

Distribution of Dermatologists in Wisconsin: How Are We Doing in Providing Care to Our Most Vulnerable Communities

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ABSTRACT

Background: The specialty of dermatology has not been affected by initiatives to help recruit physicians rurally, even with the rising demand for dermatology services. The geographic density of dermatologists is distributed unevenly across the nation; however, the distribution has not been analyzed at the state level for Wisconsin.

Methods: We analyzed geographic distribution information obtained from the American Academy of Dermatology.

Results: The Southeastern region of Wisconsin has the greatest density of dermatologists, with 6.76 per 100,000 individuals. Northeastern, Southern, Western, and Northern regions follow with ratios of 4.32, 3.97, 3.53, and 3.50, respectively.

Discussion: Two of the 5 state public health regions are adequately served with a ratio of greater than 4 dermatologists per 100,000 individuals. Wisconsin's regions with the greatest rural counties contain the worst ratios.

BACKGROUND

The physician shortage facing the United States and its disproportionate impact on rural communities is not a new issue. National initiatives including the Veterans Access, Choice, and Accountability Act of 2014 and the Resident Physician Shortage Reduction Act of 2019 have contributed to new residency positions and programs in Wisconsin in various specialties.¹

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However, one specialty that has not yet been affected by this funding is dermatology.

There is a rising demand for dermatological care due to a number of factors, including the aging population, rising skin cancer and inflammatory skin disorder rates, as well as increasing complexity of therapeutics.² A decreased dermatologist density has been associated with higher melanoma mortality rates and inferior diagnosis of skin disease.³ Rural areas are particularly prone to physician workforce shortages, and patients experience longer wait times and greater traveling distances to receive care.⁴ Wisconsin is no exception; 46 of its 54 counties are considered rural by the US Health

Resources and Services Administration (HRSA).⁵

Across the United States, the geographic density of dermatologists is distributed unevenly to larger cities and academic centers.⁶ A ratio of 4 dermatologists to 100,000 individuals is considered adequate to care for a community.⁶ It is important to understand how individual states are meeting the needs of their populations. In concordance with the Wisconsin Idea, this study analyzes how Wisconsin is doing in dermatological care beyond the academic centers.

METHODS

The American Academy of Dermatology (AAD) provided geographic information consisting of city, states, and ZIP codes.⁷ Physicians were then allocated to their respective counties. County population information was obtained from the US Census Bureau.⁸ Counties were grouped based on 5 regions defined by the Wisconsin Department of Health Services

Table 1. Ratio of Dermatologists by Public Health Region

Region	No. Dermatologists per 100,000 Individuals
Southern	3.97
Southeastern	6.76
Northeastern	4.32
Western	3.53
Northern	3.50

(DHS): Southern, Southeastern, Northeastern, Northern and Western regions.⁹ Because this study did not report on data involving human subjects, institutional review board approval was not applicable.

RESULTS

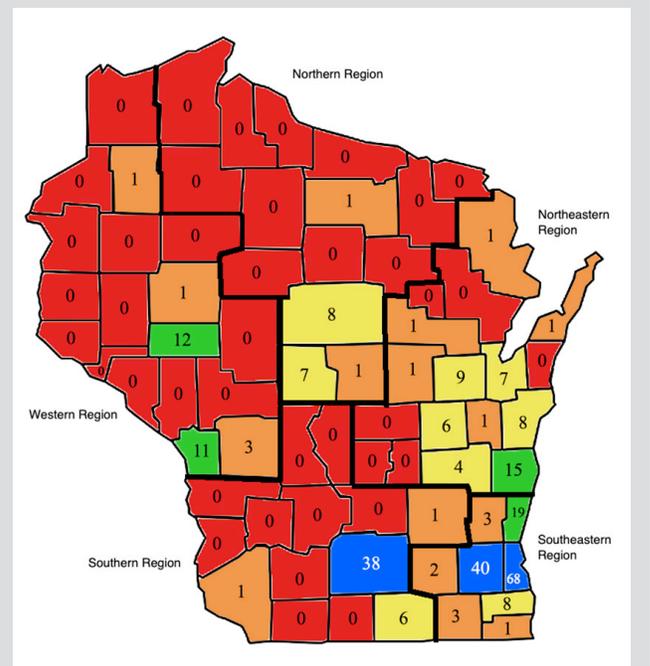
The 2019 AAD database contains 289 registered American dermatologists in Wisconsin. The Southeastern region of Wisconsin has the greatest density of dermatologists, with 6.76 per 100,000 individuals (Table 1). Northeastern, Southern, Western, and Northern regions follow with ratios of 4.32, 3.97, 3.53, and 3.50, respectively. Milwaukee County boasts the greatest number of dermatologists at 68. There are 40 counties without a dermatologist (Table 2).

DISCUSSION

Consistent with findings of other studies, Wisconsin dermatologists are unevenly geographically distributed, with most practicing in dermatology-dense areas (Figure).⁶ Of the 5 DHS regions, 3 have approximately 4 dermatologists per 100,000 or greater, while 2 are markedly below. The Southern, Western, and Northern regions have the most counties considered rural and contain the lowest dermatologist-to-population ratios. The analysis reveals that compared to other states, Wisconsin is above average with respect to the number and distribution of providers throughout the state. Past studies looking at the nation as a whole have shown that 70% of the nation has less than 4 dermatologists per 100,000 individuals and 60% has less than 3 per 100,000.⁶ However, it remains evident that rural Wisconsin populations endure longer driving distances to receive dermatological care.

There are limitations to this study. Firstly, the analysis is dependent on the location in which the dermatologists are registered with the AAD. It does not account for rural satellite locations and telemedicine potentially, underestimating the service to the rural populations. However, it also does not account for physicians working less than full-time in a given location in which the access is worse than calculated. Further, it is well known that dermatologists are now being supplemented by nonphysician clinicians.¹⁰ It has been shown that dermatology physician assistants increase the average US dermatology provider density to more than 4 per 100,000 individuals.¹⁰ Even with the increased density

Figure 1. Number of Dermatologists per Wisconsin County



Red, orange, yellow, green and blue colors denote 0, 1-3, 4-10, 11-20, 21-68 dermatologists, respectively. Thick black outline denotes boundaries of the Public Health Regions defined by Wisconsin Department of Health.

they provide, however, their distribution mirrors that of physicians with disparity remaining in the rural areas.¹⁰ It should also be considered that the outcome of supplementation by nonphysician dermatology providers has not been fully elucidated in literature.

CONCLUSION

Wisconsin is above average with respect to number and distribution of providers throughout the state in comparison to other states. Yet, the regions with the most rural counties have the lowest ratios. It is imperative that Wisconsin providers be increasingly aware of our response to the demand of health care services. In dermatology, the number of residency training positions has remained relatively stagnant while demand has increased, resulting in a projected unmet need.⁵ This need is felt most acutely in our rural populations. This alone is not likely to fill the shortage gaps. The incorporation of teledermatology and adequately trained and supervised advanced practice providers may also be helpful in extending access. These findings demonstrate that the distribution of dermatologists in Wisconsin and access to dermatological care warrant initiatives to incentivize dermatologists to provide care to underserved regions.

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Table 2. Dermatologist Distribution Based on Wisconsin County

County	No. of Dermatologists	No. of Residents	County	No. of Dermatologists	No. of Residents
Southern Region			Western Region		
Adams	0	20,383	Barron	0	45,164
Columbia	0	57,358	Buffalo	0	13,125
Crawford	0	16,291	Burnett	0	15,392
Dane	38	542,201	Chippewa	1	64,135
Dodge	1	87,847	Clark	0	34,709
Grant	1	51,554	Douglas	0	43,208
Green	0	36,929	Dunn	0	45,131
Iowa	0	23,771	Eau Claire	12	104,534
Juneau	0	26,617	Jackson	0	20,478
Lafayette	0	16,665	La Crosse	11	118,230
Richland	0	17,377	Monroe	3	46,051
Rock	6	163,129	Pepin	0	7,289
Sauk	0	64,249	Pierce	0	42,555
Vernon	0	30,785	Polk	0	43,598
Southeastern Region			Rusk	0	14,147
Jefferson	2	85,129	St. Croix	0	89,694
Kenosha	1	169,290	Trempealeau	0	29,442
Milwaukee	68	948,201	Washburn	1	15,878
Ozaukee	19	89,147	Northern Region		
Racine	8	196,584	Ashland	0	15,600
Walworth	3	103,718	Bayfield	0	15,042
Washington	3	135,693	Florence	0	4,321
Waukesha	40	403,072	Forest	0	8,991
Northeastern Region			Iron	0	5,676
Brown	7	263,378	Langlade	0	19,268
Calumet	1	50,159	Lincoln	0	27,689
Door	1	27,610	Marathon	8	135,428
Fond du Lac	4	103,066	Oneida	1	35,470
Green Lake	0	18,918	Portage	1	70,942
Kewaunee	0	20,383	Price	0	13,397
Manitowoc	8	79,074	Sawyer	0	16,489
Marinette	1	40,434	Taylor	0	20,412
Marquette	0	15,434	Vilas	0	21,938
Menominee	0	4,658	Wood	7	73,055
Oconto	0	37,830			
Outagamie	9	187,365			
Shawano	1	40,796			
Sheboygan	15	115,456			
Waupaca	1	51,128			
Waushara	0	24,263			
Winnebago	6	171,020			

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