

Rural Minnesota's Health Care Workforce: Demographics, Geography & Strategies

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A skilled rural healthcare workforce is important not only to make quality health care accessible to people in rural areas, but also because the professionals who work in rural clinics, hospitals and other healthcare settings pump millions of dollars into local economies.

This article highlights the importance of the healthcare workforce for local economies, describes the demographics and geography of Minnesota's rural healthcare workforce, summarizes current strategies to assure an adequate supply of healthcare providers in rural areas, and explores some rural healthcare workforce planning issues.

Most workforce data presented here comes from surveys of licensed professionals conducted by the Office of Rural Health and Primary Care in the Minnesota Department of Health. The complete data is available at: <http://www.health.state.mn.us/divs/chs/workforce/data.htm>.

This article uses federal definitions for metropolitan and rural areas. Metropolitan areas are comprised of counties surrounding core cities of at least 50,000 population. Minnesota has 21 counties in six metropolitan areas (Minneapolis-St. Paul, Duluth-Superior, St. Cloud, Rochester, Fargo-Moorhead and Grand Forks-East Grand Forks). Micropolitan areas include one or more counties surrounding cities of at least 10,000 population. Minnesota has 20 counties in 18 micropolitan areas. For purposes of this article, the other 46 counties are considered rural.

Workforce is Both a Health and an Economic Issue

The importance of doctors, physicians, nurses and other healthcare professionals for good health outcomes is obvious. But healthcare is also an economic development issue for rural areas.

When patients must go elsewhere for care, dollars and jobs go with them.

One of every eight Minnesota private-sector jobs is in healthcare.¹ The healthcare industry accounts for more than 20% of jobs in some rural counties. In all, more than 210,000 Minnesotans work in a wide variety of healthcare occupations. Physicians, nurses and dentists are the largest and perhaps most visible occupations, but health care centers employ a wide variety of occupations based in medicine, the biological sciences and health technology (see Figure 1).

Age and Gender

As the overall population ages, many professions face the challenge of replacing retiring workers. The workforce in some healthcare occupations is still relatively young, but a large share of the dentist, physician and nursing workforce is near retirement.

Many healthcare occupations continue to be male or female dominated. Most physicians and dentists are male, but female numbers are rising rapidly in these fields. At the same time, nursing and some allied health occupations continue to be filled mostly by females. The rural health workforce is even less gender-balanced than the rest of the state, with fewer female physicians and dentists and very few male nurses in rural areas.

Physicians. In 2005, 28% of active physicians were 55 or older. The median age of 48 was similar across metropolitan, micropolitan and rural counties. Physicians in micropolitan areas are actually a bit

Figure 1: Examples of Minnesota health occupations.

3,500	Physical therapists
600	Recreational therapists
3,200	Medical and clinical laboratory technologists
3,170	Medical and clinical laboratory technicians
3,000	Dental hygienists
3,470	Radiologic technologists and technicians
4,000	EMTs and paramedics
3,700	Medical records and health information technicians
800	Diagnostic medical sonographers
5,800	Pharmacy technicians
750	Cardiovascular technologists and technicians

Source: U.S. Bureau of Labor Statistics, May 2005 employment data, revised May 2006.

older than physicians in either metropolitan or rural areas. A smaller proportion of micropolitan physicians are under 35, and a larger proportion is over 55 than in other parts of the state.

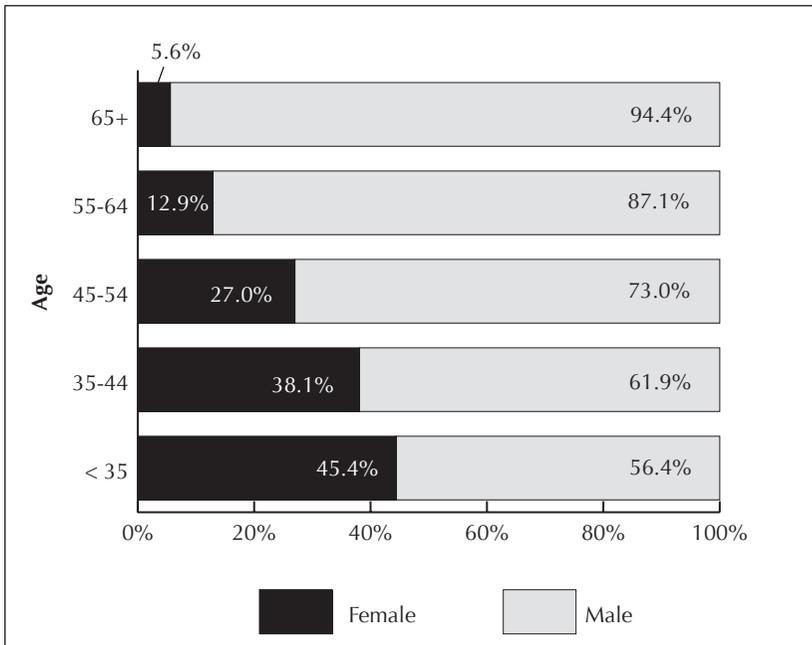
In Minnesota, 28% of physicians are female, up from 21% a decade earlier. The overall gender percentages, however, obscure a large difference between older and younger physicians. Only 11% percent of practicing physicians 55 or over are female, compared to 40% percent of physicians under 45. In 2005, women accounted for 47% percent of all first-year Minnesota medical students (including Mayo).

Women are a bit less likely to practice in rural areas than urban areas. While 28% of metropolitan area physicians are female, only 24% of rural physicians and 22% of micropolitan physicians are female (Figure 2).

Physician assistants. Physician assistants are considerably younger than physicians, reflecting in part a shorter training period. The statewide median age is 41, but the median age in rural counties is 44. In 2005, 35% of metropolitan physician assistants were under 35, compared to 20% of rural PAs.

Women make up 58% of all Minnesota physician assistants. The gender of physician assistants does not differ much between

Figure 2: Physician gender by age.



urban and rural areas; 61% of rural physician assistants are women. Younger physician assistants are more likely to be female, with women accounting for 73% of PAs under the age of 35.

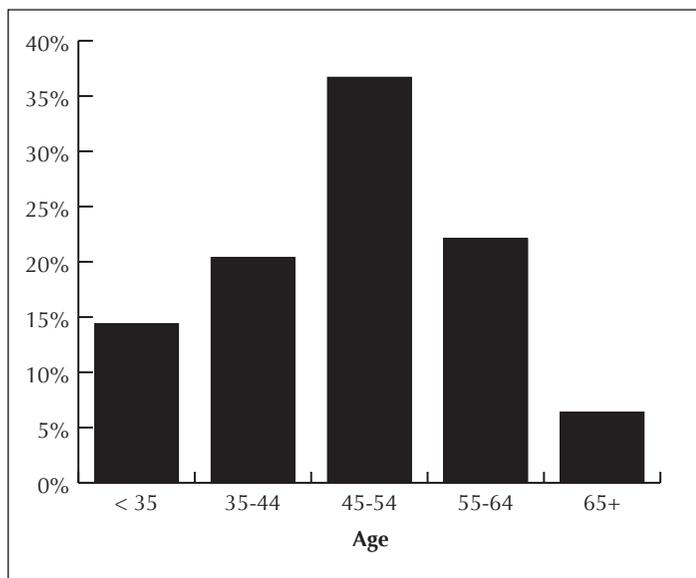
Nurses. Although they take less time than physicians to train, the nursing workforce is about the same age as the physician workforce. The statewide median age of registered nurses is 47, but reaches 49 in rural counties. Twenty-nine percent of rural RNs were 55 or older in 2005, while only 14% were under 35 (Figure 3).

The licensed practical nurse workforce is about the same age as the RN workforce. Their median age in rural areas is 48, matching the statewide median. While 28% of LPNs were 55 or older in 2005, 18% were under 35.

More than 93% of all registered nurses and 97% of all licensed practical nurses are female. Male nurses are even less common in rural areas than in urban areas.

Respiratory care practitioners. The median age of respiratory care practitioners is 44. Micropolitan and rural RCPs are probably older than RCPs in metropolitan counties, but the small number of RCPs outside metropolitan counties makes the data less reliable. Statewide, 12% of RCPS were 55 or older in 2005.

Figure 3: Rural nurses by age.



More than six out of 10 respiratory care practitioners are women. The gender mix differs only slightly between urban and rural areas. However, only several dozen RCPs practice in the state's most rural counties. The female majority in the profession may be growing, because 71% of RCPs under age 35 are women.

Physical therapists. Physical therapists are relatively young, with a statewide median age of 42. Rural therapists are even younger with a median age of 39. Only 9% of rural physical therapists were 55 or older in 2005, while 39% were under 35. This may reflect growth of the profession in rural areas after it became established in more urban areas.

More than three-quarters of practicing physical therapists are women. Male therapists are somewhat more common in rural counties, where only 68 percent are female, but women still dominate the field at all age levels.

Dentists. Dentists have the oldest median age, 49 years, of the major health care providers. Rural dentists are even older, with a median age of 53 in 2005. Fewer than one in four rural dentists were under 45, while 38% were 55 or older.

Four of five dentists practicing in Minnesota are male. Female dentists are even less common in rural areas, where 89% of rural dentists are male. Dentistry has lagged behind medicine in its recruitment of women, but gender balance is improving in dentistry as it is in medicine, with females now accounting for 42% of dentists under age 35.

Dental assistants and hygienists. Statewide, dental assistants had a median age of 37 and hygienists had a median age of 42. Rural dental assistants are older than urban assistants, but rural hygienists are younger than their urban counterparts. Only 8% of dental assistants and 6% of rural hygienists were 55 or older. One third, 33%, of hygienists and 30% of assistants were under 35.

Dental hygienists and assistants are the most female-dominated health care occupations in Minnesota, with more than 99% of hygienists and assistants being female.

Geography

Physicians and other health care providers are not evenly distributed across the state but are disproportionately concentrated in urban centers with major hospitals and clinics. One measure of physician supply is the number of physicians per 100,000 population.

ORHPC estimates that about 12,800 physicians worked at least part time at a Minnesota practice site in 2005, amounting to 246 physicians per 100,000 Minnesotans.

Most active physicians, 85%, had primary practice sites in metropolitan counties in 2005. Another 10% practiced in micropolitan counties and only 5% in the state’s 46 most rural counties (Figure 4).

An alternative geographical breakdown of the state gives a different picture of how physicians are distributed across Minnesota.

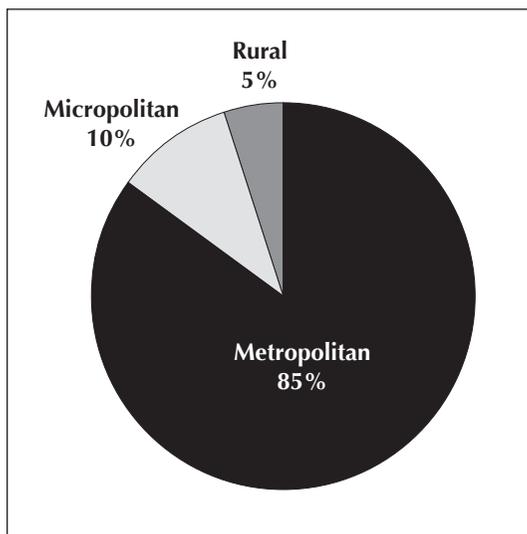
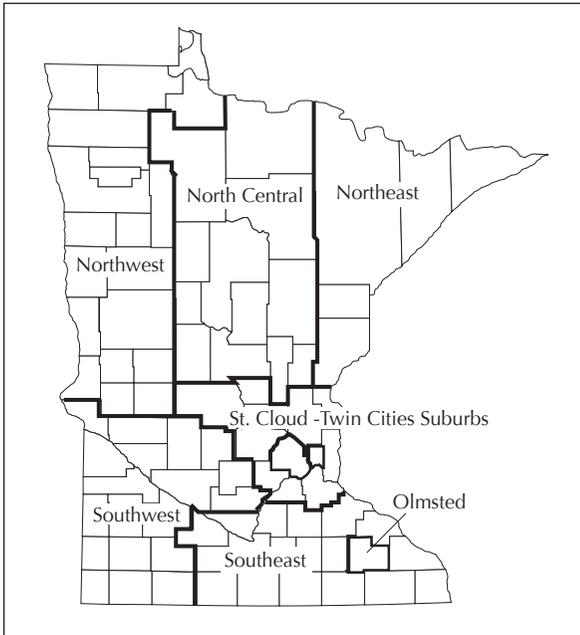


Figure 4: Geographic distribution of Minnesota physicians, 2005.

Table 1: Physicians per 100,000 population, estimated, by region.

	Physicians	Physician Assistants	RNs	LPNs	Dentists
Hennepin/Ramsey	348	15	1,358	241	73
Twin Cities Suburbs/ St. Cloud	133	9	523	194	49
Olmsted County	1,551	71	3,848	561	86
Southern Minnesota	137	12	634	448	50
Southwest Minnesota	121	8	755	514	46
Northwest Minnesota	103	15	645	525	44
North central Minnesota	149	9	787	470	44
Northeast Minnesota	279	11	1,152	481	61

Figure 5: Minnesota regions.



This regional approach first breaks out the Hennepin-Ramsey county core of the Twin Cities and Olmsted County (Rochester), then divides the rest of the state into five contiguous geographic regions.

More than 60% of physicians practiced in Hennepin, Ramsey and Olmsted counties in 2005. Olmsted County had more than 1,500 physicians per 100,000 population, while Hennepin and Ramsey together had nearly 350 physicians per 100,000 population. Patients in these counties appear to have an unusually large number of physicians to choose from, but as major medical centers, Minneapolis-St. Paul and Rochester also serve many patients from other parts of the state and nation.

The balance of the state had 143 physicians per 100,000 population. As shown above, rural areas have far fewer physicians per capita than urban areas, but broad geographic regions of the state have roughly similar numbers of physicians. After Hennepin, Ramsey and Olmsted counties are excluded, the number of physicians per capita does not vary widely among regions of the state. The one exception is northeast Minnesota, which has about 280 physicians per 100,000 population, compared to between 100 and 150 in other regions (Table 1).

Table 2: Physician specialties by metropolitan, micropolitan and rural counties.

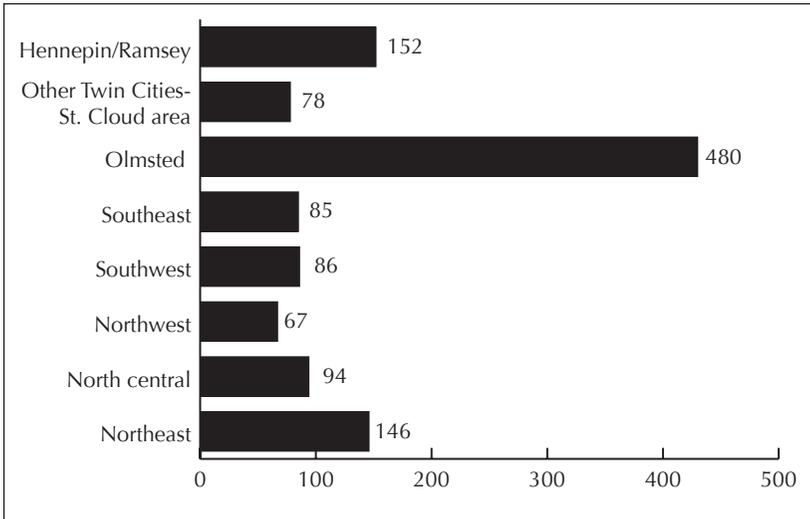
	% in primary care	Physicians per 100,000 population (estimated)		
		Primary care	Surgical specialties	Other specialties
Metropolitan statistical area counties (n = 20)	44%	129	28	136
Micropolitan statistical area counties (n = 21)	57%	98	19	55
Rural counties (all other) (n = 46)	78%	75	8	13

Primary care and specialists. The first concern in health care access is the availability of primary care physicians. Primary care physicians include family practitioners, internal medicine physicians, pediatricians, obstetricians and gynecologists. While primary care physicians may be more specialized than general practitioners once were, they remain the first point of physician contact for most people. Primary care physicians deal with the most common medical problems and are the first step before specialized care.

Table 3: Physician specialties by region.

	% in primary care	Physicians per 100,000 population (estimated)		
		Primary care	Surgical specialties	Other specialties
Hennepin and Ramsey counties	44%	152	33	163
Remainder of Twin Cities and St. Cloud Metropolitan Areas	58%	78	11	44
Olmsted County	28%	430	139	986
Southeast Minnesota (excluding Olmsted Co.)	62%	85	14	39
Southwest Minnesota	71%	86	7	28
Northwest Minnesota	65%	67	13	24
North central Minnesota	64%	94	17	37
Northeast Minnesota	52%	146	32	101

Figure 6: Primary care physicians per 100,000 population, estimated, by region.



Of physicians practicing in Minnesota, 49% claim a primary care discipline as their principal specialty. Another 11% are surgical specialists and 40% practice in other specialties.

While it may be necessary to travel some distance to see a specialist, there is an expectation that Minnesotans will find primary care physicians reasonably close to home. To achieve this goal, primary care physicians need to be distributed fairly evenly across the state.

The good news for rural areas is that 78% of rural physicians practice in a primary care specialty. The bad news is that rural areas have few specialists. An estimated 84% of surgical specialists practice in metropolitan counties, while only 4% practice in the state's 46 most rural counties. Of non-surgical specialists, 91% practice in metropolitan counties, and only 2% in rural counties. Primary care specialists account for 44% of practitioners in metropolitan counties and 57% of practitioners in micropolitan counties (Table 2).

The disparities are not surprising. Just as smaller communities are less likely to have other kinds of specialized professional services, they are less likely to have large numbers of physicians and may have few, if any, specialists.

The smaller number of physicians in rural counties means patients are more likely to need to travel to the nearest larger community to see a physician. The critical question then becomes, how far is the patient willing or able to travel? The answer depends

on the distance to a larger center that has the needed health care services. This question is even more important in some parts of the state than others: a look at a map shows that distances are generally shorter in southern Minnesota and longer in northern Minnesota, where sizable communities are more widely spaced.

The following highlights summarize how the physician workforce is distributed across the state.

- Because of its unique cluster of international-class medical facilities, Olmsted County has an unusually large number of physicians per 100,000 people, and an extraordinary number of non-primary care specialists. Only 28% of Olmsted County physicians are in primary care specialties.
- Hennepin and Ramsey counties are home to major medical facilities that serve patients from across the metropolitan region and the state. More than half of physicians in Hennepin and Ramsey counties are non-primary care specialists.
- The per-capita number of physicians in the remainder of the Minneapolis-St. Paul and St. Cloud metropolitan areas is not unusual compared to other regions of the state. This urban and suburban region actually has slightly fewer primary care and surgical specialty physicians than Greater Minnesota regions but has an edge in the number of non-surgical specialists.
- The largely rural northeast, north central, southwest and southeast regions actually have more primary care physicians per capita than the counties surrounding Minneapolis and St. Paul.
- The northeast region is a special case. Physicians, especially specialists, in this region are heavily concentrated in the city of Duluth (St. Louis County), a major medical center for the region. If St. Louis County is excluded, the number of primary care physicians in Cook, Lake, Kanabec and Carlton counties drops to 96 per 100,000 people, more in line with other regions of the state. The figure for St. Louis County alone is 166.
- The most physician-poor region is the northwest, with only 67 primary care physicians per 100,000 people. This low number may partially reflect patients traveling to clinics in the nearby regional centers of Fargo and Grand Forks in North Dakota.

The northwest regional data suggests another important point. Any analysis of this kind is based on arbitrary geographical boundaries which people may think nothing of crossing for health care. If the data permitted an answer, the critical question would be: Where does access to health care suffer because people live too far from the physicians they need to see? A community's small size alone does not put it at risk, but distance from care does. Lack of larger urban centers and remoteness combine most dramatically in large areas of northern Minnesota, but it is also an issue in western Minnesota.

Physicians, especially specialists, tend to practice in or near communities with hospitals. Six Minnesota counties – Cass, Clay, Dodge, Fillmore, Houston and Red Lake – do not have any hospitals. The greatest distances between hospitals are in the northern half of the state. The Critical Access Hospital program and health professional shortage area designations both recognize the importance of distance to care. To qualify for critical access status, a hospital must be 35 miles from another hospital or 15 miles in an area with only secondary roads. If two hospitals are 35 miles apart, a patient living half way between them would have two hospital choices within 18 miles.

Dentists

Dental care differs from medical care in important ways. First, a much smaller percentage of Minnesotans have dental insurance coverage, and a higher proportion of dental care expenses are paid from private out-of-pocket sources.² Second, dentists are more likely to work in small offices and clinics.

However, the geographical distribution of dentists is similar to that of physicians, with more dentists per capita in urban areas than in rural areas. In 2005, 78% of dentists had a primary practice site in one of the state's 20 metropolitan area counties, while only 8% practiced in the state's 46 rural counties.

Table 4: *Dentists per 100,000 population by metropolitan, micropolitan and rural counties, 2005.*

	Per 100,000 population (estimated)
Metropolitan statistical area counties (n = 20)	64
Micropolitan statistical area counties (n = 21)	55
Rural counties (all other) (n = 46)	36

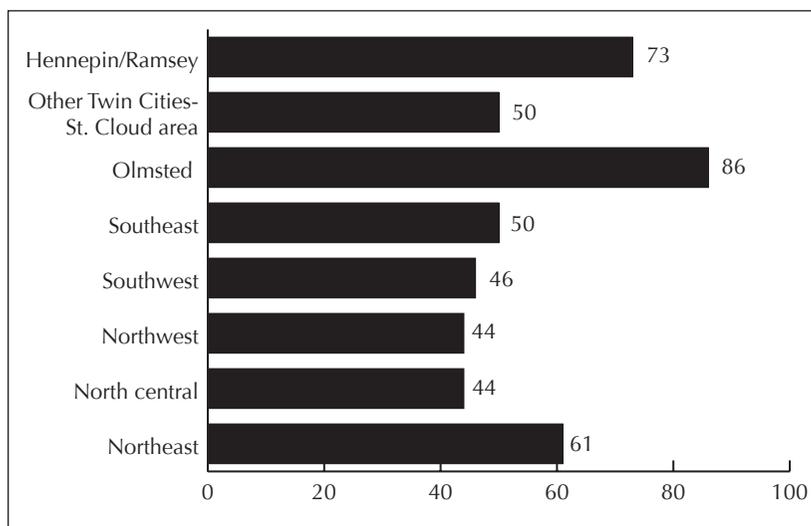
Metropolitan area counties had nearly twice as many active dentists per capita (64 per 100,000 population) as rural counties (36 per 100,000). Micropolitan area counties, with 55 dentists per 100,000 population, were closer to the metropolitan standard.

As with physicians, the regional approach gives a different picture of the distribution of dentists. First, it shows the concentration of dental practices in Hennepin, Ramsey and Olmsted counties. Hennepin and Ramsey counties had 73 dentists per 100,000 population compared to 50 in the eleven surrounding counties comprising the balance of the Minneapolis-St. Paul and St. Cloud metropolitan areas.

The southeast, southwest, northwest and north central regions all had between 44 and 50 dentists per 100,000 population. Five counties in northeastern Minnesota had 61 dentists per 100,000, but these were disproportionately located in St. Louis County, especially in Duluth. The remaining four northeastern counties had an estimated 44 dentists per 100,000 population.

This analysis shows that, outside Minneapolis-St. Paul, Rochester and Duluth, dentists are fairly evenly distributed across the state's major regions. However, the metropolitan-micropolitan-rural analysis above suggests that in each of these regions, dental practices tend to be concentrated in more urban counties that are part of metropolitan and micropolitan areas.

Figure 7: Dentists per 100,000 population, estimated, by region, 2005.



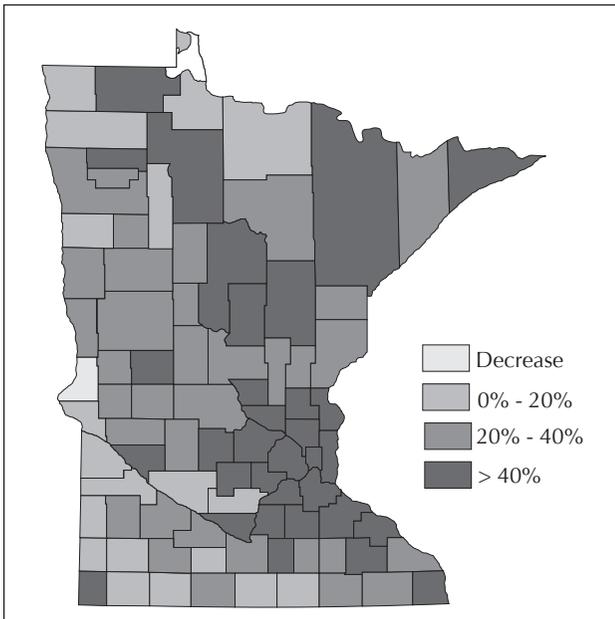
Aging Population

Not only is today's healthcare workforce aging, tomorrow's workforce will be serving an older population with different needs. The state demographer projects that Minnesota will have nearly 78,000 more people over 85 in 2030 than in 2000. We are used to associating high percentages of elderly with rural areas, but the largest increases in senior population will be in suburban and other parts of the state where populations grew rapidly over the past 30 years.

An older population makes different demands on the health care workforce. Older adults suffer more chronic illnesses, use more prescription medicine, and have more difficulty with daily activities and mobility.³ In part due to the aging population, the Association of American Medical Colleges recommends a 30% increase in medical school enrollments between 2006 and 2015 to alleviate an expected physician shortage.⁴ Health workforce demands will vary by occupation,⁵ but may be especially strong for occupations such as licensed practical nurses, who often work in long-term care settings.

The greatest increase in demand for healthcare workers to serve older people will not be in rural, but in suburban and lake-country Minnesota. This is not good news for rural areas. Rather, rural areas

Figure 8: Projected percent change in population age 65-75 by county, 2005-2015.



that already have trouble recruiting physicians and other healthcare professionals will be competing more than ever against suburban and other recent high-growth areas. If an older population does, in fact, generate increased demand for healthcare, it can be assumed that wage levels will rise as health care provider organizations try to secure the labor they need. The question for rural areas is whether they will be able to compete in a statewide market for labor.

Targeting Resources to Shortage Areas

Medical technology has advanced by leaps and bounds, but healthcare remains a labor-intensive industry. Diagnosis and treatment of people takes time, and physicians, dentists and other frontline healthcare professionals can serve only a limited number of patients a day. Practitioner shortages can increase patient wait times, hurt quality of care, and drive up wages, adding to health care cost pressures.

Several federal and state programs provide funds to increase the number of practitioners in shortage or high-need areas.

Health professionals shortage areas. Based on the ratio of population to primary care physicians, the federal government has designated parts of 30 Minnesota counties – mostly in the western and northern parts of the state – as health professional shortage areas (HPSAs). All or part of 27 counties also qualify as shortage areas based on low income.

Designation of a HPSA is more than an academic exercise. Several federal and state programs target assistance to HPSA area facilities or to providers who make a commitment to practice in a HPSA. Geographic HPSAs are based on the concept of a “rational area” for delivery of primary medical care services. A rational area can be one or more counties whose population centers are within 30 minutes travel time of each other.

A rational area qualifies as a HPSA if it has more than 3,500 people per primary care physician. An area with more than 3,000 people per primary care physician qualifies if it has “unusually high needs for primary care services or insufficient capacity of existing primary care providers.”

Medically underserved areas. All or parts of 55 counties and large areas of Minneapolis and St. Paul are designated as medically underserved. Parts of eight counties are designated underserved based on low-income.

As with HPSA determinations, medically underserved areas are based on service areas comprising all or parts of one or more

counties with population centers within 30 minutes' travel time of each other. Service areas are scored based on percent of population below poverty, percent of population over 65, infant mortality rate and the per-capita number of primary care physicians. The lowest scoring (and thus most underserved) service area in Minnesota is a sparsely populated area of western Koochiching and northern Itasca counties. The nearest significant service centers are International Falls to the east and Grand Rapids to the south.

Minnesota Strategies

Initiatives to meet rural health workforce challenges involve government, private industry and professional associations and focus on two broad strategies: 1) attracting young people to healthcare careers and 2) encouraging healthcare professionals to work and stay in rural areas. A basic premise in these efforts is that young adults from rural areas, or students who have had positive rural experiences as part of their training, are most likely to take jobs in rural areas.

Recruiting students. Recruitment of students to healthcare begins in high school or before. One effort, an alliance of healthcare employers, higher education institutions and government, co-sponsors a Minnesota chapter of Health Occupations Students of America (HOSA), which has more than 800 student members. The Minnesota departments of Health, Education, and Employment and Economic Development all promote health career education in secondary schools. Together with higher education and private industry, they sponsor an annual conference for secondary school health careers teachers. The Department of Health also makes grants to local educational consortia to support health careers curricula. The grants are targeted to rural areas and long-term care.

Financial incentives. The state also uses financial incentives to encourage health care professionals to begin their careers in rural or underserved areas. Loan repayment grant programs encourage primary care medical, mid-level practitioner and pharmacy students to practice in rural areas. For these programs, state law defines rural to include all areas outside the seven-county Twin Cities area, with the exceptions of the cities of Moorhead, Mankato, St. Cloud, Duluth and Rochester. A separate loan repayment program offers up to \$40,000 over two years to a wide range of medical, dental, mental health and social work professionals who are practicing at sites in either rural or urban health professional shortage areas.

The state also offers loan repayment grants to nursing and dental students, but these programs are not restricted to rural areas. Grants are made to nursing students who commit to practicing in nursing homes and ICF/MRs. Dentists must agree to serve state public program enrollees or patients receiving sliding fee discounts.

Higher education programs. The University of Minnesota Medical School and Dental School both promote rural practice. The University admits 55 students each year to its Duluth program, where they study for two years before transferring to the Twin Cities to complete their degrees. More than half of graduates who enter through the Duluth program go on to family practice residencies.

The School of Dentistry rotates students through two-week practicums at a clinic in Hibbing that serves mostly underserved families from northeastern Minnesota. The clinic is a joint venture of the University and Hibbing Community College. The University is in negotiations to open a similar clinic in Willmar.

The University's College of Pharmacy opened a Duluth program in 2003, with a special emphasis on pharmacy practice in non-metropolitan areas. This year, first-year Duluth pharmacy students joined Duluth medical students in a 20-hour primary care medicine course in Grand Rapids and surrounding communities.

Many Minnesota State Colleges and Universities institutions train nurses, clinical laboratory professionals and other health care workers. Healthcare workforce issues are the focus of The Minnesota Healthcare Education Industry Partnership, a collaboration among MNSCU, the healthcare industry and government. An HEIP taskforce has worked on initiatives to increase the supply of clinical laboratory workers and established a Career and Technical Education Teacher Induction Program to support first-year secondary health careers teachers.

Recruiting to rural areas. The Minnesota Dental Association has made a strong push to promote rural dental practice over the past two years. The MDA is concerned about the large number of rural dentists near retirement age and the ability of small communities to find replacements, so the MDA is encouraging communities to create local task forces to promote themselves to prospective dentists and other healthcare professionals. The association emphasizes the economic contribution a dental practice can make to a community. A solo-dentist practice typically employs two dental assistants, a dental hygienist and a receptionist. The chair of MDA's rural dentistry task force estimates, however, that a dentist needs 1,800 to 2,000 patients to be economically viable.

Other programs indirectly address rural health workforce needs by strengthening rural hospitals and clinics, possibly making them more attractive practice sites for physicians and other health professionals. These include quality improvement grants to small hospitals and clinics for planning, quality improvement projects and improved infrastructure and equipment.

Some communities have turned to foreign healthcare professionals to meet shortages. Nationally, only 41% of family medicine and 56% of internal medicine residency positions were filled by U.S.-educated physicians in 2006.⁶ Non-citizens study under J-1 visas, but require waivers to stay and work in the United States. Each state was originally allotted 20 waivers, but allocations were raised to 30 in 2002. Minnesota placed 17 waived physicians in 2006. Physicians with waivers must work three years in a shortage or underserved area. Northwest and southwest Minnesota have been the heaviest users of J-1 physicians.

Workforce Planning Issues

Two questions at the heart of health care in Minnesota are: Does rural Minnesota have enough health care? And, how much is enough?

The answers are not obvious. Rural areas do have fewer physicians, fewer medical specialists and fewer dentists than urban areas, and rural communities compete aggressively for providers.

An adequate healthcare workforce is important to rural Minnesota in two ways. First, without enough primary care physicians, dentists and other providers, people must wait longer or drive farther for basic care. Second, a diversified mix of providers, including specialists, strengthens clinics and hospitals and increases their positive economic impact on rural communities.

The economic and geographic circumstances of rural areas make health care there different from health care in urban areas. Just as urban areas have more specialty and upscale stores, urban areas also have more specialized and “high-end” medical services. The challenge in rural areas is not to duplicate the urban market, but rather to ensure that the health care available to rural citizens is of high quality and adequate to serve their needs.

From a health perspective, the first concern is primary care. However, specialists are important to the economic viability of rural hospitals because they attract patients and generate income. For example, the hospital in a mid-sized trade center in southwestern Minnesota finished its last fiscal year with a net loss, partly due to a decline in income after it lost two orthopedic surgeons. The facility

is a Critical Access Hospital, which is limited to 25 beds, but because many surgical procedures are now done with no or short hospital stays, having a specialist on staff can increase a hospital's income, while allowing it to retain its CAH status.⁷

Two basic characteristics of rural areas make their health care markets different: smaller population base and distance from larger, more urban centers. Size and remoteness matter. Smaller markets mean fewer providers. Remoteness means farther to travel to have any choice of providers. Just as a minimum population base is required to support a movie theater or a bookstore, an adequate number of paying "customers" is needed to support a dental practice, a pharmacy or a surgery center.

Physicians, dentists and other health care practitioners working in small rural communities may earn less, be employed by financially vulnerable healthcare organizations, be farther from specialists or full-service hospitals, and have less access to advanced technologies.

For all these reasons, the smallest communities in the most remote locations may have trouble attracting the healthcare providers they need. The best healthcare is expensive. Two critical questions for rural healthcare planners are:

- Will the healthcare financing system provide the income level necessary to support hospitals, clinics and providers in rural areas?
- What new approaches to healthcare delivery (e.g., telemedicine) will make it possible to provide either higher quality care or reduce costs?

Health care delivery will change, in part to stay affordable. Healthcare organizations will use different occupational mixes and entirely new occupations to increase quality and control costs. Past examples of change include the emergence of physician assistants, nurse anesthetists and minute clinics.

Healthcare workforce will continue to be a vital issue for rural residents, healthcare employers and their communities. Rural citizens need enough practitioners to assure timely, quality care. Hospitals and clinics need to be able to hire enough employees at salary levels they can afford. Rural communities will always compete in a larger market for workers. But industry, communities and government can work together to ensure quality access to healthcare for all Minnesotans.

Endnotes

¹ U.S. Department of Commerce, *County Business Patterns, 2004*. Excludes railroad workers and self-employed.

² Association of State and Territorial Dental Directors, *Guidelines for State and Territorial Oral Health Programs*, September 2006, pp. 8-9.

³ An overview of relationships between age and healthcare demand is found in *The Impact of the Aging Population on the Health Workforce in the United States*, pp. 10-13 (prepared by The Center for Health Workforce Studies, University of New York at Albany, for the Bureau of Health Professions, Health Resources and Services Administration, December, 2005).

⁴ Association of American Medical Colleges, *AAMC Statement on the Physician Workforce*, June, 2006.

⁵ *Ibid.*, pp. 14-17.

⁶ National Resident Matching Program, "Advanced Data Tables for 2006 Main Residency Match," March 16, 2006, retrieved from www.nrmp.org.

⁷ Rae Kruger, "Return of orthopedic surgeon would be a boost for Avera," *Marshall (MN) Independent*, August 23, 2006, p. 9A.