

Analysis of Geographical Density of Dermatologists Compared to Dermatology Physician Assistants

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In the past decade, the number of dermatologists in the United States (US) has increased, but distribution is skewed, with higher concentrations in academic centers and urban areas, resulting in a shortage in dermatological care.^{1,2} Non-physician practitioners, including, physician assistants (PAs), may fill this need, however, they are also unevenly situated.³ Therefore, our goals were to examine the distribution and ratio of dermatologists to dermatology PAs across the US.

Dermatologists, dermatology residents, and fellows' locations based on state licenses were acquired from Doctordatabases Media Company (October 19, 2019). Members of the Society of Dermatological Physician Assistants (SDPA) and their practice locations were obtained (November 19, 2019). The dermatologist to dermatology PA ratio was calculated based on zip codes.

The analysis included 15020 dermatologists and 2695 dermatology PAs in 566 zip codes. There was a 1.8% annual growth rate in SDPA memberships from 2016 to 2019. The growth rates for dermatologists and the US population in 2017 were 1.8% and 0.8%, respectively.³ On average, there were 6 dermatologists per PA. In 12 (2.1%) zip codes, there were 0.5 dermatologists or fewer per PA, in 44 (7.8%), there were more than 0.5 and up to 1 dermatologist per PA (Table 1).

The ratio of dermatologists to dermatology PAs were unevenly distributed across the US (Figure 1). In general, more rural areas had lower dermatologist to dermatology PA ratios.^{1,2} Areas with fewer dermatologists were most impacted by the increased dermatology PA presence. While PAs may expand dermatology scope of practice, they are not meant to be permanent solutions to the dermatology shortage. For example, PAs and dermatologists biopsied 39.4 and 25.0 pigmented lesions, respectively, to diagnose one melanoma case.⁴ In addition, PAs are significantly less likely to diagnose melanoma in situ compared to dermatologists.⁴ Therefore, areas with low dermatology/dermatology PA ratios will likely lead to higher rates of missed diagnoses. Dermatology PA training consists of 100 hours of online modules and on the job training by supervising physicians.⁵ In 9.9% of zip codes, there was 1 or fewer dermatologist per PA, which translates to patients having an equal likelihood of being treated by a PA or dermatologist. Also,

in those dermatologist sparse areas, PAs are most likely to be taught by only one dermatologist. In contrast, dermatology residents are instructed by a broad range of dermatologists with different subspecialties.

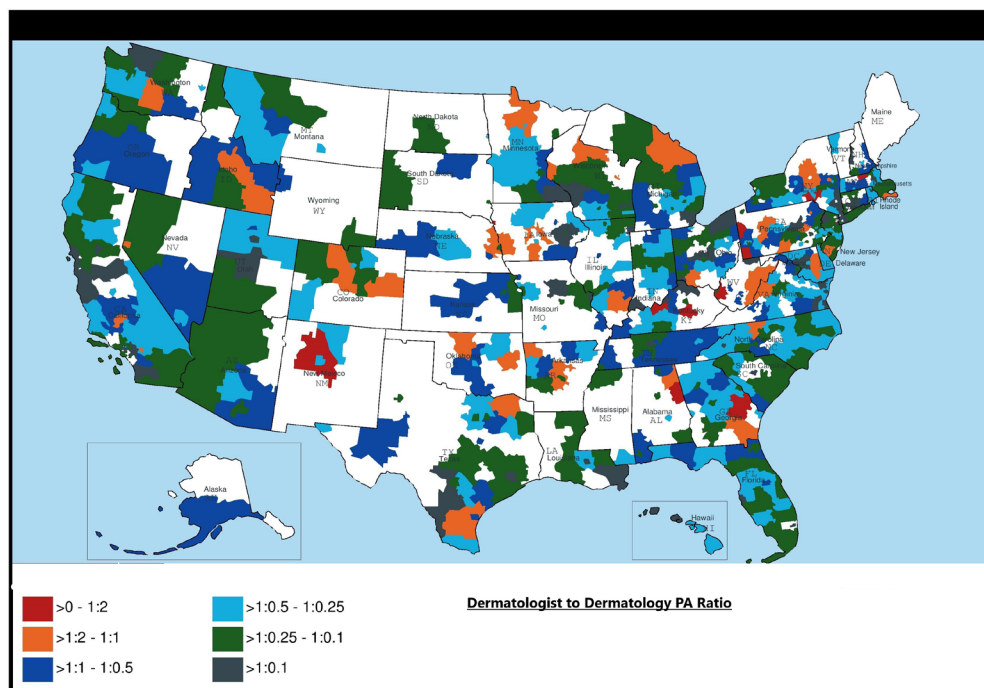
This study is subject to several limitations. The SDPA does not include all dermatology PAs and dermatology nurse practitioner (NP) data was not analyzed. However, had all dermatology PA/NPs been included, the dermatologist to dermatology PA/NP ratio would be even lower.

TABLE 1.

Top 10 Zip Codes With Lowest Dermatologist to Dermatology PA Ratios. Zip codes with the same number of dermatologists to dermatology PA were given the same rank.

Rank	3 Digit Zip Code	Location	Number of Dermatologist to Dermatology PA
1	014	Fitchburg, MA	1/4
2	404	Lexington, KY	1/3
3	153	Washington, PA	1/2.5
4	137	Binghamton, PA	1/2
4	161	New Castle, PA	1/2
4	255	Huntington, WV	1/2
4	304	Swainsboro, GA	1/2
4	362	Anniston, FL	1/2
4	401	Louisville, KY	1/2
4	511	Sioux City, IA	1/2
4	870	Albuquerque, NM	1/2
5	502	Des Moines, IA	1/2
6	804	Golden, CO	1/1.75
7	497	Mackinaw City, MI	1/1.67
8	933	Bakersfield, CA	1/1.6
9	851	Phoenix, AZ (Vicinity)	1/1.5
10	185	Scranton, PA	1/1.33
10	543	Green Bay, WI	1/1.33
10	989	Yakima, WA	1/1.33

FIGURE 1. United States map showing the ratios of dermatologists to dermatology PA in each 3-digit zip code. Colors are identified by the legend below. Zip codes without a dermatology PA are left are shown in white.



In conclusion, rural areas have lower dermatologist to dermatology PA ratios compared to urban areas. Lower dermatologist/dermatology PA ratios may result in insufficient PA supervision and increased mortality. More dermatology residency positions are necessary to address the undersupply of dermatologists in the US, with incentives given to encourage board certified dermatologists to practice in underserved areas.

DISCLOSURES

Yu Wang and Dr. Lipner have no conflicts of interest relevant to the content.

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