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Evaluating dermatology appointment lead times with Zocdoc: a cross-sectional study

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To the Editor

Concerns about a looming physician shortage have persisted for years, with projections consistently indicating an undersupply of doctors needed to serve the United States (US) population. The Association of American Medical Colleges (AAMC) estimates a potential shortage of between 13,500 and 86,000 physicians in the US by 2036.¹ Notably, the AAMC predicts a shortage of up to 13,400 dermatologists by 2034.² As many skin diseases become more prevalent with age and the US population continues to live longer, the demand for dermatologic services is increasing.²

Given the rising demand, prolonged wait times for dermatology appointments pose a significant challenge. Historically, average wait times for dermatology appointments in the US have been lengthy, often exceeding 45 days, with wide variations based on geographic region.³ According to a 2022 survey from Merritt Hawkins and AMN Healthcare, the national average wait time for a new patient appointment with a dermatologist was 34.5 days, a 7% increase from 2017 and a 42% increase from 2004.⁵

Appointment wait times often vary based on geography and insurance coverage. It has repeatedly been shown that patients with Medicaid experience longer wait times and lower appointment acceptance rates than those with private insurance or Medicare.⁶⁻⁸ Additionally, wait times are often significantly longer for patients living in rural locations compared to those in urban or suburban areas.⁶ These trends raise concerns regarding inadequate access to care among said patient populations, which in many cases, already experience increased susceptibility to poor healthcare outcomes. For example, it has been shown that Medicaid-insured individuals often have thicker tumors, more advanced staging, and higher melanoma-related mortality at diagnosis compared to privately insured patients.⁹⁻¹² Limited geographic prox-

imity to care is also associated with delayed melanoma diagnosis and higher mortality, making patients in rural areas especially vulnerable.¹³⁻¹⁵ Thus, timely access to dermatologic care is crucial in alleviating the burden of skin disease.

Innovative technologies such as telemedicine and web-based appointment scheduling platforms are being increasingly utilized to improve patient access to medical care.¹⁶ The academic literature suggests online scheduling platforms may reduce appointment wait times while simultaneously increasing patient satisfaction.¹⁷ Therefore, we sought to further explore the utility of such online scheduling systems by analyzing new patient appointment wait times in the 15 largest US cities using Zocdoc, a widely used online self-scheduling platform.¹⁸ We further sought to examine variations in wait times based on both funding and appointment types (medical versus cosmetic). Although previous studies have primarily analyzed dermatology wait times via telephone scheduling, to our knowledge this study is among the first to assess appointment availability through online scheduling platforms, specifically Zocdoc. As such, our findings provide valuable insights into the potential impact of web-based platforms on appointment wait times.

Founded in 2007, Zocdoc has grown into one of the largest healthcare appointment scheduling platforms in the US, allowing patients to book a wide range of medical services in real time.¹⁸ Users can search for available appointments by visit reason, symptom, specialty, or doctor's name. Results can then be filtered by location, insurance type, and various other criteria per the patient's preference. By default, search results are displayed by earliest appointment availability. Although Zocdoc does not publicly share demographic data on its providers, external estimates suggest that dermatologists make up roughly 3.8% of its network.¹⁹ With nearly 100,000 providers on the platform, this implies that approximately 3,800 dermatologists are available through Zocdoc.

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To better understand how Zocdoc may influence access to dermatologic care, a prospective, cross-sectional analysis of data collected from the platform was conducted to analyze appointment availability in the 15 largest US metropolitan areas, based on 2020 estimates by the United States Census Bureau: Atlanta, Boston, Chicago, Dallas, Detroit, Houston, Los Angeles, Miami, New York City, Philadelphia, Phoenix, San Bernardino, San Francisco, Seattle, and Washington, District of Columbia. Systematic searches for dermatology appointments were performed by two reviewers on Monday, June 24, 2024, with an additional reviewer verifying each identified appointment.

The appointment lead time (ALT), defined as the number of calendar days from the scheduling date to the first available new-patient appointment, was recorded for both cosmetic and general dermatology appointment types in all 15 cities. A total of 18 searches were conducted in each city, including searches for general dermatology and cosmetic dermatology appointments using 8 patient funding options: uninsured/self-pay, Medicare, Medicaid, BlueCross BlueShield (BCBS), Cigna, Aetna, Humana, and United Healthcare. BCBS, Cigna, Aetna, Humana, and United Healthcare will collectively be referred to as *private* insurance throughout this manuscript. We selected the terms “dermatology consultation” and “cosmetic dermatology consultation” to search for general dermatology appointments and cosmetic dermatology appointments, respectively. Only in-person appointments with board-certified dermatologists were included, excluding appointments with nurse practitioners, physician assistants, and physicians in other medical specialties. The search radius was restricted to 25 miles. The first available appointment on Zocdoc meeting the aforementioned criteria was recorded, and the ALT was calculated using the search date and first available appointment date.

One-way analysis of variance (ANOVA) analyses were conducted to separately evaluate the effect of city, insurance type, and appointment type on ALT, assuming equal variances. Additionally, two-way factorial ANOVA analyses were performed to assess the interaction between pairs of variables and their effect on ALT. A p-value of less than 0.05 was considered significant. All statistical analyses were performed using RStudio 2023.

A total of 270 appointments were included in the study. There was a significant difference in ALT between cities ($p < 0.05$), ranging from same-day appointments in some cities to 74 days of wait time in other cities ([Table 1](#)). Almost half (42%) of metropolitan cities, including New York City, Los Angeles, Philadelphia, Miami, Atlanta, and Phoenix, had same-day appointment availability. Boston had the longest wait times, with an average ALT of 74 days. Although 15 cities were evaluated, Seattle did not have any available appointments via Zocdoc that met our criteria. As such, it was excluded from our evaluation.

Our data indicated an average ALT of 5.61 days across all cities, appointment types, and funding types ([Table 2](#)). There was no significant difference in ALT based on

appointment type, with cosmetic and general dermatology appointments showing an average ALT of 4.6 and 6.5 days, respectively ($p > 0.05$). There was also no significant difference in ALT between private insurance, uninsured/self-pay coverage, Medicare, and Medicaid ($p > 0.05$). However, of the metropolitan areas we examined, New York City was the only one with appointments for Medicaid patients available on Zocdoc.

Previous studies evaluating wait times in dermatology have primarily focused on appointment availability through telephone scheduling. These studies have consistently reported lengthy wait times, with mean ALTs often exceeding 30 days.²⁰⁻²² In contrast, our data showed significantly shorter wait times when scheduling via Zocdoc, with same-day appointments available in almost half (42%) of the metropolitan cities evaluated. These findings align with previous reports indicating a reduction in wait times following the implementation of online scheduling systems.¹⁷ In addition to shorter wait times, the literature also highlights several other benefits of web-based appointment scheduling, including reduced staff labor, improved clinic efficiency, increased revenue, and lower no-show rates.¹⁷ One study reported a no-show rate of 6.9% for dermatology appointments made with Zocdoc, significantly lower than the 17-31% no-show rates for appointments made through traditional scheduling methods.²³

A significant difference in ALT by city was observed, consistent with previous reports describing regional variations in dermatologic appointment wait times.^{6,20} Boston had the longest wait times, with an average ALT of 74 days. Similarly, Tsang et al. found that Boston had the longest mean wait time among the 12 standard Metropolitan Statistical Areas (MSAs) examined in their 2006 study.²¹ We propose this could relate to geographic differences in the demand for dermatologic services or a lower number of dermatology practices utilizing Zocdoc in Boston. Additionally, Seattle had no appointments available on Zocdoc that met our inclusion criteria, suggesting that dermatology practices in Seattle may not utilize the platform. Of note, Zocdoc does require healthcare providers to pay a fee for each new booking made through their platform.²⁴ As a result, some practices may have opted to leave the platform and establish their own online booking systems.

We further sought to determine if ALTs differed based on funding types. No significant differences in ALTs were found when comparing private insurance, uninsured/self-pay coverage, Medicaid, and Medicare. However, there were significantly fewer appointments available to those with Medicaid, with New York City being the only metropolitan area offering Medicaid-funded appointments via Zocdoc. This lack of Medicaid-funded dermatology appointments is consistent with previously reported trends in the literature.⁶⁻⁸ According to a 2006 survey, Medicaid patients constituted only 5% of dermatology appointments, despite making up 12% of the population at the time of the survey.⁸ Previous studies have shown a greater discrepancy in areas where Medicaid

Table 1. Mean ALT by City and Appointment Type

City	Mean ALT (days)	Mean ALT for cosmetic appointment (days)	Mean ALT for medical appointment (days)
Atlanta	0	0	0
Boston	74	None available	74
Chicago	6.36	11.70	1
Dallas	0.14	0	0.29
Detroit	8	None available	8
Houston	19.40	36.90	2
Los Angeles	0	0	0
Miami	0	0	0
New York City	0	0	0
Philadelphia	0	0	0
Phoenix	0	0	0
San Bernardino	0.86	1.57	0.14
San Francisco	5.86	5.86	5.86
Seattle	None available	None available	None available
Washington DC	0.14	0.14	0.14
Average	5.61	4.62	6.46

ALT indicates appointment lead time/s

*Means recorded for each appointment type, cosmetic and medical, were calculated from the 8 gathered ALT based on funding type.

Table 2. Mean ALT by Funding Type

Funding Type	Mean ALT (days)	Mean ALT for cosmetic appointment (days)	Mean ALT for medical appointment (days)
Aetna	5.46	4.58	6.21
Blue Cross Blue Shield	5.08	3.75	6.21
Cigna	5	3.67	6.14
Humana	7.88	7	8.64
Medicare	5	3.67	6.14
Uninsured/Self-pay	5.88	5.50	6.21
United Healthcare	5.42	4.58	6.14

ALT indicates appointment lead time/s

*Medicaid is not included in this table as Medicaid appointments were only available in one city, New York City, where appointment lead time was zero days.

payment rates are lower.⁸ We hypothesize that Medicaid may require referrals from a primary care physician before seeing a specialist, making these appointments unavailable for patient self-scheduling via Zocdoc. The disparities in access to dermatologic care among Medicaid patients highlight the need for additional research and underscore the importance of continuous efforts in health equity and advocacy in dermatology.

Lastly, we found no significant difference in ALT between cosmetic and general dermatology appointments. In contrast, previous research has indicated shorter wait times for cosmetic appointments. For example, Resneck et al. (2007) reported that appointments for Botox injections could be scheduled within an average of 8 days, whereas appointments for evaluating a changing mole could take 3 to 4 weeks.²⁵ Although the wait times ob-

served in our study were not significant, we observed a much lower number of physicians offering cosmetic appointments via Zocdoc. Notably, there were no cosmetic appointments available on Zocdoc in Seattle, Boston, or Detroit.

The scope of this study is constrained by its cross-sectional approach, which restricts the evaluation of ALT to a single point in time. Furthermore, external validity is confined to physicians enrolled in Zocdoc within the 15 US metropolitan areas analyzed.

As the projected shortage of US dermatologists continues to rise, it is not unreasonable to assume that so will appointment wait times. In a field that already suffers from historically lengthy wait times, online scheduling platforms, such as Zocdoc, may provide an effective solution. When searching Zocdoc for dermatology appointments in the 15 largest US metropolitan areas, the average ALT was 5.6 days. Furthermore, same-day

appointments were available in 42% of the cities evaluated. Although no significant differences in wait times were found based on appointment type or insurance coverage, the limited availability of Medicaid-funded appointments underscores ongoing access disparities. These findings suggest that web-based scheduling systems could play a crucial role in meeting the rising demand for dermatologic services. Future research should explore the broader impacts of these platforms on patient outcomes and healthcare costs. Additionally, efforts to ensure equitable access for all patients, especially those with Medicaid, remain essential.

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Potential conflicts of interest

The authors declare no conflicts of interest.

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