# An Aging North Dakota
# Baby Boom Becomes Senior Boom

*Demographics*

The population of the world, of the United States and of North Dakota is aging. It has been predicted by the United Nations that in 50 years, if current trends continue, one out of every three people in the world would be older than 60. Those predicted two billion seniors would outnumber the world's youth.

In the United States, according to the U.S. Census Bureau, 35.0 million people 65 years and older were counted in the 2000 Census. This number is estimated to have increased to nearly 36 million in 2003. In 2000, 5,574 Americans celebrated their 65th birthday every day.

With 14.7 percent in 2000, North Dakota was one of only nine states where persons 65 and older constituted 14.0 percent or more of their total populations. This percentage is estimated to have increased to 14.8 percent in 2003. Florida has the nation's largest proportion of persons 65 and older at 16.8 percent. Both North Dakota and Florida are well ahead of the national figure of 12.4 percent. (***Older Americans Report***, April 8, 2005)

As shown in Table 1, the people 60 and over increased by over 10 percent during the past 23 years while those 60 to 74 have decreased by over 7 percent during the same time period. The people in the age cohort 75 to 84 have increased by more than one-third (34.4 percent) since 1980.

What is astounding is the increase in the number of the oldest old – those 85 and older. Like the United States, North Dakota's oldest old population showed the highest percentage increase – nearly 100 percent since 1980. In fact North Dakota, not Florida, leads the way when it comes to the proportion of people 85 and older at 2.6 percent. (***Older Americans Report***, April 8, 2005)

How can the numbers in Table 1 be explained? There are many possible reasons for the increases: improved healthcare including preventative care; improved nutrition; improved hygiene; improved public health; less labor intensive work; and so forth. How can the decrease in the 60 to 74 age cohort be explained? One explanation might be that when people reach retirement age, they move to other parts of the United States such as the "Sun Belt" states. Another explanation may be related to the times they were born. The individuals aged 60 to 74 in 2003 were born from 1929 to 1943; this time period encompassing the Great Depression beginning with stock market crash in 1929 and extending to the middle of World War II. When times are prosperous babies are born; when times are lean and when many men are absent fewer babies are born.

According to the North Dakota State Data Center, 2020 will bring major changes in the demographics of North Dakota. The Center is projecting that the population age 60 and over will increase by 63.1 percent from 2000 to 2020. (Table 2)

It must be advised that population projections, according to the State Data Center, are mathematical calculations that illustrate what the population will be in the future if specific assumptions persist throughout the projection period. Although information depicting North Dakota's resident population is relatively accurate, the ability to forecast substantial changes is a socio-economic or demographic process that may alter current population trends is tenuous at best according to the State Data Center. What would happen to the projections if, in the next ten years, cures were found for cancer and/or Alzheimer's Disease or ways to prevent the onslaught of diabetes or heart disease? Because of this fact, it is wise to utilize these projections with caution. They should not be viewed as the sole element in planning or decision-making, rather as only one tool in the process.

Table 1
North Dakota Population by Age Cohort
Source: North Dakota State Data Center

| AGE | 1980 CENSUS (652,717) | 1990 CENSUS (638,800) | 2000 CENSUS (642,200) | 2003 ESTIMATE (633,840) | PERCENT CHANGE FROM 1980 TO 2003 | PERCENT OF TOTAL ESTIMATED 2003 POPULATION |
|---|---|---|---|---|---|---|
| **65+** | 80,445 | 91,055 | 94,478 | 93,837 | +16.7% | 14.8% |
| **60+** | 108,387 | 118,195 | 118,985 | 119,636 | +10.4% | 18.9% |
| **60-74** | 75,089 | 74,799 | 70,408 | 69,700 | -7.2% | 11.0% |
| **75-84** | 25,158 | 32.244 | 33,851 | 33.820 | +34.4% | 5.3% |
| **85+** | 8,140 | 11,152 | 14,726 | 16,116 | +98.0% | 2.6% |
| | | | | | | |
| **Median Age** | 28.1 | 32.4 | 36.2 | ----- | ----- | ----- |

Table 2
North Dakota Population Projections by Age Cohort
Source: North Dakota State Data Center

| AGE | 2000 CENSUS (642,200) | 2003 EST. (633,840) | 2005 PROJ. (640,200) | 2010 PROJ. (645,325) | 2015 PROJ. (648,972) | 2020 PROJ. (651,291) | PROJ. % CHANGE 2000-2020 |
|---|---|---|---|---|---|---|---|
| **65+** | 94,478 | 93,837 | 97,771 | 110,229 | 127,263 | 149,566 | +58.3% |
| **60+** | 118,985 | 119,636 | 124,043 | 144,137 | 168,978 | 194,002 | +63.1% |
| **60-74** | 70,408 | 69,700 | 70,503 | 83,283 | 102,400 | 120.744 | +71.5 |
| **75-84** | 33,851 | 33,820 | 38,251 | 42,027 | 43,918 | 49,000 | +44.8% |
| **85+** | 14,726 | 16,116 | 15,289 | 18,827 | 22,660 | 24,258 | +64.7% |

According to the State Data Center, three leading trends are seen to influence the state's current population and comprise the underlying assumptions used to project future populations within North Dakota: rural depopulation, out-migration of young adults young families, and an increasing proportion of older individuals.

For decades rural residents have been migrating to larger cities within the state. This movement has been due to better employment opportunities, increased health care availability, closer proximity to family and friends, etc. This trend of residential consolidation in North Dakota is not unlike that which is occurring throughout the Great Plains.

In the last decade, population growth has occurred largely in the metropolitan counties (Burleigh, Cass, Grand Forks and Ward) as well as the reservation counties (Rolette and Sioux). In fact, only six of the state's 53 counties grew between 1990 and 2000 (20 percent in Cass, 15 percent in Burleigh, 8 percent in Sioux, 7 percent in Rolette, and 2 percent in Ward). The long-term trend of net-outmigration is expected to continue. Thus, the majority of counties will continue to lose population. Currently, more than half of the 53 counties in the state have a population base below 5,000 residents. By 2020, it is projected that nearly half of the counties will have a population base below 4,000 residents (many of which will be older residents). (State Data Center)

In addition to the general trend of rural depopulation, another significant pattern that will have a major consequence on the future of the North Dakota's population is the out-migration of young adults and young families. This out-migration of young North Dakotans is not a recent phenomenon. It has been happening since the Homestead Act of the late 1800's and early 1900's. Young people, and many with families, left the state when they either met the Homestead Act requirements for their land and either rented out the land or sold it to a neighboring farmer or were unable to meet the requirements due to many reasons including the weather, insects or loneliness.

Out-migration continued during the Great Depression of the 1930s when the drought and economic recession forced people to seek employment in other states – mainly California. During World War II, young people, primarily women, left the state to work in war-supporting industries primarily on the two coasts. Soldiers returning home from the War often did not return to their homes in North Dakota but migrated to states such as Oregon, Washington, Colorado and California. During the farm recession of the 1980s, many farm families either sold or rented out their farms and migrated to other states in search of new careers.

But the loss of residents in their twenties and early thirties has increased markedly over the past two decades. This trend has created an age imbalance that is very evident when examining population pyramids. The pyramids, particularly for the rural counties, are top heavy with many older residents and

fewer children and working age (tax paying) residents. This loss of young adults means that there will be fewer parents of childbearing age and therefore fewer children. When young people leave the state they take their children and future children with them. As a result, the number of children (future tax payers and future care providers) will consistently decline for the majority of the counties in North Dakota over the next 20 years. (State Data Center)

The third significant trend is the increasing proportion of older residents. In 1980, 12.3 percent of the state's population base was 65 and older; in 2000, the proportion had increased to 14.7 percent. It is projected that by 2020 this proportion will be 23 percent or nearly one out of every four North Dakota residents. Further, 27 of the state's 53 counties had more than 20 percent of their population base 65 and older in 2000. As stated earlier, the national proportion of people 65 and older is only 12.4 percent.

In addition, North Dakota has the highest proportion in the nation of older residents 85 years and older (2.6 percent). These high proportions of elderly are due, in part, to modest net in-migration of seniors who are returning to the state to be close to family and friends. Elderly desiring to return to informal care networks, already a growing trend in population redistribution, will contribute to dramatically increase as the baby-boom population ages. If current trends continue, the number of people age 65 and older will grow by 58.3 percent over the next 20 years and will represent 23 percent of the state's population. Further, the number of the oldest old (85 and older) will grow by nearly two-thirds (64.7 percent) and will represent 3.7 percent of the state's population. (State Data Center)

These three demographic trends pose serious concerns for North Dakota. How will communities remain viable in the face of continued rural depopulation? How much will property taxes have to increase in order to make up decreased income taxes resulting from the increased numbers of "retired" North Dakota citizens? What will be the impact of increased property taxes on individuals living on fixed incomes? Will public and private entities continue to be able to provide physical, social and health care services to an ever shrinking and ever-aging population base in the majority of the state? Who will be the support providers in the state in the future? Will there be sufficient numbers of caregivers to meet the projected increased demand?

Population losses, which reduce community size, force remaining residents to face rising costs of, increased travel times to, and decreased availability of goods and services. Will communities and the state be able to ensure adequate healthcare in the face of rural hospital and clinic closings? What will be the impact of further school consolidations on communities across the state? Schools, post offices, and grain elevators tend to keep communities alive. How will communities address the impact of out-migration of young adults and children? Young adults provide the natural increase for a population base

themselves and when they have children. Who will be the caregivers for the older population when their children migrate out of state?

Young adults also add vitality, new thoughts, and new ideas to their communities. They are also the next generation of workers. The loss of this "human capital" will have significant effects on the state. Are communities, counties and the state positioned to offer services to a growing older population? Do they have adequate and appropriate housing, healthcare, caregivers and transportation?

As mentioned several times, the older population has been growing and aging rapidly, with the fastest growing segment being those 85 and older. This oldest component is the most likely to need health care support as well as economic, social and physical support, which suggest that the state needs to critically examine changes in this population.

The projected aging of the population is due, in large part, to the Baby Boom cohort – those born from 1946 through 1964. In 2020, the Baby Boomer born in 1946 will be 74. The real surge of Baby Boomers into Senior Boomers will not arrive on the "service-need scene" until around 2030 when the oldest Baby Boomer will be 84. It is projected that service demand could skyrocket. According to the Administration on Aging, there will be about 70 million older persons in the United States by 2030; more than twice their number in 2000. People 65 and older that represented 12.4 percent of the population nationally in 2000 is projected to grow to 20 percent or one out of every five Americans by 2030. (State Data Center) Although 2030 population projections for North Dakota are not yet available, the trends indicate that the state's proportion of older individuals will continue to be greater than the nation's and, thus, it would seem logical that this future impact would even be greater in North Dakota.

As is well known, the availability of comprehensive health care and social services often poses problems in low-density, sparsely populated communities such as exists in nearly all of North Dakota with the exception of the four major population centers – Minot, Grand Forks, Fargo-West Fargo and Bismarck-Mandan. The sparseness of North Dakota's population can best be described by using the term "frontier county." A frontier county is defined as any county have a population of six or fewer persons per square mile. When considering the 2003 population estimates, 36 of the state's 53 counties (67.9 percent) could be labeled as frontier counties. Statewide, there were 9.2 people per square mile with a range from a low of 0.6 people per square mile in Slope County to a high of 72.0 people per square mile in Cass County.

As would be expected, the number of people per square mile is greatly reduced when considering the state's older population. When utilizing the 2003 population estimates, there were 1.4 individuals 65 and over per square mile in the state. Twenty-seven of the state's 53 counties has less than one person age

65 and over per square mile. This fact makes provision of needed services a challenge.

The increased numbers of the older population, especially those 85 years and older, raises important social policy issues. The oldest old have the greatest need for long-term care services; however, Medicare, which provides significant health insurance coverage, offers only limited coverage for long-term services. Further, in addition to the relatively greater demand for services and low tax base, there are special problems of transportation, availability of facilities and resources, and delivery of services associated with the geographic dispersion and isolation of the state's older population. (State Data Center)

Along with the rapid growth of the oldest old, the predominance of women at advanced age is a key phenomenon. In 1990, 68 percent of the population 85 and older was female. In 2000, the percent of women increased to 69 percent. Older women tend to have higher poverty rates than older men. At advanced ages, declining health, reduced income and widowhood may prompt many older women to move to the largest cities in the state, where the necessary health and social services are located or where relatives of the older population might live.

The aging North Dakota population has important implications for future community planning. First, declining health and possible loss of some independence of the older population can increase their need for health services, financial assistance, housing, and social support. Second, poverty in old age hits certain subgroups hardest, especially the oldest old, those living alone, and the most rural older residents. Third, the preponderance of women at advanced ages and their greater economic vulnerability are important issues in program planning. Several factors – including work history, family roles in caregiving, marital status, and changes in pension coverage – affect retirement income and the economic well being of older women. The older poor have less access to support services, housing, adequate nutrition, and transportation, and are apt to be less healthy than their wealthier counterparts.

Approximately two-thirds of the state's elderly (age 65 and over) live in the fourteen urban counties of the state. These fourteen counties account for 75 percent of the state's population. (North Dakota State Data Center)

The densest clusters of oldest old population reside in the major population counties including Cass, Burleigh, Grand Forks and Ward. Although the remaining counties have smaller numbers of this population group, the oldest old population in these counties face problems unique to areas of low density, geographic isolation, poorer available transportation, and varying economic bases. Access to health care services is problematic for sparsely populated areas. These areas are also less equipped to meet the needs of their older residents. Comprehensive, state-of-the-art medical care and facilities tend to be available only in the larger urban areas of the state. Traveling long distances to

these medical centers may be feasible only for the younger and more affluent segment of this most rural older population.

North Dakota, like the entire Great Plains, is comprised mainly of farming and farm-dependent communities beset by older residents who are aging-in-place and the outmigration of young persons. Many of these communities have experienced the decline and departure of businesses and services, a fall in non-subsidy farm incomes, erosion of the tax base, and reduced services for the elderly (groceries, pharmacies, social activities, etc.).

The most rural communities in North Dakota are limited in public sector capacity. Local economic conditions will continue to affect the range of services available to older persons. Issues such as ease of access to services or low-density service provision are critical when considering the elderly in the counties without urban centers.

The leading edge of the baby boom population is currently entering the pre-retirement years. This means the state needs to prepare itself for a significant elderly growth boom. In 2000, 53,433 North Dakota residents were in the pre-retirement age category (i.e., ages 55-64). The number of pre-retirees in the state is expected to grow by nearly 23,000 people in less than ten years and by 32,250 people within 20 years. The number of pre-retirees in Burleigh County is expected to nearly double by 2020 and in Cass County it is expected to nearly triple. (State Data Center)

The growth of the population age 60 and older has posed and will continue to pose a major challenge to current government programs that support older people. Smaller family size, greater childlessness, and increased rate of divorce mean that many baby boomers will have fewer family resources to turn to in their old age. On the other hand, the economic circumstances of many in the baby boom generation may be better off than the present-day older persons at retirement, since greater proportions will have college degrees, formal labor market experience, and pension coverage.

With the projected increasing number of older persons, the need to provide services to this growing segment of the population will become more and more acute. The growth in the size of the elderly is associated with a major policy issue – the allocation of public resources. The older population requires a disproportionate level of services and share of the public budget. The combination of a growing elderly population, a relatively small working-age population, and the continuing low fertility means that only a relatively small number of persons of working age will be available to provide the services and fund the elderly need. The concentration of persons in the ages where chronic health problems are most common, in combination with the rise in the ratio of older dependents to workers (dependency ratio), may well overtax the supply of health and social services including staff.

*The North Dakota Survey of Elders*

One of the primary factors to consider in planning for aging services is statistics on a population's health. A statewide survey of North Dakotans over age 50, funded by a grant through the North Dakota Department of Human Services, was conducted by the Center for Rural Health, School of Medicine and Health Sciences, University of North Dakota in the fall of 2002 to examine several important aspects of the older population that are relevant or planning future long-term care programs. Health status, life style factors such as health risk behaviors, needs for environmental adaptation, functional limitations, location with respect to potential or current family caregivers, preparations for later life care and the availability, acceptability and use of long-term care services were included in the study. The following information describes the findings from the study.

Health Status

General health status was assessed with a single question asking respondents to rate their health on a five-point scale from excellent to poor. The results for the state present an image of relatively good health. The statewide result produced 48.7 percent reporting their health as excellent or very good and 20.1 percent reporting fair or poor. This compares favorably with data from the National Health and Nutrition Examination Survey in which the nation's population age 55 and older had only 31 percent of the national respondents in the excellent or very good categories and 34 percent in the fair and poor categories.

Nationally, the rural elderly are uniformly presented as having poorer health than the elders in urban areas. In North Dakota, however, self-reported health status does not indicate such a rural deficiency. Rather, the proportion indicating their health status as either excellent or very good in rural and frontier counties is equal to or higher than that found in the urban counties. Similarly, the proportion indicating their health status as fair or poor is lower in the rural and frontier counties.

In North Dakota, the Native American older population reported substantially poorer health status (25.3 percent of those 55 and over reporting good or excellent health) than that reported in national data (31.0 percent) or in the statewide survey (45.2 percent).

Respondents were asked whether a doctor had ever told them they had any of a list of 24 chronic diseases or disorders. To look at the most commonly listed diseases, the diseases in the top one-third of the distribution were selected. The results in Table 3 do not indicate any substantial differences among urban, rural, and frontier counties. Those chronic diseases most likely to result in activity limitation, however, may be slightly less prevalent in the rural and frontier counties. One concern emerging from this analysis is a question as to whether a

selective migration occurs from the more sparsely populated rural counties resulting in a misleading impression that these are healthier places for living. One should keep in mind that the data reflect prevalence rates, not incidence rates. Chronic diseases may well be a driving force for some selective migration to larger population centers where health care and a wider range of services are available.

Table 3
Urban/Rural/Frontier Comparisons of Most Common Chronic Diseases

| DISEASE | URBAN | RURAL | FRONTIER |
|---|---|---|---|
| **Arthritis** | 37.1% | 34.4% | 33.4% |
| **Cataracts** | 19.2% | 16.3% | 18.3% |
| **High Blood Pressure** | 36.1% | 36.9% | 40.6% |
| **Heart Disease** | 14.0% | 11.1% | 13.7% |
| **Diabetes** | 9.8% | 9.5% | 13.7% |
| **Circulatory: Legs/Arms** | 11.8% | 11.1% | 7.7% |
| **Osteoporosis** | 9.6% | 10.1% | 8.5% |

Comparisons of chronic disease prevalence rates with Native American data are limited to a smaller range of items. Table 4 contains the comparisons and while not all differences place the tribal elders in the most afflicted category, the majority of the comparisons do and some of the comparisons are dramatic. Arthritis, a major source of activity limitation, is dramatically higher among the tribes' elders and the prevalence of diabetes is nearly four times as great among the tribal elders, again leading to long-term consequences that are activity limiting. Cancer and cataract rates were both reported lower in the tribal data. Questions remain as to whether this finding may be due to under-diagnosis or other factors. Other national research has concluded that Native Americans have lower survival rates for cancer and this would affect the prevalence rates. Overall, it can be safely concluded that the prevalence rates for chronic diseases containing implications for future activity limitations are relatively high among the state's tribal populations.

Table 4
Comparisons of Chronic Diseases for Persons Age 55 and Over:
Statewide, ND Tribes and Nation

| DISEASE | ND STATEWIDE DATA (55 & OVER) | ND TRIBAL DATA (55 & OVER) | NATION DATA (55 & OVER) |
|---|---|---|---|
| **Arthritis** | 34.7% | 46.3% | 40.0% |
| **Congestive Heart Failure** | 6.7% | 6.3% | 8.0% |
| **Stroke** | 4.1% | 5.1% | 8.0% |
| **Asthma** | 6.7% | 7.7% | 7.0% |
| **Cataracts** | 17.9% | 17.3% | 28.0% |
| **Cancer** | 10.2% | 6.0% | 8.1% |
| **High Blood Pressure** | 37.8% | 42.5% | 43.0% |
| **Diabetes** | 10.6% | 48.2% | 14.0% |

In the statewide survey, respondents were asked whether they needed to have their homes modified in order to retain their independence, using a series of suggested modifications. (Table 5) The overall need for home modifications is substantial. Overall, 34.8 percent indicated a need for one or more home improvements in order for their homes to adequately help them retain their independence. The most frequent expressed needs were for air conditioning, weatherization, safety strips in bathtubs or showers and handrails. Comparisons by county classification revealed less overall demand in Frontier counties, but the picture is mixed. The greatest difference appeared with air conditioning and this may be interpreted differently as to whether it is needed to help people retain independence.

Table 5
Urban, Rural and Frontier Need for Home Modifications

| MODIFICATION | URBAN | RURAL | FRONTIER |
|---|---|---|---|
| **Grab Bars** | 8.4% | 11.3% | 9.4% |
| **Non-skid strips for bathtub or shower** | 14.9% | 15.1% | 11.1% |
| **Ramps** | 2.0% | 3.0% | 4.3% |
| **Handrails** | 11.6% | 15.1% | 10.8% |
| **Weatherization** | 16.1% | 15.1% | 15.4% |
| **Air conditioning** | 24.9% | 23.6% | 16.4% |
| **Modifications for wheel chairs** | 3.6% | 4.5% | 3.4% |
| **None of the above** | 63.5% | 62.6% | 70.0% |

The extent to which functional limitations exist in a population determines the degree to which the population will need assistance. The dominant measures of functional limitation involve the use of measures of limitation in Activities of Daily Living (ADLs) and Instrumental Activities of Daily Living (IADLs). ADLs represent the extent to which people have assistance needs for the most basic activities of living. These include bathing, dressing, eating, getting in or out of bed, walking and using the toilet. These activities are fundamental and when people express difficulties with them, they are considered to be in need of assistance. This assistance may be obtained from informal family caregivers, formally offered home and community based service programs or in more institutionalized care settings, such as nursing homes. As the number of activity limitations increases, the nature and amount of care required is likely to change with people in skilled nursing homes receiving the greatest amount of care and possessing the greatest amount of ADL limitations.

IADLs reflect activities required for independent living, but are less severe than ADLs. Examples include cooking, shopping, managing money, using a phone, doing light or heavy housework, and getting outside the home.

People normally experience needs with IADLs in advance of ADL limitations and the ADL limitations tend to evolve in a pattern with bathing one's self commonly

being the first and most frequent ADL for which assistance is needed. Eating and toileting are the least frequently identified ADLs among the non-institutionalized elderly.

In North Dakota 14.1 percent of the respondents from the statewide survey reported at least one ADL limitation. This proportion increases with age and as the population becomes older, the issue of ADL limitations becomes more significant. Another commonly used marker with ADL measures is the presence of three or more ADL limitations. This degree of limitation constitutes eligibility for nursing home care and is used quite consistently in measures of functional limitation. Comparing national data from 1994 with the North Dakota statewide and tribal data requires a limited comparison to those age 65 and over because of the age ranges used in national surveys. This comparison presented in Table 6 suggests a different picture than the self-report of general health status, with North Dakota age 65 and over having a slightly higher proportion with 3 or more ADL limitations than the nation and the tribal population reporting a rate of limitations that is higher than the statewide proportion.

Table 6
Limitation of 3 or More ADLs Among Persons 65 Years of Age and Over:
Statewide, ND Tribes and Nation

| LOCATION | PERCENT |
|---|---|
| ND Statewide Data | 6.4% |
| ND Tribal Data | 6.9% |
| National Data | 6.0% |

Examining the pattern of limitation in three or more ADLs in the statewide survey using urban, rural and frontier classifications produces a substantial difference between the frontier counties and the other two categories. Urban and rural counties reported 6 percent and 6.4 percent with three or more ADL limitations, but the frontier counties reported only 3.5 percent at this level of limitation. This suggests that the relative health of the population in these smaller counties reflects a selective loss of impaired older people. People experiencing significant functional limitations are more likely to relocate to accommodate their need for care. Unfortunately, rural depopulation remains one of the issues to be addressed for the state's most rural counties.

Again, IADL limitations relate to activities required for independent living, but not as basic as the personal care issues involved with ADL limitations. These may be employed as indicators of need for a range of home and community based programs that empower people to remain in their own homes. Meal delivery, homemaker services, chore services, and transportation are examples of such programs. It is important to note that limitations in IADLs normally precede the development of ADL limitations and that persons who report three or more ADL limitations are also likely to have extensive IADL limitations.

Among those who report only IADL limitations, the prevalence is greatest among the North Dakota tribes with 13.7 percent of those 55 and over having one or more IADL limitation. The statewide survey produced an overall prevalence of 9.6 percent with the frontier counties having the lowest rate at 7.7 percent and rural counties possessing the highest at 12.1 percent. Urban county respondents were in the middle with a prevalence rate of 10 percent. Once again, the need for service may be suspected of influencing people's decision to relocate, leaving behind relatively healthy population in frontier counties.

Functional limitations can be classified into categories that correspond to levels of care. A model that rests heavily on ADL limitations but that allows for multiple IADL limitations categorizes people into four groups. The groups are composed of those with little or no limitations, slight (one ADL limitation or at least two IADL limitations), moderate (two ADL limitations) and severe (three or more ADL limitations). These four groupings correspond to those who need no services, limited home and community based services, assisted living and nursing home care respectively. These are not rigid allocations, but assist in defining the volume of need at each level.

As shown in Table 7, the rates of functional limitations are lowest for the frontier counties, reflecting a relatively healthy resident population. They are also highest for the Native American elders, where at each level of limitation, the rates were the highest discovered in the state. The growing population of elders residing on the state's reservations present service needs that are likely to continue to grow.

Table 7
Functional Limitations Age 55 and Over: Urban, Rural, Frontier and Tribes

| LEVEL OF FUNCTIONAL LIMITATION | URBAN | RURAL | FRONTIER | TRIBES |
|---|---|---|---|---|
| **Little or none** | 81.1% | 79.3% | 84.5% | 71.1% |
| **Slight** | 8.9% | 9.7% | 8.4% | 16.1% |
| **Moderate** | 4.2% | 4.1% | 3.0% | 5.3% |
| **Severe** | 5.8% | 6.9% | 4.1% | 7.5% |

In the survey instrument questions were asked to discern where people experienced blindness or had difficulties with their vision despite the use of corrective lenses. North Dakota respondents did have a slightly greater proportion than the nation indicating blindness in either one or both eyes, yet when responding to the question about trouble seeing even after corrective lenses were used, the proportion have difficulty was less (see Table 8). North Dakota's Native American elders were more likely than their national or state counterparts to have either blindness or trouble after receiving corrective lenses.

Hearing difficulties rendered a similar pattern in that the rate of deafness was higher in North Dakota than in the nation and among the Native American elders.

Hearing aid use did not follow this pattern as the use of such aids was slightly lower in the state than for the nation, but was higher for Native Americans. It is also of note that the use of hearing aids declined from urban to rural to frontier counties, suggesting that those in rural and frontier counties may experience the least access to speech and hearing clinics. Finally, among those with hearing aids, it appears that substantially more North Dakotans with hearing aids have failed to achieve satisfaction after receiving the aids. Nearly twice as many North Dakotans continued to have trouble hearing after receiving hearing aids as did the nation. Satisfaction with hearing appeared highest among the Native Americans with hearing aids.

Table 8
Visual and Hearing Problems: Statewide, ND Tribes and Nation

| PROBLEM | NATIONAL | ND STATEWIDE | ND TRIBES |
|---|---|---|---|
| Blindness in one or both eyes | 3.0% | 4.4% | 7.5% |
| Trouble seeing even with corrective lens | 19.0% | 11.2% | 23.4% |
| Deafness in one or both ears | 4.1% | 11.8% | 13.1% |
| Wears hearing aid | 7.0% | 6.6% | 10.1% |
| Trouble hearing even with aid | 23.0% | 55.1% | 10.2% |

Health risk behaviors relate not only to present levels of chronic disease or disability, but also set the stage for future experiences. In this survey the researchers examined a set of health risks for which comparisons were available. Specifically, smoking, drinking, eating regular meals, exercise, weight levels, and social involvement were examined in the survey.

Smoking and exposure to second hand smoke are clearly linked with increased risks for a variety of chronic and acute diseases. North Dakota's older citizens appeared to smoke at rates below the nation's norms for comparable age people (see Table 9). This is substantially the case for the general population and is also the case, albeit to a lesser degree, for the Native American elders. The prevalence of smoking also varies little across urban, rural and frontier counties. The low rate of smoking signals a positive foundation for one of the most significant health risk factors. The public health benefits of avoiding tobacco is of course substantial and may be expected to pay dividends in the future by postponing and preventing diseases related to tobacco use.

Table 9
Smoking Rates Age 55 and Over: Statewide, ND Tribes and Nation

| LOCATION | PERCENT |
|---|---|
| **Statewide** | 16.6% |
| **ND Tribes** | 32.2% |
| **Nation** | 34.0% |

Smokers also expose themselves to relative risks depending on the amount of smoking with heavy smoking clearly the most destructive to health. The data on smoking volumes are found in Table 10. The greatest observed difference is that the North Dakota Tribes, who reported higher numbers of smokers, reported the lowest volume of cigarette consumption. This observation may be explained by ceremonial use of tobacco. One third of the state's Native American elders who reported themselves as smokers also reported that they smoke no cigarettes each day. This, the self-report of smoking contained ceremonial use of tobacco and in fact, the Native American elders were not heavy consumers of tobacco.

Table 10
Number of Cigarettes Per Day for Persons Age 55 and Over:
Statewide, ND Tribes and Nation

| NUMBER OF CIGARETTES/DAY | ND STATEWIDE | ND TRIBES | NATIONAL |
|---|---|---|---|
| **Less than 5** | 14.7% | 53.4% | 14.0% |
| **6 to 10** | 20.2% | 24.7% | 25.0% |
| **11 to 20** | 45.0% | 17.4% | 42.0% |
| **21 to 30** | 10.9% | 2.7% | 10.0% |
| **31 & over** | 9.2% | 1.8% | 10.0% |

Comparisons by urban, rural and frontier counties indicated that rural and frontier respondents smoked quantities of cigarettes that were slightly higher than the urban respondents. The average for urban was 16.4 cigarettes per day, while the rural respondents smoked 18.2 on average and the frontier smokers smoked 17.9 cigarettes per day.

Smoking behavior is a complex issue, but existing consensus suggests that it produces risks for increased illness and mortality levels. In the statewide data, when smokers and the volume of smoking are examined, there are significant relationships between smoking and age, gender, and education. Increases in age or education produced reduced amounts of smoking.

Future cohorts of retirees will be better educated and a byproduct of this appears to be a reduced likelihood of smoking. Gender differences also exist. Women smoked less than men, with 13 percent of the women respondents smoking compared to 23.2 percent of the men. It may also be noteworthy that the gender difference is smaller. As women have increased their smoking over time, it has been among the younger cohorts and this will produce more smokers among women who retire in the future along with some increase in risks for chronic diseases. This may offset some of the improvements expected in people with higher educational levels. Age differences may be produced by reduced smoking among older people or reflect different smoking behaviors among generations. This is not discernable with the data, but the prospect of significant change among future generations smoking does not appear great. Given the public health awareness of smoking issues, it is likely that over time the volume of smokers and smoking among smokers will decrease. Fortunately, this does

not present any negative growth in future health outcomes as a result of this risk factor. This is not to say that the need for continued and improved efforts to curtail smoking aren't needed, but rather there seems to be no particular pattern that suggests a surge or decline in smoking for future generations as they become old.

Finally, smoking among the Native American elders appeared to be exaggerated by the presence of people who smoke for ceremonial purposes, but do not smoke cigarettes. There are some features that merit special considerations for this population. When education is examined in relation to smoking among the tribe's data, there is no relationship. Normally, when the educational level of a population increases, smoking decreases. The data suggest that using education as a general vehicle for smoking reduction may not produce results for Native Americans, in part because some of the smoking is ceremonial. Smoking reduction efforts for this group should be fostered from within in order to accommodate subtle cultural differences in the view of smoking and tobacco.

Two questions were employed to examine the extent of alcohol consumption in both the statewide survey and North Dakota's tribal population. The first question dealt with the length of time since one's last alcoholic beverage. This item identified non-drinkers, drinkers with a long period of abstinence and those with a history of recent consumption.

North Dakotans appeared more likely to report lifelong abstention than the nation. This is true for both the statewide survey respondents and the tribal respondents as shown in Table 11. In those two samples of people age 55 and over, there were substantially more reporting that they had never had a drink than was found for the nation. Persons who were not lifelong abstainers, but not had a drink in more than three years, reflects a second level of abstinence. This category included those who have stopped drinking. The North Dakota Native American elders had an unusually large proportion in that category, reflecting a strong measure of conscious alcohol avoidance. This evidence was interpreted as positive behavior regarding this risk factor. Consistent with high proportion of respondents who had either never consumed alcohol or had not consumed alcohol recently is the observation that among North Dakota's Native American elders, there is a low rate of alcohol consumption for recent time periods.

Table 11
Time Since Last Alcoholic Drink for Persons Age 55 and Over:
Statewide, ND Tribes and Nation

| TIME SINCE LAST DRINK | ND STATEWIDE | ND TRIBES | NATIONAL |
|---|---|---|---|
| **Never had a drink in one's life** | 13.8% | 11.4% | 0.3% |
| **More than 3 years** | 22.9% | 56.8% | 29.7% |
| **30 days to 3 years** | 22.8% | 14.3% | 20.4% |
| **Within 30 days** | 40.4% | 17.5% | 49.5% |

Comparisons among urban, rural and frontier counties did not exhibit dramatic differences (Table 12). Members of the rural and frontier counties are only slightly more likely than urban people to be life-long or recent abstainers and are only slightly less likely to have recently consumed alcohol.

Table 12
Time Since Last Alcoholic Drink for Persons Age 55 and Over:
Urban, Rural and Frontier

| TIME SINCE LAST DRINK | URBAN | RURAL | FRONTIER |
|---|---|---|---|
| **Never had a drink in one's life** | 14.7% | 13.2% | 13.6% |
| **More than 3 years** | 20.9% | 22.8% | 24.8% |
| **30 days to 3 years** | 20.7% | 23.4% | 24.2% |
| **Within 30 days** | 43.6% | 40.7% | 37.1% |

The second alcohol item dealt with binge drinking among those who do consumer alcohol, defined as having five or more drinks on the same occasion. Using this operational definition of binge drinking, North Dakotans ages 55 and over did not fare as well as the nation. (Table 13) Only 7.5 percent of the nation's consuming population ages 55 and over whom drink indicated that they had one or more days of binge drinking in the past 30 days. This compares with 21.6 percent of the statewide respondents and 60.3 percent of the tribal population 55 and over. This leads to a conclusion that among those for whom alcohol consumption is present, North Dakota and especially North Dakota tribal elders have a high rate of heavy drinking.

Table 13
Binge Drinking in Past 30 Days for Persons Age 55 and Over:
Statewide, ND Tribes and Nation

| NUMBER OF DAYS WITH 5 OR MORE DRINKS | ND STATEWIDE | ND TRIBAL | NATIONAL |
|---|---|---|---|
| **None** | 78.4% | 39.7% | 92.5% |
| **1 or 2 days** | 12.5% | 36.8% | 3.7% |
| **3 to 5 days** | 5.9% | 7.4% | 2.0% |
| **6 or more days** | 3.2% | 16.2% | 1.9% |

The findings regarding differences in binge drinking between urban, rural and frontier counties are presented in Table 14. While the patterns are not dramatic, rural populations appeared to be more at risk for heavy drinking and the data indicated that the rural category has the greatest proportion of people engaging in some level of binge drinking. Frontier county respondents exhibited less binge drinking than other rural respondents, but more than the urban.

Table 14
Binge Drinking in Past 30 Days for Age 50 and Over:
Urban, Rural and Frontier

| NUMBER OF DAYS WITH 5 OR MORE DRINKS | URBAN | RURAL | FRONTIER |
|---|---|---|---|
| **None** | 82.6% | 71.3% | 79.1% |
| **1 or 2 days** | 10.6% | 16.4% | 11.8% |
| **3 to 5 days** | 4.3% | 9.4% | 5.0% |
| **6 or more days** | 2.6% | 2.9% | 4.1% |

Age differences were examined to determine whether any suggestion of increases or decreases in binge drinking is likely in future cohorts of elders. While cross sectional data can only offer limited suggestions regarding this issue, there is some comfort to be derived from examining the influence of age. The North Dakota Native American elders were examined using a dichotomy, those under age 65 and those 65 and over. This comparison exhibited a significant difference in the proportion with no occasions of binge drinking in the past 30 days. The proportions for the two age groups were 31.3 percent and 47.1 percent respectively. Alternative interpretations of this finding are difficult to resolve without longitudinal data. One might expect future cohorts of elders to carry with them patterns of heavier drinking since the age comparisons demonstrated heavier drinking among the under 65 cohort. Alternatively, the amount of alcohol abuse may decrease with age as a result of selective survival or people simply growing out of the behavior with age. The evidence of large numbers who report a pattern of recent abstention is encouraging and provides a basis for promoting a social norm supporting abstinence.

Similarly, the statewide data for the general population found a slight general trend toward less binge drinking with increasing age (see Table 15). A majority of respondents did not report binge drinking at all ages and this majority generally increased with each age category. One exception is the 55-59 age category where the number engaged in binge drinking increases and frequent heavy alcohol use is greater. Since this is contrary to the general trend, one must be alert to the possibility of increased alcohol-related issues for this age cohort. It may reflect greater acceptance of drinking among those who reached adulthood in the early 1960s. A second observation to note is the increased high frequency binge drinking reported by the older age groups. Persons who binge on more than 20 percent of the days would appear to have a severe alcohol use problem. Each age cohort produced a higher proportion of this frequent binge drinking until the 70 and over cohort. One interpretation for this phenomenon is that a progressive increase in alcohol abuse may be a reaction to late life stressors and signify a pattern of age-related dependency. In any event, there is evidence of a need to promote a healthier approach to alcohol among some mature adults.

Table 15
Statewide Binge Drinking by Age Group

| NUMBER OF DAYS WITH 5 OR MORE DRINKS | 50 TO 54 | 55 TO 59 | 60 TO 64 | 65 TO 69 | 70 & OVER |
|---|---|---|---|---|---|
| **None** | 73.3% | 68.8% | 84.2% | 82.9% | 89.8% |
| **1 or 2 days** | 16.7% | 20.8% | 7.9% | 5.3% | 6.6% |
| **3 to 5 days** | 7.2% | 7.2% | 3.4% | 6.6% | 2.2% |
| **6 or more days** | 2.8% | 3.2% | 4.5% | 5.3% | 1.5% |

P<.05, G -.26

Nutritional adequacy was addressed using a single item as representative of whether or not one ate regular meals. This item on breakfast was taken from the National Health and Nutrition Survey to serve as a proxy for this area. Eating a regular breakfast in this context is considered a positive health behavior and indicative of positive dietary behavior in general. Nationally, 77.0 percent reported eating breakfast every day. In North Dakota the statewide proportion was 77.9 percent, the differences between North Dakota and the national benchmark were small. The North Dakota tribes reported fewer eating breakfast daily (68.7 percent). The nation, state and tribes appeared quite similar in the proportions eating breakfast rarely or never.

Similar comparisons between urban, rural and frontier counties did not yield statistically significant differences. There was, however, a pattern of change with age. The youngest age cohort had the least regular pattern of eating breakfast and regularity in eating breakfast increased with age growing from 61.4 percent to 91.0 percent. This may reflect success in educating the public and a shift in the perception of the importance attached to diet over the life cycle. The overall result of this interpretation is that one would not predict future changes in nutritional adequacy assuming that this indicator accurately reflects nutritional adequacy.

Issues of weight are considered important both as direct predictors of disability and indirectly, as predictors of chronic diseases that eventually lead to disability. According to the Centers for Disease Control (CDC), a healthy Body Mass Index (BMI) for adults is between 18.5 and 24.9. The definition of BMI categories employs the effect body weight has on disease and death. CDC further states, “A high BMI is predictive of death from cardiovascular disease. Diabetes, cancer, high blood pressure and osteoarthritis are also common consequences of overweight and obesity in adults. Obesity itself is a strong risk factor for premature deaths.”

While many object to the relatively stringent definition of overweight as including those with a BMI of 25 or greater, empirical evidence establishes this as the point

at which health risks begin to accelerate. People are considered obese when their BMI is 30 or above.

BMI scores were calculated for the respondents on the statewide survey and the survey of North Dakota tribes. Computing one's BMI is accomplished using the following formula: BMI = (Weight in kilograms) divided by (Height in meters squared).

If one accepts the goal of avoiding overweight or obesity and uses the national norms as a basis for comparison, the statewide data produce an undesirable result. A classification recommended by CDC uses the following. Persons with a BMI of under 18.5 are considered underweight. Those between 18.5 and 24.9 are considered normal. Between 25 and 29.9 people are considered overweight and 30 and above constitutes obesity.

Nationally, 35 percent of the people over 55 years of age are classified as overweight and an additional 18 percent are considered obese. North Dakota respondents over 55 years of age produced 40.7 percent overweight with an additional 24.5 percent obese. Less than one percent of the state's respondents were underweight. This data suggest substantially greater risks due to weight in North Dakota's older population.

The statewide survey respondents produced no significant differences between age groups in terms of the levels of BMI. Consequently, it should be expected that this will become a greater concern in the future, but should remain alert to the pressure of a significant contributor to late life limitations in activity.

Data reflecting the North Dakota tribal elders also demonstrated relatively high proportions in the overweight and obese categories. The proportion in the obese category for this population was very high (39 percent) compared to the 24.5 percent fort he state and 18 percent for the nation. A significant difference did exist by age groups for the Native American population with people under age 65 reporting an average BMI of 29 compared with 27.5 for those 65 years of age and over. This suggests a great need for nutritional programs, exercise and weight control for the adult population living on North Dakota reservations. It also suggests that issues related to overweight are likely to increase as a heavier cohort reaches older age.

Comparisons by urban, rural and frontier counties suggested that adults in rural North Dakota are slightly more likely to be overweight or obese than their urban counterparts. Those with BMI scores in the obese or overweight ranges were highest in frontier counties, with rural counties also being higher than urban. Frontier counties have 72.4 percent of their respondents in the overweight and obese range. Other rural counties have 68.5 percent overweight or obese and the urban counties have 62.7 percent. Again, no consistent pattern by age was

found for this issue. These findings reinforce the need for nutritional counseling, weight control and exercise throughout the state.

Exercise is a pivotal aspect of wellness, yet one that is irregularly attended by many in society. A set of items including common modes for obtaining exercise were presented to the respondents with an opportunity for them to check each that the respondents engaged in one or more times a week. Each of these could be examined individually or in terms of some classification. The exercise list was also combined into a count that reflected the number of exercise activities engaged in by the respondents.

Comparisons between national norms, the statewide survey and North Dakota tribal data for specific exercises are in Table 16. Exercise rates are higher for North Dakota's general population for most of the listed activities. They are lower only for swimming and other dancing (including square dancing, swing, etc.). The item reflecting hard physical work was unique to the statewide survey. According to the researchers, these findings bode well for the state.

Table 16
Exercise Rates for Persons Age 55 and Over: Statewide, ND Tribes and Nation

| EXERCISE | ND STATEWIDE | ND TRIBES | NATIONAL |
|---|---|---|---|
| **Walk a mile or more at a time without stopping** | 40.8% | 24.8% | 37.2% |
| **Jog or run** | 4.3% | 1.4% | 3.9% |
| **Ride a bicycle or exercise bicycle** | 17.6% | 6.1% | 11.7% |
| **Swim** | 3.1% | 0.0% | 4.1% |
| **Aerobics or aerobic dancing** | 7.1% | 1.0% | 2.8% |
| **Other dancing** | 5.5% | 3.9% | 8.1% |
| **Calisthenics** | 18.9% | 13.6% | 14.8% |
| **Garden or yard work** | 49.7% | 30.9% | 46.0% |
| **Lift weights** | 8.1% | 6.1% | 4.0% |
| **Hard physical work for one hour or more** | 22.7% | NA | NA |

The comparison with the North Dakota tribal data produced the opposite picture, with the tribes' elders exercising less than the national norms on all indicators except lifting weights. One account for this difference has to do with access to facilities. Many of the exercise activities are dependent on access to designated space and/or facilities and these forms of exercise are clearly less often used by the Native American population. Particularly striking is the total absence of water-based exercise that is dependent on access to swimming pools or lakes. The absence of this item reflects an access problem, yet the Arthritis Foundation recommends water-based exercise for older people, particularly those with

arthritis in order to reduce the load on large joints. Similarly, access to indoor opportunities for walking programs, especially during the winter months is needed to promote walking as an exercise form and this too needs appropriate space.

A count of the exercise activities (excluding the item reflecting hard work) indicates the overall level of exercise and provides a basis for comparison with national norms. The results comparing the state and North Dakota Tribes with the nation are in Table 17. The nation has become more sedentary than populations of our state, with the state's general population much less likely to have no activities and also much more likely to have several exercise activities. The reservation populations are also engaged in more exercise activities than the nation, but substantially less than other areas of the state. This may be due to differences in access. It was noted earlier that those exercise activities that are facility dependent or that require organized programs are less accessible to some people in some locations. The lower amount of exercise may also be partially a consequence of higher level of physical limitation with Native Americans experiencing chronic illnesses and activity limitations at earlier ages than the balance of the population.

Table 17
Number of Exercises for Persons Age 55 and Over: Statewide, ND Tribes and Nation

| NUMBER OF EXERCISES | STATEWIDE | ND TRIBES | NATIONAL |
|---|---|---|---|
| **None** | 24.7% | 48.8% | 58.9% |
| **1** | 32.0% | 26.6% | 37.0% |
| **2** | 23.0% | 15.4% | 3.7% |
| **3 or more** | 20.1% | 9.1% | 0.3% |

Comparisons of urban, rural and frontier counties did not produce significant differences in the number of exercise activities. It is important to observe, however, that between one-quarter and one-half of the population over age 55 did not engage in any regular activities. Although the comparisons are gratifying, the overall rate of non-participation is still very high and impedes the public health.

Patterns of exercise reflect reduced activity as a function of weight. The number of exercise activities diminishes as weight classes increase, with the obese reporting the least amount of exercise. This presents a paradox in that the greatest need for exercise in order to manage or lose weight and to counter the adverse effects of weight among the overweight and obese and yet, their obesity inhibits exercise. The task of designing and encouraging appropriate exercise programs for people fitting this profile is great.

Social involvement was included in the study as an essential element of well-being. People who are socially integrated are likely to have a more positive

outlook on life and their involvement provides an incentive to remain active. Logically, such involvement leads to better health and greater independence. The measures of social involvement used in the study included indicators of attendance at church or religious activities and a combination of membership and participation in clubs and organizations.

Attendance at church or religious activities is relatively high in North Dakota at 52.2 percent of the respondents in the statewide survey reported attending church once a week. This compares with 36 percent nationally and indicates a high measure of social involvement through religious institutions for North Dakota. The definition includes sweats and ceremonies when applied to the Native American elders and they also reported relatively high levels of participation. The rate of weekly participation the North Dakota tribes' elders was the highest among all comparisons at 59.6 percent reported engaging in weekly attendance.

Church attendance also appears to increase among people in more sparsely populated areas. Attendance at church was reported by 50.6 percent of the urban respondents, 51.8 percent of the rural respondents, and 54.9 percent of the frontier respondents. While this reinforces a stereotype of rural morality, it is significant for the study's purposes because of the level of social involvement. North Dakotan's are substantially involved with religious organizations.

Membership and participation in clubs and organizations also signifies active involvement on the part of people. Two questions established the extent to which people have memberships and are actively involved in clubs and organizations. First, the study examined whether North Dakota populations were active in joining clubs and organizations. Nationally, 35 percent join organizations. In North Dakota the rate of memberships was greater with 59.9 percent of the statewide respondents 55 years of age and over reporting belonging to one or more clubs or organizations. The Native American elders reported a rate of joining of 40.9 percent – also higher than the national average, but lower than statewide.

Among those who report joining clubs or organizations, North Dakota respondents from the statewide survey were more likely to limit memberships to one, two or three organizations. The nation's total population of joiners appeared to opt for multiple memberships. This was also true for the North Dakota tribal sample where 93.7 percent were involved in three or fewer organizations (see Table 18).

Table 18
Number of Memberships Among Joiners for Persons Age 55 and Over:
Statewide, ND Tribes and Nation

| NUMBER OF CLUBS | STATEWIDE | ND TRIBES | NATIONAL |
|---|---|---|---|
| **1** | 29.5% | 69.8% | 21.0% |
| **2** | 30.3% | 15.7% | 9.0% |
| **3** | 18.8% | 8.2% | 27.0% |
| **4** | 9.8% | 1.9% | 17.0% |
| **5 or more** | 11.6% | 4.4% | 26.0% |

When the item reflecting memberships was combined with a question reflecting frequency of attendance, it became evident that although the North Dakota samples are all inclined to join organizations, they are more likely to be active in those they do join. Nationally, 90.9 percent of those who join clubs and organizations reported no participation. Comparable numbers for the statewide and tribal data were 49.3 percent and 69.9 percent respectively. Differences by urban, rural and frontier residence were not statistically significant.

The value of this information is that North Dakota has an active population when it comes to being involved in church and organizational activities. This active base serves those who participate by promoting socially active lifestyles, which in turn keep people both active and independent. It also provides a social base from which to promote activity. Building increased social involvement would clearly be easier from a foundation in which a substantial number of the community is already involved.

Overall, the question as to whether North Dakota's older population contains either healthy or unhealthy practices or characteristics that would impact future long-term care needs is mixed. The importance of smoking, alcohol abuse, overweight, diet, exercise and social integration are certainly not uniform, yet no statistical algorithm is available to weight the relative importance of each. Health promotion and wellness activities are important in response to each and all of these risk factors. Smoking did appear in the cross sectional data to taper with age, but many of the health consequences are established by smoking at earlier ages. So also is the case with alcohol. Even a small percentage of the population with alcohol dependency produces a large volume of human suffering. While it is expected that fewer people drink in the older cohorts, a significant increase was found in intense binge drinking among the drinkers of these older cohorts. This would appear to command attention, both intervention- and prevention-targeted at mature citizens. The risk factor that yields the largest difference between North Dakota and the nation is with the degree of overweight and obesity. North Dakota has a very high proportion of its population with weight beyond recommended levels. This leads to increased prospects for chronic diseases such as diabetes, heart disease and osteoarthritis. Part of any statewide wellness effort would clearly benefit by strong attention to diet, weight

and exercise. While each of these may be addressed independently, they operate in unison to produce adverse health outcomes.

Household Characteristics

Household size is an important characteristic of one's household. Living alone in later life creates a unique context when it comes to adapting to functional limitations and the need for assistance. Comparing the household sizes for the North Dakota statewide population with the tribal respondents reveals significant differences. In North Dakota, the general population over age 55 had an average household size of 1.82 persons. The tribes' population over 55 reported households with 2.79 persons on average, substantially larger households than the general population. Further evidence of this is presented in Table 19. The proportion of households that are single person households is substantially less in the reservation communities while the proportion with three or more persons is over four times as great for the North Dakota tribes.

Table 19
Household Size Characteristics for Statewide and ND Tribes

| | **STATEWIDE** | **ND TRIBES** |
|---|---|---|
| **Mean household size** | 1.82 persons | 2.79 persons |
| **Proportion with 1 person** | 33.6% | 21.9% |
| **Proportion with 2 persons** | 57.9% | 32.4% |
| **Proportion with 3 or more persons** | 8.5% | 45.7% |

The significance of household size can be appreciated when informal caregiving is considered. Those living alone are handicapped by not having another member of their household to rely on for informal care, while those living in larger or extended households have an advantage with access to help.

The influence of age on household size is significant and in order to account for the influence of age, age specific comparisons of the state's general population with the tribes' data were developed. As evidenced in Table 20, the differences in household size declined with age. The difference for those 55 t0 64 years of age was 1.13 persons on average. This is a large difference and while the difference dropped to an average difference of .76 persons per household for those 75 and over, this is still a very large difference. Clearly, the Native American elders were more likely to live in households with extended family present. This can be a source of strength when incorporating informal caregivers into the state's long-term care system.

Table 20
Household Size for Persons 50 and Over by Age

| | 50-54 | 55-59 | 60-64 | 65-69 | 70-74 | 75 & UP |
|---|---|---|---|---|---|---|
| **Mean household size** | 2.35 | 2.08 | 1.93 | 1.82 | 1.81 | 1.50 |
| **Proportion per 1 person** | 13.4% | 19.3% | 18.9% | 30.9% | 31.6% | 59.9% |
| **Proportion per 2 persons** | 54.8% | 63.3% | 75.1% | 62.4% | 58.2% | 37.0% |
| **Proportion per 3 or more persons** | 27.8% | 17.4% | 7.0% | 6.9% | 10.2% | 3.4% |

North Dakotans in both the statewide survey and the survey of tribal elders tended to be geographically stable, with the majority of respondents age 55 and over having lived at their present address for over 20 years. The length of current residence also increased among the rural and frontier populations. Indeed, the longest residential tenure is found in the frontier counties where 61.4 percent of the respondents lived at their present address for over 20 years. The shortest residential tenure was found in the urban counties.

Respondents were also asked how likely it was that they would move in the next 10 years. The results are in Table 21. Residents of North Dakota's sparsely populated frontier counties were the least likely to express an intent to move. The urban population was the most likely to move. It appears that rural people were the most committed to aging in place and that if they eventually were required to move, it would likely be against their wishes. Further evidence of this desire to remain in their communities was found in the observation that an inverse relationship between age and the likelihood of moving.

Table 21
Likelihood of Moving in Next 10 Years for Persons Age 50 and Over:
Urban, Rural and Frontier

| | URBAN | RURAL | FRONTIER |
|---|---|---|---|
| **Unlikely** | 62.2% | 70.3% | 74.1% |
| **May move within present community** | 14.5% | 11.2% | 6.7% |
| **May move to another community** | 10.3% | 9.4% | 12.5% |
| **Will definitely move within present community** | 7.2% | 4.4% | 1.9% |
| **Will definitely move to another community** | 5.8% | 4.7% | 4.8% |

Consistent with demographers' observations that migration decreases with age following peak migration occurring in young adulthood, the anticipation of moving declined with age and the least likely to anticipate moving were those in the oldest age cohorts. When one examines the population structure of frontier counties, the evidence is clearly showing that the younger cohorts have been leaving and that over time this has prepared a foundation for limiting access to informal caregiving. The available caregivers are simply no longer available to the extent they one were. An expectation exists that older residents will follow their children and also leave the sparsely populated rural counties. This, however, does not appear supported and even among the frontier counties; the oldest cohorts are the most committed to aging in place and resistant to moving. Additionally, among those who indicated that they either might or would move, the dominant location designated for those over age 65 was within the present community and the proportion indicating that they would be likely to move within their present community increased with age.

Levels of functional limitation were cross-tabulated with the likelihood of moving and no significant relationship was observed. Evidently, even those beginning to experience functional limitations do not see moving as a solution to their problems and are committed to staying.

Family Dimensions

Living alone may contribute to one's need for formal assistance when functional limitations arise. The surveys conducted in North Dakota asked people about the composition of their households using similar questions. The statewide sample was compared to the sample taken from North Dakota tribes using categories for living with family members, living with non-family members, living with both family and non-family members and living alone (see Table 22). Significant differences were observed between the general population and the ND tribes for those living alone or living with family. Those living with family included living with spouse, parent, brother, sister and/or children. Elders in the general population were more likely to live alone and correspondingly less likely to live with family members. This difference was substantial and would affect the efficiency of relying on programs such as a family caregiving program.

Table 22
Household Composition for Persons Age 50 and Over:
Statewide and ND Tribes

| | **STATEWIDE** | **ND TRIBES** |
|---|---|---|
| **Live with family** | 63.5% | 72.4% |
| **Live with non-family** | 2.8% | 2.8% |
| **Live with both family and non-family** | 2.0% | 1.1% |
| **Live alone** | 31.7% | 23.7% |

Family composition was queried in greater detail for the North Dakota statewide survey. Respondents were asked how many living relatives they had in each of the following categories: sons, daughters, brothers, sisters, and parents. Children and siblings constitute a pool of prospective family caregivers. Parents in a sample of people age 50 and above would more likely constitute the group in need of care.

It is interesting to note that the average number of living siblings for those over age 50 was greater than the average number of children (3.14 compared to 2.92). While the difference was not great, it does reflect the smaller family sizes resulting from the long-term fertility decline. These smaller numbers of children, in turn, have the caregiving task for a parent generation that is experiencing significantly increased life expectancies.

The question as how urban, rural and frontier counties compare with respect to the mean numbers of children and siblings is presented in Table 23. The average number of children was smaller in each category, but the average did increase as one moves from urban to frontier.

Table 23
Average Number of Living Children and Siblings: Urban, Rural and Frontier

| | **AVERAGE NUMBER OF LIVING CHILDREN** | **AVERAGE NUMBER OF LIVING SIBLINGS** |
|---|---|---|
| **Urban** | 2.81 | 3.38 |
| **Rural** | 3.09 | 3.52 |
| **Frontier** | 3.22 | 3.58 |

Overall, the influence of population size and density on the availability of living children and siblings was small and not likely to have an impact on informal caregiving. Since spouses and children are the most likely caregivers for the frail old, the availability of living children is a legitimate concern. The data suggest that in terms of living persons, there are only slightly more informal caregivers available for residents of rural and frontier counties.

When attention is shifted to the local presence of potential caregivers, the question of how many of these relatives live nearby becomes important. The average total number of living relatives was 6.95 persons. Using a traveling distance of one hour's travel time one way, the average number of available family members was reduced to 2.35. Less than half of the relatives lived sufficiently close to participate substantially in family caregiving relationships. Further, the number of available family members does not vary significantly by location.

Restricting the analysis to those over 75 years of age, the availability of family members declined predictably. The average number of available family members for this age group was 2.01 and the average was least for the most

isolated frontier residents where the average was 1.78. This may be interpreted as evidence of North Dakota's loss of younger people through out-migration and as evidence that the portion of the population with least access to formal services also has the least access to informal caregivers from within the family.

Housing Adequacy

In order to determine the adequacy of housing when faced with a contingency of becoming disabled, a question regarding how adequate one's home would be should a member of the household become disabled. The majority of North Dakota homes for the 50 and over population would not be adequate for a disabled person without at least some modification. Only 35 percent indicated their homes would be adequate as is and 20.6 percent rated their homes as inadequate. The remaining 44.4 percent indicated that their homes would be adequate with modifications. This pattern did not vary when comparing urban, rural and frontier counties and suggests that efforts to enhance home and community based services or to increase and support family caregiving will require significant attention to housing as well.

Informal Caregiving

The care providers are the family, unpaid informal caregivers and paid formal caregivers; the family probably being the major care provider. This observation of the importance of informal care is both critical and complex. Recent attention to family care providers by the Administration on Aging (AoA) has elevated the visibility of informal care. It has also promoted attention to the need for support services for these care providers.

In the statewide survey, two questions were addressed regarding informal care. The first question dealt with whether the respondent was either receiving assistance from or providing assistance to family members with activities of daily living (ADLs). The second items were broader and asked whether anyone in their household was serving as either an informal caregiver or a senior caregiver. Definitions of each were read to the respondents with informal care reflecting providing assistance to someone over age 60 and including a broad range of assistance, extending to IADLs. Senior caregiving referred to a person over age 60 living with and providing care to a grandchild or young person under the age of 18 as the primary caregiver.

Overall, 5.9 percent of the respondents indicated that they are providing or receiving care from family members. The distribution for urban, rural and frontier is presented in Table 24. The rate of family caregiving was slightly higher in the frontier counties where 6.9 percent reported that they were in family caregiving relationships. The frontier counties were both more likely to provide and receive assistance from family caregivers. This probably reflects the scarcity of services as well as strong value of familism.

Table 24
Proportion Providing or Receiving Help from Family with ADLs for Persons Age 50 and Over: Urban, Rural and Frontier

| PROVIDING OR RECEIVING HELP FOR ADLS | URBAN | RURAL | FRONTIER |
|---|---|---|---|
| **None** | 94.6% | 94.7% | 93.2% |
| **Providing help** | 3.4% | 3.0% | 4.0% |
| **Receiving help** | 2.0% | 2.0% | 2.2% |
| **Both providing and receiving help** | 0.0% | 0.3% | 0.7% |

Family caregiving was assessed in relation to the ADL needs and these caregivers are the most likely to be targeted for supportive services. Those providing family care can be described with the following thumbnail sketch. They are largely without serious functional limitations themselves, but 10.6 percent of them reported two or more ADL limitations. This suggest that among family caregivers, there is a number who are themselves quite limited. With spouses the most common caregivers, one would expect that some of the caregivers themselves are in need of care. The family caregivers were also likely to be women (75.4 percent), under age 65 (71.4 percent), and relatively affluent with 52 percent of the annual incomes above $25,000.

The recipients of family care were also predominately female (75 percent) and presented an age distribution that was older than the recipients, but that was also spread over the entire age range (50 and over). They were also less affluent as the majority (52.4 percent) reported incomes of less than $15,000.

When shifting attention from family caregiving with ADL needs to the broader category of informal caregiving and needs expanded to include IADLs, the proportion of the respondents engaged in informal caregiving increases to 10.3 percent and did not vary significantly by location. Similarly, senior caregivers occurred at a rate of 3.2 percent among the respondents and again, this did not vary by location.

Access and Use of Formal Services

Formal services were examined both in terms of local availability and use. The first issue of local availability relies on the respondent to recognize the various services as being part of the array of services provided locally.

In rural areas, some services may reach only part of the population, while in others the population may not have uniform awareness. For example, the availability of services to those who reside in the open country is often limited. Programs that take services to people, such as transportation, meals-on-wheels, personal care and such become difficult to offer to all residents of a county when they are so geographically dispersed.

All services were reportedly less available to those living on farms and ranches and a minority of the respondents living in the open country reported finding most services available. Only home health and physical therapy were reported locally available to over 50 percent of the respondents living in the open country.

The availability of services is shown in Table 25 and clearly demonstrates a reduction in availability as people live in more remote rural places. The drop is particularly dramatic when one looks at the sparsely populated frontier counties. In these counties many services are not available to the majority of their residents. Indeed, developing access to programs that are becoming part of a national standard may represent one of the greatest challenges facing rural North Dakota. Many of the programs require direct personal caregiving and need to be configured to become more widely available. Housekeeping, chore services, meals programs, respite care, personal care, and many aspects of home health services require hands-on service and local providers. Others may be accommodated with a more centralized model and may capitalize on electronic presence or regional distribution of services. Programs such as the PACE (Programs for All-Inclusive Care for the Elderly) program contain a requirement of availability for an inclusive list of services, but have indicated a willingness to permit creative methods that include electronic participation for some services under CMS waivers. This will clearly be important when building service models for the most sparsely populated rural counties.

Table 25
Proportions Indicating Availability of Services for Persons Age 50 and Over:
Urban, Rural and Frontier

| SERVICE TYPE | URBAN | RURAL | FRONTIER |
|---|---|---|---|
| Housekeeping | 73.1% | 64.8% | 64.3% |
| Chore Services | 73.9% | 62.3% | 59.1% |
| Transportation | 81.1% | 57.3% | 51.2% |
| Meals-on-Wheels | 78.7% | 62.5% | 57.6% |
| Congregate Meals | 65.9% | 56.6% | 53.5% |
| Dietary Counseling | 72.1% | 55.6% | 49.5% |
| Respite Care | 65.9% | 52.6% | 39.3% |
| Personal Care | 67.9% | 53.6% | 47.0% |
| Home Health | 78.2% | 70.1% | 62.2% |
| Physical Therapy | 79.6% | 70.4% | 59.7% |
| Occupational Therapy | 71.9% | 56.3% | 45.3% |
| Medical Equipment | 72.7% | 56.3% | 49.8% |
| Home Modifications | 69.5% | 50.9% | 44.0% |

While availability of a comprehensive array of services is a critical issue for long-term care, the use of services also represents an important consideration. Simply creating organizations that make services available to people does not spontaneously generate use.

In order to assess the rate of use for each service, the respondents who exhibited some level of functional limitation were selected for analysis. This means that only people with some measure of activity limitation and who would need some help were included in the analysis.

On a service-by-service basis, each service was examined to determine what proportion of those with functional limitations and who had also indicated that services were available actually used the services. Table 26 contains the results. The range reported for use was from 2.5 percent to 36.1 percent suggesting that use among those with general levels of need was not high.

When the level of functional limitation was further restricted to include only those who exhibited moderate or severe limitations, the proportions using each service did not increase dramatically and actually decreased for four of the services. One would expect home delivered meals to experience a higher rate of use among the more severely limited and for congregate meal use to decline. Meals-on-wheels was not used more by the more severely disabled. Respite care also dropped slightly for the moderately and severely limited from the already low rate for all functionally limited.

Table 26
Rates of Use for Services for the Functionally Limited When Services are Available

| SERVICE TYPE | SOME LEVEL OF FUNCTIONAL LIMITATION | FUNCTIONAL LIMITATIONS MODERATE/SEVERE |
|---|---|---|
| Housekeeping | 27.8% | 27.6% |
| Chore Services | 27.1% | 27.8% |
| Transportation | 36.1% | 36.9% |
| Meals-on-Wheels | 15.7% | 12.0% |
| Congregate Meals | 30.8% | 31.9% |
| Dietary Counseling | 10.9% | 9.0% |
| Respite Care | 2.5% | 1.8% |
| Personal Care | 9.6% | 14.9% |
| Home Health | 13.8% | 21.0% |
| Physical Therapy | 14.5% | 18.4% |
| Occupational Therapy | 6.3% | 7.4% |
| Medical Equipment | 20.8% | 31.4% |
| Home Modifications | 26.9% | 34.4% |

Questions remain regarding factors that promote or discourage the use of formal services. For example, family caregiving is often presented as an alternative to formal care whereby the family provides informal care and may receive some training and/or support services. Family caregiving is most likely considered a tool for providing care for frail elders through no- or low cost providers as a sort of substitution for formal, paid caregivers. However, according to the statewide survey, use of formal services actually increased among those who were receiving informal care or family assistance with ADLs. The average number of services was lower among the functionally limited who were not receiving family

or informal care. This pattern was sustained when the level of functional limitation employed a more restrictive definition; using only moderate or severe limitations. The mean number of services used either remained constant or increased when informal care or family caregivers were utilized. It is likely that these caregivers promote increased contact with Aging Services and encourage use.

Locally Available Health and Residential Care

A question asking whether an array of health and residential care facilities or services were present establishes an image of the relative completeness of the health care delivery system. The data were organized on a county basis, so those counties classified as urban also contain rural components, but in close proximity to urban services. This may account for some of the small percentage not claiming services like hospitals. They were not local to the rural respondents from urban counties. Table 27 contains the results of a comparison on that item for urban, rural and frontier counties. Clearly, all services are less often locally available in the smaller rural and frontier counties. Each is part of an essential array of services required to meet the full range of health care needs for the elderly.

Table 27
Availability of Health and Residential Care for Persons Age 50 and Over:
Urban, Rural and Frontier

| | URBAN | RURAL | FRONTIER |
|---|---|---|---|
| **Hospital** | 96.3% | 83.0% | 67.0% |
| **Basic Care Home** | 86.3% | 67.5% | 64.7% |
| **Nursing Home** | 93.3% | 83.5% | 78.4% |
| **Assisted Living** | 88.8% | 71.6% | 64.5% |
| **Clinic** | 95.1% | 85.9% | 85.1% |
| **Pharmacy** | 95.9% | 86.6% | 85.1% |
| **Dentist** | 91.1% | 79.7% | 70.3% |

Contingencies and Acceptance of Care

Each respondent was asked to indicate the types of care he or she would be willing to accept in the event they became unable to meet their own needs at some point in their lives. Table 28 contains the results, comparing urban, rural and frontier counties. The rates of acceptance under the contingencies were generally high and the slight variation did not consistently place one or the other type of residence as the most or least accepting.

Table 28
Willingness to Use Service if Unable to Meet Own Needs for Persons Age 50 and Over: Urban, Rural and Frontier

| SERVICE TYPE | URBAN | RURAL | FRONTIER |
|---|---|---|---|
| **Family Caregivers** | 75.7% | 74.7% | 74.2% |
| **Assisted Living** | 83.4% | 86.0% | 84.0% |
| **Basic Care Facility** | 78.3% | 83.9% | 80.3% |
| **Nursing Home** | 74.7% | 77.7% | 77.3% |
| **Housekeeping** | 80.2% | 87.4% | 85.6% |
| **Chore Services** | 81.0% | 84.0% | 82.8% |
| **Transportation** | 83.9% | 84.0% | 82.8% |
| **Meals-on-Wheels** | 77.7% | 83.9% | 81.7% |
| **Congregate Meals** | 72.7% | 76.7% | 78.2% |
| **Respite Care** | 72.7% | 78.6% | 79.0% |
| **Personal Care** | 78.3% | 82.4% | 81.0% |
| **Home Health** | 67.3% | 76.1% | 82.0% |

Following a question about the influence of age on the acceptance of services or the types of services acceptable to the younger, better educated and more affluent cohorts who will be tomorrow's frail old, there was a statistically significant pattern with the younger cohorts exhibiting greater acceptance for formal care services. While the data does not permit addressing the expected content of such services, it did appear that future cohorts will bring to their frail years a greater attitude of acceptance for formal, funded long-term care services. This acceptance declined modestly with age and one unique cohort creates an exception. The cohort 70 to 74 years of age consistently produced a high level of acceptance that would not have been predicted by a linear trend. This cohort would have experienced childhood during the Depression and would have witnessed the unique events of the Depression and recovery. Perhaps this influenced their perception, creating a greater acceptance of government's responsibilities for human services. The next cohort to enter the age of increased risk of chronic disease and functional limitation is likely to have a relatively high level of acceptance for formal service and this could translate into higher levels of participation.

## Preparation for Future

The respondents were asked about three forms of preparation for any possible long-term care needs for themselves. Had they purchased nursing home insurance, arranged durable power of attorney or prepared a living will? Table 29 contains the responses. Acquiring nursing home insurance was quite popular with nearly one-quarter of the respondents having done so. This did not vary significantly by location. Durable power of attorney was also very popular; with slightly more urban residents have executed a durable power of attorney, but more than one-third in each type of location having done so. The living will was also uniformly popular with approximately 40 percent of the people over age 50 having prepared a living will.

Table 29
Preparation for Future Long-Term Care by Persons Age 50 and Over: Urban, Rural and Frontier

| | URBAN | RURAL | FRONTIER |
|---|---|---|---|
| **Purchased Nursing Home Insurance** | 26.3% | 22.4% | 27.7% |
| **Executed Durable Power of Attorney** | 45.3% | 38.3% | 35.0% |
| **Prepared a Living Will** | 40.0% | 40.6% | 42.5% |
| **Other** | 6.9% | 7.9% | 1.2% |

Health Insurance

Health coverage varied somewhat by location with reliance on Medicaid appearing higher in the rural and frontier counties. The question used to assess coverage asked which sources of payment served to pay one's medical bills. The respondents could report more than one source of payment. The payers for care tended to change with the age of the respondent. While one expects this, the observation extends beyond Medicare. Medicaid as a source of payment also increased with age, especially after age 65. The proportion of the respondents using Medicaid hovered at about 2 percent until age 65, after which rapid growth in dependence on Medicaid occurred. While this data is based on self-report, it does suggest that as the population ages, there is likely to be an increased burden for Medicaid (see Table 30).

Table 30
Health Insurance Coverage: Urban, Rural and Frontier

| | URBAN | RURAL | FRONTIER |
|---|---|---|---|
| **Medicare** | 46.9% | 42.7% | 53.3% |
| **Private Health Insurance** | 83.5% | 81.6% | 82.2% |
| **Champus or Champ VA** | 5.8% | 6.2% | 5.7% |
| **Medicaid** | 5.2% | 7.5% | 8.7% |
| **Other** | 5.9% | 8.6% | 8.9% |

*Availability and Demand for Elderly Services*

The following information is part of the **Needs Assessment of Long Term Care in North Dakota: 2002** prepared in a collaborative effort between the North Dakota State Data Center at North Dakota State University and the Center for Rural Health at the University of North Dakota. The purpose of this study was to examine the distribution of existing services for seniors in North Dakota and to estimate future need. This study was an extension of **The North Dakota Survey of Elders: 2002** summarized in the above material.

There were three main parts to this section of the overall needs assessment. First, the number, type, and distribution of various senior services were profiled.

Second, estimates of the number of people currently receiving services were developed. Third, estimates of future demand for elderly services were completed.

The number, type and distribution of various senior services was accomplished by compiling a list of types of services from various sources. These sources included data bases from the North Dakota Department of Human Services Aging Services Division, North Dakota Senior Info Line, the Office of Rural Health, North Dakota Long Term Care Association, Lutheran Social Services, and various online directories.

Information regarding where residents received various services was collected from two general surveys of North Dakota households. This was a collaborative approach that dovetailed data collection efforts with a labor availability study. The data was collected in two separate survey efforts. The first was a survey of 1,356 households that were randomly selected in a two-staged stratified process to ensure a generalizable sample for both urban and rural areas. The second survey was conducted simultaneously and targeted those counties missed by the survey conducted for the other research activities in the needs assessment project. Data were collected from 803 households and gathered information solely on where residents received their services. This survey also used a two-staged stratified random sample to ensure generalizability for both urban and rural areas.

Future demand for elderly services was estimated in three stages. First, prevalence rates of functional limitations by age and location were obtained from the Center for Rural Health based on **The North Dakota Survey of Elders** summarized above. These rates were calculated based on a generalizable survey of elderly in North Dakota using two standardized instruments that measure functional needs of seniors. These instruments included the Activities of Daily Living (ADL) and Instrumental Activities of Daily Living (IADL). Rates were developed for three county types. The first type was “urban” (i.e., those counties have a city of at least 2,500 residents) and represents the 14 urban counties. The second type was “rural” (i.e., those counties which do not have a city of at least 2,500 residents) representing the four counties that have at least six people per square mile. The last type was “frontier” representing the remaining 35 counties that are rural and have a population density less than six people per square mile. The prevalence rates were also calculated by two major age groups. The first group represents the younger seniors and encompasses the age group from 50 to 74 years of age. The second age group represents the older seniors and includes those who are at least 75 years of age. The prevalence rates used in the calculations are noted in Table 31.

Table 31
Prevalence of Functional Limitations by Age Group and County Type: 2002

| LEVEL OF FUNCTIONAL LIMITATION* | URBAN | RURAL | FRONTIER |
|---|---|---|---|
| ***Age 50 to 74*** | | | |
| **Low Levels** | 5.0% | 6.5% | 6.8% |
| **Moderate Levels** | 2.6% | 2.5% | 1.6% |
| **Severe Levels** | 4.5% | 4.3% | 3.4% |
| ***Age 75 and Over*** | | | |
| **Low Levels** | 15.4% | 13.8% | 13.7% |
| **Moderate Levels** | 8.7% | 6.2% | 6.9% |
| **Severe Levels** | 10.6% | 15.4% | 9.3% |

- Note regarding levels of functional disability: Low = needs beginning levels of assistance; Moderate = screened as appropriate for assisted living (2 ADLs); and Severe = eligible for nursing home care (3 or more ADLs)

In the second stage, service utilization rates were calculated. These rates were based on a table from the Agency for Healthcare Research and Quality (AHRQ) concerning levels of disability. The proportions are based on community residents and categorized by type of care (i.e., informal care, combined informal and formal, and formal care). Institutional care was calculated as a ratio of institutional residents at each level of need to the total number of community residents (Table 32).

Table 32
Utilization Rates of Functional Limitations by Type of Care: 2002

| LEVEL OF FUNCTIONAL LIMITATION | INFORMAL | INFORMAL AND FORMAL | FORMAL |
|---|---|---|---|
| **Low Levels** | 0.659 | 0.271 | 0.071 |
| **Moderate Levels** | 0.584 | 0.333 | 0.083 |
| **Severe Levels** | 0.440 | 0.519 | 0.041 |

The final step was to apply the prevalence rates of functional limitation to the State Data Center's elderly population projections. This resulted in an estimate of the number of individuals with low, moderate, and severe functional limitations by county. These estimates were then applied to the utilization rates to determine the amount of services needed in each of the counties along with the amount of institutional care that will be needed.

## Current Senior Facilities

Table 33 shows the total number of senior facilities in September 2002 by type in the state. The number of senior housing facilities varies greatly by county. More than half of the 53 counties lack an assisted living facility, a basic care facility and a senior residential facility. The number of senior service facilities is very limited in North Dakota. The number of senior service facilities is very limited in the

state. In fact, service facilities are absent in a significant number of counties in the state. Sixteen of the state's counties lack a hospital or clinic, four counties lack a senior center, and 35 counties lack a home health agency.

The distance North Dakota residents need to travel to obtain various services varies greatly as would be expected in a state the size of North Dakota with its population configuration. More than one-third of the residents travel more than 30 miles for services, particularly eye care, dental and support services.

Table 33
Number of Senior Facilities by Type: North Dakota, 2002

| TYPE OF SENIOR FACILITY TYPE | NUMBER OF FACILITIES |
|---|---|
| *Senior Housing Facilities* | |
| Assisted Living | 34 |
| Basic Care | 40 |
| Nursing Facility | 87 |
| Senior Residence | 18 |
| *Senior Service Facilities* | |
| Home Health Agency | 43 |
| Hospitals/Clinics | 89 |
| Senior Centers | 226 |
| Senior Services | 157 |
| Meals/Nutrition | 262 |

## Estimated Current Demand for Elderly Services

The State Date Center estimated that in 2000, 16,171 North Dakota seniors 75 years of age and older had a functional limitation (Table 34). The Center estimated that an additional 16,615 residents between the ages of 50 and 74 had a functional limitation in 2000. Nearly 11,000 residents age 50 and over were estimated to have a severe functional limitation in 2000.

Table 34
Estimates of Persons 50 Years and Older with a Functional Limitation by Level of Limitation and Age: 2000

| AGE | LOW | MODERATE | SEVERE | TOTAL |
|---|---|---|---|---|
| **50 to 74 years** | 7,630 | 3,211 | 5,774 | 16,615 |
| **75 years & older** | 7,178 | 3,887 | 5,106 | 16,171 |
| **50 years & older** | 14,808 | 7,098 | 10,880 | 32,786 |

It is estimated that 18,694 North Dakota residents age 50 and over were receiving informal care. This informal care was given outside an established care facility. A small but significant number of residents age 50 and over (2,090) in 2000 received formal caregiving (e.g., hospice) outside an established care facility (Table 35).

Table 35
Estimates of Persons 50 Years and Older Using Care Services by Type of Care and Level of Limitation: 2000

| CARE SERVICE | LOW | MODERATE | SEVERE | TOTAL |
|---|---|---|---|---|
| **Informal** | 9,758 | 4,144 | 4,792 | 18,694 |
| **Combination of Informal & Formal** | 4,013 | 2,364 | 5,644 | 12,021 |
| **Formal** | 1,054 | 586 | 450 | 2,090 |

It is estimated that in the year 2000, roughly 14,286 state residents age 50 and over were in need of institutional care in North Dakota for a functional limitation (Table 36).

Table 36
Estimates of Persons 50 Years and Older Who Need Institutional Care by Level of Limitation: 2000

| LEVEL OF FUNTIONAL LIMITATION | PERSONS |
|---|---|
| **Low** | 1,288 |
| **Moderate** | 1,718 |
| **Severe** | 11,280 |
| **Total** | 14,286 |

Estimated Future Demand for Elderly Services

Elderly population projections indicate the number of North Dakota residents 50 years of age and older with a functional limitation will increase 27 percent by the year 2010 and reach nearly 42,000 as compared to 33,000 in 2000. By the year 2020, this number will exceed 48,600 with roughly 16,225 of these individuals have a severe functional limitation (Table 37).

Table 37
Estimates of Persons 50 and Older With a Functional Limitation
By Level of Limitation and Age: 2010 and 2020

| YEAR & AGE | LOW | MODERATE | SEVERE | TOTAL |
|---|---|---|---|---|
| ***50 to 74 years*** | | | | |
| **2010** | 9,611 | 4,150 | 7,434 | 21,195 |
| **2020** | 10,858 | 4,765 | 8,493 | 24,116 |
| ***75 Yrs & Older*** | | | | |
| **2010** | 9,011 | 4,884 | 6,408 | 20,303 |
| **2020** | 10,873 | 5,905 | 7,732 | 24,510 |
| ***50 Yrs & Older*** | | | | |
| **2010** | 18,622 | 9,034 | 13,842 | 41,498 |
| **2020** | 21,731 | 10,670 | 16,225 | 48,626 |

As mentioned earlier, an estimated 18,700 North Dakota residents age 50 and over were receiving informal care for a functional limitation in the year 2000. By the year 2010, an estimated 23,633 residents will be receiving informal care.

This will increase to an estimated 27,696 by 2020. The number receiving formal care is expected to exceed 3,000 by 2020 up from 2,090 in 2000 (Table 38).

Table 38
Estimates of Persons 50 Years and Older Using Care Services by Type of Care
And Level of Limitation: 2010 and 2020

| YEAR AND CARE SERVICE | LOW | MODERATE | SEVERE | TOTAL |
|---|---|---|---|---|
| ***Informal*** | | | | |
| **2010** | 12,269 | 5,274 | 6,090 | 23,633 |
| **2020** | 14,324 | 6,231 | 7,141 | 27,696 |
| ***Combination of Informal & Formal*** | | | | |
| **2010** | 5,048 | 3,010 | 7,184 | 15,242 |
| **2020** | 5,890 | 3,557 | 8,421 | 17,868 |
| ***Formal*** | | | | |
| **2010** | 1,322 | 751 | 571 | 2,644 |
| **2020** | 1,544 | 881 | 664 | 3,089 |

In 2000, it was estimated that roughly 14,286 North Dakota residents age 50 and over were in need of institutional care in North Dakota for a functional limitation. This number is expected to jump to 21,296 by the year 2020 (Table 39).

Table 39
Estimate of Persons 50 Years and Older Who Need Institutional Care
By Level of Limitation: 2010 and 2020

| LEVEL OF FUNCTIONAL LIMITATION | 2010 | 2020 |
|---|---|---|
| **Low** | 1,620 | 1,886 |
| **Moderate** | 2,185 | 2,584 |
| **Severe** | 14,354 | 16,826 |
| **Total** | 18,159 | 21,296 |

*The Informal Caregivers: 2002 Outreach Study*

A survey of residents in North Dakota who serve as informal caregivers was conducted by the North Dakota State Data Center at North Dakota State University during the summer and fall of 2002. The purpose of the study was to gain insight into the barriers to informal care in order to assist policymakers in exploring ways to improve caregiving and the lives of those who provide informal care.

The study was made possible through a combined effort between the North Dakota State Data Center at North Dakota State University (NDSU), the Child Development and Family Science Department at NDSU, the North Dakota Center for Rural Health at the University of North Dakota (UND), the North Dakota Department of Human Services, Aging Services Division. It was funded

by monies made available through an appropriation under the Older Americans Act, Title III, Part E, National Family Caregiver Support Program and administered through the North Dakota Department of Human Services, Aging Services Division.

A rather broad definition of informal caregiving was used to collect the data. In brief, the definition of informal caregiving used by the researchers to determine who should be included in the data set was:

> An informal caregiver provides needed care on a long-term basis to a care recipient, who is often a relative, friend or neighbor. This does not include caregivers who provide care on a voluntary basis through an organization (such as a church group), or those who provide care as a career. Long-term care often involves assisting the care receiver with personal hygiene, getting dressed, using the bathroom, or household tasks such as preparing meals. It does not include recovery from an injury after which the recipient no longer needs care. Currently we are interested only in those recipients of care who are at least 60 years of age.

A total of 652 face-to-face interviews of persons who provided informal care were conducted by outreach workers who were responsible for finding and interviewing the informal caregivers in their geographic area. Outreach workers were encouraged to obtain roughly 10 caregiver interviews from each county in an attempt to assemble a reasonable distribution of caregivers through North Dakota. the interview instrument was divided into six sections and gathered information on: characteristics of caregiving; caregiving difficulties/concerns; services available to the care recipient; services available to the caregiver; services provided by the caregiver; and demographics.

**Survey Results**

<u>Characteristics of Informal Caregiving</u>

- Results indicated that approximately 43 percent of caregivers are caring for their spouse. An additional 29 percent of caregivers are caring for their mother or mother-in-law.
- Sixty-five percent of caregivers indicated that the care recipient needs care because of the aging process. More than 53 percent of caregivers indicated that the care recipient needs care because of physical disabilities.
- Approximately 93 percent of caregivers indicated they do not receive monetary compensation for their caregiving services.
- More than half (58.4 percent) of caregivers said the care recipient lives with them. More than a third (36.5 percent) of care recipients live in their own home/apartment.

- Care was generally seen to occur "around the clock." More than half of caregivers who do the caregiving in their home said the care recipient can only be left along for a few hours. One in four caregivers said their care recipient could not be left alone.
- Approximately 82 percent of caregivers who do caregiving outside of their home live less than 20 minutes away from the care recipient.
- Fifty-seven percent of caregivers who do caregiving outside the home said they spend up to 10 hours per week on average providing care. However, more than one-fourth of caregivers spend 16 or more hours per week providing care.
- Most caregivers said they have spent up to three years caregiving (53.1 percent). More than 23 percent of caregivers have been caregiving for at least seven years.

Informal Caregiving Difficulties/Concerns

- More than 30 percent of caregivers indicated that emotional aspects (35.8 percent) and the lifestyle change (33.9 percent) are serious difficulties they face when providing care.
- Less time for family (29.9 percent), having the responsibility for making major life decisions for a loved one (29.3 percent), no consistent help from other family members (28.7 percent), and less time for themselves (27.5 percent) were difficulties experienced by approximately a fourth or more of caregivers.
- Caregivers were asked to rate the extent to which they agreed or disagreed with various concerns associated with being a caregiver. Nearly a quarter of caregivers agreed that it is difficult for them to accept support or assistance when caregiving because it is their duty to provide care (24.6 percent) and it is difficult for them to find support or assistance when caregiving (24.1 percent).
- The top three reasons why other informal caregivers do not provide care were: others live farther away (44.9 percent), others have full-time jobs (35.2 percent), and there are no other immediate family members (26.8 percent).

Services Available to the Informal Care Recipient

- More than three-fourths of caregivers indicated that home delivered meals (89.7 percent), congregate meal settings (86.8 percent), and homemaker services/home health aides (77.3 percent) are available to their care recipient. More than half of caregivers indicated the care recipient has escort/transportation services (71.9 percent), visiting nurse (69.7 percent), outreach programs (63.3 percent), and dietician services (52.7 percent) available to them.

- More than half of caregivers who said outreach programs were not available to the care recipient indicated they would like them to be available (54.3 percent).
- Overall, caregivers were reluctant to indicate that they would like more services to be available to their care recipient. However, more than a third of caregivers indicated they would like a visiting nurse (47.2 percent), adult day centers (41.5 percent), homemaker services/home health aides (40.2 percent), escort/transportation services (36.0 percent), congregate meal settings (33.8 percent), and shopping assistance (32.8 percent) to be available to their care recipient.
- More than half of caregivers indicated the care recipient uses outreach programs (66.1 percent), home delivered meals (54.1 percent), and visiting nurse (54.0 percent) when those services are available.
- Approximately one-third of respondents indicated the care recipients uses homemaker services/home health aides (39.7 percent), congregate meal settings (38.6 percent), dietician services (37.7 percent), escort/transportation services (32.8 percent), parish nurse (32.5 percent), and shopping assistance (32.2 percent) when those services are available.
- With the exception of congregate meals, the most common reason the care recipient does not use the services mentioned above (if they are available) is because they are not needed.
- Nearly a fourth of caregivers indicated that their care recipient will not use congregate meals settings and more than 35 percent of caregivers indicated their care recipient would not use outreach programs.

Services Available to the Informal Caregiver

- More than half of caregivers indicated that information about available services (75.2 percent), assistance with accessing available services (69.9 percent), and respite care (50.6 percent) are available to them.
- Approximately one-third of caregivers and caregiver support groups (33.4 percent) are not available to them.
- The top three unavailable services that caregivers would like available to them are information about available services (68.5 percent), respite care (51.1 percent), and assistance with accessing available services (48.4 percent).
- Another one-third of caregivers would like caregiver support groups (38.2 percent), training or education (33.7 percent), and counseling services (30.1 percent) to be available to them.
- More than one-third of caregivers reported they use information about available services (66.5 percent), assistance with accessing available services (63.5 percent), individual caregiver counseling services (40.5 percent), caregiver training or education (37.0 percent), and respite care (34.0 percent).

- The most common reason caregivers do not use services (if they are available) is because they do not need it.
- Other reasons why services are not being used if the services are available to the caregiver are typically "too busy," "care recipient won't use it," and "distance."
- For caregiver services being use, caregivers rated the services quite good. The means ranged from 3.76 to 4.35 pm a one to five scale, with one being "not good at all" and five being "very good."
- Approximately 92 percent of caregivers said there are no services, other than respite care, individual caregiver counseling, help accessing available services, caregiver training/education, information about available services, and caregiver support groups, that they would like available to them.
- More than one-third of caregivers indicated that information or services that would be valuable to caregivers, now or in the future, are respite care (39.1 percent), information about care recipient's condition or disability (38.2 percent), information about developments/changes in laws affecting your situation (37.6 percent) and an info-line (36.8 percent).

<u>Services Provided by the Informal Caregiver</u>

- The vast majority of all caregivers reported they do provide each of the following services:
    - Listen to them-someone for them to talk to (99.8 percent).
    - Provide companionship (99.0 percent).
    - Assist with errands/shopping (98.0 percent).
    - Assist with household tasks (including pet care) (96.4 percent).
    - Provide transportation, getting places (95.3 percent).
    - Help with worries, anxiety, and emotional needs (i.e., loss of independence, leaving home behind, fear of death, crying, anger, etc.) (94.4 percent).
    - Communicate with medical providers (92.8 percent).
    - Assist with meals/nutritional needs (91.3 percent).
    - Provide phone contact (91.3 percent).
    - Manage finances (88.7 percent).
    - Assist with medicines (administering, side effects, etc.) (85.4 percent).
    - Administer personal care (bathing, bandaging, nail care, etc.) (83.7 percent).
    - Assist with maintenance/repair (indoor/outdoor) (82.9 percent).
    - Get other family members involved in caregiving (79.1 percent).
    - Contribute financially (71.1 percent).
    - Help with legal assistance (65.1 percent).
- The majority of caregivers provided many services on a daily basis: listening to the care recipient (85.5 percent), providing companionship (82.3 percent), assisting with meals/nutritional needs (69.1 percent),

providing phone contact (69.0 percent), helping with worries, anxiety, and emotional needs (65.1 percent), and assisting with medicines (60.6 percent).

- More than one-third of caregivers provided transportation and assisted with errands/shopping on a weekly basis (35.7 percent and 38.9 percent respectively).
- Approximately one-fourth of caregivers communicated with medical providers on a monthly basis (25.2 percent).
- Nearly half of caregivers provided legal assistance (47.8 percent) and got other family members involved in caregiving (45.7 percent) on an occasional basis.
- Caregivers were reluctant to indicate where they would like help providing services to their care recipient. However, at least a third of caregivers indicated they would like help assisting with maintenance/repair (37.9 percent), providing companionship (35.5 percent), listening to the care recipient/being someone for them to talk to (35.5 percent), and assisting with household tasks (35.3 percent).
- Nearly 34 percent of caregivers indicated they have not experienced any financial difficulties associated with caregiving.
- The following financial experiences have been experienced by caregivers as a result of their caregiving:
    - Taken off work early or arrived to work late because you provided care (17.2 percent).
    - Changed locations to accommodate care recipients needs (handicap access) (15.2 percent).
    - Had time conflicts between working and caregiving (14.7 percent).
    - Used vacation time to provide care (14.0 percent).
    - Stopped working (7.2 percent).
    - Retired early (6.4 percent).
    - Reduced official working hours (5.7 percent).
    - Changed from full-time to part-time work (4.9 percent).
    - Sold a home to move in with care recipient (4.0 percent).
    - Taken a leave of absence to provide care (3.8 percent).
    - Lost some employment fringe benefits (3.5 percent).
    - Taken a less demanding job (3.1 percent).
    - Lost a promotion (0.5 percent).
    - Other financial experience (2.6 percent).

<u>Demographics</u>

- When responding to the question asking for the average money spent with the last year caring for the care recipient, approximately 43 percent of caregivers report that it is difficult for them to divide expenses because the care recipient lives with them. However, more than 32 percent of caregivers reported that they spent between $0 and $1,000 in the last year caring for the care recipient.

- More than half of the caregivers are age 65 or older.
- Approximately 73 percent of caregivers are married or living with a partner.
- A majority of caregivers do not have children residing in their household. However, of caregivers who do have children residing within their household, a majority of them have only one child within their household.
- Nearly 34 percent of caregivers indicated the highest level of education they had achieved was a high school diploma or GED. An almost equal proportion had completed at least some college or more.
- Nearly 46 percent of caregivers are retired. Approximately 21 percent work full-time.
- Approximately 29 percent of caregivers had a household income of 2001 before taxes of $20,001 to $35,000. More than half of caregivers had a household income in 2001 before taxes of $20,000 or less.
    - According to the 2000 Census, the median household income in North Dakota was $34,604.
- The majority of caregivers are white (97.0 percent); 1.7 percent are American Indian or Alaska Native and 1.1 percent are white Hispanic.
- The majority of caregivers indicated their principle language is English (99.4 percent).
- Approximately 72 percent of caregivers are female,
- More than 62 percent of caregivers indicated their place of residence is rural.

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