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Environmental Sustainability: Jacksonville vs. Navajo Nation

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Abstract

This project investigated the relationship between environmental sustainability and cultural beliefs in two very different American societies. In particular, we compared how citizens of contemporary Jacksonville, FL view and exploit the environment in comparison with environmental utilization of the Native Americans in Navajo Nation, which spans across the states of AZ, NM, and UT. This evaluation entailed conducting surveys of individuals in both populations, as well as an aspect of cultural immersion in which we lived amongst the Navajo for approximately three to four weeks during the summer of 2005. Immersion allowed us to participate in the Navajo way of life and enhanced our understanding of their culture through experience. Conducting surveys of individuals in both populations allowed us to collect demographic and economic data, as well as data that pertained to individual resource use and opinions of the environment and/or related environmental issues.

Prologue

With the advent of air-conditioning and heating, running water and large corporate grocery stores stocked with shelf-after-shelf of readily available food supplies, the average American is almost completely removed from the natural world. As a society,

we spend the majority of our time indoors or using transportation devices. We experience the difference between summer and winter in terms of the price of our electric bills. We can tell rain from shine when the internet, television, or Nintendo game cuts off because the stormy weather disrupts our electricity.

Technology fosters an “instant gratification” lifestyle and is speeding up the pace of society to alarming rates. We can now wake up in the morning to an alarm from our cell phone, a device that also allows us to make phone calls across the country while we drive to the airport. After a twelve-hour overseas flight, we can make our way to a business conference with fifteen other individuals from different parts of the globe that all followed a similar schedule that morning. Before we retire for the evening, we can stop at an “internet café” which allows us to email the other side of the world, check our bank accounts, and make online transactions. In addition, we can now use satellite cameras on the internet to view images as broad as foreign investment lands or as specific as a household residence.

Perhaps our quick-paced society explains why we tend to be so wrapped up in a tangle of memories and future plans that hinder us from taking notice of what is going on right around us. When you look around, what do you see? Last spring at the University of North Florida (UNF) we (Rachel Freeman and Jessica Rockwood) saw empty recycle bins next to trash cans full of plastic bottles and aluminum cans at one end of campus, and full recycle bins that needed emptying to ensure room for further recycling at the other end of campus. We saw candy bar wrappers and cigarette butts infesting the nooks and crannies of campus walls and the outdoor gardens. Our observation of this general lack of concern for our local campus environment caused us to question whether we live in a world where not many people concern themselves with the natural environment. Further, how often do those who are concerned choose to put their thoughts and beliefs into action?

As concerned students and inhabitants

of the earth, we wanted to do more than complain about over-crowded recycle bins in the dorm parking lots or litter that covered the ground and our campus lakes – which are an important home and place of refuge for various turtles, fish, raccoons, snakes, and birds, including the Canadian geese that migrate south to our campus during their spring mating season. We wanted to be proactive about our concerns, but how? The first thing we asked was, “why?” Why doesn’t the Physical Facilities Department purchase more recycling bins to help facilitate the recycling process? Why do people find it necessary to dispose of cigarette butts and candy wrappers on the ground? Why don’t people just wait for the next waste basket? Is it laziness? If so, why are people so lazy? The more questions we asked, the larger the picture seemed... Why do many of us spend so much time indoors? Why do many of us complain about the heat of the summer? And then when the season changes, why do many of us complain about the bitter-coldness of the winter?

Our questions continually led us back to the belief that living in a technology-dependent society and being removed from our natural environment results in a lack of environmental concern because we are not directly affected by it. The further we remove ourselves, the more foreign the natural world becomes. And like many foreign things, we do not develop the capacity to respect or understand them because we spend too much time complaining about or judging them.

The Project

William Clark, professor of International Science as well as Public Policy and Human Development at Harvard University’s Kennedy School of Government wrote an article in 2001 that addressed America’s interest in promoting a transition to sustainability. He opens the article with this claim:

Among the greatest challenges facing humanity at the dawn of the 21st century is learning how to

better meet human needs while restoring and nurturing the planet’s life support systems. Advances in individual sectors of human development, such as food, health, water, and energy, are surely important, as is progress in addressing individual environmental problems, such as the loss of biodiversity and climate warming. The proposition advanced here is that these individual problems are more accurately and helpfully viewed as multiple dimensions of an increasingly interdependent and global relationship between society and environment--a relationship that has been captured in the phrase "sustainable development." It is not the individual problems alone but rather their interactions that pose the greatest threats and opportunities for the 21st century. If humanity is to meet these challenges and move forward in a transition toward sustainability, it will need to craft a vision of the future that encompasses the multiple interactions among the multiple dimensions of development and environment as well as a strategy for action that addresses those interactions. (Clark. 2001:18-27).

To accompany the concept of sustainable development, “environmental sustainability” is defined as a process “in which land utilization does not result in continued degradation of natural habitat and loss of renewable resources” (Lincoln et al. 2001:361). The concept of environmental sustainability relates to this project because one of our primary goals was to find a way to rekindle the relationship between humans and the natural environment. Bridging the gap between anthropology and environmentalism, this ethnological study compares the

“Western” population of Jacksonville, FL with the “Native” population of the Navajo Nation, Arizona/New Mexico/Utah. Furthermore, this study investigates the concept of environmental sustainability as it pertains to the relationship between cultural beliefs and daily actions.

We determined that the best way to carry out our research was through participant observation and cultural immersion in a setting where we believed the people respected the earth and knew how to live “with” it - which implies unity - rather than simply living “on” it – which implies separation. For as long as we could remember, history classes taught us about the American Indian peoples that respected the earth and integrated all aspects of the natural world into their way of life. We decided to use Native Americans, Navajos specifically, as our model culture from which we could learn and grow. We chose to study the Indians of Navajo Nation because they make up the largest remaining Indian reservation in the United States. Spanning across the states of Arizona, New Mexico, and Utah, Navajo Nation covers over 27,000 square miles of land (American Fact Finder 1). According to census data from 2000, the Navajo are ranked as the largest Native American population with over 250,000 individuals in the United States (American Fact Finder 1). Further, the Navajo are a sovereign nation with their own government and laws. The significance of their sovereignty implies that they have enough freedom and responsibility to dictate their lifestyles for themselves rather than abiding by a lifestyle completely created by the United States government.

Traveling to the Navajo Nation, we used both qualitative and quantitative measures to study the Navajo culture in its natural context and observe how the Navajos demonstrate respect for the natural world. Lillie Lane, Public Information Officer of the Navajo Nation Environmental Protection Agency (NNEPA), became our primary contact and host on the reservation. She taught us our first Navajo words and guided us in how to immerse ourselves in the culture

while we were on the reservation. Further still, she provided us with a framework and agenda of various events in which we could participate, and coordinated families with whom we could stay. Supplementing our qualitative immersion, we also developed a means of quantitatively evaluating the culture through a survey with basic questions pertaining to how people utilize the environment in which they live. We included questions pertaining to schooling, income, and religion due to the influence these factors have on people’s views and use of the environment. The final survey was three pages in length, with an additional page of questions that specifically pertained to Navajo culture.

Navajo Background

To understand the lives of Navajo people of today, it is important to understand where they came from - their history. To refrain from diverging too far into Navajo history, however, we narrowed our concentration to events that pertain more specifically to the topic of our research.

Raids were one aspect of an ongoing form of warfare that existed long before Anglo settlers invaded Navajo territory. Seeking food, women, slaves, and property, the Navajo raided the Pueblo Indians, the Spanish colonists who controlled Mexico, and the Mexicans after they declared independence from Spain (Pritzker. 2000:51-56). Thus, it is no surprise that Navajo raids continued when the Anglos settled Navajo land in 1848 after the United States acquired much of the Southwest from Mexico. The only difference in this situation was that U.S. government officials promised to protect Anglo settlers and New Mexicans from these raids (White. 1983:214). What the officials failed to address, however, was the fact that these raids were driven by the Navajos desire to recover their own people, who were captured as slaves for Anglo slave traders.

By 1863, the intensity of the raids and hostilities resulted in the hiring of Kit Carson, who was appointed to relocate the Navajos to

Fort Sumner in east-central New Mexico. Carson's tactics used pre-existing rivalries between Navajos and the Hopis, Mexicans, Pueblos, Utes, and Zunis to take care of most of the killing. After many of the Navajo were killed by tribal attacks, Carson and his men used a policy of scorching the earth to obliterate Navajo morale. By the end of 1864, lack of resources, low morale, and harsh winter weather culminated in the surrender of roughly 8,000 Navajo (Griffin-Pierce. 2000:322).

Similar to the 1833 Cherokee "Trail of Tears," the *Long Walk* was a 250-mile march that Carson and his men forced upon the Navajo. Extending from Fort Defiance, Arizona to Fort Sumner, New Mexico, the Navajo recall this walk as their "entrance into captivity," and refer to it as *Hweeldi*, meaning "hardship or despair" (Navajo Nation Museum 2005). During the walk stragglers were shot and killed, and children were stolen by slave traders; those who endured until they reached Bosque Redondo found themselves captive in a camp that Navajos today relate to the Jewish concentration camps of the Holocaust. Bosque Redondo was intended to serve as a relocation area for the Navajo (and other Apache Indians) – a place where Kit Carson and his troops could "tame the savages." The plan, however, turned into a disaster because the number of Navajos that needed "taming" was clearly underestimated. Due to rampant diseases for which people had no immunity and the lack of food and supplies, one fourth of the Navajos died within the first two to three months of captivation.

After living in hardship and despair for four years at Bosque Redondo, the Navajo were compliant with the rules and regulations required for any hope of release. Thus, when government officials finally decided to make a treaty and release the Navajo, the Navajo accepted a reservation area that was only a fraction of the size of their original territory. In addition, the treaty mandated that the U.S. government would appoint their chief leader, which took away from Navajo independence and forced them under U.S. control (Pritzker.

2000: 52). From this point in history to the present, the Navajos' new way of life required that they adapt themselves to the lifestyles of Anglo settlers. Navajos needed to conform their culture to fit in with the establishment of trading posts. Consequently, survival for the Navajo meant assimilation. They began weaving rugs for tourists and sending their children to U.S. boarding schools set up by an influx of Christian missionaries (Stone. 2006:130).

The importance of understanding this brief introduction into Navajo history relates to the topic of our research because these events had profound impacts on Navajo psyche and thus their culture. Stories about Navajo treatment at boarding schools revealed the ethnocide that Navajos experienced as their culture and language were literally beaten out of them. One topic that surfaced repeatedly during our interviews and conversations was that the Navajo language was not valued enough to satisfy the foreign language requirement at these boarding schools. Further, Navajos were beaten and punished for merely speaking their language. Just as electrical energy can be converted into mechanical energy in physics, the physical abuse endured by the Navajos transformed into mental abuse by sending messages that their "savage" way of life was inferior to the lifestyle of the Anglo settlers. As the Navajos were forced to adapt to the Anglo (Western) way of life, less significance was placed on their traditional "Navajo Way" - which describes all things as being interrelated and sacred; the "Navajo Way" places great importance on the concept of being grounded to the earth and maintaining harmony in and with life (Pritzker. 2000:53). In general, these events from the Navajos history help explain where their culture stands today because they mark the beginning of a "trickle-down" acculturation of the Navajo traditions through the generations.

Methods: Quantitative

Survey

We developed an ad-hoc survey (See Appendix for a copy of the survey), which was completed by individuals throughout the Navajo Nation (Arizona, Utah, and New Mexico) and Jacksonville, Florida to gain a better understanding of the two cultures' views and utilization of the environment. The three page survey is comprised of 28 questions with an additional page for the Navajo Nation that contain 15 additional questions. The questions for the Navajo pertain to their cultural beliefs and practices.

Following the Institutional Review Board guidelines which "promote the discussion of ethical, regulatory and policy concerns with human subjects research" (IRB Forum 2005), a small informational paragraph is included at the top of the survey explaining background information about the project as well as project goals. Several sentences follow addressing human consent by explaining the rights of the subjects, including confidentiality, voluntary participation, and the right to refuse to answer any of the questions on the survey.

The format of the questions varies, requiring various types of answering methods. Some questions require structured responses while others ask for further explanation. There are questions that require the individual to choose a response from a series of categories, such as "Please circle the length of time you have resided on a reservation? *0-4 years, 5-9 years, 10-14 years, 15-19 years, 20 or more years.*" Other questions ask the individual to rate his or her response on a given scale:

For the following statements, rate according to the given scale:

*1- Strongly Agree 2- Agree 3- Neutral
4- Disagree 5- Strongly Disagree*

a. I place great importance on the environment. ____

An additional question format asks for the individual to give an estimated number, "How much gasoline, in gallons, would you say your household uses per vehicle per month?"

At the conclusion of the survey, a few sentences were written thanking the subject for contributing to the project.

Participants

Navajo Nation

During June and July of 2005, we traveled to various parts of the Navajo Nation conducting surveys. The Navajo Nation reservation stretches into three states (Arizona, New Mexico, and Utah) covering over 27,000 square miles with a total of over 250,000 inhabitants. To reach our goal of surveying 100 individuals, we traveled to various distant cities throughout the reservation. The location in each city where we sought volunteers and the approach method used to administer surveys varied from place to place. We conducted surveys at "Just Move It!" events, which are community walk/runs promoting healthy lifestyles; flea markets, chapter houses, a quilting class, area businesses, the Navajo Nation Environmental Protection Agency; the Navajo Museum, Library, and Visitor's Center; a Navajo Nation Council meeting, and other various places throughout the reservation. To gain a broader understanding of the culture and increase the variety of the population, surveys were also administered off the reservation.

Depending on the location, the method used to gain volunteers varied. In public locations, such as "Just Move It!" events and flea markets, we were in contact with hundreds of people. For this reason, we set up a table of the following items: a poster we designed with an environmental awareness illustration and the words University of North Florida written around it, ten clipboards with surveys and pens attached, and incentives for those who completed a survey such as fruit, candy, and University of North Florida items (cups, beach balls, pom-poms, pens, and pencils). In locations such as office buildings and businesses where there were fewer people

and the environment was less public, we approached the individuals and asked for their assistance in our research.

In both locations, public and private, we approached the individuals the same. We introduced ourselves, gave a brief description of the project, and then asked for their participation in the survey. Upon agreement we told the individuals to read through the opening paragraph then proceed to answer the questions. After each individual completed the survey, we placed an "F" at the top of the survey for female and an "M" for male, depending on the sex of the person.

We surveyed a total number of 98 individuals. Navajo of all ages from various locations with different education levels, religious beliefs, and traditional strengths took part in the study. Most of the individuals spoke Navajo and could easily read, understand, and complete the surveys; others, however, required special attention due to the inability to read or the inability to speak English. In these special cases, we conducted the surveys orally and recorded the responses ourselves or we used a translator.

Surveys with the majority of the questions incomplete were excluded from the population. Most of the surveys that were regarded as incomplete were due to the following complications: the person filling out the survey was too young to have knowledge of the majority of the questions, the person filling out the survey thought the questionnaire was too lengthy and too time consuming, or the person filling out the survey did not understand the majority of the questions. A total of 11 surveys were excluded which brought the population size down to 87.

Jacksonville

We surveyed a total number of 68 individuals who were randomly selected to represent the city of Jacksonville. The polling locations included a flea market, college campuses, and local businesses and homes. At the flea market we set up a table with our poster, several clipboards with surveys

attached, as well as candy and UNF items as incentives. We approached the individuals the same way as we did in the Navajo Nation: introduced ourselves, briefly described the project, and asked for their participation in the survey.

All surveys were completed therefore no surveys were excluded from the population. The population size remained at 68 people.

Statistical Analyzation of the Survey

After collecting the data we began to analyze the surveys. We first created a number code for each response to every question for easier data analysis. This was converted into an Excel spreadsheet format. We then created two additional spreadsheets for both populations. Next, we assigned a number to each survey starting with the number one. Survey by survey, we input the responses from each questionnaire into the corresponding Excel spreadsheet using the created code. After all the coding was completed and the spreadsheets finalized, we sent them to our faculty sponsors, Brad Biglow and Anthony Rossi, for statistical and graphical analysis. Brad Biglow created statistics from the spreadsheets for each population using SPSS version 13.0 (SPSS Inc. 2004). Anthony Rossi used these data tables to then create graphs to display our findings. Rossi used SigmaPlot 9 (Systat Software Inc. 2005) to create these graphs. For parametric (age, number per household, etc.) results the following tests were performed: t-tests, ANOVA, and linear regression. For nonparametric (type of education, religious affiliation, etc.) results, a chi-square test was performed. The surveys for each population were now fully converted into numerical values and visual data sets which aided in determining the results of the study.

Methods: Qualitative
Cultural Immersion and Participant
Observation

We have been acculturated into the Western world since we were born. Our immersion has progressed from our first day in kindergarten to our present day at a state university. Through this cultural immersion, we have been taught ways of the Western world through language, food, literature, education, beliefs, and lifestyles, which all aid in our further understanding of this culture. We have been taught such things from an American perspective. We, in reference to the average American, read left to right, have food readily available, are brought up in education, and have explicit freedoms equal amongst us all, such as the freedom of speech, the freedom of the press, and the right to bear arms. All of these things, being a part of our culture, foster our mode of thinking and ultimately how we choose to live our lives. Cultural immersion in Westernized society is something lived, thus we have gained an understanding of this way of life.

One of the primary methods that followed throughout the project was immersion amongst the Navajo in order to learn and try to understand *their* culture. We wanted to see their way of life and observe their connection with the earth. We flew from Jacksonville, Florida to Albuquerque, New Mexico. There we met Lillie's son and his friend who took us to Window Rock, Arizona, the capital of the reservation and our home base. The car ride to Window Rock was approximately three hours. During this time we began our first observations of the people, landscape, and culture. We asked question after question and received many answers about the history of the Navajo and the Navajo culture in general. Observing the scenery was one of our methods although, perhaps, not initially thought to be one. To see the difference in the way the earth looks and feels gives insight to how one would react to it. We observed the natural beauty as well as much human disaster such as litter and coal mining plants. Only a few hours into our

experience amongst the Navajo people, we were receiving information at an exponential rate. All we could do was write as much as we could down and try to keep up.

Our immersion into the culture took many forms. One method was to live with several families of different income levels throughout various parts of the reservation. A few of these families resided off the reservation, but were still Navajo. Some of the families we stayed with lived in a typical home in a typical surrounding community equipped with television, running water, electricity, etc. Others, however, lived in remote areas with no running water. Some had livestock while others did not. Some had a home built of bricks and stucco while others' homes were constructed of scrap wood and various materials. Being able to live with several families of all different incomes and strength of tradition helped us further understand Navajo cultural diversity.

Talking with people of all ages from all walks of life was another way we immersed ourselves into the culture. We would have conversations that lasted from five minutes to three hours on any topic from how the Navajo view the earth to how Navajo traditions are being lost. These conversations would take place in people's homes, chapter houses, flea markets, libraries, museums, or wherever else we were led. We were able to speak with individuals who considered themselves traditional as well as those who did not; those who spoke Navajo; those who did not; those of a young age and those comprising the elder generation. We spoke to people who held many different occupations, beliefs, and views on the environment. Gaining firsthand accounts of the Navajo people, therefore, was vital to our research.

Immersion into the culture was an umbrella for our learning. Because we were on the reservation for the majority of our trip, this immersion took place in any method available to gain understanding. We were introduced to the Navajo Nation Environmental Protection Agency (NNEPA) and spent much of our time there while in Window Rock. NNEPA workers from Soil,

Water Quality, Air Control, and more were among our primary contacts while on the reservation. We were able to build working relationships with them while gaining valuable information on environmental conditions and challenges on the reservation. Priceless personal relationships were also developed, which in return helped us understand their culture and way of life on an individual level. With the EPA we took part in several activities as observers and participants; for example, we went on an 18-mile hike with Water Quality to test the abundance of water in Canyon de Chelly; we attended a fair at Monument Valley with Pesticide Control; and we attended a meeting for the proposal of a new coal mine on the reservation.

Cultural immersion can be overwhelming. A plethora of information is being projected at you from all angles and in so many different ways. You cannot escape it because you are *immersed* in it; and you cannot remember it all because when you try to, new information presents itself. Immersion without contemplation and analysis is useless. We knew this and therefore both of us kept a journal. We initially started by having two journals, one for a personal experience and the other for more factual information on the Navajo. Within the first few days, we found these two could not be separated because the two were intertwined. As we studied the culture and the people, the information we

received poured into us personally. Two journals of our separate, yet identical, experiences were created, and thus, our immersion flourished.

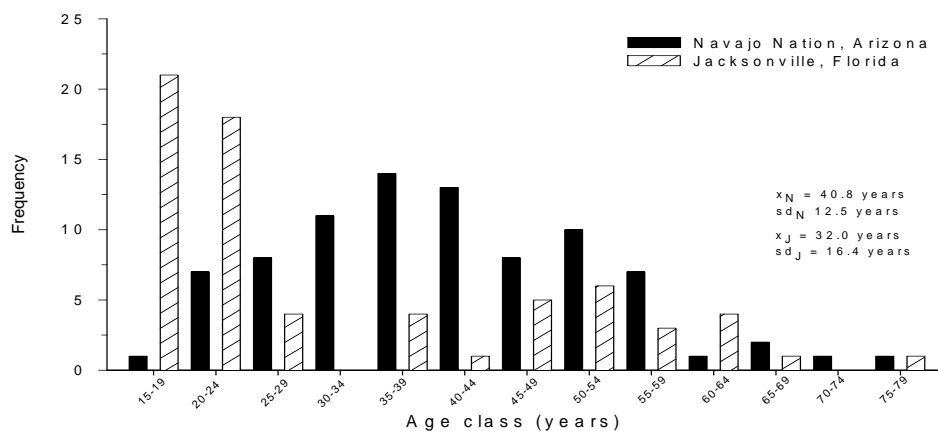
Results

For spatial reasons, graphs read “Navajo Nation, Arizona” not Navajo Nation, Arizona, Utah, and New Mexico.

Age

Comparing the age distribution across the two populations, the age of Jacksonville respondents is significantly lower than that of Navajo Nation ($t_{122}=3.59$, $p<0.05$) (Figure 1). According to the U.S. Census 2000 Demographic Profile Highlights, the average age for Navajo Nation is 24 (American Fact Finder 1). The average age for Navajo Nation is 35.3. The average age of the individuals we surveyed for the Navajo Nation is 40.85 years of age. For Jacksonville residents, the average age according to Census 2000 results is 34.7 (American Fact Finder 2). From our survey results we found that the average age of Jacksonville residents is 31.97. 50% of the Jacksonville population is 22 years of age or younger, while this age group from the Navajo includes only 4.8% of the entire population. The median age for Jacksonville is 22.5 and for Navajo Nation the median age is 40.

Figure 1. Age distribution of respondents to survey from Navajo Nation, Arizona and Jacksonville, Florida

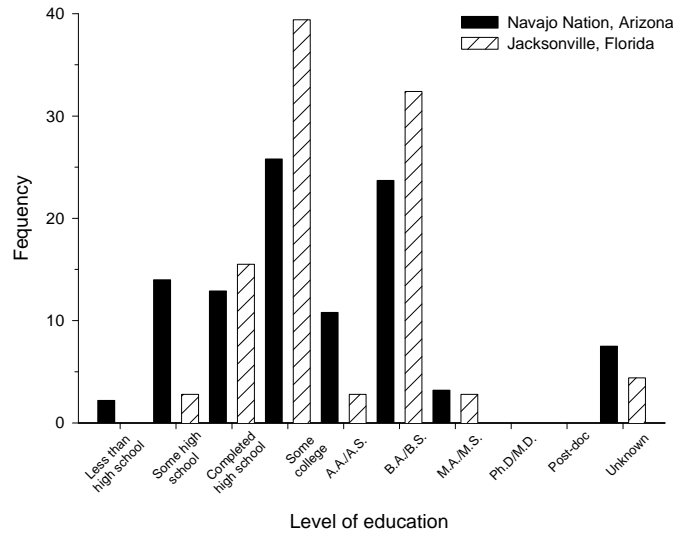


Level of Education

The level of education in Jacksonville was significantly higher than that of Navajo Nation (t₁₅₀ = 1.87, p < 0.05) (Figure 2). Of

Jacksonville respondents, 80.8%, have either completed high school or have obtained a higher level of education, while only 68.6% of Navajo Nation respondents have.

Figure 2. Level of Education of respondents to survey from Navajo Nation, Arizona and Jacksonville, Florida

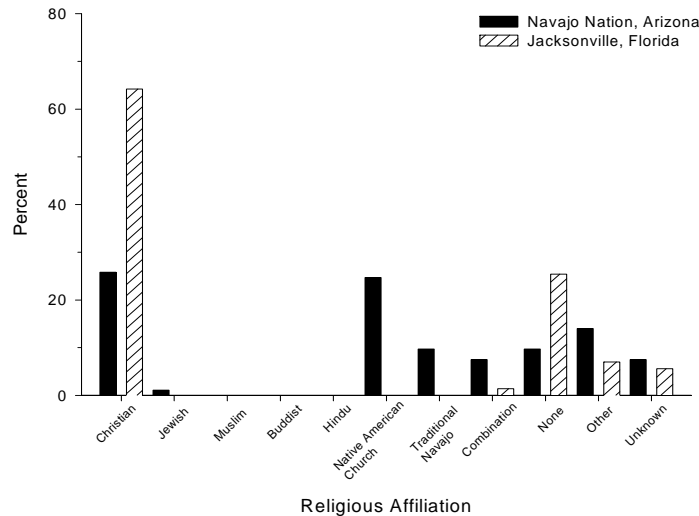


Religious Affiliation

64.2% of the Jacksonville population and only 27.9% of Navajo Nation population claim Christianity as their religion. Navajo Nation has a comparable percentage to that of Christianity for the population of individuals

who are affiliated with the Native American Church (26.7%). A larger number of the Jacksonville respondents claim to have no religious affiliation (26.9%) than Navajo Nation where only 10.5% claim the same. See Figure 3.

Figure 3. Religious Affiliation of respondents to survey from Navajo Nation, Arizona and Jacksonville, Florida



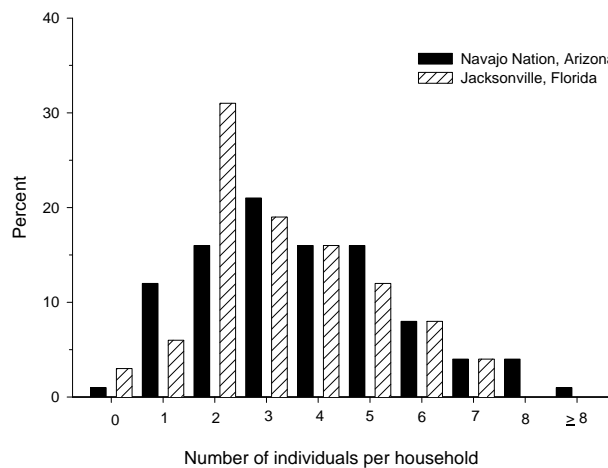
Number per Household (*Graph X-axis labeled wrong. Should be number per household not number of dependents)

The Jacksonville population has a smaller household size compared to Navajo Nation with an average number of 3.28 people per household. Navajo has an average value of 3.81 people per household. According to the U.S. Census Bureau's Census 2004, the average number of people per household in Jacksonville is 2.52

(American Fact Finder 2). Census 2000 recorded that the average number of people per household in Navajo Nation is 4 (American Fact Finder 1).

Jacksonville has no more than 7 people in each household while 4.7% of Navajo Nation has above 7 people per household. A household of 2 or fewer people in Jacksonville is representative of 40.3% of the population; only 29.4% of the Navajo Nation population has a household of 2 or fewer people. See Figure 4.

Figure 4. Number of people per household of respondents to survey from Navajo Nation, Arizona and Jacksonville, Florida



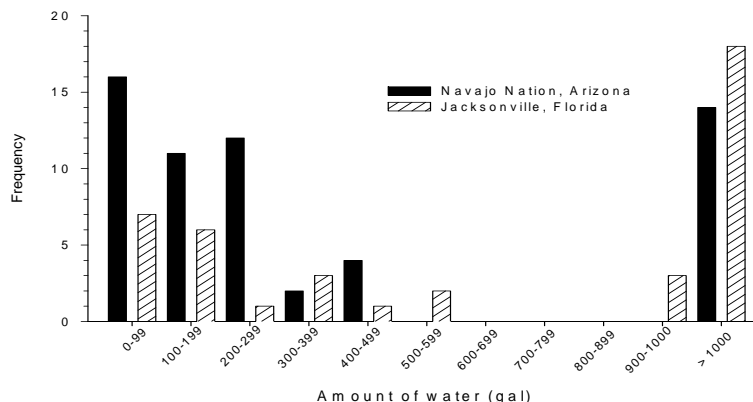
Resources

Water

With regard to water use residents of Jacksonville used significantly more water than residents of the Navajo Nation ($t_{45}=3.20$, $P<0.05$). With an average of 9348.7 gallons

consumed per month, households in Jacksonville's population used an average of five times more water than those in Navajo Nation's population, which averaged 1817.3 gals per month (Figure 5).

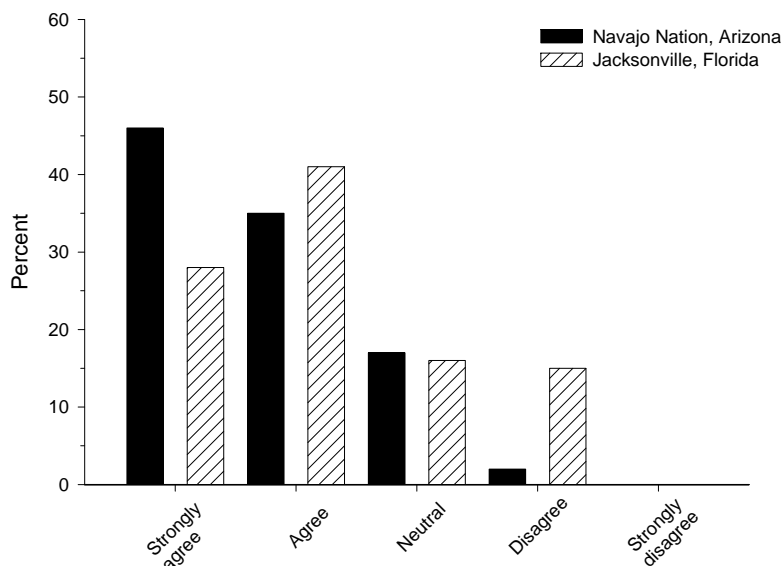
Figure 5. Amount of water consumed (gal) per household per month of respondents to survey from Navajo Nation, Arizona and Jacksonville, Florida



A comparison of the percent of respondents who stated that they were conservative with their water use relates to the former findings (Figure 5). 46.2% of individuals from Navajo Nation responded by strongly agreeing with the survey statement, “I am conservative with my daily water consumption” (Figure 6). Although residents of Jacksonville responded more frequently than residents of the Navajo Nation by agreeing with the statement (Jacksonville-

41%, Navajo Nation-35.4%), they also responded more frequently by disagreeing with the statement (Jacksonville-14.8%, Navajo Nation-1.5%). The difference between responses from the two populations in the extreme categories of this figure – strongly agree and disagree – is a direct reflection of the difference in actual usage, as formerly indicated. Further, these findings indicate that the respondents are aware of their consumption patterns.

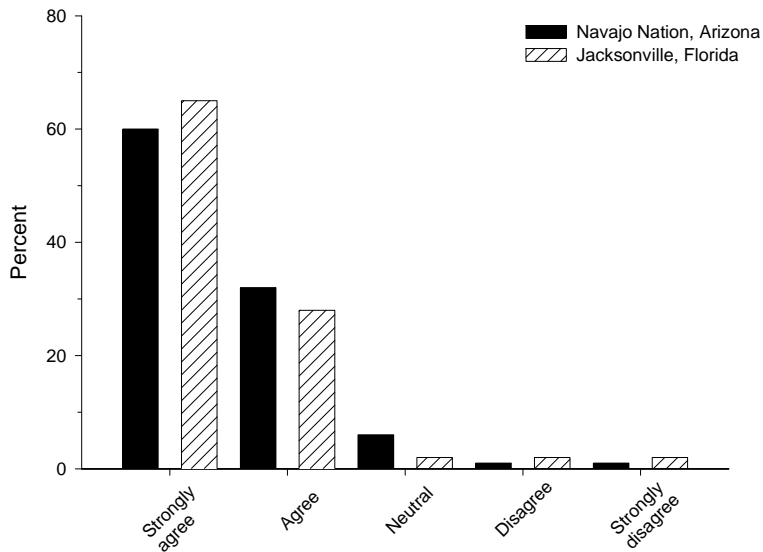
Figure 6. Percent of respondents who stated that they are conservative with water use from Navajo Nation, Arizona and Jacksonville, Florida



Upon first glance, it appears as though there is a discrepancy between the former two findings and those that relate to the two populations’ *belief* that water should be used wisely. 92.8% of Jacksonville residents compared with 91.6% of Navajo Nation strongly agreed and agreed with the statement, “I believe water should be used wisely,” Looking only at this response and comparing it to the results from Figures 5 and 7, it seems accurate to infer that the *beliefs* of

respondents from Jacksonville do not correspond to their actions. However, looking further into Figure 7 indicates that residents of Jacksonville are 50% more prevalent than those of Navajo Nation in both disagreeing and strongly disagreeing with the belief of using water wisely. Overall the data shows that most respondents – from both populations – either agree or strongly agree that water should be used wisely.

Figure 7. Percent of respondents who stated that water should be used wisely from Navajo Nation, Arizona and Jacksonville, Florida



Gasoline

With regard to gasoline consumption, no correlation was found between the two populations. Nevertheless, the majority of respondents – from both populations – use somewhere between zero and one-hundred and ninety-nine gallons of gasoline per month

(Figure 8). Residents of the Navajo Nation use an average of 85% more gasoline than those of Jacksonville (Figure 9). Further, the maximum gas consumption (gallon) of respondents of Jacksonville is 36% less than that of the Navajo Nation (Figure 10), and the mode for the Navajo Nation is four times that of Jacksonville.

Figure 8. Amount of fuel gasoline consumed (gal) per month of respondents to survey from Navajo Nation, Arizona and Jacksonville, Florida

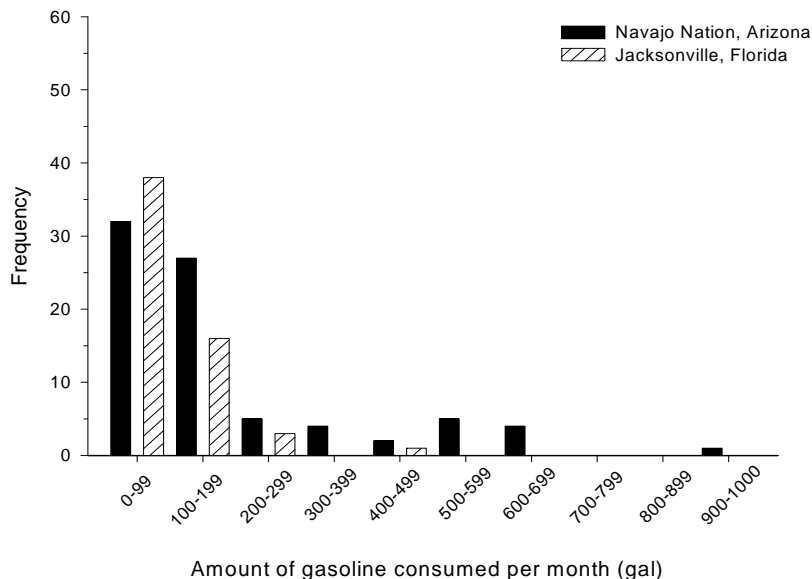


Figure 9. Average amount of gasoline consumed (gal) per month of respondents to survey

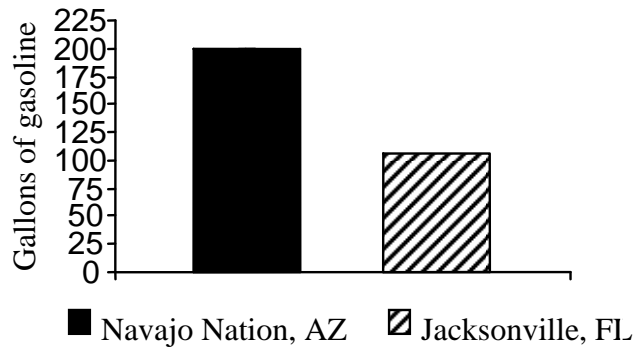
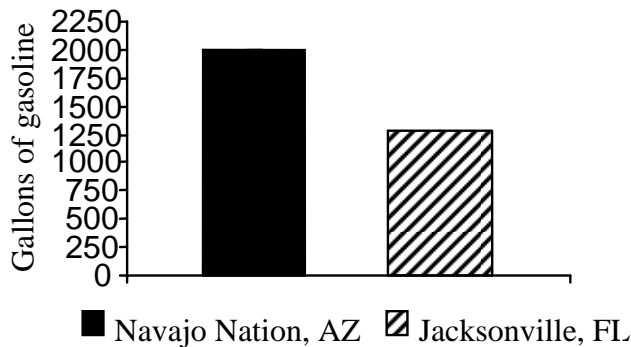


Figure 10. Maximum amount of gasoline consumed (gal) per month of respondents to survey

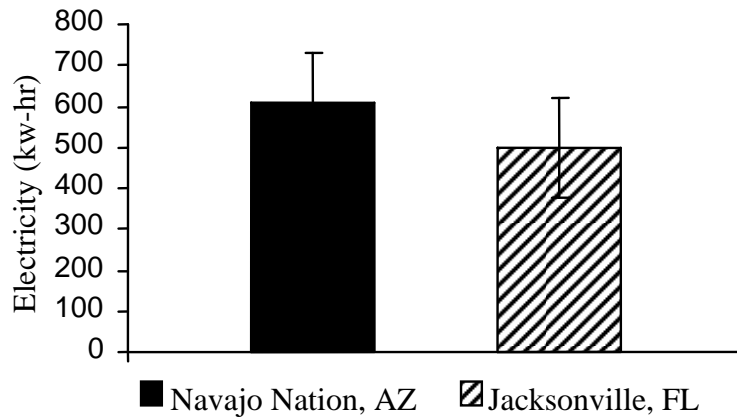


Electricity

Pertaining to electricity consumption (kw/hr), although respondents of the Navajo Nation use approximately 1.2 times more electricity than those of Jacksonville, the

difference was not statistically significant ($t_{69}=0.630474$, $P > 0.05$) (Figure 11). Further, no statistical correlation was found between the amount of electricity used and the number of people per household for either population.

Figure 11. Average amount of electricity consumed per month of survey respondents

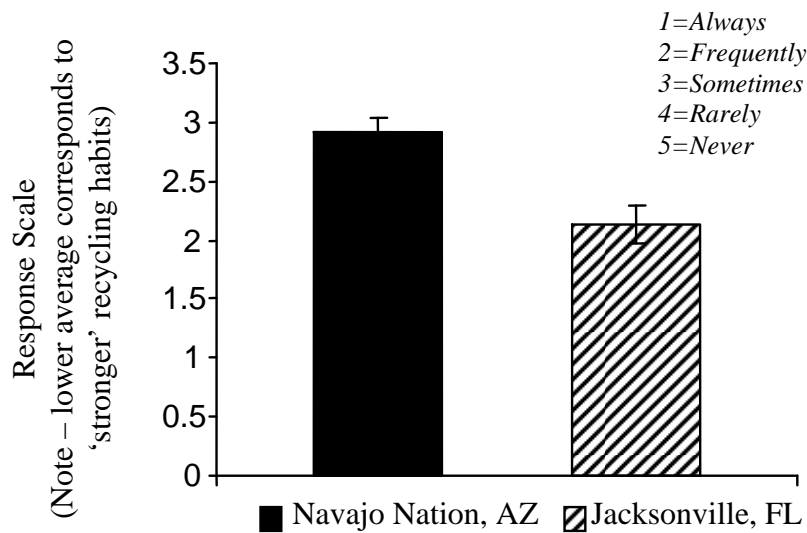


Recycling

Concerning the responses of individuals from each population who claimed to recycle on a regular basis, the average for the Navajo Nation, 2.92 (between 2-Frequently and 3-Sometimes), is significantly different than that for Jacksonville, 2.14 ($t_{148}=3.96$, $P<0.05$) (Figure 12). It should be noted that the figure displays

information somewhat counter intuitively - the higher value for the Navajo Nation's average does not correspond with a 'stronger' recycling habit. Instead, notice how the scale indicates that lower numerical values are associated with 'stronger' recycling habits. On average, Jacksonville's population responded 27% stronger (closer to 2-Frequently than 3-Sometimes) than the Navajo Nation's population.

Figure 12. Average response of individuals who claimed to recycle on a regular basis



More than 83% of all respondents (83.3% - Navajo Nation, 89% - Jacksonville) answered the statement, “I believe recycling is important for the environment” by either ‘strongly agreeing’ or ‘agreeing’ (Fig. 13). The average response for Jacksonville’s population, 1.5, is significantly stronger (closer to 1- Strongly Agree than 2-Agree) than that of Navajo Nation, 1.77 ($t_{148}=1.89$, $P<0.05$). In addition, although 83.3% of the

Navajo Nation’s population claimed to believe that recycling is important for the environment, only 55.4% ‘strongly agreed’ or ‘agreed’ that they were willing to support recycling with their tax dollars (Fig 14). Alternatively, Jacksonville’s population is nearly 30% more willing to devote their tax dollars to recycling, as indicated by an 84.5% response from the population who either ‘strongly agreed’ or ‘agreed’ to the statement.

Figure 13. Percent of respondents who stated that recycling is important from Navajo Nation, Arizona and Jacksonville, Florida

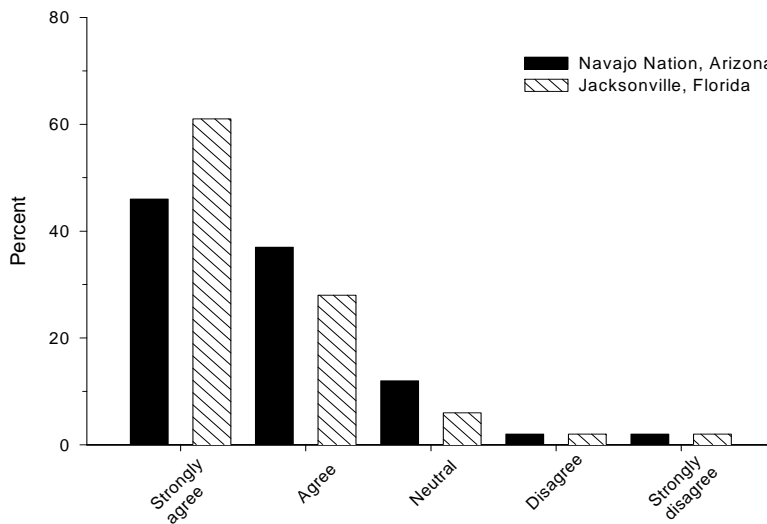
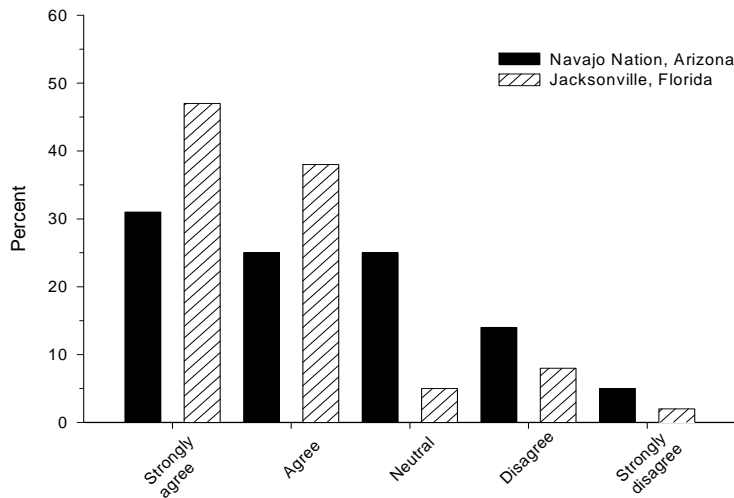


Figure 14. Percent of respondents from Navajo Nation, Arizona and Jacksonville, Florida who are willing to support recycling with tax dollars



Pollution

With respect to individual awareness of or contribution to pollution, both Jacksonville and the Navajo Nation’s populations responded similarly. More than 75% of all respondents (75.3% for Navajo Nation and 79.7% for Jacksonville) ‘agreed’ or ‘strongly agreed’ to be knowledgeable of the effects that pollution - as it pertains to

land, air, and water - have on the environment (Fig. 15). Further, less than 15% (14.1% for Navajo and 9.1% for Jacksonville) of all respondents considered themselves to be polluters on a ‘frequent’ or ‘always’ basis (Fig. 16).

Figure 15. Percent of respondents who stated that they are knowledgeable about pollution from Navajo Nation, Arizona and Jacksonville, Florida

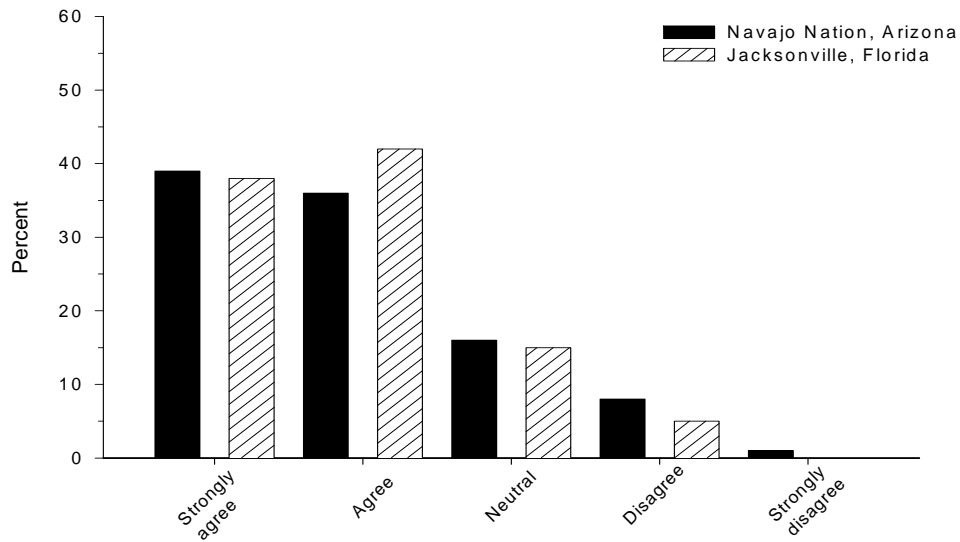
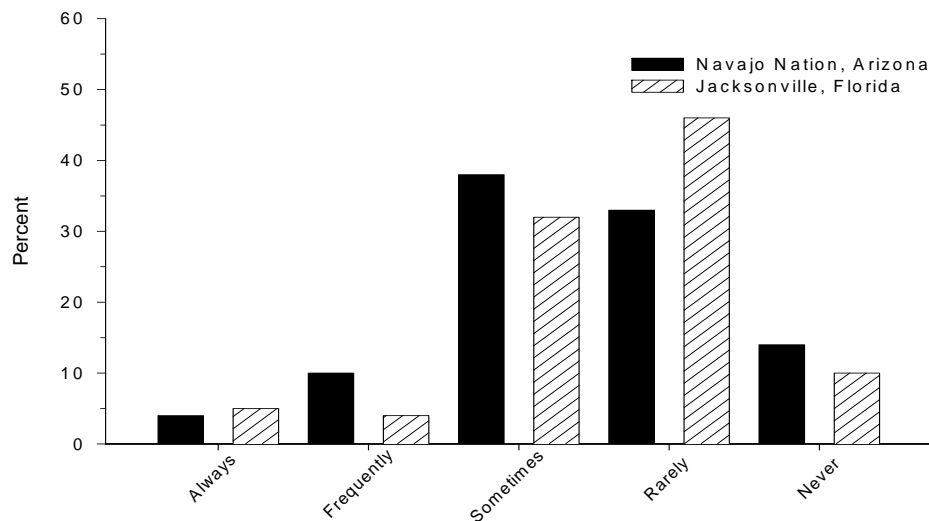


Figure 16. Percent of respondents who stated that they considered themselves polluters from Navajo Nation, Arizona and Jacksonville, Florida

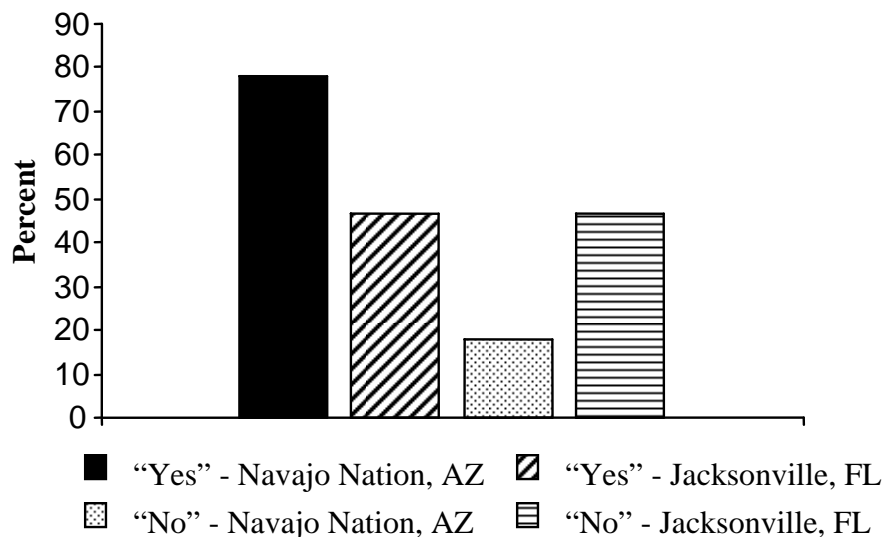


Environmental Views

Regarding whether or not cultural and spiritual beliefs contribute to the respondents' views on the environment, 78.1% of the Navajo population responded 'yes' and only 17.8% responded 'no'. Conversely, responses from Jacksonville's population are equally split between 46.7% responding 'yes' and

46.7% responding 'no.' The average response of the Navajo Nation, 1.26, was significantly closer to 1, which corresponds to 'yes' on the response scale, whereas Jacksonville's average response is significantly closer to 2, which corresponds with 'no' on the response scale ($t_{104}=3.35$, $P<0.05$) (Figure 17).

Figure 17. Percent of respondents who stated that their beliefs contributed to their views on the environment



More than 82% of all survey respondents 'strongly agreed' or 'agreed' that they place great importance on the environment. Although the percentage for Jacksonville's population, 84.6%, was higher than the percentage for the Navajo Nation, which was 82.1%, the difference was not significant ($t_{141}=0.645$, $P>0.05$). See Figure

18. In response to the whether or not the survey respondents believed there is a significant connection between humans and the environment, the percentage that either 'strongly agreed' or 'agreed' was higher for Jacksonville, 92.3%, than for Navajo Nation, 83.3%. Nevertheless, this difference was not significant either ($t_{116}=1.48$, $P>0.05$). See Figure 19.

Figure 18. Percent of respondents who stated that they place great importance on the environment from Navajo Nation, Arizona and Jacksonville, Florida

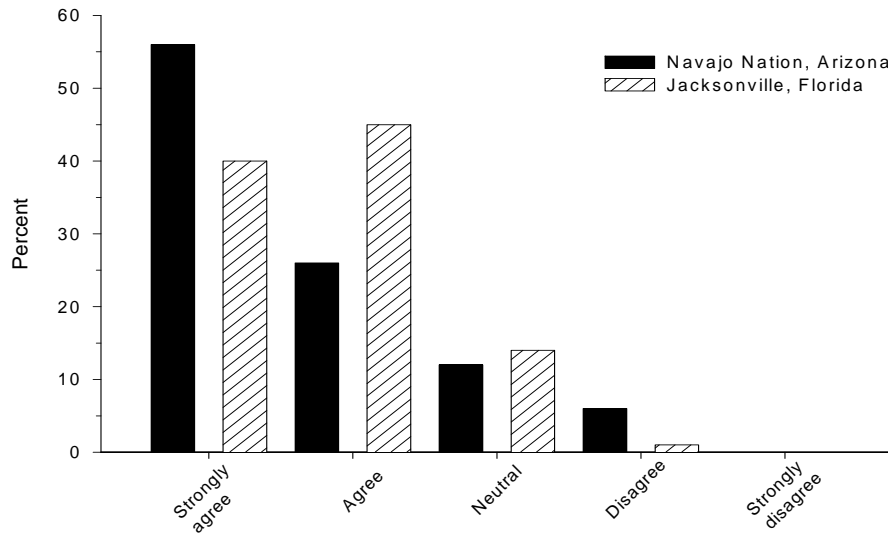
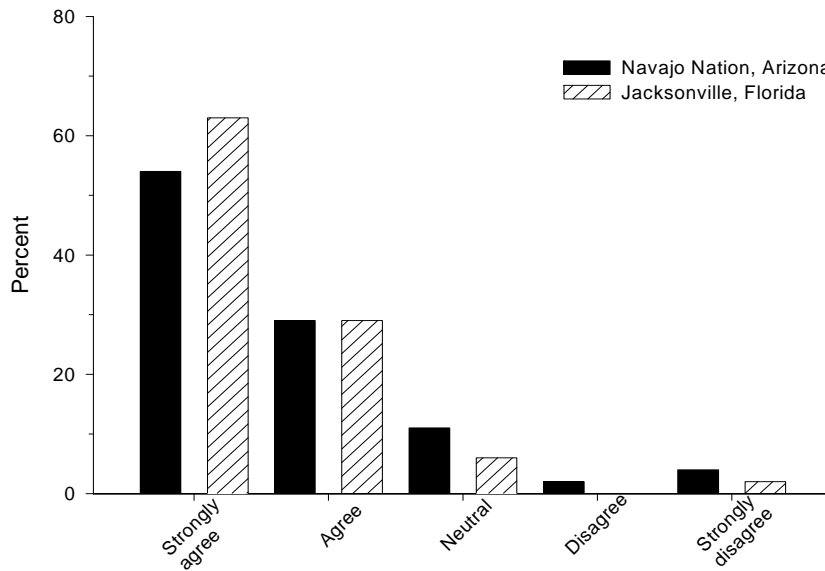


Figure 19. Percent of respondents who stated that a connection exists between humans and the environment from Navajo Nation, Arizona and Jacksonville, Florida



Discussion

With the influence of numerous colleges and universities in the Jacksonville area, we were in contact with a younger population in Jacksonville versus the Navajo Nation. This explains why the age of Jacksonville respondents were significantly lower than those of the Navajo Nation.

For the purpose of analyzing this research, when discussing whether or not cultural and spiritual beliefs influence a population's daily actions, we assumed these beliefs would result in less consumption. Therefore, if one population's consumption pattern is higher than that of the other population, we concluded that beliefs of the more consumptive population do not influence their actions.

We found that the cultural and spiritual beliefs that contributed to views on the environment of respondents from the Navajo Nation did not influence their utilization of electricity and gasoline. Although 78.1% of the Navajo Nation's population claimed that their cultural and spiritual beliefs do contribute to their views on the environment, their daily actions do not reflect this claim. In contrast, Jacksonville was split equally between those who did and did not agree that their cultural and spiritual beliefs contributed to their views on the environment. Jacksonville proved to be more conservative with their consumption of electricity and gasoline than Navajo Nation population, which consumes 1.2 times more electricity and 85% more gasoline than Jacksonville. Navajo Nation's higher consumption of electricity could be a result of more extreme variations in temperature. On average, temperatures in Northern Arizona range from 125°F in the summer months to below 35°F in the winter months (Climate of Arizona). These temperatures could lead to a higher use of air-conditioning and heating, in turn a higher consumption of electricity. Jacksonville temperatures ranged from mid to high 90s to the low 40s (°F) (About Jacksonville). Temperatures in Jacksonville

are more moderate than temperatures on the Navajo Nation, thus less electricity is needed in terms of air-conditioning and heating. Higher gasoline consumption could be due to the greater distances that individuals from the Navajo Nation travel on a daily basis. Navajo Nation spans 27,000 square miles and contains 269,202 inhabitants - 9.97 people per square mile (American Fact finder 1). Jacksonville, on the other hand, spans only 841 square miles and contains 765,994 - 910.81 people per square mile (American Fact Finder 2). Based on these figures, the greater distance between people in the Navajo Nation suggests that there is could also be a greater distance between people and places of daily consumption activities, such as grocery stores, banks, post offices, etc. Higher gasoline consumption for the Navajo Nation could be a reflection of these distances.

Cultural and spiritual beliefs of Jacksonville's population did not influence their water utilization. On average, respondents from the Jacksonville population agreed that water should be used wisely. Further, 68.9% claimed that they were conservative with their daily water consumption. Contrary to these beliefs, Jacksonville used five times more water than Navajo Nation. These findings could be due to variations in the abundance of water between the two populations. The availability of water is greater for Jacksonville because it is located on the Atlantic coast. Water is also made available through the following sources: the St. John's River, which passes directly through the city, the intercoastal waterway, the Floridian Aquifer, and an average of 51.3 inches of rainfall per year (About Jacksonville). Other various sources including smaller rivers and lakes are also found throughout the Jacksonville area. Navajo Nation is located in the mid-west region of the United States, an area that frequently experiences drought. Major sources of water include: Little Colorado River, Black Mesa Aquifer, and an average annual rainfall of only 11.5 inches (Explore the Navajo Nation). Due to the greater abundance and availability of water, Jacksonville residents are less likely

than Navajo Nation to see water as a precious resource, thus leading to a more consumptive lifestyle. Lower water consumption for Navajo Nation accurately reflects the population's claim that water should be used wisely and that they are conservative with water. This represents the only resource in which Navajo Nation's cultural and spiritual beliefs influenced their utilization.

Cultural beliefs of Jacksonville accurately depict their recycling habits as well as their pollution habits. Jacksonville respondents, on average, claimed to recycle "frequently" and 89% of the population believed that recycling is important. 84.5% were also willing to support recycling with their tax dollars. In relation to pollution, 91% of the population considered themselves non-polluters, reflecting the 79.7% who were knowledgeable about the effects of pollution. Beliefs of Navajo Nation do not depict their recycling habits and pollution habits. 83.3% of the Navajo Nation believes recycling is important, yet, the average individual recycles "sometimes" and only 55.4% are willing to support recycling with their tax dollars. The stronger support of recycling in Jacksonville could be due to the fact that residents are provided with recycling bins and a bi-weekly pick-up of recyclable items directly from the residential household. In contrast, Navajo residents are not provided with these same convenient recycling pick-up services. With only seven recycling centers dispersed throughout the reservation, recycling requires more effort on the part of residents of Navajo Nation because they must take the initiative to bring their recyclable items to the nearest recycling center.

Of the entire surveyed population, 82% including Jacksonville and Navajo Nation, agreed that they place great importance on the environment. However, 2.5% more of the Jacksonville population agreed to the statement than Navajo Nation. Similarly, 9% more of respondents from Jacksonville agreed with the statement, "I believe there is a significant connection between humans and the environment." Based on these statements, Jacksonville seems to

have a greater favor toward the environment than Navajo Nation, which can also be seen through their lower consumption of various natural resources. However, Jacksonville respondents were equally split between those who answered "yes" and those who answered "no" to the question, "Do your cultural/spiritual beliefs contribute to your views on the environment?" (It should be noted that almost 30% of the population claim to have no religious affiliation whatsoever.) Since this indicates that their overall favoritism toward the environment does not appear to come from cultural or spiritual beliefs, it is interesting to ask, "What influences their views of the environment and low consumption rates?" Several possible reasons were stated previously in relation to resource consumption: small amounts of gasoline used could be due to shorter distances traveled on a daily basis and lower rates of electricity in regards to heating and cooling could be due to lower temperatures in the Jacksonville area. In addition, the smaller household sizes for Jacksonville could have resulted in their lower resource use. In conclusion, various other aspects of Jacksonville residents' lifestyles may play a larger role in environmental utilization than the influence of cultural and spiritual beliefs in the area.

Based on results of the survey, Navajo Nation is presumably weaker than Jacksonville in their favor towards the environment. Although Navajo Nation has a lower percentage of the population that agrees with statements pertaining to environmental views than that of Jacksonville, the differences between the two populations are not significant. Over 80% of Navajo Nation did agree with the following statements: "I place great importance on the environment" and "I believe there is a significant connection between humans and the environment." Thus, Navajo Nation still has a high percentage of strong environmental views. In addition, the majority of the population answered "yes" when asked, "Do your cultural/spiritual beliefs contribute to your views on the environment?" and only 10.9% of the

population claimed to have no religious affiliation. Although the Navajo Nation population is more strongly supported by cultural and spiritual beliefs towards the environment, their consumption of various resources does not support their claim. As stated earlier, however, this could be due to outside factors such as higher average temperature – with regards to electricity, and greater distance traveled – with regards to gasoline. Yet another influencing factor could be larger household sizes of the Navajo Nation in comparison to Jacksonville. Large families require houses with larger dimensions than small family sizes; as a result, more electricity would be needed to satisfy the space. Likewise, a larger family may need a more vehicles, thus increasing the amount of gasoline used.

It can be stated that cultural and spiritual beliefs alone do not contribute to one's daily actions towards environmental utilization. Other factors including geographical location, weather conditions, and individual lifestyles also influence a person's view and use of the natural world.

Epilogue

Wilma Mankiller, in her book every day is a good day: Reflections of contemporary Indigenous Women states:

White anthropologists and 'experts' on Native Americans have written volumes about the culture of traditional indigenous peoples with little understanding of the degree to which tribal knowledge continues to inform contemporary Native life. Too many books about specific tribal groups have been written by people who spent fifteen minutes on a reservation and became experts" (Mankiller, 2004:6).

In response to her observation, we want our readers to be certain that we realize our findings resulted from a three-week study on the Navajo Nation reservation, and in no manner do we claim to be experts of the Navajo culture.

The purpose of our research was to examine environmental sustainability as it pertained to the relationship between cultural beliefs and daily actions. We found that there are several factors other than cultural and or spiritual beliefs that influence a population's resource consumption and environmental activism. The incentive of this project came from our assumption that individuals who consider themselves more intimately connected to the earth are more likely to incorporate sustainable practices into their lifestyles. Sustainable practices take many forms and vary from the latest research topics geared toward green building or biodigesters, to community supported agriculture organizations, and choosing to ride a bike instead of driving – just to name a few and that is not even scratching the surface.

In relation to our final analysis of the project, the general cultural and spiritual beliefs of a society are not the sole contributors of an individual's views and actions regarding the environment. Thus we infer that the environmental views and actions vary from individual to individual.

It is easy to get overwhelmed by the magnitude of issues such as global warming, degradation of the rainforests, the melting of polar icecaps, holes in the ozone layer, and the plethora of factors associated with these issues. It is also easy to continue engaging in poor environmental practices by blaming these larger issues on overpopulation and masses of people. We must remember, however, that the masses consist of individuals – of you's and me's and he's and she's – and **we**, not *they*, must make it a priority to lead environmentally sustainable lifestyles by making the necessary changes and cutbacks in our lives to ensure the preservation of this earth.

In their paper on biodiversity, Paul R. Ehrlich and Edward O. Wilson address the

question, “Why should we care [about preserving the earth]?” To address their question: according to a new field of Environmental Psychology, not only are our natural surroundings aesthetically pleasing, it is also beneficial to our health. The earth also provides economic benefits including foods, medicines, and textiles, as well as life sustaining ecosystem functions such as the carbon cycle. In their paper, Ehrlich and Edward expressed that the most important reason to care about the biodiversity associated with our environment is that as a “dominant species...we...have an absolute moral responsibility to protect what are our only known living companions in the universe...Human responsibility in this respect is deep, beyond measure, beyond conventional science for the moment, but urgent nonetheless” (Ehrlich 1990:758-62).

Back to our research, both populations have an understanding of preserving the environment either by their views and beliefs or by their actions and uses of their natural surroundings; however, they are not identical

in these behaviors. Apparent in their traditional practices, Navajo Nation has a more intimate connection with the earth. From the design of the Navajo Nation flag to common cultural ceremonies, the Navajo Nation includes nature in their daily lifestyle. Jacksonville, lacking in this deeper environmental connection, possesses the efficiency of contemporary systems such as recycling centers and low-energy architecture. Each of these populations contains a separate yet vital element needed to lead a more environmentally sustainable way of life. Finding a balance between these elements of the Navajo Nation and Jacksonville serves as a microcosm example of how environmentally sustainable lifestyles can be achieved on a global scale.

So what now? You, the reader, have been presented with information from research done by two young female college students. This research – *our journey* – began with a simple conversation. *Where will yours begin?*

Appendix

Survey

This survey is a part of research being conducted through the University of North Florida Biology and Anthropology programs concerning diverse communities and how they maintain a healthy relationship with the environment. The goal of this project is to compare knowledge of the environmental of two different geographic areas and peoples. In the place of individual signatures on a separate Human Consent Form for each subject surveyed, we have incorporated the following rights of each subject as a part of our survey: All answers to the survey will be confidential and only summaries of the data will be utilized. Please read each question carefully before answering. Participation is voluntary; you have the right to refuse to answer any of the following questions. Completion and return of this survey will be taken as the consent to participate in the study.

1. **What is your age?**
2. **Where were you born?**
3. **What kind of school do/did you attend (public, private, boarding, tribal, home, other)?**
4. **Please circle your highest level of education obtained:**

less than high school	some high school	high school graduate
some college	Associate's degree	Bachelor's degree
Master's or equivalent	Ph.D. or equivalent	Post-doctorate
5. **Which organized world religion are you affiliated with (Christianity, Muslim, Judaism, Buddhism, Hinduism, Native American Church, none, other)?**
6. **Are you currently employed or have you been within the past year?**
7. **Do you rent or own your home?**
8. **Do you rent/own more than one home?**
9. **How many people live in your household?**
10. **How many dependents do you have?**
11. **Please circle your approximate annual household income (in U.S. dollars):**

\$0-4,999	5,000-9,999	10,000-14,999	15,000-19,999
20,000-24,999	25,000-29,999	30,000-34,999	35,000-39,999
40,000-44,999	45,000-49,999	50,000-54,999	55,000-59,999
60,000-64,999	65,000+		
12. **Where does the majority of your income come from (work, government aid, etc.)?**
13. **Does your household own a vehicle? If so, how many?**
14. **How much gasoline, in gallons, would you say your household uses per vehicle per month?**
15. **What is the average cost per gallon in your area?**

Please describe how this price affects your budget and daily lifestyle.
16. **Estimate the average amount of gallons of water your household consumes per month**
17. **Estimate the average amount of kilowatt-hours (electricity) your household uses per month.**

If you do not have electricity, do you use kerosene, butane, or propane? If so, how much?
18. **What type of oven do you have (solar, gas, electric, fire oven, other)?**
19. **What type of cooling/heating do you have for you home (gas, electric, wood, coal, other)?**

20. How many servings do you consume daily for each category:

- a. Grains: breads, cereals, rice, pasta?
- b. Fruits and vegetables?
- c. Dairy: milk, yogurt, cheese?
- d. Protein: meats, fish, and nuts?
- e. Other: sweets, fats, or oils?

21. Do you have a personal garden from which you get any of your food?

22. Do you own any livestock (sheep, goats, cows, chickens, horses)?

23. For the following statements, rate according to the given scale:

1- Strongly Agree 2- Agree 3- Neutral 4- Disagree 5- Strongly Disagree

a. I place great importance on the environment. ____

I believe there is a significant connection between humans and the environment. ____

Please explain.

b. I am concerned with the greenhouse affect/global warming. ____

If you are not familiar with the greenhouse effect/global warming, please check here. ____

Please explain.

c. I believe recycling is importance for the environment. ____

I am willing to support recycling with my tax dollars. ____

Please explain.

d. I believe water should be used wisely. ____

I am conservative with my daily water consumption. ____

Please explain.

e. I am knowledgeable of the effects of pollution on the environment (land, air, water). ____

Please explain.

24. For the following statements, rate according to the given scale:

1- Always 2- Frequently 3- Sometimes 4- Rarely 5- Never

a. Based on your own opinion, how often would you consider yourself a polluter? ____

b. I recycle on a regular basis. ____

25. List three words you associate with your views of the environment.

26. Do any of your cultural/spiritual beliefs contribute to your views on the environment? If so, please explain.

27. Do you feel your household is taking proper steps towards maintaining a healthy relationship with the environment? If so, why or why not?

28. Do you feel the United States is taking proper steps towards maintaining a healthy relationship with the environment ? If so, why or why not?

Thank you for taking the time to help us with our research! We greatly appreciate it!

Additional Questions for the Navajo Nation

If needed, please explain further for any of the following questions on the front or back of this page.

1. Do you maintain more than one household?
2. Do you reside with your spouse's family or do have your own independent household?
3. Water: a. Do you get running water or do you haul water?
 - b. If you haul water, how far is the water source (in miles)?
 - c. Estimate the average cost for water your household consumes per month.
 - d. What is this water used for (household, livestock, garden, other)?
4. Do you consider yourself traditional?
5. What are three words you would use to describe traditional?
6. Do you speak Navajo only, English and Navajo, or English only?
7. Do you consider yourself fluent in Navajo? English?
8. Do you reside on a reservation? (If no, skip question #8.)
9. Please circle the length of time you have resided on a reservation?
0-4 years, 5-9 years, 10-14 years, 15-19 years, 20 or more years
10. How far do you live from a paved road (in miles)?
11. On average, how far do you travel daily for work, shopping, visiting relatives, etc. (in miles)?
12. Were you educated on a reservation?
13. Were you raised on a reservation?
14. Do you, or have you, attended any traditional ceremonies?
15. Living in Hozho is important to me? Circle yes or no.

Thank you for taking the time to help us with our research! We greatly appreciate it!

References Cited

“About Jacksonville: Climate.” Official Website of the City of Jacksonville, FL. 17 April 2006 – 4 August 2006.

<http://www.coj.net/About+Jacksonville/Jacksonville+Climate.htm>

"American Fact Finder 1." U.S. Census Bureau. Accessed: 17 April 2006 - 4 Aug. 2006.

http://factfinder.census.gov/servlet/SAFFIteratedFacts?_event=Search&geo_id=01000US&_geoContext=&street=&county=Navajo+Nation&cityTown=Navajo+Nation&state=04000US04&zip=&lang=en&sse=on&ActiveGeoDiv=geoSelect&useEV=&pctxt=fph&pgsl=010&submenuId=factsheet_2&ds_name=DEC_2000_SAFF&ci_nbr=244&qr_name=DEC_2000_SAFF_R1010®=DEC_2000_SAFF_R1010%3A244&keyword=&industry=

"American Fact Finder 2." U.S. Census Bureau. Accessed: 17 April 2006 - 4 Aug. 2006.

http://factfinder.census.gov/servlet/ACSSAFFFacts?_event=&geo_id=16000US1235000&_geoContext=01000US%7C04000US12%7C16000US1235000&street=&county=Jacksonville&cityTown=Jacksonville&state=04000US12&zip=&lang=en&sse=on&ActiveGeoDiv=geoSelect&useEV=&pctxt=fph&pgsl=160&submenuId=factsheet_1&ds_name=DEC_2000_SAFF&ci_nbr=244&qr_name=DEC_2000_SAFF_R1160®=DEC_2000_SAFF_R1160%3A244&keyword=&industry=

Clark, William C.
2001 America's National Interests in Promoting a Transition to Sustainability. *Environment* 43.1: 18-27.

“Climate of Arizona.” Western Regional Climate Center & National Climatic Data Center. Accessed: 17 April 2006. 4 August 2006.

<http://www.wrcc.dri.edu/narratives/ARIZ>

[NA.htm](#)

Ehrlich, Paul R; Wilson, Edward O.
1990 Biodiversity studies: Science and Policy. *Science* 253: 758-62.

“Explore the Navajo Nation.” Navajo Nation Hospitality Enterprise: Tips – Climate. Accessed: 17 April 2006 – 4 August 2006.
<http://www.explorenavajo.com/index.htm>

Griffin-Pierce, Trudy.
2000 Native Peoples of the Southwest Albuquerque: University of New Mexico Press, 305-359p.

IRB Forum (2005). <http://www.irbforum.org>.
“The Children’s Hospital of Philadelphia.” Accessed: 20 January 2005

“Jacksonville, FL Climate.”
RssWeather.com. Accessed: 17 April 2006 4 August 2006.
<http://www.rssweather.com/climate/Florida/Jacksonville/>

Lincoln, R., G Baxshall and P. Clark
2001 A Dictionary of Ecology, Evolution, and Systematics, 2nd Edition. Cambridge University Press. 361 p.

Mankiller, Wilma.
2004 Every day is a good day: Reflections by Contemporary Indigenous Women. Colorado: Fulcrum Publishing, 6 p.

Navajo Nation Museum. 2005. Window Rock, Arizona.

Prtizker, Barry M.

2000 A Native American Encyclopedia:
History, Culture, and Peoples.
Oxford: University Press, 51-56 p.

Stone, Linda.

2000 Kinship and Gender: An Introduction,
2nd Edition. Washington: Westview
Press, 130 p.

White, Richard.

1983 The Roots of Dependency:
Subsistence, Environment, and
Social Change among the
Choctaws, Pawnees, and Navajos.
Lincoln and London: University of
Nebraska Press, 212-314.