Practices in higher-income communities are associated with shorter dermatologist wait times: A cross-sectional simulated telephone call study

To the Editor: Although previous studies have highlighted long dermatologist wait times, associations between wait times and socioeconomic factors are not fully understood.[1] New patient visits depend on patients' ability to locate practices, and patients frequently use online platforms to find health providers.[2] We used a Google-search-generated convenience sample of dermatology practices to determine whether socioeconomic factors related to the practice zip code are correlated with wait times. We hypothesized that shorter dermatologist wait times are found in communities (as defined by zip code) with higher income.

We compiled a sample of the top 10 distinct dermatology practices within each state from Google search results of "dermatologist." Telephone calls were placed to each dermatology practice in October 2018, with the standardized chief complaint of a changing mole, and the earliest available physician appointment was recorded.[2] Practices not accepting new patients were excluded. The practice zip code was cross-referenced with the Census FactFinder system to determine population size, median age, household income, and education levels of the community, using the 2017 American County Survey estimates.[3] Zip code was matched to Federal Information Processing Standard county codes in the Area Health Resources File to determine density of dermatologists, calculated as total dermatologists divided by population size.[4] Univariate and multivariate linear regression models were used to correlate socioeconomic factors with wait times (SAS version 9.4, SAS Institute, Inc, Cary, NC).

The national mean wait time for new patient visits in our sample of 494 practices was 35.4 days (Table I). Density of dermatologists was not correlated with wait times ($P = .24$), and our sample was generally geographically dispersed within each state (Supplemental Fig 1 available via Mendeley at https://data.mendeley.com/datasets/rrx66s3sch/1). The northeast region had the longest mean (51 days) and median (26 days) wait times of the 4 census regions (Fig 1). Higher median household income of the practice community was associated with shorter wait times for new-patient dermatology visits ($P = .01$), even after controlling for density of dermatologists, median age, and population size of the practice community ($P = .02$). The multivariate regression estimate suggested that every $10,000 increase in median household income of the practice community was associated with a 2.3-day reduction in wait times.

This study reveals that practices located in communities with higher median household incomes have shorter dermatologist wait times independent of the density of dermatologists. This finding could be related to the private payer mix in more affluent communities or to more affluent

Table I. Descriptive statistics: wait times and Area Health Resources File/census data by zip code (n = 494)*

Variables	Mean (SD)	Interquartile range (IQR)	Univariate *P* value†	Multivariate regression estimate (standard error)‡	Multivariate model *P* value‡
Wait time, days	35.37 (46.75)	5 to 46	—	—	—
Population§	571,272.80 (1,038,283.55)	98,658 to 659,197	.11	−2.8e to 6 (2.1e to 6)	.17
Density of dermatologists‖	0.000037 (0.000034)	0.000015 to 0.000052	.24	94,451 (62,754)	.13
Age, y§	38.84 (6.02)	35 to 42.3	.96	0.21 (0.36)	.55
Household income, USD§	62,390.97 (22,327.33)	47,292 to 73,276	**.01**	−2.3e to 4 (9.7e to 5)	**.02**
Percentage high school graduate or higher§	0.91 (0.05)	0.89 to 0.95	.18	—	—

Bold values are significant findings in the study ($P < .05$).
IQR, Interquartile range; *SD*, standard deviation; *USD*, US dollars.
*If a practice could not be contacted on 3 separate days, the practice with the next highest search result was called until 10 practices were contacted in each state or until the list was exhausted.
†*P* values determined from univariate linear regression modeling with wait times.
‡Preliminary statistical analysis demonstrated that education level and practice location income were colinear ($P < .001$), so education level was not adjusted for in the multivariate model.
§2017 Estimates from the American County Survey (US Census Bureau).
‖2016 Estimate (most recent available) from the Area Health Resource File (Health Resources and Services Administration). Although this does not align perfectly with the 2017 socioeconomic variables, dermatologist workforce by area does not significantly change year to year because the 2015 and 2016 dermatologist densities are significantly correlated ($P < .001$).

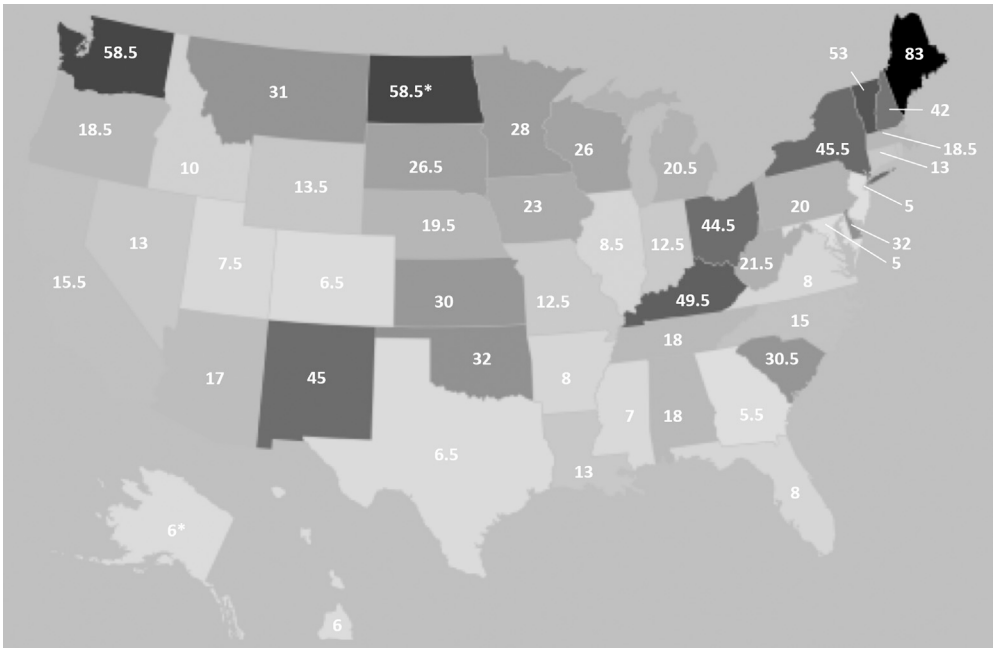

Fig 1. Median dermatologist wait times by state. North Dakota (n = 6) and Alaska (n = 9) did not have 10 data points.

communities' use of an increased number of nonphysician providers, resulting in shorter wait times for physician dermatologists.[5]

Although the wait times in our study are consistent with those in previous studies in dermatology, our convenience sample reflects highly search-accessible practices with marketing and search optimization that may not be nationally representative. However, practices with a large digital footprint may serve as a first-line choice for patients independently seeking dermatologic care. Moreover, the socioeconomic factors reflect residents within the practice community and not actual patient demographics. Future studies directly addressing patient demographics will help to better characterize the associations between socioeconomic factors and wait times and design interventions to improve access.

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Funding sources: None.

Conflicts of interest: None disclosed.

Reprints not available from the authors.

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https://doi.org/10.1016/j.jaad.2019.12.042