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Wage employment, traditional subsistence, and aspirations among Inupiat and Yup'ik in the mixed economy of Northwest Alaska

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WAGE EMPLOYMENT, TRADITIONAL SUBSISTENCE, AND ASPIRATIONS AMONG
IÑUPIAT AND YUP'IK IN THE MIXED ECONOMY OF NORTHWEST ALASKA

BY

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DISSERTATION

Submitted to the University of New Hampshire

in Partial Fulfillment of

the Requirements for the Degree of

Doctor of Philosophy

In

Sociology

May, 2011

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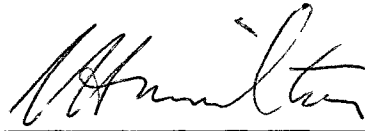
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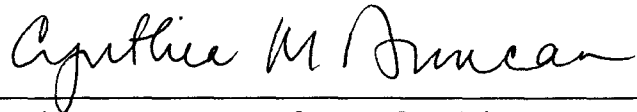


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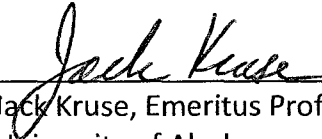
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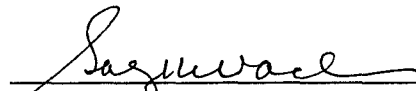
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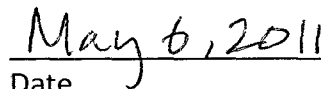
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Jack Kruse, Emeritus Professor of Public Policy,
University of Alaska



Sally Ward, Professor of Sociology



Date

for Belle and Jack.

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ABSTRACT

WAGE EMPLOYMENT. TRADITIONAL SUBSISTENCE AND ASPIRATIONS AMONG
IÑUPIAT AND YUP'IK IN THE MIXED ECONOMY OF NORTHWEST ALASKA

by

Catherine Turcotte-Seabury

University of New Hampshire, May, 2011

This project identifies, investigates, and analyzes factors contributing to the maintenance of a mixed economy in villages and regional centers largely inhabited by Iñupiat and Yup'ik in three regions of Northwest Alaska. By examining employment and subsistence patterns, desires for relocation, and employment and subsistence aspirations, this research will contribute to the understanding of work (both traditional and modern), culture, and population shift within indigenous, Arctic populations.

The Survey of Living Conditions in the Arctic (SLiCA) is used in conjunction with aggregate demographic data from the Arctic Observation Network Social Indicators Project (AON-SIP) and interviews of residents in the Northwest Arctic Borough communities of Kotzebue and Kivalina, Alaska to provide a detailed account of factors contributing to wage and subsistence practices. Bivariate and multivariate analyses are used to discern differences in behavior and attitudes

across gender and place types, and to uncover patterns of work, choice, and movement throughout the region.

By focusing on four variables from SLiCA that capture actual subsistence and employment levels, a desire to leave one's town or village, and work aspirations on an individual level I explore cultural, economic, individual, and community-level factors associated with participating in and having ambitions for wage employment, subsistence activities, and migration. Although a number of previous studies have focused on the Northern mixed economy and levels of participation, little research has sought to identify factors acting as catalysts—pushing individuals to desire work in the wage economy while maintaining traditional subsistence patterns. Few, if any, studies have examined what individuals *do* versus what they *aspire* to do.

Results show that aspirations for participation in the mixed economy diverge by place, with more town residents appearing to both desire wage employment and have thought of moving elsewhere. Males are more apt to participate more heavily in subsistence activity and wage work. Overall, results indicate that participation in subsistence and traditional activities while young is closely linked to participation as an adult, to desiring a lifestyle including subsistence, and to remaining in one's native community.

May, 2011

CHAPTER 1

INTRODUCTION

Natives are discovering how to walk in two worlds with one spirit.¹

The mixed cash/subsistence economy in Northwest Alaska consists of a combination of traditional subsistence activities, wage work, and income from transfer payments, allowing Iñupiat and Yup'ik² native to the region to maintain traditional ways of life while adapting to new and increasingly technologically advanced realities. Subsistence participation in the area forms an economy unto itself, with activities such as fishing, hunting, and gathering enterprises in which many households are sufficient and productive (Wolfe & Walker 1987). There is also a need for Iñupiat and Yup'ik to obtain wage employment for the purchase of basic necessities and modern conveniences, however, resulting in a substantial segment of the population participating in and desiring employment within the economic sector (Poppel et al 2007). It takes substantial financial

¹ From Andrews, S.B and Creed, J. 1998. *Authentic Alaska: Voices of Native Writers*. Lincoln: University of Nebraska Press. p.xxiv.

² SLiCA data consists of a sample of Iñupiat (87 percent), Yup'ik (12 percent), White (.3 percent) and other races (.75 percent). Although results presented in this project reflect this total sample, Iñupiat (or the corresponding descriptive term, Iñupiaq) will be used singularly at times for simplicity.

resources, for example, to captain a whaling expedition, and supplies and equipment must consistently be purchased and maintained—forcing most to negotiate subsistence work within the boundaries of available income and other resources (Wolfe 2004). Nevertheless, there remains a fierce loyalty among Alaska Natives to traditional ways of life, with wage work filling a necessary financial “gap,” allowing individuals and families to continue to subsist and harvest wild foods (Magdanz et al 2002; Poppel 2006b; Wolfe 2004). Iñupiat and Yup’ik highly value a culture and lifestyle that are in step with traditional practices (Poppel et al 2007), but also recognize the importance of wage-based income on community, family, and individual levels as a means to maintain traditional ties while enjoying conveniences obtained with wages (Poppel & Kruse 2008). Moreover, the role of wages and subsistence varies widely depending on location within the region and between men and women.

This dissertation identifies, investigates, and analyzes factors contributing to the maintenance of the mixed economy through subsistence and wage work patterns in Alaskan villages and towns largely inhabited by Iñupiat and Yup’ik—Native Americans who have been settled in the region for centuries.

Furthermore, the roles of outmigration and work aspirations are explored, and contrasts in findings between men and women and Iñupiaq and Yup’ik communities of different population size are discussed. By examining employment and subsistence patterns as well as factors contributing to relocation, employment, and subsistence aspirations among individuals within

communities which are separated geographically and are unique on cultural and economic levels, this research contributes to the understanding of work, culture, and population shift within Arctic communities in Alaska and elsewhere. This, in turn, advances sociological knowledge of societal and economic development in the Arctic, an area of the discipline in its infancy. Additionally, this study adds further dimension to the existing body of literature on culture and the economy in the North.

The innovative Survey of Living Conditions in the Arctic (SLiCA) is used in conjunction with longitudinal migration data from the Arctic Observation Network Social Indicators Project (AON-SIP), state-level income and employment figures, and interview data from the communities of Kotzebue and Kivalina, Alaska, to provide a detailed and statistically advanced account of factors contributing to wage and subsistence practices, aspirations, and to relocation desires of Iñupiat and Yup'ik residing in regional centers and comparatively smaller villages throughout Northwest Alaska. Multivariate analysis and mixed effects models are tested to uncover factors associated with patterns of work, choice, and movement throughout the region. Interviews with Iñupiat in the hub town³ of Kotzebue and village of Kivalina, both located in the Northwest Arctic Borough of Alaska and both included in the SLiCA survey, allow for the inclusion of detailed narratives on gender and community differences as well as

³ Hub towns have much larger populations when compared to Native villages, are vital service, health, and transportation centers, and generally have more numerous opportunities for wage employment. Hub towns included in the SLiCA survey are Nome, Barrow, and Kotzebue.

aspirations for and patterns of subsistence and wage work. Additionally, resilience, negotiation, and adaptation strategies in two communities distinct from one another socially, economically, and culturally are explored.

Research examining the maintenance of both subsistence and wage-based economies within the framework of the mixed economy has been undertaken in previous studies, with researchers largely concluding that the strength of *both* subsistence and wage work provide Iñupiat and Yup'ik with the ability to remain involved in a largely thriving mixed economy. I argue, however, that the roles of individual and community-level factors in shaping aspirations for work and subsistence participation and desires to move elsewhere has not yet been investigated. This project is unique in the manner in which it documents not just wage and subsistence patterns, but feelings toward these lifeways among Alaska Natives through statistical analysis and in-depth, unstructured interviews.

The theoretical underpinnings of this dissertation rest on development and aspirations theory including non-Western notions of development, previous research on quality of work life and factors contributing to a desire to work, and on theories of interdependence and intersubjective intentions. This project presents results on distinctions between males and females concerning their goals, dreams, and measures of success, differences by place size, and the importance of cultural practices specific to Alaska Natives.

Previous research has established a reliance upon both subsistence and wage work among Alaska Natives and other indigenous groups. This literature, in conjunction with results presented, create a unique opportunity for study and for the advancement of theory in the arenas of aspiration, work, culture, gender, and relocation among indigenous groups in the North and elsewhere.

First, this work focuses on four variables from SLiCA capturing actual subsistence and employment levels, thoughts of leaving one's town or village, and work aspirations. In using these variables I explore cultural, social, and economic factors on individual and community levels associated with participating in and having ambitions for wage employment, subsistence activity, and relocation to another place. Although a number of previous studies have focused on the Northern mixed economy and levels of participation, little research has sought to identify factors acting as catalysts—pushing individuals to desire work in the wage economy while maintaining traditional subsistence patterns. Few, if any, studies have examined what individuals *do* versus what they *aspire* to do, and the employment of mixed methods techniques to *determine whether relationships vary across locations is underutilized in social sciences research in the Arctic*. Additionally, there has not been, to my knowledge, any study that may indicate factors vital to the future of the mixed economy in Alaska and how relocation desires, employment levels, place size, and gender could influence levels of subsistence and wage work participation.

Next, speaking with community leaders and residents in Kotzebue and Kivalina, Alaska aids in effective interpretation of SLiCA analyses and in developing a better understanding of cultural, social, and economic conditions in the Arctic and elsewhere. In speaking with residents, I establish how subsistence activities and wage work are socially constructed in the minds of individuals and within communities of a different size, how tradition continues to shape social life for Iñupiat, and how gender helps to shape work and subsistence patterns and aspirations.

Research Questions

The goals of this research are fivefold:

- To identify individual, demographic, community, and social support variables associated with desiring a subsistence lifestyle;
- To measure the impact of these factors on current employment and subsistence patterns, as well as on those who may or may not have thought of leaving their home village;
- To examine above factors through the lens of gender and place size;
- To analyze data from interviews of residents from two Native communities exploring work, town and village life, and gender to complement SLiCA analysis; and
- To examine whether subsistence and employment levels and aspirations and desires to relocate differ across communities.

This dissertation uses data from the SLiCA survey (detailed information for which can be obtained at <http://www.arcticlivingconditions.org/>) integrated with in-depth, informal interviews of residents of Kotzebue and Kivalina, Alaska to answer the following questions:

- What factors affect whether Iñupiat and Yup'ik living in rural Alaskan towns and villages aspire to be involved in subsistence, and what factors are associated with desiring work in the wage economy? Are these same factors linked to a desire to leave one's community?
- Do unique factors influence work, subsistence, aspirations for each, and a desire to move in hub towns such as Kotzebue when compared with small villages such as Kivalina where employment opportunities are far fewer? Similarly, are differences by gender evident?
- Are differences in subsistence and wage work levels, aspirations for both, or the desire among some to leave affected uniquely across communities having distinct characteristics?

This study will fill gaps in existing knowledge of the mixed economy in Northwest Alaska and other Arctic regions and in literature of work, place, and gender among Native American and other indigenous groups. Much of the existing research on participation in subsistence and wage work investigates whether levels of subsistence activity are increasing, declining, or remaining steady for indigenous populations in the Arctic as wage employment opportunities change. What has not been adequately examined, however, is the

influence of individual aspirations as they affect (and are affected by) opportunity and the reality of subsistence as it is practiced today, and how this affects relocation among Iñupiat and Yup'ik. By closely examining aspirations and links between subsistence and culture, I seek a more nuanced understanding of *how* and *why* employment choices are made by Iñupiaq within existing physical, social, and economic constructs.

Hypotheses

Analysis of SLICA data will reveal that aspirations reflect a desire among most to continue living within a mixed cash/subsistence economy despite growing southern economic and social pressures—results which fall in step with previous findings. I argue that the unique history and culture of each of the Bering Straits region and Northwest Arctic and North Slope Boroughs, together with the geographic remoteness of these locations, have interacted to produce a way of life that adapts to new realities without abandoning tradition.

Theoretically, hypotheses reflect development as it has occurred in a non-western landscape, among an indigenous people who define work and are connected to employment in a manner largely different from that found among non-Native groups. In Alaska Native societies and among other Native American tribes, cultural and tribal sovereignty often trump the importance and quality of work life on an individual level.

Some of these hypotheses, however, also reflect the suggestion that tribal ties could weaken over time as generational gaps in exposure to a wide variety of subsistence activities increase, potentially creating a degree of cultural atrophy. As the landscape changes for young Iñupiat and Yup'ik—through internet use and increasing technology in classrooms, for example—less time is reportedly spent on traditional activities among some.

Guiding hypotheses is the theory that *intersubjective intentions*, or the shaping of individual aspirations by larger, community-level structures and preferences, takes place within the context of that which currently surrounds an individual, i.e. cultural and tribal connections, work, and religion/spirituality. Simply put, as preferences among certain groups of individuals change (young females, for example) choices made by individuals may begin to shift. This potential for change is reflected in hypotheses stating that older individuals with closer ties to traditional activities will tend to take part in a wider array of subsistence activities than the young and be less likely to work full-time in wage employment or desire a lifestyle that would be characterized as such.

Tables 1.1 through 1.4 below list hypotheses for each of the four dependent variables tested in this project. I hypothesize that a number of factors, measured through independent variables included in models, will demonstrate a statistically significant relationship with each of the four dependent variables and that the null hypothesis of no relationship between these concepts and number of subsistence activities will be rejected (H_0).

Subsistence Activity Table 1.1 lists hypotheses associated with the number of subsistence activities reported in the previous year. Females will report taking part in fewer subsistence activities (H_1), as will younger individuals (H_2). On the other hand, married individuals (H_3) and those in good health (H_4) will report participation in a higher number of activities in the previous year. I posit that the strongest associations with subsistence activity, however, will be found with traditional activities and skills (H_5). More sophisticated knowledge of Native language, participation in Native storytelling, and the number of traditional skills learned as a child, for example, will be positively related with more subsistence activity net of other factors included in models.

Table 1.1 Hypotheses associated with number of reported subsistence activities in the previous year

H_0	there is no relationship between the number of subsistence activities reported in the previous year and independent variables included in models; the number of activities varies randomly
H_1	the number of reported subsistence activities varies by gender, with females reporting fewer subsistence activities than males
H_2	the number of reported subsistence activities varies by age, with younger respondents reporting fewer subsistence activities than older respondents
H_3	the number of reported subsistence activities varies by marital status, with unmarried individuals reporting fewer subsistence activities than married individuals
H_4	the number of reported subsistence activities varies by self-reported level of health, with those describing themselves as in poor health reporting fewer activities than healthier respondents
H_5	the number of reported subsistence activities varies by self-reported level of traditional skills and knowledge, with those describing themselves as having less knowledge reporting fewer activities than respondents with more skills/more advanced knowledge

Wage employment It is hypothesized that younger respondents (H_6), females (H_7), and those who report more years of education (H_8) will state that they worked significantly more hours in the week prior than older respondents, males, and those with fewer years of formal education (Table 1.2). It is expected that income will also be positively associated with hours worked (H_9), as more hours worked are typically associated with higher income. I hypothesize that

social support and well-being variables will not demonstrate a statistically significant relationship with the number of hours worked, however I expect that community-level variables including the percentage of residents in poverty and the percentage not working will exhibit a relationship with wage work (H_{10}). Higher levels of unemployed individuals and higher poverty rates will be associated with lower reported wage employment for those individuals living within those communities. Finally, differences concerning variables associated with the number of wage hours reported by place type and by gender will be robust.

Table 1.2 Hypotheses associated with number of reported wage hours worked in the previous week

H_0	there is no relationship between the number of reported wage hours worked in the previous week and independent variables included in models; the number of wage hours varies randomly
H_6	the number of reported hours worked varies by gender, with females reporting more hours than males
H_7	the number of reported hours worked varies by age, with younger individuals reporting more hours than older individuals
H_8	the number of reported hours worked varies by education level, with respondents having more years of education reporting more hours than those who report fewer years of education
H_9	the number of reported hours worked varies with income, with higher income levels associated with more reported work hours
H_{10}	the number of reported hours worked varies by community characteristics, with respondents living in communities having higher levels of poverty and unemployment reporting fewer hours worked than those living in communities with lower poverty and unemployment levels

Relocation I hypothesize that females (H_{11}) and younger residents (H_{12}) are more likely to have thought of living in another community than males and older residents. Subjective estimates of social support and ties through parental birthplace will also be significant, I theorize, as these variables reflect social ties that individuals have within their community. Increased levels of social support will be positively associated with a desire to remain in one's community (H_{13}). I argue that negative opinions of community success concerning issues such as the maintenance of harmony and safety will negatively affect ambitions to remain in one's community (H_{14}). Finally, I hypothesize that desires to leave will vary by the size of community in which individuals live and along gender lines, with residents of regional centers and females more likely to have thought of moving elsewhere in the previous five years (H_{15}). These hypotheses are listed in Table 1.3.

Table 1.3 Hypotheses associated with thoughts of moving elsewhere in the previous five years

H_0	there is no relationship between thoughts of moving elsewhere in the previous five years and independent variables included in models; thoughts of moving vary randomly
H_{11}	thoughts of moving vary by gender, with females more likely to reports thoughts of moving elsewhere than males
H_{12}	thoughts of moving vary by age, with younger respondents more likely to reports thoughts of moving elsewhere than older individuals
H_{13}	thoughts of moving vary by perceived level of social support and social ties, with respondents reporting higher levels of social support less likely to report that they have thought of moving elsewhere
H_{14}	thoughts of moving vary by reported community characteristics, with respondents reporting more satisfaction with their community less likely to report that they have thought of moving elsewhere
H_{15}	thoughts of moving vary by community size, with respondents living in larger communities more likely to report that they have thought of moving elsewhere

Aspirations Table 1.4 shows hypotheses for the fourth dependent variable, aspirations for subsistence/wage employment or wage employment only. I hypothesize that a number of characteristics, including gender (H_{16}), age (H_{17}), marital status (H_{18}), education level (H_{19}), and ties to traditional ways of life such as traditional skills, storytelling, and Native language ability (H_{20}) will be associated with aspirations for a particular lifestyle. Specifically, older individuals, males, those who are married, respondents with less formal

education, and Iñupiat and Yup'ik with deeper knowledge of traditional skills through childhood instruction, knowledge of Native language, and participation in storytelling will be more likely to aspire to a life consisting of only subsistence work while minimizing their participation in the wage economy. Conversely, younger individuals who have more education and are female will be more likely to desire wage employment—findings generally congruent with previous research (Hamilton & Seyfrit 1994). Iñupiat and Yup'ik taught fewer traditional skills while young will also be more likely to prefer a lifestyle including wage employment.

Table 1.4 Hypotheses associated with aspirations for a mixed wage/ subsistence lifestyle or wage work only

H_0	there is no relationship between aspirations for subsistence and/or wage work and independent variables included in models; lifestyle aspirations vary randomly
H_{16}	lifestyle aspirations vary by gender, with females more likely to desire wage employment than males
H_{17}	lifestyle aspirations vary by age, with younger respondents more likely to report aspiring to participate in wage employment only
H_{18}	lifestyle aspirations vary by marital status, with married respondents more likely to report aspiring to participate in subsistence or subsistence/wage employment
H_{19}	lifestyle aspirations by education, with respondents reporting more years of education more likely to report aspiring to participate in wage employment
H_{20}	lifestyle aspirations vary by self-reported level of traditional skills and knowledge, with those describing themselves as having more knowledge more likely to aspire to subsistence or mixed work/subsistence than respondents with fewer skills/less advanced reported knowledge

As stated previously, it is expected that results will show the vast majority of Iñupiat and Yup'ik desiring to remain as participants in the mixed economy. I hypothesize that these attachments are due to strong cultural ties, financial necessity, and to a collective recognition of the social and nutritional value of subsistence work. I hypothesize that factors and the strength of relationships contributing to a desire for mixed subsistence/wage work or wage work only will be similar for males and females, but that differences by place type will differ more considerably.

Mixed-effects Models Four community-level factors will be tested using mixed-effects modeling. I hypothesize that significant community-level differences in level and in the effects of predictor variables, will emerge when mixed-effects models are estimated for the four dependent variables. I expect that random, community-level effects will contribute to the overall fit of models.

Interviews Through interviews with individuals in Kotzebue and Kivalina I expect to find support for results from SLiCA analyses. Interviews will reflect a desire among most to continue living within a mixed economy, with wages filling a necessary economic “gap” between traditional subsistence and resources needed to perform these activities. I will argue that the history and culture of the Bering Straits Census Area, the Northwest Arctic and North Slope Boroughs have combined to produce a way of life that continues to adapt successfully to new realities without abandoning older traditions. In speaking with residents, however, I also expect to find support for hypotheses that there are significant differences in attitudes toward subsistence and wage work by place type and gender.

Data

Survey of Living Conditions in the Arctic The pioneering Survey of Living Conditions in the Arctic (SLiCA), conducted in Alaska in the winters of 2002 and

2003,⁴ was developed to better understand environments of Native individuals, families, and social groups, and to provide data that would point to where economic shifts and development may lead (Kruse et al 2008). More than 7,000 indigenous people throughout the circumpolar region, including northern Canada, Greenland, and the Chukotka Region of Russia were surveyed, with surveys conducted in Alaska representing only one portion of total data collected. Results include information on social, economic, cultural, and educational conditions as well as nutrition and health data (Andersen et al 2002; Poppel et al 2007). A great deal of care was taken to ensure the accuracy of data gleaned from the survey, with questions developed specifically for Native groups living in the Arctic. Natives were employed as interviewers to accurately capture responses, and were trained to record all responses from subjects verbatim.

The successful dependence by Iñupiat and Yup'ik upon both subsistence and wage work has been well-documented, and SLiCA and existing community and aggregate-level data create a unique opportunity for study. These provide opportunity to explore reasons for this success, examining social, economic, individual, and community-level factors associated with participation in both facets of the mixed economy. I conducted in-depth interviews focusing on work and subsistence in the context of place and gender to learn how individuals negotiate a balance between both.

⁴ SLiCA was conducted in the Northwest Arctic Borough in January-March 2002 and in the North Slope Borough and Bering Straits region in January-March 2003.

Little research thus far has sought to identify factors acting as catalysts—pulling individuals to desire wage work while continuing to pursue subsistence activities, or acting as push factors—causing some to want to leave their native villages in favor of greater employment opportunities. Indeed, there has been little systematic study concerning what desires and other outside influences will have on Native lifeways in northwestern Alaska, especially in the midst of environmental change.

Interviews with Community Leaders and Residents I traveled to the hub town of Kotzebue and the village of Kivalina, both located within the Northwest Arctic Borough, to conduct informal interviews with community leaders and Native residents within those communities. Through interviews with individuals in these communities who possess extensive knowledge of cultural history, local work and subsistence patterns, and existing and future political and policy decisions I was able to explore the complex relationship which exists between subsistence and wage employment. Likewise, speaking with Native residents of two Northwest Arctic communities differing in lifestyle and opportunity despite sharing many traditional and cultural elements demonstrated that individuals and communities in the North are unique and must be considered independently.

Open-ended questions concerning subsistence activities, cultural practices such as food sharing, wage work, population change, the role of

corporations, and the impact of outmigration are introduced to unpack the nature of subsistence, people's engagement in wage work, their perceptions about the economy, and movement in each community and the region to better understand their influence on Native life ways. Given that my interviews were unstructured, themes evolved directly from responses provided by subjects rather than from a personal list of pre-conceived concepts. The following themes have emerged through interviews:

- Gender and place differences
- The balance of subsistence activity and employment among individuals, and the maintenance of existing lifeways
- Perceived community viability
- Threats to subsistence livelihood, Iñupiat culture, the environment, and the community
- Resilience and adaptation

Purpose

This study aims to fill a number of existing research gaps. First, this project addresses the idea that a desire among the majority of Iñupiat and Yup'ik to work *and* subsist is not a step on a linear path toward development, but rather a welcome and sustainable state maintained with the strength of cultural, familial, and community ties and formed, in part, in reaction to enormous economic and social change. Development, as it is construed in western culture,

is most often associated with economic growth and increased consumption of material goods. There is a disconnect between Native and Western views of development, I argue, that prevents a recognition among many of the necessity of mixed wage/subsistence work and of the importance of the preservation of Native culture in the face of economic, social, and environmental transformations. This project uses a mixed methods approach to demonstrate patterns and link patterns with aspirations and desires to describe and explain Alaska Natives' complex approach to development.

Furthermore, this research builds on that of previous scholars by examining the permanence of the mixed economy in many Arctic regions, showing that economic transitions taking place (or not taking place, in some cases) are affected by certain individual and community level characteristics, by development, and by Native culture, and vary across communities. Existing research on the mixed economy has investigated whether levels of subsistence participation remain stable for populations as wage employment opportunities change. But scholars have not examined how individual aspirations and desires are affected by opportunity and external factors. Stepping back further, the way individual characteristics, community and culture shape individual outcomes is critical in understanding the nature of aspirations and in considering what development means in majority-indigenous communities. Clearly, individuals are socialized through gender to desire certain lifeways, and the town or village in which an individual resides takes on a great deal of importance in shaping

lifestyle opportunities, aspirations, and choices. I contend that these factors have not, however, been quantitatively or qualitatively studied in great depth, leaving scholars and others with ideas of development in the region that are not complete. Given the abundance of literature documenting influences of community on a constellation of outcomes, such factors must be taken into consideration.

Third, this project will contribute to the body of existing literature on the influence of culture on life ways. The role of culture is very powerful, and evidence has demonstrated that a loss of cultural ties within indigenous societies can result in negative outcomes, such as high suicide and alcoholism rates (Wexler 2006). Moreover, remoteness aids in protecting and preserving many aspects of Native culture such as music and language (Reyhner 2001), but may also contribute to its fragility. Additionally, oppression, assimilation techniques, and other behaviors forced onto native groups throughout history have had a devastating impact on culture.

Finally, and perhaps most importantly, Native life ways are increasingly influenced by external forces such as the presence of corporations and their financial capital and environmental change through changing species migration patterns and disappearing sea ice. This has lead many Iñupiat and Yup'ik to work to closely protect the health of future subsistence activity through education and practice. Such concerns are shared by other indigenous groups throughout the U.S. and the world. To that extent, results of this project may generalize to other

populations, and situate this work within the body of existing Native American and indigenous literature on development, adaptation, and the maintenance of culture.

I begin this project with a review of literature pertaining to subsistence, wage work, culture, and social ties in Chapter 2. Chapters 3 and 4 provide information on Native communities included in the SLiCA survey and on methods used for this project. In Chapter 5, SLiCA data is used to examine how some factors affect dependent variables in Native hub towns and smaller villages differently and explores distinctions by gender. Chapter 6 presents results of multivariate analysis using SLiCA and AON-SIP data. Relationships between subsistence, wage work, desire for relocation and lifestyle aspirations and independent variables of focus in Native communities are shown and interpreted in these two quantitative results chapters. Both results chapters also include data and analysis from interviews with ten community leaders and residents in Kotzebue and Kivalina to offer context for statistical results. The dissertation concludes with discussion in Chapter 7.

In conclusion, I argue that this research will illustrate that:

- Although the region is undergoing considerable social, economic, and structural change, the view of subsistence as a vital and viable resource in the region remains strong;

- Wage work acts to bridge the financial “gap” that exists for many in maintaining subsistence practices using modern equipment and resources;
- Social, economic, and cultural factors, identified in this project, are essential to the maintenance of subsistence and the mixed economy;
- Hub town-village contrasts are significant, although residents of both types of communities participate in subsistence activities in a manner fitting with lifestyles in each place type;
- Likewise, gender differences regarding subsistence, wage, and relocation patterns are evident and may influence future life ways in Native communities; and
- Community characteristics matter, with distinct results seen across communities.

CHAPTER 2

THEORETICAL DISCUSSION AND FINDINGS FROM PREVIOUS RESEARCH

*Subsistence—the manner of keeping alive.*¹

This section provides a review of literature relevant to this dissertation. To begin, the chapter will discuss tradition and related development theory and the applicability of appropriate development theory to Iñupiat, Yup'ik, and other Native and indigenous populations. Theory associated with quality of work life, desires for work, and the gendered nature of employment for wages is then explored. Finally, aspirations theory is used to argue that desires for relocation and a traditional subsistence or wage-based lifestyle are based, in part, on established factors such as culture, place, and individual characteristics.

Subsequent to this more general theoretical discussion, background on the mixed economy prevalent in and specific to Northwest Alaska is examined. Dependent variables used in this research and discussed in this chapter include the number of wage hours worked, subsistence participation, thoughts of outmigration, and lifestyle aspirations among Alaska Natives. Additionally, the roles of gender and place are investigated within the context of those dependent

¹ From Andrews, S.B and Creed, J. 1998. *Authentic Alaska: Voices of Native Writers*. Lincoln: University of Nebraska Press.

variables listed above. To conclude, theoretical discussion of a number of independent variables used in this project, including education, life satisfaction, participation in traditional activities, and the nature of alcohol use provide justification for the inclusion and application of these factors in this project.

Theoretical Background

Development—Why does it Matter?

What is development? Societies have been shown to “develop” and “modernize” in similar patterns and has been detailed by Rostow and others. Rostow’s (1960) linear theory for economic growth and development, for example, consists of five distinct “stages” of modernization that are dynamic and flexible. However, the establishment of typical agricultural and industrial development patterns described by Rostow can be hindered in some regions due to low skill, climate, or inaccessibility. Modernization theory aids in illuminating development patterns and is often applied in the study of individual, third-world nations; however, modernization and development theories can also be functional as a portal into better understanding why some societies have *not* developed (in a Western sense) as quickly. This second lens identifies that culture and traditional practices along with history, geography, and availability of resources are important factors of development and, perhaps more importantly, guide investigation into how a particular society *defines* development within the context of culture and tradition.

Development matters in the context of this project as factors affecting existing patterns for work and subsistence, as well as aspirations for relocation and lifestyle, are affected by past, current, and future development models and by the suggestion that modernization and development are constructs not viewed as societal and economic goals by many Native individuals. Instead, the maintenance and preservation of both tradition *and* choice that continue to benefit Native peoples within existing and ever-changing structures is often more fundamental.

Development as Viewed through a Non-Native Lens. Historically, tension has existed between indigenous groups and non-Native populations as the word “development” has been applied to describe processes of modernization in regions employing non-Western viewpoints and characterized by ideals and cultural values not found in societies defined as “developed.” The economy of the North, for example, has not followed a path of development as it is typically defined in a Western sense (Duffy & Stubben 1998). Based historically upon the extrication of resources including whales, fur, and gold, the economy of the North of just a few generations ago stands in contrast to the dominant industry of the Arctic today—oil and natural gas exploration and extrication. Unlike those aforementioned industries, the structure of modern oil and natural gas exploration demands the importation of workers with adequate technical skills to advance development, often leaving those native to the region on the periphery. Consequently, much of the benefit of industry remains with those

who are directly involved, and development (as the West conceives of it) within the area and among local people is very limited.

Economic development is dependent upon the removal of certain obstacles, such as a lack of transportation, infrastructure, or lack of workforce skills (Bernstein 1971), and given the extreme landscape of some regions home to indigenous populations such as the Arctic, many of these obstacles are difficult to negotiate. Transportation systems can be very limited, with communities not linked to one another by roads or other systems of transport. Moreover, extremely small population centers demand relatively little in the way of services, preventing investment on the part of outside corporations from being economically viable (Condon et al 1995).

Finally, Apter argues that traditions “create immobilities in social structure” and serve to prevent innovation from taking place (1960:46). The cultural traditions of Iñupiat and other Native groups in the North and elsewhere may be a case in point. Development relies upon, demands, and carries with it social change beyond that which current physical infrastructure largely can support in the North.

Culture, Structure, and Development. Indigenous groups do not, however, live inside a vacuum. A shifting economy and changing structures play a role in shaping aspirations and desires and result in adaptive behavior vis-à-vis these emerging structures. Durkheim argued that “[s]tructure is not only a way of acting; it is a way of existing that necessitates a certain way of acting” (Bellah

1973[1893]:118). Individuals are thus not only acting within the structures that have been put into place by themselves and others, but also are continually updating and altering these structures through their own actions as they are modified and improved over time (Durkheim 1893). Nagel (1994) proceeded one step further in arguing that culture, ethnicity, and identity are themselves constructed by structure. As many indigenous populations have experienced growth in the amount of technology available and have a wider range of educational, economic, residential, employment, and dietary choices, structures such as methods of communication and access to transportation to larger towns and cities have been fundamentally altered. As latitude in making choices is gained and as the breadth of choice increases, aspirations for lifestyle outcomes change. As aspirations transform, lifestyles change as well—providing further opportunity to modify existing structures as seen fit. The transformation of structures, it can be argued, thus influence the construction of culture, which also has a direct effect on community-level factors and the effect such factors have on choice and desire (Nagel 1994).

Development as Interpreted by Native Populations—The Importance of the Maintenance of Tradition. Lifestyle preferences, however, remain rooted within the mixed economy among the population being studied here and within many indigenous societies elsewhere (Duffy & Stubben 2008; Kruse et al 2008; Poppel et al 2007). Development has not unraveled the social and cultural fabric on which some societies are based, indicating that traditional, liberal

development and economic models are inadequate and inappropriate when applied to Native American and other indigenous populations. Instead, Native people often straddle Western and non-Western economic spheres and maintain the assertion that tribal values are paramount in negotiating development (Rasmussen 2005). The maintenance of this position by indigenous populations in northwest Alaska and elsewhere—with a “foot in both worlds,” so to speak—constitutes the core theoretical position of this project. Giddens (1991) suggests this in distinctions he has made between traditional and modern societies, including characteristics such as the level of respect given to elders in traditional societies and a reliance upon technology in more modern cultures; descriptions indicating that Native populations such as the Iñupiat can and do occupy space in both.

Although seemingly settled in two distinct worlds, subsistence and tradition sit at the nucleus of Native life for most in Iñupiat and Yup'ik in Alaska and the common, Western notion of development “restricts/constricts the Indian sense of “exchange” and strips it of its psychological, social, and spiritual dimensions” (Duffy & Stubben 1998:56). It does not account for the significance of tribal membership, the importance of kin, or the antipathy felt toward a “white” economic model, for example. For scholars and others approaching subsistence practices from a Western perspective, characteristics such as involuntary unemployment (Diener & Suh 1997; Martel & Dupuis 2006) and loyalty to a subsistence lifestyle may represent individual failure or collective

shortcomings. To a tribal member, however, unemployment may indicate something wholly different and positive such as unusual and respected skill and success as a subsistence hunter, for example.

Intersubjective Intentions and Aspirations. Sagoff (1986) argued that intersubjective intentions define common goals and aspirations that develop individually but are shared with others within a society. Within the framework of community and culture, individual choice is largely based upon public and private value systems and is shaped by internal and external forces such as the presence of kin and family, education, and perceived level of safety and well-being. Therefore, the maintenance of aspirations embedded within the mixed economy of the North is affected by these intentions, and affects preferences. Put simply, if subsistence or other traditional activity is valued within a society it is preferred, with individuals living in that society aspiring to live within those values; if the behavior is preferred it is then chosen, and value systems are thus maintained. Moreover, if more value is placed on wage employment by some groups, such as females, than others, such as males, aspirations will diverge and differ based upon these divergent attitudes (Hamilton & Seyfrit 1993, 1994a, 1994b).

Location and Aspirations. Prior research on aspirations within indigenous communities finds location mattering a great deal in determining the scope and type of individual employment opportunity and desires. Lester (2000) found after interviewing Aboriginal students in Australia that rural location has a

significant, negative effect on employment aspirations. A significant degree of variance was found in types of work aspiration between rural and more densely settled areas, even within remote Aboriginal communities. In other words, the more rural the location, the more limited individual knowledge of the employment market is, thus the more limited opportunities are to imagine and develop employment (or other) aspirations. These findings were mirrored in results from Hamilton and Seyfrit, who conclude through interviews that young Inupiat living in regional centers “express more confidence” and “tend to feel weaker social ties to their present communities” (Hamilton & Seyfrit 1993:262)

Development within the Context of this Project. Why is a discussion of development in the context of indigenous groups relevant to this study? Quite simply, existing literature suggests that wanting to hunt, fish, or gather berries, securing a regular, wage position, dreaming of living elsewhere, or aspiring to a lifestyle that may differ from one’s current existence are based in large part upon social, economic, and cultural conditions—conditions which are affected by myriad factors, change over time, and vary from place to place and individual to individual.

Wage Employment

Employment Satisfaction and Desires for Work—Context Matters. For many, one’s job is a source of great satisfaction (or disappointment). Quality of work life, a construct associated with well-being in the workplace, is akin to and

aims to measure workplace satisfaction, and is associated with type of employment and time spent at work. Measures for quality of work life have been developed to reflect distinct characteristics of workers, conditions, and surroundings (Sirgy et al 2001), and previous study suggests that workplace satisfaction is located at the peak of a hierarchical “cone,” with overall life satisfaction as its base (Martel & Dupuis 2006).

Desire to work and resulting satisfaction gleaned from employment are salient to the environment of individuals. Moreover, employment and aspirations for employment should be interpreted within the context of place, culture, and characteristics of individuals, as well as the employment structure in any given community or society (ibid.). In communities inhabited by indigenous people, interpretation of employment measures must account for value placed upon traditional activities such as subsistence, thus creating distinctions between Western and non-Western models of wage employment patterns. Like development, wage work and resulting quality of work life should not be interpreted through a western lens when examining Native populations, but ought to account for other activities producing economic benefits such as subsistence activity. Factors affecting quality of work life (wage-based) may diverge from factors influencing quality of subsistence-related work life, but neither should be discounted.

An example of a Native interpretation of successful work and high levels of quality of work life can be found in an examination of social capital. Previous

research among indigenous groups has found associations between social capital, job satisfaction, and quality of life at work, with social capital more strongly related to job satisfaction than characteristics of the worker or qualities of the job itself (Requeña 2002). Subsistence and other traditional skills and activities are strongly linked to social capital in Native societies. A skillful hunter, for example, is often a leader within his or her Iñupiaq community and is regarded with a great deal of respect and authority from town or village residents, therefore possessing a high level of social capital (Wolfe 2004; Ward 2010). As such, wage employment must be examined in tandem with subsistence in this project, with factors associated with increasing or decreasing subsistence activity and wage work appreciated as being entangled in and affecting one another.

The Mixed Economy of Northwest Alaska

Background Iñupiat and Yup'ik are typically settled in traditional, small, remote, kin-based villages in northern and western areas of Alaska. Contact with outsiders did not occur until approximately 350 years ago, when Russian and European traders arrived to the area (Chance 1990; VanStone 1960). Natives became traders of baleen (from the bowhead whale) and pelts and were paid with foreign luxuries such as sugar, rifles, and ammunition, as well as tobacco and whiskey (Chance 1990). Later colonization brought with it a host of

disastrous effects such as disease and oppression, leaving some villages virtually decimated.

Although in recent decades more and more Iñupiaq and Yup'ik villagers have migrated to larger towns and cities such as Barrow, Anchorage, and the lower forty-eight states (Williams 2010), more than half of Alaska Natives reside in villages with populations of less than one thousand (ibid.) and many villages remain more than ninety percent Native today (Seyfrit et al 1998). There are no roads linking communities to one another, so travel between remote villages is limited. Consequently, the familial-based culture of self-sufficiency that has characterized Iñupiat and Yup'ik life for centuries remains but has modified over time to take advantage of modern conveniences.

Economic shifts have been taking place in northwest Alaska for many decades and are the result of a number of intersecting factors. These include, but are not limited to: Native Corporation payments (Martin 2004), payments from the Alaska Permanent Dividend Fund resulting from spiking oil revenues starting in the 1960s; transfers to Native Corporations from other industries such as the Red Dog Mine (Jans 1993); expanded local educational opportunities provided to youth; capital improvements projects totaling in the billions of dollars (Kruse 1991); changes in federal laws governing subsistence activities (Chance 1990); and increased demand for wage labor and consumer goods.

Some time ago, scholars predicted the potential for decline in subsistence participation in Northwest Alaska as modernization took hold (Berman 1998;

Condon et al 1995). Others have questioned the sustainability of maintaining a mixed subsistence/cash economy in the region, and foresee difficult choices for Iñupiat and Yup'ik in the future. The amount of human capital required, for example, to maintain a subsistence lifestyle may be at risk as traditional knowledge and culture are replaced by modern conveniences. Nevertheless, most Arctic social science researchers today conclude that the mixed economy is vital to the survival of the Iñupiat and Yup'ik and will not be easily replaced (Kruse 1991). Additionally, a recognition of the importance of geography, land, and community has evolved through ethnographic study (see Wohlforth 2004 and Marino 2009, for example), providing another key argument for the continued vitality of subsistence work (Chance 1990; Kassam 2009).

Subsistence activity in rural indigenous communities, however, has been found to be especially sensitive to contact from the outside world and global environmental change, which is largely outside of the scope of this research project but which certainly affects patterns and aspirations. Patterns and trends in certain areas may have already been altered with environmental change (Wohlforth 2004). The most visible changes in subsistence patterns have occurred in conjunction with external influences associated with technological advances (Kershaw 2004), with wage employment now necessary for the purchase of modern tools and equipment that serve to facilitate traditional activities (Usher et al 2003; Wolfe & Walker 1987).

The lifestyle of the Iñupiaq or Yup'ik villager is similar in many respects to that of generations past, but has also been transformed by influences of southern² culture including the arrival of a cash economy. Multigenerational and compound family groups³ continue work together in harvesting traditional foods while internet use has concurrently skyrocketed. Income and cash—once unnecessary—are now critical for the purchase not only of subsistence-related items, but also household goods such as fresh produce. Sod and underground winter houses of the past have given way to prefabricated homes arranged in rows. Wage employment is sought after, but largely within the context of a traditional existence. As life has been changed, the aspirations of many to work or subsist and to stay or leave have been altered to reflect these new realities.

Given the need for Iñupiat and Yup'ik to obtain wage employment for basic necessities as well as conveniences, a substantial portion of the population now desires employment within the economic sector with some leaving their home villages altogether in favor of work opportunities available in more populous communities (Kruse et al 2008; Poppel et al 2007). Does this group wish to give up the established subsistence lifestyle? In most cases, the answer is no. There is a fierce loyalty among Alaska Natives to traditional ways of life, and predictions of a rapid transition to a largely southern culture have proven

² Condon & Stern (1993) define “southern” culture, behavior, role expectations, and socialization as that which is influenced by television, advertising, radio, magazines, education, and trips to the south. Additionally, southern culture today can include influences provided by the internet and other electronic media.

³ Burch (2006:98) defined compound families as “family unit[s] whose members occupied two or more dwellings, but still operated in terms of a single overriding family organization.”

incorrect thus far (Kruse 1991). It has been established that despite the arrival of the global economy to the doorstep of Arctic communities, subsistence work remains an integral component of their day-to-day existence (Condon et al 1995; VanStone 1960). Iñupiat and Yup'ik place a high value on the culture, characteristics, and lifestyle that are in step with customary practices (Poppel et al 2007), but also recognize the importance of wage-based income in their communities (Chance 1990).

Van Stone (1960) proposed that the northern mixed economy consists of a combination of traditional subsistence and wage work, thus allowing Iñupiat and Yup'ik to “retain their aboriginal methods of obtaining food and satisfy the wants that have been created by contact with the outside world.” This model was advanced by Wolf and Walker (1987), who saw subsistence as an economy unto itself, with activities such as fishing, hunting, and gathering as enterprises in which households become sufficient and productive. Sharing food is common in the mixed economy, and community members often work together in harvesting food and obtaining supplies crucial for successful subsistence work (Chance 1990).

There is no doubt, however, that the introduction of modern technology has fundamentally altered the manner in which subsistence activity takes place. Snow machines have replaced dog teams, and GPS navigation systems now allow Iñupiat and Yup'ik to travel farther from home while hunting and fishing, for example (Kofinas 1993). Furthermore, regular access to television, and, more

recently, the internet have changed the way in which individuals in the Arctic communicate, gather information, and receive support from loved ones. This, in turn, affects lifestyle choices, living arrangements, and dependence upon subsistence and wage work. Levels and types of subsistence work in rural, indigenous communities has been found to be especially sensitive to contact from the outside world, and given recent technological developments, may be more likely to shift and change with new outside influences and pressures (Bradley et al 1990). Likewise, wage employment is necessary for the purchase of modern tools and equipment, and acts to facilitate traditional activities (through regular income) while potentially restricting time spent performing subsistence work.

Subsistence and Employment among Iñupiat and Yup'ik

Subsistence Activity

What is Subsistence? Traditional subsistence activities among Iñupiat and Yup'ik include hunting, fishing, gathering, sewing, skinning, processing, and traditional activities directly associated with this work, such as the repairing of traditional boats (Burch 2006; Kruse 1991; Nuttall 1998).⁴ The number of Iñupiat and Yup'ik participating in subsistence activities is substantial, but varies widely

⁴ For clarity, subsistence work is defined as participation in one of the above activities, while wage work is operationalized as those activities not normally defined as subsistence-based and completed for monetary payment.

by the location and size of communities, access to seasonal subsistence camps, and the age and gender of participants. Preliminary analysis of SLiCA, illustrated in Table 2.1, indicates that more than fifty percent of respondents surveyed in Alaska report fishing, gathering plants and/or berries, skinning and butchering caribou, and preserving meat and fish, and that hunting and harvesting are also vital subsistence activities (Poppel et al 2007).

Table 2.1 Percent involvement in subsistence, by activity⁵

Activity	Weighted Percent Participation
Fish	75
Preserve meat/fish	71
Pick berries	69
Skin/butcher caribou	53
Gather greens, other plants	50
Hunt caribou, moose, sheep	46
Hunt waterfowl	36
Hunt seal	35
Help whaling crews	34
Make native crafts	34
Gather eggs	31
Sew skins, make parkas	26
Member of a whaling crew	22
Make sleds or boats	20
Hunt walrus	17
Trap	10

Source: Poppel (2007)

⁵ Results have been weighted to account for adjust for biases in sampling; see Methods chapter for details on weights used.

Food Sharing within Communities. Food sharing is common practice within Native towns and villages—the importance of which cannot be overlooked (Magdanz et al 2002; Ward 2010). At the community level, the sharing of food and other products from subsistence harvests is expected and necessary (Magdanz et al 2002), as within Iñupiaq and Yup'ik communities there is longstanding tradition of sharing the bounty in times of plenty and of distributing the results of a successful hunt with others, especially those who are in need (Berman 1998; Magdanz et al 2002; Wohlforth 2004). Going one step further, Burch (2006:271) described the act of sharing food, tools, and other useful goods as obligatory: “it was something that people were expected—indeed required—to do.” Iñupiaq and Yup'ik cultural values state that the sharing of food by an individual will benefit that individual by granting them larger harvests in the future (Andrews & Creed 1998).

Benefits of Subsistence. There are a number of reasons for Iñupiat and Yup'ik to continue practicing subsistence activities—the first and most obvious being economic. Southern foods are very costly in communities such as Kotzebue and often not available in villages such as Kivalina, and the amount of time it takes for fresh fruits and vegetables to reach the area often renders them unavailable to individuals and households living in remote villages. Subsistence work reduces dependence on wages and the labor market, southern foods, and on potential food shortages that could result from myriad factors (Burch 2006). Second, participation in traditional activities aids in building community ties

while reducing harmful behavior such as binge drinking and drug use (Kerkvliet & Nebesky 1997). Finally, the familiarity *with* and reliance *upon* nature and the environment accompanying subsistence work reinforce this understanding within Iñupiaq households, and allow for traditional knowledge to be passed down to younger generations.

Gender, Place, and Subsistence. Men, in general, participate in a much more varied array of subsistence activities than women. Table 2.2 shows the level of involvement of individuals in subsistence activity by gender, separated by place type. A degree of gender disparity is apparent, with males more likely to participate in a greater number of activities than females. This is expected, as the types of subsistence activity in which females are more often involved include the smaller number occurring within the home—namely, crafts, sewing, and the preparation of traditional foods that have been harvested by males. A great deal of interdependence between males and females is entangled within these results, however—hunters rely upon others (primarily women) to prepare traditionally harvested foods, and to sew and maintain winter clothing and other items necessary for hunting (Bodenhorn 1990). Likewise, village residents tend to participate in a wider array of activities than regional center residents.

Table 2.2 Percent participation in subsistence activities by gender and place type

	Number of Subsistence Activities	Place Type	
		Town	Village
Males	None	3.4	2.0
	1-3	6.8	5.9
	4-6	9.6	7.3
	7-10	15.1	15.1
	More than 10	8.5	15.3
Females	None	8.8	4.4
	1-3	14.9	11.4
	4-6	21.2	20.4
	7-10	10.1	15.4
	More than 10	1.6	2.7

Source: Poppel (2007)

Data have been weighted; see Methods chapter for weighting used.

Do all indigenous Communities View Subsistence in the Same Light? In

short, the answer is no. A number of studies focused on the role of subsistence in employment aspirations have found that traditional, subsistence-based work can clash with wage labor and is often relegated to a position of lesser importance in the lives of indigenous populations. A majority of the indigenous adult population residing in the Torres Strait off the coast of Australia, for example, now perceive subsistence activities as being done for pleasure and only at a time that does not conflict with wage work schedules, rather than out of necessity (Arthur & David-Patero 1999).

Even more basic is the notion that subsistence participation varies widely with the availability of items on which to subsist, i.e. animals for hunting and trapping, or on climatic influences such as the appropriate environment for

agricultural activities. Regional center residents, for example, may not have as much access to a wide array of vegetation to gather. Geographical and historical constraints, as well as internal and external economic forces have all shaped the nature and degree of subsistence activity in communities throughout the world, and Northwest Alaska is no exception (Bradley et al 1990).

Households as “Micro-Enterprises.” In most Arctic regions the household is the primary economic unit within a larger economy. In light of this, Usher et al (2003) argue that rather than functioning to maximize profits, Native groups are more concerned with the development of efficiency within the household. As a substantial portion of economic wages earned by Iñupiat and Yup’ik are used to provide the means to take part in subsistence activities, returns are often viewed as being subsistence-based, rather than wage-based. The returns from both are so interwoven that they are essentially viewed by Alaska Natives as one economy, with the household at its core (Burch 2006). The vast majority of production and consumption is completed *by* the household, *for* the household—indicating that both will remain vital to lives of the Iñupiat and Yup’ik for the foreseeable future (Usher et al 2003).

Umaliq. The nexus of households within communities contains a continuum of producers, with a small number at the top of the subsistence production scale, and the majority of households falling somewhere in the middle of the production curve (Burch 2006; Kruse 1991; Magdanz et al 2002; Usher et al 2003). Some households are comprised either wholly or partly with

what have been termed superproducers, or *umaliaq* (an Iñupiaq term also used to identify whaling captains). Often young single males participating in more subsistence activities and harvesting a greater amount of local food than average and contributing significantly to the community through food distribution and leadership (Magdanz et al 2002), *umaliaq*, as well as other households, often share a large portion of their harvests with other residents—many of them elders who are no longer able to obtain their own fresh, local foods. Interestingly, *umaliaq* are also more likely to hold full-time wage jobs than others, adding to the vibrancy of the mixed economy in these small communities (Magdanz et al 2002; Ward 2010).

Wage Labor

What is Wage Employment in the Arctic? Wage employment among indigenous populations in Northwest Alaska and other Arctic regions is unique, both in type of work available and in the value placed upon employment by Iñupiat and Yup'ik. Given the subsistence-based lifestyle of many households, wage work is viewed as a means to acquire the materials necessary for successful subsistence harvests (Condon et al 1995) and “fill[s] the gap” in acquiring materials are necessary for successful subsistence participation (Ward 2010). Consequently, wage employment may be external to many individuals, especially in small villages like Kivalina. Traditional activity, conversely, may be viewed as a means to achieve greater fulfillment. Additionally, state, Native

Corporation, and oil and gas industry-related subsidies in the form of cash payments to Alaska Natives often make up a considerable portion of household income (Anders 1989). Do these payments, in conjunction with a desire to maintain a traditional lifestyle, act in influencing aspirations—thus discouraging wage work?

What is Available? The availability of consistent wage work varies widely from community to community, with greatest differences in accessibility to stable employment found between towns and smaller villages (Poppel et al 2007). In the majority of communities sampled in the SLiCA survey, local schools and government are the largest employers, often followed by jobs in the health care industry and town or village retail establishments (Kleinfeld et al 1983; North American Industry Classification System 2007). Many remaining employment opportunities available to Iñupiat and Yup'ik are seasonal. For Iñupiaq males, this often means jobs in the construction industry during the warmer months and unemployment for the remainder of the year (Bilson & Mancini 2007). Women's seasonal work often centers on the tourist industry, with the manufacture and sale of local crafts making up the bulk of work during the brief summer period.

The unemployment rate in majority-Native areas of Alaska tends to be among the highest in the state (Andrews & Creed 1998), and was 14.3 percent in the Northwest Arctic Borough in June 2010; the true number of Natives who are not working is significantly higher and not reflected in official unemployment

figures, however (Alaska Department of Workforce Development 2010).

Unemployment is also much higher in Kivalina and other small villages where wage opportunities are extremely limited. Income in the form of transfer payments from the state through annual dividend checks and Native corporation payments also provide a large proportion of income, especially in small villages such as Kivalina where wage opportunities are so limited.

Exceptions to the characteristic seasonal and borough-related employment opportunities include the North Slope Borough, which lies at the center of oil development for the state of Alaska. Nine of the ten largest employers in the borough are oil or gas-industry related. Individuals residing off of the North Slope, however, hold the vast majority of these jobs—many of which require extensive formal education and command salaries well above the national average (Alaska Oil and Gas Association 2009; Kleinfeld et al 1983). Additionally, within the Northwest Arctic Borough lies the Red Dog Mine, the largest zinc-lead mine in the United States and one of the largest zinc-concentrate producers in the world, although Natives do not hold many positions here either. As a result, the primary benefit to Iñupiat living in the North Slope and Northwest Arctic Boroughs are payments received from oil giants and the Red Dog Mine rather than from well-paying employment opportunities. In 2007, for example, more than 98 percent of property tax revenue received by the North Slope Borough came from the oil and gas industry (Alaska Oil and Gas Association 2009). There is some question as to whether

payments in lieu of taxes rather than employment opportunities provided by the oil and gas industries are helpful—evidence shows one benefit—that income inequality has not increased as a result (Kruse 1982).

The Role of Gender and Place in Wage Work Patterns. There is some evidence that particular groups are more likely to desire wage employment. Gender-based differences appear to be the most striking, with females more likely to attend college after high school graduation, obtain full-time wage employment, and move away from their local villages (Hamilton & Seyfrit 1994b). Many Native females view education and training, wage employment, and relocation to more populous towns as a “step up” in terms of lifestyle, while males may be more inclined to see education and employment within the economic sector as undesirable (Kleinfeld et al 1983). This female “flight” has far-reaching consequences for those who remain in villages (Hamilton 2010). Rising rates of alcohol abuse, for example, may be partly attributed to the disproportionately high number of males in Native villages. Additionally, the resulting dearth of “marriageable” females may contribute to a sense of dissatisfaction among young males, much like the documented discontent and frustration occurring among poor black women living in American inner cities as they attempt to find suitable males (Wilson 1978). Kleinfeld et al. (1983) found after conducting household surveys that marriage and education are the strongest indicators of consistent employment among Iñupiaq males, which also

points to the possible stabilizing effect marriage has on Native male lifestyle preferences.

The number of women working at wage jobs is increasing at a rate faster than that of males, and at the same time subsistence participation in traditionally female activities such as sewing and crafts is decreasing (Kruse 1991). This may indicate a convergence of behavior based on gender, with more reliance upon female wages for subsistence activities accomplished by males the result of these changing trends.

As expected, more employment hours are worked, on average, in regional centers when compared to villages due to comparatively greater opportunity in those places. Table 2.3 shows results from SLiCA when respondents were asked how many hours they worked in wage employment in the previous week by place type.

Table 2.3 Percent reporting hours worked in wage employment, by gender and place type

	Number of Hours Worked	Place Type	
		Town	Village
Males	Zero	5.4	13.1
	1-20	3.1	5.4
	21-37	6.0	7.1
	Over 37	24.6	21.2
Females	Zero	14.3	15.7
	1-20	5.1	7.7
	21-37	15.1	18.3
	Over 37	26.3	11.5

Source: Poppel 2007
Data have been weighted.

Does Wage Work Result in Decreased Levels of Subsistence Activity?

Researchers have found discrepant results to this question. The bulk of research on the subject has concluded that increased income from wage employment does not equate to lower levels of subsistence participation (Kleinfeld et al 1983; Kruse 1991; Magdanz et al 2002), with results are supported by the SLiCA data (Poppel & Kruse 2008). The effectiveness of the superproducer family is reinforced for those households having a family member involved in stable wage work, as a certain amount of cash income is necessary for participation in certain types of subsistence work—money is needed to repair snow machines and purchase ammunition, for example. Virtually all materials necessary for subsistence work now involve economic exchange, as goods, tools, and modern conveniences such as all-terrain vehicles must be purchased (Chance 1990; VanStone 1960). This stands in contrast to traditional work from generations ago, when individuals designed and constructed all materials for subsistence use. Condon et al. (1995) however, found declining rates of subsistence participation for young adults living in northern regions of Canada. This was found to be the result of increased participation in the economic sphere leaving less time for traditional work, combined with decreased viability of income from traditional activities.

Relocation

Relocation patterns in the North impact and are affected by local subsistence and wage opportunities, as well as factors such as age and education (Huskey et al 2003). Recent research has shown that population changes in Northwest Alaska are more heavily influenced by net migration changes than by natural increase or decrease (Hamilton & Mitiguy 2009), with population shifts reacting rapidly to changing social and economic conditions (Hamilton 2010). Kivalina's population has increased 8.8% since the 2000 Census, for example (Alaska Department of Labor and Workforce Development 2009); however, this reflects a high birth rate rather than an inflow of new residents to the village (Hamilton & Mitiguy 2009). Relocation can have a beneficial or deleterious effect on existing employment and subsistence patterns, both in communities experiencing increased outmigration and in those towns and villages experiencing an inflow of newcomers (Huskey et al 2003; Martin et al 2008).

Movement, Place, and Gender. Relocation in the North generally occurs in two directions: from smaller villages like Kivalina to larger towns and cities such as Kotzebue and Anchorage, and in return migration from towns back into villages. Village-town relocation occurs largely for reasons of employment and education, with younger residents more likely to leave villages such as Kivalina for larger Alaska communities and locations outside of the state (Huskey et al 2003). Age and education are positively associated with increased outmigration, with younger, more educated Iñupiat and Yup'ik leaving villages more frequently

(Curran 2002) and younger residents tending to be much more mobile in general. Women are also more likely to leave villages in favor of more densely populated areas, and previous study indicates that education and wage employment are of greater importance to young women than men (Hamilton 2010; Hamilton & Seyfrit 1994b). Relocation patterns are also associated with viability within a community and to levels of social capital and resilience, with high levels of outmigration associated with lower levels of both (Adger et al. 2002). As more attention is focused on environmental degradation and warming trends in the region, these may also become “push” factors, leading residents to leave villages like Kivalina as environmental conditions become more and more inhospitable to subsistence participation, safety, and comfort.

Aspirations

What Factors Influence Iñupiaq Aspirations? One of the goals of this project is to explore factors associated with work aspirations. In addition to background characteristics such as gender, age, and marital status, other factors such as physical location, education level, Native ties, and connections to social support networks will be used as independent variables in measuring relationships with aspirations for wage only employment, a lifestyle of subsistence only, or one combining both subsistence and wage work. Aspirations, defined as “strong

desires, aims, or ambitions; goals or objectives desired,”⁶ are highly variable and can be studied in myriad ways. Many factors influence what outcomes individuals seek and what paths they utilize to achieve them.

Indigenous groups such as the Iñupiat and Yup’ik are unique in the challenges they face as they negotiate a path that may bring them to a desired lifestyle. First, employment opportunities for Natives in rural Alaska can be extremely limited by geography and population size. Next, educational opportunities historically provided to Natives have been inferior to those offered to children in other parts of Alaska and the U.S. mainland, with many predominantly Native schools working hard to replace students’ Iñupiaq cultural norms with “southern” culture (Chance 1990). Finally, with outmigration comes a loss of social support, both for those who leave towns or villages in search of different opportunities and for those who remain. Consequently, kin networks may change and shift, with social support once received within the confines of a small village now obtained over the telephone or through an internet connection.

Independent Variables of Interest

Independent variables chosen for this project were guided by previous research. First, age and education have been shown to influence desires for work, subsistence, and relocation, and subjective measures of health, life

⁶ Merriam-Webster Dictionary.

satisfaction, and strength of social networks are associated with outcomes related to employment and desires to live elsewhere. Next, participation in traditional activities and connections to Native lifeways through language and storytelling act as a proxy for cultural connections. Third, interpreting alcohol consumption, whether within the home or the community, and subjective measures of a community's job in promoting the safety of citizens reflect concerns specific to the society under examination here. Similarly, perceived community harmony through the avoidance of conflict is one of the Iñupiaq values, or *Iñupiat Ilitqusiat*, promoted for the "survival of...cultural spirit" (on display at the Northwest Arctic Heritage Center, National Park Service, Kotzebue, Alaska; also see Appendix).⁷ Finally, community-level factors such as population change, median income, and percentage of residents not employed are included as measures of community health and viability, and have been found to be linked with resident welfare and well-being. Further discussion of independent variables continues below.

Age Previous research reached divergent conclusions concerning age and levels of subsistence participation. There is some evidence that young Iñupiat and Yup'ik are not participating in subsistence activities to the same degree that those from older generations are. Although young adults appear to realize the importance of subsistence to their culture and lifestyle, many are forced to hunt

⁷ Please see Appendix Table A.1 for a complete listing of Iñupiaq values.

and fish only on weekends or other convenient times due to the necessity of having a regular wage job. Additional research has found that as younger Iñupiat and Yup'ik become more accustomed to southern, store-bought foods, their taste for traditional foods is waning (Condon et al 1995).

Conversely, Kleinfeld et al (1983) found subsistence participation to be markedly greater for younger Natives when compared with older cohorts, especially among unmarried men living alone. What has not yet been examined, however, are the effects of modern technology, such as the internet, on the number of subsistence activities performed by younger Iñupiat. As connections to the outside world increase exponentially with the presence of outside cultures through television and internet use, less time may be spent by youth on activities such as hunting, fishing and gathering.

In the same vein, age appears to play a role in the desire for wage employment. Age intersects with gender to produce a cohort of younger females who are the most likely to view wage employment as a preferred way of life (Kleinfeld et al 1983). Younger males are also more likely than older males to seek wage employment, although age patterns in the desire for wage work are not as stark for young males as they are for females. Elders, in general, are much more likely to eschew wage employment altogether than their younger Native counterparts (ibid.).

Education Level of education, like gender, plays an important role in participation in wage employment by Iñupiat and other indigenous groups. The arrival of religious missionaries and schools to Iñupiaq towns and villages in the latter part of the 19th century aided in decreasing traditional mobility patterns to and from remote outposts, and caused groups to begin settling permanently in villages by the early part of the twentieth century (Berardi 1999; Chance 1990).

The introduction of southern-style educational systems and standards in the 1950s through 1970s have served to alter the culture of Alaska Natives (Ervin 1980). Furthermore, local schools had arrived in most locations by 1976 with the passage of legislation mandating the construction of educational facilities in all communities that requested one, regardless of size (Seyfrit et al 1998). Absent the requirement that students board at schools great distances away, the average education level has increased markedly in the past thirty years – the percentage of Iñupiat and Yup'ik who earn a college degree, however, remains well below average (Kruse 1992). Today, local schools in Northwest Alaska maintain a position that is central to most Iñupiaq villages and towns, as they are often the site of community gatherings and other events.

Reasons for lower average education levels among Alaska Natives may lie, in part, in a sense of cultural mistrust on the part of Iñupiat and Yup'ik of a southern educational system that has historically used an assimilation model in educating (Deyhle & Swisher 1997; Ongtooguk 2000). Prior treatment of Native culture as disposable has produced negative outcomes. The decline of spoken

Iñupiaq and other languages Native to the region, especially among younger generations (Alaska Native Language Center 2008), and the de-valuing of subsistence as a viable lifestyle can be traced, in part, to the “reformed” educational system of the 1970s. Resulting mistrust may be one reason why some Iñupiaq and Yup’ik parents may not force their children to attend school on a regular basis, instead placing a higher value on subsistence and other traditional activities (Condon 1987) and relying on family members and fellow villagers to provide a “real-world” education (Chance 1990). This could affect employment aspirations in a manner similar to that seen with geographical influences, as young Iñupiat and Yup’ik may not be exposed to opportunities available to them. However, Godoy et al. (2007) found that education levels were not strongly associated with community ties among Native students in Bolivia, indicating a potentially weak link between schooling and social networks and community strength among indigenous groups, although results were not conclusive.

Additionally, social norms still firmly rooted in Native culture likely impact educational attainment, in that status within Iñupiaq communities has not historically been achieved through high levels of education or occupational prestige but by success in Native lifeways and activities (Kleinfeld et al 1983). Culture and community remain as primary sources of education for Iñupiat and Yup’ik, with confinement within a school building viewed by some as detrimental to maintaining traditional ways of life (Ongtooguk 2000).

Developments in Education. Various programs have been implemented in recent years with the intent of keeping more students in school and enrolling more Native students in post-secondary programs. These programs appear to be benefiting females markedly more than males, with Native male enrollment in post-secondary programs falling well short of female enrollment—the gender gap is widening over time (Kleinfeld & Andrews 2006). A number of reasons for gender disparities have been proposed, chief among them being the preference of many males to remain in their communities in order to perform traditional subsistence work (ibid).

Life Satisfaction Wage labor is clearly seen as a “ticket” out of rural, remote, Native villages by some, and educational choices play an important role in determining the likelihood of attaining full time wage employment. Differences in educational aspirations (which are strongly associated with employment aspirations) point to a significant difference by gender, with females more likely to desire higher levels of education. Young Native women residing in Bristol Bay and the Northwest Arctic Borough region were found to be more likely to attend college and be employed in full-time wage jobs than their male counterparts, and female high school students in those areas reported more often than males that they expect to leave their village and migrate to another area (Hamilton & Seyfrit 1993, 1994b; Seyfrit et al. 1998). Given resulting gender imbalances and the notion that outmigration is more likely to occur within the pool of “best and

the brightest” Native adults, there is some concern as to how migration patterns could affect social and economic structures within small villages in years to come (Hamilton 2010; Hamilton & Seyfrit 1994a; Seyfrit et al 1998).

Culture, Work, Subsistence, and Aspirations: Complex Relationships The

association between culture (inclusive of Native language and traditional activities) and aspirations must be analyzed in order to interpret quantitative results concerning Iñupiaq and Yup’ik subsistence and wage patterns. A great deal has been written on the power of storytelling, language, music, and food among indigenous peoples (Burch 2006; Alaska Native Language Center 2008; Chance 1990; Duranti 2003; Patrick & Tomiak 2008). Iñupiaq and Yup’ik culture emphasize reciprocity, which is central to Native American lifeways and, more specifically, subsistence participation and food sharing (Gachter & Herrmann 2008).

Duffy and Stubben wrote of Native American culture as being “circular...self-contained yet self reinforcing and linked” (1998:76). In this vein, they argue that economic development among indigenous groups must be subordinate to native concerns, values, belief systems, and interests. Additionally, enculturation, or the process of identifying with local culture among Iñupiat and other native groups, is vital to their way of life and subsistence patterns. Successful enculturation is associated with the possession of a native identity and participation in traditional activities, such as hunting,

fishing, and gathering, and the maintenance of traditional education in schools (Zimmerman et al 1996).

Native Culture and the Environment. Iñupiat and Yup'ik value the land on which they live. Culturally, the environment is viewed by Alaska Natives as what they are a part of, rather than what they have control over (Burch 2006; Chance 1990; Leibhardt 1986; Nuttall 1998), and animals are regarded as “persons in their own right” (Fineup-Riordan 1990:166). Kassam (2009:69) writes that “[a]mong the indigenous peoples in the Arctic and sub-Arctic, ideas about nature are supported by their social system; conversely, the social system is supported by their ideas about nature.” In light of this, subsistence activities are seen, in part, as a way to express their respect for the land on which they live, and to realize the interdependent relationship between Iñupiat and their environment. Hunting, fishing, harvesting, processing, sewing, and the making of crafts and other household goods are tasks that are completed seasonally and with the condition of the land in mind. Because the economic and cultural models of Iñupiat and Yup'ik society are so closely tied to the land and environment, customs and traditions that recognize the importance of subsistence work remain vital to the way of life in Northwest Alaska (Burch 2006). Due to increasing environmental change from environmental change, towns and villages are documenting and proposing how such changes may impact subsistence activities and how rapidly these changes may occur (Nuttall & Callaghan 2000; URS 2005).

Community Characteristics There is growing evidence that differences between larger towns of Northwest Alaska, such as Kotzebue, and much smaller villages are shrinking as development and modernization continue to affect the way of life in these locations, while they remain geographically, culturally, and economically they remain distinct (Kruse 1991; Hamilton and Seyfrit 1994a). (Chapter 5 will provide further discussion of town/village contrasts). As choices become more limited and streamlined due to economic development and environmental change, individuals residing in different location may increasingly view their employment options through a similar lens—resulting in a convergence of aspirations and culture between the two location types. Moreover, subsistence participation in larger towns, although distinct from subsistence involvement in villages due to geography, climate, availability of species, etc, tends to be consistent—indicating that relocating Iñupiat and Yup'ik may not necessarily eschew traditional subsistence when they arrive to a larger community (Poppel et al 2007). Wide variation in median income, percentage of residents living below the poverty level, and employment levels between communities, however, may affect aspirations or desires for relocation, and are included as independent variables in analyses.

Social Networks and Support The degree to which Native residents receive and can rely on social support networks play an important role in determining

whether individuals relocate to other areas or remain within their town or village. Social capital has been defined in a myriad of ways since becoming an established and central concept within sociological literature, but generally refers to a sense of trust (Bowles & Gintis 2002) and involvement in the “goings-on” of one’s community (Portes 1998). To go one step further, the types of social bonds established can influence behavior. Granovetter (1973; 1983), for example, argued that weaker, bridging social ties⁸ allow individuals the ability to “reach out” to a greater number of others, thus increasing the likelihood that a desired outcome requiring the knowledge or social networks of others will be attained. By contrast, bonding social ties characterize close-knit and familial-based networks. Although critical to development and life satisfaction (Martin 2005), these bonding ties may not act as a catalyst for the development of employment aspirations.

By and large, Iñupiaq and Yup’ik villagers have maintained small networks consisting of very strong, bonding social ties (Burch 2006). Family members generally make up the bulk of and are at the core of these networks. Given the physical landscape of the Arctic, social networks in Northwest Alaska that had previously been limited to those found within each rural community, with knowledge, information, and support shared infrequently between villages and with the outside world now shaped by technology.

⁸ “Bridging” and “bonding” social networks are concepts developed by Robert D. Putnam for *Bowling Alone* (Putnam RD. 2000. *Bowling Alone*. New York: Simon & Schuster).

Using Granovetter's work as a launch point for the analysis of employment aspirations, it can be argued that Natives possessing bridging-type social networks reaching beyond their immediate community are more apt to desire outmigration and wage employment. Portes (1998) viewed these bridging ties as having a potentially negative effect on social capital within close-knit communities such as those found in Northwestern Alaska, as certain segments of the population such as the young and better-educated seek more social freedom. In the same vein, the strong, familial-based social ties enjoyed by many Iñupiaq villagers aid in preventing a desire for a lifestyle based in wage employment and are strongly associated with the upholding of a subsistence-based lifestyle. Subsistence activity remains relevant in the lives of Alaska Natives, in part, through the maintenance of close networks that serve to keep many from considering outmigration and/or full-time, year round wage employment. O'Brien et al. (2005) argue that the *linking* of these bonding ties to more far-reaching bridging ties by developing a method for increasing bridging-type connections while maintaining the integrity of indigenous culture through bonding ties would serve Native groups well.

The Internet and Social Networks. The introduction of radio, television and, more recently, the internet to Arctic towns and villages has brought new ideas and perspectives into Native homes and has changed the frequency, type, and nature of relationships. Connections rooted in cyberspace have emerged as a fundamental source of social network development (Lin 1999), with Native

villages having among the highest rates of internet use in the U.S. (Kelley 1999). Consequently, social bonds may now be maintained between family members who are not in close geographical proximity to one another, and individuals in remote communities have the ability to develop networks with others they would never otherwise come into contact with. Iñupiat and Yup'ik also now have the ability to develop websites and sell Native crafts to individuals living in all corners of the globe—and many do—thereby establishing social networks with each transaction. Computers and the internet have acted to broaden social networks for Iñupiat who are connected, and have changed the type of support that is available. As more Iñupiat are online, an abundance of bonding ties may be replaced, in part, with more loosely defined and maintained bridging networks.

CHAPTER 3

THE COMMUNITIES

The Survey of Living Conditions in the Arctic (SLiCA) provides the main source of quantitative data for this research. The complete SLiCA dataset consists of a circumpolar, multi-stage probability sample gathered in 2002 and 2003 in Alaska, Canada, Greenland, and the Chukotka Region of Russia. Consisting of 950 variables, SLiCA data provide an opportunity to examine social, cultural, economic, educational, and nutritional facets of indigenous life and to compare conditions by place around the Arctic. In total, more than 7,000 indigenous people were surveyed and data include information on social, economic, cultural, and educational conditions, as well as nutrition and health data (Andersen et al. 2007). Although SLiCA data have been analyzed by univariate, bivariate and multivariate methods, to my knowledge community-level characteristics taken from national census-type surveys have not been imputed into models to measure the effect of these items on existing SLiCA variables.

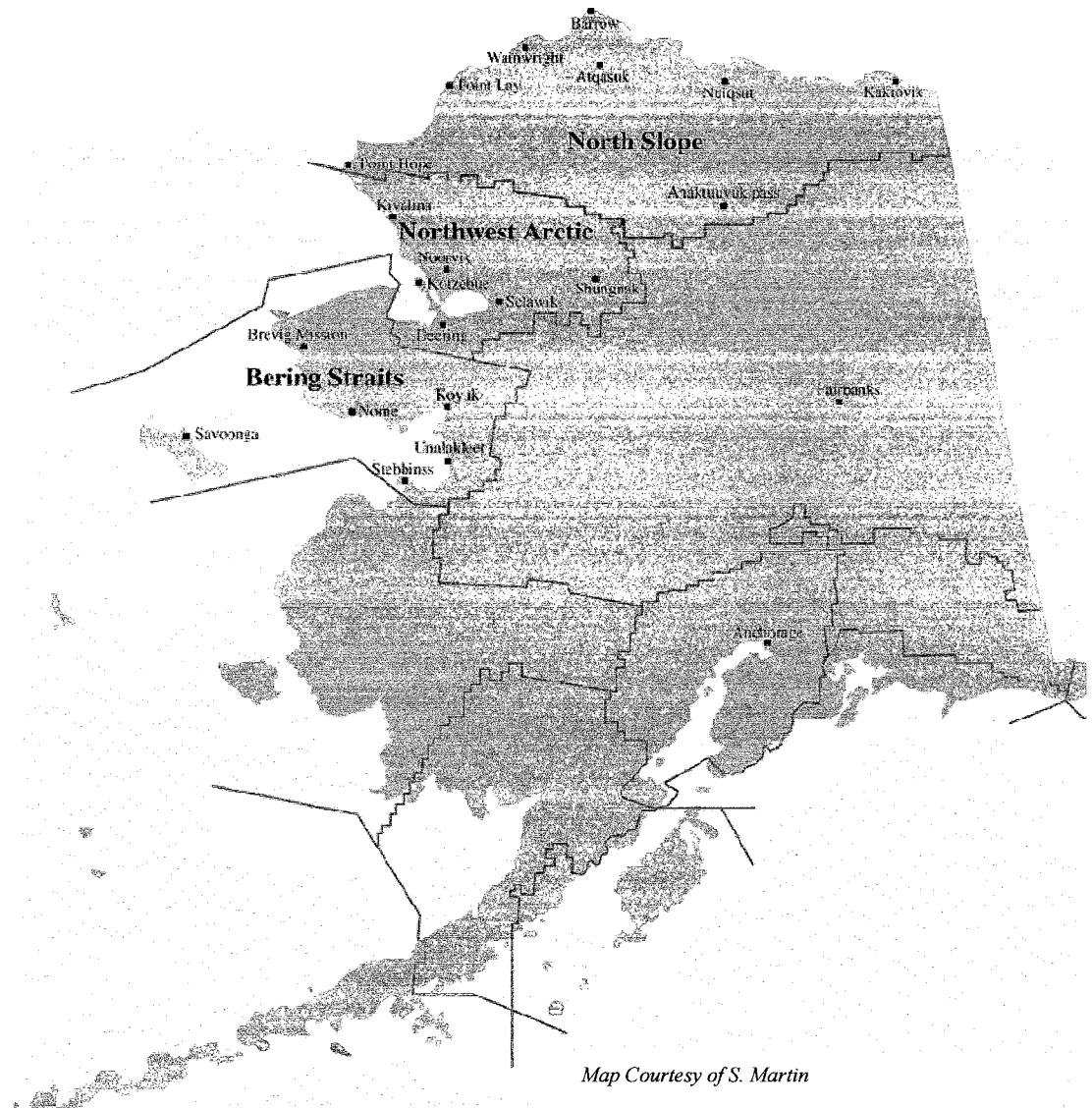
The Survey of Living Conditions in the Arctic—Alaska

Data gathered from the SLiCA project are representative of the indigenous population in Northern Alaska and elsewhere and are thus generalizable to these groups. Survey questions for the Alaska portion of SLiCA were developed in collaboration with Natives from the region and with the oversight of the Alaska Native Management Board, formed specifically for the project. A great deal of care was taken to ensure the accuracy of data gleaned from the survey. Alaska Natives were employed as interviewers to accurately capture responses, and were trained to record all responses verbatim (Kruse et al. 2008). Three regions of the state were surveyed—the Northwest Arctic and North Slope Boroughs and Bering Straits Census Area. These regions consist primarily of geographically remote villages, with one comparatively larger town in each borough acting as a regional center for the area in which it is located (Kotzebue, Barrow and Nome, respectively). Figure 3.1 illustrates the location of SLiCA communities.

In-depth interviews were conducted with 663 Native adults age 16 and over living in three larger towns and 17 smaller selected villages (20 communities in total). The majority (about two-thirds) of all Alaska Natives live within the remote communities located within the three regions captured by the SLiCA survey (Hamilton, Seyfrit, and Bellinger 1997). Surveys were completed with the assistance of trained, local individuals who served as interviewers once they had

grown comfortable with the process from expert “team leaders.” They also served as liaisons between native Iñupiat and non-native SLiCA developers. Most surveys took approximately 90 minutes to complete.

Figure 3.1 Map Illustrating Location of SLiCA Communities



Community Characteristics Towns and villages surveyed as a part of SLiCA are distinct from one another in many aspects. Originating historically as settlements or camps used for subsistence purposes, towns and villages are located adjacent to bodies of water, whether they be along the coastline of the Chuchki or Beaufort Sea or next to rivers such as the Kobuk and Colville (Burch 2006). Given these geographic differences, subsistence activities vary by available species and vegetation. The harvesting of bowhead whales, for example, takes place in coastal communities located along bowhead migration routes, such as Barrow.

Iñupiaq activities and practices (subsistence harvest types notwithstanding) tend to be quite similar across locations (Burch 2006), although the presence of non-Native foods in the grocery stores and access to goods and services in larger hub towns create a level of contact and reliance on outside goods that is not found as readily in smaller villages. Communities are not connected to one another by roads. Transportation into and out of smaller villages often involves small regional airlines or “air taxi” services flying single- or twin-engine craft. Goods are transported to villages by small aircraft and by ship to coastal communities during the brief summer period when seas are ice-free.

Demographic Characteristics Towns, or regional centers, were identified as such because they have a population greater than 2000. Villages in the sample are considerably smaller with an average population of 449. See Table 3.1 for a complete listing of towns and villages included in SLiCA ranked from most to

least populated. Virtually all respondents (99%) identify themselves as Iñupiaq or Yup'ik, with the vast majority (87%) being Iñupiaq. The Native population in SLiCA communities tends to be young, and fifty-seven percent of respondents in the sample are female. This gender imbalance could cause methodological concern given existing, reversed gender imbalance (there exists a disproportionate number of males in many communities, especially in smaller villages) (Hamilton & Seyfrit 1994a, 1994b; Hamilton et al. 1997; Hamilton 2010), but I attempt to adjust for disparities through weighting of data.

Table 3.1 Population of SLiCA communities, 2007

Community	Population (2007)
Barrow	4052
Nome	3495
Kotzebue	3133
Selawick	828
Pt Hope	704
Unalakleet	724
Savoonga	712
Noorvik	636
Stebbins	598
Wainwright	540
Nuiqsut	403
Kivalina	398
Anaktuvuk	277
Koyuk	347
Shungnak	269
Brevig Mission	328
Kaktovik	286
Pt Lay	250
Atkasuk	223
Deering	133

Interview Sites

I selected Kotzebue, the hub town for the Northwest Arctic Borough, and Kivalina, a small village also in this borough, for additional qualitative interviews because I wanted to speak with residents of both a regional center and much smaller village, and due to the nature of the relationship between the two locations regarding subsistence, wage work, and relocation. Given Kotzebue's position as a regional center for the borough, residents of Kivalina generally travel to Kotzebue or on to Anchorage (via Kotzebue) for necessities, health care,

or to visit kin and loved ones. Therefore, the influence of Kotzebue on the economy and culture of Kivalina is quite palpable to residents of both communities and creates a desirable basis for comparison.

The identification of town-village contrasts is helpful in illustrating differences in cultural and subsistence practices in communities by population size and has been the focus of previous study on relocation patterns of Iñupiat (Huskey, Berman, and Hill 2003). When used in conjunction with other data such as SLiCA, such contrasts may reveal previously undetermined reasons for lower subsistence participation in larger towns, and could act as a basis for comparison of cultural ties between villages such as Kivalina and Kotzebue. Preliminary analysis of SLiCA data indicates statistically significant differences in cultural practices between hub towns and villages and will be shown in subsequent chapters. Results such as these demonstrate the salience of cultural differences between places based upon geography, rurality, history, culture, and economics, and illustrate the benefit of interviewing individuals in one hub town and one village for this project.

Kotzebue The town of Kotzebue serves as the administrative and supply center for the Northwest Arctic Borough and region. Located thirty-three miles north of the Arctic Circle on a spit of land surrounded on three sides by water, Kotzebue's population of just over 3000 is majority Iñupiat (approximately one quarter is

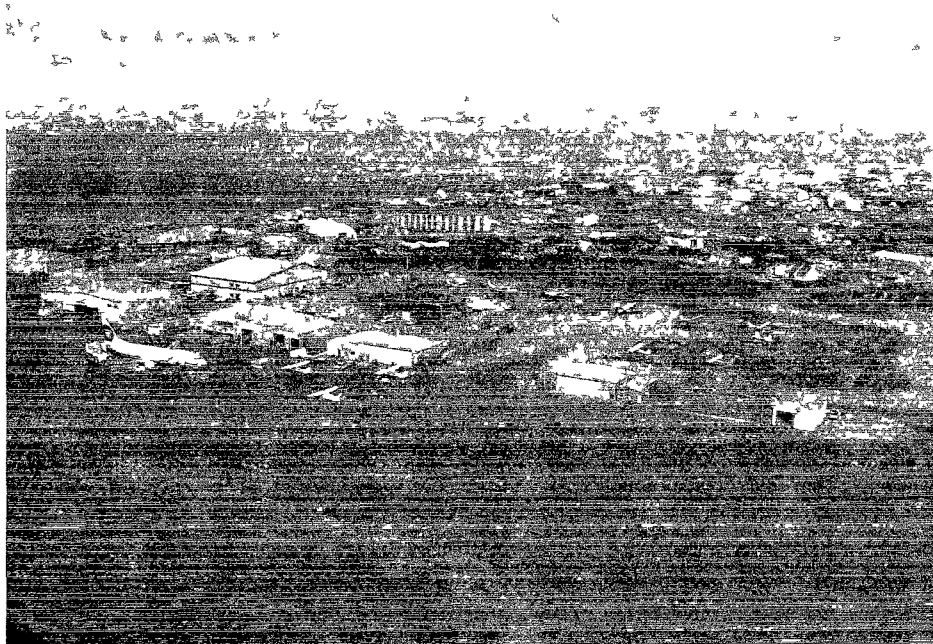
non-Native). There is evidence that Iñupiat were settled in the area in the 15th century, with Kotzebue serving as a point of exchange with Russian traders.

There are no roads linking Kotzebue to other places, however daily jet service connects the town to Anchorage and Nome where many residents travel frequently to obtain goods and services. Multiple daily flights by small propeller planes connect Kotzebue to surrounding, smaller villages as well. Residents often get around town by four-wheeler or snow machine, with the sound of four-wheelers buzzing through the streets common. The summer months come with almost continual daylight, and during this time of year many people (including children) remain outdoors late into the night, sometimes making school attendance sporadic. Winter brings with it much quieter streets as residents tend to only emerge for necessary trips and social occasions.

Employment in Kotzebue is most commonly found within the borough, schools, and healthcare system. The town is also the administrative center for the NANA Regional Corporation, a Regional Alaska Native corporation owned by more than 12,000 Iñupiaq shareholders who live throughout the large land area encompassing NANA. NANA was formed in 1971 as a result of Native Claims Settlement Act, which provided monetary and land settlements in exchange for the relinquishing of claims to Native lands in the state (NANA Regional Corporation 2010). NANA is a powerful force in Kotzebue and the Northwest Arctic Borough, providing the town with an extensive network of connections and control through the ownership of companies worldwide.

Although it does not employ many Natives (Swan, personal communication, August 5, 2010) the presence of the Red Dog Mine also looms large in Kotzebue and the Northwest Arctic Borough. Payments by the mine in lieu of taxes fund schools and social programs in the region—resulting in a dependence upon the funds received by the NANA Regional Corporation, the borough, and all of the communities within it.

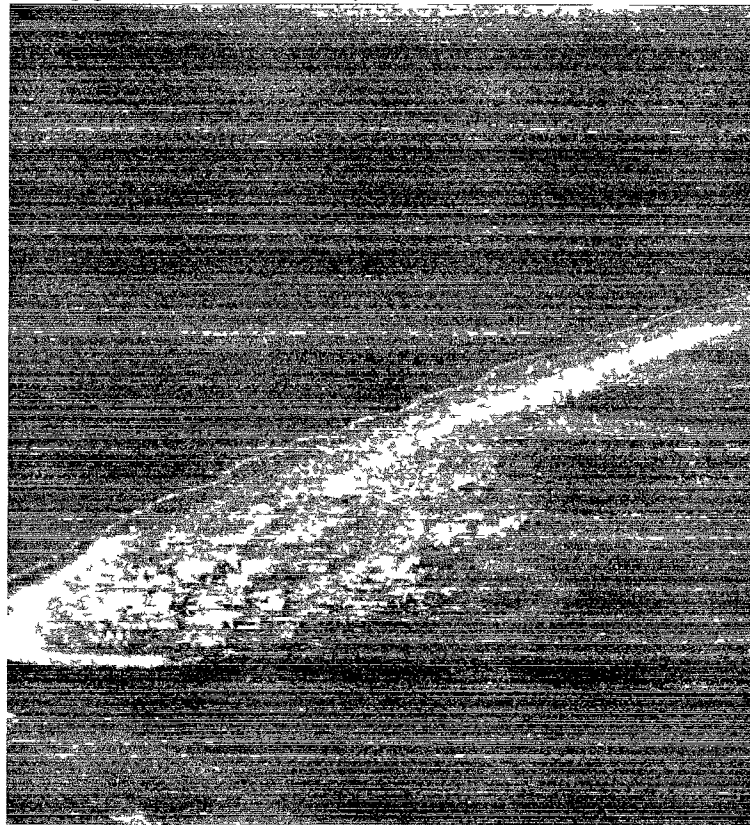
Figure 3.2 Aerial photograph of a portion of Kotzebue, Alaska (August 2010).



Kivalina Situated on the end of an eight-mile barrier island 80 miles from Kotzebue, Kivalina lies at the mouth of the Kivalina River and is otherwise surrounded by the Chukchi Sea. The village has a population of 410 with the vast

majority (97%) reporting as Alaska Native (Kruse et al. 2008). Compared with Kotzebue, subsistence activities here remain an even more vital part of village life as wage employment opportunities are extremely limited. Transportation in and out of the area is completed most often by aircraft, four-wheeler, or snow machine, and, as is the case in Kotzebue, there are no roads linking Kivalina to other villages and towns in the region. Unlike Kotzebue there is no regular, scheduled air service to other communities. Often when an airplane arrives to the village, residents come to the small landing strip to greet it.

Figure 3.3 Aerial photograph of Kivalina, August 2010. The seaward side of town (on the left in this photo) is losing ground to erosion by the Chukchi Sea.



Historically, shore ice forming in autumn months along the Bering Strait and Chukchi Sea protected Kivalina from strong waves associated with storms, but ice formation has taken place later and later in the fall leaving the village vulnerable to erosion and coastal flooding and with no physical protection against increasingly severe and frequent weather events (US Army Corps of Engineers 2006). Relocation of the village will be necessary. The village filed a lawsuit against twenty-four oil and energy companies over rising temperatures endangering their well-being (Bluemink 2008) that was dismissed but as of this writing has been appealed, and maintains ongoing disputes over alleged environmental pollution caused by the Red Dog Mine (Bluemink 2009). These issues place the village squarely in the midst of contentious political and environmental battles and at odds with other places in the borough over the financial and social benefits of corporate presence.

Figure 3.4 Children playing along the shoreline, Kivalina, Alaska.



Residents of Kivalina are aware of their rural location and reliance upon subsistence harvests for survival. Additionally, lack of physical infrastructure and availability of recreational opportunities seem to be aspects of life in the village that are talked about freely and lamented by some young people (see Appendix A for a detailed description of life in Kivalina found on the village website).

CHAPTER 4

METHODS

Descriptive data for dependent and independent variables are first presented in this chapter, followed by analytical methods to be used. Frequency tables together with weighted percentages show the distribution of each variable. Two counted dependent variables, the number of subsistence activities an individual participated in during the previous year and the number of wage hours worked in the previous week, are shown in grouped form here for tabular presentation, but are used in raw form for the later multivariate analyses. After presenting the variables, I describe analytical methods that will be used such as ordinary least squares and logit regression, as well as mixed effects modeling. All analyses are completed using the STATA statistical software package.

Weighting

Several different weight variables were calculated for these analyses. Weighting survey data compensates for departures from random sampling and allows for a more realistic picture of population characteristics (Hamilton 2009).

Two probability weights were used to adjust for each of the three regions sampled and for household size. Probability weights are proportional to the inverse of the probability of selecting a person from a household containing only one individual, for example, compared with the probability of selecting someone residing in a household with more people was employed (*hhwt*). Similarly, *regwt* was used to adjust for selection bias in the regions sampled. Additionally, a poststratification weight, (*genwt*), was used to adjust for the gender distribution in the sample. The percentage of males in the SLiCA survey is 42.75, with females making up 57.25 percent of the sample. Census data shows that in the three regions surveyed 49.1 percent of the population is male and 50.9 percent of the population is female, so this imbalance was adjusted to eliminate response bias. These three individual weights were then combined into one overall weight variable, *finalwt*,¹ and are used in analyses.

¹ The construction of the weight used in this project, *finalwt*, was completed in the following manner: first, probability weights were constructed to adjust for household size and region sampled. Proportional to the inverse of the probability of selection, the weight for household size (*hhwt*) was achieved by compiling the total number of pseudopeople, or all persons residing in all households reached by the survey (12 households with 1 person = 12 pseudopeople, 44 households with 2 people = 88 pseudopeople, etc., for a total of 2684 pseudopeople). The inverse probability of selecting a person from a particular household size (from a 2-person household the probability would be 1/2, for example) were then multiplied by the ratio of real people to pseudopeople (663/2684) to maintain the same 1-2-3-4 etc. ratio as original household sizes. The same method was used to adjust for known regional sampling biases (*regwt*) across the North Slope, Northwest Arctic and Bering Straits areas. Finally, a poststratification weight was constructed to adjust for response bias by gender by dividing the proportion of males in the population (49.1) by the proportion of males in the SLiCA survey (42.75) and by dividing the proportion of females in the population (50.9) by the proportion of females in the sample (57.3). these ratios were then used to weight male and female responses accordingly. To combine these three weights into one overall weight (*finalwt*), individual weights were multiplied (*hhwt*genwt*regwt*) and adjusted so that the final sum of weights equaled the size of the SLiCA sample.

SLiCA data, like most survey data, are clustered. One of the ways in which data are clustered is geographically, by community and by region—the North Slope, Northwest Arctic, and Bering Straits regions were each sampled and villages within each region were chosen. Further, within each location stratified random sampling was used to select households. Some cluster techniques do not accommodate the use of weighting, and in these cases this will be specified with results.

Measures

Dependent Variables Four dependent variables will be analyzed. The first, subsistence and employment aspirations of Iñupiat and Yup'ik, will be measured using an indicator asking about employment preferences. Specifically, the variable *lifestyle* asked of respondents:

If you could choose, which lifestyle would you prefer: working on a wage job, or harvesting, herding, or processing your own food, or both?

Each response was originally coded as one of three categories; however, for the purposes of this study *lifestyle* was made into a dichotomous variable, or collapsed into two categories to capture the dyadic nature of differences that I hypothesize exist between individuals who aspire to only participate in wage employment while effectively eschewing subsistence on a personal level, and those who would rather participate only in subsistence activities and those who would prefer both subsistence activity and wage work. Table 4.1 below

illustrates that a large majority, 80 percent, of Iñupiat stated that they aspire to engage in both subsistence activities and wage work, while 20 percent would prefer to only engage in wage employment if given the choice.

Table 4.1 Which would you prefer, if you had the choice? (*lifestyle*)

Lifestyle Preference	Frequency	Weighted Percent
Subsistence & wage work	503	80.8
Wage work only	126	19.3
Total	629	100*

Percentages are weighted using finalwt.

**Due to rounding, percentage does not equal 100.*

Weighted percentages before lifestyle was collapsed: subsistence work only: 8.5%, both subsistence and wage work: 71.3%.

The second dependent variable, total number of subsistence activities performed in the previous twelve months (*subsist*) includes such activities as being a member of a whaling crew, sewing skins and making parkas, hunting, fishing, trapping, gathering vegetation, and making native crafts. A total of sixteen activities were included in the measure, and each activity was asked in an individual question.

Values were then summed for each respondent resulting in the total number of activities performed. The variable *subsist* was collapsed from sixteen values to five for simplicity in Table 4.2, although multivariate analyses will use

the full 16-value scale. Table 4.2 shows that most Iñupiat reported performing between four and ten activities in the previous year, with similarly sized responses for the two extreme values: 11.8 percent of respondents reported performing zero activities, and 13.9 percent reported participating in more than ten.

Table 4.2 In how many subsistence activities did you participate in the previous year? (*subcoll*)

Grouped Number of Subsistence Activities	Frequency	Weighted Percent
Zero	78	10.0
1 to 3	132	19.3
4 to 6	186	28.6
7 to 10	175	27.1
More than 10	92	15.0
Total	663	100

Percentages are weighted using finalwt.

The third dependent variable in this project measures the number of hours worked in wage employment in the past week (*hourswork*). Care must be taken in interpreting results of the number of wage hours worked; major fluctuations in type and availability of employment in Native regional centers and villages could result in data representing an often unstable workforce in the region, depending upon the time of year in which surveys were completed and/or employment conditions in communities at the time of interviews.

Table 4.3 shows the number of wage hours worked (*hrsworkcoll*). More detailed analysis with this variable will employ the full 54-point scale; values are

grouped in Table 4.3 for simplicity. More than twenty-four percent of Iñupiat responded that they had not worked at any wage job during the previous week, while 42 percent expressed that they had worked the equivalent of a full-time job during the past week.

Table 4.3 How many hours worked in wage employment in the previous week? (*hrsworkcoll*)

Hours Worked	Frequency	Weighted Percent
Zero	160	23.2
1 to 20	70	12.4
21-37	153	22.9
Over 37	280	41.5
Total	663	100

Percentages are weighted using finalwt.

The final dependent variable included in analyses, *wantmove*, is dichotomous and asked of respondents:

Have you considered moving away from [your community] in the last five years?

This variable indicates the desire among Iñupiat and Yup'ik to relocate to another community. Table 4.4 shows the frequency and percentage of respondents who did and did not consider moving away from their current town or village in the previous five years, with forty-four percent of respondents stating that they had considered moving.

Table 4.4 Have you considered moving in the past 5 years?
(*wantmove*)

Considered Moving	Frequency	Weighted Percent
Yes	287	46.5
No	364	53.5
Total	651	100

Percentages are weighted using finalwt.

Independent and Control Variables Independent and control variables have been placed into groups for ease of description, i.e. variables associated with social support and ties to Native culture have been placed together. See Figure 4.1 below for a graphic representation of all grouped, independent variables.

Figure 4.1 Types of independent variables used in analyses

1. Demographics

- gender
- age (log)
- marital status
- health

2. Socio-Economic Characteristics and Local Ties

- education level
- household income (sqrt)
- parents born in the community

3. Native and Political Ties

- understanding of Native language
- listened to a Native story
- political knowledge
- number of traditional skills learned as a child

4. Social Support & Well-being

- 7-indicator index of overall social support
- overall life satisfaction
- alcohol as a problem within respondent's family

5. Community Attitudes

- alcohol as a problem within the community
- satisfaction with:
 - conflict avoidance
 - level of public safety
 - cost of living

This first set of background characteristics includes gender, age (transformed using a logarithm to reduce positive skew), marital status, and a self-reported measure of overall health.² This group is followed by socioeconomic characteristics and local ties including education level, income (transformed to the square root of income, again to reduce skew), and whether one or both of respondent's parents were born in the community. Table 4.5 tabulates the variables included in the first and second groups. Age cohorts are shown in Table 4.5 rather than age in years for simplicity, although multivariate results will use the logarithm of reported ages. Similarly, household income has been grouped into four categories in Table 4.5 but the square root of reported income to the nearest dollar will be used in bivariate and multivariate models.

² See Figures A.1 and A.2 in the Appendix for histograms of ungrouped independent variables of age and income prior to power transformations.

Table 4.5 Independent variables, groups 1 & 2 (background characteristics)

Variable		Frequency	Weighted Percent
Gender	Male	283	45.1
	Female	379	54.9
	Total	662	100
Age Cohort	Under 36	280	47.4
	36-50	196	29.8
	Over 50	187	22.2
	Total	663	100*
Marital Status	Not Married	424	57.6
	Married	239	42.4
	Total	663	100
Respondent Education	Elementary or less	194	29.7
	High school	283	45.0
	Vocational	148	21.6
	College	32	3.7
	Total	657	100
Locality of Parental Birthplace – Born Here?	None	252	37.3
	One Parent	254	38.8
	Both Parents	157	23.8
Household Income	Total	663	100
	Under \$15000	89	25.2
	\$15000 - \$29999	116	16.0
	\$30000 - \$49999	162	18.7
	\$50000 and over	286	40.2
	Total	653	100
Health	Excellent/very good	310	49.7
	Good	217	30.8
	Fair or poor	136	19.5
	Total	663	100

Percentages are weighted using finalwt.

**Due to weighting/rounding, percentage does not equal 100.*

The next group of independent variables added to the model captures Native cultural ties and political knowledge through the use of five indicator variables including Native language ability, participation in the telling or listening of a Native story, knowledge of local politics, and number of traditional skills

participants learned as a child. Language and traditional skills are well-established indicators of ties to Native culture, and more specifically, storytelling is regarded by Iñupiat as an important cultural component passed down through generations (Burch 2006).

Table 4.6 Independent variables, group 3 (Native and community ties)

Variable	Frequency	Weighted_Percent	
Understanding of Native Language	Not at all	72	11.3
	A few words	237	38.0
	With effort	97	15.1
	Relatively well	81	12.3
	Very well	169	23.3
Total	656	100	
Listened to a Native Story in the Past 12 Months?	Yes	359	55.7
	No	294	44.3
	Total	653	100
Political Knowledge	Very/somewhat	340	53.1
	Not very	193	34.2
	Not at all	84	12.7
Total	617	100	
Number of Traditional Skills Learned as a Child	Zero to 5	70	9.6
	5 to 10	201	31.6
	More than 10	392	58.8
	Total	663	100

Percentages are weighted using finalwt.

Social support, added next to the model, is operationalized using seven indicators combined into one index measure, *socsup*. The social support index captures not only ties maintained through face-to-face interaction, but also includes types of support that could be gained through telephone conversations or maintained via the internet. Table 4.7 shows results of the indicators used to

measure social support. Most respondents reported that they had access to most types of social support included in the survey all or most of the time. Exploratory principal components factor analysis was employed using all seven social support variables to uncover underlying dimensions and simplify analyses. All social support variables load heavily on factor one which has an eigen-value of 3.58 (as shown in Table 4.8), indicating that these indicators capture the same social support dimension. Social support has thus been combined into a single variable.

Table 4.7 Independent variables, group 4 (social support)

How Often do you have: (frequency/percent)	Social Support Variables													
	Someone to Listen to You		Someone to Count on for Advice		Someone who Shows Love and Affection		Someone to Have a Good Time With		Someone to Confide In		Someone to Relax With		Someone to do Something Enjoyable With	
All of the Time	263	40.8	259	40.4	411	64.4	311	48.7	259	40.8	253	39.5	310	48.5
Most of the Time	201	31.2	201	31.4	141	22.1	195	30.5	156	24.6	165	25.7	170	26.6
Some of the Time	123	19.1	113	17.6	59	9.3	90	14.1	120	18.9	151	23.6	117	18.3
Seldom	46	7.1	54	8.4	18	2.8	34	5.3	63	9.9	49	7.6	27	4.2
Not at All	11	1.7	14	2.2	9	1.4	9	1.4	37	5.8	23	3.6	15	2.4
Total	644	100	641	100	638	100	639	100	635	100	641	100	639	100

Percentages are weighted using finalwt

Table 4.8. Factor loadings for social support variables

Variable	Factor 1	Factor 2	Factor 3
someone to listen	0.7233	0.3018	0.0159
someone to count on for advice	0.6777	0.2965	-0.0244
someone who shows love and affection	0.6403	0.0112	0.1807
someone to have a good time with	0.7253	-0.1999	0.1232
someone to confide in	0.7138	0.0962	-0.1120
someone to relax with	0.7477	-0.2051	-0.0934
someone to do something enjoyable with	0.7697	-0.2556	-0.0653
eigenvalue	3.58	0.336	0.074

Satisfaction with one’s community, the fifth and final group of independent variables, consists of indicators measuring perceptions of alcohol as a problem, satisfaction with conflict avoidance (community harmony), satisfaction with the maintenance of public safety in respondent’s town or village, satisfaction with the cost of living, and overall satisfaction with the community. Tables 4.9a and 4.9b illustrate satisfaction of respondents with their community as viewed through results of these indicators. A vast majority of individuals stated that they feel that alcohol is a problem within their community. Previous study of alcohol abuse in the region finds that it is a serious problem (Seale 2006). However, most Iñupiat appear to be satisfied with the overall quality of life and level of public safety in their town or village, although, expectedly, residents are dissatisfied with the high cost of living in the area. Finally, individuals are generally satisfied with the level of conflict avoidance in

their community, which is an important facet of Iñupiaq culture. More than a quarter of respondents, however, stated that they were neither satisfied nor dissatisfied with the amount of conflict avoidance practiced in their community.

Table 4.9a Independent variables, group 5 (attitudes toward community—alcohol as a community problem)

		Frequency	Weighted Percent
Is Alcohol a Problem in the community?	No	96	14.7
	Yes	529	85.3
	Total	625	100

Percentages are weighted using finalwt.

Table 4.9b Independent variables, level 5 (attitudes toward community)

How Satisfied are you with: (frequency/percent)	Community attitude variables							
	The Quality of Life in the Community		Public Safety in the Community		The Cost of Living in the Community		Conflict Avoidance in the Community	
Very Satisfied	189	29.9	125	19.0	36	5.4	130	20.6
Somewhat Satisfied	299	47.9	262	41.0	147	22.5	206	35.5
Neither Satisfied nor Dissatisfied	99	14.2	88	15.5	115	19.3	156	26.8
Somewhat Dissatisfied	40	6.0	89	13.9	165	25.6	77	12.4
Very Dissatisfied	14	3.0	62	10.6	175	27.2	24	4.7
Total	641	100	626	100	638	100	593	100

Percentages are weighted using finalwt.

Finally, table 4.10 shows descriptive statistics for variables used in analyses. The mean number of hours worked in wage employment is 29.32, although 24 percent of respondents indicated that they did not work at all in the previous week for income. The mean number of subsistence activities performed in the previous year is 5.8. The average age of the sample is almost 42 years and the mean household income is \$55,447, although the income distribution is skewed by a small number of very wealthy households.

Table 4.10. Descriptive statistics for measurement variables

<i>Dependent Variables</i>	Range	SD	Mean
hours worked per week	0 – 90	21.45	29.32
number of subsistence activities	0-16	4.04	5.80
desire to move	0,1 (yes)	0.50	0.44
lifestyle aspirations	0,1 (wage work)	0.40	0.20
<i>Independent Variables</i>			
age (log)	16-91 (2.77 - 4.51)	17.02 (0.425)	41.59 (3.64)
marital status	0,1 (married)	0.48	0.36
education level	1 (elem. or less) - 4 (college)	.85	2.03
HH income	0 - 428,080	45,499	55,447
health	1 (poor) - 3 (excellent)	0.78	2.23
Native language ability	1 (not at all) - 5 (very well)	1.40	3.06

listened to Native story	0,1 (yes)	0.50	0.55
traditional skills learned as a child	0-20	4.57	11.41
parents born locally	0 (none) - 2 (both)	.77	0.86
level of social support	1-5 (high)	0.79	4.07
life satisfaction	1 (very dissatisfied) - 5 (very satisfied)	0.81	4.39
alcohol as a family problem	1 (never) - 3 (often)	0.58	1.40
satisfaction with cost of living	0 (very dissatisfied) - 4 (very satisfied)	1.26	1.54
political knowledge	0 (not at all knowledgeable) - 3 (very knowledgeable)	0.85	1.51
satisfaction with public safety	1 (very dissatisfied) - 5 (very satisfied)	1.24	3.48
satisfaction with conflict avoidance	1 (very dissatisfied) - 5 (very satisfied)	1.09	3.58
alcohol as a community problem	0,1 (yes)	0.36	0.85

Community Data Population size, population change, average income, and percentage of individuals over the age of 16 employed in communities surveyed by SLiCA will also be included in analyses. These data will be obtained from Arctic Observation Network – Social Indicators datasets (AON-SI)

(<http://www.iser.uaa.alaska.edu/projects/search-hd/datasets.htm>), the Alaska Department of Labor and Workforce Development (DOLWD), and the Alaska Community Database (ACD) maintained by the Division of Community and Regional Affairs for the State of Alaska.

These place-level indicators consist of community population in 2000 and 2007 and change in population between 2000 and 2007, 2007 median family household earned and unearned income figures for each location, and the percentage of persons over the age of 16 working and percent working year-round in 2009. Community-level population, employment, and income data are representative of *all* residents in the focus regions rather than Native residents only (as is the case with the SLiCA survey), but describe the common social environment that Natives and non-Natives both share. Table 4.11 summarizes these indicators for SLiCA communities.

Table 4.11. Population, income, and labor in SLiCA communities

Community	2000 Population	2007 Population	Percent Change	Median Income (2000)	% Working (16+)	% Working Year- Round (2009)
Barrow	4581	4052	-11.5	67,097	72	67.9
Nome	3536	3495	-1.2	59,402	72	68.8
Kotzebue	3082	3133	1.7	57,163	69	63.7
Selawik	764	828	8.4	25,625	58	50
Pt Hope	760	704	-7.4	63,125	72	57.8
Unalakleet	752	724	-3.7	42,083	68	59.3
Savoonga	702	712	1.4	23,438	61	45.7
Noorvik	676	636	-5.9	51,964	61	52
Stebbins	585	598	2.2	23,125	69	47.2
Wainwright	558	540	-3.2	54,722	71	55.6
Nuiqsut	422	403	-4.5	48,036	77	50
Kivalina	375	398	6.1	30,833	73	48.9
Anaktuvuk	316	277	-12.3	52,500	77	59.5
Koyuk	299	347	16.1	30,417	72	61.8
Shungnak	291	269	-7.6	44,375	60	54.9
Brevig Mission	278	328	18.0	21,875	72	59
Kaktovik	274	286	4.4	55,625	80	59.6
Pt Lay	245	250	2.0	68,750	78	50.5
Atqasuk	203	223	9.9	66,607	76	52.7
Deering	139	133	-4.3	33,333	78	60.6

Borough-level location data will also be used in support of that gathered at the town/village level. Borough-level data, obtained as a part of the AON-SI project, includes change in population for each decade between 1970 and 2000 by age, gender, and percent Native, and are used peripherally to support SLiCA data. Additionally, Alaska Department of Fish and Game data consisting of harvest surveys for selected communities are used in preparation and as background information for this dissertation. Surveys were not completed annually for each location; however such data is considered the primary resource for subsistence harvest data.

Together, data will allow for an examination of social, economic, political, and other differences among the twenty communities surveyed for SLiCA. Location data will be used to enhance the analysis of differences between towns and villages and will be included in multi-level models to examine effects of population change, income, and employment on desire to relocate, aspirations to remain active in the mixed economy, and subsistence and wage patterns by community.

Analysis

Quantitative Analysis This study first proceeds with descriptive analysis of the distribution of variables used and of aggregate community-level data from the AON-SI project and the ADOLWD, seen in the tables above. Next, bivariate

analysis in the form of cross-tabulations with chi square tests will be used to assess differences of dependent and variables between larger towns and smaller villages and between males and females (Chapter 5). These tables will help to establish whether gender and location (regional center or smaller village) are associated with differing aspirations for wage employment or subsistence participation, a desire to move to another location, wage hours worked, and/or subsistence activities performed. Moreover, town/village differences will also be measured by demographic composition (income, education level, whether one or both parents were born in the area, Native language skills, and self-assessed measure of health), level of social support, and attitudes toward one's community. Kruskal-Wallis tests will be used to test whether the medians of regional centers and villages and males and females are significantly different.

Multivariate analysis will begin in Chapter 6 with weighted least squares and logit regression models to measure associations between individual, community, Native, and social support characteristics and each of the four dependent variables—number of hours worked in wage employment in the previous week (*hourswork*), number of subsistence activities performed in the previous twelve months (*subsist*), thoughts on moving to another community (*wantmove*), and employment aspirations (*lifestyle*). Multiple weighted least squares regression will be used for the dependent variables *subsist* and *hourswork* because these variables are interval/ratio, or are characterized as

having units measured in equal intervals with a true zero point. The fixed effects

OLS regression models to be used with *subsist* and *hourswork* are:

$$Y_i = a + \beta_1 x_{1i} + \beta_2 x_{2i} \dots \beta_k x_{ki} + \varepsilon_i$$

where Y_i = the dependent variable for individual i ;

a = the Y intercept;

β_1 = the partial slope of the linear relationship between the first independent variable and the dependent variable, Y_i ;

x_{1i} = the first independent variable;

β_2 = the partial slope of the linear relationship between the second independent variable and the dependent variable, Y_i ;

x_{2i} = the second independent variable, and so forth;

ε_i = the residual error term.

The least-squares multiple regression equation is used to isolate the separate effects of the independent variables and to predict scores on the dependent variable. With variable names placed into the formula, it appears as:

$$\text{predicted } \textit{subsist} = a + \beta_1 \textit{age} + \beta_2 \textit{female} + \beta_3 \textit{married} \dots \beta_k + \varepsilon_i(\textit{residual})$$

Logit regression, employed with dichotomous (or dummy) variables, is used for analysis in which there are only two possible outcomes. Such is the case with the dependent variables *wantmove* which is a dummy variable coded 0 for 'no' and 1 for 'yes,' and *lifestyle*, a dummy variable coded 0 for traditional/mixed employment and 1 for wage employment.

The logit formula:

$$\ln \left\{ \frac{\hat{p}}{1-\hat{p}} \right\} = a + \beta_1 x_{1i} + \beta_2 x_{2i} \dots \beta_k x_{ki}$$

In the case of the dependent variable *wantmove*, the log odds on the left side of this model are:

$$L = \ln[P(\text{wantmove} = 1) / P(\text{wantmove} = 0)]$$

where L = the predicted logit, or log odds, of wanting to move.

Mixed-Effects Modeling Mixed-effects modeling is employed to test whether differences emerging when dependent variables, such as employment aspirations (fixed effects) are regressed upon previously discussed independent variables also vary across communities (random effects). If location is associated with significant change across fixed effects, results will indicate that a portion of the variance in those fixed effects can be attributed to random effects, which are different for different communities. The simplest mixed-effects regression model includes a random intercept, u_o , which varies across communities. The value of dependent variable Y , for the i th individual in town or village j , is modeled as:

$$Y_{ij} = \beta_0 x_{0ij} + \beta_1 x_{1ij} + \beta_2 x_{2ij} \dots \beta_k x_{kij} + u_{oj} + \varepsilon_{ij}$$

The above equation illustrates the value of Y_{ij} as a function of x_1, x_2, x_3 , etc.— effects that are the same for all individuals. The random intercept, u_{0j} , allows for the possibility that the mean level of Y (dependent variable) varies across communities after controlling for various individual-level effects.

Individual Perspectives I have conducted interviews with ten Native and non-Native individuals in Kotzebue, a regional center, and Kivalina, a small village (both located within the Northwest Arctic Borough) which provide qualitative data to this project. Data are found throughout results chapters. Information that I have obtained from interviews was used in conjunction with data from the SLiCA survey to further interpret hypotheses proposed in the introduction of this project, and to more effectively untangle the intricacies of results from quantitative analyses. A grounded approach was used when interviewing ten Iñupiat in Kotzebue and Kivalina.

I determined that interviewing techniques based in grounded theory, or the identification of themes subsequent to the collection of data, was preferable to the generation of hypotheses before going into the field. This is largely due to the emphasis placed on storytelling within Native culture, as well as the notion among Iñupiat that respect be provided to a speaker recounting stories or experiences through the recall of knowledge and experiences without interruption. It was my impression that individuals were more willing to speak for longer periods of time and answer my infrequent, open-ended questions

with much greater depth when allowed to speak freely and direct the conversation after a minimal amount of initial instruction.

Although largely based in grounded theory these in-depth interviews, collected through a convenience sampling method, focus on subsistence work patterns and aspirations and the social, economic, political, cultural, and other forces that combine to shape desires and actions within the context of remote Native towns and villages. Additionally, in interviews I examine wage and subsistence patterns in hub towns and smaller villages, gender differences, and investigate subsistence and wage work patterns, desires to move to another town, village or larger city and employment preferences. I also examine the impact of the current economic climate and the role of environmental change. Interviews were conducted with town, village, and Native Corporation leaders and Iñupiaq individuals living in both communities.

Open-ended interview questions and an unstructured format are preferable to structured or semi-structured interviews for this dissertation because of the personal nature of topics discussed and cultural sensitivity. Interview techniques were tailored to demonstrate respect for Native culture and to express humility—a character trait deeply meaningful in Iñupiaq culture. Unstructured interviews also permit “maximum flexibility in the development of hypotheses and theory,” allowing for the investigation of themes as they arise within interviews (Singleton and Straits 2004:222). Qualitative research of this type is used extensively with indigenous groups as more formal interview

methods may not result in the acquisition of important information not included in a survey or other research instrument (Curry 2003). Additionally, face-to-face interview techniques are associated with high response rates and the ability to observe peripheral conditions unobtrusively while concurrently speaking with individuals.

Individual perspectives are used in describing how majority Iñupiaq and Yup'ik communities are maintaining subsistence participation and/or wage work patterns vis-à-vis individual aspirations, and within the existing cultural, demographic, and economic framework in Kotzebue, Kivalina and elsewhere. Emphasis was placed on interviewing individuals with a broad perspective on historical cultural influences and subsistence and wage patterns. I coded interviews for themes including differences of place and gender, subsistence practices, and employment.

Figure 4.2: Kotzebue, Alaska cemetery,
September 2010



A number of themes emerged from interviews, with patterns in responses that developed coded appropriately. Major themes include similarities and contrasts in subsistence and work patterns by place type and in the socialization and acculturation of men and women, aspirations for the continuation of successful harvests, subsistence regulations, and tension and racism among Native residents, boroughs, and the state of Alaska. Interviews discuss and provide examples of interview data involving the first three themes

introduced above. Given that subsistence and hunting regulations and issues of race and conflict are beyond the scope of quantitative analysis, they will not be discussed here. It is anticipated they will be explored in future work.

Interviewees were selected based on a convenience sample, and include male and female Iñupiaq adults who were located based upon the recommendation and direction of others living in the communities sampled. Due to the difficulty in gaining entrée into Alaska Native communities as an outside researcher, care and time was taken to ensure the generation of trust prior to interviewing respondents. Additionally, the distance and difficulty in traveling to communities in the Northwest Arctic—and Kivalina in particular—resulted in a lower total number of participants than was desired. Despite the challenges associated with gathering qualitative data in these communities, I hope that further research will include additional interviews of Alaska Natives living in the region.

CHAPTER 5

RESULTS:

DISTINCT COMMUNITIES, UNIQUE EXPERIENCES: REGIONAL CENTER-VILLAGE AND MALE-FEMALE CONTRASTS

*Boys aren't taught anything anymore!*¹

This chapter will provide primarily bivariate results from SLiCA data and results from interviews concerning place type and gender. This chapter will examine differences in the following four dependent variables as they are associated with those factors above: the number of subsistence activities respondents reported participating in during the previous year, the number of hours worked in the previous week in wage employment, whether respondents had considered moving elsewhere within the previous five years, and lifestyle aspirations for wage work only or one characterized by mixed wage and subsistence work. The results presented will first focus on distinctions by place type (regional center or village) and then proceed to gender differences.

¹ As quoted from an Iñupiaq mother of six in Kotzebue.

The Importance of Place

Although regional centers and villages in the Survey of Living Conditions in the Arctic are linked by geography, culture, history, and majority indigenous population, in many respects they are quite dissimilar. Coastal communities, for example, differ from those inland—in climate, subsistence harvest type, employment, cultural practices, and in the expectations, desires, and needs of residents. First, although subsistence harvests continue to be important to the well-being of Natives in both place types, the diets of village residents typically consist of more wild foods. Second, employment opportunities are much more readily available in regional centers than villages, with more Iñupiat and Yup'ik living in these hub towns employed in full-time work. Next, previous research on Native outmigration by Hamilton and Seyfrit (1993) has found that desires for migration increase proportionally with community size, with many more young town residents reporting that they wish to move elsewhere and many more women actually choosing to relocate from smaller villages to larger population centers, resulting in a Native gender imbalance in both types of places (ibid. 1994a).

Finally, standards of living have historically been much higher in coastal whaling communities than in villages located inland (Burch 2006), which may affect aspirations for continued subsistence. Although there is no previous research directly linking place type to aspirations, one could argue that those studies discussed above from Hamilton & Seyfrit indicate that in being more

likely to desire outmigration, residents of regional centers are expressing their aspirations for wage employment.

Place Types As was discussed in Chapter 3 with the introduction of interview sites hub towns, or regional centers, are defined by SLiCA (and more generally) as being population, service, transportation, and administrative centers for boroughs, Regional Native Corporations, and surrounding regions. They have populations far higher than those of villages, with each of the hub towns included in the SLiCA survey having a population greater than two thousand. Regional centers included here (Nome, Barrow, and Kotzebue) did not historically exist as such, as an examination of population change over time shows that towns only grew much larger as these places became hubs for jobs and services and destinations for migrants (Magdanz, personal communication; Burch 2006; Hamilton & Mitiguy 2009). Villages in the region, by contrast, have less than one thousand residents with the population of many sitting under three hundred. One quarter or more of the population of towns consists of non-Natives. This stands in contrast to villages, which tend to have proportionally fewer non-Native residents. Hub towns rely on regular jet service to Anchorage (and, in a limited sense, to one another), while villages depend upon small propeller aircraft to move supplies and people. Both place types, however, are remote, with no roads linking any of the communities to one another.

Interviews with Iñupiat in the communities of Kotzebue and Kivalina reveal that resources of all type are shared and although closeness in spirit and culture is felt among Alaska Natives living in different places, differences between towns and smaller villages exist and are discussed freely. “In towns most people don’t know how to do *anything*,” one Iñupiaq woman, Lana,² originally from the village of Ambler (located in the Northwest Arctic Borough and with a population of 277)³ but now living in Kotzebue remarked in an interview [emphasis mine]. “Villagers are taught to jump right in and help,” she continued. Such distinctions, reflected by remarks made by individuals living in both Kotzebue and Kivalina, are also reflected in quantitative results.

SLiCA gathered data from residents living in both towns and villages. Respondents were divided relatively equally by place type, region, and among the three regional centers as is shown in Table 5.1 below.

² Names and some details have been changed to maintain confidentiality.

³ Alaska Department of Workforce Development 2010.

Table 5.1 Number and weighted percentage of respondents by region (within regional centers and in villages)

Region		Frequency	Weighted Percent
Bering Straits	Nome	144	18.9
	Villages	103	18.0
	Total	247	36.9
North Slope	Barrow	100	13.6
	Villages	112	16.7
	Total	212	30.3
Northwest Arctic	Kotzebue	106	16.2
	Villages	98	16.6
	Total	204	32.8
All villages		313	51.3
All towns		350	48.7
Total		663	100

Percentages are weighted using finalwt.

Lifestyle Differences by Place

Native residents of hub towns and smaller villages enjoy lifestyles that are remarkably similar while also being unique, and are profoundly shaped by subsistence opportunity and employment availability. An examination of SLiCA results confirmed in this chapter and with the presentation of multivariate analysis in Chapter 6 shows significant differences between towns and villages in the number of subsistence activities performed, number of hours worked in wage employment, thoughts on moving to another location, and aspirations for subsistence and/or wage work.

Subsistence Figure 5.1 illustrates the total number of subsistence activities performed by place. Fewer residents of hub towns appear to participate in a large number of subsistence activities; conversely, village resident participation appears to be more evenly spread with a higher overall percentage of village residents participating in a greater number of activities. A Kruskal-Wallis test performed to determine whether the medians of *subsist* are significantly different between regional centers and villages shows that they are, with a value of $p = .000$. All other things being equal, town residents tend to report participating in one fewer subsistence activities than village residents (5 for town residents and 6 for village residents).

Figure 5.1 Number of subsistence activities by place type with descriptive statistics



Percentages in histograms are weighted using finalwt

Mean, Median, Standard Deviation and Kruskal-Wallis test of *subsist*

	Village	Town
Frequency	313	350
Mean	6.51	5.16
Median	6	5
Standard Dev	4.18	3.8
Kruskal-Wallis test	$P < .001$	

Table 5.2, which includes a Pearson's χ^2 test (converted to an F statistic), confirms the significance of town-village differences in subsistence activity (using a grouped version of the variable in this case for simplicity). More than 48 percent of villagers reported that they performed more than seven subsistence

activities in the previous twelve months, compared with 35 percent of town residents. These differences are statistically significant ($p = .012$). These results could reflect the additional effort residents of regional hubs must make in many cases to reach areas for subsistence, or their preoccupation with other activities including full-time jobs. The number of subsistence activities has been established as an accurate measure of overall subsistence participation in previous study (Kruse 1991).

Table 5.2 Weighted cross-tabulation of number of subsistence activities performed,¹ by town or village residence.

Number of Activities	Village	Town	Total (of sample)
Zero	7.9	12.2	10.0
1 to 3	17.0	21.7	19.3
4 to 6	26.5	30.8	28.6
7 to 10	29.0	25.2	27.1
More than 10	19.6	10.2	15.0
Total	100	100	100
N	313	350	663

Chi-Square test $P = 0.012$

¹Subsistence variable (*subsist*) has been collapsed into five categories for ease of interpretation in this table.

Percentages are weighted using *finalwt*.

Although Native residents of hub towns such as Kotzebue are linked to one another through subsistence participation, most villagers depend more exclusively on wild foods and so rely more heavily on the success of hunters and fishermen within the community to harvest and share foods. Town residents, conversely, have more reliable access to fresh and non-local foods (Magdanz,

Braem, Robbins, and Koster 2010). The two grocery stores in Kotzebue, for example, are often stocked with produce such as mangos and kiwi, and although non-local foods such as these are very expensive they are nonetheless widely available and purchased. In remote villages, store food is much more likely to be dry or canned and produce is much more difficult to come by. Historically, however, even those living in rural villages coveted “American” foods such as sugar and evaporated milk as delicacies (VanStone 1962), and this remains the case today.

The more popular of two grocery stores in Kotzebue is large, well-stocked, open into the evening, and busy with shoppers at all times of day. The vast majority of Kotzebue residents are reliant upon the store and its offerings, with the market also serving as a social hub for residents to catch up on news and friendships. Teenagers congregate by the entrances of the store, socializing after school and in the summer months. Older residents linger in aisles, and cashiers pause to chat with customers frequently.

Kivalina, however, does not have a large grocery store. One male resident interviewed in Kotzebue identified the significance and crucial nature of successful subsistence harvests in Kivalina, where wild foods remain necessary for nutrition and well-being. The “gap” between what is obtained through subsistence activity and the finances needed to continue to be successful at obtaining wild foods—harvesting what is needed—was a term discussed freely. “The gap is much larger in villages,” he stated. “Villages like Kivalina need it

[subsistence] to survive.” Many Iñupiat recognize the stronger cultural and traditional lifeways in villages – as another Kotzebue male stated succinctly of Kivalina residents when asked how he thought most would adapt if made to relocate to a larger hub town such as the one he resides in, “they’d be a shadow of their former selves.”

Figure 5.2 Harvested salmon drying, Kivalina, Alaska, August 2010.



Remarking that she’d “sure noticed a change, subsistence-wise” after arriving in Kotzebue when compared with Ambler, the village of her upbringing, Lana seemed dismayed at what she viewed as a dilution of Native culture in larger places. As a number of villages in the region have faced (Buckland, Kobuk)

or are facing (Kivalina, Newtok, Shishmaref) relocation, life ways specific to these places cannot be overlooked.

Overall, Iñupiat who were interviewed also reported that species migration patterns were being altered due to environmental change and climate shifts were beginning to impact harvest levels. In late September 2010, for example, Native (as well as non-Native sport) hunters were anxiously awaiting the arrival of migrating caribou herds—a nutritional staple for Iñupiat in the Northwest Arctic region. Their movement southward was late, however, which worried local residents as the impending caribou rutting season would potentially coincide with migration through the area, negatively impact the flavor of meat taken and rendering a large amount of it inedible.

Hours Worked in Wage Employment The cash economy figures prominently in the lives of Alaska Natives in the area, especially among those living in regional centers. Figure 5.3 graphs the total number of hours worked in the previous week by place type, again using an employment variable that has not been collapsed (*hourswork*). Results indicate that fewer Iñupiat living in smaller villages work full-time and more report not working at all—an expected result, considering the lack of availability of full-time employment in these more remote communities. Again, a Kruskal-Wallis test shows that, like subsistence, the difference in medians between towns and villages regarding the number of hours worked is significant ($p = .000$). A larger percentage of village residents

report working less than twenty hours in the previous week or not working at all, while more than half of Natives residing in the towns of Nome, Barrow, and Kotzebue responded that they worked full (or near full) time. Clearly, the position of hub towns as regional administrative and economic centers is reflected in these results and is an indication of reasons behind village-town relocation patterns among natives in Northwest Alaska.

Figure 5.3 Number of hours worked per week in wage employment with descriptive statistics, by place type



Percentages in histograms are weighted using finalwt

Mean, Median, Standard Deviation and
Kruskal-Wallis Test of *hourswork*

	Village	Town
Frequency	313	350
Mean	26.87	31.51
Median	33	40
Standard Dev.	22.78	19.97
Kruskal-Wallis test	$P < .001$	

As with involvement in subsistence activities, a cross-tabulation in employment hours worked (Table 5.3) shows significant differences between village and town residents. For this table the number of employment hours worked variable was collapsed into the four-category *hrsworkcoll* variable. Output shows that the percentage of village residents who reported working

zero hours in the previous week was 26.8, compared with less than twenty percent of hub town residents. Moreover, half of Iñupiat and Yup'ik living in towns stated that they worked a full-time job, or over 37 hours per week, compared with 33.4 percent of village residents. The town and village patterns are significantly different ($P = .002$).

Table 5.3 Weighted cross-tabulation of number of hours in wage employment worked per week,¹ by town or village residence.

Hours worked per Week	Village	Town	Total (of sample)
Zero	26.8	19.4	23.2
1 to 20	14.6	10.2	12.4
21 to 37	25.2	20.4	22.9
Over 37	33.4	50.0	41.5
Total	100	100	100
N	313	350	663

Chi-Square test $P = 0.002$

¹Hours worked variable (hourswork) has been collapsed into four categories for ease of interpretation in this table.

Percentages are weighted using finalwt.

Thoughts of Relocation Table 5.4 illustrates the significance of town/village differences within the third dependent variable of focus, whether or not Iñupiat and Yup'ik have considered moving away from their current home in the previous five years. This question was coded as a dichotomous variable, *wantmove*. In this instance the null hypothesis, that there is no significant difference in thoughts on moving between towns and villages, can also be rejected as differences are statistically significant ($p = .014$). Almost 60 percent

of village residents reported that they have not thought about moving to another location, compared with less than half of those living in Nome, Barrow, or Kotzebue. This may indicate that as migration and movement is viewed as acceptable and expected in hub towns, more Iñupiat and Yup'ik regard migration as beneficial to well-being.

Table 5.4 Weighted cross-tabulation of feelings toward living elsewhere, by town or village residence.

Considered Moving Away	Village	Town	Total
Yes	41.1	52.3	46.5
No	58.9	47.9	53.5
Total	100	100	100
<i>N</i>	304	347	651

Chi-Square test $P = 0.014$

Percentages are weighted using finalwt.

Aspirations for Work and Subsistence The fourth and final dependent variable, aspirations for wage work or for a lifestyle rooted in the mixed economy, *lifestyle*, was re-coded from a categorical (with three categories—wage work only, subsistence only, or both) to a dichotomous variable to reflect the nature of wage work and rooted within a Native, subsistence-based lifestyle. Again, significant differences emerge between hub towns and villages, as twelve percent of village residents wish to be involved in wage work exclusively, compared with more than a quarter of town residents ($P = .000$). It should be noted, however, that in both place types the vast majority of Iñupiat and Yup'ik

desire to engage in the existing mixed economy by participating both in wage work and subsistence.

Table 5.5 Weighted cross-tabulation of aspirations for wage employment or both wage work and subsistence, by town or village residence.

Aspiration	Village	Town	Total
Wage Employment	12.3	26.5	19.3
Traditional Subsistence/Both	87.7	73.5	80.8
Total	100	100	100
<i>N</i>	293	336	629

Chi-Square test $P = 0.000$

Percentages are weighted using finalwt.

Gender and Subsistence, Work, and Aspirations

The roles of Native men and women in Northwest Alaska differ considerably, both in terms of subsistence practices and employment patterns and desires. Previous study has shown that males and females diverge in their aspirations for education, employment, and outmigration (Bodenhorn 1990; Hamilton and Seyfrit 1994b; Kleinfeld 2006)—findings suggesting that the region could face increasing social pressure in coming decades as women are more likely to leave small communities in favor of good jobs located in more populated areas while males remain in villages.

More females than males are included in the sample, as is common in large surveys; however, data were weighted to adjust for this imbalance

(although inaccuracy in gender proportions are not completely resolved). Table 5.6 is the distribution of respondents by gender after weighting partially adjusted for the gender disparity.

Table 5.6 Number and percentage of SLiCA respondents by gender

	Frequency	Weighted Percent
Males	283	44.91
Females	379	55.09
Total	662 ¹	100

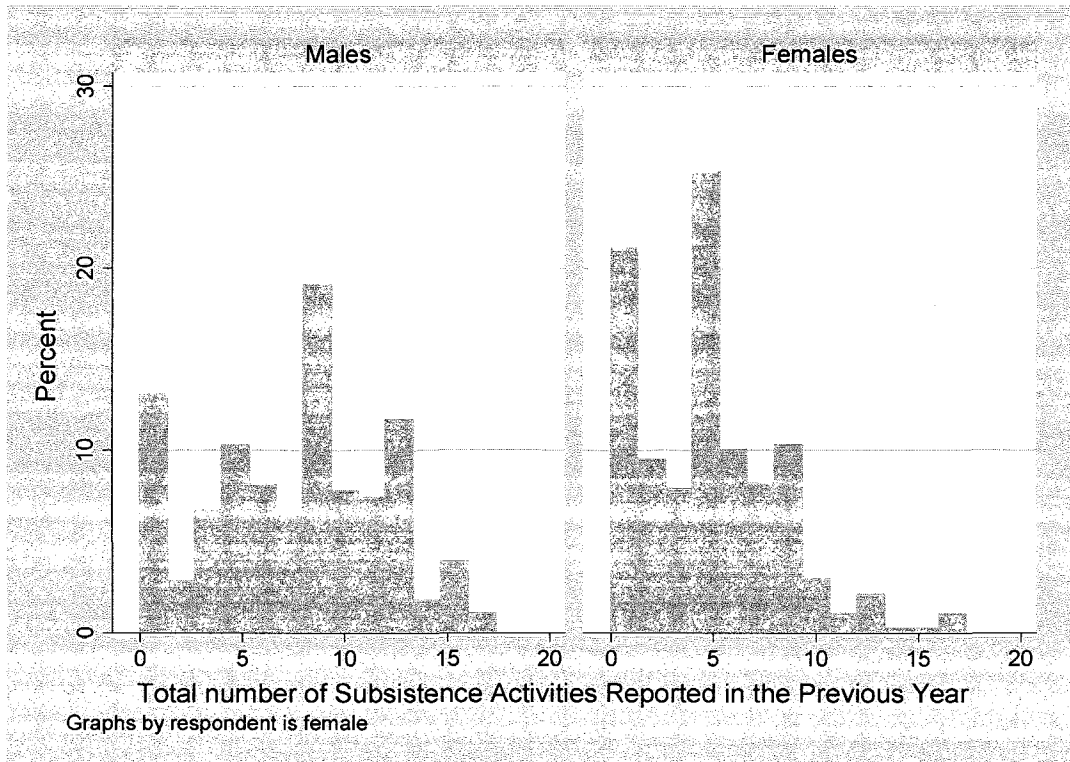
Percentages are weighted using finalwt.

¹*One response was missing.*

Gender and Subsistence Women and young females are more likely to participate in certain subsistence activities, such as gathering berries and fishing, than males. Seine fishing, in which a large fishing net is held below the water’s surface in a circle and then dragged to shore, is a fishing technique most often accomplished by women, for example. Men, alternatively, are more apt to be hunters and go on trips (almost always with family members, including women) to remote camps to harvest caribou or, in coastal regions, sea mammals such as *ugruk* (bearded seal) and bowhead whale. The amount of subsistence activities reported performed by men and women is significantly different, however, with Iñupiaq males participating in a greater number of activities overall than females. Figure 5.4 illustrates the number of activities reported by gender in the

previous year. More women than men engaged in no activities in the previous year, and male responses are clustered between about four and thirteen different activities, while the majority of females report less than five. A Kruskal-Wallis test, used to assess the null hypothesis that there is no difference in the means of *subsist* by gender, is significant ($p = 0.000$) indicating that means of *subsist* are significantly different.

Figure 5.4 Number of subsistence activities reported by gender, with descriptive statistics



Percentages in histograms are weighted using finalwt.

Mean, Median, Standard Deviation and Kruskal-Wallis test of *subsist*

	Males	Females
Frequency	283	379
Mean	7.4	4.6
Median	8.0	5.0
Standard Dev.	4.26	3.4
Kruskal-Wallis test	$P < .001$	

Table 5.7 shows these gender differences in greater detail. The variable *subsist* has been collapsed in this table only for simplicity. More than 10 percent of females report engaging in no subsistence activities in the previous year, while only 5.4 percent of males state that they did not participate in any. When

looking at higher levels of participation, more than one quarter of males stated that they performed more than ten subsistence activities in the previous year, compared with only 4.3 percent of females. A Pearson’s chi-square test indicates that differences in male and female participation are statistically significant ($p = .000$).

Table 5.7 Weighted cross-tabulation of number of subsistence activities¹ performed in the previous year, by gender.

Number of Activities	Males	Females	Total (of sample)
Zero	5.4	10.6	8.3
1 to 3	13.8	22.8	18.8
4 to 6	18.0	37.5	28.7
7 to 10	33.6	24.8	28.7
More than 10	29.2	4.3	15.5
Total	100	100	100
<i>N</i>	283	379	662

Chi-Square test $P = 0.000$

¹Subsistence variable (*subsist*) has been collapsed into five categories for ease of interpretation in this table.

Percentages are weighted using *finalwt*.

Iñupiaq and Yup’ik males have traditionally taken part in subsistence harvests and activities more frequently and have participated in a wider range of activities, so these results are expected. The role of women in subsistence participation has been, and is to some degree, defined by the cleaning, preparation, and preservation of wild foods caught by males, although women frequently fish and hunt as well.

Gender and Work Figure 5.5 and Table 5.8 illustrate the number of hours worked in the previous week by males and females, and descriptive statistics including a Kruskal-Wallis test are also shown by gender. From Figure 5.5 it is evident that respondents are clustered in two groups—those who reported that they did not work at all in the previous week, and those who report working a full-time (or close to full-time) job. More males than females stated that they worked more than fifty hours in the previous week, and slightly more females appear to have worked in part-time employment. The difference in means for the number of hours worked by males and females, shown by the Kruskal-Wallis test, is marginally non-significant ($p = 0.060$), although the median number of hours worked by males is higher than by females (33.5 and 26.3, respectively).

Figure 5.5 Number of hours worked per week in wage employment with descriptive statistics, by gender



Percentages in histograms are weighted using finalwt

Mean, Median, Standard Deviation and
Kruskal-Wallis test of *hourswork*

	Males	Females
Frequency	283	379
Mean	33.5	26.3
Median	40.0	35.0
Standard Dev.	23.4	19.3
Kruskal-Wallis test	$P < .060$	

Table 5.8, a cross tabulation of the number of hours worked by gender using a collapsed interpretation of the hours worked variable, *hrsworkcoll*, for ease of interpretation, confirms results shown in the histogram above. More than half of males reported working a full-time job, or more than 37 hours in the

previous week, compared with just over a quarter of females. Almost half of women stated that they did work, but less than 37 hours in the previous week. An *F* statistic, demonstrating results of a test examining whether values of *hrsworkcoll* are significantly different across gender ($P = 0.000$) shows that they are.

Table 5.8 Weighted cross-tabulation of number of hours in wage employment worked per week,¹ by gender.

Hours worked per Week	Males	Females	Total (of sample)
Zero	21.1	26.6	24.1
1 to 20	13.5	15.6	14.7
21 to 37	13.3	30.4	22.7
Over 37	52.0	27.5	38.5
Total	100	100	100
<i>N</i>	283	379	662

Chi-Square test $P = 0.000$

¹Hours worked variable (*hourswork*) has been collapsed into four categories (*hrsworkcoll*) for simplicity in this table.

Percentages are weighted using *finalwt*.

It should be pointed out however, that seasonal employment creates dramatic swings in the number of hours worked by Alaska Natives in the region. Males involved in outdoor work such as construction or firefighting in the summer months, for example, may work many hours per week for a span of weeks only to have no work when construction work is completed, wildfire season concludes, or colder weather moves into the region. Given that much of the SLiCA survey was conducted in the winter months, results should be interpreted with caution.

Thoughts of Relocation The third dependent variable of focus asked Iñupiat and Yup'ik whether they had thought about moving elsewhere in the previous five years. Table 5.9 presents results by gender. More than half of both men and women stated that they had not considered moving elsewhere, with slightly more females than males answering that they had considered it. A Pearson's X^2 test, however, shows that results are not significantly different ($p = 0.180$), suggesting that despite previous research indicating that young females are more likely to move away from villages to obtain education or employment, perhaps males think about moving away to a degree that is comparable to females.

Table 5.9 Weighted cross-tabulation of feelings toward living elsewhere, by gender

Considered Moving Away	Males	Females	Total
Yes	42.0	49.1	45.9
No	58.0	51.0	54.1
Total	100	100	100
<i>N</i>	276	374	650

Chi-Square test $P = 0.180$

Percentages are weighted using finalwt.

Aspirations for Work and Subsistence Males and females also do not appear to differ from one another in their lifestyle aspirations, which was coded as a dichotomous variable for either wage employment only or desiring a lifestyle consisting of both subsistence activity and wage work. Without controlling for other factors, a Pearson X^2 test does not allow us to reject the null hypothesis

that the variables are not independent from one another with a probability value of .141. Despite this, it appears as though females may be slightly more likely than males to state that they would prefer a lifestyle consisting of wage work only over one characterized by both wage work and subsistence activity. However, the vast majority of males and females (87 and 82 percent, respectively) report that they desire a life rooted in both sides of the mixed cash/subsistence economy.

Table 5.10 Weighted cross-tabulation of aspirations for wage employment or both wage work and subsistence, by gender.

Aspiration	Males	Females	Total
Wage Employment	12.8	18.1	15.7
Traditional Subsistence/Both	87.2	81.9	84.3
Total	100	100	100
<i>N</i>	268	361	629

Chi-Square test *P* = **0.141**

Percentages are weighted using finalwt.

Regional Center and Village Culture Given the amount of movement and relocation between villages, from regional centers to and from villages, and in and out of Anchorage, Fairbanks, and other locations, Iñupiat have become very aware of parallels and dissimilarities in culture, lifestyle, and resources in different communities. Many Native families living in towns such as Kotzebue quite frequently travel to Anchorage when they must or are able to obtain items and services not available in the North, and goods are often filtered from those living in larger communities on to kin located in more remote places who do not

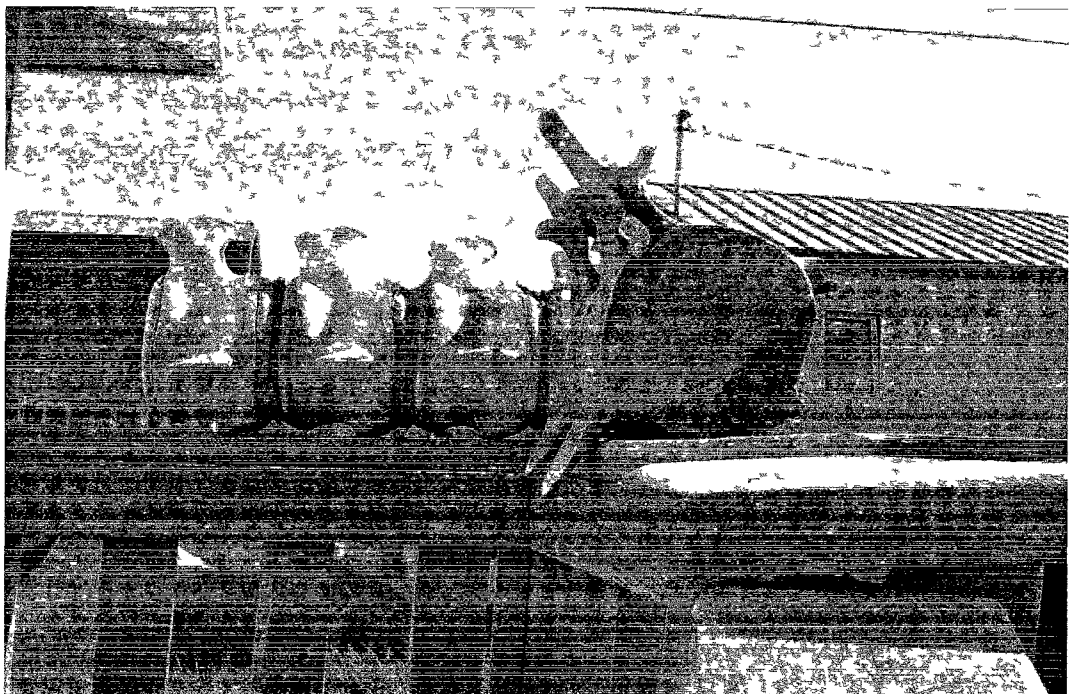
enjoy regular access to necessary items and for whom travel is more difficult and too costly.

Much of the difference in results seen in these dependent variables described above, in particular, can perhaps be assessed as a function of the nature of the community in which individuals live. Regional center residents are much more likely to be employed in regular wage work, receive steady pay, and to rely upon (and are likely relied upon by others for) the provision of resources that regular income brings. Prior research has investigated the sharing of wild foods by “superhouseholds” and “superproducers” (Wolfe, 2004); however little study has examined how wages are directly and indirectly shared throughout kin and family networks and communities. A male Northwest Arctic Borough official indicated that he often shared fuel with his extended family in exchange for wild food, for example, with fuel costs commonly divided among family and kin, as many cannot afford to purchase fuel on their own (In 2010, for example gasoline hovers at over \$7 per gallon in Kotzebue, with even higher prices seen in Kivalina.).

Traditional Roles in Kivalina. The gendered division of subsistence labor and activity was most visible in Kivalina. Individuals within one Native household consisting of a married couple and their adolescent male child discussed subsistence extensively, and the male head of the household, Harold Lorne, was

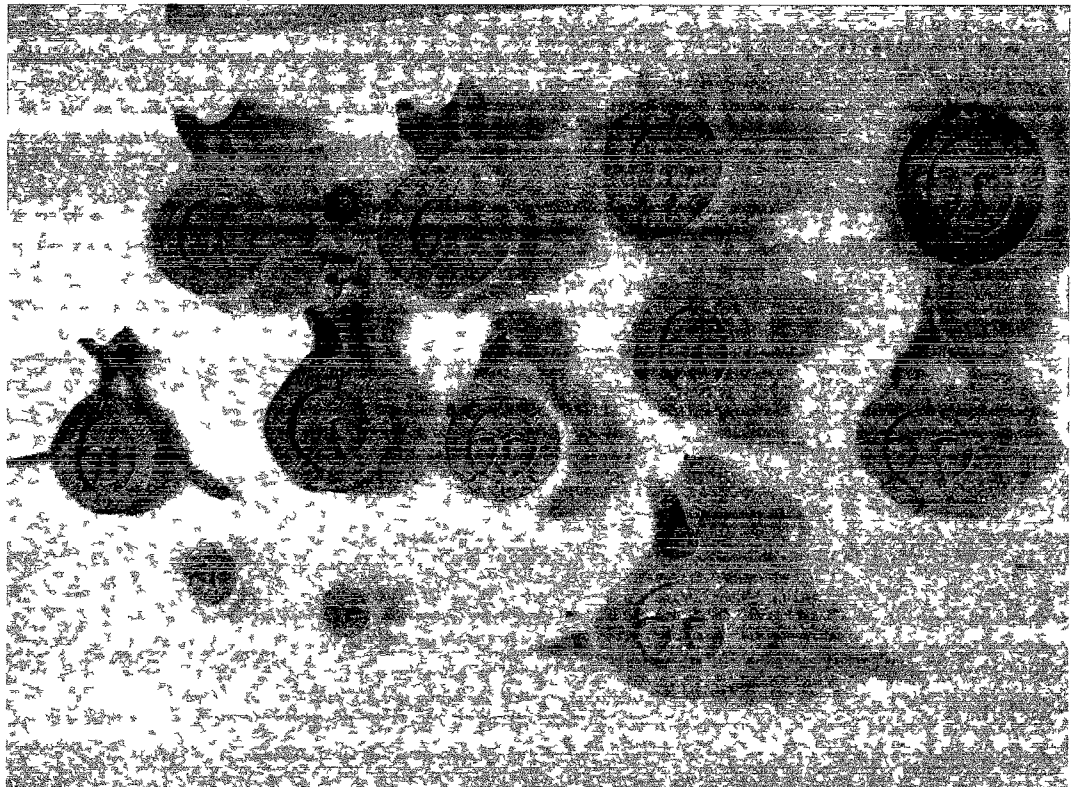
eager to demonstrate evidence of their successful harvests. Each family member of the household took on different subsistence-related responsibilities. During the interview Harold produced vertebrae from bowhead whale and caribou antlers (see Figure 5.6), and although he did not divulge whether he was directly involved in the harvesting of the animals he had possession of them and was responsible for their care. Bowhead whale vertebrae are used to create traditional masks, which are carved and fashioned by his son, Joseph, and are then be brought to Anchorage, Fairbanks, or elsewhere and sold (see Figure 5.7 for a photograph of finished pieces).

Figure 5.6 Bowhead whale vertebrae drying in Kivalina in preparation for use in crafts.



Harold's wife, Cora, was responsible for gathering salmonberries which were eaten as a treat, especially during the winter months, and Harold was clear in explaining that "my wife picked those" as he opened a deep freezer located in their home with pride.

Figure 5.7 Display of traditional masks carved from bowhead whale vertebrae and adorned with polar bear fur.



Youth and the Future of Traditional Skill. The division of subsistence labor among some is not quite as delineated as this, however, and may be changing as a new generation of ideas and lifestyle preferences emerges—especially within hub towns. One Iñupiaq mother of six, for example, remarked that boys

in the region aren't taught subsistence skills as rigorously they used to be, especially in regional centers such as Kotzebue. Likewise, lighthearted discussion at a social gathering in Kotzebue focused for a time on the hunting talent of a young female, Elise. There was good-natured teasing in the room toward her boyfriend, also present, about his lack of shooting talent when compared with his partner, but it was evident that all present, including Elise's boyfriend, were impressed and respectful of her skill as a hunter.

In Summary

Table 5.11 provides an overview of bivariate results from this chapter. Overall, residents of regional centers, or towns, reported a significantly higher number of hours worked in wage employment, had thought of moving to another community within the previous five years at a higher rate, and were more likely to have aspirations for wage work only. Village residents, such as those living in Kivalina, were more likely to report higher numbers of subsistence activity in the previous year. Interviews with Native residents indicate that people are aware of the greater necessity of subsistence and successful harvests in smaller villages, which are more rural and have fewer available goods from the outside.

Table 5.11 Summary of bivariate results (town-village and male-female differences)

Dependent variable	Towns/villages	Males/ females
Number of subsistence activities	villages higher	males higher
Number of wage hours worked	towns higher	males higher
Have thought of moving	towns higher	n.s.
Aspirations for wage work	towns higher	n.s.

When gender differences were examined, males and females also exhibit some differences in subsistence and wage work patterns. Males were more likely to report both higher levels of subsistence participation as measured through the number of subsistence activities reported in the previous year as well as a higher number of hours worked in wage employment in the previous week. Gender differences concerning thoughts of moving elsewhere and aspirations for a lifestyle rooted in the mixed economy or in wage employment only, however, were not statistically significant.

In conclusion, results from Chapter 5 illustrate not just differences in lifestyle patterns by place with more town residents appearing to both desire wage employment and be thinking about living elsewhere presumably to attain it, but in the position of males as higher subsistence participants and more involved in the economic sphere of communities through higher levels of wage

employment. These disparities in participation by both place type and gender may indicate a fragility in traditional lifeways, perhaps with communities needing subsistence to maintain the survival of residents, such as Kivalina, more likely to see traditional practices continue while they wane in larger, more developed places in the region.

CHAPTER 6

RESULTS:

MULTIVARIATE ANALYSIS

[Without subsistence] they'd be a shadow of their former selves.¹

Four tables are presented and interpreted in the first section of this chapter, each containing two models—the first a full model containing all variables of interest, the second a reduced model. To arrive at a reduced model, variables were dropped from the full model one at a time based on significance levels and overall fit. Table 6.1 presents coefficients from these regression models for selected determinants of the number of hours worked per week in wage employment as reported by respondents to the SLiCA survey. Table 6.2 presents results using the same variables regressed on the number of subsistence activities reported in the previous year by respondents, and Table 6.3 illustrates coefficients for determinants of thoughts of moving to a new location within the previous five years. Finally, Table 6.4 presents coefficients for

¹ Stated by a male in Kotzebue regarding Kivalina residents.

these factors on aspirations for wage employment or a lifestyle consisting of both subsistence participation and wage employment. Following these regression models, mixed-effects model results are discussed. As was the case in the previous chapter, results from interviews in Kotzebue and Kivalina will be woven throughout.

All results are weighted using *finalwt*, a combination of sampling weight *hhwt*, to account for household size, and the poststratification weights *genwt*, which acts to reduce the effects of the oversampling of females and *regwt*, which adjusts for bias by region. Clustering data by region within regression commands was an option for analysis; unfortunately, however, STATA software does not allow for survey weights to be used in conjunction with these types of clustering techniques. As a result, clustered standard errors (by region), without survey weighting, were estimated and results compared against those using of *finalwt* (which includes a weight to account for biases in data collection by region, but does not cluster data by region). This exploratory analysis revealed that overall results with clustered errors were similar to those using *finalwt* across dependent variables. *Finalwt* has thus been used as a weight for all regression models.

Regression Analysis by Dependent Variable

Subsistence Activity Table 6.1 presents results from weighted least squares regression models regressing the total number of subsistence activities

performed in the previous year on independent variables of interest. The full model shows that gender and marriage are associated with the number of subsistence activities individuals reported performing in the previous year. Specifically, women tend to engage in a fewer number of subsistence activities ($t = -6.99, p = .000$). These results are congruent with significant differences in the number of subsistence activities reported in Chapter 5, which showed that the median number of activities reported by females is about three fewer than for males (five versus eight, respectively).

Interestingly, there is not a significant relationship between household income and the number of subsistence activities reported in the previous year, even after reducing the model with income included. This was done because of previous research demonstrating a significant, positive relationship between subsistence and income, and due to the necessity of purchasing tools and equipment that potentially could impact the success of subsistence harvests.

Controlling for gender (and all other predictors in the model), married respondents also participated in more activities ($t = 2.90, p = .005$). The most consistent predictor of subsistence activity in this model is the number of traditional skills learned as a child such as hunting, fishing, and sewing ($t = 8.01, p = .000$)—an expected result. The more traditional skills respondents were taught as children, the more subsistence activities they report participating in currently. Additionally, participation in Native storytelling is positively associated with subsistence ($t = 3.82, p = .000$). Overall life satisfaction is also related to

increased subsistence ($t = 2.50, p = .016$). Together, the variables in this full model explain about 42 percent of the variance in subsistence participation ($R^2 = .4209$).

The number of traditional skills learned as a child remains the strongest predictor of subsistence participation in the reduced model ($t = 9.53, p = .000$), however the strong, positive relationship between number of subsistence activities and being male also remains ($t = -7.40, p = .000$). Type of residence also matters, with the strength of the relationship between subsistence and place type increasing from the full to reduced model to $t = -4.74, p = .000$. Residents of villages report participation in a greater number of activities than do regional center residents. Marriage, better health, a greater number of Native stories told and/or heard, greater political knowledge, learning more traditional skills as a child, and higher levels of reported life satisfaction are all associated with participation in a higher number of subsistence activities. A negative relationship between perceived community safety and subsistence exists, with those who responded that they were less satisfied with community efforts to maintain resident safety more likely to participate in a wider variety of subsistence activities ($t = -2.09, p = .041$). A chi square test (results not shown) shows no gender difference in the perceived job being done to maintain community safety, indicating that the association between safety and subsistence is due to other, unknown factors.

Table 6.1. Weighted least squares regression of the number of subsistence activities reported on key variables

	Full Model		Reduced Model	
	β	SE	β	SE
<i>Demographics</i>				
gender (female)	-2.188***	0.31	-1.981***	0.27
age (log)	-0.138	0.64		
married	0.851**	0.29	0.797***	0.24
health	0.262	0.18	0.480**	0.16
<i>SES and Local Ties</i>				
education level	0.257	0.23		
household income (sqrt)	0.461	0.34	0.447	0.28
parents born locally	-0.263	0.21		
<i>Native and Political Ties</i>				
Native language	0.280	0.15		
number of Native stories	1.421***	0.37	1.311***	0.36
political knowledge	0.363	0.26	0.443*	0.19
traditional skills	1.736***	0.22	2.021***	0.21
<i>Social Support & Well-being</i>				
social support	-0.135	0.16		
life satisfaction	0.476*	0.19	0.424**	0.16
alcohol a family problem	0.415	0.28		
<i>Attitudes toward Community</i>				
alcohol a community problem	-0.189	0.69		
satisfaction with conflict avoidance	0.102	0.14		
satisfaction with safety	-0.288	0.17	-0.243*	0.12
satisfaction with costs	-0.046	0.15		
<i>Community Characteristics</i>				
place type (town)	-0.778*	0.37	-1.062***	0.22
percent in poverty	-0.019	0.02		
population change, 2000-07	0.000	0.00		
percent not working	0.039	0.03		
Constant	-3.073	2.38	-0.740	1.34
F	19.54		43.83	
Prob >F	0.000		0.000	
N	443		580	
R ²	.421		.411	

Wage Employment Table 6.2 presents results from weighted least squares regression models using independent and control variables outlined in Chapter 4. Two models are shown; a full model including all independent variables of interest, and one that is reduced to illustrate changes in the strength of relationships as the model becomes more parsimonious. In the full model, the number of wage hours worked in the previous week is regressed on all variables. Results from this full model show some interesting relationships. First, the association between the number of employment hours worked per week and gender is significant. Males tend to report working more hours per week ($t = -3.40, p = .001$), as do those who are younger ($t = -3.18, p = .003$)—results confirming significant differences by gender in Chapter 5. Interestingly, being married and in better reported health are not strongly linked to working more hours per week. As expected, education level and household income are positively correlated with the number of hours worked in the previous week by respondents, with more educated individuals and those earning more reporting a higher number of hours worked ($t = 5.49, p = .000$ and $t = 2.10, p = .041$, respectively). Native ties through language abilities—knowledge of written and spoken language such as Iñupiaq, for example—and number of skills learned as a child are not strongly linked to the number of wage hours worked. Political knowledge, however, is associated with working more hours per week. ($t = 2.05, p = .046$). Out of social support and well-being variables, believing that alcohol is a problem within one’s family is the only factor which is significant ($t = 2.86, p =$

.006). Iñupiat and Yup'ik surveyed who view alcohol as a family problem are likely to report being more active in wage work through increased hours on the job. The percentage unemployed within a community predicts individual work hours.

In the reduced model, gender, age, and education level are variables most strongly linked to working a greater number of hours in wage employment per week ($t = -3.06, p = .003, t = -6.08, p = .000,$ and $t = 6.62, p = .000,$ respectively).

Table 6.2. Weighted least squares regression of number of hours worked per week on key variables

	Full Model		Reduced Model	
	β	SE	β	SE
<i>Demographics</i>				
gender (female)	-7.129***	2.10	-6.444**	2.10
age (log)	-8.074**	2.54	-10.975***	1.81
married	-1.149	2.07		
health	0.960	1.19		
<i>SES and Local Ties</i>				
education level	5.788***	1.05	7.157***	1.08
household income (sqrt)	4.601*	2.19	5.662**	1.92
parents born locally	-1.559	1.14		
<i>Native and Political Ties</i>				
Native language	-0.435	0.69		
number of Native stories	-2.278	2.00		
political knowledge	2.168*	1.06	3.015**	0.97
traditional skills	0.173	1.32		
<i>Social Support & Well-being</i>				
social support	-1.785	1.15		
life satisfaction	1.274	1.33		
alcohol a family problem	4.791**	1.68		
<i>Attitudes toward Community</i>				
alcohol a community problem	-7.825	2.56	-5.228*	2.30
satisfaction with conflict avoidance	-0.847	0.81		
satisfaction with safety	-0.957	0.74		
satisfaction with costs	0.326	0.79		
<i>Community Characteristics</i>				
place type (town)	-4.723	3.02	-4.678	2.48
percent in poverty	-0.102	0.10		
population change, 2000-07	0.005	0.01		
percent not working	-0.316	0.16	-0.350**	0.12
<i>Constant</i>	68.348	11.50	71.392	9.35
<i>F</i>	16.40		55.21	
<i>Prob >F</i>	0.000		0.000	
<i>N</i>	443		585	
<i>R</i> ²	.212		.224	

Thoughts on Relocation The third dependent variable for this project measures responses to the question of whether or not Iñupiat and Yup'ik surveyed had considered moving to another location (and away from their current community) within the past five years. Again, two models are illustrated (Table 6.3). In the full model, only age and perceived community success at promoting harmony and safety exhibit a significant relationship with one's thoughts of moving, net other variables. Younger Iñupiat and Yup'ik are more likely to report that they had considered moving within the past five years—an expected result ($z = -3.63$, $p = .001$), and those who feel that the community is doing an adequate job at promoting safety and harmony are also less likely to want to move elsewhere ($z = -2.68$, $p = .010$ and $z = -3.40$, $p = .001$, respectively). Somewhat surprising in this model is the lack of significance found between gender and considering living elsewhere, as previous study has shown that females (young females, especially) are more likely to desire a life outside of their home town or village (Hamilton, 2010). Interesting as well is the lack of relationship between Native ties and traditional knowledge and thoughts on moving.

In the reduced model age remains the most robust predictor of thoughts of moving elsewhere ($z = -5.15$, $p = .000$), with gender also emerging as a determinant. Parental birthplace is also statistically significant when controlling for other factors ($z = -2.72$, $p = .009$), as is Native language ability ($z = -2.13$, $p = .038$). Individuals whose parents were born in the community and those who have a better grasp of the Native language are less likely to have thought of

moving elsewhere. Viewing alcohol as a problem within one's community, however, is positively associated with thoughts of moving. Respondents who felt that alcohol was a problem within their town or village were more likely to report that they had thought of moving to another community ($z = 2.26, p = .028$).

The two variables measuring attitudes toward one's community (safety and harmony) are significant at the $p < .01$ level. Satisfaction with the community's job at ensuring public safety and satisfaction with conflict avoidance, important facets of Iñupiaq culture, are both negatively linked to the consideration of moving elsewhere ($z = -3.05, p = .004$ and $z = -3.15, p = .003$, respectively).

Table 6.3. Weighted logit regression of thoughts on moving on key variables

	Full Model		Reduced Model	
	β	SE	β	SE
<i>Demographics</i>				
gender (female)	0.190	0.16	0.286*	0.14
age (log)	-1.329***	0.37	-1.358***	0.26
married	-0.184	0.19	-0.250	0.17
health	-0.066	0.15		
<i>SES and Local Ties</i>				
education level	0.150	0.15		
household income (sqrt)	0.258	0.31	0.346	0.21
parents born locally	-0.345	0.18	-0.424**	0.16
<i>Native and Political Ties</i>				
Native language	-0.121	0.08	-0.154*	0.07
number of Native stories	-0.077	0.22		
political knowledge	0.078	0.15		
traditional skills	-0.185	0.15		
<i>Social Support & Well-being</i>				
social support	0.003	0.13		
life satisfaction	-0.140	0.13	-0.245*	0.10
alcohol a family problem	0.338	0.22		
<i>Attitudes toward Community</i>				
alcohol a community problem	0.526	0.38	0.614*	0.27
satisfaction with conflict avoidance	-0.248**	0.09	-0.276**	0.09
satisfaction with safety	-0.308***	0.09	-0.242**	0.08
satisfaction with costs	0.029	0.11		
<i>Community Characteristics</i>				
place type (town)	0.394	0.36		
percent in poverty	0.021	0.02		
population change, 2000-07	0.001	0.00		
percent not working	-0.014	0.02		
<i>Constant</i>	7.016	2.02	7.651	1.17
<i>F</i>	7.35		9.81	
<i>Prob >F</i>	0.000		0.000	
<i>N</i>	441		533	

Examples of mistrust within communities exist, but a cultural duty to cast actions generating anger or suspicion aside abounds—even in regional centers. Lisa, a Native woman interviewed in Kotzebue, had just had some of her salmon stolen from a drying rack in her yard a few days prior, for example—the latest in a string of robberies she had been a victim of. Her level of community trust was therefore diminished. “In Kotzebue they don’t care about each other,” she stated. “This year I got robbed my black [seal] meat and my seal oil too.” She went on to describe other recent robberies that had taken place in the two local grocery stores and the local auto parts retailer in town, and surmised that most thefts and robberies in the area occur because of hunger or a need for alcohol or drugs.

Her actions in response to this victimization and criminal behavior appear to belie her anger and mistrust, however, and are evidence of cultural loyalties. When asked whether she had contacted police to report the crimes that had taken place in her own backyard, she replied that she had not called the authorities as “no one does that.” To turn in someone or report a crime meant that one would be turning on a neighbor, friend, or relative and that is culturally unacceptable, she explained, even in a large town like Kotzebue where many people do not know each other well. She went on to state that whoever stole her food must need it more than she, therefore making it wrong to attempt to punish the thief. “We’re practically related to each other one way or another,

whether we like it or not,” she said with resignation, summing up her views of community trust.

This sense of place and strong social ties resulting from trust, reliance, and cultural commonality are palpable among Alaska Natives in Kotzebue, and although I did not spend sufficient time in Kivalina or other villages to conclude that similar feelings are evident there, it could be assumed that they are also present in smaller, more remote communities where individuals have more frequent contact with one another. The survival of Iñupiaq “cultural spirit” is based upon seventeen core principles including *sharing* and *responsibility to tribe* (see Appendix for a complete listing of the core principles). Lisa demonstrated their significance and meaning on an individual level.

Aspirations for Wage Work and/or Subsistence The final dependent variable examined in this project, *lifestyle*, consists of a dichotomous (dummy) measure categorizing responses to the question of whether those surveyed would rather take part in a lifestyle consisting of mixed wage-subsistence work or participate in wage work only (coded 0,1 respectively). In chapter 4, SLiCA data were presented revealing that the vast majority of those surveyed (80%) responded that they would prefer a mixed lifestyle of both wage-based employment and subsistence activities.

The full model illustrates some interesting associations. Being female is associated with desiring a lifestyle in the wage economy rather than mixed wage-subsistence work when controlling for other factors in the model ($z = 2.16$, $p = .036$)—female Iñupiat and Yup'ik living in the areas surveyed are more likely to report that they wish to engage only in wage work, although the overall percentage of respondents who desire this is quite small. The full model also shows that better health is linked to desiring wage employment ($z = 3.88$, $p = .000$). Connections to Native practices matter: although the relationship between participating in Native storytelling and lifestyle aspirations is not statistically significant, this and learning more traditional activities as a child are associated with desiring subsistence or mixed subsistence/wage work ($z = -1.95$, $p = .057$; $z = -3.05$, $p = .000$ respectively). Those who report that alcohol is a problem within their community are also more likely to report that they would prefer wage employment ($z = 2.12$, $p = .039$), and population change within communities is associated with lifestyle aspirations as well: interestingly, communities seeing an increase in population from 2000 to 2007 are more likely characterized by residents who desire subsistence and mixed work ($z = -2.14$, $p = .038$).

The reduced model containing lifestyle preference as a dependent variable shows similar results. Being female remains associated with desiring wage work although the strength of that relationship dips below a level of significance, however age becomes significant as other variables are dropped

from the model—younger respondents are more likely to desire wage work—a result that is congruent with previous research finding that young females are more likely to see employment as positive ($z = 1.85, p = .070$ and $z = -2.09, p = .041$, respectively; see Hamilton and Seyfrit 1994b; Hamilton 2010). The strongest factors in predicting lifestyle aspirations net of other factors here are related to traditional Native ties, however. There is a strong, negative relationship between participating in Native storytelling and the number of traditional activities learned as a child and desiring subsistence or both subsistence and wage work. Those who have told and/or listened to a Native story in recent months are less likely to want to work only in a wage job ($z = -2.81, p = .007$), and the more traditional activities respondents reported learning as children, the less likely they were to want wage employment without participating in subsistence activities ($z = -4.22, p = .000$). The strength of the relationship between lifestyle aspirations and viewing alcohol as a problem within the community and population change decreases, although a significant relationship emerges between aspirations and the percentage of residents in one's community not working. Interestingly, higher unemployment rates are associated with desiring subsistence as the model is reduced ($z = -4.03, p = .000$).

Table 6.4. Weighted logit regression of lifestyle aspirations on key variables

	Full Model		Reduced Model	
	β	SE	β	SE
<i>Demographics</i>				
gender (female)	0.750*	0.35	0.538	0.29
age (log)	-0.956	0.65	-0.787*	0.38
married	-0.314	0.32	-0.447	0.32
health	0.464***	0.12	0.174	0.12
<i>SES and Local Ties</i>				
education level	0.075	0.19		
household income (sqrt)	-0.322	0.27		
parents born locally	0.135	0.19		
<i>Native and Political Ties</i>				
Native language	-0.083	0.19		
number of Native stories	-0.695	0.36	-0.640**	0.23
political knowledge	-0.005	0.17		
traditional skills	-0.623**	0.20	-0.578***	0.14
<i>Social Support & Well-being</i>				
social support	0.337	0.19	0.306	0.16
life satisfaction	-0.239	0.18		
alcohol a family problem	0.091	0.22		
<i>Attitudes toward Community</i>				
alcohol a community problem	1.481*	0.70	0.769	0.41
satisfaction with conflict avoidance	-0.106	0.11		
satisfaction with safety	0.096	0.15		
satisfaction with costs	0.005	0.15		
<i>Community Characteristics</i>				
place type (town)	-0.094	0.47		
percent in poverty	-0.001	0.02		
population change, 2000-07	-0.002*	0.00		
percent not working	-0.037	0.03	-0.058***	0.01
<i>Constant</i>	3.650	1.95	4.362	1.21
<i>F</i>	11.92		8.37	
<i>Prob >F</i>	0.000		0.000	
<i>N</i>	434		563	

Gender and Employment Aspirations. From interviews with Native and state officials and male and female residents of Kotzebue and Kivalina, it appears as though the paths taken by Iñupiaq men and women in the region are distinct and divergent—increasingly so, even. As was documented by Hamilton and Seyfrit in their interviews of high school students (as well as adults) in the Northwest Arctic and Bristol Bay regions in the 1990s, women have different aspirations than men (1994). Interviews helped to uncover some possible root causes for these divergent paths.

Results from SLiCA data show the strength of relationship between learning traditional skills as a child and engaging in a wide range of subsistence activities later in life. Mothers tend to teach skills such as gathering and crafts to daughters, according to one villager, while men, most likely engaged as hunters of caribou, seal, or whale, are expected to instruct sons on how to be successful harvesters of these wild foods. According to one Iñupiaq woman in Kotzebue, however, many of these traditional skills are being learned by children from grandparents as “parents just don’t have the time” and “they [grandparents] teach you what your parents left out.” Perhaps with grandparents now taking on a great deal of responsibility in instructing younger generations on subsistence techniques actual practice is in decline, although this was not indicated through interviews.

Young Iñupiat dream of success, but ideas of what success are appear to be very different among men and women. Socialization processes unique to each

gender may be creating a cultural, educational, and economic chasm between Native males and females in Northwest Alaska. Specifically, young men and women are “being acculturated differently,” commented one state official. Part of the reason for this divergence starts in childhood and the gendered lens through which employment opportunities are viewed—the school district, often a village’s largest employer, is often seen as employment suited for females, with more physical tasks such as construction, other manual jobs, and firefighting viewed as employment more appropriate for young males to aspire to.

Because of these attitudes, over time adolescent and young Iñupiaq females become much more likely to be mentored by other professional women than their male counterparts are to be guided by adult male role models. Professional, female mentors—whether they are teachers, doctors, or employees of the Maniilaq social services organization in the Northwest Arctic Borough—invest time and energy teaching and developing generations of female Native leaders and professionals. Young males, on the other hand, tend to not enjoy comparable opportunities to develop these sorts of beneficial relationships. Most commonly, male employment consists of temporary, seasonal work, and is not characterized by the close, professional relationships enjoyed by many young women. The nature of traditionally “male” work, types of employment young men aspire to, and devaluation of education among many

males when compared with females (Hamilton 1994) only hinder chances for a professional mentor among young men.

In villages, gender disparity in wage employment appears to be an even more serious issue. “Men are more “on par” with women in hub communities,” remarked one male in Kotzebue, indicating that the gender gap appears greater in smaller villages. This is likely due to the abundance of steady, year-round, male dominated work in hub towns such as maintenance operators, and a comparable dearth of this type of work in villages.

Mixed Effects Modeling

Mixed effects models were tested to determine whether fixed effects (as described in the Methods chapter) also vary across random effects—in this case, each of the three regions included (the North Slope and Northwest Arctic Boroughs and the Bering Straits Census area). A mixed effects model with random intercepts for each of the four dependent variables was tested which, like those models shown above in this chapter, controlled for individual-level variables of interest. Each mixed effects model returned results indicating that these individual effects do not vary across regions.

When the number of subsistence activities was examined as the dependent variable in a mixed effects model using those variables in the reduced model weighted least squares model above (Table 6.1), results showed that intercepts did not vary from place to place (results from Stata output for mixed

effects models are shown in Appendix D). A likelihood-ratio test confirmed that the random intercept model did not show improvement over the model shown in Table 6.1 in which only fixed effects were tested ($p = .202$), although all predictors with the exception of household income have significant effects, as was the case with the original fixed effects model.

Similar results were found when a model employing the number of hours worked in wage employment as a dependent variable was run ($p = .160$). When mixed effects logit regression models were used to investigate whether respondents had thought of moving in the previous five years and lifestyle aspirations, models were unstable and findings are thus not available.

Summary of Comparisons with Findings from Chapter Five

A number of interesting findings congruent with those in Chapter 5 emerge from multivariate analysis, and themes are confirmed through interview data gathered in Kotzebue and Kivalina, Alaska. First, males and residents of smaller villages are more inclined to participate in a greater number of subsistence activities—findings confirming those from Chapter 5, and suggesting that subsistence harvests of wild foods play a more crucial role in the nutrition and survival of village residents.

Next, regarding wage work, males again report greater participation (results which also support those presented in the previous chapter), as do younger respondents and those possessing higher levels of education. When controlling for all other factors in the weighted least squares model (Table 6.2), place type does not appear to have a significant effect on wage work—results not in step with significant differences by place type shown in Chapter 5.

Being female is a reasonably significant predictor of thinking of moving elsewhere ($p < .05$) when controlling for other factors in Table 6.3 of this chapter which does not mirror earlier, bivariate results finding no relationship between males and females. However, place type is not associated with thoughts of moving in that model, unlike results found in the previous chapter demonstrating that residents of the regional centers of Nome, Barrow, and Kotzebue are more inclined to consider moving elsewhere.

Finally, neither gender nor place type is strongly associated with aspirations for participation in the mixed wage/subsistence lifestyle in Table 6.4. Results regarding gender are similar to those in Chapter 5, however significant town/village differences were evident in bivariate analysis that do not appear here.

CHAPTER 7

DISCUSSION

*A mixed economy enables more sharing.*¹

Development, preferences, and aspirations must be examined in the context of place. Among people native to the Northwest Arctic, culture and intersubjective intentions have shaped aspirations and choices, guiding the vast majority of Iñupiat and Yup'ik to prefer a lifestyle rooted in the mixed economy today. Not only do individuals appreciate the necessity of obtaining resources to harvest successful subsistence amounts, but through changing preferences, structure, and culture many see wage work as an enriching path unto itself. Although some groups, such as females, appear to be more apt to share this view, Alaska Native people have largely not allowed outside, Western influences to unravel their core cultural fabric. Iñupiat and Yup'ik are fiercely proud of their ability to maintain close ties to Native lifeways while using twenty-first century technology.

¹ Quoted from a NANA official in Kotzebue, Alaska.

It must be pointed out, however, that people living in population centers appear to be more fragiley connected to traditional lifeways than those residing in more rural locations. Residents of the towns of Nome, Barrow, and Kotzebue, for example, tend to be less heavily involved in subsistence, work many more hours in wage employment, think of moving elsewhere more frequently, and are more likely to aspire to participate in the wage economy only. In fact, more than one quarter of town residents responded in this manner. These results suggest that development may be occurring at a more rapid rate in these locations, and perhaps indicate a bifurcation in traditional ties and practices by place.

Related to this, perhaps the most important finding from SLiCA analyses and interviews presented here is the continued importance of Native tradition and culture in maintaining lifestyles rooted in the mixed economy regardless of place type or gender. Native ties are strongly associated with subsistence and work patterns, aspirations for a lifestyle consisting of both subsistence and wage work, and remaining in the community. Indeed, factors such as those included in analyses are important in gaining an understanding of the desire among a few to aspire to have a wage job without subsistence involvement, which factors are most strongly associated with greater levels of subsistence activity, and issues and characteristics providing an impetus for some to consider moving elsewhere.

What is central, however, is the desire among the vast majority of Iñupiat to continue hunting, fishing, harvesting, processing, preserving, and creating in a

traditional manner with the aid of modern equipment and methods, and the strength of associations between breadth of subsistence activity and past and current Native and traditional ties. Clearly, development in the region will continue to include subsistence practices. Although it is not known whether wage opportunities will increase (especially in smaller villages), it is important to recognize that subsistence instruction to young Natives is essential regardless of the economic climate.

Chapter 5 examined separate bivariate models for towns and villages and by gender. Chapter 6 presented results of multivariate analysis for the entire SLiCA sample with four full and reduced models for the dependent variables *subsist*, *hourswork*, *wantmove*, and *lifestyle*. This final chapter will interpret findings by each of these dependent variables, commencing with the number of subsistence activities reported by Iñupiat and Yup'ik in the previous year and followed by the number of hours worked per week in wage employment, thoughts of moving to another location, and aspirations for wage work or a combination of both wage employment and subsistence participation. Discussion of each independent variable will include overall findings from full and reduced models in Chapter 6, with more detailed discussion of town-village and male-female findings from Chapter 5. Subsequent to this discussion the relevance of non-significant findings from these models will be introduced. Finally, this dissertation will conclude with a brief discussion of relevant literature associated

with development and choice, limitations to the project, and thoughts on further study.

Summary of Findings

Subsistence Activity Overall, results confirm the strong relationship between gender and subsistence that has been documented in previous studies.

Additionally, the role of life satisfaction should not be discounted, with greater levels of overall life satisfaction associated with a greater variety of subsistence activities. As hypothesized, place type is associated with the range of activities. Iñupiat villagers tend to participate in a wider array of subsistence activities than their counterparts living in regional centers.

Perhaps most importantly, however, results of this examination of subsistence participation confirm hypothesized relationships between traditional skills and practices and subsistence participation. Findings indicate that teaching young Iñupiat and Yup'ik traditional skills is strongly associated with higher subsistence participation as viewed through the number of activities performed later in life. Furthermore, Native storytelling should continue to be included in traditional, informal (as well as formal) education due to its seeming importance in subsistence participation. The strength of the association between skills learned early on in life and later activity also points to a potential area of concern for Alaska Natives as young people may become less skilled at tasks

related to subsistence because of other educational demands and increasing technology, especially within regional centers (Kelley 1999).

Subsistence and Place. Results presented in Chapter 5 show that there are considerable differences in the number of subsistence activities reported in the previous year by place type. Almost twenty percent of village residents reported taking part in more than ten activities in the previous year, results which could indicate that in hub towns younger residents are more occupied with other tasks and activities. This may be cause for concern in these more populated places, as discussed above.

Subsistence and Gender. Overall, males tend to participate in a greater number of subsistence activities than females, with well over one quarter of males reporting participation in greater than ten activities in the previous year. Although results were not presented here, additional analysis indicates that males tend to participate in a wider range of subsistence activities when younger and females more likely to participate in more activities as they get older. These results may point to divergent levels of importance afforded to education by males and females, with males perhaps preferring to spend more time on a wider range of subsistence activities while females place more importance on education, all else being equal.

Wage Employment

Wage Employment and Place. Vast differences in wage work were seen by place type in Chapter 5, with half of town residents reporting engaging in full-time work in the previous week. Contrasting these results is the finding that more than one quarter of village residents reported that they did not work at all for wages in the previous week. Regarding wage-based work, youth and more years of formal education were linked to increased work hours in both towns and villages in previous analysis.

Wage Employment and Gender. Differences in the number of wage hours worked per week by males and females are apparent, although two groups of individuals emerge for both sexes—those who reported working zero hours in the previous week and those who reported working the equivalent of a full-time job. One again, it can be gleaned from models not shown younger males who possess a higher level of education appear more likely to work in full time employment than females—results which emerge despite the gathering of SLICA data during the winter months when fewer seasonal, characteristically male-dominated employment opportunities such as firefighting and construction work are available. This seems to provide evidence that males are more likely to engage in a higher number of wage employment hours if well-educated. All in all, these data create a portrait of younger, well-educated individuals who appear much more likely to engage in regular, full-time work.

Thoughts of Moving Strong findings emerged regarding local ties and community attitudes when the third dependent variable, asking individuals whether they had thought of moving elsewhere within the previous five years, is examined. The more satisfied respondents are with their community's actions toward resident safety and conflict avoidance, the less likely they are to consider moving elsewhere. Parental birthplace is also associated with thoughts on moving elsewhere in full and reduced models in Chapter 6. If an individual's parents were born in the same community in which that individual currently resides, he or she is less likely to want to move—establishing that ties to a place through kin matter. Although expected, these findings are an indication that perceived quality of one's community is an important part of the desire to want to leave one place in favor of another. Clearly, local ties through parental birthplace, life satisfaction, and community quality act as protective factors, decreasing the likelihood that Native residents of regional centers and villages will want to leave.

Relocation and place. There is a greater likelihood that those who reside in the regional centers of Nome, Barrow, and Kotzebue have thought of moving elsewhere within the past five years. In regional centers in particular, relationships between moving elsewhere and locality of parental birthplace and satisfaction with the job one's community is doing in ensuring safety and harmony are stronger than in smaller villages, perhaps pointing to the importance of local ties and community satisfaction in these places when

compared with villages where more Iñupiat and Yup'ik are more likely to remain (results not shown).

Relocation and Gender. Interestingly, thoughts of relocation did not differ by gender in bivariate analysis presented in Chapter 5 and only weak associations were found by gender in multivariate results. Females do appear to be more likely to have thought about relocating to another community; however for both males and females this amounted to less than half of the total sample.

Aspirations The variable most strongly related to aspirations for subsistence or wage work of those examined was the total number of traditional skills respondents reported learning as a child. More exposure to Native activities and skills associated with a desire for a subsistence-based lifestyle over one that includes only wage-based work, and suggest that traditional instruction to young people is paramount to continued high levels of subsistence participation in coming decades in the region. Good health is associated with desiring wage work and is likely a function of age. The percentage of individuals not working within a community is linked to desiring subsistence or mixed work, and may point to a way in which community characteristics shape attitudes. In places where fewer are working, namely villages, the intersubjective intentions of that place dictate that subsistence work is a choice, while wage work may not be.

Aspirations and place. Although results for lifestyle aspirations by place are very similar in towns and villages when controlling for other factors

described in this project, when these variables are not included in models significantly more town residents report desiring a lifestyle rooted in wage work. Overall, however, the vast majority of respondents in both towns and villages stated that they prefer to enjoy a lifestyle consisting of both wage and subsistence work. These results demonstrate the similarities existing in attitudes toward and practices in traditional activities and indicate the importance of ongoing exposure to traditional skills and practices.

Aspirations and gender. Lifestyle aspirations appear not to diverge when males and females are investigated separately—results present in both bivariate and multivariate analyses. However, in analyses completed that are not shown here, age appears to matter much more for females with youth associated with desiring wage employment among that group. These results confirm those hypothesized. What is surprising, however, is a lack of association between age and aspiration concerning males, and even the reversal in direction of this relationship when compared with females. As previous literature has also demonstrated, young Iñupiat women seem to view education in a more positive light than do young males. Likewise, women see regular, steady employment as beneficial and a symbol of success. Females in Native communities often look to other, professional females working in white-collar, year round jobs as mentors and role models, while males more often work seasonal jobs—providing young men with different types of role models.

Non-Significant Relationships Just as linear and logit regression models pointed to some strong associations between independent and dependent variables in this project, it is interesting to note that a number of variables hypothesized to have significant effects on dependent variables in fact demonstrated relationships which were weak, virtually non-existent, or trended in a direction opposite from that hypothesized. First, the demographic variables of marital status and health showed little association with dependent variables in full models presented in Chapter 6. Marriage was only strongly associated with one of the four dependent variables: the number of subsistence activities reported in the previous year. Likewise, self-reported health was also only significant in the reduced model presenting relationships between the number of subsistence activities performed and other factors (Table 6.1), and showed significance only in the full model for lifestyle aspirations (Table 6.4), although this relationship disappeared as that model was reduced.

Education level, household income, and locality of parental birthplace do not appear to be factors associated with subsistence participation or lifestyle choice—results that are quite surprising. Previous research has established a link between higher household income and greater subsistence participation (Wolfe 2004), and prior study has also found that a desire for education is associated, expectedly, with a desire for employment, especially among young females (Hamilton 1994). These results indicate that perhaps those who possess higher levels of education and reside in the region “settle in” to a lifestyle allowing for

both wage work and subsistence, and that those already having higher incomes do not aspire to have a lifestyle that differs from theirs currently. Likewise, variables associated with well-being, including levels of social support and life satisfaction, are not statistically linked to lifestyle aspirations or, for the most part, thoughts of moving elsewhere (Chapter 6).

Community characteristics including the percentage of residents in poverty, percentage not working, and population change do not, overall, have significant effects on dependent variables net other factors included in models. This, in conjunction with significant findings discussed above, indicates that exposure to activities and practices are greater determinants of aspirations and desires than characteristics of one's community.

Theoretical Viewpoints

A Native Conception of Development. Indigenous populations do not identify themselves through a non-Native lens, and as such should be recognized in this manner despite the inclusion of technological advances in everyday life (McMichael 2008). As Marino found in the Alaskan village of Shishmaref (2009), there are competing values and cultures at work within Native communities. Western conceptions of development are in conflict with indigenous lifeways. Economics, politics, the environment, and culture are not mutually exclusive and

cannot be untangled when examining development through subsistence and wage patterns and aspirations.

Instead, “local interpretations of development” (Pomponio 1992:192) are necessary for the maintenance of indigenous lifeways as they continue to be fixed within intersubjective intentions and to vary on individual and community levels. Amartya Sen (1999) constructs freedom as the ability to choose one’s fate. Similarly, Rampersad (2009) argues that the removal of opportunity and aspiration for Native populations in the Arctic and elsewhere to continue their livelihood in the way that they see fit is tantamount to the removal of choice. I argue based on findings presented that continued instruction on the value and methods associated with subsistence to young Native Inupiat and Yup’ik would have a positive effect on subsistence participation, as well as on the strength of Native ties. Interview data suggest that fissures may exist in levels of traditional practice depending on place and/or gender, and that the strength of traditional skills and knowledge may soon begin to decline among Inupiat and Yup’ik as young people elect to spend more time with technology. Likewise, information provided through interviews also points to the potential for a lack of traditional skills education on the part of parents to children as intersubjective intentions and structures change and shift, although this cannot be concluded based on data presented here.

Limitations

There are a number of limitations to this project. First, difficulty in capturing the habits, desires, or aspirations of all individuals through survey analysis must be acknowledged. Many Iñupiat and Yup'ik move frequently, for example, relocating from a village to a regional center and back again as employment, family, kin, and other factors dictate. Additionally, limited employment opportunities and the irregular nature of many jobs in the region, in conjunction with the gathering of SLiCA data in the winter months, may have resulted in imprecision in wage hours reported by respondents and reflects the difficulty in capturing accurate employment figures. Additionally, aspirations are, by nature, fluid and change over time and based on circumstance, thus making inference difficult.

Furthermore, data do not allow for networks consisting of individual roles to be established within family and kin groups, and the number of subsistence activities reported in the previous year on an individual level should not be mistaken as a measure of total subsistence participation. *Superproducer* families, for example, will often be comprised of one or more skilled hunters with others supporting their efforts through wage employment, preparation of equipment or supplies, the processing of harvests, or a combination of these. Such networks, both within and between family groups, are vital to continued subsistence practices in the region (Magdanz 2002) and should be recognized as such.

Next, the size of the interview sample does not lend itself to generalization and synthesis with SLiCA data, although it is intended that further study in the region will result in an interview sample of more considerable size. Themes emerging from interviews, however, largely mirror those established by SLiCA and generally support quantitative findings, indicating that interviews are a valuable tool for further study. Additionally, it is important to establish that correlations presented between demographic, cultural, social, economic, and community factors and dependent variables associated with work and subsistence patterns and desires and aspirations do not necessarily represent causal relationships, and it cannot be determined from results whether causality is embedded within findings.

Finally, the impact of environmental change on the social and cultural landscape of Iñupiaq and Yup'ik life is beyond the scope of this project and therefore not a limitation in the strictest sense, but nonetheless must be acknowledged. The ability of Alaska Natives to develop and use toolkits necessary to successfully adapt to an increasingly altered landscape will prove challenging, and with environmental degradation linked to cultural harm (Rampersad 2009), will be progressively more crucial. In speaking with Natives, however, one gets the sense that Iñupiat and Yup'ik feel that a changed landscape is inevitable and utterly out of their control. As one Native Corporation official interviewed for this project remarked regarding

environmental change, “[w]e don’t really pay attention to that. We’re too busy trying to get food to the table.”

Future Study

Further study in the region will more deeply explore issues related to choice and aspirations through interviews with Alaska Natives living in Northwest Alaska. Interviews and other data collection should also be expanded to capture Iñupiat (as well as Yup’ik) who have relocated to larger urban centers such as Fairbanks and Anchorage in order to investigate how aspirations for wage employment shape decision making and what role subsistence has in more urban surroundings. For those who have moved to an area far from the North Slope, Northwest Arctic, or Bering Straits regions, for example: are subsistence needs and wants filled by family members and other kin remaining in Native villages? Is there desire among relocated individuals to someday return to home villages in order to reconnect with traditional practices and lifeways? Finally, what is the level of concern among parents and other family members for Native children being reared in areas where subsistence cannot be practiced or taught regularly, as it likely would be in Iñupiaq and Yup’ik villages?

Concluding Remarks

Native ties through language, storytelling, and traditional activities learned as a child establish a strong link between these types of ties and a traditional lifestyle. First, more sophisticated Native language abilities are associated with *not* thinking of moving elsewhere. Second, strong, positive associations were found between both participation in Native storytelling and the number of traditional skills learned as a child and the number of subsistence activities respondents reported in the previous year. Finally, local ties measured through increasing political knowledge are associated with increased wage work hours.

Learning more traditional skills as a child appears to act as a protective factor for subsistence participation as an adult—more skills learned as a child not only equates to participation in significantly more activities later in life, but also to increased aspirations for subsistence in the future. In general, these findings remain significant when data is examined across regional centers and villages and when examining male and female groups individually. Results dovetail those of previous research showing that *superproducer* families within communities harvest and produce proportionally large amounts of wild food that they then share with others (Wolfe 2004) and suggest that these qualities within certain families *themselves* likely reproduce, in effect, to continue traditions of “*superproducing*” and food sharing within communities. This evidence points to

the importance of instruction of traditional skills and activities to Native youth in order to establish a foundation of subsistence in future generations.

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APPENDICES

Appendix A. Description of village life, community resources, and available opportunities as presented on Kivalina's village website (<http://www.kivalinacity.com/>).

An estimated 66 adults that were born and raised in Kivalina have moved away but with their children, it totals to 110. There are 11 who are incarcerated but return to Kivalina when they are released. Only 58 adults have regular year-round jobs of which 10 are employed by Red Dog. There are 106 structures in Kivalina with 86 being residential housing units. Not listed are uninhabitable structures [sic] that are still standing.

There are no hotels, restaurants, movie theatres, or recreation centers. The only public facilities are as follows: City Office/Tribal Office, US Post Office, Episcopal Church, Friends Church, bingo hall, clinic, washeteria, school, general store owned by ANICA, Inc., AVEC electric power plant, heavy equipment building, airport building, and an armory building. Visitors coming into Kivalina should call the City or Tribal Office for accommodations when staying more then [sic] a day. Generally, most are placed in the school where accommodations include flush toilets and showers.

The only form of entertainment for the adult age people is bingo and evening gym nights for the athletic ones. Entertainment for the school aged children are [sic] evening gym nights and on occasion, a movie sponsored by the McQueen School student council at the gymnasium. On a rare occasion, there will be a dance for the school age and young adult, which is self-sponsored by a responsible adult or two. For the non-athletic or non-bingo players, entertainment is staying at home doing their own thing. There is a new medium for entertainment - Inupiaq dance practice every other night.

Thanks to the Northwest Arctic Borough, the Village Police Office was funded in 2010. There was a position open for Village Protection Safety Officer but it remains open. After the discontinuation of Revenue Sharing, law enforcement became non-existent, although there is a position available under the State Troopers program; Village Police Safety Officer. Because of lack of housing and water and sewer, the two applicants chose not to accept the job so that position remains open.

Kivalina has two water tanks that provide water for it's [sic] residents. In the middle of town are two huge holding tanks that hold 500,000 and 670,000 gallons of water. That is the only source of drinking water for almost all the residents. They are refilled annually in the summer time between July and August. Those that can afford it choose not to drink the water because of the Teck Cominco's Red Dog Mines discharge into the Wulik River. Their personal choice of drinking water comes from the Kivalina River or during the fall season gather rain water in August. There is no water and sewer service in the residential housing units. The water services provided by the City of Kivalina is too small and cannot carry such a huge load.

Appendix B. Histograms of independent SLiCA variables age and income prior to transformation

Figure A.1.

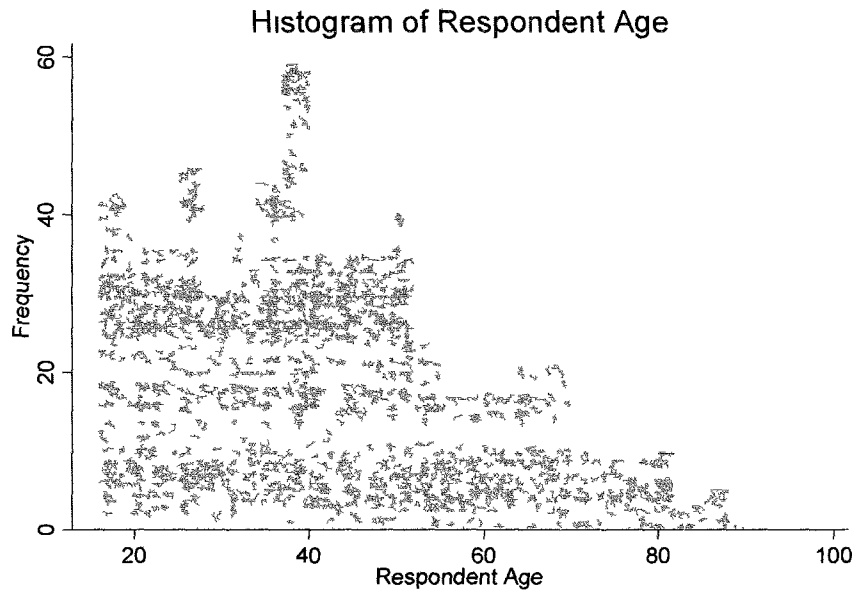
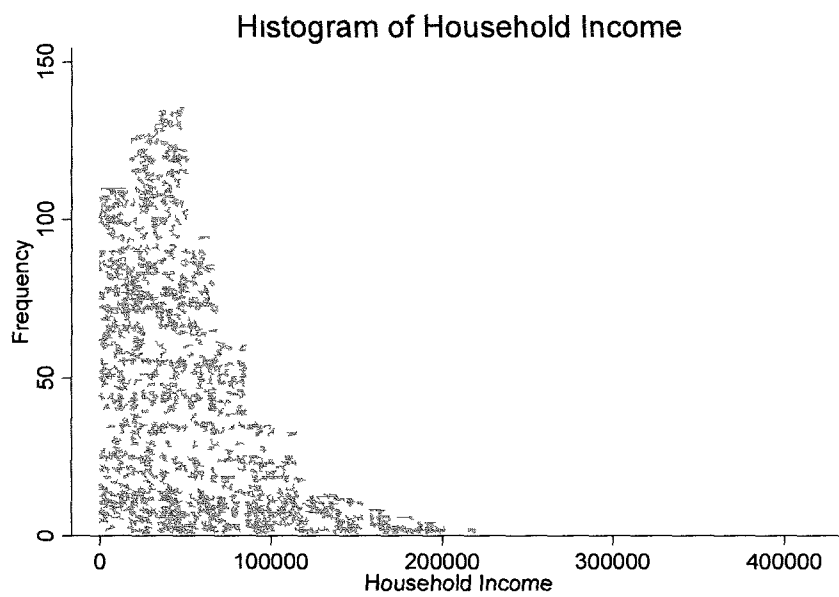


Figure A.2.



Appendix C. Core Iñupiaq Values:

1. Respect for others
2. Knowledge of language
3. Sharing
4. Cooperation
5. Respect for elders
6. Avoid conflict
7. Humor
8. Domestic skills
9. Responsibility to tribe
10. Humility
11. Hard work
12. Respect for nature
13. Family roles
14. Spirituality
15. Hunter success
16. Love for children
17. Knowledge of family tree

Appendix D. Results for mixed effects models for four dependent variables of focus—number of subsistence activities reported and number of wage hours worked

```
. xtmixed subsist rwoman rmarry health3 hhinc story2 politics tradeduc2 lifsatis
safety plctype || region:
```

Performing EM optimization:

Performing gradient-based optimization:

```
Iteration 0: log restricted-likelihood = -1483.7792
Iteration 1: log restricted-likelihood = -1483.7792
```

Computing standard errors:

```
Mixed-effects REML regression          Number of obs      =      580
Group variable: region                 Number of groups   =       3
```

```
Obs per group: min =      175
                avg  =     193.3
                max  =      223
```

```
Log restricted-likelihood = -1483.7792      Wald chi2(10)      =     398.23
                                           Prob > chi2       =     0.0000
```

subsist	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
rwoman	-1.981949	.2777175	-7.14	0.000	-2.526265	-1.437632
rmarry	.7881801	.2859533	2.76	0.006	.2277219	1.348638
health3	.4729831	.1742245	2.71	0.007	.1315094	.8144568
hhinc	.482991	.2798362	1.73	0.084	-.0654779	1.03146
story2	1.293523	.2788223	4.64	0.000	.7470408	1.840004
politics	.4390536	.1629246	2.69	0.007	.1197273	.7583798
tradeduc2	2.022903	.2114464	9.57	0.000	1.608475	2.43733
lifsatis	.4471471	.1686428	2.65	0.008	.1166133	.7776809
safety	-.2620745	.1096069	-2.39	0.017	-.4769	-.0472489
plctype	-1.057306	.2747147	-3.85	0.000	-1.595737	-.5188748
_cons	-1.426759	1.025578	-1.39	0.164	-3.436855	.5833361

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
region: Identity				
sd(_cons)	.2390094	.2297792	.036315	1.573056
sd(Residual)	3.108602	.0923104	2.932841	3.294896

```
LR test vs. linear regression: chibar2(01) = 0.70 Prob >= chibar2 = 0.2019
```

```
. xtmixed hourswork rwoman a7a educ hhinc politics alcprobcom plctype
percnwork || region:
```

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log restricted-likelihood = -2524.0019

Iteration 1: log restricted-likelihood = -2524.0019

Computing standard errors:

```
Mixed-effects REML regression          Number of obs      =      585
Group variable: region                  Number of groups   =         3

Obs per group: min =         177
                  avg =        195.0
                  max =         228
```

```
Log restricted-likelihood = -2524.0019      Wald chi2(8)       =      188.02
                                           Prob > chi2       =      0.0000
```

hourswork	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
rwoman	-6.497176	1.567509	-4.14	0.000	-9.569437	-3.424916
a7a	-.3407328	.0487928	-6.98	0.000	-.4363649	-.2451008
educlev	6.655269	.9880738	6.74	0.000	4.71868	8.591858
hhinc	5.104294	1.623316	3.14	0.002	1.922653	8.285935
politics	3.089059	.9574073	3.23	0.001	1.212575	4.965543
alcprobcom	-5.149644	2.288348	-2.25	0.024	-9.634723	-.6645653
plctype	-5.227846	2.537901	-2.06	0.039	-10.20204	-.2536507
percnwork	-.3963471	.1232888	-3.21	0.001	-.6379887	-.1547055
_cons	52.11456	7.363129	7.08	0.000	37.68309	66.54602

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
region: Identity				
sd(_cons)	1.684193	1.484877	.2991755	9.481077
sd(Residual)	18.35648	.5417888	17.32472	19.44968

LR test vs. linear regression: chibar2(01) = 0.99 Prob >= chibar2 = 0.1600

University of New Hampshire

Research Integrity Services, Office of Sponsored Research
Service Building, 51 College Road, Durham, NH 03824-3585
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30-Apr-2009

Seabury, Catherine
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Newbury, NH 03255

IRB #: 4578

Study: Making the Choice for Wages: Inupiat and the Mixed Economy

Approval Date: 30-Apr-2009

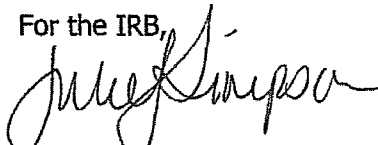
The Institutional Review Board for the Protection of Human Subjects in Research (IRB) has reviewed and approved the protocol for your study as Exempt as described in Title 45, Code of Federal Regulations (CFR), Part 46, Subsection 101(b). Approval is granted to conduct your study as described in your protocol.

Researchers who conduct studies involving human subjects have responsibilities as outlined in the attached document, *Responsibilities of Directors of Research Studies Involving Human Subjects*. (This document is also available at <http://www.unh.edu/osr/compliance/irb.html>.) Please read this document carefully before commencing your work involving human subjects.

Upon completion of your study, please complete the enclosed Exempt Study Final Report form and return it to this office along with a report of your findings.

If you have questions or concerns about your study or this approval, please feel free to contact me at 603-862-2003 or Julie.simpson@unh.edu. Please refer to the IRB # above in all correspondence related to this study. The IRB wishes you success with your research.

For the IRB,



Julie F. Simpson
Manager

cc: File
Hamilton, Lawrence

University of New Hampshire

Research Integrity Services, Office of Sponsored Research
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09-Sep-2009

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IRB #: 4578

Study: Making the Choice for Wages: Inupiat and the Mixed Economy

Approval Expiration Date:

Modification Approval Date: 01-Sep-2009

Modification: Addition of interviews with up to 20 Inupiat adults

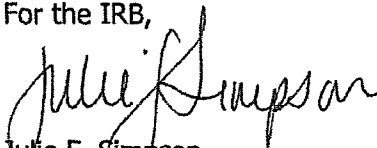
The Institutional Review Board for the Protection of Human Subjects in Research (IRB) has reviewed and approved your modification to this study, as indicated above. Further changes in your study must be submitted to the IRB for review and approval prior to implementation.

Approval for this protocol expires on the date indicated above. At the end of the approval period you will be asked to submit a report with regard to the involvement of human subjects in this study. If your study is still active, you may request an extension of IRB approval.

Researchers who conduct studies involving human subjects have responsibilities as outlined in the document, *Responsibilities of Directors of Research Studies Involving Human Subjects*. This document is available at <http://www.unh.edu/osr/compliance/irb.html> or from me.

If you have questions or concerns about your study or this approval, please feel free to contact me at 603-862-2003 or Julie.simpson@unh.edu. Please refer to the IRB # above in all correspondence related to this study. The IRB wishes you success with your research.

For the IRB,



Julie F. Simpson
Manager

cc: File
Hamilton, Lawrence

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02-Sep-2010

Seabury, Catherine
Sociology, Horton SSC
51 Hearthstone Road
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IRB #: 4578

Study: Making the Choice for Wages: Inupiat and the Mixed Economy

Review Level: Expedited

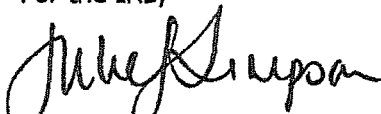
Approval Expiration Date: 01-Sep-2011

The Institutional Review Board for the Protection of Human Subjects in Research (IRB) has reviewed and approved your request for time extension for this study. Approval for this study expires on the date indicated above. At the end of the approval period you will be asked to submit a report with regard to the involvement of human subjects. If your study is still active, you may apply for extension of IRB approval through this office.

Researchers who conduct studies involving human subjects have responsibilities as outlined in the document, *Responsibilities of Directors of Research Studies Involving Human Subjects*. This document is available at <http://www.unh.edu/osr/compliance/irb.html> or from me.

If you have questions or concerns about your study or this approval, please feel free to contact me at 603-862-2003 or Julie.simpson@unh.edu. Please refer to the IRB # above in all correspondence related to this study. The IRB wishes you success with your research.

For the IRB,



Julie F. Simpson
Manager

cc: File
Hamilton, Lawrence