

Office of Rural Health & Primary Care Health Workforce Analysis Program

2004 Geographic Distribution of Minnesota Physicians

The Office of Rural Health and Primary Care (ORHPC) collects information about physicians practicing in Minnesota in conjunction with the annual licensing process. The geographic distribution of physicians is critical to health care access. Hospitals, clinics and other health care facilities—along with health professionals—tend to be located in more urban places where there is sufficient population to support specialized services. This pattern is not unique to health care, but it raises questions about access for people in rural or remote areas.

The distribution of physicians in urban and rural areas differs depending on which counties are defined as urban and which are defined as rural. This report compares four ways of dividing the state into urban and rural areas, and uses an alternative method to focus more clearly on the most rural counties.

Definition 1: Rural. In its reports of health professions workforce data, the ORHPC has usually defined urban Minnesota to include the seven Twin Cities area counties (Anoka, Carver, Dakota, Hennepin, Ramsey, Scott and Washington), plus the cities of Rochester, Duluth and St. Cloud. All other areas in the state have been considered rural. Using this definition, a disproportionate percentage of physicians practice in urban areas.

Table 1: Distribution of Physicians Practicing at Minnesota Sites
Urban=Twin Cities seven-county metro plus Rochester, St. Cloud, Duluth

	Urban	Rural
Population	59%	41%
All physicians	80%	20%
Primary care physicians	73%	27%
Specialist physicians	87%	13%

Definition 2: Twin Cities seven-county area. The regions used most often by Minnesota researchers are the seven Twin Cities metropolitan counties and the 80 non-Twin Cities counties. The seven Twin Cities counties correspond to the jurisdiction of the Twin Cities Metropolitan Council and for many years matched the federal government's definition of the Minneapolis-St. Paul metropolitan statistical area (MSA). This 7/80-county split was used in ORHPC's *Rural Health Status Report* (2005).



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Table 2: Distribution of Physicians Practicing at Minnesota Sites
Twin Cities seven-county metropolitan area compared to 80 nonmetropolitan counties

	7 Twin Cities counties	80 non-Twin Cities counties
Population	54%	46%
All physicians	58%	42%
Primary care physicians	59%	41%
Specialist physicians	57%	43%

The seven-county metropolitan area has only a slightly larger share of physicians than its population would predict. With this division, Rochester, St. Cloud and Duluth are grouped in the nonmetropolitan, or rural part of the state, dramatically reducing the urban share of the state's physicians. As shown in Table 1, adding Rochester, St. Cloud and Duluth to the seven Twin Cities counties dramatically increases the urban share of physicians. This effect is mostly due to an exceptionally large number of physicians in Rochester.

Definition 3: 11-county Twin Cities Metropolitan Statistical Area. More recently, the Twin Cities metropolitan statistical area (MSA) was expanded to include 11 Minnesota counties. The renamed Minneapolis-St. Paul-Bloomington metropolitan statistical area includes the original seven counties plus Wright, Sherburne, Isanti and Chisago. Some researchers now compare this 11-county area to the other 76 counties in the state. The 11-county Twin Cities MSA's share of physicians closely matches its share of population.

Table 3: Distribution of Physicians Practicing at Minnesota Sites
Twin Cities metropolitan statistical area compared to balance of state

	11-county Twin Cities MSA	76-county Balance of State
Population	59%	41%
All physicians	60%	40%
Primary care physicians	62%	38%
Specialist physicians	58%	42%

Definition 4: Metropolitan and non-metropolitan Minnesota. An additional 10 counties are part of MSAs fully or partially in Minnesota. The 21 metropolitan statistical area counties can be compared to the 66 counties outside MSAs. The 21 MSA counties account for 84 percent of all physicians and 89 percent of specialists, but only 72 percent of the state's population. This effect is due almost entirely to the inclusion of Rochester and Olmsted County. The effect of including Olmsted County is analyzed in Tables 9 and 10.

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Table 4: Distribution of Physicians Practicing at Minnesota Sites
Metropolitan areas compared to nonmetropolitan Minnesota

	21 Metropolitan Statistical Area Counties	66 Nonmetropolitan Area Counties
Population	72%	28%
All physicians	84%	16%
Primary care physicians	79%	21%
Specialist physicians	89%	11%

Overall comparison

The four geographic classifications illustrated in Tables 1-4 all divide the state into two parts—one that is more urban and another that is more rural. Tables 5 and 6 summarize the differences in the pictures each method gives of rural Minnesota.

- Urban-rural definitions that include Rochester in the rural category dramatically increase the numbers of physicians in rural Minnesota.
- Considering only the 66 counties outside the state's seven metropolitan statistical areas reduces the rural share of physicians to only 28 percent. These 66 counties have only 124 physicians per 100,000 population, compared to 254 physicians per 100,000 population in the 21 metropolitan area counties.

Table 5: Rural Share of Population and Physicians
Alternative Urban-Rural Definitions

	Traditional Rural: 80 non-Twin Cities Counties, Minus Duluth, Rochester and St. Cloud	80 non-Twin Cities Area Counties, Including Duluth, Rochester and St. Cloud	76 Counties Outside Twin Cities Metropolitan Statistical Areas	66 Counties Outside Metropolitan Statistical Areas
Population	41%	46%	41%	28%
All physicians	20%	41%	40%	16%
Primary care physicians	27%	41%	39%	21%
Specialist physicians	13%	43%	42%	11%

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Table 6: Rural Physicians per 100,000 Population
(estimated based on survey response rate)
Alternative Urban-Rural Definitions

	Traditional Rural: 80 non-Twin Cities Counties, Minus Duluth, Rochester and St. Cloud	80 non-Twin Cities Area Counties, Including Duluth, Rochester and St. Cloud	76 Counties Outside Twin Cities Metropolitan Statistical Area	66 Counties Outside Metropolitan Statistical Areas
All rural physicians	107	199	213	124
Primary care physicians	73	99	103	82
Specialist physicians	34	100	110	42

Limitations of simple urban-rural comparisons

Any definition of urban and rural areas is arbitrary. Because the groupings include such large areas, both urban and rural categories can obscure variations within each group.

Table 7: Share of State's Physicians

	Population	Primary Care	Specialist	All Physicians
Seven counties	54%	59%	57%	58%
Hennepin	22%	32%	36%	34%
Ramsey	10%	12%	13%	13%
Five suburban counties	21%	15%	8%	12%
State total	5,088,006	100%	100%	100%

Table 8: Physicians per 100,000 Population (estimates based on survey response)

	Primary Care	Specialist	All Physicians
Seven counties	120	115	235
Hennepin	157	176	332
Ramsey	130	139	269
Five suburban counties	77	41	118
Minnesota	111	108	218

The seven-county Twin Cities share of physicians is only mildly disproportionate to its share of the state's population, but there is a wide variation within the region.

- Ramsey County, and even more so Hennepin County, have larger shares of the state's physicians than their shares of population.

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- The five suburban counties have a smaller share of the state's physicians than their population would suggest.
- Hennepin County has 332 physicians per 100,000 population; the five suburban counties have only 118. The difference is even more pronounced for specialists, which are heavily concentrated in Hennepin County.

Similarly, data for the other 80 counties, when grouped together, obscure wide variation across the non-Twin Cities portion of Minnesota.

Table 9: Share of State's Physicians

	Population	Primary Care	Specialists	All Physicians
80 non-TC counties	46%	41%	43%	42%
Olmsted	3%	9%	23%	16%
Other 79 counties	44%	32%	20%	26%
MSA (excl TC & Olmsted)	16%	12%	9%	10%
Non-MSA (66 counties)	28%	21%	11%	16%
State total	5,088,006	100%	100%	100%

Table 10: Physicians per 100,000 Population (estimates based on survey response)

	Primary Care	Specialists	All Physicians
80 non-TC counties	199	99	100
Olmsted	382	953	1,336
Other 79 counties	82	49	131
MSA (excl TC & Olmsted)	81	62	142
Non-MSA (66 counties)	82	42	124
Minnesota	111	108	218

Olmsted County has more than 1,300 physicians per 100,000 people. While Olmsted County residents seemingly have many more physicians to choose from than anywhere else in the state, the number is misleading because a large share of physicians in Rochester hospitals and clinics serve patients from a broader region, the nation and the world. This unusual concentration of health care services makes it necessary to exclude Rochester and Olmsted data to have a meaningful understanding of health occupations outside the Twin Cities.

The other 79 non-Twin Cities counties (excluding Olmsted) have only 131 physicians per 100,000 people, far below the statewide ratio of 218. This 79-county area is comprised of 13 counties within metropolitan statistical areas and 66 non-MSA counties. The two groups are similar in ratios of primary care physicians to population, but the MSA counties have many more specialists per capita than the more rural non-MSA counties.

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A new approach: a three-part division. A three-way division of the state creates more homogeneous groupings and gives a better picture of the most rural parts of the state. Federally designated metropolitan statistical areas and micropolitan statistical areas provide a ready-made set of categories:

- Seven metropolitan statistical areas, including 21 counties
- Micropolitan statistical areas, including 20 counties
- Forty six rural counties outside MSAs and micropolitan statistical areas.

MSAs and micropolitan areas both include an urban center and surrounding counties with close economic relationships to the urban center. MSAs have an urbanized center of at least 50,000 population. Micropolitan areas have an urbanized center of at least 10,000 population. Most micropolitan counties in Minnesota are centered on small and medium-sized regional trade centers.

Table 11: Share of State's Physicians

	Population	Primary Care	Specialists	All Physicians
MSA counties (21)	72%	79%	89%	84%
Micropolitan counties (20)	15%	13%	9%	11%
Rural counties (46)	13%	8%	2%	5%
State total	5,088,006	100%	100%	100%

Table 12: Physicians per 100,000 Population (estimates based on survey response)

	Primary Care	Specialists	All Physicians
MSA counties (21)	121	134	254
Micropolitan counties (20)	95	64	159
Rural counties (46)	68	16	84
Minnesota	111	108	218

While these categories still obscure important geographic variation, they better show the differences between the state's most urban and most rural areas. Both micropolitan areas and rural areas fall well below MSA counties in physicians per 100,000 population—especially in the case of specialists. But the 46 rural counties fall far below other parts of the state in number of physicians.

