

EIGHTH BIENNIAL REPORT | 2025

HEALTH ISSUES FOR THE STATE OF NORTH DAKOTA



SCHOOL OF MEDICINE & HEALTH SCIENCES ADVISORY COUNCIL

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* Dr. Wynne stepped down from the Vice President and Dean positions, as well as Executive Secretary of the UND School of Medicine and Health Sciences Advisory Council, on Nov. 30, 2024. He was succeeded by Dean Marjorie Jenkins.

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Disclaimer: This *Biennial Report* represents the good-faith effort of the UND School of Medicine & Health Sciences and its Advisory Council to provide current and accurate information about the state of healthcare in North Dakota. Numerous sources were used in gathering the information found in this *Report*. We welcome corrections, which we will incorporate in subsequent editions of the *Biennial Report*.

INTRODUCTION AND UPDATE

The *First Biennial Report: Health Issues for the State of North Dakota* was prepared in the fall of 2010 by the University of North Dakota School of Medicine and Health Sciences (SMHS) Advisory Council, a legislatively mandated group of 15 stakeholders in the North Dakota healthcare enterprise. It was published in 2011 to coincide with the 62nd Legislative Assembly of North Dakota and was produced with the cooperation of the senior leadership team of the SMHS. The primary stimulus for the preparation of the *Report* was a revision in the North Dakota Century Code (NDCC) that was instituted in 2009 by the 61st Legislative Assembly in which the duties of the SMHS Advisory Council were modified. The modified duties included a requirement to submit a report biennially. The duties of the SMHS Advisory Council as specified in NDCC Section 15-52-04 are as follows:

1. *The advisory council, in consultation with the school of medicine and health sciences and the other agencies, associations, and institutions represented on the advisory council, shall study and make recommendations regarding the strategic plan, programs, and facilities of the school of medicine and health sciences.*
2. *Biennially, the advisory council shall submit a report, together with its recommendations, to the agencies, associations, and institutions represented on the advisory council, to the University of North Dakota, and to the legislative council.*
- 3.a. *The report must describe the advisory council's recommendations regarding the strategic plan, programs, and facilities of the school of medicine and health sciences as developed under subsection 1. The recommendations for implementing strategies through the school of medicine and health sciences or other agencies and institutions must:*
 - (1) *Address the healthcare needs of the people of the state*
 - (2) *Provide information regarding the state's healthcare workforce needs*
- b. *The recommendations required under subdivision 3a may address:*
 - (1) *Medical education and training*
 - (2) *The recruitment and retention of physicians and other healthcare professionals*
 - (3) *Factors influencing the practice environment for physicians and other healthcare professionals*
 - (4) *Access to healthcare*
 - (5) *Patient safety*
 - (6) *The quality of healthcare and the efficiency of its delivery*
 - (7) *Financial challenges in the delivery of healthcare*
4. *The council may consult with any individual or entity in performing its duties under this section.*

The *First Biennial Report* provided the first comprehensive analysis of the existing state of health in North Dakota and its healthcare delivery enterprise. The *Report* found that rural depopulation, out-migration of the young from the state, an increasingly older adult population, low population density, and localized population growth in the major cities and in the Oil Patch would result in an increasing imbalance between the demand for healthcare and the supply of providers that would necessitate the need for more physician and nonphysician providers in North Dakota and better healthcare delivery systems.

The *Report* concluded that North Dakota had a paradox regarding its healthcare workforce, characterized as shortages amid plenty. The size of the physician workforce in North Dakota was found to be at or better than national norms for most specialties, including all the primary-care disciplines. Despite this, there was a significant distribution problem, with the greatest number of providers located in the urban regions of the state and a shortage (especially primary-care providers) in the rural areas.

The *Report* also offered an analysis of what the future was likely to hold and concluded that the current shortage of physicians was only going to increase as the population aged and grew in the future. It also found that the shortage of workers in the healthcare field over the next 15 years would not be limited to physicians. The *Report* determined that an entire cadre of additional healthcare providers - from nurses to physician assistants to occupational and physical therapists to medical laboratory specialists and others - would be needed to ensure that effective, efficient, and appropriate healthcare would be available to all North Dakotans.

The *Report* concluded with a proposal for a multifaceted plan to address the healthcare needs of North Dakota, emphasizing necessary steps to reduce disease burden, increase the healthcare workforce through enhanced retention of graduates as well as expansion of class sizes, and improve the state's healthcare delivery system through more cooperation and coordination of the various healthcare delivery facilities.

Coincident with the release of the *Report*, the SMHS Advisory Council prepared and released its plan for addressing the identified healthcare workforce needs of North Dakota. Called the Healthcare Workforce Initiative (HWI), the plan identified specific steps to reduce disease burden and increase the provider workforce through programs designed to increase provider retention for practice within the state as well as expand the provider network through class size increases. The HWI received strong support from University of North Dakota leaders, the SMHS Advisory Council, and a wide variety of constituencies around the state. During the subsequent 62nd session of the North Dakota Legislative Assembly, it was determined that the HWI would be implemented in two phases. The first phase was implemented immediately following the end of the 62nd Legislative Assembly in the summer of 2011, and consisted of a variety of programs to reduce disease burden (including the initiation of a Master of Public Health training program as a joint undertaking by the University of North Dakota and North Dakota State University, and a program to address geriatric patient needs), increase retention of healthcare professional graduates, and partially increase class sizes.

The Second Biennial Report: Health Issues for the State of North Dakota was an update on the developments and changes that occurred between 2011 and 2013. It reanalyzed the health of the citizens of North Dakota and the status of our healthcare delivery systems, utilizing updated data and more refined projection tools. The *Report* was similar to the first report in its organizational approach—analysis of the current state of affairs, projections for the future, and proposed plans to deal with the identified healthcare delivery challenges. The *Report* summarized the most up-to-date statewide healthcare data available, and it carefully analyzed the data to extract the most salient and informative implications regarding healthcare and healthcare delivery within the state. The *Report* contained a more robust analysis of the healthcare challenges associated with the oil boom, and proposed approaches to ensure that adequate healthcare was available not only in the Red River Valley but particularly in the rapidly growing and challenging areas in the western part of the state that were most affected by the oil

boom. The *Report* contained a more complete analysis of the status of nonphysician healthcare workers, and a greatly expanded section analyzing quality and value indicators in the state. The *Report* concluded with a reemphasis of the importance of fully adopting the HWI by the 63rd Legislative Assembly, along with a call to adequately address the associated physical plant needs of the SMHS to accommodate the attendant growth in the number of healthcare students.

Following the release of the *Second Biennial Report*, North Dakota's 63rd Legislative Assembly endorsed full implementation of the second phase of the HWI. Authorization and funding were forthcoming to permit complete implementation of the four core strategies of the HWI: reduce disease burden, retain more graduates for direct patient care in North Dakota, increase class sizes, and improve the efficiency of healthcare delivery in the state. Accordingly, medical student class size subsequently was increased by 16 students per year, health sciences students by 30 students per year, and a variety of rural-focused residencies added. Coincident with the growth in class sizes, construction began on a new SMHS building designed to accommodate the increased class sizes. The building was completed on time and on budget and opened during the summer of 2016 to welcome the incoming medical school Class of 2020 and the health sciences classes that started later that fall.

The *Third Biennial Report: Health Issues for the State of North Dakota*, released in 2015, used updated data to assess the status of health and healthcare delivery throughout North Dakota. It incorporated the results of a statewide survey of all major healthcare providers that was completed during 2014 to assess healthcare workforce needs. The *Report* provided updated information on healthcare needs and delivery in the Oil Patch in particular. It also analyzed in greater depth the use of nonphysician providers throughout the state. And it looked in greater detail than prior reports at a variety of related healthcare challenges, including oral health, and behavioral and mental health needs.

The Fourth Biennial Report: Health Issues for the State of North Dakota, released in 2017, updated the previous three editions with the latest available demographic and census data and incorporated the results of several healthcare workforce surveys, especially a comprehensive study of nursing facility workforce in North Dakota that was compiled and completed in September 2016. The study analyzed the responses obtained from 81 rural and urban nursing facilities and assessed such issues as vacancy rates, recruitment issues, and retention strategies. Along with a study of the hospital workforce in North Dakota that was completed in September 2014, the two studies provide a comprehensive overview of the status of the nonphysician healthcare workforce throughout the state that complements the updated data available in the latest *Report* regarding the physician workforce.

The *Fifth Biennial Report: Health Issues for the State of North Dakota*, released in 2019, updated the previous four editions with a comprehensive examination of healthcare workforce licensure data. Data were gathered in January 2018 and examined number of licensed professionals, locations, specialties, and demographics. The result of this informed two new chapters including a comprehensive chapter on nursing workforce in North Dakota and a second chapter on psychiatrists, behavioral health, and non-physician workforce. A second study of hospital workforce in North Dakota was completed in July 2018, this study updated the previous 2014 study and is presented alongside the nursing facility study of 2016 to provide an updated comprehensive overview of health facility workforce in North Dakota.

The *Sixth Biennial Report: Health Issues for the State of North Dakota*, released in 2021, updated the previous five editions with a comprehensive examination of healthcare workforce licensure data. Data were gathered in January 2020 and examined number of licensed professionals, locations, specialties, and demographics. The result of this informed a new chapter on social determinants of health which serves to tie the population and socioeconomic influences of the state on health outcomes.

The *Seventh Biennial Report: Health Issues for the State of North Dakota*, updated the previous six editions with a comprehensive examination of healthcare workforce licensure data. Data were gathered through June of 2021 and examines number of licensed professionals, locations, specialties, and demographics. A new chapter on pandemic planning and public health addresses the national and state response to the SARS-CoV-2 pandemic as well as the School of Medicine and Health Sciences, UND College of Nursing and Professional Disciplines, and North Dakota State University Pharmacy program's academic response to the pandemic.

The latest version, the *Eighth Biennial Report: Health Issues for the State of North Dakota*, updates the previous seven editions with a comprehensive examination of healthcare workforce licensure data. Data were gathered through June of 2024 and examines number of licensed professionals, locations, specialties, and demographics. The population and health of North Dakotans was also updated with the newest available data. Three new chapters were added to this edition. The first is a chapter addressing the health of the Indigenous population of North Dakota. The second addresses women's and children's health in the state. The third new chapter highlights the community impacts of the School of Medicine and Health Sciences across the state of North Dakota.

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EXECUTIVE SUMMARY

North Dakota, like the rest of the country, continues to grapple with a major healthcare delivery challenge: how to meet a burgeoning demand for healthcare services now and especially in the future with a supply of physicians and other healthcare providers that has not always kept pace with growing demand. The problem was exacerbated by the strain on healthcare workers from the SARS-CoV-2 (COVID) pandemic, leading to “burnout” and departure of vital healthcare providers from the healthcare field generally. The need for healthcare workers is particularly important in rural and western parts of North Dakota, where there has been a shortage (especially of primary care providers) since the start of statehood. The data that were reviewed for this *Biennial Report* (and prior reports) illustrate two major long-standing problems in North Dakota. One problem is an inadequate number of healthcare providers; however, the larger problem is a maldistribution of providers. The data show that healthcare providers are disproportionately located in the larger urbanized areas of the state, leaving many rural areas with a shortage. Without direct intervention, the difficulty of providing adequate healthcare in North Dakota will worsen over the coming decades from the aging of the population (including aging and eventual retirement of the healthcare workforce) that will increase the demand for healthcare services in those areas.

However, unlike much of the rest of the country, North Dakota has been directly addressing its healthcare delivery challenges over the past decade and a half through the implementation of a well-vetted plan for healthcare workforce development and improved healthcare delivery. That plan, the Healthcare Workforce Initiative (HWI), was an outgrowth of both the *First* and *Second Biennial Report on Health Issues for the State of North Dakota*. Phase I of the HWI, which began by increasing medical and health sciences class sizes, along with increasing residency (post-MD degree training) slots, has already been fully implemented. Phase II of the plan, which includes further growth of residency slots, is being implemented now. When fully implemented, the HWI should, in the future, decrease North Dakota’s healthcare delivery challenges through attainment of its four goals: 1) reducing disease burden, 2) retaining more healthcare provider graduates for care delivery within the state, 3) training more healthcare providers, and 4) improving the efficiency of the state’s healthcare delivery system through an emphasis on team-based care delivery approaches. To accommodate the substantial class size expansions associated with the HWI, a new University of North Dakota (UND) School of Medicine & Health Sciences (SMHS) facility was constructed on UND’s Grand Forks campus. The building was completed in 2016 and is fully functional. The largest government-funded building construction project in the state’s history at the time was completed on time and on budget.

In accordance with the expectations specified in the North Dakota Century Code (NDCC 15-52-04), this *Eighth Biennial Report on Health Issues for the State of North Dakota (Report)* updates the first seven reports with an assessment of the current state of health of North Dakotans and their healthcare delivery system, along with an analysis of the steps that need to be taken to ensure that all North Dakotans will continue to have access to high-quality healthcare at an affordable cost now and in the future.

The Population of North Dakota: The current *Report* begins with an updated analysis of the population demographics in North Dakota, utilizing the most recently available data. Standardized definitions are used to define the state’s population: metropolitan to denote areas

with a core population of 50,000 or more; micropolitan (or large rural) to denote areas with core populations of 10,000 to 49,999; and rural to denote areas with a population below 10,000 (see *Figure 1.3*). More than half of North Dakota's current population resides in metropolitan areas, with one-quarter (25%) located in rural areas (see *Table 1.2*). This distribution represents a dramatic change from only a few decades ago, when more than half of the state's population was located in rural areas. North Dakota is one of the least densely populated states in the country, ranking 48th in population density, and tied for eighth in the country in the percentage of its state population that is 85 years of age or older. Because demand for healthcare increases proportionally with age, demand for healthcare services is especially pronounced in North Dakota. Such needs will only increase as the state's citizens grow older. In terms of health insurance, North Dakota has a lower rate of uninsured population when compared to the U.S. (see *Figure 1.13*) and the gap of uninsured population between metropolitan and micropolitan compared to rural has closed since 2013 to fall more in line with U.S. trends (see *Figure 1.14*). People in rural regions of North Dakota generally are older, poorer, and have less or no insurance coverage than people in non-rural areas, all of which are challenges to providing adequate healthcare (see *Table 1.2*). Rural regions continue to experience depopulation that will only exacerbate the current problem of healthcare access and delivery.

Social Drivers of Health in North Dakota: Various external factors, referred to as social drivers of health (SDOH), can affect health status and explain why some people are generally healthier than others (see *Figure 2.1*). SDOH consider the various circumstances in which people are born, live, learn, work, socialize, play, and age that affect a range of health outcomes. Circumstances that may impact health outcomes of individuals include the current social structure, economic factors, and physical aspects of a person's environment (see *Figure 2.2*). Environments include home, school, workplace, neighborhood, city, and other community settings where a person spends a significant amount of time. Resources that contribute to an enhanced quality of life for a given population are likely to have a significant influence on positive health outcomes of the population. Examples of quality of life enhancing resources include safe and affordable housing, access to education, public safety, availability of healthy foods, local health services, and environments free from life-threatening toxins. Examining the six areas of SDOH (economic environment, education, food access, physical infrastructure, social and community context, and healthcare access) can demonstrate where disparities among the population exist and strategies can be developed to address those disparities. Examples of disparities in North Dakota include food deserts (see *Figure 2.5*), areas of low access to healthcare professionals, and specific subsets of the population being less likely to be covered by health insurance.

The Health of North Dakota: The health of North Dakotans, in comparison with the rest of the U.S., is relatively good. When examining general health measures, North Dakotans are relatively healthier than the country as a whole. North Dakotans are less likely to report fair or poor health than the rest of the U.S. (see *Table 3.3*). North Dakotans also have a lower prevalence of both asthma and diabetes. However, in 2022, North Dakota had a higher percentage of overweight and obese individuals compared to the country as a whole. North Dakotans also tend to have a higher risk of some types of cancer. Additionally, North Dakota has led the nation in the number of deaths attributed to Alzheimer's disease. Previously, North Dakota had a higher mortality rate than the U.S. but that trend has shifted in a better direction in

recent years. Nonetheless, the mortality rate in the U.S. and North Dakota worsened substantially in 2020, likely due both to the direct impact of the pandemic along with the indirect impact of the pandemic in delaying necessary care for other conditions (see *Figure 3.3*). As of 2022, both mortality rates are trending downward.

Women’s and Children’s Health: When considering women’s health in North Dakota, an important trend to be aware of is birth rate; specifically, the birth rate has been slightly decreasing over the past few years (see *Figure 4.1*). It is also important to consider barriers to women’s healthcare in the state, one of which is access to care due to lack of appropriate provider types and women’s health services. As of 2024, there are only 11 cities in North Dakota with birth units and those birth units show a strong association to the major highways in North Dakota (see *Figure 4.2*). When looking at workforce that specializes in women’s health, around 78% of OB-GYNs in the state are based in metropolitan areas. Also, approximately one-fifth of Certified Nurse Midwives in the state work in rural areas. Children are another important group to consider in North Dakota, accounting for nearly one-fourth of the state’s population. There are a variety of factors that impact children’s health, including insurance, immunizations, and access to appropriate healthcare providers. While there are 78 general pediatricians in the state, nearly 80% practice in metropolitan areas.

Health of American Indians: North Dakota contains all or part of four federally recognized Tribes and one Tribal community located at least partially within the state. This includes the Three Affiliated Tribes (the Mandan, the Hidatsa, and the Arikara); the Standing Rock Reservation, home of the Standing Rock Sioux Tribe; the Spirit Lake Reservation, home of the Spirit Lake Tribe; and the Turtle Mountain Reservation, home to the Turtle Mountain Band of Chippewa Indians. The Sisseton Wahpeton Oyate Tribe also exists in the southeastern corner of North Dakota with a small amount of Tribal trust land, though much of the Tribal trust land is in South Dakota. North Dakota has the sixth largest American Indian population in the U.S. with nearly 60% of the American Indian population living on reservations in the state. The American Indian population of North Dakota experiences the same social drivers of health as the non-American Indian population but with compounding cultural and historical factors that uniquely influence the health of the population both positively and negatively.

Physician Workforce: The physician workforce in North Dakota has somewhat fewer physicians per 10,000 persons than the U.S. as a whole or the Midwest comparison group (see *Figure 6.2*), and although the gap had narrowed over the past three decades, it recently has widened. Our physicians are more likely to be male than elsewhere in the U.S. (see *Figure 6.5*). Previously, the physicians in North Dakota have been older when compared with the rest of the country, but a trend of younger physicians is beginning to emerge (see *Figure 6.4*). About one-fourth of the physician workforce is made up of international medical graduates, a little higher than the rest of the country. The UND SMHS is an important source of physicians for the state, as half of the physicians in North Dakota received some or all of their medical training (medical school or residency or both) in-state as of 2023. In terms of a balance of trade, or the net import and export of medical school graduates, North Dakota has improved since 2013 when the net export was -370 graduates relative to 2023 where the net export was -168 graduates.

The patient-to-physician ratio is not equally distributed across the state. There are 38.6 physicians per 10,000 persons in metropolitan areas, 15.2 physicians per 10,000 persons in micropolitan areas, and 5.9 physicians per 10,000 persons in rural areas of North Dakota.

Without the effects of the HWI, current estimates indicate a shortage of some 260 to 360 physicians by 2025, the consequence of a heightened need for healthcare services as the Baby Boom generation ages and from retirements in the aging physician workforce (one-quarter of the physicians in North Dakota are 65 years of age or older).

Primary Care Workforce and Specialist Care Workforce: The state's primary care physicians include family medicine, general internal medicine, and general pediatrics. Physician assistants and nurse practitioners also serve as primary care providers throughout North Dakota. The density of primary care providers in North Dakota is higher in metropolitan regions than in micropolitan and rural regions, with eight counties currently without primary care providers (see *Figure 7.1*). Residency training in North Dakota is an especially important conduit of primary care physicians, since nearly half (46%) of them have graduated from UND's medical school; more than half completed a residency within the state (51%). Almost four out of five (79%) of the family medicine physicians in the state attended the UND School of Medicine and Health Sciences and/or an in-state residency program.

North Dakota has relatively fewer specialists in general pediatrics as well as obstetrics/gynecology when compared to the Upper Midwest or the rest of the U.S. (see *Figure 7.8*). North Dakota does have more surgeons per 10,000 persons when compared to the Upper Midwest and the U.S. We have about the same relative number of psychiatrists as other Midwest states and the rest of the United States, although 78% are based out of either Grand Forks or Cass counties, leaving the western parts of North Dakota with a significant shortage.

Nursing Workforce: The state's nursing workforce was examined using new licensure data. The state has shown a stable trend of Registered Nurses (RNs), an increase of Advanced Practice Registered Nurses (APRNs), and a decline in Licensed Practical Nurses (LPNs) from 2018 to 2024 (see *Figure 8.1*). The representation of APRNs between 2018 and 2024 was relatively stable with an increase from 5% to 8% of the state's nursing workforce. The representation of LPNs decreased from 19% to 14%, and RNs remained stable at 76%. Despite the decline in the percent of LPNs, there was an increase of more than 2,100 nurses licensed in the state of North Dakota between 2018 and 2024. The increase in nurses overall was due to the increase of more than 1,900 RNs between 2018 and 2024. The current 2025 distribution of licensed nurses in North Dakota is represented by a majority of RNs (76%), followed by LPNs (14%) and APRNs (8%). A majority of RNs and LPNs were trained in-state, with the highest numbers working in an outpatient setting. A majority of nurse practitioners were trained in North Dakota with the highest percentage working in primary care. While a majority of nurses licensed in North Dakota have employers within the state, nearly 1 in 3 has an employer that is out-of-state (29.6%). Although a nursing presence is especially noteworthy in rural regions of the state, the majority of nurses work in metropolitan areas (see *Figure 8.3*).

Behavioral Health Non-Physician Healthcare Workforce in North Dakota: Most behavioral health professionals and non-physician providers are found in metropolitan areas. This includes psychiatrists, psychologists, counselors, licensed addiction counselors, social workers, occupational therapists, physical therapists, physician assistants, medical laboratory scientists, pharmacists, and dentists (see *Figures 9.2* and *9.8*). The largest behavioral health workforce occupation in North Dakota is social workers, with more than 2,000 licensed in the state. When comparing geographic distribution, approximately three-fourths of counselors and social workers are in metropolitan areas. Despite this distribution of social workers and counselors being

located mostly in metropolitan areas, the majority of North Dakota counties maintain a supply of counselors and social workers. Addiction counselors are less likely to be in metropolitan areas than their peers, with only 65% in metropolitan areas. Between 2018 and 2024, all behavioral health professions in North Dakota showed an increasing trend in the number of licensed behavioral health practitioners in the state. This trend is particularly pronounced for counselors (see *Figure 9.4*). When the trend over time is further broken down by metropolitan-rural status, the number of counselors, social workers, and occupational therapists increased in metropolitan areas while the trend varied in micropolitan and rural areas. When examining those occupations with programs at the SMHS, the geographic distribution varies between metropolitan and rural areas. Physical therapists are more likely to practice in metropolitan areas (67%) along with physician assistants (69%) (see *Figure 9.12*) and occupational therapists (74%). However, the metropolitan-rural split among medical laboratory scientists is less pronounced, with about 61% practicing in metropolitan areas and 39% being in either micropolitan or rural areas.

Public Health Planning for the Future: North Dakota's 28 Local Public Health Units (LPHUs) have multiple organizational structures that result in varied types of authority (see *Figure 10.2*). While all LPHUs offer the same core functions, the size of the service area and volume of population vary widely depending on whether an LPHU is a single- or multi-county entity, and whether the LPHU contains or is near to one of the larger cities. This creates service delivery challenges due to travel distance and staffing patterns that are a result of the relative resources of each LPHU. This can be exacerbated by varied levels of vulnerability for the population of an LPHU (see *Figure 10.1*). In recent years, largely due to the SARS-CoV-2 pandemic, the public's trust of public health has diminished. Chapter 10 provides an expanded explanation of the goals of public health using three overarching themes of assessment, policy development, and assurance. Public health serves a vital role in the health and well-being of all North Dakotans and opportunities exist to raise awareness and enhance the understanding of public health utilizing those themes.

Healthcare Organization and Infrastructure: Healthcare in North Dakota is delivered through more than 300 ambulatory care clinics, 52 hospitals, and 71 skilled-nursing facilities (see *Figure 11.1*). These facilities are supported by an array of emergency medical services (EMS) providers, trauma centers, 28 public health units, eight human service centers with six outreach/satellite locations, oral health providers, and pharmacies. Generally, the further a facility is from a metropolitan area, the more its operation is threatened by financial and other pressures, including staff recruitment and retention challenges. When examining geographic access to hospitals, a large portion of the state's population lives within 30 miles of a Critical Access Hospital, Tertiary Center, or Indian Health Service hospital as shown in *Figure 11.10* that includes North Dakota hospitals and the associated distance buffers around those facilities of 30, 60, or 90 miles. This indicates that access to short-term general hospitals and emergency rooms is relatively similar throughout the state. That level of access changes when considering specialty care. There are currently 11 cities in the state that have a hospital where a woman can go to have a planned birth. When examining geographic access to hospitals with a birthing unit, a smaller portion of the state is within 30 miles of those facilities, with more representation between 30 and 60 miles, or greater than 60 miles based on the displayed distance buffers around those facilities (see *Figure 11.11*). There are currently six cities where hospitals have inpatient psychiatric beds. As a result, hospitals with psychiatric beds are only accessible

variably, depending on if an individual lives within 30 miles, between 30 to 60 miles, or between 60 and 120 miles of a psychiatric facility (see *Figure 11.12*).

SMHS Impacts: As the only medical school in the state, the SMHS recruits and educates students from across the state. The SMHS also provides a service role throughout the state, reaching the population where they are at with educational and outreach opportunities. The R-COOL Scrubs Camps and Academies serve as an important step in the pathway to introducing students to healthcare careers with a geographic impact across the state for both host locations of events as well as students who engage in these opportunities (see *Figure 12.1*). This is also evident in the reach of communities, students, and volunteers who engage with the Scrubs opportunities (see *Table 12.1*). Faculty, staff, and students from both medicine and health sciences engage in service activities that allow for educational, clinical, and professional policy opportunities that serve the population and professionals of the state. The motor vehicle-based Simulation In-Motion North Dakota (SIM-ND) program, a simulation education program that has been serving North Dakota for more than 10 years, has a broad reach within the state. SIM-ND events held throughout North Dakota reached 133 partner organizations, engaged with more than 4,400 learners, and had a presence in 32 counties that contain more than 90% of the state's population.

Quality and Value of Healthcare: Nationally, as well as locally, the health delivery system is going through profound change. Improvements in population health and a realignment of provider payments to incorporate those improvements is a new and fundamental reality. The quality and safety of care delivered in a healthcare system is directly associated with improving and maintaining overall health status. In a complex healthcare system, there are a number of concerns, including the availability of providers; access to care and health services, technology, and treatment advancement; and the financial dimensions of affordability and payment. Each of these is a contributing factor in the overall strategy to be considered when reforming or redesigning the health system. In addition, the quality of care provided to the population and the patient outcomes produced are equally important facets of reform.

The statewide problem of unmet mental and behavioral health needs, especially related to the recent pandemic, is highlighted in the current *Report*. One approach already implemented through the HWI is to bring the (often rural) patient to the provider through the use of telepsychiatry. The UND Department of Psychiatry and Behavioral Science has implemented training in telemedicine-delivered clinical services for all of its residents so that they will be able to utilize this effectively in clinical practice.

The quality of healthcare delivered in North Dakota is as good as or better than much of the United States, but there appears to have been a decline in several measures in the past few years, particularly in patient safety, care coordination, and healthy living. North Dakota (along with other Upper Midwest states) generally provides high-quality care at relatively lower cost than other states in the U.S. North Dakota ranked 28th in state health system performance in the country in a recent assessment undertaken by the Commonwealth Fund (an improvement from 29 in 2020) (see *Table 13.1*).

Recommendations: The *Report* concludes with a number of recommendations. First is continuing strong endorsement of the Healthcare Workforce Initiative, especially given the accumulated data that verify its effectiveness. One component of the HWI – the RuralMed

medical school scholarship program – is cited in particular for its positive results in rural physician recruitment. The budget submitted by the UND SMHS for the 2025–2027 biennium and endorsed by both UND and the State Board of Higher Education has been structured to permit ongoing funding of the HWI and a continuation of the various vital healthcare educational programs of the UND SMHS. The UND SMHS Advisory Council strongly supports the proposed funding.

A second recommendation is for a continuation of the full implementation of the *Strategic Plan for Health* that was completed in 2021 and its ambitious goal for North Dakota to become the healthiest state in the nation. The three important initial steps for beginning this quest will be to raise awareness of the health implications of policy and legislative decisions, expand statewide public health expertise and leadership capacity, and enhance cross-sector collaboration and integration of the numerous entities involved in the healthcare enterprise within (and outside of) the state.

CHAPTER ONE:

**THE POPULATION OF NORTH DAKOTA
AND ATTENDANT HEALTHCARE NEEDS**

INTRODUCTION: POPULATION-DRIVEN HEALTHCARE NEEDS

Healthcare delivery in the U.S. is driven by several factors including organizational structure of healthcare systems, payor types and arrangements, public policy, and technological adaptations, among other contributing factors. The largest driver of healthcare delivery is the utilization patterns set by the population that accesses care in these places, or the demand of the population. The composition of the population may have varied healthcare service demands as segments of the population have unique healthcare needs that utilize more (or less) services. Examples of this include the healthcare needs for children under age 5 years, women of childbearing age, and older Americans. In addition to demographically driven demand, segments of the population may have unique socioeconomic or demographic characteristics that influence their healthcare insurance coverage, resulting in limited access to healthcare due to payor agreements. Examples of this would be individuals who have served in the military and are veterans who have Veteran's Administration (VA) benefits, American Indian and Alaska Native populations who have access to healthcare under treaty agreements, and individuals in poverty who have state Medicaid coverage.

In addition, demographic and socioeconomic characteristics that influence demand and utilization, geographic access, needs for specialty or coordinated care, and access to other ancillary services play a role. These areas will be discussed further in later chapters of this *Report*.

POPULATION

Historical Changes

North Dakota has been significantly influenced by its agricultural history and the role agriculture has played economically, socially, and culturally. Historically, North Dakota has benefited from federal statutes such as the Homestead Act, a rich productive land base, early immigration, the proliferation of railroad expansion to move out agricultural products, and changes in agricultural technology. The state's population growth from 1910 to 1930 (Figure 1.1) was likely influenced by the continuing development and growth in agriculture. The full effect of the Depression in the 1930s and World War II precipitated a population decline in North Dakota. At one point in 1934, one-third to one-half of North Dakotans were "on relief" and receiving government assistance. During the 1930s, there was an out-migration of more than 120,000 people. Even during this period, there was a rural-urban dichotomy with population shifts where farm and small-town populations declined and larger, more urban areas of the state grew.¹

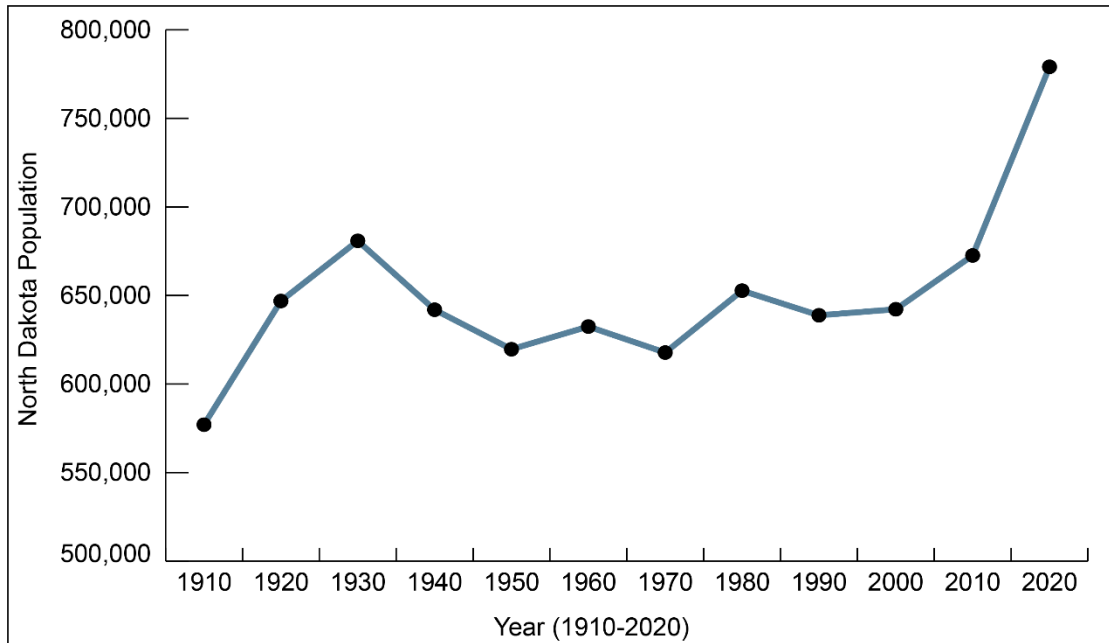


Figure 1.1. Population of North Dakota from 1910 to 2020.^{2,3} ND population increased from 577,056 in 1910 to 680,845 in 1930, decreased to 617,761 in 1970, and then increased to 672,591 in 2010. North Dakota’s highest population was in 2020. In 2020, the U.S. Census Bureau estimated population was 779,094. North Dakota has gained more than 100,000 residents since 2000, when the population was 642,200.

“The ND counties with the most significant population increases from 2000 to 2022 were Cass, McKenzie, Mountrail, Stark, and Williams. The data indicate unique trends in county population: gradual urbanization and a resurgence of population associated with energy development.”

From 1930 to 1950, the state’s population declined from about 681,000 to 620,000, then increased to 632,000 in 1960, and dipped again to 618,000 in 1970. By 1980, the population increased to 653,000.² The rapid increase in the late 1970s likely was a result of significant expansion of oil and gas production during that period and a trend toward urbanization. The oil boom of the late 1970s was followed by an oil bust in the 1980s, and the state’s population once again declined and was accompanied by continuing rural depopulation. The population remained relatively stable between 1990 and 2000, with population estimates between the 2000 and 2010 Census showing an increasing population trend with the 2010 Census confirming that growth. Between 2010 and 2020 the state grew by more than 100,000 people, a nearly 16% increase. Population estimates between 2020 and 2022 show that this trend remains stable with a slight downturn in total population.

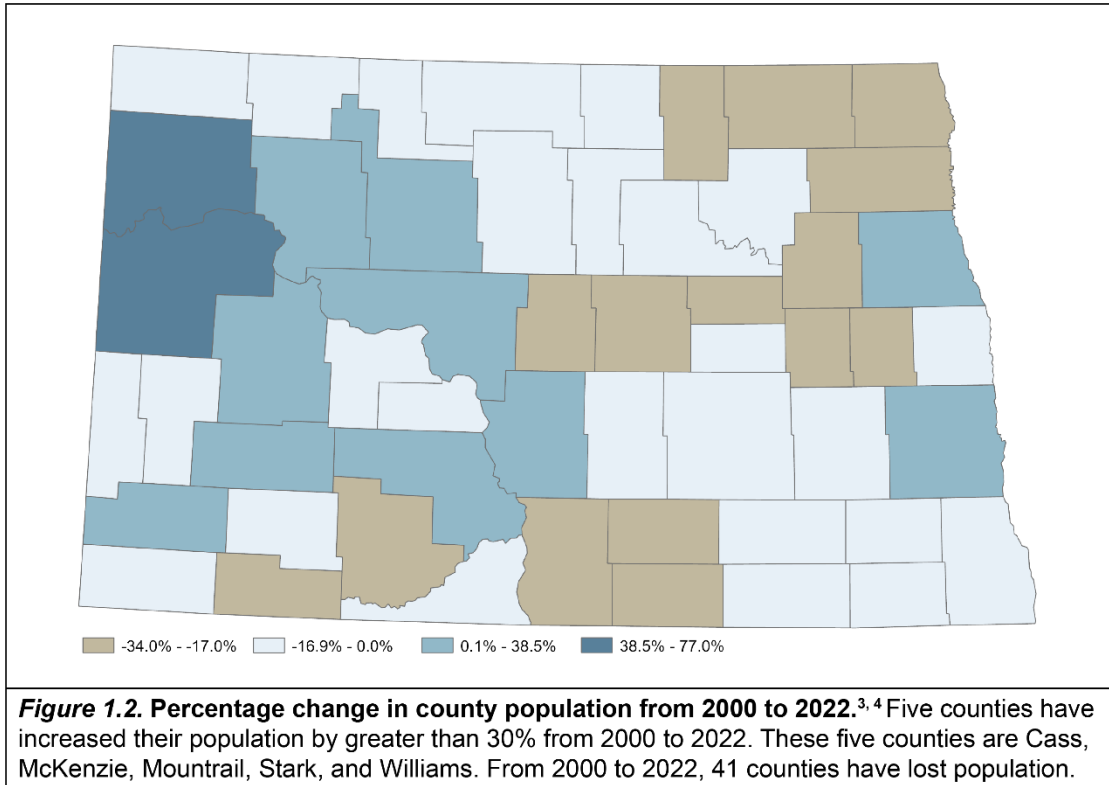
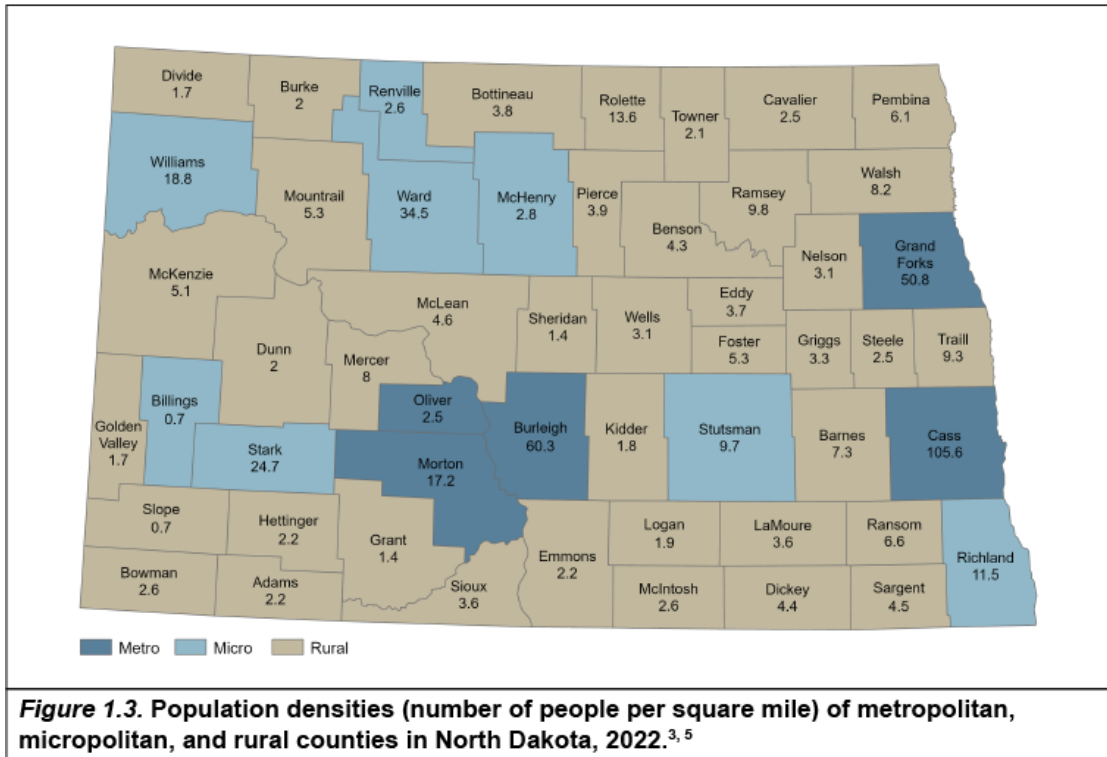


Figure 1.2 shows the change in population by county from 2010 to 2022. The counties with the most significant population increases from 2010 to 2022 were McKenzie, Williams, Stark, Mountrail, and Cass.

Metropolitan, Micropolitan, Rural, and Frontier Counties

North Dakota is comprised of a mixture of several densely populated larger cities, many smaller towns, and large areas with low population density. The distribution of North Dakota’s population is another challenging issue for efficient healthcare delivery. Figure 1.3 shows the population per square mile for metropolitan, micropolitan, and rural counties in the state. Since its inception, the state has experienced low population density overall. North Dakota ranks 48th in population density when compared nationally, with 11.3 people per square mile. As a reference, the District of Columbia has approximately 10,970 people per square mile.³



Until recently, North Dakota experienced muted population growth. According to the 2022 American Community Survey, North Dakota has increased 15.5% from 2010 to 2022.^{3, 4} North Dakota had the fourth-fastest growth rate in the country over that period, primarily from the rapid growth in the energy sector. The national growth rate from 2010-2022, in comparison, was 7.2%.^{3, 4} North Dakota’s growth mainly occurred in the western half of the state and Cass County.

To better define the population dispersion across North Dakota, standardized descriptions are used to facilitate comparison with other regions of the country:

- **Metropolitan** describes a population cluster or area with a core population of 50,000 or greater. The state’s three largest cities and their surrounding area (Fargo, Bismarck, and Grand Forks) are located in metropolitan areas.⁵
- **Micropolitan** (or large rural) describes areas with a population core from 10,000 to 49,999. This includes Minot, Dickinson, Williston, and Jamestown.⁵
- **Rural** constitutes areas with a population cluster of fewer than 10,000. Both micropolitan and rural areas are considered nonmetropolitan. Historically, more than 50% of North Dakota’s population has been designated as rural.³⁻⁷ Depending on the definition of rural, North Dakota is among the five states with the largest component of rural areas.⁵
- **Frontier** is defined as a county with a population density of six or fewer people per square mile. Thirty-six of the state’s 53 counties are classified as frontier. Only nine of 53 counties have population densities above the state’s average density of 11.3 people per square mile. The lowest density is found in Slope County (0.7 people per square mile), and the most densely populated is Cass County (105.6 people per square mile). The

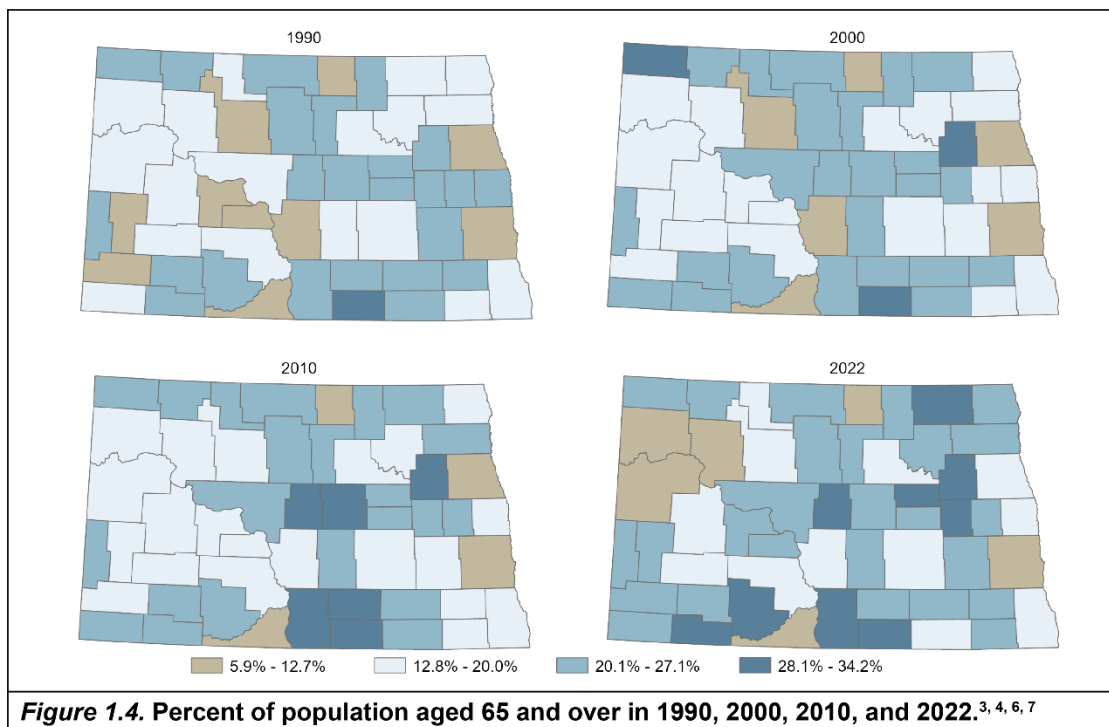
average population density of the United States, as a point of comparison, is 93.7 people per square mile.³

It should be noted that Metropolitan, Micropolitan, and Rural are a combined set of definitions from the Federal Office of Management and Budget, while Frontier is a designation that is based on separate federal criteria.

Changes in Population by County and Age

Figure 1.4 shows the progression of population change for people aged 65 years and older at three census periods and one intercensal point (1990, 2000, 2010, and 2022). There has been a continual increase in the proportion of older adults in the rural counties. In 2022, 18 counties with 25% or more of their population aged 65 years or older were all rural as well as classified as frontier.

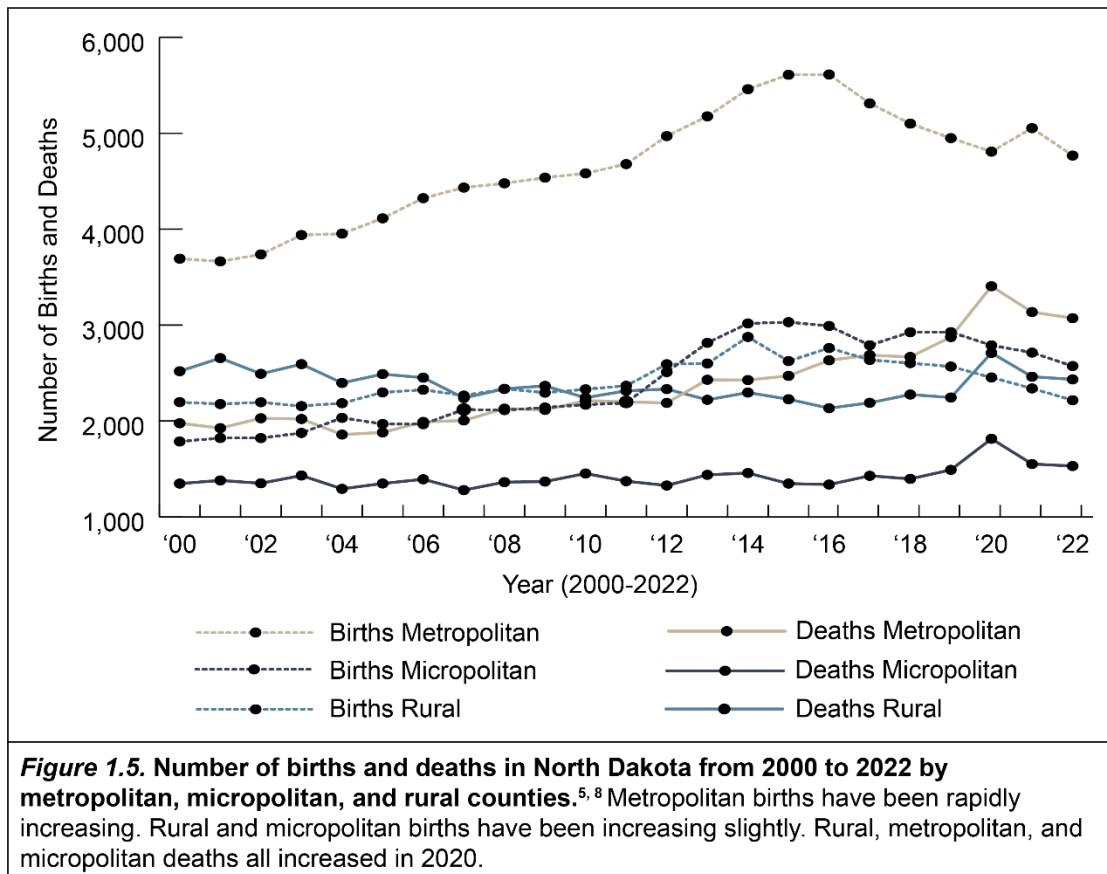
There has been a significant increase in the number of people aged 85 years and older. This group constitutes 2.3% of the state's population. North Dakota is tied for eighth in the country for states with the highest percentage of older adults; nationally, 2.0% of Americans are age 85 and older.³



Change in Population by Births and Deaths

A large part of the increase in metropolitan population is the result of an increase in birth rate in metropolitan areas. The number of births in North Dakota has increased from 9,083 in 2010 to 9,557 in 2022, an increase of 5.2%.⁸ The overall trend of births between 2010 and 2022 demonstrates an increase, with a high point of 11,364 births in 2015 followed by a downward curve to 2022. The number of deaths also increased from 5,909 in 2010 to 7,037 in 2022, an

increase of 19.1%.⁸ Metropolitan areas have experienced the largest number of births. Although rural areas have the lowest number of births, there is a trending increase in the birth rate. Metropolitan areas had 487 more births than deaths on average from 2010 to 2022. Micropolitan areas had on average 158 more births than deaths. Rural areas had on average 5.5 more births than deaths. As a consequence of these two factors alone (not taking into account migration), metropolitan population has increased more than micropolitan and rural population has.



CURRENT DEMOGRAPHICS

The population of North Dakota influences the healthcare delivery system in the state. Changes in demographics drive the shift of focus of policy and service delivery to meet the needs of the changing population. For example, a geographic area that experiences the aging of its population will see more demand for chronic care services, home care, therapy services, and geriatric specialty care. While a demand for services for aging populations may be increasing, that demand may not be sufficient to support all services needed in every geographic area. This results in an increased need for alternative service delivery such as telemedicine, locum tenens or visiting specialists, or transportation options to allow patients to travel to urban centers for specialty care. Changing population characteristics will result in demand for services to meet the shifting population needs.

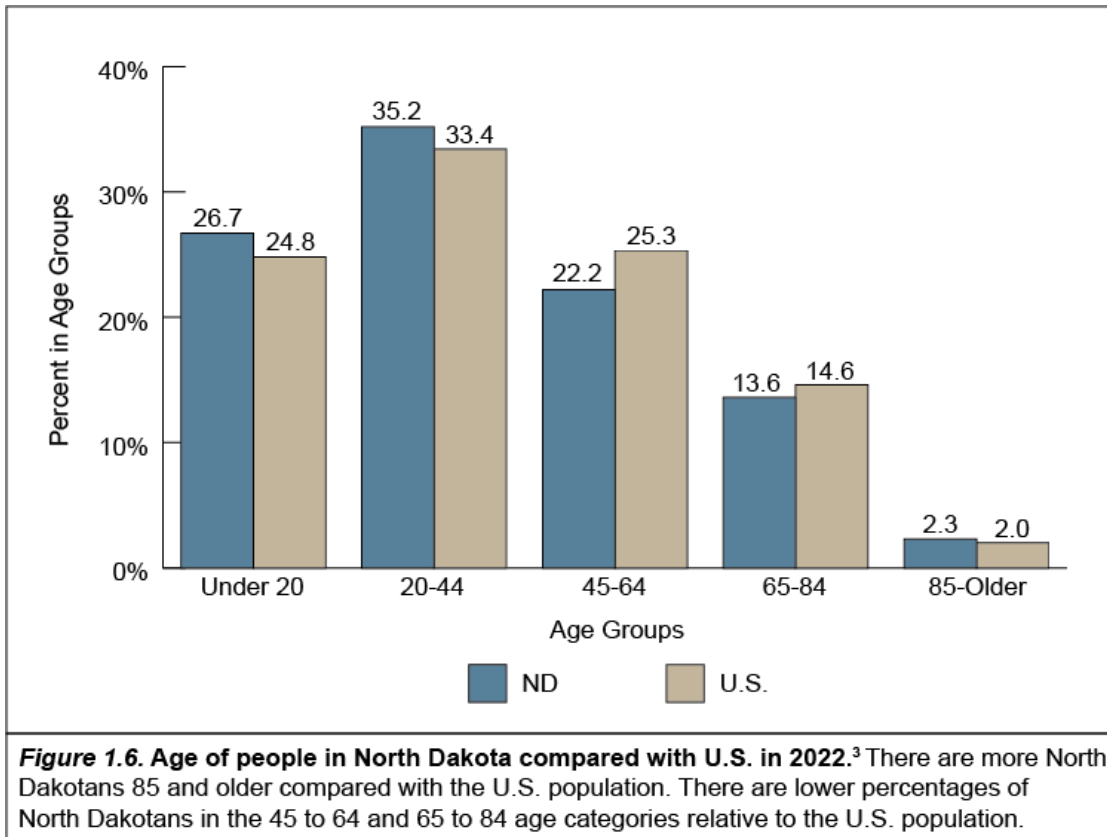
Areas experiencing population decline still have healthcare needs and health systems must attempt to adapt to changing conditions to maintain some level of service delivery. In more remote areas there are needs for access to primary and emergency care, public health services, as well as reasonable access to acute and specialty services. Health systems may provide access to basic care but may need to refer services. Areas of population decline tend to see a loss in families with children and adolescents, as well as younger working-age populations, with an older adult population staying in the area. This results in rural areas simultaneously experiencing a loss of population coupled with a relatively larger older-adult population requiring an increase in services.

Demographic factors, economic conditions, and public policy decisions have combined to create a complicated and challenging environment for maintaining access to essential healthcare services in the more rural areas of the state. North Dakotans recognize the barriers and challenges to community institutions and to the community or town itself. The maintenance of institutions and organizations is essential to solidify a healthcare service base, a foundation that is necessary to meet local access-to-care needs, improve population health status, and contribute to local economic and community development.

Age

Previous versions of this *Report (Seventh Biennial Report 2023)* have presented an aging trend for the state of North Dakota, with rural areas having more residents aged 65 and 85 years and older when compared to the United States. Between 1980 and 2000, North Dakota experienced an out-migration of younger populations due largely to economic drivers. The out-migration trend experienced a reversal in the mid-2000s due to an increase in oil and gas production in the western part of the state and an increase in the technology sector in the urban centers. In 2010, North Dakota in comparison to the U.S. had less population under age 20, and between 40 and 64 years of age, but had more population between age 20 and 39. In 2022, North Dakota had a larger percent of population attributed to the age categories under age 45, and age 85 and older, further establishing the previously seen trend shift. While the state is experiencing an overall younger trend, it should be noted that the percent of the population age 85 and older is still near the top for all U.S. states, tying North Dakota for eighth in the country. This greatly influences the need for providers. For example, nationally in 2019, the age group under age 15 on average experienced 194.8 healthcare visits per 100 people and individuals age 75 or older experienced 776.4 visits per 100 persons, a 400% difference.⁹ If we assume that a family physician provides 5,500 office visits a year, 1,000 individuals age 15 and under would take up 35% of one physician's practice, while it would take 1.4 family physicians to treat a similar number of older patients. Thus, simply comparing the number of North Dakota physicians per 100,000 persons can be misleading unless the age of the populations being compared is taken into account. Figure 1.6 shows specific age ranges across North Dakota, as compared to the U.S. North Dakota has a smaller percentage of individuals between the ages of 45 and 64 and 65 to 84 than the U.S.

“Older populations use dramatically more healthcare resources than do younger populations. North Dakota’s population is among the oldest in the nation. This greatly influences the need for providers.”



As shown in Figure 1.7, rural North Dakotans are older than their counterparts in micropolitan or metropolitan areas. The disproportionately older population in rural North Dakota likely is the consequence of the continuing out-migration from rural areas, with younger people moving elsewhere. This effect is evident in the agrarian sector, where the increase in average age has been particularly apparent in North Dakota farmers (Figure 1.8).¹⁰ As many rural counties have continued to see a decline in overall population, that decline is commonly associated with a loss of young individuals and families or difficulty in recruiting and retaining young individuals and young families. Older adults are less likely to leave an area where they have spent their entire lives.

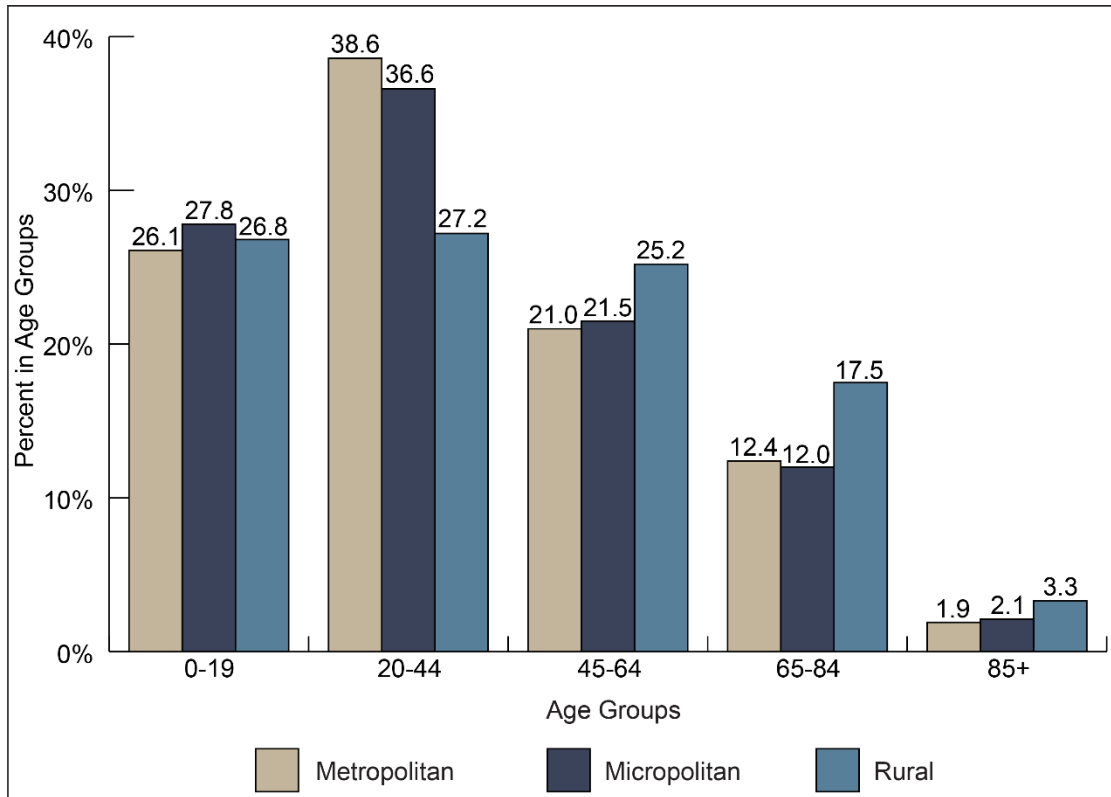
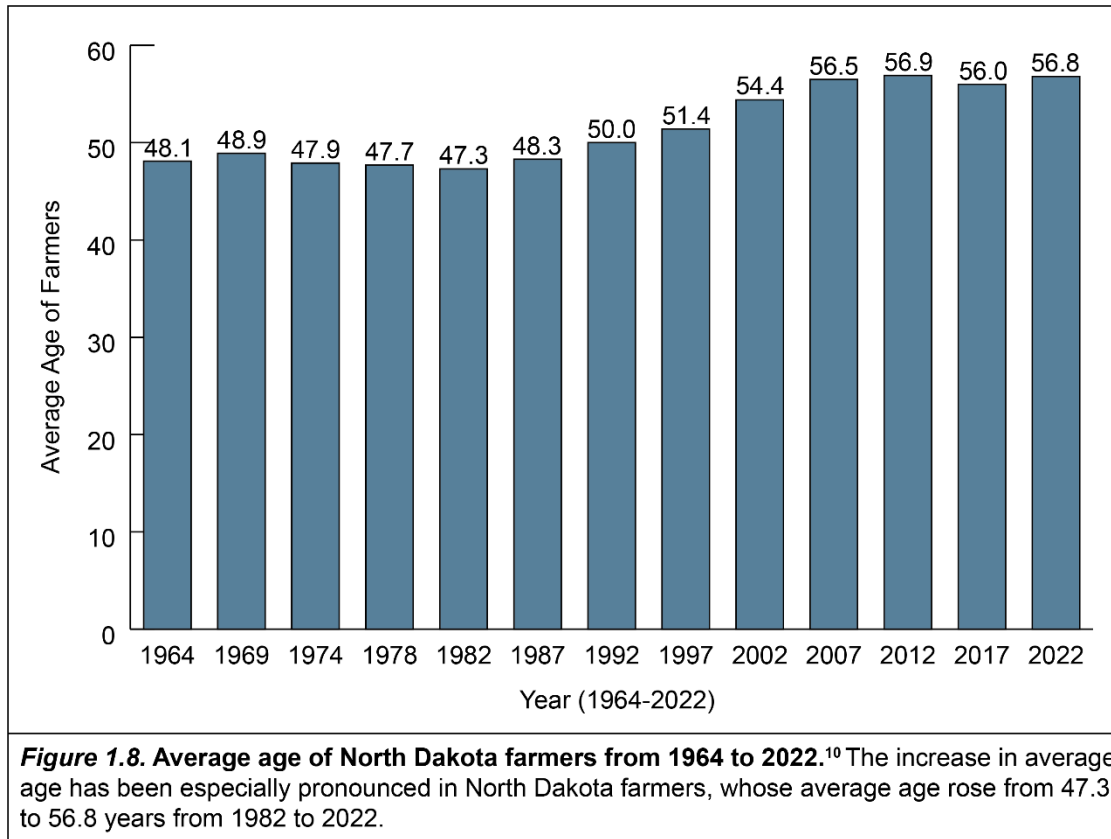


Figure 1.7. Age of people in North Dakota by metropolitan-rural status, 2022.^{3, 5}

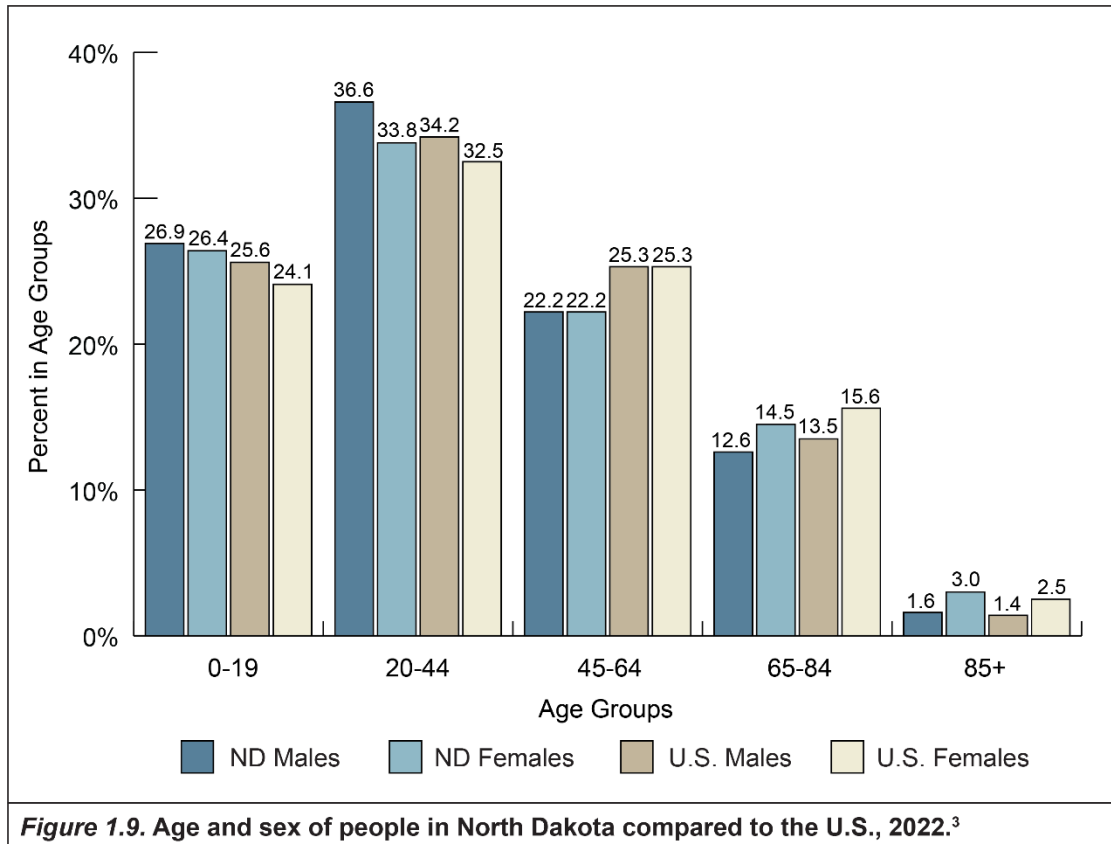


Sex and Gender

The characteristics of sex and gender are separated by the difference of a biological and social-cultural construct. A clarification set forth by the National Academy of Medicine (NAM), formerly the Institute of Medicine (IOM), clarifies the definitions of sex and gender. In their 2001 work titled “Exploring the Biological Contributions of Human Health: Does Sex Matter,” the NAM made a recommendation to clarify usage and bring consistency to the literature around human subjects. Per these recommendations “the term sex should be used as a classification, generally as male or female, according to the reproductive organs and functions that derive from the chromosomal complement (p. 8).” And “the term gender should be used to refer to a person’s self-representation as male or female, or how that person is responded to by social institutions on the basis of the individual’s gender presentation (p. 8).”¹¹ In general, most humans are born with a biologic sex of male or female defined by chromosomal and physiological characteristics. Alternatively, an individual’s gender is defined by their social, cultural, and personal experiences that serve as a representation of self. These distinctions are important when considering the healthcare implications of both sex and gender. An individual’s sex has biological implications in treatment and prevention strategies that must be taken into consideration when treating the physical self. An individual’s gender (or gender identity) also has implications for care in regard to treating the individual as a whole.

In North Dakota in 2022, the sex breakdown of the total population was 51.4% male compared to 48.6% female. In the U.S. in 2022 that breakdown was 49.6% male compared to 50.4%

female. The distribution of population by age shown in Figure 1.9 indicates that there are disproportionately more males under age 45, a similar population age 45 to 64, and more females over age 65 in North Dakota compared to the U.S.³ In North Dakota in 2022, the gender breakdown of the adult population (age 18 and over) was 0.38% transgender (male to female, female to male), 0.20% gender nonconforming, and 99.41% not transgender. In the U.S. in 2022 that breakdown was 0.48% transgender (male to female, female to male), 0.31% gender nonconforming, and 99.20% not transgender.¹²



Race and Ethnicity

The characteristics of race and ethnicity are similar to sex and gender in that they are generally separated by biological or physiological and social-cultural constructs. Broadly, race is characterized by physical traits such as skin color and other physical characteristics. Racial categories are roughly based on ancestral origins and while broad racial categories exist and are recognized, they are less distinct than in the past due to population migration and intermarriage. Where race is generally reliant on physical characteristics, a person’s ethnic identity is focused more on cultural characteristics such as language, history, religion, and customs.¹³

In North Dakota in 2022, a majority (84.5%) of the population reported White alone as their race. This category was followed by American Indian/Alaska Native (4.7%), two or more races (4.4%), and Black (3.2%). In the U.S., a majority of the population (65.9%) reported White alone as their race. That was followed by Black alone (12.5%), two or more races (8.8%), other race alone

(6.0%), and Asian alone (5.8%). In 2022, 0.8% of the population of the U.S. reported American Indian/Alaska Native alone as their race. The U.S. Census Bureau collects ethnicity data for those individuals reporting a Hispanic or Latino ethnicity. In 2022, 4.3% of North Dakota's population was Hispanic or Latino compared to 18.6% of the U.S.³

The racial and ethnic distribution of population for both North Dakota and the U.S. has changed over time. In comparison to 2022, data from 2010 presented a less diverse population. In North Dakota in 2010 an even larger majority of the population (90.5%) reported White alone as their race. That was followed by American Indian/Alaska Native alone (5.3%), two or more races (1.6%), and Black alone (1.1%). In the U.S. in 2010 a majority of the population (74.8%) also reported White alone as their race. That was followed by Black alone (12.7%), other race alone (4.9%), and Asian alone (4.3%). In 2010, 2.0% of North Dakota's population was Hispanic or Latino compared to 12.9% of the U.S.⁴

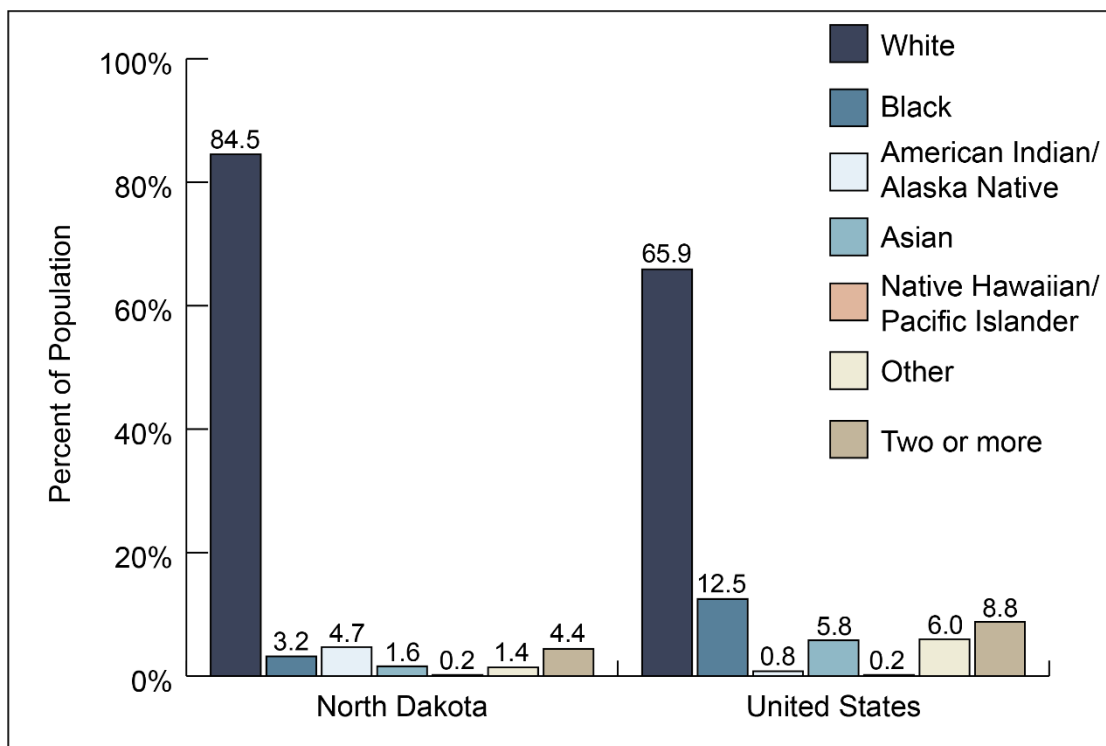


Figure 1.10. Percent of population by racial group for North Dakota and the U.S., 2022.³

Veteran's Status

In the U.S., a military Veteran is defined as a person who served in the active military, naval, or air service, and who was discharged or released there from under conditions other than dishonorable. Individuals who serve in the U.S. military are eligible for benefits, including assistance with or access to programs specifically for Veterans that assist with areas such as housing, educational programs, and healthcare. These are services designed and intended to support Veterans after they separate from the military and ensure they have adequate support mechanisms in place within their communities.

Table 1.1 illustrates North Dakota Veteran demographics compared to the U.S. and highlights some notable differences between North Dakota and the U.S. In 2022, 7.4% of the adult population of North Dakota were Veterans. That was compared to 6.6% of the U.S. When looking at the period of service for all Veterans, North Dakota's Veteran distribution had less Veterans in all eras examined except the second period of the Gulf War (9/2001).³

When comparing North Dakota's Veteran population to the U.S., North Dakota and the U.S. have similar percentages of males and females. When examining age, North Dakota has more Veterans under age 54 than the U.S. When comparing race and ethnicity, North Dakota has a higher percentage of Veterans than the U.S. in the populations who are White alone (91.4% compared to 77.8%) or American Indian or Alaska Native (2.7% compared to 0.7%). In terms of educational attainment, North Dakota had a higher percentage of Veterans than the U.S. who had no high school education (5.8% compared to 4.9%), had a high school diploma or a GED (28.5% compared to 26.9%), or held an associate's degree (28.5% compared to 26.9%). North Dakota had fewer Veterans than the U.S. who were below poverty (5.9% compared to 6.9%) or disabled (26.5% compared to 29.3%).³

Table 1.1. Veterans characteristics, North Dakota and the U.S., 2022.³

Category		North Dakota		United States	
		N	%	N	%
Total Veterans		43,674	7.4	16,955,133	6.6
Period of Service	World War II	781	1.8	296,811	1.7
	Korean War	2,458	5.6	1,012,520	6.0
	Vietnam War Era	14,303	32.7	5,846,975	34.4
	Gulf War (8/1990-8/2001)	9,879	22.6	3,915,074	23.0
	Gulf War (9/2001 or later)	12,727	29.1	3,973,341	23.4
Age	18-34	4,925	11.3	1,461,505	8.6
	35-54	10,962	25.1	4,038,454	23.8
	55-64	7,462	17.1	3,112,711	18.3
	65-74	10,478	24.0	4,245,542	25.0
	75 and Older	9,847	22.5	4,136,921	24.3
Sex	Male	39,340	90.1	15,354,467	90.3
	Female	4,334	9.9	1,640,666	9.7
Race and Ethnicity	White	39,939	91.4	13,220,431	77.8
	Black	557	1.3	2,104,915	12.4
	Asian	191	0.4	317,154	1.9
	American Indian Alaska Native	1,158	2.7	117,180	0.7
	Native Hawaiian Pacific Islander	130	0.3	34,457	0.2
	Other	389	0.9	357,199	2.1
	Two or More Races	1,310	3.0	843,797	5.0
	Hispanic or Latino	1,145	2.6	1,349,506	7.9
Educational Attainment	No High School	2,528	5.8	837,866	4.9
	High School or GED	12,436	28.5	4,571,939	26.9
	Associate's Degree	16,193	37.1	6,241,475	36.7
	Bachelor's Degree	11,312	25.9	5,116,747	30.1
Poverty/ Disability	Below Poverty	2,579	5.9	1,167,552	6.9
	Disabled	11,566	26.5	4,982,715	29.3

INCOME FACTORS

Poverty

People in poverty tend to have a lower health status. In a 2021 report on quality and disparities, the Agency for Healthcare Research and Quality (AHRQ) found that people in poor and low-income households experienced worse care than their counterparts in high-income households on more than half of the quality measures examined. In that same report, AHRQ found that disparities have increased in approximately 5% of the quality measures.¹⁴

Poverty rates vary based on age, race, household composition, and geography. Poverty rates have also varied for metropolitan, micropolitan, and rural areas since 2010. Rural rates have been the highest, followed by metropolitan and micropolitan.^{5, 15} The highest poverty rates are in rural counties.

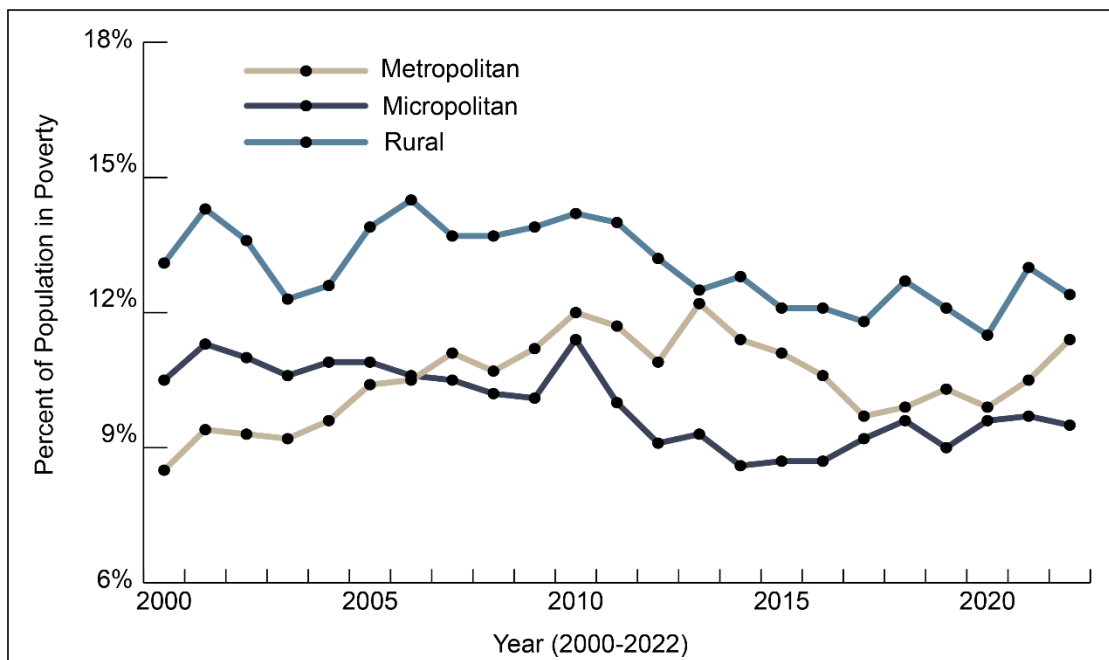
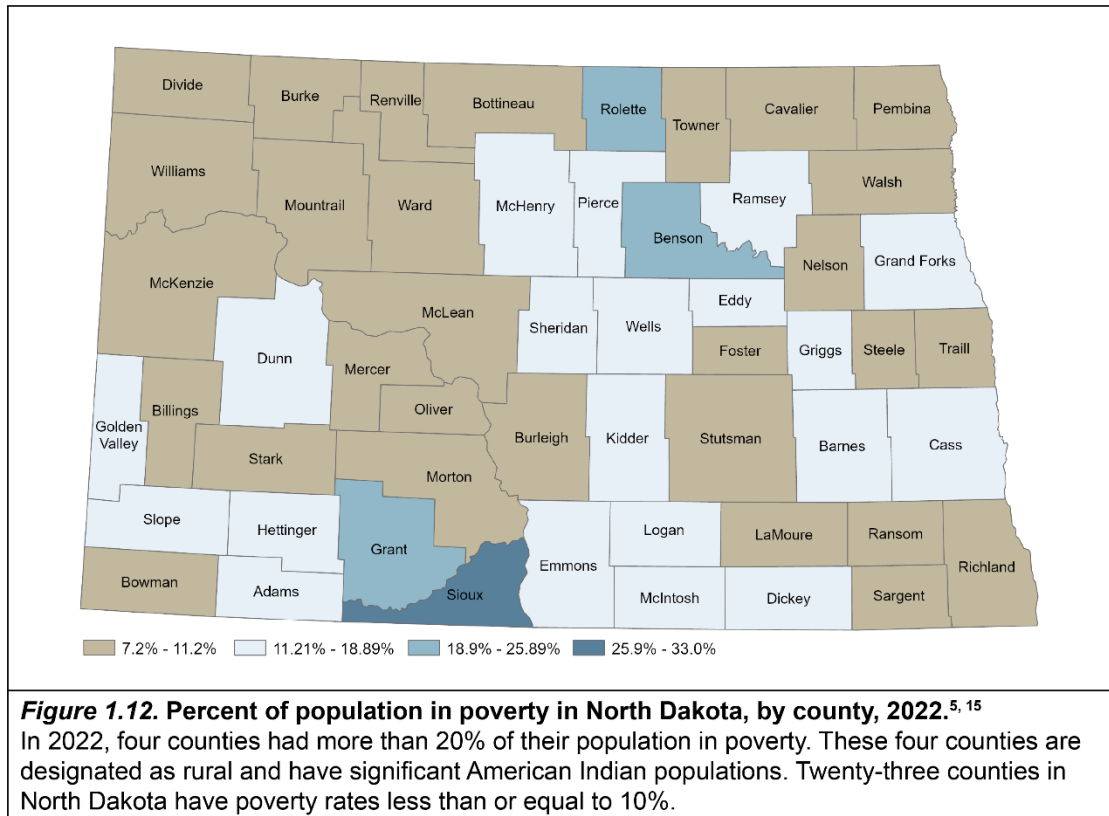


Figure 1.11. Poverty in North Dakota by metropolitan, micropolitan, and rural areas, 2000-2022.^{5, 15}

In 2022, the federal Office of Management and Budget (OMB) considered the poverty level for a family of two to be \$18,310 and for a family of four it was \$27,750. In 2022, 11.2% of North Dakota residents were in poverty (the U.S. had 12.6% in poverty). The poverty rate from 2000 to 2022 was higher in rural North Dakota than other areas. Between 2010 and 2022, the poverty rate decreased by varying amounts for metropolitan, micropolitan, and rural areas of North Dakota.



“The highest poverty rates are in rural counties and counties with a higher proportion of American Indians.”

Health Insurance Coverage

The Affordable Care Act (ACA) was signed into effect in the U.S. in 2010. One of the major provisions of the ACA was an individual mandate that required everyone to have health insurance or pay a penalty.¹⁶ While the penalty provision still exists, the Tax Cuts and Jobs Act of 2017 set the individual mandate penalty to \$0 which went into effect in 2019.¹⁷ Currently there is still an individual insurance mandate in the U.S.; however, there is no mechanism by which that mandate is enforced. As such the topic of health insurance, or lack of health insurance, is a notable data point to consider when comparing populations. The U.S. Census Bureau’s Small Area Health Insurance Estimates (SAHIE) are available on an annual basis starting 2008 which allows for trend analysis of health insurance pre- and post-ACA implementation.¹⁸

In North Dakota in 2022, 7.2% of the state’s population under age 65 years were uninsured compared to 9.6% of the U.S. population of the same age. In the years prior to the enactment of the ACA (2008-2010), North Dakota’s rate of uninsured ranged from 11.4%-11.6%. During that same period the rate of uninsured for the U.S. ranged from 16.3%-17.7%. As the ACA was signed in 2010, but penalties for not having health insurance did not go into effect until 2013, the rates of uninsured remained relatively stable until 2013 for the U.S. and increased slightly in North Dakota. The rates of uninsured started to decline for both the U.S. and North Dakota from 2013 to 2016. The U.S. rates of uninsured stabilized in 2016 and remained around 10% until

dropping to 9.6% in 2022. The North Dakota rate also declined until 2016 and then has demonstrated a varied pattern fluctuating between 7.2% and 9.2% with the state dropping back to 7.2% in 2022.¹⁸ It should be noted that while the penalty for not having health insurance coverage was set to \$0 in 2019, the rates of uninsured populations did not rise dramatically to those rates prior to the ACA. One possible confounding effect that may explain the rate variance in North Dakota between 2019 and 2022 is the SARS-CoV-2 (COVID-19) pandemic that impacted the number of individuals in the labor force.

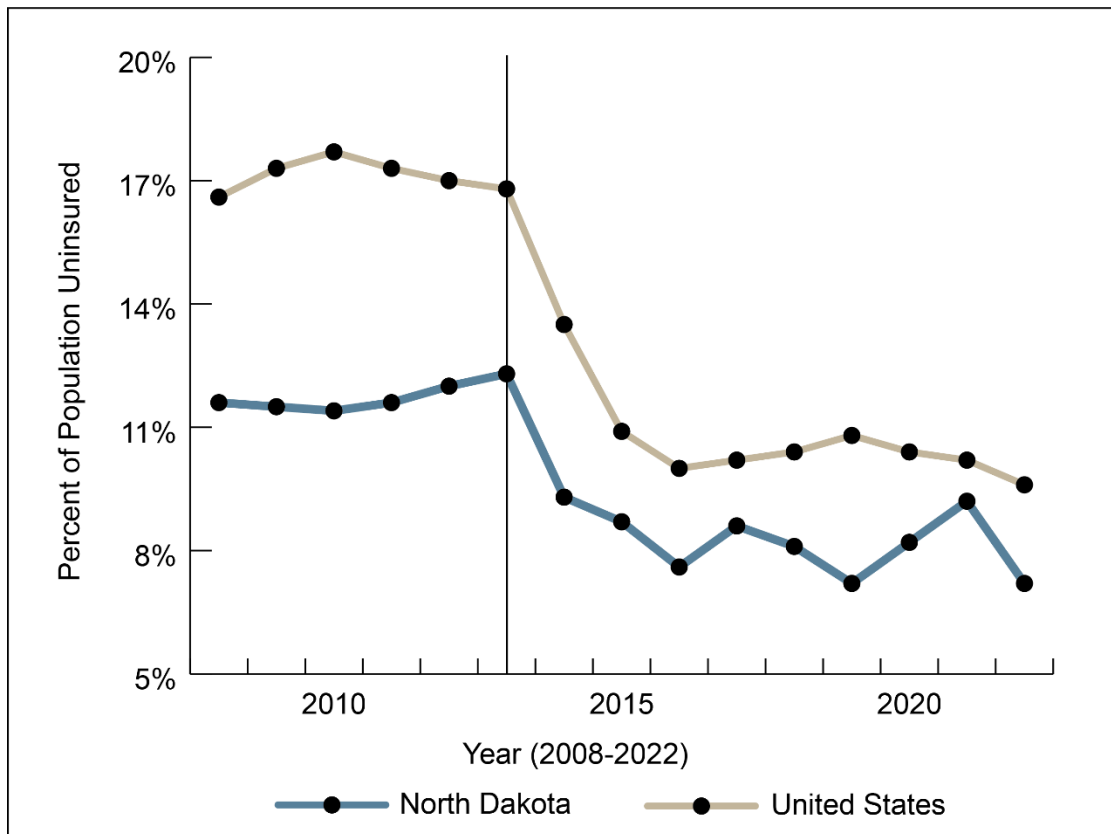
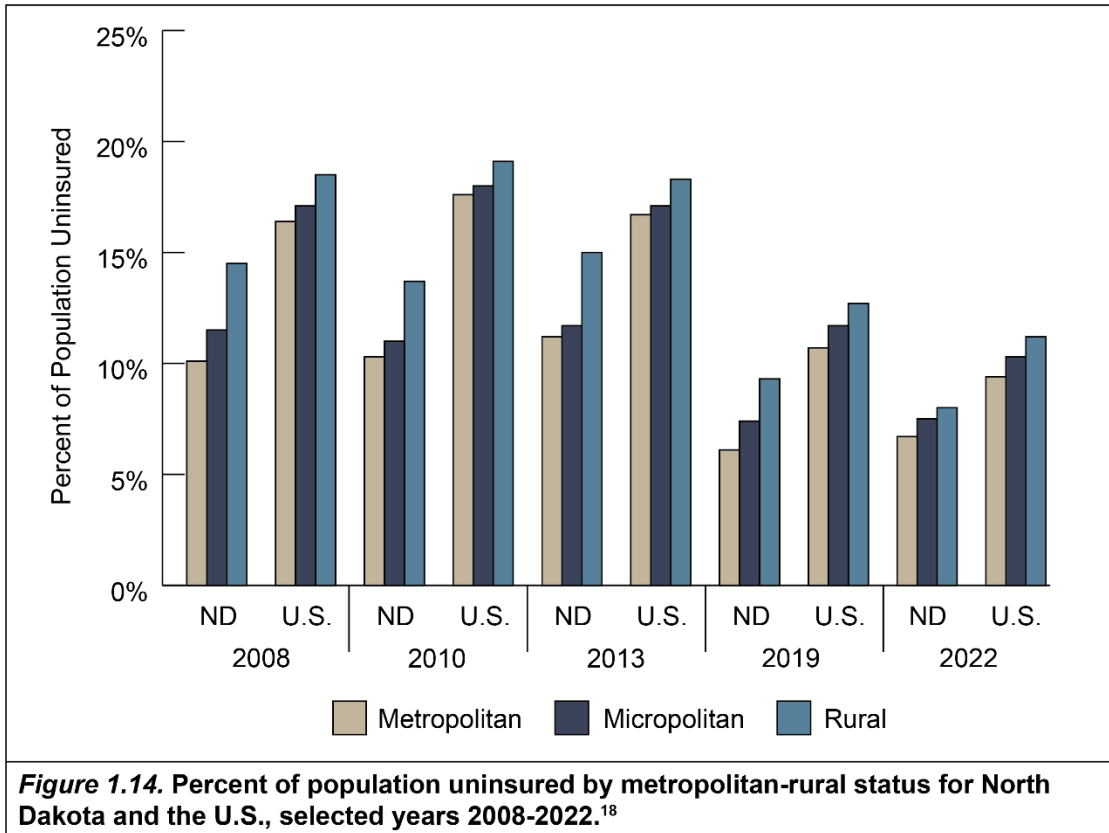


Figure 1.13. Uninsured population of North Dakota and the U.S., 2008-2022.¹⁸
 The black vertical line represents the point in time when penalties for not having health insurance went into effect in 2013.

While the overall rates of uninsured populations declined from 2008 to 2022, the rates of uninsured populations in rural areas have remained higher than in metropolitan or micropolitan areas. In the U.S., the rates of uninsured in rural areas ranged from 1.5 to 2.1 percentage points higher than their metropolitan counterparts between 2008 and 2022. The rate of uninsured in rural areas of North Dakota ranged from 3.2 to 4.4 percentage points higher than their metropolitan counterparts between 2008 and 2019 but dropped to a difference of 1.3 percentage points in 2022. This indicates the gap between metropolitan and rural is closing in North Dakota and future trends should be monitored for further changes. Regarding the distribution of uninsured population, Figure 1.15 represents the rate of uninsured population by county in 2022. Those counties in tan are at or below the statewide rate of 7.2%. Those in blue tones are above the statewide rate. The distribution of counties above the statewide rate are

geographically distributed throughout the state with an overrepresentation in the western part of the state.



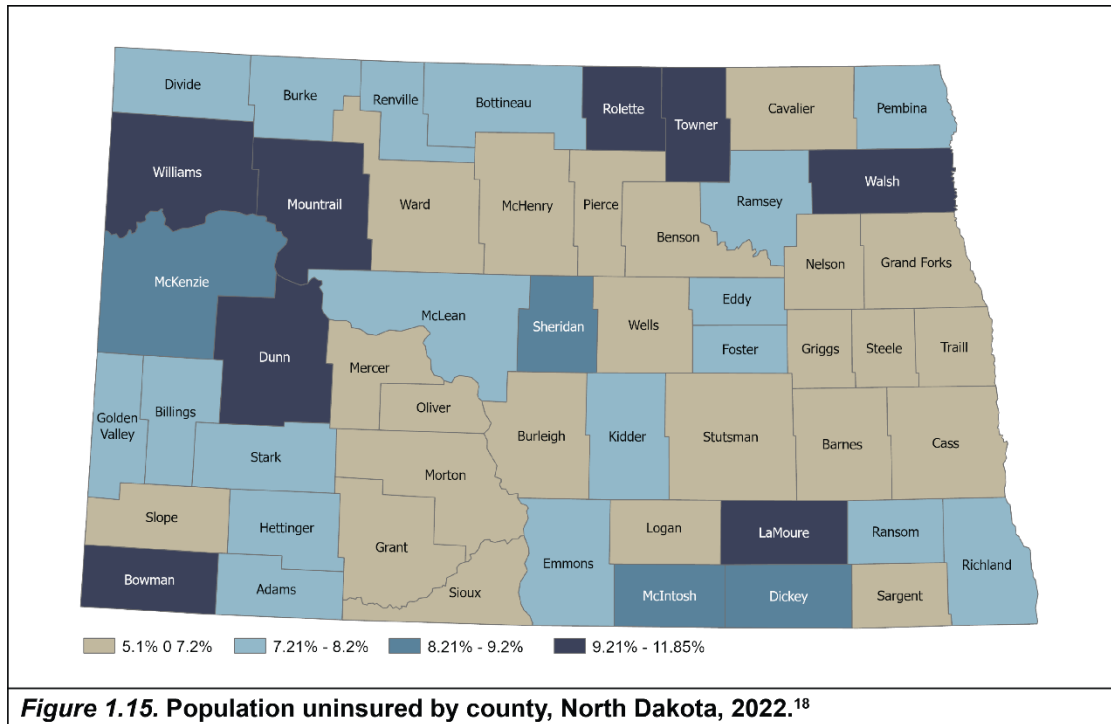


Figure 1.15. Population uninsured by county, North Dakota, 2022.¹⁸

DEMOGRAPHICS SUMMARY

Demographic characteristics contribute to health disparities and highlight the access-to-care and health status issues found in North Dakota. In general, those in the most rural areas of North Dakota are older, have a higher rate of population in poverty, and have less health insurance coverage than those in metropolitan and micropolitan areas (Table 1.2). Despite this, North Dakota has shown some promising trends in increasing the population, having more residents under age 65, less poverty, and higher rates of insurance when compared to the U.S. These factors have been shown to influence the ability of a person to seek healthcare when it is necessary, maintain a regular relationship with a physician or other health professional, better manage health conditions, and ultimately realize a higher status of health. Sociodemographic factors such as poverty, income disparity, insurance coverage, education, and culture, including rural culture, can serve as social determinants of health, which will be discussed in Chapter 2.

Table 1.2
Summary of demographics of North Dakota's population by metropolitan, micropolitan, and rural areas, 2022.³

Category	Metropolitan		Micropolitan		Rural	
	N	%	N	%	N	%
Total Population	392,722	50.6	188,201	24.2	195,951	25.2
Sex						
Male	199,916	50.1	98,776	24.7	100,653	25.2
Female	192,806	51.1	89,425	23.7	95,298	25.2
Age						
Under 20	102,649	26.1	52,234	27.8	52,529	26.8
20-44	151,579	38.6	68,862	36.6	53,316	27.2
45-64	82,571	21.0	40,502	21.5	49,412	25.2
65-84	48,506	12.4	22,597	12.0	34,224	17.5
85 and Older	7,417	1.9	4,012	2.1	6,470	3.3
Race						
White	335,909	85.5	161,828	86.0	158,688	81.0
Black	17,125	4.4	6,462	3.4	1,646	0.8
American Indian/ Alaska Native	8,075	2.1	3,112	1.7	25,097	12.8
Asian	9,018	2.3	2,210	1.2	1,246	0.6
Native Hawaiian/ Pacific Islander	1,064	0.3	265	0.1	130	0.1
Other	4,205	1.1	4,576	2.4	1,924	1.0
Two or More	17,326	4.4	9,748	5.2	7,220	3.7
Ethnicity						
Hispanic or Latino	13,362	3.4	11,762	6.3	8,065	4.1
Not Hispanic or Latino	379,360	96.6	176,439	93.8	187,886	95.9
Poverty						
Yes	43,717	11.4	17,088	9.5	23,402	12.4
No	339,028	88.6	163,014	90.5	164,987	87.6
Uninsured						
Yes	21,820	6.7	11,513	7.5	11,638	8.0
No	304,108	93.3	142,249	92.5	133,676	92.0

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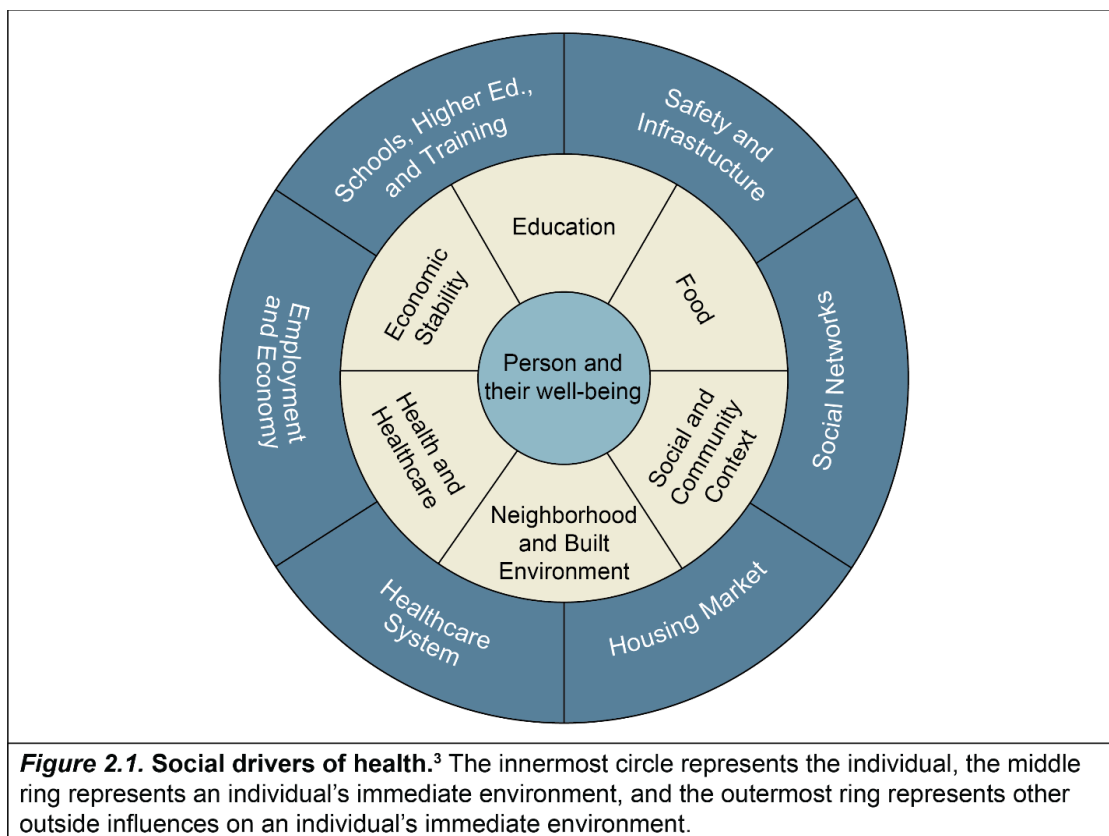
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CHAPTER TWO:

**SOCIAL DRIVERS OF HEALTH IN NORTH
DAKOTA**

INTRODUCTION

Various external factors, referred to as social drivers of health (SDOH), can affect health status and explain why some Americans are generally healthier than others. SDOH consider the various circumstances in which people are born, live, learn, work, socialize, play, and age which affect a range of health outcomes.^{1, 2} Circumstances that may affect health outcomes of individuals include the current social structure, economic factors, and physical aspects of a person's environment. Environments include home, school, workplace, neighborhood, city, and other community settings where a person spends a significant amount of time. Resources that contribute to an enhanced quality of life for a given population are likely to have a significant influence on positive health outcomes of the population. Examples of quality-of-life enhancing resources include safe and affordable housing, access to education, public safety, availability of healthy foods, local health services, and environments free from life-threatening toxins.² Six factors are recognized as core social drivers of health. They are individuals' economic circumstances, their education, food access, the physical infrastructure of their environment, the social and community context in which they live, and their overall health and access to healthcare (Figure 2.1).² There is little consensus on how much impact each factor has on an individual, but each does have some degree of influence.



As discussed in Chapter 1, population characteristics influence healthcare delivery systems and should inform local health policy. When the demographics or socioeconomic of an area change, it is also possible that the healthcare delivery system will change. For example, when an area experiences the aging of its population, one would more likely see increased demand

for long-term care services, home care, transportation services, and alternative housing options. If an area were to experience depopulation, then it is likely those conditions would make it more difficult for the healthcare delivery system to maintain services in that area. The rurality of North Dakota is another factor that can influence healthcare delivery and local health policy. Most North Dakota counties are designated as rural and some healthcare services, such as specialty care services, may not be readily available in more rural areas of the state. All of these factors and more are a part of social drivers of health and can affect the health of North Dakota residents.

SOCIAL DRIVERS OF HEALTH

Economic Stability

Economic stability can encompass numerous factors, including employment, poverty, opportunities available in various industries, and the overall health of the area in which an individual lives.

Employment

The unemployment rate is typically used as an indicator of an area's economic stability, and an individual's employment status is a key indicator of their personal economic stability. The Bureau of Labor Statistics reports unemployment rates on a monthly basis. In December of 2019, North Dakota had an unemployment rate of 2.0%.⁴ A low rate such as this typically indicates a healthy economy for the state. However, the unemployment rate can change rapidly due to external factors that affect various industries. Some examples pertinent to North Dakota include changes in crop prices that may affect agricultural sales/exports, or if there is a decline in the oil market subsequently affecting prices. When there is prolonged economic stability, it is more likely that the unemployment rate will be lower, but the unemployment rate can increase based on outside economic influences. We saw a sharp increase in the unemployment rate during the spring of 2020. In the early months of 2020, North Dakota reported an unemployment rate of 2.0%, but this rate jumped to 8.7% in April 2020. This jump was followed by a steady decline through 2020 and 2023 (Figure 2.2).⁴ In 2022, about 3.6% of youths aged 16-19 in North Dakota were not enrolled in school and were not working, compared to 6.6% nationwide. These individuals are referred to as disconnected youth.⁵ As of March 2024, the top five largest employers by industry in North Dakota include trade, transportation, and utilities; government; private educational and health services; retail trade; and mining, logging, and construction.⁶ Although these industries employ the largest number of people in North Dakota, other sectors of the economy contribute the most to North Dakota's overall Gross Domestic Product (GDP).

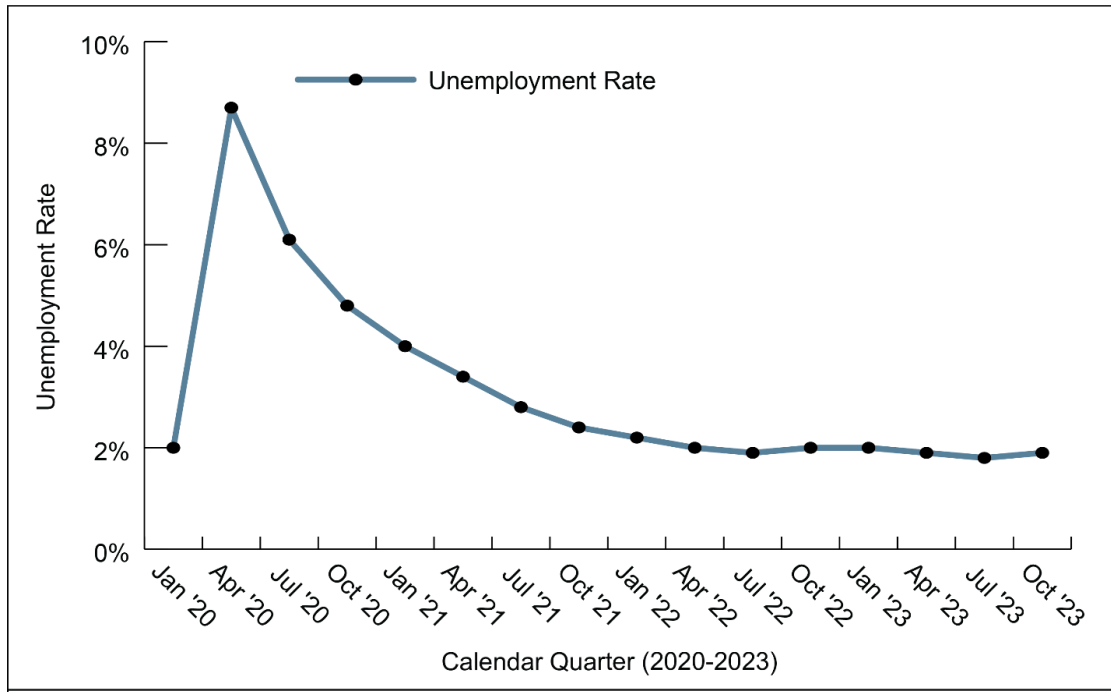
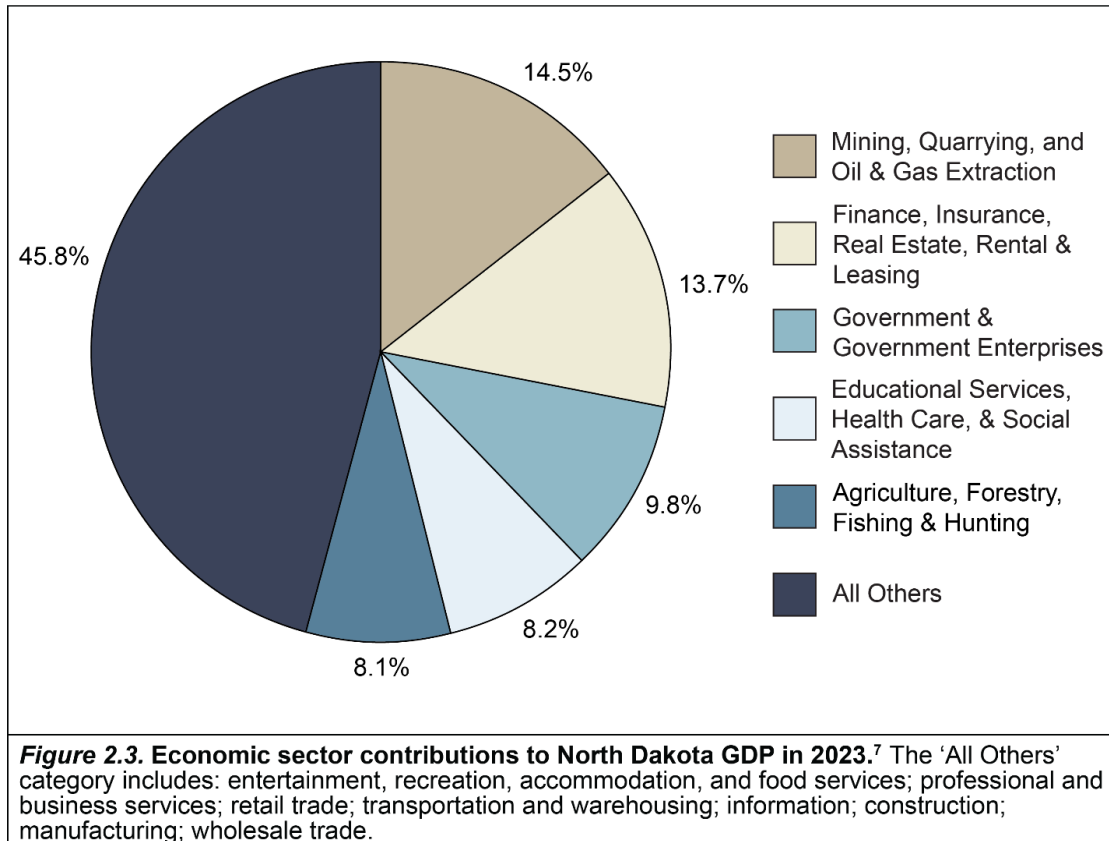


Figure 2.2. North Dakota unemployment rate by calendar quarter 2020-2023.⁴ North Dakota had an increase in the unemployment rate in the spring of 2020 followed by a steady decline and the rate remaining fairly level since April of 2022.

Economy

In 2023, the industry contributing the most to the GDP in North Dakota was mining, quarrying, and oil and gas extraction, which accounted for 14.5% of the GDP. The next largest industry was finance, insurance, real estate, rental, and leasing, contributing 13.7% to the state GDP, followed by government and government enterprises, which contributed 9.8% to the GDP. Education services, healthcare, and social assistance contributed 8.2% to the state GDP, and agriculture, forestry, fishing and hunting also contributed 8.1% to the state GDP. These five industry sectors accounted for over half of North Dakota’s GDP in 2023 (Figure 2.3).⁷ Another economic measure to consider would be the Gini Index value, which is a summary value of income inequality. The Gini Index ranges from 0 to 1, with 0 indicating perfect income equality (everyone receives an equal amount) and 1 indicating perfect income inequality (one person or group receives all of the income).⁸ North Dakota has a Gini Index value of 0.45 compared to the overall value in the U.S. of 0.48, indicating that there is more income equality in North Dakota than in the country as a whole.⁹



Poverty

While employment and the health of the overall economy are important indicators, it is also important to consider an individual's income when examining their economic stability. In 2022, the median household income in North Dakota was \$73,240 while the median income for the U.S. was about \$74,755.¹⁰ Poverty can have a significant impact on an individual's health as it can limit access to services and resources including healthy foods, good housing, and healthcare. The Federal Poverty Level (FPL) is often used as a measurement of economic hardship for individuals and families. In 2024, the FPL was \$15,060 for individuals, \$20,440 for a family of two, \$25,820 for a family of three, and \$31,200 for a family of four.¹¹ It is estimated that 11.2% of the total population of North Dakota is living in poverty, while 12.3% of children under the age of 18 are living in poverty. In comparison, 12.6% of the U.S. population is living in poverty, while 16.3% of children under the age of 18 in the U.S. are living in poverty.¹⁰

Education

Education is an important facet of the social drivers of health insofar as obtaining an education can lead to increased job and economic opportunities. Some level of training or education is typically required for most jobs in today's market.

Public Education

Public schools are an important feature of the education system in the U.S. and North Dakota, and a high school diploma is a standard requirement for most jobs and higher education

opportunities. In North Dakota, the four-year cohort high school graduation rate was 82.7% for the 2022-2023 school year.¹² About 3.9% of North Dakotans age 25 or older went to high school for some amount of time but have no high school diploma, which is far lower than the national percentage of 6.1%.¹³ There are certain programs available that support school readiness in young children and support children as they progress through school. One such program is the Head Start Program, which supports school readiness for children up to age 5 who come from low-income families. In 2024, there were 35 Head Start, 13 Early Head Start, one Migrant and Seasonal Head Start, and 16 American Indian and Alaska Native Head Start programs in North Dakota.¹⁴ North Dakota has seen an increase in enrollment in public schools over the past decade. During the 2023-2024 school year, there were 115,767 K-12 students enrolled in North Dakota public schools. This is a 13.9% increase compared to enrollment in the 2013-2014 school year (Figure 2.4). Also, during the 2023-2024 school year there were a total of 9,446 K-12 students enrolled in non-public schools.¹⁵

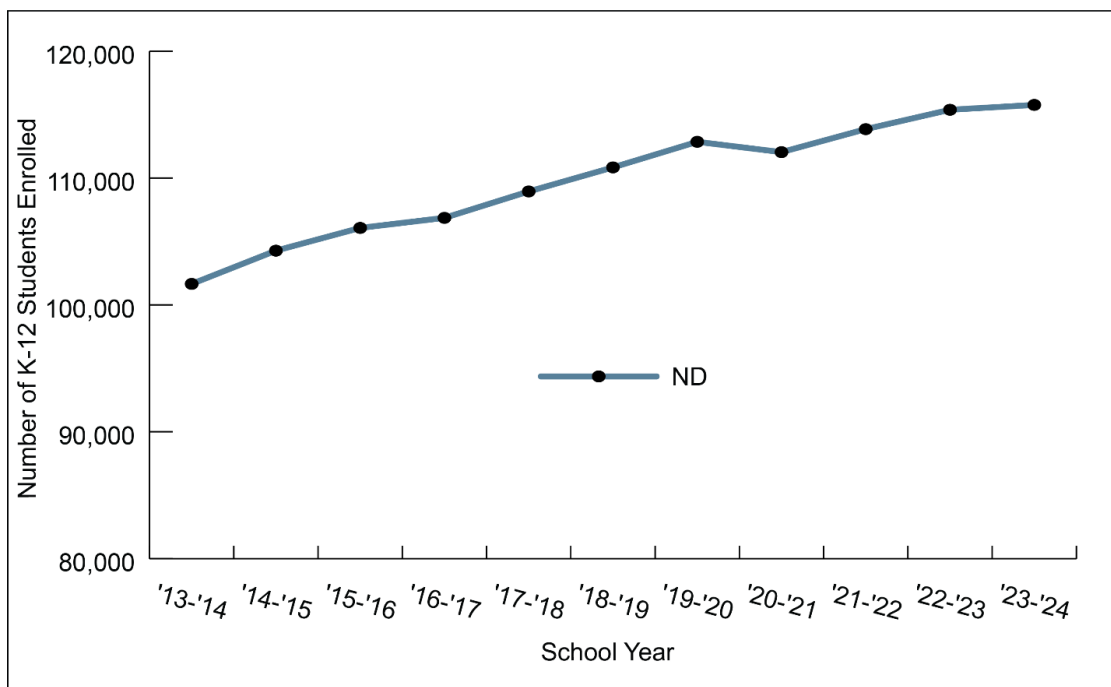


Figure 2.4. Number of K-12 students enrolled in North Dakota public schools, by school year.¹⁵ North Dakota has had a mostly steady increase in public school enrollment between the 2013-2014 school year and the 2023-2024 school year, with a dip in enrollment during the 2020-2021 school year.

There are instances where schoolwork or classroom activity needs to be completed online at home or out of the traditional school environment making internet access very important. According to the Federal Communications Commission (FCC), 100% of the population of North Dakota has access to an internet provider that offers download/upload internet speeds of 100/20 Megabits per second (Mbps) with about 97.5% of the state having access to internet speeds of 250/25 Mbps and 76.7% of the state having access to internet speeds of 1000/100 Mbps.¹⁶ While broadband may be available, some individuals may experience barriers to using the service. For some, internet service may be too expensive, or the service might be unreliable. The FCC found that in 2019 about 14.5 million Americans lacked access to broadband speed internet with 17% of those lacking access living in rural areas of the United States. This was

higher on Tribal lands at about 21%.¹⁷ In another study, Microsoft found that it is likely that 162.8 million Americans do not use broadband-speed internet. This indicates a difference between the availability of a service and its actual use.¹⁸

Higher Education

Generally, obtaining a college degree provides more employment opportunities. College degrees allow individuals to gain more specialized skills and knowledge within their chosen field, as well as learn the most up-to-date techniques and information. In North Dakota, 31.4% of individuals aged 25 or older have obtained a bachelor's degree or higher.¹³ North Dakota has a number of institutions of higher education that offer a variety of degrees and programs. There are five 2-year public colleges, four 4-year private colleges, five tribal colleges, four 4-year public colleges, and two research universities.¹⁹ Overall, the North Dakota higher education system has a retention rate of 72% and graduation rate of 56%.²⁰ Community colleges can be a key component of the higher education system as they are a potentially more affordable way for individuals to receive higher education or start their journey into higher education. During the 2022-2023 school year, there were 28,322 students enrolled in community colleges across the state. Of those students, 13,730 were degree seeking, 1,465 were non-degree seeking, and 14,469 were taking non-credit courses.²⁰

Food Access

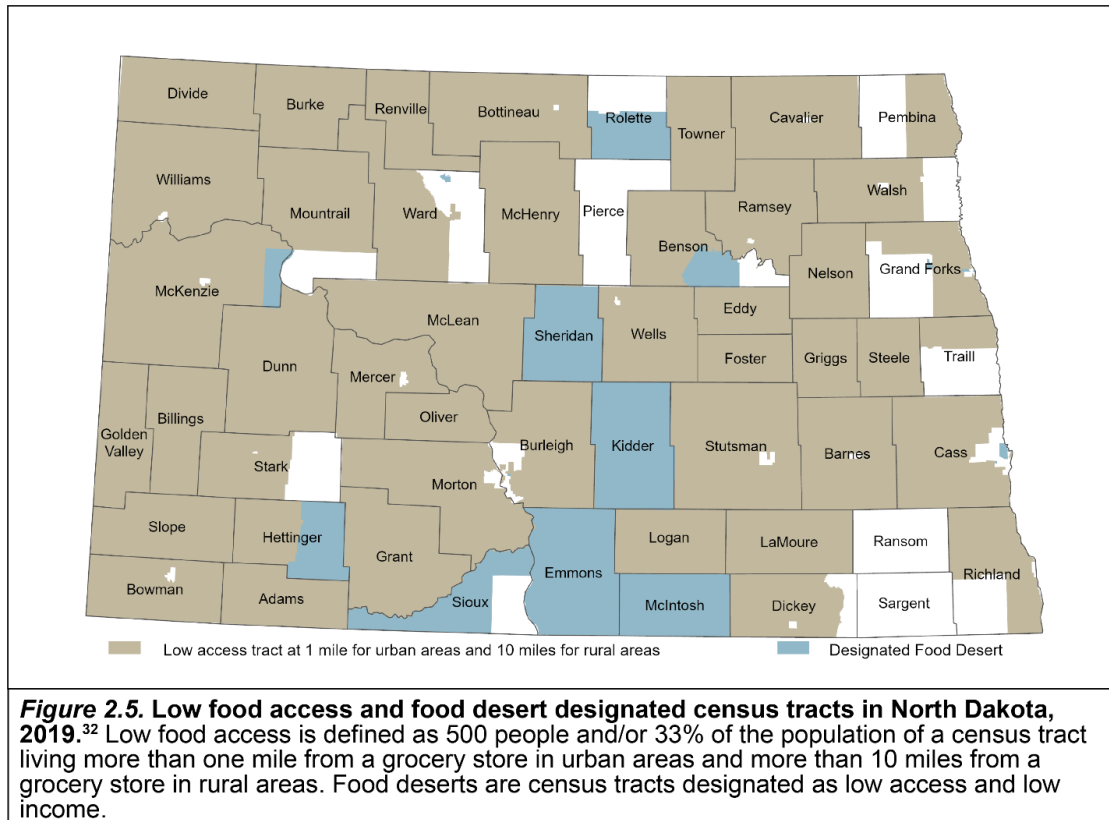
Lack of access to fresh, healthy foods is associated with poor diets and higher levels of obesity, diabetes, and other negative health outcomes. Thus, access to healthy food and food security are important components of social determinants of health.^{21, 22} Referring to an individual or household as food insecure means they do not have the resources to provide enough food to live a healthy and active life.²³

Assistance Programs

Food insecurity in children is an area of concern as it may worsen the onset and persistence of adverse health conditions, such as developmental deficits, obesity, weakened immunity, and increased risk of serious illnesses. Programs that provide healthy, affordable food result in fewer negative health outcomes and chronic illnesses among the population, especially when targeted towards children in need.²⁴ One program available for students is the Free/Reduced Price Lunch program in schools. In North Dakota about 21.9% of students were eligible for a free/reduced lunch during the 2021-2022 school year.²⁵ Based on the school year 2021-2022 income eligibility requirements, children in families at or below 130% of the FPL were eligible for free lunches at school, and children in families at or below 185% of the FPL were eligible for reduced price lunches at school. These income eligibility requirements are adjusted every school year.²⁶ Children of individuals that receive Supplemental Nutrition Assistance Program (SNAP) benefits that attend school automatically qualify for free school meals.²⁷ SNAP (formerly called food stamps) is a federal nutrition program helping individuals and families in need of access healthy food. SNAP participation is associated with lower overall healthcare expenditures and Medicaid/Medicare costs for states. Early access to SNAP is also associated with improved birth outcomes and long-term health for children and adults.²⁸ Based on 2022 data, 6.3% of the population in North Dakota was receiving food stamps/SNAP benefits.²⁹

Food Environment

Access to healthy food does not depend only on one's income, but also on the food environment in which a person lives. Ahern, Brown, and Dukas (2011) investigated the relationship between food availability and county-level health outcomes. In non-metro counties, more grocery stores and direct farm sales per capita were associated with lower mortality rates. Fewer fast-food restaurants and convenience stores per capita were associated with lower rates of diabetes.³⁰ Fast food establishments do not always offer healthy food options that grocery stores and other food markets may offer. There are about 2.4 grocery stores per 10,000 persons in North Dakota, but some counties have no grocery stores at all.³² The U.S. Department of Agriculture (USDA) defines grocery stores as supermarkets and smaller grocery stores primarily selling food, such as canned and frozen food, fresh produce, and fresh and prepared meats, fish, and poultry. They do not include convenience stores with or without gasoline, or large general merchandise stores that also sell food.³¹ According to the Food Access Research Atlas (2019), there are 107 census tracts in North Dakota where residents have low access to retail outlets selling healthy foods, with 346,369 residents living in those census tracts. For a census tract to be designated as low access, 500 people and/or 33% of the population in that census tract must be living more than one mile away from a grocery store in urban areas or more than 10 miles away from a grocery store in rural areas.³² Another way to view the issue of food environments is by looking at food deserts. The USDA defines food deserts as geographical areas with limited access to healthy and affordable food. The USDA examines food deserts at the census tract level and those census tracts that are considered low access and designated as low income are considered food deserts.³³ There are 17 census tracts in North Dakota that are considered food deserts, with 52,813 North Dakota residents living in these census tracts (Figure 2.5).³²



Physical Infrastructure and Built Environment

The physical environment in which individuals live can also affect their overall health. Factors such as roads, sidewalks, air quality, safe and stable housing, and access to both outdoor and indoor recreation can vary significantly between communities. There are also significant environmental differences between rural and urban areas, which are particularly salient to North Dakota, as a majority of the state is designated rural.

Built Environment

When examining the built environment in which individuals live, work, and play, researchers consider several factors. A key part of an individual’s built environment is access to safe and stable housing. When people struggle with maintaining housing, they experience stress at the potential that they may become unsheltered. If an individual or family becomes unsheltered, they may be forced to live out of vehicles, in temporary shelters, in accommodations that do not have kitchens or adequate plumbing facilities, or even be forced to live outdoors without any shelter. All of these situations can have various impacts on health, including an increased risk of potential illness. Beyond the risk of losing stable housing, maintaining adequate housing can be difficult, particularly for those who are struggling financially. High housing costs can lead to overcrowding in housing units, struggling with paying household bills, or struggling to pay other bills. In North Dakota, it is estimated that about 12% of households are struggling with severe housing problems, which include housing cost burden, overcrowding, and inadequate facilities. The three counties in ND with the highest percentage of households experiencing severe

housing problems are Sioux County (19%), Benson County (18%), and Pierce County (18%). In comparison, it is estimated that about 17% of households nationwide are experiencing severe housing problems.³⁴ According to the U.S. Census Bureau American Community Survey, about 1% of housing units that are occupied in North Dakota lack complete plumbing facilities or complete kitchen facilities.³⁵ Living in a housing unit that does not have complete plumbing facilities obviously can make maintaining proper hygiene more difficult, and if a housing unit lacks complete kitchen facilities, individuals living in such units can be forced to eat fast or restaurant food more often which may increase how much they spend every month on food.

When individuals lose access to stable housing and have no permanent shelter, this can lead to many other issues within the realm of social drivers of health. Without a permanent address, individuals may have trouble accessing financial support services and finding improved employment as employers may require a physical address for those applying for jobs. The U.S. Department of Housing and Urban Development (HUD) released a report in 2023 on homelessness. According to their 2023 point-in-time report, they estimate that about 784 people in North Dakota were experiencing homelessness. This is equal to about 0.1% of the state population. The report goes on to state that about 568 (72%) of those experiencing homelessness are individuals and 216 (28%) are families with children. The total number of people experiencing homelessness in ND represents a 44.6% increase over the past 5 years (2018-2023), but a 62.1% decrease in the past decade (2013-2023).³⁶ It is important to note that this number represents only a point-in-time count taken once per year, which is difficult to reliably track over time and can vary drastically due to various economic factors.

Safety is another important aspect of the built environment, not only being safe from crime but also that the area is environmentally safe. Some examples of the topics considered when determining if an area is environmentally friendly are air pollution, water pollution, access to safe drinking water, and toxins present in the physical infrastructure. When considering toxins within physical infrastructure, one common toxin that is often discussed is lead paint in older homes. According to the EPA, older homes built before the year 1978 are more likely to contain lead-based paint.³⁷ Lead is a toxin that can cause neurological problems when individuals have prolonged exposure.³⁸ In North Dakota, it is estimated that about 46.3% of occupied housing units were built prior to 1980, and 10.4% were built prior to 1940.³⁵ With houses that may contain lead paint, it is important to test for the toxin and attempt to mitigate any potential exposure, when possible, especially if the housing unit is undergoing renovations. Clean drinking water and air pollution are other key aspects of an area being environmentally safe. It is estimated that North Dakota has an annual average air pollution rate of 5.0 micrograms per cubic meter of fine particulate matter. This is well below the national standard for 12.0 micrograms per cubic meter. The highest measurements of air pollution in ND are found in counties with the largest cities of Bismarck, Grand Forks, and Fargo. When looking at access to safe drinking water violations, researchers found that in 2022 most ND counties reported no drinking water violations with only 2 counties reporting drinking water violations. This indicates that as a state, North Dakota has relatively clean air and access to safe drinking water.³⁴

Often when individuals think of safety they think about crime and the risk potential crime may pose to them. Individuals may look at crime rates in different neighborhoods or cities when considering where to live. The threat of crime is an important consideration when examining SDOH as it can affect stress of individuals who live in high crime areas, as well as how they utilize the physical infrastructure within their environments. For example, if crimes often occur

within the neighborhood park, people may be less likely to use that park. In North Dakota, the Bureau of Criminal Investigation manages the state's Uniform Crime Reporting (UCR) program. This involves the collection and analysis of crime statistics reported by local law enforcement agencies in the state and is made available to the public through an online dashboard organized into specific public interest focus areas of violent crime, property crime, and drug/DUI crimes. On a statewide level, North Dakota has seen an increase between 2012-2022 in all crimes within the three focus areas except for two specific crime areas. North Dakota has seen a decrease in DUI arrests (-43.0%) and a decrease in major crimes where the offender used drugs or alcohol (-11.8%). However, the rates of different crimes and how they have changed over the past decade vary widely between jurisdictions throughout the state.³⁹

Access to Recreation

Weather can be a hindrance to outdoor recreation activities. North Dakota typically experiences a variety of weather conditions throughout a given year. The state can experience extreme heat during the summer and extreme cold in the winter, as well as a variety of severe weather events. Depending on weather conditions, individuals may not be able to enjoy outdoor activities and may need to use indoor recreational facilities for physical activities. One study found that fewer recreational facilities per capita was a predictor of obesity in non-metro settings.³⁰ Based on the 2010 population, there are about 14.4 recreation/fitness facilities per 10,000 people in North Dakota.⁴⁰ Some of these recreational facilities may require a paid membership for use and not every community is able to support fitness centers or larger recreational facilities. Smaller communities in North Dakota have a variety of ways of providing recreational opportunities in the community. They typically have postings about community recreation groups or classes (whether free or paid), or even open/extra hours at available recreational facilities such as high school gyms or a community pool. Announcements regarding recreational classes or events can often be found in the local newspaper, a town newsletter, town websites or social media pages, or on bulletin boards in community spaces such as at post offices, community centers, grocery stores, clinics, or city office buildings.

Accessing recreation can also involve safe outdoor spaces for walking, hiking, and biking. A community's physical infrastructure that lends itself to being a safe space for walking is often referred to as "walkability." The U.S. Environmental Protection Agency (EPA) offers a nationally standardized Walkability Index. Within this index, most areas of North Dakota are ranked as below-average walkability, with just a few census block groups within cities being rated with above-average walkability.⁴¹ However, the nationally standardized walkability index does not necessarily reflect the reality of recreation standards in North Dakota. There are opportunities for individuals to get outside and walk around their communities/areas even if those areas are not developed with sidewalks or designated walking trails/park areas. Just because an area is undeveloped for walking does not mean it is strictly un-walkable. While some walking-focused infrastructure does make certain areas safer for walkers, particularly in cities and along roads, some undeveloped areas can still be used for the fundamental recreation activity of walking. According to County Health Rankings, about 79% of individuals in North Dakota live close to a park or recreation facility indicating that a majority of the population does have potential access to areas and facilities for recreation purposes. However, about 25% of adults in ND reported not participating in any physical activity outside of work.³⁴

Social and Community Context

Access to community and social support also influences an individual's overall health. Having access to support, different community activities, and social groups/clubs/organizations can play a role in physical, mental, and emotional well-being. Studies have shown that loneliness and social isolation are associated with an increase in all-cause mortality. Social isolation has also been linked to cardiovascular disease. Lack of social supports not only affects physical health but also has been shown to affect mental health, as social isolation is associated with poorer mental health outcomes.⁴² The Mayo Clinic and the American Psychological Association consider social support an important tool in mitigating stress and offer tips on how to build social networks, including being proactive through volunteering or community classes, as well as taking advantage of technology by staying in touch through text, email, or social network websites.^{43, 44}

Community Social Supports

Some communities work on building social networks for individuals living in their community. These efforts often take the form of community events such as citywide rummage sales, community potlucks, or art and entertainment fairs. Many cities have event calendars or event announcements on their city websites or social media pages. For example, Devils Lake, Dickinson, and Garrison all have community event listings on their city websites including listings for music events, camps for kids, boating events, and other activities. Some communities also work towards encouraging individuals and families to move to their town or city and offer support to new residents. One example is Carrington's *New Resident Guide*. This guide not only provides information on utilities and City Hall, but also has information on local realtors, telecommunications providers, employment opportunities, and local news media.⁴⁵

Community Health Workers

There are several different ways to maintain the health and social connectedness of a community. One model that has been used more widely in the past decade is community health workers (CHWs). This model uses community members who work in conjunction with the local healthcare system and public health officials, providing support for individuals seeking healthcare. CHWs can help patients navigate the local healthcare system, connect people to healthcare and healthcare resources, provide culturally competent health education and information, serve as patient advocates, and provide numerous other services. A key benefit of the community health worker model is that these professionals provide services in a culturally competent manner. Typically, CHWs reside in the communities they serve and share the same language, socioeconomic status, ethnicity, and life experiences as patients.⁴⁶

During the 2023 North Dakota Legislative session, lawmakers passed House Bill 1028 which created regulations for the certification of community health workers in North Dakota. The bill created these regulations within the state's Century Code and also created a community health worker task force. Specifically, the task force is directed to develop a data-driven plan for community health worker scope of work, education and training, certification and regulation, medical assistance reimbursement (including reimbursement to a federally qualified health center), and a North Dakota community health worker collaborative; provide to the Department of Health and Human Services a proposal for a Medicaid state plan amendment or waiver to include community health workers; provide the Department of Health and Human Services

proposed administrative rules for the community health worker scope of work, education and training, certification and regulation, medical assistance reimbursement, and a North Dakota community health worker collaborative; and collaborate with existing clinical, public health, home, and community-based systems.⁴⁷ Creating regulations within the Century Code and creating the community health workers task force provide North Dakota with opportunities to grow this type of workforce within the state with the long-term potential benefit of improving health outcomes within communities.

Recognizing Culture in Healthcare

Addressing culture in healthcare can be one way to alleviate healthcare disparities and improve healthcare outcomes within a health system. When individuals feel their cultural beliefs are recognized and respected by the healthcare system and healthcare professionals, they may feel more comfortable seeking care.⁴⁸ Some examples of cultural practices that can be recognized in the healthcare field include working alongside traditional healers, allowing healing or prayer circles, asking about cultural dietary preferences, or recognizing various living situations such as multigenerational households and how that might factor into care and healing. Practitioners can address culture respectfully in many ways, even by simply asking patients if there are any cultural beliefs or practices they should be aware of. One study examined the self-reported healthcare experiences of underrepresented Americans in a Midwestern state. The study included individuals who identified as African American, Native American, Latino/a American, and Asian American. While the overall responses reported general satisfaction with their healthcare providers, it was found that poor experiences predicted lower levels of treatment satisfaction and racist experiences predicted being afraid of seeking conventional healthcare services.⁴⁹

One example of healthcare in North Dakota that includes cultural practices would be the Good Road Recovery Center based in Bismarck, ND. Opened in December 2018, the Good Road Recovery Center was established by the members of the Three Affiliated Tribes, also known as MHA Nation, whose members have been severely impacted by substance use and its effects. This facility is run by the MHA Nation and focuses on substance abuse treatment while incorporating traditional cultural practices into the treatment process. The center's vision is to work towards providing a greater understanding of the health capacity of Indigenous culture by instilling in Indigenous people the knowledge and desire to live in balance with themselves and the world around them. The center offers both outpatient and residential treatment services as well as intensive case management.⁵⁰

Language Barriers

Language barriers can have impacts on an individual's ability to access resources and find a sense of community. Even though the population of North Dakota is fairly homogeneous from a demographic perspective, there are a variety of languages found within the state. As one of the largest school districts in the state, Fargo Public Schools reports that there are 84 languages spoken amongst their student population.⁵¹ District officials can thus infer that the families of the students also speak a large variety of languages. So, language barriers for students and their families are a consideration for the education system within North Dakota. Language barriers in healthcare can lead to miscommunication between healthcare professionals and their patients. This can decrease the quality of care the patient receives and lead to dissatisfaction with their care.⁵²

Language barriers can mean more than just a disconnect between the languages spoken within a community. It can also mean that hurtful and inaccurate language may be used to describe certain populations within a community. Particularly in healthcare, using inclusive and respectful language can create a more comfortable environment for patients. When patients feel comfortable in a healthcare setting, they may be more likely to seek the care they need.⁵³ If an individual feels that the healthcare environment is in any way uncomfortable or hostile towards them, they may choose to not seek care. An example of how to use inclusive language comes from the National Institutes of Health (NIH), which produces a style guide for creating health-related web content, fact sheets, brochures, and other materials. Part of the NIH style guide includes sections on respectfully addressing disabilities; autism; obesity; race and national origin; sex, gender, and sexuality; using person-first and destigmatizing language; and using inclusive and gender-neutral language. This style guide can serve as a resource to the healthcare community when considering how best to address areas where inclusive language may need to be considered.⁵⁴ Using updated and respectful terminology for all members of a community can lead to all community members feeling accepted and prevent feelings of hostility and isolation. The U.S. Department of Health and Human Services has also been working on creating the National Standards for Culturally and Linguistically Appropriate Services (CLAS) in Health and Health Care. This set of standards looks to improve the quality of services provided to all individuals in order to work towards reducing health disparities and achieving the goal of great health equity within the U.S. Part of these standards includes a section on communication and language assistance within the healthcare setting to ensure that all individuals are able to access appropriate services and receive the care they need.⁵⁵

Health and Healthcare

This category of social drivers of health may be the most obvious factor contributing to an individual's overall health, but it is influenced by all the other social drivers. Access to healthcare and healthcare resources can be affected by where an individual lives, their socioeconomic status, their ability to navigate the health system, and other social drivers. Access to and availability of healthcare resources and healthcare providers is an important aspect to consider when looking at an individual's overall health.

Access and Availability

One way to examine access to and availability of healthcare services and providers is through Health Professional Shortage Area designations or HPSAs. These are designations defined by the Health Services and Resources Administration (HRSA) and indicate healthcare provider shortages for primary care providers, dental health providers, and mental health providers. These designations can be for a geographical area, a specific population within an area, or for a facility.⁵⁶ As of February 2024, about 89% of counties in North Dakota are fully or partially designated HPSAs for primary care, 45% of counties are fully or partially designated for dental health, and 87% of counties are fully or partially designated for mental health (Figure 2.6, Figure 2.7, Figure 2.8).⁵⁷ Individuals located in an HPSA may have increased travel time and distance to healthcare services and/or they may have to wait longer periods of time to access healthcare services.

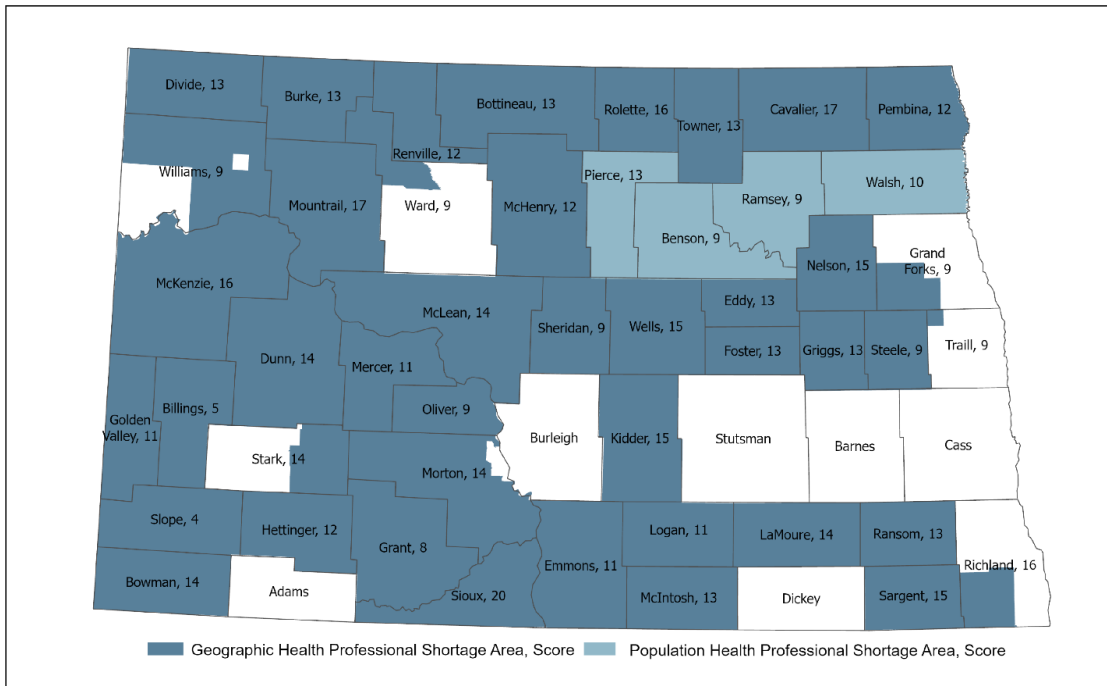


Figure 2.6. Primary care health professional shortage areas (HPSAs) in North Dakota, 2024.⁵⁷ The numbers associated with the counties are the HPSA scores for the respective county. A higher score indicates a greater shortage of primary care providers.

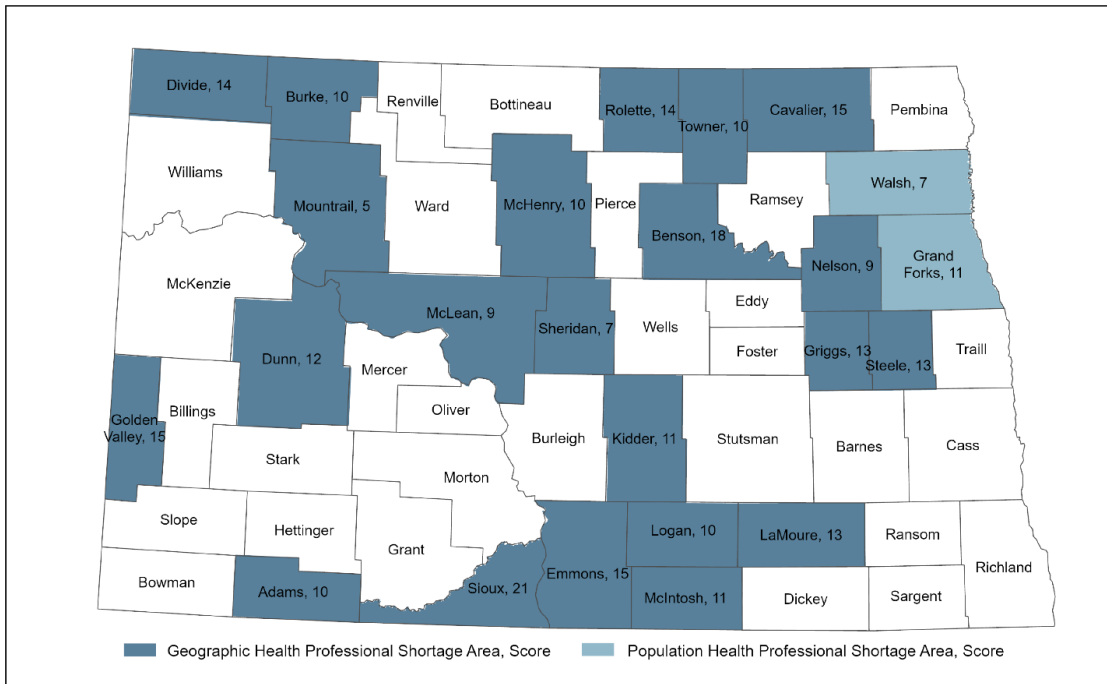


Figure 2.7. Dental health professional shortage areas (HPSAs) in North Dakota, 2024.⁵⁷ The numbers associated with the counties are the HPSA scores for the respective county. A higher score indicates a greater shortage of dental health providers.

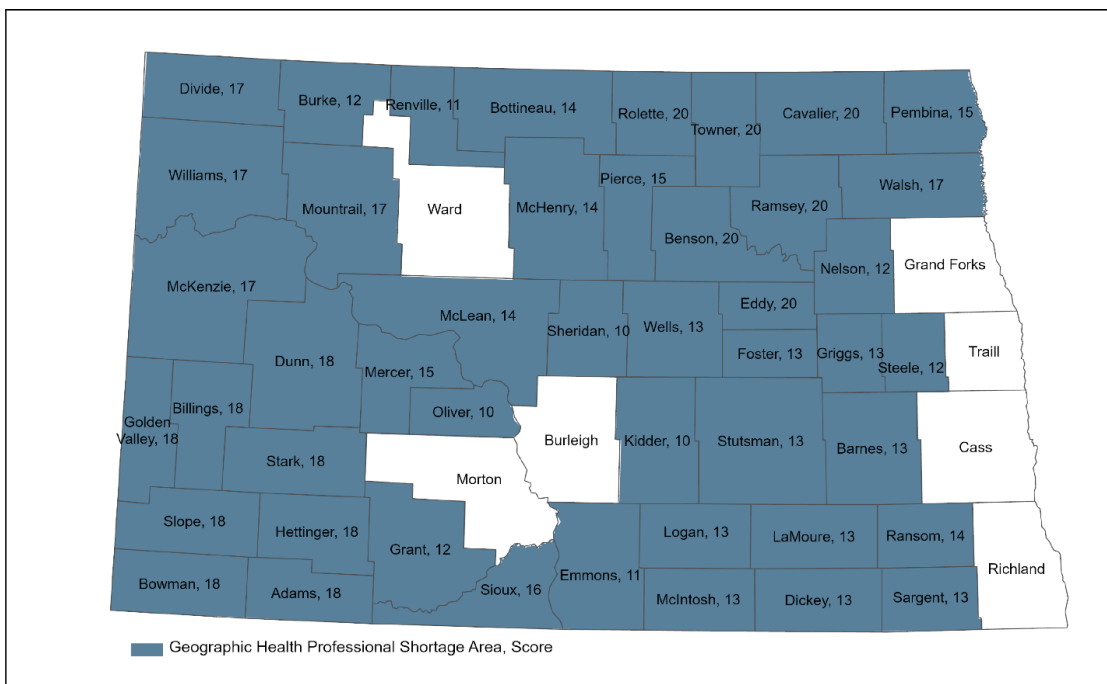
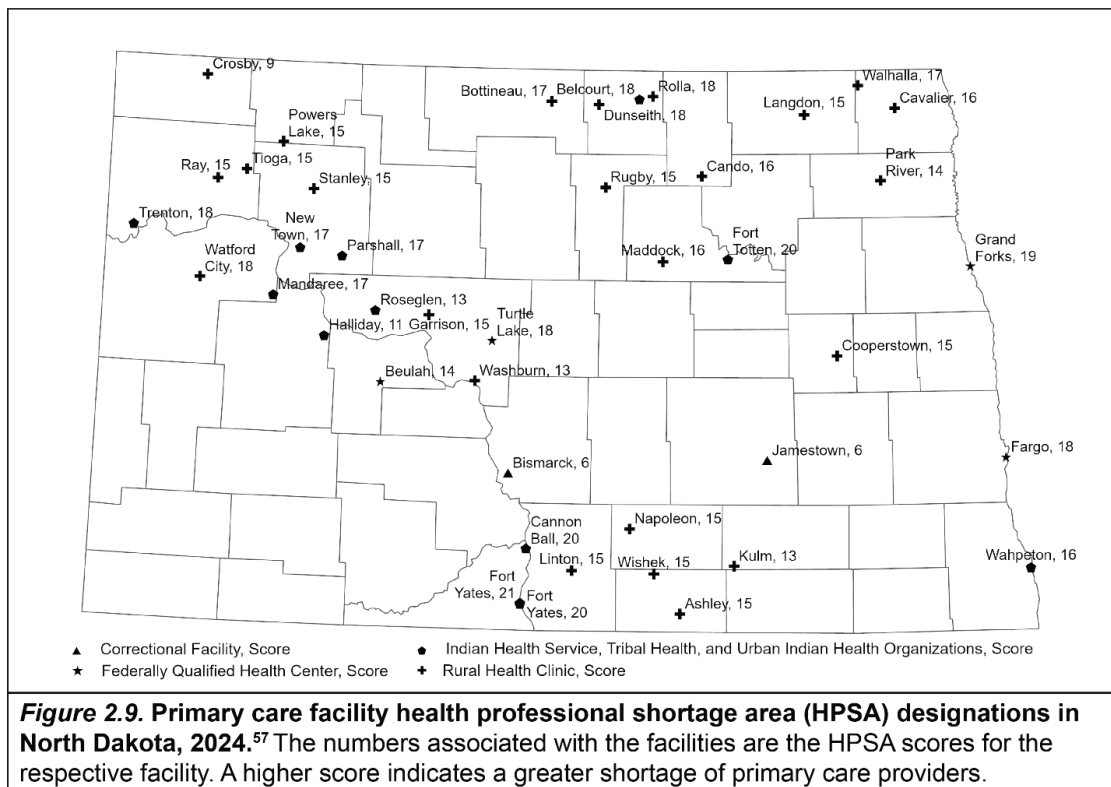


Figure 2.8. Mental health professional shortage areas (HPSAs) in North Dakota, 2024.⁵⁷ The majority of counties in North Dakota are designated as mental health professional shortage areas. The ones that are not designated contain or are adjacent to the cities of Grand Forks, Fargo, Bismarck, and Minot. The numbers associated with the counties are the HPSA scores for the respective county. A higher score indicates a greater shortage of mental health providers.

When a facility is designated as HPSA, this indicates that the facility likely serves as a safety net facility and provides health services to underserved populations. As of February 2024, there are 43 healthcare facilities in North Dakota designated for primary care including 12 Indian Health Service, Tribal Health, and Urban Indian Health (ITU) facilities, 5 Federally Qualified Health Centers (FQHCs) and their satellite locations, 24 Rural Health Clinics (RHCs), and 2 correctional facilities (Figure 2.9). There are 44 healthcare facilities designated for dental health including 12 ITU facilities, 5 FQHCs and their satellite locations, 24 RHCs, 2 correctional facilities, and one other facility not located in an already designated area (Figure 2.10). Finally, there are 49 facilities designated for mental health in North Dakota including 12 ITU facilities, 5 FQHCs and their satellite locations, 24 RHCs, 2 correctional facilities, the state mental health hospital, four human service centers that are not located in an already designated area, and one other facility not located in an already designated area (Figure 2.11).⁵⁶ FQHCs are key safety net facilities for low-income and other underserved populations. In North Dakota, there are a total of 21 FQHC locations or about 2.71 FQHCs for every 100,000 North Dakota residents.⁵⁸



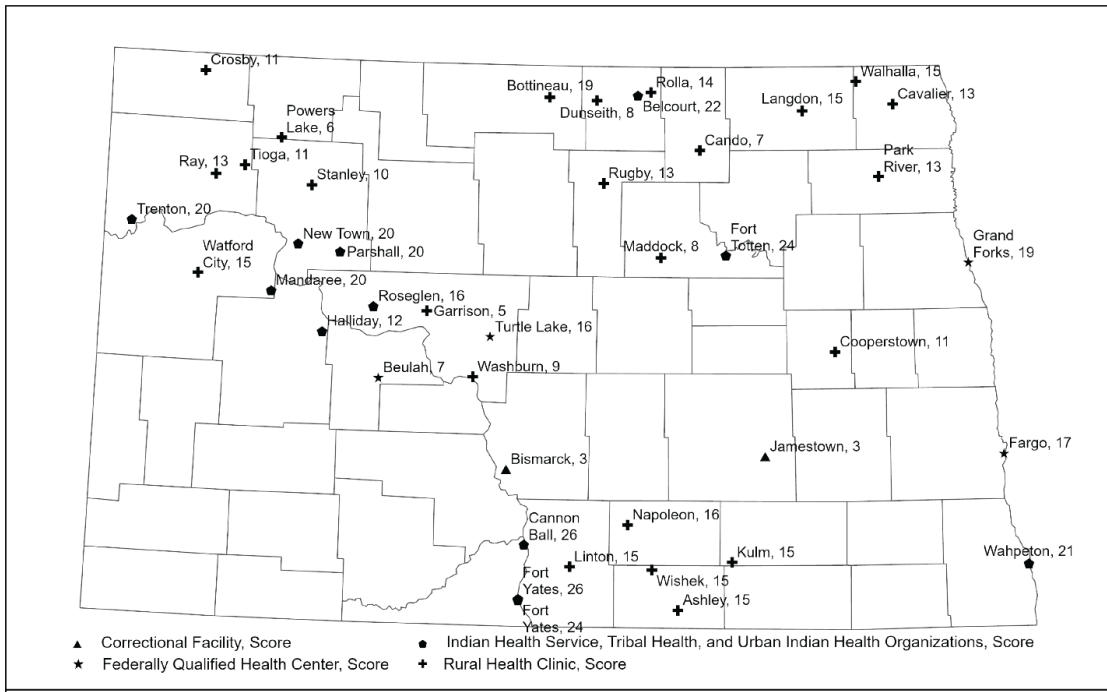


Figure 2.10. Dental health facility health professional shortage area (HPSA) designations in North Dakota, 2024.⁵⁷ The numbers associated with the facilities are the HPSA scores for the respective facility. A higher score indicates a greater shortage of dental health providers.

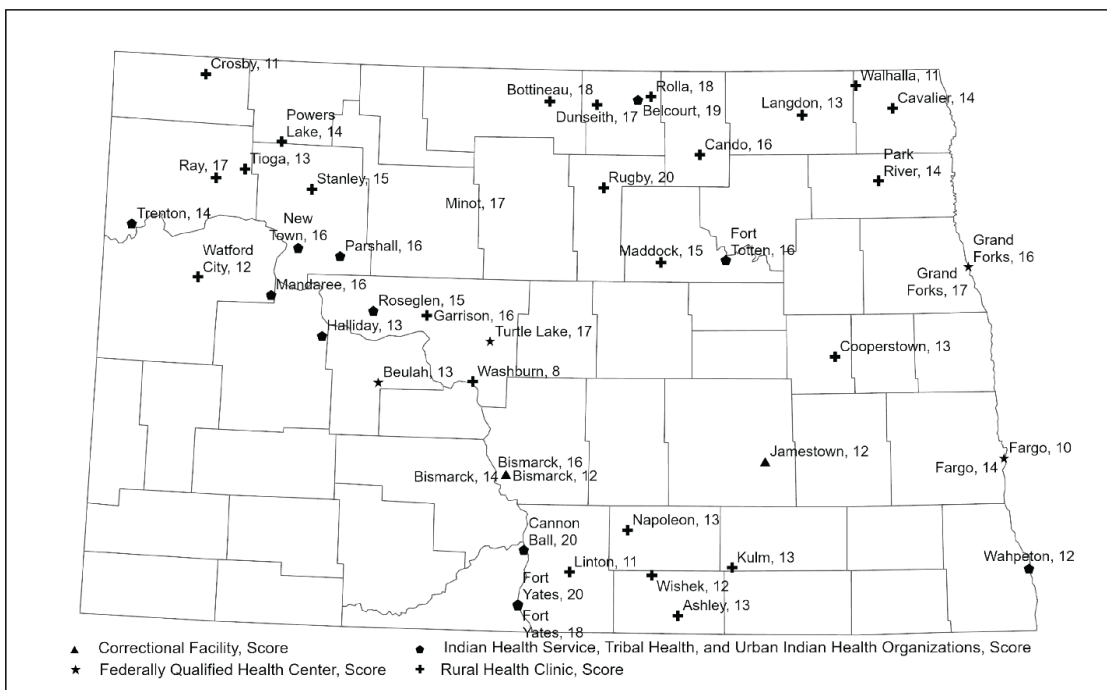


Figure 2.11. Mental health facility health professional shortage area (HPSA) designations in North Dakota, 2024.⁵⁷ The numbers associated with the facilities are the HPSA scores for the respective facility. A higher score indicates a greater shortage of mental health providers.

Another way to look at access to healthcare is to consider the types of providers available and how many there are to serve a given population. While a community may have a healthcare facility, that facility may not be fully staffed or may not be able to offer a complete range of healthcare services based on available providers. According to the Area Health Resource File, there were 51.75 dentists per 100,000 persons in North Dakota and 90.33 primary care physicians per 100,000 persons in North Dakota in 2023. When compared to other states, the rate of dentists and the rate of primary care physicians in North Dakota are about average.⁵⁹

Insurance Coverage

Availability of healthcare services is not the only factor to consider when examining an individual's access to healthcare services. Insurance coverage or lack of insurance coverage is also a factor. Some healthcare services can be costly or unexpected, such as being injured in a car accident. There are several ways for an individual to pay for healthcare services, including out-of-pocket or through insurance. Most North Dakotans have some form of health insurance coverage, but in 2021, about 9.2% of the population was uninsured. In 2009, the percent of North Dakotans with no insurance was 11.5% so the number of uninsured individuals in North Dakota has decreased between 2009 and 2021 (Figure 2.12).⁶⁰

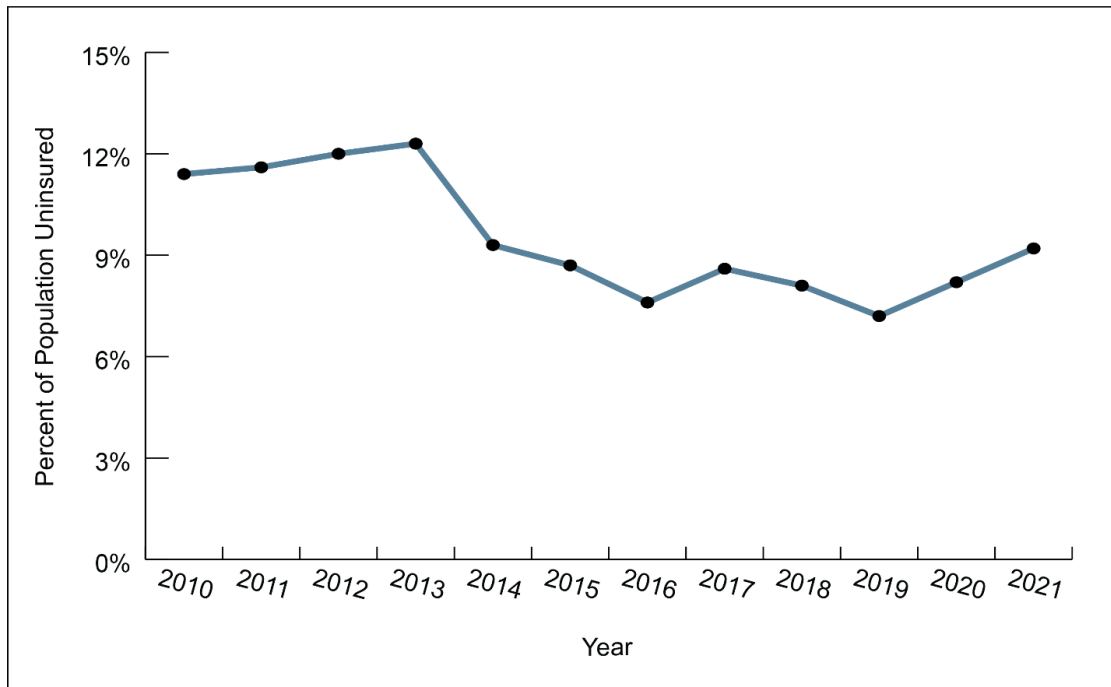


Figure 2.12. Percent of population with no health insurance coverage in North Dakota from 2010-2021.⁶⁰ Between 2013 and 2016 North Dakota had a notable drop in the percent of the population without health insurance, and since 2014 the percent uninsured has remained below 10%.

Disparities in North Dakota

Examining data related to social drivers of health in North Dakota, there are some areas where disparities and inequities become apparent. When the data are examined based on varying characteristics of the population, one can identify areas that need improvement. While North Dakota's population is limited in its diversity, the population of North Dakota is becoming more diverse, with nearly 25% of ND children identifying as a race/ethnicity other than White. As the state becomes more diverse, it is important to recognize when specific segments of the population are disproportionately affected by SDOH that could result in negative health outcomes. As an example, the percent of the ND population that identifies as American Indian/Alaska Native population is 4.3%, but that racial group is disproportionately represented when it comes to various measures of SDOH and negative health outcomes. While only making up 4.3% of the population of ND, the AI/AN population represents 11.4% of diabetes deaths and 5.5% of heart disease deaths in ND.⁶¹

Educational attainment is another area where we see notable disparities in North Dakota. It is estimated that among the White population of ND 94.5% have a high school graduate education or higher, and 32.3% have a bachelor's level education or higher. For the American Indian/Alaska Native population of ND, it is estimated that 84.6% have a high school graduate education or higher, and 14.4% have a bachelor's level education or higher (Figure 2.13).⁶² It is important to understand why educational attainment is a key part of SDOH. Studies have found that educational attainment is correlated to lifetime earning potential for individuals in the U.S. According to data analyzed in 2023 by the National Center for Education Statistics, higher educational attainment was associated with higher median earnings in 25- to 34-year-olds who worked full-time and year-round. This pattern was consistent from 2010 through 2021. According to the 2021 data, the median income for those with a master's degree or higher was \$74,600 while it was \$61,600 for those with a bachelor's degree, \$45,000 for those with an associate's degree, and \$39,700 for those who only completed high school.⁶³

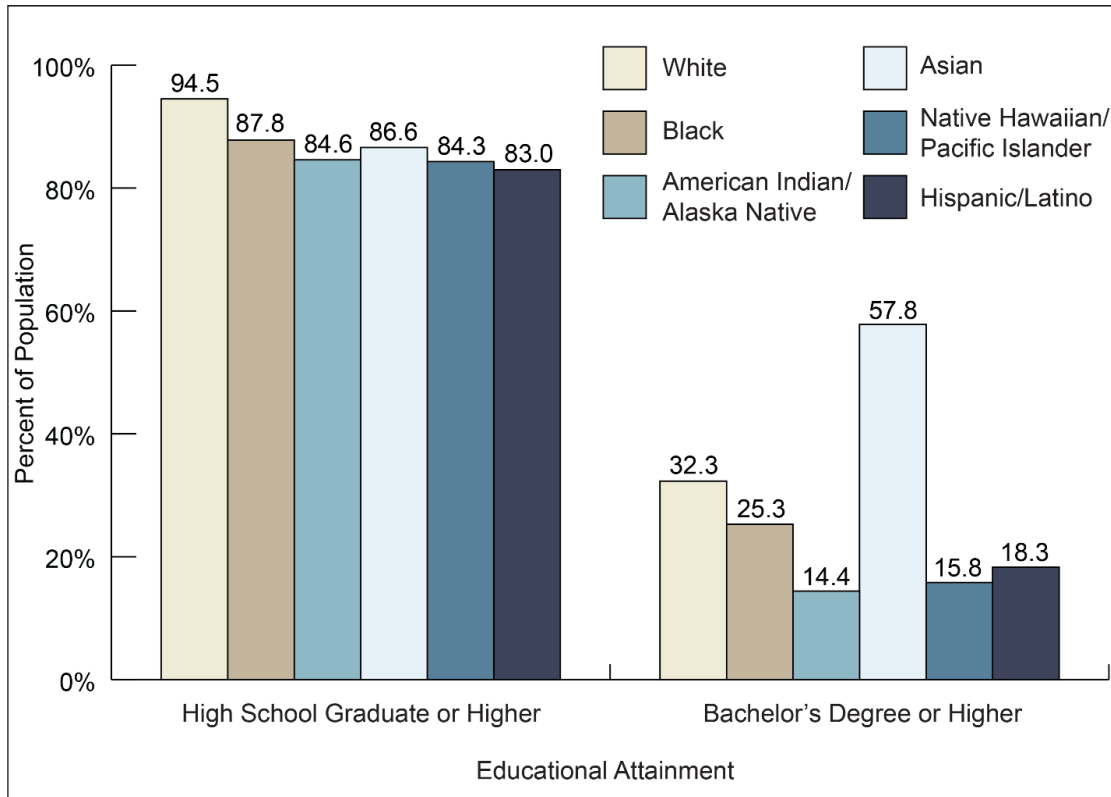


Figure 2.13. Educational attainment of people in North Dakota by racial/ethnic group, 2022.⁶²

Health insurance coverage is another major area when considering data related to SDOH. Whether or not someone has health insurance coverage in the United States can have a major impact on their access to healthcare. According to data on the rate of those who are not covered by health insurance from the American Community Survey compiled by the Kaiser Family Foundation (KFF), the uninsured rate for the nonelderly in North Dakota was 4.9% for those who are White and 23% for those who are American Indian/Alaska Native. This demonstrates a notable difference between the different racial groups when it comes to those who are covered by health insurance and those who are not. When comparing uninsured rates by gender, the uninsured rate for males in North Dakota was 10.7% and for females was 7.6%.⁶¹ The LGBTQIA+ population of North Dakota is another subset of the population with a high rate of being uninsured, with 13% of the LGBTQIA+ people of North Dakota being uninsured.⁶⁴ When the data are broken down by Federal Poverty Level (FPL), one sees the rate of uninsured declining as income as a percent of the FPL increases: for those below 138% of the FPL in 2022 the uninsured rate was 14.5%; for those between 138% and 399% of the FPL the uninsured rate was 8.7%; and for those at or above 400% of the FPL the uninsured rate was 3.3%.⁶⁵ Since about 48.7% of Americans receive healthcare coverage through an employer, this is a logical correlation between being unemployed or within some level of poverty and being uninsured.⁶¹

A lack of health insurance coverage may lead to more expensive costs to receive medical care, which may lead to delays for uninsured individuals seeking the care they need. In some cases, the cost of healthcare may stop individuals from seeking care at all. According to data from the

Centers for Disease Control and Prevention (CDC) Behavioral Risk Factor Surveillance System (BRFSS) compiled by the KFF, the percent of adults in North Dakota who reported not seeing a doctor in the past year due to cost broken down by race/ethnicity is 5.5% White, 18.1% Black, 15.9% Hispanic, and 13.5% of AI/AN. This data demonstrate a notable difference among racial groups for those who reported not having seen a doctor in the past year.⁶¹

Insurance coverage for oral healthcare is another important aspect when considering individuals' access to healthcare services. A survey conducted at the beginning of 2023 found that about 27% of the adult population in the U.S. lacked dental insurance, which is almost three times higher than those who lack health insurance (about 9.3%). Adults who are living in rural areas are more likely to not have dental insurance compared to their counterparts living in urban areas.⁶⁶ The percentage of adults aged 18+ who visited a dentist or dental clinic in the past year increases as the level of education and level of income increase. In short, those of lower socioeconomic status (SES) are less likely to visit a dentist or dental clinic in the past year. More women than men have visited a dentist or dental clinic in the past year.⁶⁷

In North Dakota, about half of kindergarteners have experienced tooth decay. There is a clear rural/urban divide among kindergarteners who experience oral health problems. Rural kindergartners are more likely to experience tooth decay, have untreated tooth decay, experience rampant tooth decay, and require early or urgent dental care compared to urban kindergartners. Roughly one-quarter of middle and high school students in North Dakota had no dental visit in the past 12 months. With an average of 74.2% of children receiving preventative dental care visits in the last 12 months, this put North Dakota below the national average of 75.1%. One population that experiences inequities in oral health in North Dakota is the AI/AN population. Just over half (51%) of the AI/AN population in North Dakota have not seen a dentist in five or more years compared to 31% of the non-AI/AN population. The AI/AN population has three times as many emergency visits for tooth pain compared to those who are white. Pregnant persons also experience barriers to receiving dental care with 27% lacking dental insurance, 15% cannot afford to go to a dentist or dental clinic, and 7% cannot find a dentist accepting Medicaid patients.⁶⁸

Beyond access to healthcare, other areas can be examined for disparities when looking into social drivers of health in North Dakota. Food deserts and lack of access to grocery stores selling a variety of healthy foods can have a significant impact on overall health. There are organizations throughout the country that are working to reduce the burden of food insecurity; in North Dakota, the organization focused on reducing food insecurity is the Great Plains Food Bank (GPFB). The GPFB serves several communities throughout the state and often partners with local community groups on several efforts. About 54% of their partners are volunteer led, indicating that volunteers make up a notable portion of the workforce efforts around reducing food insecurity in North Dakota. The GPFB has also put together a report regarding food insecurity in the state. According to their report, the AI/AN population of North Dakota faces hunger at seven times the rate of other population groups. About 37% of the clients at GPFB are children, 17% are older adults (60 years old or older), 14% are Veterans, and 13% are single caregivers. They also found that about 8% of their clients are grandparents who care for grandchildren. Their report also investigated other SDOH factors within community members' lives. Of the clients who answered their survey, they found that 17% were unemployed, 32% experienced a lack of transportation, 27% lacked access to housing, 21% were experiencing poverty, and 27% had a chronic health condition. These data points paint a picture of a broad

spectrum of individuals and their circumstances who are experiencing food insecurity in North Dakota. One of the most pronounced findings from this report is that individuals indicated they had to choose between paying for food or paying for other essentials. These include things such as paying utility bills (43%), paying for transportation (41%), and paying for healthcare (18%).⁶⁹

Another organization looking into and addressing food insecurity at a national level is Feeding America. This organization created its own food insecurity map which indicates notable findings among ND counties. According to the Feeding America map, Sioux County, Benson County, and Rolette County have the highest rates of food insecurity. These counties also have a significant AI/AN population and are associated with AI/AN reservations within North Dakota. Overall, the report indicates that 42,290 ND residents are food insecure, and the state has a food insecurity rate of about 5.5%. However, of this 5.5%, 38% are above the SNAP threshold of 200% FPL indicating they would not qualify for assistance under that program.⁷⁰

Another way to examine social drivers of health and associated disparities is to look at the data spatially. This enables individuals to see specific areas of a city, state, or nation where the data indicate disparities. The County Health Rankings and Roadmaps is a program that is run by the University of Wisconsin Population Health Institute. This institute synthesizes data on social drivers of health from various sources and creates rankings for counties within states so individuals can examine which areas of a state demonstrate disparities within the data. Data included within the county health rankings are length of life, quality of life factors, health behaviors, clinical care factors, social and economic factors, and the physical environment. When the counties in North Dakota are ranked based on these SDOH factors, we find that our three lowest ranked counties are Rolette County, Benson County, and Sioux County. It is important to note that each of these counties contain some portion of Native American reservations within North Dakota.^{34, 71}

Another area that can affect aspects of an individual's SDOH is whether they have been incarcerated or involved in the criminal justice system. Having a criminal record can make it more difficult for individuals to access safe and stable housing and become gainfully employed. This would affect their ability to afford healthy food and access quality healthcare. Involvement in the criminal justice system, in particular incarceration, is another area where there are noted disparities in North Dakota, particularly racial disparities. The North Dakota Department of Corrections and Rehabilitation (DOCR) provides data on the population within the state that is involved with the DOCR through a publicly available dashboard. This dashboard notes that there are racial disparities present in North Dakota when it comes to those under the control of DOCR with people of color being overrepresented in prison, on probation, and on parole. Black citizens of North Dakota are 4.9 times more likely to be under DOCR control compared to their white counterparts, Latinos are 1.7 times more likely, and Native Americans are six times more likely.⁷²

National Focus on Social Drivers of Health

The topic of social drivers of health has become a major research area at the national level. In particular, the CDC has compiled a large amount of data, research, and resources on the topic. This information was compiled by the CDC to assist those interested in the topic with assessing SDOH for their community and improving community well-being. One of the resources available through the CDC is the National Environmental Public Health Tracking Network. This resource

compiles environmental data and health data from city, state, and national sources while also providing context and analysis of the data to make it easier to understand and use. This network allows users to explore the data, review various topical dashboards, and provides information on state and local tracking programs. Another resource provided by the CDC is its database on chronic disease indicators. This database not only provides state level and some metropolitan level information on chronic diseases, but also provides information on risk factors for those chronic diseases. The risk factors for which data is provided include SDOH. Some of the risk factors contained in this database are healthcare coverage, data on the uninsured, poverty, education, and risk behaviors. All of these are noted SDOH and can contribute to an individual's health status.

Finally, another significant resource is provided through a partnership between the CDC and the Agency for Toxic Substances and Disease Registry (ATSDR). The Social Vulnerability Index (SVI) looks at 15 census variables to help identify communities that may require support in the event of disasters. While this index was developed to assist local officials in preparation for or recovery from a potential disaster, several of the variables used in the SVI are considered SDOH. Some of the variables include measures of socioeconomic status, housing, transportation, and how many individuals in the population have a disability. Data used to create the index is provided on the resource webpage as well as an interactive map where individuals can view the geographical distribution of the index. The geographical distribution can be viewed at either a county or census tract level and the sub-themes that make up the index can also be examined individually through geographic distribution.

The resources discussed above are just a few of those available through the CDC that provide data on SDOH. There are numerous other national organizations that also focus research, data collection, data analysis, and policy development around addressing social drivers of health. Some of these groups include the National Alliance to Impact the Social Determinants of Health, the National Collaborative for Education to Address the Social Determinants of Health, the Agency for Healthcare Research and Quality, Centers for Medicare & Medicaid Services (CMS), and the Kaiser Family Foundation. There are also global entities with work focused around SDOH such as the World Health Organization (WHO). With so much focus on the topic of social drivers of health, there are several useful tools available for individuals and organizations to learn more about the topic and review available data specific to their local communities.

The U.S. Department of Health and Human Services under the Office of Disease Prevention and Health Promotion (OASH) has identified SDOH as one of the three main priority areas under the Healthy People 2030 initiative. Under this priority area of SDOH, OASH lists specific goals in the areas of economic stability, education access and quality, healthcare access and quality, neighborhood and built environment, and social and community context. The OASH webpage for this priority area tracks the specific goals the OASH has set in these SDOH topic areas so the public can see not only what the goals are, but the progress being made on those goals. It also provides evidence-based resources under each SDOH topic area so that the public is able to identify strategies and tools that could help in furthering the Healthy People 2030 SDOH goals within communities.⁷³

SUMMARY

Together, all these social drivers affect an individual's health - the kind of work they do, the type of education they receive, their living situation, their economic stability, access to food, social norms, social support, and their access to healthcare services all influence health. All these factors are linked and influence one another. For example, a lack of access to healthy food may lead to a poor diet, which could contribute to other health concerns. Certain health concerns may require more frequent medical intervention and could include increased costs or even increased travel time depending on where an individual lives. Disparity in one area of the social drivers of health could affect other areas of an individual's life. Some of the goals when addressing social drivers of health include increasing health equity and reducing disease prevalence.⁷⁴ Health equity refers to everyone having the opportunity to achieve their full health potential and not face barriers to this possibility due to socially determined circumstances. Reducing disease prevalence includes making efforts towards reducing obesity, cardiovascular disease, diabetes, cancer, and other conditions, all of which can be influenced by social drivers of health.⁷⁵

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CHAPTER THREE:

THE HEALTH OF NORTH DAKOTA

INTRODUCTION

The condition of individual health is of concern to the individual, family, and community; however, the aggregate of health concerns for individuals and families has significant implications for the overall healthcare system and its ability to design a model of delivery to improve health status. When considering how to build a health system in a community that addresses the needs of the population, it is important to consider access to care, the cost of care, the quality of care, and the availability of healthcare providers. Access to care refers to the ability to gain entry into the health system. This can include the availability of health professionals and institutional access points such as hospitals, public health units, clinics, and services for emergency medical care, long-term care, behavioral and mental health, oral health, pharmacies, and other points of care. In North Dakota, natural barriers such as distance, weather, and road conditions are important considerations when it comes to access to care. The cost of care is another influence on individual health. North Dakota has been described as a low-cost, high-quality state in which the cost of care, relative to other states, is lower; importantly, the quality of care delivered is considered high. It thus is a higher-performing state.¹ Even in a relatively low-cost state like North Dakota, cost has been and remains a concern within public policy discussions. In 2019, before the COVID-19 pandemic, healthcare costs in the United States were highest compared to other countries, accounting for about 16.8% of gross domestic product (GDP), a common and accepted measure of economic production and activity.² In comparison, healthcare in the next most expensive countries, Germany and Switzerland, accounted for approximately 11.7% and 11.3% of GDP. The United States consumes more healthcare services than other countries. For example, 25% of Americans take four or more prescription drugs regularly compared with a median of 17% for residents of the Organization for Economic Cooperation and Development (OECD) countries.³

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The quality of care delivered in a healthcare system relates directly to population health. According to the Institute of Medicine, there are six principal aims to improve health that should be followed: safety, effectiveness, patient centeredness, timeliness, efficiency, and equity.⁴ In general, by making improvements within each of the six aims, the healthcare system performs better by being more responsive to patients' needs, improving patient safety, basing care on the science of best practices in order to be more effective, reducing delays in the delivery of care, and increasing the degree of equity to provide adequate access and improved quality to patients regardless of socioeconomic status, geographical location, race, and gender. Additionally, it is important to consider the availability of healthcare providers as a driver for improved population health. The supply and demand of healthcare professionals and providers is fundamental to health improvement as there is a long-standing maldistribution of most provider disciplines in North Dakota, particularly in medicine, and particularly in rural areas. Along with all of these considerations for building health systems that strive to improve population health, it is important to understand the health concerns that impact the population. Not only the overall general health concerns, but also any unique health concerns for a particular area or population. This chapter will discuss the health of North Dakota residents by examining health metrics using the

most recent available data. Understanding the most impactful health indicators can provide direction on where to focus efforts when health systems are working towards improving the overall health of the population. Specifically, this chapter will look at issues associated with behavioral risk factors and population health. It is intended to help the reader better understand the issues that affect not only the population at hand but also to serve as a general context for subsequent discussions of access to care, availability of providers, quality of care, and cost factors.

BEHAVIORAL RISKS

Examining the prevalence of behavioral risks and related issues in North Dakota is important for better understanding the health of the state as a whole. According to the National Survey on Drug Use and Health (NSDUH), in 2022, 60.5% of North Dakota adults ages 18 years and older used alcohol in the past month and 29.0% of North Dakota adults engaged in binge alcohol use in the past month. Regarding cigarette use, an estimated 19.8% of North Dakota adults used cigarettes in the past month in 2022.⁵ Table 3.1 shows the percentage of adults in North Dakota who have the behavioral risk factors of smoking, drinking alcohol, binge drinking, drinking and driving, not wearing a seat belt, and not exercising at least moderately from 2018 to 2022. The percentage of adults who reported smoking showed an overall decreasing trend, whereas the rate of binge drinking remained relatively consistent.⁶ Although the percentage of persons who reported drinking alcohol decreased, the number of DUI arrests have increased. This is evidenced by the number of DUI arrests that increased by 4.3% from 2021 to 2022 (4,040 to 4,215), according to the North Dakota Attorney General's office.⁷

Behavioral Risk Trends

Table 3.1
Percent of adults reporting behaviors, 2022.⁶

	2018	2019	2020	2021	2022
Smokes	18.6	16.7	16.7	14.4	14.5
Drinks Alcohol	57.6	59.6	56.2	55.2	54.3
Binge Drinks	21.1	21.5	19.7	19.3	21.2
Drinks & Drives	2.7	NA	2.0	NA	NA
Doesn't Always Wear a Seatbelt	27.5	NA	25.1	NA	NA
No Physical Activity/Exercise Other Than Job	22.2	27.4	24.6	25.5	23.9

NA = Not Available

Table 3.2 shows the percentage of youth risk behaviors in North Dakota in 2023. Adolescent females in North Dakota have a generally poorer behavioral risk profile than do adolescent

males for drinking alcohol and being overweight; however, adolescent males have greater issues with tobacco use, not wearing a seat belt, and being obese.⁸

Table 3.2
Percent of youth risk behaviors in North Dakota, 2023.⁸

	Total	Female	Male
Smokes	5.4	4.1	6.5
Drinks	19.5	21.9	17.2
Drinks & Drives	4.5	4.4	4.5
Doesn't Always Wear a Seat Belt When Driving	25.2	17.3	32.6
Doesn't Always Wear a Seat Belt as Passenger	47.3	43.0	51.6
Obese	16.3	11.9	20.5
Overweight	14.7	15.3	14.1

Behavioral risk factors are an important aspect of any health discussion. They have components that operate at the most basic individual, social, and global public policy levels. According to the World Health Organization, the 10 leading behavioral causes of death worldwide (factors such as high blood pressure, tobacco use, high blood glucose, physical inactivity/overweight, alcohol use, high cholesterol) account for 33% of all deaths. Global healthy life expectancy would be extended by 5 to 10 years if individuals, communities, health providers and health systems, and the private and public sectors initiated processes to better address, influence, and control global disease burden risk factors.^{9, 10}

GENERAL HEALTH

Table 3.3 shows the percentage of adults in North Dakota who have general health issues of overweight/obesity, fair/poor general health, one or more days in the past month with poor health, poor physical health, and poor mental health. Additionally, it was found that about 11.4% of North Dakota residents have a disability. This is lower than the overall rate for the U.S. population which is 12.9%.¹¹ When reporting the prevalence of mental illness, the National Survey on Drug Use and Health distinguishes between any mental illness and serious mental illness. Any mental illness (AMI) is defined as “having a diagnosable mental, behavioral, or emotional disorder, other than a developmental or substance use disorder.” Serious mental illness (SMI) is a subset of any mental illness in which the individuals experienced serious functional impairment. Among adults in North Dakota, an estimated 26.0% had any mental illness in the past year and 6.5% of adults had a serious mental illness in the past year. Furthermore, 10.3% of North Dakota adults had a major depressive episode in the past year. One quarter (25.3%) of adults in North Dakota received mental health treatment in the past year, which is higher than the national estimate (21.8%).⁵ Inpatient treatment may be necessary for someone with serious mental illness, but North Dakota struggles with a shortage of inpatient beds throughout the state (see Chapter 11: Delivery of Health in North Dakota for more information about that topic).

Table 3.3
Percent of adults reporting general health conditions, 2022.⁶

	2018	2019	2020	2021	2022
Overweight/Obese	65.8	65.6	64.3	63.2	64.5
General Health is Fair or Poor	13.9	13.9	12.1	13.0	14.3
1+ Days Poor Health	20.7	21.5	19.9	21.2	23.6
1+ Days Poor Phys. Health	33.1	33.6	26.0	32.1	34.5
1+ Days Poor Mental Health	36.2	34.2	34.7	36.4	39.1

Comparison with National Benchmarks

Compared to national data, North Dakotans are relatively healthier than the country as a whole regarding the general health measures of fair/poor health, diabetes, and asthma. However, North Dakota was reported to have a higher number of people who are overweight and obese (64.5% versus 58.6% nationally), and a slightly lower pneumonia immunization rate than the U.S. overall (29.0% versus 29.6%).

“Compared to national data, North Dakotans are relatively healthier than the country as a whole on the general health measures of fair/poor health, diabetes, and asthma; however, North Dakota scores slightly worse on overweight/obesity.”

For both the state and the nation, the obesity rate is generally increasing; however, the rate for the country as a whole is increasing faster. Obesity/overweight status is a health problem that contributes to many health conditions, including cancer, diabetes, and heart disease. The percentage of North Dakotans viewing themselves as having only fair or poor health has increased over the past two years: 13.0% in 2021 to 14.3% in 2022; the U.S. rate in 2022 (17.9%) was higher than the state rate.⁶

HEALTH CONDITIONS

Health conditions that are not directly tied to behavioral risk factors have shown varied trends from 2018 to 2022. It is likely that obesity is a common, but indirect, cause of many of these associations. For example, high cholesterol, high blood pressure, arthritis, and diabetes all are more common in obese patients. The American Diabetes Association estimates that 4,598 individuals are diagnosed with diabetes annually in North Dakota. Moreover, 32.2% of North Dakota adults have prediabetes.¹² Thus, it should come as no surprise that many of these conditions show similar prevalence gradients as does overeating with obesity. Compared with

national benchmarks, North Dakotans have a lower prevalence of various non-behavioral related health conditions than persons in other states, no doubt contributing to our better state of overall health. In 2022, North Dakotans had a lower prevalence of asthma (14.8% compared with 15.2%), and diabetes (9.5% compared with 12.0%) than did the U.S.⁶ Table 3.4 shows the percentage of North Dakotans reporting various health conditions since 2018.

Table 3.4
Percent of adults reporting chronic health conditions, 2022.⁶

	2018	2019	2020	2021	2022
High Cholesterol	NA	22.9	NA	25.6	NA
High Blood Pressure	NA	29.8	NA	31.0	NA
Arthritis	25.9	25.4	22.5	25.4	27.0
Asthma	13.0	12.3	11.8	12.5	14.8
Cardiovascular Disease	4.2	3.4	4.0	3.4	4.1
Diabetes	9.4	8.9	9.9	9.5	9.5

Chronic Disease

An important issue when examining the dynamics of health status is chronic disease. Chronic disease is commonly associated with aging, but people of all ages can experience it. Common chronic diseases include the following: cancer, heart disease, stroke, diabetes, chronic obstructive pulmonary disease (COPD), asthma, and arthritis.¹³ Significant health risk factors include smoking, lack of physical activity, and poor nutrition. Engaging in healthful behavior reduces the risk for illness. Chronic disease causes 8 in 10 deaths each year in the United States.¹⁴ About 129 million Americans (roughly half of all adults) live with at least one chronic condition and about 61 million Americans (nearly one quarter of all adults) live with two or more chronic conditions.¹³ More than 86% of the cost of healthcare in the United States is related to chronic disease.¹⁵ More specifically, diabetes alone costs \$661 million per year in North Dakota.¹²

Heart disease is the leading cause of death in both the United States and North Dakota. According to the CDC, 4.9% of U.S. adults have ever received a diagnosis of coronary heart disease. In 2022, the CDC reported 702,880 deaths due to heart disease in the United States and a mortality rate of 210.9 per 100,000 persons.¹⁶ In North Dakota specifically, there were 1,538 deaths due to heart disease and an age-adjusted mortality rate of 155 per 100,000 persons that same year.¹⁷

High blood pressure, a risk factor for cardiovascular disease, is a highly prevalent condition that contributes to premature death, heart attack, stroke, diabetes, and renal disease.¹⁸ High cholesterol, a risk factor for cardiovascular disease, diabetes, and other diseases, can be controlled to some degree by diet, exercise, and weight loss. High blood pressure and high

cholesterol found together in the same patient create more medical problems, placing that patient at even greater risk.

Cancer

Cancer is the second-leading cause of death among adults in the United States (second only to heart disease and stroke) and affects an estimated one in three individuals in their lifetime, either through their own diagnosis or that of a loved one. Increasing innovations in medical technology have led to earlier diagnoses and improved treatment of many cancers, resulting in more people diagnosed with cancer surviving each year. Approximately 18 million Americans with a history of cancer were alive in 2022.¹⁹

According to the American Cancer Society, about 30% of cancer deaths are caused by smoking cigarettes. Furthermore, the combined effects of excess body weight, physical inactivity, unhealthy diet, and alcohol consumption can be attributed to 16% of cancer deaths. The American Cancer Society estimated that there would be more than 1.9 million new cancer cases diagnosed in 2023 in the United States.¹⁹

Age is a primary risk factor for most cancers, with 88% of all cancers diagnosed among individuals ages 50 or older. Men have a 41 out of 100 lifetime risk of developing cancer whereas for women the risk is 39 out of 100. Although virtually anyone can experience cancer, some groups are more likely than others to be diagnosed with certain types of cancer; cancer incidence varies by race and ethnicity.¹⁹

According to the American Cancer Society, the disparities in the cancer burden among racial and ethnic minorities are the result of obstacles to prevention, early detection, and high-quality treatment. In addition, poverty is a serious factor. American Indian/Alaska Natives have the highest cancer mortality rate compared to other racial and ethnic groups. Hispanics have the lowest incidence and mortality rates for lung cancer; however, for uterine or cervical cancers, they have the second highest incidence. African Americans have the highest prostate cancer incidence and mortality rates.¹⁹

As the second-leading cause of death in the country, cancer and cancer control command a place in U.S. health objectives. Healthy People 2030 presents 20 separate cancer targeted objectives. For example, one objective is to reduce the overall cancer death rate by 10% (from 179.3 deaths per 100,000 to 161.4 deaths per 100,000).²⁰

“Digestive system cancer is the most commonly diagnosed cancer in North Dakota, followed by breast cancer. For reasons that are unexplained, North Dakota also has one of the highest incidences of colorectal cancer of any state.”

In North Dakota, females are slightly less likely to develop cancer than men (Figure 3.1). Digestive system cancer is the most commonly diagnosed cancer in North Dakota (Table 3.5), followed by breast cancer. Conversely, lung cancer is the most common cause of cancer death, and although prostate cancer is more common in men, it causes fewer deaths since many men die with their prostate cancer, rather than from it. The risk of cancer incidence in North Dakota is slightly higher than in the rest of the nation overall (Figure 3.1), although North Dakota rates per 100,000 residents are lower for prostate cancer among males (118.6 vs. 128.0) and breast

cancer among females (132.1 vs. 137.4) compared to U.S. rates (Table 3.5). Compared to national rates, North Dakota has higher rates of lung bronchus cancer (52.3 vs. 46.9) and colorectal cancer (40.6 vs. 37.5).^{21, 22}

It is noteworthy that North Dakota leads the nation in the incidence of some cancers. For example, the incidence of chronic lymphocytic leukemia (CLL), a disease of the elderly, is more common in North Dakota than in any other state. This is a particularly unusual occurrence because most cases of CLL are diagnosed “incidentally” during routine medical exams performed for other reasons. The relative scarcity of healthcare professionals in North Dakota, discussed in subsequent chapters, may act to underestimate the true burden of CLL, which often is not the cause of death (and thus would not appear in mortality statistics). One possible reason for the high rates of CLL in North Dakota is the high exposure to radon. Radon, a naturally occurring gas, is a by-product of uranium, which is common in soils in the upper Plains, and is a cause of several types of leukemia. Research at the University of North Dakota has shown that in many states (including North Dakota), CLL rates by county are positively correlated with levels of radon measured in homes.²³

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For reasons that are unexplained, North Dakota also has one of the highest incidences of colorectal cancer of any state and shows a three-fold variation in colorectal cancer rates among North Dakota counties. The cause of the majority of colorectal cancers is unknown. Because colorectal cancer is the third most common cancer in the U.S. in terms of incidence and mortality, a better understanding of colorectal cancer in North Dakota could improve the health of North Dakotans and of the U.S. overall.²⁴

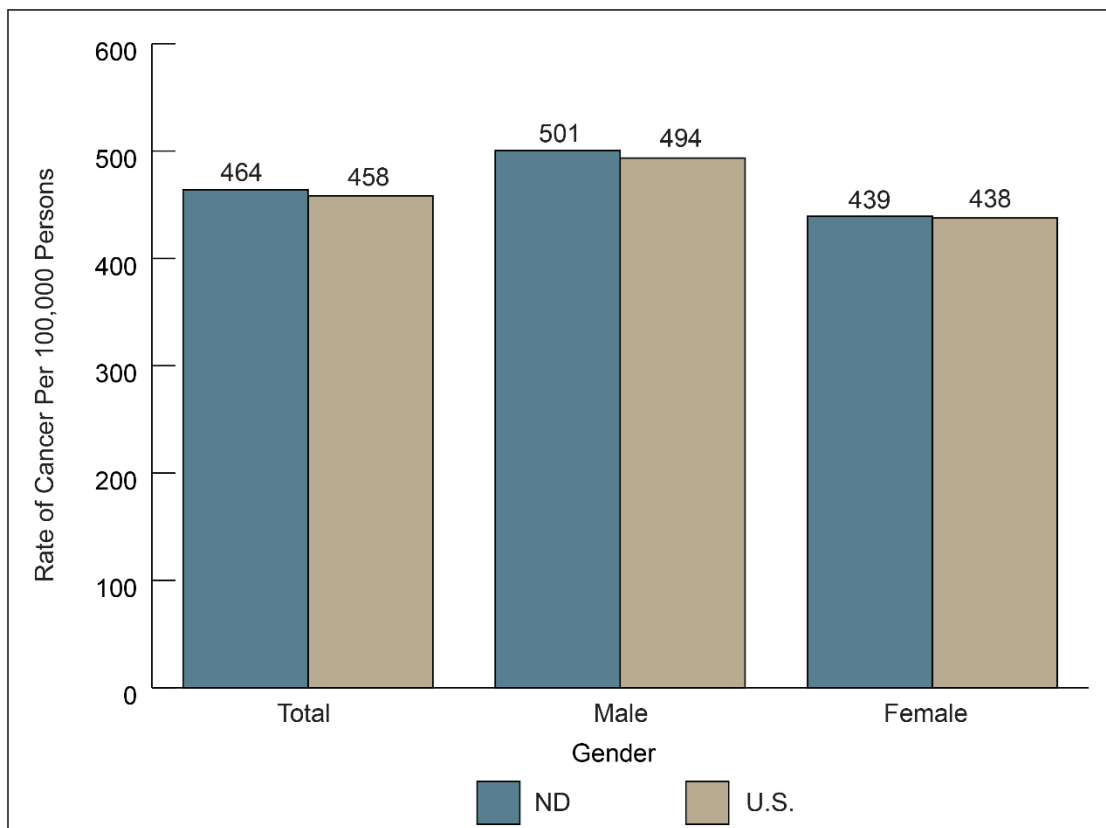


Figure 3.1. Rates of cancer in North Dakota and the U.S. by gender, 2021.^{21, 22, 25}

Table 3.5
Most common cancer rates per 100,000 persons, 2021.²¹

Type	All North Dakota		Males		Females	
	Rate	Cases	Rate	Cases	Rate	Cases
Breast	66.6	577	NA	NA	132.1	574
Digestive System	74.0	658	86.1	361	63.0	297
Male Genital System	NA	NA	125.2	602	NA	NA
Prostate	NA	NA	118.6	573	NA	NA
Respiratory System	55.9	533	65.4	295	48.1	238
Lung Bronchus	52.3	499	59.5	268	46.5	231
Colon Rectum	40.6	352	44.9	182	35.3	170

Screenings and Immunizations

Table 3.6 shows the percentage of adults in North Dakota who have had screenings for high cholesterol (past five years), prostate-specific antigen (PSA), home blood stool test (ever), sigmoidoscopy/colonoscopy (ever), mammogram (ever), pap smear (ever), flu vaccine (past year), or pneumonia vaccine (ever).

Table 3.6
Screening percentages, 2022.⁶

	2018	2019	2020	2021	2022
Cholesterol	NA	73.4	NA	72.6	NA
PSA	23.5	NA	19.8	NA	NA
Blood Stool	11.6	NA	13.1	NA	NA
Sigmoid/Colonoscopy	29.5	NA	5.3	NA	34.0
Mammogram	59.2	NA	59.2	NA	60.6
Pap	84.2	NA	84.2	NA	NA
Flu	38.6	44.9	48.3	44.5	42.4
Pneumonia	30.3	31.2	28.5	27.6	29.0

According to Healthy People 2030, people in the United States continue to develop diseases that are preventable. The increase in life expectancy (from about 49 years in 1900 to 78.8 years in 2012) is the result, in part, of a significant reduction in infectious disease mortality associated with the development of immunizations.²⁰

The development of a public health infrastructure has played a major role in improved life expectancy. The impact of public health programming is evident through focusing on water safety, infectious disease control, safer and more healthful foods, healthier mothers and babies, family planning, tobacco control, vaccinations, motor vehicle safety, more healthful and safer workplaces, and the decline in deaths from coronary heart disease and stroke.²⁶

Vaccines are among the most cost-effective clinical preventive services and are core components of any preventive service package. Childhood immunization programs provide a particularly high return on investment. According to the CDC, for children born between 1994 and 2013, vaccination will prevent an estimated 322 million illnesses, 21 million hospitalizations, and 732,000 deaths during their lifetime.²⁷

Health screenings are an important way to evaluate risk factors for diseases like cancer, cardiovascular, and diabetes. Baseline data are acquired that can assist physicians and other providers to track measures of blood pressure, cholesterol, blood sugars, weight and height, and body fat. The baseline risk factor data provides the evidence needed both for prevention and disease management. Health screenings also aid the patient in being more proactive in their own care, and adequate baseline data can spur heightened interest and involvement on the part of the patient.

Healthy People 2030 discusses the importance of various health screenings. For example, the monitoring and management of weight, blood pressure, and cholesterol can reduce adults' risk for heart disease and diabetes; routine screening can detect certain cancers (breast, colorectal, and skin) at earlier stages that are more treatable; and regular check-ups for adults 65 and older can help to screen for age-related conditions such as eye disease and hearing loss.²⁰

Mortality

Nationally, premature mortality is higher in rural areas than urban areas and the difference has increased over time. In 1999, rural areas had an age-adjusted death rate that was 7% higher than urban areas. However, in 2019 the age-adjusted death rate in rural areas had jumped to 20% higher than in urban areas.²⁸ In North Dakota, Figure 3.2 shows the expected number of deaths for each age group among metropolitan, micropolitan, and rural areas. The North Dakota data indicates that the state's mortality rates exceeded the national rates from 1999 until 2014 (Figure 3.3).

U.S. mortality rates have trended lower since the 1960s for both urban and rural areas, but since the 1990s, mortality rates in urban and rural areas have diverged somewhat. From 1999 to 2019, male rural mortality declined from 1,140.4 per 100,000 to 977.3, whereas male urban mortality decreased from 1,050.3 per 100,000 to 821.9. Over the same time period, female rural mortality declined from 760.2 per 100,000 to 704.5, whereas female urban mortality decreased from 728.5 per 100,000 to 584.6.²⁸

Death rates from unintentional injuries, suicide, heart disease, and cancer were higher in rural areas than in urban areas. For example, the rural rate exceeded the urban rate by 21% for heart disease in 2019.²⁸

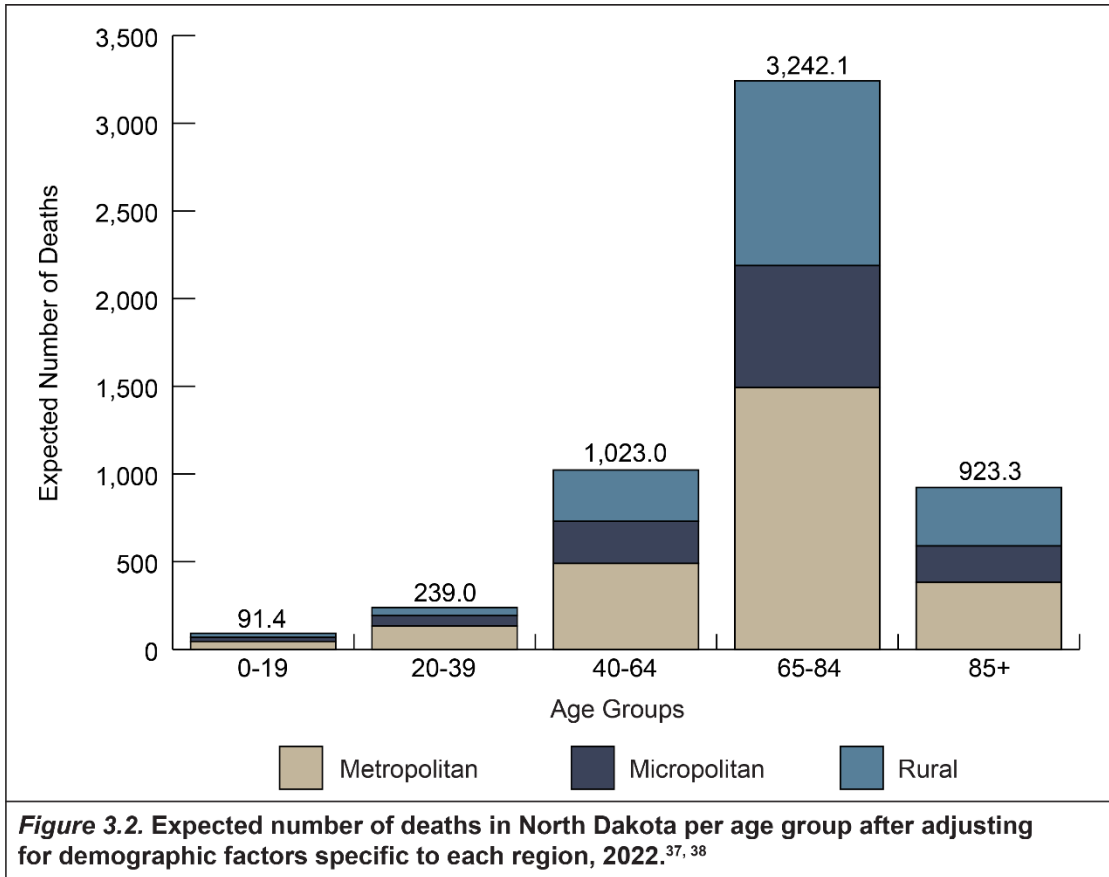
“Despite the recent growth in opioid misuse, North Dakota has one of the lowest rates of drug deaths in the country.”

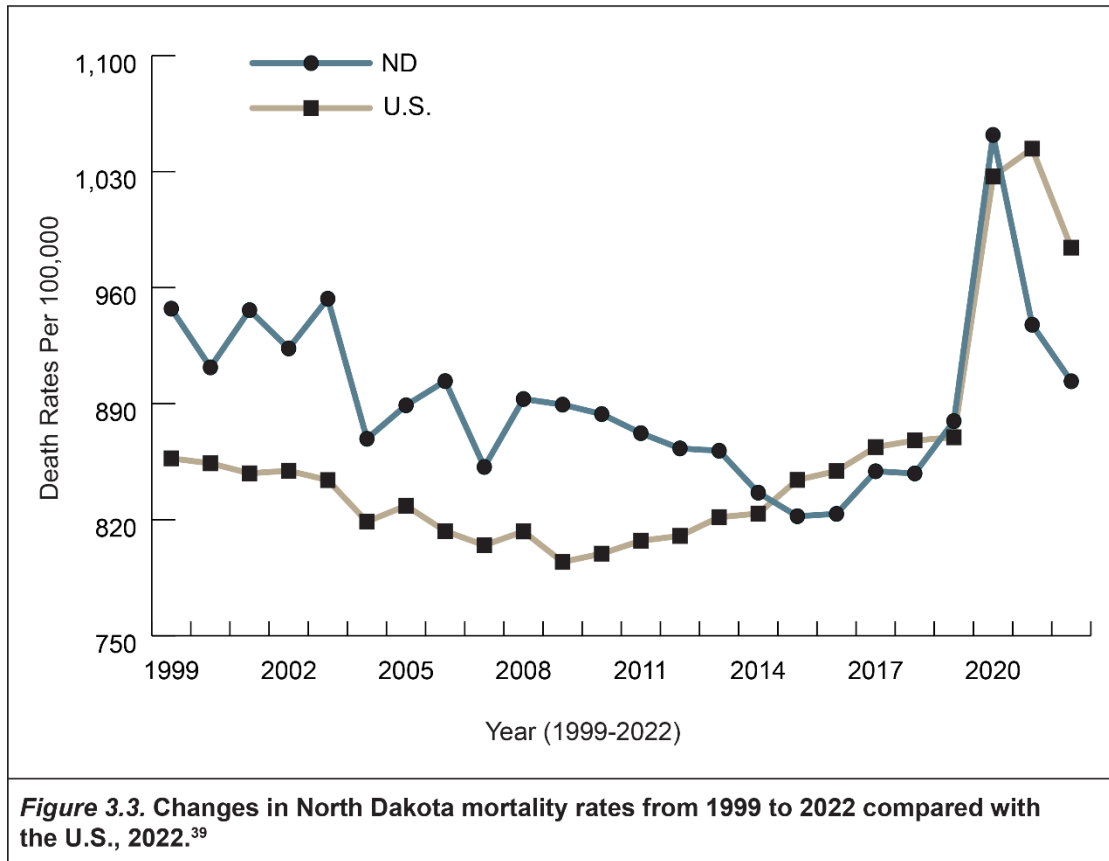
Since 2016, there has been an increased awareness of the growing problem of opioid addiction and deaths.²⁹ Drug overdose is now the leading cause of accidental death in the United States, with the CDC reporting 81,806 drug overdose deaths involving opioids in 2022.³⁰ Drug overdose deaths now exceed motor vehicle crashes. In 2022, 8.9 million people aged 12 or older had misused opioids (heroin or prescription pain relievers) in the past year.³¹ In North Dakota, an estimated 3.3% of adults engaged in opioid misuse in the past year and an estimated 2.0% of adults had opioid use disorder in the past year.⁵ Research has established that the rural opioid problem is disproportionately higher. Some research indicates that rural adolescents are more likely to abuse prescription painkillers than urban adolescents.³² Other research studies have found the misuse of nonmedical prescription opioids is concentrated in states with large rural areas.³³ Nevertheless, despite the recent growth in opioid misuse, North Dakota has one of the lowest rates of drug deaths in the country.

In 2018, the United States' age adjusted suicide rate was higher in rural areas (19.4 per 100,000 persons) than in urban areas (13.4 per 100,000 persons). This trend has been consistent in the U.S. since the year 2000.³⁴ In North Dakota, an estimated 5.7% of adults had serious thoughts of suicide in the past year, 1.7% of adults made suicide plans in the past year, and 0.8% of adults attempted suicide in the past year in 2022.⁵

The rural maternal mortality rate is higher than in urban areas. Likely contributing factors are the facts that rural women have less adequate prenatal care, are more likely to be on public health insurance or have no insurance, face more challenges with travel time and distance, and have less access to adequate primary care. The latter issue is related to the general lower supply of rural-based primary care combined with less direct access to obstetricians because of fewer

obstetricians practicing in rural areas – due in part to malpractice insurance and liability concerns.^{35, 36}





Changes in Mortality

United States mortality rates were relatively stable from 1999 until 2019, while North Dakota rates over the same period were more variable (Figure 3.3). The COVID-19 pandemic appeared in early 2020 and the mortality rates for both the U.S. and North Dakota increased substantially. The significant increase in recent mortality rates likely reflects the direct impact of the pandemic, along with the indirect effect of delayed care of other medical conditions. Figure 3.4 shows changes in mortality rates for metropolitan, micropolitan, and rural areas, as well as North Dakota overall.

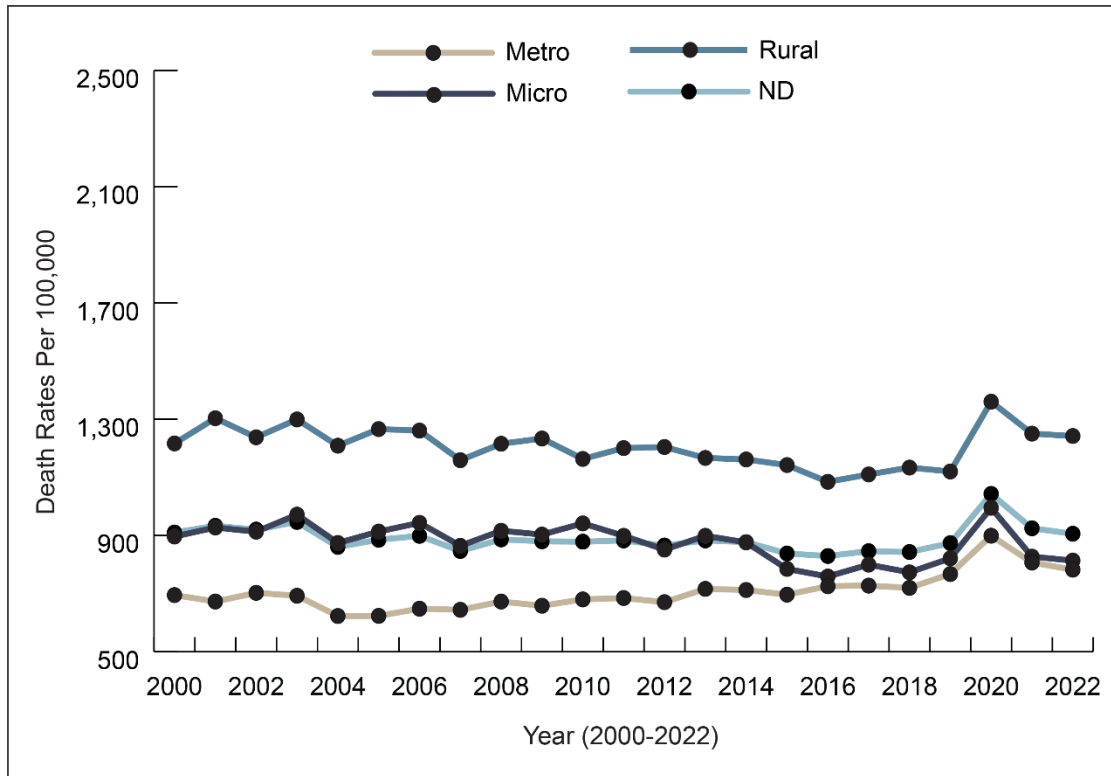


Figure 3.4. Changes in North Dakota mortality rates from 2000 to 2022 for metropolitan, micropolitan, and rural areas, 2022.^{37, 38}

Neurodegenerative Diseases

Neurodegenerative diseases are a range of illnesses that cause the death of nerve cells. These include Alzheimer’s disease (AD), Parkinson’s disease, motor neuron diseases (the most common of which is amyotrophic lateral sclerosis [“Lou Gehrig disease”]), as well as relatively rare genetic disorders such as Huntington’s disease. Statistics for most of these diseases are generally less reliable than those for cancer, as cancer is a reportable disease (a disease for which statistics on incidence and mortality are mandated by federal law), whereas mortality data for other diseases must rely on death certificates and other passive means of reporting. However, it is important to note that one in 10 Americans suffers from AD. This is both an important medical and financial issue as dementia care is among the most expensive conditions for society to manage. Death certificate data indicate that North Dakota has the nation’s highest death rate from AD.⁴⁰ This is likely due, at least in part, to the fact that AD is strongly age-dependent, and that North Dakota has the second-highest proportion of seniors aged 85 and older in the nation. For example, individuals 65 and older comprised greater than 14.0% of the population of the state in 2011 and this population is projected to increase by 50% by 2025. For reasons that are unknown, Midwestern and Plains states also have significantly higher mortality rates of amyotrophic lateral sclerosis, a progressively paralyzing disorder that is usually fatal within 3-5 years of diagnosis.

SUMMARY

Numerous factors that influence the health status of individuals and communities are tied to socioeconomics, geography, workforce supply, and health policy. These factors can contribute to behavioral risks, chronic conditions, preventive care, and mortality. In recent years, North Dakota has improved in the behavioral risk areas of smoking and alcohol use; however, behavioral risks related to physical activity have not improved for North Dakota adults. The general health of North Dakotans has shown an increase in the percentage of individuals reporting one or more poor health days. The percentage of adults reporting chronic health conditions has shown variability in recent years with fluctuating trends showing similarities between 2018 and 2022. Similar to adults, children's risk behaviors in recent years have shown a decrease in smoking and alcohol use. North Dakota has a higher incidence of lung bronchus and colorectal cancer when compared to the U.S. North Dakota has the highest rates of death from Alzheimer's disease, as well as plains states having significantly higher mortality rates from amyotrophic lateral sclerosis. Health screenings have also shown variances in some areas in recent years. Lastly, although mortality rates in North Dakota have fluctuated, the rates between 2001 and 2018 were trending downward prior to the onset of the COVID-19 pandemic.

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CHAPTER FOUR:

**WOMEN'S AND CHILDREN'S HEALTH IN
NORTH DAKOTA**

INTRODUCTION

This chapter will focus on the health and healthcare for women and children in North Dakota. These populations have specific and unique healthcare needs that are important to take into consideration when examining healthcare in the state. This chapter will examine the health of women and children, the specific healthcare workforce and facility needs, and unique barriers to care for women and children. Women's health and healthcare will be discussed followed by children's health and healthcare. These topics are intricately connected and are part of the basis for the overall health of the state.

Women present with a variety of unique conditions limited to females that need to be followed by the healthcare team. These include pregnancy-related conditions such as miscarriages, preeclampsia, eclampsia, gestational diabetes, placental abruption, pregnancy related anemia, infections, and multiple other diagnoses. Postpartum depression and anxiety, vaginal tearing, and cesarean section recovery are post-pregnancy conditions that require monitoring. Other female exclusive problems that can require medical care include menarche, disorders relating to irregular menstruation, menopause, endometriosis, pelvic inflammatory diseases, cancer of the reproductive tract, and various genetic conditions. Children and infants also have unique health considerations such as proper development and meeting developmental milestones, addressing concerns such as asthma and allergies, prevention of diseases or injuries that cause life-long effects, and their mental health. All of these topics on women's and children's health should be considered when examining the health and healthcare needs of a population.

WOMEN'S HEALTH TOPICS

Fertility and Birth Rates

In 2022, the United States experienced a fertility rate of 56.0 births per 1,000 females aged 15-44, showing a downward trend from previous years by 1%. The total number of births was approximately 3.67 million, indicating a slight decrease from 2021. In the most recent preliminary data from 2023, the general fertility rate was 54.4 births per 1,000 females ages 15-44, down 3% from 2022.¹ A trend was observed that birth rates declined for women aged 15-24, but increased for women in the 25-29 and 35-44 age ranges.² This is likely due to economic uncertainties, changing social norms, increased access to contraception, and a trend toward delayed parenthood. Furthermore, the overturning of *Roe v. Wade* in June 2022 may have impacted how women view their own reproductive rights. This ongoing decline in fertility rates highlights significant demographic shifts and poses potential challenges for future economic growth, social support systems, and workforce sustainability, especially with an aging population.

Specifically, within North Dakota in 2022, the fertility rate was 62.0 births per 1,000 women ages 15-44 years old, reflecting a slight decline compared to previous years (66.7 per 1,000 in 2021), yet remaining above the national average. The state recorded approximately 9,636 North Dakota resident births in 2023, with the number of births being lower in 2022 and 2023 when compared to previous years (See Figure 4.1).^{3,4} Factors influencing this decline might include economic changes, the impact of COVID-19, and increased educational and career opportunities for women. Despite maintaining a higher fertility rate than the national average,

North Dakota faces similar demographic challenges, such as an aging population and potential impacts on the future workforce and economic stability.

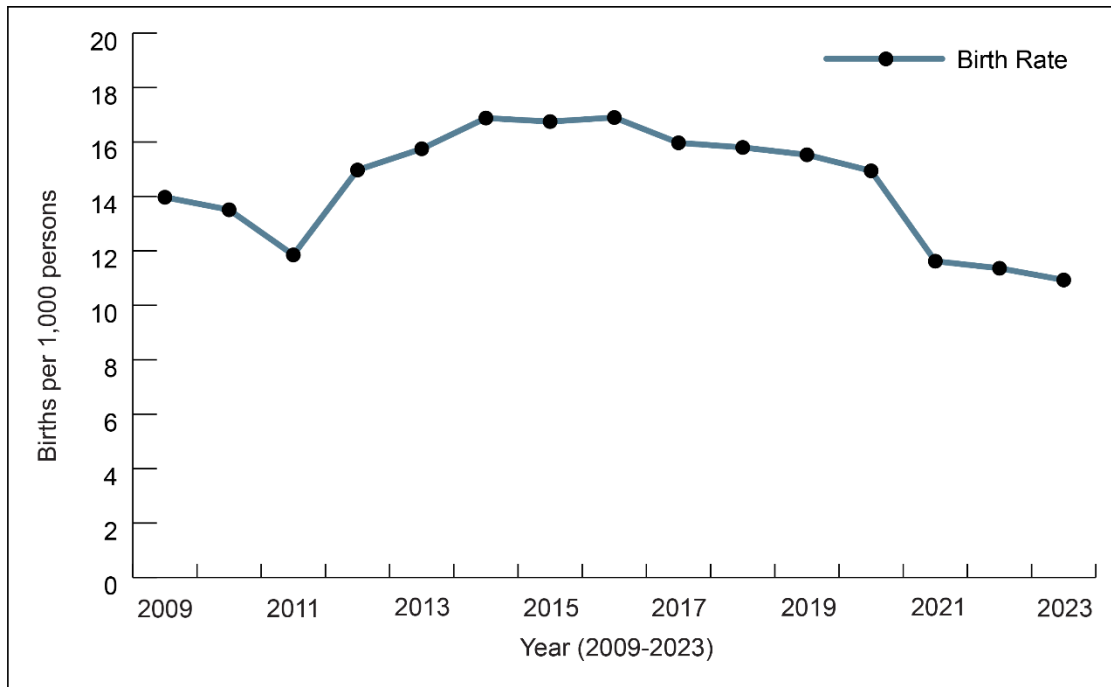


Figure 4.1. Birth rate in North Dakota, 2009-2023.³

Family planning is an important aspect to consider in regard to both women’s and public health. The act of planning the number of children a woman chooses to bear and when is an important decision in one’s medical plan. Utilization of family planning services results in a pregnancy that is more likely to result in a healthy baby. Young adults who do not experience unplanned pregnancies are more likely to proceed in their educational path, making family planning relevant at all childbearing ages. Family planning services include: physical exams for men and women; birth control methods and referral for sterilization procedures; breast, cervical, and testicular cancer screening; diagnosis and treatment of sexually transmitted infections; preconception and life plan counseling; pregnancy testing; counseling and education; community education and outreach; referral to preventive health and social services such as primary care, nutrition services, immunizations, and the Women, Infants and Children program (WIC); fertility awareness-based methods; basic infertility services; and services for adolescents.⁵

With family planning, unplanned pregnancies can be prevented, and infections can be easily tested and treated prior to further spread. In North Dakota, family planning clinics are confidential and provide services to any individual of any age. Services are currently provided in 24 locations within the state.⁵ Not only do these services benefit the reproductive health of women, but they enable individuals to have knowledge of how their decisions could impact their partners, family, and other individuals.

Chronic Conditions

Women's overall health includes managing cardiac health, chronic conditions, obesity, mental health, and substance use. Over the years, an approach has been developed to combat these conditions; however, it was done so in a “one size fits all” model. As further research has been conducted, providers now realize that the traditional approach to each of these areas of medicine may need to be altered to account for the difference in female physiology. Heart disease is the leading cause of death among women, with nearly one in five female deaths attributable to it. According to the Centers for Disease Control and Prevention (CDC), heart disease is also the leading cause of death in North Dakota.⁶ Thus, it is critical that healthcare providers can identify the differences between males and females in relation to heart disease presentation and treatment. For example, the symptom onset of a myocardial infarction, also known as a heart attack, varies between men and women. Women are more likely to have a mild symptom onset that may lead to them being discharged prior to receiving proper testing and care. Additionally, women are at higher risk for cardiovascular disease (CVD) once they are postmenopausal.⁷ Considering that CVD is a public health concern on a national level and within North Dakota, more efforts need to be made toward researching the differences that may be impacting women disproportionately. Addressing these issues through comprehensive healthcare, education, and support services can improve women's longevity and quality of life.

Prevention

Screening for conditions is a key step in many preventive care guidelines. Preventive health measures, such as mammograms and pap smears, are essential for early detection of breast and cervical cancers. With cancer as the second leading cause of death in North Dakota, substantial efforts should be made to ensure women of North Dakota have adequate resources and access to preventive medicine. For women's health, breast cancer is one area of screening with high importance. According to the American Cancer Society, breast cancer is the most common cancer in women in the United States aside from skin cancers, accounting for 30% of all new female cancers annually.⁸ The median age at the time of breast cancer diagnosis is 62 years old, with a 1 in 8 chance of developing breast cancer.⁸ The U.S. Preventive Services Task Force regularly adjusts its screening guidelines, with the most recent recommendation stating biennial screening mammograms should be completed for women aged 40 to 74 years.⁹ Women are generally recommended to receive an annual mammogram screening starting at age 40, although this can vary based on personal risk factors.¹⁰ Once a mammogram is obtained, the images can assess breast tissue for any abnormalities. According to the National Cancer Institute, 72% of women ages 40 and over received a mammogram within the past 2 years in North Dakota. This is slightly higher than the national average of 69% reported by the CDC.¹¹

Cervical cancer is another diagnosis that can be detected early with regular screening practices. As stated by the CDC, cervical cancer was once the leading cause of cancer deaths among women in the U.S., yet human papillomavirus (HPV) vaccines and screening practices have now made it one of the most preventable cancers.¹² Screening recommendations state pap smears for women aged 21 to 29 should begin screening with cytology alone every 3 years. Women aged 30 to 65 with normal pap smears can continue with the prior recommendation or utilize the FDA-approved primary hrHPV testing alone every 5 years. At age 30, women are

additionally advised to test for HPV along with their pap smear.¹³ After the age of 65, no screening is required after adequate negative prior screening results.¹³ Screening protocols can lead to early detection of cervical cancer and improve health outcomes. In North Dakota, 75% of women ages 21-65 received a pap smear in the past 3 years.¹⁴ It is imperative to continue educating women of all ages and socioeconomic classes about the importance of receiving routine screening. Routine pap smear screenings contributed to a 50% decline in cervical cancer incidence and deaths over the past 30 years.¹⁵ Ensuring access to these preventive services helps detect cancers at early stages, significantly improving survival rates. Promoting regular screenings can save lives and reduce healthcare costs associated with late-stage cancer treatments.

In North Dakota, a program called Women's Way was established and began offering screening services in 1997. In 2001, legislation was signed to allow uninsured Women's Way clients diagnosed with breast or cervical cancer to access treatment coverage through the North Dakota Medicaid Breast or Cervical Cancer Early Detection Program. North Dakota women ages 40 through 64 years, or ages 21 through 39 with breast symptoms or due for a pap test, with an insurance policy not covering these services or unable to meet their deductible, may be eligible for the Women's Way program dependent on household income.¹⁶ This program helps break financial barriers for women across the state to access screening and diagnostic procedures. In addition, this program may also provide transportation services to ensure timely access to care.¹⁶

Intimate Partner Violence

Ensuring safety amongst patient populations aims to promote health, quality of life, and general well-being. In women's health, the topic of domestic violence (DV) and intimate partner violence (IPV) is pertinent as women are more likely to be victims in these scenarios. Domestic abuse, also referred to as intimate partner violence or relationship abuse, is a "pattern of controlling, threatening, degrading or violent behaviors that may include sexual abuse, used by one partner to maintain power and control over another partner in an intimate partner relationship."¹⁷ Other forms of abuse include sexual violence, dating violence, stalking, human trafficking, and abuse later in life to older adults. While physical means of abuse are one type, abuse can be seen through emotional, financial, or digital means of gaining control over another individual. According to data from the CDC, 29.7% of North Dakota women and 18.5% of North Dakota men experience intimate partner physical violence, intimate partner sexual violence, and/or intimate partner stalking within their lifetime.¹⁸ Women of childbearing ages between 18-24 are most commonly impacted by domestic violence, often putting pregnant individuals at higher risk of experiencing abuse.¹⁸ In 2020, 4,674 domestic violence incidents were reported to crisis centers across the state, with 87% of the victims being women.¹⁸ As North Dakota has a significant American Indian population, especially in rural communities, it is important to note that American Indians experience violent crime, including intimate partner violence, at a rate two and a half times higher than the national rate.¹⁹ This poses a large risk to many individuals within the state.²⁰

Domestic or intimate partner violence often goes unreported. Therefore, it is challenging to determine if there has been an increase in sexual violence itself, or if more victims are now choosing to come forward and report these crimes. Victims often view these discussions as uncomfortable, fear-provoking, and potentially life-threatening, making it difficult to gather

complete data regarding rates and the number of cases within the state. The true statistics are likely higher than the reported data. While recognition of this problem is a key step in facilitating conversation and encouraging victims to report their experiences, action must be taken to provide services and care for individuals after abuse takes place. Survivors of abuse or violence may have many long-term impacts mentally, emotionally, and physically. It is also important to remember that not all victims come forward for support. Many women fear retaliation, feelings of shame, and social stigma. Additionally, they may worry about their safety or the safety of their children if they report abuse. Economic dependence on their abuser can also be a significant barrier. Some women may believe that the abuse is their fault or that they can change their partner's behavior. Cultural and societal pressures, as well as a lack of supportive resources, further discourage women from seeking help and reporting intimate partner violence.

The North Dakota Council on Abused Women's Services collects information from 19 advocacy centers across the state of North Dakota and creates an annual fact sheet on statistics regarding intimate partner violence. In 2023, a total of 6,131 DV victims and 1,288 sexual assault victims were served by advocacy centers in the state of North Dakota. Of those cases, 83% were women.²¹ IPV has been shown to be one of the leading causes of non-obstetric maternal morbidity and mortality. Rural residents experience an increased risk when in comparison with urban residents for abuse among pregnant and postpartum women. The prevalence of perinatal IPV was 4.6% for rural residents and 3.2% for urban residents. It has also been shown that among women who have experienced perinatal IPV, 21.3% did not receive any screenings for abuse.²² Due to North Dakota's high percentage of rural communities, creating prevention and support interventions for women within rural communities such as abuse screenings during healthcare visits and education for providers who serve more rural areas of the state could reduce IPV. Identifying and implementing methods to reduce intimate partner violence can result in healthier, safer lives for women and their families.

Maternal Mortality

Maternal mortality, defined by the CDC as the death of a woman while pregnant or within one year of the end of pregnancy from any cause related to or aggravated by the pregnancy, is both a global and local issue within women's health.²³ While the maternal mortality ratio (the number of maternal deaths in a given time period divided by 100,000 live births during the same period of time) has decreased globally by about 38% between 2000 and 2017, the United States continues to see an increase and currently reports almost 700 pregnancy-related deaths annually, which is the worst in the developed world per CDC data.²³ Although the United States is often viewed as a country with the newest advancements in technology and prosperity, there seems to be a missing component in regards to maternal care and support. In North Dakota, certain demographic groups are at greater risk of maternal mortality. Fourteen to fifteen percent of total births are to American Indian mothers, 80% to Non-Hispanic White mothers, and less than 5% are to all other racial and ethnic minorities.²³ It was found that 93% of pregnancy-related deaths to American Indian or Alaska Native persons were determined to be preventable, while 80% of Caucasian deaths were preventable.²³

The American Indian population is vulnerable to pregnancy-related deaths due to a range of barriers, with geographical distribution of care centers being one factor. In addition to American Indian births in North Dakota, approximately 5% of North Dakota residents are native-born U.S. citizens with at least one immigrant parent.²⁴ Cultural limitations, such as language barriers, are

of critical importance to consider to ensure clear communication, understanding, and high quality of care to prevent pregnancy-related deaths preventable under cultural circumstances. This is supported by improved rapport between patient and provider and continued education surrounding intercultural knowledge.

There are substantial health implications for women unable to access the most basic level of healthcare. This includes higher rates of maternal morbidity and mortality. In the United States, 658 women died of maternal causes in 2018, and another 754 women died in 2019.²⁵ There are several factors contributing to increasing maternal mortality including modifications in death certificates, cause of death coding changes, prioritization of cause of death documentation/reporting, improved ability to establish cause of death, and an increase in comorbidities complicating pregnancies. North Dakota ranks #21 in the U.S. with 20.1 maternal deaths per 100,000 births.²⁵ In 2018, there were zero maternal deaths in North Dakota. In 2019, there was one maternal death and five possible maternal deaths. In 2020, there were two maternal deaths and five possible maternal deaths.²⁵ In 2021, there were 10 maternal deaths reported by the Department of Vital Records.²⁵ Two deaths in 2021 met the CDC criteria for maternal deaths and eight deaths had possible pregnancy association.²⁵ Both maternal deaths meeting the CDC definition were COVID-19-related. There were three maternal deaths in 2021 that were identified on death certificates but require further analysis.²⁵

North Dakota has a long-standing process to monitor and respond to maternal mortality. The North Dakota Maternal Mortality Review Committee (ND MMRC) was first convened in 1954 and had the primary function of educating physicians. In 2021 it was reconfigured with funding within the North Dakota Century Code via House Bill 1205. This initiated the reporting of the MMRC activities to the legislature and other state entities and provided that the UNDSMHS Department of OB-GYN administratively oversees the MMRC. The MMRC has 24 members who meet annually to review all maternal mortality cases with a mission to reduce the number of pregnancy-related deaths in the state. The 2022 MMRC panel reviewed outlier cases for reporting system failure, analyzed 2021 cases for a sequential list of factors leading up to the immediate cause of death, evaluated other tracing modalities to identify in-state and out-of-state maternal deaths, determined possible preventable deaths to identify mechanisms to reduce future recurrence, and considered policy/educational/behavioral changes intended to reduce maternal mortality.²⁵ When discussing maternal mortality, it is important to note the difference between pregnancy-related deaths and pregnancy associated deaths. Pregnancy-related deaths are those that fulfill the criteria of the CDC definition of maternal death while pregnancy associated deaths are defined as the death of a woman while pregnant or within one year of the end of pregnancy from a cause not related to the pregnancy. The ND MMRC seeks to distinguish between the two and to discern the cause and factors that may have led up to the death that isn't always readily apparent.

Behavioral Health

North Dakota classifies behavioral health workforce professionals into tiers that are determined by education requirements, scopes of practice, and levels of responsibility. To learn more about the different tiers of behavioral health professionals in North Dakota, please refer to Chapter 9. Women in North Dakota who are in need of behavioral health services are likely to encounter a variety of professionals. Women are also subject to unique behavioral health needs that must be recognized. Women are more likely to experience anxiety disorders, panic disorder, phobias,

post-traumatic stress disorder, obsessive-compulsive disorder, and major depression when compared to men.²⁶ They are also three times as likely to experience an eating disorder compared to men and they are more likely to self-harm.²⁷ It is also important to consider unique stressors women experience in their daily lives, particularly in rural areas. For rural women, there may be fewer opportunities to socialize outside of their home that can contribute to feelings of loneliness and isolation. Women staying home to raise children could also contribute to social isolation, particularly in rural areas.

Other unique behavioral health concerns for women include those linked to pregnancy and childbirth. Substance and alcohol use during pregnancy are behavioral health concerns that can lead to conditions such as fetal alcohol syndrome, in addition to post-partum mental health concerns such as post-partum depression and post-partum anxiety. Between 2017 and 2021, 13.1% of North Dakota women experienced post-partum depression.²⁸ Seeking treatment for behavioral health concerns has additional barriers and considerations for women with children, such as the need for childcare and the additional expense of childrearing, that could impact an individual's ability to seek treatment. All behavioral health professionals and healthcare workers need to use proper screening tools to assist in preventative care for women and give proper consideration to presentation and symptoms, as women can have a different presentation of behavioral health conditions compared to men. A team approach across all tiers can help improve maternal mental health in North Dakota and potentially help decrease the rate of maternal mortality as mental health conditions are one of the leading underlying causes of pregnancy-related death.²³ The North and South Dakota Perinatal Quality Collaborative's (NSDPQC) current project is aiming to address substance use disorder among pregnant women in both North Dakota and South Dakota in an effort to improve maternal health outcomes in both states.²⁹

Being aware of the unique behavioral health concerns for women is a key to addressing their behavioral healthcare needs. Finding the appropriate behavioral health professional to help women address their specific behavioral health needs is crucial. The availability of behavioral health professionals in North Dakota is a concern because, although the behavioral health workforce is growing in the state (see Chapter 9), demand for those services continues to increase. Continuing to expand this workforce will not only serve the overall health of the state, but also women's health in the state.

BARRIERS FOR WOMEN'S HEALTH

Access to Care

Accessing vital healthcare services can be a challenge for many women, particularly those in rural areas. One study found that less than one-half of rural women in the United States live within a thirty-minute drive to the nearest hospital with perinatal services.³⁰ Over 70% of counties in North Dakota are defined as maternity care deserts, compared to 32.6% nationally. Maternity care deserts are defined as places where access to maternity care services is limited or absent, either through lack of services or barriers to a woman's ability to access that care within their county. In 2023, there were reported to be 9,638 births in North Dakota. Of those, 1,956 were born to mothers whose county of residence is listed as a maternity care desert.³¹

The length of travel to maternity care facilities is an indicator of the overall outcome of delivery. There is a positive correlation between increased time of travel required and adverse outcomes for both the mother and infant, including but not limited to stillbirth, pre-term birth, and severe maternal morbidity. Specifically, travel time of greater than or equal to 120 minutes was associated with the greatest risk of complications, even in low-risk pregnancies.³² Given that over 70% of North Dakota's counties are classified as maternity care deserts and there is a direct correlation between maternity care deserts and adverse outcomes in childbirth, efforts to increase access to maternal and perinatal care could balance distribution of services throughout the state.

There is a relative shortage of physicians in the state of North Dakota needed to care for the population in general and women specifically, and a maldistribution of providers across the state, with rural areas having the greatest need for additional doctors and other healthcare providers. The average number of physicians to patients is 283.3 for every 100,000 people in the U.S. North Dakota's most recent assessment shows 235.6 physicians per 100,000 population making it one of the lowest ratios in the United States. Of particular importance is the shortage of general providers to deliver care in North Dakota. Recent reports indicate there are about 490 family medicine physicians in North Dakota.³³ Although the reports of physician shortages are frequently cited, there is also a similar insufficiency and maldistribution of other healthcare providers and supportive staff. This includes, but is not limited to, physician assistants (PA-C), certified nursing assistants (CNA), emergency medical responders (EMR), licensed practical nurses (LPN), registered nurses (RN), advanced practicing nurses (APRN) such as nurse practitioners (DNP or CNP), certified nurse midwives (CNM), and clinical nurse specialists (CNS). These individuals, often referred to as midlevel providers, help alleviate the physician shortage and improve patient outcomes. PA-Cs and APRNs in particular have had a positive impact on maternal and pediatric care as they can provide basic and sometimes complete care for patients.

The rural nature of the state continues to impact the number of specialty physicians readily available for the women and people of North Dakota. Patients – especially those in rural areas – often face long travel distances to receive specialized care, potentially leading to delayed diagnoses and treatments. This can result in poorer health outcomes and higher mortality rates. Additionally, the reduced availability of specialists contributes to increased burdens on primary care providers, who must manage a broader range of health issues without adequate support. When compared nationally, North Dakota was found to have a lower ratio of OB-GYNs.⁷ The primary care physicians and OB-GYNs that do practice in North Dakota are primarily localized in urban areas.³⁴ There are few OB-GYNs located in rural areas and several of the state's delivery hospitals are located in urban cities. There has also been a decrease in the states Certified Nurse Midwives, which further decreases access to care for rural women.

There are several factors that should be considered when scheduling a birth for a rural mother, including time of year, weather, place to stay, childcare, and travel accessibility. Some rural facilities have visiting OB-GYNs. In 2023, there were 72 OB-GYNs in North Dakota, with 56 practicing in metropolitan areas and 16 working in micropolitan areas.³⁴ North Dakota also has fellowship-trained OB-GYN specialists in the areas of maternal fetal health (MFM), reproductive endocrinology and infertility (REI), and urogynecology. North Dakota has never had a fellowship trained specialist in gynecologic oncology, so those patients usually are referred to either South

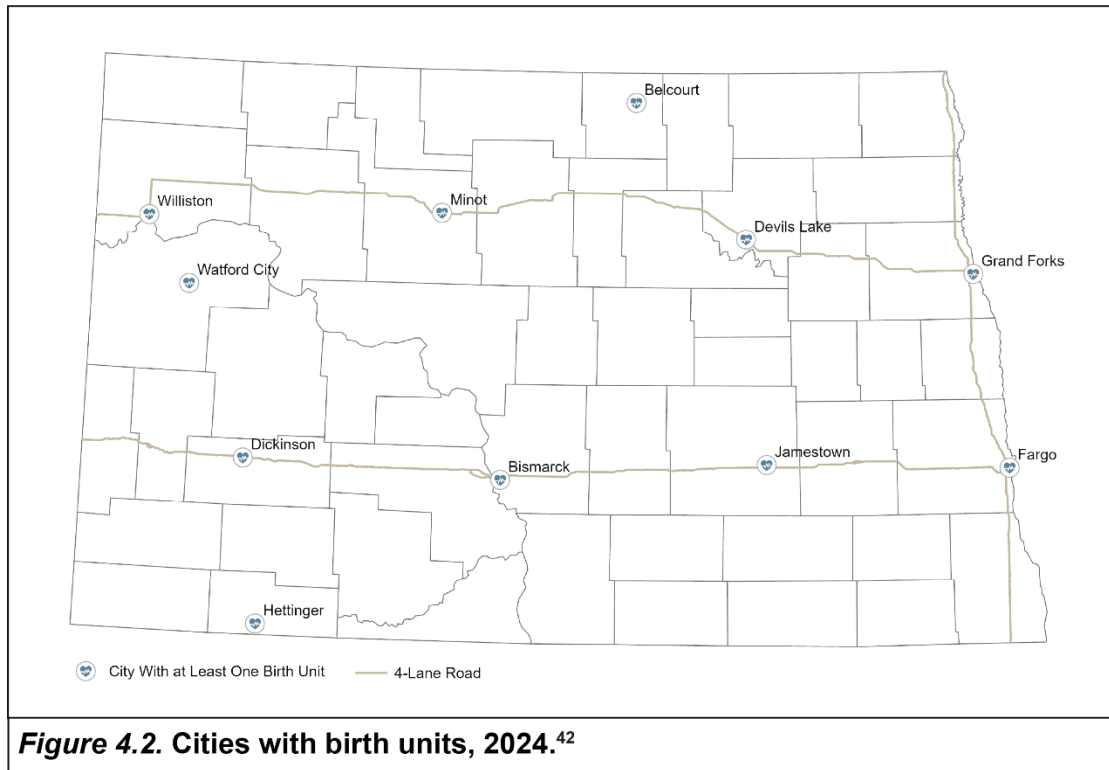
Dakota, the Twin Cities in Minnesota, or the Mayo Clinic. A more detailed breakdown of OB-GYNs and the specialty physician workforce can be found in Chapter 7.

Access to care and birth units can be supplemented by various members of the healthcare workforce, such as Certified Nurse Midwives (CNMs). CNMs are licensed independent healthcare providers who attend births and provide reproductive care and primary care for women. They provide holistic care to women during pregnancy and postpartum and can be an asset to women's health providers in the state. CNMs perform deliveries in the home setting, birth centers, and in hospital settings. Research has shown that CNMs achieve similar outcomes as physicians and generally rely on less technology during the provision of their labor and delivery services.³⁵ According to the North Dakota Board of Nursing, there are 29 licensed CNMs in North Dakota, which is an increase from 25 licensed CNMs in 2023.³⁶ CNMs often provide care in rural or underserved areas.^{35, 37} When examining the United States as a whole, research indicates that midwives only attend 10.2% of births.³⁸ However, CNMs attend births at one-third of rural maternity hospitals.³⁷ CNMs are more likely to attend births at rural hospitals with larger birth volumes compared to those with smaller birth volumes.³⁷ All 50 states provide some coverage of CNM services through Medicaid.³⁹

While CNMs are licensed and trained to perform labor and deliveries, the current estimate is that less than half of North Dakota's CNMs use these skills. A number of issues could be contributing to the low numbers of CNMs in North Dakota. As of 2024, there are no CNM educational programs in the state of North Dakota. Among practicing CNMs in the state, 21% practice in rural locations.⁴⁰ In rural locations, family practice physicians also provide obstetric services. However, obstetric services by physicians in rural areas has been steadily decreasing and continues to provide new challenges to rural women such as increased travel and uncertainty of their delivery location.

The state, along with the rest of the U.S., is expected to have an even greater shortage of healthcare providers for women over the next several decades. There is a projected national shortage that could max out at 22,000 OB-GYNs by the year 2050.⁴¹ This is an example of one specialty, and as one can imagine, individuals may need to see a variety of specialists during their life depending upon their own lifestyle, genetics, and characteristics. Besides primary care, dermatology, psychiatry, internists, emergency medicine, and neurology are some of the highest specialties in demand. Because there are not enough providers for patients in general or in the fields that are critically needed, efforts need to be implemented to better attract and distribute more physicians and other providers.

As mentioned earlier, the length of travel to maternity care facilities is a predictor of the overall outcome of delivery. A positive correlation between increased time of travel required and adverse outcomes for both the mother and infant have been reported. Unfortunately, in North Dakota, there are many areas considered to be maternity care deserts. Births have been reported from women residing in 52 different counties across the state, yet there are only 11 cities with birth units as of 2024, as detailed in Figure 4.2.⁴² The 11 birth units displayed in Figure 4.2 are all located in relative proximity to the major highways in North Dakota.



Currently, there are two leading strategies aimed at mitigating the maternity care desert crisis: expanding community-based models that are safe and affordable for low-risk women and addressing workforce challenges. Community birthing centers (CBCs) are healthcare facilities for childbirth where care is provided under the midwifery model. These are freestanding healthcare units not within a hospital or clinic. There are 384 birth centers in the United States.⁴³ To date, approximately 30% of those birth centers are in rural areas and small towns.⁴³ A study published by the National Library of Medicine reported the safety and efficacy of birthing centers.⁴⁴ The centers had higher average birthweight, higher Apgar scores at five minutes, and similar rates of neonatal intensive care unit admissions as other delivery centers.⁴³ The birth centers in the study were mostly located less than four miles from a suitable transfer hospital. Specifically, 64.9% of rural birth centers and 78.9% of urban hospitals were within four miles of the closest transfer hospital. Furthermore, 35% of birth centers in rural settings and 43% of birth centers in urban settings required more than 15 minutes of travel time to the nearest suitable hospital.⁴³ Given that North Dakota is more rural than urban, it is important to emphasize that the study did not find any performance advantages demonstrated within sites that are less than 15 minutes from the hospital or transfer location. Increased research and funding towards implementing community birthing centers in maternity care deserts is a feasible option and should be considered as a viable option to increase access to care and improve outcomes of childbirth for both the mother and infant. These birthing centers could be strategically spaced throughout North Dakota to allow for the most residents to have adequate access.

However, it is worth noting that an increase in community birthing centers for the state of North Dakota would require a source of providers, such as midwives and nurses, as well as physicians, willing to partner with these birthing centers for transfers and emergencies. Another limitation to the effectiveness of community birthing centers in rural areas of North Dakota is that

the centers are typically reserved for low-risk pregnancies. Moderate to high-risk pregnancies are pregnancies that involve increased health risks for the pregnant person, infant, or both. People with high-risk pregnancies may need extra care before, during, and after they give birth that is not available at community birthing centers.⁴³ Community birthing centers would allow increased access for rural mothers with low-risk pregnancies but would not provide direct benefit to rural mothers with moderate to high-risk pregnancies. In case of an emergency, however, having a birthing center nearby may increase the chance of survival of both the mother and infant by having trained professionals available to help until the mother-infant unit are able to transfer to a more equipped location. In summary, opening community birthing centers may be a feasible option for increasing access to maternity care in rural areas, especially those designated as maternity care deserts.

Typically, patients with high-risk pregnancies who live far from appropriate hospitals need to move closer to larger hospitals since specialized care is required. However, lack of housing, family obligations, and employment closer to an appropriate hospital may prevent patients with high-risk pregnancies from moving, putting their own life and their child's life at risk.⁴⁵ The University of Texas Medical Branch in Galveston's Department of Obstetrics and Gynecology developed its own Regional Maternal & Child Health Program to address problems like this. This program provides assistance such as housing for high-risk women and their families, as well as coordination with clinics closer to their homes through electronic medical records, to make sure patient safety is the first priority. Increasing access to healthcare for women is vital for achieving positive health outcomes.³⁰

Challenges to Care

There are a number of challenges for women seeking healthcare in North Dakota. Access to care is one major issue, but others include the physical, social, and civic environment in which women reside. Women seeking healthcare may encounter bureaucratic restrictions that affect their ability to remain healthy and productive members of society. North Dakota has a total ban on abortions with few exceptions,⁴⁶ which, using other states as a model, could lead to negative consequences regarding the availability and quantity of OB-GYNs practicing in the state.^{47, 48}

"Abortion" means the act of using or prescribing any instrument, medicine, drug, or any other substance, device, or means with the intent to terminate the clinically diagnosable pregnancy of a woman, including the elimination of one or more unborn children in a multifetal pregnancy, with knowledge that the termination by those means will with reasonable likelihood cause the death of the unborn child.⁴⁹ On April 24, 2023, North Dakota began enforcing its new total ban on abortion. This ban prohibits abortion at all stages of pregnancy, except in the case of death or serious health risk.⁴⁶ The goal of this section is not to discuss the ethicality of the new law, but rather to inform the public on possible implications as it pertains to women's health and access to healthcare.

There are a few exceptions to the abortion ban currently in effect in North Dakota. These exceptions are limited and include:

- To save the mother's/woman's life
- To preserve the pregnant person's physical health

- If the pregnancy is a result of rape and/or incest (only through six weeks, zero days of pregnancy)

According to a study published in 2024, a survey of OB-GYNs in states with restrictive abortion laws described a range of perceived impacts.⁵⁰ The OB-GYNs reported distress at having to delay essential patient care, fears of legal ramifications, mental health effects, and planned or actual attrition. North Dakota is not the only state to have limited abortion laws, however. As of June 20, 2024, 14 states have functionally banned abortion with limited exceptions. Physicians found in violation of these laws face possible felony charges, loss of their medical license, fines, and prison sentences.

A study published in January 2024 questioned OB-GYNs practicing in states with abortion bans to identify observations in practice they have experienced as a result of the ban.⁵⁰ The first were clinical impacts, meaning there were delays in care provided until patients became more sick or legal sign-off on a medical exception to the ban was obtained. Specifically, physicians had to delay care until patients were at risk of death or permanent impairment, or the fetal heart stopped spontaneously. They also reported the inability to provide appropriate care oneself, make referrals for such care, or even provide complete counseling to patients on pregnancy options. Due to aiding and abetting clauses, some institutions informed their employees they could not provide referrals for abortions or discuss abortion as an option.⁵⁰ The second domain in which the laws affected OB-GYNs was in the form of personal impacts. Physicians reported moral distress, fear, and perceived consequences of law violation, intention to leave the state, and symptoms of depression and anxiety. Fifty of 54 participants in this study reported situations in which they or their colleagues could not follow clinical standards due to legal constraints. Forty-seven of 54 participants reported worries about practicing in an uncertain legal climate. Many of these fears centered on the potential for criminal prosecution, loss of medical license, loss of income, or incarceration. Six participants had already moved their practices to states with stronger abortion protections while another 29 of 48 participants had entertained the idea of leaving their state but could not due to personal ties. Each physician who moves away as a result of abortion laws increases the burden and case load for the remaining physicians who have stayed. This will likely increase waiting times for the rest of the population that is seeking general OB-GYN care not specific to abortion practices. Lastly, 38 out of 54 of the participants had symptoms of depression and anxiety that they felt was a direct consequence of the *Dobbs v. Jackson* decision.⁵⁰ *Dobbs v. Jackson* resulted in 17 states functionally banning abortion except in narrow circumstances, and physicians found in violation of these laws face felony charges, loss of their medical license, fines, and prison sentences.

Evidence of lower standards of healthcare and worsened patient health have been reported as a result of the abortion ban.⁵⁰ Examples include delays in care, worsened health outcomes, and increased cost and logistic complexity of care. According to researchers at one public university, the reduced number of OB-GYN providers resulted in several cases where patients experienced preventable complications, such as severe infection or having the placenta grow deep into the uterine wall and surrounding structures.⁵¹ The lowered standard of care is enough to cause concern and question the reasoning behind providing evidence-based care to patients in need, but it is also threatening to drive practicing OB-GYNs out of states with abortion bans in place, such as North Dakota.^{47, 48} The total ban on access to abortions may be directly opposing the goal of retaining OB-GYNs in the state. A further decrease in practicing OB-GYNs would limit North Dakotans' access to OB-GYN physicians. While there are no published data specific to

North Dakota physicians, a May 2023 survey found that 55% of Idaho OB-GYNs were seriously or somewhat considering leaving the state due to the abortion ban.⁵⁰

Parental Leave Policies

Parental leave has positive impacts on the health of both women and children.⁵² Parental leave is the overarching term used in the workplace that includes both maternity and paternity leave. Maternity leave refers to the period of time that a new mother takes off from work following the birth of her baby. Paternity leave is the time a father or partner takes off work after the birth or adoption of their child, to spend time with their child and support the mother. According to the Family and Medical Leave Act (FMLA), North Dakota requires employers with 50 or more employees to provide up to 12 weeks of unpaid, protected leave to employees for the birth of a newborn or to care for that newborn during a 12-month period of time. Increased length of parental leave has a positive impact on the parent-child relationship.⁵³ The length of leave as well as unpaid versus paid leave go hand-in-hand, as many families cannot afford to take longer unpaid parental leave, even if it is offered. On average, new mothers take 10 weeks of maternity leave as they are unable to forego a paycheck for the entire 12 weeks.⁵⁴

Forty-seven percent of the current U.S. labor force is composed of women (compared to North Dakota's 63.8%), but only 16% of all employed American workers have access to paid parental leave through their workplace. It was found that as many as 23% of employed mothers return to work within 10 days of giving birth because of their inability to pay living expenses without an income. Returning to work in 10 days or fewer after giving birth may increase the chances of post-delivery complications and delayed healing. One study examined the impact of paid maternity leave on the mental and physical health of mothers and children and found the following:

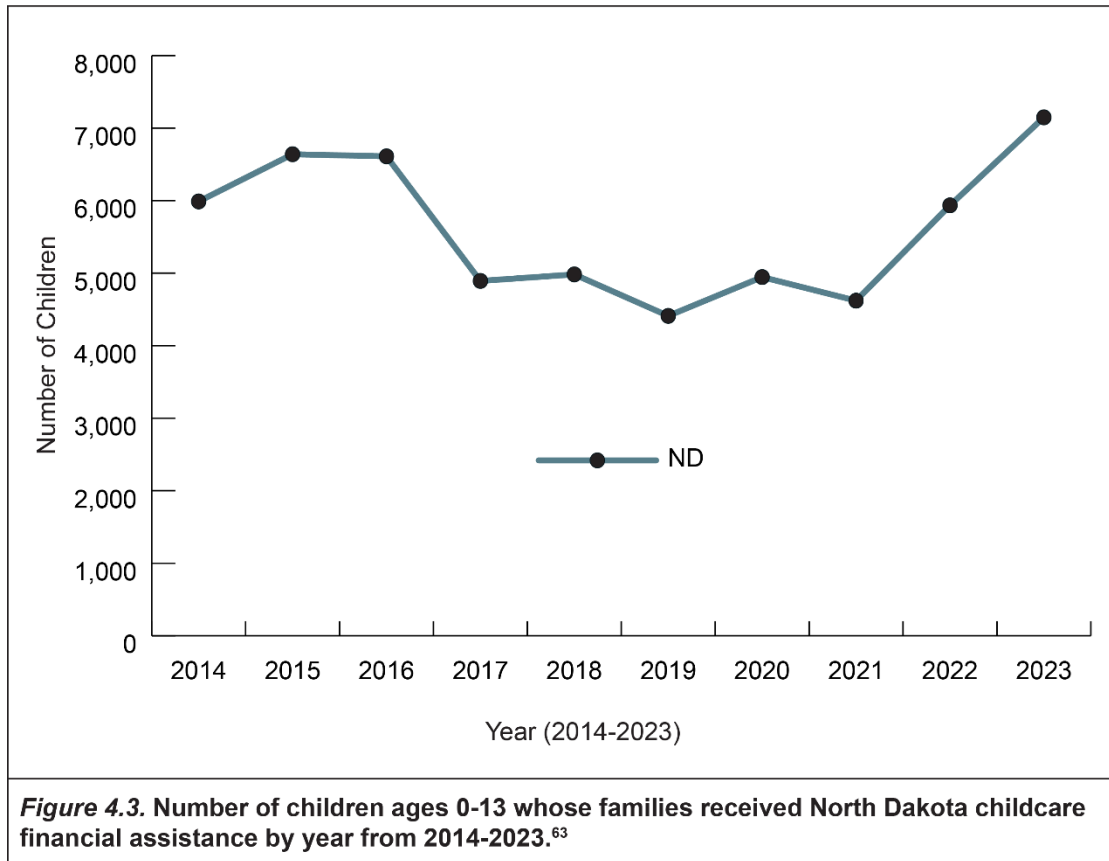
Paid maternity leave is associated with beneficial effects on (1) the mental health of mothers and children, including a decrease in postpartum maternal depression and intimate partner violence, and improved infant attachment and child development, (2) the physical health of mothers and children, including a decrease in infant mortality and in mother and infant rehospitalizations, and an increase in pediatric visit attendance and timely administration of infant immunizations, and (3) breastfeeding, with an increase in its initiation and duration.⁵⁶

Research shows that there is also a positive correlation between the length of maternity leave and mother's mental health and duration of breastfeeding. Furthermore, extended maternity leaves also were associated with lower perinatal, neonatal, and post-natal mortality rates as well as lower child mortality. Maternity leave also affects the quality and quantity of time a child spends with their mother rather than in non-maternal care. The quantity and quality of time a child spends with their mother in the first year of life affects the child's well-being.⁵⁷ For example, mothers may have more time to care for an ill child, to breastfeed, or to seek prompt medical care when on maternity leave. As noted previously, the current standard is 12 weeks of unpaid leave being offered. A new policy in Switzerland extended maternity leave to 14 weeks, and those two additional weeks resulted in fewer depressive symptoms and longer breastfeeding duration. A 2007 study examined the outcomes from the change in Swiss policy concluded that the benefits impacting other health outcomes would warrant longer leaves, but extending maternity leave by just two weeks resulted in detectable benefits.⁵⁸

Childcare

Childcare costs are another vital component of women's and children's health. In 2023, the average cost of childcare in North Dakota varied by county but was generally higher than the national average.⁵⁹ This is an even larger issue for rural North Dakotans, as childcare costs are higher than their urban counterparts and they must travel further to access childcare facilities. Finding ways to mitigate this issue could help offset some of the financial and socioeconomic disparities seen between rural and urban populations in North Dakota.

Evidence suggests that the cost of childcare in the United States has increased substantially over the past few decades as well as in North Dakota. According to the North Dakota Department of Health and Human Services, the current average annual cost of infant care in North Dakota is \$10,758 and childcare for a toddler is roughly \$9,685 per year.⁶⁰ The Department of Health and Human Services also stated that childcare is considered "affordable" if it costs households no more than 7% of their income.⁶¹ The average household income for North Dakota residents is quoted at \$97,221 per year and 7% of that average household income is \$6,805.47, which is one third less than the actual average cost of childcare in North Dakota.⁶² This means that an average household that needs childcare services is spending just over 9% of their annual salary on that care. This estimate is only taking one child into consideration. Each child that requires childcare would translate into the need for an additional portion of the parents' annual salary as well. Figure 4.3 shows the number of children ages 0 through 13 years old whose families receive childcare assistance from the state of North Dakota. While the trend has varied over time, there has been a notable increase in the number of children whose care is covered by North Dakota's childcare assistance program in recent years.⁶³



Data from the National Survey of Children’s Health shed light on the issue of childcare being a significant barrier to economic security for families with young children. In 2016, nearly 2 million parents of children ages 5 and younger had to quit a job, not take a job, or greatly change their job because of problems with childcare. Many parents find that childcare expenses consume most of their paycheck, which has driven many to leave the workforce. It was stated that mothers typically are the ones who make that tradeoff.⁶²

North Dakota is no stranger to this phenomenon but may be affected by it to an even greater extent than the general population of the United States. Rural families have fewer options for childcare than urban and suburban families. Nearly two-thirds of rural families live in childcare deserts. Childcare deserts are defined as a census tract with more than 50 children under age 5 that contains either no childcare providers, or so few childcare options that there are more than three times as many children as licensed childcare slots.⁶⁴ Families in rural areas spend more of their income on, and travel further to, their childcare arrangements. Rural families spend an average of 12.2% of their income on childcare while their urban counterparts spend an average of 9-10% of their income on childcare. Furthermore, those living in urban areas live about 3.5 miles from their childcare provider while rural families average 7.5 miles away with nearly one-third of rural families living more than 10 miles away from their childcare center.⁶³ These differences put a significant strain on rural families’ time and resources as they sacrifice significantly more time and money driving to drop off and pick up their child(ren) and paying for childcare than their urban counterparts.⁶³

According to the Center for American Progress, 24% of people in North Dakota live in a childcare desert.⁶⁴ As mentioned above, there are disparities between the rural, suburban, and urban populations. Of the rural population, 90,330 individuals live in a childcare desert, or 31% of the rural population. Likewise, 81,165 of the suburban population live in a childcare desert, or 21% of the suburban population. There is a steep drop off when it comes to the urban population, however, as only 8,140 individuals live in a childcare desert, or 14% of the urban population.⁶⁴ Geographic location is not the only factor affecting the lack of childcare options in North Dakota. Non-Hispanic, white individuals were the least likely to be living in a childcare desert at just 23%. Non-Hispanic, black/African Americans in North Dakota were next lowest at 27%, and Hispanic/Latino North Dakotans had the highest percent living in a childcare desert at 29%.⁶⁵

CHILDREN'S HEALTH TOPICS

In 2022, there were 182,775 children under the age of 18 living in North Dakota. This accounts for 23.4% of the state's population.⁶⁶ Children from birth to adulthood have unique healthcare needs and considerations as will be discussed below.

Insurance

There are a number of factors that can influence the health and wellbeing of children. One major influence on their health is insurance coverage that affects their access to care. One measure of need is examining those aged birth to 20 who are covered by Medicaid, which is a federally funded program available to eligible children based upon need. In 2023, 29.4% of those aged birth to 20 were covered by Medicaid; this is an increase from 2014 when the figure was 26.2%. If a child is not covered by insurance, their medical care can potentially be very expensive. In 2022, about 5.3% of children aged birth to 18 who were not covered by insurance. This is a decline from 2013 when it was 8.6%.⁶⁶ However, it should be noted that those without insurance have the potential for higher healthcare costs or have delayed/forgone healthcare when needed. Unaddressed healthcare needs in childhood can affect an individual throughout their life. As children are often covered by the insurance their guardians carry, adults having access to insurance is important. In 2022, about 7% of parents in North Dakota did not have health insurance. Additionally, it was found that in November 2022, about 5% of adults in North Dakota were living in a household with children who lacked health insurance.⁶⁶

Health Considerations

Starting in infancy there are a number of health concerns unique to infants and children. Receiving routine screenings at birth and during infancy can help providers and parents/guardians ensure that children receive the needed care. An example of this is hearing screening for newborns. Catching hearing concerns early can assist in the overall development of the child. In North Dakota, 98% of newborns born in a medical facility in 2023 received a hearing screening. This is a drop from 99% which was consistent from 2014-2022. Of those newborns who received the hearing screening in 2023, 12% failed the hearing screening and were referred for further testing due to hearing loss or impairment.⁶⁶ This example demonstrates why routine screenings for infants and children are important for children's health.

Another area of consideration for children's health is receiving dental care. Good oral health is important to promote throughout an individual's lifetime, especially beginning in childhood as poor dental health can affect them later in life. From 2020-2021, about 74% of children in North Dakota received preventative dental care in the past year. Additionally, during that same time period, 81% of children in North Dakota were reported to have teeth in excellent or very good condition.⁶⁶ Thus nearly one in five children may not have good oral healthcare in North Dakota. As insurance coverage for dental care is not required for all insurance plans, this can lead to an issue of obtaining insurance coverage for dental care or having to pay out of pocket for dental care.

Mental and behavioral health among children is an area that has been of increasing interest over the last few years. During the 2020-2021 timeframe, 24% of children aged 3 to 17 in North Dakota were reported to have one or more emotional, behavioral, or developmental conditions. This is an increase from 2017-2018 when it was 21%. In 2020, 11.3% of children and teens in North Dakota were reported to have anxiety or depression. Anxiety and depression can be severe and may lead to additional physical harm through effects on diet, exercise, socialization, and self-harm. There has been a noted increase in the percentage of high school students in North Dakota who reported feeling sad or hopeless in the past year, from 23% in 2009 to 36% in 2021.⁶⁶ Addressing mental and behavioral health concerns in children can be difficult, as they may require treatment methods that are different from adults. The types of providers needed to address mental and behavioral health in children are a specialty type of provider that is not as commonly available.

Asthma is another condition that is commonly found in children. It is associated with special healthcare needs and children often use various medications to treat the condition. During the 2020-2021 timeframe, about 6% of children in North Dakota were reported to have asthma problems.⁶⁶ According to the Americans with Disabilities Act (ADA), asthma is considered a disability as it can affect the child's ability to work, attend school, and participate in other activities of daily life.⁶⁷ There were also about 19% of children in North Dakota during 2020-2021 that identified as having special healthcare needs meaning they were at an increased risk of chronic physical, developmental, behavioral, or emotional conditions that would require healthcare services of a type or amount beyond that required by children generally.⁶⁶ The increased need for healthcare services can have a large impact on a child's life, impacting their ability to attend school, participate in activities, and socialize.

Infant and Child Mortality

One area that is closely watched is infant mortality. In North Dakota, the infant mortality rate based on 5-year totals has been variable, moving from 5.3 deaths per 1,000 live births in 2013-2017 to 5.7 deaths per 1,000 live births in 2015-2019, and back down to 5.0 deaths per 1,000 live births in 2019-2023.⁶⁶

The CDC has made several attempts to improve infant outcomes. The CDC supports 36 Perinatal Quality Collaboratives (PQCs), including a fully funded program in North and South Dakota (NSDPQC). PQCs are state or multistate networks of multidisciplinary teams working to improve the quality of care for mothers and babies. PQCs contribute to improvements in healthcare and outcomes for mothers and babies such as addressing maternal mental health, building connections with hospitals and communities, screening and treating mothers with

substance use disorders and affected newborns, reducing severe pregnancy complications associated with high blood pressure and hemorrhage, and reducing healthcare associated bloodstream infections in newborns.⁶⁸ The Maternal and Child Health Epidemiology Program (MCHEP) builds capacity to improve maternal and child health by assigning epidemiologists to states to support epidemiological research and provide scientific information to improve maternal and child health programs and policies.⁶⁸ The CDC also supports Sudden Unexpected Infant Death (SUID) and Sudden Death in the Young Case Registry (SDY), allowing data about these circumstances to develop strategies to reduce future deaths. As of this writing, North Dakota does not participate in the SUID or SDY registry.⁶⁸

The Pregnancy Risk Assessment Monitoring System (PRAMS) is another source of data collection aimed at reducing infant mortality. PRAMS collects data on attitudes and experiences before, during, and after pregnancy that can then be used to measure progress toward goals in improving the health of mothers and infants. PRAMS is designed to identify high risk women and infants for health problems with a goal of improving the health outcomes of mothers and infants. Mothers who have recently given birth are selected via lottery and receive a survey by mail to complete PRAMS.⁶⁸ The ongoing analysis of maternal and infant outcomes continues to be an important topic for the state of North Dakota.

Beyond infant mortality, deaths among children and teens are also important to examine. In North Dakota in 2022, the child and teen death rate was 31 deaths per 100,000. Specifically, the child death rate was 19 per 100,000 and the teen death rate from all causes was 65 per 100,000. When examining specific causes of death for teens in North Dakota, the death rate for teens from accident, homicide, and suicide was 52 per 100,000.⁶⁶ Being aware of the causes of deaths for children and teens is important as it can assist in preventing deaths and addressing any potential healthcare concerns that lead to these deaths.

Immunizations

Immunization is an important element of children's health that can be initiated during infancy. Beginning the recommended vaccination schedule following birth and maintenance throughout adolescence and adulthood helps ensure efficacy against infection and greatly reduce the disease burden within a community. The initial vaccination series begins either at birth or around two months of age, with dosing schedules published by the CDC.⁶⁹ Providers can begin conversations regarding vaccinations with parents/guardians prior to birth to ensure vaccines are given at appropriate times and planned into an infant's care plan.

Healthcare Providers for Children

In 2023, there were 78 general pediatricians in the state. Sixty of the general pediatricians practiced in metropolitan areas, 16 practiced in micropolitan areas, and two practiced in rural areas.^{34, 70} A more detailed breakdown of general pediatricians and specialty physician workforce can be found in Chapter 7. These specific types of providers are critical to maintain the appropriate healthcare for children. Pediatricians have the specific training needed to understand the nuances of children's health, areas of concern, and developmental milestones, as well as particular treatment needed for children with specialized conditions.

TELEMEDICINE

Fortunately, North Dakota has been taking a proactive approach to address health disparities through the development of the Healthcare Workforce Initiative and other efforts to build healthcare infrastructure in the state. One tool that can be utilized to expand healthcare opportunities for women and children is telemedicine. Telemedicine is a promising and innovative way to expand access to women's healthcare, particularly for those in rural areas. Telemedicine is a way of connecting patients with their providers through the use of technology for the purpose of diagnosis and treatment. There are several forms of telemedicine that can be used including live video visits, pre-recorded videos, websites, mobile apps, texting lines, and phone calls.

Telemedicine has been around for years; however, the onset of the COVID-19 pandemic propelled it into mainstream use. Before the pandemic, about 5% of primary care physicians used telemedicine, whereas during the pandemic, this number increased to about 46%.⁷¹ The majority of these physicians using telemedicine planned to continue using it after the pandemic as well, although the actual usage of telemedicine at present has not in general continued to be as high as it was during the pandemic. Nowadays when booking appointments to visit a provider, virtual visits are frequently an option for patients to select depending on their health concerns. The following are several examples of how telemedicine can be used specifically for women's healthcare:

- OB-GYN consultations: Prenatal and postpartum care visits to discuss symptoms, questions, and concerns. May receive prenatal education, family planning information, menopause management, referrals, etc.
- Specialist care: Access to specialists like reproductive endocrinologists, perinatologists, and oncologists without having to travel long distances. May also allow for remote collaboration between several providers and their patients.
- Gynecological concerns: May discuss contraception, sexual concerns, and menstrual issues among many other things.
- Lactation consultations: May discuss breastfeeding concerns and receive breastfeeding guidance.
- Mental health support: May receive therapy and support for mood disorders, stress management, postpartum depression, and other mental health concerns.
- Preventive health counseling: May discuss preventive health behaviors, such as diet, exercise, self-breast exams, and safe sex practices.
- Remote monitoring: May use remote monitoring devices to track vital signs, fetal movements, and chronic disease parameters. This real-time information can be reviewed by providers for prompt intervention.
- Follow-up: Visits after minor procedures or surgeries to discuss questions and concerns.
- Medication Management: Providers can prescribe, change, and adjust medications in a timely matter.

When used correctly, telemedicine can be a useful tool for connecting with those in healthcare shortage areas for some of the needs as described above. Additionally, telemedicine can ease access and increase utilization for everyday life. It can decrease traveling distance, ease

comfort by being able to see a provider from one's own home, and fit appointments better around busy schedules.⁷²

There is also a great opportunity for collaboration between health professionals by using telemedicine. As mentioned before, primary care providers and OB-GYNs in North Dakota are more localized to urban areas compared to rural areas. This is also the case with other healthcare professionals including nurses, physician assistants, and other specialists. Despite this, isolated rural regions of the state are more likely to be supplied by non-physician healthcare workers, especially nurses, compared to physicians. It would be advantageous for healthcare teams to train these non-physician healthcare workers about women's healthcare issues to the extent possible within their scope of practice. When patients are requesting services that are outside of the non-physician's scope of practice and it is something that can be addressed via telemedicine, it would be beneficial to have a physician available to consult through their local clinic. By having an established partnership and easy access to a physician to consult with, this may help smaller clinics without physicians give a broader scope of care to their patients.

Telemedicine helps overcome geographical barriers, improve access to specialized cases, and enhances convenience for patients in North Dakota. Specifically, women's health patients have increased access to gynecologists, obstetricians, and other women's health specialists remotely. This accessibility reduces the need for long-distance travel and can potentially prevent the worsening of health conditions. Telehealth enables pregnant women to access prenatal and postnatal care more conveniently. Women may be able to follow with a family practice physician physically in their rural location and with an OB-GYN via telemedicine. This could lead to a smoother transition of care as the woman approaches delivery. Telehealth can also be utilized for mental health support during the perinatal period and for all patients in general. Psychiatric care is challenging to access in rural North Dakota and telemedicine provides an option of mental healthcare for the rural population.

An example of how telehealth may benefit North Dakota is afforded by the North Dakota Family Planning Program Policy and Procedure Manual. Under Title X of the manual, projects must provide medical services related to family planning in person or via telehealth, and necessary referral to other medical facilities when medically indicated.⁷³ The North Dakota Family Planning Program assists individuals to understand and take responsibility for their reproductive health through education, counseling, and medical services. Telehealth services are expected to be high-quality, client-centered, and increase access to critical family planning and reproductive services. These services help increase equity in family planning to adhere to the choices of the individual. Telehealth services for reproductive health in rural areas is important to increase safe practices, allow patients to make informed decisions, enhance the family planning decision process, and decrease clinic-based services to decrease wait times. Service sites implementing telehealth are designed to improve sexual and reproductive healthcare services, with priority given to individuals from low-income families or medically underserved populations. Service sites providing telemedicine provide adequate training to staff to be HIPAA compliant to protect the confidentiality of the patient.

SUMMARY

Well-woman healthcare from providers, including patient education, has the opportunity to prevent the leading causes of female morbidity and mortality or permit diagnosis of conditions at early stages. With a trusting patient-provider relationship, preventive care, lifestyle changes, and diagnosis management can set up women for success in managing their health as well as the health of those around them. This chapter identified some of the many issues impacting women and children in North Dakota.

A key component of any approach aimed at improving the quality of healthcare for women in rural North Dakota is to attract more health professionals to rural areas. It will take a variety of approaches to bring this to fruition. Healthcare training programs can increase the probability that a graduate will settle in a rural area after graduation by selecting individuals with those characteristics that have been shown to be associated with rural practice, such as having a strong desire to serve underserved populations, being from a rural area, or having a strong interest in breadth and variety in their practice. It was found that rural physicians provide a greater range of care to their patients due to the lack of other specialists or healthcare workers in their area. Other factors that can increase recruitment to rural areas include financial incentives such as loan repayments, tax credits, and assistance with medical liability insurance. Another solution is to work with the health professionals who are already present in rural areas, including offering educational programs to expand their skillset. By offering more education to the existing healthcare workers in rural areas, they may be able to diagnose, treat, and educate their patients about a broader array of health concerns without referral to more distant locations.

Another consideration is paid maternity leave as it has positive effects on the mother and family unit immediately after birth and impacts the child long after. One study found that paid leave was associated with better language outcomes regardless of socioeconomic status and fewer infant behavior problems for mothers with lower levels of educational attainment. The researchers concluded that expanding access to policies that support families, such as paid parental leave, may aid in reducing socioeconomic disparities in infant development.⁷⁴ There is ample evidence to show that paid parental leave greatly improves the health and wellbeing of the parent as well as the child, both immediately and long-term.^{58, 74}

Given that North Dakota is facing a workforce shortage, it would be beneficial to make every attempt to retain the workforce that is currently available to the state. Identifying funds to make childcare more affordable and accessible to all of North Dakota's residents may be a feasible way of doing this. In April of 2023, Governor Doug Burgum signed a bill that provided nearly \$66 million to support childcare services and helped address a major barrier to workforce participation in North Dakota. This bill was signed in an effort to build and sustain a workforce to support economic growth and reach its full potential. Governor Burgum stated, "Expanding access to affordable, quality childcare will make it easier for parents and guardians to engage in work, provide for their families, and strengthen local businesses and their communities." This is a good example of how the needs of North Dakota residents were noticed and an attempt was made at assisting with those needs. As a result of this bill, an estimated 2,200 extremely low-income working families no longer have a co-pay requirement for childcare. This bill not only assists families with childcare costs, but it also allows both parents to participate in North Dakota's workforce.⁷⁵

Multiple strategies have also been suggested to improve preventive health for women in North Dakota. The first strategy is collaboration with state-level organizations to improve access to care. This would include extended Medicaid coverage for postpartum women and developing strategic plans with the North Dakota Maternal Mortality Review Committee. In 2022, Medicaid supported 2,098 births in North Dakota, which constituted 22% of all births in the state. PRAMS 2020 data showed that 69% of American Indian women utilize Medicaid as their primary insurance coverage and 35% of “other races” in contrast to 17% white respondents.⁷⁶ Increasing postpartum Medicaid coverage shows potential to improve the health of minority groups. Strategy two suggests connecting women with preventative care information and services during their pregnancy or between pregnancies when they are most likely to contact the healthcare system. This could lead to tailored patient care creating a foundation of wellness to enhance women’s health. A third strategy considers partnering with local community-based organizations to expand preventive messages and to outreach specific populations of high-need women specific to their community. This would include working with women’s task forces to disseminate information through non-traditional settings. This could increase the outreach to women of specific racial and ethnic groups. Pilot sites to assist in this strategy that have been suggested including food banks, ethnic grocery stores, and common shopping stores.⁷⁶

Overall, it is important to continue to discuss and explore ways to improve women’s healthcare. Proposed improvements that may help to increase healthcare access for women include: expansion of the use of telemedicine, greater collaboration between rural and urban healthcare teams, travel reimbursement, housing assistance, additional provider recruitment, and continued education.

Anecdotally, women make the majority of healthcare decisions for themselves as well as for their families. When considering how women and their health can impact the overall well-being of the population, policymakers should remember that improving women’s health and healthcare can improve the health and healthcare of family members and children. Healthy children have a better likelihood of becoming healthy adults. Children’s health can be supported through coverage for their healthcare, maintaining appropriate child healthcare providers in the state, and addressing unique childhood health concerns through various statewide initiatives. Efforts to improve women’s and children’s health in North Dakota can help move the state forward toward its goal of being the healthiest state in the nation.

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CHAPTER FIVE:

**HEALTH SERVICES, CARE ACCESS, AND
HEALTH OUTCOMES FOR AMERICAN
INDIANS IN NORTH DAKOTA**

DEMOGRAPHIC SNAPSHOT OF AMERICAN INDIAN POPULATIONS IN NORTH DAKOTA

North Dakota contains all or part of four federally recognized Tribes and one Tribal community located at least partially within the state.^{1,2} This includes the Three Affiliated Tribes (the Mandan, the Hidatsa, and the Arikara); the Standing Rock Reservation, home of the Standing Rock Sioux Tribe; the Spirit Lake Reservation, home of the Spirit Lake Tribe; and the Turtle Mountain Reservation, home to the Turtle Mountain Band of Chippewa Indians. The Sisseton Wahpeton Oyate Tribe also exists in the southeastern corner of North Dakota with a small amount of Tribal trust land, although much of the Tribal trust land is in South Dakota (Figure 5.1).²

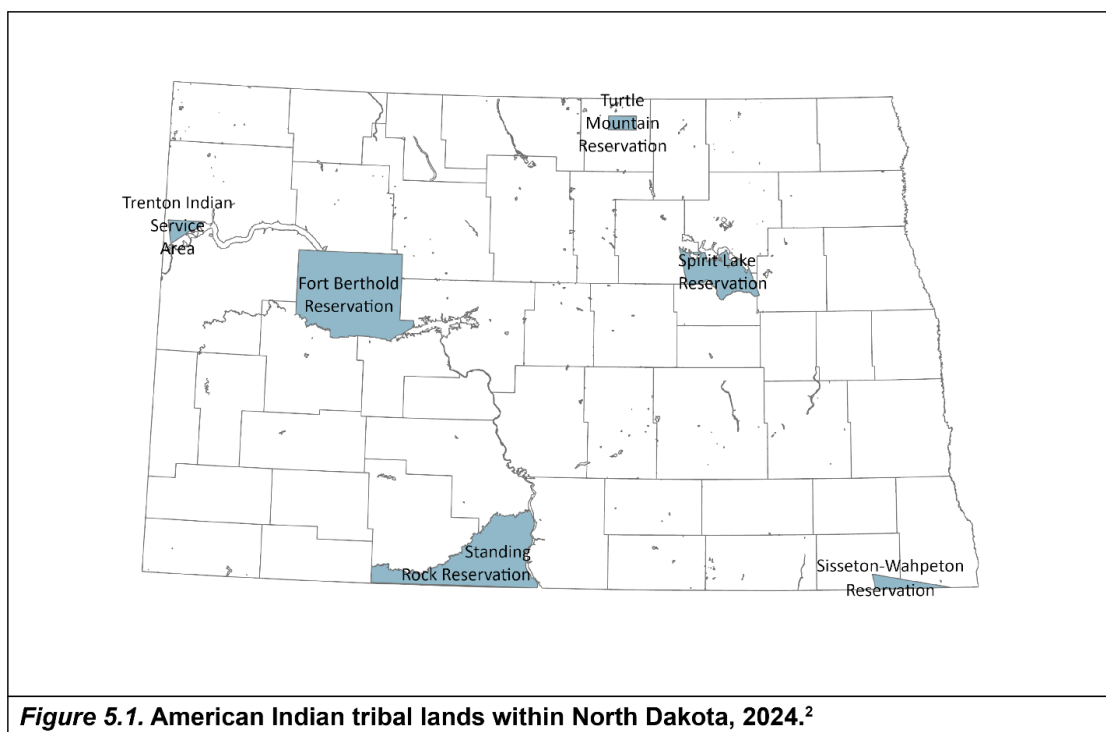


Figure 5.1. American Indian tribal lands within North Dakota, 2024.²

North Dakota boasts the sixth largest American Indian population in the United States with American Indians representing 4.9% of the state population (31,329 people).² This is the largest subpopulation in North Dakota. Almost 60% of the American Indian population live on reservations in the state, and over 40% are under age 20 years. Of those who live off the reservation, a majority continue to live in counties near the reservation or in the nearest metropolitan county (Grand Forks and Bismarck predominately; Figure 5.2, Table 5.1).²

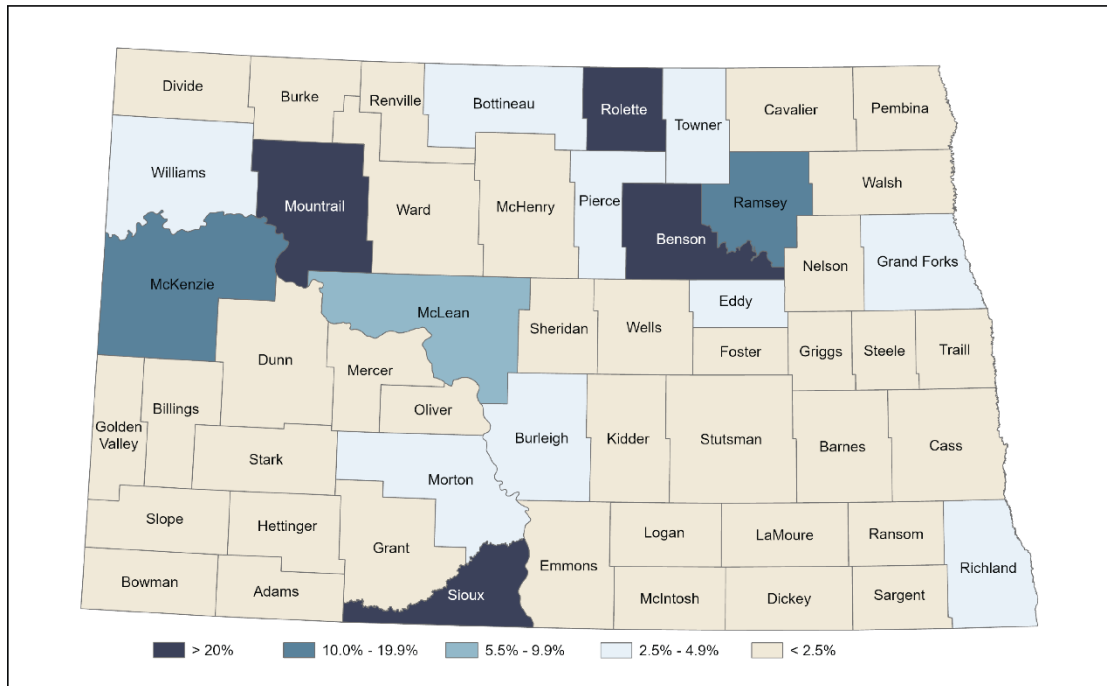


Figure 5.2. Percent of American Indian population by county in North Dakota, 2022.³

**Table 5.1
Membership, population, and land area of Tribal Nations in North Dakota, 2024.²**

Tribal Nation	Enrolled Members	Population on the Reservation	Land Area in ND
Turtle Mountain Band of Chippewa	30,722	9,710	72 sq. miles
Three Affiliated - MHA Nation	10,400	5,915	~1 million acres
Standing Rock Sioux Tribe	15,568	15,000	3,625 sq. miles
Spirit Lake Nation	7,256	4,500	405 sq. miles
Sisseton Wahpeton Oyate Nation	13,777	15,000	108,589 acres

SOCIAL DETERMINANTS OF HEALTH AND HISTORICAL TRAUMA

A multitude of factors impact the overall health and well-being of American Indians in North Dakota. Rural and remote areas are often more isolated, lacking healthcare infrastructure and capacity, and American Indian individuals may sometimes delay seeking care in part because they do not trust non-Tribal organizations.^{4, 5} Other factors that influence treatment include transportation, level of social support, perceived provider effectiveness, type of treatment setting, geographic location, and tribal affiliation.⁴ Although more than 70% of American Indians live in urban areas nationally, many maintain strong ties to their home reservations. Many make

frequent visits and move back and forth from cities to Tribal lands, and often delay seeking healthcare until they are back home. According to the Office of Indian Affairs in North Dakota, 19,963 or 54.6% of American Indians in the state live on reservations.⁵ Despite demonstrating resilience, American Indians in the state still face persistent health disparities and systemic violence, with ongoing social, economic, and environmental factors exacerbating existing health inequities. There are also unique social and economic disparities that have historically impacted the Tribal populations that include, but are not limited to, colonization, forced migration, land loss, and cultural devastation.⁶

Additionally, these unique Indigenous social determinants impact American Indian populations in both positive and negative ways, such as:^{4, 7, 8}

- Self-determination (autonomy): Tribal peoples having greater control over their lives correlates with improved health outcomes.
- Access and utilization of traditional Land: The connection to Land profoundly influences health. When traditional economies and governance structures are weakened, there are impacts to individual health.⁸ Conversely, research has identified access and cultural connection to Land as determinants of positive physical and emotional health.^{9, 10, 11}
- Historical trauma: Collective emotional wounds across generations, stemming from historically traumatic events such as genocide, assimilation, and the purposeful destruction of lands, languages, and traditional practices, continue to affect American Indian health today.
- Race-based discrimination and social exclusion: Mistrust of non-native healthcare professionals, linked to discrimination, contributes to adverse health outcomes.
- Culture and cultural continuity: Disregard for American Indian cultural beliefs regarding health and healing affects overall health and American Indian communities' trust in healthcare providers. Growing research connects positive health outcomes for American Indian people when their culture is acknowledged or centered in health care practice.^{12, 13, 14}

Historical Trauma

The Substance Abuse and Mental Health Services Administration (SAMHSA) has detailed a timeline of significant events in Native American history that is intended to assist behavioral health and primary care providers in better understanding the lived experiences of their patients.⁴ This table, though it does not include all events, is available [from SAMHSA](#). The overview of historical events presented in that table demonstrates more than 500 years of numerous traumatic events connected to European colonization. American Indian and Alaska Native peoples in North Dakota continue to experience repercussions from these events. Clinicians and researchers identify this experience in which past traumatic events affect one's present day functioning as historical trauma.

Protective Factors

Culture and language have been recognized as protective factors for health outcomes such as heart disease, cancer, and diabetes.⁴ Public health measures should aim to understand American Indian cultures to best serve their health needs and to effectively offer preventive

measures to guard against negative health outcomes and early mortality. American Indian cultures are the product of shared history, and they encompass values, beliefs, customs, traditions, institutions, relationships, and language.^{4,7} In addition to a diverse culture among American Indians, there are over 150 unique languages spoken among American Indians and Alaska Natives in the U.S., with many tribes having their own distinct customs and beliefs.¹⁵

It is important to create community solutions that make healthcare accessible, culturally safe and relevant to the needs of the community to ensure that proposed solutions work effectively. Providers and administrators should work to understand the importance of historical trauma, holistic health, the role of culture and cultural identity, sovereignty, the significance of community, the value of cultural awareness, the importance of providing culturally responsive services, the significance of environment, and respecting that there are many paths to healing.⁴ Providers, administrators and decisionmakers who support and help American Indians maintain their ties to their native culture can help prevent and address a multitude of health related conditions.⁴ Due to historical and political impacts, many American Indians are working to reconnect to their communities and traditional healing practices by:

- Embracing and learning more about their Indigenous roots
- Getting back to their culture and traditions and learning traditional practices
- Taking part in community activities and events that reflect their culture
- Studying their native language, arts, history and the current issues affecting their community⁴

There are a multitude of influences and experiences that apply to Indigenous populations because of the unique historical, social and political factors impacting American Indians today. It is important for decisionmakers to understand and address the impacts of historical trauma, the social determinants of health and the unique Indigenous determinants of health. It is also important for decisionmakers to have an understanding of the health, economic and social disparities that continue to exacerbate existing health inequities. Understanding these factors and impacts is crucial for developing effective strategies to improve the health and well-being of American Indian populations, particularly American Indians living in rural tribal regions of North Dakota. By working to prevent and address the health, economic and social disparities impacting health inequities experienced by American Indians in North Dakota, decisionmakers can work towards creating and streamlining an approach that is responsive to the overall needs and results in American Indians in North Dakota having access to much needed support and financial resources.

HEALTH STATUS AND DISPARITIES IN NORTH DAKOTA FOR AMERICAN INDIANS

American Indian populations in North Dakota experience health outcome disparities including but not limited to, diabetes, cancer, substance use disorder, heart disease, and unintentional injuries.¹⁶ According to the 2022 Behavioral Risk Factor Surveillance System, American Indian adults are more likely than non-Native adults in North Dakota to report their general health as fair or poor (19% American Indian compared to 14% non-Native). See Table 5.2 for other self-reported health disparities experienced by American Indians in North Dakota when compared with non-Natives.¹⁷

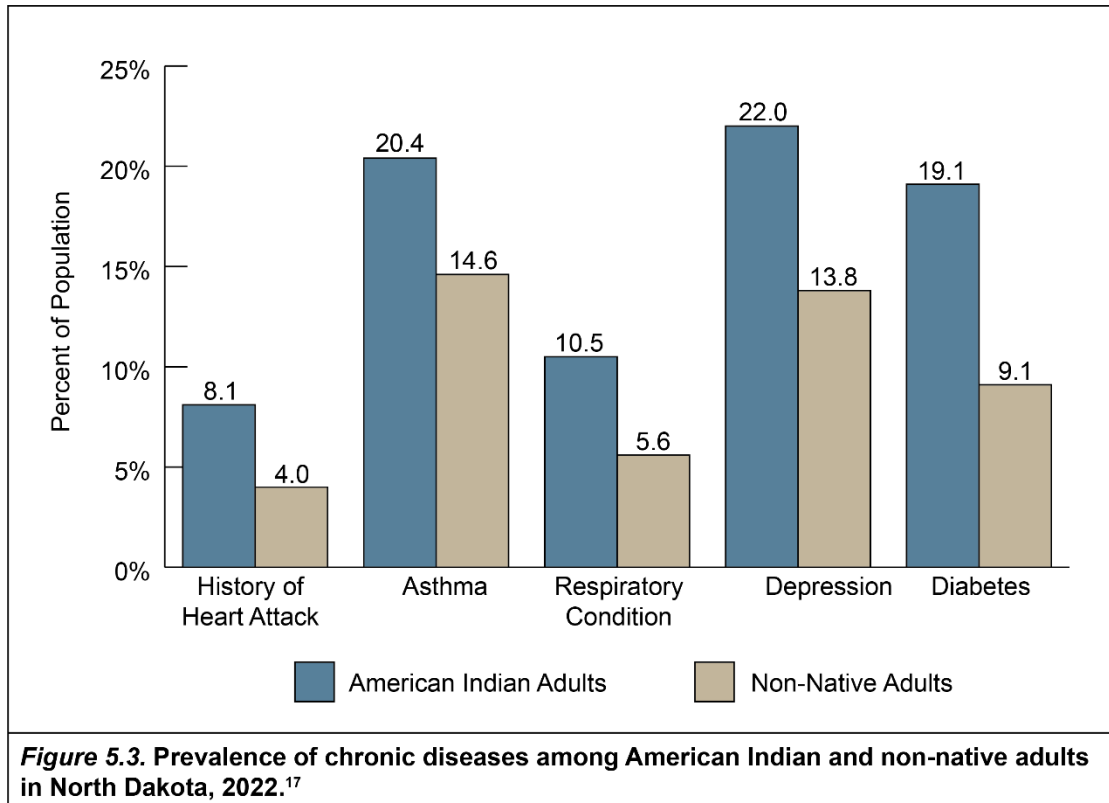
Table 5.2**Health disparities as self-reported by North Dakota adults in the Behavioral Risk Factor Surveillance System by race, 2022.¹⁷**

Health Concern	American Indian	Non-Native
Physical health was not good for 8 or more days in the last 30 days	16.2%	13.5%
Mental health was not good for 8 or more days in the last 30 days	27.2%	17.7%
Does not have a personal healthcare provider	28.1%	17.4%
Had a time in the last year when needed to see a doctor but did not because could not afford it	13.0%	8.4%
Less than 7 hours of sleep a night	51.3%	32.5%
Last dental visit was 5 or more years ago	23.2%	9.8%
Ever had a heart attack	8.1%	4.0%
Ever had a stroke	3.3%	2.9%
Ever told you had asthma	20.4%	14.6%
Ever told you had COPD, emphysema, or chronic bronchitis	10.5%	5.6%
Ever told you had a depressive disorder	25.0%	21.6%
Ever told you had diabetes	19.1%	9.0%

Chronic Disease

In 2018, the Centers for Disease Control and Prevention reported that most American Indian and Alaska Native Elders had been diagnosed with at least one of ten possible chronic diseases (89.7%). A large proportion (69.8%) reported two or more chronic diseases and just under half (45.2%) had three or more. The most common among American Indian and Alaska Native Elders were (and continue to be) high blood pressure, diabetes, and arthritis.^{18, 19} The incidence of chronic diseases are not only reported disparately among American Indian and Alaska Native Elders; American Indian and Alaska Native adults (ages 18 and older) continue to die at higher rates than other Americans from many conditions, including chronic liver disease and cirrhosis, diabetes mellitus, and chronic lower respiratory diseases.¹⁹ In North Dakota, the 2022 core variables, as identified in the Behavioral Risk Factor Surveillance System (BRFSS), found that, 8.1% of American Indians in North Dakota had a reported history of heart attack (myocardial infarction) compared to 4.0% of non-Natives (Figure 5.3).¹⁷ Similarly in North Dakota:

- 20.4% of American Indians have asthma compared with 14.6% of non-Native adults
- 10.5% of American Indians have chronic obstructive pulmonary disease (COPD), emphysema, or chronic bronchitis compared with 5.6% of non-Native adults
- 22% of American Indians report depressive disorder (including depression, major depression, dysthymia, or minor depression) compared with 13.8% of non-Native adults
- 19.1% of American Indians have diabetes compared with 9.1% of non-Native adults

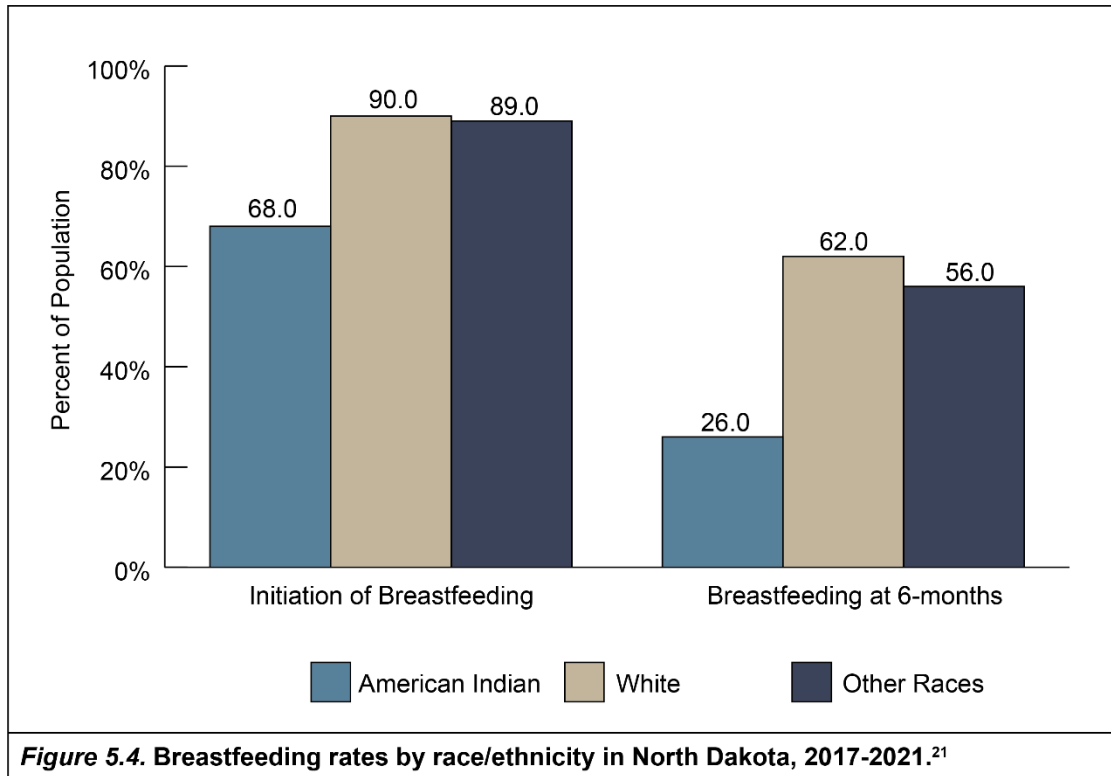


Pregnancy and Infant Health

The state of North Dakota has significant and persistent racial/ethnic disparities in Maternal and Child Health (MCH) outcomes, with American Indian communities being the priority population for reducing disparities in MCH outcomes.

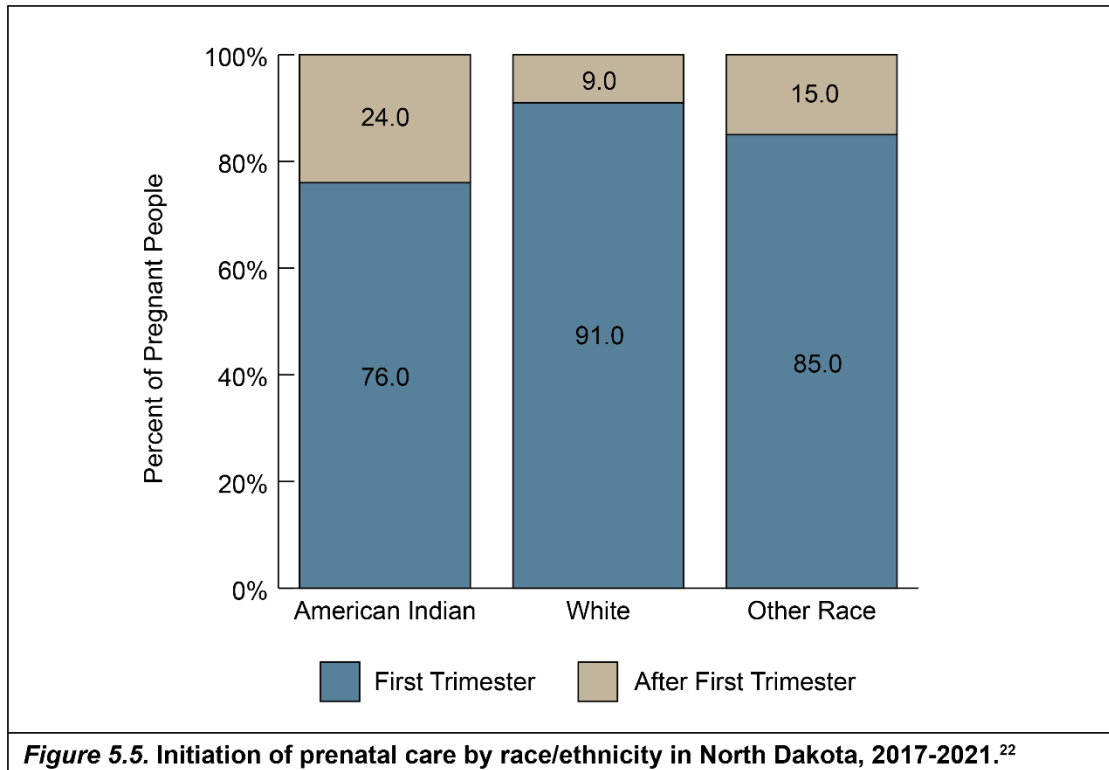
Breastfeeding

The North Dakota MCH Priorities Report (2024) highlights that the American Academy of Pediatrics (AAP) recommends all infants (including premature and sick newborns) exclusively breastfeed for at least six months. This recommendation is based on the finding that human milk supports optimal infant growth and development by providing all required nutrients during that time.²⁰ One of the North Dakota MCH Priorities includes increasing the rates of breastfeeding initiation and exclusive breastfeeding through six months with an emphasis on the American Indian population.²⁰ According to 2017-2021 North Dakota Pregnancy Risk Assessment Monitoring System (ND PRAMS) data, 68% of American Indian mothers initiated breastfeeding, approximately 20% lower than other women in the state (Figure 5.4).²¹ At 6-months postpartum, American Indian women are half as likely to report any breastfeeding (exclusive breastfeeding or mixed feeding) as women of other racial/ethnic identities (Figure 5.4).²¹



Prenatal Care Access

American Indian populations have lower rates of initiation of prenatal care in the first trimester than other racial/ethnic groups in North Dakota (Figure 5.5) and are the only racial/ethnic group below the Healthy People 2030 goal (80.5% of all pregnancies) for early and adequate prenatal care.²² This disparity is persistent, with American Indian populations having 15-20% lower rates of early prenatal care access compared to White populations for much of the past 30 years.²³ Key drivers of disparities in obtaining prenatal care need to be further addressed, as American Indian women report higher rates of transportation issues, lack of childcare, and lack of timely appointments as reasons they were not able to initiate prenatal care in the first trimester.²⁴



Perinatal Mental Health

Perinatal mental health conditions are a contributing factor in approximately one-third of maternal mortality cases in North Dakota. Data regarding determinants of postpartum depression among American Indian populations are sparse, yet 20% of American Indian women experience postpartum depression, compared to 19% of women of other racial identities, and 10% of White women.²⁵

Mental Health and Substance Misuse

Mental health and substance misuse treatment of American Indian and Alaska Native people requires a tailored approach, recognizing the unique cultural values and practices of each tribal nation. Defining wellness and prescribing suitable therapies for mental healthcare becomes challenging in view of the diversity among American Indian and Alaska Native people. There is no universally accepted definition of “good mental health;” it is generally characterized as a state of emotional, psychological, and social well-being that positively impacts how people deal with stress and function productively in society.²⁶

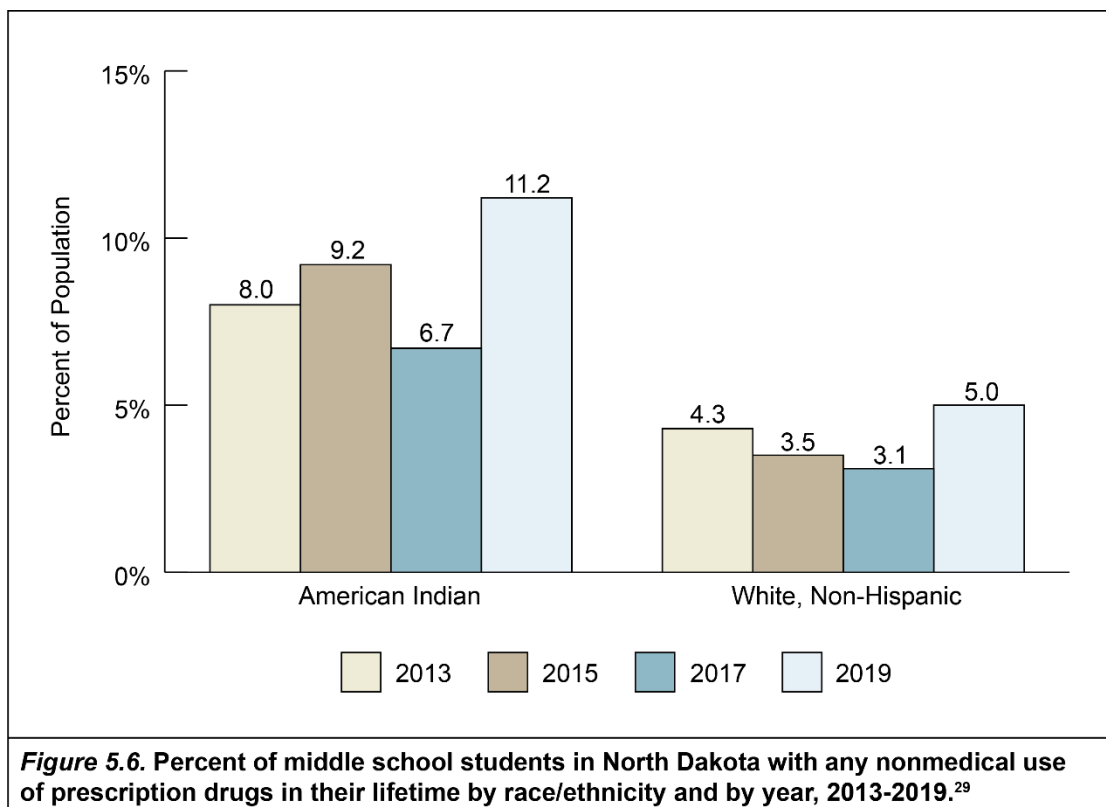
American Indian Mental Health and Substance Use Disparities in North Dakota

Research indicates that American Indian populations experience disproportionately high rates of mental health issues, including suicide, post-traumatic stress disorder, violence, and substance use disorders. Consequently, American Indian individuals report serious psychological distress at a rate 2.5 times higher than that of the general population within a one-month period.²⁷ According to 2022 BRFSS data, 21.7% of American Indian respondents in North Dakota reported 14 or more days per month when they considered their mental state not good.¹⁷ There

is a correlation between mental and behavioral health concerns and substance misuse. For example, studies reveal a heightened propensity for substance misuse among individuals diagnosed with clinical depression or experiencing depressive symptoms, particularly within American Indian and Alaska Native communities.²⁸ Also reported in the BRFSS data for 2019, 8.7% of American Indian adults reported excess drinking compared to 6.3% of non-American Indian adults in the U.S., and 7.7% of North Dakota adults who are non-Hispanic White.¹⁷ The North Dakota State Epidemiological Outcomes Workgroup released a North Dakota Behavioral Health Epidemiological Profile in 2022. A snapshot of data relating to the health outcomes of American Indians in North Dakota include:²⁹

- The percentage of American Indian individuals admitting to substance abuse treatment for alcohol from 2015 to 2018 (17.8% - 21.0%) was disproportionately high considering they make up only 5.7% of the population of North Dakota.
- When examining substance abuse treatment admissions for alcohol with a secondary drug among individuals 12 years and older, the percentage of American Indian individuals make up the second highest group (22.9% - 32.5%).
- There has been a growth in the percentage of middle school students in North Dakota who are American Indian and report nonmedical use of prescription drugs (Figure 5.6).

In 2021, American Indian and Alaska Native males and females had the highest suicide rates compared to other demographic groups. Between 2020 and 2021, rates of suicide rose by 17% for American Indian and Alaska Native males (from 36.4 deaths per 100,000 standard population to 42.6).³⁰ In 2022, the CDC reported that 21.7% of American Indian and Alaska Native respondents in North Dakota reported 14 or more days per month when they considered their mental state not good.³¹

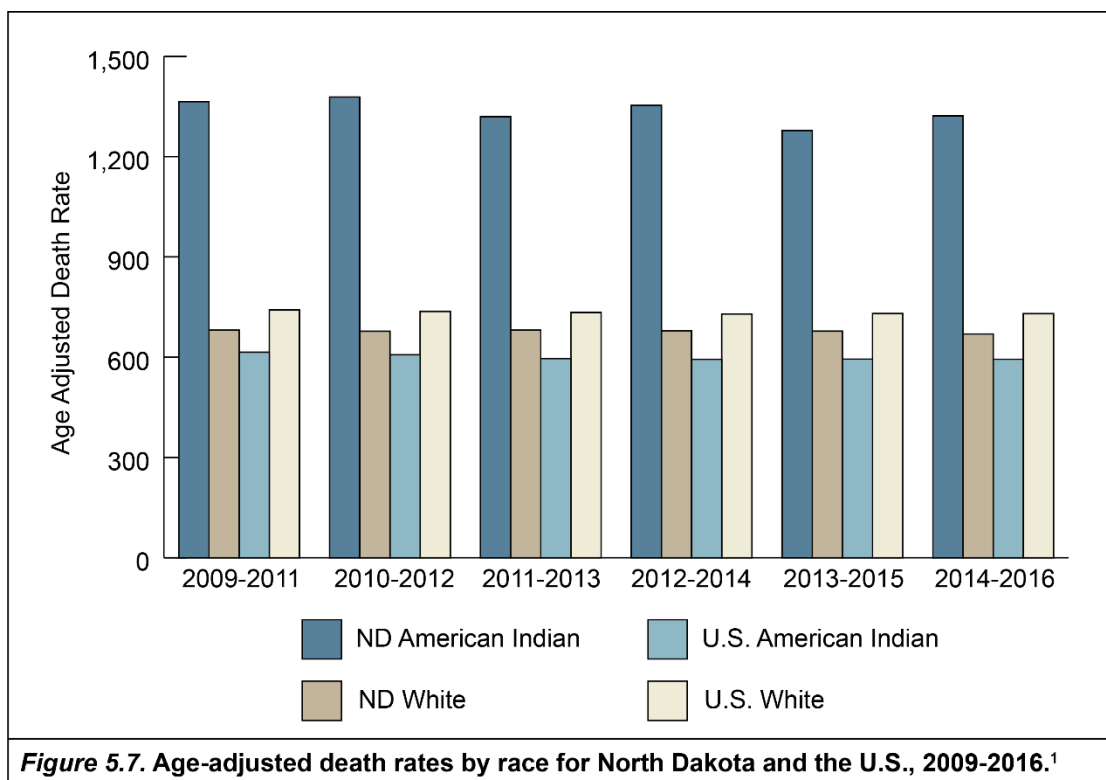


Promoting Positive Mental Health and Healing Among American Indians in North Dakota

Views on substance use and mental disorders among American Indian and Alaska Native populations differ significantly from mainstream perspectives. Rather than viewing them as diseases or moral failings, many see them as a symptom of imbalance or disharmony within oneself and their relationship with the world. Therefore, healing and treatment methods need to include holistic aspects of spiritual, emotional, physical, social, and cognitive healing.⁴ For generations, American Indian and Alaska Native communities have effectively utilized traditional ceremonial practices to foster resilience and healing from historical traumas. Such traditional ceremonies include sweat lodge rituals, drumming sessions, talking circles, naming ceremonies, and other spiritual practices observed by tribal nations. There is a growing trend towards interventions that integrate traditional ceremonies in conjunction with clinical methods that are typically employed by Western science to treat substance misuse.³² When American Indian and Alaska Native people connect with their culture, language, traditions, and heritage, it serves as a protective factor for mental health issues and substance misuse, helping them develop strength and resilience by increasing their cultural identity.²⁸ However, substance use program administrators often face challenges when integrating culture with clinical care and these healthcare services often are excluded from reimbursement by public and private insurers.³² Most recently, in October 2024, the Centers for Medicare and Medicaid Services approved 1115 waivers in the states of California, Arizona, New Mexico, and Oregon. These waivers allow the four states' Medicaid agencies to cover Traditional Healing when treating mental health concerns with American Indian and Alaska Native people.³³

Causes of Death Among American Indians in North Dakota

American Indians' median age of death in North Dakota is 57 years for males and females combined, which is on average 20 years younger than other races in the state.¹⁶ The 10 leading causes of death (unadjusted for age) among American Indians in North Dakota from 2010 to 2019 were diseases of the heart, cancer, accidents, cirrhosis, diabetes, COPD, suicide, cerebral vascular disease, influenza and pneumonia, and septicemia.³⁴ From 2017-2020, premature deaths (deaths prior to age 65) accounted for 57% of American Indian deaths in North Dakota compared to the premature death rate of other races (21%) in the state.¹⁶ Data show that the age-adjusted death rate for all North Dakotans has steadily declined since 1979; however mortality remains higher for American Indians. American Indians in North Dakota experience the highest age-adjusted mortality rate of any state, with an age-adjusted death rate of 1,322 per 100,000 people for the years 2014-2016 and has remained consistently high between 2009-2016 (Figure 5.7). This is nearly double the age-adjusted death rate of 669.4 per 100,000 among White residents in North Dakota during the same time period.¹

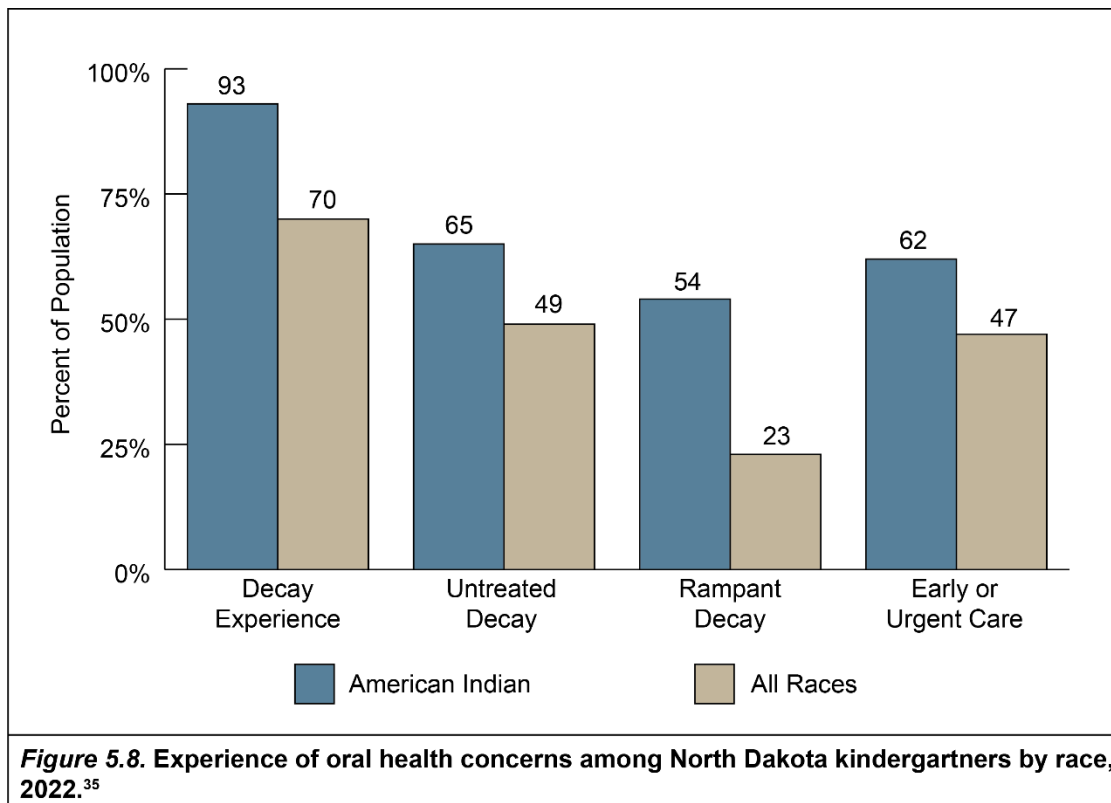


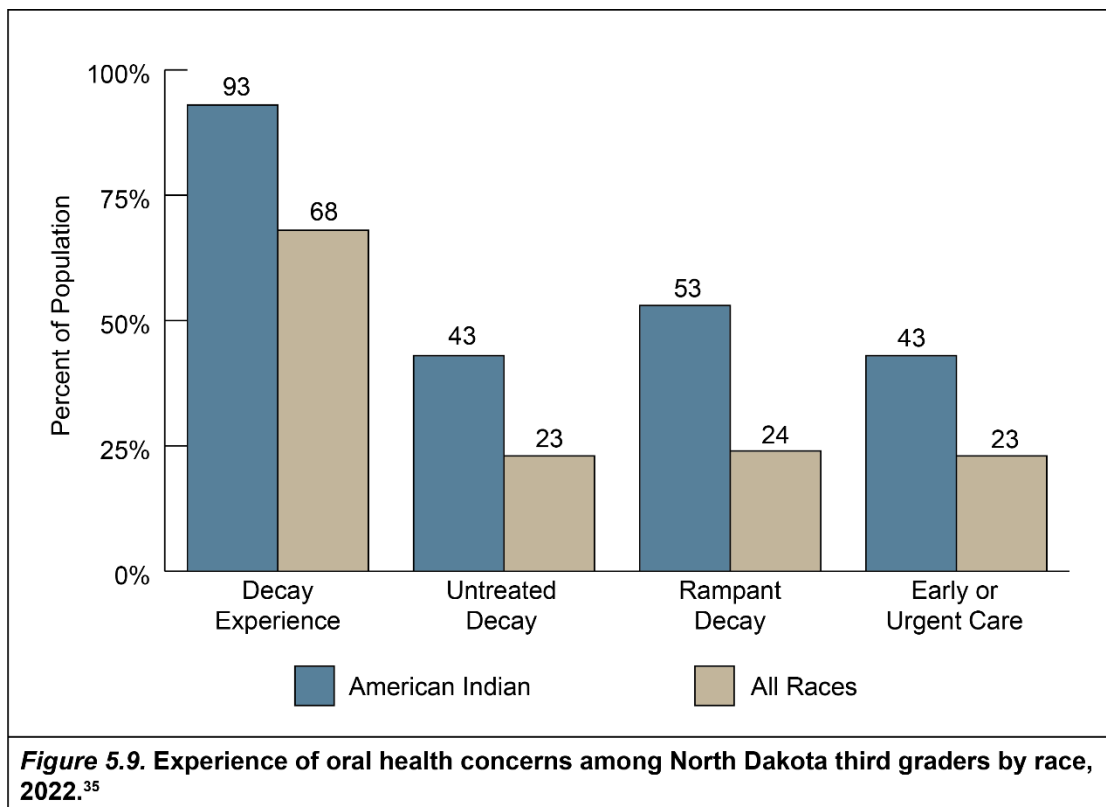
Oral Health Status in North Dakota

Health of the mouth is directly related to overall health. Oral diseases like tooth decay (cavities) and periodontal (gum) disease affect North Dakotans of all backgrounds. They are also associated with many serious health problems like type 2 diabetes, heart disease, lung disease, stroke, dementia, low birth weight, and pre-term birth. Oral health also is linked to mental health. Promoting good habits (brushing teeth twice a day and flossing) and supporting oral health are essential components of advancing the overall health and wellbeing of all North Dakotans.

Countless providers, dental teams, local public health units, clinicians, agencies, and programs in the state are doing important work to ensure a healthy North Dakota. However, there still are many opportunities to address the burden of poor oral health for the individual, the community, and the state, especially as it relates to the oral health status of American Indian populations. A snapshot of those needs, taken from the report on oral health in North Dakota, include:³⁵

- Tooth pain causes more frequent emergency room visits. American Indians experience three times as many emergency visits for tooth pain compared to those who are non-Hispanic White in North Dakota.
- More than two times as many American Indian kindergartners have rampant tooth decay compared to other kindergartners in North Dakota (Figure 5.8).
- Nine in ten American Indian kindergartners have experienced tooth decay.
- American Indian kindergartners are 30% more likely to have untreated decay compared to their non-American Indian peers.
- Nine in ten American Indian third graders have experienced tooth decay (Figure 5.9).



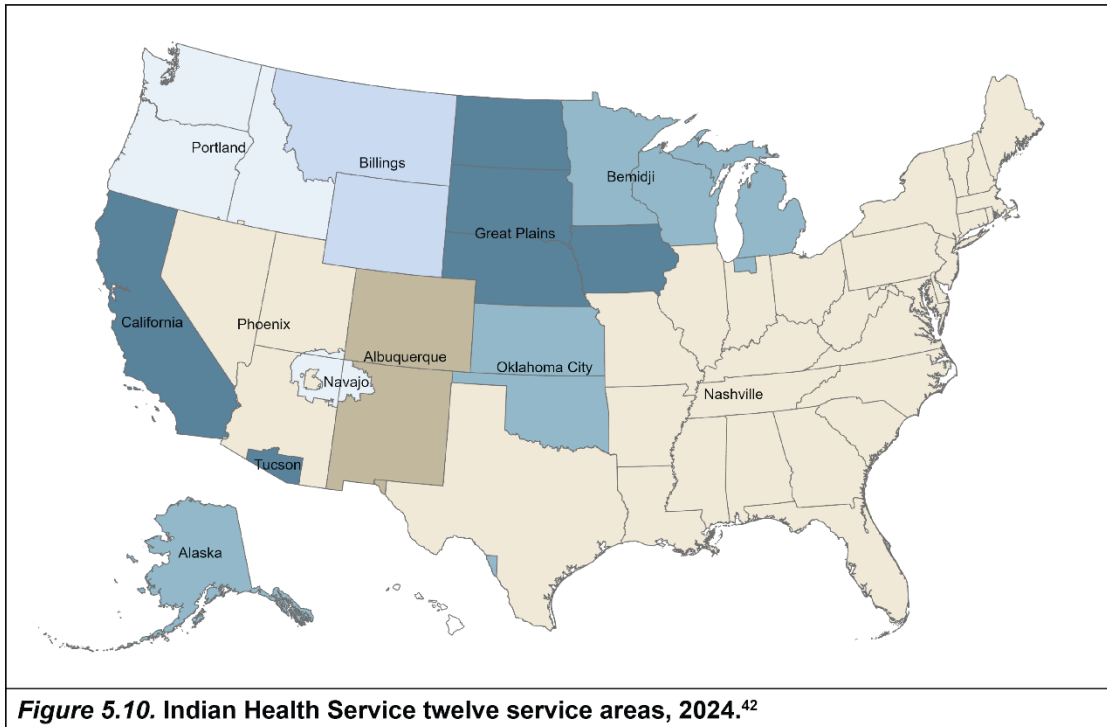


HEALTHCARE ACCESS AND UTILIZATION: INDIAN HEALTH SERVICE (IHS)

In 2020, the number of people who identified as American Indian and Alaska Native nearly doubled from 5.2 million in 2010, to 9.7 million, which now accounts for 2.9% of all people living in the U.S.³⁶ These individuals are spread out across the U.S. both on and off reservations. Due to federal practices of assimilation and removal, a vast majority of American Indian and Alaska Natives live in urban areas.³⁷ In 2020, the 10 states with the largest percentage of American Indian and Alaska Native people were Alaska, Oklahoma, New Mexico, South Dakota, Montana, North Dakota, Arizona, and Wyoming.³⁸ As has been indicated, these populations continue to experience persistent health disparities like higher rates of chronic disease.³⁹ Despite the fact that many American Indians and Alaska Natives are from working families, there are high rates of poverty that likely may be attributed to historical structural barriers and the ongoing effects of colonization.⁴⁰ A 2021 briefing showed that despite a drop in the uninsurance rate, American Indians and Alaska Natives still have the highest uninsurance rate (approximately 28%) among all populations.⁴¹

The Indian Health Service (IHS) is the main provider of primary healthcare and disease prevention services to over 2.7 million American Indians and Alaska Natives. The IHS is comprised of over 600 hospitals, clinics, and health stations on or near Indian reservations in 37 states across the U.S.⁴² The IHS consists of a so-called I/T/U system of care, meaning it provides medical and some limited dental services through the IHS (federally operated), through Tribal 638 compacts and contracts (Tribally operated), and through Urban Indian Health Programs. Additional services not provided directly at IHS, such as specialty care, may be

attained through the Purchased/Referred Care (PRC) program, but this program has limited funding.⁴³ A listing of the IHS Service Areas is included in Figure 5.10.



Access to the IHS differs from the general population as it is not an insurance program. Rather it is a federal treaty obligation to provide healthcare to Tribal Nations that maintain a nation-to-nation relationship with the U.S. Despite legal authority and federal commitment to address health disparities for citizens of Tribal Nations, the IHS continues to be underfunded, operating at approximately 59% of calculated costs.⁴⁴ Among per capita expenditures, IHS spending was only \$4,078 per user compared to a national average of \$9,726 per person in 2017.⁴⁵ IHS is a “payer of last resort” meaning it will first bill insurance before using funds appropriated to IHS by Congress each year.⁴⁶ Among third-party revenue at IHS, Medicaid represents the largest share with 62% of its \$1.3 billion coming from Medicaid in 2017.⁴⁰

Medicaid is the largest single health insurance program in the United States, covering millions of the poorest individuals and families in the nation.⁴⁷ Medicaid provides coverage to over one in four nonelderly (< age 65) American Indian and Alaska Natives that assists in filling gaps in employer-based insurance programs and those without insurance.^{38, 40} Medicaid enrollment is determined by federal law that requires states to cover certain individuals, including low-income families, qualified pregnant women and children, and individuals with disabilities. Low-income criteria vary by state; however the Affordable Care Act of 2010 (ACA) extended eligibility to at least 133% of the federal poverty level (FPL) in every state.⁴⁸ The ACA created the opportunity for states to expand coverage to nearly all low-income Americans under the age of 65 up to 138% of the FPL.⁴⁰ In North Dakota, Medicaid coverage among American Indians and Alaska Natives increased from approximately 12,000 (28%) in 2012 to 17,000 (34%) in 2017 as a result of Medicaid expansion.⁴⁹

Medicaid expenditures typically are shared between the state and federal government at various Federal Medical Assistance Percentage (FMAP) rates that have a statutory minimum of 50%.⁵⁰ The Medicaid expansion program anticipated and advocated that the federal government would cover most costs. It did so by assuming that spending and enrollment figures would save money or offset costs such as uncompensated care and increased economic activity. The program worked to streamline the enrollment process allowing multiple ways to enroll, a single application for multiple programs, electronic data to confirm eligibility, and a real-time determination of eligibility.⁵¹ As of 2021, 38 states and Washington, D.C., have accepted this infusion of federal funding to expand Medicaid.⁵²

Medicaid is the largest source of third-party revenue for IHS, since the federal government covers 100% of Medicaid expenditures for American Indian and Alaska Native enrollees who seek care through IHS or a Tribal facility.⁴⁰ If Medicaid expansion were adopted in the remaining non-expansion states, approximately 55,000 more uninsured non-elderly American Indian and Alaska Native adults could be enrolled.⁴¹ Enrollment in Medicaid allows American Indians and Alaska Native patients the ability to access more services other than just those provided via IHS.

Healthcare Professionals Serving American Indian People

Despite the focus of IHS and the growing number of people identifying as American Indian/Alaska Native, one of the most pressing challenges in Indian Country is a shortage of healthcare professionals. A 2018 report showed that only 0.6% of the 727,398 active physicians and 0.5% of the 174,570 total full-time faculty members at U.S. medical schools and teaching hospitals identified themselves as American Indian/Alaska Native.⁵³ These figures translate into low numbers of American Indians/Alaska Natives on the medical student pathway where American Indians/Alaska Natives are underrepresented by more than 60% among applicants and medical school matriculants.⁵⁴ American Indians/Alaska Natives also are underrepresented in other health professions, representing only 0.6% of registered nurses, 0.3% of physical therapists, 0.4% of physician assistants, 0.8% of advanced practice nurses, and 0.6% of medical assistants.⁵⁵⁻⁵⁹ These shortages likely contribute to a lower life expectancy, lower quality of life, and greater incidence of chronic conditions faced by American Indian/Alaska Native persons across Indian Country.^{18, 60, 61} There is a need to address this underrepresentation of American Indian/Alaska Native persons in health professions in an effort to better combat health disparities in communities across Indian Country.

The National Academy of Medicine (formerly known as the Institute of Medicine), the National Institutes of Health, the American Medical Association, and other stakeholders have called for an increase in the representation of underrepresented minorities (URMs) in the health professions, including American Indians/Alaska Natives, as a means to address these health disparities. These calls are based on evidence indicating that American Indians/Alaska Natives and other URMs are more likely to practice in their communities and that racial concordance may increase patient adherence to treatment.⁶²⁻⁶⁵ The Association of American Medical Colleges (AAMC) recognizes that American Indians/Alaska Natives are more likely to practice in rural areas or in medically underserved areas providing healthcare to marginalized communities where there is often a shortage of U.S. healthcare workforce.⁵³

CULTURALLY SENSITIVE HEALTHCARE SERVICES AND PREVENTION

Studies indicate that physician training in providing culturally responsive healthcare can improve patient-centered care by reducing provider bias and improving patient-provider communication, thus increasing patient access to high-quality care.⁶⁶ Culturally responsive healthcare helps to mitigate the consequences of previous negative healthcare encounters that may result in psychological barriers to seeking medical care.⁶⁷ Culturally responsive healthcare thus likely plays an important role in addressing health disparities and enhancing equity. There is a growing trend to also consider cultural sensitivity, a concept related to cultural competence. Cultural sensitivity is a concept that recognizes the ethnic, cultural, social, environmental and historical factors that shape the experiences and living realities of a target population.^{68, 69} Although there isn't a universally accepted standard for delivering culturally sensitive medical education related to American Indian populations, efforts are underway to devise tools for use by American medical schools to assist in aligning their curricula with accreditation standards promulgated by the Liaison Committee on Medical Education.⁶⁶

Department of Indigenous Health

The University of North Dakota's doctoral degree in Indigenous Health, the first of its kind in the United States or Canada, provides students with a deeper understanding of the unique health issues facing Indigenous populations. With its evidence-based approach to public health, the program prepares Indigenous health scholars to join the elite group of forward-thinking, culturally aware experts who are setting new standards in the fight for Indigenous health equity worldwide. Students in this program develop skillsets and proficiencies in research and evaluation methods, policy, and leadership, as well as gain a deeper understanding of the unique health issues facing Indigenous populations. A multitude of job opportunities exist for graduates of the program, including health researcher, health program evaluator, health policy analyst, university or Tribal college faculty, Tribal health director, health program administrator, Indigenous health consultant, non-profit administrator, and public health officer, among numerous other roles.

The Indigenous Health PhD program recently admitted its fifth cohort. Annually, the program admits an average of 14 doctoral students. As of Fall 2024, the PhD in Indigenous Health has matriculated 71 students from the first five cohorts, 57 (80%) of which are currently enrolled in coursework, 10 (14%) have graduated, two (3%) are on temporary leave, one (1%) withdrew due to extenuating circumstances, and one (1%) passed away during the program. To date, the program has retained 97% of the students who have enrolled. Nationally, about 43% of PhD candidates withdraw from their doctoral programs, regardless of race or ethnicity.⁷⁰ Although only in its fifth year, the program boasts high retention rates and has at least 15 students planning to graduate in 2025.

Pilots in Improving Health for American Indians in North Dakota

There are several programs in North Dakota that are striving to promote health equity, as well as a strong American Indian healthcare workforce. Below is a sample of programs and initiatives in the state that serve American Indian populations and promote health equity.

Indians into Medicine (INMED)

The INMED Program at the University of North Dakota is ranked first in the nation for graduating American Indian/Alaska Native physicians. To date, this program has produced 281 American Indian doctors, and 350 additional graduates in other health-related fields. INMED is designed to increase awareness and motivation for health careers among American Indian/Alaska Native students by developing academic programs and recruiting and enrolling students in the various health career programs. INMED provides academic, personal, social, and cultural support for students in grades 7 through graduate studies. Each year, INMED enrolls an average of 100 health, pre-health, and health sciences students in various academic programs. INMED assures that it addresses the needs and concerns of tribal communities in its five-state region through the Tribal Advisory Board (TAB). The tribal governments of all 26 tribes in North Dakota, South Dakota, Nebraska, Montana, and Wyoming appoint representatives to TAB.

Recruitment and Retention of American Indians into Nursing (RAIN)

The Recruitment & Retention of American Indians into Nursing (RAIN) program provides academic support and assistance to American Indian students seeking degrees in nursing, nutrition and dietetics, and social work at the University of North Dakota.

Indians into Psychology Doctoral Education (INPSYDE) Program

The primary goals of the INPSYDE program are to increase the number of American Indians with doctoral degrees in psychology and to simultaneously enhance the cross-cultural understanding and competence of non-Indians about Indian psychology. The INPSYDE program seeks to increase awareness of, interest in, and motivation for training and careers in mental health among Native American students. The program aims to build and maintain bridges between Tribal colleges and the University of North Dakota INPSYDE program. The program recruits American Indian students for undergraduate and graduate study in psychology and provides academic, financial, personal, and cultural support for these students. This program also develops new, and enhances current, culturally relevant courses and field-based experiences in clinical psychology.

Center for Biomedical Research Excellence (CoBRE) Indigenous Trauma and Resilience Research Center (ITRRC)

In 2021, the UND School of Medicine & Health Sciences, Department of Indigenous Health received a \$10 million, five-year award from the National Institute of Health to establish the world's first Indigenous Trauma and Resilience Research Center (ITRRC). The ITRRC delves deeper into the significant disparities faced by American Indians using an Indigenous strength-based approach to address the impact of historical and unresolved trauma on health inequities within the population. The ITRRC promotes the building of Indigenous-led researchers and Indigenous-driven evidence of culturally relevant findings and interventions to improve health outcomes. Completed studies through the ITRRC include Stress and Health in American Indian Pregnancies, Impact of Boarding School on Perceived Stress, Allostatic Load and Resilience, and Historical Trauma and Resilience as a Biological State and its Association with the Effects of the Traditional Indigenous Food Chokeberry.

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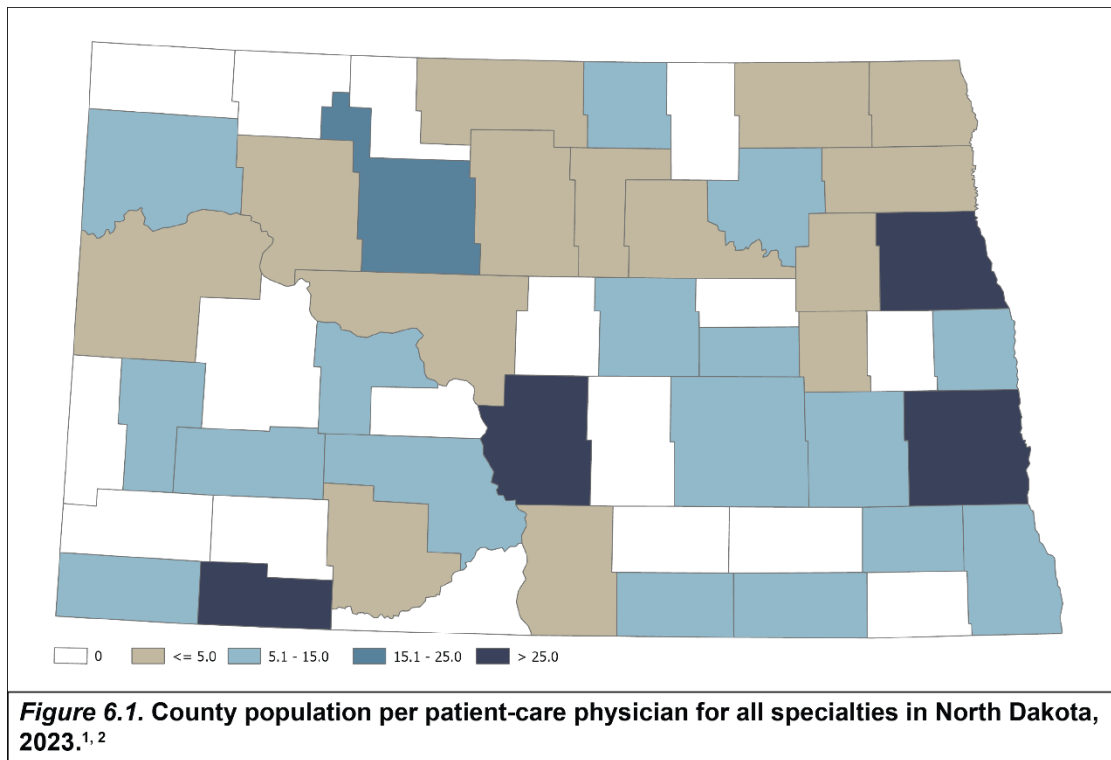
CHAPTER SIX:

**PHYSICIAN WORKFORCE IN NORTH
DAKOTA**

PHYSICIAN DISTRIBUTION IN NORTH DAKOTA

Distribution by Geography

Physician distribution in North Dakota varies significantly by geography, with a higher population-to-physician ratio in rural counties than in counties with larger cities (Figure 6.1). Seventeen of North Dakota's 53 counties, with a combined population of 41,298 (5.3% of North Dakota's population), have no practicing patient-care physicians.



Distribution of North Dakota Physicians Compared to the Upper Midwest and the Nation

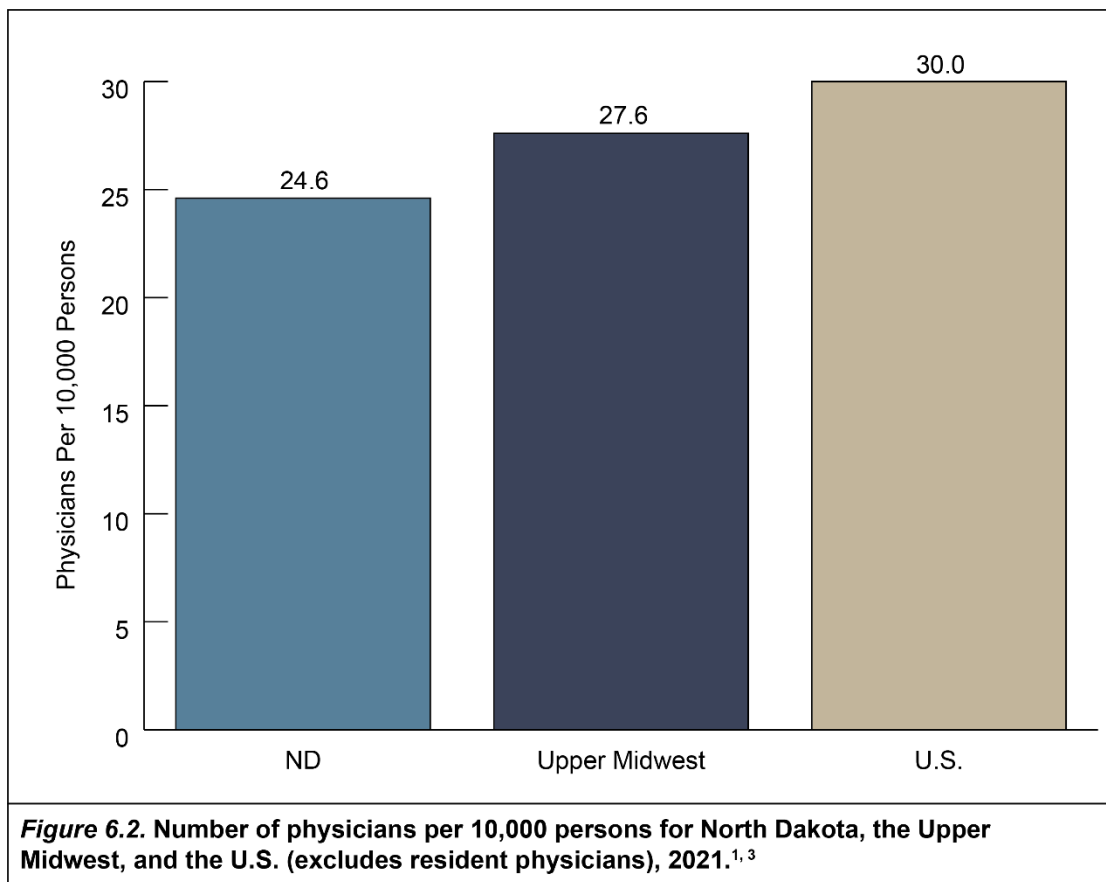
When comparing the availability of physicians to provide healthcare services in North Dakota with regional and national benchmarks, it is important that the comparisons are of similar designations. There are a number of ways to select physicians for analyses, and analyses often are not clear about the criteria applied. The following are examples of the criteria that can be used for analysis: patient care, specialty, resident training status, age, Doctor of Medicine (MD)/Doctor of Osteopathy (DO) status, federal/nonfederal status, practice geography, gender, primary care status, patient-care status, practice type status, medical school of origin, and international medical school status.

“Prior to the full implementation of the Healthcare Workforce Initiative, North Dakota had the lowest number of residency slots per medical school student in the country, and there were significantly fewer residents on a proportional basis than any other state in the nation.”

Differences in employment criteria can result in significant differences in physician counts and in workforce analysis results. Table 6.1 shows the allopathic physicians (MDs) in North Dakota and the United States for the years 1990, 1995, 2000, 2017, 2019, and 2021. This table includes all U.S. MD physicians except for those from U.S. territories. The table shows that across the years, North Dakota has trailed the United States in all physicians per 10,000 persons. However, the disparity between the number of North Dakota physicians per 10,000 persons and the number of U.S. physicians per 10,000 persons has generally remained consistent. Prior to the full implementation of the Healthcare Workforce Initiative, North Dakota had the lowest number of residency slots per medical school student in the country, and there were significantly fewer residents on a proportional basis than any other state in the nation.

Table 6.1
All medical doctors (MDs) per 10,000 persons in North Dakota and the U.S. by year.^{1, 3, 4}

	ND	U.S.	% ND of U.S.
1990	19.5	24.2	80.6
1995	23.0	27.0	85.2
2000	25.0	28.4	88.0
2017	24.3	29.1	83.5
2019	24.9	29.6	84.1
2021	24.6	29.7	82.8



It often is challenging to reconcile differences between data from different sources. Thus, exact numbers, ratios, and text can vary somewhat from one place in the *Eighth Report* to another, though the differences are not significant. To minimize differences, data for this *Report* have been carefully gathered from the same source in an effort to be sure that the comparisons are as accurate as possible.

In 2023, North Dakota had 1,649 practicing patient-care physicians. Of those physicians, 50% graduated from the University of North Dakota (UND) School of Medicine and Health Sciences (SMHS) or from a UND residency program, or both.² The difference in 2021 physician-to-population ratios per 10,000 persons is illustrated in Figure 6.2. The ratio for North Dakota is 18.0% lower than for the United States as a whole and 10.9% lower than in the comparative Upper Midwest states (Iowa, Minnesota, Montana, Nebraska, South Dakota, Wisconsin, and Wyoming).

Distribution by Gender

North Dakota had fewer female physicians per 10,000 persons than both the Midwest and United States during 2021 (Table 6.2). Although not as dramatic, the ratio of male physicians per 10,000 is also lower than both the Upper Midwest and the United States. The UND SMHS, like most medical schools in the country, currently graduates about equal numbers of men and women, so it is anticipated that the relative number of female physicians in North Dakota will increase over time.

Table 6.2
Gender of physicians per 10,000 persons in North Dakota with comparisons, 2021.^{1, 3, 5}

	ND	Upper Midwest	U.S.
Women	8.3	10.3	11.5
Metropolitan	13.1	13.3	12.7
Micropolitan	4.7	5.4	3.9
Rural	2.1	2.7	2.1
Men	16.3	17.3	18.2
Metropolitan	25.5	21.6	19.7
Micropolitan	10.5	11.4	9.3
Rural	3.8	5.5	4.7

The overall ratio of female physicians in North Dakota in metropolitan areas (per 10,000 persons) is higher than the ratio for the United States as a whole but is slightly lower than the Upper Midwest ratio. The North Dakota male physicians per 10,000 persons ratio is higher in metropolitan counties than in the Upper Midwest and all U.S. counties. Regardless of gender, the ratio of physicians in rural areas is equal to or below that of the Upper Midwest and the nation.

“The deficit of North Dakota physicians is in rural areas where we fall behind both the Upper Midwest and the nation in the number of physicians per 10,000 persons.”

Distribution by Geography

Figure 6.3 shows that North Dakota has a higher ratio of physicians (per 10,000) in metropolitan areas than either the Upper Midwest or the nation. The ratio of North Dakota physicians in micropolitan areas is lower than the Upper Midwest but higher than the nation. The deficit of North Dakota physicians is in rural areas where we fall behind both the Upper Midwest and the nation in the number of physicians per 10,000 persons.

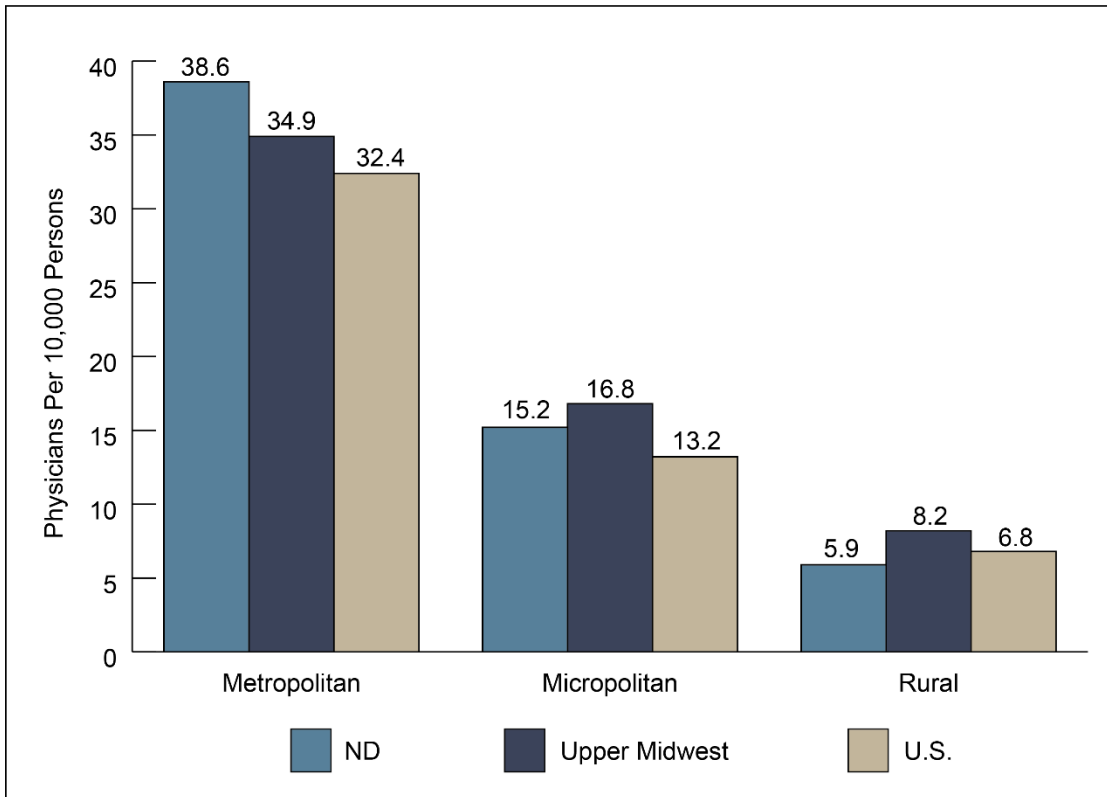


Figure 6.3. Physicians per 10,000 persons for North Dakota with comparisons, 2021.^{1, 3, 5}

Table 6.3 shows the percent difference between the rate (per 10,000 persons) of office-based physicians in North Dakota, the Upper Midwest, and the United States as a whole. North Dakota has 17.0% fewer office-based physicians (per 10,000 persons) than the United States and 11.5% fewer office-based physicians than the Upper Midwest overall. Compared to Upper Midwest and U.S. rates, North Dakota has higher rates for metropolitan counties and lower rates in rural counties.

Table 6.3
Physician primary practice per 10,000 persons in North Dakota with comparisons, 2021.^{1, 3, 5}

	ND	Upper Midwest	% Difference	U.S.	% Difference
Office	15.6	17.5	-11.5	18.5	-17.0
Metropolitan	23.8	21.4	10.6	20.0	17.4
Micropolitan	10.4	12.3	-16.7	9.7	7.0
Rural	4.4	6.2	-34.0	5.1	-14.7
Hospital	7.1	7.5	-5.5	7.6	-6.8
Metropolitan	11.7	9.9	16.7	8.4	32.8
Micropolitan	3.5	3.6	-2.8	2.8	22.2
Rural	1.3	1.6	-20.7	1.4	-7.4

Negative numbers indicate that the ND rate is below that of the Midwest or U.S. rate. Positive numbers indicate that the ND rate is above the Midwest or U.S. rate.

Regarding hospital-based physicians, North Dakota metropolitan counties have more physicians per 10,000 persons than the Upper Midwest and United States by 16.7% and 32.8%, respectively. For micropolitan areas, North Dakota has fewer hospital-based physicians than the Upper Midwest by 2.8% but more than the nation as a whole by 22.2%. In rural counties, North Dakota has 20.7% fewer physicians than the Upper Midwest and 7.4% fewer physicians than the United States. The data indicate that North Dakota physicians in metropolitan counties are more likely to be in a hospital-based practice than the comparison groups.

Distribution by Age

Figure 6.4 shows that the North Dakota physician age structure is similar to that of the Upper Midwest states and U.S. comparison groups, though North Dakota's physicians are a little less likely to be 75 and older. It is important to note that North Dakota has the highest percentage of physicians in the 35 to 44 age group, which would suggest that they will be in the physician workforce for a good number of years. Figure 6.5 shows that North Dakota physicians are slightly less likely to be female than the Upper Midwest and U.S. The state has a greater percentage of international medical graduate (IMG) physicians and physicians working in hospital-based practices compared to the Upper Midwest and the U.S.

“North Dakota has the highest percentage of physicians in the 35 to 44 age group, which would suggest that they will be in the physician workforce for a good number of years.”

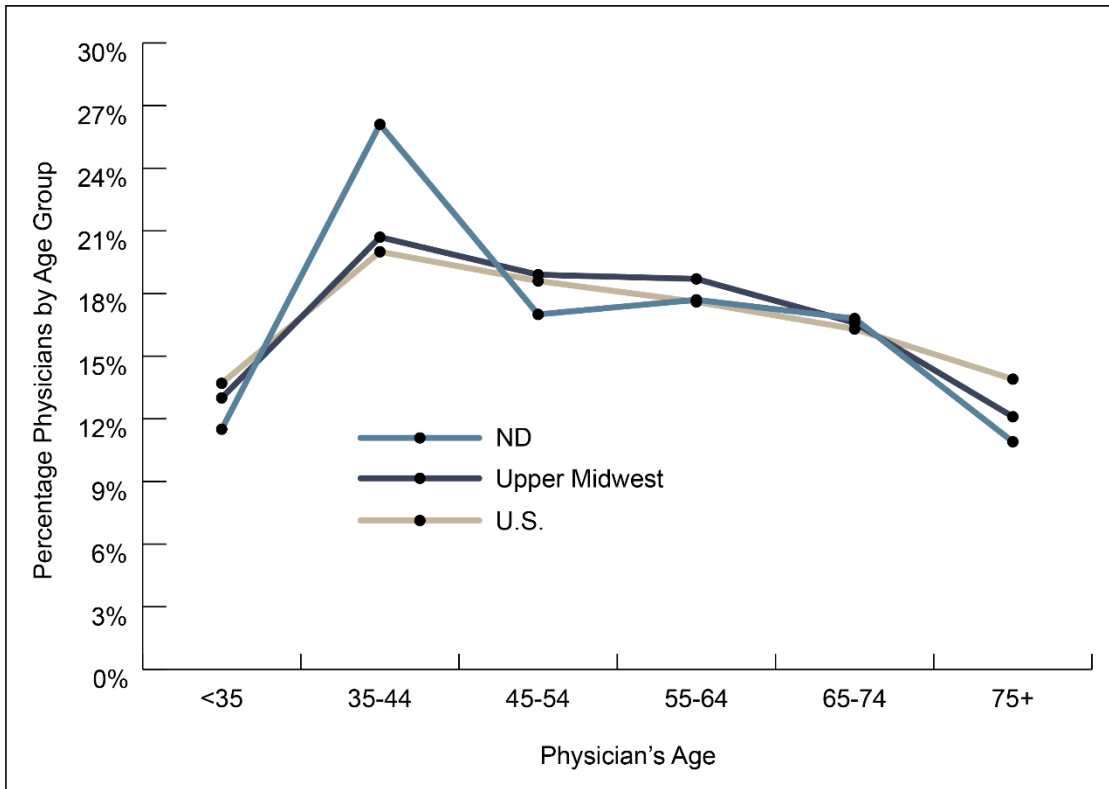
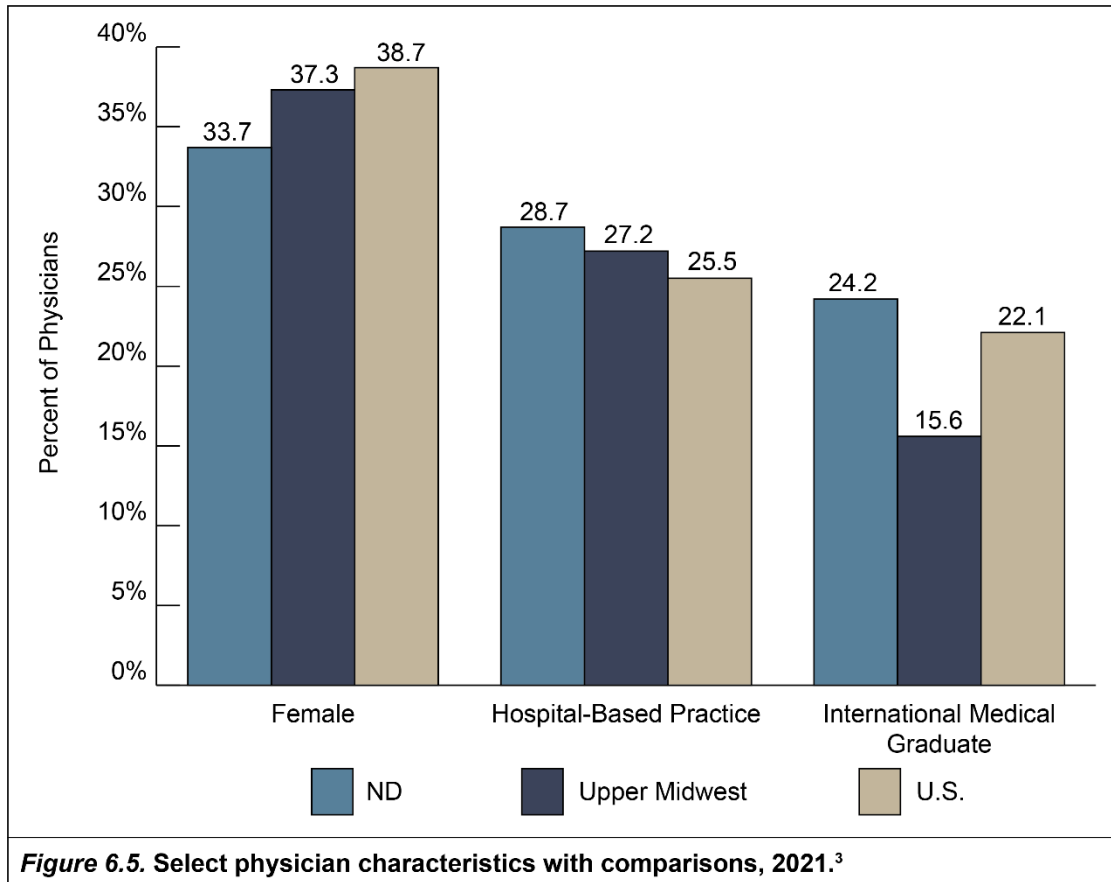
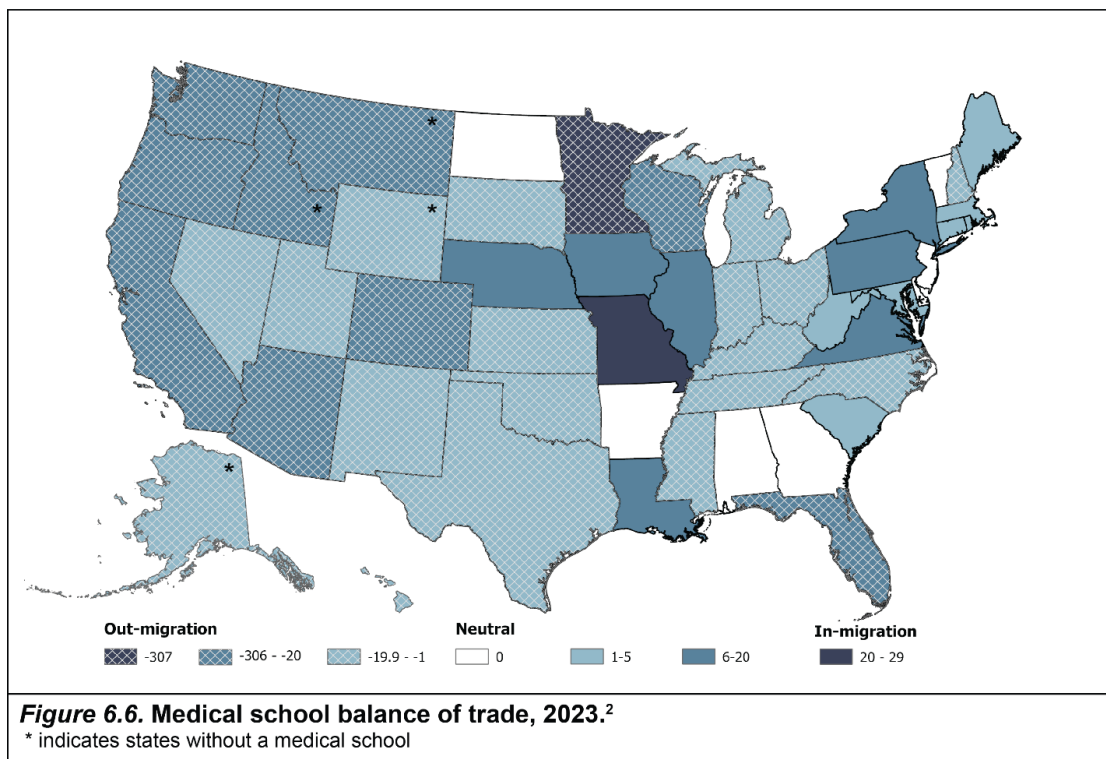


Figure 6.4. Physician percent by age category with comparisons, 2021.³



Distribution by Origin

Medical school graduates are dispersed widely across the nation with their location strongly influenced by factors such as the location of their residency training, specialty choice, opportunities, home origins, and their spouse’s origins. The smaller or more specialized the medical residency training, the greater the nationwide market is for its graduates. For example, the market for primary care physicians is more regional, while the market for neurosurgeons is more national and international.



“North Dakota is a net medical school graduate physician exporter. That is, more UND SMHS graduates practice in other states than other states’ graduates are practicing in North Dakota.”

Figure 6.6 shows the medical school balance of trade in relation to North Dakota. North Dakota experiences the highest net loss of physicians to Minnesota, meaning there is a substantially higher number of UND SMHS graduates currently practicing in Minnesota compared to the number of physicians who graduated from medical school in Minnesota currently practicing in North Dakota. In terms of positive migration balances, North Dakota experiences the highest net gain of physicians from Missouri.

In 2023, the balance of migration into and out of North Dakota by physicians based on medical school state location varied widely with respect to where the physicians were practicing. This can be thought of as an interstate balance of trade in medical school training and practice destination (excluding IMG graduates).

North Dakota is a net medical school graduate physician exporter, as is true for most medical schools in the U.S. That is, more North Dakota UND SMHS graduates practice in other states than other states’ graduates are practicing in North Dakota. For the UND SMHS, 1,189 medical school graduates practice outside North Dakota versus 1,021 graduates of medical schools outside of North Dakota who practice in North Dakota. The resulting interstate “balance of trade” between North Dakota and the rest of the nation is –168 to North Dakota’s disadvantage. Thanks in part to the University of North Dakota School of Medicine and Health Sciences’ *Healthcare Workforce Initiative (HWI)*, this number has decreased since 2013, when the balance was -370.

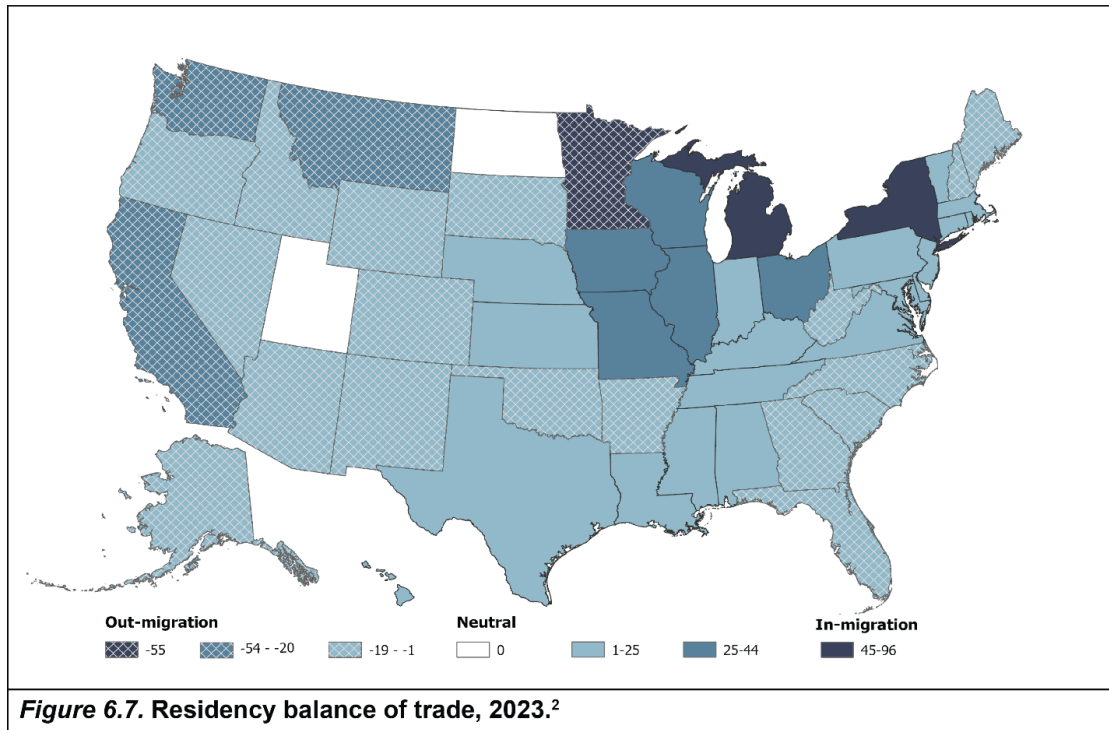
This out-migration can be partly explained by the fact that UND graduates in the years prior to 2011 who wanted to specialize in any specialty other than family medicine, internal medicine, psychiatry, general surgery, and transitional had to go out of state for their residencies because the residency program they chose did not exist within North Dakota. Thanks to the HWI, there has been a large expansion in the number and types of residency programs in North Dakota, with a doubling of slots since 2011. In 2023, of the 1,021 U.S. medical school graduates practicing in North Dakota (excluding graduates from Canada and other countries), 628 or 52% graduated from medical schools outside of North Dakota. Overall, North Dakota benefits from the influx of physicians who trained in other parts of the nation.

“The out-migration of physicians can be partly explained by the fact that prior to 2011 UND graduates who want to specialize in any specialty other than family medicine, internal medicine, psychiatry, general surgery, and transitional have to go out of state for their residencies because the residency program they chose did not exist within North Dakota. Thanks to the HWI, there has been a large expansion in the number and types of residency programs in North Dakota, with a doubling of slots since 2011.”

Since 2011, the UND SMHS has partnered with area health providers to establish more residency and fellowship programs. New post-graduate programs include residencies in neurology, orthopedic surgery, hospital medicine, and pediatrics and fellowship (post-residency) programs in geriatrics and hematology-oncology. This is important because the strongest predictor of eventual practice location for physicians is where they obtain their residency training. Other predictors include location of the medical school, where they grew up, and the geographic origin of their spouse when applicable. Many physicians, especially those in primary care, start practicing in the general vicinity of where they completed their post-medical school residency training. The beneficial effects of North Dakota residencies are readily apparent. The percentage of physicians graduating from those residencies who were practicing in North Dakota was 27% in 2017 and 34% in 2023, which is an increase of 27%.²

Of the 1,649 physicians practicing direct patient care in North Dakota in 2023, 478 (29%) completed at least one residency within North Dakota while 1,171 (71%) did not. Of the 1,320 physicians who completed at least one residency in North Dakota, 64% (842) practice in other states and 36% (478) practice in North Dakota.

Figure 6.7 shows the residency “balance of trade” in North Dakota. Among current practicing physicians in North Dakota, the largest in-migrations come from physicians who completed residencies in Michigan and New York. Other states where physicians practicing in North Dakota commonly completed residencies include Iowa, Missouri, Wisconsin, Illinois, and Ohio. In contrast, the current practice locations of physicians who completed at least one residency in North Dakota were also examined. It was found that North Dakota experiences the largest net loss of residency graduates to Minnesota. Other states with a large out migration of North Dakota residency graduates include Washington, California, and Montana.



North Dakota has a positive balance of physicians who completed their residency training in other states and who are now practicing in North Dakota. There are 1,171 physicians with no North Dakota residency training currently practicing in North Dakota and 842 North Dakota residency graduates practicing out of state. This makes North Dakota a large net importer of other states' residency graduates.

“One of the most important predictors of whether physicians establish a clinical practice in North Dakota is if the physician attends the UND SMHS and completes at least one residency in-state.”

One of the most important predictors of whether physicians establish a clinical practice in North Dakota is if the physician attends the UND SMHS and completes at least one residency in-state. Table 6.4 shows that the majority of family medicine physicians practicing in North Dakota either graduated from UND SMHS and/or completed a residency in North Dakota. This same trend is also noted for other specialties.

Table 6.4
Percent of North Dakota specialty physicians who graduated from the UND SMHS and/or completed at least one residency in North Dakota as of 2023.²

Residency	Percent
Family Medicine	79
Internal Medicine	40
Obstetrics & Gynecology	69
Pediatrics	42
Psychiatry	48

Residency Training in North Dakota

The different specialties where a residency can be completed within North Dakota includes family medicine, internal medicine, neurology, pediatrics, psychiatry, orthopedic surgery, surgery (preliminary), surgery (categorical) and transitional.⁶ Transitional residencies are a year-long program designed to introduce graduates to a wide range of medical and surgical specialties with the goal of building a broad foundation of clinical skills as a base for future training in a medical specialty. There also are fellowship (post-residency) programs available in forensic pathology, geriatrics, hematology-oncology, and sports medicine. Table 6.5 shows the current numbers of residents and fellows in the programs.

Table 6.5
Number of residents/fellows in ACGME-accredited North Dakota residencies/ fellowships and number who completed training in 2023-2024.⁶

Residency/Fellowship	Number in Training 2023 - 2024	Duration in Years	Completed Training in 2023 - 2024
Family Medicine	88	3 Years	28
Geriatrics Fellowship	2	1 Year	2
Hematology & Med Oncology	4	3 Years	NA
Internal Medicine	25	3 Years	9
Neurology	9	4 Years	NA
Orthopedic Surgery	15	5 Years	3
Psychiatry	21	4 Years	3
Sports Medicine Fellowship	2	1 Year	1
Surgery (Preliminary)	2	1 or 2 years	2
Surgery (Categorical)	26	5 Years	5
Transitional Year	5	1 Year	5

NA = Not Applicable

“In addition to providing funding for many of these additional residency/fellowship slots through the Healthcare Workforce Initiative (HWI), the North Dakota Legislature provided support to permit expansion of graduate healthcare provider class sizes, with the addition of 16 medical students per year (total 64) and 30 health sciences students per year (total of 90).”

New post-graduate positions have been established since 2012 in UND’s Center for Family Medicine in Bismarck (rural family medicine, in conjunction with West River Health Services in Hettinger); UND’s Center for Family Medicine in Minot (rural family medicine in conjunction with Mercy Medical Center in Williston); UND Department of Surgery (rural general surgery); UND Department of Psychiatry and Behavioral Science (rural psychiatry); Catholic Health Initiatives- St. Alexius Medical Center (hospitalist and geriatrics); and Sanford Health in Fargo (family medicine, pediatrics, geriatrics fellowship, and hematology-oncology fellowship).

In addition to providing funding for many of these additional residency/fellowship slots through the Healthcare Workforce Initiative (HWI), the North Dakota Legislature provided support to permit expansion of graduate healthcare provider class sizes, with the addition of 16 medical students per year (total 64) and 30 health sciences students per year (total of 90).

Additional funding for residency/fellowship slots has been provided by local healthcare systems affiliated with the SMHS, an excellent example of a productive public/private partnership that benefits the people of the state.

Physician Specialty and Rural Location

North Dakota's patient-care physicians practice in many different specialties. Of the direct patient care physicians practicing in North Dakota in 2023, the most prevalent physician specialties included family medicine at 374 (22.7%); general internal medicine at 175 (10.6%); general surgery at 114 (6.9%); internal medicine specialties at 97 (5.9%); radiology at 89 (5.4%); psychiatry at 83 (5.0%); anesthesiology at 80 (4.9%); and emergency medicine at 79 (4.8%). These specialties account for more than half (61.6%) of the practicing physicians in the state. None of the remaining specialties account for more than 5% of North Dakota's practicing physicians.²

The geographic distribution of physicians is discussed in Chapter 7 in the context of primary care physicians. The more specialized areas of practice are centralized in the state's larger cities where the populations are sufficient enough to support them and they have the necessary threshold populations whose reimbursements make their practices viable.

International Medical Graduates

International medical graduates (IMGs) play a crucial role in the U.S. healthcare system.⁷ They are defined as medical school graduates from any country outside of the United States and Canada. Currently, IMGs account for approximately 25% of the practicing physician workforce in the United States and that percentage is expected to grow in the future.⁸ They are expected to fill needed positions in family medicine, internal medicine, surgery and pediatrics that are not being filled by U.S. medical graduates (USMGs). Forty-four percent of practicing IMGs are in primary care disciplines, with family medicine having the highest number of IMGs.¹

IMGs make up about one-fourth of the North Dakota physician workforce, which was similar to the 2021 rate in the United States. In 2021, 24.2% of all physicians practicing in North Dakota were IMGs, compared to 15.6% for the upper Midwest and 22.1% for the U.S. IMGs are a critically important component of the professional workforce in North Dakota and throughout the country.

The number of IMG physicians per 10,000 persons in North Dakota is higher than or equal to the Upper Midwest and United States in all three geographic areas (Table 6.6). The distribution of IMG physicians in North Dakota is similar to the distribution of U.S. medical school graduates (USMGs), where the highest density is in the metropolitan areas and lowest density is in rural areas.

“Currently, IMGs account for approximately 25% of the practicing physician workforce in both North Dakota and the rest of the United States and that percentage is expected to grow in the future.”

The demographic characteristics of IMGs compared to USMGs in North Dakota are similar. In 2021, the gender breakdown for IMGs compared to USMGs is 68.2% male compared to 65%,

respectively. The average age of IMGs is 49.3 years compared to 52.1 years for USMGs. When examining physician specialty, IMGs are slightly more primary care-oriented than USMGs with 43.8% and 36.2% providing primary care (family practice, general internal medicine, and general pediatrics), respectively. IMG surgeons represent less than half the rate (number of physicians per 10,000 population) of USMGs surgeons, representing 3.1% and 8.2%, respectively. IMGs practicing in internal medicine are found at twice the rate of USMGs (19.3% and 7.8%, respectively).²

Of the 409 IMGs in North Dakota, 179 practice in primary care with 79 (21.3%) practicing in general internal medicine. Of those 79 general internal medicine IMGs, 22 (29.1%) completed a general internal medicine residency in the state of North Dakota. Of the 62 internal medicine specialty IMGs, 10 (16.1%) completed a residency in North Dakota while the rest were trained out-of-state.²

Table 6.6
Rate of IMGs and USMGs per 10,000 persons with comparisons, 2021.^{1, 3, 5}

	ND	Upper Midwest	U.S.
IMG	5.9	4.3	6.5
Metropolitan	9.2	5.5	7.1
Micropolitan	4.1	2.6	2.6
Rural	1.2	1.0	1.2
USMG	17.6	22.6	21.7
Metropolitan	27.7	27.8	23.4
Micropolitan	10.1	15.2	11.7
Rural	4.8	8.1	6.5

The largest numbers of IMGs practicing in North Dakota come from India (85 physicians; 20.8%), followed by Pakistan (26 physicians; 6.4%), and Dominica (West Indies) (25 physicians; 6.1%).²

“If not for the HWI, the combination of the aging of the state’s population and increasing healthcare needs would have resulted in the demand for physicians outpacing the supply even more than it has.”

Projection of Physicians in North Dakota

If not for the HWI, the combination of the aging of the state’s population and increasing healthcare needs would have resulted in the demand for physicians outpacing the supply even more than it has. All other things being equal, if the population of North Dakota does not expand at an increased rate but at the slower historical rate, the rate of physicians per 10,000 persons will remain stable through 2045. The standard projection of population growth shows a relatively steady supply of physicians relative to the population, but only if the HWI measures continue to be implemented in full. Full and continuing implementation of the HWI will help ensure that adequate healthcare delivery teams will be available throughout the state.

One important variable in projecting the future supply of physicians in North Dakota is when they decide to retire. Recent projections by GlobalData Plc., in conjunction with the Association of American Medical Colleges, have shown a nearly 10% predicted difference in eventual workforce levels that occur if retirement is accelerated or delayed by as little as two years.⁹ Because physician burnout and job dissatisfaction appear to be increasing (at least in part because of the burden of dealing with the electronic health record), the frequency of early retirement may increase.¹⁰ In 2021, 17% of actively working physicians were at or above the traditional retirement age of 65 years old. Moreover, 25% of actively working physicians were between the ages of 55 and 64 years old. Thus, it is possible that one-third (or even more) of active physicians may retire within the next decade. Additionally, results from the 2022 National Sample Survey of Physicians (NSSP) revealed that physicians plan to retire earlier than was reported in the 2019 survey.⁹ If this were to occur, it clearly would exacerbate the existing physician shortage and distribution problem.

SUMMARY

The supply of physicians in North Dakota lags behind the nation, especially in rural counties (5.9 physicians per 10,000 persons compared with 8.2 in other Upper Midwest states and 6.8 for the United States). Aging is a problem because more than half of North Dakota's physicians (51.5%) are 45 to 74 years old. Though a large proportion of North Dakota's physicians were IMGs and Canadian physicians (27%) in 2023, the state lacks large numbers of physicians from other states.

As the physician population in the state continues to age, a large number will be retiring and will need to be replaced. As the North Dakota population also ages, there will be an increased need for physician care.

The supply of physicians within North Dakota is not only influenced by the above circumstances, but by others external to it. U.S. medical schools are increasing their output of graduates, which should be helpful for filling the growing need for more physicians in North Dakota. However, there are trends that are changing the national and international playing field for North Dakota regarding its ability to attract more physicians. With more demand for healthcare across the country, more physicians produced by medical schools and residency programs likely will remain in their training states, and North Dakota could experience fewer physicians moving from those states and programs into North Dakota to practice. Likewise, the increases in the number of U.S. medical school graduates could reduce the number of IMGs from U.S. residency programs, and North Dakota may experience a reduction in the number of IMG physicians coming to North Dakota to practice.

Thus, now is not the time for a business-as-usual approach in the face of all the specifics addressed in this chapter. These influences are likely to lead to fewer physicians within North Dakota to serve its growing population and the significant growing number of older adult citizens. North Dakota is vulnerable to various trends and circumstances over which it has little control. In the face of all this, it is critical that North Dakota continues to control its own fate by appropriately continuing to invest in and support the HWI to train healthcare professionals, including physicians, who will practice within North Dakota. Finally, it is important to continue to provide opportunities for young adult North Dakotans to enter pathway programs that eventuate in their training as physicians as well as other healthcare providers.

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CHAPTER SEVEN:

**PRIMARY CARE AND SPECIALTY
PHYSICIAN WORKFORCE IN NORTH
DAKOTA**

PRIMARY CARE PHYSICIANS

Primary care physicians are an essential foundational component of the North Dakota healthcare delivery system, and access to them by all of North Dakota's population is an important goal. Primary care physicians are defined as physicians in the specialties of family medicine, general internal medicine, and general pediatrics. Specialist physicians can provide some primary care services but focus on specific medical areas. The specialist physicians addressed in this chapter are psychiatrists, general surgeons, general pediatricians, and obstetrics/gynecologists.

“Primary care physicians are an essential foundational component of the North Dakota healthcare delivery system, and access to them by all of North Dakota’s population is an important goal.”

Primary Care Physician Distribution in North Dakota

Distribution by Geography

The North Dakota population per primary care provider is shown in Figure 7.1. It includes physician assistants and nurse practitioners as they can also provide primary care to communities. There are no primary care providers in eight counties.^{1,3} Counties with greater than 2,500 people per physician also may have primary-care-physician shortages. Even in counties with the lowest rates of population-per-primary-care-physician may see primary care physician shortages because of travel distances to alternative care and high needs for care.

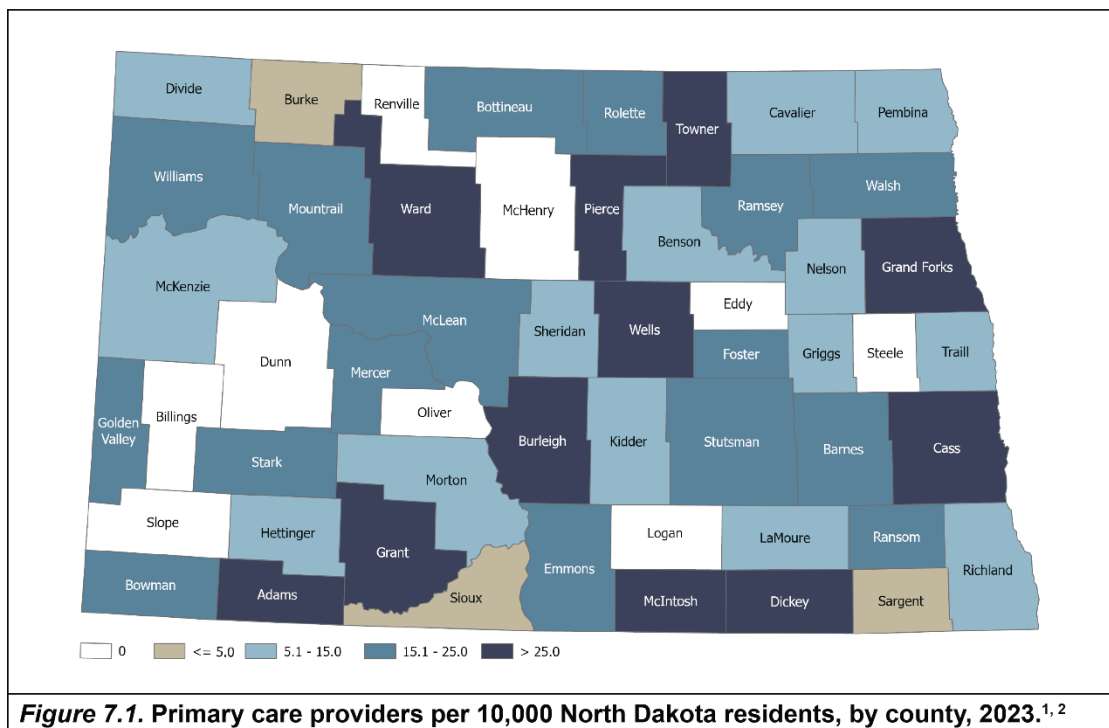


Figure 7.1. Primary care providers per 10,000 North Dakota residents, by county, 2023.^{1,2}

Distribution of North Dakota Primary Care Physicians Compared to the Upper Midwest and the Nation

Note that while Figure 7.1 details the distribution of primary care providers in the state, including physician assistants and nurse practitioners, the following information is specific to primary care physicians due to limitations with non-physician data.

Distribution by Geography

The ratio of primary care physicians (including residents who are medical graduates undergoing a period of advanced training in their medical specialty before practice as a physician) in North Dakota per 10,000 population is similar to the United States, but slightly lower than for the Upper Midwest (Figure 7.2).

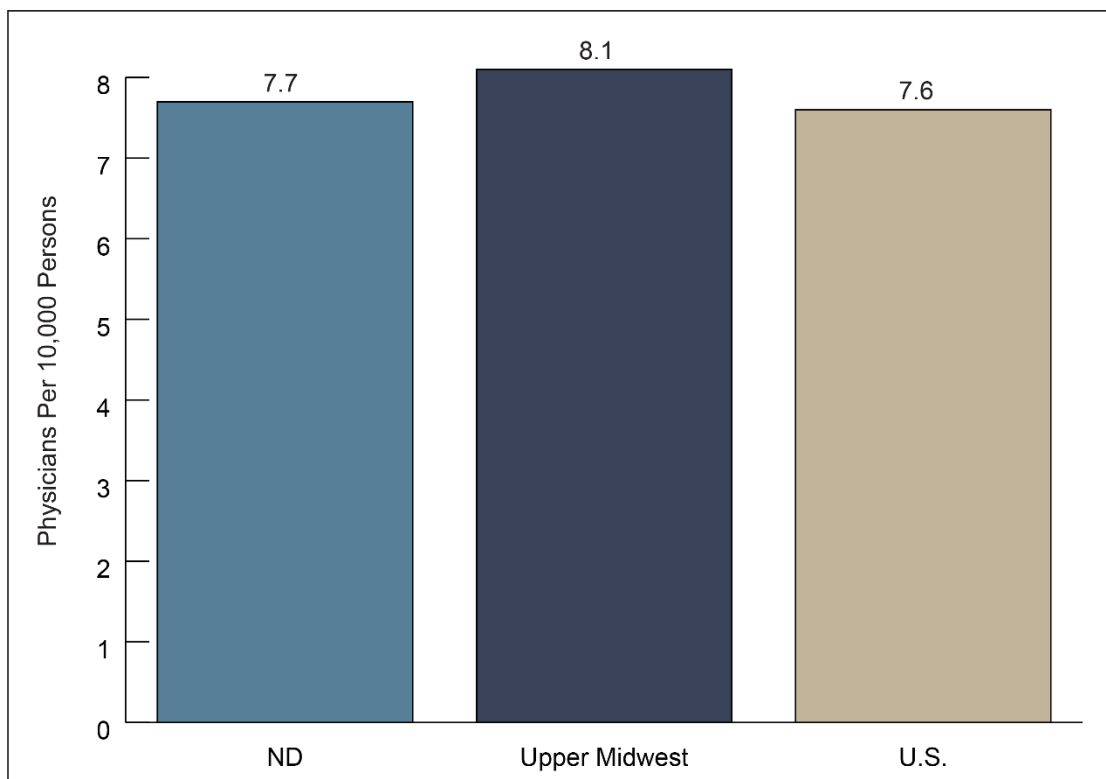
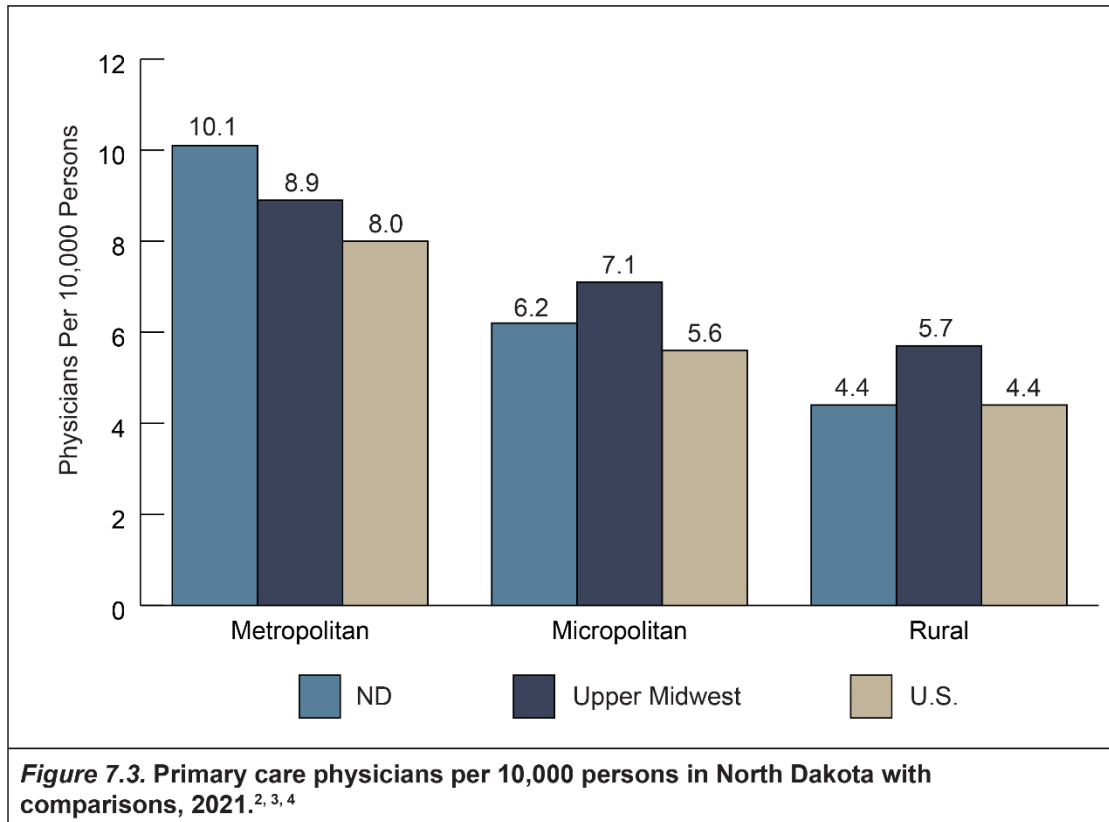


Figure 7.2. Primary care physicians per 10,000 persons in North Dakota, the Upper Midwest, and the U.S., 2021.^{3,4}

Figure 7.3 shows that across North Dakota, the Upper Midwest, and the United States, the practicing-primary-care-physician-to-10,000-population ratios are lower for rural counties. For metropolitan counties, North Dakota's rate per 10,000 population is higher than for the Upper Midwest and for the United States. Regarding rural counties, North Dakota trails the Upper Midwest (4.4 versus 5.7) and is equal to the United States (4.4 versus 4.4) in the number of physicians per 10,000 population.



Of the 627 primary care physicians practicing in North Dakota in 2023, 59.7% (374) were family physicians, 27.9% (175) were general internal medicine, and 12.4% (78) were general pediatricians.⁴

Distribution by Selected Characteristics

Table 7.1 shows the percentage of primary care physicians broken down by gender, hospital-based practice, and international medical graduate (IMG) status. Of the 627 primary-care direct patient care physicians practicing in North Dakota, 69.7% are located in metropolitan counties, 18.0% in micropolitan counties, and 12.3% in rural counties. Rural counties have a higher percentage of physicians who are female than metropolitan or micropolitan counties (69.0% rural versus 38.9% micropolitan, and 43.9% metropolitan). The percentage of hospital-based physicians in metropolitan areas is 18.3% versus 18.2% in rural counties. As shown in Table 7.1, the percentage of North Dakota physicians who are IMGs varies substantially by location status (15.6% up to 33.6%). In North Dakota, 28.5% of all primary-care physicians are IMGs.

Table 7.1
Percent of primary care physicians in North Dakota who are female, have hospital-based practices, and are International Medical Graduates, 2021.^{1, 3}

	N	Area (%)	Female (%)	Hospital-Based (%)	IMG (%)
Metropolitan	437	69.7	43.9	18.3	29.5
Micropolitan	113	18.0	38.9	14.2	33.6
Rural	77	12.3	69.0	18.2	15.6
Total	627		46.1	17.5	28.5

Distribution by Age

A comparison of the age structure of North Dakota’s primary care physicians compared with those of the Upper Midwest states (Iowa, Minnesota, Montana, Nebraska, South Dakota, Wisconsin, and Wyoming) and the United States is depicted in Figure 7.4. The percentage of North Dakota’s primary care physicians between the ages of 35 and 44 is higher with respect to the comparison regions. The percentage of North Dakota’s primary care physicians who are 45 and older is modestly lower with respect to the comparison regions.

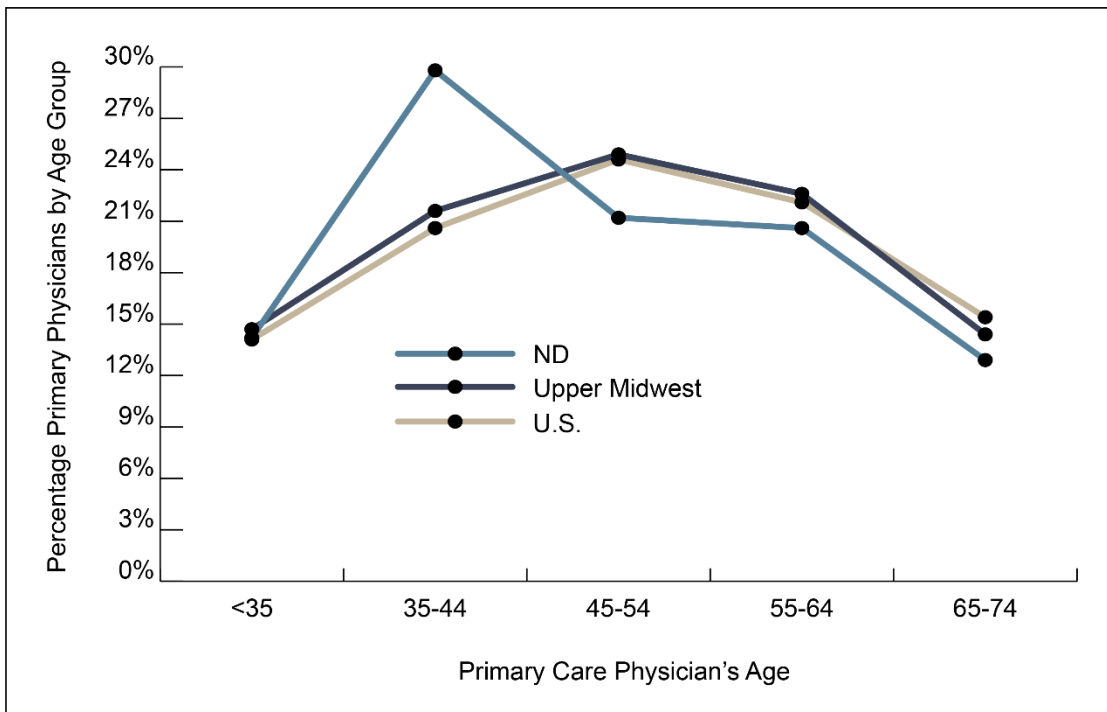


Figure 7.4. Percent of primary care physicians by age for North Dakota with comparisons, 2021.⁴

The age distribution of North Dakota primary care physicians is shown by metropolitan status in Table 7.2. The percentage of primary care physicians in rural counties is higher for the 65–74 age category than for the micropolitan and metropolitan county categories (23.8% versus 18.9% and 10.0%, respectively). Because micropolitan counties have the lowest percentage of primary care physicians, they appear to have the most difficulty attracting recent graduates. The vast majority of primary care physicians, regardless of county population densities, are between the ages of 35 and 64 years.

Table 7.2
Percent of primary care physicians in North Dakota by age and area, 2021.^{2, 4}

	N	<35	35-44	45-54	55-64	65-74	>74
Metropolitan	437	15.5	31.5	22.7	18.8	10.0	1.4
Micropolitan	113	10.2	31.5	16.5	22.8	18.9	0.0
Rural	77	11.3	15.0	17.5	30.0	23.8	2.5
Total	627	14.0	29.5	21.0	20.9	13.3	1.3

Table 7.3 shows that North Dakota has a slightly higher percentage of its primary care physicians practicing in office-based practice than in the Upper Midwest or the United States. North Dakota also has a slightly higher percentage of its primary care physicians practicing in hospital-based practice than in the two geographic comparison groups. The ratios for all three groups are lower as the counties become more rural.

Table 7.3
Practice base and area of primary care physicians per 10,000 persons in North Dakota with comparisons, 2021.^{2, 3, 4}

	ND	Upper Midwest	U.S.
Office	11.3	11.0	10.0
Metropolitan	14.7	12.2	10.5
Micropolitan	9.3	9.2	7.2
Rural	6.3	7.8	5.7
Hospital	2.0	1.7	1.4
Metropolitan	2.8	1.9	1.4
Micropolitan	1.3	1.5	1.0
Rural	1.1	1.3	0.9

Distribution by Origin

Nearly 5 out of 10 (46.4%) primary care physicians in North Dakota graduated from the University of North Dakota (UND) School of Medicine and Health Sciences (SMHS) (Figure 7.5). Figure 7.6 shows that over half (51.2%) of North Dakota’s primary care physicians obtained their residency training from a residency program based in North Dakota. Nearly 70% of North Dakota’s primary care physicians completed their residency training in North Dakota and other upper Midwestern states.

“Nearly 5 out of 10 (46.4%) primary care physicians in North Dakota graduated from the University of North Dakota School of Medicine and Health Sciences.”

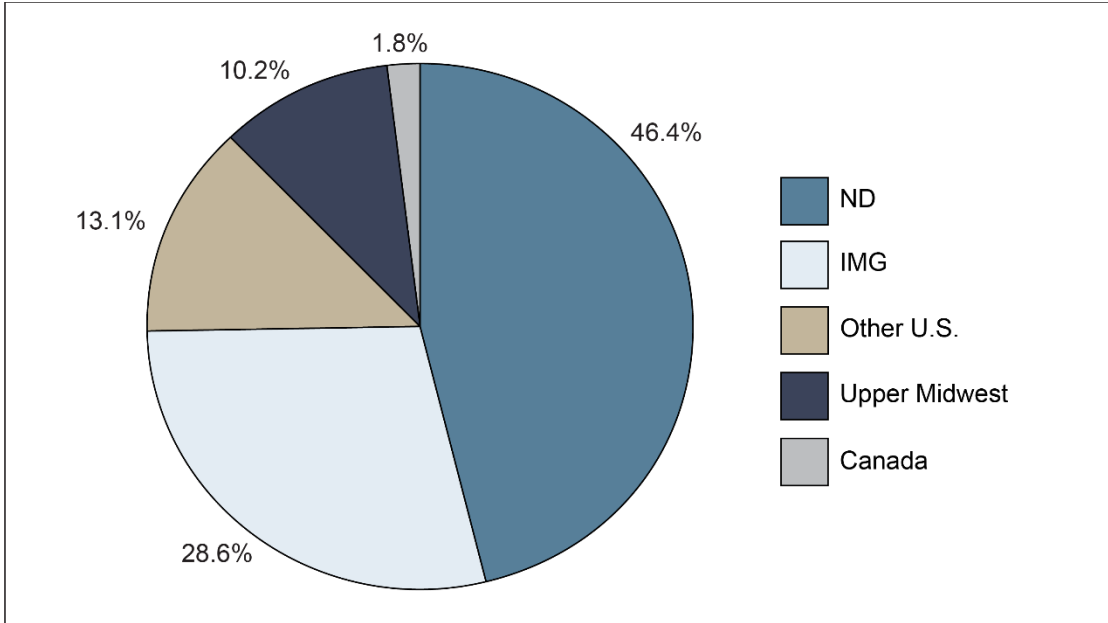


Figure 7.5. Locations where North Dakota primary care physicians graduated from medical school, 2023.¹

North Dakota’s primary care physicians graduated from medical schools from all over the United States and the world. UND SMHS graduates account for 46.4% of practicing primary care physicians in North Dakota. International Medical Graduates (IMGs) account for 28.6% and Canadian medical school graduates account for 1.8% of North Dakota’s practicing primary care physicians. The rest of the Upper Midwest states account for 10.2% while the rest of the United States accounts for 13.1% of North Dakota’s primary care physicians.

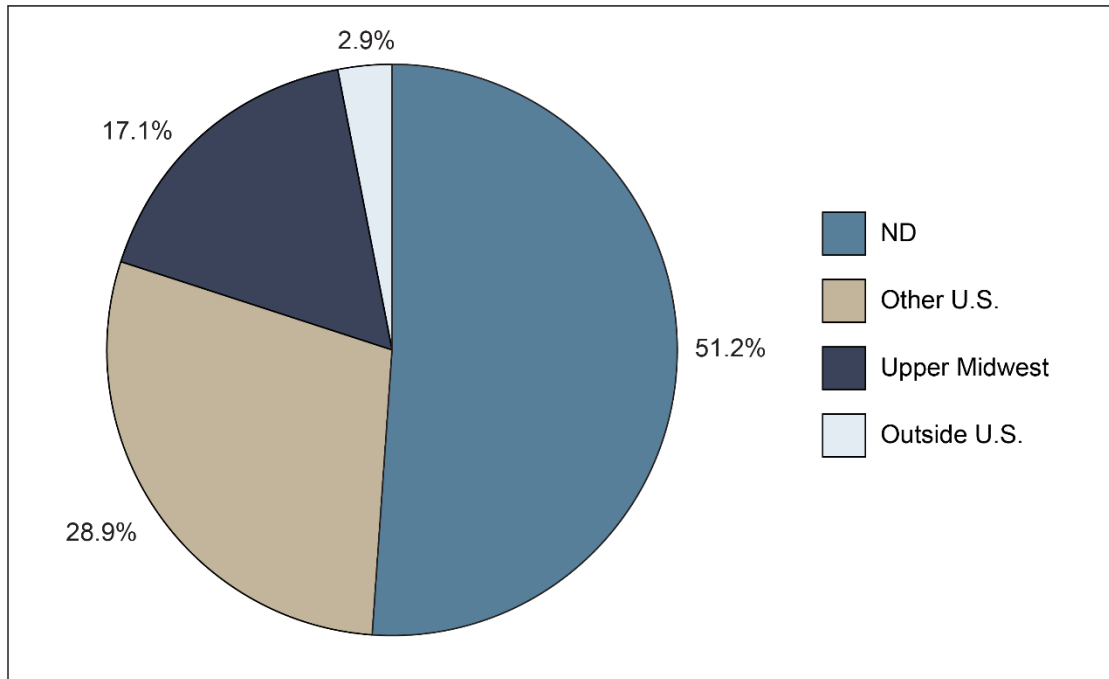


Figure 7.6. Locations where North Dakota primary care physicians completed their residency, 2023.¹

Over half (51.2%) of North Dakota's currently practicing primary care physicians completed their residency training in North Dakota. Primary care physicians who graduated from residency programs outside of North Dakota came from the Midwest (17.1%), other United States (28.9%), and Canada and other foreign countries (2.9%).

The balance of migration into and out of North Dakota by primary care physicians based on medical school state location demonstrated a net loss for the state. Specifically, 330 of the 740 graduates of the UND SMHS who are currently practicing medicine are primary care physicians practicing outside of North Dakota. However, 217 graduates of medical schools outside of North Dakota are practicing primary care within North Dakota. Thus, North Dakota has a net loss of 113 SMHS graduates to other parts of the United States. The largest number of SMHS graduates leave the state to practice in Minnesota (164); however, some of them undoubtedly are practicing near the North Dakota border and thus are serving patients from North Dakota.

An important predictor of eventual practice location is where physicians obtain their residency training. Many physicians start practicing in the general vicinity of where they completed their post-medical school residency training. Of the 627 practicing North Dakota primary care physicians, 410 (51.6%) completed their residency within North Dakota while 217 (47.8%) did not.

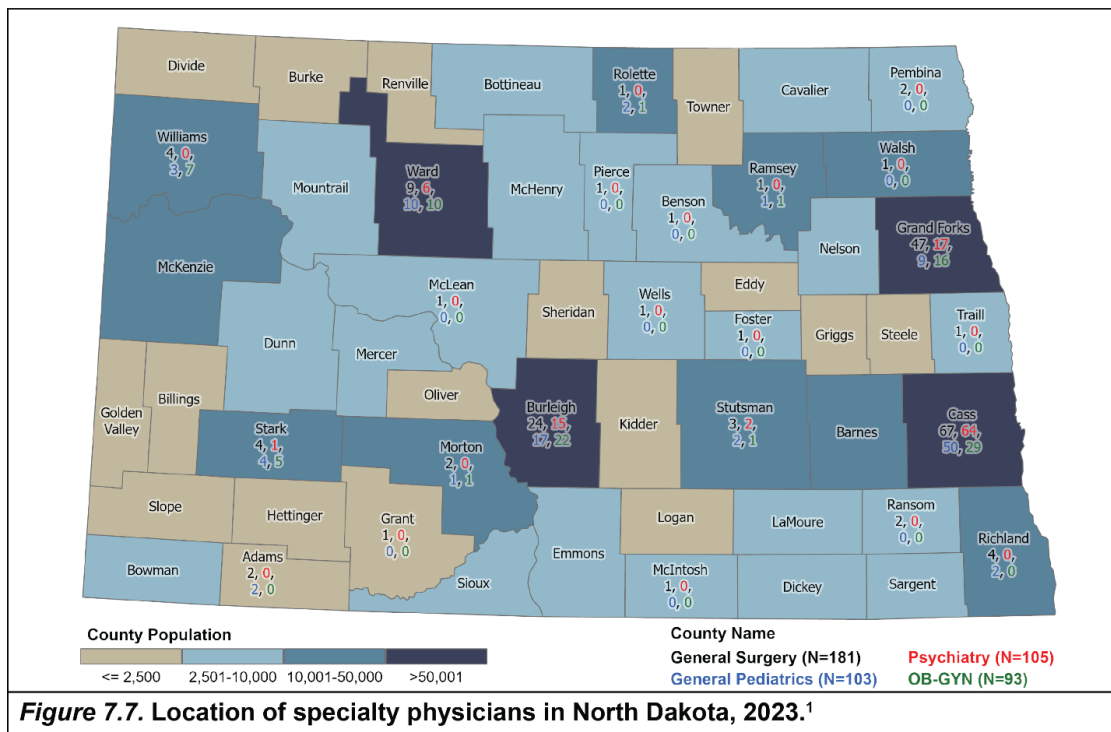
“An important predictor of eventual practice location is where physicians obtain their residency training. Many physicians start practicing in the general vicinity of where they completed their post-medical school residency training.”

At the same time, North Dakota exports the majority of its residency graduates. Of the 740 total North Dakota-trained residency graduates who are practicing, 330 (58.4%) practice in other states and 410 (41.6%) practice in North Dakota. Of North Dakota's total primary care physicians in 2023, over 50% completed residency training in North Dakota.

SPECIALTY CARE PHYSICIANS

Distribution by Geography

As can be seen in Figure 7.7, most of North Dakota's practicing specialists are located in Fargo, Bismarck, Grand Forks, and Minot. Given the specialist geographic distribution and the generally low numbers of specialists per population, a significant portion of North Dakota's population experiences long travel times to access their nearest specialist physician. Note that in this analysis, general pediatrics is considered a specialty and not part of primary care.



Distribution by Selected Characteristics

Within North Dakota, rural counties have an extremely low number of specialty physicians (Table 7.4). Overall, the majority of obstetrics and gynecologist (OB-GYN) specialists in North Dakota are female (66.7%). In contrast, only about 16.7% of the general surgeons in North Dakota are female and about 56% of general pediatricians are female. Micropolitan counties have lower percentages of female specialists as do metropolitan counties for general surgery and psychiatry (i.e., less than 50% female). Micropolitan and metropolitan counties have higher percentages of female specialists for pediatrics and OB-GYN (i.e., greater than 50% female). For all four specialties, the number of rural county specialists is so few that meaningful comparisons with metropolitan and micropolitan areas are not prudent. Across the state, the

vast majority of specialty physicians are domestically trained, rather than international medical graduates (IMGs).

Table 7.4
Percent of specialist physicians in North Dakota who are female, have hospital-based practices, and are International Medical Graduates, 2023.^{1, 2}

	N	Female (%)	Hospital-Based (%)	IMG (%)
General Surgery	114	16.7	31.6	11.4
Metropolitan	89	18.0	32.6	10.1
Micropolitan	20	15.0	15.0	10.0
Rural	5	0.0	80.0	40.0
Psychiatry	66	42.4	27.3	34.8
Metropolitan	56	44.6	28.6	35.7
Micropolitan	7	28.6	28.6	42.9
Rural	3	33.3	0.0	0.0
General Pediatrics	78	61.5	15.4	16.7
Metropolitan	60	65.0	15.0	15.0
Micropolitan	16	43.8	12.5	25.0
Rural	2	100.0	50.0	0.0
OB-GYN	72	66.7	25.0	4.2
Metropolitan	56	67.9	26.8	1.8
Micropolitan	16	62.5	18.8	12.5
Rural	0	0.0	0.0	0.0

Perhaps not surprisingly, the majority of specialty physicians are located in metropolitan areas and are male. While IMGs account for roughly a quarter of North Dakota’s practicing physicians, they account for substantially lower percentages of general surgeons (11.4%), general pediatricians (16.7%), and OB-GYNs (4.2%), but account for more psychiatrists (34.8%).

The percentage of specific specialty physicians by age and the three geographic categories is shown in Table 7.5. Obstetricians (43.8%) and general pediatricians (33.3%) are more likely to be in the 35-44 years age category, whereas general surgery (29.8%) is more likely to be in the 45-54 years age category. Psychiatrists are most likely to be in the 35-44 years or the 55-64 years age categories (31.8% for each category).

Table 7.5
Percent of specialists in North Dakota by age and area, 2021.^{2,4}

	N	<35	35-44	45-54	55-64	65-74
General Surgery	114	1.8	26.3	29.8	23.7	18.4
Metropolitan	89	2.2	24.7	33.7	25.8	13.5
Micropolitan	20	0.0	40.0	15.0	15.0	30.0
Rural	5	0.0	0.0	20.0	20.0	60.0
Psychiatry	66	6.1	31.8	19.7	31.8	10.6
Metropolitan	56	7.1	35.7	14.3	30.4	12.5
Micropolitan	7	0.0	14.3	57.1	28.6	0.0
Rural	3	0.0	0.0	33.3	66.7	0.0
General Pediatrics	78	5.1	33.3	21.8	21.8	17.9
Metropolitan	60	6.7	36.7	26.7	16.7	13.3
Micropolitan	16	0.0	18.8	6.3	43.8	31.3
Rural	2	0.0	50.0	0.0	0.0	50.0
OB-GYN	72	2.8	41.7	27.8	20.8	6.9
Metropolitan	56	3.6	41.1	26.8	19.6	8.9
Micropolitan	16	5.9	43.8	31.3	25.0	0.0
Rural	0	0.0	0.0	0.0	0.0	0.0

North Dakota's specialists per-10,000-population ratios for general pediatricians and OB-GYNs are lower than for the Upper Midwest and U.S. ratios (Figure 7.8). The North Dakota ratio for general surgeons is higher than the Upper Midwest and the United States, and the ratio for psychiatrists is lower than for the nation but higher than the Upper Midwest.

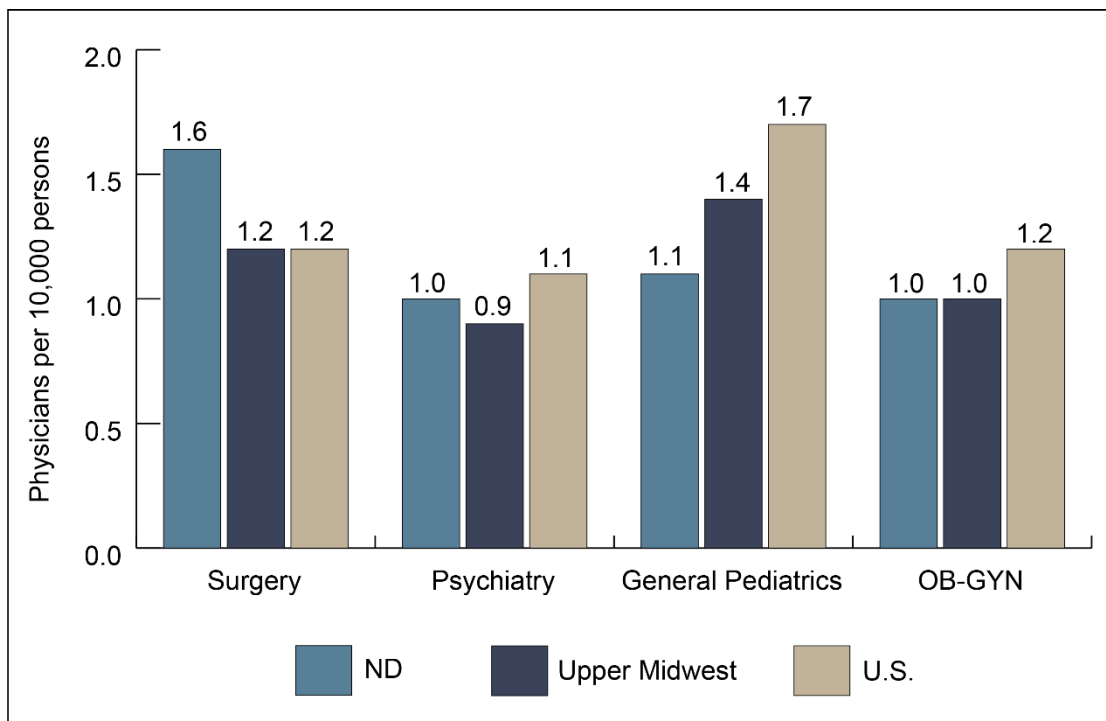


Figure 7.8. Surgeons, psychiatrists, general pediatrics, and OB-GYNs per 10,000 persons in North Dakota with comparisons, 2021.^{3,4}

**Table 7.6
Specialty physicians per 10,000 persons in North Dakota by area with comparisons, 2021.^{2,4}**

	ND	Upper Midwest	U.S.
Surgery	1.6	1.2	1.2
Metropolitan	2.6	1.0	1.3
Micropolitan	1.0	1.0	0.7
Rural	0.3	0.5	0.4
Psychiatry	1.0	0.9	1.1
Metropolitan	1.7	1.1	1.2
Micropolitan	0.4	0.5	0.4
Rural	0.2	0.2	0.2
General Pediatrics	1.1	1.4	1.7
Metropolitan	1.6	1.8	1.9
Micropolitan	1.0	0.9	0.8
Rural	0.1	0.2	0.4
OB-GYN	1.0	1.0	1.2
Metropolitan	1.4	1.2	1.3
Micropolitan	1.0	0.8	0.7
Rural	0.1	0.3	0.3

The specialists per-10,000-population ratios by rural or urban status for 2020 are shown in Table 7.6. Across North Dakota and for each specialty, the rural counties have lower ratios than the micropolitan and metropolitan counties.

SUMMARY

Most of North Dakota's population is located within a federally designated shortage area for primary care. Primary care physicians in North Dakota are more likely to be male, located in metropolitan counties, and trained domestically (in the upper Midwest or North Dakota specifically) for medical school and residency. Primary care physicians in North Dakota generally are early in their career, most commonly between the ages of 35 and 44 years old. In 2023, there were 627 direct-patient-care primary care physicians in North Dakota (374 family medicine, 175 general internal medicine, and 78 general pediatrics). North Dakota has a slightly lower ratio of primary care physicians to population than other Midwest states but a slightly higher ratio than the United States when resident physicians are included in the comparison. More than half of all primary care physicians in North Dakota graduated from the UND SMHS or completed a residency in North Dakota or both.

Of North Dakota's total primary care physicians in 2023, 51% completed residency training in North Dakota. Of North Dakota's total primary care physicians (including IMGs), 46% received their medical degree from the UND SMHS. Considering both North Dakota residency graduates and UND SMHS medical school graduates, 67.1% of North Dakota practicing primary care physicians received at least some of their training in North Dakota.

In 2023, there were 114 general surgeons, 66 psychiatrists, 78 pediatricians, and 72 OB-GYNs in North Dakota. As with other physicians in North Dakota, these specialists are more likely to be older, male, office-based and domestically trained when compared with other Midwest states and the United States. North Dakota has lower ratios of general pediatricians and OB-GYNs per 10,000 population than the comparison groups, and higher ratios of psychiatrists and general surgeons than other Midwestern states.

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CHAPTER EIGHT:

**NURSING WORKFORCE IN NORTH
DAKOTA**

INTRODUCTION

This nursing workforce chapter for the *Eighth Biennial Report* has been a successful collaboration between the University of North Dakota (UND) College of Nursing and Professional Disciplines, the UND School of Medicine and Health Sciences (SMHS), as well as the UND SMHS Advisory Council and the UND SMHS Center for Rural Health. To summarize this chapter, there has been and will continue to be increased blurring of lines between health professions regarding roles and responsibilities. The overlapping roles need to be considered for an accurate account of the healthcare workforce and the potential associated health outcomes. North Dakota is a unique state in that the rural nature of our healthcare systems provides more opportunities for progressive innovation regarding healthcare workforce roles.

To demonstrate the roles of nursing as clearly as possible in this biennium, multiple data sources have been utilized. Licensure data from the North Dakota Board of Nursing (NDBON), dated June 2024, provides an account of all nurses licensed in North Dakota (ND) as of that date.¹ North Dakota nurses renew licensure status every other year by the end of December. These licensure data encompass Licensed Practical Nurses (LPN), Registered Nurses (RN), and Advanced Practice Nurses (APRN) in the state. These data provide basic demographic information such as age, location of employment, and area of specialty. This information was supplemented with data from the NDBON's annual education reports^{2,3} that include the most recent academic year of 2022-23, which provides information on North Dakota nursing school numbers of applicants and graduates, among other information. In addition, trend analyses from 2018-2024 based on licensure data are included in this *Report*.

AGGREGATE NURSING RESULTS

Data were extracted from the NDBON licensure dataset as of June 2024.¹ The NDBON conducts annual open licensure renewal from October through December each calendar year, with most nursing types renewing every other year. These data are obtained via electronic submission by the individual applicant or renewing nurse and aggregated by the NDBON for reporting purposes. All available demographic information and certification type, practice type, and educational program attended were used in the analysis. Zip codes were used to determine Metropolitan, Micropolitan, and Rural (MMR) areas. These are a widely applied national geographic taxonomy based on area population determined by Census and American Community Survey data. This taxonomy classifies locations into one of three categories: metro, micro, and rural. Metropolitan areas are defined as those with at least one urban area with a population of 50,000 or greater. Micropolitan areas have at least one urban area with a population between 10,000 and 49,999, while rural areas have urban centers of less than 10,000.⁴

Limitations with the licensure data include the self-reporting of information. Individuals did not always enter their educational information appropriately. Employer setting and employer practice area may have been misinterpreted by the individual as no clear definitions are given in the NDBON renewal data entry website. The setting is defined as an outpatient clinic versus an inpatient facility, for example. The practice area is the specialty area where the licensee might work, such as family practice or cardiology. Zip codes were converted to MMR, which was not available directly from the data.

The information reported in this section combines all nursing roles and license types within the state. There are 20,096 nurses licensed in North Dakota.¹ Since 2017, there has been a gradual increase in the total number of nurses with licenses in North Dakota, except for the latest reporting period. Overall, there was a decrease of 313 (-1.5%) nursing licenses between 2022 and 2024. Nurses included in the report are LPN, RN, and the four APRN roles: Nurse Practitioner (NP), Certified Registered Nurse Anesthetist (CRNA), Certified Nurse Midwife (CNM), and Clinical Nurse Specialist (CNS). There was a decrease in percentages of RNs, LPNs, and CNSs. NP percentages continued to increase between 2018 and 2024, while percentages of CRNAs and CNMs stayed relatively stable. Trends in percentages for all licensure types are delineated in Figure 8.1. The roles are all reported separately in later sections of this document.

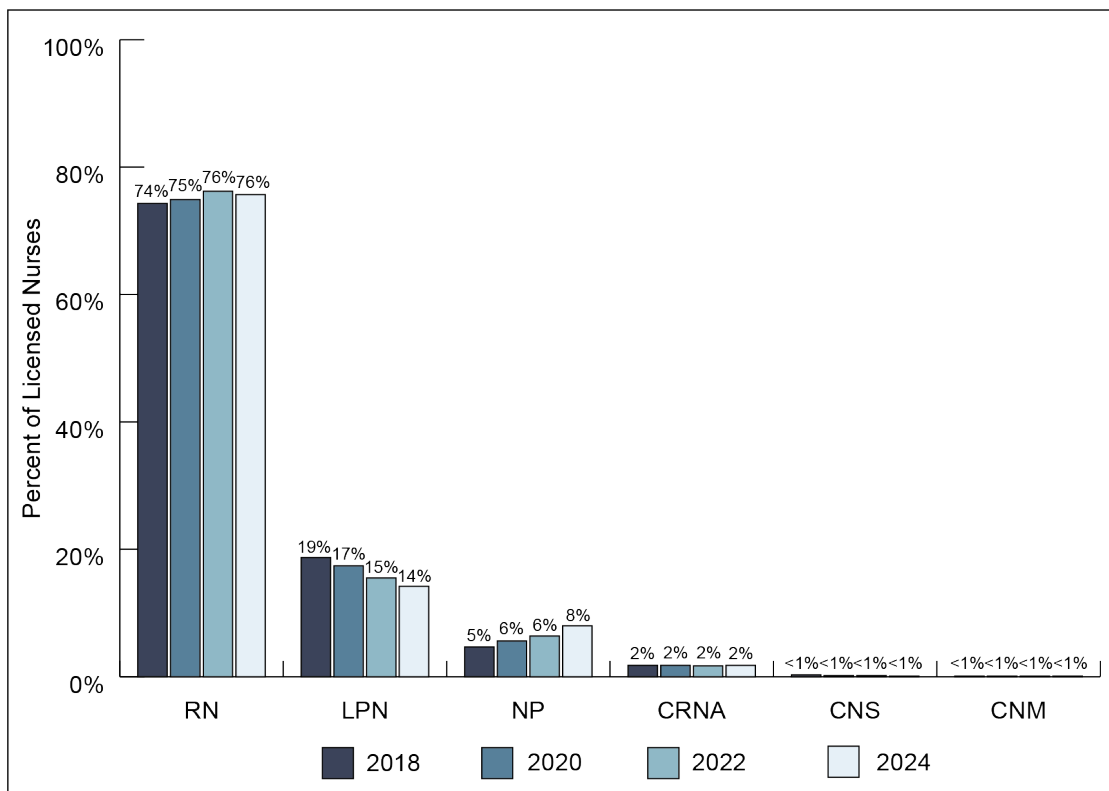


Figure 8.1. Percent of licensed nurses in North Dakota by license type and year, 2024.¹

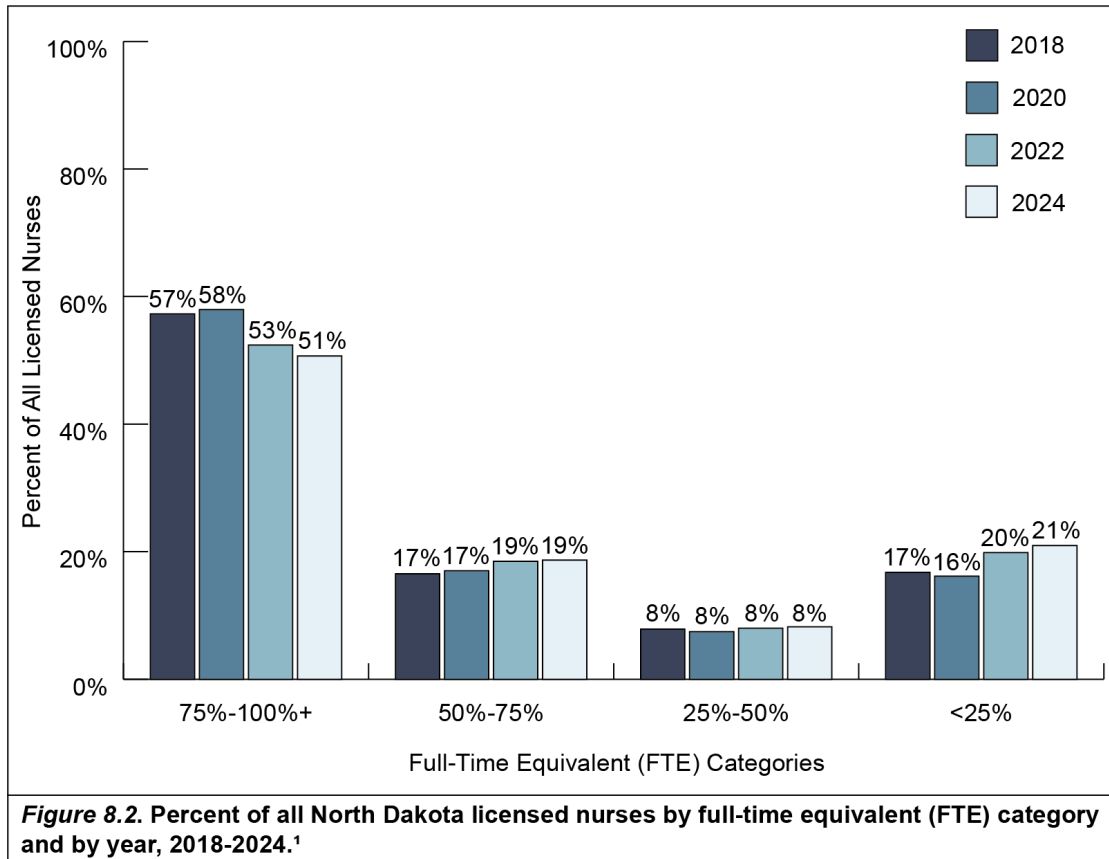
While over 20,000 nurses hold licenses in North Dakota, only 70.4% have North Dakota employer addresses, 62.1% have both North Dakota employer addresses and North Dakota residences, and 8.1% of nurses have a North Dakota employer and either Minnesota or South Dakota residence addresses (see Table 8.1).¹ Thus, roughly 70.2% of nurses licensed in North Dakota likely are employed in North Dakota. This equates to approximately 145 nurses per 10,000 population as compared to the nationwide figure of 130 per 10,000 (BLS data for RN, LPN, APRN added together).^{5, 6} It may appear that North Dakota has a higher percentage of nurses as compared to the rest of the country; however, other factors need to be considered such as full-time equivalent (FTE) versus number of nurses and distribution, both geographically and by work setting. This *Report* will attempt to include as much information on these factors as possible with the available data.

Table 8.1
State of employer and state of residence for nurses licensed in North Dakota, 2024.¹

License Type	Employer in North Dakota						Employer Outside of North Dakota*		Total
	State of Residence								
	ND		MN, SD, or MT		Other State				
	N	%	N	%	N	%	N	%	N
NP	1,092	68.0%	119	7.4%	4	0.2%	390	24.3%	1,605
CRNA	271	75.7%	26	7.3%	-	0.0%	61	17.0%	358
CNS	22	73.3%	3	10.0%	1	3.3%	4	13.3%	30
CNM	17	58.6%	5	17.2%	-	0.0%	7	24.1%	29
RN	9,139	60.0%	1,255	8.2%	35	0.2%	4,790	31.5%	15,219
LPN	1,939	67.9%	219	7.7%	2	0.1%	695	24.3%	2,855
Total	12,480	62.1%	1,627	8.1%	42	0.2%	5,947	29.6%	20,096

*This includes 1,793 with an employer in MN, SD, or MT, 2,507 with an employer in another state, and 1,640 with no defined employer state.

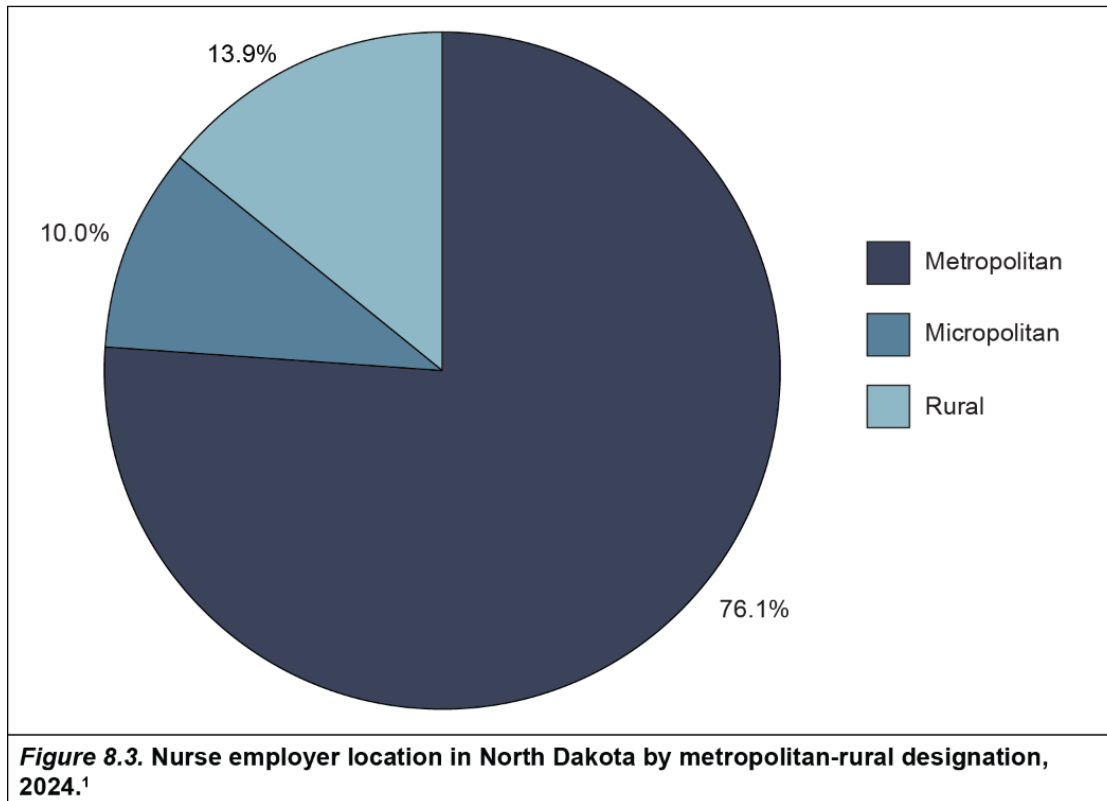
This year, instead of using self-reported statements of full-time, part-time, unemployed, or prn work (as needed), we analyzed the hours nurses reported working in 2024. We also ran these data from 2018, 2020, and 2022 for trend analysis. Using 2,080 hours per year as the definition of 100% FTE (also designated as 1.0 FTE), nursing efforts were categorized as <25%, 25-50%, 50-75%, and 75-100%. As of 2024, only 51% of nurses holding licenses in North Dakota reported working between 75-100% FTE. This is a decline from 57% in 2018. During this same time, nurses working less than 50% FTE rose from 25% to 29%. Each licensure type generally reflected this shift away from 75-100% FTE. These trends are troublesome and likely contribute to North Dakota's perceived nursing workforce shortage. The COVID-19 pandemic may be one of many causes for the trend towards more part-time work. However, more research is needed to determine why the number of North Dakota nurses who work in 75 - 100% FTE positions has decreased and the number of nurses who work in positions considered to be less than 50% FTE has increased.



“Only 51% of nurses holding licenses in North Dakota reported working between 75-100% FTE”

Despite North Dakota being a rural state with only four areas encompassing six counties in the metropolitan classification, about two-thirds of nurses licensed in North Dakota are employed in an area classified as metropolitan and one-third of nurses are employed in micropolitan and rural areas (Figure 8.3). By comparison, the distribution of the general population of North Dakota is 50.6% metropolitan, 24.2% micropolitan, and 25.2% rural, indicating a relative maldistribution of nurses across the state.^{1, 4} Of interest is that North Dakota’s population from 2010 - 2020 increased by 4.87% in rural and micropolitan areas in North Dakota counties; however, the number of all nurses decreased by 2.05% in 2018 - 2024. There was an increase in North Dakota’s metropolitan area county populations of 18.7% from 2010 - 2024 and an increase of 1.9% for all nurses in those areas from 2018 - 2024. For metropolitan area counties, the increase in the percentage of nurses is less than the increase in the population. These troubling trends could further impact healthcare access and quality healthcare for North Dakota’s rural, micropolitan, and metropolitan areas of counties.

“Approximately two-thirds of nurses licensed in North Dakota are employed in an area classified as metropolitan. The remaining third are in rural areas...indicating a maldistribution of nurses across the state.”



North Dakota nursing programs have educated 53.6% of nurses currently licensed in the state. Minnesota nursing programs are a distant second with 26%. Thus, most (82.6%) of North Dakota nurses are educated regionally (defined as North Dakota, Minnesota, or South Dakota; Figure 8.4). However, since 2018, there has been an almost 4% decrease in the proportion of North Dakota licensed nurses having attended North Dakota nursing programs and a 1.5% decrease in the proportion of regional trainees. North Dakota licensed nurses having graduated from Minnesota nursing schools has increased 9.2% per year since 2018 while nurses from foreign schools have risen 150% since 2018. It is unknown whether the nurses obtaining education in other states or areas are originally from North Dakota and return or move to North Dakota after their training. However, based on the literature regarding the nursing workforce, it is likely these nurses are leaving North Dakota for their education and then returning or attending online programs while completing clinical rotations in North Dakota. This is also concerning, as the number of nursing students attending clinical rotations in North Dakota from distance education programs has risen 25% in one academic year (2021-22 to 2022-23).³ One of the primary obstacles when attempting to increase enrollments in North Dakota nursing programs is difficulty with clinical placements; this issue is a limitation for expansion plans for other health profession programs.

With increasing demand for nurses, this trend in where the nurses' education is obtained is problematic. North Dakota is only training half of the nurses needed for the state. It is a consistent observation that students who move to other locations to obtain their education are less likely to return to their hometowns to work. Overall enrollments in nursing programs have been decreasing across the state since 2021 and faculty numbers continue to be problematic.^{2, 3} Programs have also had to divide budgets to allow for increased staff for clinical placement

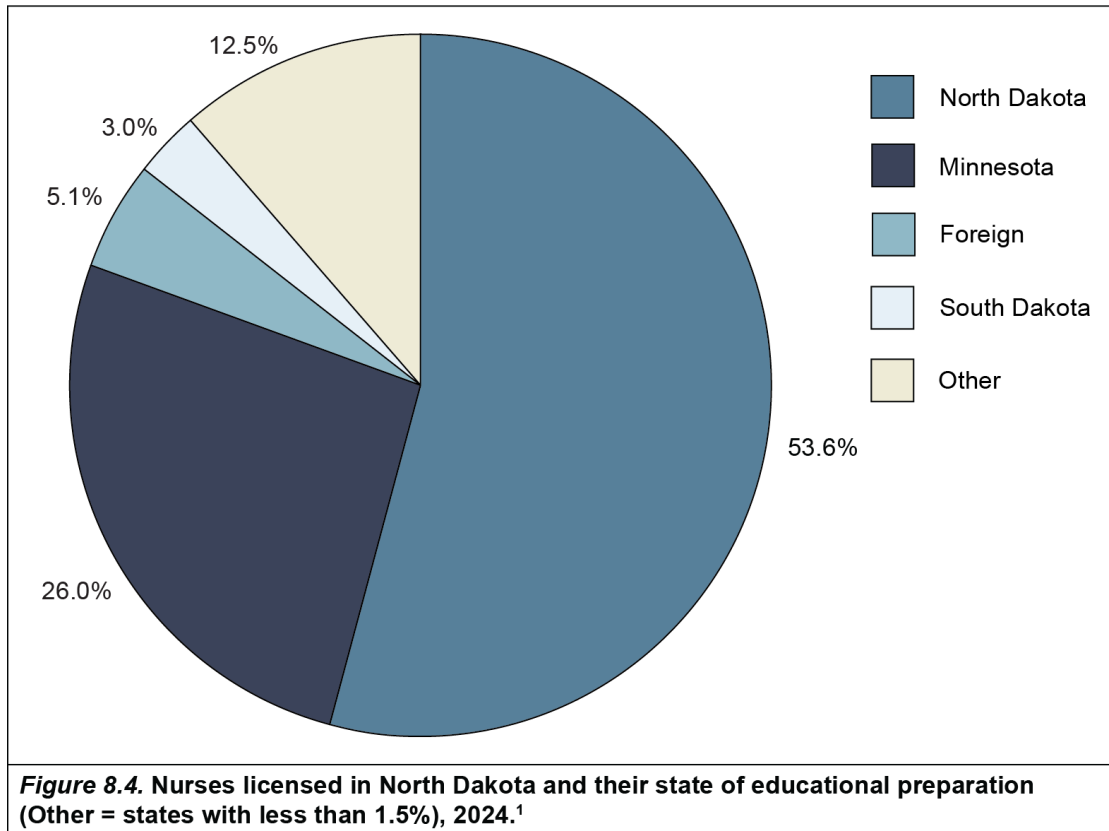
management while at the same time providing additional financial resources for increased simulation needs due to difficulties with obtaining appropriate clinical sites for students.

Educational programs motivated to address the call for additional nurses rely heavily on high quality faculty members to deliver program content. However, the overall faculty numbers have only increased by 9 since the 2015-16 academic year. The trend since 2015 in North Dakota has been a loss of nursing faculty age 50+ by 4.38% per year. The average trend for faculty under age 50 is a 4.49% increase.^{2, 3} While faculty prepared with a bachelor's degree have decreased by 7.5% since 2015, master's prepared faculty have increased by 17.84%. However, nursing faculty with doctoral degrees have decreased by over 10%.^{2, 3} Thus, while the average age of the faculty is trending younger and more masters prepared faculty are present, teaching and practice experience may be impacted with the more seasoned older faculty and those with terminal degrees leaving the field.

Another factor is that many nurses want or need to continue practicing and therefore are unable to maintain full-time faculty status. As a result, they are either counted as part-time or adjunct. Since 2015, on average 45.5% of all nursing faculty are part-time.^{2, 3} While part-time faculty are needed to provide both clinical and didactic education, they typically do not have the added requirements of service and scholarship as many full-time faculty. This places additional non-teaching workload on full-time faculty. Increasing student enrollment for in-state nursing programs obviously is beneficial; with the aging population, high rates of chronic disease, and maternal and infant mortality concerns in rural areas (see more in Chapter 3), there will continue to be an increased need for nurses in all roles.

An additional factor is that faculty salaries generally are lower than the salary amount a nurse with the same expertise, license, and experience could receive for clinical practice, further complicating the faculty shortage problem. Nursing faculty also typically need a graduate degree, whereas practicing RNs need a 2- or 4-year degree. The average annual salary for an RN, regardless of degree, in the U.S. is \$94,480, while the average nursing instructor salary is \$86,530.⁵ This gap increases with clinically practicing APRNs who must have at least a master's degree, and most now earning a doctorate. NPs across the U.S. average \$128,490 annually.⁷ Salaries tend to correlate with the nursing degree, and clinical license market salary leveling may increase nursing faculty numbers.

“North Dakota nursing programs have educated 53.6% of nurses currently licensed in the state.”



NORTH DAKOTA'S LICENSED NURSING WORKFORCE BY ROLE

This section presents a view of North Dakota's nursing workforce broken down by license type or role: LPN, RN, NP, CRNA, CNM, and CNS. Data are presented, summarized, and analyzed from the North Dakota Board of Nursing Licensure Data, and the North Dakota Board of Nursing Education Annual Reports with the most recent being the 2021-2022 and 2022-2023 reports.^{1, 2, 3}

Licensed Practical Nurses (Licensed Vocational Nurses)

LPNs/LVNs work at North Dakota's various healthcare facilities, such as hospitals, clinics, assisted living and nursing facilities, including long term care and nursing homes. LPNs are important interprofessional healthcare team members and have certain roles and responsibilities while providing patient care. North Dakota's Standards of Practice Law states: "Each LPN is responsible and accountable to practice according to the standards of practice prescribed by the board and the profession." It is not the setting or the position title that determines a nursing practice role but rather the application of nursing knowledge.⁸ The LPN practices nursing dependently under the direction of the registered nurse, advanced practice registered nurse, or licensed practitioner through the application of the nursing process and the execution of diagnostic or therapeutic regimens prescribed by licensed practitioners.⁸ The licensed practical nurse's administration and management of nursing includes assigning and delegating nursing interventions.⁸ Unlicensed assistive persons complement the licensed

practical nurse in the performance of nursing interventions but may not substitute for the licensed nurse.⁸ The licensed practical nurse practices within the legal boundaries for practical nursing through the scope of practice authorized in the Nurse Practices Act and nursing rules. Due to a more limited scope of practice, LPNs can work in fewer areas of clinical practice than RNs.

As of December 2023, there were 2,855 LPNs in North Dakota.¹ The number of North Dakota LPNs has decreased from 3,155 (9.51%) in the 2023 *Report*. Since 2018, the number of LPNs licensed in the state has decreased by 14.8%. To practice as an LPN, an individual must graduate from an approved practical nursing education program, pass the National Council Licensure Examination for Practical Nursing (NCLEX-PN) exam, and apply for licensure in the state. Most practical nursing graduates have earned either a certificate or an associate degree. The state's LPNs have obtained their initial education in several states. However, most of North Dakota's LPNs achieved their initial practical nursing education in North Dakota (48%) or Minnesota (44%) (Figure 8.5).¹ There are fewer LPNs than RNs in the state since many LPNs continue their education to become RNs. Each year, more students are graduating from nursing education programs and thus are eligible to take the RN exam than the LPN exam. Increased salary, career advancement, and the desire to work in more areas of practice may be reasons why an LPN may choose to become an RN.

On April 22, 2024, the federal Center for Medicare and Medicaid Services (CMS) published minimum staffing standards for long-term care facilities (nursing homes or facilities) that require an RN to be onsite 24 hours a day, seven days a week. This new rule will be implemented over the next several years to allow time for facilities to meet the new rules. Nursing facilities considered urban will have to comply with the new rule by May 2026 and those considered rural will have until May 2027 to comply. Exemptions to the new rules may be allowed but will be considered by CMS on a case-by-case basis.⁸ Because recruitment of RNs to rural areas can be a challenge, the new rule likely will increase the pressure to have an adequate supply of RNs. Therefore, it will be important to develop financial and other support mechanisms to allow some currently employed LPNs to obtain further education and become licensed RNs without jeopardizing the important role that LPNs play as important members of the healthcare team in rural areas and at long-term care facilities (nursing homes).

“LPNs are an important member of the healthcare team, especially in rural areas and at nursing homes.”

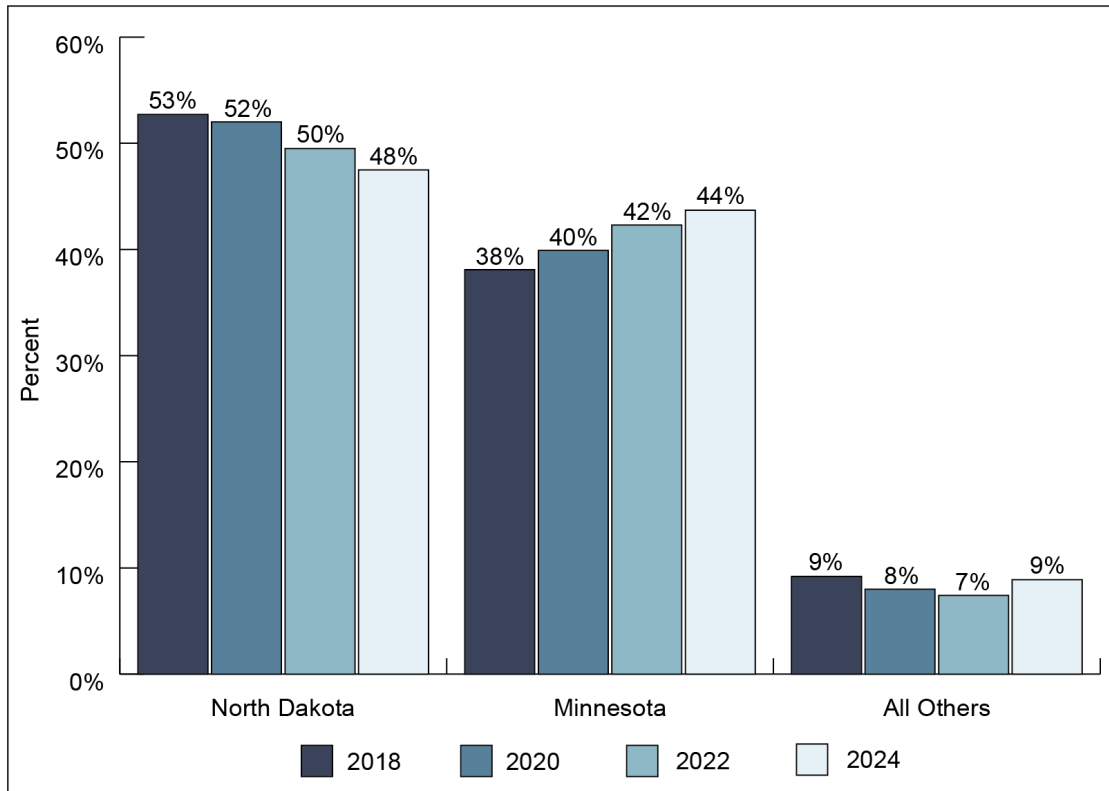


Figure 8.5. North Dakota licensed practical nurses' (LPNs') education state by year, 2018-2024.²

North Dakota's Practical Nurse Education Programs

Currently there are seven NDBON-approved practical nurse education programs in North Dakota.¹⁰ Most of these programs are in rural areas with a goal to increase access for individuals to obtain practical nursing education. One of these programs is at a tribal college (Sitting Bull College). Four state colleges collaborate and are part of the Dakota Nursing Program (Bismarck State College, Dakota College at Bottineau, Lake Region State College in Devils Lake, Williston State College). In addition, the Dakota Nursing Program has several distance sites located throughout the state (rural and urban). The remaining two programs are at Dickinson State University and North Dakota State College of Science.

Graduates earn an associate degree or a certificate in practical nursing specific to the program.¹⁰ Graduates from all programs can apply to take the NCLEX-PN examination to become LPNs. Table 8.2 provides information on total enrollment, admissions, and graduates for these programs over the recent past.^{2, 3} Since 2016, admission and enrollment numbers have varied with a decline in graduates (Table 8.2). Several factors have influenced program admission, enrollment, and graduate numbers. Generally, from 2016-2021 the state's number of practical nursing program enrollment, admission, and graduate numbers were on the rise; however, the numbers have decreased since 2021. Several factors may have caused this decrease including the closure of practical nursing programs at Fort Berthold Community College in fiscal year 2014-2015, Turtle Mountain Community College in fiscal year 2016-2017, and United Tribes Technical College in fiscal year 2018-2019 impacted overall program numbers. Furthermore, the COVID-19 pandemic likely influenced total enrollment, admissions,

and graduate numbers from 2021-2023. Based on conversations with current faculty and administrators of these programs, the state's practical nursing programs are limited in their ability to increase enrollment numbers due to limited funding and resources and a continued shortage of faculty. The 2021-2022 NDBON education report indicated six open faculty positions.² The last NDBON education report for 2022 - 2023 noted five vacant positions.³ Additional state funded research studies are needed to determine the reasons for the decline in faculty, practical nursing admissions, enrollment, and graduate numbers.

Table 8.2
North Dakota's practical nurse program 6 year trends, 2016-2023.³

Practical Nursing Program Trends	FY 2016-2017	FY 2017-2018	FY 2018-2019	FY 2019-2020	FY 2020-2021	FY 2021-2022	FY 2022-2023
Program Admissions	275	300	305	295	312	243	277
Total Enrollment	379	419	417	396	393	381	300
Graduate Certificate Program Graduates	92	132	138	128	155	135	129
Associate Degree Program Graduates	55	93	61	76	70	56	31
Total Graduates	147	225	199	204	225	191	160

Information provided is from the '18-'19, '19-'20, '20-'21, '21-'22, & '22-'23 NDBON Nursing Education Annual Reports

LPN Employment Practice Areas and Settings

North Dakota's LPNs work in various practice areas (Figure 8.6). Interestingly, the largest number of LPNs (1,156) identified the area "other" as their main practice area. Geriatrics was identified as the second most common practice area (663 LPNs).¹ The third most common area is family medicine (354 LPNs). It is not surprising that many LPNs indicated that they practice in geriatrics, as many are employed in nursing homes or other long-term care facilities. In addition, many LPNs work in family practice clinics. It is difficult to determine what practice areas make up the "other" areas (other than the pre-specified area of anesthesia); more detailed data collection is needed to determine what areas are considered "other."

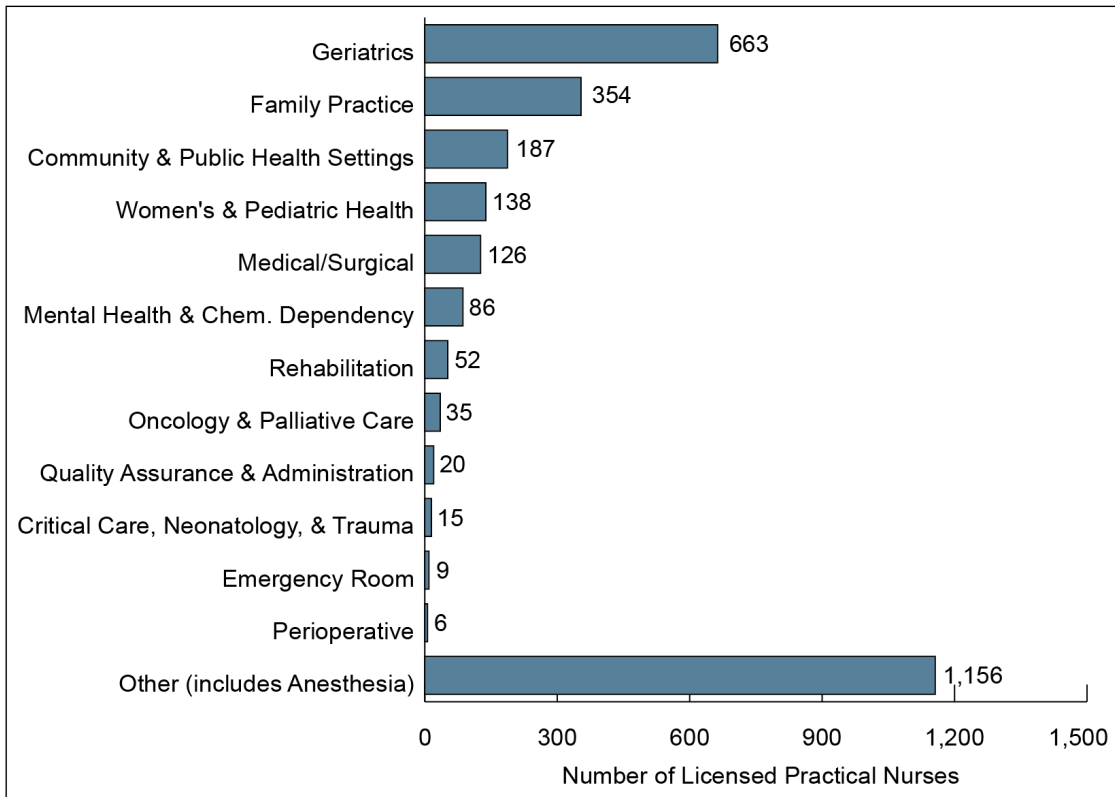
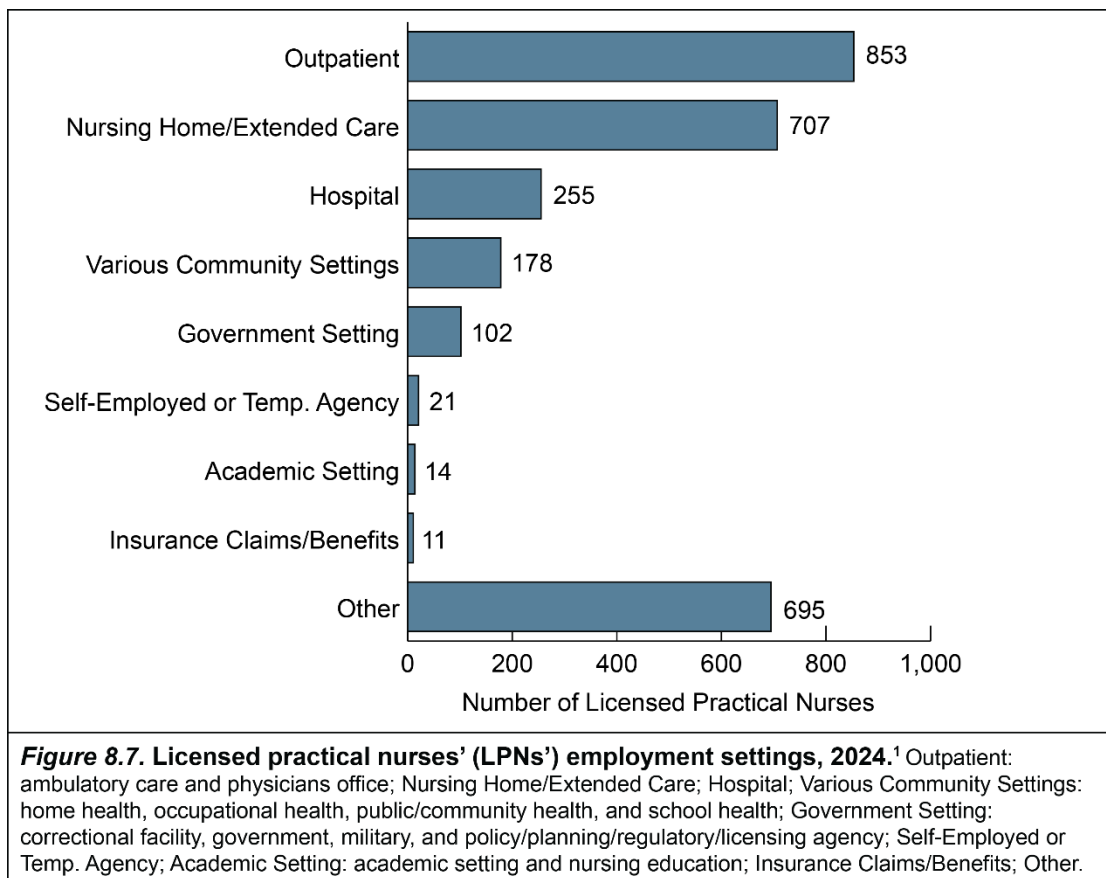


Figure 8.6. Licensed practical nurses' (LPNs') current practice area, 2024.¹

Figure 8.7 illustrates the employment settings for North Dakota's LPNs. Most LPNs practice at outpatient facilities such as provider clinics and ambulatory care centers (853). The second highest employer is nursing homes (707) with hospitals a distant third (255). Community settings were fourth.¹ Overall, the number of LPNs decreased in every employment setting.



Since 2018, the number of LPNs working in a position considered 75 - 100% FTE has decreased, while the number working at less than 25% FTE has increased.¹ In 2024, the state's LPNs vary in employment status as indicated by FTE (Figure 8.8). Most LPNs (43%) recently indicated a 75 - 100% FTE status, followed by 15% at 50 – 75% FTE status, 9% at 25 – 50% FTE status, and 31% at less than 25% FTE status.¹ These FTE trends for LPNs are concerning and may have a detrimental impact on North Dakota's nursing shortage. Factors such as the COVID-19 pandemic, burnout, negative working environment, and other reasons may be impacting the supply of LPNs working at least 50 - 75% FTE positions. Some LPNs may have chosen to decrease the number of hours worked per week, retire, or quit the profession altogether. Reemployment of these licensed LPNs could help decrease the state's LPN vacancies. More studies are needed to explore the reason for the decrease in the percentage of LPNs employed in a 75 - 100% FTE position. In addition to the overall decrease in the number of employed LPNs in North Dakota, this trend in the FTEs further adds to the overall nursing workforce shortage. In addition, more research is needed to determine what type of workplace environment factors need to be implemented to increase LPN to 50 - 100% FTE positions and the number of LPNs employed in North Dakota.

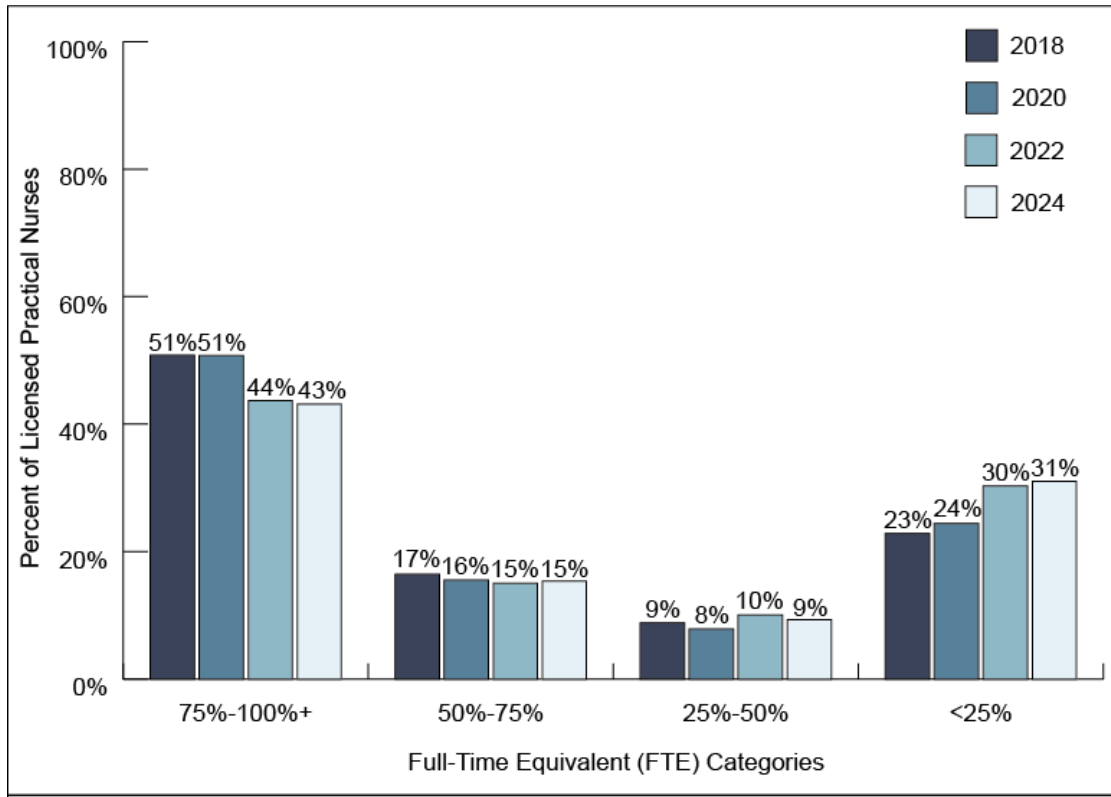
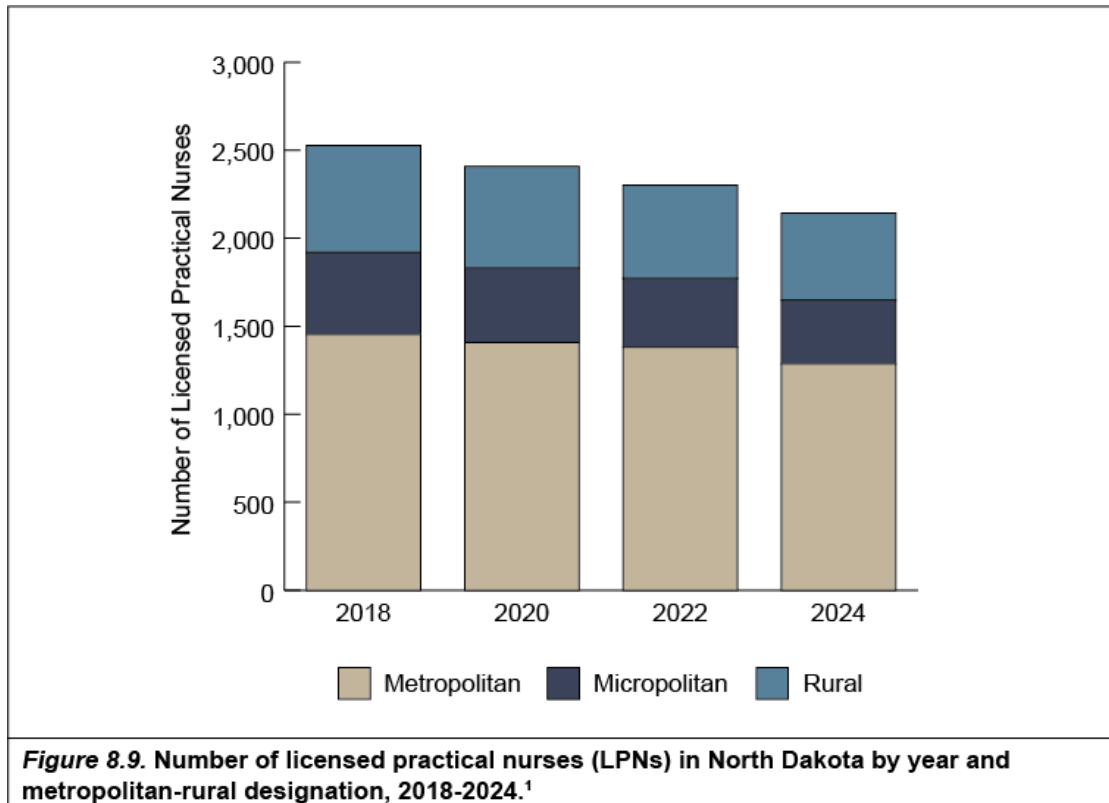
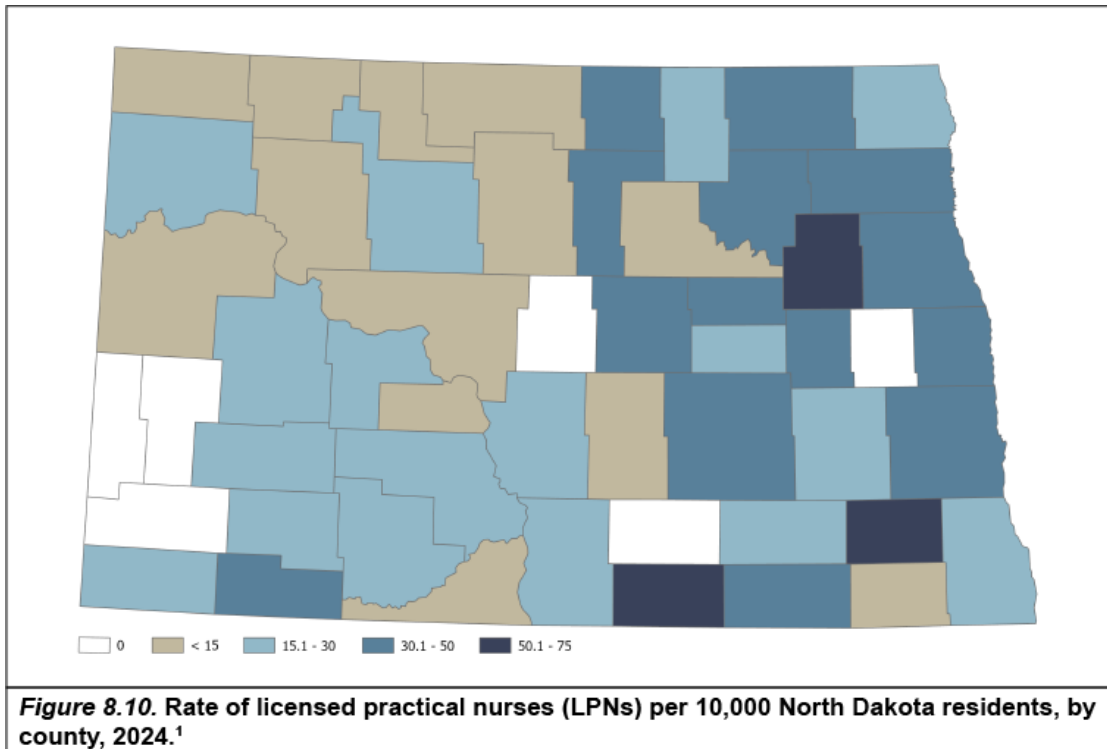


Figure 8.8. Percent of North Dakota licensed practical nurses (LPNs) by full-time equivalent (FTE) category and by year, 2018-2024.¹



LPNs identified the city in which they are employed. City zip codes were used for determination of MMR areas. Most LPNs are working at a facility that is considered metropolitan followed by those facilities considered rural (Figure 8.9).^{1, 4} These percentages have fluctuated since 2018 with an increase in metropolitan and decrease in rural percentages. However, from 2022 - 2024 all three areas have a decrease in the number of LPNs. As is true with other healthcare providers, North Dakota has an LPN distribution problem. Three of North Dakota's counties have over 50 LPNs per 10,000 residents while most other counties have fewer than 30 per 10,000 residents. Most of these counties with lower LPN concentration are rural (Figure 8.10). The unequal distribution of LPNs and decrease in the number of LPNs working in a 75 - 100% FTE position may contribute to a negative impact on North Dakota's nursing workforce.



LPNs can apply for licensure in more than one state so that they can concurrently practice in several states. An LPN may choose to have more than one license because they live on a state border, work under contract, or maintain a residence in more than one state. Some LPNs have a compact LPN license so that they can practice in one of the states that recognize compact licenses (MN is not a compact state).¹ Compact states are states that have joined together to legally permit their LPNs to obtain a multi-state licensure called a compact license.¹³

Only 67.9% of North Dakota licensed LPNs have a North Dakota employer and residence. However, 7.7% of LPNs reported they have North Dakota employers with border state residences (Minnesota, Montana, or South Dakota) (see Table 8.1). Some North Dakota licensed LPNs did not list the location of their employer or work out-of-state (24.3%).¹ LPNs who did not list their employer or work out-of-state may be contract nurses working at several rural and urban healthcare facilities, retired, or unemployed. Healthcare facilities often hire contract LPNs to help fill vacant positions.

Other LPN Demographics

The average age of the state’s LPN workforce has remained about the same since 2018 at 44.3 years old (Figure 8.11). Noteworthy is the consistent decrease in the number of LPNs as they age, with an increase in the number of LPNs in the age range of 51-55 years and older¹ (Figure 8.11).

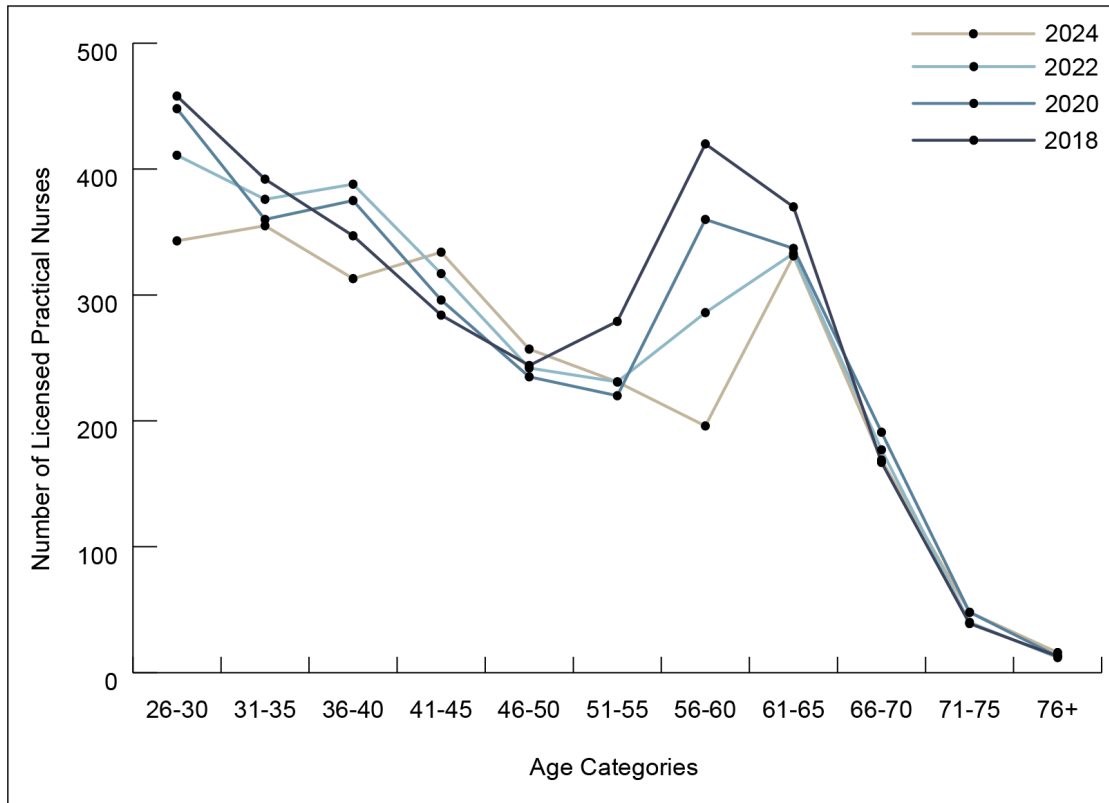


Figure 8.11. Number of North Dakota licensed practical nurses (LPNs) in each age category by year, 2018-2024.¹

Registered Nurses

RNs work at North Dakota’s various healthcare facilities, such as hospitals, clinics, assisted living facilities, and nursing homes (long-term care). RNs are important interprofessional healthcare team members and have certain unique roles and responsibilities when providing patient care. North Dakota’s Standards of Practice Law states: “Each RN is responsible and accountable to practice according to the standards of practice prescribed by the board and the profession.”¹¹ It is not the setting or the position title that determines a nursing practice role, but rather the application of nursing knowledge.¹¹ Through the application of the nursing process (assessment, interventions, and evaluation), the RN practices nursing independently and interdependently.¹¹ RNs also practice nursing dependently by executing diagnostic or therapeutic regimens prescribed by licensed practitioners. The administration and management of nursing by RNs include assigning and delegating nursing interventions that may be performed by others.¹¹ The RN practices within the legal boundaries for nursing through the scope of practice authorized in the Nurse Practice Act and nursing rules.¹⁰

As of June 2024, there were 15,219 licensed RNs in North Dakota.¹ This is a decrease from 15,473 (2.16%) RNs reported in the 2023 *Biennial Report*. Of interest is the fact that since 2018, the number of RNs licensed in the state has increased by 14.38%. To practice as an RN, an individual must graduate from an approved nursing education program, pass the National Council Licensing Examination for Registered Nurses (NCLEX-RN) exam, and apply for licensure in the state. Several registered nursing education degree options exist. Most nursing

graduates eligible to take the NCLEX-RN exam have initially earned either a diploma, associate degree, or bachelor's degree before licensure. Some RNs, after receiving an associate degree, will continue their education and earn a bachelor's degree. After becoming licensed as an RN, they can pursue additional education necessary for their area of practice, such as earning a master's or doctoral degree (PhD - Doctor of Philosophy, DNP - Doctor of Nursing Practice).

North Dakota's RNs have obtained their initial nursing education in many states. Most of the state's RNs earned their degrees in North Dakota (54%), which increased by 1% compared to 2022 after a steady decline since 2018. The number of RNs who earned their degrees in neighboring states has varied - the number of RNs from Minnesota (24%) has shown a slight increase since 2018 and since 2022 the number of RNs coming from South Dakota has slightly decreased from 4% to 3%. In addition, RNs educated in foreign countries increased to 7% of the state's RN workforce while nurses from other states (13%) decreased since 2022 (Figure 8.12).¹

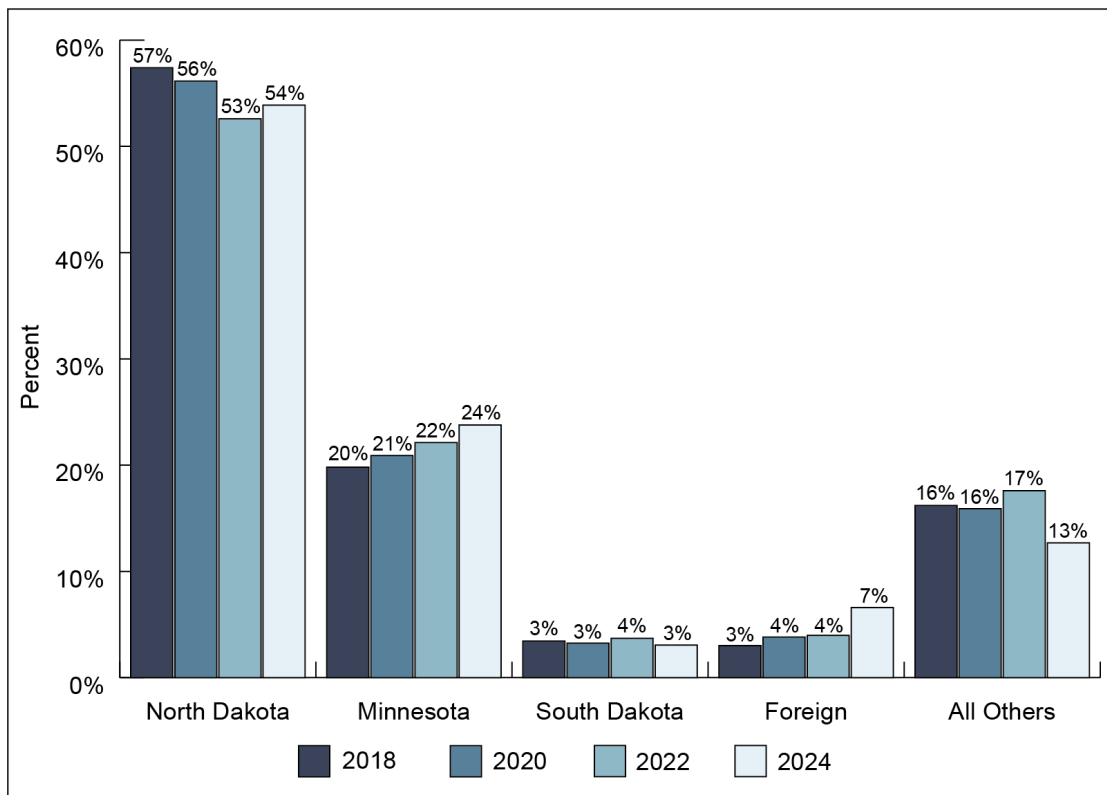


Figure 8.12. North Dakota registered nurses' (RNs) education by state and year, 2018-2024.²

North Dakota's Registered Nurse Education Programs

North Dakota currently has 15 NDBON-approved registered nurse education programs, an increase from 12 as reported in the last *Report* from 2023.¹² All graduates are eligible to take the NCLEX-RN exam required for initial RN licensure. Four state colleges collaborate and are part of the Dakota Nursing Program (Bismarck State College, Dakota College at Bottineau, Lake Region State College, and Williston State College) in which students graduate with an associate degree. In addition, the Dakota Nursing Program has distant sites throughout the state in mostly rural areas associated with each of the four colleges. The North Dakota State College of Science and the University of Jamestown also offer an associate degree program. Some state

universities offer a Bachelor of Science (BSN) (baccalaureate) degree program, including Dickinson State University, Minot State University, North Dakota State University (NDSU), NDSU Nursing at Sanford Health, and the University of North Dakota. Three private universities/colleges offer a Bachelor of Science (baccalaureate) degree program: the University of Jamestown, the University of Mary, and Rasmussen University. In addition, the University of Jamestown offers a direct entry master’s degree RN program in which students can enter the program with a previous college degree, such as a bachelor’s degree, in another major.¹² Mayville State University offers an RN/BSN program where RNs enrolled are practicing RNs and enroll in an online program to obtain a baccalaureate degree. Data from Mayville State University’s (MSU) nursing RN/BSN program are not included in the *NDBON Nursing Education Annual Report* since MSU does not undergo approval through the NDBON and instead obtains accreditation from the Commission on Collegiate Nursing Education (CCNE).^{2, 3}

Table 8.3 provides information on total enrollment, admissions, and graduates for these programs over recent years. Fort Berthold Community College closed its associate degree nursing program in fiscal year 2014 - 2015. The baccalaureate graduate data (Table 8.3) includes some RNs already practicing who earned a previous diploma or associate degree before their initial RN licensure. While total enrollment overall has varied in the baccalaureate and associate degree programs, the total number of graduates generally increased through FY 2020-2021, it has declined since then.^{2, 3} The COVID-19 pandemic most likely harmed the state’s nursing programs’ overall admission, graduate, and enrollment numbers, although total graduates for these programs increased in 2020-2021 despite the pandemic effects.^{2, 3} Fiscal years 2021-2022 and 2022-2023 generally saw a decrease in student total enrollments, admissions, and graduates.^{2, 3}

Table 8.3
North Dakota’s registered nurse program 6 year trends, 2016-2023.³

Registered Nurse Program Trends	FY 2016-2017	FY 2017-2018	FY 2018-2019	FY 2019-2020	FY 2020-2021	FY 2021-2022	FY 2022-2023
Associate Degree Program Admissions	122	161	157	176	207	187	204
Baccalaureate Degree Program Admissions	639	612	706	671	643	475	223
Total Enrollment	1,584	1,514	1,830	1,797	1,758	1,755	1,474
Associate Degree Program Graduates	103	119	151	143	188	165	165
Baccalaureate Program Graduates*	488	553	570	563	730	495	480
Total Graduates	591	672	721	706	751	660	645

Information provided is from the '18-'19, '19-'20, '20-'21, '21-'22, & '22-'23 NDBON Nursing Education Annual Reports
*Note total for each fiscal year includes Basic BSN, LPN to BSN, Diploma to BSN, and ADN to BSN.

RN Employment Practice Areas and Settings

North Dakota’s RNs have identified areas in which they currently practice (Figure 8.13). The largest number of RNs (5,344) identified the area of “other” as their main practice area. It is difficult to determine exactly what “other” would indicate; however, presumably “other” would be any of the areas not specified in Figure 8.13. Medical/Surgical was the second most common

area (1,791),¹ indicating RNs who are working mainly in hospitals and outpatient surgery centers. These trends are consistent when compared to previous *Reports*.

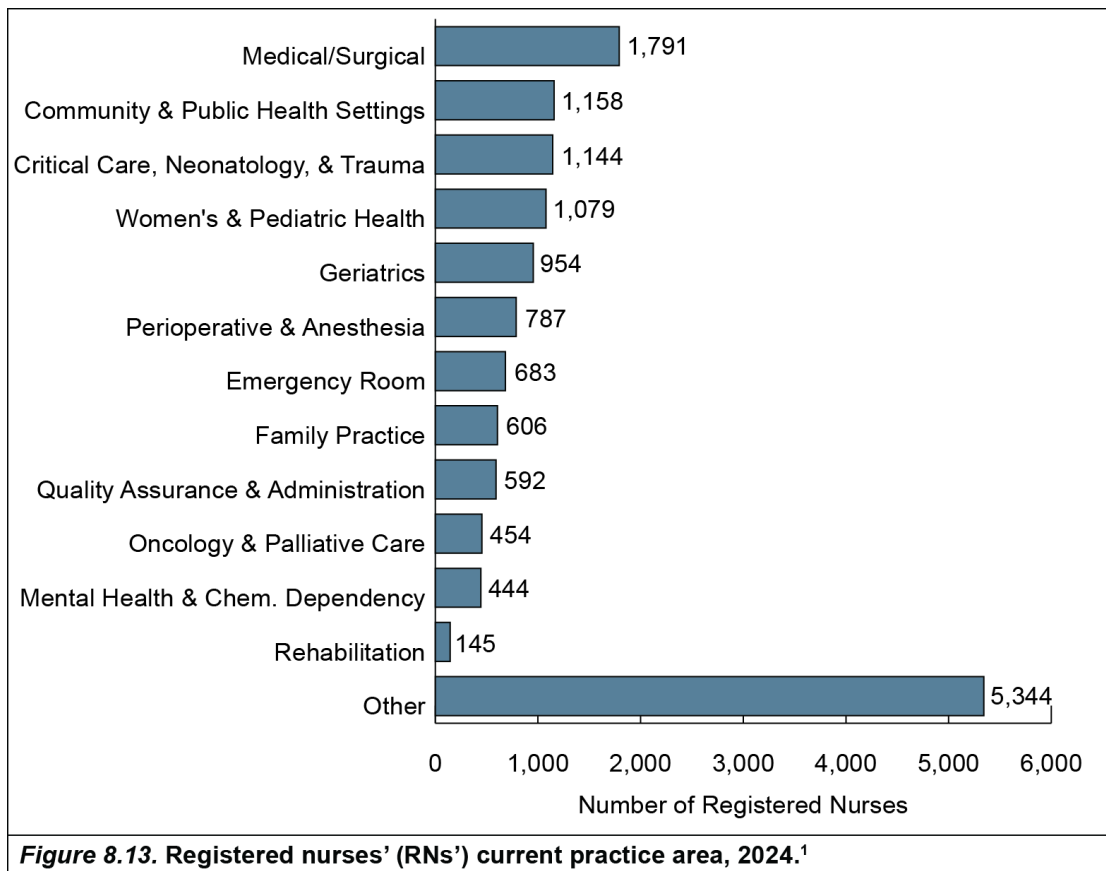


Figure 8.14 illustrates the employment settings for North Dakota's RNs. Like LPNs, the most common employers for the state's RNs are inpatient facilities (hospitals and nursing homes) at 7,554.¹ However, unlike the LPN workforce, most RNs indicated that they work in hospitals (6,505 or 43%) versus nursing homes (1,049 or 7%). Overall, the total number of RNs in the inpatient facility is stable, based on the previous *Report* in 2023.¹ One reason that more RNs are employed in hospitals versus nursing homes is that the overall patient acuity is higher in hospitals. The RN's legal scope of practice/license allows them to care for higher acuity patients than LPNs. However, of concern is that the number of RNs who reported working in a nursing home has decreased by 4.5% from 1,098 to 1,049 since the last *Report*. This concern is related to the new Centers for Medicare & Medicaid Services regulations that will become effective in May 2026 and May 2027, requiring nursing homes to have an RN present 24 hours a day, 7 days a week.⁹ Of interest is that outpatient settings were identified by RNs (2,161) as the second most common employment setting, a slight increase from the last *Report* in 2023.¹ These findings are expected because of the increased utilization of clinics and outpatient settings for patient care.

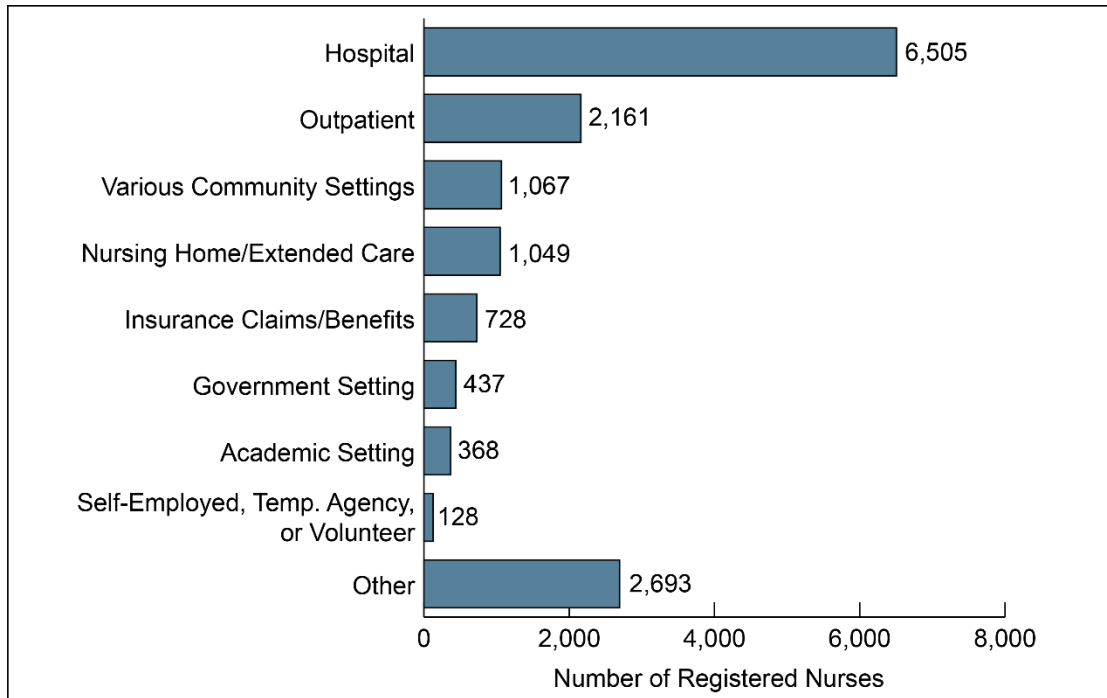


Figure 8.14. Registered nurses' (RNs) employment settings, 2024.¹ Hospital; Outpatient: ambulatory care and physicians office; Various Community Settings: church, home health, occupational health, public/community health, school health, and social services; Nursing Home/Extended Care; Insurance Claims/Benefits; Government Setting: correctional facility, government, military, and policy/planning/regulatory/licensing agency; Academic Setting: academic setting and nursing education; Self-Employed, Temp. Agency, or Volunteer; Other.

The state's RNs vary in employment status as represented by FTEs (Figure 8.15). RNs reported a 7% decrease in the 75% -100% FTE positions (51%) and a 4% increase in the <25% FTE positions (20%) since 2018. These trends are similar to what was found with LPNs and may negatively impact the state's nursing workforce.

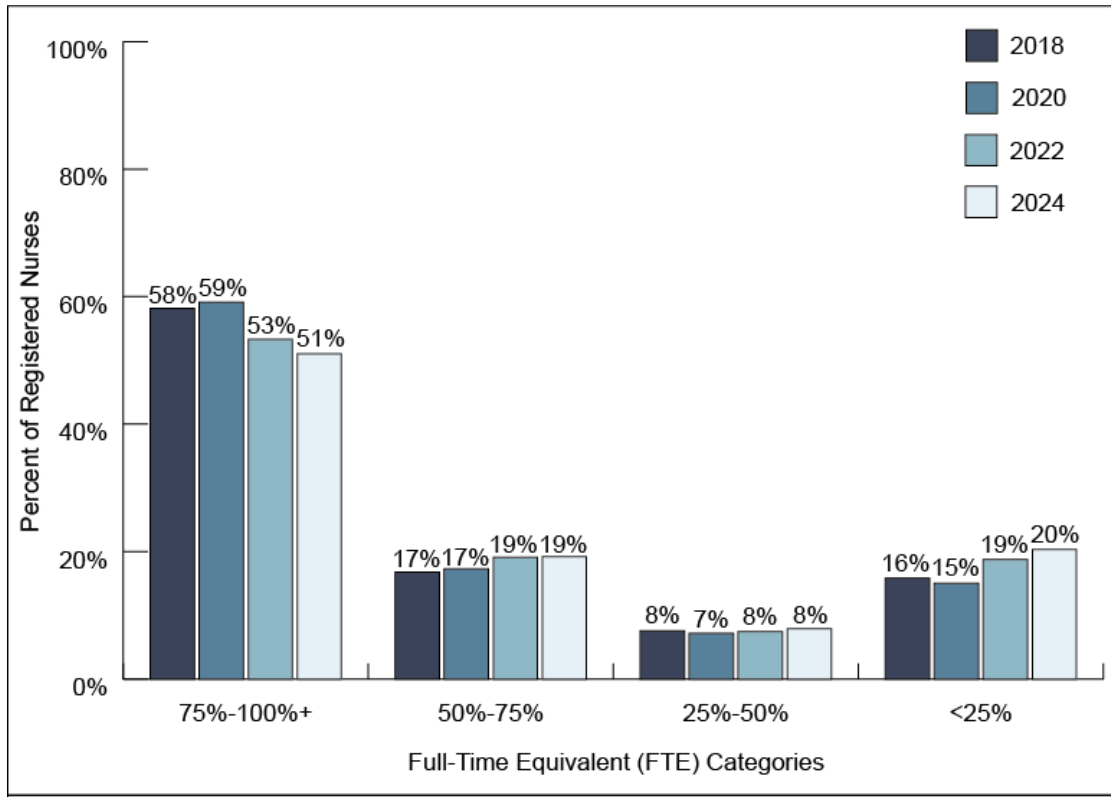


Figure 8.15. Percent of North Dakota registered nurses (RNs) by full-time equivalent (FTE) category and by year, 2018-2024.¹

Most RNs are working at a facility located in metropolitan areas. The remainder work in rural or micropolitan areas (Figure 8.16). Like North Dakota’s LPN workforce, the state’s RN workforce is not distributed evenly. Counties throughout North Dakota vary in their percentages of RNs per 10,000 North Dakota residents (see Figure 8.17).

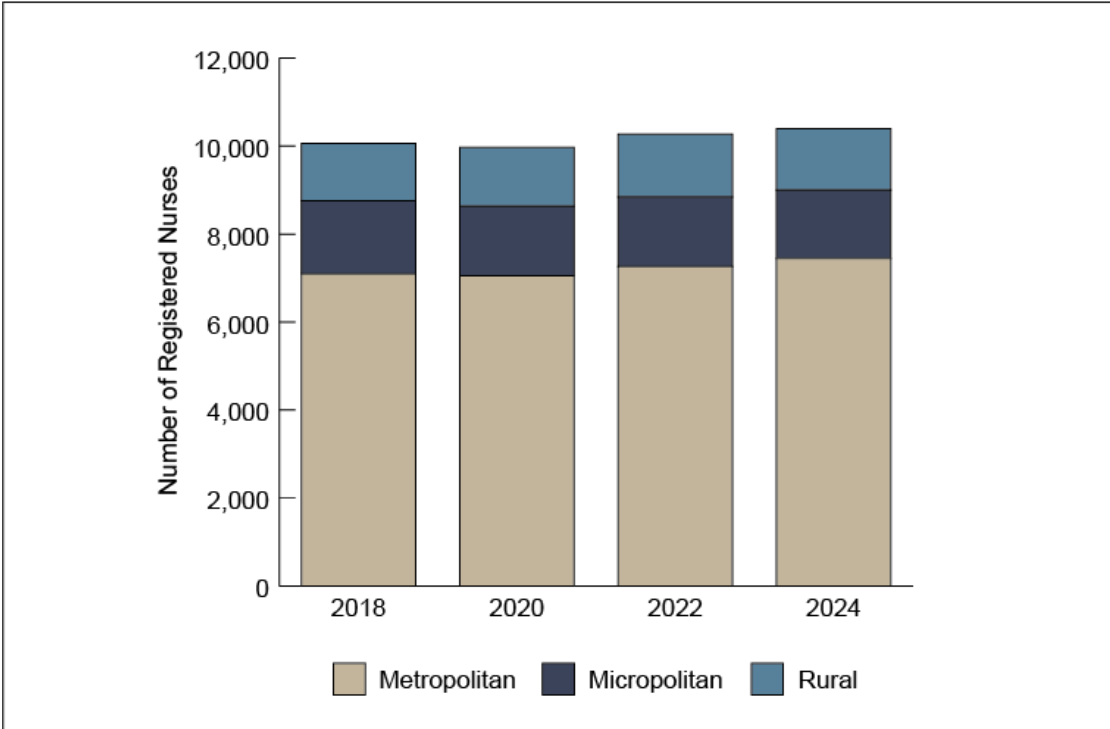


Figure 8.16. Number of registered nurses (RNs) in North Dakota by year and metropolitan-rural designation, 2018-2024.¹

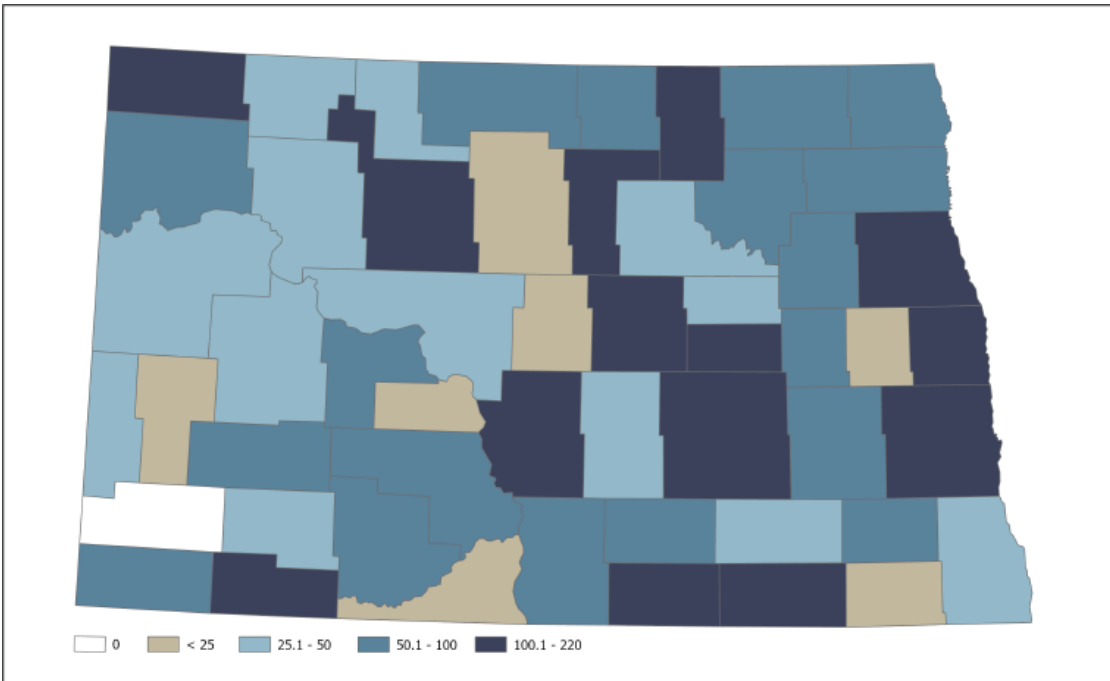


Figure 8.17. Rate of registered nurses (RNs) per 10,000 North Dakota residents, by county, 2024.¹

RNs can apply for licensure in more than one state to concurrently practice in several states. The RN may choose to have more than one license because he or she lives on a state border, works under contract, or maintains a residence in more than one state.¹ Only 60% of North Dakota licensed RNs reported a North Dakota address and North Dakota employer. However, 8.2% of RNs reported they have a North Dakota employer and a Minnesota, Montana, or South Dakota residence (see Table 8.1). Some North Dakota licensed RNs (31.5%) did not indicate employment status and/or employment in another state.¹ RNs who maintain North Dakota licenses and are employed in another state or multiple licenses could be contract nurses working at various rural and urban healthcare facilities. The data sources available make it difficult to determine how many nurses licensed in North Dakota have multiple licenses with other non-compact states.

There is a movement toward RN licensure compact agreements. This would require RNs to be licensed in their home state but could practice in any state included in the compact agreement. Currently, forty-one states (including North Dakota¹³) signed into the compact agreement with pending legislation in other states to approve joining the compact agreement. Minnesota does not recognize compact licenses, and RNs are required to obtain a Minnesota license to practice there.

Other RN Demographics

Most of North Dakota's RNs are 36 - 40 years old (16.2%) (Figure 8.18), an increase from previous years. The average age of the state's RNs has remained about the same since 2018 at 42.7 years; however, there is a trend for nurses to continue working past retirement age.¹ As was found with LPNs, RNs demonstrate a gradual decline in numbers as their ages increase, except for a spike in the 50s and 60s.

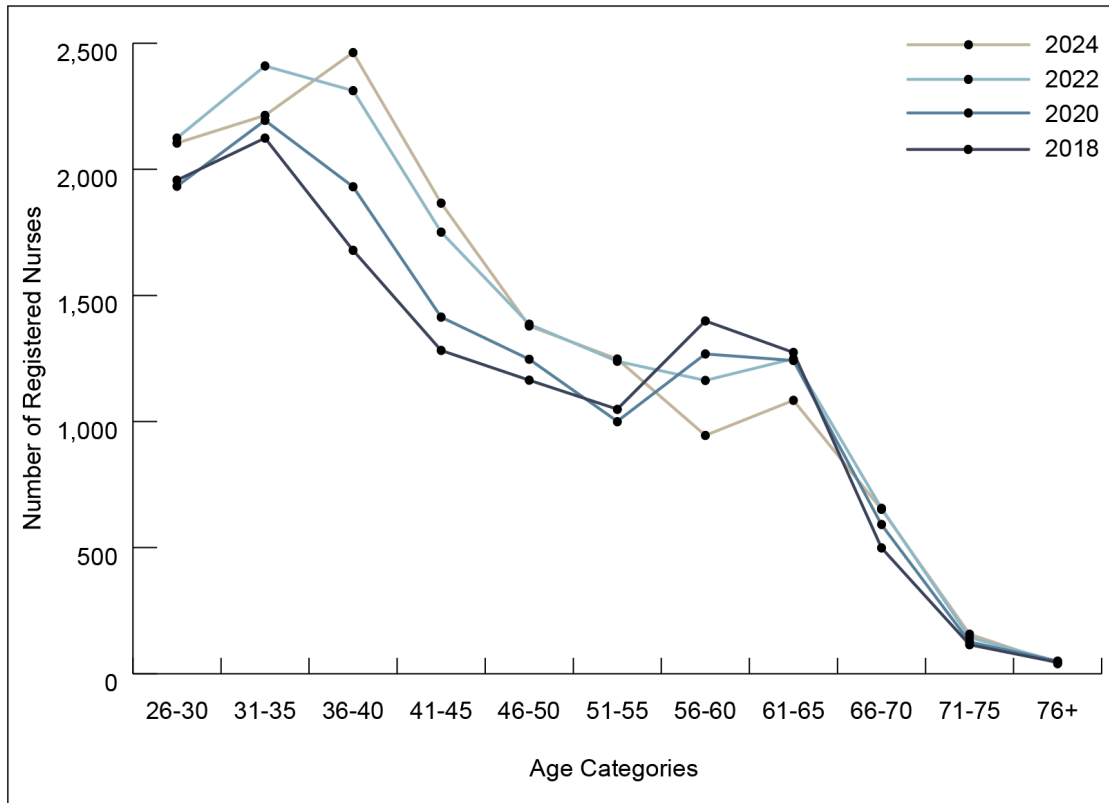


Figure 8.18. Number of North Dakota registered nurses (RNs) by age category and year, 2018-2024.¹

Nurse Practitioners

NPs have been recognized as providing care to patients in the United States since 1965. Currently, NPs must have the following: a bachelor's degree in nursing, pass state RN licensing exams, have a minimum of one-year experience as an RN, and then complete either a Master or Doctor of Nursing Practice degree. Upon completion of this degree, the RN must pass a national certification exam to be licensed and practice as an NP. According to the American Association of Nurse Practitioners, "NPs assess patients, order and interpret diagnostic tests, make diagnoses, and initiate and manage treatment plans, including prescribing medications." NPs can work in primary care, specialty care, inpatient, outpatient, and many other practice areas.¹³ NPs can work without a supervising or collaborating physician in many states, including North Dakota, and are a significant addition to interprofessional healthcare teams.

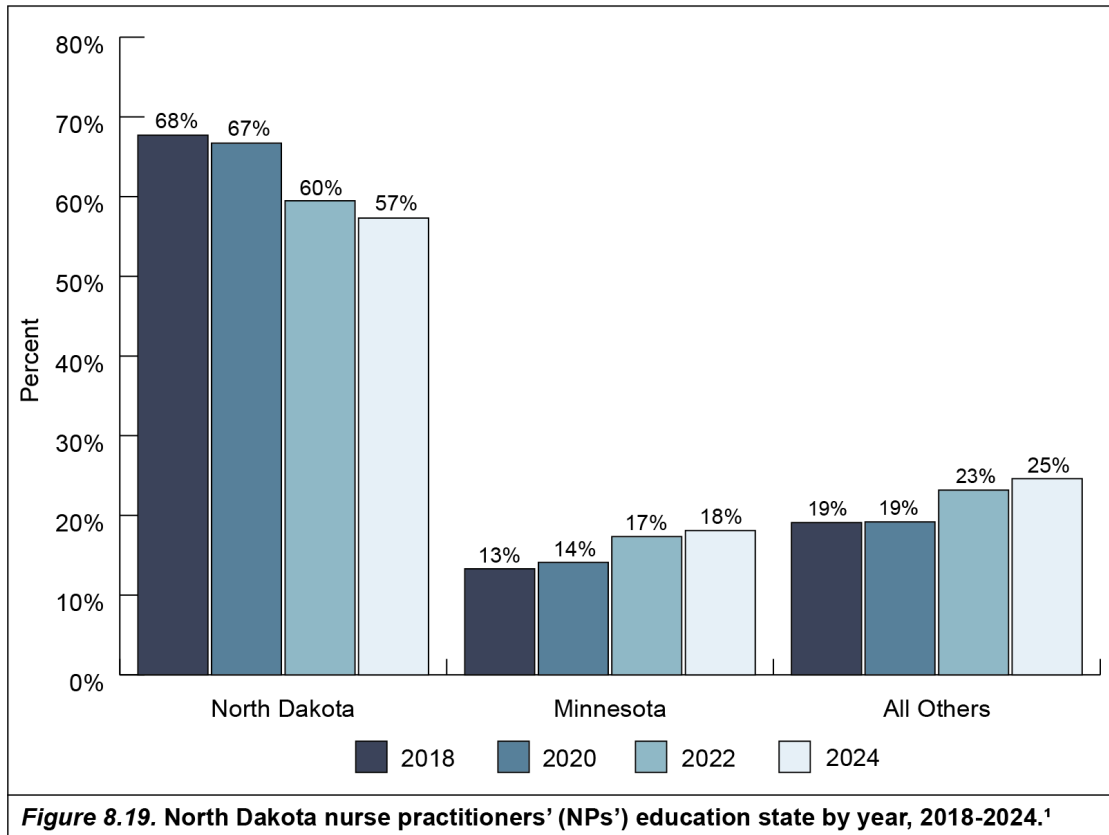
There currently are about 385,000 NPs licensed in the U.S.¹³ Approximately 39,000 new NPs complete their graduate degrees per year. Eighty nine percent of NPs are certified in a primary care area, 83% accept Medicare patients, and 81% accept Medicaid patients.¹³ NPs hold prescriptive authority, including for controlled substances, in all 50 states and Washington, D.C.¹³ NPs provide increased access to primary care, especially with rural and underserved populations.¹⁴

There currently are 1,605 NPs licensed in North Dakota, an increase of 23% since the last *Report*, and an 89% increase between 2018 and 2024.¹ North Dakota has three schools with accredited NP programs, two with Family Nurse Practitioner (FNP) programs, and one with a Psychiatric Mental Health Nurse Practitioner (PMHNP) program in addition to an FNP program (see Table 8.4).³ Of the currently licensed NPs in North Dakota, 57% were educated within the state, a decrease of 9.26% since 2018 (see Figure 8.19).¹ Eighty percent of NPs licensed in North Dakota were educated regionally, including North Dakota, South Dakota, Minnesota, and Montana with a 3.5% decrease since 2018. Few NPs in North Dakota were educated outside the U.S., although their number has increased from zero in 2018 to 14 in 2024.

Table 8.4
Nurse practitioner (NP) graduates from North Dakota programs, 2018-2023.²

University	Degree	Program	2018	2019	2020	2021	2022	2023
North Dakota State University	Doctor of Nursing Practice	Family Nurse Practitioner	16	15	13	15	19	19
University of Mary	Doctor of Nursing Practice	Family Nurse Practitioner	22	23	20	17	21	18
University of North Dakota	Master of Science	Family Nurse Practitioner	34	35	36	0*	77	84
		Adult-Geriatric Primary Care Nurse Practitioner	11	17	8	0*	24	18
		Psychiatric & Mental Health Nurse Practitioner	14	19	24	14	43	54
Total			97	109	101	46	184	193

*Curriculum was changed from FT/PT option to only PT = 1 yr with no grads.



RNs who are established in a rural area and return to school to become NPs tend to go back to their home areas to practice after graduation.¹⁵ Enrollment limitations for NP educational programs are a nationwide problem. This is primarily due to lack of qualified faculty and availability of clinical preceptors. In North Dakota 32% of current nursing faculty are over age 50, with 12% over age 60.³ Retirements in the next ten years could reduce faculty availability for program growth. Additionally, the availability of clinical preceptors for North Dakota programs may be limited due to the 34 out-of-state schools with NP programs who have students doing preceptorships in North Dakota.

Healthcare facilities nationwide are stressed with the number of healthcare students needing preceptors and clinical hours. This has led to internal processes or departments to manage student scheduling within many healthcare systems and academic programs.¹⁶ In turn, this creates a bottleneck for enrollment and progression of NP students through their curriculum as healthcare facilities have had to limit the number of NP students accepted for preceptorships. This occurs in North Dakota as well, primarily in our larger urban centers. Academic programs not affiliated with a medical system are reliant upon the good will and voluntary efforts of providers and their institutions to allocate time for student experiences. In some areas of the U.S., healthcare facilities require payment to provide clinical experiences; this can be prohibitively expensive.¹⁷ Some states have started allocating funds or providing tax incentives to preceptors and healthcare facilities.¹⁸

The NP role was originally developed to increase the number of primary care providers. Several non-primary care population areas of certification for NPs have evolved over the past 50 years,

such as acute pediatrics and psychiatric/mental health. Additionally, many primary care NP designations such as family nurse practitioner or adult and geriatric primary care nurse practitioner may also lend themselves to practice outside of a primary care area. This choice may depend on job availability within the NP's home area. Many primary care NPs are choosing positions in specialty practices, presumably related to the increased pay relative to positions in primary care.

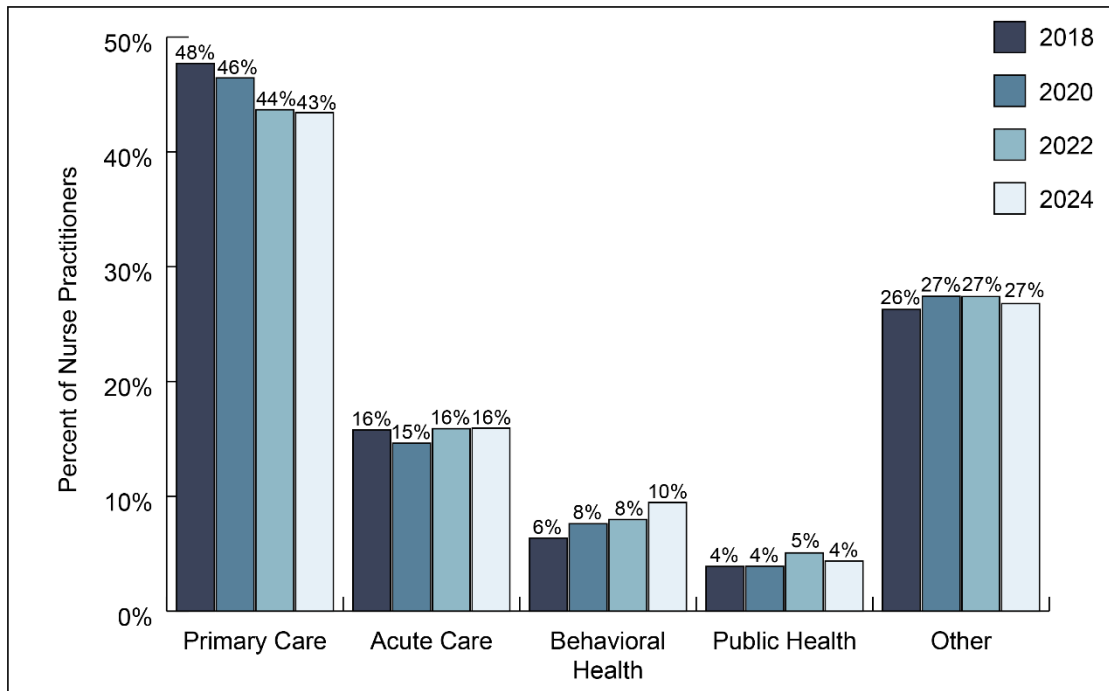


Figure 8.20. Nurse practitioners' (NPs') practice area by year, 2018-2024.² The categories include the following practice areas; Primary Care: family practice, geriatrics, maternal/child health, pediatrics, women's health; Acute Care: anesthesia, critical care, emergency, medical/surgical, neonatology, oncology, palliative care, perioperative, trauma; Behavioral Health: chemical dependency, mental health; Public Health: community, home health, nursing administration, occupational health, parish, public/community health, rehabilitation, school.

Despite this, some 43% of NPs licensed in North Dakota are working in primary care areas such as family practice, geriatrics, maternal/child, pediatrics, or women's health.¹ While the number of NPs working in primary care has increased, the percentage has decreased 5% since 2018, reflective of additional NPs working in mental health, acute care, and other non-primary care areas.¹ Although 90% of NPs in North Dakota are certified as a primary care provider, less than half of those report working in primary care practice areas. Larger urban healthcare systems across the state tend to employ primary care certified NPs in specialty areas more frequently than in primary care areas, so this may be a contributing factor. NPs in acute specialty care comprise 16% of North Dakota licensed NPs, 10% work in behavioral health, and 4% in a public health practice (see Figure 8.20).¹ Additionally, 47% of NPs practice in an outpatient setting, 26% inpatient or long-term care, and the remainder in a community, government, academic setting, or other (see Figure 8.21).¹

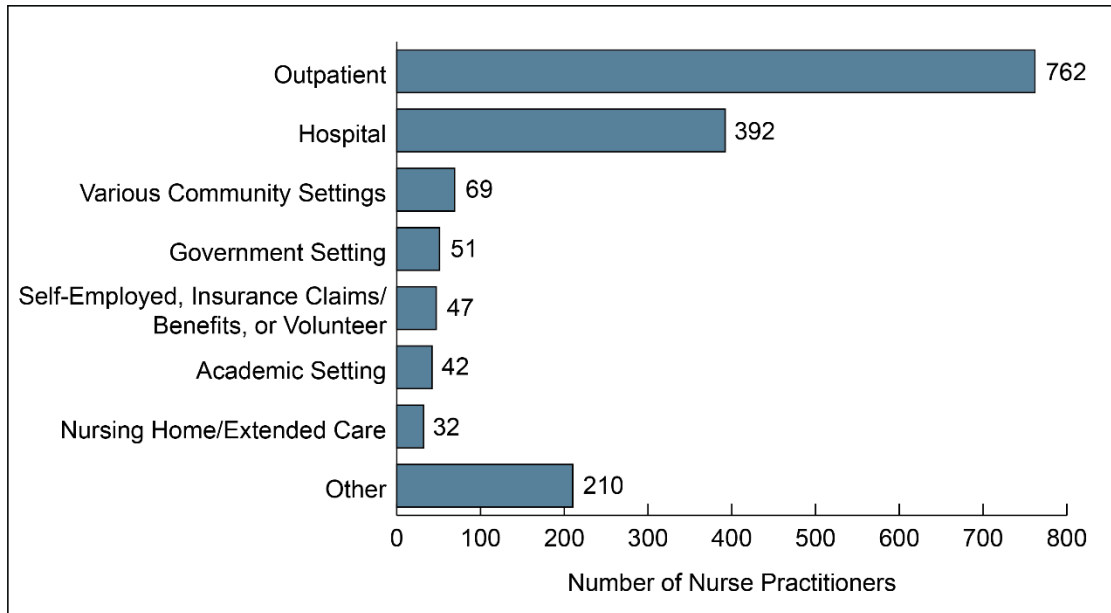


Figure 8.21. Nurse practitioners' (NPs) employment settings, 2024.¹ Outpatient: ambulatory care and physicians office; Hospital; Various Community Settings: church, home health, occupational health, public/community health, and school health; Government Setting: correctional facility, government, military, and policy/planning/regulatory/licensing agency; Self-Employed, Insurance Claims/Benefits, or Volunteer; Academic Setting: academic setting and nursing education; Nursing Home/Extended Care; Other.

The percentage of NPs working at the 75%-100% FTE effort level has decreased almost 5% since 2018, to 57%. At the same time, the percentage of NPs working between 25%-50% FTE has remained steady while those working <25% FTE increased since 2020 (see Figure 8.22).¹ It was thought that work effort as measured by FTE numbers decreased due to the pandemic, but now a few years after the height of the pandemic those numbers continue to decline.

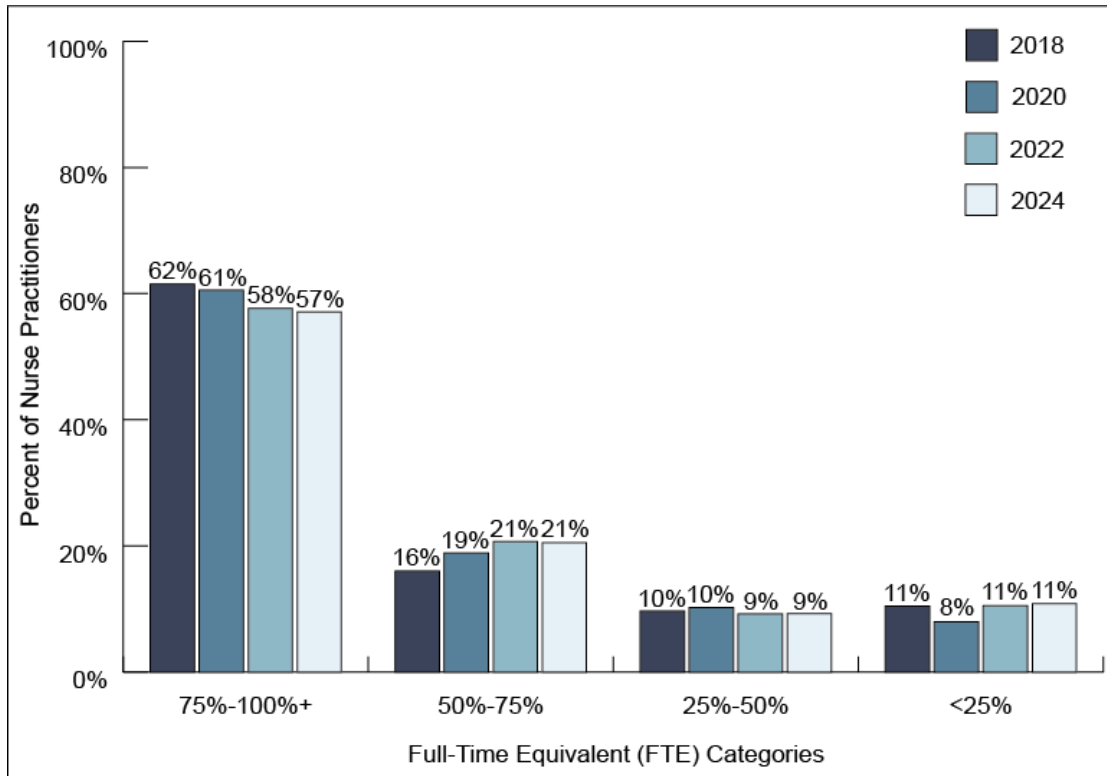
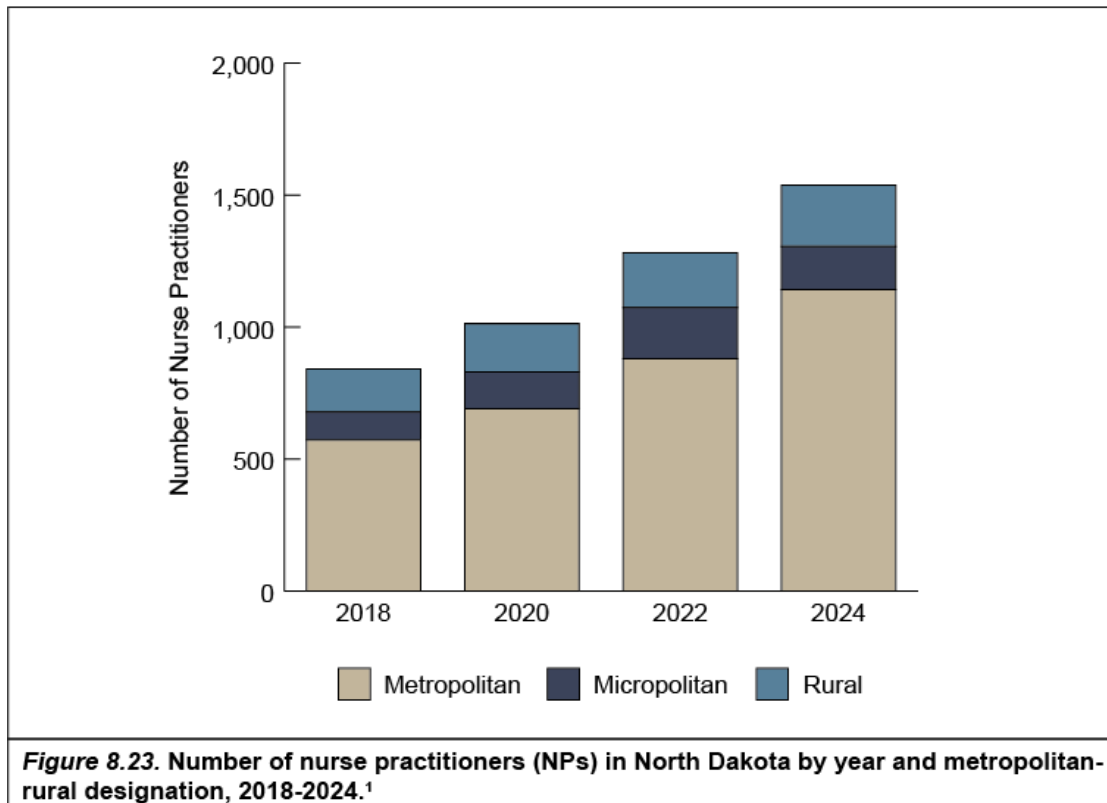
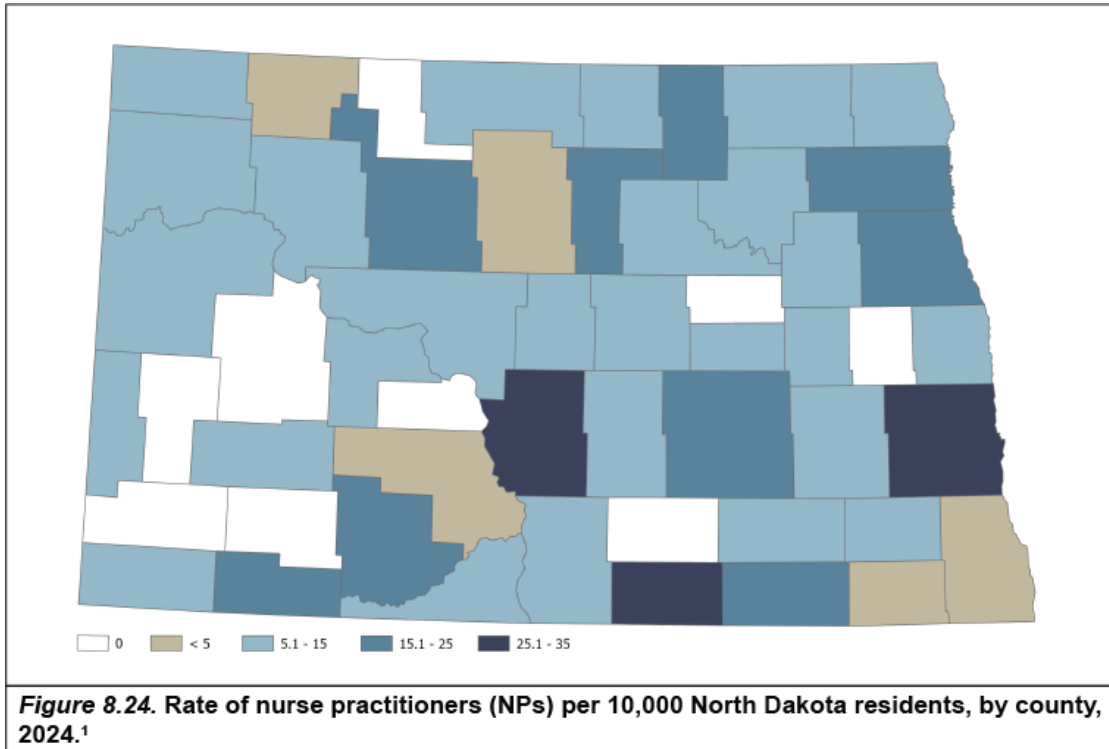


Figure 8.22. Percent of North Dakota nurse practitioners (NPs) by full-time equivalent (FTE) category and by year, 2018-2024.¹



North Dakota NPs are largely metropolitan (74.3%) as most large healthcare facilities are in the four urban hubs of North Dakota and are the typical employer of NPs (see Figures 8.23 and 8.24).¹ Since the previous *Report*, reporting methods have changed from using Rural Urban Commuting Area (RUCA) codes to the MMR designation.^{4, 22} While RUCA does not directly translate to the MMR modality, manual calculations show that the percentage of NPs in metropolitan and rural areas is roughly the same as in the 2023 *Report*.¹ Nationwide there are 8.98 NPs per 10,000 population in rural areas and 11.21 NPs per 10,000 population in urban areas.²¹ North Dakota exceeds these numbers, with 10.47 NPs per 10,000 population in rural areas and 17.68 per 10,000 population in urban areas.¹ While ND appears to be faring better than the nation with general NP numbers, a maldistribution is evident as some rural counties do not have NPs and may have fewer specialties like psychiatric and mental health NPs.



The average age of NPs in North Dakota is 43.9 years, a decrease of 1.22 years from 2018 (see Figure 8.25).¹ This matches the average age of North Dakota nurses of 43.9 years. As with other nursing roles, NPs have a higher percentage of licensed providers in the younger age groups, with 59% between the ages of 31 and 45. The lower numbers of NPs less than 30-years-old is likely the result of the time it takes to complete the advanced education of an NP. Typically, the youngest any NP could be, if following a traditional path and moving quickly through the process, would be 25 years old.

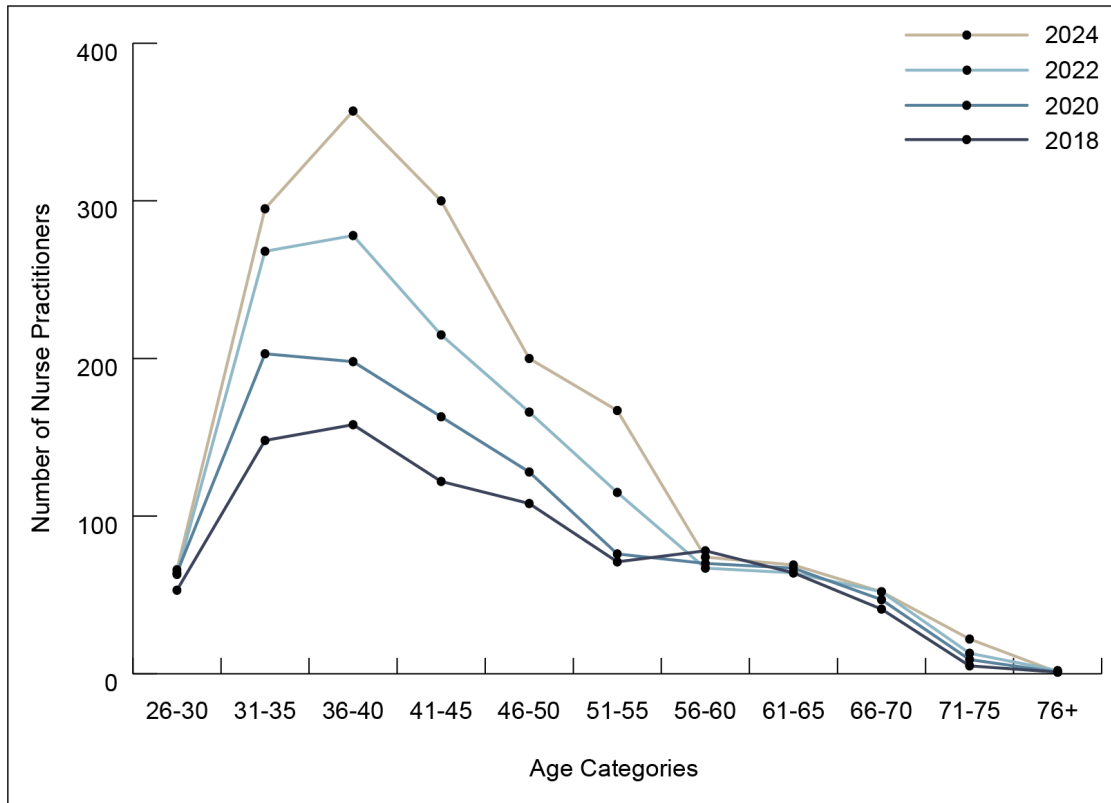
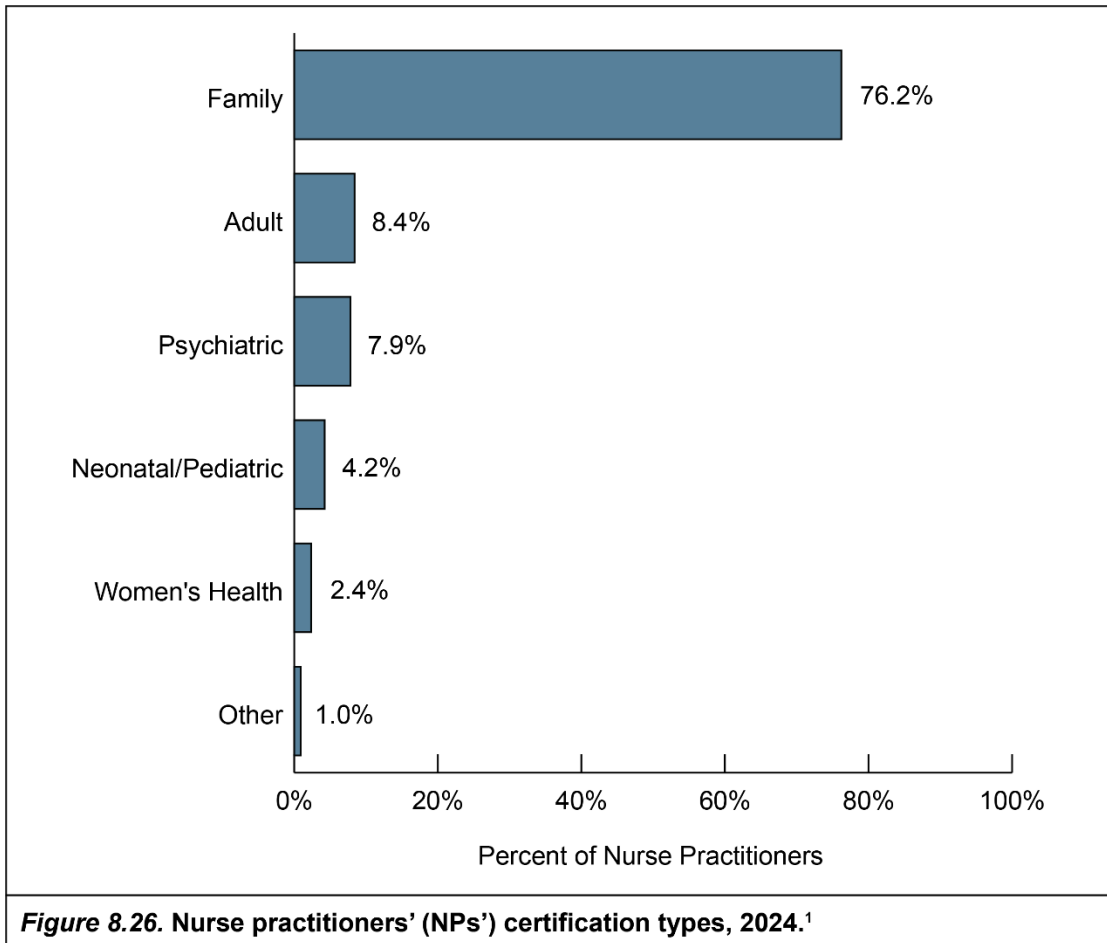


Figure 8.25. Number of North Dakota nurse practitioners (NPs) in each age category by year, 2018-2024.¹

Most North Dakota NPs are certified as Family Nurse Practitioners (76.2%) (see Figure 8.26).¹ The distribution of certification types is relatively stable with the primary changes since the last *Report*.¹ Adult and geriatric NPs tend to care for patients with more chronic issues and residents in long-term care facilities. PMHNPs can work with patients experiencing behavioral health issues, both inpatient and outpatient, and across the lifespan, from children through the elderly. There has been a nationwide trend of increased numbers of acute care NPs such as Adult-Geriatric Acute Care and Pediatric Acute Care. These NPs are trained to care for higher acuity, primarily inpatient populations.²³ At this point, the NDBON data does not delineate acute care from primary care NP certifications.



Certified Registered Nurse Anesthetists

CRNAs are advanced practice registered nurses who administer anesthetics to patients undergoing procedures needing anesthesia and/or pain management. These services include pre-anesthesia evaluation, administering the anesthetic, monitoring and interpreting the patient's vital signs, and managing the patient throughout the procedure.²⁴ CRNAs practice in multiple settings including hospitals, ambulatory surgical centers, and outpatient offices.²⁴ CRNAs oftentimes are the sole anesthesia providers in rural settings. North Dakota currently has 358 licensed CRNAs, with 71% of them educated at the University of North Dakota in the state's sole anesthesia education program. Overall, 87% of CRNAs were educated within the region, including North Dakota, South Dakota, and Minnesota (see Figure 8.27).¹

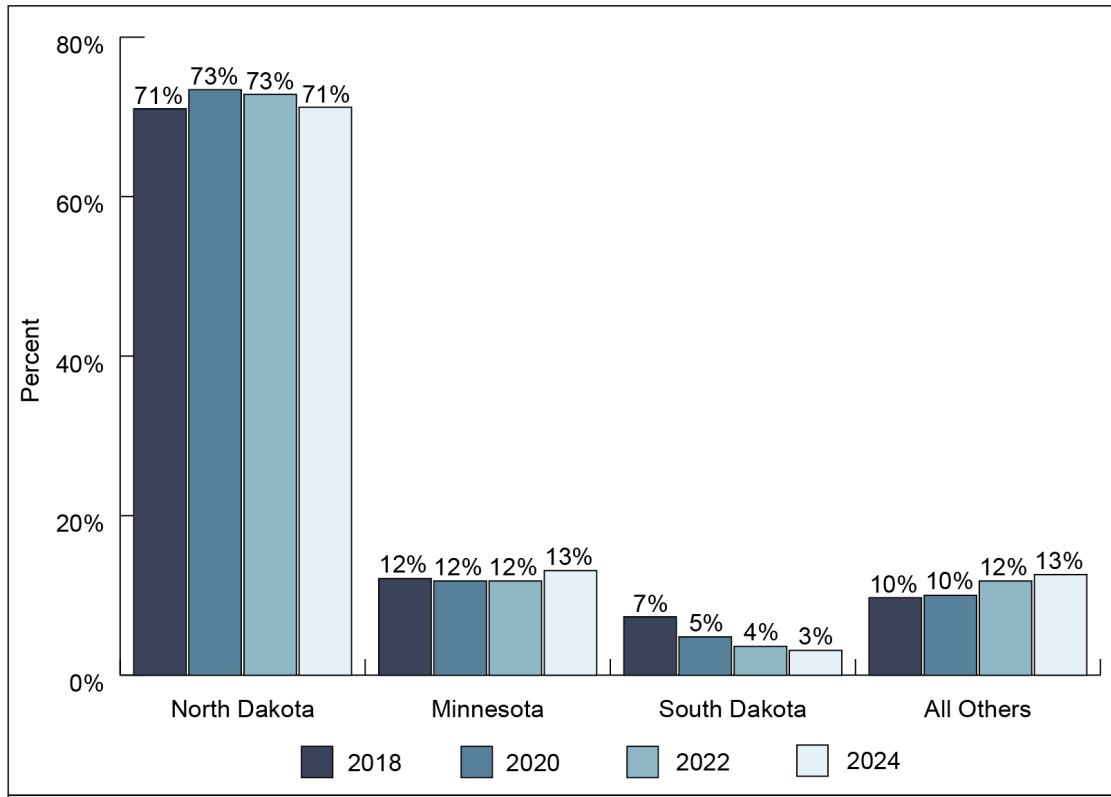
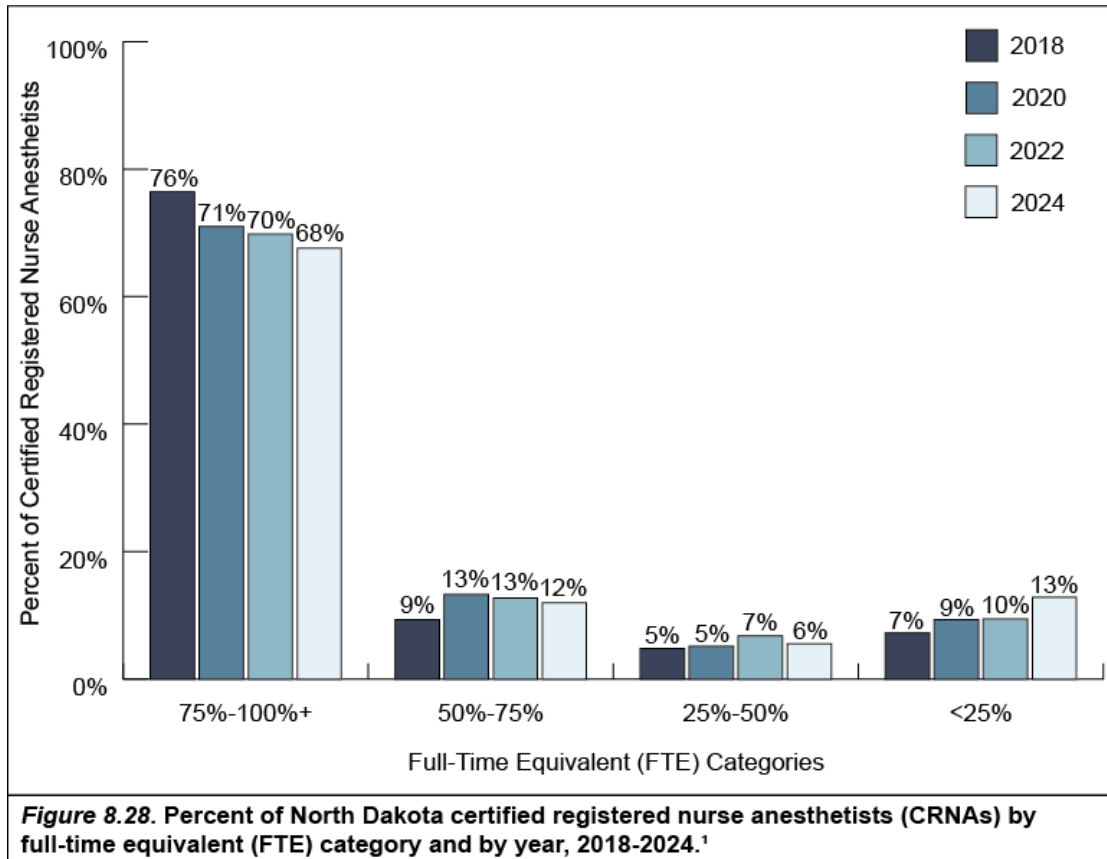


Figure 8.27. North Dakota certified registered nurse anesthetists' (CRNAs) education state by year, 2018-2024.²

The University of North Dakota’s CRNA educational program recently transitioned to the Doctor of Nursing Practice (DNP) degree, with the first cohort of DNP-prepared CRNAs graduating in 2021. The program typically graduates 15-20 new CRNAs yearly, as reflected in the most recent NDBON education reports.² The vast majority (92%) of CRNAs licensed in North Dakota currently are working in anesthesia; the remainder reported working in critical care, community, or other practice areas.¹ The work settings of licensed CRNAs in North Dakota include 84% working in a hospital setting, 8% in ambulatory care, 3.6% self-employed, and the remainder serving in an educational setting or “other.” Most CRNAs are employed between 75%-100% FTE (68%), 13% are employed less than 25% time, and 4.4% were unemployed at the time of licensure renewal (see Figure 8.28).¹



Most CRNAs in North Dakota are hospital-based with the majority located in an area designated as metropolitan (83.7%) (see Figure 8.29).¹ However, CRNAs typically are the sole anesthesia provider in rural locations throughout the U.S. In fact, CRNAs comprise about 80% of all anesthesia providers in rural areas of the U.S.²⁵ There has been a slight shift of CRNAs in North Dakota apparently moving from micropolitan employment to metropolitan, but the rural numbers remain stable.

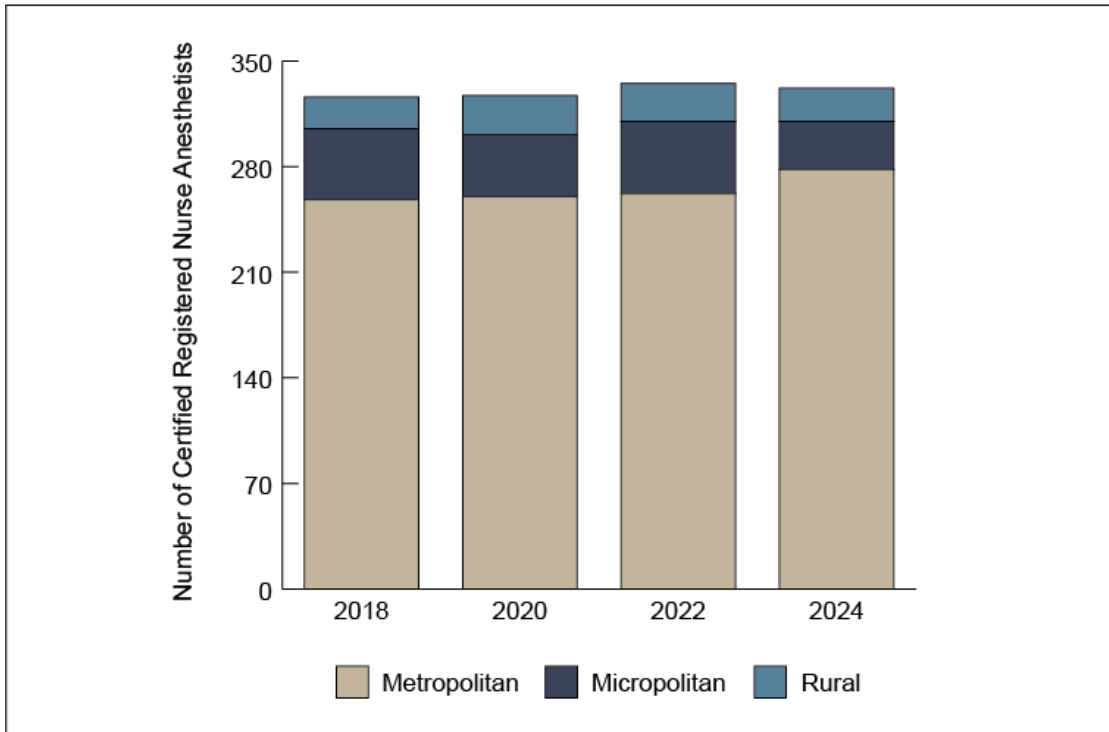


Figure 8.29. Number of certified registered nurse anesthetists (CRNAs) in North Dakota by year and metropolitan-rural designation, 2018-2024.¹

As with other APRN types, RNs need experience and additional education prior to being eligible to practice as a CRNA. This is likely the reason that there are no CRNAs under the age of 28 in North Dakota. The current average CRNA age is 47 years (see Figure 8.30).¹ There is slightly less variability in the age ranges of the CRNA as compared to the overall RN workforce. This may be due to the higher percentage of male nurses who move into the CRNA ranks and continue employment throughout their careers versus women who tend to stop working or go to part-time status for parts of their careers due to childbirth and child rearing. Regardless, 25% of the current CRNA workforce is over age 55, likely indicating that one-fourth of the workforce may be retiring in the next 10 years.

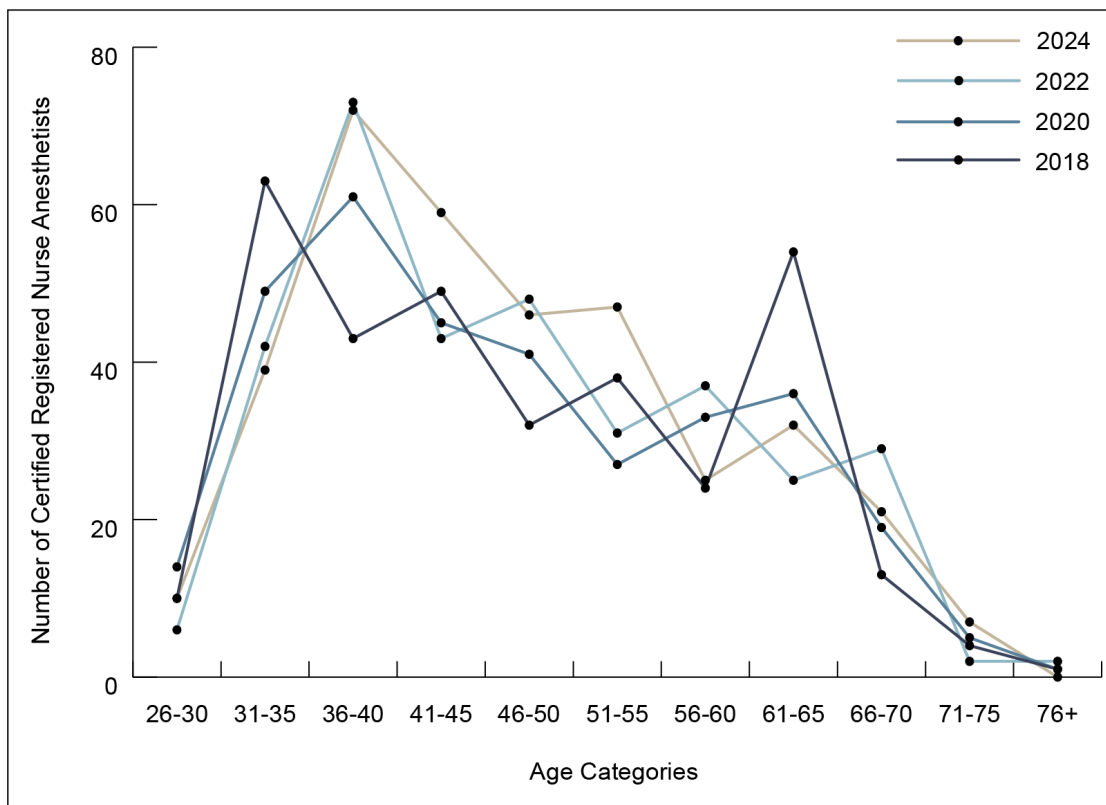


Figure 8.30. Number of North Dakota certified registered nurse anesthetists (CRNAs) in each age category by year, 2018-2024.¹

Certified Nurse Midwives

CNMs are licensed, independent healthcare providers with prescriptive authority in all 50 states who are designated as primary care providers under federal law.²⁶ As with all APRN types, CNMs are RNs with additional didactic and clinical education and a national certification. CNMs attend births, provide reproductive care, and primary care for the childbearing woman. CNMs attend births in hospital settings, stand-alone birthing centers, and in the home setting.²⁶ There are currently 29 CNMs licensed in North Dakota (16% increase since the last *Report*); 10 are employed in an ambulatory setting or physician’s office, 9 are hospital-based, 2 are self-employed, and the remaining 8 are employed in nursing education, community health, or a government setting.¹ All CNMs currently are employed; 62% work at least 75% FTE, 12% work less than 50% FTE, while the remaining 25% work between 50-75% FTE. These percentages reflect a continued decrease in the full time CNM workforce when comparing 2024 data to the past few *Reports*.¹ It is important to note that though CNMs are qualified and licensed to attend labor and deliveries, it is estimated that only one-third of the state’s CNMs are in positions that may include this option.

North Dakota is listed by 31% of the CNMs as the state where they received their education. Overall, 69% were educated in the region, including North Dakota, South Dakota, and Minnesota for some part of their nursing training. There currently are no CNM educational programs available in North Dakota or South Dakota, so these respondents may be referring to

their undergraduate RN programs. Twenty-one percent of the CNMs are employed in an area designated as rural, which demonstrates a 7% decrease in rural CNMs since the last *Report*. The average age of CNMs licensed in North Dakota is 44 years, with a continued decreasing trend in average age over the past two *Reports*. The decreasing age of CNMs is likely a result of younger CNMs entering the workforce in North Dakota.¹

Certified Nurse Specialists

CNSs are APRNs who are certified to provide care to a specific patient population. This could be patient populations such as adult/geriatric, pediatric, or neonatal. CNSs work in a variety of settings and specialties such as palliative care, inpatient pediatrics, and psychiatry. CNSs may work in three spheres: clinical expertise, nursing practice, and system innovation. They can provide direct patient care, teach nurses and staff, act as a consultant for nurses/staff/other providers, lead evidence-based projects, and assist other providers with direct patient care. CNSs can prescribe either independently or collaboratively in 40 states. North Dakota currently has 30 licensed CNSs, a 10% decrease since the previous *Report*, which continues the downward trend of a 39% loss since 2018.

Notably, 57% of the CNSs in North Dakota are employed in a mental health practice setting. Roughly half of the CNSs in North Dakota work in a hospital or ambulatory care setting, with the remainder in an academic, government facility, or “other” category. The employment of CNSs includes 67% at 75% FTE or more, 27% employed at less than 50% FTE, and the remainder employed between 50-75% FTE. Full-time employment of CNSs has decreased by 10% while part-time employment has continued to increase since the previous *Report*.¹ This could be due to an overall loss in numbers for the role, but also the aging population of the CNS workforce without replacement is a likely contributor. There are currently no CNS educational programs in North Dakota and few healthcare systems have advertised openings for CNS employees. CNSs are largely employed in metropolitan areas of the state (60%). Nine of the 30 CNSs were educated in North Dakota, with 20 of the 30 CNSs educated in the region (North Dakota, South Dakota, Minnesota).

CNSs can be certified in multiple areas. In North Dakota, 57% of the licensed CNSs are certified as psychiatric, providing much needed behavioral healthcare at many human service centers and inpatient facilities. However, it is important to note that the Psychiatric CNS certification is no longer an available option as the certifying body discontinued the certification. The shift has been to Psychiatric & Mental Health (PMH) nurse practitioners, although currently only 7.9% of North Dakotas NPs are certified in PMH.¹ The remaining CNSs in North Dakota are certified as adult or geriatric providers. Most of these providers work in hospital settings and/or long-term care. The average age of CNSs in North Dakota is 60.5 years, an increase of one year since the previous *Report*.

North Dakota Nurses Compared with Nationwide Statistics

North Dakota currently is ranked third in the nation for the ratio of nurses to population at 145 nurses per 10,000 population, while the nationwide average nurse to population ratio is 130 per 10,000. None of the data on nursing ratios per population, nationwide data and ND data, considers overall work effort (FTE), geographic information, nor setting of the nurse. Thus, nurses holding an unexpired license may be counted even if they are not currently working, are

retired, or work part-time. Additionally, geographical distribution is not considered so there may be areas of high concentration of nurses with veritable nursing "deserts" in other areas. Another concern is the work setting and time devoted to direct patient care by the nurse, both of which are not accounted for in the overall ratio data. To what extent these factors might temper the finding of a higher density of nurses in North Dakota than the rest of the country is unclear.

COVID-19's Continued Impact on Frontline Healthcare Workers

The COVID-19 health crisis had an unprecedented impact on hospital staff and frontline healthcare workers throughout the world as well as within North Dakota. A study published in the *Journal of Rural Health* highlights the tangible impact faced by North Dakota hospital workers during this period.³³ Frontline healthcare workers who had direct interaction with COVID-19 patients were significantly more likely to report symptoms of anxiety, depression, burnout, and stress due to several factors such as exposure to infection, less-than-optimal staffing levels, and unclear and inconsistent guidance regarding personal protection measures. While the pandemic has passed, the ramifications on the nursing workforce continue. Over the past two to four years, two significant trends have emerged nationwide and in North Dakota. First, nurses have been leaving inpatient work in large quantities, opting for outpatient or community settings. Presumably nurses are looking to work with lower acuity patients and perhaps have a more regular schedule.³⁴ Second, an increasing number of nurses are reducing their work hours with a large jump in those working less than 25% FTE in North Dakota. Although overall nursing numbers have increased, a larger number of nurses are needed to maintain the working FTE due to increased part-time workers.

SUMMARY

Despite the seemingly positive statistics of overall nurse numbers in the state as compared to the nation (145 nurses/10,000 population in North Dakota; 130 nurses/10,000 population nationwide), this *Report* notes an interim decrease in nurses licensed in North Dakota between 2022 and 2024 (-313). There are a few areas of concern, including trends in effort (FTE), age of nurses, geographic distribution, declining enrollment for in-state educational programs, and increased reliance on nurses educated out-of-state.

There is a worrisome trend since 2018 of decreasing numbers of nurses in North Dakota working full-time. Most notably, since 2020 nurses at 75%-100% FTE have dropped 7% with most apparently shifting to less than 25% FTE (5% increase). While some of this shift may be related to burnout or shifting priorities post-COVID, these explanations are speculative at present. Just over half of all nurses licensed in North Dakota work at their primary position in a full-time capacity (53%). The age of the nursing workforce also could be an area of further study as 20% of the overall nursing workforce in North Dakota is over age 55, suggesting the possibility of 20% of the current workforce retiring within 10 years. Perhaps the most concerning findings are that 27% of LPNs and 24% of CRNAs are over the age of 55 years.

An analysis of the geographic distribution of nurses in the state was a new undertaking for this *Report*. While overall nursing numbers per population ratios are greater than for the U.S. as a whole, the distribution in North Dakota is not aligned with the population. While the most metropolitan counties in North Dakota tend to have over 100 nurses per 10,000 population, our most rural counties typically have less than 25/10,000. While the larger health systems are in

more metropolitan counties and employ more nurses than the rural Critical Access Hospitals, the lower density of nurses in rural regions likely is a significant contributor to limited healthcare access in those regions.

Enrollment in North Dakota nursing programs has had a marked decrease since the 2021 academic year for LPN (-23.8%), RN (-9.5%), and APRN (-12%). At the same time, the fraction of North Dakota licensed nurses who are educated out-of-state has increased. Overall, only 53% of nurses licensed in North Dakota were educated in-state. A major contributor in the ability to enroll nursing students is having clinical site availability at our healthcare facilities. Over the past year, there was a 25% increase in the clinical placement of students from programs outside of North Dakota.

Primary care continues to struggle with insufficient numbers in the workforce across the U.S. A 4% decrease in NPs working in primary care has emerged since 2018, despite 90% of North Dakota NPs having primary care certification (Family, Adult-Gero Primary Care, Women's Health, Pediatric Primary Care). At the same time, there has been a 4% increase in NPs working in behavioral health, reflecting an apparent shift in the workforce. While behavioral healthcare providers are desperately needed in the state, primary care still is a high priority. Less than half of the NPs certified in primary care report working in a primary care area.

A final and important area to be addressed is CNM practice in North Dakota. Fewer family practice physicians are providing delivery services across the state and the most recent data gathered lists only 76 practicing obstetricians, only two of whom practice outside of metropolitan areas. Current CNM numbers have increased 16% since the previous *Report* (29), though very few, if any, are practicing to their full capabilities. Most healthcare facilities in North Dakota do not allow CNMs to deliver, but rather use them in the capacity of a women's health provider in outpatient clinics. While it is beneficial for women to have the choice to obtain care from a CNM, it may be in the best interests of the state to encourage full privileges, including labor and delivery. The increase in preterm births in North Dakota (10.3%, 14.5% for American Indian/Alaska Native), and higher than national average maternal morbidity (2.4/10,000 vs 2.3/10,000) might be attributed to a lack of prenatal and delivery services across the state, especially in rural locations.²⁷

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CHAPTER NINE:

**BEHAVIORAL AND OTHER NON-
PHYSICIAN HEALTHCARE WORKFORCE**

INTRODUCTION

This chapter addresses specific healthcare professionals involved in behavioral and other aspects of health occupations in North Dakota who are not addressed in other chapters. A majority of the data used here was obtained through the professional licensure boards in North Dakota.

DEFINING BEHAVIORAL HEALTH WORKFORCE

There are a variety of ways to define behavioral health workforce. The definition should include the providers who treat individuals with behavioral health disorders and examine their education, scope of practice, and level of independence in the treatment environment. In North Dakota, a simple method for defining the behavioral health workforce is to utilize the tiered classification system established in 2017 by the North Dakota Legislature. This classification system for mental health professionals was based on a thorough review of education and statutory guidelines, along with scope of practice, to ensure that professionals are being fully utilized within their scope of practice.¹

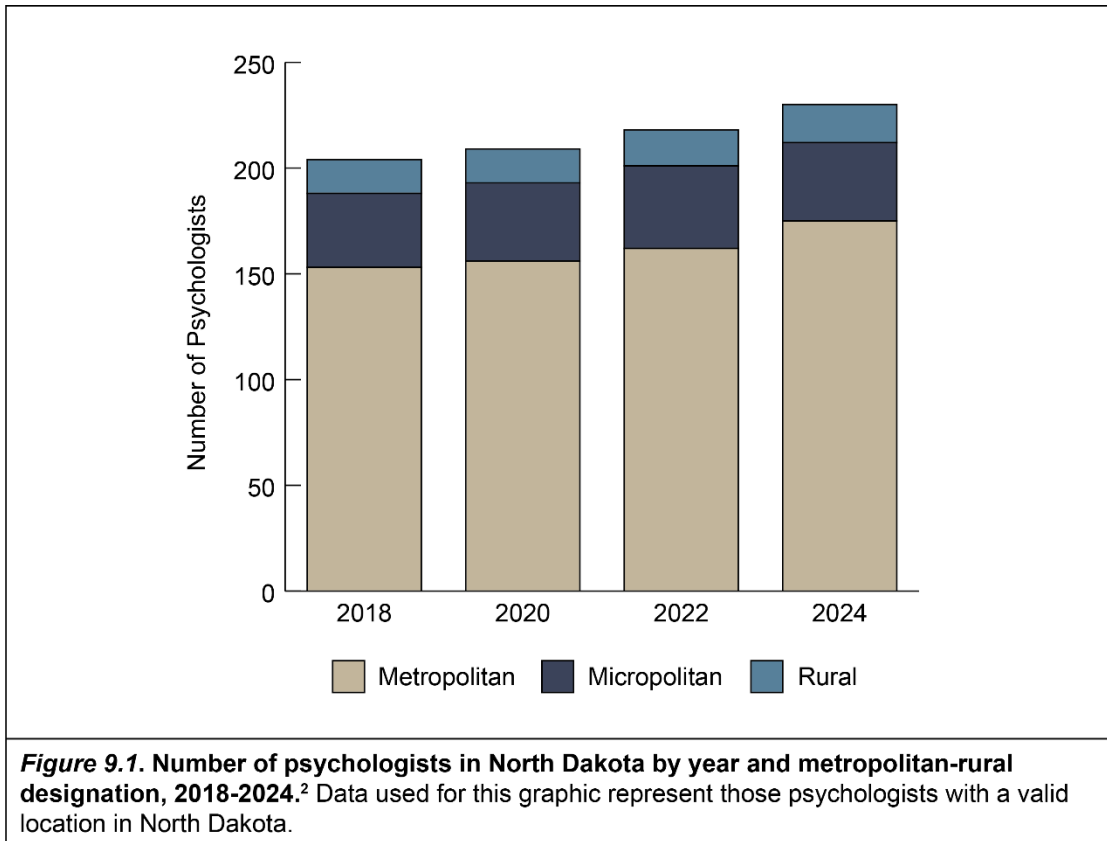
The colleges and universities located within North Dakota offer a variety of degrees within the behavioral health field. The types of degrees available at North Dakota institutions range from associate degrees in human and/or social services to a medical degree, with a psychiatry residency program available in the state.¹

The Tiered System

A broad definition of behavioral health workforce includes providers of substance abuse and mental health services as well as those providing services in supportive roles. The tiered classification system currently in use is a simple way of defining the behavioral health workforce. This system classifies the various professions based on the required level of education and scope of practice.

PSYCHOLOGISTS

Psychologists are licensed mental health professionals who can treat mental illnesses through therapy, as well as administer and interpret psychometric tests/assessments to assist in diagnosis. Psychologists hold a doctoral degree in clinical or counseling psychology, usually a PhD or PsyD, from an American Psychological Association (APA) or Canadian Psychological Association accredited program in order to be eligible for licensure in North Dakota. There are no other approved accrediting bodies. To be licensed in North Dakota, psychologists must adhere to the standards and ethics of the APA, complete at least two years of supervised professional experience, and complete written and oral examinations.¹ There are 298 psychologists licensed in North Dakota or about 3.8 psychologists per 10,000 residents. This is an increase from 2018 when there were 252 psychologists were licensed in North Dakota, representing an 18.3% increase over 6 years. Metropolitan areas saw the largest percentage increase over this same time period with a 14.3% increase (Figure 9.1).²



Educational Programs in North Dakota

The University of North Dakota (UND) is the only institution in North Dakota with psychology training programs accredited by the APA. UND offers doctoral programs in both clinical and counseling psychology. These programs allow North Dakota to fully train psychologists in-state and prepare individual practitioners for licensure after program completion.¹

Practice Characteristics

Psychologists in North Dakota have been licensed for an average of 19 years. The majority of psychologists who are licensed in North Dakota are located in a metropolitan area ($n = 175$, 76.1%) (Figure 9.2).²

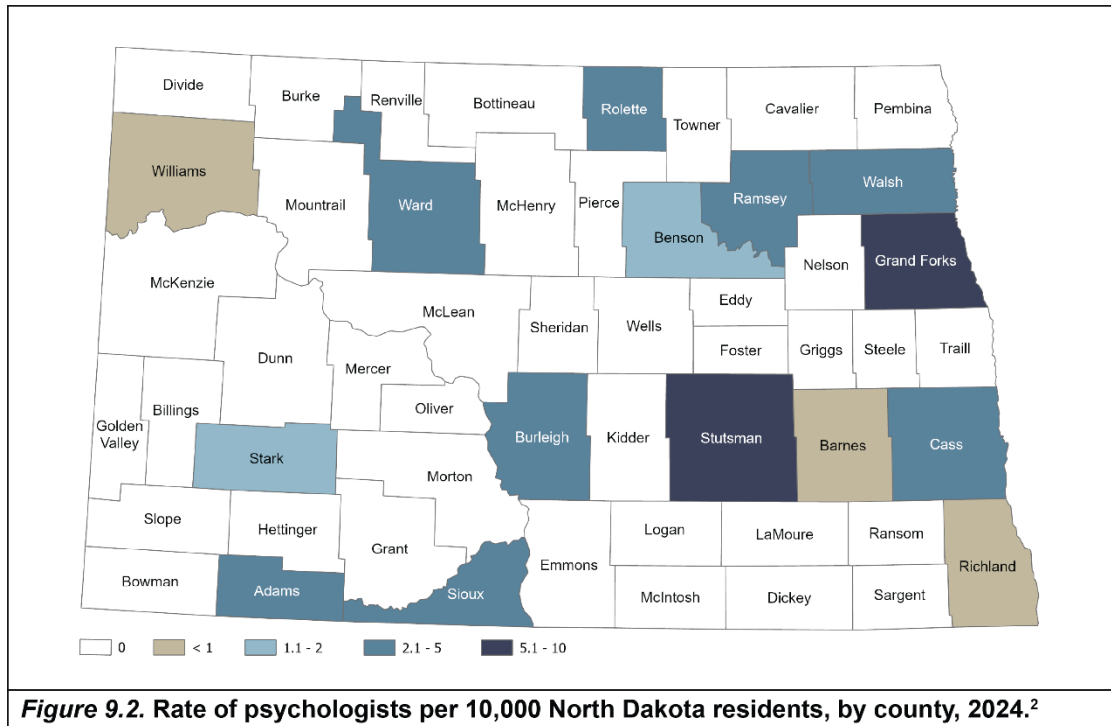


Figure 9.2. Rate of psychologists per 10,000 North Dakota residents, by county, 2024.²

COUNSELORS

Counselors are licensed behavioral health professionals who treat behavioral health conditions through individual, family, or group therapy. Counselors provide assessments, diagnoses, and therapeutic interventions to individuals, couples, families, and groups to achieve more effective emotional, mental, and social development and adjustment.¹ There are 743 counselors licensed in North Dakota, including 118 licensed associate professional counselors (LAPC), 204 licensed professional counselors (LPC), and 421 licensed professional clinical counselors (LPCC).³

Education

Counselors are required to obtain a master’s degree or higher within the field of counseling from an accredited school in order to be eligible for licensure in North Dakota. North Dakota State University (NDSU) offers a master’s degree in clinical mental health counseling and one in school counseling. The Council for Accreditation of Counseling and Related Educational Programs approved accreditation for both programs at NDSU. The University of North Dakota, University of Jamestown, and University of Mary also offer master’s degrees in counseling. UND offers four areas of specialization for the MA counseling degree including addiction counseling, community mental health counseling, child adolescent counseling, and rehabilitation. The clinical counseling program at the University of Jamestown is an online program. The University of Mary also offers areas of specialization including addiction counseling, clinical mental health counseling, and school counseling. The master’s level programs at UND, University of Jamestown, and University of Mary are not listed with any accreditation bodies for counseling education.¹

Licensure Requirements

LAPC and LPC

In order to receive LAPC licensure in North Dakota, counselors must have a master's degree in counseling from an accredited institution that meets the standards of the Board of Counselors Examiners, provide recommendations stating they will adhere to the standards of the profession, and write a plan to acquire supervised experience. LAPC is the preliminary licensure that is given before obtaining the full LPC licensure, and these professionals must acquire experience while being supervised by an LPC or LPCC. After obtaining at least two years of experience (and at least half of that being supervised), licensure as an LPC in North Dakota requires that the counselor write a statement of professional intent to practice in the state and the proposed use of the license, the intended population, and the procedures they intend to use, as well as complete an examination prescribed by the board.¹

LPCC

To receive LPCC licensure, in addition to the requirements of the LPC, the counselor must complete the following: 1) a total of 60 graduate semester credits, 12 of which may be obtained in documented training, clinical experiences, or courses consistent with the North Dakota Century Code clinical education guidelines; 2) graduate clinical coursework including abnormal psychology and psychopathology, appraisal and diagnostic evaluation, and clinical counseling skills; 3) 700 hours of training in supervised practical and/or internships relevant to the practice of counseling; 4) two years (3000 hours) of post-master's supervised clinical experience in a clinical setting, 100 of those hours must include supervision by a licensed professional clinical counselor; and 5) a passing score on the National Clinical Mental Health Counseling Examination.¹

Practice Characteristics

Most counselors in North Dakota are located in a metropolitan area with 77.7% of LPCCs ($n = 269$), 71.8% of LPCs ($n = 94$), and 73.8% of LAPCs ($n = 76$) so located (Figure 9.3 and Figure 9.4). There has been a significant increase in licensed counselors in North Dakota, from 469 in 2018 to 743 in 2024. This is a 58.4% increase over the six years. The largest increase was in the number of LPCCs licensed in the state, going from 212 in 2018 to 421 in 2024 (a 98.6% increase). Between 2018 and 2024, North Dakota had the largest percent increase in counselors in micropolitan areas (64.1%) followed by metropolitan areas (54.6%) and least in rural areas (17.4%) (Figure 9.4).³

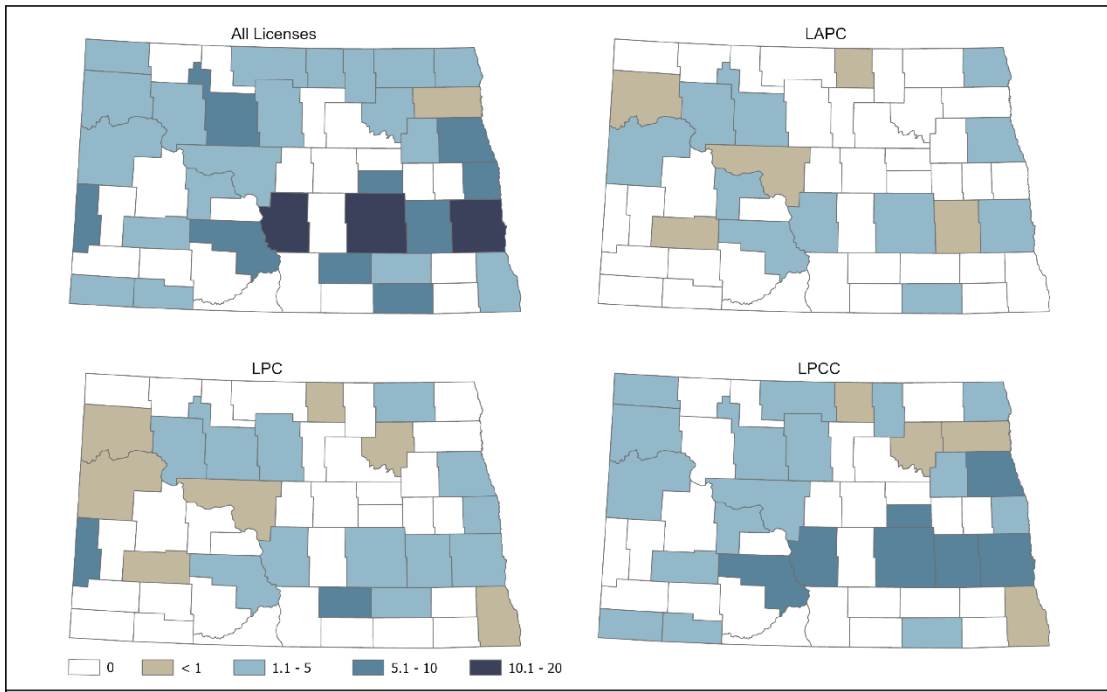


Figure 9.3. Rate of counselors per 10,000 North Dakota residents, by license type and by county, 2024.³

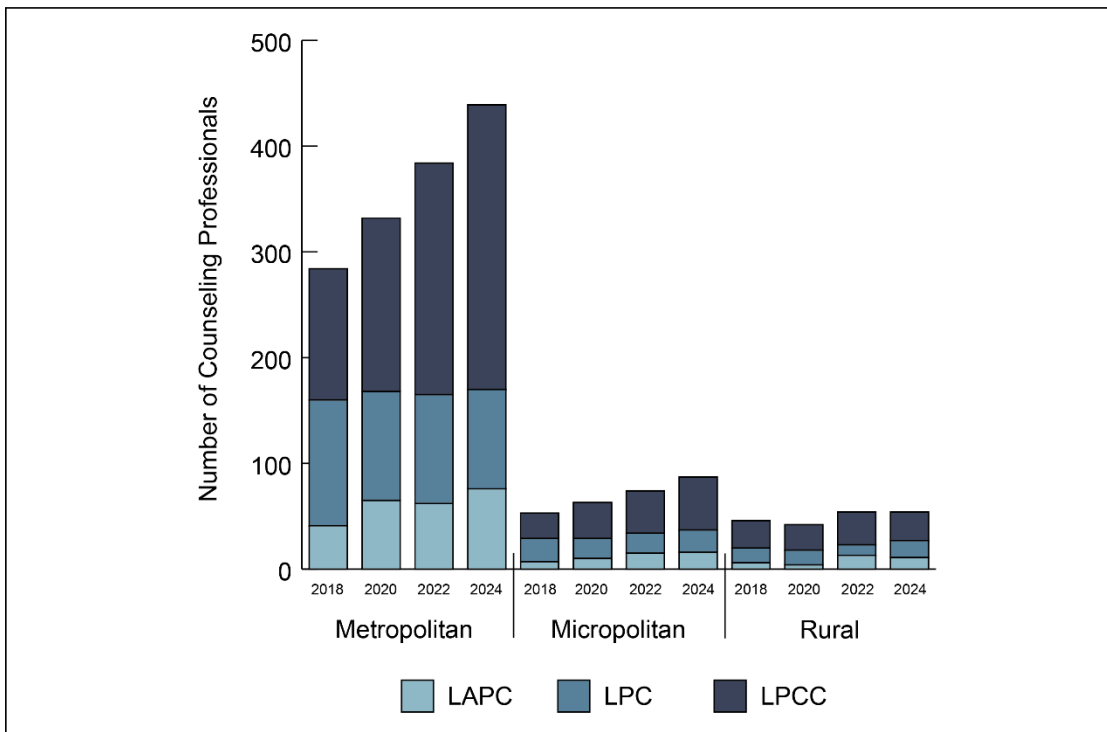
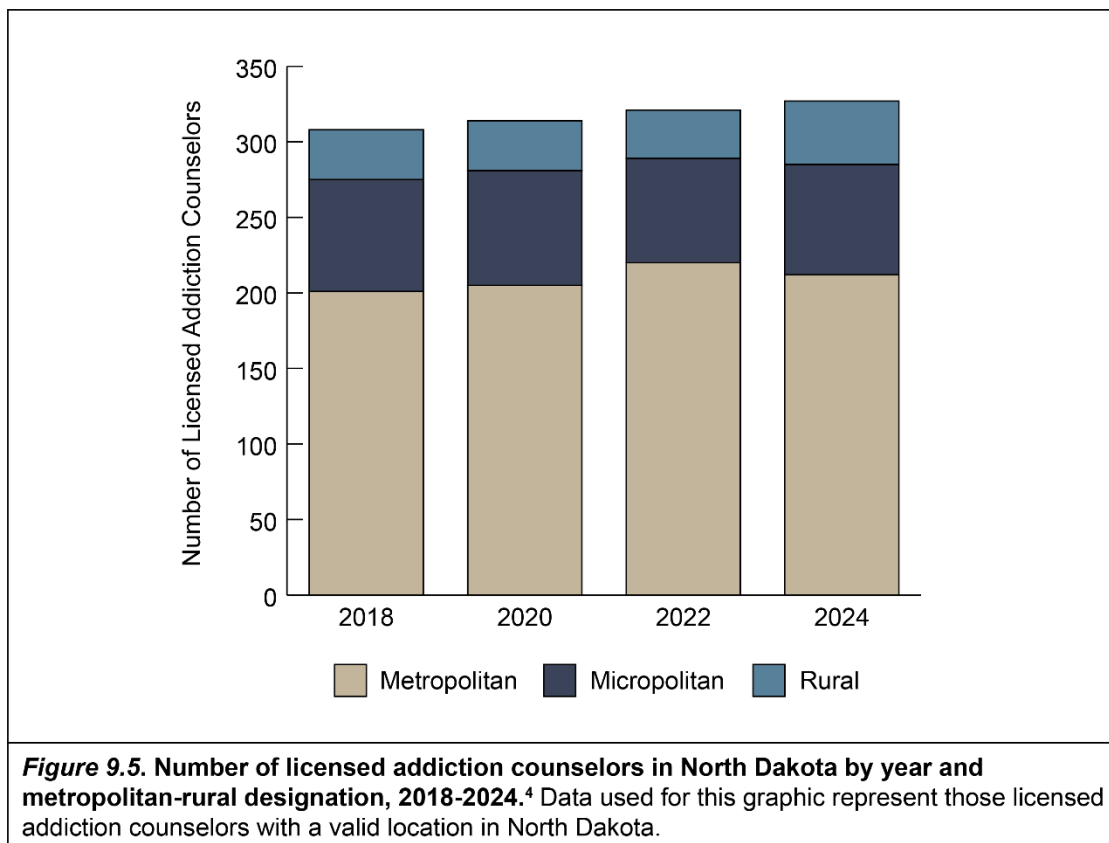
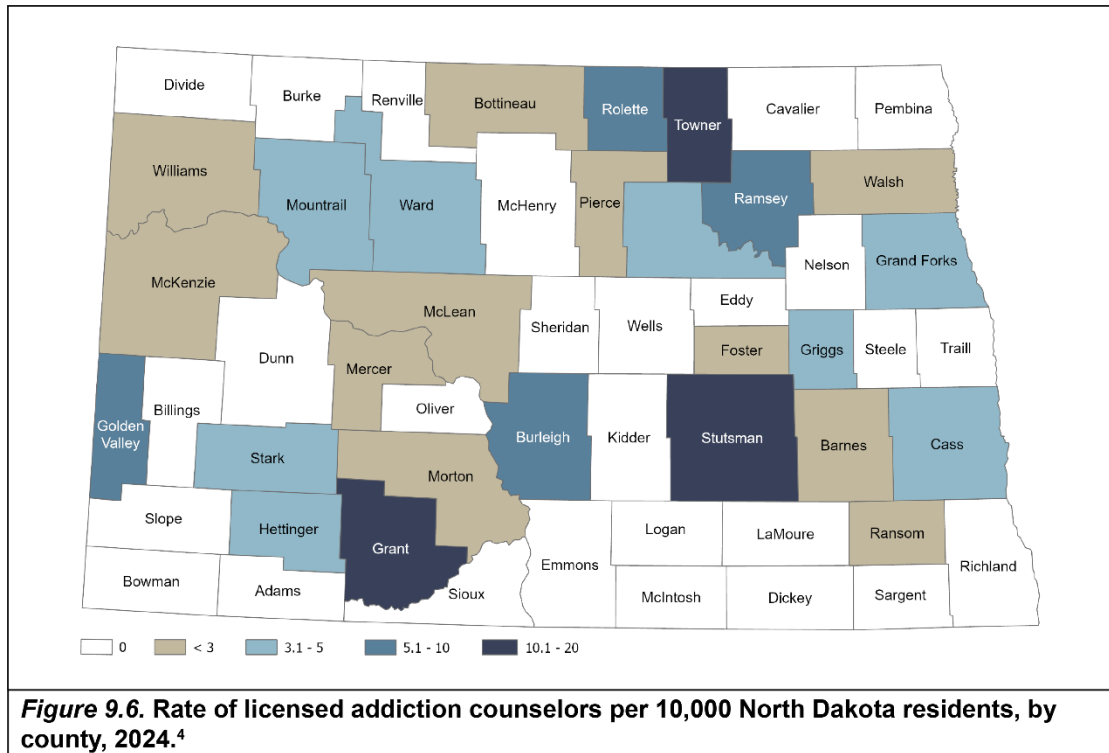


Figure 9.4. Number of counseling professionals in North Dakota by year and metropolitan-rural designation, 2018-2024.³ Data used for this graphic represent those counselors with a valid location in North Dakota.

LICENSED ADDICTION COUNSELORS

Licensed addiction counselors (LAC) are behavioral health professionals who specialize in assessing and counseling individuals with substance-related or addictive disorders through individual and/or group therapy. To be licensed as a LAC in North Dakota, one must have a bachelor's or higher degree in addiction studies, complete course work set forth by the North Dakota State Board of Addiction Counseling Examiners, complete written and oral examinations, complete a clinical training program, and adhere to the code of ethics.¹ There are 388 addiction counselors licensed in North Dakota, which is equal to 5.0 LACs per 10,000 North Dakota residents. The majority of licensed addiction counselors in North Dakota are located in metropolitan areas ($n = 212$, 64.8%), followed by micropolitan areas ($n = 73$, 22.3%), and lastly rural areas ($n = 42$, 12.8%). There has been an overall increase in the number of LACs in North Dakota between 2018 and 2024. In 2018, there were 375 LACs in the state and that increased to the current 388, representing a 3.5% increase over 6 years (Figure 9.5 and Figure 9.6).⁴





Educational Programs in North Dakota

In North Dakota, four institutions of higher education offer degrees or classes focused on addiction studies. The University of North Dakota offers a specialization in addiction counseling within the master’s degree in counseling program, and the Department of Social Work offers a chemical dependency minor. The University of Mary offers a bachelor’s degree in addiction counseling as well as a minor in addiction counseling that can be combined with other degree programs they offer, such as a degree in social work, psychology, or a master’s in clinical mental health counseling degree program. Minot State University offers a bachelor’s degree in addiction studies and the National Addiction Studies Accreditation Commission accredits their program. In addition, the University of Jamestown offers a bachelor’s degree in psychology with a concentration in addiction counseling.¹

“The majority of psychologists, counselors, and licensed addiction counselors work in metropolitan areas.”

LICENSED MARRIAGE AND FAMILY THERAPISTS

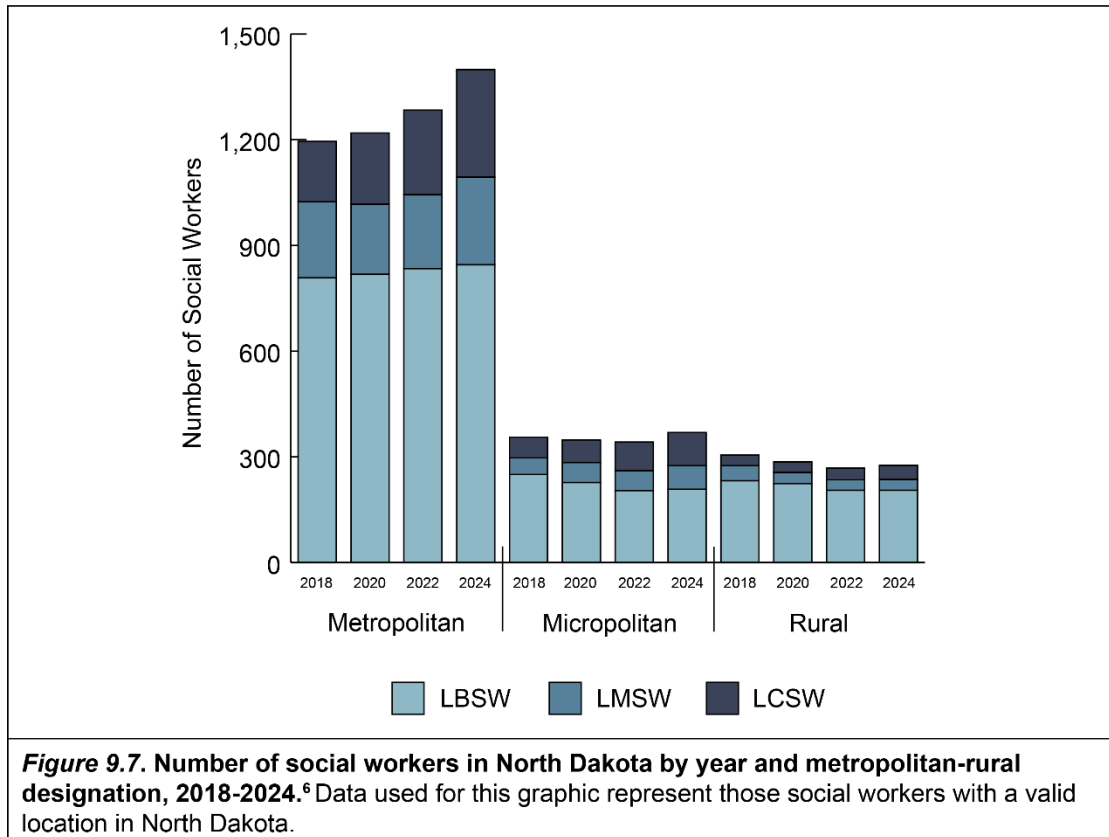
Marriage and family therapists (LMFT) are behavioral health professionals who specialize in marriage and family systems. They are able to diagnose and treat mental and emotional disorders affecting couples or families. Licensed associate marriage and family therapist (LAMFT) is the preliminary licensure before the full licensure of LMFT. In order to be eligible for licensure in North Dakota, these practitioners must have a master’s degree from an educational program approved by the licensing board. There are no colleges or universities in North Dakota

that currently have degree programs that are accredited by the Commission on Accreditation for Marriage and Family Therapy Education but there are a variety of degree programs in psychology and counseling available in the state.¹ LAMFTs have the same capabilities as LMFTs, except LAMFTs are supervised by LMFTs. Currently, there are 6 LAMFTs and 62 LMFTs licensed in North Dakota. There also are 16 supervisors approved by the North Dakota Marriage and Family Therapy Licensure Board but only eight are located in North Dakota. The other eight supervisors are located in Minnesota, South Dakota, and New York.⁵

SOCIAL WORKERS

Social workers are licensed professionals who work in a variety of fields related to human services with the aim of helping individuals and families improve their lives through the restoration or enhancement of biopsychosocial functioning. The three licensures obtainable in North Dakota are licensed clinical social worker (LCSW), licensed master social worker (LMSW), and licensed baccalaureate social worker (LBSW), with LCSWs having the most autonomy in practice and LBSWs having the least. LBSWs can do assessments, interventions, counseling, and case management or supervision, as well as educate and develop policies, programs, and activities. LMSWs have the same capabilities as LBSWs but have specialized knowledge and more advanced skills. LCSWs have the same capabilities as LBSWs and LMSWs but have specialized clinical knowledge and training in the areas of practice, and can also diagnose and treat mental, emotional, and behavioral disorders, conditions, and addictions.¹ During the 2019 legislative session in North Dakota, the titles for licensed social workers changed. LCSWs previously were called licensed independent clinical social workers; LMSWs previously were licensed certified social workers; and LBSWs previously were licensed social workers.

There are 2,888 social workers licensed in North Dakota. Most are LBSWs ($n = 1,609$, 55.7%), followed by LCSWs ($n = 774$, 26.8%), and LMSWs ($n = 505$, 17.5%). There has been an increase in the number of social workers in North Dakota from 2,376 in 2018 to the current level of 2,888 or a 21.5% increase over 6 years. The largest increase is for LCSWs with a 116.2% increase over six years, indicating that the number of LCSWs in the state has more than doubled over the last six years. Within this same timeframe, there was an increase in the number of social workers in metropolitan areas (a 17.1% increase) but a decrease in rural areas of 9.5% (Figure 9.7).⁶



Education

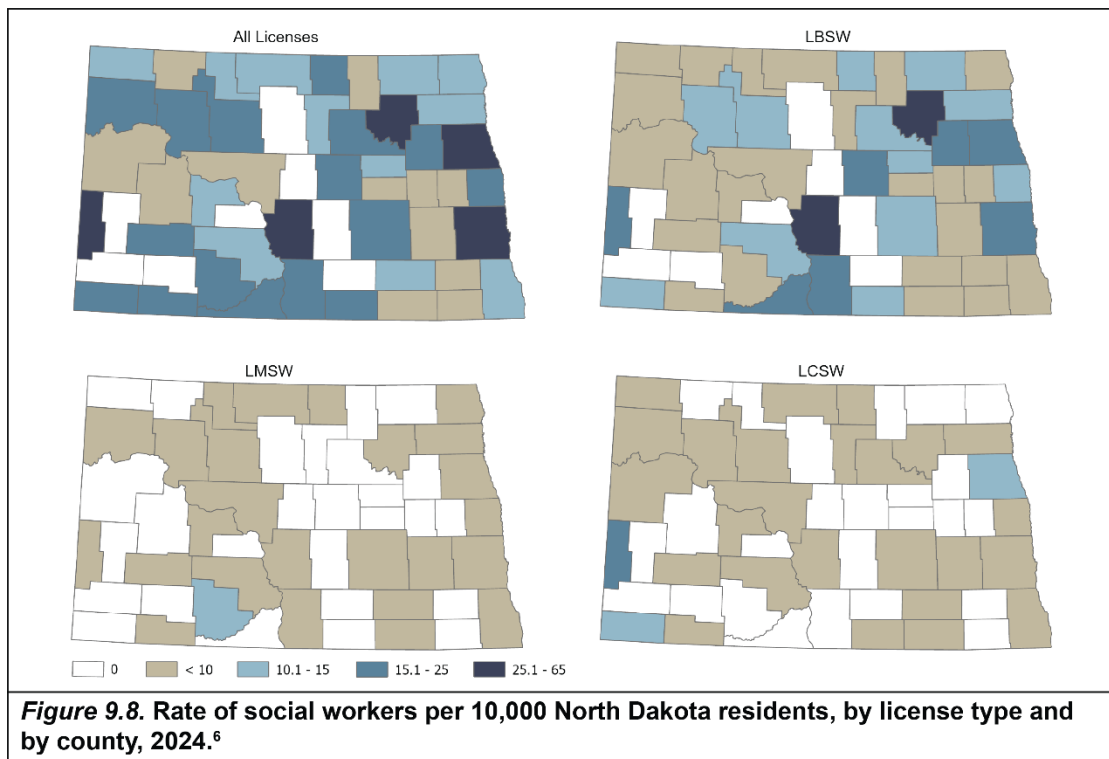
There are different educational and training requirements for the different social work licensures. To be licensed in North Dakota, LBSWs must have a baccalaureate degree in social work, pass an examination approved by the North Dakota Board of Social Work Examiners, and adhere to the code of social work ethics adopted by the North Dakota Board of Social Work Examiners. LMSWs have the same requirements as LBSWs, except they must obtain a doctorate or master's degree. LCSWs have the same requirements as LMSWs and LBSWs, but they must complete an additional 3,000 hours of supervised clinical social work experience under a LCSW.¹ On average, social workers in North Dakota have been out of school for approximately 12.9 years.⁶

The University of North Dakota, the University of Mary, Minot State University, and Sitting Bull College all offer bachelor's degree programs in social work that are accredited by the Council on Social Work Education (CSWE). UND also has a master's degree program in social work that is accredited by the CSWE. North Dakota State University (NDSU) offers a dual degree program in partnership with Minot State University. The dual degree program allows students the option to take all classes at NDSU and get a bachelor's degree in human development and family sciences from NDSU as well as a bachelor's degree in social work from Minot State University. Cankdeska Cikana Community College, Nueta Hidatsa Sahnish College, and the North Dakota State College of Science all offer associate degree programs in social work. This degree option is designed for students who are planning to pursue a bachelor's degree in social work once

their associate's degree program is completed. It offers a cost-effective way for students to begin their education in social work.¹

Practice Characteristics

The data were analyzed to determine the specific metropolitan-rural designation for the various social work professionals in North Dakota. These analyses indicate that 1,399 (68.4%) of the social work professionals in North Dakota are located in metropolitan areas, followed by those in micropolitan areas ($n = 369$, 18.1%), and rural areas ($n = 276$, 13.5%). The results, categorized by licensure level, indicate that 854 (67.1%) of LBSWs, 249 (71.8%) of LMSWs, and 305 (69.5%) of LCSWs are located in metropolitan areas indicating that most social work professionals are in a metropolitan setting (Figure 9.7 and Figure 9.8).⁶



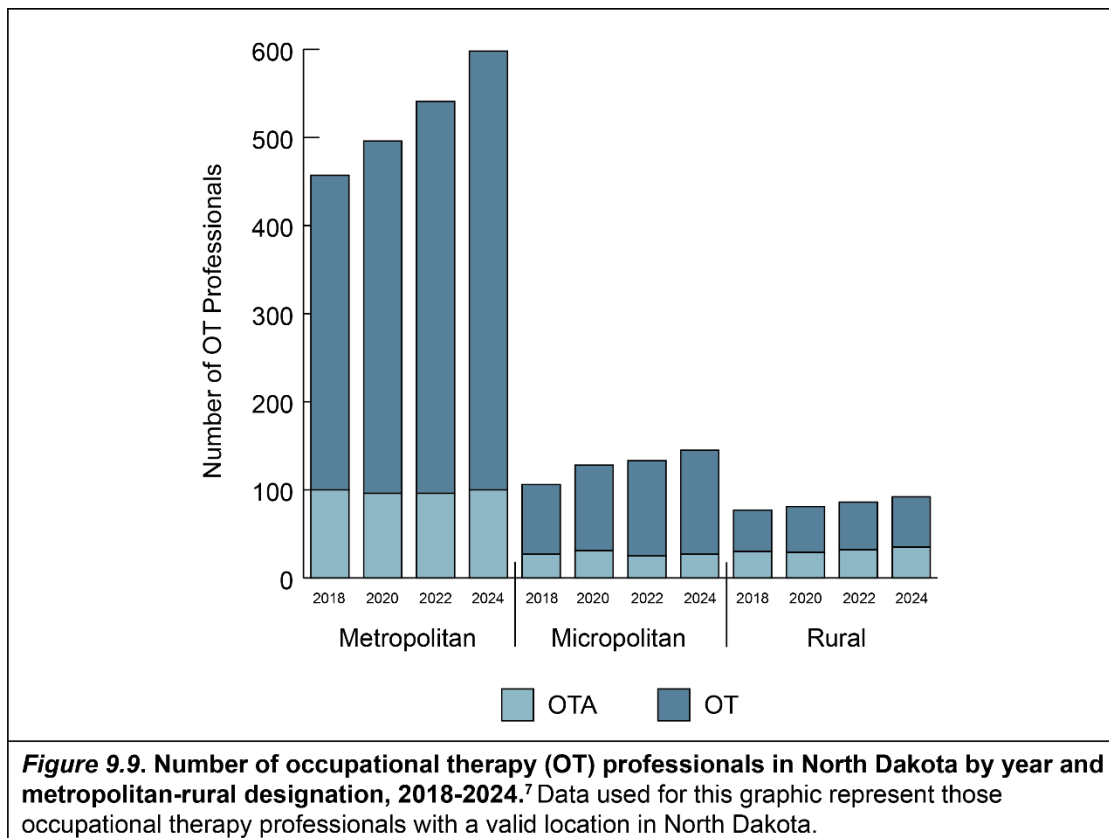
OCCUPATIONAL THERAPY PROFESSIONALS

Occupational therapy practitioners focus on helping clients gain/regain skills that allow them to live independently and engage in meaningful occupations. Settings where occupational therapy practitioners are found include acute care hospitals, rehabilitation centers, nursing homes, home health, outpatient clinics, and school systems. Occupational therapists (OTs) also are qualified behavioral health professionals who provide evaluation and intervention for individuals at risk of psychiatric, addiction, behavioral issues, and cognitive disabilities. OTs provide therapy for individuals with the purpose of building and enhancing skills, and developing habits, routines, and roles so individuals are successful in their everyday lives. To be licensed as an occupational therapist in North Dakota, one must obtain a degree from an occupational therapy educational program accredited by the Accreditation Council for Occupational Therapy Education (ACOTE),

complete a period of supervised fieldwork experience, and pass an examination approved by the National Board for Certification in Occupational Therapy.¹ Currently, there are 1,076 occupational therapy practitioners licensed in North Dakota, with 871 occupational therapists (OTs) and 205 occupational therapy assistants (OTAs). This is an increase from 2018 when there were 840 OT professionals in the state, with 199 OTAs and 641 OTs. This represents a 28.1% increase in OT professionals in the state, with an increase of 3.0% for OTAs and a 35.9% increase for OTs. Based on the population of North Dakota, currently there are 11.2 occupational therapists per 10,000 North Dakota residents and 2.6 occupational therapy assistants per 10,000 North Dakota residents.⁷ The rate of OTs in North Dakota is substantially higher than the national rate. In the U.S. there are 144,840 OTs that equates to 4.2 OTs per 10,000 U.S. residents.⁸ On average, occupational therapy professionals (OTs, OTAs) have been in practice in North Dakota for 13 years, with occupational therapists practicing, on average, for 13 years and occupational therapy assistants practicing, on average, for 14 years.⁷

Trends

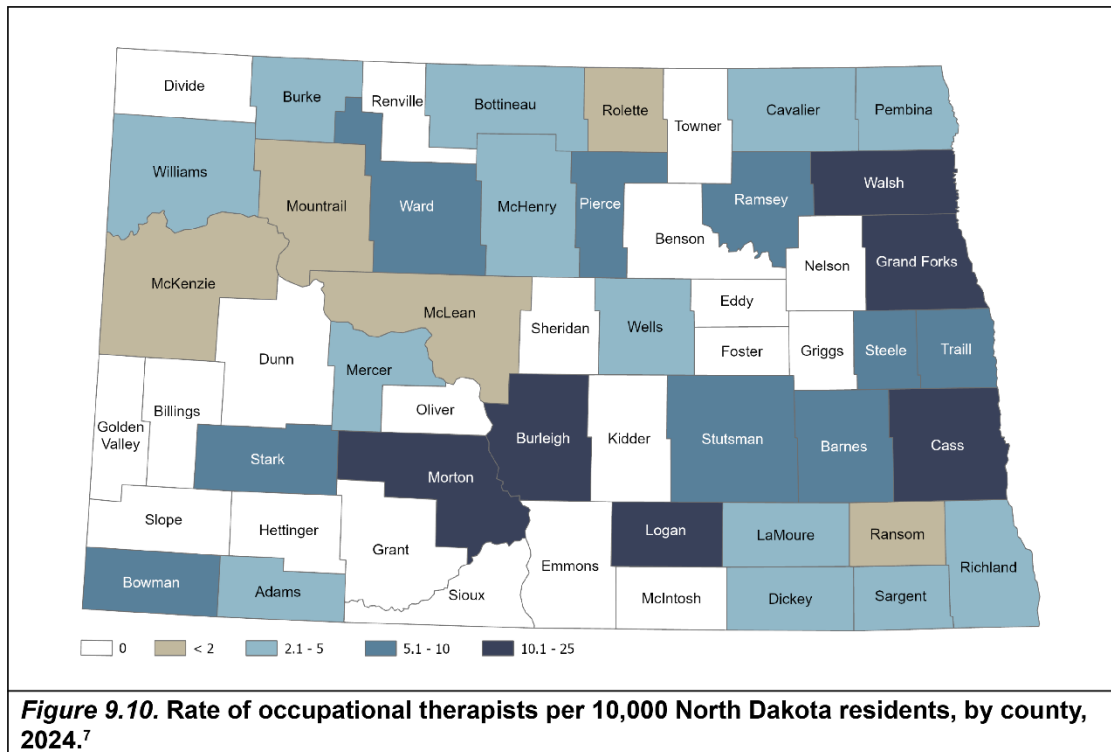
There has been a noted increase in the number of OT professionals located in North Dakota with the largest percent increase in micropolitan areas with a 36.8% increase over six years, followed by metropolitan areas with a 30.8% increase, and least in rural areas with a 19.5% increase. Metropolitan areas had the largest increase of an additional 141 OT professionals over six years (Figure 9.9).⁷

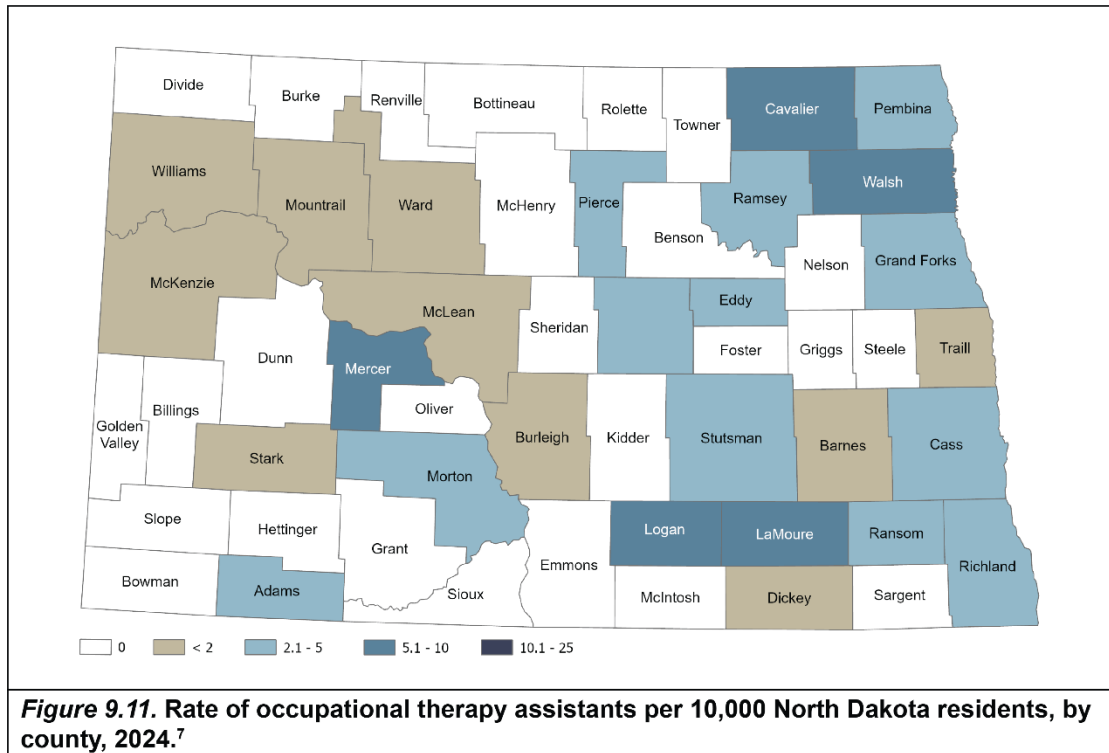


Practice Characteristics

The majority of the occupational therapy professionals (OTs, OTAs) in North Dakota ($n = 598$, 72.1%) are located in metropolitan areas, followed by micropolitan areas ($n = 145$, 17.5%), and rural areas ($n = 92$, 11.1%). Of the OTs working in North Dakota, 498 (74.0%) are located in metropolitan areas, 118 (17.5%) in micropolitan areas, and 57 (8.5%) in rural areas. For OTAs, 100 (54.3%) are located in metropolitan areas, 27 (14.6%) in micropolitan areas, and 35 (19.0%) in rural areas (Figure 9.10 and Figure 9.11).⁷

“Of the occupational therapists working in North Dakota, about 74.0% work in metropolitan areas and 8.5% work in rural areas.”





University of North Dakota Occupational Therapy Program

The first cohort of Occupational Therapy Doctorate (OTD) students graduated in May 2022. This class entered the program the semester prior to the pandemic and then transitioned to remote curriculum delivery in the middle of their second semester. This cohort completed a full, albeit modified, curriculum due to pandemic restrictions. For the OTD Class of 2022, 39 of 53 completed a survey by the Department of Occupational Therapy at an average of one year and five months after graduation with a response rate of 74%. Of these respondents, 19 students were originally from Minnesota, followed by North Dakota ($n = 12$), Wyoming ($n = 8$), and other states ($n = 14$). Of the 39 respondents, 100% reported their student loan amounts and their annual anticipated entry-level salary projections for the upcoming year. Student loan amounts reported by 2022 graduates were: Less than \$10,000 ($n = 4$), \$10,000-19,999 ($n = 1$), \$20,000-29,999 ($n = 1$), \$30,000-\$39,999 ($n = 2$), \$40,000-\$49,999 ($n = 0$); \$50,000 – 59,999 ($n = 4$); \$60,000-69,999 ($n = 4$), \$70,000-79,999 ($n = 4$), \$80,000-89,999 ($n = 3$), \$90,000-99,999 ($n = 5$), \$100,000-149,999 ($n = 9$), and more than \$150,000 ($n = 1$).⁹

Of the 39 respondents, 38 reported on their level of satisfaction with the program. Of those 39, 27 (71%) were Satisfied/Extremely Satisfied, 10 (26%) were Neutral, 1 (2.6%) was Dissatisfied/Extremely Dissatisfied. It should be noted that this cohort spent one semester in the program attending in-person courses and then completed a modified delivery option due to the COVID-19 pandemic, which may have influenced their satisfaction with their educational experience. At the time of this survey, respondents reported their primary work was occurring in the following states: Minnesota ($n = 10$), North Dakota ($n = 7$), Wyoming ($n = 6$), Nebraska ($n = 4$), Colorado ($n = 2$), Alaska ($n = 1$), Arizona ($n = 1$), California ($n = 1$), Idaho ($n = 1$), Montana ($n = 1$).

= 2), New Mexico (n = 1), South Dakota (n = 1), Tennessee (n = 1), Wisconsin (n = 1), and one did not report.⁹

In the Fall of 2023, 97.4% (n = 35) of respondents of the OTD Class of 2022 reported that they were working as an occupational therapist while 10.25% (n = 4) reported they were not working as an occupational therapist. Of those who were working as an OT, 33 reported full-time employment, one reported part-time employment, and one reported working in a per diem position. All OTD 2022 respondents (n = 39) reported on their full-time projected annual salary: Less than \$10,000 (n = 1), \$30,000-\$39,999 (n = 0), \$40,000-\$49,999 (n = 1); \$50,000-59,999 (n = 10); \$70,000-79,999 (n = 10); \$80,000-89,999 (n = 3), \$90,000-99,999 (n = 1) and \$100,000-149,999 (n = 0). For the four respondents who reported not working as an occupational therapist, reported salary was less than \$10,000 (n = 1), \$40,000-49,999 (n = 1), \$50,000-59,999 (n = 1), and \$60,000-69,999 (n = 1). Areas of practice included free standing outpatient clinic (n = 11), other (n = 8), mental health (n = 2), hospital (n = 6), early intervention (n = 3), rehabilitation (n = 3), schools (n = 2), long-term care/skilled nursing facility (n = 1), and one respondent did not report. None of the respondents were employed as a traveling practitioner. Respondents reported the primary reason for selecting their current position which included practice setting (n = 24), location (n = 5), other (n = 5), salary/wage (n = 3), benefits (n = 1), and one respondent did not report their reason for selecting their present employment.⁹

In 2023, the second cohort graduated from UND Occupational Therapy with a doctoral degree. This class entered during the pandemic and completed a full, albeit partially modified, curriculum due to some remaining post-pandemic restrictions. Of the 2023 OTD cohort, 35 of 50 completed the new graduate survey (5 months after graduation) for a response rate of 70%. The identified home states of the 2023 graduates were Minnesota (n = 14), North Dakota (n = 11), Wyoming (n = 5), Nebraska (n = 2), California (n = 2) and U.S. is not home residence (n = 1). Of the 35 respondents, 100% reported on their student debt, satisfaction with the program, and their annual anticipated entry-level salary projections for the upcoming year. Graduate satisfaction with the program included 27 (77%) were Satisfied/Extremely Satisfied, 7 (20%) were Neutral, 1 (3%) was Dissatisfied/Extremely Dissatisfied. Student loans reported by 2023 OTD graduates were: Less than \$10,000 (n = 4), \$30,000-\$39,999 (n = 1), \$40,000-\$49,999 (n = 1); \$50,000-59,999 (n = 5); \$70,000-79,999 (n = 3); \$80,000-89,999 (n = 4), \$90,000-99,999 (n = 4) and \$100,000-149,999 (n = 12). At the time of this survey, respondents reported their primary state of employment as: Minnesota (n = 17), North Dakota (n = 7), Wyoming (n = 4), Arizona (n = 2), Alaska (n = 1), California (n = 1), Colorado (n = 1), Missouri (n = 1), and Nebraska (n = 1).⁹

For the OTD Class of 2023, 100% (n = 35) of respondents were working as occupational therapists and of those 32 (91%) were employed in a full-time capacity, 1 (3%) was working part-time, and 2 (6%) were working in per diem positions. Respondents reported on their primary reason for selecting their current position as follows: practice setting (n=17), location (n = 11), salary/wage (n = 3), other (n = 3), and benefits (n = 1). Employment settings for these respondents were as follows: 40% (n = 14) free-standing outpatient clinic, 20% (n = 7) hospital setting, 17% (n = 6) long-term care setting/skilled nursing facility, 9% (n = 3) school setting, (n = 2) other, 3% (n = 1) mental health, 3% (n = 1) home health, and 3% (n = 1) rehabilitation settings. Those surveyed reported their full-time projected annual salary as follows: \$40,000-\$49,999 (n = 2), \$50,000-\$59,999 (n = 2), \$60,000-\$69,999 (n = 11), \$70,000-\$79,999 (n = 9), \$80,000-\$89,999 (n = 8), \$90,000-\$99,999 (n = 2) and \$100,000-\$149,999 (n = 1).⁹

Other Educational Programs

Beyond the OT program available through UND, there are two other higher education institutions in North Dakota that offer degree programs accredited by ACOTE. North Dakota State College of Science offers an OTA associate degree program. Additionally, the University of Mary offers doctorate and master's degree programs in occupational therapy. The doctorate program is fully accredited by ACOTE while the master's program is in candidacy status.

BEHAVIOR ANALYSTS

Behavior analysts are professionals who use experimental and applied analysis of behavior and statistics to develop techniques and treatments that facilitate the evaluation and modification of behavior, especially when the behavior is maladaptive.¹ For example, in North Dakota behavior analysts work with children who have been diagnosed with autism and help develop treatment plans and adaptive strategies. According to the North Dakota Century Code (43-64), there are two licensure levels in North Dakota: the licensed assistant behavior analyst (LABA) and the licensed behavior analyst (LBA). These are relatively new licensure titles approved by the North Dakota legislature during the 2019 legislative session. Licensed behavior analysts used to be referred to as licensed applied behavior analysts and licensed assistant behavior analysts used to be referred to as registered applied behavior analysts. To obtain these licenses, applicants must complete education, examination, and experience requirements established by the State Board of Integrative Health Care, such as certification from the Behavior Analyst Certification Board (BACB); have the physical, mental, and professional capability for practice of applied behavior analysis; and have a history free of any disciplinary action by the board.¹ There are 34 licensed behavioral analysts in North Dakota.¹⁰

BEHAVIOR TECHNICIANS

Behavior Technicians are paraprofessionals who practice under the supervision of either an LBA or LABA. They are responsible for the direct implementation of behavior analytic services. To be a behavior technician in North Dakota, an individual must meet requirements of the BACB, including at least a high school diploma or equivalent degree, passing a background check, 40 hours of training, completion of a competency assessment and the registered behavior technician (RBT) examination.¹

MENTAL HEALTH TECHNICIANS/CASE AIDES

Mental health technicians and case aides are entry-level paraprofessionals with a basic understanding of mental illness and treatment that provide direct care services in inpatient facilities and outpatient agencies. To be certified as a mental health technician in North Dakota, applicants must have a high school degree, training in cardiopulmonary resuscitation, first aid, crisis intervention, Health Insurance Portability and Accountability Act and confidentiality, as well as medication module training and mental health certificate training.¹

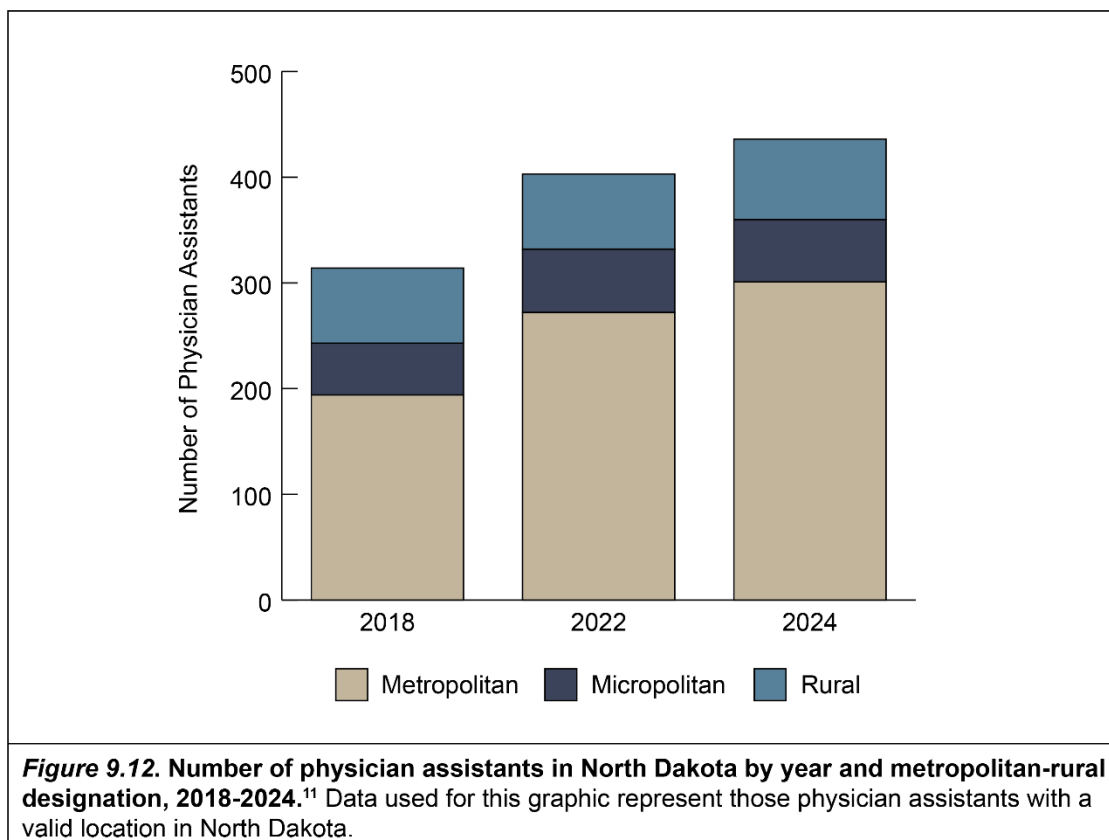
PEER SUPPORT SPECIALISTS

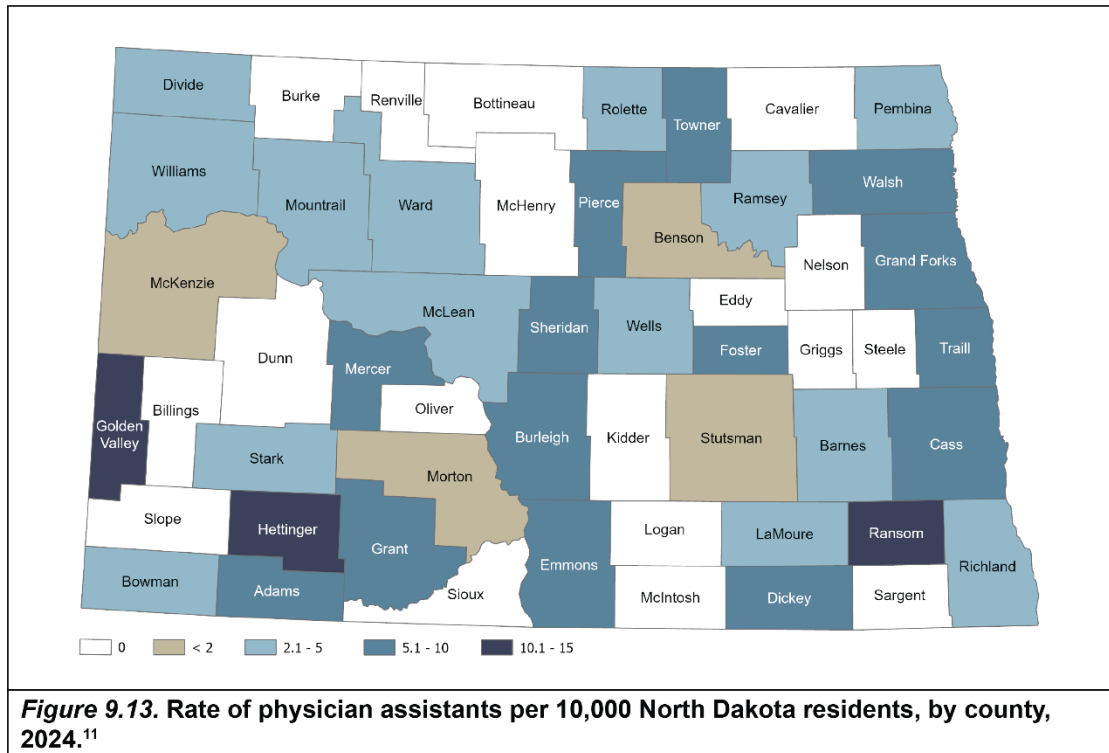
Peer support specialists are individuals with behavioral health experience who use this experience to serve as a pro-social model, offer insight to an individual's care team, and provide support focused on advocacy, coaching, and mentoring. The only education or training required is a weeklong training through the North Dakota Department of Health and Human Services Behavior Health Division.¹

PHYSICIAN ASSISTANTS

Practice Characteristics

North Dakota has a total of 571 physician assistants (PAs) licensed in the state, which is equal to 7.3 PAs per 10,000 North Dakota residents.¹¹ This rate is higher than the national rate. In the U.S. there are 132,940 PAs which is equal to 4.1 PAs per 10,000 U.S. residents.¹² Physician assistants in North Dakota have been licensed on average for 11 years. The majority of physician assistants in North Dakota work in metropolitan areas ($n = 301$, 69.0%) followed by rural areas ($n = 76$, 17.4%), and then micropolitan areas ($n = 59$, 13.5%). There has been an increase in the number of licensed PAs in North Dakota from 361 in 2018 to 571 in 2024 or a 58.2% increase over those six years. (Figure 9.12 and Figure 9.13).¹¹





University of North Dakota Physician Assistant Program

In May 2023, the Department of Physician Assistant Studies at the University of North Dakota graduated 33 students. Summarized below are workforce survey responses of 32 graduates who completed an abbreviated workforce survey. Home states of graduates eligible for state licensing and employment include North Dakota ($n = 19, 59.4\%$), Minnesota ($n = 6, 18.8\%$), and one (3.1%) from each of the states of South Dakota, Montana, Wyoming, Wisconsin, Missouri, Washington, and Texas. When the survey was conducted, all respondents ($n = 32, 100\%$) had secured full-time jobs. The majority of graduates ($n = 25, 78.1\%$) reported working in their home state. Those who are not are working in a neighboring state (ND or MN).¹³

Half of the employed graduates reported working in a primary care setting ($n = 16, 50\%$). The next most common employment setting is in surgical specialties, including orthopedics, neurosurgery, and head and neck surgery ($n = 6, 19\%$). Graduates also found employment in emergency medicine, psychiatry, hospital medicine, rheumatology, critical care, ENT, urology, and hematology/oncology ($n = 10, 31\%$). In terms of care for rural areas, 44% (14 of 32) of the responding graduates are practicing in rural areas (communities with a population of <25,000) and 41% (13 of 32) are working in rural/underserved primary care. The starting salary range for graduates of the Physician Assistant Studies program at the University of North Dakota is \$105,000-\$147,000, averaging \$121,000 per year.¹³

PHYSICAL THERAPY PROFESSIONALS

Physical therapists are healthcare professionals who examine individuals with mechanical, physiological, and developmental body structure impairments or activity limitations and/or

participation restrictions in movement and alleviate the impairments through designing and implementing therapeutic interventions. To be licensed in North Dakota, one must graduate from a professional physical therapy education program accredited by a national accreditation agency approved by the North Dakota Board of Physical Therapy and pass the examination approved by the board. The most recent licensure data for physical therapists (PTs) and physical therapist assistants (PTAs) were obtained from the North Dakota Board of Physical Therapy in early 2024. The complete data set contained 1,239 licensed providers including 1,054 PTs and 185 PTAs. Of the 1,054 PTs, 873 (82.8%) were employed, 76 (7.2%) were self-employed, and 38 (3.6%) reported a combination of self-employed and employed. The remaining 67 (6.4%) PTs did not report employment status. Of the 185 PTAs, 155 (83.8%) were employed as PTAs, 3 (1.6%) were self-employed, and 4 (2.2%) reported a combination of self-employed and employed. The remaining 23 (12.4%) PTAs did not report employment status.¹⁴ In North Dakota, 1,054 PTs is equal to 13.6 PTs per 10,000 North Dakota residents. This rate is higher than the national rate of 7.2 PTs per 10,000 U.S. residents with a total of 240,820 PTs.¹⁵

Trends

Since 2018, there has been an overall increase in the number of physical therapy professionals working in North Dakota. Between 2018 and 2024, there has been a 23.3% increase in PT professionals working in the state (25.9% for PTs, and 10.1% for PTAs). The largest increase has been seen in metropolitan areas with a 20.8% increase during the six-year time period. Rural areas also saw a notable increase of 18.8%, followed by micropolitan areas with 10.7% (Figure 9.14).¹⁴

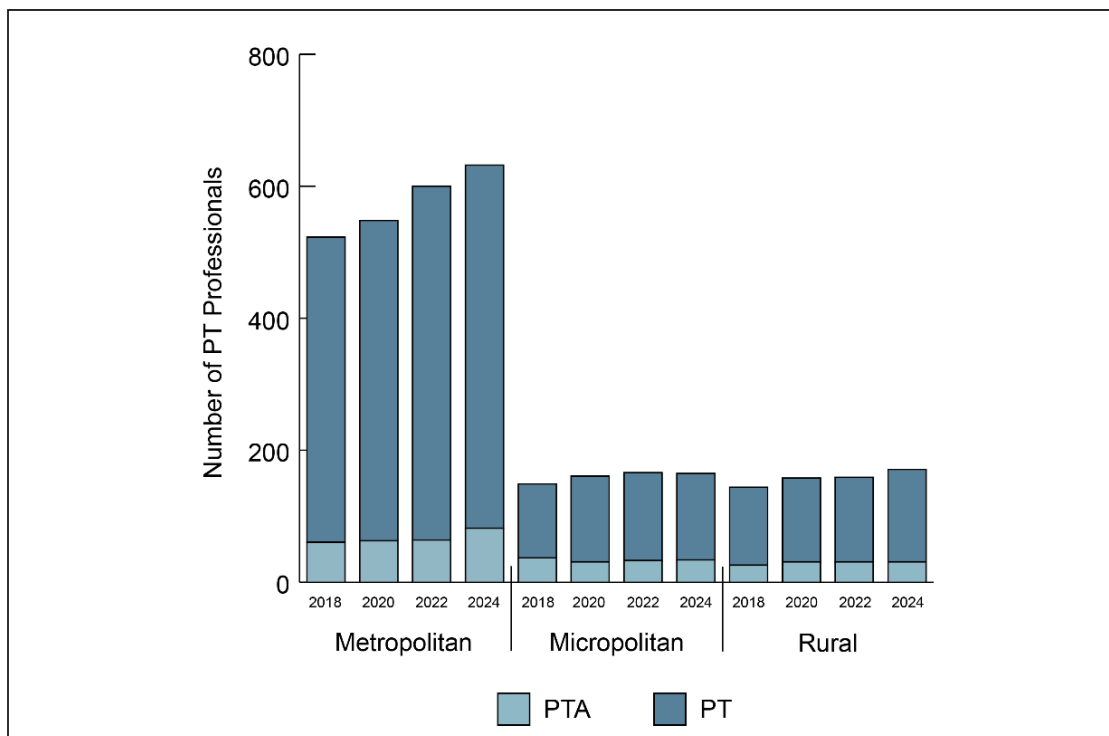


Figure 9.14. Number of physical therapy (PT) professionals in North Dakota by year and metropolitan-rural designation, 2018-2024.¹⁴ Data used for this graphic represent those physical therapy professionals with a valid location in North Dakota.

Demographics

The demographic data revealed that 71.4% of providers were women, 28.1% were men, and 0.5% preferred not to respond. Among the license types, 70.0% of PTs and 77.8% of PTAs reported being women. The vast majority of licensees ($n = 1,168$, 93.9%) reported being white (non-Hispanic); 94.1% of PT and 93.0% of PTA providers reported as white (non-Hispanic).¹⁴

Education

Physical therapists graduate with a Doctor of Physical Therapy (DPT) degree. The DPT, first introduced in North Dakota in 2006, has become the required entry-level degree nationally for physical therapists as of 2015. The majority of PTs practicing in North Dakota have a Doctor of Physical Therapy degree (68.1%), followed by a master's degree (19.8%), and bachelor's degree (11.5%). An associate degree is the entry-level degree for physical therapist assistants and nearly all (96.8%) PTAs in North Dakota have this degree (Table 9.1). A majority (74.3%) of all practicing PTs and PTAs in North Dakota graduated from a North Dakota school. Specifically, 80.9% of physical therapists obtained their degree from a North Dakota school, 7.0% graduated from a Minnesota school and 14 individuals were educated in another country. The PTAs practicing in North Dakota included 38.4% educated in North Dakota and 37.8% educated in Minnesota.¹⁴

“80.9% of physical therapists obtained their degree from a North Dakota school.”

Table 9.1

Educational attainment for North Dakota physical therapists and physical therapist assistants, 2024.¹⁴

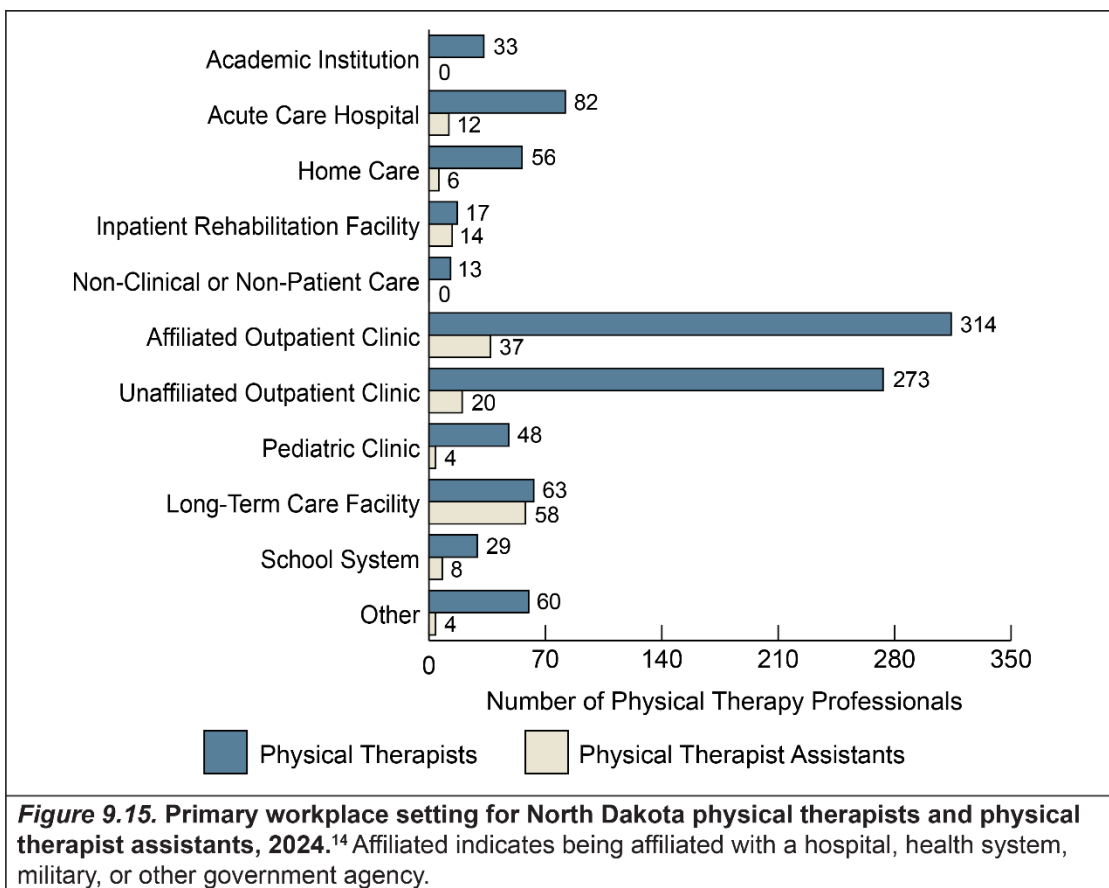
Degree	PT		PTA		All	
	N	%	N	%	N	%
Associate's	1	0.1	179	96.8	180	14.5
Bachelor's	121	11.5	3	1.6	124	10.0
Certificate	5	0.5	1	0.5	6	0.5
Master's	209	19.8	2	1.1	211	17.0
Doctor of Physical Therapy	718	68.1	0	0.0	718	58.0
Total	1,054	100.0	185	100.0	1,239	100.0

Practice Characteristics

There were multiple practice settings identified for PTs and PTAs in the data set. The majority of PTs practice in an outpatient setting (59.4%), while a majority of PTAs practice in an extended care setting (35.6%), followed by the outpatient setting (34.9%) (Figure 9.15). PTs and PTAs in North Dakota work with a multitude of individuals with various diagnoses, injuries, or conditions, meaning most do not work solely with individuals requiring only one type of care. Thus, the

following percentages do not total 100%. Most PTs see individuals with orthopedic/sports conditions or injuries (66.6%), followed by individuals with neurological conditions or injuries (59.1%). A majority of PTAs see individuals with neurological conditions or injuries (66.3%) followed by individuals with orthopedic/sports injuries or conditions (49.7%) and cardiovascular or pulmonary injuries or conditions (47.9%) (Figure 9.16). The majority of all PTs (78.3%) reported providing care to adults aged 20-64 years and 71.6% reported providing care to adults aged 65+. A majority of PTAs (84.1%) reported providing care to adults ages 65+ and 55.2% reported working with adults ages 20-64 (Figure 9.17).¹⁴

“A majority of PTs (88%) reported no planned changes in work hours in the near future, although a small minority (4.7%) expect to increase their hours of physical therapy or direct patient care while 7.3% expect to decrease their hours or leave the field of physical therapy.”



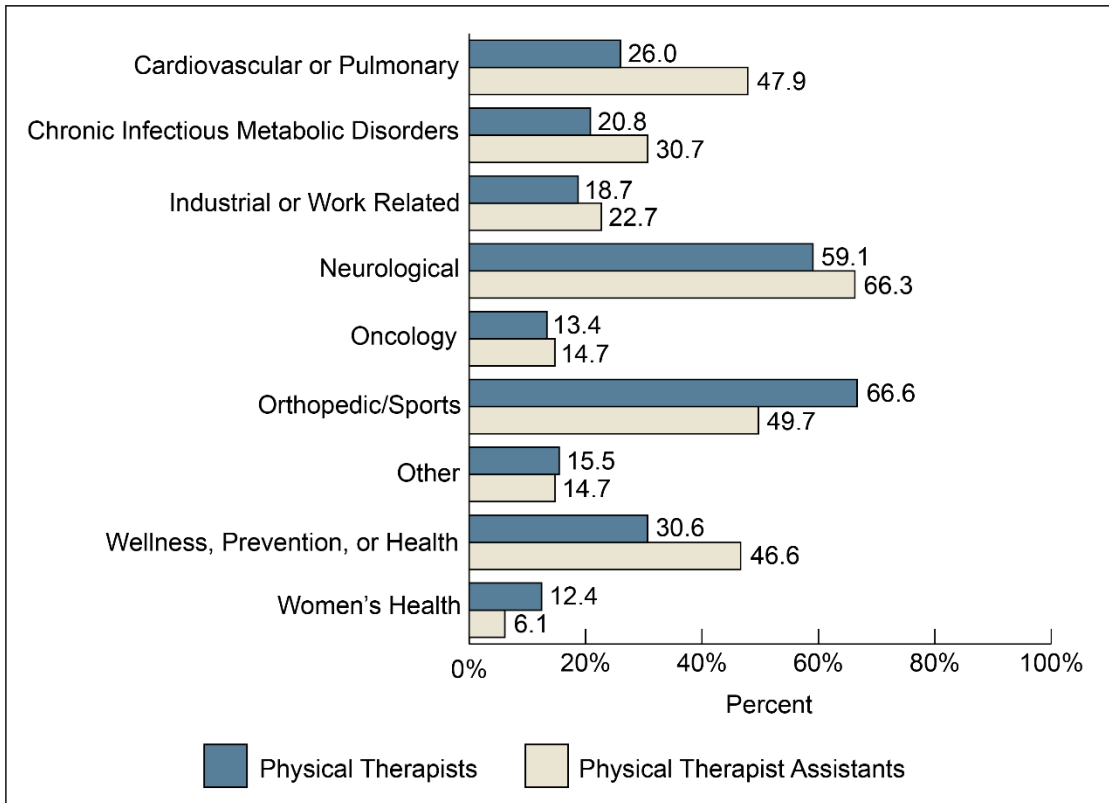
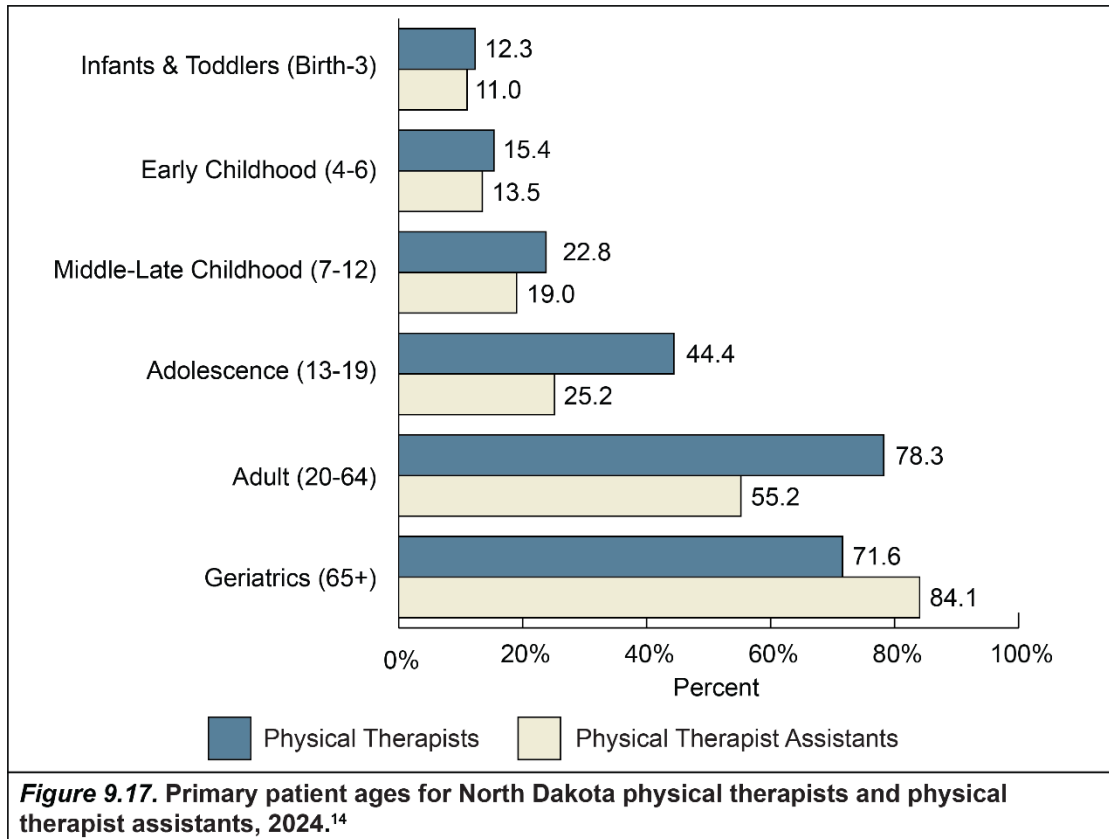


Figure 9.16. Primary injuries or conditions treated by North Dakota physical therapists and physical therapist assistants, 2024.¹⁴



A majority (67.0%) of PTs practice in a metropolitan area, and just over half (55.8%) of PTAs practice in a metropolitan area as well (Figure 9.18 and Figure 9.19). A majority of PTs (88%) reported no planned changes to their state of practice in the near future, some (4.6%) expected to increase their hours of physical therapy or direct patient care, while 7.4% expected to decrease their hours or leave the field of physical therapy. A majority of PTAs (85.3%) reported no planned changes, 9.2% expected to increase their hours of physical therapy or direct patient care, and 5.5% expected to decrease their hours or leave the field of physical therapy (Table 9.2).¹⁴

“A majority (67.0%) of all PTs practice in a metropolitan area while just over half (55.8%) of PTAs practice in a metropolitan area.”

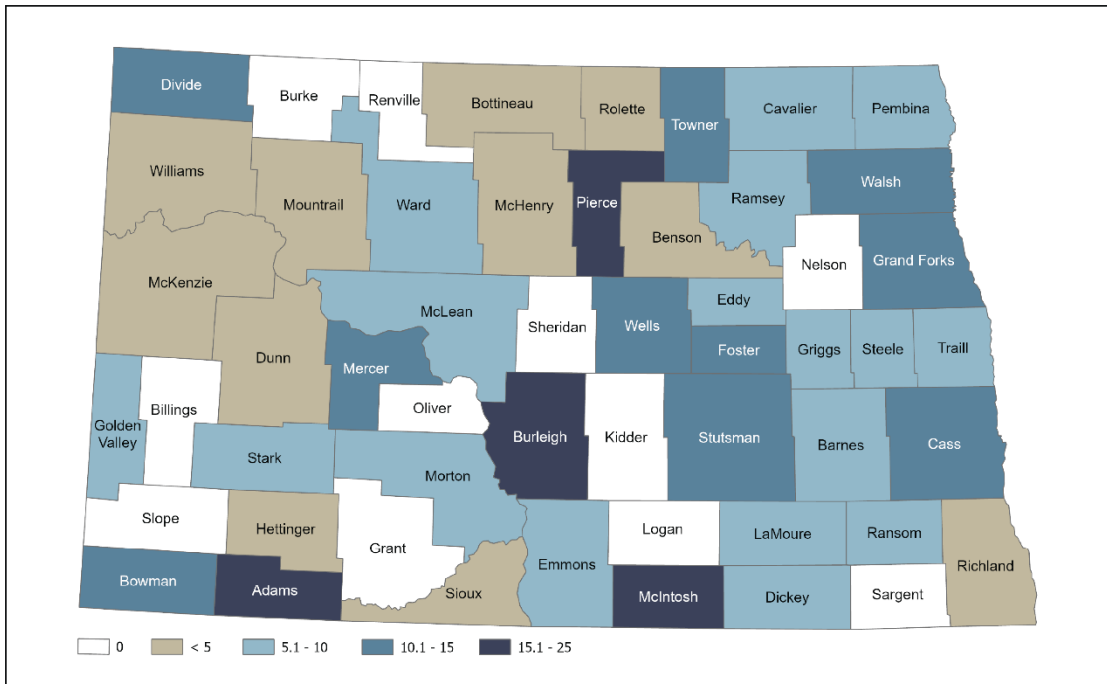


Figure 9.18. Rate of physical therapists per 10,000 North Dakota residents, by county, 2024.¹⁴

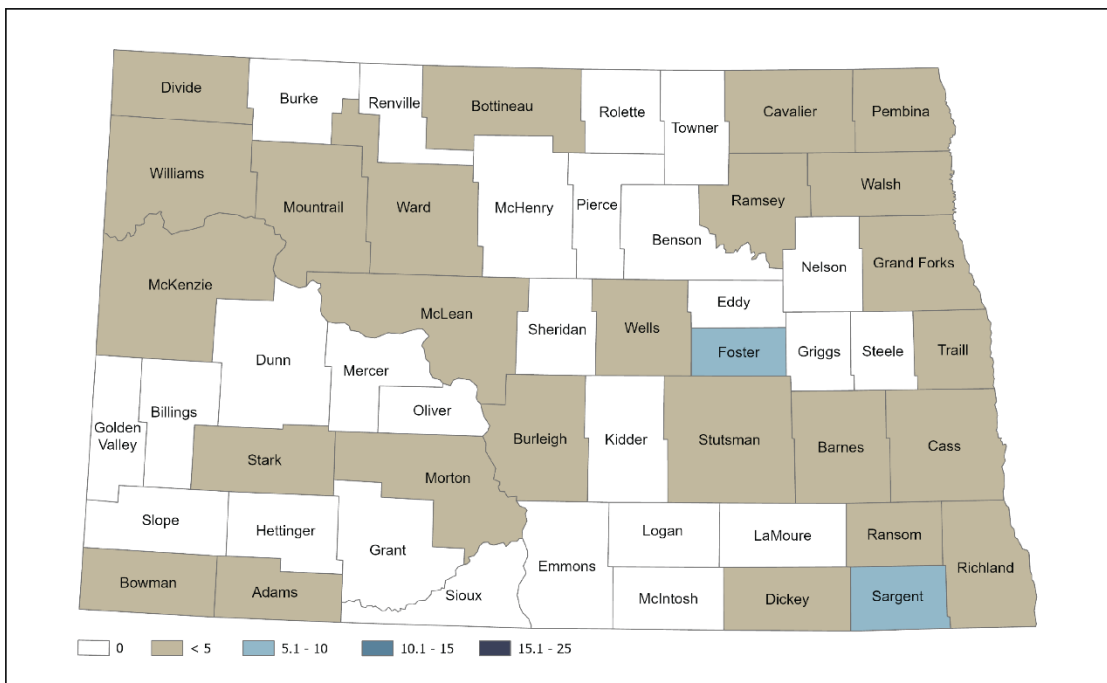


Figure 9.19. Rate of physical therapist assistants per 10,000 North Dakota residents, by county, 2024.¹⁴

Table 9.2
Future plans for North Dakota physical therapists and physical therapist assistants, 2024.¹⁴

Future Plans	PT		PTA		Total	
	N	%	N	%	N	%
Decrease my hours in the field of physical therapy	44	4.2	6	3.3	50	4.1
Decrease my hours of direct patient care	23	2.2	0	0.0	23	1.9
Increase my hours in the field of physical therapy	36	3.4	17	9.2	53	4.3
Increase my hours of direct patient care	13	1.2	0	0.0	13	1.1
No planned change	924	88.0	157	85.3	1,081	87.6
Stop working in the field of physical therapy	10	1.0	4	2.2	14	1.1
Total	1,050	100.0	184	100.0	1,234	100.0

University of North Dakota Doctor of Physical Therapy Program

The UND School of Medicine and Health Sciences Doctor of Physical Therapy program graduated 50 individuals in May 2023. An electronic survey was distributed to the graduates approximately one year after graduation. A total of 19 students responded to the survey for a response rate of 38.0%. The original class included 19 (36.5%) students from North Dakota, 28 (54%) from Minnesota, and the remaining students were from Wyoming (2.0%) and other states (7.7%). All 19 (100%) of the graduate respondents were employed as physical therapists in a full time (95%) or per diem/as needed (5%) position. There were 3 (16%) employed in North Dakota while the remainder of the respondents reported employment in Minnesota (68%) and one person each was employed in states of Arizona, Idaho, and Ohio. The primary area of practice for the graduates was an outpatient clinic (42.0%). The majority of respondents (58.0%) reported an initial salary between \$75,001 and \$85,000.¹⁶

Other Educational Programs

Additional higher education institutions in North Dakota that offer Doctor of Physical Therapy degrees accredited by the Commission on Accreditation in Physical Therapy Education (CAPTE) include the University of Mary and the University of Jamestown. The newest DPT program in the state is at the University of Jamestown with the program achieving full accreditation status in 2016. Currently there are no physical therapy assistant programs in North Dakota that are accredited by CAPTE.

NUTRITIONISTS AND DIETICIANS

Licensed Registered Dietitians

In North Dakota, there are 592 licensed registered dietitians. Currently there are 6.6 licensed registered dietitians per 10,000 North Dakota residents working in North Dakota. Licensed registered dietitians working in North Dakota have been practicing for an average of 10.9 years.¹⁷

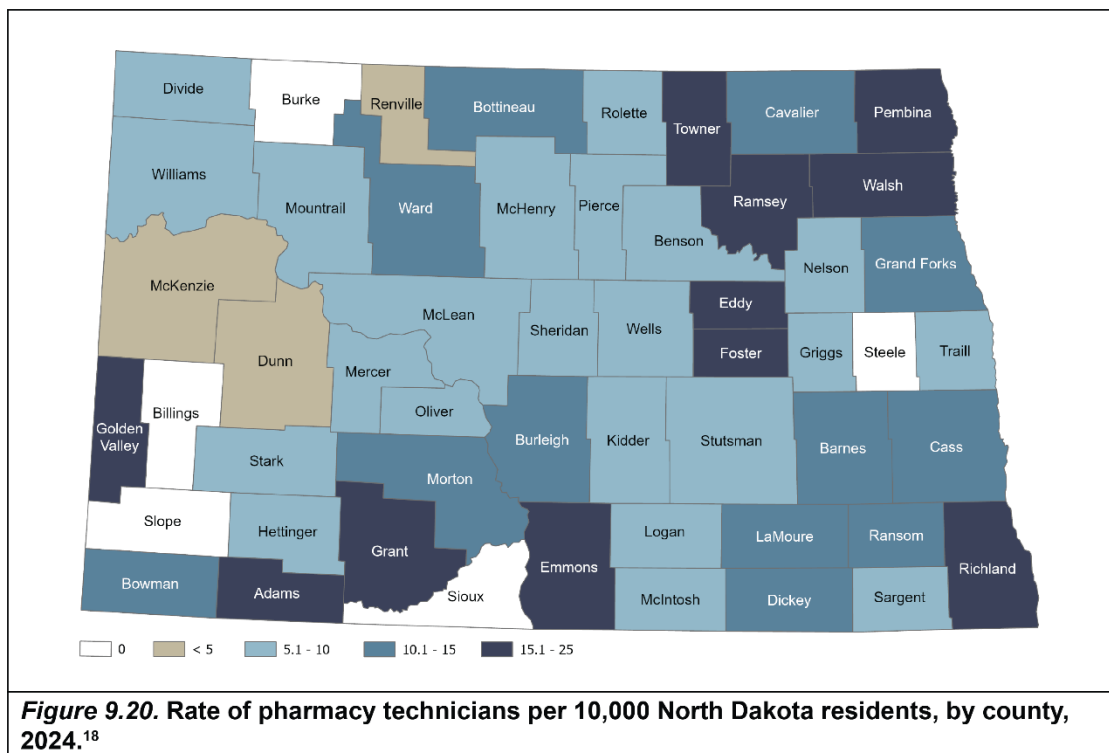
Licensed Nutritionists

In North Dakota, there are 27 licensed nutritionists. That amounts to 0.5 licensed nutritionists per 10,000 North Dakota residents working in North Dakota. Licensed nutritionists working in North Dakota have been practicing for an average of 11.6 years.¹⁷

PHARMACY PROFESSIONALS

Pharmacy Technicians

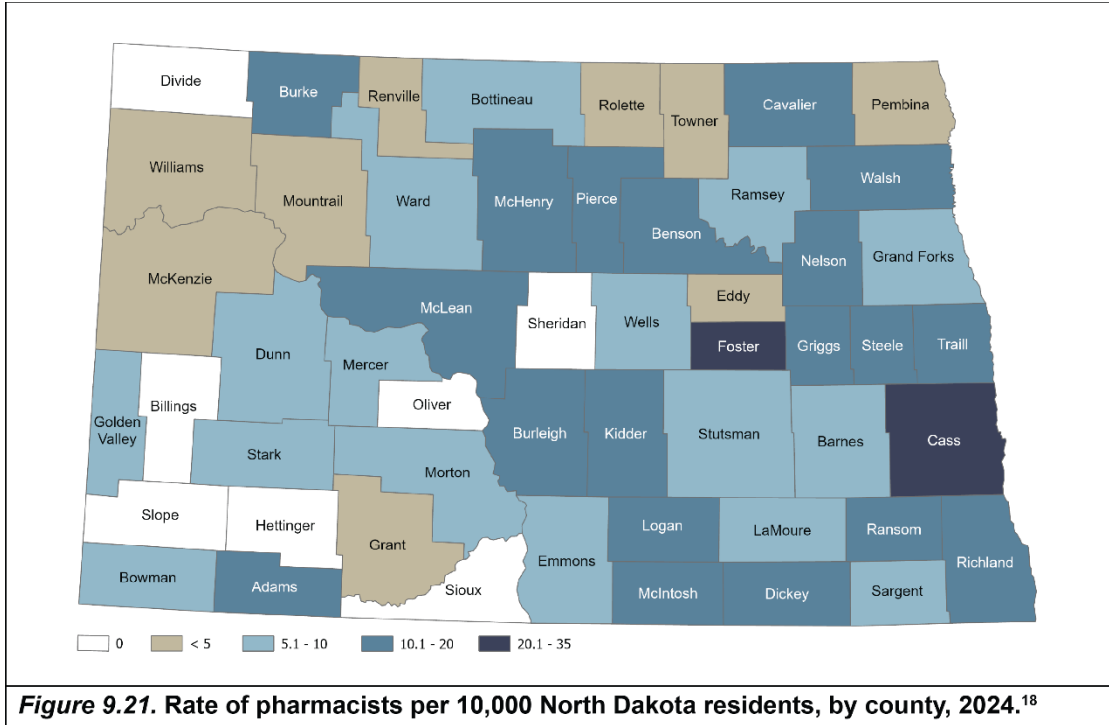
There are 991 pharmacy technicians licensed and working in North Dakota (Figure 9.20). Most pharmacy technicians work in metropolitan areas ($n = 488, 55.1\%$), followed by rural areas ($n = 213, 24.1\%$), and micropolitan areas ($n = 184, 20.8\%$). Pharmacy technicians in North Dakota have been licensed for an average of 10.4 years.¹⁸

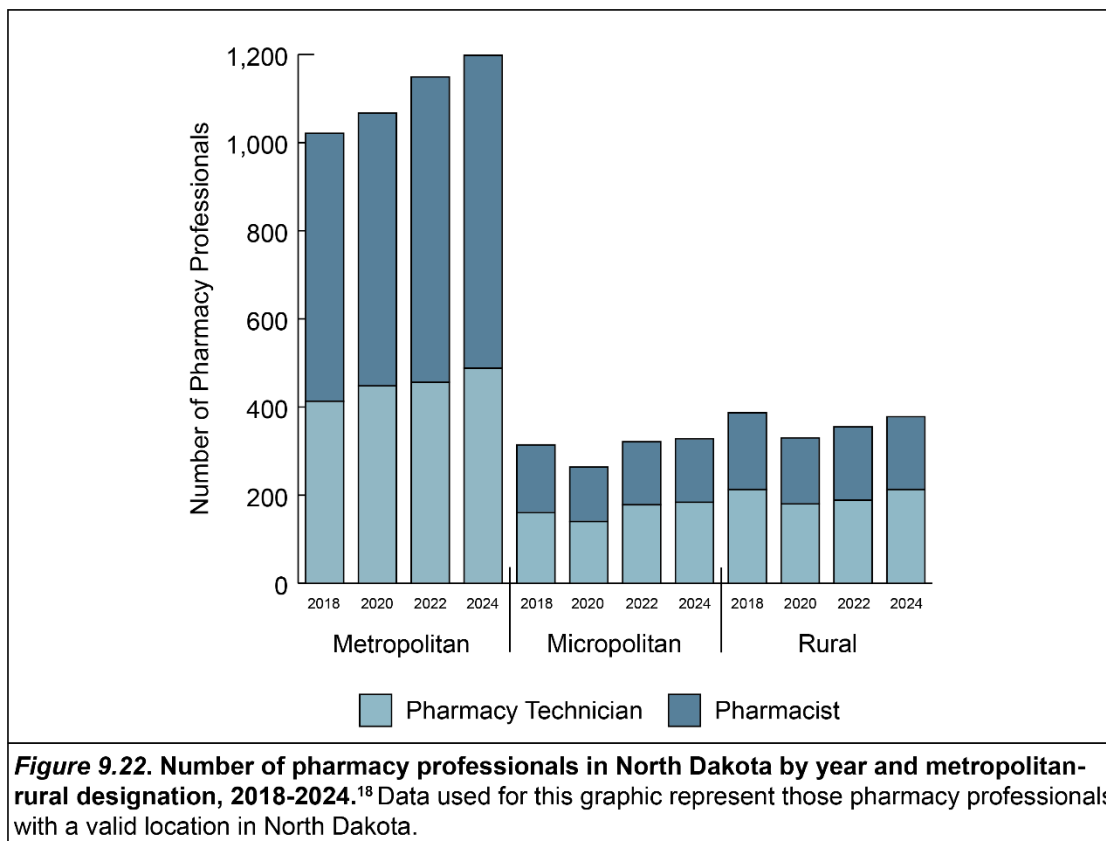


Pharmacists

There are 1,397 pharmacists licensed in North Dakota (Figure 9.21). Most pharmacists in North Dakota are located in metropolitan areas ($n = 710, 69.7\%$). The next most common area where pharmacists are located is in rural areas ($n = 165, 16.2\%$), followed by micropolitan areas ($n = 144, 14.1\%$). Pharmacists in North Dakota have been licensed for an average of 15.5 years. Over the last six years, there has been a 16.8% increase in the number of pharmacists in metropolitan areas of the state however, micropolitan areas and rural areas have both seen a decrease in the number of pharmacists of 6.5% and 5.2% respectively (Figure 9.22).¹⁸

“Most pharmacists in North Dakota work in metropolitan areas (69.7%). The next most common area is rural areas (16.2%), followed by micropolitan areas (14.1%).”





MEDICAL LABORATORY SCIENTISTS

There are 1,177 medical laboratory scientists licensed in North Dakota. Medical laboratory scientists are licensed in two categories: as scientists/technologists or technicians. Most of the medical laboratory scientists licensed in North Dakota are licensed as clinical laboratory scientist/medical technologists ($n = 889$, 75.5%), followed by clinical laboratory technician/medical laboratory technician ($n = 288$, 24.5%). Currently there are 11.3 medical laboratory scientists and 3.7 medical laboratory technicians per 10,000 North Dakota residents licensed in North Dakota.¹⁹ The rate of medical laboratory scientists in North Dakota is higher compared to the average for the U.S., where there are 344,200 clinical laboratory technologists/technicians or 10.3 clinical laboratory technologists/technicians per 10,000 U.S. residents.²⁰

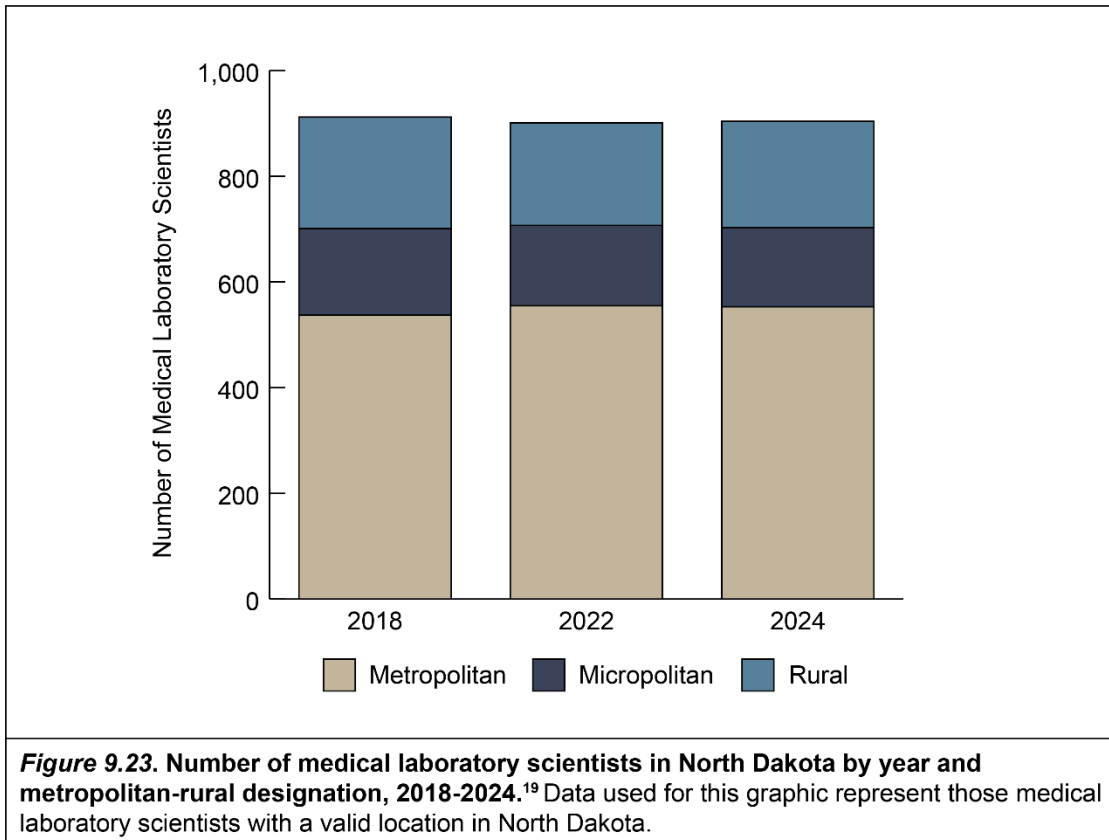
“Currently there are 11.3 licensed medical laboratory scientists per 10,000 North Dakota residents.”

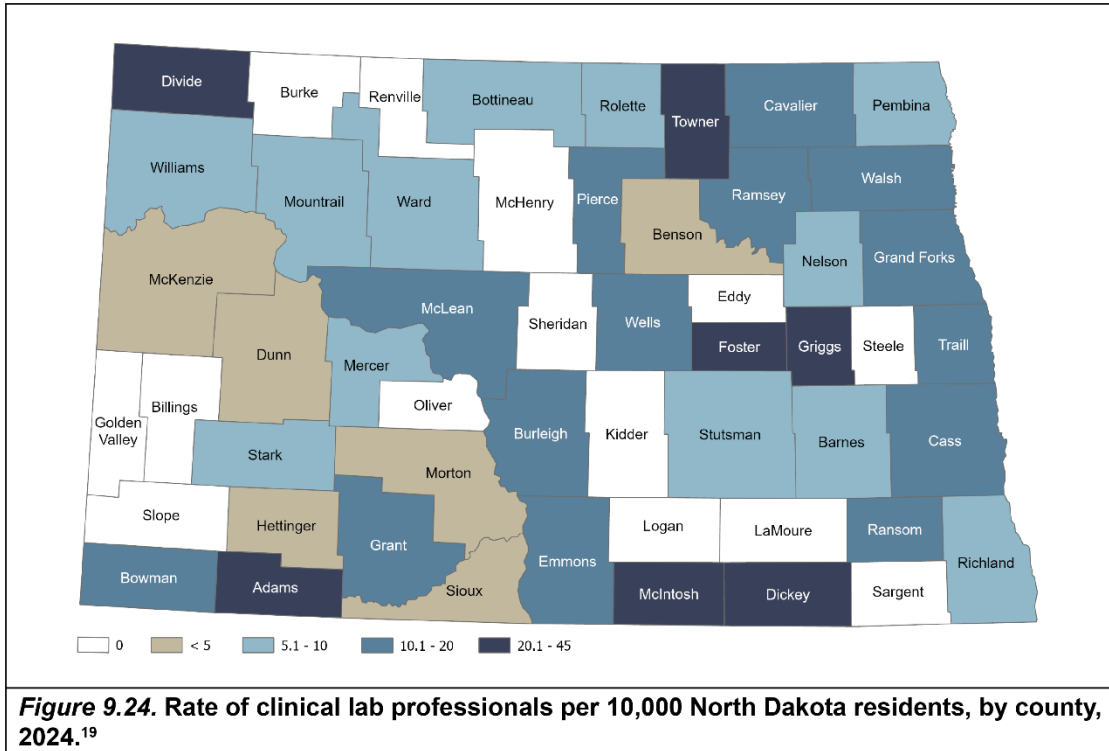
Practice Characteristics

Clinical laboratory scientists/medical technologists working in North Dakota have been in practice, on average, for 13 years. Clinical laboratory technicians/medical laboratory technicians have been in practice, on average, for 18 years. Most medical laboratory scientists working in North Dakota work in metropolitan areas ($n = 553$, 61.2%), followed by rural areas ($n = 201$,

22.2%), and micropolitan areas ($n = 150, 16.6\%$). Over the last six years, there has been limited change in the number of clinical laboratory professionals in North Dakota (Figure 9.23 and Figure 9.24).¹⁹

“Most medical laboratory scientists working in North Dakota work in metropolitan areas (61.2%), followed by rural areas (22.2%), and micropolitan areas (16.6%).”





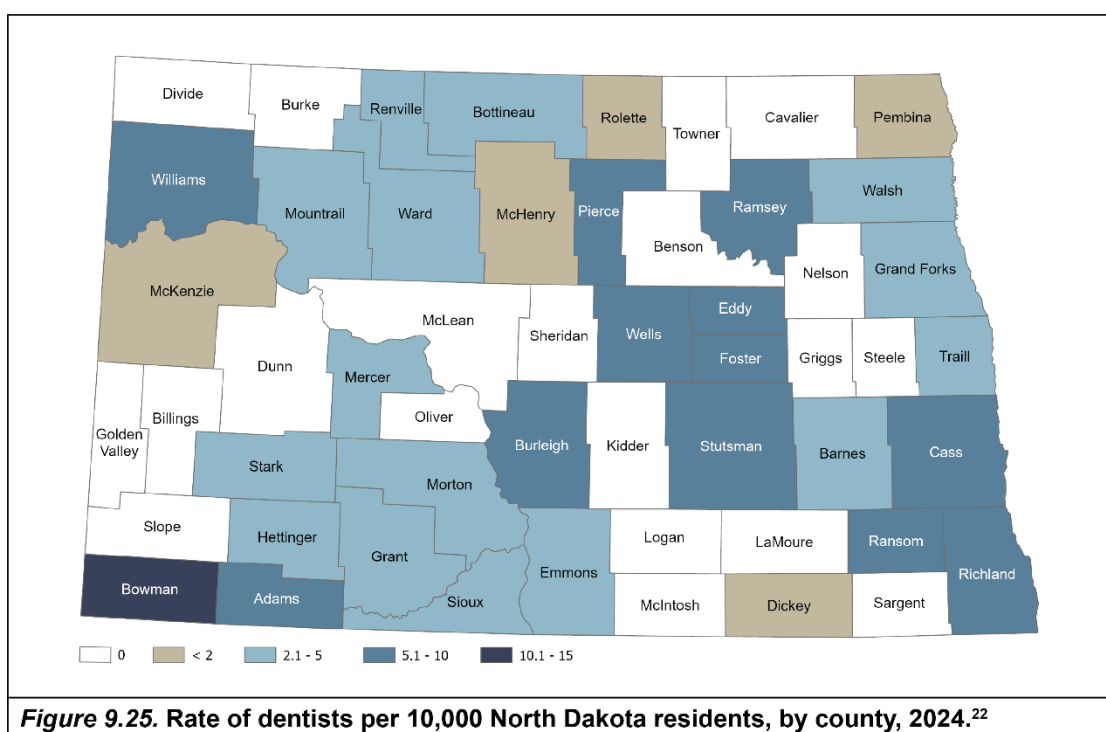
University of North Dakota Medical Laboratory Science Undergraduate Program

The UND School of Medicine and Health Sciences Department of Medical Laboratory Science (MLS) graduated 91 certification-eligible individuals through traditional ($n = 58$) and non-traditional ($n = 33$) undergraduate routes for the academic year of 2023-2024. The traditional route class included 20 (34.5%) students from North Dakota, 18 (31.0%) students from Minnesota, 8 (13.8%) international students, 3 (5.2%) students from Montana, 2 (3.5%) students from Colorado, and one student (1.7%) each from California, Illinois, Iowa, South Dakota, Texas, Washington, and Wisconsin. An electronic exit survey seeking employment information was distributed to traditional route MLS program graduates at the time of graduation. A total of 32 responses to the survey were received, for a response rate of 55.1%. Thirty-one (96.9%) students reported plans to pursue MLS-related employment, while one student (3.1%) indicated intent to pursue further education in medical school. Of the 31 students seeking MLS-related employment, 20 (64.5%) already had secured a position at the time of graduation. Additional surveys will be distributed 6-12 months post-graduation, in attempts to collect employment information from those that began their job search after graduation and to determine final placement rates within one year of graduation. Eighty percent (80.0%) of respondents originally from North Dakota and 28.6% of respondents not originally from North Dakota indicated that they would remain in North Dakota for employment. The primary areas of practice for respondents were a clinical laboratory within a hospital of 100-300 beds (47.4%), >500 beds (26.3%), 300-500 beds (15.8%), and >100 beds (10.5%). Respondents reported an average starting salary of \$28.50 per hour.²¹

DENTAL PROFESSIONALS

Dental professionals such as dentists, dental hygienists, and dental assistants are important healthcare providers in North Dakota. According to the most recent licensure data, there are 459 licensed dentists in North Dakota or 5.9 dentists per 10,000 North Dakota residents (Figure 9.25). Licensed dentists have been practicing, on average, for 15 years. Additionally, there are 831 registered dental hygienists, and 843 registered dental assistants in North Dakota, totaling 2,133 dental professionals in the state. In 2018, the state had 1,945 dental professionals, indicating that during that six-year time period there has been a 9.7% increase in the overall number of dental professionals in the state. Specifically, the number of dentists increased by 2.9%, the number of dental hygienists increased by 4.9%, and the number of dental assistants increased by 19.4%.²²

“There are 459 licensed dentists in North Dakota or 5.9 dentists per 10,000 North Dakota residents.”

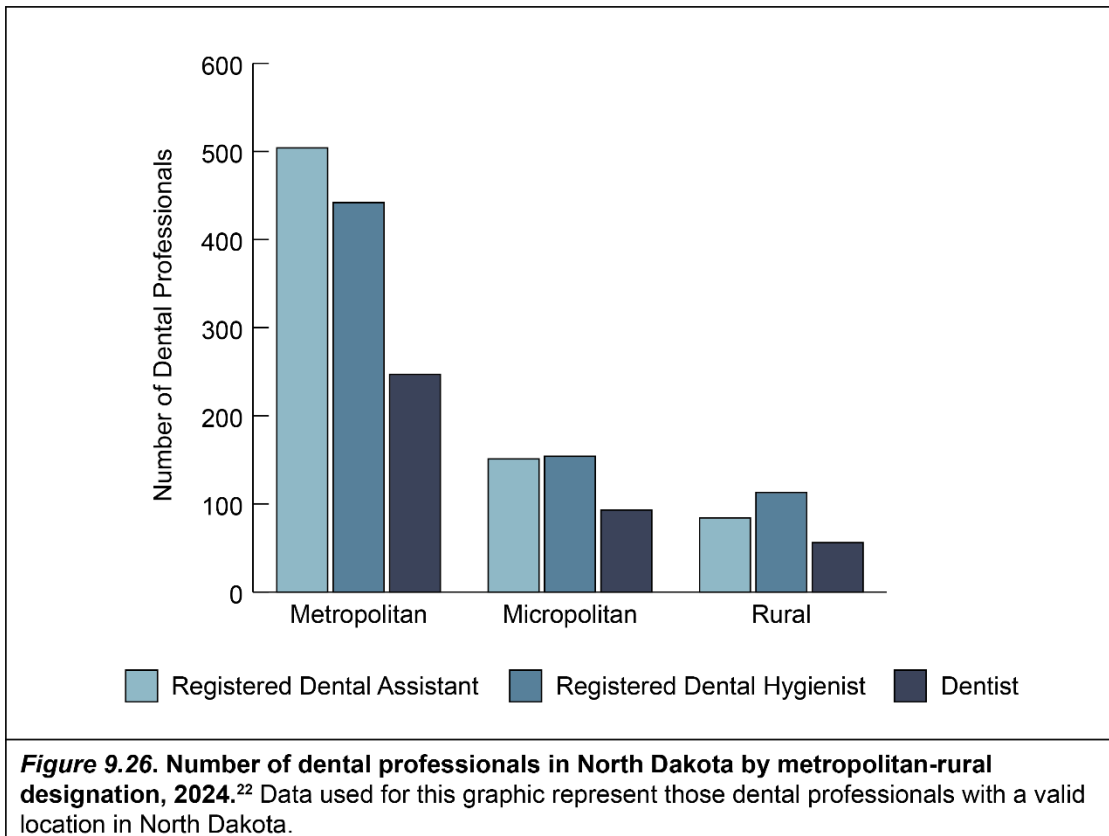


Practice Characteristics

A total of 18.4% of the dentists in North Dakota reported working in specialty areas; of these, 21 (4.7%) reported orthodontics, 20 (4.4%) reported oral and maxillofacial surgery, 19 (4.2%) reported pediatric dentistry, 13 (2.9%) reported endodontics, six (1.3%) reported periodontics, three (0.7%) reported prosthodontics. Most licensed dentists working in North Dakota work in metropolitan areas ($n = 247$, 62.4%), followed by micropolitan areas ($n = 93$, 23.5%), and rural areas ($n = 56$, 14.1%). This trend also holds true for dental hygienists (metropolitan = 62.3%,

micropolitan = 21.7%, rural = 15.9%) and dental assistants (metropolitan = 68.2%, micropolitan = 20.4%, rural = 11.4%) (Figure 9.26).²²

“Most licensed dentists working in North Dakota work in metropolitan areas (62.4%), followed by micropolitan areas (23.5%), and rural areas (14.1%)”



ATHLETIC TRAINING PROFESSIONALS

There are approximately 260 certified athletic trainers in North Dakota, or about 3.3 per 10,000 state residents.²³ In the U.S. there are 28,480 athletic trainers which equates to 0.9 athletic trainers per 10,000 U.S. residents.²⁴ Thus, North Dakota has significantly more athletic trainers than the rest of the country on a per capita basis.

University of North Dakota Athletic Training Program

The athletic training program is based within the Department of Sports Medicine at the University of North Dakota School of Medicine and Health Sciences and has been in existence since 1990. The master’s level program began in 2022 and the first graduates from the master’s program graduated in the spring of 2024. The master’s program prepares students for entry-level positions within the field of athletic training as well as prepares them to take the national certification exam to become certified athletic trainers which is necessary to obtain licensure in

49 of the 50 states. Over the past three academic years (2021-2023), the athletic training program has graduated 16 students and 12 (75%) of those graduates passed the certification exam and 12 (75%) are employed as athletic trainers.²⁵

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CHAPTER TEN:

PUBLIC HEALTH PLANNING FOR THE FUTURE

INTRODUCTION

The World Health Organization (WHO) defines health as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.”¹ This definition serves as a useful basis for an overarching holistic approach to viewing health as a multifaceted construct that can be addressed in a variety of ways. The concept of health can be viewed at the individual level with the burden of responsibility solely on the individual, or it can be expanded to include entire populations. This latter notion introduces the idea of public health. The general definition of public health is the science of protecting and improving the health of people and populations.² According to the Centers for Disease Control and Prevention (CDC) Foundation “Public health is the science of protecting and improving the health of people and their communities.”³ The overarching goal of public health thus is to protect the health of entire populations. This is achieved through promoting healthy lifestyles, research focused on disease and injury prevention, as well as detecting, preventing, and responding to infectious diseases. It is important to note that within the public health paradigm, populations of interest can be as small as a local neighborhood, or as big as an entire country or region of the world.

Recent events, including the SARS-CoV-2 pandemic, wildfires, and natural disasters, have drawn attention to the challenges communities face when preparing and managing large-scale public health policies and responses. When communities are under-resourced and unprepared, these challenges may result in preventable loss of life, diminished public trust in federal, state, local, and territorial governments, and ongoing confusion about how to respond to an emergency/crisis.⁴

SOCIAL VULNERABILITY INDEX

Identifying populations and places at a higher risk of adverse outcomes related to community-level stressors and hazards such as natural or human-caused disasters can serve multiple purposes. Such efforts can be used by public health officials and local planners to prepare for and respond to emergencies. One tool that has been developed is the CDC and Agency for Toxic Substances and Disease Registry (ATSDR) Social Vulnerability Index (SVI). The SVI was developed by the CDC/ATSDR and the Office of Environmental Health Emergency Management as a result of the Pandemic and All-Hazards Preparedness Act of 2006.⁵

The Geospatial Research, Analysis, and Services Program developed the first SVI in 2011 with data releases for 2000, 2010, 2014 and every other year up to 2022.⁵ This tool relies heavily on the U.S. Census Bureau’s American Community Survey 5-year estimates that are available at sub-state geographies. The multiple geographies for the input data for the SVI allows for the tool to address data at a census tract or county level. The SVI uses 16 input variables to create four theme-ranking variables. The four themes are socioeconomic status, household characteristics, racial and ethnic minority status, and housing type and transportation. Table 10.1 illustrates the 16 input variables that contribute to the four themes. The SVI creates percentile ranks for the 16 input variables, the four themes, and an overall ranking.

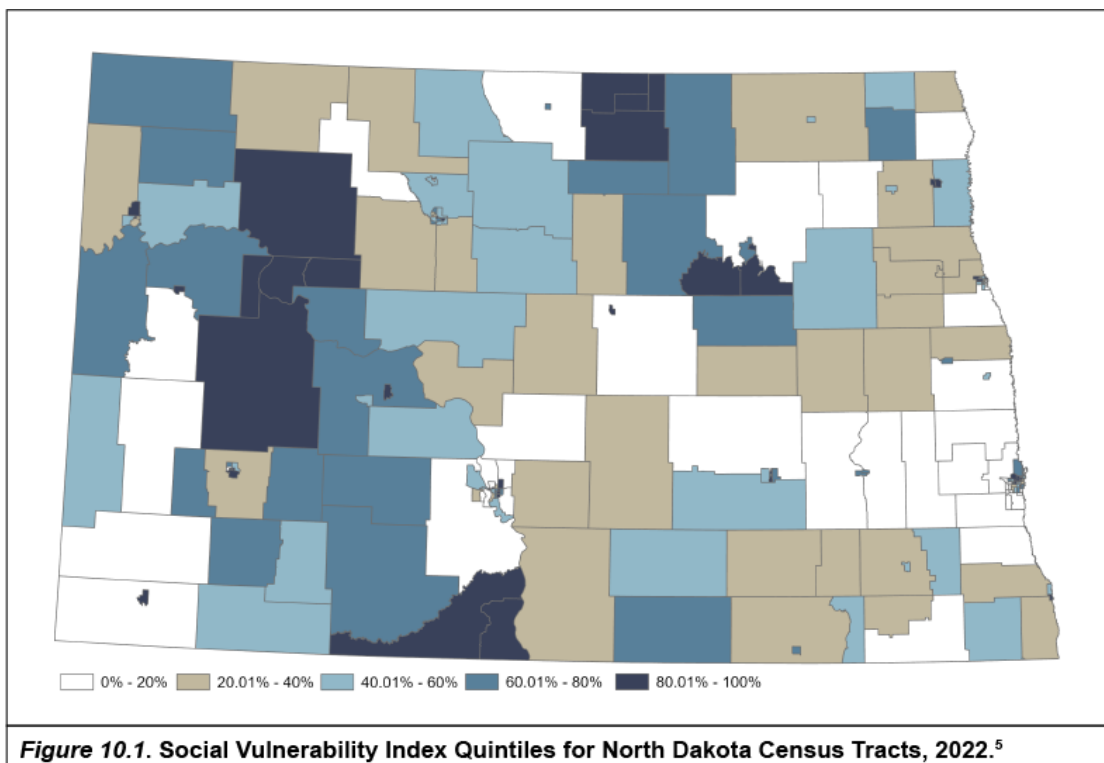
Table 10.1
Social Vulnerability Index variables and themes.⁵

Theme	Variable
Socioeconomic Status	Below 150% Poverty
	Unemployed
	Housing Cost Burden
	No High School Diploma
	No Health Insurance
Household Characteristics	Aged 65 and Older
	Aged 17 and Younger
	Civilian with a Disability
	Single-Parent Households
	English Language Proficiency
Racial and Ethnic Minority Status	Hispanic or Latino (of any race); Black and African American, Not Hispanic or Latino; American Indian and Alaska Native, Not Hispanic or Latino; Asian, Not Hispanic or Latino; Native Hawaiian and Other Pacific Islander, Not Hispanic or Latino; Two or More Races, Not Hispanic or Latino; Other Races, Not Hispanic or Latino
Housing Type and Transportation	Multi-Unit Structures
	Crowding
	Mobile Homes
	Group Quarters

The resultant SVI rankings allow for identification of areas that are at a higher risk of adverse outcomes as a result of a natural or man-made disaster. These adverse outcomes can include human suffering, economic loss, and health inequities. As the SVI methodology utilizes variable and theme rankings, utilizing data from a geography with more spatial units allows for more granular examination of areas of increased risk. Due to this, the use of the SVI at a census tract level was selected for use here as currently there are 228 census tracts in North Dakota but only 53 counties. Figure 10.1 demonstrates the application of the SVI rankings at the census tract level for 2022. The color scheme of the map shows the relative vulnerability from low (white) to high (darkest blue) for all tracts in North Dakota. It should be noted that the quintiles represent the relative rankings of vulnerability within the state of North Dakota alone with no comparisons made to any other state. This type of examination may allow for prioritization and application of state-provided or managed resources.

The areas in the darkest blue have the highest relative vulnerability. These areas are dispersed throughout the state and correspond with tracts within the eight largest cities or overlap partially or completely with the four largest American Indian reservations in North Dakota. While the highest level of vulnerability is dispersed throughout the state, the next highest category is more prevalent in the western portion of the state. The lowest risk category shown in white is also

dispersed throughout the state with slightly more tracts in the eastern part of the state. The SVI may serve as one mechanism that can be used to identify vulnerable populations, and while other mechanisms exist, the SVIs use of multiple themes may allow for a specific focus based on those themes. While this tool and others may assist in identifying populations at risk, there is an existing front-line workforce that is serving all populations at the local level. The role of public health in the state is a critical workforce that prioritizes access to prevention, harm reduction, and chronic disease management, and serves a variety of other needs as they arise.



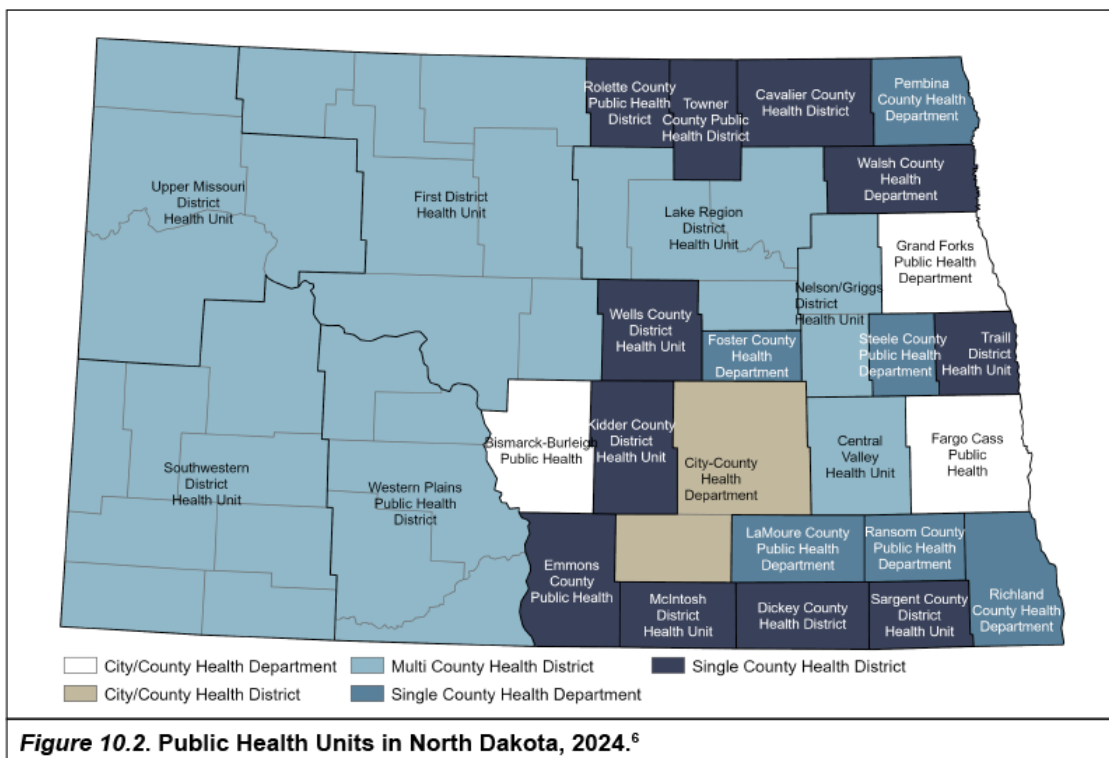
Public Health Structure and Organization in North Dakota

The organization of public health delivery in North Dakota is decentralized with 28 independent local public health units (LPHUs) working in partnership with the North Dakota Department of Health and Human Services.⁶ These LPHUs are organized into single or multicounty health districts, city/county health departments, or city/county health districts. Seventy-five percent of the local health units serve single county, city, or combined city/county jurisdictions, while the other 25% serve multicounty jurisdictions. The majority of the multicounty jurisdictions are located in the western part of the state. In this decentralized approach, the units are required to meet state standards and follow state laws and regulations, but they can exercise their own powers and have administrative authority to make decisions to meet their local needs. Figure 10.2 demonstrates the location and type of the various LPHUs in the state.

The structure of each LPHU directly impacts the governance of the unit. In general, departments are governed by city or county commissions, and districts are governed by boards of health. The three city/county health departments (Bismarck-Burleigh, Fargo Cass, and Grand Forks) are governed by boards that are appointed positions with two departments identified as

operating in an advisory capacity only. The only city/county health district, City-County (Barnes), is governed by the district board of health for city and county issues. The six single county health departments (Foster, LaMoure, Pembina, Ransom, Richland, and Steele) are governed by boards that are appointed by county commissioners and include at least one county commissioner and a practicing physician as the health officer for the county. The seven multi-county health districts (Central Valley, Custer, First District, Lake Region, Nelson-Griggs, Southwestern, and Upper Missouri) are governed by boards of health. The 11 single county health districts (Cavalier, Dickey, Emmons, Kidder, McIntosh, Rolette, Sargent, Towner, Traill, Walsh, and Wells) have their own governing boards not appointed by a city or county commission and county commissioners can serve on those boards.⁷

In addition to the 28 units discussed above, there are six tribal health jurisdictions in or overlapping with North Dakota. The North Dakota Century Code (NDCC) specifies that "An Indian nation that occupies a reservation the external boundaries of which border more than four counties may form a health district or public health department."⁸ The NDCC further specifies that "A tribal public health unit and bordering public health units shall collaborate regarding the provision of public health services."⁸ The six tribal health jurisdictions are Spirit Lake Sioux Nation, Standing Rock, Three Affiliated Tribes, Turtle Mountain Chippewa, Trenton Indian Health Service, and Sisseton Indian Health.



Public Health Services in North Dakota

In North Dakota, the North Dakota State Association of City and County Health Officials (ND SACCHO) outline the ten essential public health services that serve as the framework for the National Public Health Performance Standards and are as follows:^{9, 10}

1. Monitor health status to identify and solve community health problems.
2. Diagnose and investigate health problems and health hazards in the community.
3. Inform, educate, and empower people about health issues.
4. Mobilize community partnerships and action to identify and solve health problems.
5. Develop policies and plans that support individual and community health efforts.
6. Enforce laws and regulations that protect health and ensure safety.
7. Link people to needed personal health services and assure the provision of healthcare when otherwise unavailable.
8. Assure competent public and personal healthcare workforce.
9. Evaluate effectiveness, accessibility, and quality of personal and population-based health services.
10. Research for new insights and innovative solutions to health problems.

While each public health unit can organizationally determine its own mission and primary focus, there are minimum core functions set forth in the NDCC. These core functions are communicable disease control, chronic disease and injury prevention, environmental public health, maternal, child, and family health, and access to clinical care. To illustrate the spectrum of services that can be varied from unit to unit, they may include the following areas and services identified from LPHU websites:

Medical Services: Flu shots for ages 6 months and older, immunizations for all ages, office visits and consultations, tuberculosis testing and management, Injections (Vitamin B-12, contraceptives), and lab testing services such as blood sugar and lipid testing.

Children's Services: Car seat inspections and education, crib education and distribution, preschool screening assistance, child health visits, Health Tracks program, lice checks, and Women, Infants, and Children (WIC) Program for nutrition education and vouchers.

Adult Services: Blood pressure checks, family planning services (annual exams, pregnancy testing, contraceptive options, sexually transmitted infection testing, home visits for chronic disease management, and foot care services.

Environmental Services: Emergency preparedness and response program, environment health services, sewer permit applications for county residents, water testing kits, and West Nile Virus Program.

Other Services: Prevention and education programs for youth and adults, tobacco cessation programs, school health, and employee wellness services.

The availability of services outside of the core functions outlined in the NDCC is dependent on the LPHU's staffing, capacity, and ability to acquire additional funding through grants and other opportunities. As larger LPHUs may have the ability to leverage additional resources, they are the most likely to offer more services through the LPHU. This is not the case for all LPHUs as opportunities are continually being sought by those staff who work within the LPHUs to provide the most robust offerings for their citizens. It should be noted that the varied LPHU structures result in a wide variety of LPHU geographic areas and size of populations served. Table 10.2 illustrates the 28 LPHUs, their respective number of counties, population, geographic area, and population per square mile. The largest population served by one LPHU is Fargo Cass Public Health with 186,328 people, while the smallest population served is the Steele County Public Health Department with 1,774 people.¹¹ The largest geographic LPHU is First District Health

Unit with 10,619 square miles, while the smallest geographic LPHU is the Foster County Health Department.⁹ The most densely populated LPHU is Fargo Cass with 105.6 people per square mile, while the least densely populated is Kidder County District Health Unit.¹¹

Table 10.2
Public Health Units in North Dakota, 2024.^{6, 11}

Local Public Health Unit Name	Counties	2022 Population	Area (Square Miles)	Population Per Square Mile
Bismarck-Burleigh Public Health	1	98,443	1,633	60.3
Cavalier County Health District	1	3,691	1,489	2.5
Central Valley Health Unit	2	23,458	3,215	7.3
City-County County Health District	1	10,826	1,492	7.3
Dickey County Health District	1	5,003	1,131	4.4
Emmons County Public Health	1	3,297	1,508	2.2
Fargo Cass Public Health	1	186,328	1,765	105.6
First District Health Unit	7	96,854	10,619	9.1
Foster County Health Dept.	1	3,388	634	5.3
Grand Forks Public Health Dept.	1	72,927	1,436	50.8
Kidder County District Health Unit	1	2,391	1,351	1.8
Lake Region District Health Unit	4	23,917	4,222	5.7
Lamoure County Public Health Dept.	1	4,135	1,146	3.6
McIntosh District Health Unit	1	2,529	975	2.6
Nelson/Griggs District Health Unit	2	5,334	1,691	3.2
Pembina County Health Dept.	1	6,853	1,119	6.1
Ransom County Public Health Dept.	1	5,663	862	6.6
Richland County Health Dept.	1	16,548	1,436	11.5
Rolette County Public Health District	1	12,292	903	13.6
Sargent County District Health Unit	1	3,828	858	4.5
Southwestern District Health Unit	8	48,090	9,990	4.8
Steele County Public Health Dept.	1	1,774	712	2.5
Towner County Public Health District	1	2,152	1,025	2.1
Traill District Health Unit	1	8,004	862	9.3
Upper Missouri District Health Unit	4	65,000	7,924	8.2
Walsh County Health District	1	10,553	1,282	8.2
Wells County District Health Unit	1	3,990	1,271	3.1
Western Plains Health Unit	5	49,606	6,444	7.7

Challenges Faced by Public Health

The essence of the CDC Foundation’s definition of public health is that “public health is concerned with protecting the health of entire populations.”³ Notwithstanding this intent, public

health faces many challenges nationwide as well as in North Dakota. These challenges present themselves in a multitude of ways with some mirroring statewide healthcare access issues such as geography, structure, and awareness of services. Other challenges present themselves as public perceptions of public health and disconnects between the intent of public health delivery and the ability of public health units to enact and enforce policy.

Geographic Access

The varied geographical size, population, and population density across LPHUs in the state result in unique challenges related to service delivery. As Table 10.2 demonstrates, there is a wide range of geographic areas and population sizes served by the various LPHUs. These variations present unique challenges in service delivery. Geographic access to care is a special challenge for rural healthcare delivery in North Dakota, including public health. While multi-county LPHUs may operate satellite locations in outlying areas, those are often one point of access per county. This results in varied travel time and distance for individuals to access public health locations. An additional consideration related to geographic access to care is winter weather. This compounds access to care issues that include increased travel time due to road conditions, the potential for unsafe conditions due to ice and accumulating snow, as well as the short amount of time that a minor automotive breakdown may transition from an inconvenience to an emergency situation due to cold.

North Dakota's LPHUs have developed strategies to address this challenge, including the use of mobile units that visit outlying communities for targeted interventions and routine services. An example of the active presence of LPHUs in communities outside of satellite locations or main offices is the use of vaccination clinics that take place in smaller towns. These events are offered in community spaces with varied days and times. This presents opportunities for residents to access vaccinations locally and at times that fit their schedules that allows for greater access to care.

Structure

The timing and type of policy response to a public health crisis anywhere can vary significantly by jurisdiction, which can make policy coordination especially challenging. Public health officials' authority in policy implementation and enforcement varies by state, county, city, and local jurisdictions. Judicial support of public health authorities has been decreasing in recent decades as well through the process of preemption.¹² Preemption is a legal doctrine that allows a higher level of government to limit the power of a lower government level, such as legislative rules limiting the implementation and enforcement of certain public health policies. Due to the decentralized public health system in the U.S. and North Dakota, multiple levels of government are charged with ensuring public health. This can work as a system of checks and balances at its best or as a hindrance in policy implementation, resource allocation, and service deployment. Research suggests that limiting public health authority undermines public health efforts and results in worse outcomes.¹² Furthermore, a reduction in public health entities' autonomy and authority may create concerns about a state's ability to prevent and respond to public health challenges.

As noted above, there are five distinct organizational structures of LPHUs in the state. Each of these organizational structures have different oversight mechanisms that result in scenarios where neighboring LPHUs have different authority. This potentially results in one LPHU being

able to implement an intervention or public health strategy in rapid fashion, while a neighboring LPHU may take more time to work through the request and approval process.

Intent and Action

The goal of public health is to protect and promote the health of all community members. To accomplish this expansive goal, public health agencies need to provide several different services. These can be broken down into three overarching themes: assessment, policy development, and assurance.

The first theme is assessment. This includes maintaining an ongoing understanding of the health of a population through continuous monitoring of public health status, identification of potential health threats, and ongoing assessments of community needs and resources. Included within the concept of assessment is a continuous focus on investigating, diagnosing, and understanding of health problems and hazards faced by the community. This is achieved by using real-time data to anticipate, prevent, and mitigate emerging health threats.

The second theme is policy development. The goal is to effectively inform and educate community members about the information gained from the assessment theme. This includes developing and disseminating accessible health information to the public, ideally through collaboration with multiple partners with an emphasis on accuracy and speed of dissemination. Policy development should also look to strengthen, support, and mobilize communities through multi-sector partnerships, both in facilitating new partnerships and by collaborating with existing community partnerships.

Another important task within the theme of policy development is to develop, champion, and implement laws and policies that guide public health decision-making through evidence-based practices. This requires continuous monitoring and developing policies, plans, and laws that improve public health, increase health emergency preparedness, and strengthen community resilience. Likewise, policy development requires ensuring that applicable laws to protect the public's health are equitably applied and enforced. This may include conducting safety enforcement activities, licensing and monitoring healthcare services, licensing and credentialing the healthcare workforce, and including health consideration in laws from other sectors, a concept known as "health in all policies."

The final theme of services provided by public health agencies is assurance. The first component in this theme is assuring that an effective system that enables equitable access to services and care needed to be healthy exists for all community members. This may include connecting the population to needed health and social services, including preventative services, ensuring access to high-quality and accessible healthcare and social services, and engaging the health delivery system to reduce gaps and barriers. Interconnected with ensuring that an effective health system exists in a community is a focus on healthcare workforce development, such as providing education and training, cultivating partnerships with academia and other professional training programs, and building pathways for future health practitioners.

Assurance also is concerned with the improvement of public health functions through ongoing evaluation, research, and continuous quality improvement. This is achieved through consistently linking public health research with public health practice, contributing to research on evidence-based effective public health practice, and continuously evaluating services, policies, plans, and laws to ensure they are contributing to the health of a community without causing undue harm.

Essential components needed to achieve this goal is the use of qualitative, quantitative, and lived experiences to inform decision-making.

The final goal within the theme of assurance is to develop, build, and maintain a strong organizational infrastructure for public health and healthcare delivery. This starts with an understanding of the broader organizational infrastructure that supports the public health system in a given jurisdiction or community. It is important that the appropriate and required resources are allocated equitably to ensure the public's health, employing effective communication and strategic planning, and having robust information technology services that are up-to-date and meeting privacy and security standards.

Public Perception

Public support for public health policies and initiatives is vital for success. Public support can be defined as an attitude held towards a particular policy, including the introduction, implementation, or continued existence of the given policy. As might be expected, views regarding public health policies often exist on a continuum ranging from strong opposition to strong support, with some feeling truly neutral about a policy. Public approval for public health initiatives and planning encourages policy adoption, improved trust in government-public relations, and increases adherence and compliance with policies. Several factors influence public support of policies, including: the perceived fairness of the policy, perceived effectiveness/benefits of the policy, perceived harms of the policy, perceived scale of the problem/perceived risk, who holds responsibility for the problem, trust in government, social and cultural norms, and emotions and affect.

A recent study conducted at University of North Dakota found that trust in government health agencies and vaccine knowledge were the strongest predictors of vaccine confidence among North Dakotans surveyed. The authors suggest that vaccine knowledge, trust in doctors, and trust in government health agencies would be strengthened through a well-executed vaccine promotion campaign and education program. Such efforts should include informative content with consistent and transparent efforts to build public trust in vaccinations through collaboration between local, state, and federal public health agencies. These lessons can be expanded upon to support other important public health policy implementation and increase public perception and awareness.¹³

SUMMARY

Public health delivery in North Dakota has a range of organizational structures, geographic areas, and size of populations served. This presents a unique challenge in delivering services throughout the state that allows for consistent and timely service delivery. The organizational structure of each public health unit directly impacts how quickly decisions can be made and implemented, and by whom those decisions are made. The overarching themes of public health, assessment, policy development, and assurance, have varying levels and types of support throughout the state. While public health has been under scrutiny in recent years especially regarding vaccine efforts and public health guidelines for disease prevention, there still are large gaps in the public's awareness of public health efforts. One way that public health services can be optimized in a community is by ensuring that accurate and timely information regarding the function and role of public health is provided to the population. This will assist individuals in

knowing what public health services are available to them, what health and safety information they can expect to receive, and the benefits of prevention and early intervention.

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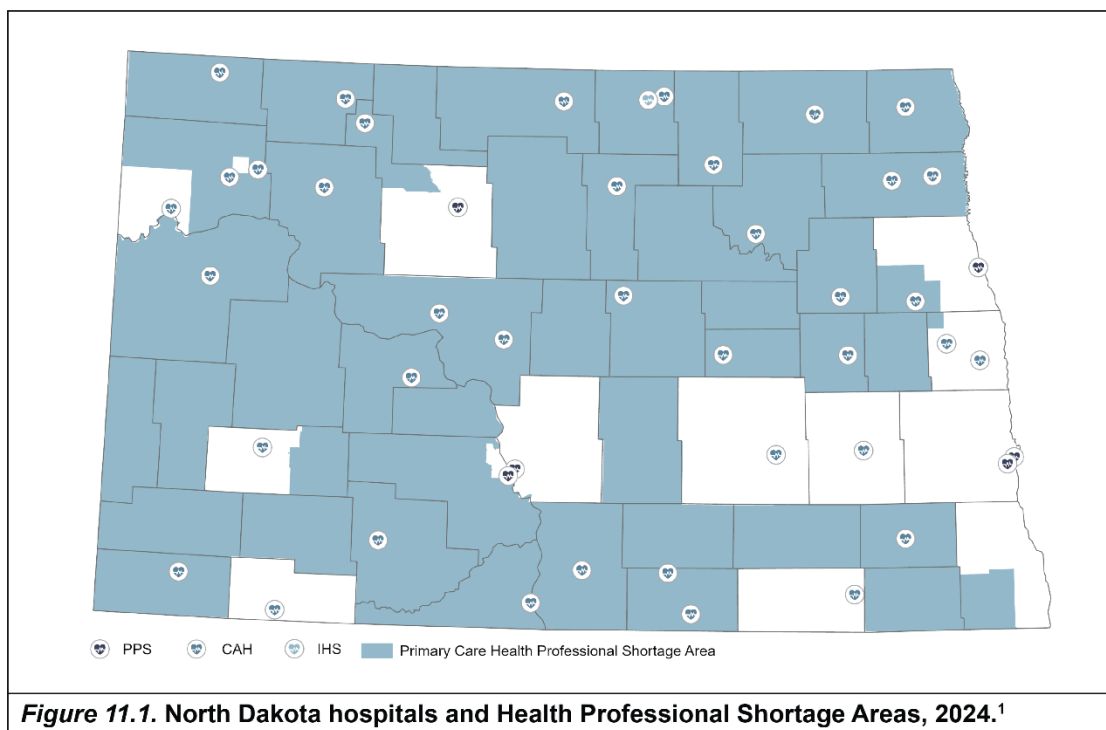
CHAPTER ELEVEN:

**HEALTHCARE ORGANIZATION AND
INFRASTRUCTURE IN NORTH DAKOTA**

HOSPITALS AND HEALTH SYSTEMS

A health system is a broad organizational structure composed of a hospital(s), clinic system, and other healthcare elements (e.g., ambulance, nursing home, and/or pharmacy). There are a variety of different hospital categories that may be components of a health system. In North Dakota there are 52 hospitals in the state. Of these 52 hospitals, there are 37 critical access hospitals (CAHs), six general acute Prospective Payment System (PPS; tertiary) hospitals, two psychiatric, two long-term acute care, two transplant-designated hospitals, two rehabilitative hospitals, and one Indian Health Service (IHS) hospital.¹ This summary, however, requires further clarification. The two transplant hospitals in the state are not freestanding transplant hospitals but instead are components of two tertiary centers. Additionally, there are tertiary hospitals that operate in more than one location in the same city, such as Fargo. For the purposes of this *Report*, those are only counted once per city.

The distribution of North Dakota hospitals is displayed in Figure 11.1 along with the counties that are federally designated as primary care health professional shortage areas (HPSAs). The tertiary hospitals, sometimes called referral hospitals, are located in the four largest cities in the state, and the CAHs supplement the six largest hospitals (Altru Health System in Grand Forks, Trinity Health in Minot, Sanford Health in Bismarck and Fargo, Catholic Health Initiatives [CHI]-St. Alexius Medical Center in Bismarck, and Essentia Health in Fargo) by providing hospital coverage elsewhere. Tertiary hospitals imply the third level of care as primary and secondary hospitals make referrals to tertiary hospitals that offer specialty care services.



The United States Department of Veterans Affairs (VA) and its Veterans Health Administration operates a federally funded hospital for veterans in Fargo, ND, that is similar to and complements the six larger hospitals in the state. Outpatient care through the Fargo VA Hospital is provided by eight associated community-based outpatient clinics (CBOC) that are located

throughout the state. The CBOCs are found in Bismarck, Devils Lake, Dickinson, Grafton, Grand Forks, Jamestown, Minot, and Williston.² The VA also operates four Vet Centers with one each in Bismarck, Fargo, Grand Forks, and Minot. According to the VA, Vet Centers 'offer confidential help for Veterans, service members, and their families at no cost in a non-medical setting.' Vet Centers offer counseling services for depression, post-traumatic stress disorder, and the psychological effects of military sexual trauma.²

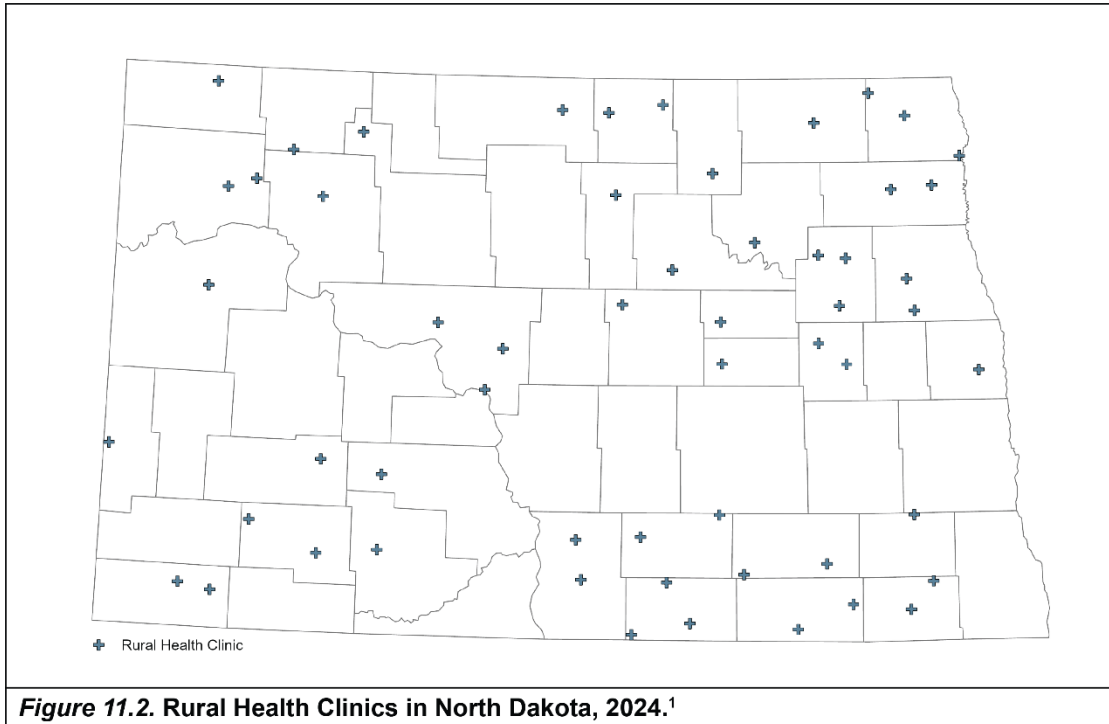
The CAHs are rural hospitals that must meet the following specific federal guidelines: cap of 25 acute-care beds, an average length of stay of 96 hours or less, located at least 35 miles from another hospital, and reimbursement on an allowable-cost basis as opposed to a PPS, which is used by the tertiary hospitals.³ All rural hospitals in North Dakota, except for the single IHS hospital, are CAHs and are nonprofit.

All 37 CAHs have important networking relationships with the tertiary hospitals located in the four largest cities in North Dakota. Each city thus forms a tertiary care geographic region that serves as a referral source for trauma, inpatient needs greater than 96 hours, and specialized services or treatment not available at a CAH. The tertiary care geographic regions approximately follow a quadrant pattern with CAHs referring to the nearest tertiary city. Most of the CAHs are located an hour or more by surface transportation from their tertiary referral center.

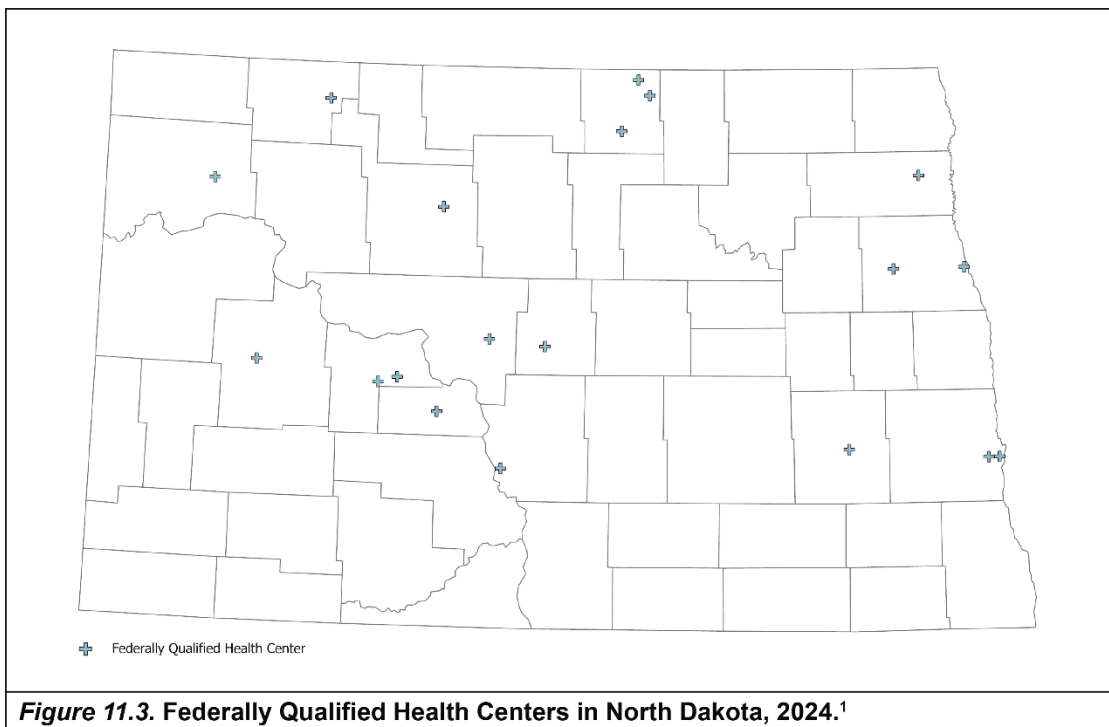
Nationally, as well as in North Dakota, the hospital market continues to consolidate. In comparison to South Dakota, rural North Dakota hospitals tend to have more independence and autonomy in that they are community-controlled, nonprofit hospitals. North Dakota is unique in that there are no for-profit hospitals. All CAHs must operate with some form of communication and transfer agreement with a referral hospital. All of the CAHs work with at least one regional tertiary hospital on quality improvement efforts. The tertiary health systems also operate a number of primary care medical clinics either in conjunction with a CAH or sometimes in a more competitive model.

AMBULATORY CARE

There are approximately 300 primary care and specialty clinics in the state that operate as independent clinics, part of a larger health care network, or as federally designated facilities. There are 59 federally certified Rural Health Clinics (RHCs) in the state that serve as primary care clinics (Figure 11.2).⁴ CAHs own and operate most of the RHCs as provider-based RHCs with the remaining RHCs being either owned by a tertiary provider or operated as independent clinics generally owned by a physician or group practice. All of the North Dakota provider-based clinics are owned by hospitals, primarily CAHs, which are nonprofit entities in this state; therefore, the provider-based RHCs are nonprofit. Under federal law, both provider-based and independent RHCs, can be for-profit or not-for-profit, public, or private.⁵

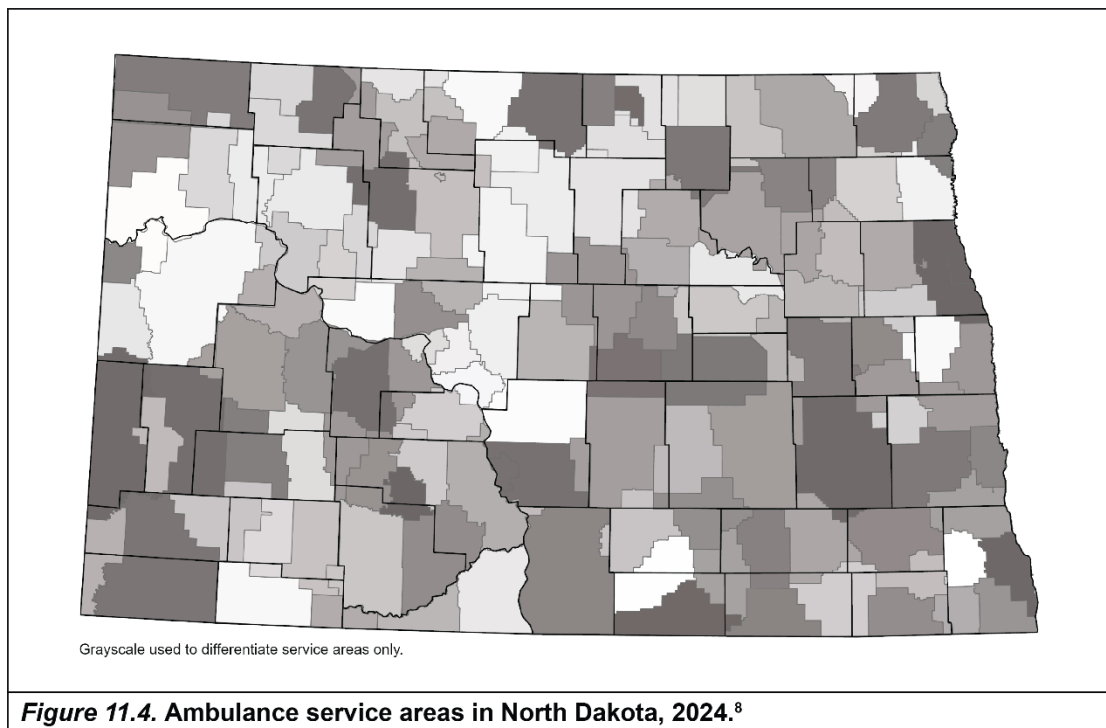


There are five Federally Qualified Health Centers (FQHCs) in North Dakota, with the most common type being the community health center (CHC) model. The five centers (four CHCs and one migrant health center) operate in 16 communities (Figure 11.3).⁶ Twelve of the communities are rural, and five are urban (Bismarck, Fargo, Grand Forks, Minot, and West Fargo).



EMERGENCY MEDICAL SERVICES

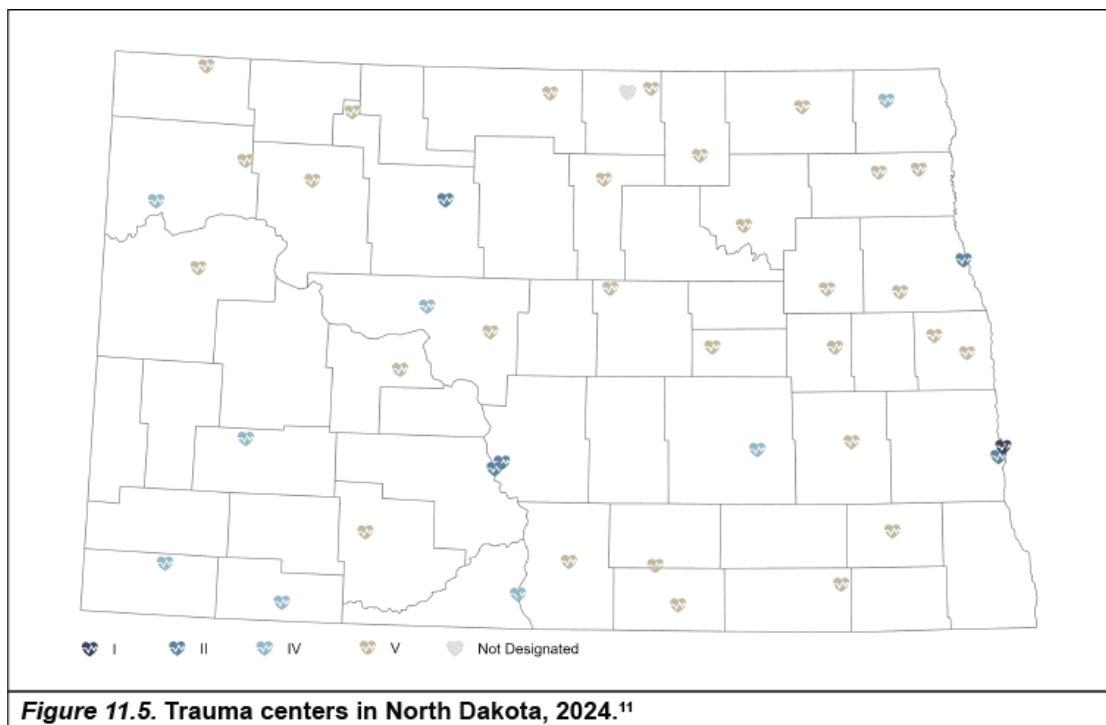
Emergency medical services (EMS) are a fundamental service and health delivery function. EMS commonly refers to emergency medical care for people who have had a sudden or serious injury or illness, or who have suffered major trauma.⁷ North Dakota infrastructures include advanced life support systems, basic life support systems, and quick response units, and employ paramedics in both rural and urban areas.



TRAUMA SYSTEM AND CENTERS

Trauma, according to the North Dakota Century Code, means “tissue damage caused by the transfer of thermal, mechanical, electrical, or chemical energy, or by the absence of heat or oxygen.”⁹ In the United States, unintentional injuries resulting in trauma were estimated to be responsible for more than 220,000 deaths in 2022, with an estimated death rate of 6.8 per 10,000 persons.¹⁰ Unintentional injuries, including opioid overdoses (unintentional poisoning), motor vehicle crashes, and unintentional falls, were the leading cause of death for people 45 years of age or younger in 2022.¹⁰

All acute care hospitals, including all 37 CAHs and the single IHS hospital, are designated as trauma centers (Figure 11.5). Verification of trauma center status is based on nationally-recognized standards set by the American College of Surgeons Committee on Trauma. The standards include hospital organization, clinical capabilities, facility and equipment availability, quality improvement processes, prevention and public education, trauma research, continuing education, trauma service support personnel, and transfer agreements.



There are five trauma center levels.¹² Level I is a comprehensive regional resource. There is one Level I trauma center in North Dakota that offers 24-hour immediate coverage by a variety of practitioners from various specialties, including general surgery, orthopedic surgery, neurosurgery, anesthesiology, emergency medicine, radiology, and critical care. It also is a referral resource for communities in nearby regions, provides leadership in prevention and public education for surrounding communities, provides continuing education, incorporates a comprehensive quality assessment program, operates an organized teaching and research effort for innovation in trauma care, screens for substance abuse and patient intervention, and meets an annual minimum volume of trauma patients.¹²

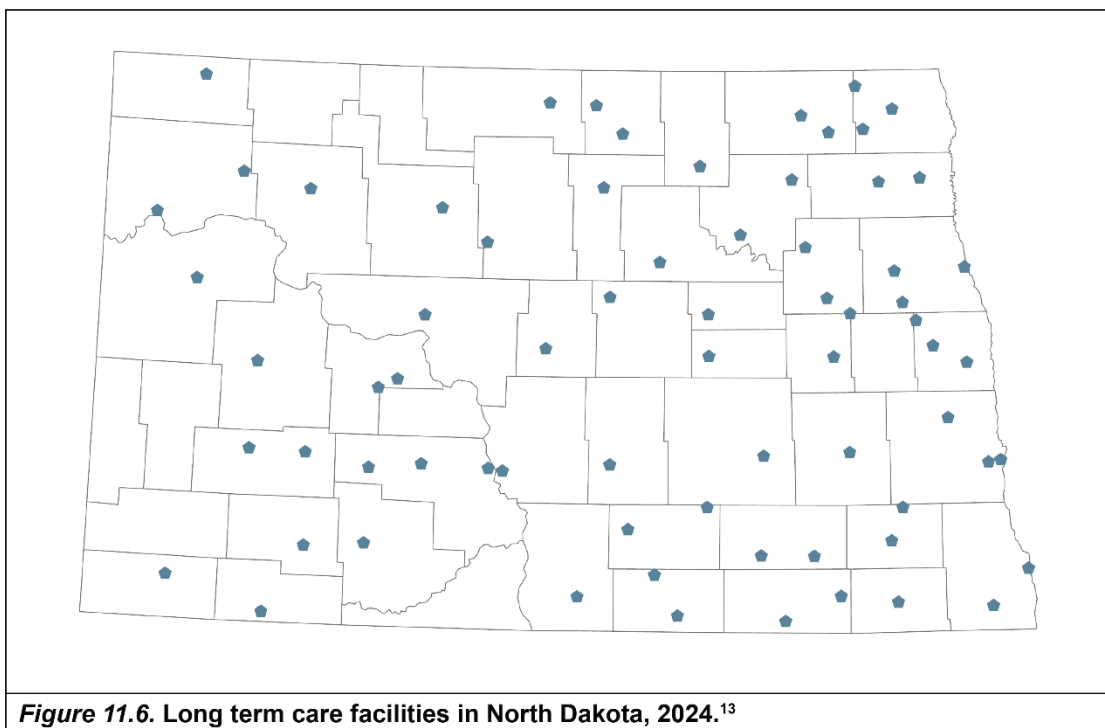
A Level II facility is able to initiate definitive care to all injured patients. It offers 24-hour immediate coverage by general surgeons, including orthopedic surgery, neurosurgery, anesthesiology, emergency medicine, radiology, and critical care. North Dakota has five Level II trauma centers; five of the six tertiary hospitals are so designated (the remaining one is the Level I center).¹²

North Dakota does not have any Level III trauma centers. This level can provide prompt assessment, resuscitation, surgery, intensive care, and stabilization of injured patients. Level IV trauma centers provide advanced trauma life support before transfer of patients to a higher-level trauma center.¹² This level provides evaluation, stabilization, and diagnostic capabilities for injured patients. Eight CAHs have this designation.

Level V trauma centers are the most common in North Dakota with 29 CAHs having this designation. A Level V trauma center provides initial evaluation, stabilization, and diagnostic capabilities and prepares patients for transfer to higher levels of care.¹² All CAHs have transfer agreements for patients requiring more comprehensive care at a Level I through Level III trauma center.

LONG-TERM CARE AND AGING SERVICES

Like the rest of the country, North Dakota must contend with an aging population that has a corresponding effect on policy decisions at both the state and federal level as it relates to health infrastructure, health status, education, housing, transportation, economic development, and other sectors. Long-term care (LTC) services are a function of healthcare that is directly affected by population factors, particularly the aging of the population. In North Dakota, long-term care facilities include assisted living, basic care, and nursing care. Each is a different type or level of care with corresponding services. North Dakota has 75 skilled nursing facilities, 71 assisted living facilities, and 55 basic care facilities (Figure 11.6).¹³



At the state level, the Aging Services Division of the North Dakota Department of Health and Human Services administers programs and services that enhance the quality of life and help elders and people with physical disabilities live independently in their homes and communities. Aging Services provides a number of services including the following: dementia care services, adult family foster care licensing, Older Americans Act supportive services, Older Americans Act nutrition services, payment for the establishment of guardianship services, LTC ombudsman program, senior community service employment program, telecommunications equipment distribution program, and vulnerable adult protective services.¹⁴

PHARMACIES

North Dakota has more than 250 pharmacies with 103 (40%) located in rural areas (Figure 11.7).¹⁵ A majority of pharmacies in North Dakota are outpatient pharmacies, accounting for 44% of all pharmacies in the state. This is followed by hospital pharmacies (27%) and telepharmacies (15%).

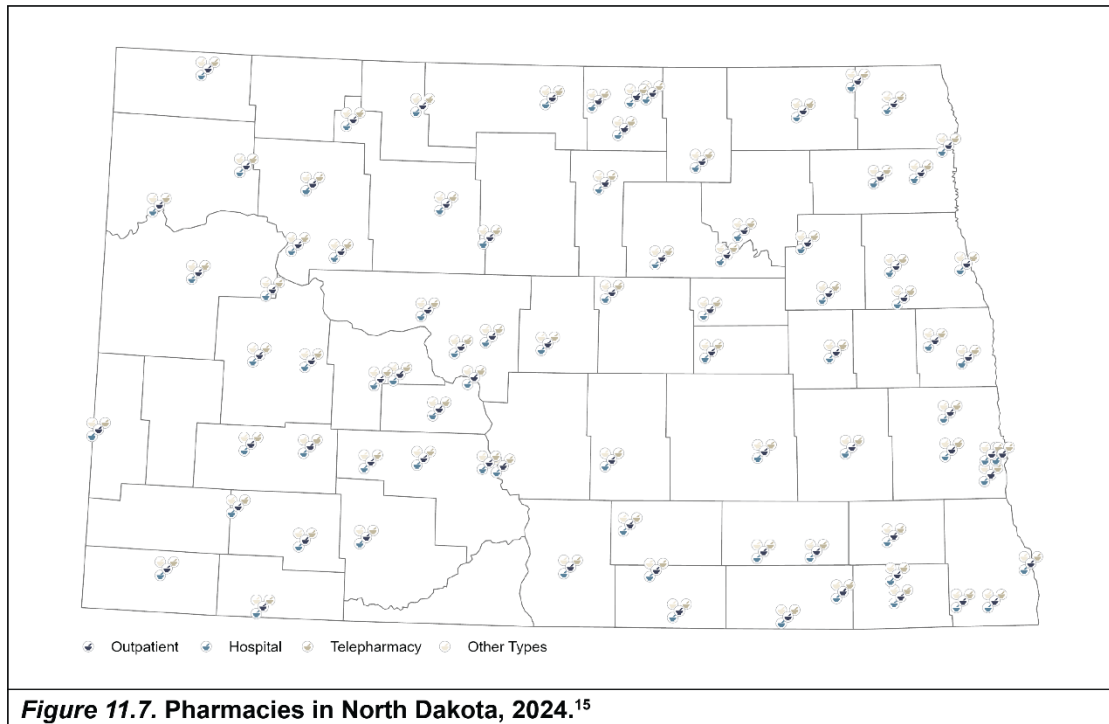


Figure 11.7. Pharmacies in North Dakota, 2024.¹⁵

BEHAVIORAL HEALTH FACILITIES

Behavioral health as a broad concept includes mental health and substance use disorders, life stressors and crises, and stress-related physical symptoms. In terms of care, behavioral health care refers to the prevention, diagnosis, and treatment of these conditions.¹⁶ North Dakota’s Department of Health and Human Services (DHHS) oversees multiple access points for individuals to seek behavioral healthcare services. The state organizes behavioral healthcare delivery into eight regions that break the state into service areas around the eight largest populated areas. This includes eight Human Service Centers (HSCs) with locations in Bismarck, Devil’s Lake, Dickinson, Fargo, Grand Forks, Jamestown, Minot, and Williston. Five of the eight HSCs operate satellite or outreach locations with one in Region I (Watford City), two in Region II (New Town and Rugby), one in Region III (Rolla), one in Region IV (Grafton), and one in Region VI (Valley City).¹⁷

The HSCs in North Dakota currently are transitioning to operating as Certified Community Behavioral Health Clinics (CCBHCs). This is due to legislation passed during the 68th Legislative Assembly (SB 2083). This legislation includes the following:¹⁸

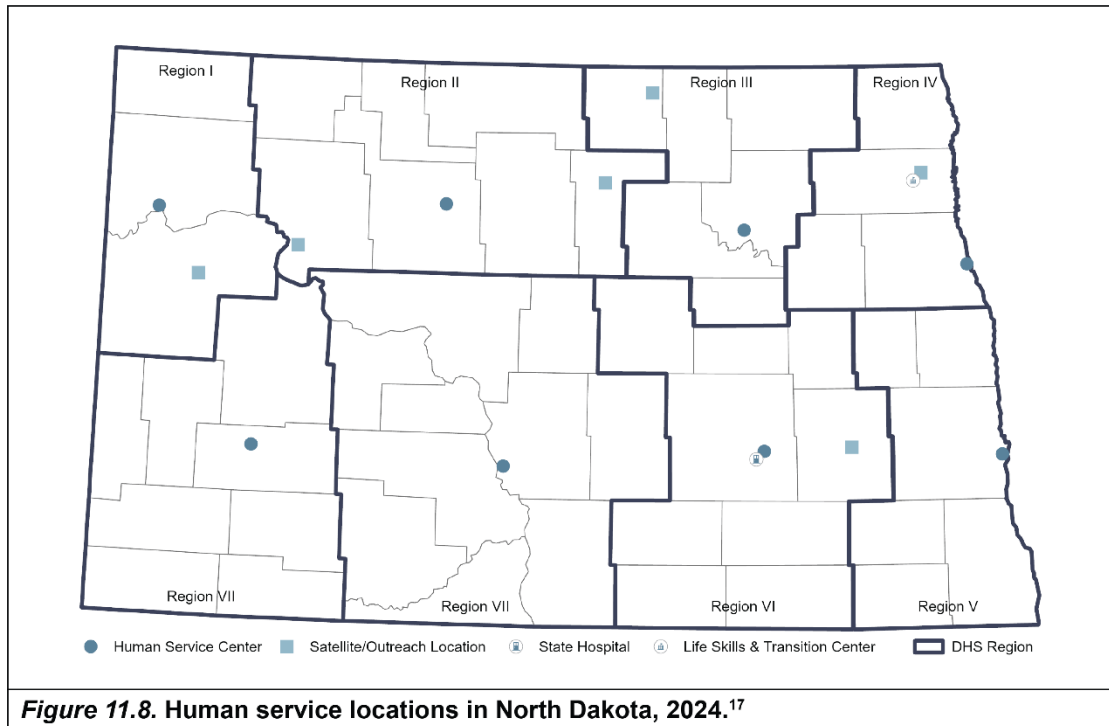
The department shall develop a plan for an integrated, multidisciplinary continuum of services for individuals with serious and persistent mental illness. The continuum may consist of an array of services provided by private mental health professionals, private agencies, human service zones, regional human service centers, community-based residential care and treatment facilities, and private and public inpatient psychiatric hospitals. When appropriate, access to the continuum must be through regional human service centers. Within the limits of legislative appropriations, the plan for a continuum may include:

- a. Programs, and appropriate related facilities, to provide socialization skills.
- b. Programs, and appropriate related facilities, to provide basic living skills.
- c. Appropriate residential facilities and other housing options.
- d. Appropriate training, placement, and support to enhance potential for employment.
- e. Appropriate delivery and control of necessary medication.
- f. Appropriate economic assistance.
- g. An inpatient facility with appropriate programs to respond to persons who require hospitalization.
- h. Peer and recovery support.
- i. Crisis service that is available twenty-four hours a day seven days a week.

This legislation allows the HSCs to transition following the CCBHC model outlines by the Substance Abuse and Mental Health Services Administration's model that requires CCBCHs to provide the following:¹⁹

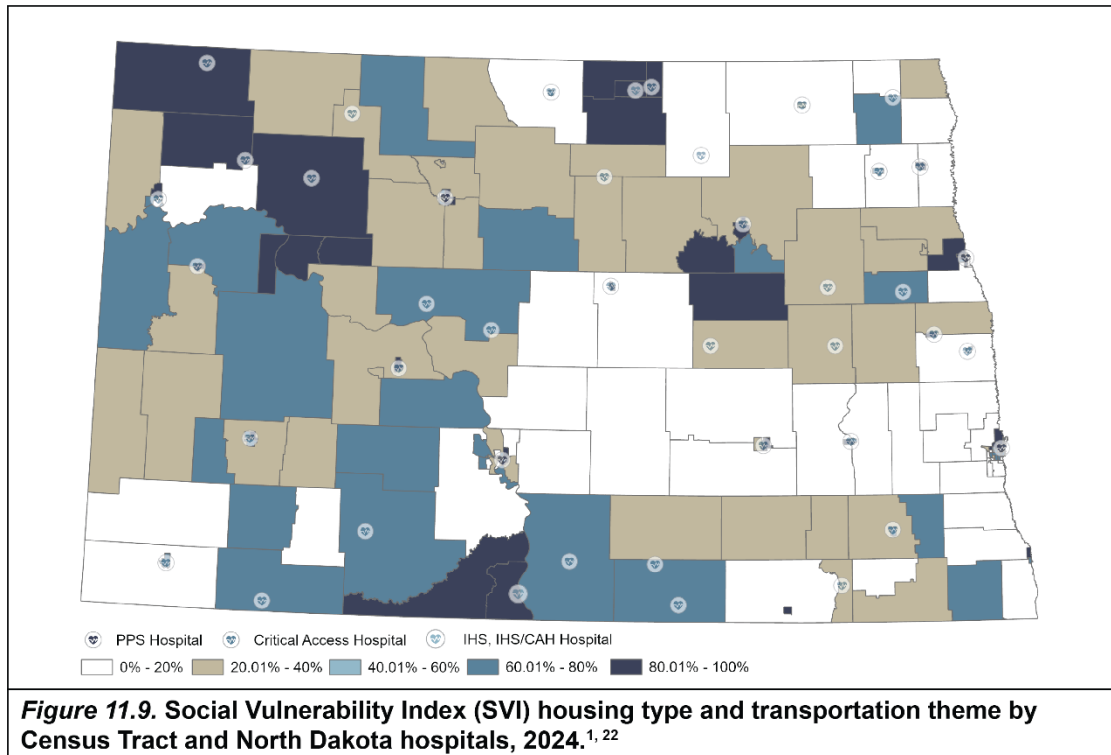
- Crisis services to be available 24 hours a day, 7 days a week.
- Comprehensive behavioral health services to be available so people who need care don't have to piece together the behavioral health support they need across multiple providers.
- Care coordination to be provided to help people navigate behavioral healthcare, physical healthcare, social services, and the other systems they are involved in.

In addition to the operation of the HSCs and satellite/outreach locations, North Dakota DHHS also operates a State Hospital located in Jamestown. The State Hospital offers comprehensive behavioral health services for adults, including acute inpatient psychiatric care, substance abuse treatment, intermediate psychosocial rehabilitation, forensic evaluations, and safety net services. For individuals requiring residential addiction treatment, the Tompkins Rehabilitation Center serves male and female clients within the hospital's continuum of care.²⁰ North Dakota DHHS also operates the Life Skills and Transition Center (LSTC) in Grafton. The LSTC is a state-operated, comprehensive support agency serving people with intellectual and developmental disabilities.²¹

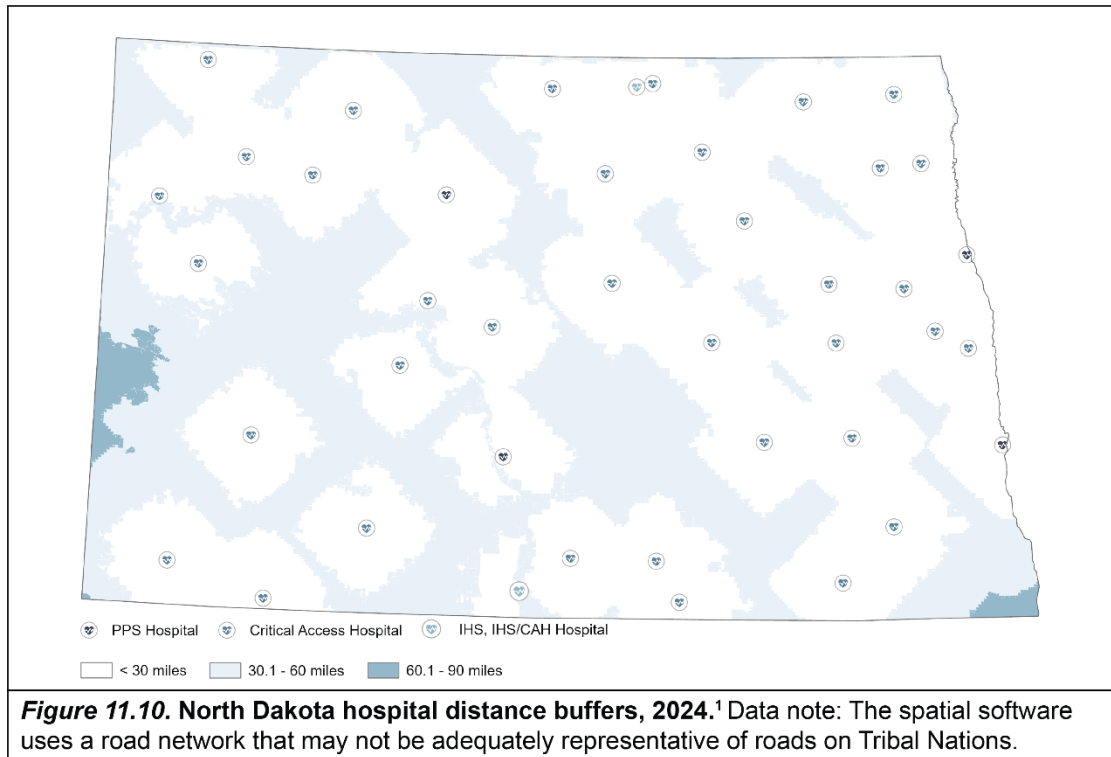


GEOGRAPHIC ACCESS TO CARE

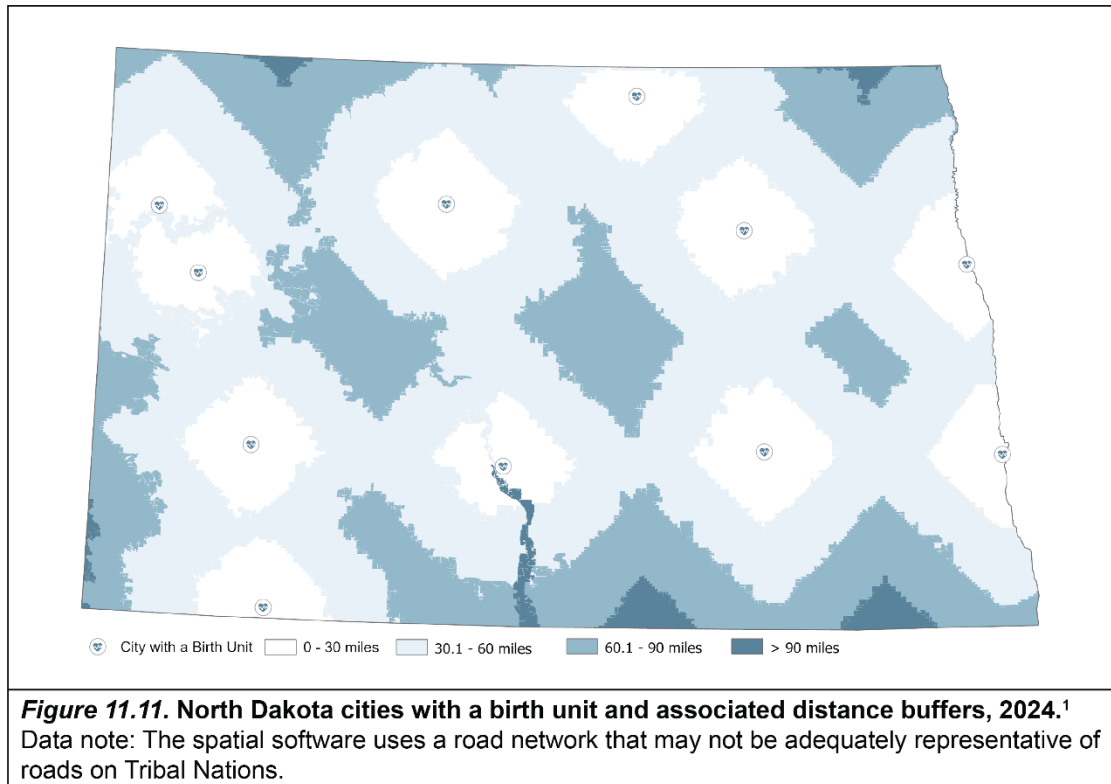
In Chapter 10 of this *Report*, the U.S. Centers for Disease Control and Prevention’s Social Vulnerability Index (SVI) was introduced. The SVI utilizes data for substate geographies (counties or census tracts) to develop four theme ranking variables.²² Those include: socioeconomic status, household characteristics, racial and ethnic minority status, and housing type and transportation. Chapter 10 provides a more in-depth examination of the SVI’s four themes and overall rankings within North Dakota to determine a relative view of vulnerability. While all areas of the SVI relate to access to care, geographic access to physical locations in terms of travel time and distance most closely relate to the Housing Type and Transportation (HT/T) theme. The data elements that make up that theme include the number of multi-unit housing structures, number of mobile homes, crowding, households that lack access to a vehicle, and persons in group quarters. Crowding is further defined as households with more people than number of rooms. Group quarters is defined as individuals not living in housing units (houses, apartments, mobile homes, or rented rooms) but instead living in institutional settings such as correctional facilities or nursing homes, or in non-institutional settings such as group homes, shelters, military barracks, or college dormitories. Figure 11.9 illustrates the HT/T theme of the SVI with North Dakota CAH, PPS, and IHS or IHS/CAH hospitals overlaid. The two darkest blues in the map indicate the areas with the highest proportional amount of crowding, housing insecurity, and lack of access to a vehicle compared to the lighter colors. These factors present additional challenges for the population being able to access service locations such as the hospitals displayed on the map. In the example of Mountrail County in the northwest region of the state, the hospital in Stanley is located in a census tract that covers nearly 1,500 square miles and also falls above the 80th percentile for the HT/T theme.



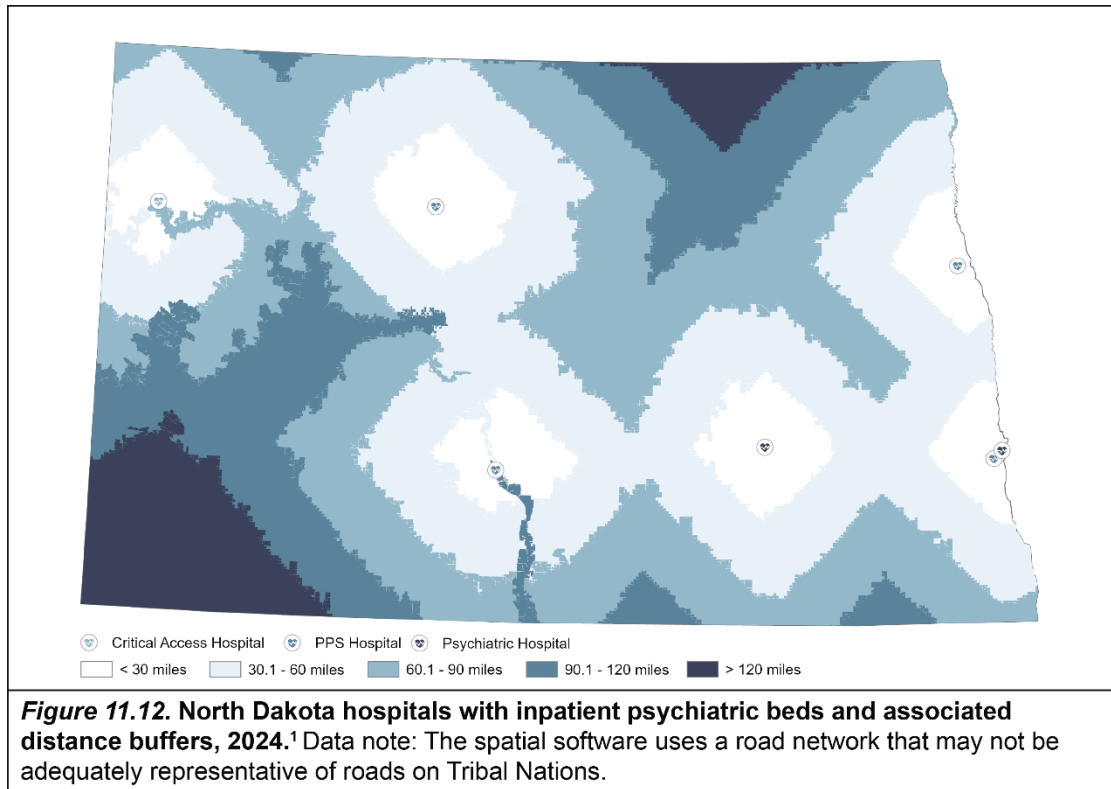
A more comparable geographic analysis evaluating access to care is the use of service area buffers around service delivery locations. Figure 11.10 illustrates the same hospitals used for Figure 11.9 and overlays a travel distance buffer of 30, 60, and 90 miles.¹ These buffers utilize a road network with an associated hierarchy to simulate actual travel distance using the least restrictive routes. The routing method is similar to what one might expect from the mapping applications on a mobile device. In examining geographic access to hospitals using only travel distance, a large amount of the state is within 30 miles of the closest hospital. A lesser area is between 30 and 60 miles, with a small portion being between 60 and 90 miles. This analysis does not consider hospitals in bordering states that may be a closer geographic option for some of the border areas.



There is reasonable geographic access to short-term general hospitals in the state. However, geographic access hospitals with specialty care availability is more problematic. Figure 11.11 illustrates the cities with a birth unit, which was initially presented in Chapter 5. This figure presents those same cities with the same travel distance buffer of 30, 60, and 90 miles, but also includes an additional buffer of 90 to 120 miles as there are areas of the state that are further than 90 miles from a city with a birth unit. This creates a number of challenges for expectant mothers as the time between the onset of labor and the time of delivery are varied and emergent situations may arise rapidly. An additional factor related to living on the northern plains is adverse winter weather that may make travel conditions difficult or impossible.



An additional specialty care access scenario relates to hospitals with inpatient psychiatric care beds and is illustrated in Figure 11.12. This figure uses the same travel distance buffer of 30, 60, 90, and 120 miles but adds an additional buffer of 120 to 240 miles as there are areas of the state that are further than 120 miles from a hospital with inpatient psychiatric beds. The geographic access presented here shows a much larger proportion of the state that is more than 60 miles from a hospital with inpatient psychiatric beds. In the case of hospitals with inpatient psychiatric beds, travel distance is compounded by challenges of emergent situations arising rapidly, the limited number of beds in some hospitals, and challenges in transporting individuals in crisis situations.



SUMMARY

Healthcare in North Dakota is delivered through more than 300 ambulatory care clinics, 52 hospitals, 75 skilled-nursing facilities, 55 basic-care facilities, and 71 assisted-living facilities, supported by an array of EMS providers, trauma centers, and pharmacies. Behavioral health services delivered via the state system includes eight Human Service Centers and six outreach/satellite locations, the State Hospital, and a Life Skills and Transition Center. Geographic access to care varies widely depending on the type of services being sought. Confounding factors include seasonal weather and road conditions, the unpredictability of emergency situations, and the influence of timely access on outcomes. Additional limitations addressed in Chapter 2 tie the social drivers of health with access challenges, and in Chapter 10 the SVI was introduced and expanded on here to identify additional metrics to be able to determine vulnerable populations throughout the state. Chapters 6-9 address workforce shortages and maldistribution which also contribute to access to care issues.

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CHAPTER TWELVE:

**UND SCHOOL OF MEDICINE AND HEALTH
SCIENCES COMMUNITY IMPACTS**

INTRODUCTION

Previous editions of this *Report* have included an appendix of health workforce pathway activities hosted or led by the University of North Dakota (UND) School of Medicine and Health Sciences (SMHS). That appendix served to highlight programs and efforts aimed at growing the health workforce in the state. There are a variety of programs and activities focused on K-16 activities (kindergarten through baccalaureate level education) as well as service activities conducted by faculty, staff, and students that serve the state. This chapter's focus is to explain those activities and programs in greater detail to better illustrate the SMHS's impact on communities throughout the state. Unless otherwise listed, the activities reviewed here were done between January 1, 2023, and July 1, 2024.

HEALTH WORKFORCE PATHWAY ACTIVITIES

Health workforce pathway activities (previously referred to as pipeline activities) are those activities aimed at introducing health careers to students in pre-clinical education settings. These pathway activities may focus on students as early as late elementary and middle school all the way through bachelor's level education programs. The intent of these activities is to provide an overview of occupational opportunities and offer experiences that give a more comprehensive understanding of those health careers.

R-COOL-Health Scrubs Camps

The R-COOL-Health Scrubs (R-COOL-Health) Camp is a program supported by the Center for Rural Health (CRH) at the UND SMHS and focused on rural students in grades 5-12. The overall purpose of the program is to increase awareness, interest, and understanding of health careers available in rural North Dakota through creative and interactive activities.¹ For the purposes of this program, rural is defined as any geographic area beyond a twenty-mile radius from Minot, Bismarck/Mandan, Grand Forks, and Fargo/West Fargo. Partnerships between schools, healthcare facilities, and economic or job development authorities are required to increase collaboration and awareness of the economic impact of healthcare.

R-COOL-Health Scrubs Academies

The UND R-COOL-Health Scrubs Academy I is a four day/three-night camp held on the UND campus. The Scrubs Academy I encourages junior high students from across North Dakota to pursue a career in healthcare. Students participate in hands-on activities and receive information related to a variety of healthcare professions. In addition to the experiences with healthcare professionals, students are certified in Friends and Family CPR and the Health Insurance Portability and Accountability Act. The Scrubs Academy I serves as a mini-preparation program to strengthen academic skill sets associated with health disciplines, introduce adolescents to a higher education experience, and foster a relationship between the students and healthcare professionals.²

The R-COOL-Health Scrubs Academy II is a four-day/three-night camp where high school students learn what it is like to be a health professional and see an array of healthcare professions that they may consider as a career. Students spend their days in various health

facilities (e.g. critical access hospitals, tertiaries, clinics, long term care and assisted living facilities, ambulances, treatment centers), enjoy fun activities in the evenings, and spend the night in the Lake Region State College dorms. Students have the opportunity to job shadow multiple professions during the course of the camp.³

The Scrubs Academy II serves as a mini-preparation program to strengthen academic skill sets associated with health disciplines, introduce adolescents to a higher education experience, and foster a relationship between the students and healthcare professionals.

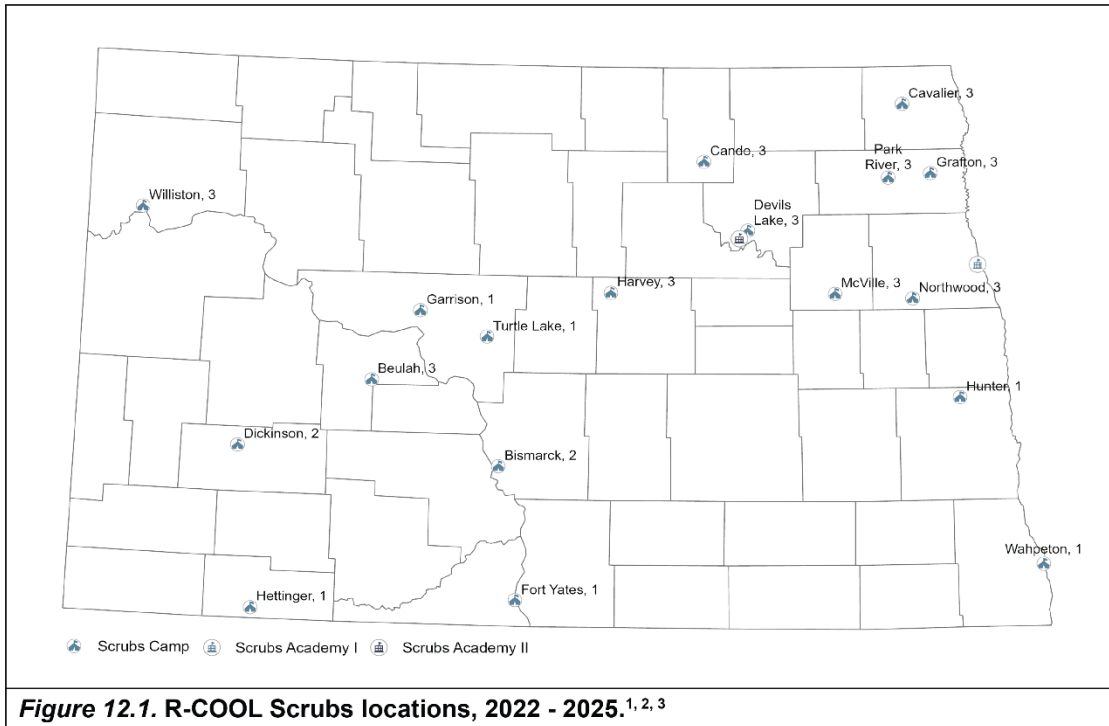


Table 12.1
R-COOL Scrubs Camps statistics.⁴

Year	Camps Funded	Communities Involved	Students Involved	Volunteers Involved
2009/2010	14	61	1,016	292
2010/2011	9	36	441	239
2011/2012	9	56	407	211
2012/2013	9	57	682	286
2013/2014	9	56	635	197
2014/2015	8	56	699	263
2015/2016	9	57	830	382
2016/2017	10	70	891	363
2017/2018	10	57	931	419
2018/2019	9	64	953	240
2019/2020	8*	28	381	158
2020/2021	7*	86	1,226	202
2021/2022	9*	121	1,048	302
2022/2023	13	134	1,406	411

**In 2019/2020 an additional 8 canceled due to COVID-19; in 2020/2021 an additional 2 canceled due to COVID-19; and in 2021/2022 an additional 1 canceled due to COVID-19*

Table 12.2***R-COOL Scrubs Academy statistics.***⁴

Year	Students Involved	Communities Involved
2011	38 (25 rural)	21
2012	45 (34 rural)	22
2013	56 (45 rural)	27
2014	51 (33 rural)	25
2015	56 (44 rural)	25
2016	55 (35 rural)	26
2017	56 (44 rural)	21
2018	80 (52 rural)	38
2019	84 (63 rural)	27
2020	<i>Canceled due to COVID-19</i>	
2021	<i>Canceled due to COVID-19</i>	
2022	<i>Canceled due to COVID-19</i>	
2023	77 (58 rural)	32

SIMULATION IN MOTION - NORTH DAKOTA

The Simulation in Motion-North Dakota (SIM-ND) is a statewide simulation education program. For over 10 years, SIM-ND has been bringing hands-on training to health care workers in rural North Dakota.⁵ Using mobile simulation labs and high-fidelity human simulators, SIM-ND can immerse their learners in a safe but realistic learning environment. The use of simulation allows learners to participate in high stakes, low frequency events, such as trauma, cardiac arrest, emergent delivery, and pediatric emergencies in a controlled learning environment. There are very few limitations to mobile simulation. Some examples of locations where simulation can occur are workplace settings, outdoor or recreational locations, hospital settings, and within the mobile simulation truck. SIM-ND was created for North Dakota's rural Emergency Medical Services (EMS) and Critical Access Hospitals that remain the primary audience. Other audiences that can benefit from simulation and participate in SIM-ND are law enforcement agencies, fire departments, healthcare students such as nursing or paramedic or Emergency Medical Technicians, and individuals working in industry or agriculture. While there are limitations to simulation, SIM-ND strives to create learning scenarios that benefit as many learners in rural North Dakota as possible.

Table 12.3 illustrates the types of learners that engaged in SIM-ND activities held in North Dakota for the time frame of January 1, 2023, through November 19, 2024. A total of 345 events were held in 32 counties, 53 cities, and in partnership with 133 different organizations or departments. This table demonstrates the impacts of the SIM-ND program on the intended audiences with the variety of unique categories and combined categories of learner types.

Table 12.3**Learners by type for SIM-ND events, January 2023 through November 2024.⁶**

Learner Types	Learners
Correctional Officers	8
CRNA Students	18
DNP Students	39
DOCR Staff, Nursing	24
EMS	717
EMS Students	126
EMS/Law Enforcement	160
EMS/Nursing	37
EMS/Nursing Students	40
EMS/Nursing/APP/MD	66
Fire/EMS	839
Flight (EMS/Nursing)	116
High School Students	123
Industry/First Responder	434
MD/DO	60
Military	78
Nursing	1,022
Nursing Students	136
Nursing/Anxillary Staff	8
Nursing/APP	21
Nursing/APP/MD	295
UND SMHS Students	48
Learners - Total	4,415

APP - Advanced Practice Providers, CRNA - Certified Registered Nurse Anesthetist, DNP - Doctor of Nursing Practice, DO - Doctor of Osteopathy, DOCR - Department of Corrections and Rehabilitation, EMS - Emergency Medical Services, MD - Medical Doctor

Figure 12.2 represents the cities where at least one SIM-ND event was held during the time frame of January 1, 2023, through November 19, 2024. There were 53 unique cities where one or more SIM-ND events were held. The range in the number of events per city was between 1 and 89, with the median number of events being 2. There were 32 counties where a SIM-ND event was held which represents 60% of North Dakota's 53 counties. When considering the population of North Dakota, the SIM-ND program held events in counties that represent 90.1% of the population of the state which demonstrates a targeted outreach that serves a very large segment of the population of the state.

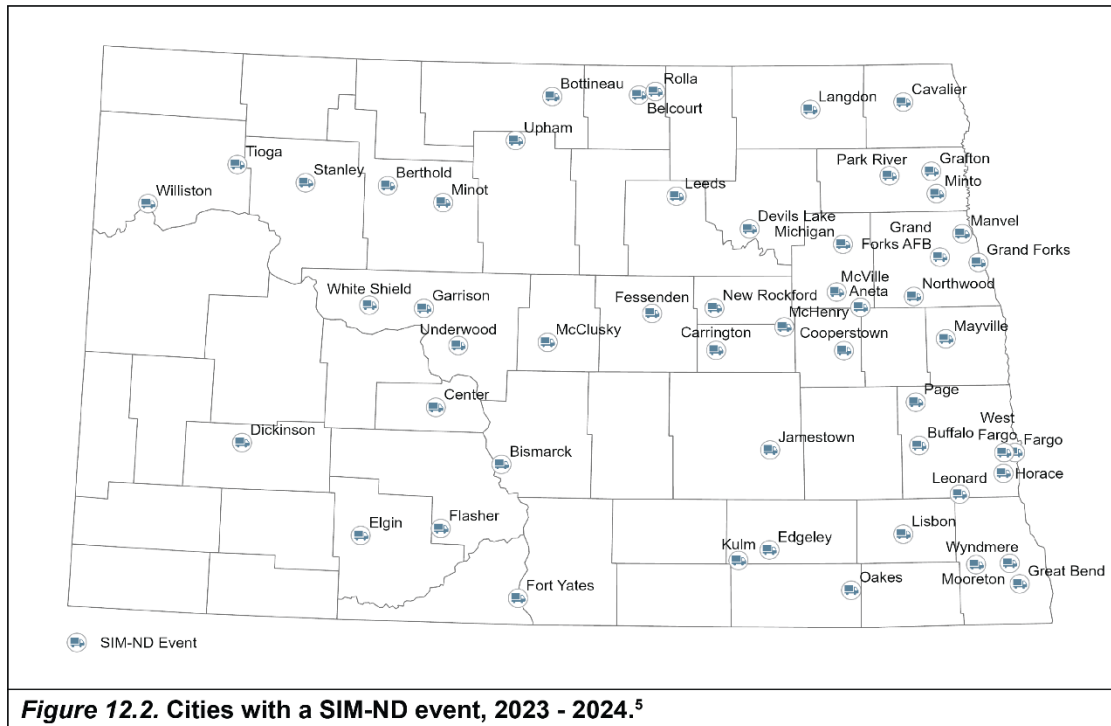


Figure 12.2. Cities with a SIM-ND event, 2023 - 2024.⁵

RECRUITMENT AND RETENTION ACTIVITIES

K-12 Career Introduction

The Center for Rural Health (CRH) is the Program Office for the Area Health Education Center (AHEC).⁶ The CRH subcontracts two regional centers serving the eastern and western AHEC locations in Mayville and Hettinger that serve their respective half of the state. One program under AHEC is HOSA Future Health Professionals. HOSA engages students to learn healthcare leadership skills, which will equip them to be effective future members of the state’s healthcare workforce. HOSA is organized as chapters within schools throughout the U.S. North Dakota currently has 19 high school chapters with more than 650 students participating.

Career Placement and Financial Incentives

The CRH serves as the coordinator for the Rural Recruitment and Retention Network (3RNET). 3RNET serves as a job board to assist facilities in recruiting the healthcare workforce. This also includes presentations at career fairs and presentations to academic programs to inform future workforce about opportunities. The CRH also manages the J1 visa waiver program, which is subcontracted from the North Dakota Department of Health and Human Services. This program helps to fill workforce gaps by offering a pathway for international medical graduates to stay in the state after residency training is complete. The CRH also offers technical assistance to sites eligible for the National Health Service Corps loan repayment program.⁷

HEALTH SCIENCES ACTIVITIES

The Health Sciences academic programs within the SMHS conduct a range of service activities that benefit the people of the state of North Dakota. This includes faculty service that may comprise serving on boards or organizations that promote learning, professional guidance, and policy initiatives; serving in clinical service roles that offer supports and services to targeted populations, presenting program and academic work at a city, county, or statewide events; and service activities funded via grants that allow for program-focused efforts to improve the health and wellbeing of North Dakotans. The focus of service activities also includes service done by health science students that may include many of the same or similar types of service done by faculty members with many of these opportunities being done with faculty member supervision and participation.

Master of Public Health Program

Students from the UND Master of Public Health (MPH) program participated with the United Way's Backpack Program.⁸ This program provides a backpack of packaged meals for students in need to take home over the weekend to ensure that they have food for the weekend. These backpacks include food items that are ready to eat or require minimal preparation, so the student is able to independently open and eat or prepare the food without the necessity of adult supervision. This partnership was between the MPH program and United Way and served students enrolled in the East Grand Forks School District, East Grand Forks Head Start Program, Grand Forks Head Start Program, Larimore Elementary Program, and the Social and Academic Intervention Learning Program through the Grand Forks School System.

Medical Laboratory Science Program

The Medical Laboratory Science (MLS) program at SMHS engaged in a number of activities to provide information about the MLS discipline and to enhance participation in community events.⁹ The MLS program worked with students who participated in the R-COOL Scrubs programming to provide information about careers for those with MLS degrees. The MLS program also participated in the Community Meet and Greet, an opportunity for students to engage with clinical sites. The MLS program was able to invite clinical sites to that event. The MLS program also offered an MLS career education demonstration for the Red River (Grand Forks) High School Health Careers Class to inform students in grades 9-12 about MLS careers. In addition, the MLS program provided information to Red River juniors and seniors about the MLS profession and educational opportunities for the Red River Health Occupations class. Another educational opportunity at multiple locations was the MLS program providing an overview of the profession and educational opportunities for South Middle School, Valley Middle School, and Schroeder middle schools in Grand Forks, events that also involved numerous other schools from the area surrounding Grand Forks. The MLS program partnered with SMHS, Altru, and DakMinn Blood Bank to host a blood drive at the SMHS as an opportunity to encourage faculty, staff, and students to donate blood products.

Occupational Therapy Program

The Occupational Therapy (OT) program at the UND SMHS participated in a variety of activities throughout the state.¹⁰ One faculty member serves on the Clinician Task Force Group, an entity that is a non-profit organization of seating and wheeled mobility therapists from around the country. The goal of this group is to advocate and educate all stakeholders on the needs of clients and help ensure wheelchair users have their needs met. The inclusion of a North Dakota member will ensure that North Dakota wheelchair users benefit from the efforts of the group. A faculty member also serves on the board of the Grand Forks Growth and Support Center (GFGSC). The GFGSC serves individuals with developmental and/or intellectual disabilities and operates as a day program. This program partners with people receiving services from GFGSC, their families and/or support professionals.

The OT faculty serve the Indians into Medicine (INMED) high school summer academy. The INMED summer academy offers students from local tribes an opportunity to be on campus and explore different career opportunities. Students varied in age from 9th grade to 12th. The OT faculty also work with students who participate in the R-COOL Scrubs Academy held at UND SMHS. This allows faculty to provide an overview and understanding of the OT profession to North Dakota students interested in health careers.

OT faculty and students participated in the LiveGrand Health and Wellness Expo. The aim of the expo is to assist individuals with no-, low-, or fixed-income households to connect with community resources that will support health, well-being, and recovery. Using a collaborative approach, OT students helped participants identify and connect with services they wanted or needed to access. Information from 56 vendors was given to 207 adults and 39 children during this event.

OT students, in partnership with the Grand Forks Housing Authority (GFHA), conducted a bike rodeo for children of low socio-economic status. The aim of this event was to teach children how to ride bicycles safely and how to perform safety checks on their bicycles. A flat, open surface or obstacle course allowed participants to practice balance, turning maneuvers, starts, and stops. Education was provided to the children about the proper fit and use of bike helmets, bike inspections to ensure sound functioning, safety drills (hand signals, intersection safety), rules of the road, and distraction-free riding (visual awareness practices). OT students provided education to students and families during the annual Walk or Roll to School Day event. They encouraged healthy habits, raised awareness of traffic safety, and identified safe routes to school. This was done in partnership with the GFHA, Safe Kids, and Lake Agassiz Public School's Walk/Roll to School Event.

The OT faculty serve as proposal reviewers for the Sanford Bismarck Research Council. The council reviews proposals from healthcare professionals and students completing clinical experiences with the goal of advancing clinical translational research and implementation of practice based on the best available evidence. The OT faculty serve on a community of practice for social-emotional/behavioral disorders (SEBD) for the North Dakota Department of Public Instruction. A community of practice is a learning theory concept that includes professionals, parents, and students who have expertise in SEBD and support students who qualify for special education services under the category of SEBD. OT faculty participated in the Have a Heart Day, an opportunity for Grand Forks elementary students to receive a functional anatomy lesson

aimed at elementary age students. OT faculty presented information to potential students and parents and connected with alumni at the North Dakota State Fair in Minot.

OT faculty provided a number of targeted interventions for older adults in North Dakota. One activity was Health Promotion Programming, a partnership with the Grand Forks Housing Authority. OT students held weekly listening sessions with residents in a Grand Forks Housing apartment complex for low-income populations. Students used motivational interviewing skills to help residents identify health promotion goals and resources to support their health. Another activity was Geriatric Clinical Rotations. This included conducting needs assessments and establishing partnerships with rural and tribal communities in North Dakota to develop clinical geriatric rotations, interprofessional student service-learning to implement wellness assessment and health promotion programming for geriatric populations across multiple practice settings (primary care, hospital, assisted living, community, memory care, and rehabilitation).

The Continuing Education for Healthcare opportunity included conducting needs assessments and disseminating microlearning modules in the form of short videos and short case-based papers with assessment of learning to advance skills in treating geriatric populations. This included partnerships with academic programs at UND, clinical educators, the Life Skills and Transition Center in Grafton, ND, and Lutheran Sunset Home in Grafton, ND.

The OT faculty also provide therapy dog visits. This is an opportunity to provide therapy dog visits to promote mental health, especially during stressful times, such as finals week, and declining health. The audience of these visits include UND students and employees, residents at skilled nursing facilities, and hospital patients. Partnerships for these visits include the Alliance of Therapy Dogs, UND SMHS, and Valley Senior Living Center.

OT faculty serve on the Board of Management for the North Dakota Occupational Therapy Association. This includes assisting in organizing and planning educational and networking events to support OT practitioners and students in the state.

Physician Assistant Program

The Physician Assistant (PA) Program at UND SMHS participated in several activities spanning multiple focal and geographic areas.¹¹ Faculty and staff from the PA program participated in the North Dakota Academy of PAs annual meeting held each May. At those events faculty and students presented scholarly projects. The PA faculty work with students who participate in the R-COOL Scrubs Academy held at UND SMHS. This allows faculty to provide an overview and understanding of the PA profession to North Dakota students interested in health careers. The PA Director and volunteer students of the PA program volunteer with the Thompson High School anatomy class each May. As part of their summer professionalism course, PA students work on community service projects in the student's home community. These community service projects are selected by the students and the locations of opportunities vary by the student's home community.

Physical Therapy Program

The Physical Therapy (PT) Program at UND SMHS engaged in various activities.¹² PT students completed balance assessments for older adults (age 65 and older) at the Grand Forks Senior Center. PT students also attended exercise classes in the community including the YMCA,

Grand Fork Senior Center, and Choice Health and Fitness where they observed and assisted participants. This was focused on individuals aged 55 and older. PT faculty assisted by teaching mobility skills to nursing students in the nursing simulation center, including transferring patients, bed mobility, range of motion activities, assistive device adjustments, and basic gait training. The PT program also completes older adult fitness assessments at SMHS.

SUMMARY

The UND SMHS maintains a presence around the state through four regional campuses, with one each in Bismarck, Grand Forks, Fargo, and Minot. This allows the SMHS to operate in all four corners of the state for educational and programming purposes to engage and work with individuals across the state. The UND SMHS maintains a service presence that not only provides opportunities for members of the public to learn about the school and its programming but also to gain valuable knowledge about healthcare careers, engage and interact with grant funded activities, and meet the faculty, staff and students of the SMHS. The statewide presence of healthcare pathways activities such as Scrubs Camps that then draw students from across the state for the Scrubs Academies allow for an early introduction and experience for middle and high school students to learn about and get interested in health careers. The important presence throughout the state by the SIM-ND program further provides additional opportunities for participants to learn more about health careers, as well as to be able to gain valuable first-hand experience in dealing with various types of health emergencies that may occur in and around North Dakota communities.

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CHAPTER THIRTEEN:

QUALITY & VALUE OF HEALTHCARE

NATIONAL OVERVIEW

The quality and safety of care delivered in a healthcare system is directly associated with improving and maintaining overall health status of the served population. In a complex healthcare system, there are a number of concerns that can negatively impact quality and safety, such as the availability of providers; patient access to care, health services, and technology; and the financial dimensions of affordability and payment. Each of these is a contributing factor in the overall strategy to be considered when reforming or redesigning a healthcare system. In addition, the quality of care provided to the population and the patient outcomes produced are equally important facets of reform. This chapter will focus on two areas: quality of care, and health reform in North Dakota.

The National Academy of Medicine's (NAM, formerly The Institute of Medicine [IOM]) six principal components to improving health – safety, effectiveness, patient-centeredness, timeliness, efficiency, and equity – are the cornerstones for improving health status and system performance in a period of transformative change.¹ The NAM has been central in identifying the elements in the U.S. healthcare system that have contributed to the systemic dysfunction associated with cost, performance, access, quality, and other facets, and has offered insights and articulated critical reform elements. When considering formalized healthcare reform as envisioned through public policy instruments or restructuring and providing incentives through market conditions compelled by an adaptive private health system, the configuration of healthcare will need to contend with systemic, societal, and policy change. The NAM, along with other organizations, has called for a modernized or modified healthcare system predicated on openness, responsiveness, and shared responsibility. The federal Agency for Healthcare Research and Quality (AHRQ) applies these six aims in its nationwide analysis and assessment of health quality, which is called the National Quality Strategy (NQS).²

Better care is anticipated by fully implementing the NAM's goals to achieve a healthcare delivery system that is more patient-centered, employs evidence-based science, addresses safety, and targets effectiveness and efficiency to improve access and achieve greater equity. Better health of the population should be attained by promoting effective communication; improving care coordination; engaging communities, employers, payers, and providers as partners; and promoting the most effective prevention and treatment approaches. Affordable care focuses on the need to simultaneously produce better care and better health, and to do so in a manner that reduces the rising cost of healthcare for individuals, families, employers, and the public sector.

The emphasis in healthcare reform on new healthcare delivery models, reforming payment structures by rewarding improved outcomes, focusing on patient-centeredness and evidence-based treatments, and accentuating disease prevention all are efforts to improve health status and to lower the growth in healthcare costs.

To help achieve these aims, the NQS established six priorities to help focus the efforts of public and private partners:

1. Making care safer by reducing harm caused in the delivery of care.
2. Ensuring that each person and family are engaged as partners in their care.
3. Promoting effective communication and coordination of care.
4. Promoting the most effective prevention and treatment practices for the leading causes of mortality, starting with cardiovascular disease.

5. Working with communities to promote wide use of best practices to enable healthful living.
6. Making quality healthcare more affordable for individuals, families, employers, and governments by developing and spreading new healthcare delivery models.³

The six NQS priorities show the continuing development of thought relative to a transformative approach to the healthcare delivery system. The six NAM principles of safety, patient-centeredness, effectiveness, efficiency, timeliness, and equity have served as guiding pillars for reform. There is a continuing movement to foster greater transparency, inclusion, patient-centeredness, and communication; to call for enhanced accountability from providers and the overall healthcare system to individuals, families, payers, employers, and communities; to focus on prevention, health promotion, care coordination, and greater patient knowledge and involvement; to emphasize that better health and better care can arise from a responsive healthcare system that recognizes that efficiency in organizational performance can produce better health and medical outcomes; and to initiate new healthcare delivery approaches to associate patient outcomes with provider payment structures in order to ensure a more equitable distribution of healthcare services.

To achieve greater value through a more optimally performing healthcare system, the NAM supports strategies to: 1) capture the opportunities present in technology, industry, and policy; 2) develop pathways to a continuously learning healthcare system; 3) engage patients, families, and communities; 4) achieve and reward high-value care; and 5) create a new culture for care.

The healthcare community, including providers, payers, policymakers, academics, and advocacy groups, recognizes the need to better align or build viable linkages between those who practice healthcare and those who generate knowledge of the healthcare system and the resident components of that system. A summary report produced by the IOM a decade ago discussed the need to integrate research into the delivery of care so as to leverage its experiences, rather than creating a set of parallel infrastructures and processes.⁴

An important element discussed in the proceedings was the idea that to transform the healthcare delivery system, research could not reach a natural progression without understanding the implementation of research into the real world, and delivery systems that relied on the knowledge and present organizational structure could not be expected to transform to the level of significant change. In August 2016, the National Academies of Sciences, Engineering, and Medicine's Roundtable on the Promotion of Health Equity and the Elimination of Health Disparities issued its findings.⁵ This work incorporates another element of a transformative system: the role of the private sector or of the contributions of private-public partnerships and the implications for healthcare, health equity, and health status. The movement to value-based care incorporates a focus on: quality improvement as argued by the NAM, AHRQ, and many other sources; changing the structure, orientation, financing, and performance of the health system; and the actors who serve as agents for change. The latter point, from NAM, is that the range of participants goes beyond the public sector, since how the healthcare system adapts or does not adapt to public instruments and new policy directives also involves the needs of the private business sector. Employers pay for the majority of private health costs and have a vested interest in a transformative health system and the implications for economic opportunity, including workforce productivity and availability, better employee health, and improved community health. Private and public collaboration lends itself to the concept of

community benefit embedded in health reform as a responsibility of the healthcare system to facilitate improved population health. Collaborative models are a vehicle to ensure that healthcare, business, transportation, housing, and other sectors fashion comprehensive changes to how population health is approached.⁶

A recent report⁷ emerged from discussions involving national experts on payment strategies to support high quality care. The focus was on people with serious health conditions such as cancer, chronic obstructive pulmonary disease, and heart disease. A range of ideas was discussed, including the following: 1) incorporating more social services as an integrated approach; 2) changing Medicare to better incentivize care coordination; 3) relying less on an acute care model where reimbursements “trickle down” and instead use more community-based networks; 4) supporting delivery system reform that more adequately connects social services, long-term services, and support structures to the patient; 5) including a hospice and palliative care benefit in integrated financing and delivery; and 6) encouraging more health systems and state and local governments to lead in innovation for quality, accessibility, and affordability.⁶

Healthcare is struggling with and contemplating many of the same issues from its past, including controlling cost, improving quality of care and health status, and instituting higher organizational and system performance. Much of what drives healthcare system change involves public policy instruments being used by private and public sector players to improve not only the system of care at a global level but also to create real concrete change in health and medical outcomes at the individual and community levels. Better care, better health, and more affordable care have become focal points in the redesigned American healthcare system.

ASSESSMENT OF HEALTH QUALITY IN NORTH DAKOTA

Overall Assessment

There are different public and private organizations that analyze state-specific quality data. Such analysis can be instructive for state and local officials, providers, employers, payers, and individuals who are interested in understanding effective interventions and healthcare status. Such data can serve to guide both public policy and local programs' responses. The amount of quality-relevant data, the number and type of measures, the number of health organizations and providers collecting and using quality-related measures grow each year. Both the scientific knowledge and the policy directives that guide and shape the incorporation of data metrics and evidence-based principles become more refined and pronounced over time. The recognition on the part of policymakers and health advocates of the importance in understanding how healthcare systems and providers intervene to promote optimal health, and the actual collection and analysis of health outcome data are fundamental factors in a transformative U.S. healthcare system.

AHRQ Assessment

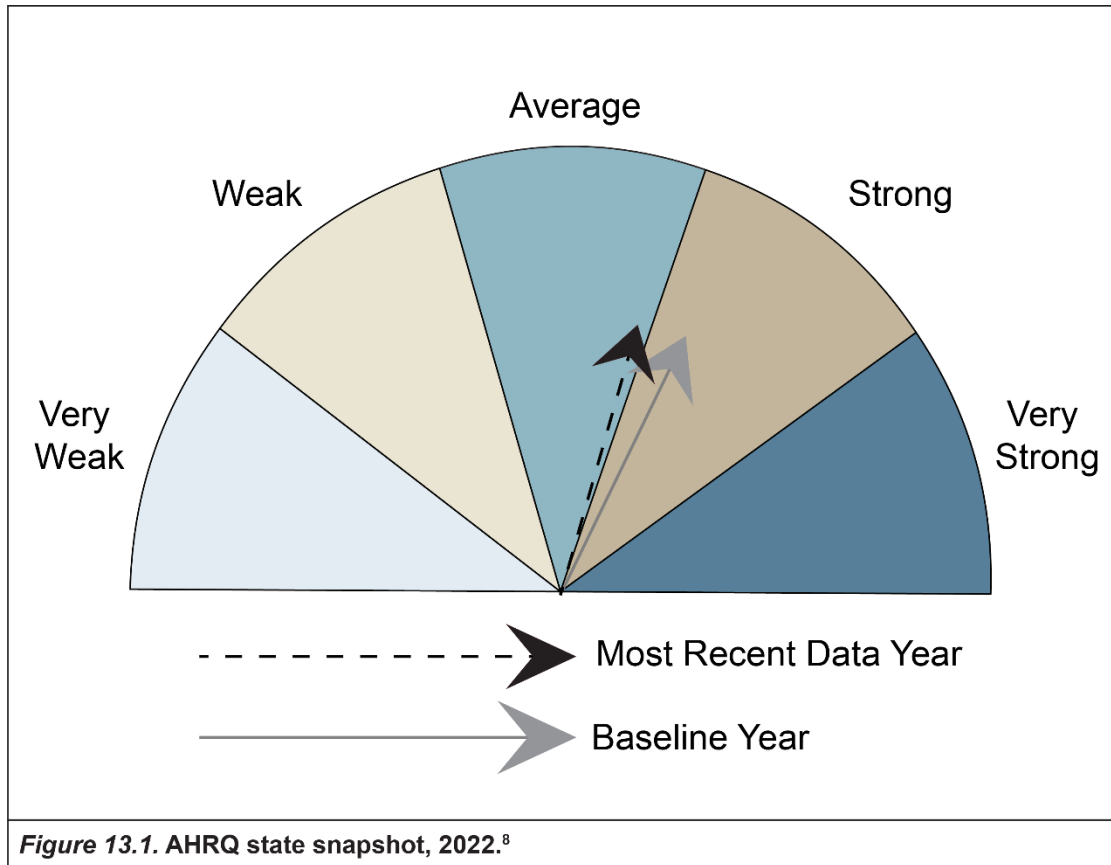
In a recent report, the AHRQ rated North Dakota as average in comparison with other states in regard to overall healthcare (Figure 13.1).⁸ In previous reports, North Dakota was reported as average or strong. States are graded as very weak, weak, average, strong, and very strong.⁷ On all healthcare quality measures, North Dakota was in the top 10. South Dakota was in the middle 31 and Minnesota also was in the top 10.⁸ North Dakota was rated strong for person-

centered care, care coordination, and COVID-19 experiences. It was rated average for patient safety, healthy living, and effective treatment. In comparison to its base year, North Dakota improved on person-centered care but declined in patient safety, care coordination, and healthy living. Structural access showed no change and effective treatment demonstrated a slight decrease.

Diseases and conditions where North Dakota scored three strong ratings included cancer, HIV and AIDS, and diabetes. Since the last *Report*, North Dakota returned to its baseline rating of strong for diabetes. North Dakota decreased from its baseline rating of strong to average for chronic kidney disease and mental health and substance use disorder but increased from a baseline of weak to average for cardiovascular disease.

Priority populations saw North Dakota maintain the same rating but with slightly lower scores for white and non-Hispanic white. North Dakota was rated average for private insurance and public insurance. The uninsured is rated as very weak while insured is rated as strong. Ratings remained similar for type of care, including being rated strong for acute care and prevention; however, chronic cases saw a decrease from a baseline of strong to average. Setting of care showed North Dakota improving slightly within the average level for ambulatory. However, the state declined from strong to average for home health-hospice. The nursing home care setting had a baseline of strong but is currently rated on the border between weak and average.

The 2023 AHRQ assessment on healthcare quality and disparities used 137 individual measures related to assess North Dakota (132 in 2021 and 126 in 2017). North Dakota was deemed to have achieved or improved upon its benchmark year on 70 of the measures. It was scored as close to the benchmark on 38 and rated far below the benchmark on 29 measures. The state's best measures were for long-stay nursing home residents with physical restraints; hospital admissions for asthma per 100,000 population, ages 18 to 39; home healthcare patients whose management of oral medications improved; hospital admissions with chronic obstructive pulmonary disease or asthma per 100,000 population, age 40 and over; and home healthcare patients whose ability to get in and out of bed improved. Its weakest measures were: deaths per 1,000 hospital admissions with coronary artery bypass graft, age 40 and over; long-stay nursing home patients experiencing one or more falls with a major injury; long-stay nursing home residents with moderate to severe pain; long-stay nursing home residents with depression symptoms; and drug overdose deaths involving other synthetic opioids (other than methadone) per 100,000 resident population.



Commonwealth Fund Assessment

The *Commonwealth Fund* scorecard for 2023 showed North Dakota ranked 28 out of 51 states, which is a small improvement from its position of 29 in 2020.^{9, 10} The Commonwealth Fund also used subcategories to analyze quality and performance: reproductive and women’s health; access and affordability; prevention and treatment; avoidable hospital use and cost; healthy lives; income disparity; and racial and ethnic health equity. The rankings associated with each measure are presented in Table 13.1 for 2020, 2022, and 2023.

Since a metric like access is so pivotal in understanding health, it is helpful to review some findings. North Dakota has seen an improvement in the number of children with health insurance, a reduction of individuals under age 65 having high out of pocket medical costs in relation to their household income, and a decrease in the number of adults aged 18 and older who went without care because of cost in the past year.

The *Commonwealth Fund* report found that the most improved indicators for North Dakota were adults with inappropriate lower back imaging, preventable hospitalizations ages 18-64, and hospital 30-day mortality. The report also identified indicators that had worsened such as children who did not receive needed mental healthcare, home health patients with a hospital admission, and employer-sponsored insurance spending per enrollee.

Table 13.1
North Dakota rankings associated with the Commonwealth Fund
State Scorecard, 2023.^{9, 10}

Category	2020	2022	2023
Access and Affordability	23 rd	23 rd	24 th
Prevention and Treatment	20 th	38 th	30 th
Avoidable Hospital Use and Costs	11 th	16 th	19 th
Racial and Ethnic Health Equity	11 th	32 nd	43 rd
Healthy Lives	15 th	25 th	21 st
Income Disparity	-	11 th	25 th
Reproductive and Women's Health	-	-	17 th

Hospital Consumer Assessment of Healthcare Providers and Systems

In analyzing the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) data for North Dakota in 2022, North Dakota’s critical access hospitals (CAHs) ranked 31st in state rankings of CAH reporting rates for inpatient quality measures.¹¹ State rankings of CAH reporting rates are based on the percentage of CAHS per state reporting on quality measures, thus if multiple states have a 100% of CAHS reporting on a given metric those states will tie for the 1st ranked position. Minnesota ranked 27th and South Dakota ranked 1st, tied with 30 states with 100% of CAHs reporting inpatient quality measures. For state rankings of CAH reporting rates for outpatient quality measures for 2022, North Dakota, South Dakota, and 10 other states tied for the 1st ranked position with 100% of CAHs reporting in comparison to a U.S. rate for CAHs of 89.0%. Minnesota was rated at 14th place. Other indicators from the report showed that North Dakota CAHs exceed other CAHs on some measures and rated lower on other measures.¹¹

North Dakota CAHs were significantly better than other CAHs for the following:

- Median time from ED arrival to ED departure for discharged patients (17 minutes shorter than national average)
- Medications administered in the ED

North Dakota CAHs were deemed significantly worse compared to all other CAHs nationally for the following:

- Healthcare workers given influenza vaccination
- Patient left without being seen
- Providing a complete ED provider note¹¹

In North Dakota, 97.3% of the CAHs submitted data to the Critical Access Hospital Management and Performance Assessment System on at least one inpatient process for care measure for discharges in 2022.¹¹ This was on par with the U.S. CAH rate which was 97.1% for 2022. The

highest rate for North Dakota was in 2019 and 2020 with 100%, compared to the U.S. CAH rate of 95.3% and 91.9% for the same years respectively. The lowest rate for North Dakota was 2014 with a rate of 75.0% compared to a U.S. CAH rate of 84.7%. North Dakota in 2022 ranked 31st. For outpatient process of care measures, North Dakota exceeded the national data submission rate for CAHs in all years. In 2022, 100% of North Dakota CAHs submitted data on outpatient quality measures, which was higher than the national average of 89%. The lowest rate for North Dakota was in 2015 at 72.2% compared to a national average of 67.1% for the same year. North Dakota ranked number one overall, along with 11 other states, for submission of data on outpatient quality measures.¹¹

In looking more closely at HCAHPS data from 2013 to 2017, some interesting findings emerge. On some common measures, North Dakota CAHs compare well to CAHs in the region (Kansas, Nebraska, South Dakota, and North Dakota), and North Dakota CAHs perform better than North Dakota's larger Prospective Payment System (PPS) hospitals.¹¹ One standard measure is patients who reported that their doctors always communicated well. In the third quarter of 2016 to the second quarter of 2017, state CAHs had 86.2% of patients agreeing with this statement. That is slightly below CAHs in the other states that ranged from 87% to 88%; however, only 77.6% of patients in North Dakota PPS hospitals agreed with the statement. Patient agreement with doctor communication is below PPS systems in other states, where the figure ranged from 80% to 83%. The national patient rating for all hospitals was 82%; thus, North Dakota CAHs exceed that standard. North Dakota ranked 13th on this measure. North Dakota CAHs were slightly below their 2016-2017 rate with 83.6% of respondents agreeing to the statement on physician communication for 2014-2015. On a state-by-state ranking, the data from 2016-2017 showed a significant improvement from the previous report where the state ranked 22nd on the physician measure; these data covered the fourth quarter of 2014 to the third quarter of 2015. At that time, North Dakota PPS hospitals scored slightly higher at 79.6%.

A second standard measure is patients who reported their nurse always communicated well. North Dakota CAHs had 85.5% of patients agreeing with the statement.¹¹ That was slightly above CAHs in the other states that ranged from 83% to 85%; however, 74.9% of patients in North Dakota PPS hospitals agreed that nurses communicate well. While local CAHs were higher than regional CAHs, North Dakota PPS hospitals were below the region. The other PPS hospitals in three nearby states (North Dakota, South Dakota, Nebraska) ranged from 80.5% to 81.1% agreement. The national rate for all hospitals on this nursing communication measure was 80% and North Dakota was rated 7th. This was a significant improvement from data from the fourth quarter of 2014 to the third quarter of 2015 when North Dakota ranked 19th on this measure.

A third standard measure is patients who gave their hospital a rating of 9 or 10 on a scale from 0 (lowest) to 10 (highest). North Dakota CAHs compared well for 2016-2017 with 78.5% agreeing with this high rating. Nebraska was the highest at 82.2%; followed by Kansas at 80.0%; South Dakota tied with North Dakota. Once again, North Dakota PPS hospitals were below the other states at 64.9%, with the other states ranging from 76.5% to 77.6%. The national rate was about 73% and North Dakota ranked 15th, another significant improvement from 2014-2015 when it ranked 27th.¹¹

A final important measure for attention is the readmission rate. Readmission rates are viewed as a measure of the local health system's ability to coordinate the patient's care over the full

continuum of care that is offered. In interpreting these data, a lower score is better, with readmissions being calculated as the number of readmissions divided by all discharges. The most recent time frame was the third quarter of 2015 to the second quarter of 2016. In comparison to the CAHs in Kansas, Nebraska, and South Dakota, North Dakota had the lowest rate with a readmission rate of 15.2%, which was a tie with Nebraska.¹¹ On this measure the PPS hospitals in North Dakota and the other states outperformed all CAHs, and North Dakota PPS hospitals were comparable to the other states. North Dakota PPS hospitals had a readmission rate of 14.8%, slightly above the Nebraska rate of 14.6% and South Dakota with 14.7%, but better than Kansas with 14.9%. North Dakota was below the national rate of 15.3%. This placed North Dakota at 17th overall. North Dakota in 2015-2016, for both CAH and PPS, outperformed the national CAHs and PPS hospitals, relative to 2014-2015. In the 2014-2015 period, North Dakota CAHs had readmission rates of 15.5% while PPS systems had 15.1%.¹¹

Kaiser Family Foundation

The Kaiser Family Foundation (KFF) is a trusted, independent organization focused on providing information on national health issues. KFF routinely conducts analysis comparing healthcare policies and outcomes between states and internationally.

According to KFF, North Dakota has higher healthcare expenses than the national average. For 2020, North Dakota reported annual per capita expenses of \$11,301, which was higher than the national per capita average of \$10,191.¹² According to KFF, health spending per capita “includes spending for all privately and publicly funded personal health care services and products” and includes hospital spending, but does not include insurance program administration, research, or construction expenses.¹² North Dakota shows a robust spending growth of 5.3% annually from 2001 to 2020, outpacing Minnesota (4.1%), Montana (4.6%), South Dakota (4.8%), and the national average (4.5%).¹³

Table 13.2
Healthcare expenses.^{12, 13}

Location	Per Capita Expenses by State of Residence	Private Insurance Spending Growth
U.S.	\$10,191	4.5%
Minnesota	\$10,846	4.1%
Montana	\$10,212	4.6%
South Dakota	\$12,495	4.8%
North Dakota	\$11,301	5.3%

In 2022, North Dakota showed a high percentage of employer coverage health insurance at 56.6%, which is above the national average of 48.7%.¹⁴ In comparison, Minnesota reported 55.8% employer coverage, while Montana and South Dakota fell well below North Dakota at

43.4% and 51.8%, respectively. North Dakota also has a lower uninsured rate at 6.6%, compared to the national average of 8.0% and South Dakota's matching rate. Notably, North Dakota has a lower percentage of Medicaid (12.0%) and Medicare (14.8%) than other neighboring states.¹⁴

Table 13.3

Employer insurance coverage.¹⁴

Location	Employer	Medicaid	Medicare	Military	Uninsured
U.S.	48.7%	21.2%	14.6%	1.3%	8.0%
Minnesota	55.8%	18.3%	15.4%	0.8%	4.3%
Montana	43.4%	21.3%	17.6%	1.9%	8.1%
South Dakota	51.8%	13.4%	16.3%	3.0%	8.0%
North Dakota	56.6%	12.0%	14.8%	2.2%	6.6%

Data from 2022 show that North Dakota had a birth rate of 62.0 per 1,000 women ages 15-44 years old, which is above the national average of 56.0.¹⁵ Furthermore, North Dakota had a teen birth rate of 11.7 per 1,000 women ages 15-19 years old, lower than the U.S. rate of 13.6.¹⁶ In terms of infant deaths, North Dakota had a lower rate at 4.4 compared to South Dakota's 7.8 and national average 5.6.¹⁷ The infant death rate provided here is lower than reported in chapter 4 as the source data are different. Chapter 4 uses a data source that utilizes a 5-year trend, while the KFF source data quoted here is single-year data. Additionally, North Dakota's life expectancy at birth of 76.9 years is slightly higher than South Dakota's 76.7 but lower than Minnesota's 79.1.¹⁸ The national average life expectancy at birth is 77.0 years, which is higher than North Dakota's average. Overall, North Dakota demonstrates positive health metrics, particularly in birth and infant death rates, highlighting its relative strengths in maternal and child health compared to other states.

Table 13.4

Birth rates.^{15, 16, 17, 18}

Location	Birth Rate	Teen Birth Rate	Infant Deaths	Life Expectancy
U.S.	56.1	13.6	5.6	77.0
Minnesota	58.2	8.2	4.5	79.1
Montana	53.2	12.2	4.7	76.8
South Dakota	66.5	17.4	7.8	76.7
North Dakota	62.0	11.7	4.4	76.9

Hospital Cost Reporting

The Centers for Medicare and Medicaid Services collects data from healthcare facilities in the U.S. that receive Medicare payments. All hospitals that receive Medicare funding submit annual hospital cost reports. A public-use file providing a subset of the measures collected through these reports is provided as part of the Hospital Provider Cost Report dataset.¹⁹ The following summaries compare the PPS hospitals and CAHs in North Dakota for federal fiscal year 2022, which covers the time period of October 1, 2021, through September 30, 2022. The two areas of focus for the hospital provider cost report data analysis will be capacity and finance. The following summaries address the six PPS and 36 CAH hospitals not associated with Tribal ownership in North Dakota as these have the most complete data for analysis. The following data are presented at a CAH and PPS level. Chapter 11 outlined CAHs as rural hospitals that must meet the following specific federal guidelines: cap of 25 acute-care beds, an average length of stay of 96 hours or less, located at least 35 miles from another hospital, and reimbursement on an allowable-cost basis as opposed to a PPS, which is used by the tertiary hospitals.²⁰ These guidelines that distinguish CAH and PPS hospitals in such a way that they operate differently and the context of their respective operations must be taken into consideration before drawing conclusions.

Capacity

Capacity for the purpose of this section includes full-time equivalent (FTE) staffing, FTE for medical residents and interns, number of beds, number of bed days (beds x 365), number of occupied bed days, and number of discharges. When examining FTE, PPS hospitals had an average of 2,632 FTEs while CAHs had an average of 90.¹⁹ The range of FTE for PPS hospitals was between 922 and 5,766, while the range for CAHs was between 23 and 334. When examining medical resident and intern FTE, PPS hospitals had an average of 29 with a range of 4 to 90. Only one CAH reported medical resident or intern FTE which included an FTE of 3.

When examining the number of beds, PPS hospitals averaged 236 beds while CAHs averaged 22. The range for PPS hospitals was 142 to 493, while the range for CAHs was between 9 and 35. It should be noted here that under federal regulation, CAHs may only operate a maximum of 25 inpatient beds. The reporting mechanism here includes swing beds and other operating status beds, which explains the CAH maximum number of 35.

When examining the number of bed days, PPS hospitals averaged 59,419 while CAHs averaged 8,066. The range for PPS hospitals was between 18,700 and 94,170, while the range for CAHs was between 4,015 and 12,775. When examining occupied bed days, PPS hospitals averaged 3,837 while CAHs averaged 2,271. When examining hospital discharges, PPS hospitals averaged 5,637 while CAHs averaged 281. The range for PPS hospitals was between 1,169 and 9,368, while the range for CAHs was between 1 and 279.

Finance

Financial measures for the purpose of this section includes the cost of charity care, the cost of uncompensated care, total costs, and total charges. When examining the cost of charity care, PPS hospitals averaged \$3,093,855 while CAHs averaged \$496,840.¹⁹ The range for PPS hospitals was between \$1,733,812 and \$6,687,290, while the range for CAHs was between \$1,820 and \$6,885,558. When examining the cost of uncompensated care, PPS hospitals

averaged \$4,933,015 while CAHs averaged \$693,267. The range for PPS hospitals was between \$1,084,131 and \$9,061,847, while the range for CAHs was between \$12,072 and 6,987,142. When examining total costs, PPS hospitals averaged \$30,760,121 and CAHs averaged \$19,018,863. The range for PPS hospitals was between \$10,751,672 and \$45,702,237, while the range for CAHs was between \$5,836,606 and \$76,121,811. When examining total charges, PPS hospitals averaged \$371,311,926 and CAHs averaged \$28,527,047. The range for PPS hospitals was between \$100,941,581 and \$967,368,393, while the range for CAHs was between \$4,087,887 and \$166,738,873.¹⁹

The final financial metric examined here is the cost to charge ratio (CCR). The CCR is the hospitals' total expenses divided by their charges, which can be used to measure how much a hospital marks up its costs. The CCR value for any hospital should range from 0 to 1 with values closer to 1 indicating the hospital's charges and expenses are similar. CCR values closer to 0 indicate a higher markup than those closer to 1. CCR values greater than 1 indicate that the facility is billing less than the costs incurred to the facility. Of the 36 CAHs examined here, 8 had a CCR greater than 1, and another four were between 0.9 and 1. Of all 36 CAHs examined, one in three had a CCR above 0.9.²¹

SUMMARY

A key factor in improving and maintaining overall health status is the quality and safety of care delivered within a healthcare system. Factors such as access to care and health services, treatment advancement, availability of providers, and healthcare affordability contribute to the overall quality and value of healthcare. NAM proposes six principal aims to improve health within the current U.S. healthcare system. As demonstrated in this chapter, North Dakota continues to work towards improving the quality and value of healthcare within the state. According to the most recent AHRQ assessment, North Dakota was in the top ten states on all healthcare quality measures; however, there has been a recent decline in patient safety, care coordination, and healthy living. Areas demonstrating improvement over time include an increase in children with health insurance, a reduction of individuals under age 65 reporting high out of pocket medical costs, and a decrease in adults aged 18 and older who went without care due to cost in the past year. Conversely, some indicators have worsened, including an increase in children who did not receive needed mental healthcare, home health patients with a hospital admission, and increased employer-sponsored health insurance spending. Nationally, North Dakota scores worse for healthcare workers given the influenza vaccine, patients leaving emergency departments without being seen, and provider notes after visiting emergency departments. North Dakota exceeds the national average in employer-covered health insurance and has a lower uninsured rate than the national average.

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CHAPTER FOURTEEN:

HEALTHCARE WORKFORCE DEVELOPMENT

All seven prior editions of this *Report* have considered healthcare workforce issues in considerable detail. The 7th *Biennial Report* in 2023 reassessed the various options available to increase the in-state healthcare workforce: recruit from outside the state, increase the number of trainees, and retain more graduates for practice within North Dakota. It concluded that the best plan for the state's healthcare workforce development would be an approach that combined increasing both the number of graduates and the retention of practitioners. Those two concepts became two of the four important building blocks (along with reducing disease burden and improving the efficiency of our healthcare delivery system) of the Healthcare Workforce Initiative (HWI) that subsequently was proposed by the University of North Dakota (UND) School of Medicine and Health Sciences (SMHS) Advisory Council, endorsed by the North Dakota State Board of Higher Education, and approved and funded by the 62nd, 63rd, 64th, 65th, 66th, 67th, and 68th Legislative Assemblies. Almost all of the components of the HWI have been implemented by UND SMHS under the oversight of its Advisory Council. For example, medical and health sciences class sizes have been expanded to the desired and approved levels on schedule. However, the one outlier was that residency slot expansion (a residency is post-MD degree graduate medical training required of all physicians before they can get a full license to practice medicine) envisioned under the approved HWI plan had to be temporarily truncated owing to budget challenges during the 2019-21 biennium. The HWI funding for an approved new family medicine residency program based in Fargo was not possible at that time, but fortunately Sanford Health generously agreed to provide the required financial support so that this residency program is now up and running (under the umbrella of UND programs). Sanford Health similarly agreed to fund an orthopedic surgery residency program also based in Fargo. The temporary slowing of adding new residency slots now has ended, as evidenced by the newly approved residency program in pediatrics that began enrolling resident trainees in 2024. In addition, in 2023 the SMHS Advisory Council endorsed additional residency and fellowship programs to include a new child and adolescent psychiatry fellowship, an expansion of the existing rural surgery residency, an additional (new) residency in internal medicine located in Bismarck (currently there is one in Fargo), and a new cardiovascular disease fellowship located in Fargo that is expected to welcome its first fellows in 2026.

One important aspect of a long-term plan like the HWI that relies on educational programs to balance the supply of healthcare professionals with the need for their services is that it necessarily requires a relatively long lead time to achieve its goal. The long lead time is important since the training of additional physicians, for example, takes a minimum of seven years from the time a student enters medical school until that doctor is licensed and ready to see patients in the community.

Since the HWI plan utilizes a variety of approaches both to increase retention and expand class sizes, it might be useful to review the rationale for those approaches and to reevaluate why recruitment of healthcare professionals from outside the state is believed to be an inferior option.

RECRUIT FROM OUTSIDE NORTH DAKOTA

One approach to meeting workforce needs is to recruit physicians and other healthcare professionals from training programs or employed positions outside of North Dakota. Indeed, this approach has always played a role in filling the state's workforce complement, and it likely

will continue to play an ongoing (albeit more limited) role even as the impact of the HWI becomes more apparent over time. Even if the current healthcare workforce supply were adequate, however, there would be an ongoing need to replace a portion of current healthcare providers resulting from normal and expected turnover in the workforce. For physicians, the typical turnover rate is at least 5% per year due to retirement, death, relocation, or a change in job status. For North Dakota, this means that nearly 100 new physicians are needed annually – whether locally produced or recruited externally – just to *maintain* current physician workforce levels. Considering that many current physicians are at the age where retirement becomes more likely, there may be an increase in the workforce attrition as the current baby boomers retire.

Recruitment to replace those who have left the workforce may come from physicians located in other states or other countries. The recruitment of international medical graduates (IMGs) has been particularly important for filling a gap in rural primary care needs.¹ Currently, about one in four physicians practicing in North Dakota are IMGs, which is slightly more than the U.S. as a whole where a little over one in five physicians are IMGs. Some, but not all, analyses have suggested that proportionally more IMGs than U.S. medical graduates (USMGs) practice in underserved settings. Recent studies have indicated that graduates in general are trending away from practice in rural underserved areas. A state comparison of the percentages of generalist IMGs and USMGs shows that North Dakota has significantly fewer IMG physicians in metropolitan areas, significantly more IMGs in micropolitan areas, and more IMGs in rural areas.¹

IMGs have filled an important and essential role in providing primary care to North Dakota rural communities for many years. However, relying on an expectation that it will be possible in the future to recruit additional IMGs to meet future needs likely will be difficult for several reasons. First, there is no reason to assume that the national trend for IMGs will be dissimilar to USMGs, whose career choices typically do not gravitate toward primary care and especially rural primary care practice. On the other hand, physicians who graduate from the UND SMHS are much more likely to go into family medicine (96th percentile), primary care (94th percentile), or practice in a rural area (99th percentile) than graduates of all other United States medical schools.²

Second, rules regarding J-1 visa waivers are evolving and will have an effect on the availability of IMGs. IMGs often come from developing nations, and there is a continuing debate over the effect of retaining IMGs for service in the United States rather than encouraging service to their own countries of origin.¹ This raises the issue of whether it is proper and ethical to encourage a “brain drain” whereby the best and brightest physicians from developing countries come to the United States rather than remain “home” and help to provide for even more pressing medical needs in those nations.

It is important to note that when North Dakota communities recruit for professional talent from outside the state, they compete on the world market. Intense competition for scarce human resources often requires that healthcare facilities offer premium compensation to attract workers, which in turn raises costs to North Dakota patients. This is particularly true in rural communities, where the work is demanding and professionals have access to fewer support mechanisms than they could find in larger communities. Cost considerations aside, in order to meet additional future shortages through external recruitment, North Dakota would have to recruit more successfully against other competitors than it does at present.

There are additional factors that bear consideration. Anecdotal data suggest that the turnover rate of physicians recruited from out of state is about double that of locally produced physicians. Given the substantial expense of physician recruitment – the estimate for which varies by location – the need to recruit twice as often does add considerable financial pressure to the already constrained financial resources of hospitals operating on slim operating margins (especially the critical access hospitals in rural North Dakota). Additionally, it takes extra time for nonresident physicians to acculturate to the North Dakota experience, and the longer this process takes, the more likely there will be turnover of the position.

INCREASE THE NUMBER OF HEALTHCARE PROFESSIONALS TRAINED IN NORTH DAKOTA

An alternative strategy (one that is a benchmark of the HWI) is to grow our own physicians and other healthcare professionals by increasing the number of health professionals trained in the state. As noted above, this approach has a built-in time lag of a minimum of seven years for physicians to complete education and training, and a somewhat shorter time frame for other healthcare professionals.³ However, the educational process itself does not necessarily guarantee a specific number or type of physicians or healthcare professionals to meet the healthcare needs of rural North Dakota communities, since a trainee's choice of career pathway ultimately is a matter of personal choice that can be influenced but not dictated.

What are the Needs of North Dakota?

To understand the need, it is instructive to compare the current status of the healthcare workforce in North Dakota with the national situation. In North Dakota, the current number of active patient-care physicians is 1,655 or 217 per 100,000 population. This compares with the U.S. average of 248. The current number of active patient-care physicians in North Dakota in primary care is 618 or 81 per 100,000 population, which is slightly lower than the U.S. median of 85.⁴ While these data suggest that North Dakota is doing reasonably well compared with the rest of the country, the United States currently is experiencing an aging healthcare workforce with a geographic maldistribution that is not adequately meeting the current needs of many communities, especially rural. This is especially true for North Dakota. Rural communities have too small a population to support specialists, and they rely on primary care physicians and other providers to adequately and affordably meet healthcare needs. Nationally, one-third of all physicians are in primary care, while almost one-half of physicians in primary care (mostly family physicians) are in rural communities.⁴ Family physicians provide the broadest care to all segments of the population and are essential to addressing the healthcare needs of North Dakota's rural and remote communities. But rural communities have experienced a chronic shortage of primary care physicians for many decades.

The challenge for rural communities is to attract and retain healthcare professionals to areas where technology is less advanced, salaries may be less competitive, and geographic or other challenges exist for the clinician and/or their family. The current healthcare workforce is aging, and younger healthcare professionals typically seek more specialization and a better work-life balance. Healthcare delivery methods will continue to evolve in order to address the increasing demand for the management of chronic diseases; care of the aging with increasing dementia; and the need to address significant population health issues such as obesity, physical inactivity,

and cigarette smoking. These issues are interrelated insofar as successfully addressing population health issues likely will result in longer survival and thus a paradoxical *increase* in the number of people with chronic diseases requiring care. These complex and challenging realities require thoughtful strategies (such as the HWI) to ensure the right healthcare professionals with the right skills are available to keep our citizens and populations healthy.

National Recommendations for Increasing Health Professions Students

In June 2006, the Association of American Medical Colleges (AAMC) recommended a 30% increase in U.S. medical school enrollment and an expansion of graduate medical education (GME) positions to accommodate the growing demand for healthcare professionals.⁵ The AAMC periodically has updated its workforce predictions and recommendations. Its analysis in 2017 found that the recommended 30% increase in medical school slots had been achieved in the prior decade or so, and as a consequence the AAMC initially moderated its projection of future physician workforce shortages. Nevertheless, the most recent AAMC report in 2024 adjusted its projected shortfall to between 13,500 and 86,000 physicians nationwide by 2036, with primary care and surgery being the specialties with the greatest predicted shortages.⁶ Because GME (residency training) is a requirement for licensure in the United States, the AAMC and others have emphasized that simply increasing the number of graduating medical students without ensuring a commensurate growth in the number of residency training positions will not eventuate in more physicians; there will be a bottleneck at the residency level. However, the number of federally sponsored GME positions has been essentially frozen since 1997 by the Balanced Budget Act, and the growth of GME slots since then has been slow—less than half the rate of growth of medical student positions.

There had been considerable debate by experts regarding the AAMC recommendation for a 30% increase in the number of first-year medical school slots; in retrospect, the recommendation would appear to have been too conservative. An AAMC report on the complexities of projecting physician supply and demand from 2008 identified the following findings that supported the prediction of increasing demand:³

- Aging of the population will drive demand for healthcare services sharply upward.
- The growing U.S. population.
- Increased health coverage (including expanded insurance coverage as a consequence of the Affordable Care Act) that increased the demand for healthcare services.
- Increased clinical productivity (that is to say, more efficient healthcare delivery) is hard to accomplish because of the increasing complexity of care of current and future patients.
- Increasing the numbers and roles of physician assistants and nurse practitioners may help, but the full effect is difficult to predict.
- Effects of the healthcare workforce shortage will include longer wait times, increased travel distances, shorter visit times, expanded use of non-physicians, higher prices, and possible reduced access to the healthcare system.
- Shortages are expected to continue to be especially problematic in poor, rural, and urban communities.⁷
- A 30% increase in the number of matriculated medical students and a commensurate increase in GME positions (which seems unlikely for the foreseeable future) will only moderate but not eliminate the mismatch between the demand for and the supply of healthcare services.

These issues have been exacerbated by the negative impact of the pandemic on the general status of provider job satisfaction – there has been a noticeable increase in the sense of burnout and job dissatisfaction among providers, that may accelerate the selection of earlier retirement by an aging provider workforce.

North Dakota’s Production of Medical Students

The UND SMHS is the only medical school in North Dakota. The number of students enrolled in medical school in the years 2019-2021 was 301 or 39.5 per 100,000 population. This ranks nationally as 14th out of the 50 states.⁴ For the freshman medical student class of 2024, 84% of the seats were occupied by students from either North Dakota or Minnesota. North Dakota had 175 residents in training (up from 136 in 2016-17), which ranked 44th out of 50 states, but had 106 primary care residents, ranking 19th in the United States.⁴ Compared with the national benchmark, it is evident that the UND SMHS is doing an excellent job of educating North Dakota students in medicine. Compared with other states, North Dakota has more capacity for training residents and, with the state-supported expansion of residency training slots through the HWI, will be graduating more North Dakota-trained physicians in the coming years.

The UND SMHS consistently has ranked in the top five schools in the country for the percentage of students choosing a family medicine residency program; in the past several years, it has ranked No. 1. In a recent study of medical schools that looked at social mission based on producing primary care physicians, physicians who serve Health Professional Shortage Area (HPSA) communities and educating students from underrepresented minorities, the UND SMHS ranked in the top 20% of all U.S. schools.⁸ The UND SMHS has done very well in producing primary care physicians (94th percentile) and educating students from underrepresented minorities. The diversity of its students is primarily a result of its nationally recognized Indians Into Medicine (INMED) program that ranks first in the United States as to the percentage of students who are from federally recognized tribes.

One result of the general countrywide decline in medical student interest in primary care residencies has been the increased number of international medical school graduates (IMGs) in these residency programs.^{9, 10} In North Dakota, the number and percentage of residents who are IMGs is 74 (42.3%), which ranks 2nd out of 50 states. While IMGs are more likely to choose primary care and to practice in HPSAs, they are somewhat less likely to stay in practice in rural or underserved areas than U.S. graduates.^{4, 7} As IMGs become settled in the United States, they tend to move away from their initial practice site. One longitudinal comparison of U.S. medical graduates with IMGs showed that almost 90% of U.S. graduates were practicing in urban settings in the United States.⁹

Factors Affecting the Selection of Primary Care and Rural Practice

Rural communities in North Dakota will continue to need high-quality physicians and, in particular, primary care physicians and other healthcare professionals who can provide primary care. There are many personal and experiential factors that affect an individual’s decision to choose a specialty and to select a practice site. The two enduring factors that best predict a student’s residency (and eventual practice) choice have been found repeatedly to be the “fit” of the particular specialty with the interests of the student and the right work-life balance associated with that specialty choice.

A 2009 report¹¹ from the Robert Graham Center suggested that two things are clear regarding primary care: there is a problem with sufficient access to primary care physicians in rural and impoverished areas, and current practice configurations or organizations will have great difficulty absorbing all currently uninsured patients if universal access to healthcare insurance coverage were to be achieved. For these reasons and others, it is especially important to understand the factors that influence the decision of medical students and residents in their choice of where to practice, and we need to consider providing further opportunities for support and encouragement in this decision.

What can be done to help ensure the right number of the right physicians? Studies have shown that medical students' choices of primary care or specialty careers beyond the considerations of specialty "fit" and work-life balance are influenced by the following:¹¹⁻¹⁵

- Student-related factors such as gender, race and ethnicity, socioeconomic status, rural or urban background, and attitudes and values.
- Exposure to required family medicine curriculum during the third or fourth year of medical school.
- Income differences between specialties.
- Institutional factors such as state funding, Title VII Health Professions
- Student loan funding, and the strength of family medicine departments.

Each one of these items is important, but none are a direct or certain predictor of career choice. Awareness of personal factors helps identify the potential influences on choices and may help in addressing these factors through the recruitment and admissions process. Educational experiences throughout medical education and residency can be designed to assure quality experiences in primary care and at rural sites.

One systematic review of the literature has shown that medical students with experience in a rural setting are more likely to choose a career in primary care and are three times more likely to practice in a rural community compared to the national average.¹² The most successful outcomes for addressing the rural physician shortage have been the employment of comprehensive medical school rural programs.¹² There are six U.S. programs that met the criteria, developed by the authors, that included the primary purpose of increasing the supply of rural physicians. These criteria are having a defined cohort of students, having a focused admissions process, and having a specific rural curriculum or an extended full-time required rural clinical curriculum. These programs are similar to the UND SMHS Rural Opportunities in Medical Education (ROME) Program. All of these programs increased the supply of rural physicians with an average of 53% to 64% of their graduates in practice in rural communities. This compares with the national rate of 3% for recent medical school graduates planning on rural practice or the 9% of physicians currently practicing in rural communities.^{13, 14}

In 2000, a national survey reported predictors of generalist physicians' decisions to care for underserved populations (most rural areas are underserved), and identified four independent factors:¹⁴

- Identifying oneself as a member of an underserved ethnic or minority group.
- Growing up in a rural or inner-city area.
- Strong interest before medical school in practicing medicine in underserved areas.
- Participation in the National Health Service Corps.

Another survey confirmed the factors of coming from a rural background and being a member of an underrepresented minority, and also included the factor of older age.¹⁵ Note that all of these factors are identifiable at the time of admission to medical school, and thus could be incorporated into admission criteria. Recognizing this, the UND SMHS has an admission process that gives additional weight to rural origin, rural experience, and rural commitment as it considers student applicants to its medical school curriculum.

Why Does Primary Care Matter?

How important is it to have adequate numbers of primary care providers in our communities? Studies have shown that a greater supply of primary care physicians is associated with lower mortality from all causes, whereas a greater supply of specialty physicians is associated with higher mortality. States with higher ratios of primary care physicians to population had better health outcomes, including lower rates of death from heart disease, cancer, or stroke; infant mortality; low birth weight; and self-reported poor health. This was even after controlling for sociodemographic measures that can be related to poorer health (such as age, education, income, and unemployment) and lifestyle factors (seat belt use, obesity, and smoking). This relationship of improved health with increased primary care also is demonstrated in international studies. In addition to health benefits, there are reductions in healthcare system costs and reductions in disparities across population subgroups.

What is it about primary care that results in these improved health outcomes? Six mechanisms are thought to account for the beneficial effect of primary care on population health.^{16, 17}

- Greater access to needed services.
- Better quality of care.
- Greater focus on prevention.
- Early management of health problems.
- Cumulative effect of the main primary care delivery characteristics.
- Role of primary care in managing and avoiding unnecessary and potentially harmful care.

The United States ranks behind other developed countries in health and healthcare system performance, partly because of a long decline in the interest in and vitality of primary care. One report suggests that the nation should move toward having 50% of active patient-care clinicians (physicians, nurse practitioners, and physician assistants) in primary care practice.¹⁶ A comparison of health and healthcare systems in the United States and Canada demonstrates these differences. In the U.S., there are 50% more specialists than primary care physicians, compared with 10% more specialists than primary care physicians in Canada. Healthcare costs have been at least \$2,500 less per person per year in Canada than in the U.S. Canada ranks significantly higher in most measures of health outcomes than the U.S. and has fewer social disparities in healthcare and health outcomes. This has been attributed to specific healthcare system characteristics and the strong primary care infrastructure in Canada.¹⁸

Challenges to Addressing the Health Workforce Pathway and Need for the Health Professions

Seeking and encouraging applicants from rural communities to apply to healthcare professions schools is an important part of any plan to improve healthcare workforce needs,¹⁹ as has been done at the UND SMHS. Some rural educational systems are not able to provide the strong science and math background necessary for success in medical school, and this challenge may increase as a result of recent economic challenges. Additional potential challenges for rural students include coming from a lower educational and socioeconomic status, having fewer role models in healthcare, experiencing less encouragement for attaining advanced degrees, less technology familiarity, and the need to travel to obtain a medical education. It is important to note, however, that studies have shown no significant academic performance differences between students from rural or urban backgrounds.

Increasing the Numbers of Health Professions Students and Residents

Recognizing the healthcare workforce needs in North Dakota and the nation, the UND SMHS, through the HWI, has increased the number of its healthcare professions students by around 25%.

Ensuring an increase in the number of students interested in primary care and rural practice necessitated additional operational changes. These included continued support of the RuralMed Program, curricular changes in the early years to assure the development of competency in primary care, and additional rural community sites and rural physicians for clinical training. Geriatric, population health, and public health programs have been added at the UND SMHS and will be critical factors in this growth to support educating and attracting students interested in addressing the important healthcare needs of the state. These programs will enhance the experience of primary care for interested students and physicians while developing specific skills for the care of aging individuals and for addressing population health effectively.

The increased number of resident training slots in North Dakota have been designed specifically to attract the interest of our own medical school graduates and to assure an effective workforce for North Dakota. Adding more students to our primary care programs with an option for further training in geriatrics, public health, management of chronic disease or mental health, and disease prevention and health promotion is a priority.

INCREASING THE RETENTION OF HEALTHCARE PROFESSIONALS

Successful recruiting of students and residents into primary care and rural practice is one step in addressing the workforce needs of North Dakota. An equally important step is to improve the retention of healthcare professionals who graduate from a North Dakota program for rural practices and communities within the state.¹⁹

Factors Affecting Retention

The first, and necessary, step in addressing the healthcare needs of rural North Dakotans is to recruit and retain physicians and other healthcare professionals to practice primary care in rural communities. If trainees don't stay and practice in those communities, however, communities

will not be effectively meeting the needs of their populations. Factors that affect students' specialty selection also may affect retention:²⁰

- Start-up grants or practice development subsidies.
- Tax credits for rural or underserved area practices.
- Providing substitute physicians (locum tenens support).
- Malpractice immunity for providing voluntary or free care.
- Payment bonuses or other incentives by Medicaid or other insurance carriers.
- Subsidies for the installation of effective electronic health records.

Very few studies have been conducted regarding retention of physicians in communities beyond the study of the effects on physicians of mandatory service for the National Health Service Corps or other obligations. One recent study suggests that recruitment and retention are distinct processes. Generally, the factors that influence recruitment are not directly related to retention. Physicians have reported over time that staying in practice in a rural community is affected by local poverty, social and professional isolation, a lack of amenities, and the hardship of rural practice—long hours, frequent on-call shifts, and lower income than in more urban settings.²⁰

Approaches to Improving Retention

Using repeated surveys, a study by Pathman and colleagues²⁰ compared the retention of physicians in rural HPSA communities with rural non-HPSA communities and found no significant difference between the two. The conclusion of this study confirms other studies that found that the principal factor affecting rural physician shortages is that too few physicians are recruited there in the first place, and not that there are more problems retaining those physicians that were successfully recruited. There were two characteristics of the physicians who remained in rural practice longer—owning their practice and being on-call fewer than two times a week. Even though recruitment may be the primary factor, these issues affecting retention are more modifiable than many of the issues affecting recruitment. Suggestions to improve retention include the following:

- Promoting practice ownership through low-interest loans and start-up guarantees.
- Offering leadership opportunities.
- Providing a greater voice in clinic policies and work schedules.
- Reducing on-call frequency by coordinating cross-coverage.
- Providing telephone triage systems.
- Providing full-time physician staffing in local emergency rooms.

The Need to Study and Evaluate the Effectiveness of Programs

There continues to be a need to study and to better understand the factors or approaches that positively affect retaining quality physicians in a community. An international report that included an extensive review of the literature has shown that while most studies on retention are done on physicians, there is little information on financial incentives and there is a lack of coherence between the strategy to retain physicians and the factors that matter to healthcare workers in choosing and remaining in a location.²¹

Another international study addressed whether compulsory programs such as the National Health Service Corps are effective in retaining providers in rural or remote areas.²² The conclusion of the study was that no rigorous assessment has been done to compare the outcomes between workforce disparities in countries with compulsory service to those countries without compulsory service. Conclusions, in addition to further evaluation, are that for success in any compulsory program, good planning and transparency of the rationale and requirements are important. Also, successful retention depends on the support of the healthcare system and the benefits to the healthcare worker: pay, housing, continuing education, and clinical backup or supervision.

Continuing Professional Development

Communities can help retain good physicians and healthcare professionals by being aware of the challenges and needs for their continuing education and development. Two unique aspects of rural medical practice are the scope of practice and the distance from major urban centers with specialist services. Rural practice includes clinic, house calls, nursing home care, hospital admissions and care, emergency room care, obstetric care, general surgery, and anesthesia. Rural physicians perform a wider range of procedures than providers in more urban settings, play an important role in the initial management of trauma, and have to provide care unique to the location, such as wilderness or industrial areas, specific cultural groups, or agricultural medicine. The reality of rural practice attracts certain types of individuals interested in this breadth and variety. Continuing in this practice requires the confidence and skills that come from support and access to continuing professional development.²³ Learning new information or skills and spending time away with peers is essential to continuing a healthy and rewarding practice. One challenge is that rural physicians generally cannot leave their communities for continuing education or professional development. Medical schools can be helpful in retention of rural physicians by creating programs for education and training that provide content that is needed by rural physicians, methods that are accessible through outreach to the community or distance technology, or immersion retraining experiences. Communities can support their physicians by providing financial support for professional development, arranging for physician coverage, and arranging for interesting exchange opportunities between rural and urban physicians. The needs of rural physicians are unique and can only be met successfully if there is flexibility and variety to address different needs. An example of how the UND SMHS can help in this regard was its Rural Surgery Support Program, where the SMHS provided, on a temporary basis, a highly qualified general and trauma surgeon to local, typically rural, communities in need of surgery services for a limited time. The SMHS thus provided a local and internal locum tenens service to the communities of North Dakota.

Increased Retention of Graduates

It is known that medical students, especially those interested in primary care, have an increased likelihood of practicing in the vicinity of their residency training site(s). One approach to increasing the needed workforce locally is to attract students to and retain individuals from North Dakota's own residency programs. There are a variety of interventions that are likely to increase the retention of graduating physicians within the state. These include revising and refining the admissions process to select students most likely to remain within the state to practice and revising the curriculum to ensure optimal exposure to primary care experiences. It is important

to note that the SMHS provides robust longitudinal clinical experiences in rural communities through programs like the Minot Integrated Longitudinal Experience. Reducing debt burden through the RuralMed Program, where the four-year tuition costs of medical school are defrayed if the physician agrees to practice in a rural area of North Dakota for five years, addresses one issue that may affect the decision to practice rural primary care –that of extensive debt load from medical school tuition. Finally, the substantial number of volunteer clinical faculty role models are extremely important and influential in decision-making for our students and residents.

ROLE OF ADVANCED PRACTICE PROVIDERS

Increased deployment and utilization of non-physician providers, especially physician assistants and nurse practitioners, is an important component in addressing North Dakota's healthcare workforce needs now and in the future. The training and use of such providers in North Dakota is explored in more detail in Chapters 7 and 8 of this *Report*. Precisely what role such advanced practice providers (APPs) fill, however, remains unclear. The hope and expectation is that APPs would complement physician providers by providing needed basic clinical services to patients who are otherwise underserved; thus, APPs are especially important in the most rural communities, where their increased deployment would ameliorate some level of physician shortage. It is hoped that an APP might, in effect, be a substitute for a physician. And while APPs do provide such a service especially in rural areas of North Dakota, it is not clear what fraction of APPs function in this role. From a national perspective, many APPs are providing other non-primary care services to patients; many APPs, for example, work in subspecialty areas.²⁴ While these services may well be needed and important, they do not necessarily alleviate the problem of physician shortages in rural areas. Thus, although APPs are not the sole answer to the problem of healthcare provider shortages in rural regions of North Dakota, they are a component of the solution. To what extent they will be an even more effective positive force in the future remains to be seen.

SUMMARY

The decision to increase the number of healthcare professionals trained in North Dakota (i.e. “growing our own”) to meet the current and future healthcare needs of the population is a critically important component of the HWI. There is a need for all physicians, but a greater need in the specialties of primary care and surgery. There is a corresponding need for other healthcare professionals to complement the work of physicians, and the numbers needed will require ongoing assessment. Successfully meeting those needs will result in improved population health status, costs that are better controlled, and improved quality. While there is a significant time lag in “growing our own,” the selection of students from rural North Dakota communities with a commitment to rural practice will increase the likelihood of successful rural and primary care recruitment. The UND SMHS is striving to meet current and anticipated workforce needs by partnering with North Dakota Area Health Education Centers and others to address the resources and opportunities required to increase the number of North Dakota students interested in and prepared for a healthcare professions education. There are a wide variety of programs and activities in place across North Dakota to encourage students to pursue healthcare careers and even more are planned (see Chapter 12).

Research has shown that the principal factor in addressing a physician shortage challenge is successful recruitment.²⁰ To be successful in keeping a quality healthcare workforce, however, health leaders should consider the modifiable factors related to educational and work experience that will lead to better retention. Increasing the types and length of experience in rural communities during medical and other health career student education and training will help develop more confident, informed decision-making about choosing rural practice. The UND SMHS will continue to advocate for funding for scholarships or loan repayment for students who commit to rural practice (such as the RuralMed Program). It will work in partnership with rural health systems and physicians to encourage and support mentoring. The UND SMHS will continue to inform and advocate for issues related to reimbursement and practice support in partnership with healthcare systems and local and state government. This will help to ameliorate further the long-standing problem of adequate rural healthcare delivery.

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CHAPTER FIFTEEN:

CONCLUSION

Using updated employment and demographic datasets and incorporating the results of several recent comprehensive statewide cross-sectional healthcare workforce studies, this *Eighth Biennial Report: Health Issues for the State of North Dakota 2025* concludes with a similar takeaway message as the previous seven *Reports* did: continued implementation of the Healthcare Workforce Initiative (HWI) is having, and increasingly will have, a significant positive effect on helping to narrow the gap between the demand for and the supply of finite healthcare resources. Furthermore, absent full implementation of the HWI, North Dakota likely will face a major gap between the societal demands for healthcare and the capacity of the healthcare system to deliver care.

Chapter 2 provides a new overview of social drivers of health. This topic has been addressed in previous *Reports*; however, there is increased awareness and appreciation that social drivers are key factors in health outcomes in the state (and elsewhere) and focusing on them also serves to highlight areas that have disparities or need additional focus. Social drivers of health, while not a new topic, provide additional insight as to how North Dakota might best address healthcare for the entire population of the state and prioritize efforts to serve as many people as possible.

As Chapter 3 demonstrates, the general level of health in North Dakota is reasonably good, and for the general health measures of fair/poor health, diabetes, and asthma in North Dakota fares better than the rest of the country on average. Previous *Reports* noted that North Dakota's age-adjusted mortality rates have exceeded the national average. That trend narrowed and then reversed sharply with the trend for both North Dakota and the U.S. continuing to decline.

As with the seven previous *Biennial Reports* released between 2011 and 2023, rural depopulation, out-migration of the young from the state, an increasingly older adult population, low population density in some regions, and recent localized population growth in the major cities and in the Oil Patch are exacerbating the imbalance between a rising demand for healthcare and the available supply of providers. The imbalance between supply and need for healthcare resources is both quantitative (to a relatively minor degree) and distributional (to a major degree) in that while North Dakota is short of specific providers, the healthcare providers here are distributed disproportionately in the metropolitan areas in excess of what population demands would otherwise require. Some of the apparent maldistribution is entirely appropriate, since it is desirable to have specialists regionalized in more urban areas to maximize the efficient delivery of healthcare services.

However, since even family physicians – the bulwark providers of care in rural areas – are disproportionately found in metropolitan areas, it is clear that major challenges remain in recruiting and retaining needed providers in more remote areas of the state. Importantly, family physicians constitute the physician group whose geographic distribution is the most optimal compared with all other physician provider groups. A similar pattern of more providers relative to the population in urban (compared with rural) regions is found for non-physicians as well. Advanced-practice providers like physician assistants and nurse practitioners also are disproportionately distributed in the metropolitan areas of North Dakota, although physician assistants show the least maldistribution of any healthcare provider group. As Chapter 7 demonstrates, the expanded definition of primary care provider to include primary care physicians, nurse practitioners, and physician assistants illustrates a more accurate distribution of primary care providers to cover more of the state than just physicians alone. In addition to considering all disciplines that contribute to primary care, an additional solution is the use of telehealth. Through the use of telehealth approaches, the

practitioner can be brought to the patient – wherever the patient is located – rather than the other way around, as has been the traditional approach.

The *First Biennial Report* concluded that North Dakota had a paradox regarding its healthcare workforce, which it characterized as shortages in the midst of plenty. The size of the physician workforce in North Dakota in 2011 was found to be at or better than national norms for many specialties (although for the overall physician workforce North Dakota lagged the rest of the country on average), but with maldistribution of providers resulting in shortages especially in micropolitan and rural areas. As subsequent *Biennial Reports* emphasized and the current *Eighth Biennial Report* confirmed, North Dakota may have slipped in the size of its physician workforce relative to the population, and it continues to lag the rest of the United States in the number of physicians relative to population.

As the seven prior *Biennial Reports* noted, the current shortage of physicians is only going to increase as the population grows and ages in the future if there is not continued implementation of the HWI. And the shortage of workers in the healthcare field over the next 15 years will not be limited to physicians. An entire cadre of additional healthcare providers – from nurses to physician assistants to occupational and physical therapists to medical laboratory scientists and others – will be needed to ensure that effective, efficient, and appropriate healthcare is available to all North Dakotans, as envisioned in the HWI.

The population projection model used in the *Second Biennial Report* was predicated on an assumption of modest population growth based on the forward trend of historical patterns, and a major influence from the aging of our current population. The *Second Biennial Report* underweighted (relative to national projections) the effect of population growth, since it assumed (as others did at the time) that the stable-growth model would continue to apply in the future. As discussed in detail in Chapter 1 of the *Second Biennial Report*, the stable-growth model that the *Report* utilized predicted a population increase to only 796,000 people by 2040, which is a slower growth rate than the country as a whole (note that the population of North Dakota was estimated to be about 755,000 people in 2017, which would imply a growth rate of only 0.2% per year over the 25 years from 2015 to 2040). The workforce projections that were utilized in the initial *Report* were based on that stable (and slow) growth model. Any significant population growth in excess of the previously projected increase obviously would necessitate an even larger growth in the health workforce than previously anticipated.

Researchers were intentionally conservative in estimating physician needs in the *Second Biennial Report*. In retrospect, the previous *Report* likely was too conservative. It adapted and applied national workforce predictions to North Dakota, but intentionally adjusted the calculations downward so as to not overestimate healthcare workforce needs. The national workforce modeling calculations anticipate that future workforce needs are driven primarily by population growth (about two-thirds of the effect in the model) and less so by the aging of the population (about one-third of the effect). Since North Dakota has a disproportionately large older adult population (more than the national average), the *Report* over-weighted the effect of aging in its modeling of healthcare workforce needs for the state at the same time as it underweighted the effect of population growth. Thus, it used a model that applied national estimates to the North Dakota population and then reduced the predicted shortage by 50% to account for lower anticipated population growth. The *Second Biennial Report* estimated that the

physician shortage by 2025 would be 210 physicians – 50 short as of the 2011 baseline, and 160 more needed by 2025 – for a total shortage of at least 210 by 2025.

Utilizing updated census data and population growth modeling, the *Second Biennial Report* found that the shortage in 2013 likely had grown to between 100 and 200 physicians (not to mention other healthcare workers). Thus, using old estimates of future population growth, the revised estimate provided in the *Second Biennial Report* was that 260 to 360 more physicians will be needed by 2025 (i.e., 100 to 200 needed immediately plus 160 needed by 2025).

The *Third Biennial Report*, issued in the midst of an oil boom, concluded that 500 additional physicians likely was a conservative estimate of the number of additional physicians needed in North Dakota by 2025 if the population continued to grow as rapidly as it did at the peak of the boom. The number did not include the need for replacement of physicians who would retire, leave the state, or cease practicing medicine for other reasons. As discussed in Chapter 5 of this current *Report*, the age at which North Dakota's physicians retire will have a significant effect on future healthcare workforce size and the extent of the physician shortage. It is perhaps the most important factor impacting future physician supply, since more than 40% of the U.S. physician workforce is aged 55 years and older. Delaying or accelerating retirement age by only two years, for example, can have almost a 10% effect on the future workforce size. Taking these factors into consideration, it is likely that the prior estimate of roughly 500 additional physicians needed by 2025 still is correct, even factoring in slower ongoing population growth.

All seven prior *Reports* concluded with a strong endorsement of the HWI, the multifaceted plan to address the healthcare needs of North Dakota. The *Reports* emphasized necessary steps to: reduce disease burden, increase the healthcare workforce through enhanced retention of graduates as well as expansion of class sizes, and achieve a better-functioning healthcare delivery system through more cooperation and coordination. In view of the realization that the state's workforce needs likely are even larger than previously estimated, those recommendations are reinforced in this *Eighth Biennial Report* with added emphasis on the imperative to continue with full implementation of the Healthcare Workforce Initiative. It is important that the three major stakeholder groups involved in the HWI – the North Dakota Legislature that provides the funding; the UND SMHS that provides the training and programmatic support for the HWI; and the healthcare enterprise and local communities throughout the state that provide essential partnerships that are vital to the success of the HWI –continue to work together in the cohesive and effective manner they have in the past to ensure the continuing success of the HWI.

A second major conclusion of this *Eighth Biennial Report* is that further attention and planning (by the healthcare enterprise as a whole, the North Dakota Legislature, the UND School of Medicine and Health Sciences, and other stakeholders) are needed to address a variety of intertwined mental and behavioral health issues that are present throughout the state but are especially challenging in the more rural regions.

CHAPTER SIXTEEN:

**RECOMMENDATIONS: HEALTHCARE
PLANNING FOR NORTH DAKOTA**

The proactive approach taken by the last seven North Dakota Legislative Assemblies to address the current and especially the anticipated future healthcare workforce and healthcare delivery challenges facing the state already is having a positive effect that should grow as the Healthcare Workforce Initiative (HWI) becomes even more impactful over the next few years. Phase I of the HWI began in 2011 following the 62nd Legislative Assembly with an initial increase in medical and health science student class sizes, provisions for additional residency positions (post-MD degree clinical training required for state licensure), implementation of coordinated Master of Public Health degree programs at the state's two research universities (the University of North Dakota [UND] and North Dakota State University [NDSU]), and expansion of the RuralMed Program (which encourages physician graduates to set up their practices in rural areas of North Dakota in exchange for the waiving of their medical school tuition). Phase II of the HWI began in 2013, following the 63rd Legislative Assembly, and provided support for additional expansion of the class and residency cohort along with continued support for the multiple other provisions of the HWI. Implementation of the HWI was continued with support from the 64th through 68th Legislative Assemblies.

Implementation of the HWI also required the construction of a new facility for medical and health sciences education that would accommodate the increased class sizes and permit consolidation of previously scattered UND health sciences programs into one building, thus facilitating interprofessional education. Construction of the new facility was completed on time and on budget, and the move into the new building occurred during the spring and summer of 2016, just in time to welcome the medical student Class of 2020 as well as the health sciences students starting their classes later that fall.

The Healthcare Workforce Initiative is designed to help meet North Dakota's healthcare delivery issues by utilizing four foundational approaches:

- Reduce disease burden, thus lowering the demand for healthcare services and related costs.
- Retain more physician and other healthcare provider graduates for clinical practice within the state.
- Train more physicians and other healthcare providers locally by increasing the medical, health sciences, and resident class sizes.
- Improve the efficiency of the healthcare delivery system in North Dakota principally through the training of healthcare providers who are proficient in team-based, interprofessional healthcare delivery methods.

This combination of reducing demand and increasing supply of various healthcare resources, along with necessary improvements in the healthcare delivery system, should bring the healthcare demand and supply equation into significantly better balance in North Dakota over the next 10 to 15 years.

REDUCE DISEASE BURDEN

It is axiomatic to say that the best way to treat disease is to prevent it in the first place. Although simple in concept, disease prevention has proven to be much more difficult to achieve in practice. Nevertheless, the HWI incorporates several concrete steps to encourage and highlight

disease prevention and reduction. The HWI includes the following strategies to reduce chronic and acute disease, all of which have been implemented:

- A Department of Population Health at the UND School of Medicine and Health Sciences was initiated a decade ago under the leadership of Dr. Gary Schwartz, chair of the department. The department's focus is on developing programs that positively influence the health-related behaviors of North Dakotans.
- The Master of Public Health Programs at UND and NDSU continue to develop public health practitioners for the state and were critically important during the response to the COVID-19 pandemic and after.
- The UND School of Medicine and Health Sciences (SMHS) Department of Indigenous Health was established in 2021 and initiated the first-in-the-nation medical school-based Ph.D. track in Indigenous Health.
- A variety of additional residency training programs at the UND SMHS have been implemented beyond the initial five that were already in place, including neurology, orthopedic surgery, hematology-oncology, pediatrics, geriatrics – and soon, cardiology (program to start in 2026). The geriatrics program consists of a special advanced clinical training residency program in geriatric medicine for physicians who have recently completed a family medicine or internal medicine residency (i.e., a one-year residency in geriatrics following the completion of the standard three-year family medicine or internal medicine residency).

Health-Related Behaviors

Many serious health problems affecting North Dakotans (and all Americans) are caused, or at least made worse, by the personal choices they make about eating, smoking, physical inactivity, and other considerations.² In fact, these health-related behaviors account for nearly 40% of all deaths in the United States.² As an example, chronic diseases such as heart disease, type 2 diabetes, and cancer are among the most common and costly health problems. However, they are also among the most preventable because they share – as common contributing causes – undesirable health-related behaviors. One of the best ways to “cure” these widespread diseases is to improve health literacy and the choices people make that affect their health. The potential effect of prevention is substantial. The U.S. Centers for Disease Control and Prevention estimates that if tobacco use, poor diet, and physical inactivity were eliminated in the United States, up to 80% of heart disease and stroke, 80% of type 2 diabetes, and 40% of cancers could be prevented.³

In North Dakota, there is good evidence that health-related behaviors can be improved through public education and collaboration. Through the combined effort of many agencies and individuals, the percentage of North Dakota youth who currently smoke cigarettes decreased significantly from 21.1% in 2007 to 5.9% in 2021.⁴ Successful improvement of health-related behaviors can avoid not only an enormous toll of suffering and death from disease but also can be accomplished at far less expense than treating the resulting diseases.¹ Based on the foregoing factors, the new Department of Population Health and the Master of Public Health Programs and their respective faculty members at UND and NDSU are focusing on public education and other efforts to positively affect the health-related behaviors of North Dakotans.

Master of Public Health Programs

One of the most practical approaches to improving health education and other public health initiatives in the state is to prepare its health professionals to undertake these roles as they enter practice. Specifically, having individuals with graduate training in public health (Master of Public Health degree) can augment capacity and reduce disease burden. UND and NDSU have partnered to create two collaborative graduate-level programs in public health. Since the programs began accepting students in 2012, they have grown and matured. The first graduates of the programs are now beginning to have a positive effect on the health of the public.

RETAIN MORE GRADUATES

As outlined previously in this *Report*, there are a variety of interventions (many of which are accepted best practices based on national consensus) that the UND SMHS has implemented that are likely to increase the retention of graduating physicians for eventual clinical practice within the state. These include the following:

- A revised and refined medical school admission process designed to select students most likely to remain within the state to practice.
- A revised curriculum to ensure optimal exposure to primary care experiences and to provide increased longitudinal clinical experiences in rural communities, actions that are associated with an increased retention rate.
- Reduced debt burden through the RuralMed Scholarship Program, where the four-year tuition costs of medical school are defrayed if the physician agrees to practice in a rural area of North Dakota for five years. This effort has been augmented by a focused approach to garnering more philanthropic support for student scholarships.
- Partnerships with physicians and healthcare systems to optimize and enhance mentoring and affinity relationships.

TRAIN MORE PHYSICIANS AND HEALTHCARE PROVIDERS

Increasing retention efforts is a necessary but not sufficient approach to meeting the state's healthcare workforce shortage. Accordingly, an essential component of meeting the healthcare workforce needs of North Dakota is to expand class sizes or, to use the colloquial expression, "widen the pathway." In response to a charge from the Association of American Medical Colleges, total medical school class size across the United States has been increased by more than a third. The UND SMHS now has successfully increased medical class size by almost that same magnitude as a consequence of the HWI, and this should help ensure an adequate physician workforce in the future for North Dakota when coupled with the other efforts already underway and planned.

But simply increasing the medical student class size will be insufficient to meet the needs of North Dakota unless additional residency slots are available in the state for postgraduate training. The optimal retention of physicians occurs when the students go to school and enter residency within the same state; in those cases, about 2 out of 3 students remain in-state. Simply increasing class size will result in only about 1 out of 3 physicians remaining in-state for ultimate practice. Accordingly, the HWI as originally proposed incorporates a total of 17 new residency slots per year

(total of 51 slots overall), but this number has been augmented over the years, partly as a consequence of additional financial support provided by a major regional healthcare provider organization.

Available slots have been committed to the following residencies or fellowships: family medicine, geriatrics, hospitalist, psychiatry, orthopedic surgery, neurology, hematology-oncology, pediatrics, cardiology, and general surgery. Many of these offer training specific to rural practice.

The healthcare workforce shortage is not limited to physicians, however. Accordingly, the HWI also has allowed an expansion of 30 students per year (total of 90, or an increase of about 15%) for health sciences students trained by the UND SMHS.

IMPROVE THE EFFICIENCY OF THE HEALTHCARE DELIVERY SYSTEM

There are numerous health system initiatives already underway locally, regionally, and nationally — and many others proposed — that strive to improve the efficiency of our healthcare delivery system, with a goal of providing better care at lower cost in a more patient-friendly manner. Additionally, especially given the unique and difficult challenges of depopulation and low population density in rural North Dakota, alternative healthcare delivery models, including enhanced use of non-physician providers, telemedicine and other virtual care delivery methods, home care, and medical homes, need to be explored and expanded.

One of the prime ways in which the UND SMHS intends to improve the efficiency and effectiveness of the state's healthcare delivery system is by better training a wide spectrum of healthcare students in optimal methods of interprofessional healthcare delivery. But working together in effective interprofessional teams doesn't just happen; team members need to learn about each other's discipline and practice working together. So before we can expect to have effective healthcare teams taking care of actual patients, we need to properly train students in an interprofessional environment. The UND SMHS curriculum (along with the specially designed space in the new facility) has been redesigned to encourage and permit broadened interprofessional education. In support of interprofessional education, the new building has eight learning communities that provide the physical spaces where students from a variety of professions learn together.

RECOMMENDATIONS FOR MEETING NORTH DAKOTA'S HEALTHCARE WORKFORCE NEEDS

Ongoing (and full) funding for the HWI by the 69th Legislative Assembly and other subsequent assemblies to follow is absolutely essential. North Dakota is one of the few states in the nation that has taken a forward-looking and proactive approach to healthcare needs through the HWI, and it is poised to reap the benefits of this approach in the next decade and beyond. Results so far have been quite positive; young physicians who are recent graduates of the UND SMHS, its residency programs, or both who are or will be moving to Hettinger, Devils Lake, and Williston, among other communities that have labored for years heretofore to attract physicians. In addition to continuing to endorse and support the full implementation of the HWI, a variety of other approaches that policymakers might consider during the 69th Legislative Assembly include:

- North Dakota state income tax credit for healthcare practitioners who volunteer to teach healthcare students.
- Creation of a RuralMed-like (or other financial incentive) program to encourage rural practice for other needed non-physician providers (e.g., addiction counselors, medical laboratory technicians, and nursing assistants).
- Support for expanded mental and behavioral healthcare.

STATE HEALTH IMPROVEMENT PLAN

In 2020 the state of North Dakota's Health Strategies Planning Group developed the state's Strategic Plan for Health. This was addressed in the *Seventh Biennial Report* and served as the initial blueprint for making North Dakota the healthiest state in the nation. Since that time, the North Dakota Public Health Division engaged in a reaccreditation process. As part of that process, a five-year plan was developed to outline a framework to provide guidance on state-level goals for health improvement. This plan is known as the State Health Improvement Plan and outlines four priorities for 2024 through 2029. Those priorities are strengthening workforce, expanding access and connection, cultivating wellness, and building community resilience.⁵

Strengthening Workforce

The focus of the strengthening workforce priority is to implement effective recruitment, retention, and training strategies so statewide stakeholders can ensure a strong and stable workforce ready to meet the needs of North Dakotans.

Expanding Access & Connection

The first focus of the expanding access and connection priority is to enhance well-being by expanding access to essential healthcare services, such as primary care, cardiac care, oral health care, cancer screening, and chronic disease management and prevention. The second focus is to support strategies to actively connect individuals to referrals for services and programs that support their holistic well-being, ensuring that everyone has the opportunity to receive the care and support they need.

Cultivating Wellness

The focus of cultivating wellness is to advance the collective commitment to improving the health outcomes of all communities in the state by investing in developing strategies to: 1) strengthen childhood opportunities and reduce adverse childhood experiences, 2) decrease occupational injuries, and 3) curb tobacco and e-cigarette usage, and 4) enhance the length and quality of life of tribal populations and older adults.

Building Community Resilience

The focus areas of building community resilience are to build capacity and enhance readiness for infectious disease response, emergency preparedness and response, and strengthen overall community resilience, while being responsive to the challenges of rural communities.

SUMMARY

The HWI has provided the state of North Dakota with a blueprint for disease prevention, healthcare workforce development, and healthcare delivery system optimization that is having a significant positive effect on the healthcare delivery challenges faced by the state. The HWI is only part of the solution, but it is a crucial element since it primarily addresses the educational foundation upon which the entire healthcare delivery system is based. Coupled with synergistic approaches by insurers, healthcare delivery institutions, other educational organizations, and policymakers, it will form part of the foundation of a revised and improved healthcare delivery system in the state.

Deliverables

Continued full implementation of the HWI, the State Health Improvement Plan, and the other healthcare educational programs of the UND SMHS will help achieve a variety of goals that should be considered the deliverables to be received in exchange for funding of the HWI. The most important deliverable will be an adequate supply and distribution throughout North Dakota of caring, team-oriented primary and subspecialty-care practitioners schooled in interprofessional care. About half of the needed practitioners will result from a variety of increased retention efforts, and the other half will come from the expansion of class sizes and additional residency slots. Inherent in the plan is the anticipation that it will address the twin challenges of provider availability in North Dakota—an adequate supply of providers, as well as an appropriate distribution of those providers throughout all three population areas of the state (metropolitan, micropolitan (large rural), and rural).

In addition to the obvious and necessary improvement in healthcare delivery throughout North Dakota, the increased number of healthcare providers will have a direct positive effect on the economic environment in the state as a result both of their increased employment and the “halo” effect that has been reported to generate \$1 million or more annually as a consequence of each additional physician practitioner employed.

The UND SMHS anticipates that it will continue to generate about \$1.50 of additional revenue for every \$1 (including the mill levy) appropriated by the Legislative Assembly. The additional revenue currently is composed of \$0.40 as a result of tuition, \$0.48 in grants and contracts (most often federal funds), \$0.60 in ancillary income such as from physician practice plans and contributions from local healthcare delivery institutions to fund certain residency training costs, and \$0.03 from philanthropy. Currently, the UND SMHS generates over \$150 million biennially in additional revenue to that provided by the State of North Dakota.

Given the track record to date of the HWI and the predicted long-term positive impact on healthcare delivery in the state, it is essential that the UND School of Medicine and Health Sciences receives ongoing and continued support and funding from the North Dakota Legislature. For the 69th Legislative Assembly, the highest imperative is to continue full and stable funding of the HWI as well as for the UND SMHS as a whole.

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APPENDIX A

ABBREVIATIONS AND ACRONYMS

3RNet:	National Rural Recruitment and Retention Network
AAMC:	Association of American Medical College
ACA:	Affordable Care Act
ACOTE:	Accreditation Council for Occupational Therapy Education
ACS:	American Community Survey
AHEC:	Area Health Education Center
AHRQ:	Agency for Healthcare Research and Quality
ALS:	Advanced Life Support
APA:	American Psychological Association
APRN:	Advanced Practice Registered Nurse
ATSDR:	Agency for Toxic Substances and Disease Registry
BACB:	Behavior Analyst Certification Board
BCI:	Bureau of Criminal Investigation
BLS:	Basic Life Support
BLS:	Bureau of Labor Statistics
BRFSS:	Behavioral Risk Factor Surveillance System
BSN:	Bachelor of Science in Nursing
CACREP:	Council for Accreditation of Counseling and Related Educational Programs
CAH:	Critical Access Hospital
CAPTE:	Commission on Accreditation in Physical Therapy Education
CBC:	Community Birthing Center
CBOC:	Community-Based Outpatient Clinic
CCBHC:	Community Based Behavioral Health Clinics
CCNE:	Commission on Collegiate Nursing Education
CCR:	Cost to Charge Ratio
CDC:	Center for Disease Control and Prevention
CHI:	Catholic Health Initiatives
CLAS:	Culturally and Linguistically Appropriate Services
CMS:	Centers for Medicare and Medicaid Services
CAN:	Certified Nursing Assistants

CNM:	Certified Nurse Midwife
CNPD:	College of Nursing and Professional Disciplines
CNS:	Clinical Nurse Specialist
CoBRE:	Center for Biomedical Research Excellence
COMAFTE:	Commission on Accreditation for Marriage and Family Therapy Education
COPD:	Chronic Obstructive Pulmonary Disease
COVID-19:	Coronavirus Disease 2019
CPA:	Canadian Psychological Association
CPR:	Cardiopulmonary Resuscitation
CRH:	Center for Rural Health
CRNA:	Certified Registered Nurse Anesthetist
CSWE:	Council on Social Work Education
DHHS:	Department of Health and Human Services
DNP:	Doctor of Nursing Practice
DO:	Doctor of Osteopathy
DOCR:	Department of Corrections and Rehabilitation
DPT:	Doctor of Physical Therapy
EMS:	Emergency Medical Services
EMT:	Emergency Medical Technician
EMR:	Emergency Medical Responders
EPA:	Environmental Protection Agency
FCC:	Federal Communications Commission
FMAP:	Federal Medical Assistance Percentage
FMLA:	Family and Medical Leave Act
FPL:	Federal Poverty Level
FQHC:	Federally Qualified Health Centers
GDP:	Gross Domestic Product
GED:	General Educational Development
GFGSC:	Grand Forks Growth and Support Center
GFHA:	Grand Forks Housing Authority
GPFB:	Great Plains Food Bank
GRASP:	Geospatial Research, Analysis, and Services Program

HCAHPS:	Hospital Consumer Assessment of Healthcare Providers and Systems
HIPAA:	Health Insurance Portability and Accountability Act
HPSA:	Health Professional Shortage Area
HRSA:	Health Resources and Services Administration
HSC:	Human Service Center
HUD:	Department of Housing and Urban Development
HWI:	Health Workforce Initiative
IHS:	Indian Health Service
IMG:	International Medical Graduate
INMED:	Indians into Medicine
IOM:	Institute of Medicine
ITRRC:	Indigenous Trauma and Resilience Research Center
KFF:	Kaiser Family Foundation
LABA:	Licensed Assistant Behavior Analyst
LAC:	Licensed Addiction Counselor
LAMFT:	Licensed Associate Marriage and Family Therapist
LAPC:	Licensed Associate Professional Counselor
LBA:	Licensed Behavior Analyst
LBSW:	Licensed Baccalaureate Social Worker
LCME:	Liaison Committee on Medical Education
LCSW:	Licensed Certified Social Worker
LMFT:	Licensed Marriage and Family Therapists
LMSW:	Licensed Master Social Worker
LPC:	Licensed Professional Counselor
LPCC:	Licensed Professional Clinical Counselor
LPHU:	Local Public Health Unit
LPN:	Licensed Practical Nurse
LSTC:	Life skills and Transition Center
LTC:	Long Term Care
MCHEP:	Maternal and Child Health Epidemiology Program
MD:	Doctor of Medicine/Medical Doctor
MLS:	Medical Laboratory Sciences

MMRC:	Maternal Mortality Review Committee
MN:	Minnesota
MPH:	Master of Public Health
MSU:	Mayville State University
NAM:	National Academy of Medicine
NASAC:	National Addiction Studies Accreditation Commission
NBCOT:	National Board for Certification in Occupational Therapy
NCLEX-PN:	National Council Licensure Examination for Practical Nursing
NCLEX-RN:	National Council Licensure Examination for Registered Nursing
ND:	North Dakota
NDBON:	North Dakota Board of Nursing
NDCC:	North Dakota Century Code
NDOTA:	North Dakota Occupational Therapy Association
NDSACCHO:	North Dakota State Association of City and County Health Officials
NDSU:	North Dakota State University
NPHPS:	National Public Health Performance Standards
NHSC:	National Health Services Corps
NIH:	National Institutes of Health
NQS:	National Quality Strategy
NSDUH:	National Survey on Drug Use and Health
NSSP:	National Sample Survey of Physicians
OASH:	Office of Disease Prevention and Health Promotion
OECD:	Organization of Economic Cooperation and Development
OEHEM:	Office of Environmental Health Emergency Management
OMB:	Office of Management and Budget
OT:	Occupational Therapist
OTA:	Occupational Therapist Assistant
OTD:	Doctor of Occupational Therapy
PhD:	Doctor of Philosophy
PMHNP:	Psychiatric Mental Health Nurse Practitioner
PPS:	Prospective Payment System
PQC:	Perinatal Quality Collaborative

PRAMS:	Pregnancy Risk Assessment Monitoring System
QRU:	Quick Response Unit
RBT:	Registered Behavior Technician
RHC:	Rural Health Clinic
RN:	Registered Nurse
RUCA:	Rural-Urban Commuting Area
SAHIE:	Small Area Health Insurance Estimates
SAIL:	Social and Academic Intervention Learning
SAMHSA:	Substance Abuse and Mental Health Services Administration
SD:	South Dakota
SDOH:	Social Determinants of Health
SIM-ND:	Simulation in Motion-North Dakota
SMHS:	School of Medicine and Health Sciences
SNAP:	Supplemental Nutrition Assistance Program
STI:	Sexually Transmitted Infections
SUID:	Sudden Unexpected Infant Death
SVI:	Social Vulnerability Index
TAB:	Tribal Advisory Board
TRC:	Tompkins Rehabilitation Center
UCR:	Uniform Crime Reporting
UND:	University of North Dakota
URM:	Underrepresented Minority
US:	United States
USDA:	United States Department of Agriculture
USMG:	U.S. Medical Graduate
VA:	Veterans Affairs
WHO:	World Health Organization
WIC:	Women, Infants and Children program

APPENDIX B

DEFINITION OF TERMS

Numeric

- 340B Drug Discount Program: U.S. federal government program created in 1992 that requires drug manufactures participating in Medicaid to provide outpatient drugs to covered entities at significantly reduced prices.
- 3RNET: an organization focused on connecting healthcare professionals with jobs specifically in rural and underserved areas in the U.S. This network has a nonprofit member organization in each state. Also known as the National Rural Recruitment and Retention Network.

A

- Accountable Care Organization (ACO): a group of hospitals, doctors, and other healthcare providers, who come together voluntarily to give coordinated high-quality care to their Medicare patients. Their goal is to ensure that patients get the right care at the right time, while avoiding unnecessary duplication of service and preventing medical errors.
- Accreditation (accredited): the action or process of officially recognizing someone as having a particular status or being qualified to perform a particular duty.
- Accreditation Council for Continuing Medical Education: sets and enforces standards in physician continuing education within the U.S. It acts as the overseeing body for institutions and organizations providing continuing medical education activities.
- Accreditation Council for Graduate Medical Education (ACGME): an independent, not-for-profit, physician-led organization that sets and monitors the professional educational standards essential in preparing physicians to deliver safe, high-quality medical care to all Americans.
- Accreditation Council for Occupational Therapy Education (ACOTE): Accrediting agency for occupational therapy education in over 600 occupational therapy and occupational therapist assistant educational programs.
- Accreditation Review Commission on Education for the Physician Assistant (ARC-PA): accrediting agency that protects the interests of the public and physician assistant profession by defining the standards for PA education and evaluating PA educational programs.
- Acquired Immune Deficiency Syndrome: a disease in which there is a severe loss of the body's cellular immunity, greatly lowering the resistance to infection and malignancy.
- Acuity: the measurement of the intensity of nursing care required by a patient.
- Acute Care: providing or concerned with short-term, usually immediate medical care (as for serious illness or a traumatic injury).
- Acute Myocardial Infarction: a heart attack, when the heart is deprived of circulating blood due to blocked arteries.
- Addiction Counselor: a mental health professional who specializes in helping patients with addictions.

- **Adult-Geriatric Primary Care Nurse Practitioner:** an advanced practice nurse who has the education and training to assess and manage adult health and common acute and chronic illness. They emphasize prevention and wellness through patient education.
- **Advanced life support:** emergency medical care for sustaining life, including defibrillation, airway management, and drugs and medications.
- **Advanced Practice Providers:** medical providers (physician assistants or nurse practitioners) who are trained and educated similarly to physicians. They work in all areas of the hospital and clinic, and patients can be treated by them in the emergency room, operating room, or during routine visits.
- **Advanced Practiced Registered Nurse:** a nurse with a graduate-level degree such as a Master's of Science in Nursing or a Doctor of Nursing Practice, and has been specially trained in one of the four recognized APRN roles.
- **Advocacy:** public support for or recommendation of a particular cause or policy.
- **Affordable Care Act:** landmark health reform legislation passed by 111th Congress and signed into law by President Obama in 2010 that aimed to expand coverage, lower healthcare costs, hold insurance companies accountable, guarantee more choice, and enhance the quality of care for all Americans.
- **Agency for Healthcare Research and Quality:** one of twelve agencies within the Department of Health and Human Services that invests in research and evidence to make health care safer and improve quality.
- **Aggregate:** a whole formed by combining several elements.
- **Agrarian:** relating to cultivated land or the cultivation of land; any community whose economy is based on producing and maintaining crops and farmland.
- **Alleviate:** make less severe.
- **Allopathic:** refers to the treatment of disease by conventional means such as using drugs that have the opposite effects compared to the symptoms.
- **Alzheimer's Disease:** a progressive disease that destroys memory and other important mental functions.
- **Amalgamate (amalgamation):** combine or unite to form one organization or structure.
- **Ambulatory care:** the medical care provided in an outpatient basis, including diagnosis, observation, consultation, treatment, intervention, and rehabilitation services. Also known as outpatient care.
- **Ameliorate:** to make, something bad or unsatisfactory, better.
- **American Association of Nurse Practitioners:** a national professional membership organization with a mission to empower all nurse practitioners to advance quality health care through practice, education, advocacy, research, and leadership.
- **American Community Survey:** an annual demographics survey program conducted by the United States Census Bureau. It regularly gathers information previously contained only in the long form of the decennial census, including ancestry, US citizenship status, educational attainment, income, language proficiency, migration, disability, employment, and housing characteristics.
- **American Dental Association:** the largest dental association in the U.S. that is the leading source of oral health related information for dentists and their patients.

- American Medical Association: an organization that helps physicians help patients by uniting physicians nationwide and medical students to work on the most important professional and public health issues.
- American Psychological Association: the leading scientific and professional organization that represents psychology in the United States that includes researchers, educators, clinicians, consultants, and student members.
- American Recovery and Reinvestment Act: a bill signed into law by President Obama that was designed to give the economy a boost by reducing federal taxes, increasing unemployment benefits, and also increasing spending in certain areas
- Amid: surrounded by or in the middle of.
- Ancillary: providing necessary support to the primary activities or operations of an organization, institution, industry, or system.
- Anecdotal: not necessarily true or reliable, because based on personal accounts rather than facts or research.
- Anesthesiologist: a physician specializing in anesthesiology.
- Anesthesiology: the branch of medicine concerned with anesthesia and anesthetics.
- Anxiety: a nervous disorder characterized by a state of excessive uneasiness and apprehension, typically with compulsive behavior or panic attacks.
- Arthritis: painful inflammation and stiffness of the joints.
- Area Health Education Center: a federally funded program established in the United States in 1972 to improve the supply, distribution, retention and quality of primary care and other health practitioners in medically underserved areas.
- Associate Degree: an undergraduate academic degree awarded by community colleges, junior colleges, technical colleges, and some bachelor-granting colleges and universities upon completion of a course of study lasting two years on average.
- Association of American Medical Colleges: a not-for-profit association dedicated to transforming health care through innovative medical education, cutting-edge patient care, and groundbreaking medical research.
- Asthma: a respiratory condition marked by spasms in the bronchi of the lungs, causing difficulty in breathing. It usually results from an allergic reaction or other forms of hypersensitivity.
- Autism: a developmental disorder of variable severity that is characterized by difficulty in social interaction and communication and by restricted or repetitive patterns of thought and behavior.
- Automated External Defibrillator: a portable electronic device that automatically diagnoses life-threatening cardiac arrhythmias of ventricular fibrillation and pulseless ventricular tachycardia, and is able to treat them through defibrillation, the application of electricity which stops the arrhythmia.
- Axiomatic: self-evident or unquestionable.

B

- Bachelor's Degree: an undergraduate academic four-year degree awarded by colleges and universities upon completion of a course of study. Also called a Baccalaureate degree.

- **Balanced Budget Act of 1997:** an omnibus legislative package that was designed to balance the federal budget by 2002.
- **Basic-Care Facility:** a congregate residential setting with private rooms and semi-private rooms, providing 24-hour supervision with a comprehensive care plan.
- **Basic Life Support:** the level of medical care which is used for patients with life-threatening illnesses or injuries until the patient can be given full medical care at a hospital.
- **Behavior Analyst:** a professional who uses experimental and applied analysis of behavior, and use statistics, to develop techniques and treatments that facilitate the evaluation and modification of maladaptive behavior.
- **Behavior Analyst Assistant:** a professional who works closely under the supervision of an applied behavior analyst and assists in completing assessments, developing ABA therapy, collect and analyze data to make intervention changes as needed.
- **Behavioral Health:** the scientific study of the emotions, behaviors, and biology relating to a person's mental and physical well-being, their ability to function in everyday life, and their concept of self.
- **Behavioral Health Risk Factor Surveillance System:** a health survey system that collects data on health-related risk behaviors, chronic health conditions, and preventative services.
- **Benchmark for Excellence in Patient Safety:** a program within the Health Care SafetyZone Portal where critical access hospitals can elect to participate in benchmarking and data sharing with all critical access hospitals in the nation that use the event-reporting system.
- **Beneficiary:** a person or entity who receives money or other benefits
- **Biennium (Biennial):** a specified period of 2 years.
- **Birth Center:** a place for childbirth where care is provided in the midwifery and wellness model.
- **Blue Cross Blue Shield of North Dakota:** an independent licensee of the Blue Cross and Blue Shield Association, serving residents and businesses with insurance needs in North Dakota.
- **Board of Occupational Therapy Practice:** board that licenses occupational therapists and occupational therapy assistants, monitors professional conduct and regulate the profession to ensure the highest quality of occupational therapy services for the residents of the state.
- **Bulwark:** a person, institution, or principle that acts as a defense
- **Bundled Payment Model:** a model in which providers and/or healthcare facilities are paid a single payment for all the services performed to treat a patient undergoing a specific episode of care.
- **Bundled Payments for Care Improvement Initiative:** comprised of four broadly defined models of care, which link payments for the multiple services beneficiaries receive during an episode of care. Organizations enter into payment arrangements that include financial and performance accountability for episodes of care.
- **Bureau of Labor Statistics:** government agency that measures labor market activity, working conditions, price changes, and productivity in the U.S. economy to support public and private decision-making.
- **Bush Foundation:** a philanthropic foundation that invests in individuals and organizations in Minnesota, North Dakota, South Dakota, and the 23 Native Nations that share the same geographic area.

C

- Cadre: a small group of people specially trained for a particular purpose or profession.
- Canadian Psychological Association: the national association for science, practice, and education of psychology in Canada.
- Cancer: a disease caused by an uncontrolled division of abnormal cells in a part of the body causing malignant tumor(s) to grow.
- Cardiac Arrest: a sudden, sometimes temporary, cessation of function of the heart.
- Cardiac Arrhythmia: abnormal variation from the normal heartbeat. The abnormal rhythm can be too slow, too fast, too irregular, or too early.
- Cardiac Ready Community: a community that has public access to AED's, CPR instruction, blood pressure screenings, and transport plans for first responders, EMS, and the local hospital.
- Cardiology: the branch of medicine that deals with the diseases and abnormalities of the heart.
- Cardiopulmonary Resuscitation (CPR): a medical procedure involving repeated compression of a patient's chest, performed in an attempt to restore the blood circulation and breathing of a person who has suffered cardiac arrest.
- Cardiovascular Disease: a general name for a wide variety of diseases, disorders, and conditions that affect the heart and blood vessel.
- Care Coordination: the process of deliberately organizing patient care activities and sharing information among all of the participants concerned with a patient's care to achieve safer and more effective care
- Cartilage: firm, whitish, flexible connective tissue found in various forms in the larynx and respiratory tract, in structures such as the external ear, and in the articulating surfaces of joints.
- Case Aide: a professional who performs community contact work on simpler aspects of programs or cases and assists in providing services to clients and family members, under close supervision of caseworker.
- Catholic Health Initiatives: a national, nonprofit, faith-based health system in the U.S.
- Census: an official count or survey of a population, typically recording various details of individuals.
- Centers for Disease Control and Prevention: U.S. health protection agency that is a subdivision of the Department of Health and Human services.
- Centers for Medicare and Medicaid Services: part of the U.S. Department of Health and Human Services that oversees many federal healthcare programs, including those that involve health information technology.
- Center for Rural Health: a federally designated State Office of Rural Health for North Dakota that connects resources and knowledge to strengthen the health of people in rural and tribal communities.
- Certified Application Counselor: an individual that is trained to help people with their insurance options through the Marketplace at no cost to the consumer.
- Certified Nurse Midwife: a registered nurse who graduated from a nurse midwifery education program accredited by the Accreditation Commission for Midwifery Education and have passed a national certification examination to receive the professional designation.

- Certified Nursing Assistant: an individual who helps patients or clients with healthcare needs under the supervision of a registered nurse or licensed practical nurse.
- Certified Registered Nurse Anesthetist: an advanced practice registered nurse who administers anesthesia and other medications. They also monitor patients who are receiving and later recovering from anesthesia.
- Chaplain: a member of the clergy attached to a private chapel, institution, ship, branch of the armed forces, etc.
- Chief Executive Officer: an individual who has the most authority in an organization or business.
- Children's Health Insurance Program: a partnership between the federal and state governments that provides low-cost health coverage to children in families that earn too much money to qualify for Medicaid. In some states it can also cover pregnant women.
- Cholesterol: a compound of the sterol type found in most body tissue. It is an important constituent of cell membranes and precursor of other steroid compounds, but a high proportion in the blood of low-density lipoprotein (which transports cholesterol to the tissue) is associated with an increased risk of coronary heart disease.
- Chronic Disease: a persistent or recurring disease usually affecting a person for three months or longer.
- Chronic Liver Disease: a progressive decline in liver function that lasts at least six months.
- Chronic Obstructive Pulmonary Disease: a lung disease that makes it hard to breathe. It is caused by damage to the lungs over many years usually from smoking.
- Cirrhosis: a chronic liver disease that occurs when healthy liver tissue is replaced by scar tissue, making it difficult for the liver to function properly.
- Clinical Nurse Specialist: an advanced practice registered nurse who holds a master's or doctoral degree in a specialized area of nursing practice. They focus on diagnosing and treating patients, nurse management, and administration.
- Clinical Preceptor: a supervised clinical experience which allows students to apply knowledge gained in the classroom portion of a program to clinical practice.
- Clinical Quality Measures: tools that help measure and track the quality of health care services that eligible professional, eligible hospitals, and critical access hospitals provide.
- Coalition: an alliance for combined action
- Colloquial: used in ordinary or familiar conversation; not formal
- Colonization: the action or process of settling among and establishing control over the indigenous people of an area.
- Colonoscopy: a procedure in which a flexible fiber-optic instrument is inserted through the anus in order to examine the colon.
- Commensurate: corresponding in size or degree; in proportion.
- Commission on Accreditation of Athletic Training Education (CAATE): a non-profit organization serving the public and profession by establishing and ensuring compliance with accreditation standards that facilitate quality outcomes, continuous improvement, innovation and diversity to enhance athletic training education.
- Commission on Accreditation for Marriage and Family Therapy Education: establishment, review, and revision of accreditation standards and policies, and the accreditation of graduate and post-graduate educational programs.

- Commission on Accreditation in Physical Therapy Education (CAPTE): grants specialized accreditation status to qualified entry-level education programs for physical therapists and physical therapist assistants.
- Commonwealth Fund: a private U.S. foundation whose stated purpose is to promote a high performing health care system that achieves better access, improved quality, and greater efficient, particularly for society's most vulnerable.
- Community-Based Outpatient Clinics: clinics that provide the most common outpatient services, including health and wellness visits, so that individuals seeking care to do have to travel to larger medical centers.
- Community Health Center: a private, nonprofit organization that directly or indirectly (through contracts and cooperation agreements) provides primary health services to residents of a defined geographic area that is medically underserved.
- Community Health Needs Assessment: a state, tribal, local, or territorial health assessment that identifies key health needs and issues through systematic, comprehensive data collection and analysis.
- Community Health Worker: a frontline public health worker who is a trusted member of and/or has a usually close understanding of the community served. This trusting relationship enables the worker to serve as a liaison/link/intermediary between health/social services and the community to facilitate access to services and improve quality of service delivery.
- Comorbidity: the simultaneous presence of two chronic diseases or conditions in a patient.
- Concordance: agreement or consistency.
- Concussion: a type of traumatic brain injury caused by a bump, blow, or jolt to the head or by a hit to the body that causes the head and brain to move rapidly back and forth. The sudden movement causes the brain to bounce around or twist in the skull, creating chemical changes in the brain and sometimes stretching and damaging brain cells.
- Conditions of Participation: a set of stringent health measures designed to regulate how hospitals and other medical establishments utilize Medicare aid.
- Congestive Heart Failure: a weakness of the heart that leads to a buildup of fluid in the lungs and surrounding body tissues.
- Contact tracing: the identification and monitoring of individuals known to be exposed to a highly contagious and infectious disease.
- Constituency: a body of voters in a specified area who elect a representative to a legislative body.
- Contract employees: an individual retained by a company for a predetermined time, for a predetermined price.
- Council for Accreditation of Counseling and Related Educational Programs (CACREP): a group responsible for accrediting master's and doctoral degree programs in counseling and its specialties that are offered by colleges and universities.
- Council on Social Work Education: national association representing social work education in the United States.
- Counselor: a person trained to give guidance on personal, social, or psychological problems.
- COVID-19 Pandemic: an ongoing illness of coronavirus disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and was declared a pandemic in March 2020.

- Credence: a belief in or acceptance of something as true.
- Critical Access Hospital: a designation given to rural hospitals that is designed to reduce the financial vulnerability of rural hospitals and improve access to health care by keeping essential service in rural communities.
- Critical Incident Stress Management: an adaptive, short-term psychological helping-process that focuses solely on an immediate and identifiable problem. It can include pre-incident preparedness to acute crisis management to post-crisis follow-up.
- Curriculum: the subjects comprising a course of study in a school or college.

D

- Decennial: recurring every ten years.
- Deductible: a specified amount of money that the insured must pay before an insurance company will pay a claim.
- Deliverable: a report, a document, a software product, a server upgrade or any other building block of an overall project.
- Dental Assistant: an individual qualified to work with a professional dentist and assist in various duties such as organizing appointments, sterilizing and arranging instruments, escorting patients, and taking x-rays.
- Dental Hygienist: an ancillary dental worker specializing in scaling and polishing teeth as well as providing guidance on cleaning the teeth.
- Dental Therapist: a member of a dental team who provides preventative and restorative dental care, usually for children and adolescents.
- Dentist: a person qualified to treat the diseases and conditions that affect the teeth and gums, especially the repair and extraction of teeth and the insertion of artificial ones.
- Dependency ratio: number of individuals who are economically inactive (less than 16 years of age or older than 65), divided by the number of individuals who are of working age (16 to 65 years old).
- Depopulation: a significant reduction in the population.
- Depression: formally known as Major Depressive Disorder; a mood disorder characterized by persistent feelings of sadness or hopelessness, lack of sleep, change in appetite, loss of interest in activities, and lack of energy every day for at least two weeks.
- Dermatology: the branch of medicine concerned with the diagnosis and treatment of skin disorders.
- Detriment: the state of being harmed or damaged.
- Diabetes: a disease in which the body's ability to produce or respond to the hormone insulin is impaired, resulting in abnormal metabolism of carbohydrates and elevated levels of glucose in the blood and urine.
- Diagnose: to identify the nature of, an illness or other problem, by examination of the symptoms.
- Diagnostic and Statistical Manual of Mental Disorders 5th Edition (DSM-5): a handbook used by health care professionals that contains descriptions, symptoms, and other criteria for diagnosing mental disorders.
- Didactic: intended to teach, particularly in having moral instruction as an ulterior motive.
- Dietitian: an expert on diet and nutrition.

- **Direct Care Associate:** responsible for providing in-home personal care and daily living tasks to individuals who are suffering from illness, physical disabilities, or the elderly requiring long-term care.
- **Direct Secure Messaging:** a national encryption standard for securely exchanging clinical healthcare data via the internet.
- **Disparity:** a noticeable difference between people or things.
- **Disseminate:** spread or disperse (something, usually information) widely.
- **Division of Emergency Medical Service:** serves as North Dakota's lead emergency medical services agency. It is responsible for licensing ambulance services and quick response units, training, testing, certification, and licensure of EMS personnel, coordinating the State Trauma System, administering the EMS for Children Program, coordinating the State CISM Team, coordinating, the State Stroke System, of Care, and coordinating the State Cardiac System of Care.
- **Doctor of Medicine:** a degree that is attained by attending and graduating from a conventional medical school and requires passing a licensing examination and completing residency training prior to treating people or prescribing medications.
- **Doctor of Nursing Practice:** a degree designed for nurses seeking a terminal degree in nursing practice and offers a general leadership or administration focus.
- **Doctor of Occupational Therapy:** a professional/clinical doctorate designating the highest level of academic preparation for an entry-level occupational therapist.
- **Doctor of Osteopathy:** a fully licensed physician who practices in every medical specialty. They provide a full range of services, from prescribing drugs to performing surgery.
- **Doctor of Physical Therapy:** the qualifying degree for physical therapy in the United States, considered a graduate-level clinical/professional degree for the practice of physical therapy.

E

- **Early Intervention:** a system of services that helps babies and toddlers with developmental delays or disabilities in domains such as physical, cognitive, communication, social/emotional, and self-help.
- **Electrocardiograph:** a galvanometric device that detects and records the minute difference in electric potential caused by heart action and occurring between different parts of the body and it is used to diagnose heart disease. The output it gives is called an electrocardiogram.
- **Electronic health record:** a longitudinal electronic record of patient health information generated by one or more encounters in any care delivery setting.
- **Emergency Department Transfer Communication:** a National Quality Forum endorsed measure to evaluate communication for transitions of care during emergency department transfers.
- **Emergency Medical Responder:** a person who is specially trained to provide out-of-hospital care in medical emergencies.
- **Emergency Medical Services:** refers to the treatment and transport of people in crisis health situations that may be life threatening.
- **Emergency Medical Technician:** a person who is specially trained and certified to administer basic emergency services to victims of trauma or acute illness before and during transportation to a hospital or other healthcare facility.

- Emphysema: a condition in which the air sacs of the lungs are damaged and enlarged, causing breathlessness.
- EMS Voluntary Event Notification Tool: a web-based EMS reporting of events such as near-misses, assaults on EMS, patient safety events, and other situations.
- Endodontics: the branch of dentistry concerned with diseases and injuries of the soft tissues inside a tooth (i.e., dental pulp).
- Enterprise: a project or undertaking, typically one that is difficult or requires effort; a business or company.
- Epidemiology: the study of the determinants, occurrence, and distribution of health and disease in a defined population.
- Equity: the quality of being fair and impartial.
- Equivocal: open to more than one interpretation; ambiguous.
- Evidence-Based Practice: any practice that relies on scientific and mathematical evidence to form strong inductive or deductive arguments for guidance and decision-making.
- Exit Interview: an interview held with an employee (or student) who is about to leave an organization, typically in order to discuss the employee's reasons for leaving and their experience of working for the organization.
- Expenditure: the action of spending funds.

F

- Family Medicine: the branch of medicine designed to provide basic health care to all members of a family.
- Family Nurse Practitioner: a registered nurse with specialized educational and clinical training in family practice.
- Federal Office of Rural Health Policy: created to advise the Secretary of the U.S. Department of Health and Human Service on health care issues impacting rural communities including access to quality health care and health professionals, viability of rural hospitals, and effect of the department proposed rules and regulations, including Medicare and Medicaid, on access to and financing of health care in rural areas.
- Federal Poverty Level: a measure of income used by the U.S. government to determine who is eligible for subsidies, programs, and benefits.
- Federally Qualified Health Center: outpatient clinics that qualify for specific reimbursement systems under Medicare and Medicaid.
- Feeding Assistant: any individual employed by a facility, or under contract, to feed or assist with the feeding of nursing facility residents, who must either have successfully completed a department-approved paid feeding assist and training course or be a certified nurse aid.
- Fieldwork: practical work experience conducted by a student in a professional working environment, rather than in a classroom.
- First Aid: the first and immediate assistance given to any person suffering from either a minor or serious injury or illness until full medical treatment is available.
- Flex-Time: a work policy that allows employees the flexibility to choose their work hours.
- Food and Drug Administration known (FDA): U.S. federal agency that is responsible for protecting and promoting public health through the control and supervision of food safety, tobacco products, caffeine products, dietary supplements, prescription and over-the-counter

pharmaceutical drugs (medications), vaccines, biopharmaceuticals, blood transfusions, medical devices, electromagnetic radiation emitting devices (ERED), cosmetics, animal foods & feed and veterinary products.

- Forensic Odontology: a dentist who uses their training and knowledge of the teeth and uses that within the criminal justice field and legal system. Also called forensic dentistry.
- Frontier: a county with a population density of six or fewer people per square mile.
- Frontier Community Health Integration Project Demonstration: a federal 3-year initiative that seeks to develop and test new models of integrated, coordinated healthcare in the most sparsely populated rural counties. Its goal is to improve rural health outcomes and to reduce Medicare expenditures.
- Full time equivalent (FTE): the hours worked by one employee on a full-time basis. The concept is used to convert the hours worked by several part-time employees into the hours worked by full-time employees.

G

- Gamut: the complete range or scope of something
- Gastroenterology: the branch of medicine which deals with disorder of the stomach and intestines.
- Generalist: an internist, family physician, or pediatrician who performs general medicine; one who treats most diseases that do not require surgery, sometimes including those related to obstetrics.
- General Surgery: a surgical specialty that focuses on abdominal contents, alimentary tract, breast, skin, soft tissues, and the endocrine system.
- Geriatrics: a branch of medicine that deals with the problems and disease of old age and the medical care and treatment of aging people.
- Governor's Nursing Shortage Taskforce: a group convened by Governor Burgum of North Dakota that is comprised of a diverse group of stakeholders. The goal of the taskforce is to examine the issue, identify causes, possible solutions, and to make recommendations to address the critical shortage of nurses and other healthcare workers in North Dakota.
- Graduate degree: an advanced academic degree (usually a master or doctorate degree) awarded by colleges and universities to individuals who have completed a bachelor's degree and additional course work for the advanced degree.
- Grant: a sum of money given by an organization, especially a government, for a particular purpose.
- Great Depression: a severe worldwide economic depression in the 1930's.
- Great Plains Telehealth Resource and Assistance Center: an organization with the mission to build telehealth awareness, promote education, provide individualized consultation, and provide data specific to telehealth services in the Great Plains Region.
- Gross Domestic Product (GDP): a standard of measurement of the total value of all goods and services produced in either the nation or at a state level.

H

- Health Information Manager: responsible for obtaining, analyzing, and securing the digital and traditional health records of patients.

- Health Information Technology: information technology applied to health and health care that supports health information management across computerized systems and the secure exchange of health information between consumers, providers, payers, and quality monitors.
- Health Information Technology for Economic and Clinical Health Act: a part of the American Recovery and Reinvestment Act that deals with privacy and security issues in relation to electronic storage of medical files. The standards in this act are meant to improve the protection of medical information.
- Health Insurance: insurance that compensates the insured for expenses or loss incurred for medical reasons, as through illness or hospitalization.
- Health Insurance Portability and Accountability Act (HIPAA): U.S. legislation that provides data privacy and security provisions for safeguarding medical information, and protects America's workers with improvement to portability and continuity of health insurance coverage.
- Health Professional Shortage Area: an area designated by the Health Resources and Services Administration that indicates health care provider shortages in primary care, dental health, or mental health. These shortages can be geographic, population, or facility-based.
- Health Research and Education Trust: a not-for-profit research and education affiliate of the American Hospital Association (AHA) with a mission to transform health care through research and education.
- Health Resources and Services Administration: part of the U.S. Department of Health and Human Services which is tasked with improving access to health care services for people who are geographically isolated, economically and medically vulnerable.
- Health System: the people, institutions, organizations, healthcare professionals, and resources needed to deliver health care to a target population within a geographical area.
- Healthcare SafetyZone Portal: a comprehensive web-based system that transforms any reporting, education, or safety procedure into easy and meaningful electronic processes.
- Health Workforce Initiative: a plan created to identify specific steps to reduce disease burden and increase the provider workforce through programs designed to increase provider retention for practice within the state of North Dakota as well as expand the provider network through class size increases
- Healthy North Dakota: a statewide partnership of more than 400 committee members and organizations working to determine solution for more healthful living.
- Healthy People: an agenda that provides science-based, national goals and objectives with 10-year targets designed to guide national health promotion and disease prevention efforts to improve the health of all people in the United States.
- High Blood Pressure: a common disease in which blood flows through blood vessels, or arteries, at higher-than-normal pressure. Complications from high blood pressure include chronic kidney disease, heart attack, heart failure, stroke, and possibly vascular dementia.
- High Cholesterol: a condition that causes the levels of certain bad fats, or lipids, to be too high in the blood. High cholesterol can lead to a buildup of plaque in the blood vessels which can increase the risk of heart attack, stroke, and peripheral artery disease.
- Holistic Medicine: characterized by the treatment of the whole person, considering mental and social factors, rather than just the physical symptoms of a disease.

- Home Health: medical care provided in a patient's home that is provided by skilled medical professionals.
- Homestead Act: a series of U.S. federal laws that gave an applicant ownership of land, typically called a "homestead," at little or no cost.
- Hospice Care: care that focuses on the quality of life rather than its length. It provides humane and compassionate care for people in the last phase of incurable disease so that they may live as fully and comfortably as possible.
- Hospital-Acquired Condition Reduction Program: a program that provides incentive for hospitals to reduce hospital-acquired conditions. This is done through reducing payments to applicable hospitals that rank in the worst performing 25 percent of all subsection hospitals with respect to risk-adjusted hospital-acquired condition quality measures.
- Hospital Consumer Assessment of Healthcare Providers and Systems: a government survey for measuring patient satisfaction at hospitals across the country.
- Hospital Medicine: the discipline concerned with the medical care of acutely ill hospitalized patients.
- Hospital Readmission Reduction Program: a payment penalty program designed to reduce Medicare fee-for-service hospital readmission rates for conditions that account for expensive, high-volume admissions and frequent readmissions.
- Human Resource Counselor: a professional who provides counseling in different aspects of managing human resources such as career planning or development, performance management, stress management, and other areas which may affect employees emotionally.
- Human Services: a field that centers on meeting human needs through an interdisciplinary knowledge base, focusing on prevention as well as remediation of problems, and maintain a commitment to improving the overall quality of life of service populations.
- Huntington's Disease: An inherited condition in which nerve cells in the brain break down over time.
- Hypertension: abnormally high blood pressure.

I

- Immunization: the action of making a person or animal immune to infection, typically through an injection or series of injections.
- Impetus: the force that makes something happen or happen more quickly
- Incentive: a thing that motivates or encourages one to do something.
- Incidence: a measure of the probability of occurrence of a given medical condition in a population within a specified period of time
- Incrementalism: a method of working by adding to a project using many small incremental changes instead of a few large jumps.
- Indian Health Services: an agency within the U.S. Department of Health and Human Services that is responsible for providing federal health services to American Indians and Alaska Natives.
- Indians into Medicine: a comprehensive program designed to assist American Indian students who aspire to be health professionals to meet the needs of tribal communities.
- Infection: the replication of organisms in host tissue, which may cause disease.

- **Infectious Disease:** a disease resulting from the presence and activity of a pathogenic microbial agent such as bacteria, viruses, fungi, or parasites.
- **Influenza:** a highly contagious viral infection of respiratory passages causing fever, severe aching, and catarrh, and often occurring in epidemics. It is also called flu.
- **Infrastructure:** the basic physical and organizational structures and facilities (e.g. buildings, roads, power supplies) needed for the operation of a society or enterprise.
- **Inpatient Care:** healthcare delivered in a hospital or other facility where the patient usually stays overnight and receives lodging and food as well as treatment.
- **Institute for Healthcare Improvement:** an independent not-for-profit organization leading the improvement of health care throughout the world.
- **Institute of Medicine:** a nonprofit organization with the mission to advance and disseminate scientific knowledge to improve human health.
- **Insurance:** a means of protection from financial loss in which, in exchange for a fee, a party agrees to compensate another party in the event of a certain loss, damage, or injury. It is a form of risk management, primarily used to protect against the risk of a contingent or uncertain loss.
- **Internal Medicine:** the medical specialty dealing with prevention, diagnosis, and treatment of adult disease not requiring surgery.
- **International Medical Graduates (IMG):** medical school graduates from any country outside of the United States and Canada.
- **Internship:** the position of a student or trainee who works in an organization, sometimes without pay, in order to gain work experience or satisfy the requirement for a qualification.
- **Interoperability:** the ability of different information systems, devices and applications (systems') to access, exchange, integrate and cooperatively use data in a coordinated manner
- **Interprofessional:** a group of individuals from different disciplines working and communicating with each other.
- **Isolation:** in the context of infectious disease management, the separation of people who are known to be infected from those who are not infected.

J

- **Joint Committee on Rural Emergency Care:** a committee dedicated to advancing policy and practice to ensure access to timely, affordable, and high-quality emergency services in rural America.

K

- **Kaiser Family Foundation:** a non-profit organization focusing on national health issues. It develops and runs its own policy analysis, journalism, and communications programs, sometimes in partnership with major news organizations.
- **Kidney Disease:** a condition in which one's kidneys are damaged and cannot filter blood the way they should resulting in a buildup of waste in the body. Also called chronic kidney disease.

L

- Labor Market: the availability of employment and lab, in terms of supply and demand.
- Liability: the state of being responsible for something, especially by law.
- Liaison Committee on Medical Education (LCME): the nationally recognized accrediting authority for medical education programs leading to the M.D. degree in the U.S. and Canadian medical schools.
- Licensed Associate Professional Counselor: a two-year license that allows an individual to have the rights and privileges of a Licensed Professional Counselor but they work under continual supervision. They must attain the necessary supervised experience and meet the criteria to become an LPC within two years.
- Licensed Baccalaureate Social Worker: a license to provide individuals with support and guidance when seeking out services or supports within their community. It is the first level of licensure recognized for social workers and requires a Bachelor of Social Work degree from a accredited institution.
- Licensed Behavior Analyst: a license that requires applied behavior analysis training and provides services to individuals with behavioral problems.
- Licensed Clinical Social Worker: a license that allows an individual to provide clinical treatment for mental illnesses to clients independent of supervision. They must attain a Master's degree in social work and two years of supervised field experience to become a LCSW.
- Licensed Master Social Worker: a license that requires an individual to operate under the supervision of a licensed psychologist, psychiatrist, or LCSW to provide mental health services. They must attain a Master's degree in Social work and meet the criteria to become a LMSW.
- Licensed Nutritionist: an individual that has earned credentials from a nationally recognized nutrition licensing body and may legally provide nutrition counselling, nutrition services, and advice.
- Licensed Practical Nurse: a nurse who works under the direction of a physician or a registered nurse and cares for people who are sick, injured, convalescent, or disabled.
- Licensed Professional Clinical Counselor: a license that allows an individual to provide mental health and substance abuse treatment to individuals, families, or groups. They must attain a Master's degree in clinical mental health counseling and 3,000 hours of supervised fieldwork to become a LPCC.
- Licensed Registered Dietitian: a professional license to assess, diagnose, and treat nutrition and regulation of diet. It requires a baccalaureate degree and experience requirements as approved by the Commission on Dietetic Registration.
- Licensed Vocational Nurse: the term used for Licensed Practical Nurse in Texas and California.
- Life Expectancy: a measure of the average time an organism is expected to live, based on the year of its birth, its current age and other demographic factors
- Liquidity Measure: a measure a firm's ability to pay operating expenses and other short-term, or current, liabilities.
- Locum Tenens: one filling an office for a time or temporarily taking the place of another, used especially of a doctor or clergyman.

- Long-Term Care Facility: a facility that provides rehabilitative, restorative, and/or ongoing skilled nursing care to patients or residents in need of assistance with activities of daily living.

M

- Maldistribution: an uneven distribution of something, especially when disadvantageous or unfair.
- Malpractice: an improper, illegal, or negligent professional activity or treatment
- Mammogram: an x-ray picture of a breast.
- Marginalized: (of a person, group, or concept) treated as insignificant or peripheral.
- Marriage and Family Therapist: a mental health professional; trained in psychotherapy and family systems and licensed to diagnose and treat mental and emotional disorder within the context of marriage, couples, and family systems.
- Matriculated: enrolled at a college or university.
- Maxillofacial Surgery: a type of surgery that deals with any disease, disorders, injuries, or defects that affect either the jaw or facial regions of a person.
- Median: denoting or relating to a value or quantity lying at the midpoint of a frequency distribution of observed values or quantities, such that there is an equal probability of falling above or below it.
- Medicaid: a health care program that assists low-income families or individuals in paying for doctors' visits, hospital stays. Long-term medical, custodial care costs and more.
- Medicaid Health Management Program: a disease management program that focuses on asthma, diabetes, chronic obstructive pulmonary disease, and congestive heart failure. The program allowed providers to provide additional care coordination services in the form of a health management program for the previously listed health conditions.
- Medicaid Primary Care Case Management Program: a model of health care delivery that generally requires a Medicaid enrollee to choose and primary care provider who is responsible for coordinating the enrollee's care and is paid a monthly fee for doing so, on top of payment for providing medical services.
- Medical Director: an individual responsible for overall coordination of care and for implementation of policies related to care of residents in a nursing home.
- Medical Records Staff: individuals who are responsible for a variety of tasks including collecting patient information, issuing medical files, filing medical records, and processing patient admissions/discharge papers.
- Medical Technologist: an allied health professional that analyzes and tests body fluids and tissues. Also called a medical laboratory scientist, clinical laboratory scientist, or medical laboratory technologist.
- Medically underserved areas: areas having too few primary care providers, high infant mortality, high poverty or a high elderly population.
- Medicare: the federal health insurance program for people who are 65 or older, certain younger people with disabilities, and those with end-stage renal disease (permanent kidney failure requiring dialysis or a transplant).
- Medicare Access and CHIP Reauthorization Act: a law signed by President Obama in 2015 that repeals the substantial growth rate methodology for determining updates to the

Medicare physician fee schedule, established annual positive or flat fee updates for 10 years, and institutes a two-track fee update beginning in 2019.

- Medicare Beneficiary Quality Improvement Program: a quality improvement activity under the Medicare Rural Hospital Flexibility (FLEX) grant program with a goal of improving the quality of care provided in small, rural Critical Access Hospitals.
- Medicare Part A: hospital insurance provided by Medicare through the Centers for Medicare and Medicaid Services. It covers inpatient care in hospitals, nursing homes, skilled nursing facilities, and critical access hospitals.
- Medicare Part B: medical insurance that covers services and supplies that are medically necessary to treat health conditions of Medicare beneficiaries.
- Medicare Part D: U.S. federal-government program to subsidize the cost of prescription drugs and prescription drug insurance premiums for Medicare beneficiaries.
- Medicare Quality Innovation Network-Quality Improvement Organization: an entity under the direction of the Centers for Medicare and Medicaid Services. It is one of the largest federal programs dedicated to helping improve the nation's quality of care.
- Medicare Rural Hospital Flexibility Program: a program that allows small hospitals to be certified as Critical Access Hospitals and offers grants to states to help implement initiatives to strengthen the rural hospital health care infrastructure.
- Mental Health: a person's condition with regard to their psychological and emotional well-being.
- Mental Health Technician: an individual that observes and assists assigned mental health patients with daily living activities, therapeutic activities, and socialization.
- Mental Illness: any of a broad range of medical conditions (such as major depression or schizophrenia) that are marked primarily by sufficient disorganization of personality, mind, or emotions to impair normal psychological functioning and cause marked distress or disability and that are typically associated with a disruption in normal thinking, feeling, mood, behavior, interpersonal interactions, or daily functioning.
- Metropolitan: denotes areas with a core population of 50,000 or more
- Micropolitan: denotes areas with core populations of 10,000 to 49,999
- Morbidity: the condition of being diseased.
- Mortality: the condition of being dead.
- Multi-Payer Advanced Primary Care Initiative: in this demonstration, CMA participated in multi-payer reform initiatives that were conducted by states to make advanced primary care practices more broadly available. It evaluated whether advanced primary care practice reduced unjustified utilization and expenditures, and improved the safety, effectiveness, timeliness, and efficiency of health care.
- Maternal Morbidity: Any short- or long-term health issues that result from pregnancy and childbirth. Some conditions start during pregnancy and are short-lived, while others develop years later and continue throughout a woman's life.
- Maternal Mortality: The death of a woman from complications of pregnancy or childbirth that occur during pregnancy or within six weeks after the pregnancy ends. Maternal mortality can also be caused by a chain of medical events started by the pregnancy or delivery, or by the worsening of an unrelated condition due to the pregnancy or delivery.

N

- National Academy of Medicine: formerly known as the Institute of Medicine, it is an independent organization of eminent professional from diverse fields including health and medicine, and the natural and social sciences, that works to address critical issues in health, medicine, and related policy in the U.S. and globally.
- National Addiction Studies Accreditation Commission (NASAC): an academic accreditation organization for higher education in addiction studies programs.
- National Health Service Corps: an organization that connects primary health care providers to area of the U.S. with limited access to care.
- National Priorities Partnership: a partnership of 52 major national organizations with a shared vision to achieve better health and a safe, equitable, and value-driven healthcare system.
- National Quality Strategy: a nationwide effort in the U.S. to provide direction for improving the quality of health and healthcare in the United States with three guided aims: better care, healthy people and communities, and affordable care.
- National Rural Health Association: a national nonprofit membership organization with more than 21,000 members. Their mission is to provide leadership on rural health issues through advocacy, communications, education, and research.
- National School Lunch Program: a federally assisted meal program operating in public and nonprofit private schools and residential child care institutions. It provides nutritionally balanced, low-cost or free lunches to children each school day.
- Nephrology: specialty of medicine focused on the kidneys, specifically normal kidney function and kidney disease, the preservation of kidney health, and the treatment of kidney disease.
- Neurosurgery: surgery performed on the nervous system, especially the brain and spinal cord.
- Next Generation ACO: this model builds upon a provider's experience in the Pioneer ACO Model and the Shared Savings Program by offering a new opportunity in accountable care that sets predictable financial targets, enables providers and beneficiaries' greater opportunities to coordinate care, and aims to attain the highest quality standards of care.
- North Dakota Board of Medicine: a board that protects the citizens of the state by regulating the practice of medicine by physicians, physician assistants, and fluoroscopy technicians and disciplines them if they violate the state's medical practice act.
- North Dakota Board of Nursing: a board that strives to proactively regulate the practice of nursing by providing timely information that gives registered nurses, licensed practical nurses, advanced practice nurses, QAP/Technicians, and medication assistants the knowledge they need to remain compliant with the laws and rules.
- North Dakota State Board of Occupational Therapy Practice: a board responsible for licensing qualified applicants to practice occupational therapy and to ensure that licensees comply with the state laws and regulations covering that practice.
- North Dakota State Board of Physical Therapy: a board responsible for licensing qualified applicants to practice physical therapy and to ensure that licensees comply with the state laws and regulations covering that practice.

- North Dakota Board of Social Work Examiners: a board responsible for licensing qualified applicants to practice social work and to ensure that licensees comply with the state laws and regulations governing that practice.
- North Dakota Century Code: the collection of all the statutes passed by the North Dakota Legislative Assembly since the state's admission to the Union. It also includes the North Dakota Constitution.
- North Dakota Dental Association: a constituent organization chartered by the American Dental Association that is organized into five component districts representing 87% of North Dakota dentists.
- North Dakota Health Information Network: a network focused on improving healthcare by creating a secure medical record-sharing network for providers and consumers. They aim to empower patients by ensuring their medical data remains safe and private.
- North Dakota Hospital Association: a voluntary trade organization of North Dakota's licensed hospitals committed to advancing public policy and fostering excellence in medical and health service.
- North Dakota Long Term Care Association: a professional association of community and long-term care providers, whose goal is to enhance the lives of the people they serve through collaboration, education, and advocacy.
- North Dakota Nurse Practices Act: the state law that governs the practice of nursing and scope of practice, specifically protects those who need nursing care
- Nuclear Medicine: a medical specialty involving the application of radioactive substances in the diagnosis and treatment of disease.
- Nurse Manager: a nurse who manages the nursing staff at a particular facility. They are responsible for the recruitment and retention of nursing staff and overseeing them. They also occasionally collaborate with doctors on patient care and help assist patients and their families when needed.
- Nurse Practitioner: a nurse who is qualified to treat certain medical conditions without the direct supervision of a doctor.
- Nursing Home: a private institution providing residential accommodation with healthcare, especially for elderly people. They provide 24-hour nursing care and supervision.

O

- Obesity: the condition of being overweight with a BMI (body mass index) greater than 25.
- Obstetrics-Gynecology: the branch of medical science concerned with childbirth, caring for women in connection with childbirth, and women's reproductive health.
- Occupational Therapist: a licensed health professional who is trained to assist people to overcome the limitations caused by injury or illness, emotional or psychological difficulties, developmental delay, or the effects of aging. It requires a Master's degree.
- Occupational Therapist Assistant: helps patients develop, recover, and improve, as well as maintain the skills needed for daily living and working. It requires an Associate's degree.
- Occupational Therapy: a form of therapy for those recuperating from physical or mental illness that encourages rehabilitation through the performance of activities required in daily life.

- Occupational Therapy Assistant: individuals that are directly involved in providing therapy to patients under the direction of an occupational therapist. They are involved in helping patients develop, recover, improve, as well as maintain the skills needed for daily living and working.
- Oil Patch: refers to western counties (Divide, Burke, Renville, Bottineau, McHenry, Ward, Mountrail, Williams, McKenzie, Dunn, McLean, Golden Valley, Billings, Stark, Slope, and Bowman) in North Dakota that occupy a portion of the Bakken Formation where oil is extracted.
- Ombudsman: an official appointed to investigate individual's complaints against maladministration, especially that of public authorities.
- Oncology: the study and treatment of tumors and cancer.
- Oral and Maxillofacial Surgery: the specialty of dentistry which includes the diagnosis, surgical and adjunctive treatment of diseases, injuries, and defects involving both the functional and aesthetic aspects of the hard and soft tissues.
- Oral Health: the health of the mouth (oral cavity) and includes hard tissue (teeth and bone) as well as the soft tissue (gums, cheeks, tongue, floor of the mouth, lips, palate, and throat).
- Organization for Economic Cooperation and Development: an intergovernmental economic organization with 35 member countries, founded in 1961 to stimulate economic progress and world trade.
- Orthodontist: a licensed dentistry professional qualified to treat irregularities of the teeth, especially alignment and occlusion, and jaws, including the use of braces.
- Orthopedic Medicine: the branch of medicine concerned with the diagnosis and treatment of problems related to the bones, joints, and ligaments.
- Outpatient Care: medical care or treatment that does not require an overnight stay in a hospital or medical facility. It may be administered in a medical office or a hospital, but most commonly, it is provided in a medical office or outpatient surgery center (also called ambulatory care).

P

- Palliative Care: specialized medical care for people living with a serious illness focused on providing relief from the symptoms and stress of the illness. The goal is to improve quality of life for both the patient and the family.
- Pap Smear Test: a test carried out on a sample of cells from the cervix to check for abnormalities that may be indicative of cervical cancer.
- Paramedic: a person trained to give emergency medical care to people who are seriously ill with the aim of stabilizing them before they are taken to the hospital.
- Parkinson's Disease: A disorder of the central nervous system that affects movement, often including tremors.
- Part-Time Employment: working less than full-time, typically less than 30 hours per week.
- Patient-Centered Medical Home: a care delivery model whereby patient treatment is coordinated through their primary care physician to ensure they receive the necessary care when and where they need it, in a manner they can understand.

- Patient-Centered Primary Care Collaborative: a not-for-profit multi-stakeholder membership organization dedicated to advancing an effective and efficient health system built on a strong foundation of primary care and the patient-centered medical home.
- Payer-Mix: the percentage of revenue coming from private insurance versus government insurance versus self-paying individuals
- Pediatric Medicine: a branch of medicine dealing with the development, care, and diseases of children.
- Pediatric Dentistry: a branch of dentistry provides both primary and comprehensive preventive and therapeutic oral health care for children from birth through adolescence, including those with special health care needs.
- Peer Support Specialist: a person with “lived experience” who has been trained to support those who struggle with mental health, psychological trauma, or substance use.
- Per-Capita: for each person, or in relation to people taken individually.
- Percutaneous Coronary Intervention: a nonsurgical procedure that improves blood flow to the heart by opening narrowed arteries that supply blood to the heart.
- Per Diem: for each day. Often used in financial contexts. Also called flex time, referring to a flexible schedule where an individual picks and chooses which days they work based on open shifts.
- Perinatal: relating to the time, usually a number of weeks, immediately before and after birth.
- Periodontics: the branch of dentistry concerned with the structures surrounding and supporting the teeth as well as the diseases and disorders that affect them.
- Pew Charitable Trusts: an independent nonprofit organization that invests in evidence-based, non-partisan analysis to solve current societal challenges.
- Pharmacist: an individual licensed to prepare, compound, and dispense drugs upon written order (prescription) from a licensed practitioner such as a physician, dentist, or advanced practice nurse.
- Pharmacy: a store where medicinal drugs are dispensed and sold.
- Pharmacy Technician: a health care provider who performs pharmacy-related functions, generally working under the direct supervision of a licensed pharmacist.
- Physical Therapy: the treatment of disease, injury, or deformity by physical methods such as massage, heat treatment, and exercises rather than by drugs or surgery.
- Physician: a person qualified to practice medicine.
- Physician Assistant: a medical professional who can diagnose illness, develop and manage treatment plans, prescribe medications, and often serve as a patient’s primary healthcare provider usually under the supervision of a licensed physician.
- Pioneer ACO: an ACO designed for health care organizations and providers that were already experienced in coordinating care for patients across care settings. It allows these provider groups to move more rapidly from a shared savings payment model to a population-based payment model on a track consistent with, but separate from, the Medicare Shared Savings Program.
- Pneumonia: lung inflammation caused by bacterial or viral infection, in which the air sacs fill with pus and may become solid.
- Postpartum: occurring in or being the period following childbirth
- Postulate: suggest or assume the existence, fact, or truth of (something) as a basis for reasoning, discussion, or belief.

- **Post-Traumatic Stress Disorder:** a condition of persistent mental and emotional stress occurring as a result of injury or severe psychological shock, typically involving disturbance of sleep and constant vivid recall of the experience, with dulled response to others and to the outside world.
- **Practica:** a supervised placement in a variety of settings (i.e., community mental health, hospitals, inpatient) that provides students the opportunity to apply knowledge and clinical skills gained in coursework to develop and practice the professional competencies that are an essential part of the training program.
- **Practice Transformation Networks:** a program designed to help participants develop the tools, skills, and knowledge necessary to successfully participate in shared shavings programs and other alternative payment models.
- **Preceptor:** a skilled practitioner or faculty member who supervises students in a clinical setting to allow practical experience with patients.
- **Pregnancy Risk Assessment Monitoring System:** a joint surveillance project between state, territorial, or local health departments and CDC's Division of Reproductive Health developed in 1987 to reduce infant morbidity and mortality by influencing maternal behavior before, during, and immediately after live birth.
- **Premature:** occurring or done before the usual or proper time; too early. Also refers to a baby born before the end of the full term of gestation, especially three or more weeks before.
- **Premium:** an amount to be paid for an insurance policy.
- **Prenatal Care:** the healthcare a women receives during pregnancy, including checkups, testing, education, and counseling.
- **Prescribe:** to advise and authorize the use of a medicine or treatment for someone, usually put into writing (prescription) for documentation purposes.
- **Prevalence:** the proportion of a particular population found to be affected by a medical condition.
- **Primary Care:** healthcare provided by a medical professional (such as a general practitioner, pediatrician, or nurse) with whom a patient has initial contact and by whom the patient may be referred to a specialist.
- **PrimeCare Select ACO:** an ACO made up of a team of health care providers working together to coordinate care. It combines the entire range of patient care in an effort to realize greater efficiencies and lower the out-of-pocket costs for patients.
- **Privacy Officer/Security Officer:** both have a role in developing the facilities policies and procedures, training the staff in HIPPA's requirements, and working to establish and maintain compliance of PHI within the practice.
- **Projection:** an estimate or forecast of a future situation or trend based on a study of present ones.
- **Prospective Payment System:** several payment methodologies for which means of determining insurance reimbursement is based on a predetermined payment regardless of the intensity of the actual service provided.
- **Prosthodontics:** the branch of dentistry concerned with the design, manufacture and fitting of artificial replacements for teeth and other parts of the mouth.
- **Prudent:** acting with or showing care and thought for the future.

- **Psychiatric Mental Health Nurse Practitioner:** an advanced practice nurse who has the education and training to provide a wide range of mental health services to patients and families in a variety to settings. They can diagnose, conduct therapy, and prescribe medication for patients with psychiatric disorders, organic brain disorders, or substance abuse problems.
- **Psychiatrist:** a medical practitioner specializing in the diagnosis and treatment of mental illness.
- **Psychiatry:** the study and treatment of mental illness, emotional disturbance, and abnormal behavior.
- **Psychologist:** an expert or specialist in psychology.
- **Psychology:** the scientific study of the human mind and its functions, especially those affecting behavior in a given context.
- **Psychometric Test:** a standard and scientific method used to measure individuals' mental capabilities and behavioral style
- **Public Health:** promotes and protects the health of people and the communities where they live, learn, work, and play through scientific research, education, and policy.
- **Public Health Accreditation Board:** a nonprofit organization dedicated to improving and protecting the health of the public by advancing and ultimately transforming the quality and performance of state, local, tribal, and territorial public health departments.
- **Public Policy:** government policies that affect the whole population.
- **Pulmonology:** the branch of medicine concerned with the diagnosis and treatment of disease involving the respiratory tract

Q

- **Quality Health Associates of North Dakota:** collaborates with healthcare professionals, organizations, and communities across the state to improve the quality of care provided to the people of North Dakota by successfully balancing the needs of providers, consumers, stakeholders, and payers.
- **Quality Improvement Organization:** a group of health quality experts, clinicians, and consumers organized to improve the quality of care delivered to people with Medicare.
- **Quarantine:** In the context of infectious disease management, the separation of contacts from tother after exposure to a probable or confirmed case of infection.
- **Quartile:** each of four equal groups into which a population can be divided according to the distribution of values of a particular variable.
- **Quick Response Units:** also known as first responders

R

- **Radiation Therapy:** a type of cancer treatment that uses external beams of intense energy to kill cancer cells
- **Radiation Therapy Technologist:** allied health professionals who work in medical and clinical settings administering radiation treatments to patients in highly targeted ways.
- **Radiographer:** also referred to as radiology technologists are allied health professionals who take x-rays and other medical images to assist clinical radiologists and other doctors to diagnose, monitor, or treat a patient's injury or illness.

- Radiology: the science dealing with x-rays and other high-energy radiation, especially the use of such radiation for the diagnosis and treatment of diseases.
- Regional Extension Center: an organization that has received funding under the Health Information Technology for Economic and Clinical Health Act to assist health care providers with the selection and implementation of electronic health record technology
- Regional Extension Assistance Center for HIT: formed as a program of an alliance of nonprofit organizations dedicated to helping clinics, small hospitals, and other settings in Minnesota and North Dakota improve care by implementing and effectively using electronic health record systems.
- Registered Behavior Technician: paraprofessional certification in behavior analysis and a person who assists in delivering behavior analysis services and practice under supervision.
- Registered Nurse: a graduate-trained nurse who has been licensed by a state authority after qualifying for registration.
- Rehabilitation: treatment or treatments designed to facilitate the process of recovery from injury, illness or disease to as normal a condition as possible.
- Reimburse: to repay a person who has spent or lost money.
- Renal Disease: kidney failure, also called end-stage kidney disease which means the kidneys no longer work well enough to filter waste out of the blood.
- Residency: a period of specialized medical training in a hospital under the direct or indirect supervision of an attending physician.
- Respiratory Disease: a group of disease that damage the airways and lungs, and affect one's ability to breath properly.
- Respiratory Therapist: a licensed individual in the medical field that cares for patients who have trouble breathing due to various causes such as asthma, emphysema, or premature infants with underdeveloped lungs.
- Retention: the ability of an organization to retain its employees.
- Robert Graham Center: aims to improve individual and population healthcare delivery through the generation or synthesis of evidence that brings a family medicine and primary care perspective to health policy deliberations from the local to international levels.
- Rural: areas with a core population of less than 10,000.
- Rural Health Clinic: a clinic located in a rural, medically under-served that has a separate reimbursement structure from the standard medical office under the Medicare and Medicaid programs. They can be public, non-profit, or for-profit healthcare facilities.
- Rural Health Network Development Grant Program: the purpose of the program is to support rural integrated health care networks that have combined the functions of the entities participating in the network.
- Rural Opportunities in Medical Education (ROME) Program: a 24-48-week interdisciplinary experience in a rural primary care setting, open to third-year students at the University of North Dakota School of Medicine and Health Sciences. Students live and train in non-metropolitan communities under the supervision of physician preceptors.
- Rural-Urban Commuting Area (RUCA) codes: classify U.S. census tracts using measures of urbanization, population density, and daily commuting from the decennial census.

S

- Salient: most noticeable or important.
- Satellite Clinic: a facility owned by a hospital but operated at a distant site.
- School Psychologist: an expert who intervenes at the individual and school system level to provide support for various developmental and mental health issues.
- SARS-CoV-2: severe acute respiratory syndrome coronavirus 2, the infection that causes the illness named COVID-19.
- Scoliosis: abnormal lateral curvature of the spine.
- Scope of Practice: describes the procedures, actions, and processes that a healthcare practitioner is permitted to undertake in keeping with the terms of their professional license.
- Septicemia: blood poisoning, especially that caused by bacteria or their toxins.
- Sequestration: the action of taking legal possession of assets until a debt has been paid or other claims have been met.
- Shared Savings ACO: facilitates coordination and cooperation among providers to improve the quality of care for Medicare fee-for-service beneficiaries and reduce unnecessary costs.
- Sigmoidoscopy: an examination of the sigmoid colon by means of a flexible tube inserted through the anus.
- Simulation in Motion-North Dakota: a statewide, mobile education system using high fidelity human patient simulators to train pre-hospital and hospital personnel.
- Skilled Nursing Facility: a facility, very similar to a nursing home, that provides skilled nursing care and/or rehabilitative services to help injured, sick, or disabled individuals. These facilities typically offer more skilled medical expertise and services than a nursing home.
- Sliding Fee: variable prices for products, services, or taxes based on a customer's ability to pay.
- Social Drivers of Health: the economic and social conditions that influence individual and group differences in health status.
- Social Services: services provided (usually through a government) for the benefit of the community, such as education, medical care, and housing.
- Social Vulnerability Index (SVI): a tool that uses U.S. Census data to identify communities most susceptible to the negative impacts of a disaster by ranking them based on social factors like poverty, lack of access to transportation, crowded housing, minority status, and household composition.
- Social Worker: a trained person who works to alleviate the conditions of those in need of help or welfare.
- Socioeconomic Status: the social standing or class of an individual or group. It is often measured by a combination of education, income, and occupation.
- Specialty Care: specialized medical service provided by a physician specialist such as dermatology, mental health, oncology, or cardiology.
- Speech Therapy: training to help people with speech and language problems to speak more clearly.
- State Stroke System of Care Program: guidelines that were developed to assist healthcare providers in the care of stroke patients with a goal to reduce death and disability due to heart disease.

- **Statewide Online Ambulance Reporting System:** an online system that allows hospitals to log on and download patient-care reports in instances where that facility is listed as the destination.
- **Stroke:** a medical emergency where blood flow to a part of the brain stops, usually caused by a clot in the blood vessels of the brain.
- **ST-Segment Elevation Myocardial Infarction:** a term used to describe a classic heart attack. It is one type of myocardial infarction in which a part of the heart muscle has died due to the obstruction of blood supply to the area.
- **Subsidy:** a form of financial aid or support extended to an economic sector generally with the aim of promoting economic and social policy.
- **Substance Abuse:** an overindulgence in or dependence on an addictive substance, especially alcohol or drugs.
- **Substance Abuse and Mental Health Services Administration:** a branch of the U.S. Department of Health and Human Services that is charged with improving the quality and availability of treatment and rehabilitative services in order to reduce illness, death, disability, and the cost to society resulting from substance abuse and mental illness.
- **Substance Use Disorder:** a treatable mental disorder that affects a person's brain and behavior, leading to their inability to control their use of substance, including legal or illegal drugs, alcohol, or medications.
- **Sudden Infant Death Syndrome:** the death of a seemingly healthy baby in its sleep, due to an apparent spontaneous cessation of breathing.
- **Suicide:** the action of killing oneself intentionally.
- **Surgical Care Improvement Project:** a multi-year national campaign to substantially reduce surgical mortality and morbidity through collaborative efforts between healthcare organizations.
- **Surgical Technologist:** an individual who works under the supervision and delegatory authority of a surgeon to facilitate the safe and effective conduct of invasive and non-invasive surgical procedures, ensuring that the operating room environment is safe, that equipment functions properly, and that the operative procedure is conducted under conditions that maximize patient safety.
- **Susceptibility:** the state or fact of being likely or liable to be influenced or harmed by a particular thing.
- **Synergistic:** relating to the interaction or cooperation of two or more organizations, substances, or other agents to produce a combined effect greater than the sum of their separate effects.

T

- **Team-Based Care:** the provision of health services to individuals, families, and/or their communities by at least two health providers who work collaboratively with patients and their caregivers – to the extent preferred by each patient – to accomplish shared goals within and across settings to achieve coordinated, high-quality care.
- **Telehealth:** the use of electronic information and telecommunication technologies to support long-distance clinical health care professional health-related education, public health, and health administration.

- Telemedicine: the use of electronic technology and telecommunication technologies to support long-distance patient and healthcare provider interactions for the purpose of diagnosis and treatment.
- Telepsychiatry: the application of telemedicine to the specialty field of psychiatry. The term describes the delivery of psychiatric assessment and care through telecommunications technology, usually videoconferencing.
- Tertiary Hospital: a hospital that provides tertiary care, which is health care from specialists in a large hospital after referral from primary care and secondary care.
- Transforming Clinical Practice Initiative: a large federal investment uniquely designed to support clinician practices through nationwide, collaborative, and peer-based learning networks that facilitate large-scale practice transformation.
- Trauma: tissue damage caused by the transfer of thermal, mechanical, electrical, or chemical energy, or by the absences of heat or oxygen; physical injury or a distressing or disturbing experience.
- Trauma Center: a hospital equipped and staffed to provide care for patients suffering from major traumatic injuries such as falls, motor vehicle collisions, or gunshot wounds.
- Tuberculosis: an infectious bacterial disease characterized by the growth of nodules (tubercles) in the tissues, especially the lungs.
- Turnover Rate: the percentage of employees leaving a company within a certain period of time.

U

- Ulcer: an open sore on an external or internal surface of the body, caused by a break in the skin or mucous membrane that fails to heal.
- Ultrasound Technician: an individual that operates special equipment that uses high-frequency sound waves to record images of internal organs. Also referred to as a sonographer or diagnostic medical sonographer.
- Urban Areas: area designation referring to those with a core city population of 50,000 or greater.
- Urbanization: the process of making an area more urban
- Urgent Care: walk-in clinics that provide health care for individuals who are unable to see their primary care provider (either due to unavailability or care being needed outside of usual clinic hours) but need immediate care to treat and injury or illness that is not serious enough to require going to an emergency room. These clinics fill the gap between a doctor's office and emergency room care.
- Urology: the branch of medicine and physiology concerned with the function and disorders of the urinary system.
- U.S. Department of Agriculture: a department within the U.S. federal government responsible for developing and executing federal laws related to farming, forestry, rural economic development, and food.
- U.S. Department of Health and Human Services: a cabinet-level agency in the executive branch of the federal government tasked with enhancing and protecting the well-being of all Americans by providing effective health and human services and fostering advances in medicine, public health, and social services.

- U.S. Department of Veterans Affairs: a department within the U.S. federal government tasked with providing patient care and federal benefits to veterans and their dependents.

V

- Vacancy Rate: number of vacant job-specific positions (or positions within the whole organization), divided by the total number of job-specific positions (or within the whole organization), multiplied by 100
- Vaccination: treatment with a vaccine to produce immunity against a disease.
- Value-Based Purchasing Program: an initiative of the Centers for Medicare and Medicaid that rewards acute-care hospitals with incentive payments for the quality of care they provide to Medicare beneficiaries.
- Vocational Rehabilitation Counselor: a professional who works with people with physical, mental, developmental, or emotional disabilities to overcome or manage the effects of disabilities on employment or independent living.
- Volunteer: a person who freely offers to participate in an enterprise or undertake a task.

W

- Webinar: a seminar conducted over the internet.
- Women, Infants and Children (WIC): a nutrition and breastfeeding program that helps eligible pregnant women, new mothers, babies and young children. WIC provides nutrition education and counseling, nutritious foods, and referrals to health and other social services.
- World Health Organization: a specialized agency of the United Nations that is concerned with international public health. The primary role is to direct international health within the United Nations' system and to lead partners in global health responses.

XYZ