systems for years to come, perpetuating current disparities. Ensuring fairness is critical for advancing health equity.

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Worldwide seasonal variation in search volume for cutaneous warts from 2004 to 2019

To the Editor: Several dermatologic conditions show seasonal variation, including visits for actinic keratosis, acne, and folliculitis.[1] In the well-known case of molluscum contagiosum, environmental conditions and behaviors that facilitate contact and fomite viral transmission[2] may give rise to clinically apparent seasonality. By analogy, the human papillomavirus serotypes responsible for cutaneous warts may plausibly show similar seasonal variation.

Google Trends (https://trends.google.com/) is a publicly available resource that presents monthly Google search volume data since 2004,[3] and it has been used to assess the incidences of various diseases.[3] We used Google Trends data for an exploratory study of worldwide and country-specific monthly search data from 2004 through 2018 for "wart," "genital wart" (GW), and "molluscum contagiosum" (MC) topics.[4] Google Trends normalizes search data to time and place of origin and reports a relative search volume index (SVI) scaled from 0 to 100. Cross-correlation and time-delay analyses were performed using the R Stats Package, version 3.5.1 (R Core Team, Vienna, Austria).

The worldwide MC and wart series showed clear seasonality, with a consistent 12-month period oscillation (Fig 1). Accordingly, cross-correlation between the wart and MC series was high ($r = 0.89$). Graphically, the seasonal components for the worldwide wart and MC series were approximately biphasic, both more clearly than for the GW series (Supplemental Fig 1, *A-C*; available via Mendeley at http://doi.org/10.17632/4wrt3rp3fh.2). Graphically clear wart series seasonality was present for the United States, Canada, Mexico, Spain, the United Kingdom, the Netherlands, Poland, Ukraine, Russia, Japan, Australia, and Argentina (and borderline present for Chile) but absent for Romania, Iran, Kazakhstan, the Philippines, Kenya, South Africa, Ecuador, Colombia, Peru, and Brazil. Among countries displaying wart seasonality, none showed similar variation in GW data. Pairwise comparison of the major contributors by hemisphere (United States, Japan, Argentina, Australia) (Fig 2) showed phase inversion of SVI oscillations across the equator.

Time-delay analysis showed maximum cross-correlation at zero lag for the latitude-concordant pairs (United States/Japan, Argentina/Australia; $r = 0.88$ and $r = 0.56$, respectively) and at 1 half-period lag for the latitude-discordant pairs (United States/Argentina, Japan/Australia; both $r = 0.65$). Whereas natural (weather) seasonality shows a 6-month phase shift between the Northern and Southern Hemispheres, these observations are consistent with underlying natural seasonality.

In this Google Trends analysis, both worldwide and country-specific SVIs for cutaneous warts—but not GW—showed marked and consistent yearly cyclic variation, spanning several continents and showing equatorial phase variability. These data

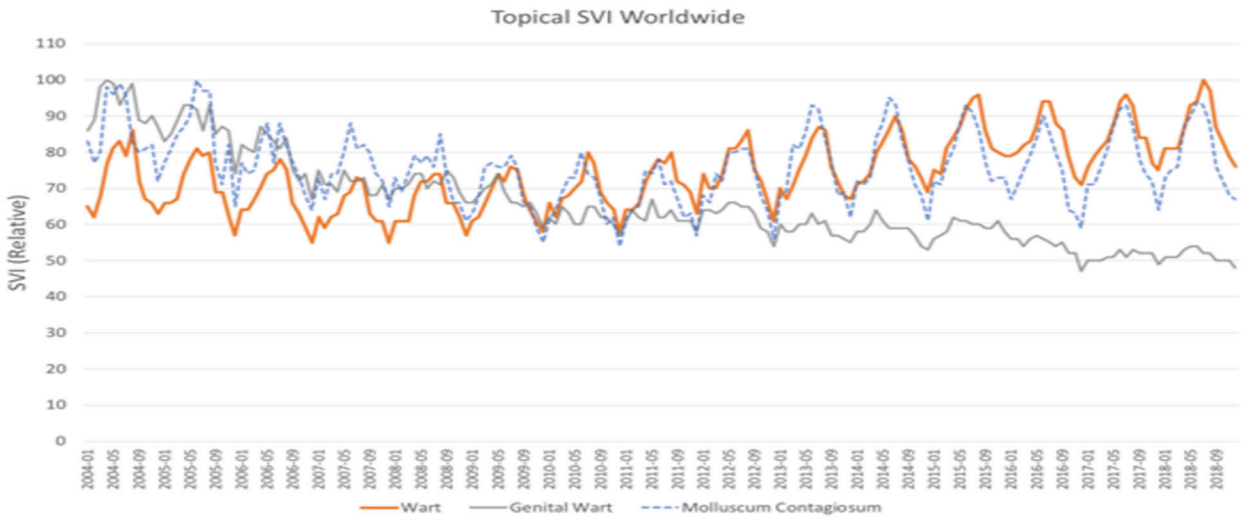

Fig 1. Worldwide time series for "wart," "genital wart," and "molluscum contagiosum" topic search volume index (SVI), 2004 to 2019.

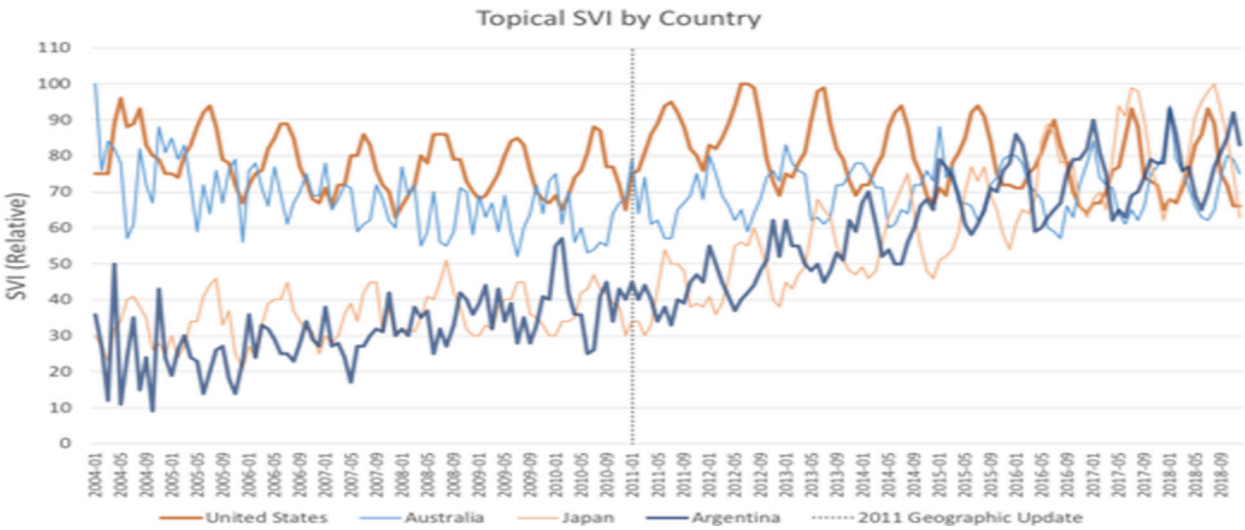

Fig 2. Country-specific time series for wart topic SVI for northern (orange) and southern (blue) hemispheres, 2004 to 2019. Note apparent noise reduction in the Argentina and Australia series after the 2011 update to Google's geographic assignment process. *SVI,* Search volume index.

provide evidence suggestive of a global, but not ubiquitous, natural seasonality to internet search volume for cutaneous extragenital warts and raise the question of corresponding epidemiologic seasonality.

Wart SVI seasonality might arise independent of disease incidence, and behavioral trends in skin exposure and self-interest could influence knowledge-seeking for abnormalities like warts. However, myriad environmental and human factors also merit consideration as potential modulators of both disease activity and viral transmissibility.[5]

Internet search trend designs face unique challenges. Making inferences from search volume to clinically relevant factors is complex and difficult, and we suggest that data such as ours be considered directly representative only of public information seeking. Additionally, the precise compositions of Google Trends topics (unlike raw terms) are not publicly available. Where topics share conceptual overlap, as for the wart and GW topics, this represents an inherent limitation to the use of Google Trends data.

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The modern dermatology program director: A cross-sectional study on personal and professional characteristics

To the Editor: Program directors are responsible for maintaining professional and educational excellence, quality patient care, and a scholarly approach to practice.[1] Within dermatology, recent studies have analyzed the sex characteristics of leadership.[2,3] However, the profile of contemporary dermatology program directors, a critical leadership role within academic medicine, is largely undescribed. We herein report a cross-sectional analysis of dermatology program directors, with an emphasis on demographics, training, academic accomplishments, and sex disparities. Although the program director role has historically been predominated by men, with the increasing number of female dermatology residents, we hypothesized there would be no significant differences among program directors according to sex.[2]

A list of current US dermatology program directors was collected from Accreditation Council for Graduate Medical Education program listings. Programs with an osteopathic or military affiliation were excluded. Associate program directors were not included. Tracked variables included sex, age, professional degrees, training location, academic title, number of publications, receipt of National Institutes of Health funding while program director, and date of starting program director role. Publication data were collected at different intervals (total, before starting program director role, and after starting program director role) to assess for changes in productivity associated with becoming program director. Research productivity was obtained from PubMed by searching the program director's last name, first name, and middle initial. If the program director did not have a middle initial, the number of publications was taken from the most updated curriculum vitae or academic website information. All other information was obtained from the Accreditation Council for Graduate Medical Education program listings, faculty websites, and other available web pages.

Data were summarized with descriptive statistics. Differences among sex in continuous data were analyzed with a Wilcoxon rank sum test. Categoric data were assessed with χ^2 analyses. $P < .05$ was considered significant.

Program director information from 113 programs, representing all allopathic residencies, was collected. Most program directors were women (56%) with a median age of 47 years (interquartile rage [IQR] = 16 years). The median age of starting the role as program director was 42 years (IQR = 12 years). For men compared with women, there was no difference in current age (51 vs 46 years; $P = .11$) or age at becoming program director (42 vs 42 years; $P = .93$). The median time spent serving as program director was 5 years (IQR = 5 years). Most individuals attended medical school in the United States (95%) and 24% completed a fellowship. Fifty-seven program directors (50%) completed residency training at their current institution.

Eight program directors (7%) held an additional professional degree. Only 1 program director held an advanced degree in education (MEd). The median number of total publications was 20 (IQR = 43) per program director and was similar between men and women (20 vs 17; $P = .30$). The median number of publications while serving as program director was 6 (IQR = 15) and was similar between men and women (7 vs 5; $P = .16$). Six program directors (5%) currently work under National Institutes of Health–funded research grants. The current academic rank was evenly represented among assistant (32%), associate (32%), and full professors