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## Accessibility of APRNs to Critical Access Hospitals and Rural Health Clinics in Nebraska

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### The Sum is Greater Than the Parts

Synergism is the interaction between two or more discrete agencies, agents or conditions (Merriam-Webster). When synergistic parts work together, they accomplish more than they could alone.

Nurses understand synergism. Muscles function in highly organized groups to effect movement of the skeleton. The co-administration of medications with different mechanisms of action is a common therapeutic strategy.

The concept of synergism can also be applied to health care teams. As the largest group of licensed health care professionals, nurses are integral to the composition of interdisciplinary teams. Having access to sufficient numbers of nurses with the right mix of other professional and support staff in teams is essential to provide high quality and cost-effective services to specific patient populations.

### Sighting the Target: The Nursing Shortage

Nurses are in short supply in all Nebraska counties and the demand is projected to accelerate through at least 2025. Shortages are most severe in rural areas of the state (Nebraska Center for Nursing [CFN], 2018).

The vision of the CFN is *Nebraska Nurses: when and where you need them*. Just as the marksman relies on a properly calibrated sighting device to scan the environment and locate the target, the primary mission of the Center is to collect and analyze nursing workforce data to support the efforts of employers and other stakeholders to attract and retain qualified nurses in the state.

Nurses are the largest group of licensed health care professionals in Nebraska, accounting for over 55% of all licensed health care professionals (Wilson et al.,

2018). Eighty (80) percent of all nurses are registered nurses (RNs). Nearly 2,000 RNs are also licensed as advanced practice registered nurses (APRNs) working in the state (CFN, 2019). Table 1 details the number and relative percentage of each group of APRNs.

Nurse practitioners (NPs) are the largest group of APRNs. The increase in the number of NPs practicing in rural Nebraska (CFN, 2019) mirrors reported national trends (43.2% increase nationwide between 2008 and 2016; 47.8% increase in Nebraska between 2008 and 2018) (Barnes et al., 2018). Nurse practitioners and medical providers, including physicians and physician assistants lead health care teams in the provision of essential health care services, including primary care, aging, chronic disease, behavioral-mental health and emergency care. Interdisciplinary team configurations that embrace NPs as providers can strengthen the delivery of health care (Barnes et.al., 2018).

**Table 1:** Number and Percentage for each group of APRNs

Type of APRN	Number	Percentage
Nurse Midwife (APRN-CNM)	41	2%
Clinical Nurse Specialist (APRN-CNS)	83	4%
Nurse Anesthetist (APRN-CRNA)	372	19%
Nurse Practitioner (APRN-NP)	1,474	75%
Total	1,970	100%

Source: 2018 RN Renewal Survey

Certified Registered Nurse Anesthetists (CRNAs) are the first and longest established APRN group in the state and like NPs, practice under the authority of their own licensure. They are the only anesthesia providers in over 95% of critical access hospitals (CAHs) (T.

## Inset 1

**Nurse Practitioners (NPs)** practice in a wide variety of clinic, hospital and other health care settings. They provide initial, ongoing, and comprehensive care, which includes patient histories, physical examinations and other health assessment and screening activities, and diagnosing, treating, and managing patients with acute and chronic illnesses and diseases. Nurse practitioners order, perform, supervise and interpret laboratory and imaging studies; prescribe medication, supplies and durable medical equipment; and, make appropriate referrals for patients and families.

**Certified Registered Nurse Anesthetists (CRNAs)** provide the full spectrum of anesthesia and anesthesia-related care for surgery and other procedures for patients of all ages and varying levels of acuity. They may also provide pain management services.

**Clinical Nurse Specialists (CNSs)** function to integrate care across health care settings. The primary goal of the CNS is continuous improvement of patient outcomes and nursing care through staff mentoring and health system changes. The CNS may be responsible for diagnosis and treatment of health/illness states, disease management, health promotion, and prevention of illness and risk behaviors among individuals, families, groups, and communities

**Certified Nurse-Midwives (CNMs)** provide a full range of primary health care services to women of all ages, including gynecologic care, family planning services, preconception care, prenatal and postpartum care, childbirth, and care of the newborn. Practice includes treating the male partner of female clients for sexually transmitted disease and reproductive health concerns.

**(Consensus Model for APRN Regulation, 2008).**

Rauner, personal communication, January 16, 2019, UNMC Health Professions Tracking Service December 2018).

Clinical Nurse Specialists (CNSs) are predominately employed by large hospitals systems. They also practice in nursing education and administrative roles. (CFN, 2019). Certified Nurse Midwives (CNMs) are required to have a practice agreement with physicians in Nebraska. Practice agreements are a known deterrent to the migration of CNMs to rural and underserved areas (Kozhimannil et al., 2016). **Inset 1** provides a description of the role of each APRN group.

Rural and frontier counties in Nebraska rely on a robust network of rural health clinics and critical access hospitals as entry points for essential health care services. Advanced practice registered nurses are among the health care providers that not only provide direct care in those

settings, but also make decisions regarding consultation, collaboration and referral to other health care professionals when higher levels of care are required.

### Sharpening the Focus

The purpose of this article is to identify the numbers of APRNs that work in rural and frontier communities and live in proximity to rural health clinics and critical access hospitals (CAHs) in Nebraska. The significance of this analysis is twofold: 1) Identify the APRN workforce that is geographically available in rural communities, and 2) Increase awareness of APRNs capacities to contribute to the provision of essential health care services in rural health clinics and CAHs.

*continued on page 8*

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**Data and Definitions.** Data sources include the 2018 RN Licensure Renewal Survey, Licensure data from the Nebraska DHHS Licensure Unit, and U.S. Census Bureau county data. **Figure 1** shows the distribution of urban, rural and frontier counties in Nebraska.

Medicare-certified rural health clinics (RHCs) were enacted by the Rural Health Clinic Services Act of 1977 (Public Law 95-210) to provide affordable and accessible primary health care services to underserved populations. Reimbursement structures are different from medical offices operating under Medicare and Medicaid programs.

Critical Access Hospital is a designation given to eligible rural hospitals by the Centers for Medicare and Medicaid Services (CMS). The CAH designation is designed to reduce the financial vulnerability of rural hospitals and improve access to healthcare by keeping essential services in rural communities (Rural Health Information Hub, 2019). See **Figure 2** for the locations of RHCs and CAHs in the state.

**Demographics.** The Center for Nursing data workforce model projects a persistent shortage of nurses at all levels of licensure in all economic regions of the state (CFN, 2018). Shortages are more critical in rural and frontier counties than in urban counties. The estimated shortage of APRNs will increase to 592 in the year 2025 which represents a 42% increase between 2019 and 2025.

**Methodology.** To identify the potential availability of the APRN nursing workforce, APRNs who reported working in a RHC or CAH in Nebraska were excluded from the geographic analysis ( $n = 196$ ). The remainder, ( $n = 1,757$ ), including those with a known residence outside of Nebraska, including Iowa, Kansas, South Dakota and Wyoming, were geographically identified using Geographic Information System (GIS)

Figure 1: Urban, Rural and Frontier counties in Nebraska

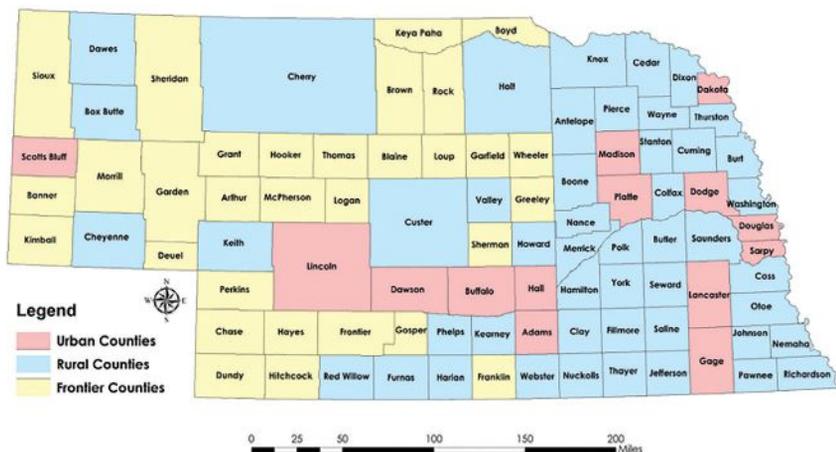
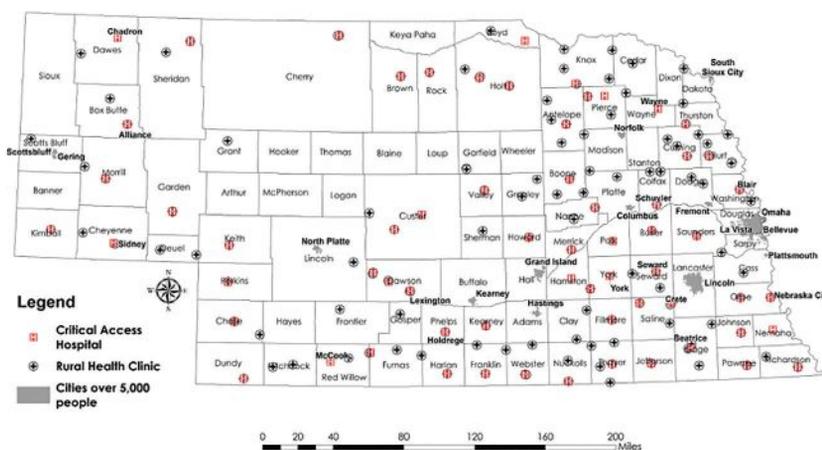


Figure 2: Location of CAHs and RHCs in Nebraska



software. A 20-mile radius was built around the location of each APRN and overlapped against the location of RHCs and CAHs. Demographic variables, work settings, specialties, and certifications were available for all APRNs based on the 2018 RN Renewal Survey.

**Results.** According to the 2018 RN Renewal Survey, there are **1,970** APRNs whose primary workplace is in Nebraska. Of the 32 counties without any APRNs, all are either rural or frontier counties. See **Figure 3**.

There are a total of 143 RHCs and 64 CAHs in Nebraska. See **Table 2**. As expected, the majority of both of these facilities are in rural or frontier counties.

**Table 2:** Number of Critical Access Hospitals and Rural Health Clinics by Type of County

County:	Critical Access Hospital	Rural Health Clinic
FRONTIER	11	30
RURAL	49	96
URBAN	4	17
Total	64	143

A total of 196 APRNs are currently employed in a RHC and/or in a CAH. This represents **10.5%** of the total APRN workforce in Nebraska. See **Table 3**.

Figure 3: Number of APRNs Who Work in Nebraska By County

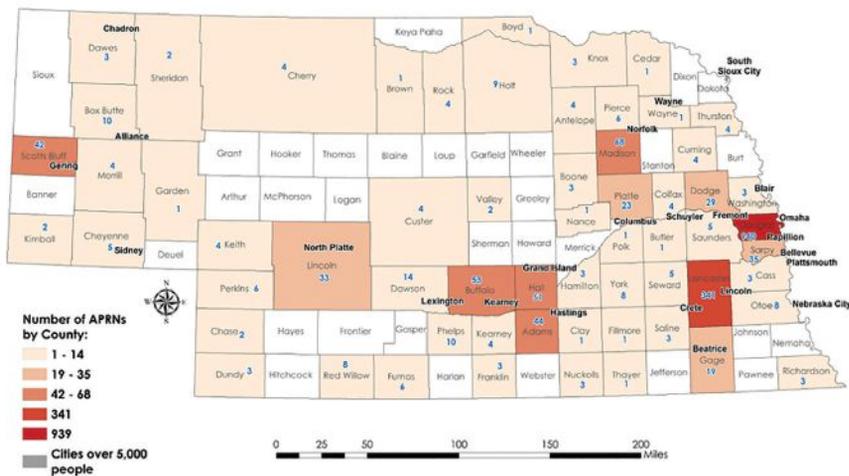


Figure 4: 20-mile Buffer from APRNs Overlapping Location of RHCs and CAHs

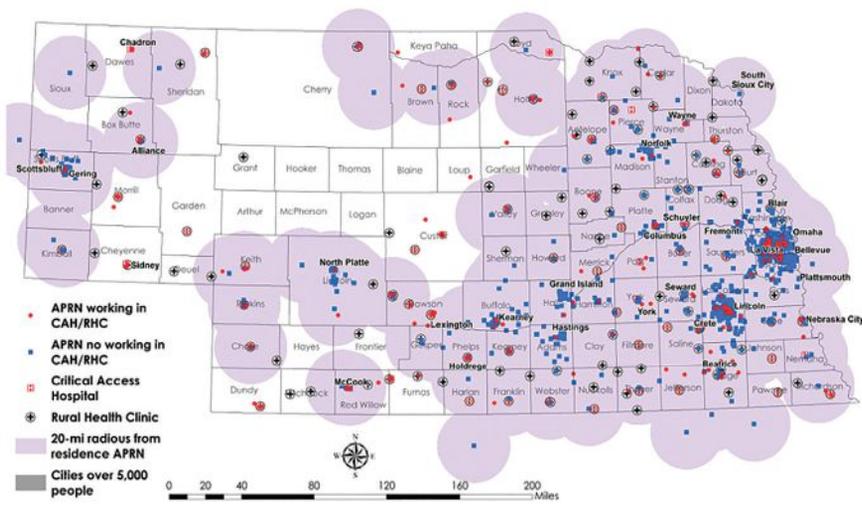


Table 3: Number of APRNs Working in a Rural Health Clinic or CAH

Type of Health Care Facility	Total Number of APRNs
Rural Health Clinic	23
Critical Access Hospital	150
Work in both type of settings	23
<b>Total</b>	<b>196</b>

Of the 1,757 APRNs who do not work in a RHC or CAH, 11 reported primary residence in neighboring states (Iowa,  $n = 2$ , Kansas,  $n = 6$ , South Dakota,  $n = 1$ , and Wyoming,  $n = 2$ ). It was estimated, based on the responses to the 2018 RN Renewal Survey, that APRNs currently working in RHCs or CAHs, travel an

average of 20 miles one-way to their workplaces. This distance was used to create a buffer zone around each APRN who does not work in these types of facilities ( $n = 1,757$ ). These buffers were then geographically overlapped against the locations of RHCs and CAHs to identify the potential APRN workforce available within 20 miles of their primary residences. See Figure 4.

The resulting analysis revealed that 91% of RHCs ( $n = 130$ ) and 87% of CAHs ( $n = 56$ ) are located within a 20-mile radius of residence of an APRN not currently working in these types of facilities. Rural health clinics located in Grant, Garden, Deuel, and Hitchcock counties had neither an APRN working in them or living within a 20-miles radius. The same findings were demonstrated for CAHs located in Garden and Pawnee counties.

**Taking Aim at the Target**

Nurses are in short supply at all levels of licensure in all economic regions of the state.

The concept of synergism can be readily applied to optimizing the function of interdisciplinary health care teams that rely on the inclusion of nurses. Advanced practice registered nurses function in teams in direct patient care roles that facilitate and complement the services provided by other health care professionals. Thoughtful analysis of APRN workforce data and the identification of the proximity of their primary residences as within a 20-mile radius to the majority of RHCs and CAHs in the state demonstrates the capacity of APRNs to improve access to health care services provided in these practice settings.

**Notes**

- 1 Based on the average number of miles that APRNs working in clinics or CHAs drive one-way to their work places.
- 2 The exception is Nebraska Dakota County. South Sioux City, NE and neighboring Sioux City, Iowa is a Metropolitan area defined by the U.S. Census Bureau.

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