

National economic conditions can have a profound impact on health status and the overall health system. Due to recessionary pressures, Americans are cutting back on health care, physician visits are down, insurance claims are down, and there is growing concern that short-term individual health decisions based on economic pressures will lead to long-term medical problems and prompt higher spending later (*Public Health*, 2008). While the overall North Dakota (ND) economy appears to be weathering much of the national economic storm (witness a state budget surplus of approximately \$1 billion), North Dakota does have economic concerns that are linked to geographic areas (i.e., some rural and tribal areas have less favorable economic circumstances than urban North Dakota) and the state is feeling some pressure due to the national reach of downturns in business operations permeating regional and state economies. Changing economic straits are likely to have an impact on ND's aging population. Fixed incomes (retirement savings and Social Security) are more vulnerable during hard economic times and the elderly are faced with challenging decisions concerning the cost of health care. Difficulty in making out-of-pocket payments for physician visits, scaling back on medications (e.g., skipping days or cutting pills in half), eliminating preventive care services, and seeking care less frequently are some of the arduous options that the elderly face as the economy ratchets downward. These trends are important to track going forward because of their direct and indirect influence on health and health care.

Social and physical determinants play an important role in health and have both direct and indirect impacts on health outcomes. For example, socioeconomic status and income inequality are identified as some of the most important determinants of health (IOM, 2009). This section describes conditions such as population demographics (including population change and trends; age, race, and ethnicity indicators) and economic and social factors that have implications for health and health care in North Dakota. Understanding these characteristics as well as their projected changes can inform public and private sector decision-making about both health and health care.

From a demographic perspective, North Dakota has a small population and large geographic areas that can be defined as rural or frontier (the latter defined as six or fewer people per square mile). This presents a unique set of circumstances and challenges that confront the economic expansion of the state, the viability of health systems, and even the sustainability of some rural communities. The 2007 *estimated population* is recorded as 639,715 (NDSU Data Center, 2008). North Dakota's *population density* ranks 47th with about nine people per square mile, ahead of Montana (six people per square mile) and Wyoming (five per square mile). A significant

majority of North Dakota's counties (36 of 53) are classified frontier. Only four counties are part of metropolitan areas (Burleigh, Cass, Grand Forks, and Morton) and the remaining 13 counties can be classified as either rural or micropolitan.¹ Micropolitans are areas that may be a county or a group of counties with a population center of 10,000 to 49,999. Based on federal guidelines, there are eight micropolitan counties in the state. The remaining five counties are rural.

Unique challenges confront the state as it had the smallest population gain in the 1990s and was the only state to lose population from 2000 to 2005. In comparison to all other states, North Dakota has the highest percentage of population in the 85 and older cohort (ND: 2.3%; US: 1.5%; ND Department of Human Services, Aging Services Division, 2008). In addition, this age cohort is also the fastest growing in the state. Health care providers and health organizations in rural and frontier areas of the state are particularly vulnerable financially to population decline. Additionally, they must realign services to meet the needs of the dominant age cohorts that typically have significant co-morbidities.

Population Characteristics. North Dakota, in general has population characteristics that follow national trends, such as a growing elderly population, and an expanding minority population, the latter primarily occurring on Indian reservations. North Dakota also has an out-migration of youth and young families. Over the past 20 years, most U.S. rural counties gained population while North Dakota's rural counties lost population. From 1980 to 2000, 47 of 53 ND counties lost population. This included all rural counties with the exception of two counties with a significant American Indian population. The Economic Research Service, USDA, classifies counties as "population loss counties" if there are two consecutive census periods of *population loss*. Forty-five North Dakota counties are so classified. Of the 373 communities in North Dakota, only 17 have a population of 2,500. Over 60% (about 230 of these communities) have populations of *250 people or less* (NDSU Data Center, 2002). At the other end of the continuum, the four largest cities range from 35,000 to 93,000. Due in part to a significantly expanding energy economy in the western part of the state,

Percent Change in Population		
Area	1990-2000	2000-2005
U.S.	13.1%	5.3%
North Dakota	0.5%	-0.9%
Metropolitan	10.3%	4.3%
Nonmetropolitan	-6.1%	-5.0%
Micropolitan	-1.6%	-4.3%
Noncore	-9.1%	-5.5%
Source: U.S. Census Bureau		

North Dakota is experiencing a recent population increase. The stability of this population increase is directly tied to fluctuations in the energy economy. One challenge for North Dakota is if overall population dynamics will impede local (rural) and statewide economies. Younger and middle-aged individuals and families have or are leaving many ND rural areas, having a significant effect on health care as hospitals, clinics, and other health providers have both decreasing population bases to drive volume as well as difficulty recruiting and retaining health professionals. Significant population loss and outmigration lowers the purchasing power and business potential for rural economies (Kean, 1998).

Age, Race and Ethnicity. As

previously indicated, the fastest growing age cohort is people 85 and older. From 2000-2005, this age cohort increased by over 16%. By 2020, 46 of the state's 53 counties will have 22% or more of their population age 65 or older. At the other end of the age continuum, people from birth to age 19 witnessed a decline of approximately 15% over the period from 2000 to 2005 (NDSU Data Center, 2006). During this time, all 53 counties experienced a loss in the number of people 19 years of age and younger (NDSU Data Center, 2006).

In 2005, North Dakota had the fourth lowest percentage of children age 17 and younger (21.7%) (KIDS COUNT, 2007). North Dakota's *median age* (38.8) ranks ninth overall and is higher than the national median age of 36.2. The American Indian population in North Dakota, in contrast, has a median age of 18, which compares to a national median age for American Indians of 28.5. The median age of the ND Hispanic population is 24.5 (U.S. Census, 2007).

In terms of *race/ethnicity*, North Dakota's population consists of 92.3% Caucasian, 5.3% Native American, 1.6% Hispanic/Latino, 0.8% African American, and 0.7% Asian (based on the 2005 U.S. Census Bureau estimate). From 2000 to 2006, the minority population increased by 13.8% (6,269 people) while the white population declined by 2.1% (12,602 people). The Hispanic population rose by 36.6% (2,851 people); the Asian population increased by 28.8% (1,128); African-Americans experienced a 26.6% increase (1,109); the population of people of multiple races increased by 21.5% (1,286); and the American Indian population increased by 8.7% (an increase of 2,750). Additionally, an estimated 5,000–7,000 Hispanic migrant farm workers and their families traveled to North Dakota from their home state to work in agriculture (Heuer, Personal communication, 2008). While North Dakota's population is largely Caucasian, increases in other races have significant implications for health care services, ranging from

language translation services to the ability to deliver culturally competent care.

Economic and Social Characteristics. North Dakota's Gross Domestic Product (GDP) ranks 49th out of 50 states

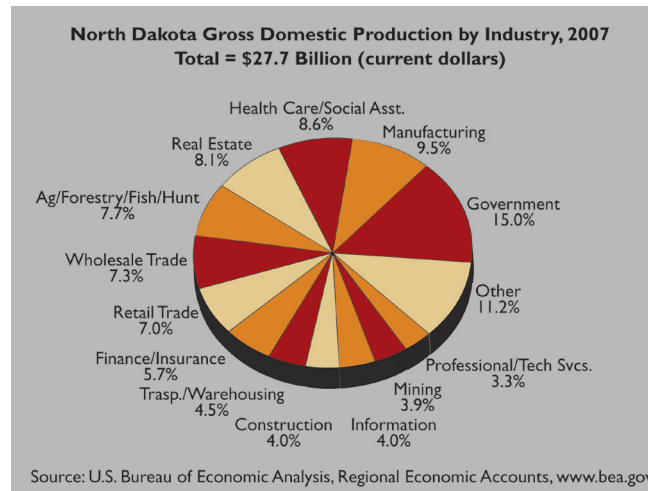
at approximately \$28 billion, increasing by 3% from 2006 to 2007 (NDSU State Data Center, 2008). By way of comparison, the largest state economy, California, had a GDP in 2007 of \$1.8 trillion. The total GDP for the United States in 2007 was approximately \$14 trillion (Bureau of Economic Analysis, 2008). In terms of *GDP growth*, North Dakota fares better. From 1997 to 2006, North Dakota's GDP grew by 29% ranking it 24th overall (Workforce Associates,

Inc., 2007). Thus, while the state's GDP is relatively small in comparison to other states, the economy is reasonably strong and growing at a moderate rate.

The government sector (including public schools and government-provided health services) accounted for the largest part of the state's GDP at 15%, followed by manufacturing at 9.5%. North Dakota is one of 16 states where the government sector accounts for this level of state GDP (Trust for America's Health, 2008). **The health sector is a significant and growing part of the ND economy,** ² accounting for the third largest share of the state's GDP at 8.6%, with agriculture coming in fourth. Workforce statistics indicated that eight of the top ten private employers in the state are in the health care industry. Health care represents about \$2.4 billion in the overall \$28 billion state economy (NDSU State Data Center, 2008).

The *median household income* (2007) in North Dakota was \$43,753 compared to the national median of \$50,740 (U.S. Census, 2007). *Per capita income* varies by geographic location with rural ND per capita income lower than urban areas. In 2006, the rural per capita income of \$30,865 compared to an urban income of \$34,852. Between 2005 and 2006, rural per capita income in North Dakota actually declined by 1.8% while urban North Dakota increased by 0.8% (USDA 2008). ND urban income exceeding rural income has been constant since 1975.

Another key characteristic highly relevant to the health of individuals and communities and to the financial viability of health care systems is poverty. Poverty is highly associated with geography as 88% (340 counties) of persistent-poverty counties in the United States are nonmetropolitan or rural (persistent-poverty counties are counties with 20% or more of their *population living in poverty* for four consecutive census



periods: 1970, 1980, 1990, and 2000; Rural Policy Research Institute, 2006). In North Dakota, five rural counties are classified as persistent poverty: Benson, Grant, Rolette, Sheridan, and Sioux. About 74,000 North Dakotans live in poverty (11.6% of the state's population) with rural poverty greater than urban: 12.7% compared to 10.4% (USDA, 2008). Over 18,000 (approximately 13% of ND children, 18 and younger) live in poverty (KIDS COUNT, 2007). The 2000 Census indicated that poverty is a significant problem for children in specific subcategories: about 39% of non-white ND children lived in poverty, 42% of children on American Indian reservations, and 44% of children in single-parent homes. Five ND counties have 25% or more of their children living in poverty and another nine counties have one in five children in poverty (KIDS COUNT, 2007). Another indicator of childhood poverty is the percentage of children enrolled in the *Women, Infant, and Children (WIC) food program*. In 2007, 57% to 60% of children born that year were enrolled in WIC (ND WIC State Office, personal communication). Also over 31,000 ND children 18 and younger (21.4%) are in families that receive *food stamps*. A final indicator for children and poverty is the number of those who receive *free or reduced-price school lunches*. In 2006, approximately 32,000 children (31% of all school-age children) were enrolled (KIDS COUNT, 2007). Income disparity is an environmental characteristic that links to health outcomes (IOM, 2003).

One example that illustrates the relationship between low income access to health care and unmet health care needs is evident in the opening of a dental clinic in 2007 in Grand Forks, a branch of the federally supported Valley Community Health Center in Northwood. In the first year of operations, approximately 75% of the caseload was Medicaid. 95% of the over 1,800 patients who had not seen a dentist in five years or more and 30% of the children had at least one cavity. Financial circumstances combined with limited access to care can have a profound impact on health status.

A positive trend in North Dakota is a low *unemployment rate* ranging from 2.8% to 3.6% (2001–2008), while the U.S. unemployment rate averaged 4.6% to 6% (Rhode Island Department of Labor and Training, 2008). Given current economic conditions due to the recession, national unemployment rates are rising and while the current unemployment rate for North Dakota is about 3.5%, it is expected to increase somewhat but continue to track behind the national average. Similar to income and poverty trends, rural North Dakota unemployment is higher than urban (3.6% versus 2.6% in 2007; USDA, 2008). The highest unemployment rates in the state are found on reservations, averaging 63% (ND Indian Affairs Commission, personal communication, September 2008). Given the tie between employment and health insurance, for many unemployed, access to health care services is directly affected. Even for those with insurance, hard economic times will likely force some to make difficult choices between purchases of necessities (e.g., food, shelter,

auto, and other basics) and out-of-pocket health costs for copayments and deductibles and for medications. Another troubling economic indicator is that North Dakota ranks 6th in terms of *people holding multiple jobs* at 8.7% of ND workers compared to the U.S. rate of 5.2%. According to NDSU State Data Center director, Richard Rathge, factors that contribute to this situation are the number of low paying seasonal jobs and a per capita income that is below national levels (The Associated Press, 2009, February 6).

Formal education is associated with better health status, and North Dakota does better than the national average in *high school graduation rates* (ND 88% versus U.S. 84%) and is comparable in *college graduation rates* (ND 26% and U.S. 27%; U.S. Census, 2007). A higher percentage of rural North Dakotans have not completed high school than found in urban areas (20% and 11%, respectively), and a lower percentage have completed college (17% and 29%; United States Department of Agriculture, Rural Economic Research Service, 2008, December 15).

The 1992 National Adult Literacy Survey (the most recent data available) found that 46%–51% of the U.S. adult population scored at an *acceptable literacy rate* with North Dakota attaining a 39% level (in comparison to MN, 35%; MT, 39%; and SD, 41%;

Council of State Governments, 2002). A recent study of the health literacy of North Dakota adults age 18 and older found that about 18% of respondents functioned at a marginal or inadequate functional *health literacy* level (Dakota Medical Foundation [DMF], 2008). Low health literacy has significant implications, often associated with “poor health status, lack of knowledge about diseases, lack of use of preventive services, increased hospitalizations, increased healthcare costs, lower self-reported health status, and decreased understanding of health problems and treatment” (DMF, 2008). Efforts that can improve health literacy are important investments in decreasing both compromised health and associated costs.

Implications. North Dakota's health and health care are affected by demographic and socioeconomic factors over time, including age, employment status, education and income. These and other external characteristics can markedly influence the health of individuals and communities and the structure and financial conditions of health systems. North Dakota, with urban clusters and a small and geographically rural and frontier population, faces a unique set of challenges

that confront the health of populations, the viability of health systems, and even the sustainability of some rural communities. Health care providers and health organizations in rural and frontier areas of the state are particularly vulnerable to population decline. With external support as needed, communities affected by changing age, economic and other demographics need to be nimble and prepared to realign services. As strategies to strengthen both health and health care in North Dakota are contemplated, meaningful efforts should consider these factors, and close attention paid to performance on key measures in order to address emerging concerns.