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Prevalence of Chronic Disease Among American Indian and Alaska Native Elders

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*Connecting resources and knowledge to strengthen
the health of people in rural communities.*

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Executive Summary

There is a paucity of information about the prevalence of chronic disease among American Indian and Alaska Native populations with even less information available about rural/urban differences. Literature indicates associations between chronic disease and functional limitation in relation to demographics, geography, health behaviors and access to health services among rural populations; however, what is not known is if these associations are also present among American Indian and Alaska Native elder populations.

To address this gap in research, the Center for Rural Health at the University of North Dakota School of Medicine and Health Sciences applied for and received funding from the Office of Rural Health Policy (ORHP), Health Resources and Services Administration (HRSA), to conduct a secondary data analysis on Native elder data from the "Identifying Our Needs: A Survey of Elders" needs assessment project funded through the Administration on Aging (AoA) at the National Resource Center on Native American Aging (NRCNAA). The self-reported data represents 9,403 American Indian and Alaska Native elders from 171 tribal nations, 11 of 12 Indian Health Service regions and 31 states. The Native elder data file was linked to the Area Resource File (2003) and frontier county codes (Frontier Education Center, 2004) to create a file that contained county level medical resources information and an urban-rural-frontier variable. The file was analyzed to determine if differences in prevalence of chronic disease and functional limitation in American Indian elders are related to age (55-64, 65-74, 75-84 and 85+), gender or geographical location (urban vs. rural vs. frontier counties). Additional analyses explored differences in relation to demographics, health behaviors, access to health care services, health care providers, and degree of functional limitation.

Highlights of Overall Findings

- Native elders had a higher prevalence of arthritis, congestive heart failure, stroke, asthma, prostate cancer, high blood pressure and diabetes than the general population ages 55 and older (National Health and Nutrition Examination Survey III, 1988-1994) and a lower prevalence of severe functional limitation as compared with the general population ages 65 and over (National Long Term Care Survey, 1994).
- Female Native elders had a significantly higher prevalence of diabetes, high blood pressure, other cancer (not including breast, colon/rectal and lung cancer), cataracts, asthma, arthritis and moderately severe to severe functional limitations.
- The prevalence of arthritis, congestive heart failure, stroke, cataracts, colon/rectal cancer, prostate cancer and functional limitation increased significantly with age; whereas the prevalence of asthma and diabetes decreased with age.
- Low income was associated with an increased prevalence of a functional limitation, arthritis, diabetes and stroke.

- Native elders who engaged in exercise were less likely to have functional limitations, diabetes and high blood pressure.
- Native elders who reported staying at least one night in a hospital in the past year were more likely to have a functional limitation, colon/rectal cancer, congestive heart failure, diabetes, high blood pressure, lung cancer, other cancer, prostate cancer, and stroke.
- Native elders reported a number of co-morbidities; in addition the greater the number of chronic diseases reported, the greater the number of functional limitations experienced.

Overall Conclusions and Policy Recommendations

An overall conclusion is that Indian Health Service regular appropriations and the Indian Health Care Improvement Act (IHCIA), primary sources of IHS funding, should be funded and reauthorized at an appropriate level to provide adequate health services to Native populations. The IHCIA is crucial to ensure that Native elders have full access to critical health care services. IHS funding currently provides only 59% of the funding needed to provide for health care services (IHS, 2005). The federal government actually budgeted nearly twice as much per capita for health care to federal prisoners, \$3,803, compared to the IHS budget for American Indian and Alaska Native health care, \$1,914 (U.S. Commission on Civil Rights, 2003).

Beyond this, given limited federal and tribal resources, targeted interventions need to be developed and implemented to improve the health of American Indian and Alaska Native elders based on quantitative data. Findings from this project assist in determining where and what type of interventions would be most beneficial to improve the health of American Indian and Alaska Native elders. Five conclusions have been drawn from the results of this study and are presented with policy recommendations in this report.

1. Increase disease prevention efforts including health promotion and wellness programs.
2. Increase chronic disease management programs to prevent co-morbidity and increase access to services.
3. Increase availability of home/community based long-term care services in rural areas.
4. Increase availability of health care services and homes which are equipped with necessary plumbing and sanitation along with handicap accessibility to those Native elders living in rural reservation areas.
5. Increase access to educational opportunities which would result in increased income for future generations of Native elders.

INTRODUCTION

There were 35 million individuals over age 65 in the United States in 2000, a 12% increase from 1990. The fastest growing segment in the U.S. population is individuals ages 85 and older (U.S. Census Bureau, 2001). In rural areas, the elderly population has increased due to individuals choosing to remain in their homes, younger people moving to metro areas, and older people relocating to rural areas. In terms of gender, women comprise 53% of the rural population ages 60-64 and 63% of the 85 and older rural population (Rogers, 1999).

Access to healthcare continues to pose a challenge for the nation's growing rural elderly populations as limited medical resources in rural and frontier areas often require elderly to travel long distances in order to meet their health needs (Krout, 1994). About 1/5 of elderly in the United States live in rural areas (Coburn & Bolda, 1999), and these rural elderly are not only more likely to suffer from poor health, but they also tend to have less income and less education when compared to urban elderly (Coward et al., 1994). With aging, there is also a rapid increase in the prevalence of a number of chronic diseases such as arthritis, Alzheimer's disease, cancer, heart disease, Parkinson's disease and stroke (Krishnan et al., 2002).

Several chronic diseases can be attributed to health damaging behaviors including tobacco use and obesity (Wakefield, 2002) and about 40% of deaths can be attributed to health damaging behaviors (McGinnis et al., 2002). Behavior is a particularly important focus for rural populations in general. For example, men and women in rural areas are more likely to smoke than individuals living in more populated areas (National Center for Health Statistics, 2001). Another health damaging behavior, heavy alcohol consumption has been found to be more common in rural populations, non-Hispanic white, Hispanic and American Indians than in other groups (National Center for Health Statistics, 2001).

Health care problems facing rural white and minority populations such as African Americans and Hispanics are documented with regard to elder populations. However, little is known regarding American Indian and Alaska Natives and even less is known about the relationship between chronic disease and access to healthcare in this population. Although the percent of American Indian/Alaska Natives (includes those who also indicated another race) in rural areas increased by 78% between 1990 and 2000, (Randolph, Gaul & Slifkin, 2002), national studies focusing on health and access to health care rarely include Native populations. This is likely due to the expense of accessing small populations located in isolated areas. Or, if Natives are included, the sample size is frequently insufficient for analysis.

In terms of longevity, the Indian Health Service (IHS) Division of Statistics (1998), reported that overall life expectancy of American Indians (71.1 years) is lower than the U.S. general population life expectancy (76.9 years) for all races (National Center for Health Statistics, 2000). American Indian life expectancy varies by regional area as do chronic disease rates among the Native elderly population (Ludtke, McDonald, & Allery, 2002). IHS Division of Statistics reported a regional difference of as much as 12 years in American Indian life expectancy between the California Indian Health Service Area (76.3 years) and the Aberdeen Indian Health Service Area (64.3 years).

Existing research related to American Indians documents the relationship between chronic disease and mortality. Gillum (1995) analyzed data from the U.S. Vital Statistics System and two National Health and Nutrition Examination Surveys on the epidemiology of stroke specific to American Indian and Alaska Natives. Gillum found stroke to be a leading cause of death for American Indian and Alaska Natives in the 1990 data. Stroke as a cause of death derives from various factors including hypertension and diabetes. According to Campbell (2002), female Oklahoma American Indians had a higher prevalence of obesity, high blood pressure, diabetes, heart disease, heart attack and stroke than the general population. Tomas, McDonald and Ludtke (2003) also found that Native elder women were more likely to be obese and less likely to exercise.

Lower life expectancy is correlated with higher chronic disease rates while the ability to diagnose and manage chronic disease is correlated with one's ability to access health care services in a timely manner. Increased morbidity related to access to primary, secondary, and tertiary healthcare are important concerns for all elderly in rural communities. Rural Healthy People 2010 (Gamm et al., 2003) identified access to health care as a top priority for rural America. The Institute of Medicine's 2002 report indicated that access to healthcare is an important step in eliminating racial and ethnic health disparities. The U.S. Commission on Civil Rights (2004) identified several social and cultural barriers affecting American Indian and Alaska Natives including racial and ethnic bias and discrimination, patient health behaviors, environmental factors, delivery of health care in a culturally appropriate manner, language, poverty and education. Identified structural barriers included management of different types of IHS services, geographic location, wait times, age of facilities, provider turnover rates, retention and recruitment of qualified health providers, misdiagnosis or late diagnosis of disease and rationing of health services. In addition, increasing the vulnerability of Native elders are the high rates of poverty in many tribal populations. Research correlates lower health status with lower socio-economic status (Sternfeld et al., 2002).

Characteristics of rural health delivery systems are often distinctly different from urban health delivery systems and across rural areas there is considerable variation in health infrastructure. Furthermore, rural elders tend to use a different mix of health care services from their urban counterparts, such as higher rates of inpatient and outpatient hospital services and fewer visits to physicians (Medicare Payment Advisory Commission, 2001). The infrastructure of rural health care systems should meet the needs of individual communities, which can account for the wide variety of infrastructure. For example, rural hospitals can range from a five bed Critical Access Hospital to a 250 bed rural regional referred hospital. These dynamics prompt an array of information needs and policy solutions that reflect both within-rural variation as well as rural-urban infrastructure differences. In addition, environmental features such as long distances, geographical barriers, diverse cultures, poor economic conditions, and inadequate distribution of services and health care providers often limit access to health care for many rural communities, (Congdon & Magilvy, 2001; Davis & Magilvy, 2000). The majority of reservations face similar challenges in isolated rural areas.

Native elders constitute one of the populations for which there is a paucity of data regarding health status, health care needs and capacity for self-care (e.g. functionality such as activities of daily living). There are currently 562 American Indian/Alaska Native federally recognized tribes in the United States. The federal government, because of numerous treaties, provides healthcare to tribes through the IHS. Tribes have the option of managing their own portion of the IHS budget and 53% of the current IHS budget is managed by tribal health programs (IHS, 2004). The 2003 budget for IHS was \$2.8 billion for the provision of health care to approximately 1.5 million American Indian/Alaska Natives (IHS, 2003). There are approximately 4.1 million individuals who identify themselves as American Indian/Alaska Native alone or in combination with other races (U.S. Census, 2002). IHS provides health care services not only through over 500 hospitals and clinics located on or near reservations (Forquera, 2001), but also contracts for specialty health services through off reservation vendors.

Forty-nine percent of American Indian/Alaska Natives have private insurance coverage as compared to 83% of Caucasians (Zuckerman et al., 2004). In addition, IHS requires exhaustion of all other possible sources of funding before payment, making IHS a provider of last resort (Kuschell-Haworth, 1999). Patients must first exhaust all health care resources available to them from such sources as private insurance, Medicare, or Medicaid (if they are eligible, they must apply for coverage) before IHS will consider payment. Those American Indians/Alaska Natives with access to IHS, Medicare/Medicaid and private insurance coverage tend to use IHS for routine medical care and use private insurance for more specialized care (Dixon et al., 1997).

The aim of this research was to examine whether potential differences in chronic disease prevalence among American Indian/Alaska Natives are related to rurality, gender, age, health care access or health behaviors. The study will serve as a foundation for long-term research efforts focused on informing and aligning programs for evidence-based public policies to meet the health care needs of American Indian/Alaska Native elders. This research will inform tribal, state and federal government in designing infrastructure for long-term care for American Indians and Alaska Natives. Documenting general health status and the extent of chronic disease is critical to defining the needs for health services among persons within this subpopulation.



OVERALL FINDINGS

The following narrative contains the results of a study that examined the prevalence of chronic disease among American Indian/Alaska Natives using the NRCNAA Native Elder data set. This data set includes self-reported information regarding general health status including chronic disease, activities of daily living, instrumental activities of daily living, vision, hearing and dental, tobacco and alcohol usage, diet and exercise, social support, housing, occupational status and demographics. The question regarding chronic disease asked Native elders to indicate if a doctor had ever told them that they had any of the following diseases: arthritis; congestive heart failure; stroke; asthma; cataracts; breast cancer; prostate cancer; colon/rectal cancer; lung cancer; other cancer; high blood pressure; and diabetes. Native elders (9,403) from 31 states and 11 of 12 Indian Health Service Regions are represented.

This data set was linked with the Area Resource File (ARF, 2003) which provided health care access variables and urban influence codes (UIC) along with frontier county codes (Frontier Education Center, 2004). Frontier counties were determined by population density and distance in miles and travel time in minutes from a market-service area. Elders were divided into three categories: 1) urban elders, those that live in large or small metropolitan areas, UIC 1 and 2, 2) rural elders, those living in a non-metropolitan county, UIC 3-9 and 3) frontier elders, those that live in a non-metropolitan county and are classified as frontier.

A limitation is that Urban Influence Codes are based on county population and do not take into account rural areas within a county coded as urban. Another limitation is that the data is representative of elder populations on or around reservations and may not be representative of Native elders residing in urban areas. For a complete description of the data set, analytic models and results, see our website at medicine.nodak.edu/crh.



Demographics

- Demographics of the Native elder data set are presented in Table 1. Of a total of 9,403 Native elders, the greatest percentage was female, between ages 55-64, had an income between \$5,000-\$9,999 and lived in a frontier area. The most prevalent chronic diseases were high blood pressure, arthritis and diabetes.

Table 1: Demographics

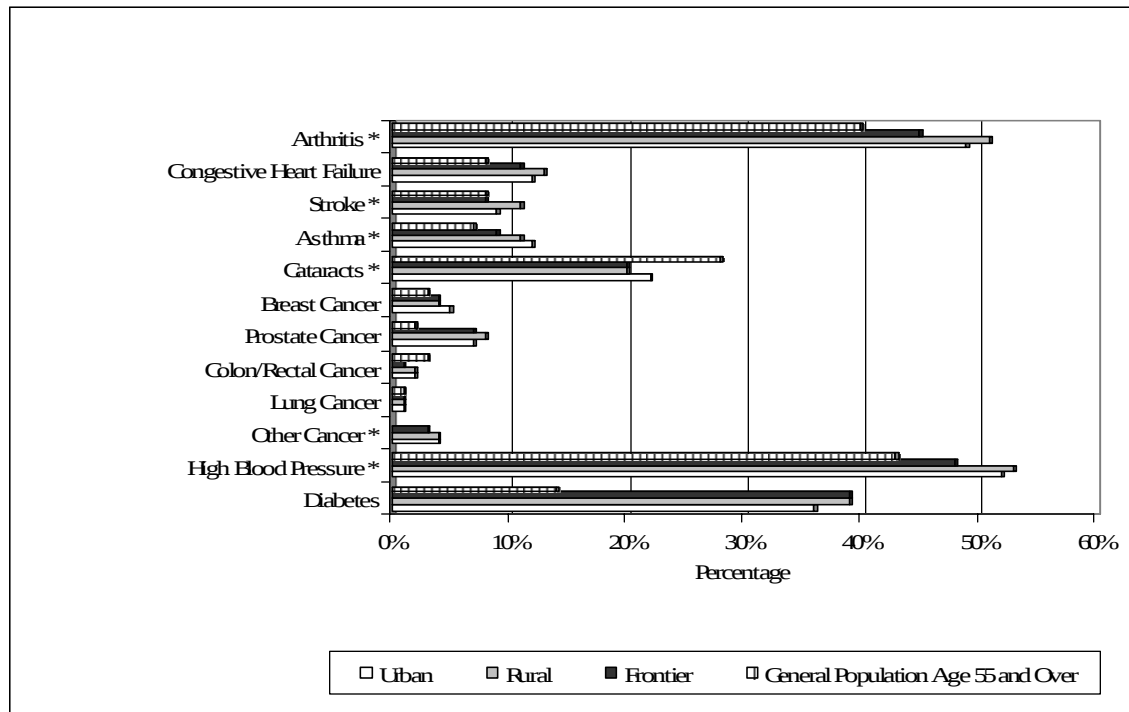
	N	%
<u>Gender</u>		
Male	3,595	40%
Female	5,525	60%
<u>Age Group</u>		
55-64	3,634	40%
65-74	3,403	37%
75-84	1,562	17%
85+	490	5%
<u>Personal Annual Income</u>		
< \$5,000	2,189	26%
\$5,000 - 9,999	2,738	33%
\$10,000 - 19,999	2,029	24%
<u>Geographic Location (Residence)</u>		
Urban	1,927	21%
Rural	2,591	28%
Frontier	4,641	51%
<u>Chronic Disease</u>		
High Blood Pressure	4,708	50%
Arthritis	4,432	47%
Diabetes	3,537	38%
Cataracts	1,924	21%
Congestive Heart Failure	1,104	12%
Asthma	945	10%
Stroke	865	9%
Prostate Cancer (males)	263	7%
Breast Cancer (females)	219	4%
Other Cancer	317	3%
Colorectal Cancer	145	2%
Lung Cancer	77	1%

Rurality and Chronic Disease

- Native elders had a higher prevalence of arthritis, congestive heart failure, stroke, asthma, prostate cancer, high blood pressure and diabetes than the general population ages 55 and over (National Health and Nutrition Examination Survey III, 1988-1994).

Native elders who lived in urban areas had a significantly higher prevalence of cataracts and asthma as compared to rural and frontier Native elders. Elders who lived in urban and rural areas had a higher prevalence of other cancers as compared to those living in frontier areas. A possible interpretation is that Native elders moved to areas with greater availability of medical services. A higher prevalence of high blood pressure, arthritis and stroke was found in Native elders living in rural areas as compared to elders living in frontier or urban areas (see Figure 1).

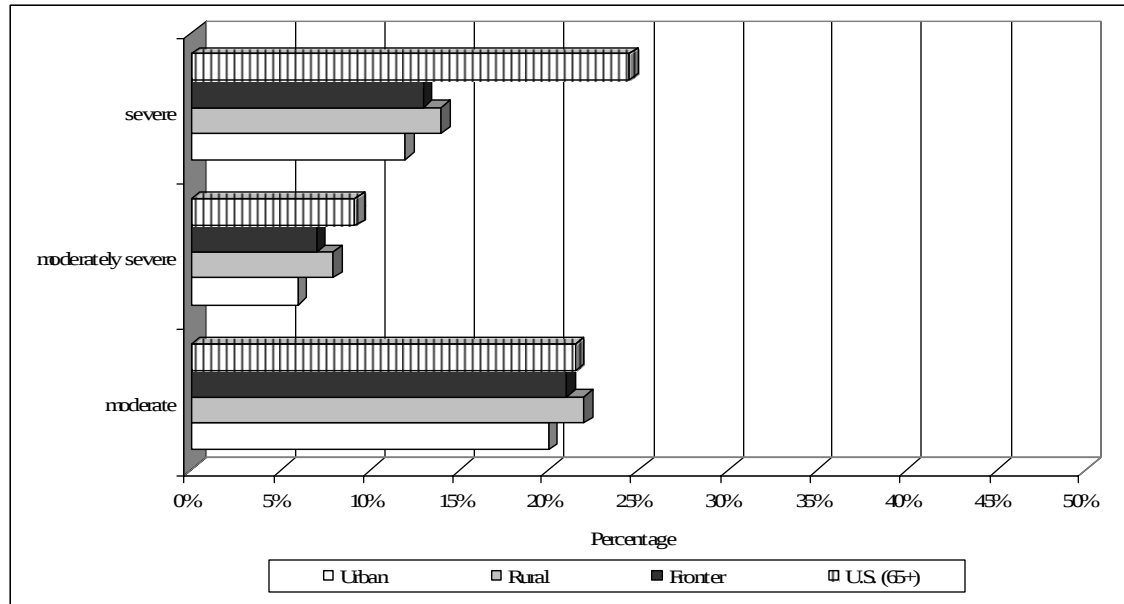
Figure 1: Prevalence of Chronic Disease by Rurality and Compared to the General Population



Note. * = Chi Square $p < .05$. Females are excluded from the prostate cancer and males are excluded from the breast cancer analysis.

- Native elders had a lower prevalence of severe functional limitation as compared with the general population ages 65 and over (National Long Term Care Survey, 1994). Native elders in rural and frontier areas had a higher prevalence of functional limitations as compared to urban elders (see Figure 2). Native elders with a functional limitation may have returned home to the reservation so that family members could assist them.

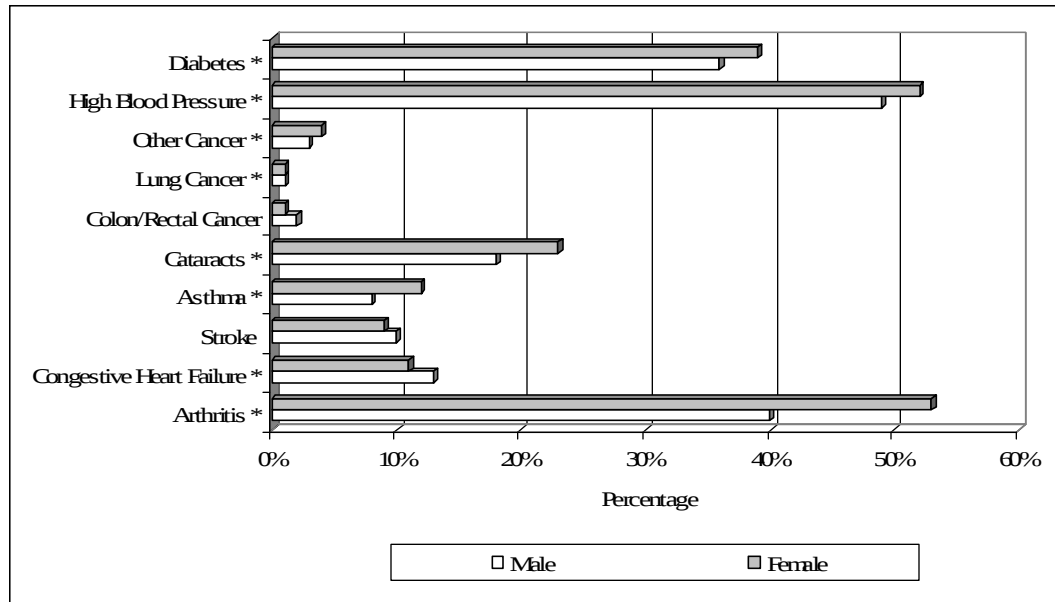
Figure 2: Prevalence of Functional Limitations by Rurality and Compared to the General Population



Gender and Chronic Disease

- Female Native elders had a significantly higher prevalence of diabetes, high blood pressure, other cancer, cataracts, asthma and arthritis as compared to male elders. Male elders had a significantly higher prevalence of lung cancer than females (see Figure 3).

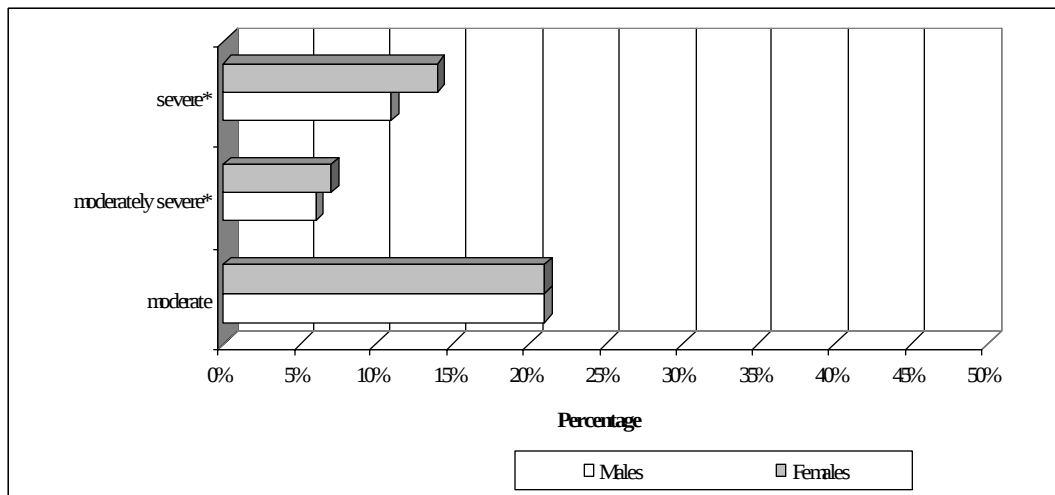
Figure 3: Prevalence of Chronic Disease by Gender



Note. * = Chi Square $p < .05$

- Female Native elders had a greater prevalence of moderately severe and severe functional limitation as compared to males (see Figure 4).

Figure 4: Prevalence of Functional Limitation by Gender

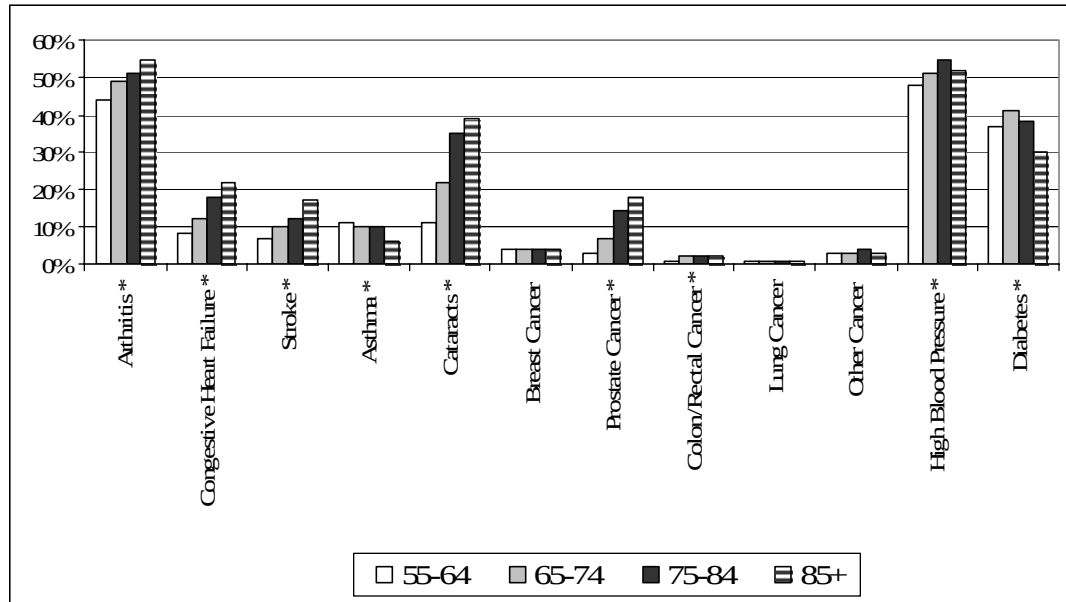


Note. * = Chi Square $p < .05$

Age and Chronic Disease

- The prevalence of arthritis, congestive heart failure, stroke, cataracts, colon/rectal cancer and prostate cancer increased significantly with age. Asthma decreased with age and the oldest age group (ages 85+) had the lowest prevalence of diabetes (see Figure 5).

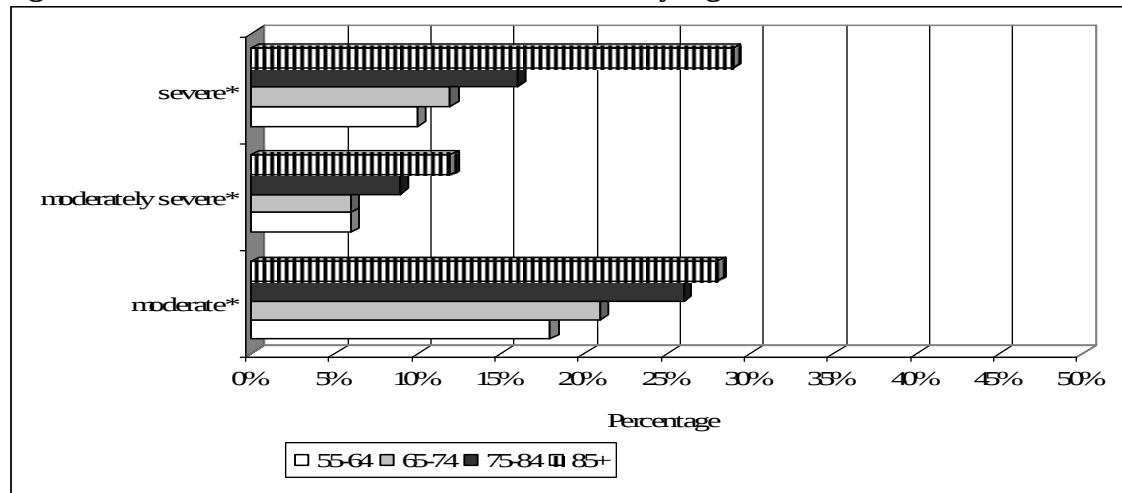
Figure 5: Prevalence of Chronic Disease by Age Cohort



Note. * = Chi Square $p < .05$ Females are excluded from the prostate cancer and males are excluded from the breast cancer analysis.

- Prevalence of functional limitation increased with age. Native elders ages 85 and older have the greatest prevalence for all levels of functional limitation (see Figure 6).

Figure 6: Prevalence of Functional Limitation by Age Cohort



Note. * = Chi Square $p < .05$

Results of Logistic Regression and Odds Ratios

The relationship between chronic disease and functional limitations and demographics, geographic location, health behaviors and health care access for Native elders was determined using a series of logistic regression models (N=5,437). Only significant findings are highlighted below.

- **Demographics and Chronic Disease**

- Elders in the youngest age group (55-64 years) were more likely to have asthma (171%) or diabetes (154%) than elders ages 85 and older.
- Females were more likely to have arthritis (60%), asthma (50%), or cataracts (28%) and less likely to have congestive heart failure (61%) than males.
- Elders with an elementary school education were more likely to have diabetes (42%) and those with an elementary or a high school education were more likely to have high blood pressure (22%) than Native elders who have graduated from college.
- Low income (less than \$5,000/year) was associated with an increased prevalence of a functional limitation (114%), arthritis (24%), diabetes (47%) or stroke (66%) than elders with an income of over \$20,000. Elders with an income of \$5,000-\$10,000 per year were more likely to have a functional limitation (114%), arthritis (24%), diabetes (51%) or a stroke (72%) than elders with an income of over \$20,000.

- **Rurality and Chronic Disease**

- Rurality of residential location was also a predictor of chronic disease. Rural elders were more likely to have high blood pressure (16%) or a stroke (49%) and urban elders were more likely to have had a stroke (69%) than frontier elders.

- **Health Behaviors and Chronic Disease**

- Current tobacco users were more likely to have arthritis (29%) and were less likely to have diabetes (30%).
- Elders who reported walking a mile or more at least one time in the last month were less likely to have a functional limitation (70%). Native elders who engaged in aerobics or dancing were less likely to have high blood pressure (67%). Those elders who reported gardening were less likely to have a functional limitation (39%) and diabetes (45%).

- **Health Care Access/Utilization and Chronic Disease**

- Native elders who reported staying at least one night in a hospital in the past year were more likely to have a functional limitation (192%), congestive heart failure (122%), diabetes (34%), high blood pressure (18%), stroke (63%), colon/rectal cancer (145%), lung cancer (129%), prostate cancer (113%) and other cancer (82%).

- **Co-Morbidity and Chronic Disease**

- The chronic diseases that were most prevalent among Native elders included high blood pressure (50%), arthritis (47%), and diabetes (38%). These diseases were more prevalent among Native elders than their counterparts in the general population over 64 years of age. Several significant co-morbid relationships were found among chronic diseases. Chronic disease clusters of particular note were diabetes/high blood pressure, congestive heart failure/high blood pressure, lung cancer/colorectal cancer and stroke/high blood pressure/diabetes. Having multiple chronic diseases had an adverse effect on elders' functional capabilities. The greater the number of diseases indicated by Native elders, the greater the likelihood of functional limitations. Native elders who had arthritis or a stroke were the most likely to indicate having functional limitations.



OVERALL CONCLUSIONS AND POLICY RECOMMENDATIONS

The protection of community wellness, prevention of disease and injury, the understanding of the impact of the environment on individual and community health, and the notion of wellness as integrally tied to spiritual, physical, mental, and social harmony are all key elements of Native value systems, and of public health. Given limited federal and tribal resources, targeted interventions need to be developed and implemented to improve the health of American Indian and Alaska Native elders based on quantitative data. Findings from this project assist in determining where and what type of interventions would be most beneficial to improve the health of American Indian and Alaska Native elders. Five conclusions have been drawn from the results of this study. Each of these conclusions is presented below with supporting data and policy implications.

The first and most important step to improving the health status of Native elders is ensuring that Indian Health Service regular appropriations and the Indian Health Care Improvement Act (IHCA), primary sources of IHS funding, are funded and reauthorized at an appropriate level to provide adequate health services to Native populations. The Indian Health Service's mandate is to provide health care services to members of all federally-recognized tribes. The unique relationship between sovereign Native American tribes and the U.S. federal government was established through a series of treaties, court decisions, and executive orders over the past 200 years. The Indian Self-Determination and Education Assistance Act of 1975 allow tribes to elect to assume responsibility and administration of their health care services or to remain within the IHS system.

IHS funding currently provides only 59% of the funding needed to provide for health care services (IHS, 2005). The federal government actually budgeted nearly twice as much per capita for health care to federal prisoners, \$3,803, compared to the IHS budget for American Indian and Alaska Native health care, \$1,914 (U.S. Commission on Civil Rights, 2003). Full funding of IHS is critical in order to ensure basic health care access to Native elders, before any of the suggested programs outlined below can be effective.



1. Increase disease prevention efforts including health promotion and wellness programs.

Rationale

Thirty-eight percent of Native elders are obese compared to 18% of the general population, ages 55 and older. Body mass index was identified as a factor in the prevalence of arthritis, asthma, diabetes, and high blood pressure in Native elders. In addition, some form of exercise was associated with a decreased likelihood of having diabetes, a functional limitation and high blood pressure.

Policy Recommendations

- **Federal agencies including the Indian Health Service (IHS), Administration on Aging (AoA), Centers for Disease Control (CDC), Health Resources and Services Administration (HRSA), Bureau of Indian Affairs (BIA), Administration on Native Americans (ANA) and the Agency for Healthcare Research and Quality (AHRQ) should allocate resources to develop and evaluate wellness programs that focus on healthy eating choices and physical activity for American Indians and Alaska Natives using a multigenerational approach.** Addressing these issues through a community environment perspective, may have the most positive impact on the health of all American Indians and Alaska Natives. Wellness programs such as Minnesota's Wisdom Steps represent interventions that could potentially serve as models for the nation's tribes. Further, due to the honored status of Native American elders in their communities, their participation in wellness activities may positively influence the health status for future generations. Because of limited opportunities for employment, the concept of vocational wellness (one dimension of wellness) should be expanded to include volunteer opportunities.

Supportive programs, such as Minnesota's Wisdom Steps, provide an opportunity for tribes to adapt a successful established wellness program to meet the needs of their elders. These programs are based on individuals setting personal health goals with the assistance from their physician. Success in the program is about the journey to health, as it encourages elders to improve their health by establishing personal goals.

The primary limitation to implementing a wellness program is engaging Native elders without community support. Success of the intervention rests upon key community Native elder leaders embracing and committing to wellness in their communities.

Overall, wellness programs provide an opportunity to focus on a holistic view of health that includes a community component that is beneficial to all generations. Evidence-based wellness interventions are key to learning what works and what does not work; therefore, evaluation of Native elder wellness programs could be

used to identify elements that enhance the health of participants and their communities. Best practice models could be identified and an evaluation could be used to discern whether these practices would be cost effective.

Researchers/evaluators of American Indian and Alaska Native descent would be recommended to ensure a culturally sensitive approach is used.

While cost effectiveness of wellness programs may be difficult to assess in the short term (such as a one or two-year study), there is ample evidence regarding the cost of various diseases and their complications that can be used as part of a cost benefit analysis. In addition, outcome data (specific or general) about the success of these types of wellness programs are unavailable; therefore, this data will need to be collected before large allocations are expended to expand programs.

- **An interagency team comprised of the IHS, ANA, CDC, the BIA, the Department of Education and the National Institutes of Health (NIH) should be created with the charge of developing a collaborative model for health promotion emphasizing community involvement.** Health promotion should become a major goal infused into programs of health care, community education, human services and in-home outreach programs. While the target population of elders is imperative, prevention must also address younger age groups such as those in pre-retirement cohorts.

The advantages of this approach are that an environmental, multi-disciplinary community approach to health promotion will have the greatest chance of making a lasting impact. Furthermore, implementing successful health promotion strategies across the age spectrum is critical to addressing the poorer health status experienced by the majority of American Indian and Alaska Native communities.

A major limitation to this approach is that historically, IHS funding has been unable to meet essential health care needs of American Indian and Alaska Natives. Efforts to redirect already limited funding to health promotion would be problematic; therefore, additional funding would need to be earmarked for health promotion efforts. In addition, through strategic planning IHS could focus on the most prevalent or debilitating diseases.

- **Health screenings not already supported for elders (55 years or older) should become the responsibility of IHS and the Centers for Medicare and Medicaid Services (CMS) as a part of targeted health promotion programs.** Health screenings, designed for early detection and treatment of chronic diseases, are essential to reduce functional limitations. These targeted chronic diseases would include arthritis, diabetes, high blood pressure, congestive heart disease, and stroke.

Early intervention limits complications and improves quality of life; therefore, the primary challenge is to identify funding for health screenings, especially in the current IHS budget. Taking into consideration that current IHS funding is inadequate to meet the basic health care needs of American Indian and Alaska Natives, these services should be funded separately and should not compete with existing lines of funding.

- **Designated funding within Health and Human Services should be provided to enable tribal health organizations and IHS to implement coordinated community screening and referral programs for American Indian and Alaska Native elders. These programs should be designed to remedy access to dental, hearing, and vision screenings.** Detection of dental, hearing or vision problems should occur before they contribute to other negative health outcomes, such as fall injuries or poor nutrition. Tribal health entities may want to consider partnering with public health to conduct these screenings.

Many communities have instituted local screening programs (e.g., a mobile dental clinic), thereby diminishing the need to travel outside of the community. Transportation is often a challenge for Native elders, especially those residing in rural and frontier communities. Providing community-screening programs would increase access for those who may not otherwise have access. In addition, partnering with public health provides an excellent opportunity to leverage other resources, such as adult immunizations, that can be provided during the community-screening program.

All screening programs require a funding source; therefore, collaboration with tribal and other non-tribal entities is essential. This collaboration requires leadership from the tribal community and also requires resources to maximize participation. Designated funding for tribal health, IHS, CMS, and public health would need to be secured to successfully implement a community-screening program.



2. Increase chronic disease management programs to prevent co-morbidity and increase access to services.

Rationale

Several statistically significant co-morbid relationships were found among six chronic diseases. Chronic disease clusters included: diabetes/high blood pressure; congestive heart failure/high blood pressure; lung/colorectal cancer; and stroke/high blood pressure/diabetes. Among those elders experiencing multiple chronic diseases, their functional status decreased, indicating the need for increased supportive services for the elders to remain independent. Moreover, the decreasing prevalence of diabetes among older elders indicates that those elders with diabetes may have shortened life spans.

Policy Recommendation

- **A joint CMS, CDC, ANA and IHS disease management demonstration program should target the most prevalent chronic diseases in Native elders including diabetes, arthritis and high blood pressure.** Adequate disease management prevents premature death, leads to better quality of life, and decreases the development of co-morbid conditions. This demonstration program could include collaborative care and self-management education. Self-management has been found to be effective in improving outcomes and reducing costs among individuals with chronic disease (Bodenheimer, Lorig, Holman, & Grumbach, 2002).

Current diabetes disease management programs have demonstrated effectiveness; however, there is little information pertaining to disease management programs targeted to Native elders. A demonstration disease management program targeted to Native elders would provide an opportunity to identify effective and non-effective elements that can be used to develop chronic disease management models for Native elder populations. The higher rates of chronic disease among this population suggest transitioning as quickly as possible from a demonstration to a full-scale program.

Due to the potential difficulty of managing several co-morbid chronic diseases, disease management programs should also include patient management programs. Native elders would benefit from assistance in navigating an increasingly complex health care system with multiple providers and locations of treatment.

3. Increase availability of home/community based long-term care services in rural areas.

Rationale

Significant relationships were found between functional limitations and arthritis, congestive heart failure, stroke, asthma, high blood pressure and diabetes. Increased functional limitations results in the need for home or community based long-term care services. Prompted by new federally funded research findings from the University of North Dakota's Center for Rural Health, National Resource Center on Native American Aging, the U.S. Senate Committee on Indian Affairs held an oversight hearing to examine the long-term care and health care needs of American Indian and Alaska Native Elders (July 10, 2002). During the hearing, the Committee Chair, Senator Daniel Inouye (D-HI) noted that "...long term care options for most Native American elders are minimal at best."

Policy Recommendations

- **A special initiative under AHRQ should be established that seeks innovative designs for providing home and community based long-term care services and support for demographically challenged reservations.** This initiative should seek to encourage new provider delivery models designed specifically for isolated and sparse populations, allow for experimentation with reimbursement strategies, and should include funds for evaluation. Special incentives for tribes to develop local solutions should be encouraged with funding mechanisms similar to those offered by states. A three to five year program on four reservation sites selected to represent the diversity in these demographically challenged areas is recommended. Community-University partnerships should be encouraged in this initiative to ensure the adaptation of current materials and state of the art knowledge in the design of new home and community-based care programs.

Innovative home and community based long-term programs that address the unique conditions of Native elders have great potential to improve the quality of life for Native elders, their families, and their communities. Using a community participative approach in developing, implementing, and evaluating programs is key to successful adoption of culturally appropriate long-term care solutions and should incorporate tele-health and information technology applications to span geographic distances. These programs would require new funding for AHRQ.

- **A special initiative for HRSA, IHS and AHRQ should be established that seeks innovative designs for providing home and community based long-term care services and support for demographically challenged reservations.** Collaboration among entities improves the likelihood of support for funding and success of innovative programs. Funding is the major challenge in implementing this recommendation; however, pooling resources by the aforementioned entities

may have the greatest potential for implementation. Also, formal policies are needed that recognize traditional Native religions as eligible for faith-based funding.

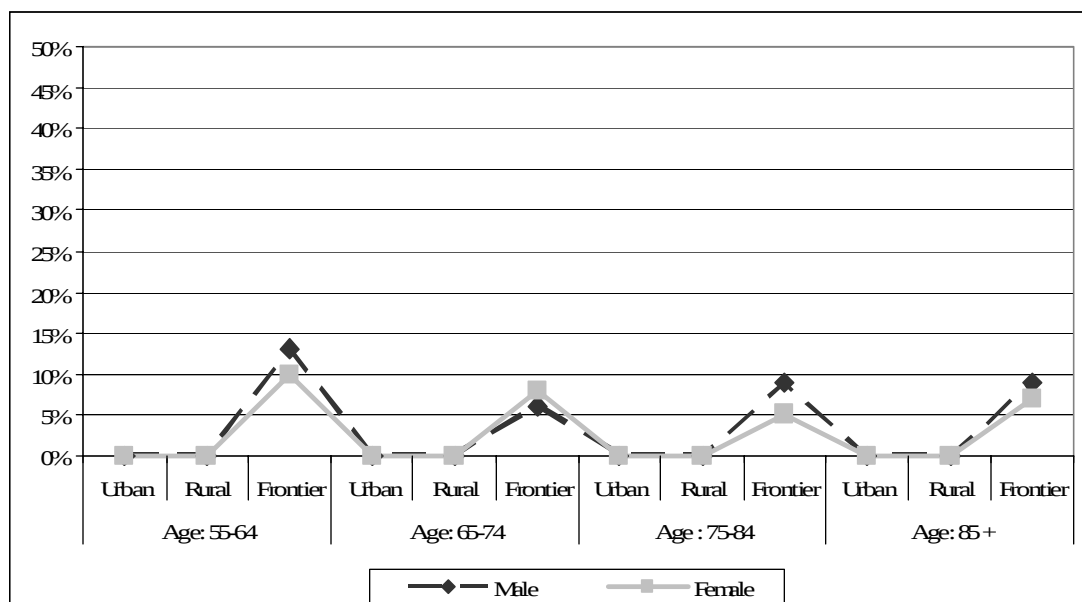
- **Congress should reauthorize the Indian Health Care Improvement Act (IHCIA) to full staff and respond to the needs of American Indians and Alaska Natives.** IHCIA was enacted in 1976 to address findings that the health status of American Indians and Alaska Natives ranked far below that of the general population. IHCIA is the key federal law that authorizes appropriations for IHS programs and projects, such as the delivery of health services, the surveillance of diabetes, and tools for monitoring the effectiveness of ongoing and future prevention strategies. Failure to reauthorize IHCIA has significant fiscal impact to IHS.

4. Increase availability of health care services and homes which are equipped with necessary plumbing and sanitation along with handicap accessibility to those Native elders living in rural reservation areas.

Rationale

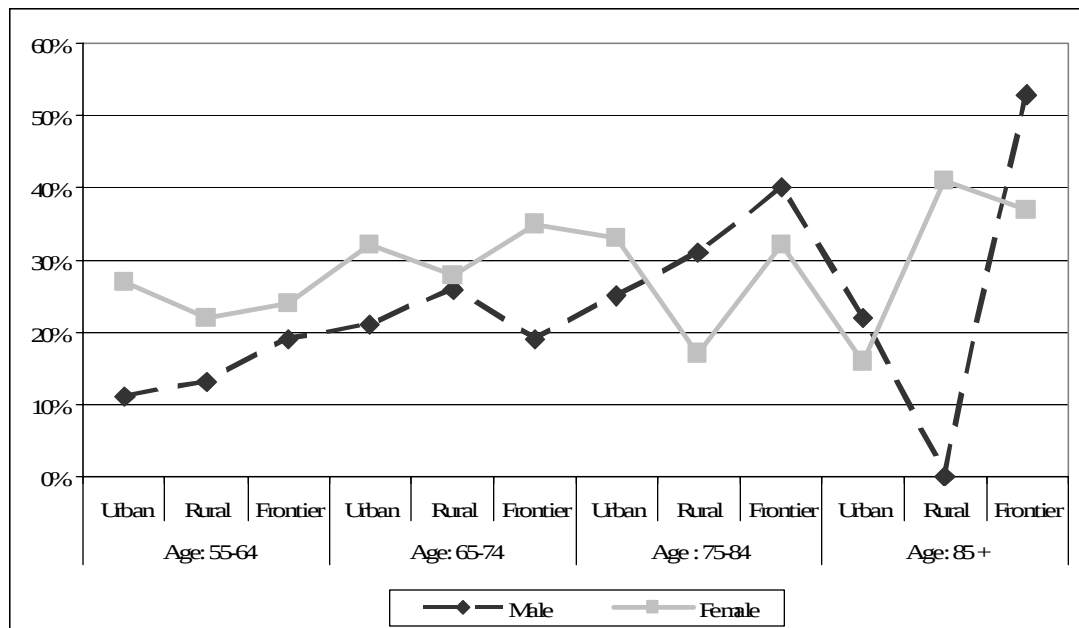
Access to health care services (e.g. hospitals, clinics, health care providers) was related to several chronic diseases. In addition, eight percent of frontier elders described their unmet health needs as, “unavailable services” in their area (Figure 7). These included access to physicians, nurses, dentists, an IHS representative, prescription medication, nursing homes, medical facilities, pharmacies, plumbing and senior centers. Although this is a small number of elders, no urban or rural elders cited these needs in their areas, thus emphasizing the lack of services in isolated frontier counties.

Figure 7: Access to Services as an Unmet Health Need



When asked about unmet health needs, 28% of elders identified a need to make homes handicapped accessible, by having a handicap bathroom and railings installed (Figure 8). Other responses centered on repairs or renovations to the home including having functional heating, plumbing and electricity. Elders, ages 85 and over and those living in frontier areas most frequently requested renovations.

Figure 8: Home Renovations Requested by Native Elders as an Unmet Health Need



Policy Recommendations

- The AoA Office for American Indian, Alaska Native, and Native Hawaiian Programs should advocate with states and other federal agencies to increase senior centers for frontier Native Elders.** Recognizing the vital link in the service delivery network, senior centers function as meal sites, screening clinics, recreational centers, social service agency branch offices, mental health counseling clinics, older worker employment agencies, volunteer coordination centers, and community meeting halls. The significance of senior centers cannot be underestimated. They provide a sense of involvement in the community, offer the opportunity to pursue activities of personal interest, and bring a sense of belonging to elders. Senior centers could also serve as a central location for provision of information technology services. These could include assisted telecommunication links with public services such as Social Security.

Increasing the availability of senior centers for Native elders residing in frontier counties has the potential of enhancing the network for Native elders, and also providing a common gathering place in which other community members can learn from and interact with Native elders. The inter-generational connections are

essential to sharing and preserving culture and community, especially for those most geographically challenged.

Additional funding for senior centers and staffing for the centers along and telecommunications for internet assistance would need to be identified.

- **A special initiative under Housing and Urban Development (HUD) should provide assessments, on a regular basis of Native elder's current housing environment in relationship to their health needs.** An implied goal of independent living is embedded in the preceding recommendations. Individual homes should meet the needs of their residents. Home safety audits should become standard practice for the elder population to ensure optimal conditions for independent living. These environmental assessments should be broadly defined to include medical equipment such as safety bars in bathrooms, toilet risers and such items that enable people to function at optimal levels in their home environments.

By assuring that Native elders live in homes appropriately equipped for their health needs, they are able to remain in their homes and communities rather than be moved to alternative care sites. In addition, maintaining elderly in their home and communities is cost effective, and adds to their quality of life. Communities also benefit by having their elders living among other generations.

Some Native elders' housing is so substandard that they would require new housing options if their homes were audited for safety. Funds to assist Native elders to upgrade their current living environments would need to be set aside in addition to funds to implement the home safety audit programs.

- **Congress should increase funds for the American Indian and Alaska Native Housing Assistance and Self-Determination Act (NAHASDA) to improve plumbing and sanitation conditions for frontier Native Elders and all American Indian and Alaska Natives.** Plumbing was identified as an unmet health need for frontier Native Elders. Access to plumbing and proper sanitation is essential to maintaining good health.

As some frontier Native Elders assist in providing care for their children and grandchildren, improvement in their living conditions will translate to improved living conditions for their families. It is a basic public health function that should be available to all Native elders.

Improvements in plumbing and sanitation require funding which is currently unavailable at the level of need.

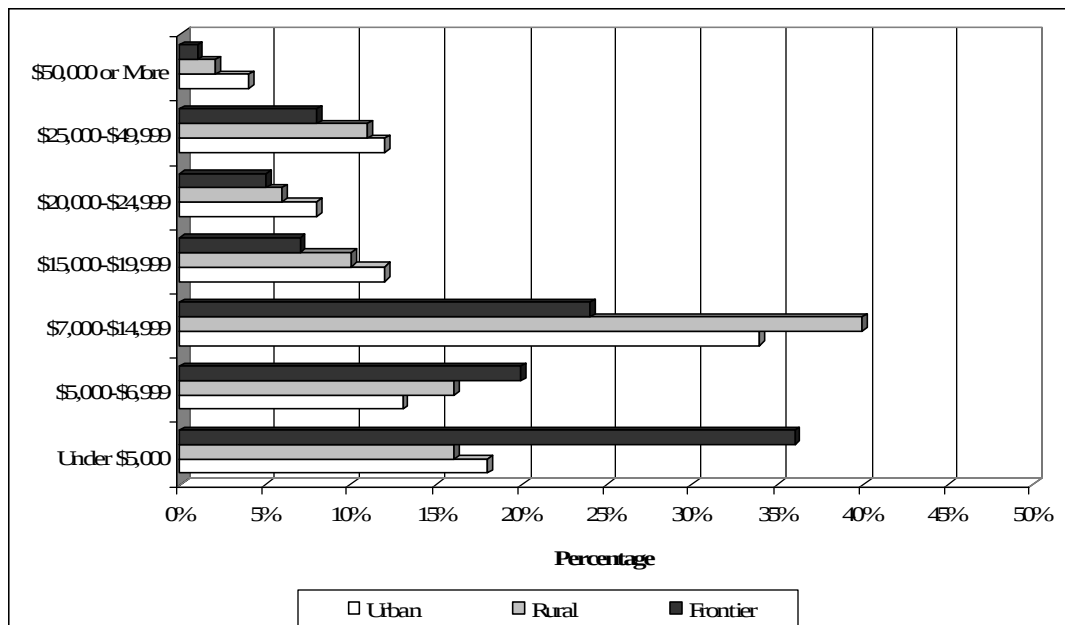
5. Increase access to educational opportunities which would result in increased income for future generations of Native Elders.

Rationale

Native elders living in rural and frontier areas most frequently had incomes in the lower income brackets including 36% of frontier elders with an annual income below \$5,000 and 40% of rural elders with an annual income between \$7,000 and \$14,999 (Figure 9).

Socioeconomic factors significantly contribute to one's health status over the course of a lifetime. Native elders having the lowest income and lowest educational levels were the most likely to suffer from high blood pressure, which is a precursor for many other health problems. Therefore, it is imperative to focus efforts on improving socioeconomic conditions in addition to improving access to health care. All American Indian and Alaska Natives, including current and future elders, will benefit from improved socioeconomic status.

Figure 9: Native Elder's Personal Annual Income by Rurality



Policy Recommendations

- **A special initiative under the Department of Education should solicit model cost effective mechanisms for enhancing perceptions of opportunities and improving student retention.** Education and income are both predictors of health and disability, thus it is essential in the overall outlook of Native health to increase support and enhance student retention and American Indian and Alaska Native students' perceptions of career opportunities. While this recommendation

deviates from immediate attention to elders, it is considered critical for the long-term. Future generations must realize more of the untapped potential of American Indian and Alaska Native youth. They are the elders of the future.

Improving the health disparities of future Native elders begins today with Native youth. Educational opportunities open doors for improved income, and ultimately, improved health. The long-term viability of American Indian and Alaska Natives is dependent upon investments in youth.

Efforts to provide better quality education and further opportunities for higher education would require investments by the Department of Education and tribal communities. Allocating funds to increase the educational level of future generations will require leadership from the federal and tribal governments.

- **Congress should increase funds for the ANA to fund programs such as the Social and Economic Development Strategies (SEDS) grants, which reduce dependency on public funds and social services by increasing community development.** The high rates of poverty and unemployment among the majority of American Indian and Alaska Native reservations denote the importance of economic development for these communities. Strategies to develop critical economic development infrastructure will assist the tribes for future generations and would provide a firm foundation for economic activity in the near future and beyond.

The goal of this recommendation is not to excuse the government from trust responsibilities set forth in past treaties, but instead to build the knowledge and infrastructure to assist tribes in accessing additional resources to address the underlying issues of high poverty and lack of infrastructure.

REFERENCES

- Area Resource File (ARF). Area Resource File Website. Available at: <http://www.arfsys.com/main.htm> Accessed on December 27, 2004.
- Bodenheimer, T., Lorig, K., Holman, H. & Grumbach, K. (2002). Patient self-management of chronic disease in primary care. JAMA, 288. 2469-2475.
- Campbell, J. (2002). Behavioral risk factors among rural American Indian and Alaska Native women in Oklahoma: Oklahoma REACH 2010. National Rural Women's Health Conference presentation.
- Congdon, J. & Magilvy, J. (2001). Themes of rural health and aging from a program of research. Geriatric Nursing, 22(5): 234-8.
- Coburn, A. & Bolda, E. (1999). The Rural Elderly and Long Term Care. In Thomas Ricketts, ed. Rural Health in the United States. New York: Oxford University Press.
- Coward, R., McLaughlin, D. & Duncan, R. (1994). An overview of health and aging in rural America. In Coward, B., Brill, G., Kukulka, Gahiler. Health Service of Rural Elders. New York: Springer Publishing.
- Davis, R. & Magilvy, J. (2000). Quiet Pride: The Experience of Chronic Illness by Rural Older Adults. Journal of Nursing Scholarship, 32: 385-390.
- Dixon, M., Lasky, P., Iron, P. & Marquez, C. (1997) Factors affecting Native American consumer choice of health care provider organizations. In A Forum on the Implication of Changes in the Health Care Environment for Native American Health Care. Washington D.C.: The Henry J. Kaiser Family Foundation.
- Forquera, R. (2001). Urban Indian Health. Kaiser Family Foundation Publication #6006.
- Frontier Education Center (2004) Frontier Counties from 2000 Census. Available at: <http://www.frontierus.org/index.htm?p=2&pid=6003&spid=6019> Accessed on December 27, 2004.
- Gamm, L., Hutchison, L., Dabney, B. & Dorsey A. (2003). Rural Healthy People 2010: A Companion Document to Healthy People 2010. Southwest Rural Health Research Center, School of Rural Public Health, the Texas A & M University System Health Science Center.
- Gillum, R. (1995). The Epidemiology of Stroke in Native Americans. Stroke, 26: 514-521.
- Indian Health Service (2003). Indian Health Service Fiscal Year 2003 Appropriation Results in 3.3% Funding Increase. Press Release. Rockville, MD: Indian Health Service.
- Indian Health Service (2004). FY2005 Budget Requests. Justification of Estimates for Appropriations Committees. Rockville, MD: Indian Health Service.

Indian Health Service (2005). Facts on Indian Health Disparities. <http://info.ihs.gov>

Institute of Medicine (2002). Unequal treatment: Confronting Racial and Ethnic Disparities in Health Care. National Academies Press: Washington, D.C.

Krishnan K, Delong M, Kraemer H, Carney R, Spiegel D, Gordon C, McDonald W, Dew M, Alexopoulos G, Buckwalter K, Cohen P, Evans D, Kaufmann P, Olin J, Otey E, & Wainscott C. (2002). Comorbidity of depression with other medical diseases in the elderly. Biol Psychiatry 52(6): 559

Krout, J. (1994). An overview of older rural populations and community based service. In Krout, J. ed. Providing Community-Based Services to the Rural Elderly. Thousand Oaks, CA: Sage Publications.

Kuschell-Haworth, H. (1999). Jumping through hoops: Traditional healers and the Indian health care improvement act 2 Depaul J. Health Care L. 843-844.

Ludtke, R., McDonald, L., & Allery, A. (2002). Long Term Care and Health Needs of America's Native American Elders. National Resource Center on Native American Aging, Center for Rural Health, University of North Dakota School of Medicine and Health Sciences, July 2002.

Medicare Payment Advisory Commission. (2001). Medicare in Rural America Washington, D.C.

McGinnis, M., Williams-Russo, P. & Knickman, J. (2002). The case for more active policy attention to health promotion. Health Affairs 21 (2), 78-93.

National Center for Health Statistics. (2001). Health, United States, 2001 with Urban and Rural Health Chartbook. Hyattsville, Maryland.

National Health Interview Survey. (1994). U.S. Department of Health and Human Services, Data Dissemination Branch, National Center for Health Statistics, Centers for Disease Control and Prevention: Hyattsville, Maryland.

National Health and Nutrition Examination Survey III. (1988-1994). U.S. Department of Health and Human Services, Data Dissemination Branch, National Center for Health Statistics, Centers for Disease Control and Prevention: Hyattsville, Maryland.

National Long Term Care Survey (1994). Duke University Center for Demographic Studies: Durham, NC.

Penland, J.G., Gray, J.S., Lambert, P., Wilson, E. L., Gonzalez, J., & Lukaski, H.C. (2004) Depression in Northern Plains Indians is associated with physical health and fitness, dietary

intakes, food insecurity, and cultural identification. Presentation at Experimental Biology Conference, Washington, D.C., April 17-21, 2004.

Randolph, R., Gaul, K. & Slifkin, R. (2002). Rural Populations and Health Care Providers: A Map Book. North Carolina Rural Health Research and Policy Analysis Center, University of North Carolina at Chapel Hill.

Rogers, C. (1999). Changes in the Older Population and Implications for Rural Areas. Food and Rural Economics Division, Economic Research Service, U.S. Department of Agriculture, Rural Development Research Report Number 90.

Sternfeld, B., Ngo, L., Satariano, W. & Tagers, I. (2002). Associations of body composition with physical performance and self-reported functional limitation in elderly men and women. American Journal of Epidemiology, 156 (2).

Tomas, C., McDonald, L. & Ludtke, R. (2003). Fact sheet: Gender differences in health risks amongst native elderly. National Resource Center on Native American Aging, University of North Dakota.

U.S. Census Bureau (2001). The 65 Years and Over Population: 2000: Census 2000 Brief. U.S. Department of Commerce, Economics and Statistics Administration.

U.S. Census Bureau (2002). Census 2000 Brief: The American Indian and Alaska Native Population: 2000.

U.S. Commission on Civil Rights (2003). A Quiet Crisis: Federal Funding and Unmet Needs in Indian Country. Washington, D.C.

U.S. Commission on Civil Rights. (2004). Broken Promises: Evaluating the Native American Health Care System: Draft report for the Commissioners' Review. Washington, D.C.

Wakefield, M. (2002). Turning up the volume to battle chronic disease. Nursing Economics, 20 (5). 229-231.

Zuckerman, S., Haley, J., Roubideaux, Y. & Lillie-Blanton, M. (2004). Health service access, use and insurance coverage among American Indian/Alaska Natives and Whites: What role does the Indian Health Service play? American Journal of Public Health, 94 53-59.