University of Nebraska Medical Center

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The Status of the Nebraska Healthcare Workforce: Update 2022

April 2022

UNMC Rural Health Initiatives, in collaboration with the UNMC College of Public Health, Center for Health Policy, and the Nebraska AHEC Program

Acknowledgments

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AUTHORS

Hyo Jung Tak, PhD

Nicole Carritt, MPH

Marlene Deras, BS

Bedant Chakraborty, BDS, PhD(C)

David W. Palm, PhD

Ronnie D. Horner, PhD

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CONTACT INFORMATION

Nicole Carritt, MPH
Director, UNMC Rural Health Initiatives
Office of Academic Affairs

University of Nebraska Medical Center
986035 Nebraska Medical Center
Omaha, NE 68198-6035

unmc.edu/rural-health

Ronnie D. Horner, PhD
Professor & Chair, Department of Health Services Research and Administration

University of Nebraska Medical Center
984350 Nebraska Medical Center
Omaha, NE 68198-4350

unmc.edu/publichealth/chp

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Executive Summary

Ensuring an adequate health care workforce for rural and underserved urban communities has been a long-standing challenge for Nebraska. The need for collaborative and innovative approaches to address this challenge has never been more pressing. The SARS-CoV-2 pandemic has underscored this challenge and accelerated the need for enhanced and definitive action.

Changes in the healthcare landscape, including policy-related factors, population migration, and demographic changes, continue to significantly impact access to quality health care, particularly in rural areas of the state. The pandemic has also provided us with a new lens and clear focus to look at long-standing issues and potential opportunities to reimagine the concept of rural health and the healthcare workforce. The survival of health services in rural areas of Nebraska depends on the economic vitality of the communities and vice versa – from a greater focus on population health to education, technology, infrastructure, and workforce and community economic development. The rapidly changing landscape requires comprehensive, collaborative, and innovative thinking to address the critical challenge immediately.

Rural-urban differences in access to healthcare continue to be an essential and challenging policy issue facing communities throughout the State of Nebraska. With the onset of the recent pandemic, concern has arisen that the disparity in care access may have been widened. The 2022 report, entitled “The Status of the Healthcare Workforce in the State of Nebraska: Update 2022,” addresses these concerns, showing the current distribution of the healthcare workforce throughout the state. Since the last report in 2019, there has been a substantial increase in the health workforce in nursing and pharmacy; there has been a modest increase among physician assistants. However, access to physicians, especially those in primary care specialties, remains a challenge for the more sparsely populated counties.

In the face of significant and continuing transformational changes in healthcare delivery and demographic and population distribution changes in Nebraska, increasing unmet healthcare needs in rural areas may manifest as health care inequity and poorer health outcomes in these communities. These updated data on the state’s healthcare workforce may be useful to assess the relative impact of existing programs, inform health workforce planning efforts, motivate policy interventions, and guide the development of new healthcare delivery models to reduce unmet needs and associated disparities in health.

The data used in this report are from the University of Nebraska Medical Center Health Professions Tracking Services (HPTS) and State of Nebraska licensure data for 2021. For comparison purposes, we also provide data for 2017 and 2019. As in previous reports, we examine the following health professions:

- Physicians
- Physician Assistants
- Advanced Practice Registered Nurses, Registered Nurses and Licensed Practical Nurses
- Dentists and Dental Hygienists
- Pharmacists and Pharmacy Technicians
- Emergency Medical Technicians
- Physical Therapists
- Occupational Therapists
- Medical Nutrition Therapists
- Respiratory Care Practitioners
- Speech-Language Pathologists
- Audiologists
- Medical Radiographers
- Chiropractors
- Podiatrists
- Optometrists

Nebraska behavioral health workforce data and analysis are available through the Behavioral Health Education Center of Nebraska (BHECN) at https://www.unmc.edu/bhecn/. Therefore, the behavioral health workforce was not included in this report.

The following are selected critical findings from the study:

- The number of active physicians per 100,000 population decreased from 257.7 to 249.8 per 100,000 between 2019 and 2021.
- Since 2019, while the number of counties with any primary care physician increased by 1 to 80 out of 93, the number of primary care physicians per 100,000 population has continued its decline.
- Out of 93 counties, 49 counties had active OB/GYN physicians in 2021 compared to 39 counties in 2019; however, the number of physicians in this specialty has continued to decline.
- There are now 1,571 nurse practitioners (NP) in Nebraska - a 17.7% increase since 2019 when there were 1,335 NPs.
- The number of dental professionals decreased between 2019 and 2021. The number of dentists per 100,000 population fell from 56.2 to 53.6, while the number of dental hygienists decreased from 73.8 to 65.8 per 100,000 population.
- Between 2019 and 2021, the number of practicing pharmacists increased from 2,048 to 2,051. However, pharmacists per 100,000 population decreased from 106.2 to 104.5, while pharmacy technicians experienced substantial growth from 3,511 to 5,044 during this two-year period.
- The number of all types of emergency medical technicians have increased from 6,633 to 6,898, a 4% increase between 2019 and 2021.
- Of note, the workforce is aging for several types of health professionals. A significant proportion of Nebraska's dentists (26.9%), licensed practical nurses (20.6%), podiatrists (20%), physicians (19.4%), optometrists (18.6%), and registered nurses (17.2%) are in the pre-retirement age group (61 years of age or older).

Healthcare professions are high-demand, high-skill, and high-wage (H3) occupations. These professions are critical to the overarching healthcare system as they facilitate access to quality healthcare and significantly impact Nebraska's health, economy, and the sustainability and vibrancy of the state's rural and urban underserved communities.

Based on these 2021 findings, it is clear that meeting the state's health care workforce needs remains a significant challenge. We make several recommendations to help monitor and address workforce challenges in the State of Nebraska, including those that expand the evidence base required to formulate innovative and practical approaches to achieve optimal healthcare workforce distribution. These recommendations are:

1. Ensure adequate resources are available to support sufficient numbers of qualified health professions faculty, clinical sites, classroom sites and space, and clinical preceptors necessary to boost health professions student and faculty populations and support educational programming, partnerships, and research.
2. Enhance existing pipeline programs and educational initiatives that incentivize individuals from rural and underserved urban areas to become healthcare professionals to practice healthcare in these communities, particularly for health professions exhibiting significant shortages.
3. Enhance the availability of scholarships and student loan repayment programs for health profession students and practitioners at all levels, particularly for health professions exhibiting significant shortages and those interested in serving rural and underserved urban areas to recruit and retain the needed healthcare workforce.
4. Increase the number of medical residency training positions in Nebraska to include significant training in rural and underserved urban areas.

5. Expand the capacity of the telecommunication infrastructure to support the adoption and utilization of telehealth for expanding access to healthcare, mentoring, and support for health professions students and practicing healthcare professionals.
6. Develop innovative healthcare delivery solutions and related policy interventions to mitigate gaps in healthcare access due to health profession shortages and support rural training programs like Simulation in Motion-Nebraska (SIM-NE).
7. Perform continued targeted data collection, monitoring, forecasting, and modeling the healthcare workforce distribution and statewide health care needs.
8. Evaluate the effectiveness of current state and federal healthcare workforce-related statutes, policies, and programming to determine the current efficacy and how programs might be modified for increased effectiveness.
9. Establish and streamline existing public-private partnerships for health professions education, workforce development, and healthcare delivery.

While ongoing monitoring of the health care workforce in Nebraska is important, it is equally important to better understand the 'why' for the workforce shortages documented in this report. Between this report and the next, effort will be targeted to identifying factors contributing to recruitment and retention challenges (e.g., community and/or health system factors) and to developing a system for forecasting the health care workforce needs of the future. The ultimate goal is to develop and implement policies to improve access to healthcare throughout the State of Nebrasaka and beyond.

I. Introduction

Healthcare providers play a crucial role in ensuring access to healthcare, improving health outcomes, and controlling healthcare expenditures.[1,2] In 2016, the U.S. spent more than a quarter (27.0%) of its healthcare spending on preventable illnesses.[3] Although many factors drive these costs associated with chronic diseases, recent studies indicate that barriers to care, i.e., unmet need or delayed care, have been associated with physician availability.[2,4] The supply and demand of providers in the current healthcare landscape are affected by the population growth, the aging of the nation's population, and the expanding health insurance coverage.[5] And as demonstrated by the pandemic caused by the SARS-CoV-2 virus, acute health events may also influence the availability of and access to healthcare providers.

Over the past decade, there has been increasing concern about a shortage of healthcare providers broadly. A 2012 Kirch et al. study estimated that in 2020, the U.S. might have a shortage of 45,400 primary care physicians and 46,100 medical specialists, a total deficit of 91,500 medical doctors.[6] Furthermore, it was suggested that the national demand for primary care physicians will exceed the supply by 2025.[5,7] A recent report on physician supply and demand by the Association of American Medical Colleges (AAMC) projected that by 2034, there would be a shortage of between 17,800 and 48,000 primary care physicians.[8] In addition, a deficit of between 21,000 and 77,000 physicians was projected to occur among the non-primary care specialties by 2034.[8]

These projected shortages in the healthcare workforce do not discuss the variation of the needs across geographic areas. For rural areas particularly, it is well documented that the more rural the community, the sparser the availability of healthcare providers. Ensuring access to healthcare in rural communities is a complex task for policymakers at the federal and state level. In 2021, it was reported that 61.5% of primary care health professional shortage areas were located in rural areas.[9] Nebraska is a predominantly rural state.[10-12] Eighty-seven out of the ninety-three counties in Nebraska are either partially or entirely rural, and about one in four Nebraskans live in rural areas.[11,12] Therefore, the state residents face critical barriers in accessing care, including primary care.[11] An essential step in effectively addressing such shortages is to document the nature of the disparities, that is, the size and maldistribution of the healthcare workforce in Nebraska.

Mueller and colleagues conducted the first study focused on Nebraska's healthcare workforce in 2009.[13] Although they reported a maldistribution of the healthcare workforce in Nebraska, in doing so, they also laid the foundation for workforce planning in the state. Following this report, more recent research has been commissioned by the Rural Health Initiatives Office and Nebraska Area Health Education Center (AHEC) Program. The UNMC Center for Health Policy (CHP) researchers documented several gaps in rural access to the physician workforce, including primary care.[11,14] In 2017, it was reported that 13 out of the 93 counties in Nebraska did not have any primary care physicians.[14] In 2019, 14 counties lacked primary care physicians.[11] These shortages in rural counties occurred while the number of active physicians per 100,000 population increased from 253.1 to 257.7 per 100,000 population over the same two-year period.[11,14] Among other concerns, the aging workforce was highlighted in these reports.[11,14] The literature also reports disparities in the race/ethnic composition of the workforce and the projected demographic shift in the Nebraskan population.[11,13-15] It was suggested that one in five Nebraskans belong to a racial or ethnic minority and that the Hispanic population is projected to triple over the coming decades.[11,15] Thus, it is crucial to evaluate Nebraska's healthcare workforce's current trends and composition to identify strategies to better align the healthcare workforce with the demand for healthcare.

As recommended in the previously published reports, the current study presents an updated set of findings for the healthcare workforce in Nebraska. Our study utilizes recent data to help policymakers, educational programs, and other stakeholders make informed decisions based on the updated trends and compares them with the prior reports to highlight patterns in the supply of a group of licensed healthcare professionals in the State of Nebraska.

II. Data Source and Methods

This report utilizes the Health Professions Tracking Service (HPTS) data from 2021.[16] HPTS is a database providing information on licensed healthcare professionals in Nebraska at the University of Nebraska Medical Center. HPTS offers licensing data available from the State of Nebraska Department of Health and Human Services (DHHS) by identifying licensed professionals practicing and compiling data on professional work hours for several professions and each practice site. HPTS is an ongoing service that ensures accuracy through regular and consistent data collection. Our study used data from April 2021 to examine actively practicing physicians, physician assistants, advanced practice registered nurses, dentists, pharmacists, physical therapists, and occupational therapists. Advanced Practice Registered Nurses were stratified as nurse practitioners, certified nurse-midwives, clinical nurse specialists, and certified registered nurse anesthetists. All providers are licensed in the State of Nebraska.

In addition to the above HPTS data, State of Nebraska licensure data was obtained for the following professions in the report:

- Registered Nurses
- Licensed Practical Nurses
- Dental Hygienists
- Pharmacy Technicians
- Emergency Medical Technicians
- Medical Nutrition Therapists
- Respiratory Care Practitioners
- Speech-Language Pathologists
- Audiologists
- Medical Radiographers
- Chiropractors
- Podiatrists
- Optometrists

Unlike the HPTS data on actively practicing providers, not all licensed providers may be actively practicing. Location data for licensed providers were based on addresses supplied by the State of Nebraska medical licensure database. Note that visiting specialties or part-time providers with rotating schedules may provide services in more than one community. However, in this report, all the distributions are capped to the providers serving in Nebraska.

The analyses consist of examining providers' number and demographic characteristics and mapping their geographic distribution across counties in Nebraska. Geographical mapping utilized location data for providers who reported a Nebraska-based address; licensed providers with an out-of-state address were excluded from the mapping analysis. Demographic characteristics include age, sex, and race/ethnicity. Race/ethnic categories are non-Hispanic white, non-Hispanic black, Hispanic/Latino, and non-Hispanic other/multiracial. U.S. Census Bureau 2019 estimates for Nebraskan counties were used to adjust workforce data for county population size.[17] The state population data from the 2021 U.S. Census data were used to adjust the workforce data.[15] These census datasets were the most recent available for the state. Stata MP v.16.1 (StataCorp, College Station, TX) was used for statistical analysis, and ArcMap 10.8.1 geographic information system (ESRI, Redlands, CA) was used for geographical analysis.

III. Distribution and Characteristics of Professionals

HIGHLIGHTS

- Since 2019, there has been a decrease in the total number of practicing physicians, attributable primarily to the loss of those in the primary care specialties, notably Family Medicine/General Practice and Pediatrics.
- Over the 2017-2021 period, the Advanced Practice Nursing workforce demonstrated an increasing trend, particularly in the number of Nurse Practitioners.
- The number of Registered Nurses also increased over the 2017-2021 period; however, the increase is lessening since 2019.
- The number of practicing Dental Health Professionals has decreased since 2019, with notable decreases among Dentists in General Practice and Dental Hygienists.
- The total number of Pharmacy Professionals has been increasing since 2017, with that increase attributable to the number of Pharmacy Technicians; the number of Pharmacists has remained steady over that period.
- The total Emergency Medicine Technician (EMT) workforce declined between 2017 and 2019 but experienced an increase between 2019 and 2021, mainly attributable to the number of basic EMTs and Paramedics.

III.1. PHYSICIANS

Among actively practicing physicians in Nebraska, there are 143 specialties, of which 104 are medical specialties and an additional 39 surgical specialties. However, this report focuses on the changes in the primary care fields of family medicine, general practice, internal medicine, obstetrics and gynecology, and pediatrics. In addition, we present results for general surgeons.

The total number of physicians practicing in Nebraska decreased in 2021 compared to 2019, a reversal of the increase between 2017 and 2019 (Table 1). Compared to 2019, the most significant decline in the number of actively practicing physicians occurred for the primary care specialties, with a loss of 99 primary care physicians. Specifically, there were 32 fewer family/general practitioners among the primary care specialties, 36 fewer pediatricians, 16 fewer internists, and 15 fewer obstetricians and gynecologists (OB/GYN). Among the non-primary care specialties, there was a slight decrease in the number of general surgeons, but the number of physicians in other specialties increased by38 physicians from 2019 to 2021.

Table 1. Number and rate per 100,000 population by specialty of physicians in 2017, 2019 and 2021

	2017	2019	2021
PHYSICIAN TYPE	N (RATE/100,000)	N (RATE/100,000)	N (RATE/100,000)
Primary Care	1,794 (94.1)	1,774 (92.0)	1,675 (85.3)
Family Medicine/General Practice	894 (46.9)	870 (45.1)	838 (42.7)
Internal Medicine	395 (20.7)	387 (20.1)	371 (18.9)
Obstetrics and Gynecology	214 (11.2)	210 (10.9)	195 (9.9)
Pediatrics	291 (15.3)	307 (15.9)	271 (13.8)
Other Specialties			
General Surgery	172 (9.0)	188 (9.7)	184 (9.4)
Other	2,861 (150.0)	3,009 (156.0)	3,047 (155.2)
Total Physicians	4,827 (253.1)	4,971 (257.7)	4,906 (249.8)

Note: * Physicians include medical doctors (MD), doctors of osteopathy (DO), physicians with Bachelor of Medicine, Bachelor of Surgery (MBBS), residents, and fellows.

The demographic characteristics of physicians in 2021 were similar to both 2019 and 2017. There-was-a modest upward trend in the proportion of women physicians, with an increase of 1.3% between 2017 and 2019 and 1.5% between 2019 and 2021 (Table 2). The race/ethnicity distribution of Nebraska physicians in 2021 continues to be similar to 2019 and 2017. The number of actively practicing physicians continued to grow marginally older. For example, almost 30% of the physician workforce was over 55 years of age in 2021 (Table 2). In addition, 19.4% of physicians in Nebraska are currently more than 60 years old and, hence, may be at risk of retiring within the next 5-10 years.

Table 2. Sex, race/ethnicity and age distribution of physicians in 2017, 2019 and 2021

	2017	2019	2021
DEMOGRAPHIC CHARACTERISTICS	N (%)	N (%)	N (%)
Sex*			
Female	1,509 (31.4)	1,625 (32.7)	1,676 (34.2)
Male	3,305 (68.6)	3,340 (67.3)	3,230 (65.8)
Race/ethnicity**			
Non-Hispanic White	3,085 (87.3)	3,085 (87.4)	2,968 (87.5)
Non-Hispanic Black	58 (1.6)	59 (1.7)	57 (1.7)
Hispanic	91 (2.6)	93 (2.6)	89 (2.6)
Non-Hispanic Other/Multiracial	302 (8.5)	294 (8.3)	280 (8.3)
Age in years***			
Less than or equal to 35 years	1,086 (22.5)	1,168 (23.6)	993 (20.3)
36-45 years	1,256 (26.1)	1,317 (26.5)	1,423 (29.1)
46-60 years	1,599 (33.1)	1,556 (31.4)	1,534 (31.3)
More than or equal to 61 years	880 (18.3)	924 (18.6)	951 (19.4)

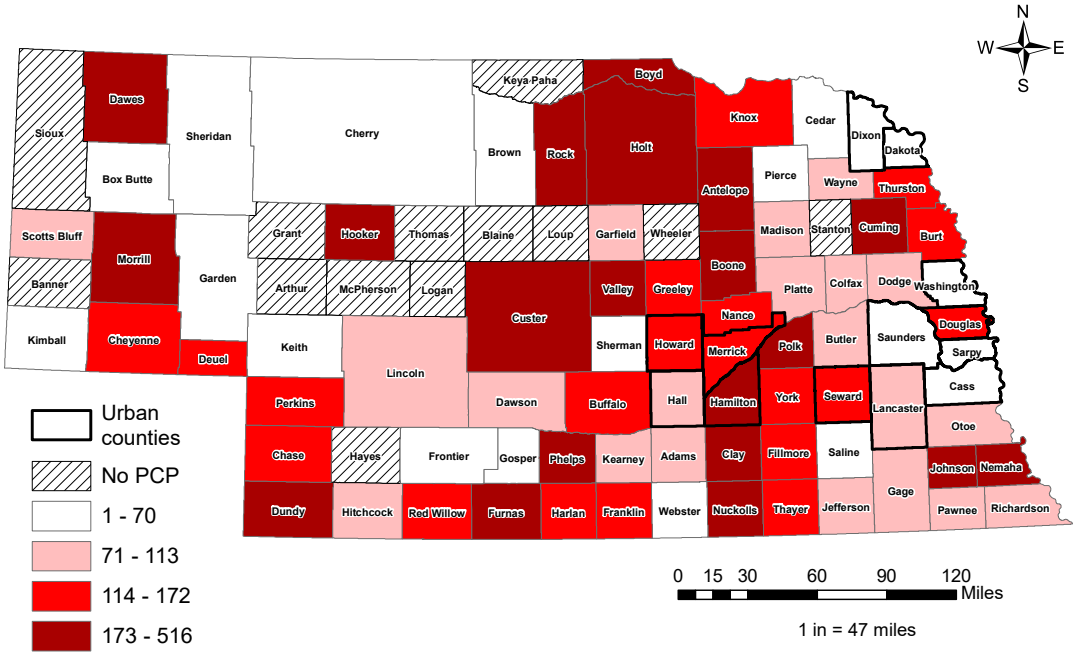
* Sex was not reported for 13 physicians in 2017.
** Race/ethnicity was not reported for 1,291 physicians in 2017 and 1,512 physicians in 2021.
*** Age was not reported for six physicians in 2017 and five physicians in 2021.

The distribution of primary care specialists and general surgeons are presented in Figures 1 to 6. Although sparsely populated, 13 of the state's 93 counties do not have any active primary care physicians (family medicine, general practice, internal medicine, OB/GYN, pediatrics) (Figure 1). Since 2019, only one of these counties (Gosper) has added active primary care physicians.

The State of Nebraska has designated all counties except Douglas and Lancaster as shortage areas for at least one type of primary care specialty (refer to Appendices B, C, and D). For example, 25 out of 93 counties are designated shortage areas for family physicians, having either no family physician or, on average, there are 2,000 or more persons per family physician (Figure 2). Aside from Scotts Bluff and Dawes Counties, most western and central Nebraska counties either have no primary care physicians or have a low number of physicians relative to the population size.

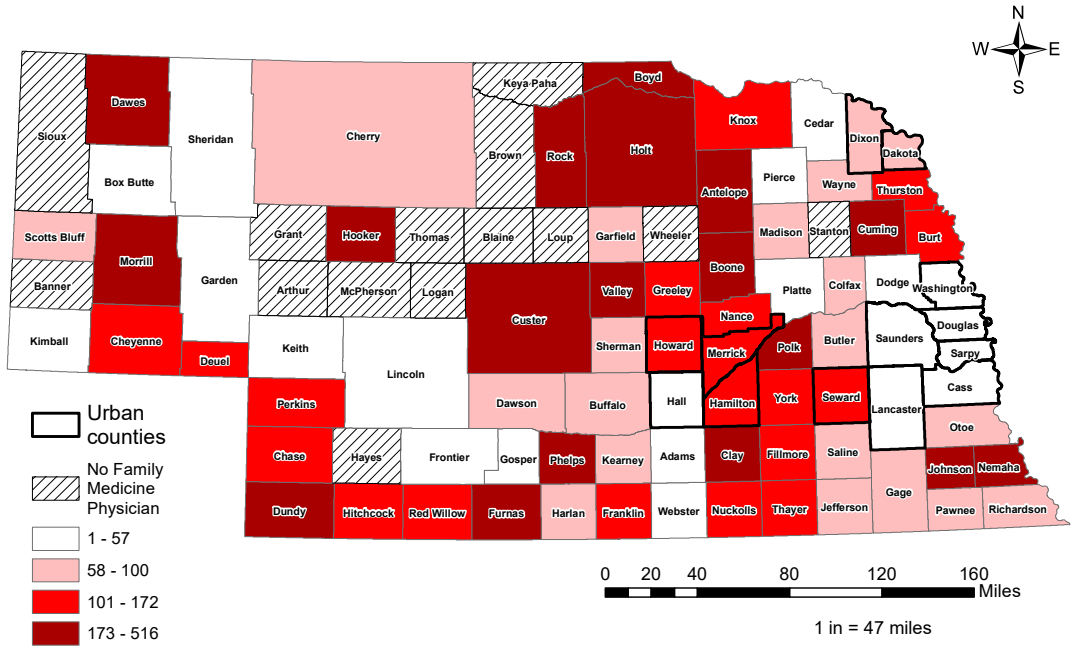
The distribution of all other primary care physicians is similar to family practice/general practice physicians. Compared to 2019, Gosper County now has a family practitioner, but Brown County no longer has one. Family medicine and general practice physicians continue to be more widely dispersed throughout the state than the specialties of internal medicine, OB/GYN, and pediatrics (Figures 3-5). In comparison with 2019, Pierce County added an internal medicine physician, but Boyd, Thurston, and Webster no longer have internal medicine physicians (Figure 3). Since 2019, there has been considerable improvement in the number of OB/GYN physicians practicing in rural Nebraska. In 2021, 49 counties had active OB/GYN physicians compared to 39 in 2019 (Figure 4). There were no changes in the distribution among pediatric physicians (Figure 5) between 2019 and 2021. Since 2019, Sheridan, Brown, Cuming, and Thurston have not had any general surgeons. However, Knox County gained more active practicing surgeons by 2021 (Figure 6).

Figure 1. Number of active primary care physicians per 100,000 population by county, Nebraska in 2021



Note: * PCP is Primary Care Physician. County information was note reported for 13 PCPs.

Figure 2. Number of active family medicine physicians per 100,000 population by county, Nebraska in 2021



Note: * County information was note reported for 12 familiy medicine physicians.

Figure 3. Number of active internal medicine physicians per 100,000 population by county, Nebraska in 2021

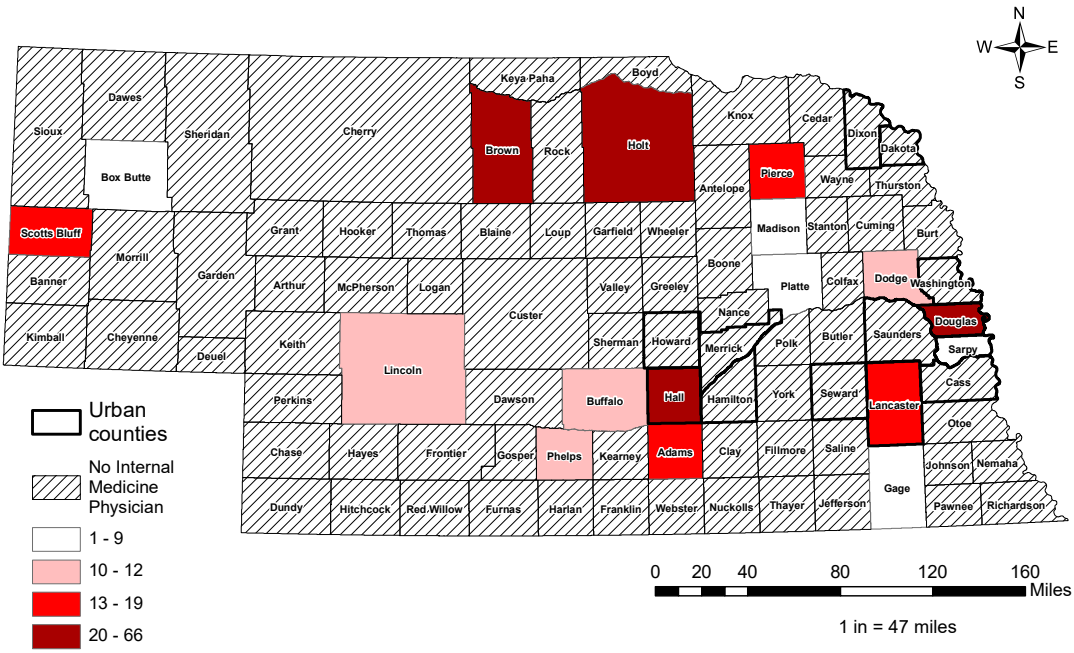
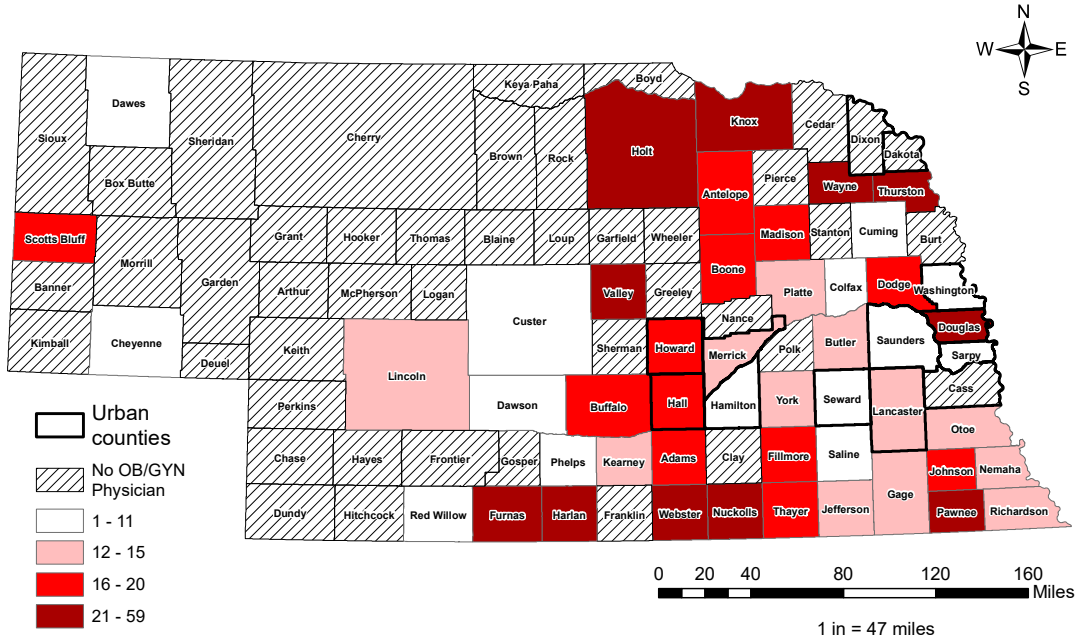
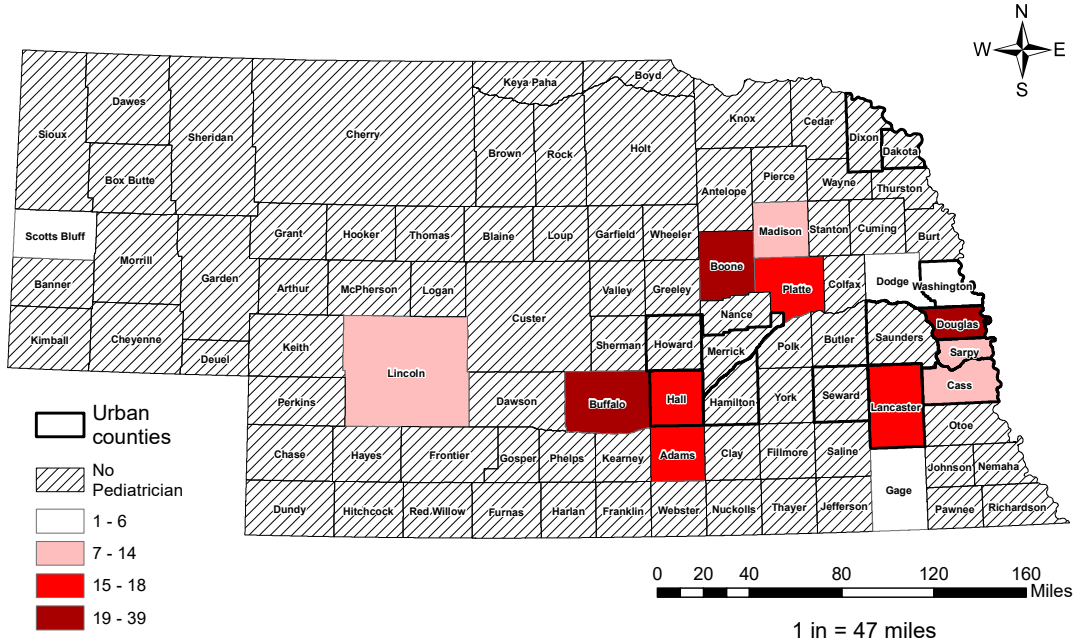


Figure 4. Number of active OB/GYN physicians per 100,000 population by county, Nebraska in 2021



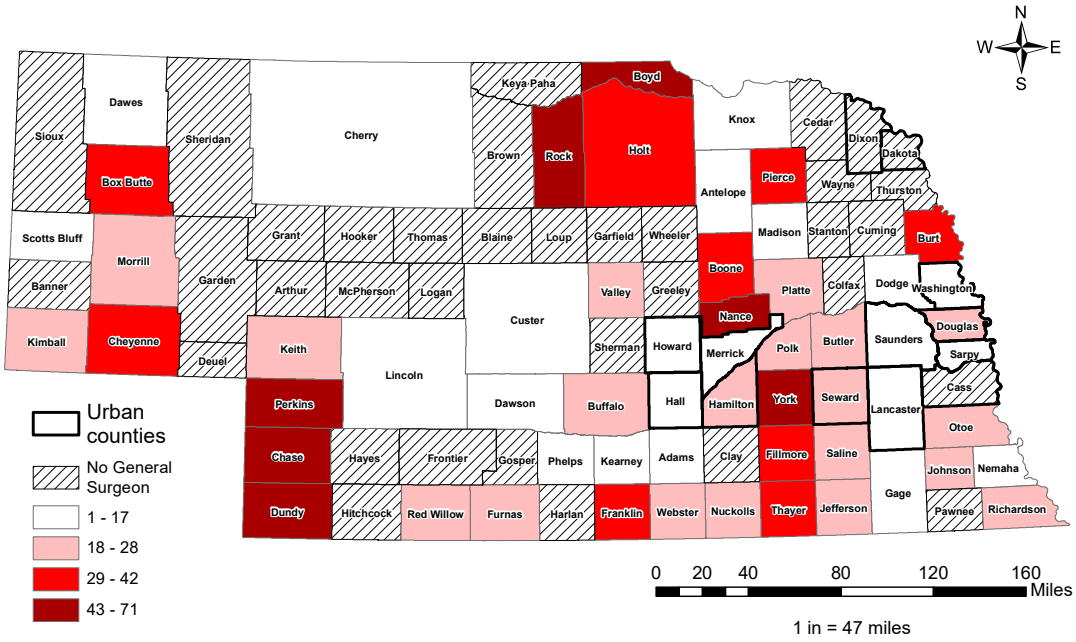
* Note: OB/GYN, Obstetrics and Gynecology

Figure 5. Number of active pediatric primary care physicians per 100,000 population by county, Nebraska in 2021



Note: *County information was not available for one pediatrician.

Figure 6. Number of active general surgeons per 100,000 population by county, Nebraska in 2021



Note: *County information was not reported for one general surgeon.

III.2. PHYSICIAN ASSISTANTS

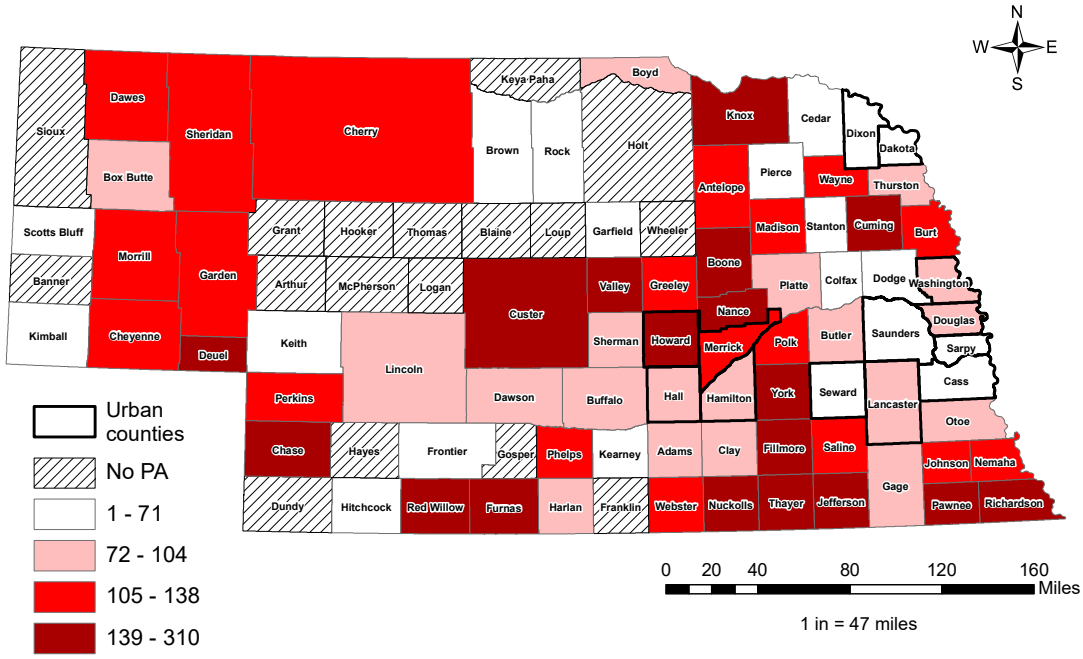
There was an increase in active physician assistants (PA) from 908 PAs in 2017 to 1,013 PAs in 2019 to 1,087 PAs in 2021. In 2021, more than half (53.8%) of the physician assistants were 40 years old or younger and predominantly women (74.7%); the proportion of physician assistants who are women has been increasing since 2017 (Table 3). For race/ethnicity, virtually all physician assistants are non-Hispanic White with little change in composition since 2017. Spatial analysis suggests that 17 counties do not have an active physician assistant, increasing one county from 2019 (Figure 7). The current distribution of physician assistants among counties in Nebraska is similar to that of 2019, except that Holt County no longer has any physician assistants (Figure 7).

Table 3. Sex, race/ethnicity and age distribution of physician assistants (PA) in 2017, 2019 and 2021

	2017	2019	2021
DEMOGRAPHIC CHARACTERISTICS	**N (%)**	**N (%)**	**N (%)**
Sex*			
Female	649 (71.5)	745 (73.5)	812 (74.7)
Male	259 (28.5)	268 (26.5)	275 (25.3)
Race/ethnicity**			
Non-Hispanic White	741 (96.8)	785 (96.4)	834 (96.2)
Non-Hispanic Black	3 (0.4)	4 (0.5)	4 (0.5)
Hispanic	11 (1.4)	12 (1.5)	15 (1.7)
Non-Hispanic Other/Multiracial	11 (1.4)	13 (1.6)	14 (1.7)
Age in years***			
Less than or equal to 35 years	340 (37.5)	388 (38.4)	394 (36.3)
36-45 years	267 (29.4)	292 (28.8)	343 (31.6)
46-60 years	224 (24.7)	256 (25.3)	275 (25.3)
More than or equal to 61 years	76 (8.4)	76 (7.5)	75 (6.9)

* Race/ethnicity was not reported for 142 PAs in 2017, 199 PAs in 2019, and 220 PAs in 2021.
** Age was not reported for one PA in 2017 and 2019.

Figure 7. Number of active physician assistants per 100,000 population by county, Nebraska in 2021



Note: *County information was not available for five PAs.

III.3. NURSE PROFESSIONALS

III.3.1. Advanced Practice Registered Nurses

Advanced practice registered nurses (APRN) include nurse practitioners (NP), certified nurse-midwives (CNM), clinical nurse specialists (CNS), and certified registered nurse anesthetists (CRNA). In 2021, 1,571 nurse practitioners, 39 certified nurse-midwives, 52 clinical nurse specialists, and 386 certified registered nurse anesthetists were in active practice (Table 4). The number of APRNs has increased substantially from 2017 to 2021, especially since 2019. Since 2017, 423 additional nurse practitioners have been practicing in the state, three certified nurse midwives, three clinical nurse specialists, and 78 certified registered nurse anesthetists.

Table 4. Number and rate per 100,000 population by type of advanced practice registered nurse (APRN)

	2017	2019	2021
APRN TYPE	N (Rate/100,000)	N (Rate/100,000)	N (Rate/100,000)
Nurse Practitioner (NP)	1,148 (60.2)	1,335 (69.2)	1,571 (80.0)
Certified Nurse Midwives (CNM)	36 (1.9)	37 (1.9)	39 (2.0)
Clinical Nurse Specialists (CNS)	49 (2.6)	47 (2.4)	52 (2.6)
Certified Registered Nurse Anesthetists (CRNA)	308 (16.2)	368 (19.1)	386 (19.7)
Total APRNs	1,541 (80.8)	1,787 (92.6)	2,048 (104.3)

Tables 5 to 8 present the demographics of APRN professionals by type. Women predominate in these professions except for certified registered nurse anesthetists, where only about half the practitioners are women. Similarly, non-Hispanic whites represent over 90% of each type of practitioner. The proportion of women practitioners who are non-Hispanic White has remained relatively steady since 2017. Similar to earlier years, there are substantial differences in age across types of APRNs. Only 10.5% of nurse practitioners are above the age of 60 years (Table 5); this compares to 15.4% of certified nurse-midwives (Table 6), 42.3% of the clinical nurse specialists (Table 7), and 16.1% of certified registered nurse anesthetists who are older than 60 years of age (Table 8). These age patterns are similar to those observed in 2017 and 2019.

Table 5. Sex, race/ethnicity and age distribution of active nurse practitioners (NP) in 2017, 2019 and 2021

	2017	2019	2021
DEMOGRAPHIC CHARACTERISTICS	**N (%)**	**N (%)**	**N (%)**
Sex*			
Female	1,097 (95.6)	1,258 (94.2)	1,482 (94.3)
Male	51 (4.4)	77 (5.8)	89 (5.7)
Race/ethnicity**			
Non-Hispanic White	788 (96.5)	898 (96.8)	1,058 (96.1)
Non-Hispanic Black	9 (1.1)	9 (1.0)	16 (1.5)
Hispanic	10 (1.2)	11 (1.2)	13 (1.9)
Non-Hispanic Other/Multiracial	10 (1.2)	10 (1.1)	14 (1.3)
Age in years***			
Less than or equal to 35 years	311 (27.1)	355 (26.6)	377 (23.9)
36-45 years	378 (33.0)	454 (34.1)	583 (37.1)
46-60 years	334 (29.1)	381 (28.6)	445 (28.3)
More than or equal to 61 years	123 (10.7)	142 (10.7)	164 (10.5)

* Race/ethnicity was not reported for 331 NPs in 2017, 407 in 2019, and 470 in 2021.
**Age was not reported for two NPs in 2017, 2019, and three in 2019.

Table 6. Sex, race/ethnicity, and age distribution of active Certified Nurse-Midwives (CNM) in 2017, 2019 and 2021

	2017	2019	2021
DEMOGRAPHIC CHARACTERISTICS	**N (%)**	**N (%)**	**N (%)**
Sex*			
Female	36 (100.0)	37 (100.0)	39 (100.0)
Male	0 (0.0)	0 (0.0)	0 (0.0)
Race/ethnicity**			
Non-Hispanic White	20 (87.0)	19 (86.4)	22 (88.0)
Non-Hispanic Black	2 (8.7)	2 (9.1)	2 (8.0)
Hispanic	1 (4.3)	1 (4.5)	1 (4.0)
Non-Hispanic Other/Multiracial	0 (0.0)	0 (0.0)	0 (0.0)
Age in years***			
Less than or equal to 35 years	9 (25.0)	7 (18.9)	7 (18.0)
36-45 years	14 (38.9)	17 (45.9)	17 (43.6)
46-60 years	9 (25.1)	8 (21.6)	9 (23.1)
More than or equal to 61 years	4 (11.1)	5 (13.5)	6 (15.4)

* Race/ethnicity was not reported for 11 CNMs in 2017, 15 CNMs in 2019, and 14 CNMs in 2021.

Table 7. Sex, race/ethnicity, and age distribution of active Clinical Nurse Specialists (CNS) in 2017, 2019 and 2021

	2017	2019	2021
DEMOGRAPHIC CHARACTERISTICS	**N (%)**	**N (%)**	**N (%)**
Sex*			
Female	48 (98.0)	46 (97.9)	51 (98.1)
Male	1 (2.0)	1 (2.1)	1 (1.9)
Race/ethnicity**			
Non-Hispanic White	45 (97.8)	43 (97.7)	47 (97.9)
Non-Hispanic Black	0 (0.0)	0 (0.0)	0 (0.0)
Hispanic	0 (0.0)	0 (0.0)	0 (0.0)
Non-Hispanic Other/Multiracial	1 (2.2)	1 (2.3)	1 (2.1)
Age in years***			
Less than or equal to 35 years	2 (4.1)	2 (4.3)	2 (3.9)
36-45 years	9 (18.4)	5 (10.7)	8 (15.4)
46-60 years	22 (44.9)	19 (40.4)	20 (38.4)
More than or equal to 61 years	16 (32.6)	21 (44.7)	22 (42.3)

* Race/ethnicity was not reported for three CNSs in 2017, 2019, and 4 CNSs in 2021.

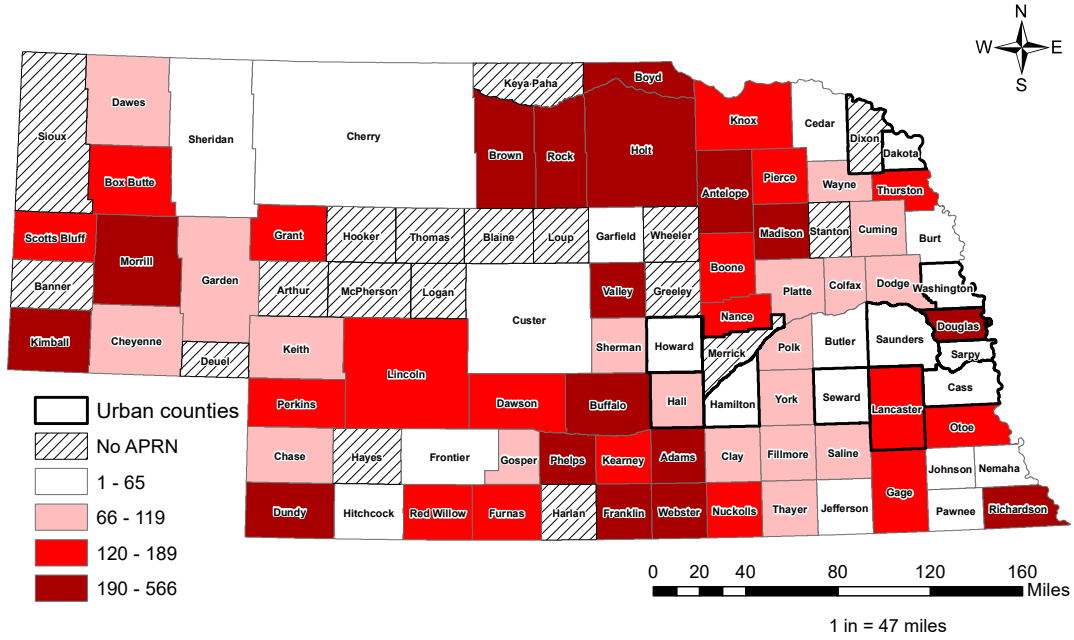
Table 8. Sex, race/ethnicity, and age distribution of active Certified Registered Nurse Anesthetists (CRNA) in 2017, 2019 and 2021

	2017	2019	2021
DEMOGRAPHIC CHARACTERISTICS	**N (%)**	**N (%)**	**N (%)**
Sex*			
Female	158 (51.3)	193 (52.6)	213 (55.3)
Male	150 (48.7)	174 (47.4)	172 (44.7)
Race/ethnicity**			
Non-Hispanic White	192 (98.0)	227 (96.2)	250 (95.8)
Non-Hispanic Black	0 (0.0)	1 (0.4)	1 (0.4)
Hispanic	2 (1.0)	5 (2.1)	6 (2.3)
Non-Hispanic Other/Multiracial	2 (1.0)	3 (1.3)	4 (1.5)
Age in years***			
Less than or equal to 35 years	52 (16.9)	77 (20.9)	63 (16.3)
36-45 years	99 (32.2)	122 (33.1)	153 (39.6)
46-60 years	100 (32.5)	108 (29.3)	108 (28)
More than or equal to 61 years	57 (18.5)	61 (16.6)	62 (16.1)

* Sex was not reported for 1 CRNA in 2021.
** Race/ethnicity was not reported for 112 CRNAs in 2017, 132 in 2019, and 125 in 2021.
*** Age was not reported for one CRNA in 2019.

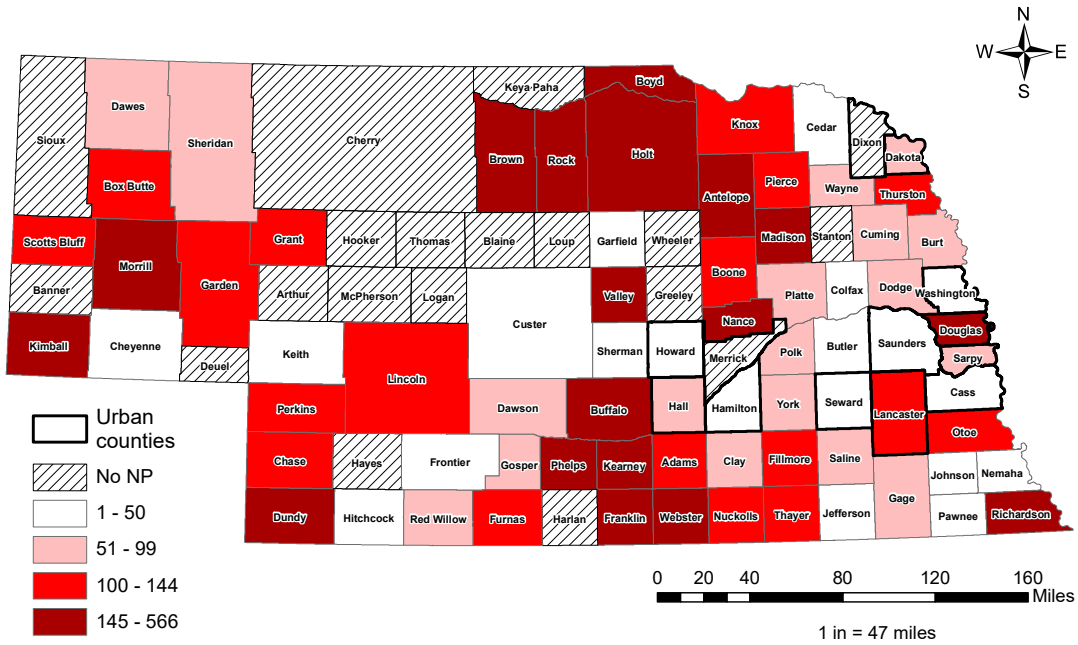
The distribution across counties of APRNs overall and by type are shown in Figures 8 through 12. As shown in Figure 8, 18 out of 93 counties had no active APRN in 2021 compared to 17 and 18 counties without an APRN in 2019 and 2017, respectively. As shown in Figure 9, 19 counties do not have a nurse practitioner, which is one more than in 2019. It is important to note that most of these counties are sparsely populated, with less than 1,000 persons. The geographical distribution of CNM, CNS, and CRNA professionals is shown in Figures 10-12. The majority of counties in Nebraska do not have either CNM or CNS specialties.

Figure 8. Number of active advanced practice registered nurses (APRN) per 100,000 population by county, Nebraska in 2021



Note: **County information was not reported for 14 APRNs.

Figure 9. Number of active nurse practitioners (NP) per 100,000 population by county, Nebraska in 2021



Note: *County information was not reported for 11 APRNs.

Figure 10. Number of active certified nurse midwives (CNM) per 100,000 population by county, Nebraska in 2021

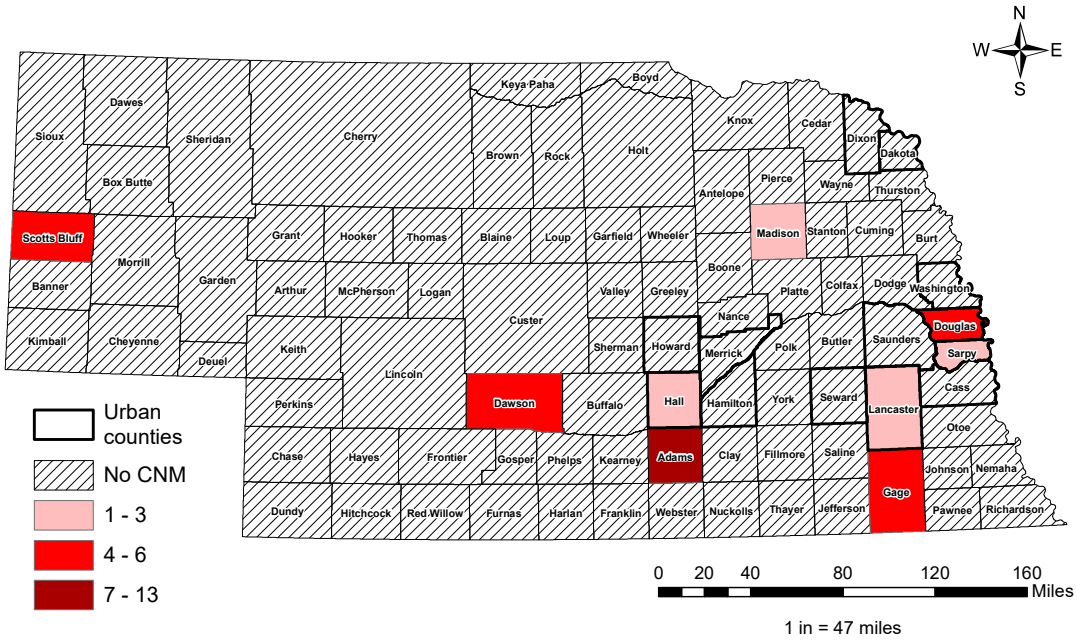


Figure 11. Number of active clinical nurse specialists (CNS) per 100,000 population by county, Nebraska in 2021

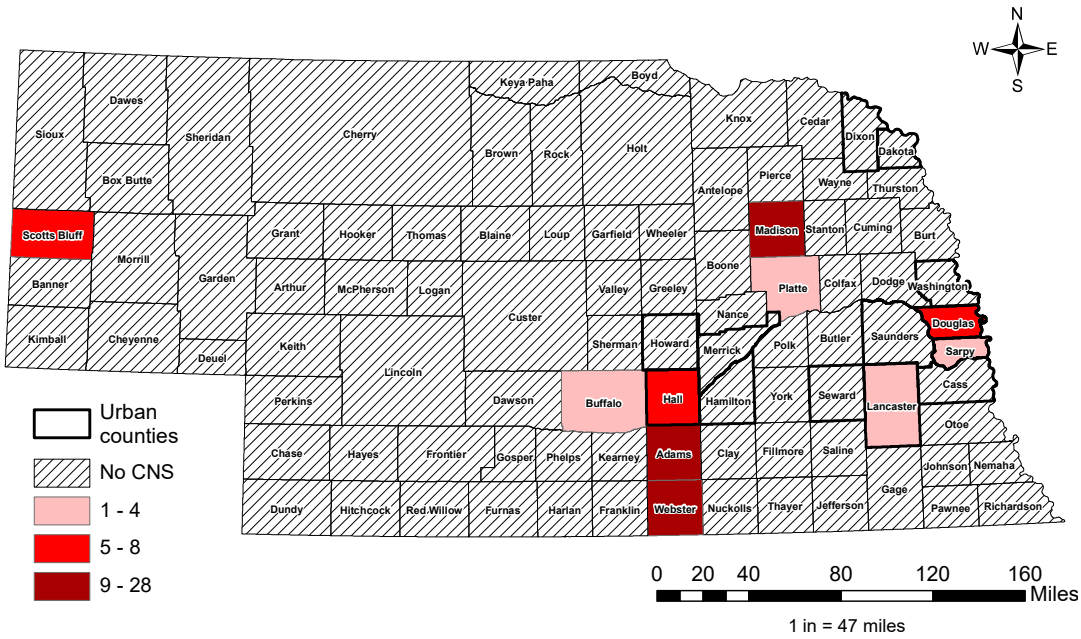
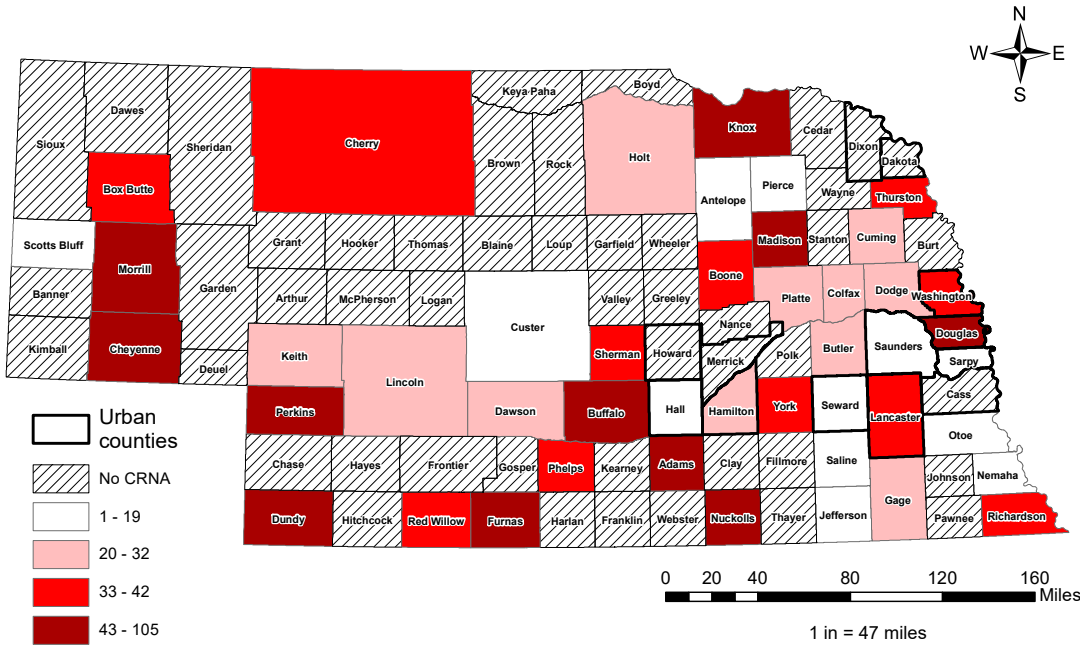


Figure 12. Number of active certified registered nurse anesthetists (CRNA) per 100,000 population by county, Nebraska in 2021



Note: *County information was not reported for 3 CRNAs.

III.3.2. Registered Nurses and Licensed Practical Nurses

Data on the number of actively practicing registered nurses (RN) and licensed practical nurses (LPN) for Nebraska are presented in Table 9. There are approximately five times the number of registered nurses as licensed practical nurses in each reporting year. There has been a modest increase in registered nurses from 2017 to 2021. By contrast, there was an increase of almost 300 licensed practical nurses from 2017 to 2019, but a decrease of 87 between 2019 and 2021.

Table 9. Number and rate per 100,000 population by type of nurse professional in 2017, 2019 and 2021

	2017	2019	2021
NURSING PROFESSIONAL TYPE	N (Rate/100,000)	N (Rate/100,000)	N (Rate/100,000)
Registered Nurse (RN)	27,922 (1,464.1)	29,059 (1,506.2)	29,681 (1,511.5)
Licensed Practical Nurse (LPN)	5,600 (293.6)	5,892 (305.4)	5,805 (295.6)
Total RN and LPN Professionals	33,522 (1,757.7)	34,951 (1,811.6)	35,486 (1,807.1)

Table 10 presents the demographic distribution of registered nurses and licensed practical nurses. Women predominated in these professions, although over the 2017-2021 period, the proportion of men in these professions showed a modest but steady increase. The age distribution of registered nurses skews substantially more to the younger age categories than licensed practical nurses. However, there is an increasing proportion of registered nurses older than 60 years of age. The proportion of older than 60 years has been steadier for licensed practical nurses. However, a potentially alarming increase in the proportion of registered nurses 61 years of age or older was observed in 2019 and has continued in 2021.

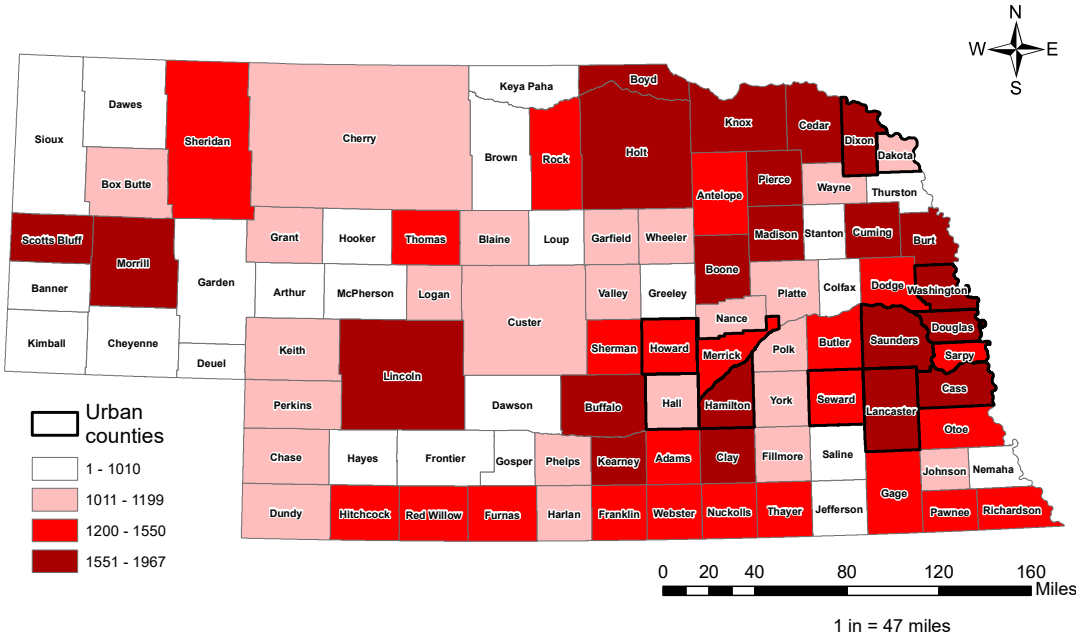
Table 10. Sex and age distribution of registered nurses (RN) and licensed practical nurses (LPN) in 2017, 2019, 2021

	RN			LPN		
	2017	2019	2021	2017	2019	2021
DEMOGRAPHIC CHARACTERISTICS	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Sex*						
Female	26,089 (93.6)	27,068 (93.2)	27,573 (92.9)	5,410 (96.6)	5,698 (96.7)	5,596 (96.4)
Male	1,786 (6.4)	1,962 (6.8)	2,108 (7.1)	190 (3.4)	194 (3.3)	209 (3.6)
Age in years***						
Less than or equal to 35 years	9,233 (33.1)	8,873 (30.6)	9,662 (32.5)	1,457 (26.0)	1,152 (19.6)	1,262 (21.8)
36-45 years	6,127 (22.0)	7,112 (24.5)	7,344 (24.7)	1,276 (22.8)	1,429 (24.2)	1,436 (24.8)
46-60 years	8,507 (30.5)	8,251 (28.5)	7,574 (25.5)	1,911 (34.2)	1,992 (33.8)	1,913 (32.9)
More than or equal to 61 years	4,011 (14.4)	4,788 (16.5)	5,101 (17.2)	949 (17.0)	1,313 (22.3)	1,194 (20.6)

* Sex was not reported for 47 RNs in 2017 and 29 RNs in 2019.
** Age was not reported for 44 RNs in 2017, 35 RNs in 2019, 7 LPNs in 2017, and 6 LPNs in 2019.
*** Note: The data used here is from the licensure database. Data for race-ethnicity was not available.

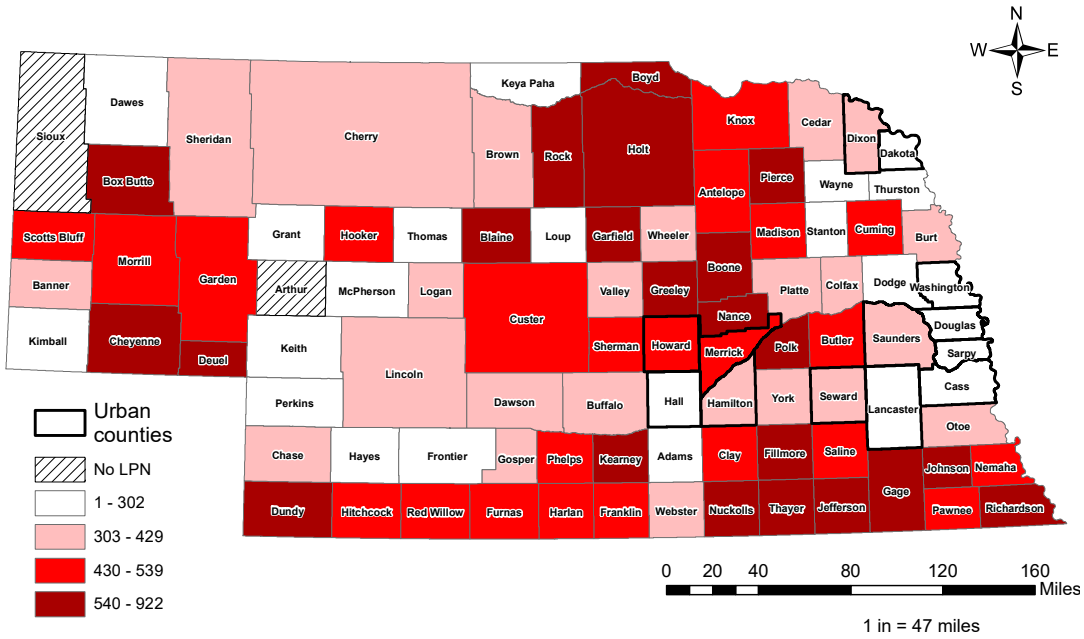
The distribution across counties of the number of nursing professionals per 100,000 population is presented in Figures 13 and 14. In 2021, all counties in Nebraska had at least one active registered nurse, and 91 of 93 counties had an active licensed practical nurse. The Counties of Keya Paha and McPherson changed from having no licensed practical nurse in 2019 to having at least one in 2021.

Figure 13. Number of registered nurses (RN) per 100,000 population by county, Nebraska in 2021



Note:* A total of 42 county observations were not included in the maps as their information was recorded as a combination of multiple counties. i.e., Gosper/Dawson – 10 and Madison/Antelope – 32.

Figure 14. Number of licensed practical nurses (LPN) per 100,000 population by county, Nebraska in 2021



Note: * A total of 42 county observations were not included in the maps as their information was recorded as a combination of multiple counties. i.e., Gosper/Dawson – 1 and Madison/Antelope – 10.

III.4. DENTAL HEALTH PROFESSIONALS

In 2021 there was a noticeable decrease in the number of dentists in active dental practice, specifically those in general dental practice and the number of dental hygienists (Table 11). It is also worth noting that the number of professionals in dental specialties is about one-fourth the number in general practice. The most common dental specialties are orthodontics, pediatric dentistry, and oral surgery.

Table 11. Number and rate per 100,000 population by type of Dental Professional in 2017, 2019 and 2021

	2017	2019	2021
DENTAL PROFESSIONAL TYPE	N (Rate/100,000)	N (Rate/100,000)	N (Rate/100,000)
Dentist	1,077 (56.5)	1,085 (56.2)	1,052 (53.6)
General Practice	854 (44.8)	864 (44.8)	829 (42.2)
Other Specialties	223 (11.7)	221 (11.5)	223 (11.4)
Dental Hygienist	1,366 (71.6)	1,423 (73.8)	1,292 (65.8)
Total Dental Professionals	2,443 (128.4)	2,508 (130.0)	2,344 (119.4)

Demographically, at all three time points, the majority of dentists are men and non-Hispanic whites. However, since 2017, an increasing proportion of dentists were women, representing about one-third of all dentists in 2021 compared to 24.8% in 2017. The age distribution of the dentist workforce has remained relatively similar at each time point, although 2021 saw a slight increase in the proportion of dentists older than 60 years of age: 26.9% versus 23.3% in 2017 and 23.8% in 2019 (Table 12). Dental hygienists are almost exclusively women with an age distribution skewing toward younger ages; only 8.2% in 2021 were older than 60 years of age, a similar proportion to that in 2019, but a slight increase from the 6.0% in 2017 (Table 13).

Table 12. Sex, race/ethnicity, and age distribution of active dentists in 2017, 2019 and 2021

	2017	2019	2021
DEMOGRAPHIC CHARACTERISTICS	**N (%)**	**N (%)**	**N (%)**
Sex*			
Female	267 (24.8)	299 (27.6)	321 (30.5)
Male	810 (75.2)	786 (72.4)	731 (69.5)
Race/ethnicity**			
Non-Hispanic White	908 (94.4)	897 (94.1)	861 (93.9)
Non-Hispanic Black	6 (0.6)	6 (0.6)	6 (0.7)
Hispanic	18 (1.9)	19 (2.0)	20 (2.2)
Non-Hispanic Other/Multiracial	30 (3.1)	31 (3.2)	30 (3.2)
Age in years***			
Less than or equal to 35 years	211 (19.6)	216 (21.1)	208 (19.8)
36-45 years	250 (23.2)	264 (25.9)	270 (25.7)
46-60 years	311 (28.8)	298 (29.3)	291 (27.7)
More than or equal to 61 years	250 (23.3)	242 (23.8)	283 (26.9)

* Race/Ethnicity was not reported for 115 dentists in 2017, 132 in 2019, and 135 in 2021.

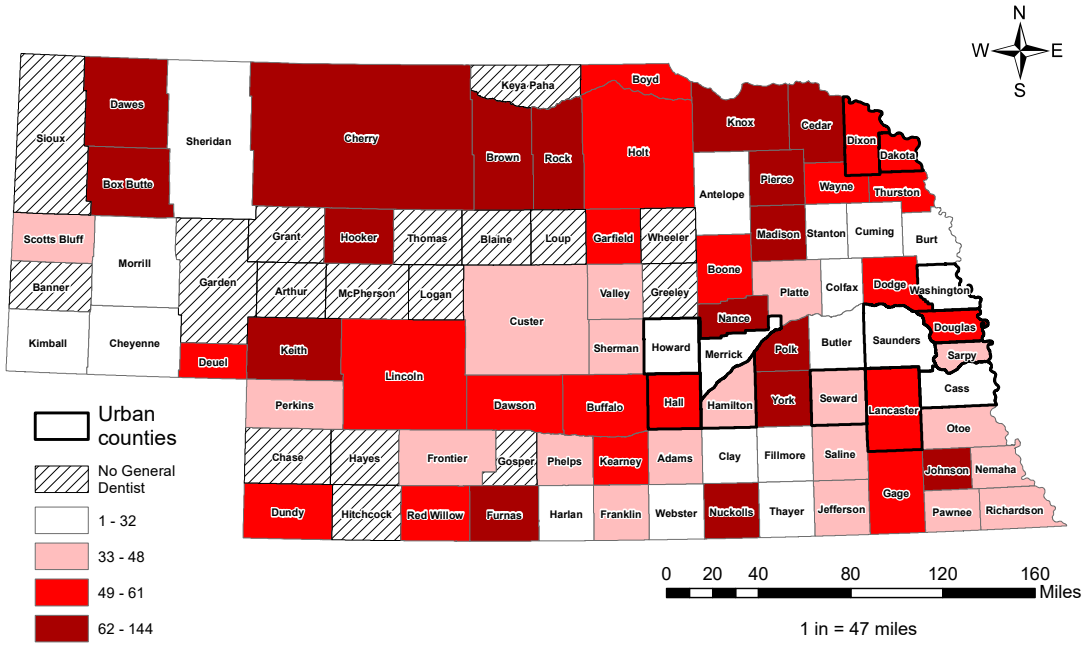
Table 13. Sex and age distribution of dental hygienists in 2017, 2019 and 2021

	2017	2019	2021
DEMOGRAPHIC CHARACTERISTICS	**N (%)**	**N (%)**	**N (%)**
Sex*			
Female	1,349 (98.8)	1,399 (98.3)	1,269 (98.2)
Male	17 (1.2)	24 (1.7)	23 (1.8)
Age in years***			
Less than or equal to 35 years	592 (43.8)	551 (39.1)	512 (39.6)
36-45 years	315 (23.3)	357 (25.3)	340 (26.4)
46-60 years	364 (26.9)	383 (27.2)	334 (25.9)
More than or equal to 61 years	82 (6.0)	120 (8.5)	106 (8.2)

* Age was not reported for 13 dental hygienists in 2017 and 12 dental hygienists in 2019.
Note: ** The data used here is from the licensure database. Data for race-ethnicity was not available.

Figures 15-17 show the general dentists, dental specialists, and dental hygienists across Nebraskan counties. Seventeen counties have no practicing general dentists, while 62 counties have no specialist dentists; 17 counties have no dental hygienists. In 2017 and 2019, 15 and 16 counties did not have any general dentists, and 18 and 20 counties did not have any dental hygienists.

Figure 15. Number of active general dentists per 100,000 population by county, Nebraska in 2021



Note: * County information was not reported for one general dentist.

Figure 16. Number of active specialty dentists per 100,000 population by county, Nebraska in 2021

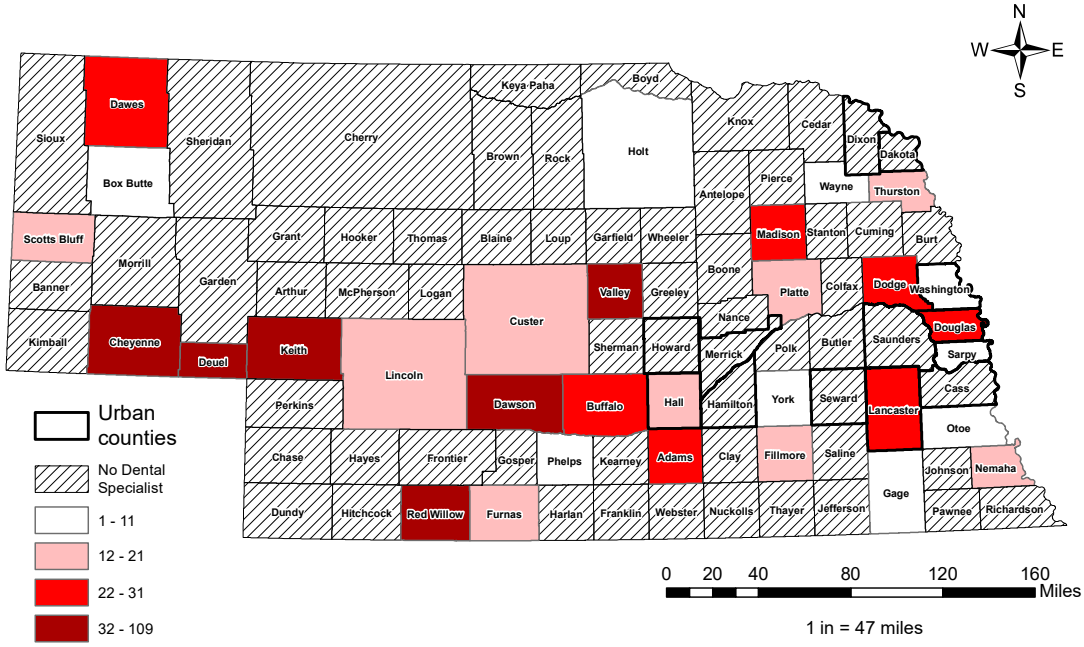
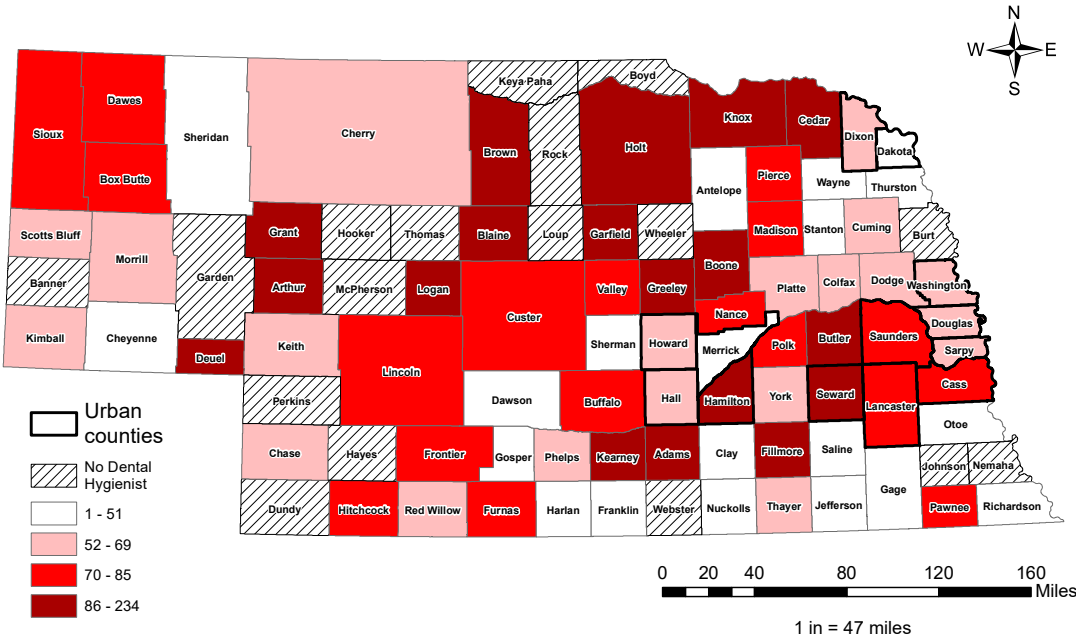


Figure 17. Number of licensed dental hygienists per 100,000 population by county, Nebraska in 2021



Note: * One county observation was not included in the maps as it was a combination of multiple counties. i.e., Madison/Antelope.

III.5. PHARMACY PROFESSIONALS

Pharmacy professionals consist of licensed pharmacists and pharmacy technicians. Pharmacy professionals may work in various healthcare settings outside the retail pharmacy, including hospitals. The number of practicing pharmacy professionals experienced a substantial increase in 2021, attributable largely to the increase in the number of pharmacy technicians (Table 14). The number of practicing pharmacists in the state was slightly lower-in 2019 and 2021 compared to 2017.

Table 14. Number and rate per 100,000 population by type of pharmacy professional in 2017, 2019 and 2021

	2017	2019	2021
PHARMACY PROFESSIONAL TYPE	N (Rate/100,000)	N (Rate/100,000)	N (Rate/100,000)
Pharmacist	2,066 (108.3)	2,048 (106.2)	2,051 (104.5)
Pharmacy Technician	3,428 (179.7)	3,511 (108.0)	5,044 (256.9)
Total Pharmacy Professionals	5,494 (288.1)	5,559 (288.1)	7,095 (361.3)

Tables 15 and 16 reports the demographic characteristics of pharmacists and pharmacy technicians, respectively. Approximately two-thirds of pharmacists are women, and this proportion shows a slight increase over time (Table 15). Virtually all pharmacists in the state are non-Hispanic white. Pharmacists are predominantly middle-aged; 46.7% were between 31 and 45 years in 2021. Approximately 14% are older than 60 years of age, and this proportion has been relatively constant, indicating no increase in the aging of this health profession (Table 15). Pharmacy technicians are predominately women, representing about 80% of the workforce; the proportion of women has been constant in the 2017-2021 period (Table 16). More than half of the pharmacy technician workforce was 35 years of age or younger, but the age distribution has remained relatively stable during the 2017-2021 period.

Table 15. Sex, race/ethnicity, and age distribution of active pharmacists in 2017, 2019, and 2021

DEMOGRAPHIC CHARACTERISTICS	2017 N (%)	2019 N (%)	2021 N (%)
Sex*			
Female	1,237 (59.9)	1,248 (61.0)	1,277 (62.3)
Male	828 (40.1)	799 (39.0)	772 (37.7)
Race/ethnicity**			
Non-Hispanic White	1,639 (95.4)	1,605 (95.0)	1,587 (94.8)
Non-Hispanic Black	8 (0.5)	11 (0.7)	10 (0.6)
Hispanic	22 (1.3)	22 (1.3)	25 (1.5)
Non-Hispanic Other/Multiracial	50 (3.0)	52 (3.1)	53 (3.2)
Age in years***			
Less than or equal to 35 years	597 (28.9)	549 (26.9)	479 (23.4)
36-45 years	580 (28.1)	607 (29.7)	667 (32.6)
46-60 years	586 (28.4)	592 (29.0)	613 (30.0)
More than or equal to 61 years	300 (14.5)	298 (14.6)	290 (14.2)

* Sex and age were not reported for two pharmacists in 2021.
** Race/Ethnicity was not reported for 347 pharmacists in 2017, 358 pharmacists in 2019, and 376 pharmacists in 2021.
*** Age was not reported for three pharmacists in 2017 and two in 2021 and 2019.

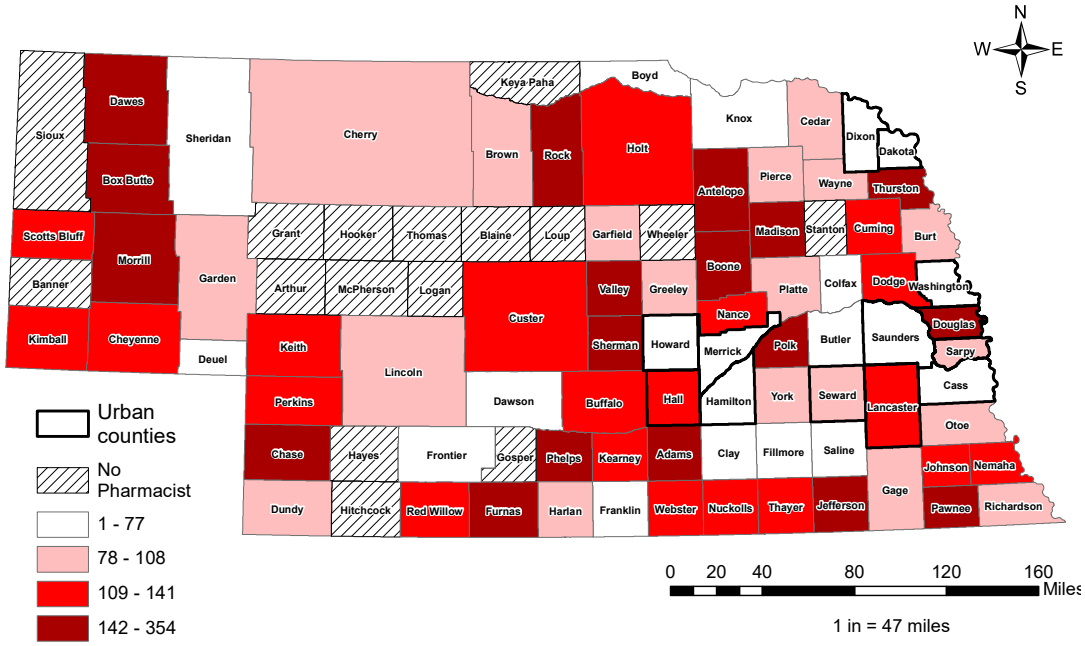
Table 16. Sex and age distribution of pharmacy technicians in 2017, 2019, and 2021

DEMOGRAPHIC CHARACTERISTICS	2017 N (%)	2019 N (%)	2021 N (%)
Sex*			
Female	2,725 (80.6)	2,798 (81.1)	3,962 (79.9)
Male	656 (19.4)	651 (18.9)	994 (20.1)
Age in years***			
Less than or equal to 35 years	2,027 (59.3)	1,907 (54.6)	2,976 (59.0)
36-45 years	554 (16.3)	698 (20.0)	915 (18.1)
46-60 years	690 (20.3)	678 (19.4)	835 (16.6)
More than or equal to 61 years	147 (4.3)	211 (6.1)	318 (6.3)

* Sex was not reported for 47 pharmacy technicians in 2017, 21 pharmacy technicians in 2019, and 88 pharmacy technicians in 2021.
** Age was not reported for ten pharmacy technicians in 2017 and 17 pharmacy technicians in 2019.
Note: *** The data used here is from the licensure database. Data for race-ethnicity was not available.

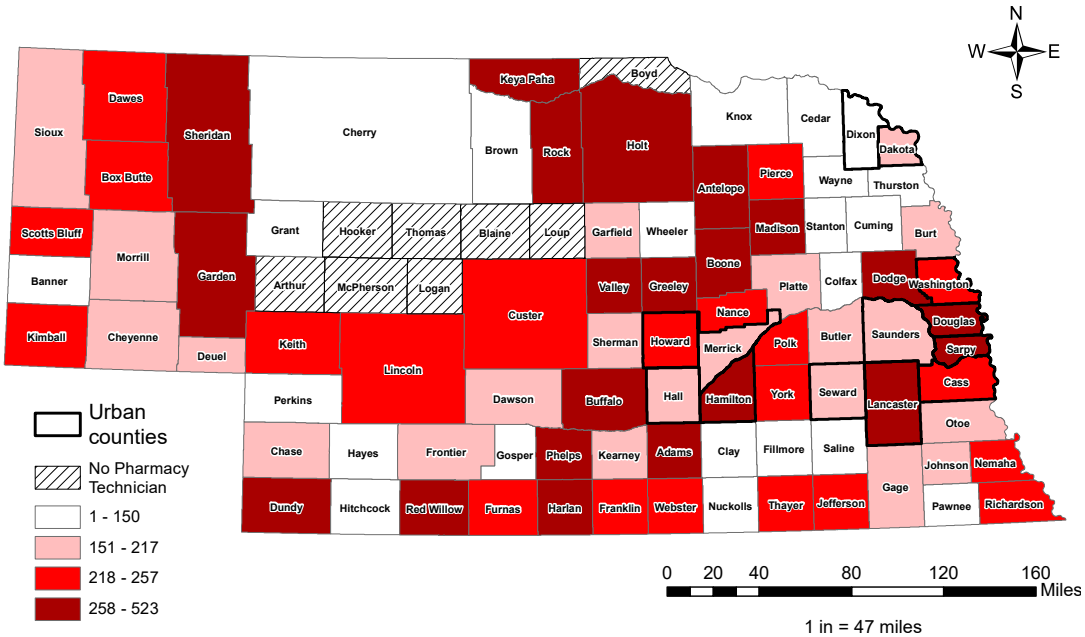
The 2021 county-level distribution of pharmacists and pharmacy technicians are presented in Figures 18 and 19, respectively. The distributions of both types of pharmacy professionals are similar. Sixteen out of 93 counties did not have any pharmacists in 2021 compared to 18 counties and 17 counties in 2017 and 2019, respectively (Figure 18). There was a slight improvement in the county coverage of pharmacy technicians. In 2017, there were 13 counties with no pharmacy technicians compared to only eight in 2021 (Figure 19).

Figure 18. Number of active pharmacists per 100,000 population by county, Nebraska in 2021



Note:* County information was not reported for 32 pharmacies.

Figure 19. Number of licensed pharmacy technicians per 100,000 population by county, Nebraska in 2021



Note: Two county observations were note included in the maps as they were a combination of multiple counties. i.e., Madison/Antelope.

III.6. EMERGENCY MEDICAL TECHNICIANS

Emergency medical technicians (EMT) include basic, intermediate, and advanced EMTs, emergency medical services responders and instructors, and paramedics. Basic EMTs comprised the largest category of EMTs in Nebraska during the 2017 to 2021 period, and paramedics were a distant second (Table 17). The numbers have fluctuated up and down over this period with the lowest level during 2019 and an increase in numbers in 2021 that are nearing to those seen in 2017.

Table 17. Number and rate per 100,000 population by type of emergency medical technician (EMT) in 2017, 2019 and 2021

	2017	2019	2021
EMT TYPE	N (Rate/100,000)	N (Rate/100,000)	N (Rate/100,000)
Advanced EMT	19 (1.0)	15 (0.8)	24 (1.2)
Intermediate EMT	54 (2.8)	47 (2.4)	49 (2.5)
Basic EMT	5,090 (266.9)	4,988 (258.5)	5,108 (260.1)
Paramedic	1,388 (72.8)	1,216 (63.0)	1,304 (66.4)
Emergency Medical Responder	410 (21.5)	367 (19.0)	413 (21.0)
Total EMTs	6,961 (365.0)	6,633 (343.8)	6,898 (351.3)

Among EMTs, approximately two-thirds are men, and this has held relatively constant over the 2017-2021 period, although in 2021, there was a slight increase in the proportion that are women (Table 18). The age distribution tends to be younger, where about 18% are 30 years of age or younger.

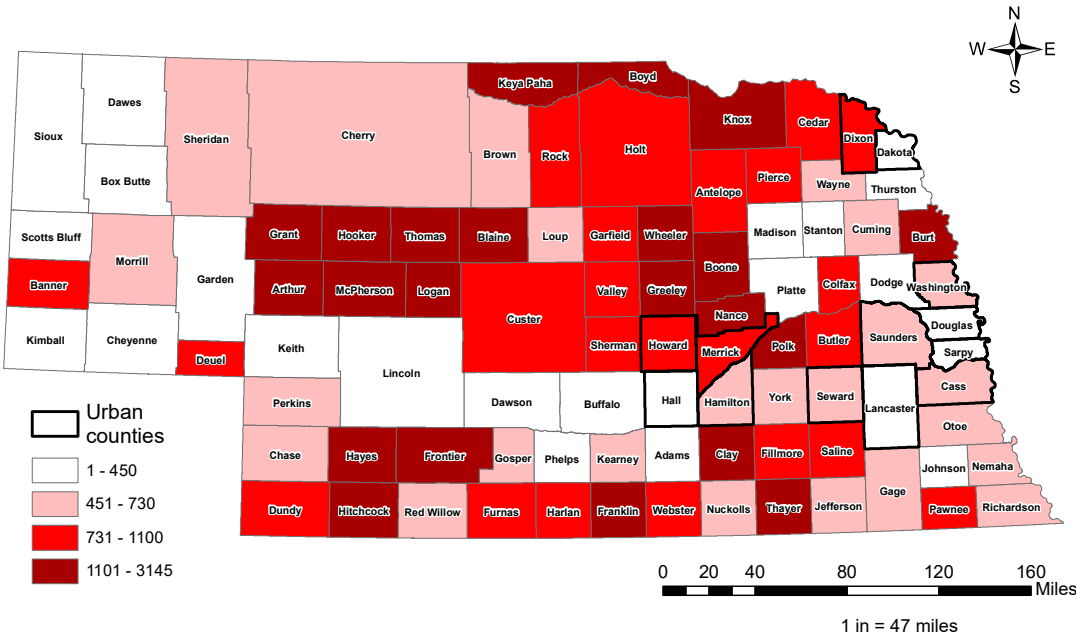
Table 18. Sex and age distribution of emergency medical technicians in 2017, 2019 and 2021

	2017	2019	2021
DEMOGRAPHIC CHARACTERISTICS	N (%)	N (%)	N (%)
Sex*			
Female	1,523 (29.3)	1,868 (28.5)	2,220 (32.6)
Male	3,668 (70.7)	4,677 (71.5)	4,597 (67.4)
Age in years***			
Less than or equal to 35 years	1,616 (31.0)	1,929 (29.2)	2,042 (29.6)
36-45 years	1,257 (24.2)	1,656 (25.1)	1,748 (25.3)
46-60 years	1,723 (33.2)	2,169 (32.8)	2,174 (31.5)
More than or equal to 61 years	615 (11.8)	845 (12.9)	934 (13.5)

* Sex was not reported for 43 EMTs in 2017, 10 EMTs in 2019, and 81 EMTs in 2021.
** Age was not reported for 23 EMTs in 2017 and 34 EMTs in 2019.
Note: *** The data used here is from the licensure database. Data for race-ethnicity was not available.

The distribution of EMTs across Nebraska counties is shown in Figure 19. All counties have at least one EMT; however, the distribution of EMTs varies substantially across the state, with the lowest concentrations of EMTs found in the northeastern, southeastern, south-central, and western counties. This distribution pattern was-similar to the one in 2017 and 2019.

Figure 20. Number of licensed emergency medical technicians (EMT) per 100,000 population by county, Nebraska in 2021



* Note: A total of 22 county observations were not included in the maps as they were a combination of multiple counties. i.e., Gosper/Dawson - 13 and Madison/Antelope - 9..

III.7. OTHER ALLIED HEALTH PROFESSIONALS

The category of other allied health professionals includes actively practicing physical therapists and occupational therapists, licensed medical nutrition therapists, respiratory care practitioners, speech-language pathologists, audiologists, and medical radiographers. Over the 2017-2021 period, there has been an increase in physical therapy and occupational therapy professionals (Table 19). Still, there was a noticeable decline in medical nutrition therapists, respiratory care practitioners, and medical radiographers.

Table 19. Number and rate per 100,000 population by type of allied health professional in 2017, 2019 and 2021

	2017	2019	2021
OTHER ALLIED HEALTH PROFESSIONAL TYPE	N (Rate/100,000)	N (Rate/100,000)	N (Rate/100,000)
Physical Therapist	1,367 (71.7)	1,410 (73.1)	1,498 (76.3)
Occupational Therapist	787 (41.3)	805 (41.7)	914 (46.5)
Medical Nutrition Therapist	660 (34.6)	699 (36.2)	565 (28.8)
Respiratory Care Practitioner	1,367 (71.7)	1,371 (71.1)	1,279 (65.1)
Speech Language Pathologist	844 (44.3)	1,170 (60.6)	1,136 (57.9)
Audiologist	161 (8.4)	167 (8.7)	133 (6.8)
Medical Radiographer	2,120 (111.2)	2,156 (111.8)	2,018 (102.8)
Total Allied Health Professionals	7,306 (383.1)	7,778 (403.2)	7,543 (384.1)

Tables 20-26 demonstrate demographic characteristics of physical therapists, occupational therapists, medical nutrition therapists, respiratory care practitioners, speech-language pathologists, audiologists, and medical radiographers, respectively. Most allied health professionals are women

except for physical therapists (Table 20) and respiratory care practitioners (Table 23), where approximately one-third are men. The age distributions across allied professions, again, skew toward younger ages. The demographic profile of these professionals has been stable, being similar in 2017, 2019, and 2021.

Table 20. Sex, race/ethnicity, and age distribution of physical therapists in 2017, 2019 and 2021

	2017	2019	2021
DEMOGRAPHIC CHARACTERISTICS	**N (%)**	**N (%)**	**N (%)**
Sex*			
Female	901 (65.9)	926 (65.8)	976 (65.2)
Male	466 (34.1)	482 (34.2)	521 (34.8)
Race/ethnicity**			
Non-Hispanic White	719 (95.7)	744 (95.1)	770 (95.9)
Non-Hispanic Black	3 (0.4)	3 (0.4)	2 (0.3)
Hispanic	9 (1.2)	11 (1.4)	9 (1.1)
Non-Hispanic Other/Multiracial	20 (2.7)	24 (3.1)	22 (2.8)
Age in years***			
Less than or equal to 35 years	480 (35.1)	517 (36.7)	470 (31.4)
36-45 years	439 (32.2)	420 (29.8)	460 (30.8)
46-60 years	370 (27.0)	402 (28.5)	477 (31.9)
More than or equal to 61 years	78 (5.7)	69 (4.9)	88 (5.9)

* Sex was not reported for one PT in 2021.
** Race/ethnicity was not reported for 616 PTs in 2017, 628 PTs in 2019, and 695 PTs in 2021.
*** Age was not reported for two PTs in 2019 and three in 2021.

Table 21. Sex, race/ethnicity, and age distribution of occupational therapists in 2017, 2019 and 2021

	2017	2019	2021
DEMOGRAPHIC CHARACTERISTICS	**N (%)**	**N (%)**	**N (%)**
Sex*			
Female	737 (93.7)	749 (93.0)	858 (93.9)
Male	50 (6.4)	56 (7.0)	56 (6.1)
Race/ethnicity**			
Non-Hispanic White	385 (97.0)	383 (95.8)	435 (95.8)
Non-Hispanic Black	4 (1.0)	4 (1.0)	4 (0.9)
Hispanic	4 (1.0)	6 (1.5)	7 (1.5)
Non-Hispanic Other/Multiracial	4 (1.0)	7 (1.8)	8 (1.7)
Age in years***			
Less than or equal to 35 years	328 (42.0)	343 (43.0)	357 (39.4)
36-45 years	253 (32.5)	238 (29.8)	264 (29.1)
46-60 years	171 (22.0)	191 (24.0)	253 (27.9)
More than or equal to 61 years	28 (3.6)	26 (3.3)	32 (3.5)

* Race/ethnicity was not reported for 390 OTs in 2017, 405 OTs in 2019, and 460 OTs in 2021.
** Age was not reported for seven OTs in 2017, in 2019, and eight OTs in 2021.

Table 22. Sex and age distribution of medical nutrition therapists in 2017, 2019 and 2021

DEMOGRAPHIC CHARACTERISTICS	2017 N (%)	2019 N (%)	2021 N (%)
Sex*			
Female	628 (96.2)	658 (95.4)	510 (94.8)
Male	25 (3.8)	32 (4.6)	28 (5.2)
Age in years***			
Less than or equal to 35 years	221 (33.5)	226 (32.3)	186 (33.0)
36-45 years	156 (23.7)	188 (26.9)	159 (28.2)
46-60 years	171 (25.9)	167 (23.9)	130 (23.0)
More than or equal to 61 years	112 (17.0)	118 (16.9)	90 (15.9)

* Sex was not reported for seven MNTs in 2017, nine MNTs in 2019, and 27 MNTs in 2021.
** Note: The data used here is from the licensure database. Data for race-ethnicity was not available.

Table 23. Sex and age distribution of respiratory care practitioners in 2017, 2019 and 2021

DEMOGRAPHIC CHARACTERISTICS	2017 N (%)	2019 N (%)	2021 N (%)
Sex*			
Female	928 (68.2)	494 (69.6)	896 (70.4)
Male	432 (31.8)	414 (30.4)	376 (29.6)
Age in years***			
Less than or equal to 35 years	417 (30.6)	366 (26.8)	332 (26.0)
36-45 years	358 (26.3)	375 (27.4)	342 (26.7)
46-60 years	465 (34.2)	453 (33.2)	432 (33.8)
More than or equal to 61 years	122 (8.9)	174 (12.7)	173 (13.6)

* Sex was not reported for 7 RCPs in 2017, 2021, and eight RCPs in 2019.
** Age was not reported for five RCPs in 2017 and three in 2019.
*** Note: The data used here is from the licensure database. Data for race-ethnicity was not available.

Table 24. Sex and age distribution of speech-language pathologists in 2017, 2019 and 2021

DEMOGRAPHIC CHARACTERISTICS	2017 N (%)	2019 N (%)	2021 N (%)
Sex*			
Female	807 (96.3)	1,114 (96.5)	1,083 (96.6)
Male	31 (3.7)	41 (3.5)	38 (3.4)
Age in years***			
Less than or equal to 35 years	381 (45.6)	453 (39.1)	463 (40.7)
36-45 years	183 (21.9)	293 (25.3)	283 (24.9)
46-60 years	189 (22.6)	290 (25.0)	282 (24.8)
More than or equal to 61 years	83 (10.0)	123 (10.6)	108 (9.5)

* Sex was not reported for six SLPs in 2017 and 15 SLPs in 2019 and 2021.
** Age was not reported for eight SLPs in 2017 and 11 in 2019.
*** Note: The data used here is from the licensure database. Data for race-ethnicity was not available.

Table 25. Sex and age distribution of audiologists in 2017, 2019 and 2021

	2017	2019	2021
DEMOGRAPHIC CHARACTERISTICS	N (%)	N (%)	N (%)
Sex*			
Female	122 (75.8)	128 (77.1)	111 (84.1)
Male	38 (23.6)	38 (22.9)	21 (15.9)
Age in years***			
Less than or equal to 35 years	44 (27.5)	41 (24.8)	31 (23.3)
36-45 years	52 (32.5)	57 (34.6)	47 (35.3)
46-60 years	48 (30.1)	49 (29.7)	37 (27.9)
More than or equal to 61 years	16 (10.0)	18 (11.0)	18 (13.6)

* Sex was not reported for one audiologist in 2021 and 2019.
** Age was not reported for two audiologists in 2019.
*** Note: The data used here is from the licensure database. Data for race-ethnicity was not available.

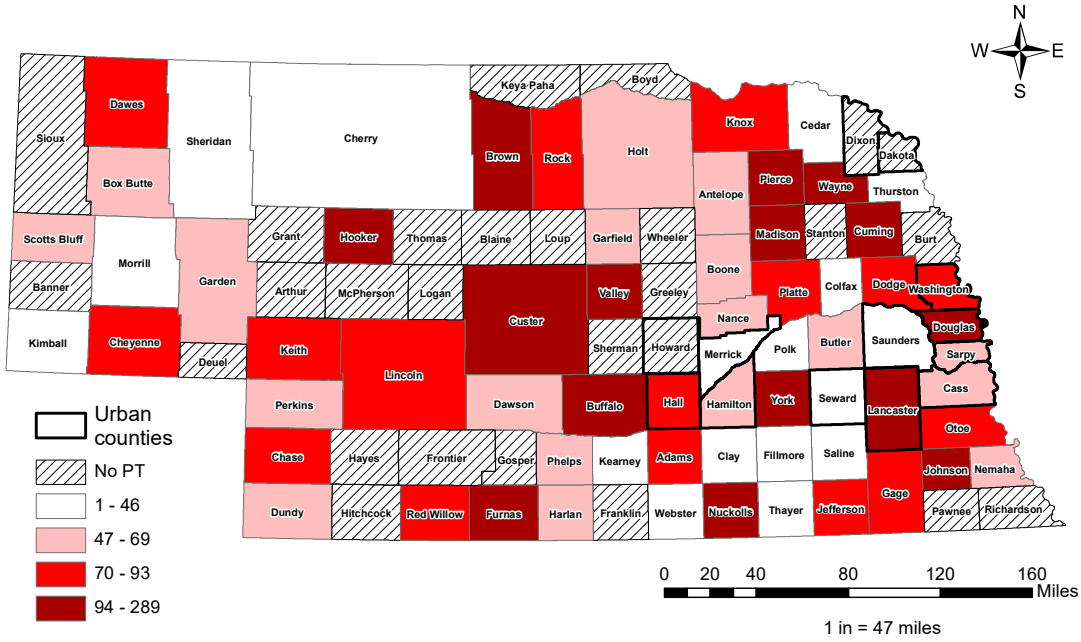
Table 26. Sex and age distribution of medical radiographers in 2017, 2019 and 2021

	2017	2019	2021
DEMOGRAPHIC CHARACTERISTICS	N (%)	N (%)	N (%)
Sex*			
Female	1,763 (83.3)	1,784 (83.1)	1,708 (84.7)
Male	353 (16.7)	362 (16.9)	306 (15.1)
Age in years***			
Less than or equal to 35 years	1,012 (51.1)	858 (42.0)	836 (41.4)
36-45 years	449 (22.6)	585 (28.7)	575 (28.5)
46-60 years	414 (20.9)	469 (23.0)	411 (20.3)
More than or equal to 61 years	106 (5.3)	128 (6.3)	196 (9.7)

* Sex was not reported for four medical radiologists in 2017, 2021, and ten in 2019.
** Age was not reported for 139 medical radiologists in 2017 and 116 in 2019.
*** Note: The data used here is from the licensure database. Data for race-ethnicity was not available.

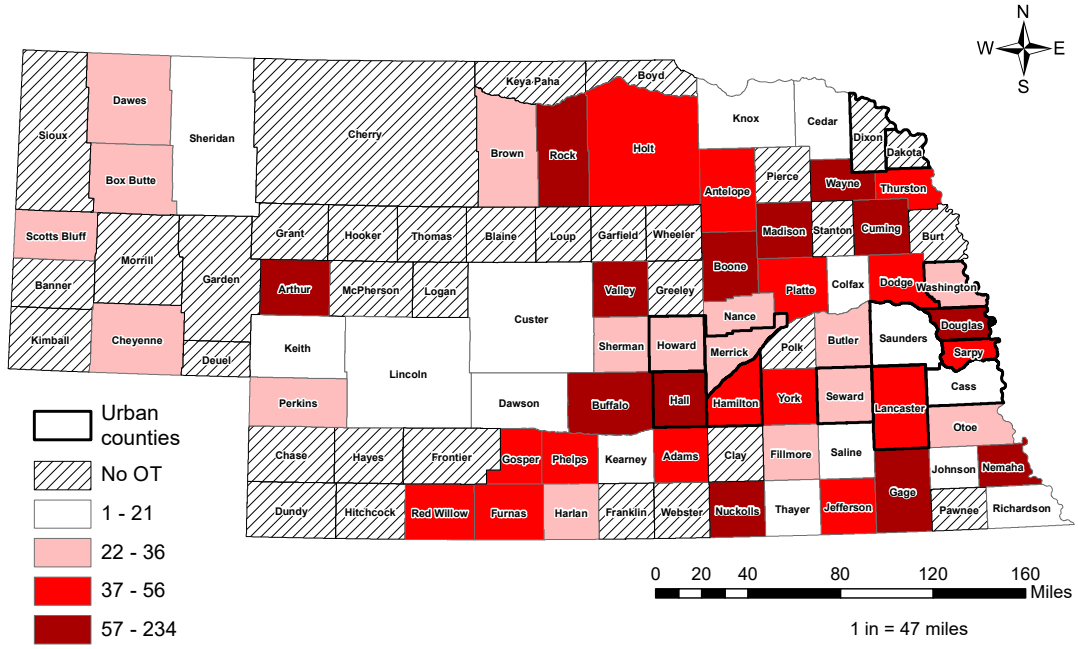
The geographical distribution of these other allied health professions is presented in Figures 21-27. There remain substantial gaps in the distribution of allied health professions across Nebraska. For example, only 19 counties have licensed audiologists. Similar to 2019, the north-central region of Nebraska has virtually no occupational therapists, medical nutrition therapists, or speech-language pathologists (Figures 22, 23, 25). Of the licensed allied health professionals below, licensed medical radiographers were more evenly distributed across Nebraska, with six counties having no medical radiographers (Figure 27). This is an improvement of one county since 2019 and three counties from 2017 when there were nine counties without a medical radiographer.

Figure 21. Number of physical therapists per 100,000 population by county, Nebraska in 2021



* Note: County information for four PTs were not recorded.

Figure 22. Number of occupational therapists per 100,000 population by county, Nebraska in 2021



* Note: County information was not reported for 3 OTs.

Figure 23. Number of licensed medical nutrition therapists (MNT) per 100,000 population by county, Nebraska in 2021

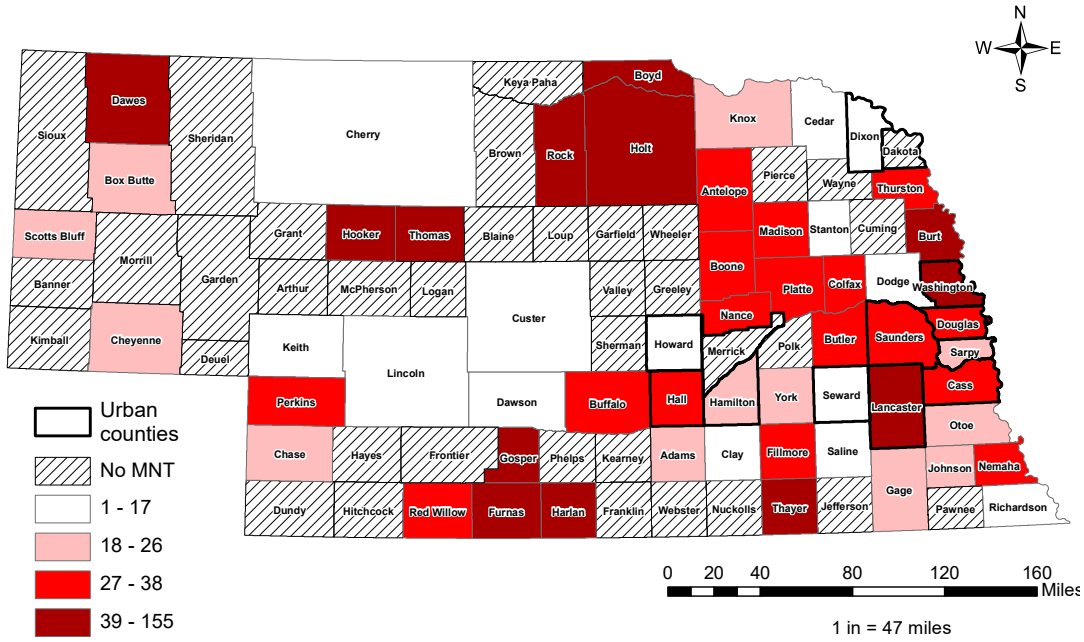


Figure 24. Number of licensed respiratory care practitioners (RCP) per 100,000 population by county, Nebraska in 2021

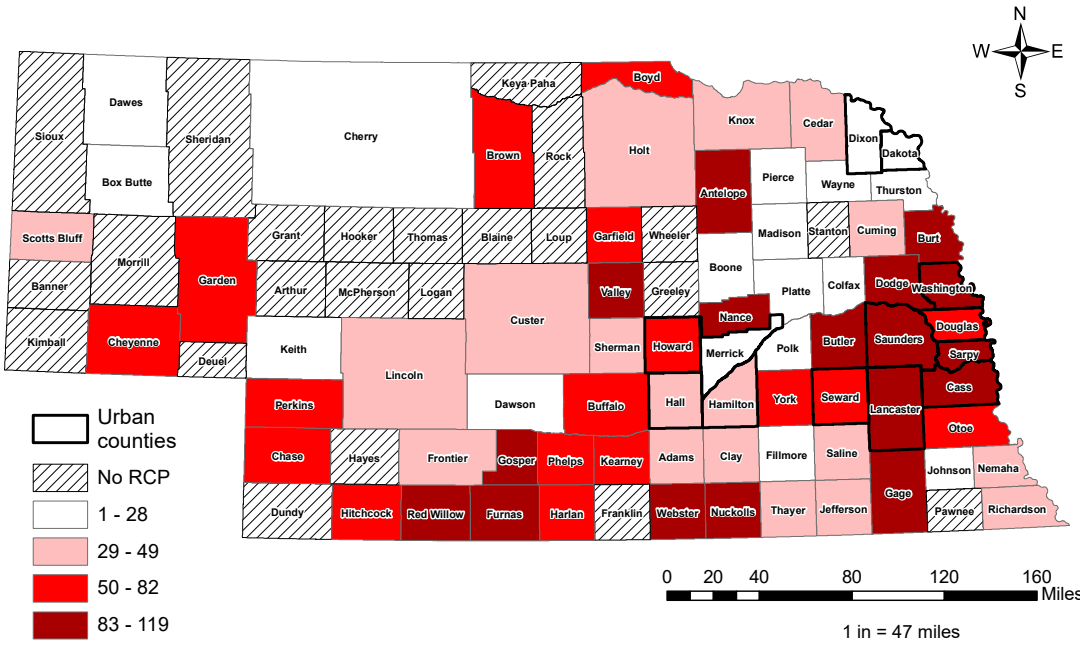


Figure 25. Number of licensed speech-language pathologists (SLP) per 100,000 population by county, Nebraska in 2021

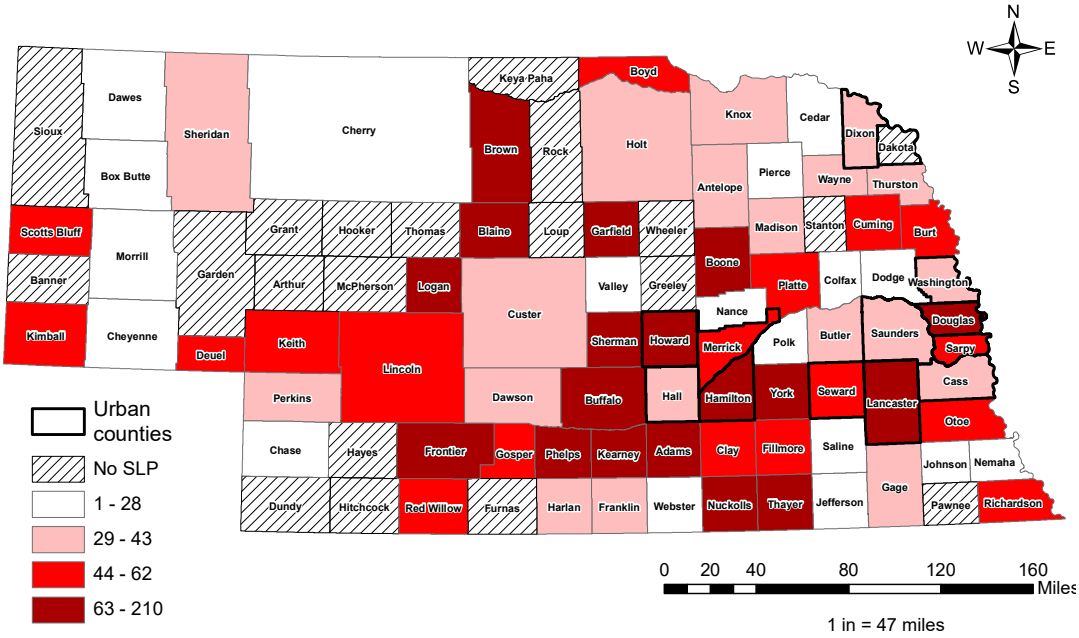


Figure 26. Number of licensed audiologists per 100,000 population by county, Nebraska in 2021

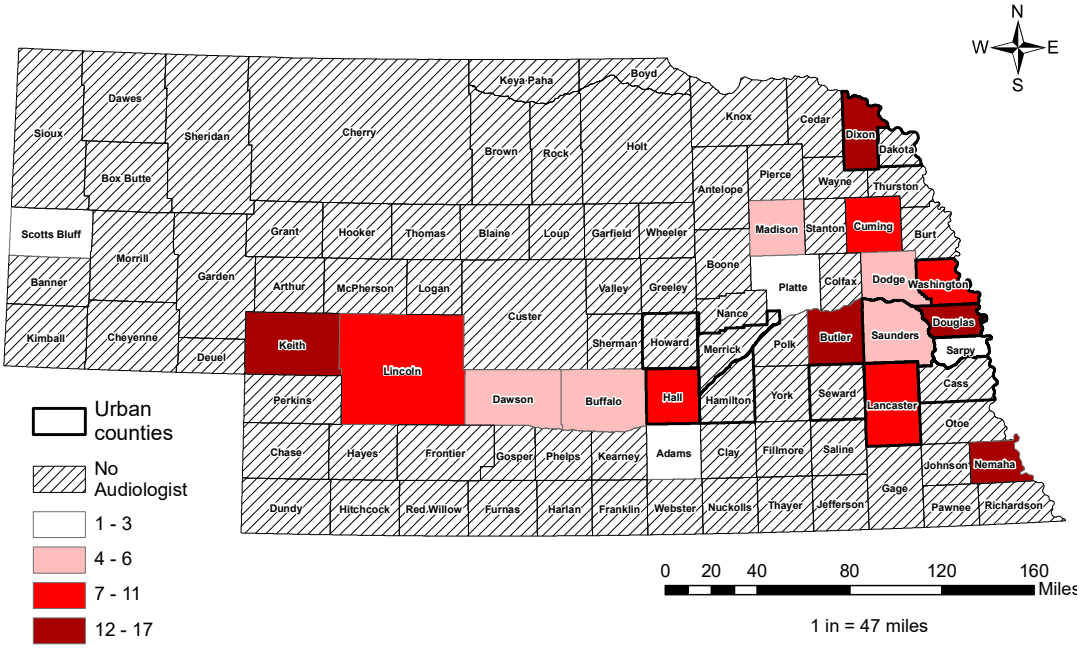
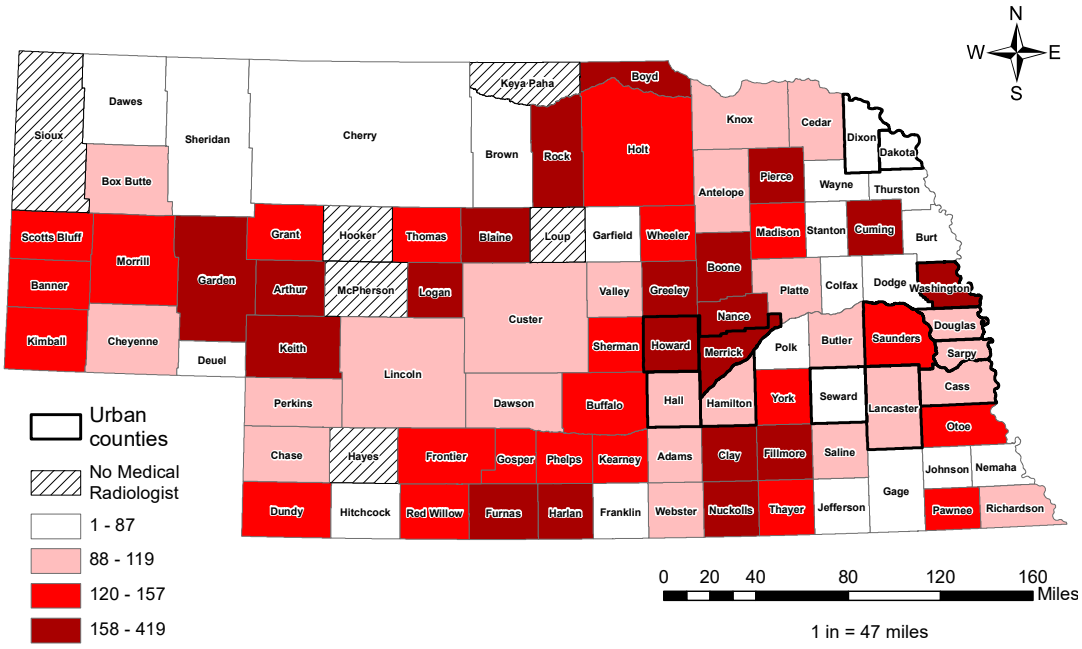


Figure 27. Number of licensed medical radiographers per 100,000 population by county, Nebraska in 2021



* Note: One observation was reported to be a combination of two counties hence it is not mapped.

III.8. OTHER NON-PHYSICIAN CLINICIANS

The other clinical health professional category includes chiropractors, podiatrists, and optometrists. In 2021, there was a notable decrease in the number of podiatrists and optometrists compared to 2019 and 2017 (Table 27). Our 2021 data show that there are 735 chiropractors, 70 podiatrists, and 381 optometrists practicing in Nebraska.

Table 27. Number and rate per 100,000 population by type of other clinical health professionals (OCHP) in 2017, 2019 and 2021

	2017	2019	2021
OTHER ALLIED HEALTH PROFESSIONAL TYPE	N (Rate/100,000)	N (Rate/100,000)	N (Rate/100,000)
Chiropractor	714 (37.4)	745 (38.6)	735 (37.4)
Podiatrist	108 (5.7)	107 (5.5)	70 (3.6)
Optometrist	430 (22.5)	435 (22.5)	381 (19.4)
Total OCHP	1,252 (65.6)	1,287 (66.7)	1,186 (60.4)

In terms of demographic characteristics, most chiropractors and podiatrists are men, while optometrists are more evenly distributed among men and women (Tables 28-30). In all three professions, the practitioners tend to be older individuals. There is a suggestion of an aging workforce in these professions; since 2017, there has been an increasing percentage of 60 years of age or older.

Table 28. Sex and age distribution of chiropractors in 2017, 2019 and 2021

DEMOGRAPHIC CHARACTERISTICS	2017 N (%)	2019 N (%)	2021 N (%)
Sex*			
Female	186 (26.2)	204 (27.6)	207 (28.4)
Male	525 (73.8)	536 (72.4)	523 (71.6)
Age in years***			
Less than or equal to 35 years	278 (40.3)	226 (31.3)	208 (28.3)
36-45 years	197 (28.6)	236 (32.7)	247 (33.7)
46-60 years	166 (24.2)	189 (26.2)	186 (25.4)
More than or equal to 61 years	49 (7.1)	70 (9.8)	94 (12.8)

* Sex was not reported for three chiropractors in 2017 and five chiropractors in 2019 and 2021.
** Age was not reported for 24 chiropractors in 2017 and 2019.
*** Note: The data used here is from the licensure database. Data for race-ethnicity was not available.

Table 29. Sex and age distribution of podiatrists in 2017, 2019 and 2021

DEMOGRAPHIC CHARACTERISTICS	2017 N (%)	2019 N (%)	2021 N (%)
Sex*			
Female	18 (16.8)	18 (16.8)	11 (15.7)
Male	89 (83.2)	89 (83.2)	59 (84.3)
Age in years***			
Less than or equal to 35 years	20 (18.5)	15 (14.1)	4 (5.7)
36-45 years	27 (25.0)	31 (28.9)	23 (32.9)
46-60 years	44 (40.7)	44 (41.1)	29 (41.4)
More than or equal to 61 years	17 (15.8)	17 (15.9)	14 (20.0)

* Note: The data used here is from the licensure database. Data for race-ethnicity was not available.

Table 30. Sex and age distribution of optometrists in 2017, 2019 and 2021

DEMOGRAPHIC CHARACTERISTICS	2017 N (%)	2019 N (%)	2021 N (%)
Sex*			
Female	156 (36.4)	166 (38.3)	157 (41.3)
Male	273 (63.6)	268 (61.8)	223 (58.7)
Age in years***			
Less than or equal to 35 years	110 (31.3)	80 (21.4)	83 (21.8)
36-45 years	103 (29.3)	136 (36.4)	117 (30.7)
46-60 years	121 (34.3)	123 (32.9)	110 (28.8)
More than or equal to 61 years	18 (5.2)	35 (9.3)	71 (18.6)

* Sex was not reported for one optometrist in 2019 and 2021.
** Age was not reported for 78 optometrists in 2017 and 61 optometrists in 2019.
*** Note: The data used here is from the licensure database. Data for race-ethnicity was not available.

IV. Summary and Recommendations

Since the 2020 report "The Status of the Healthcare Workforce in the State of Nebraska," the distribution of the healthcare workforce has shown modest improvements but only for a few professions. Overall, the healthcare workforce trends point to continuing challenges to delivering health care in rural regions.[11] For example, although the relative distribution of OB/GYN physicians has improved since 2019, there are still 44 counties that lack obstetrical and gynecologic coverage. Moreover, the number of OB/GYN physicians continues to decline. Similar declining trends can be observed for all the physician types since 2019; the number decreased from 4,971 in 2019 to 4,906 in 2021. As concerning, most of the specialties examined in the report are increasing in average age. Among physicians, 19.4% are now aged 61 years and older, compared to 18.6% in 2019.

Our updated results highlight a persistent and substantial deficit in the supply of physicians and other healthcare professionals across rural Nebraska. Fortunately, physician assistants and nursing professionals can play a critical role in mitigating the declining physician workforce or limited access to physicians in rural communities. This has been aided by policy initiatives such as Legislative Bill 107 (passed in 2015), which granted full practice authority to Nebraska nurse practitioners. This legislative change has significantly enhanced access to care in rural and underserved areas in Nebraska.[18] However, as of 2021, there still remains substantial variation in the numbers and rates of nurse professionals across the state, with relatively low rates of RNs, LPNs, and APRNs in western and central Nebraska. Moreover, the 2021 data may not be recent enough to reflect the impact of the COVID-19 pandemic on the nursing workforce.

Another area of concern is the decreasing number of dental professionals, from 2,508 in 2019 to 2,344 in 2021. The reasons for this decrease are not clear. It is clear, though, that the dental professional workforce is aging with a substantial proportion of dentists in the 46-60 years age category and in the pre-retirement age group (more than or equal to 61 years). In 2019, 23.8% of the dentists were over 60 years of age, compared to 26.9% in 2021. Related, the supply of dental hygienists has decreased significantly in Nebraska since 2019, from 1,423 to 1,292 dental hygienists in 2021.

In contrast, the number of pharmacy technicians increased substantially from 5,559 in 2019 to 7,095 in 2021. It could be speculated that the insufficiency in active pharmacists has increased the demand for pharmacy technicians to keep patient care services sustainable. A similar trend was seen in the case of EMTs, where they rose from 6,633 in 2019 to 6,898 in 2021. The reason for this increase is largely unclear. In addition, there was a noticeable increase in the number of physical and occupational therapists over the two years. However, the supply of other allied health professionals saw an overall decrease. A decline was also observed in the case of the collective number of other clinical health professionals (chiropractors, podiatrists, and optometrists) from 1,287 in 2019 to 1,186 in 2021. These decreasing trends in the currently licensed healthcare workforce could be attributable, in part, to the impact of SARS-CoV-2 on Nebraska's licensing modifications to overcome the state of emergency.[19,20] Several healthcare professionals have obtained provisional credentialing to permit professionals to work during the pandemic, which shall remain active until about 30 days after lifting the COVID-19 state of emergency.[19]

In summary, there continue to be significant challenges in the number and distribution of the healthcare workforce in Nebraska, with increasing reliance on the non-physician workforce such as nursing professionals. Although there has been improvement in the supply of healthcare providers over the past decade, the delivery of comprehensive, high-quality, team-based care for complex health conditions remains difficult in Nebraska's rural communities. The rural communities, especially in central and western Nebraska, have limited or no access to essential healthcare specialists. In addition to geographical disparities in access to care, future challenges include

commissioning a diverse workforce and maintaining and increasing the supply of a healthcare workforce that is aging.

Based on these 2021 findings, it is clear that meeting the state's health care workforce needs remains a significant challenge. We make several recommendations to help monitor and address workforce challenges in the State of Nebraska, including those that expand the evidence base required to formulate innovative and practical approaches to achieve optimal healthcare workforce distribution. These recommendations are:

5. Ensure adequate resources are available to support sufficient numbers of qualified health professions faculty, clinical sites, classroom sites and space, and clinical preceptors necessary to boost health professions student and faculty populations and support educational programming, partnerships, and research.
6. Enhance existing pipeline programs and educational initiatives that incentivize individuals from rural and underserved urban areas to become healthcare professionals to practice healthcare in these communities, particularly for health professions exhibiting significant shortages.
7. Enhance the availability of scholarships and student loan repayment programs for health profession students and practitioners at all levels, particularly for health professions exhibiting significant shortages and those interested in serving rural and underserved urban areas to recruit and retain the needed healthcare workforce.
8. Increase the number of medical residency training positions in Nebraska to include significant training in rural and underserved urban areas.
9. Expand the capacity of the telecommunication infrastructure to support the adoption and utilization of telehealth for expanding access to healthcare, e-mentoring, and e-support for health professions students and practicing healthcare professionals.
10. Develop innovative healthcare delivery solutions and related policy interventions to mitigate gaps in healthcare access due to health profession shortages and support rural training programs like Simulation in Motion-Nebraska (SIM-NE).
11. Perform continued targeted data collection, monitoring, forecasting, and modeling the healthcare workforce distribution and statewide health care needs.
12. Evaluate the effectiveness of current state and federal healthcare workforce-related statutes, policies, and programming to determine the current efficacy and how programs might be modified for increased effectiveness.
13. Establish and streamline existing public-private partnerships for health professions education, workforce development, and healthcare delivery.

While ongoing monitoring of the health care workforce in Nebraska is important, it is equally important to better understand the 'why' for the workforce shortages documented in this report. Between this report and the next, effort will be targeted to identifying factors contributing to recruitment and retention challenges (e.g., community and/or health system factors) and to developing a system for forecasting the health care workforce needs of the future. The ultimate goal is to develop and implement policies to improve access to healthcare throughout the State of Nebrasaka and beyond.

Appendix A: Demographic Profile of the State of Nebraska

Table A1. Sex, race/ethnicity, and age distribution of Nebraska population in 2021, U.S. Census Bureau

DEMOGRAPHIC CHARACTERISTICS	PERCENTAGE (%)
Sex	
Female	50.0
Male	50.0
Race/ethnicity	
White, Non-Hispanic	78.2
Black/African American (a)	5.2
Hispanic/Latino (b)	11.4
Other (a)	4.3
Two or more	2.3
Native Hawaiian/Other Pacific Islander	0.1
Other	0.8
Age in years	
Less than 18 years	24.6
18-64 years	59.2
More than or equal to 65 years	16.2

* Notes:
{i} Total Nebraska population estimatesin 2021: 1,963,692.
** {ii} These are state-level estimates. They are not comparable to other geographic levels due to methodology differences between different data sources.
*** {iii} Fact Notes: (a) Includes persons reporting only one race.
(b) Hispanics may be of any race, so they also are included in applicable race categories.

Appendix B: State of Nebraska Designated Health Professions Shortage Areas

Table B1. State designated shortage areas for primary care medical professions by county[21]

County	Family Practice	Internal Medicine	Pediatrics	Obstetrics & Gynecology	General Surgery
Adams	No	Yes	No	Yes	Yes
Antelope	Yes	Yes	Yes	Yes	Yes
Arthur	Yes	Yes	Yes	Yes	Yes
Banner	Yes	Yes	Yes	Yes	Yes
Blaine	Yes	Yes	Yes	Yes	Yes
Boone	No	Yes	No	Yes	Yes
Box Butte	Yes	Yes	Yes	Yes	Yes
Boyd	No	Yes	Yes	Yes	Yes
Brown	Yes	Yes	Yes	Yes	Yes
Buffalo	No	Yes	Yes	No	No
Burt	Yes	Yes	Yes	Yes	Yes
Butler	No	Partial	Partial	Partial	Partial
Cass	No	Partial	Partial	Partial	Partial
Cedar	Yes	Yes	Yes	Yes	Yes
Chase	Yes	Yes	Yes	Yes	Yes
Cherry	Yes	Yes	Yes	Yes	No
Cheyenne	Yes	Yes	Yes	Yes	No
Clay	Yes	Yes	Yes	Yes	Yes
Colfax	Yes	Yes	Yes	Yes	Yes
Cuming	No	Yes	Yes	Yes	No
Custer	Yes	Yes	Yes	Yes	Yes
Dakota	No	Yes	Yes	Yes	Yes
Dawes	Yes	Yes	Yes	Yes	Yes
Dawson	No	Yes	Yes	Yes	Yes
Deuel	Yes	Yes	Yes	Yes	Yes
Dixon	Yes	Yes	Yes	Yes	Yes
Dodge	No	Partial	Partial	No	Partial
Douglas	No	No	No	No	No
Dundy	Yes	Yes	Yes	Yes	Yes
Fillmore	No	Yes	Yes	Yes	Yes
Franklin	Yes	Yes	Yes	Yes	Yes
Frontier	Yes	Yes	Yes	Yes	Yes
Furnas	Yes	Yes	Yes	Yes	Yes
Gage	No	Partial	Partial	No	Partial
Garden	Yes	Yes	Yes	Yes	Yes
Garfield	Yes	Yes	Yes	Yes	Yes
Gosper	Yes	Yes	Yes	Yes	Yes
Grant	Yes	Yes	Yes	Yes	Yes
Greeley	Yes	Yes	Yes	Yes	Yes
Hall	No	Yes	Yes	Yes	Yes
Hamilton	Yes	Yes	Yes	Yes	Yes
Harlan	Yes	Yes	Yes	Yes	Yes
Hayes	Yes	Yes	Yes	Yes	Yes
Hitchcock	Yes	Yes	Yes	Yes	Yes
Holt	Yes	Yes	Yes	Yes	Yes

County	Family Practice	Internal Medicine	Pediatrics	Obstetrics & Gynecology	General Surgery
Hooker	No	Yes	Yes	Yes	Yes
Howard	No	Yes	Yes	Yes	Yes
Jefferson	Yes	Yes	Yes	Yes	Yes
Johnson	Partial	Partial	Partial	Partial	Partial
Kearney	Yes	Yes	Yes	Yes	Yes
Keith	Yes	Yes	Yes	Yes	No
Keya Paha	Yes	Yes	Yes	Yes	Yes
Kimball	Yes	Yes	Yes	Yes	Yes
Knox	No	Yes	Yes	Yes	Yes
Lancaster	No	No	No	No	No
Lincoln	No	Yes	Yes	No	No
Logan	Yes	Yes	Yes	Yes	Yes
Loup	Yes	Yes	Yes	Yes	Yes
Madison	No	Yes	No	No	No
McPherson	Yes	Yes	Yes	Yes	Yes
Merrick	Yes	Yes	Yes	Yes	Yes
Morrill	Yes	Yes	Yes	Yes	Yes
Nance	Yes	Yes	Yes	Yes	Yes
Nemaha	Yes	Yes	Yes	Yes	Yes
Nuckolls	Yes	Yes	Yes	Yes	Yes
Otoe	No	Partial	Partial	Partial	Partial
Pawnee	Yes	Yes	Yes	Yes	Yes
Perkins	No	Yes	Yes	Yes	No
Phelps	No	Yes	Yes	Yes	Yes
Pierce	Yes	Yes	Yes	Yes	Yes
Platte	No	Yes	Yes	Yes	Yes
Polk	Yes	Yes	Yes	Yes	Yes
Red Willow	Yes	Yes	Yes	Yes	Yes
Richardson	Yes	Yes	Yes	Yes	Yes
Rock	Yes	Yes	Yes	Yes	Yes
Saline	Yes	Partial	Partial	Partial	Partial
Sarpy	No	No	No	No	No
Saunders	No	Partial	Partial	Partial	Partial
Scotts Bluff	No	Yes	Yes	No	Yes
Seward	No	Partial	Partial	Partial	Partial
Sheridan	Yes	Yes	Yes	Yes	Yes
Sherman	Yes	Yes	Yes	Yes	Yes
Sioux	Yes	Yes	Yes	Yes	Yes
Stanton	Yes	Yes	Yes	Yes	Yes
Thayer	Yes	Yes	Yes	Yes	Yes
Thomas	Yes	Yes	Yes	Yes	Yes
Thurston	Yes	Yes	Yes	Yes	Yes
Valley	No	Yes	Yes	Yes	Yes
Washington	No	Partial	Partial	Partial	Partial
Wayne	Yes	Yes	Yes	Yes	Yes
Webster	Yes	Yes	Yes	Yes	Yes
Wheeler	Yes	Yes	Yes	Yes	Yes
York	Yes	Yes	Yes	Yes	No

* Note: Partial means a part of the county is a designated shortage area.

Table B2. State designated shortage areas for dentistry, pharmacy, physical therapy and occupational therapy by county[21]

County	General Dentist	Pharmacist	Occupational Therapist	Physical Therapist
Adams	No	No	No	No
Antelope	Yes	No	No	Yes
Arthur	Yes	Yes	Yes	Yes
Banner	Yes	Yes	Yes	Yes
Blaine	Yes	Yes	Yes	Yes
Boone	No	No	No	No
Box Butte	No	No	No	Yes
Boyd	Yes	Yes	Yes	Yes
Brown	Yes	Yes	No	No
Buffalo	No	No	No	No
Burt	Partial	Yes	No	No
Butler	No	Partial	No	No
Cass	No	Partial	No	No
Cedar	Yes	Yes	No	No
Chase	Yes	Yes	No	Yes
Cherry	No	Yes	No	Yes
Cheyenne	Yes	No	No	No
Clay	Yes	Yes	Yes	Yes
Colfax	Partial	Yes	Partial	Partial
Cuming	Partial	No	No	No
Custer	Yes	No	No	No
Dakota	Yes	Yes	Yes	Yes
Dawes	No	No	No	Yes
Dawson	No	Yes	No	No
Deuel	No	Yes	Yes	No
Dixon	No	Yes	Yes	Yes
Dodge	No	No	No	No
Douglas	No	No	No	No
Dundy	No	Yes	No	Yes
Fillmore	Partial	Yes	Partial	No
Franklin	Yes	Yes	Yes	Yes
Frontier	Yes	Yes	No	Yes
Furnas	Yes	No	No	No
Hayes	Yes	Yes	Yes	Yes
Hitchcock	Yes	Yes	Yes	Yes
Holt	Yes	No	No	Yes
Hooker	Yes	Yes	No	Yes
Howard	Yes	No	No	Yes
Jefferson	Partial	Yes	No	No
Johnson	No	No	No	No
Kearney	No	Yes	No	Yes
Keith	No	Yes	No	Yes
Keya Paha	Yes	Yes	Yes	Yes
Kimball	Yes	Yes	No	Yes
Knox	No	Yes	No	No
Lancaster	No	No	No	No
Lincoln	No	No	No	Yes
Logan	Yes	Yes	Yes	Yes
Loup	Yes	Yes	Yes	Yes
Madison	No	No	No	No
McPherson	Yes	Yes	Yes	Yes
Merrick	Yes	No	Yes	Yes
Morrill	Yes	Yes	No	Yes

County	General Dentist	Pharmacist	Occupational Therapist	Physical Therapist
Nance	Yes	Yes	Yes	Yes
Nemaha	Partial	No	No	Partial
Nuckolls	Yes	Yes	No	No
Otoe	No	No	No	No
Pawnee	Partial	Yes	No	No
Perkins	Yes	Yes	No	Yes
Phelps	No	No	No	No
Pierce	Yes	Yes	No	Yes
Platte	No	No	No	No
Polk	Partial	No	No	Partial
Red Willow	No	No	No	No
Richardson	No	Yes	No	No
Rock	Yes	Yes	No	No
Saline	No	No	No	No
Sarpy	No	No	No	No
Saunders	No	Partial	No	No
Scotts Bluff	No	No	No	No
Seward	No	Partial	No	No
Sheridan	Yes	Yes	Yes	Yes
Sherman	Yes	Yes	No	Yes
Sioux	Yes	Yes	Yes	Yes
Stanton	Yes	Yes	Yes	Yes
Saline	Yes	No	No	No
Sarpy	No	No	No	No
Saunders	No	Partial	No	No
Scotts Bluff	No	No	No	No
Seward	No	Partial	No	No
Sheridan	Yes	Yes	Yes	Yes
Sherman	Yes	Yes	Yes	No
Sioux	Yes	Yes	Yes	Yes
Stanton	Yes	Yes	Yes	Yes
Thayer	Yes	Yes	No	No
Thomas	Yes	Yes	Yes	Yes
Thurston	No	No	No	No
Valley	No	No	No	Yes
Washington	No	Partial	No	No
Wayne	No	Yes	No	No
Webster	Yes	No	No	Yes
Wheeler	Yes	Yes	Yes	Yes
York	No	No	No	No

* Note: Partial means a part of the county is a designated shortage area.

Appendix C: State of Nebraska Guidelines for Designated Health Profession Shortage Areas[22]

State of Nebraska Guidelines for Designation of Family Practice Shortage Areas

1. A service area may be a single county, a partial county, a group of contiguous counties, or an identified population group within a defined area.
2. In computing the population-to-physician ratio, physicians practicing family or general practice will be counted on a full-time equivalent (FTE) basis, with four hours counting as 0.1 FTE. Physicians will not be counted if they are practicing under Medicare, Medicaid, or licensure sanction, or if they have documented plans to discontinue practice within one year. Physicians will not be counted if they no longer have hospital and/or nursing home privileges in the county or service area for the area they serve. If the population to FTE ratio is greater than the population of the service area, the population of the service area will be entered as the ratio. The Rural Health Advisory Commission will review individual concerns about full employment of a service area.
3. Service areas will be designated if there is no physician coverage or if the population-to-physician ratio equals or exceeds **2,000/1**.
4. Service areas with a population-to-physician ratio at or between **1,500/1 – 1,999/1** will be designated if at least one of the following high need indicators is present:
    a. The proportion of the population that is 65+ ranks in the highest quartile of the State;
    b. The proportion of the population below the poverty level ranks in the highest quartile of the State;
    c. The infant mortality rate ranks in the highest quartile of the State;
    d. The low birth weight rate ranks in the highest quartile of the State;
    e. More than half of the area's physicians are over 60 years old;
    f. The area is a frontier area (fewer than six persons per square mile.)
5. Counties having a population greater than or equal to fifteen thousand inhabitants and/or included within a metropolitan statistical area as defined by the United States Department of Commerce, Bureau of the Census will not be designated. Special populations and/or facilities may be designated within these counties. Areas within a 25-mile radius of Lincoln and Omaha will not be designated.
6. Service areas designated as federal primary care shortage areas may be designated as state shortage areas for purposes of the Nebraska Rural Health Incentive Programs.
7. The designation of an area will not be withdrawn if a student loan recipient or loan repayment applicant has chosen the area as a future practice site.

Guidelines for Designation of Shortage Areas in General Surgery, Internal Medicine, Obstetrics/Gynecology, Pediatrics, and Psychiatry

1. A service area may be a single county or a group of contiguous counties.
2. In computing the population-to-physician ratio, physicians practicing a particular specialty will be counted on a full-time equivalent basis, with four hours counting as 0.1 FTE. Physicians will not be counted if they are practicing under Medicare, Medicaid, or licensure sanction, or if they have documented plans to discontinue practice within one year. Psychiatrists working exclusively in an inpatient setting will not be counted.

If the population to FTE ratio is greater than the population of the service area, the population of the service area will be entered as the ratio. The Rural Health Advisory Commission will review individual concerns about full employment of a service area.

3. Service areas will be designated as shortage areas for a particular specialty if there is no local physician coverage in that specialty or if the population-to-specialist ratio equals or exceeds:

General Surgery	**10,200/1**
General Internal Medicine	**3,250/1**
Obstetrics/Gynecology	**10,000/1**
General Pediatrics	**9,300/1**
Psychiatry	**10,000/1**

4. Except as defined in 1 above, areas within a 25-mile radius of Lincoln and Omaha will not be designated.
5. The designation of an area will not be withdrawn if a student loan recipient or loan repayment applicant has chosen the area as a future practice site.

Guidelines for Designation of Physician Assistant Shortage Areas

1. A service area may be a single county or a group of contiguous counties.
2. Service areas will be designated as physician assistant shortage areas if there is no local physician coverage or if the population-to-physician ratio equals or exceeds the guideline for the specialty of the collaborating physician.
3. Except as defined in 1 above, areas within a 25-mile radius of Lincoln and Omaha will not be designated.
4. The designation of an area will not be withdrawn if a student loan recipient or loan repayment applicant has chosen the area as a future practice site.

Guidelines for Designation of Nurse Practitioner Shortage Areas

1. A service area may be a single county or a group of contiguous counties.
2. Service areas will be designated as nurse practitioner shortage areas if there is no local physician coverage or if the population-to-physician ratio equals or exceeds the guideline for the specialty.
3. Except as defined in 1 above, areas within a 25-mile radius of Lincoln and Omaha will not be designated.
4. The designation of an area will not be withdrawn if a loan repayment applicant has chosen the area as a future practice site.

Guidelines for Designation of General Dentistry Shortage Areas

1. A service area may be a single county, a partial county, a group of contiguous counties, or an identified population group within a defined area.
2. The designation of a service area as a General Dentistry Shortage Area will be based on the ratio of service area population to full-time equivalency (FTE) of general dentists in the service area. In computing the population-to-dentist ratio, dentists will be counted on a full-time equivalent basis, with four hours counting as 0.1 FTE. Dentists will not be counted if they are practicing under Medicare, Medicaid, or licensure sanction, or if they have documented plans to discontinue practice within one year.

If the population to FTE ratio is greater than the population of the service area, the population of the service area will be entered as the ratio. The Rural Health Advisory Commission will review individual concerns about full employment of a service area.

3. A service area is designated as a General Dentistry Shortage Area if there is no dentist in the service area or if the population-to-dentist ratio equals or exceeds **3000/1**.
4. Service areas with a population-to-dentist ratio at or between **2500/1 – 2999/1** will be designated if at least one of the following high need indicators is present:
    a. Half or more of the dentists serving the area are 55 or older;
    b. The proportion of the population below the poverty level ranks in the highest quartile of the State; or
    c. The area is a frontier area (fewer than six persons per square mile).
5. Except as defined in 1 above, areas within a 50-mile radius of Lincoln and Omaha will not be designated.
6. Service areas designated as federal general dentistry shortage areas may be designated as state shortage areas for purposes of the Nebraska Rural Health Incentive Programs.
7. The designation of an area will not be withdrawn if a student loan recipient or loan repayment applicant has chosen the area as a future practice site.

Guidelines for Designation of Pharmacist Shortage Areas

1. A service area may be a single county or a group of contiguous counties.
2. The designation of a service area as a Pharmacist Shortage Area will be based on the ratio of service area population to full-time equivalency (FTE) of pharmacists practicing in the service area. In computing the population to pharmacist ratio, pharmacists will be counted on a full-time equivalent basis, with four hours counting as 0.1 FTE. Pharmacists will not be counted if they are practicing under Medicare, Medicaid, or licensure sanction, or if they have documented plans to discontinue practice within one year. If the population to FTE ratio is greater than the population of the service area, the population of the service area will be entered as the ratio. The Rural Health Advisory Commission will review individual concerns about full employment of a service area.
3. A service area is designated as a Pharmacist Shortage Area if there is no pharmacist in the service area or if the population-to-pharmacist ratio equals or exceeds **1700/1.**
4. Service areas with a population-to-pharmacist ratio at or between **600/1 – 1699/1** will be designated if the proportion of the service area population 65 and older ranks in the highest quartile of the State or if more than half of the area's pharmacists are over 60 years old.
5. Except as defined in 1 above, areas within a 25-mile radius of Lincoln and Omaha will not be designated. Cities larger than 15,000 will not be designated.
6. The designation of an area will not be withdrawn if a loan repayment applicant has chosen the area as a future practice site.

Guidelines for Designation of Physical Therapy Shortage Areas

1. A service area may be a single county or a group of contiguous counties.
2. In computing the population-to-physical therapist (PT) ratio, PTs will be counted on a full-time equivalent (FTE) basis, with four hours counting as 0.1 FTE. PTs will not be counted if they are practicing under Medicare, Medicaid, or licensure sanction, or if they have documented plans to discontinue practice within one year. If the population to licensed PT ratio is greater than the population of the service area, the population of the service area will be entered as the ratio. The Rural Health Advisory Commission will review individual concerns about full employment of a service area.

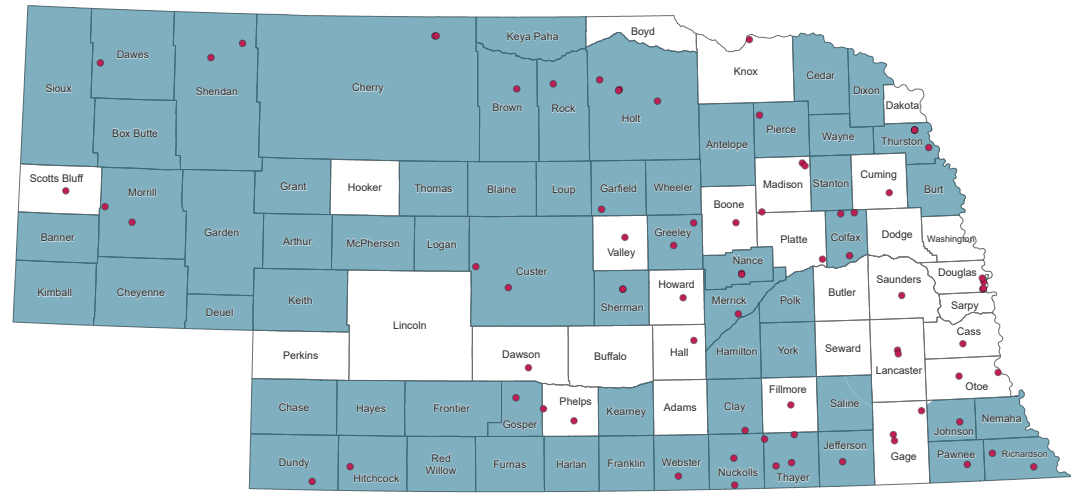
3. A service area is designated as a Physical Therapy Shortage Area if there is no physical therapist practicing in the service area or if the population-to-PT ratio equals or exceeds **5000/1**.
4. Service areas with a population-to-PT ratio at or between **4,500/1 – 4,999/1** will be designated if at least one of the following high need indicators is present:
    a. The area is a frontier area (fewer than six persons per square mile);
    b. The proportion of the service area population 65 and older ranks in the highest quartile of the State;
    c. The proportion of the service area Special Education students to the student population ranks in the highest quartile of the State;
    d. The proportion of the service area population below the poverty level ranks in the highest quartile of the State; or
    e. Fifty percent or more of the PTs practicing in the county are 60 or older.
5. Except as defined in 1 above, areas within a 50-mile radius of Lincoln and Omaha will not be designated.
6. The designation of an area will not be withdrawn if a loan repayment applicant has chosen the area as a future practice site.

Guidelines for Designation of Occupational Therapy Shortage Areas

1. A service area may be a single county or a group of contiguous counties.
2. In computing the population-to-occupational therapist (OT) ratio, OTs will be counted on a full-time equivalent (FTE) basis, with four hours counting as 0.1 FTE. OTs will not be counted if they are practicing under Medicare, Medicaid, or licensure sanction, or if they have documented plans to discontinue practice within one year. If the population-to-OT ratio is greater than the population of the service area, the population of the service area will be entered as the ratio. The Rural Health Advisory Commission will review individual concerns about full employment of a service area.
3. A service area is designated as an Occupational Therapist Shortage Area if there is no Occupational Therapist practicing in the service area or if the population-to-OT ratio equals or exceeds **5,000/1**.
4. Service areas with a population-to-OT ratio at or between **4,500/1 – 4,999/1** will be designated if at least one of the following high need indicators is present:
    a. The area is a frontier area (fewer than six persons per square mile);
    b. The proportion of the service area population 65 and older ranks in the highest quartile of the State;
    c. The proportion of the service area Special Education students to the student population ranks in the highest quartile of the State;
    d. The proportion of the service area population below the poverty level ranks in the highest quartile of the State; or
    e. Fifty percent or more of the OTs practicing in the county are 60 or older.
5. Except as defined in 1 above, areas within a 50-mile radius of Lincoln and Omaha will not be designated.
6. The designation of an area will not be withdrawn if a loan repayment applicant has chosen the area as a future practice site.

Appendix D: State-Designated Shortage Area Maps

Figure D1. State designated shortage areas for family practice



- National Health Service Corps Approved Sites
- Designated Shortage Area
- Not a Designated State Shortage Area

0 25 50 Miles

N

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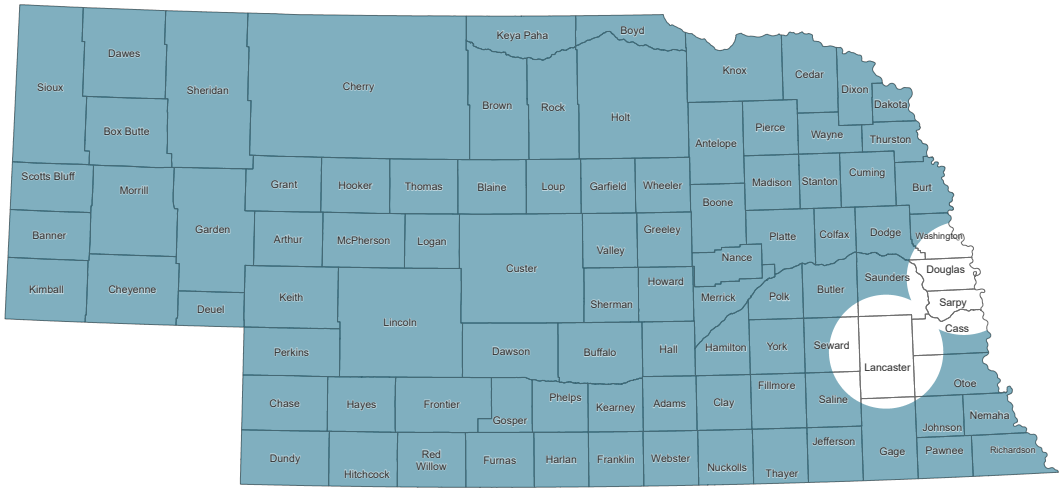
Figure D2. State designated shortage areas for general internal medicine



- Designated Shortage Area
- Not a Designationed State Shorage Area

0 25 50 Miles

N

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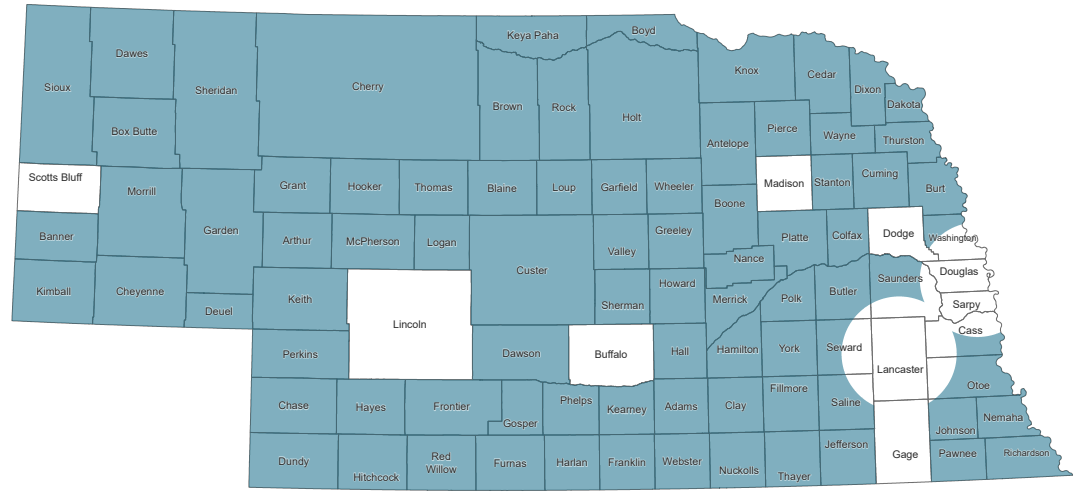
Figure D3. State designated shortage areas for obstetrics and gynecology



Designated Shortage Area
Not a Designated Shortage Area

0 25 50 Miles

N

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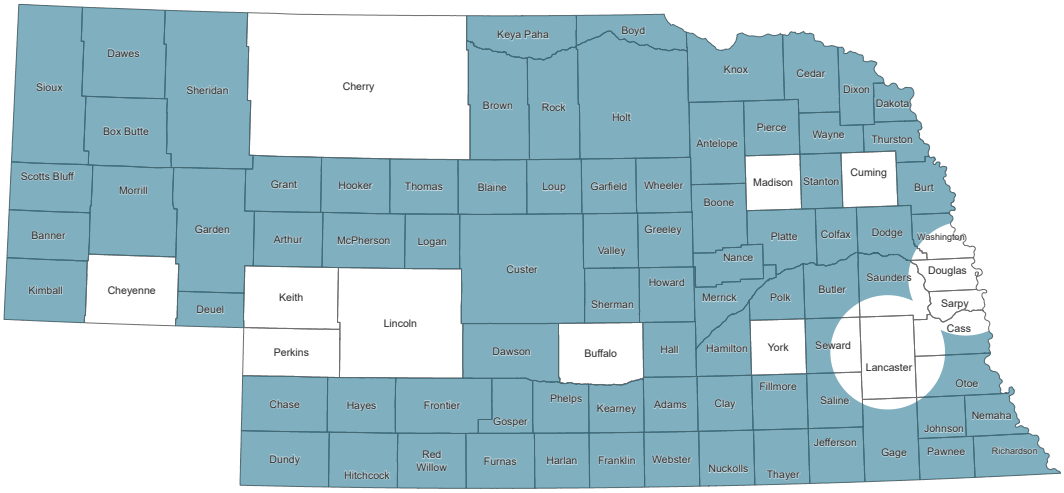
Figure D4. State designated shortage areas for general surgery



Designated Shortage Area
Not a Designated State Shortage Area

0 25 50 Miles

N

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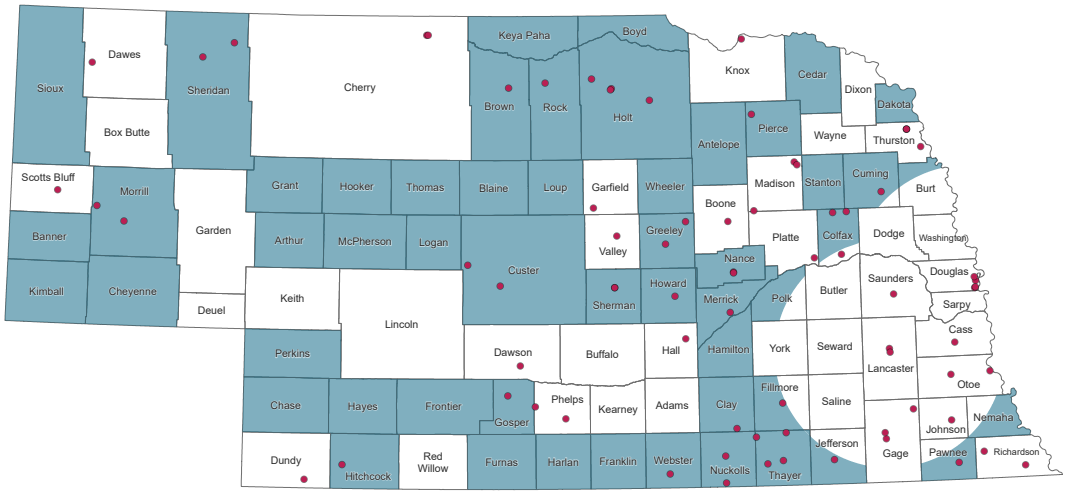
Figure D5. State designated shortage areas for general dentistry



National Health Service Corps Approved Sites
Designated Shortage Area
Not a Designated State Shortage Area
0 25 50 Miles
N

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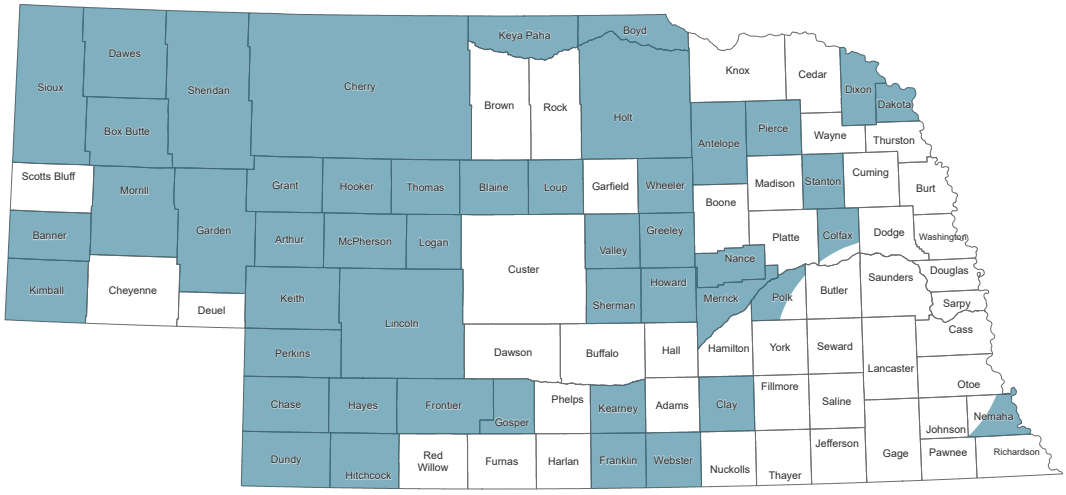
Figure D6. State designated shortage areas for occupational therapy



Designated Shortage Area
Not a Designated Shortage Area
0 25 50 Miles
N

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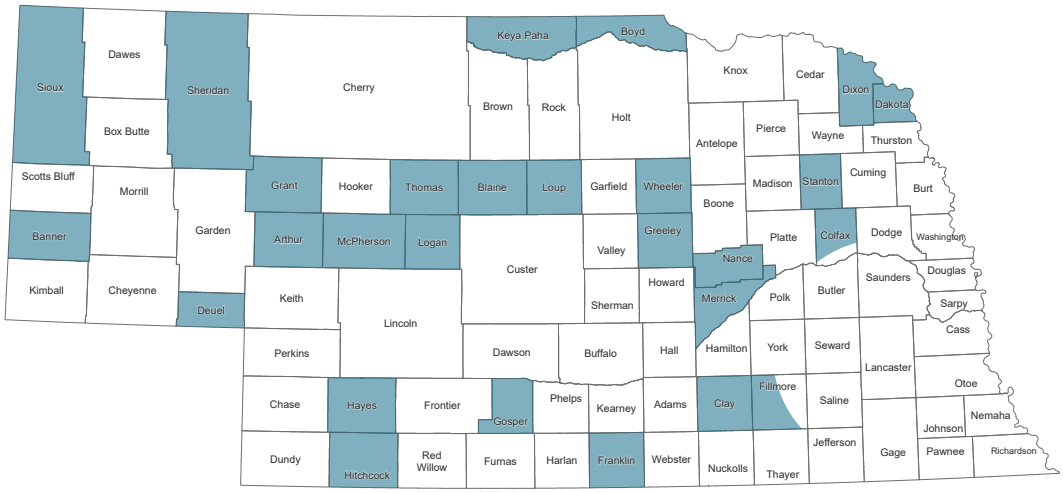
Figure D7. State designated shortage areas for physical therapy



Designated State Shortage Areas
Not a Designated State Shortate Area

0 25 50 Miles

N

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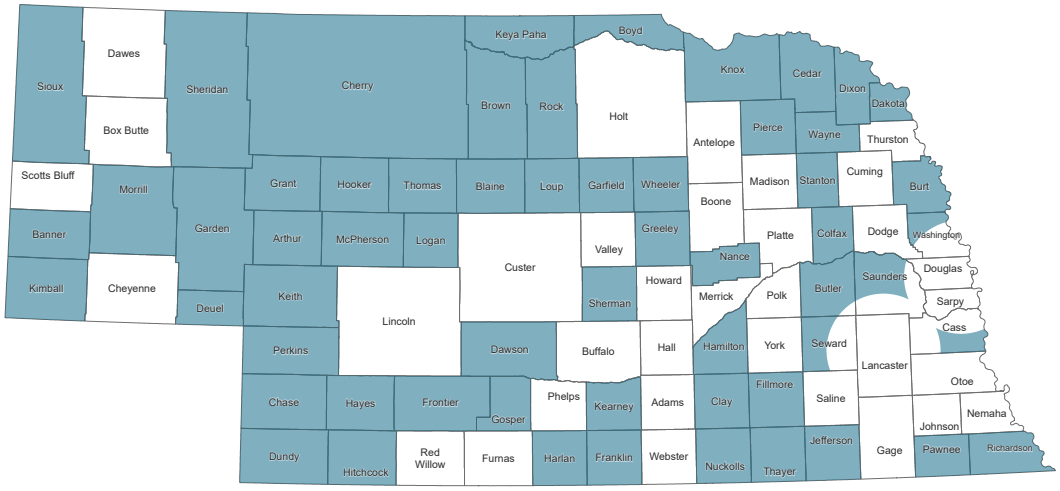
Figure D8. State designated shortage areas for pharmacist



Designated Shortage Area
Not a Designated State Shortage Area

0 25 50 Miles

N

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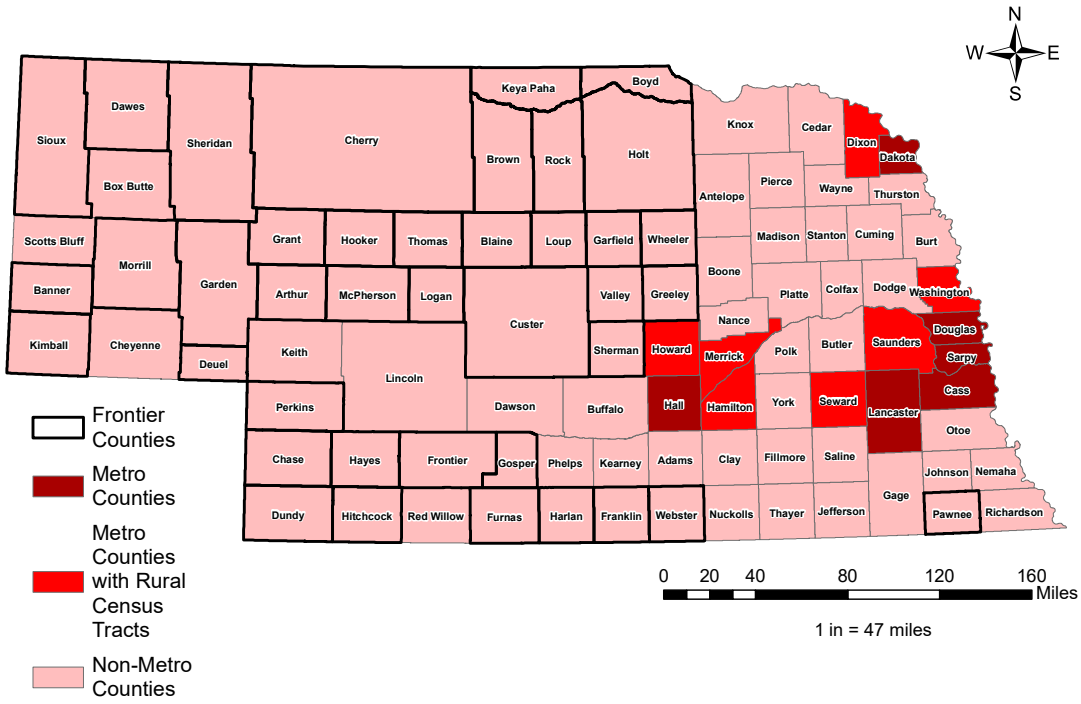
Appendix E: Distribution of Non-Metro and Metro Counties in Nebraska

Figure E1. Non-metro, frontier and metro counties in Nebraska



The classification of Metropolitan and Non-Metropolitan (Rural or Micropolitan) counties is from the Health Resources and Services Administration, Federal Office of Rural Health Policy.[12] There are a few Metropolitan counties have certain census tracts that are considered rural.[12]

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