

# SEVENTH BIENNIAL REPORT | 2023

# HEALTH ISSUES FOR THE STATE OF NORTH DAKOTA

SCHOOL OF MEDICINE & HEALTH SCIENCES  
ADVISORY COUNCIL



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This *Biennial Report* represents the good-faith effort of the UND School of Medicine and 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*.

**Acknowledgement**

We acknowledge the exceptional contributions of the following individuals in the preparation of the *Biennial Report*: Mandi-Leigh Peterson, Dr. Karen Bernhardt, Dr. Kristen Leighton, Dr. Jon Starkweather, and Sonja Bauman of the North Dakota Healthcare Workforce Group; Dr. Joshua Wynne, UND Vice President for Health Affairs and Dean, School of Medicine & Health Sciences; Dr. David Relling, Associate Dean for Health Sciences; Dr. Jana Zwilling and Dr. Rhoda Owens of the College of Nursing and Professional Disciplines; Brian Schill of the Office of Alumni and Community Relations; and Laura Stutrud of Information Resources.

Cover photo courtesy of Anzley Harmon, ND Tourism.

# EXECUTIVE SUMMARY\*



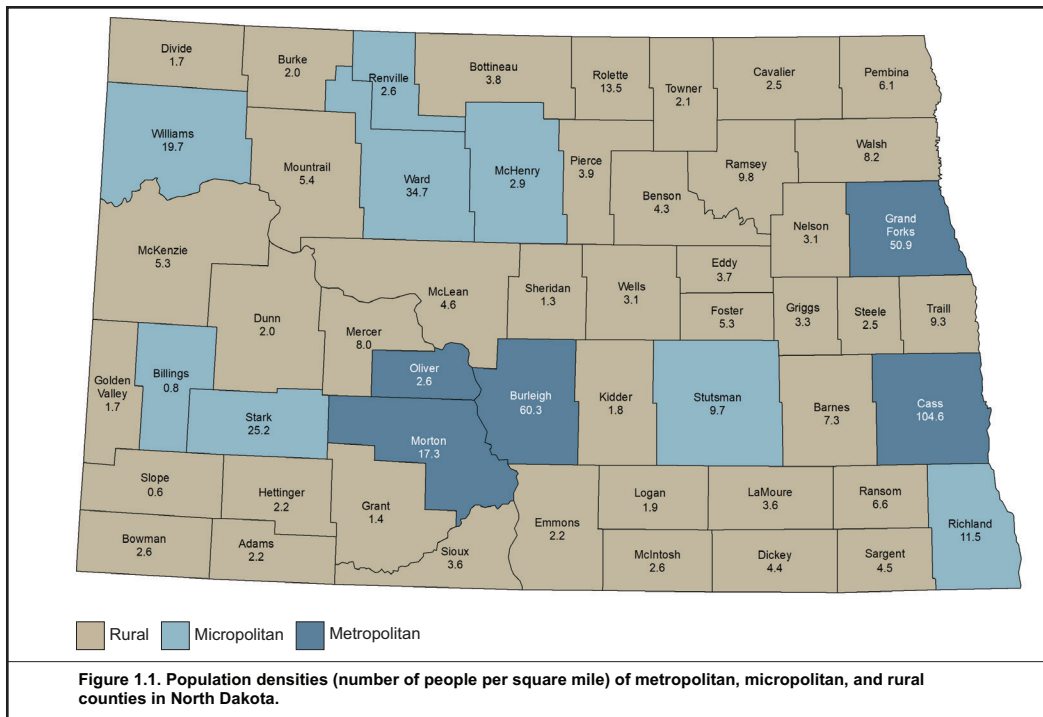
North Dakota, like the rest of the country, continues to grapple with a major healthcare delivery challenge—how to meet a burgeoning demand for healthcare services now and especially in the future with a supply of physicians and other healthcare providers that has not always kept pace with growing demand. The problem is exacerbated by the strain on healthcare workers from the SARS-CoV-2 (COVID) pandemic, potentially leading to “burnout” and departure of vital healthcare providers from the healthcare field. 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 through the implementation of a well-vetted plan for healthcare workforce development and improved healthcare delivery. That plan, the Healthcare Workforce Initiative (HWI), was

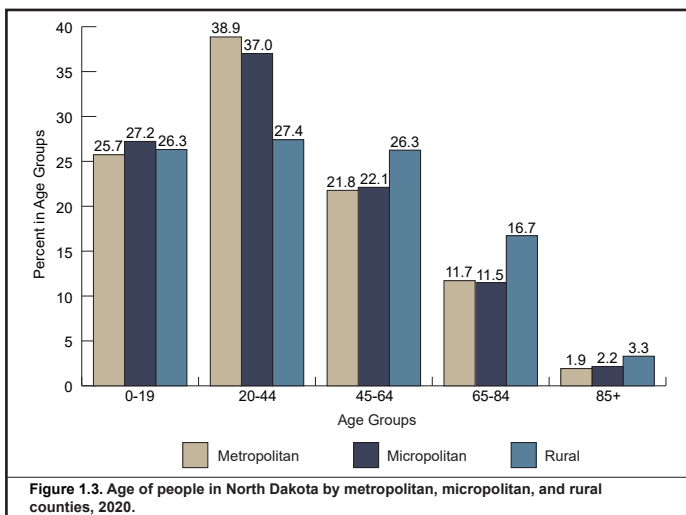
an outgrowth of both the *First* and *Second Biennial Report on Health Issues for the State of North Dakota*. Phase I of the HWI, which began by increasing medical and health sciences class sizes along with increasing residency (post-MD degree training) slots, has already been fully implemented. Phase II of the plan, which includes further growth of residency slots, currently is being implemented. 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 and 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, it was completed on time and on budget.

In accordance with the expectations specified in the North Dakota Century Code (NDCC 15-52-04), this *Seventh Biennial Report on Health Issues for the State of North Dakota (Biennial Report)* updates the first six 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.

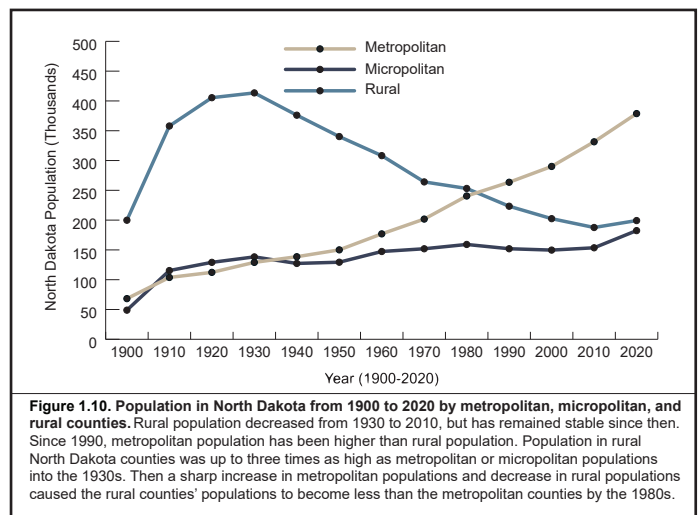
\* The full *Biennial Report*, along with all supporting data, is available at [med.UND.edu/publications/biennial-report](http://med.UND.edu/publications/biennial-report).



**Figure 1.1. Population densities (number of people per square mile) of metropolitan, micropolitan, and rural counties in North Dakota.**



**Figure 1.3. Age of people in North Dakota by metropolitan, micropolitan, and rural counties, 2020.**

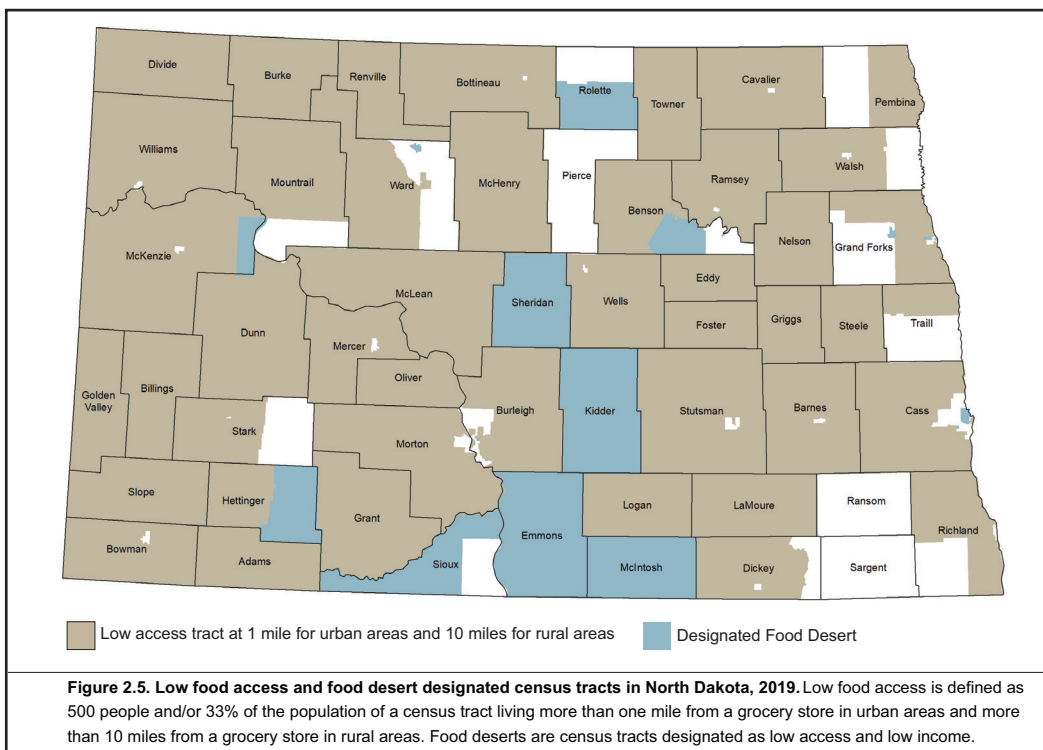
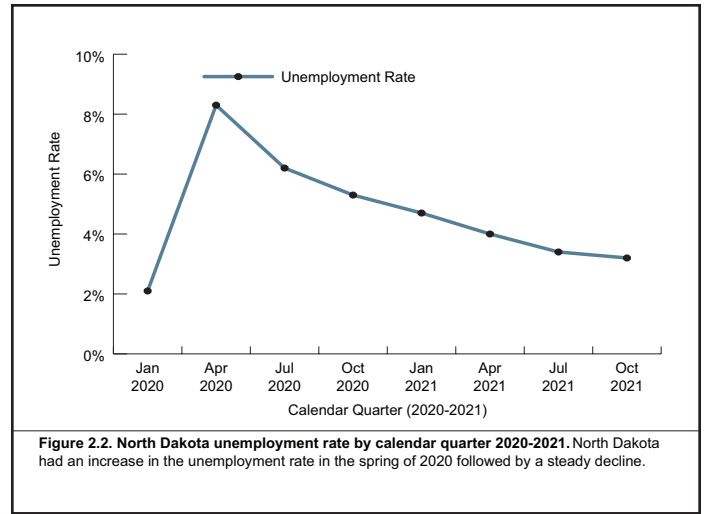
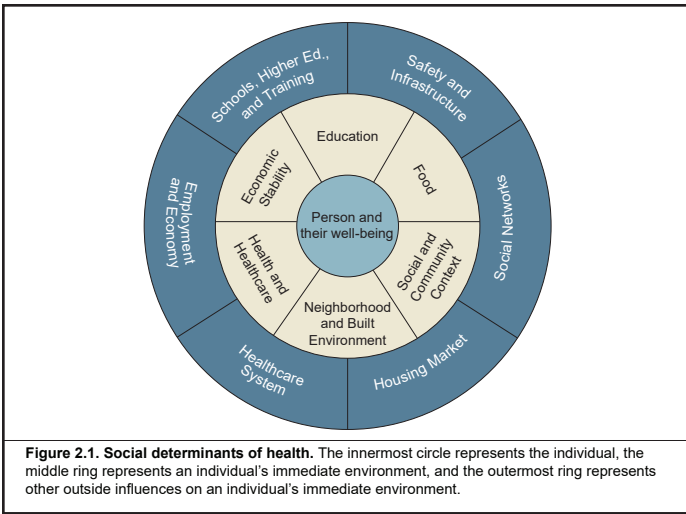


**Figure 1.10. Population in North Dakota from 1900 to 2020 by metropolitan, micropolitan, and rural counties.** Rural population decreased from 1930 to 2010, but has remained stable since then. Since 1990, metropolitan population has been higher than rural population. Population in rural North Dakota counties was up to three times as high as metropolitan or micropolitan populations into the 1930s. Then a sharp increase in metropolitan populations and decrease in rural populations caused the rural counties' populations to become less than the metropolitan counties by the 1980s.

**The Population of North Dakota:** The current *Biennial 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 1.1*). Half of North Dakota’s current population resides in metropolitan areas, with a little more than a quarter (26%) located in rural areas (see *Figure 1.10*). This represents a dramatic change since only a few decades ago 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 fourth 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. 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 *Figure 1.3*). Rural regions continue to experience depopulation that will only exacerbate the current problem of healthcare access and delivery.

**Social Determinants of Health in North Dakota:** Various external factors, referred to as social determinants of health (SDOH), can affect health status and explain why some people are generally



healthier than others (see *Figure 2.1*). SDOH include conditions where people live, work, learn, and socialize. 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. Six factors are recognized as core social determinants of health (see *Figure 2.5*). They are the 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.

**The Health of North Dakota:** The health of North Dakotans, in comparison with the rest of the United States, is relatively good. When examining general health measures, North Dakotans are relatively healthier than the country as a whole. These general health trends include asthma, high cholesterol, and high blood

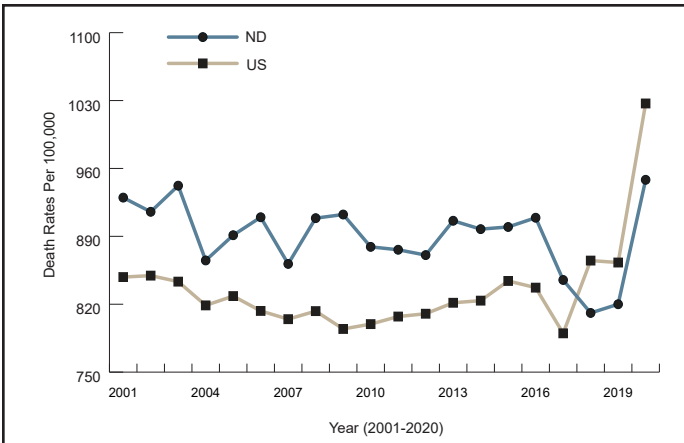


Figure 3.6. Changes in North Dakota mortality rates from 2001 to 2020 compared with the United States, 2020.

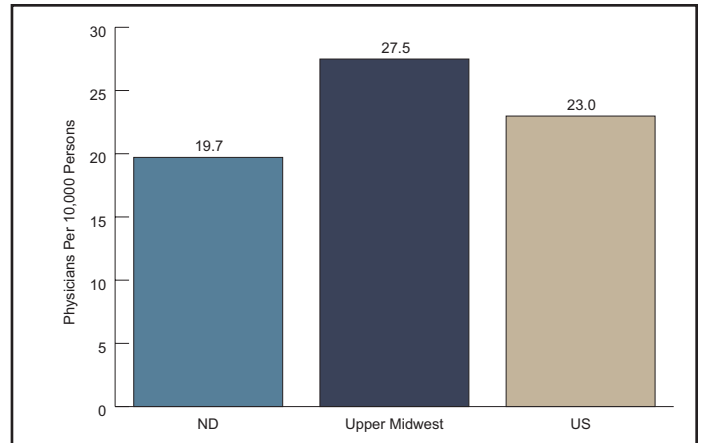


Figure 5.2. Number of physicians per 10,000 persons for North Dakota, the Upper Midwest, and the United States (excludes resident physicians), 2019.

Table 3.2  
Percent of adults reporting general health conditions, 2020.

	2015 (590,349)	2016 (591,299)	2017 (588,563)	2018 (580,621)	2019 (586,392)	2020 (584,823)
Disabled	16.6	17.0	NA	NA	NA	NA
Overweight/Obese	61.5	62.8	NA	65.8	65.6	64.3
General Health is Fair or Poor	13.9	14.8	15.3	13.9	13.9	12.1
1+ Days Poor Health	19.4	19.0	21.0	20.7	18.6	17.2
1+ Days Poor Phys. Health	34.8	33.1	34.6	33.1	33.6	26.0
1+ Days Poor Mental Health	33.0	32.5	34.3	36.2	34.2	34.7

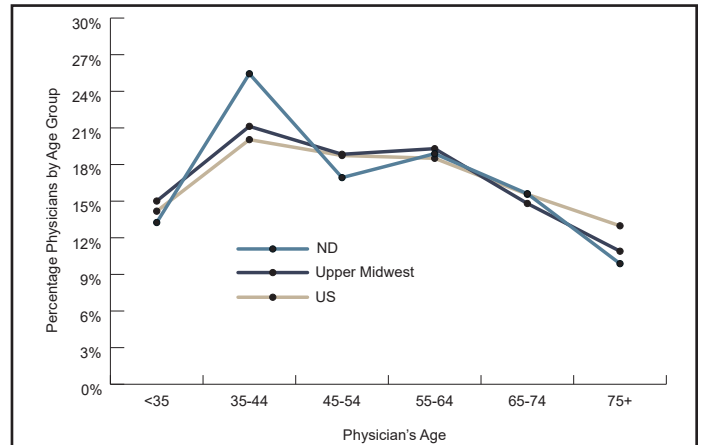


Figure 5.4. Physician percent by age category with comparisons, 2019.

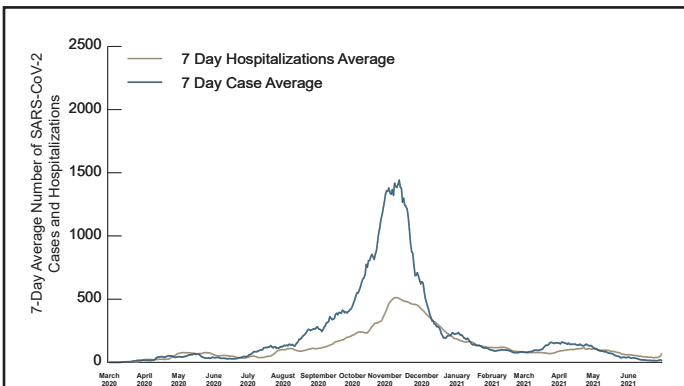


Figure 4.1. Seven day average of SARS-CoV-2 cases and hospitalizations in North Dakota between March 1st, 2020 and June 30th, 2021.<sup>2</sup>

pressure. In 2020 North Dakotans had higher rates of influenza and pneumonia compared to the country as a whole. North Dakotans have a slightly lower prevalence of diabetes than the rest of the United States and are less likely to report fair or poor health (see Table 3.2). However, North Dakotans 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 has worsened recently, 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 3.6).

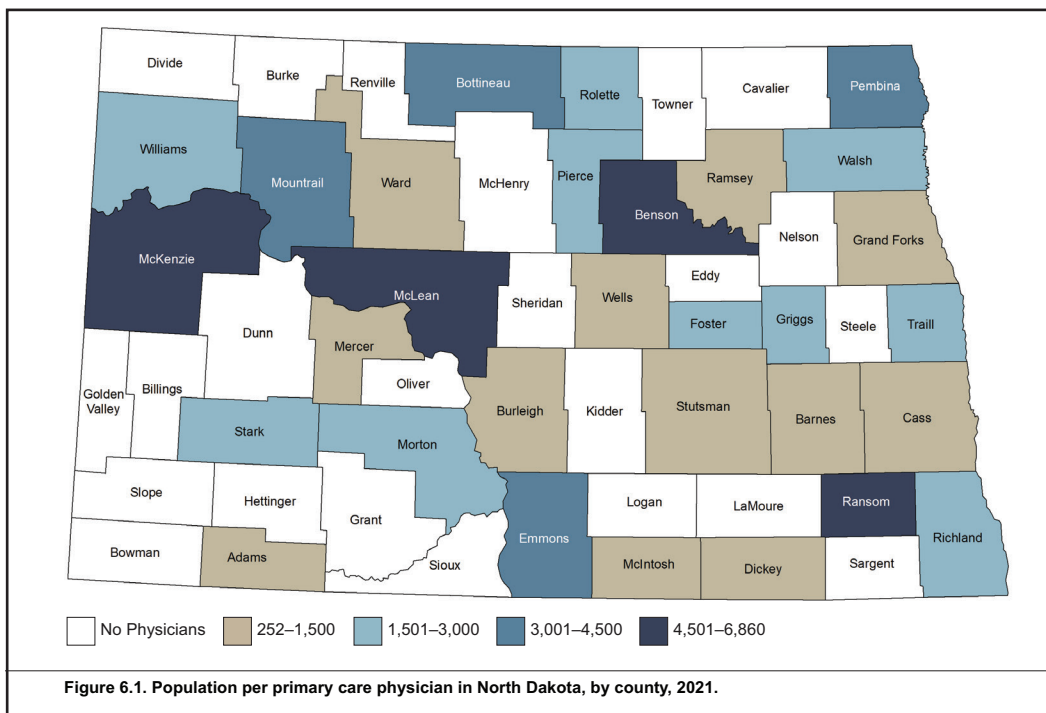
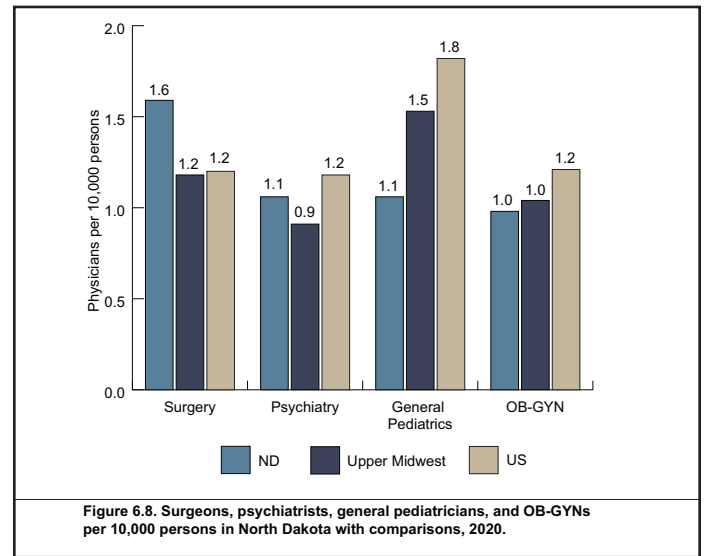
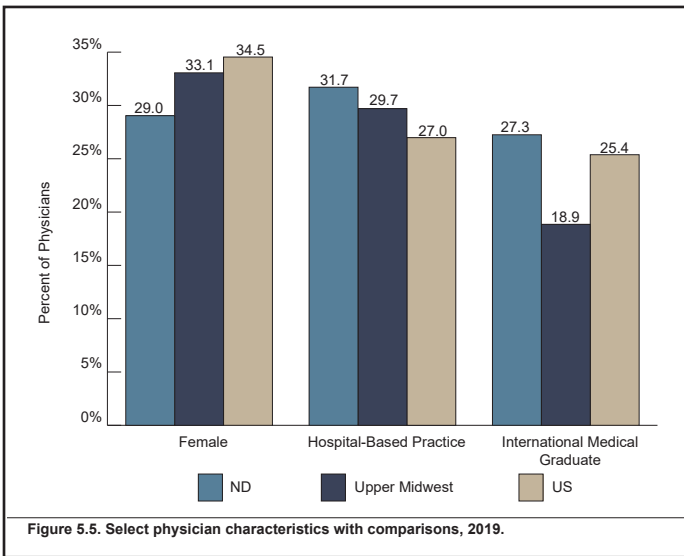
**SARS-CoV-2:** In early 2020, the state of North Dakota, like the rest of the country, was in the early phases of preparing for the arrival of a global pandemic, SARS-CoV-2. The virus’s arrival in North Dakota was slightly behind the rest of the country and that allowed for the state to focus on readiness strategies including prevention and overall mitigation (see Figure 4.1). While these efforts were focused on public health and safety, they were being conducted at a point in time when no vaccines were available. The state adopted strategies based on public health best practices that focused on reducing the spread within the state of North Dakota while allowing the state to operate as normally as possible. As in the rest of the country, North Dakota saw a widespread outbreak prior to vaccines becoming available that resulted in taxing the health infrastructure within the state towards the end of 2020. When vaccines became available in 2021, the state had a comprehensive vaccination plan including identifying priority groups as well as establishing public health and health system partnerships to coordinate vaccinations. As

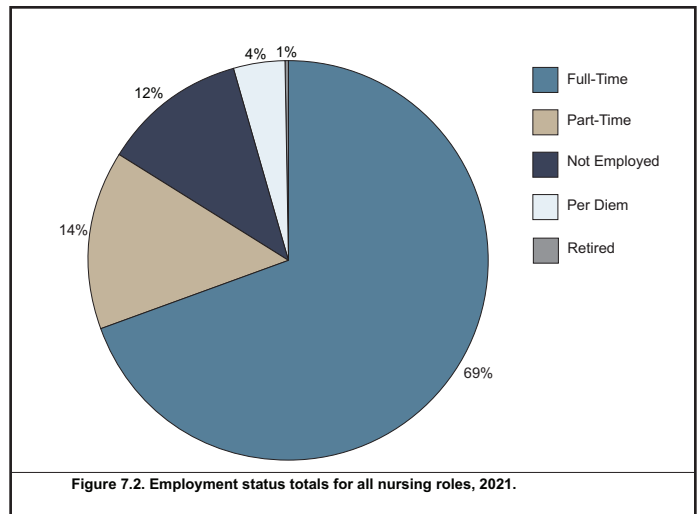
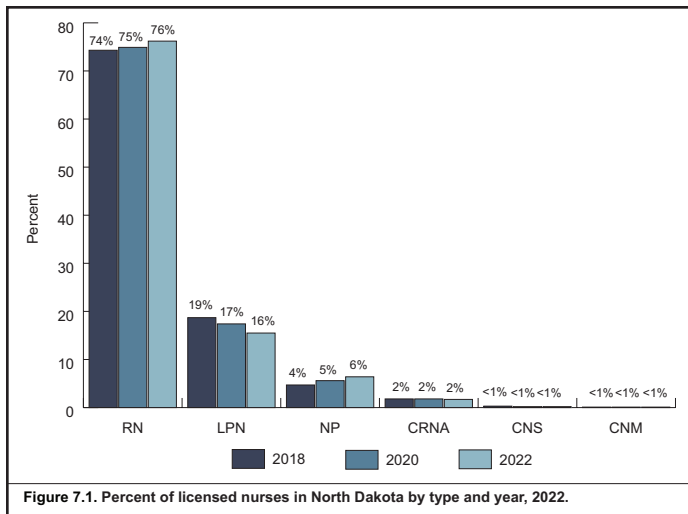
of this writing, North Dakota had 68% of the eligible population vaccinated with at least one round of vaccine compared to the United States at 80%.

**Physician Workforce:** The physician workforce in North Dakota has somewhat fewer physicians per 10,000 population than the United States as a whole or the Midwest comparison group (see Figure 5.2), 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 United States (see Figure 5.5), although female physicians in North Dakota are more evenly distributed across the state when compared to the rest of the United States. 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 5.4). 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, accounting for 47% of the more than 1,000 physicians practicing in North Dakota who graduated from a U.S. medical school.

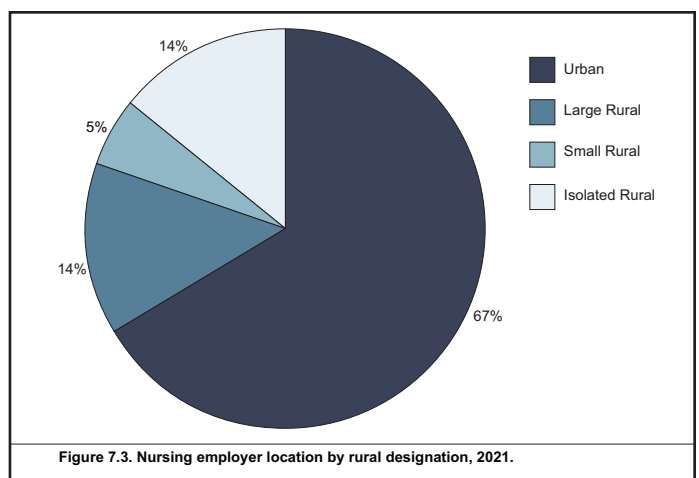
As of 2021, half of the physicians in North Dakota received some or all of their medical training (medical school or residency or both) in-state. The patient to physician ratio is not equally distributed across the state. Micropolitan areas have about twice as many patients per





physician as metropolitan areas, while rural areas have about five times as many. 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. Compared with the rest of the country, North Dakota has a similar number of primary care physicians when normalized to the population size. Their density is significantly higher than either comparison group in metropolitan regions. Although primary care physicians in North Dakota are more likely to practice in rural areas compared with specialist physicians, they still are twice as likely to be found in urban regions rather than rural areas (see Figure 6.1). Residency training in North Dakota is an especially important conduit of primary care physicians, since nearly half (45%) of them have graduated from medical school at UND; more than half completed a residency within the state or did both. The impact of UND and in-state residency training is even more impressive for family medicine physicians, since more than three-quarters of them are in-state graduates.

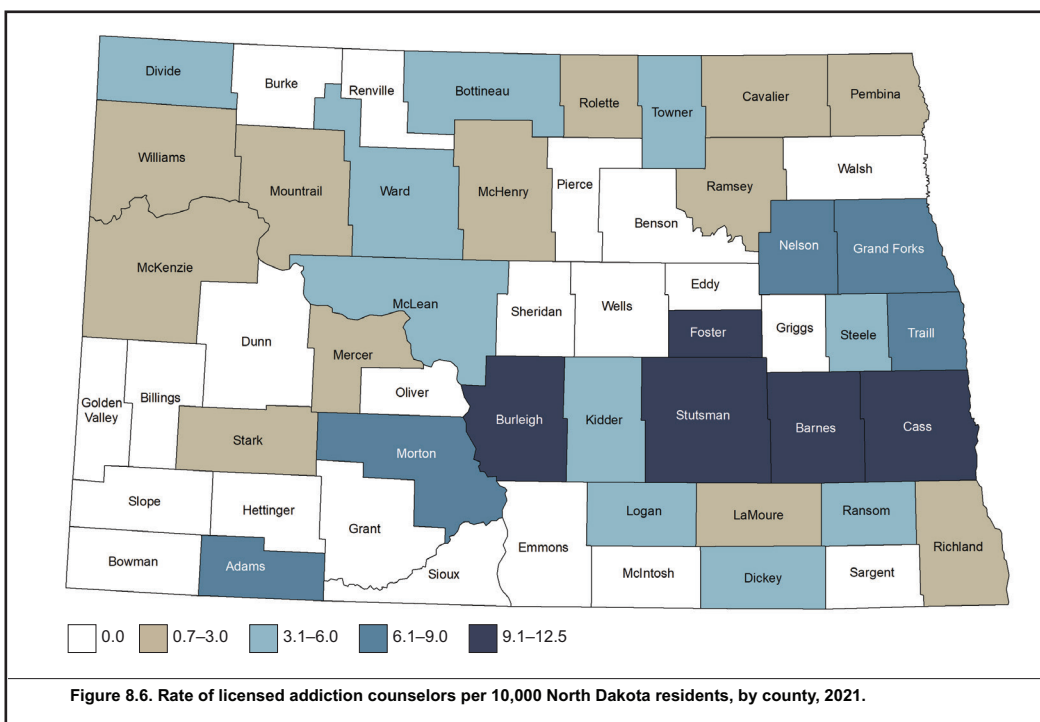
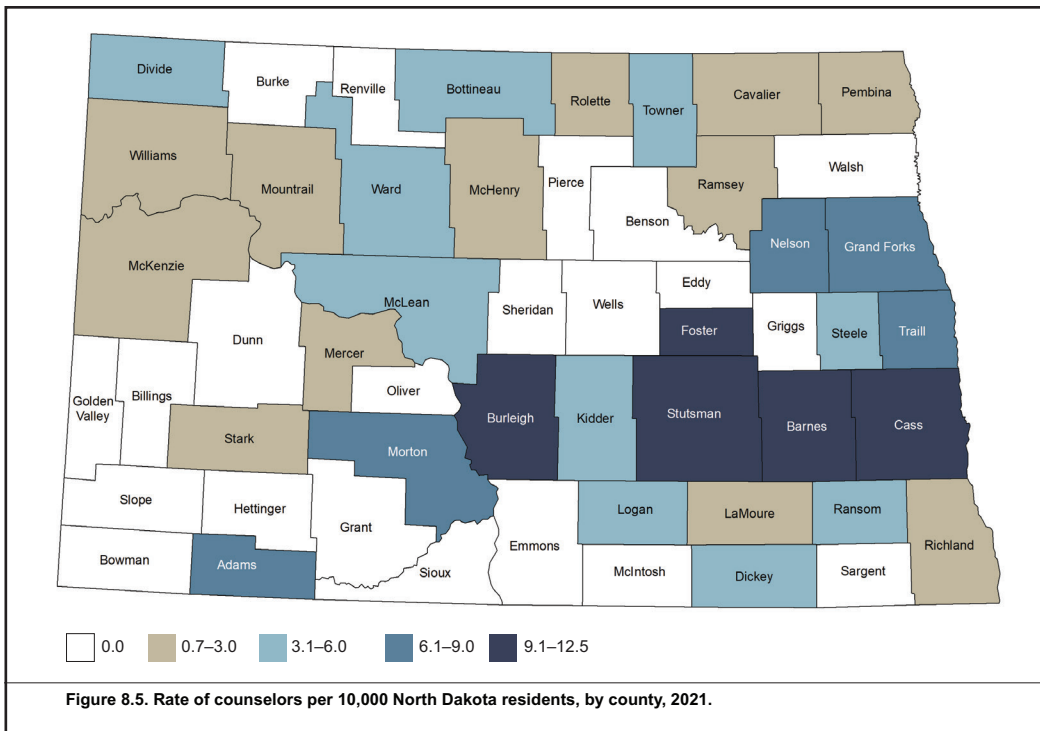


North Dakota has relatively fewer specialists in certain specialties (including obstetrics/gynecology) than the Midwest or the rest of the United States (see Figure 6.8). North Dakota has about the same relative number of psychiatrists as other Midwest states and the United States, although two-thirds of them work in the eastern part of the state, leaving the western parts of North Dakota with a relative shortage.

**Nursing Workforce:** The state’s nursing workforce was examined using new licensure data. The state has shown an increasing trend

of Registered Nurses (RNs) and Advanced Practice Registered Nurses (APRNs) with a decline in Licensed Practical Nurses (LPNs) from 2018 to 2022 (see Figure 7.1). The representation of APRNs between 2018 and 2022 was relatively stable with an increase from 7% to 8%. The representation of LPNs decreased from 19% to 16%, and RNs increased from 74% to 76%. Despite the decline in the percent of LPNs, there has been an increase of more than 2,500 nurses licensed in the state of North Dakota between 2018 and 2022. The increase in nurses overall was due to the increase of more than 2,200 RNs between 2018 and 2022. The current 2022 distribution of licensed nurses in North Dakota is represented by a majority of RNs (76%), followed by LPNs (16%) 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. Most nurses in North Dakota – regardless of nursing role – work full-time; 12% are unemployed (see Figure 7.2). The majority of full-time nurses are licensed as RNs or APRNs; however the percent of RNs employed full-time declined from 74% in 2018 to 69% in 2022. In 2022 61% of LPNs

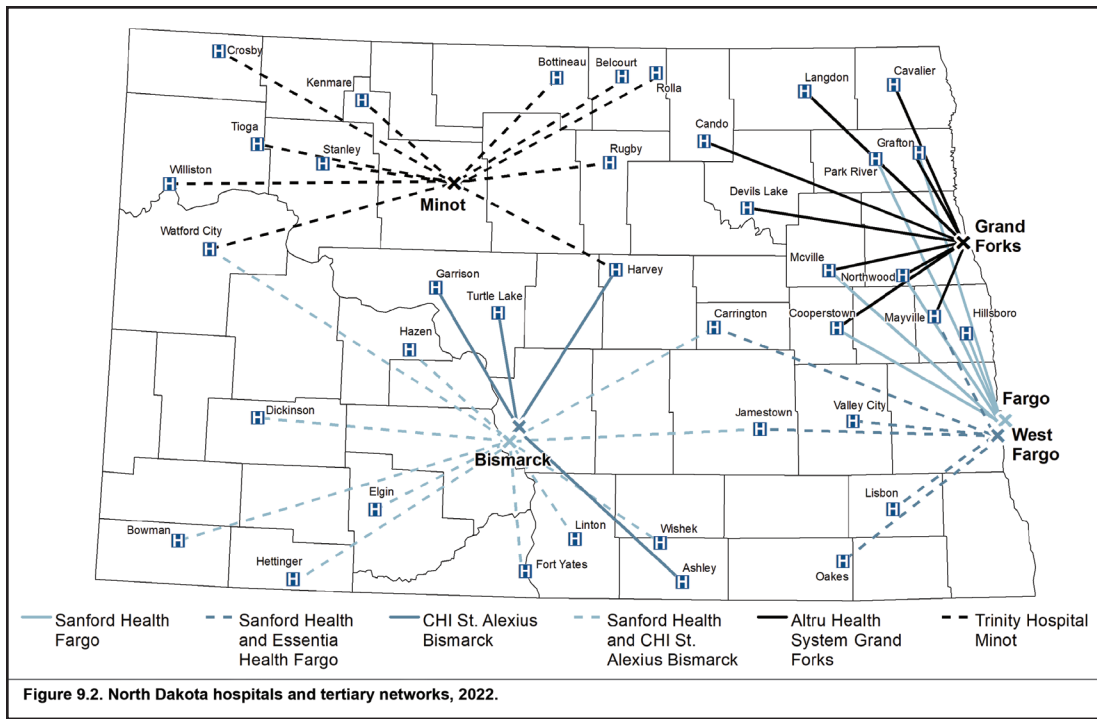




were employed full-time and 19% of LPNs were not employed. Although a nursing presence is especially noteworthy in isolated rural regions of the state, the majority of nurses work in the urban areas (see Figure 7.3).

**Behavioral Health Non-Physician Healthcare Workforce in North Dakota:** Most behavioral health professionals and non-physician providers are found in urban 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 8.5 and 8.6). The largest behavioral health workforce occupation in North Dakota is social workers, with more than 2,000 licensed in the state. A majority of social workers are licensed bachelor's social workers (LBSW) with 66% of social work licenses,



followed by licensed clinical social workers (LCSW) with 18%, and licensed master social workers with 16% of licenses. Of the three social work license types, LCSWs 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. Of all behavioral health occupations in the state, the most common academic program offered at North Dakota institutions of higher education is social work. When comparing geographic distribution, approximately three-fourths of counselors and social workers are in urban areas. Despite this distribution in a majority in urban areas, the county level distribution of counselors and social workers shows representation of the workforce in a majority of counties. Addiction counselors are less likely to be in urban areas than their peers, with only 66% in urban areas. When examining those occupations with programs at the SMHS, the geographic distribution favors rural areas. Physical therapy professionals are split almost evenly between urban and rural with 51% in urban areas and 49% in rural areas. Medical laboratory scientists are represented in urban areas at 65% and isolated rural areas at 15%. Physician assistants and occupational therapist professionals are distributed with approximately 70% in urban areas and 30% in rural spaces.

**Healthcare Organization and Infrastructure:** Healthcare in North Dakota is delivered through more than 300 ambulatory care clinics, 52 hospitals, and 77 skilled-nursing facilities (see Figure 9.2). These facilities are supported by an array of emergency medical services (EMS) providers, trauma centers, 28 public health units, oral health providers, human service zones, and pharmacies.

**Table 10.1**  
North Dakota rankings associated with the Commonwealth Fund State Scorecard, 2022.

Category	2018	2020	2022
Access	24 <sup>th</sup>	23 <sup>rd</sup>	23 <sup>rd</sup>
Prevention and Treatment	23 <sup>rd</sup>	20 <sup>th</sup>	38 <sup>th</sup>
Avoidable Hospital Use and Costs	9 <sup>th</sup>	11 <sup>th</sup>	16 <sup>th</sup>
Equity	27 <sup>th</sup>	11 <sup>th</sup>	25 <sup>th</sup>
Healthy Lives	26 <sup>th</sup>	15 <sup>th</sup>	32 <sup>nd</sup>
COVID	-	-	41 <sup>st</sup>

Generally, the further the facility is from a metropolitan area, the more its operation is threatened by financial and other pressures, including staff recruitment and retention challenges. Rural health organizations tend to be small in size but have a significant impact both on the health of individuals and the economic base of their communities. An example identified in the full report demonstrated the importance of collaboration between health systems, public health, and other entities to provide vaccinations for SARS-CoV-2. For example, the collaboration between the Alerus Center, Altru Hospital, City of Grand Forks, North Dakota Department of Health, North Dakota National Guard, the University of North Dakota College of Nursing and Professional Disciplines, and the University of North Dakota Master of Public Health Program served the greater Grand Forks region to provide vaccinations for the public. This effort allowed the region to optimize the acquisition and delivery of the vaccine at one location that resulted in the delivery of over 37,000 vaccinations. This effort also focused on delivering vaccines to home-bound individuals who otherwise would not be able to travel to the vaccine delivery site.

**Healthcare Policy:** 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, such as 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 *Biennial 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 the delivery of certain acute-care services. North Dakota (along with other upper Midwest states) generally provides high-quality care at relatively lower cost than other states in the United States. North Dakota ranked 29th in state health system performance in the country in a recent assessment undertaken by the Commonwealth Fund (down from 22nd in 2017) (see *Table 10.1*).

The *Biennial 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. One suggestion for consideration by the 68th Legislative Assembly is to authorize funding so that any approved merit pool for North Dakota University System salaries can apply as well to personnel funded through the HWI. The budget submitted by the UND SMHS for the 2023–2025 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 major conclusion of the *Biennial Report* is that further attention and planning (by the healthcare enterprise as a whole, the North Dakota Legislature, the UND SMHS, 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.

A final recommendation is for full implementation of the recently completed *Strategic Plan for Health* (<https://bit.ly/NDStrategicPlanforHealth2021>) 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) the state.



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