Beyond the Map: Trainee Composition, Reporting Gaps, and Rural Access in United States Dermatology Fellowship Programs

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Abstract

Introduction: Geographic distribution and workforce trends have been widely examined at the residency level. However, fellowship training plays a critical role in determining access to subspecialty dermatologic care. Fellowship programs shape advanced procedural and diagnostic education and may influence long-term workforce patterns. Despite this, less attention has been directed toward the geographic concentration and trainee representation of dermatology fellowship programs. Understanding where these programs are located and who they train is essential to evaluating potential implications for regional access to subspecialty care.

Objectives: To evaluate the geographic distribution of United States dermatology fellowship programs and to assess differences in trainee demographics across three subspecialties: Micrographic Surgery and Dermatologic Oncology (Mohs), Dermatopathology, and Pediatric Dermatology.

Methodology: Fellowship programs were identified using the FREIDA™ AMA Residency Database. Program ZIP codes were linked to the 2020 Rural-Urban Commuting Area (RUCA) classification system and categorized as urban or rural. Programs were also classified as university-based, community-based, community-based university affiliated, or other. Trainee composition was analyzed by medical degree pathway (Doctor of Medicine, Doctor of Osteopathic Medicine , and International Medical Graduate), as well as by gender (male and female). Differences in degree and gender distribution by subspeciality were analyzed using chi-square tests.

Results: 132 programs were identified. Mid Atlantic had the largest number of Mohs programs (20.5%), South Atlantic and Mid Atlantic are tied for the highest dermatopathology programs (18.6%), and Pacific had the largest number of Pediatric Dermatology programs (25%). 128 (97%) are in urban and 4 (3%) in rural areas. 89 programs (68%) are university-based and 43 (32%) community-based, community-based university affiliated, or other. Trainee degree composition differed by fellowship type (p = 0.000136) with Mohs programs showing the highest MD representation (≈87%) and pediatric dermatology the highest IMG proportion (≈36%). Across all fellowships combined, 56% of trainees were female and 44% were male. Gender distribution differed significantly by subspecialty (p = 0.0048), with Mohs programs being male-predominant (60.3%) and Pediatric Dermatology female-predominant (81.8%). The unavailability of demographic data was not significantly associated with rural versus urban location or institutional types (p = 0.511).

Summary/Conclusion: Dermatology fellowship programs in the United States are overwhelmingly in urban centers and university-based. Trainees are predominantly MDs. Gender representation varies significantly by subspecialty with the greatest disparity observed between Mohs and Pediatric Dermatology. These findings indicate the geographically disparate of subspecialty expertise and likely limited access to advanced dermatologic care in rural communities.

Introduction

National analyses consistently demonstrate geographic disparities and uneven workforce density among dermatologists and its subspecialties with a concentration in metropolitan areas and rural regions facing limited access to advanced care.[1] Prior studies have focused primarily on residency level trends showing that dermatology programs disproportionately accept MD graduates compared with DO and IMGs, possibly influencing who ultimately enters the subspeciality pipeline and where they practice. How these upstream imbalances extend into fellowships remains unclear and little is known about whether fellowship location or trainee composition may further reinforce gaps in subspeciality access. This study evaluates the geographic distribution of United States dermatology fellowship programs and examines differences in trainee demographics across Mohs, Dermatopathology, and Pediatric Dermatology to better understand their implications for regional access to advanced dermatologic care.

Methods

Dermatology fellowship programs in Mohs, Dermatopathology, and Pediatric Dermatology were analyzed using publicly available three-year averages on first-year fellow data on FREIDA™ AMA. Programs were categorized by U.S. Census region as defined in FREIDA™ (New England (CT, MA, ME, NH, RI, VT); Mid Atlantic (NJ, NY, PA); East North Central (IL, IN, MI, OH, WI); West North Central (IA, KS, MN, MO, ND, NE, SD); South Atlantic (DC, DE, FL, GA, MD, NC, SC, VA, WV); East South Central (AL, KY, MS, TN); West South Central (AR, LA, OK, TX); Mountain (AZ, CO, ID, MT, NM, NV, UT, WY); Pacific (AK, CA, HI, OR, WA). Program ZIP codes were categorized as urban (RUCA 1–3) or rural (RUCA 4–10). Programs with unavailable demographic data were contacted directly and given a two-week response window. Statistical significance defined as $p < 0.05$.

Results

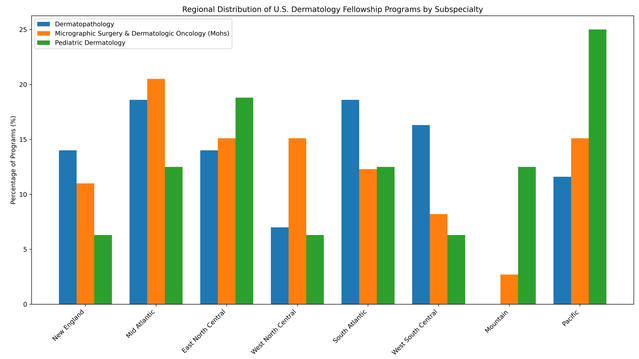

Figure 1. Regional Distribution of U.S. Dermatology Fellowship Programs by Subspecialty
Mohs programs were most concentrated in the Mid Atlantic (20.5%), Dermatopathology programs were most represented in the South Atlantic and Mid Atlantic (18.6% each), and Pediatric Dermatology programs were most concentrated in the Pacific region (25%).

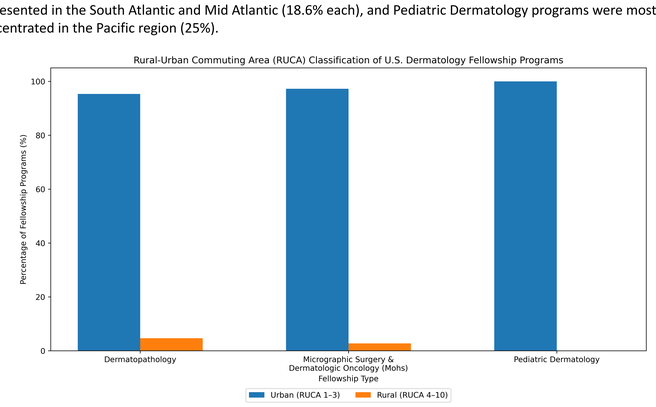

Figure 2. Rural–Urban Commuting Area (RUCA) Classification of Dermatology Fellowship Programs
Distribution of fellowship programs categorized as urban (RUCA 1–3) versus rural (RUCA 4–10). Across all subspecialties, 97% of programs were in urban areas and 3% in rural areas, reflecting substantial metropolitan concentration of advanced dermatology training.

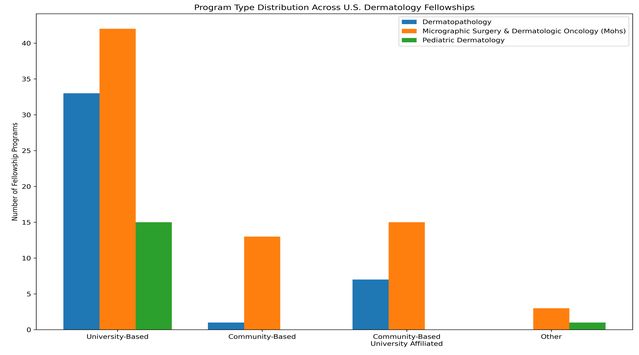

Figure 3. Institutional Type Distribution Across Dermatology Fellowship Programs
Number of fellowship programs categorized as university-based, community-based, community-based university affiliated, or other. The majority of programs (68%) were university-based, indicating that subspecialty dermatologic training is primarily embedded within academic medical centers.

Results

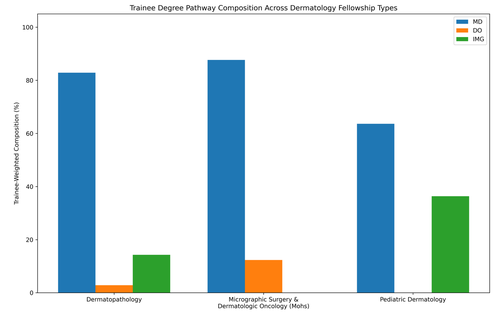

Figure 4. Trainee Degree Pathway Composition Across Fellowship Types
Weighted percentage of first-year fellows by degree pathway (MD, DO, IMG) across subspecialties. Degree composition differed significantly by fellowship type (overall p = 0.000136). Mohs programs demonstrated the highest MD representation (~87%), Dermatopathology also showed strong MD predominance (~83%) with limited DO representation (~3%), while Pediatric Dermatology had the highest IMG proportion (~36%). These findings demonstrate statistically distinct degree profiles across subspecialty training pathways.

Discussion

Discussion:

- Nearly all dermatology fellowship programs (97%) are in urban areas, demonstrating a marked concentration of subspecialty training within metropolitan regions.
- Majority of programs (68%) are university-based indicating that advanced dermatologic training is largely embedded within academic medical centers rather than community settings.
- Because fellowship training shapes advanced procedural and diagnostic expertise, urban-centered training environments may contribute to continued disparities in subspecialty availability in rural communities.
- Significant variation in MD, DO, and IMG representation across fellowship types (p = 0.000136) indicates that subspecialty training is not demographically uniform, which may have implications for the composition and distribution of the future subspecialty workforce.

Limitations:

- Some programs across all three subspecialties were excluded due to unavailable demographic data, newly established programs without reportable fellows, or loss of accreditation resulting in inactive fellowship positions.
- RUCA classification does not measure workforce density or patient-level access.
- Fellowship location does not necessarily predict practice location.

Future Studies:

- Examine whether fellowship training location and geographic distribution of practicing Mohs surgeons, dermatopathologists, and pediatric dermatologists is associated with practice location to better understand how urban-centered subspecialty training may influence rural workforce distribution.
- Investigation into subspecialty application patterns and institutional selection practices may help explain differences in MD, DO, IMG, and gender representation across fellowship types and their potential implications for workforce diversity and distribution.

References

1. Glazer AM, Rigel DS. Analysis of Trends in Geographic Distribution of US Dermatology Workforce Density. *JAMA Dermatology*. 2017;153(5):472. doi:https://doi.org/10.1001/jamadermatol.2016.6032