alaska State Publication.
- Ziker, J., & Schnegg, M. (2005). Food sharing at meals: kinship, reciprocity, and clustering in the Taimyr Autonomous Okrug, Northern Russia. *Human Nature*, 16(2), 178-211.

APPENDIX A

Semi-structured Interview Questions

What year were you born?
 Where were you born and raised?
 Do you work full time or part time?
 Do you have a permanent or seasonal position?

I will be asking you questions about food sharing and the existing ways for the sharing of Native foods.

- Please start by telling me about sharing. How does it happen in this village, both informally (eg. dinner invitations) and formally (eg. bowhead whale hunts) for each resource?

Wainwright

- Bowhead (community sharing)
- Caribou
- Walrus
- Beluga
- Rainbow Smelt

Kaktovik

- Bowhead (community sharing)
- Caribou
- Dall sheep (community hunt)
- Arctic char
- Ringed seal

Barrow

- Bowhead (community sharing)
- Caribou
- Walrus
- Canada geese
- Broad whitefish

- The Ways of Sharing
 - How do you share?
 - What do you share?
 - When do you share?
 - How much do you share?
 - Is there barter and trading that is a part of subsistence sharing?
- Do any of the federal and state fish and wildlife regulations affect sharing? How?

- How about sharing before the hunt (eg. preparations)? Do people share equipment (eg. 4-wheeler, boat, weapons), money for gas, or time (eg. food shopping and preparations of gear)? If so how? (Ask them for examples).
- In your lifetime, has the sharing of subsistence foods changed? If so how? (Ask them for examples).
- Does sharing change if fewer animals are harvested. For example, if there are few caribou caught, is the sharing different from when there are lots of caribou caught? (Ask them for examples).
- Why do you share subsistence foods? Why do you think other people share subsistence foods?

APPENDIX B

IRB Letter of Acceptance



(907) 474-7800
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Institutional Review Board

909 N Koyukuk Dr. Suite 212, P.O. Box 757270, Fairbanks, Alaska 99775-7270

June 17, 2008

To: Gary Kofinas, Ph.D.
Principal Investigator

From: Bridget Stockdale, Research Integrity Administrator
Office of Research Integrity

A handwritten signature in black ink, appearing to read 'Bridget Stockdale'.

Re: IRB Protocol Application

Thank you for submitting the IRB protocol application identified below. I have administratively reviewed this protocol and determined that it meets the requirements specified in the federal regulations regarding human subjects' protections for exempt research under 45 CFR 46.101(b)(2) for research involving the use of educational test, survey procedures, interview procedures or observation of public behavior, unless: (i) information is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects, and (ii) any disclosure of the human subjects' responses outside of the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing employability, or reputation.

Protocol #: 08-50
Title: *Sharing for Subsistence*
Level: Exempt
Received: May 25, 2008
Exemption Date: June 17, 2008

If there are major changes to the scope of research or personnel involved on the project, please contact the Office of Research Integrity. Email us at fyirb@uaf.edu or call 474-7800. Contact the Office of Research Integrity if you have any questions regarding IRB policies or procedures.



UNIVERSITY OF ALASKA FAIRBANKS

APPENDIX C**ATLAS.ti Code List**

Active hunter in family
Age of an elder
Alaska compared to Canada
Bearded seal hunting and sharing
Bearded seal preparation
Beluga whale harvesting/sharing
Camping and sharing
Caribou preparation/sharing
Changes in Native food abundance
Climate change
Cultural belief
Cultural changes
Cultural inclinations
Cultural tradition
Cutting - receive a share
Deciding how to share
Dog teams
Duck hunting share
Elder foods
Employment and subsistence
Family differences
Family relations
Feeling
First animal caught
Fishing and sharing
Following - receive a share
Food sharing beliefs - why share?
Food sharing changes
Food sharing expectations
Formal rules
Hard times, starvation, and famine
Helping each other
Household person to ask
Hunting safety precautions
Ice fishing
Informal food sharing
Informal rules
Methods of distribution
Native food-sharing at feasts
Native food requests

Native food tastes
Need
Not wasting food
Oil companies
Outside community visits
People Native food shared with
Pride
Rainbow smelt harvesting
Rainbow smelt preparation
Raised by grandparents
Reciprocity
Rising gas prices
Rules for sharing
Seal meat preparation
Shares
Sharing
Sharing and expecting nothing in return
Sharing equipment, gas, grub - receive a share
Sharing extra food
Sharing money vs. hunting equipment
Sharing store bought food
Sharing with other communities
Similarities to other Native Cultures
Size of the whale
State & Federal Fish and Wildlife regulations
Suggestions
Teaching children
Trading and bartering
Traditional knowledge
Traditional upbringing
Traditional use of seals
Trapping
Walrus - sharing
Weather and survival
Whaling captains and their crew
Whaling Captains Association
Whaling sharing/shares
Younger generation

APPENDIX D

Survey of Living Conditions in the Arctic Questions A39 to A41

A39. Think about **all** the meat and fish your household ate in the past 12 months. How much of this meat and fish was traditional food, that is, nikipaq: none, less than half, about half, or more than half?

1. NONE
2. LESS THAN HALF
3. ABOUT HALF
4. MORE THAN HALF
8. DON'T KNOW
9. NA

A40. Still thinking about **all** the meat and fish your household ate in the past 12 months, how much did members of your household harvest: none, less than half, about half, or more than half?

1. NONE
2. LESS THAN HALF
3. ABOUT HALF
4. MORE THAN HALF
8. DON'T KNOW
9. NA
0. INAP

A41. This next question still concerns the traditional foods consumed by your household over the past 12 months. Did your household receive traditional food from others?

1. YES
2. NO
8. DON'T KNOW
9. NA
0. INAP

A. Did your household receive traditional food in exchange for helping other households?

1. YES 2. NO 9. NA 0. INAP

B. Did your household receive traditional food from others, by exchanging one traditional food for another?

1.YES 2. NO 9. NA 0. INAP

C. Did your household receive a gift of traditional food from others?

1.YES 2. NO 9. NA 0. INAP

APPENDIX E

Chi-Square Significance Tests

Hypotheses	Significance	Supported
Hypothesis1- Households with elders will have a higher likelihood of receiving more food than non-elder households.	No Chi square p-value .064 > 0.10	No - Households with 1 or more elders did not receive more.
Hypothesis2- Households with handicap, physically and mentally health challenged members will have a higher likelihood of receiving more food than households without.	No Chi square p-value .190 > 0.10	No – Households with 1 or more physically and/or mentally health challenged member did not receive more.
Hypothesis3- Households with high levels of child and/or elder care responsibilities will have a higher likelihood of receiving more food than households will low levels of these responsibilities.	No Chi square p-value .112 > 0.10	No – Households with high levels of child and/or elder care responsibilities did not receive more.
Hypothesis4- Households with lower ratios of HH full time wage workers to total HH size will have a higher likelihood of receiving more food than households with higher ratios.	No Chi square p-value .506 > 0.10	No – Households with lower ratios of HH full time wage workers to total HH size did not receive more.
Hypothesis5- Households with a low total income will have a higher likelihood of receiving more food than households with a high total income.	No Chi square p-value .183 > 0.10	No – Households with a low total income did not receive more.
Hypothesis7- Households with members who participated in a low number of subsistence activities in the past 12 months will have a higher likelihood of receiving food than households with members who participated in a higher number of subsistence activities.	Yes Chi square p-value .000 < .001	Yes - Households with members performing less than 6 subsistence activities have a higher percentage in the 1 step more than harvested category than the other subsistence activities categories.
Hypothesis8- Households with a higher dependent to independent ratio will have a higher likelihood of receiving food than households with a low dependent to independent ratio.	No Chi square p-value .108 > 0.10	No – Households with a higher ratio of dependents to independents did not receive more.