

Differences in Primary Care Appointment Availability and Wait Times by Neighborhood Characteristics: a Mystery Shopper Study

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INTRODUCTION

Primary care is widely recognized as a gateway to the health care system and improved health.¹ Prior studies have found disparities in appointment access by insurance type² (commercial vs. Medicaid) and mixed findings on the association of neighborhood socioeconomic status and having a usual source of care.^{3,4} We previously found large racial differences in the supply of primary care across neighborhoods in a large urban area (Philadelphia, PA).⁵ In this study, we examine how appointment access varies by neighborhood socio-demographics and primary care supply—hypothesizing less access in low SES neighborhoods and those with lower supply.

METHODS

As previously described, we inventoried adult primary care practices in and near Philadelphia County.⁵ From July 6 to September 14, 2015, research assistants posing as patients called practices to request a new, non-urgent, appointment.² Medicaid participating practices received private and Medicaid-insured calls. Practices were excluded if they did not offer primary care ($n = 16$), had a disconnected phone ($n = 17$), or served a specialized population ($n = 16$) (e.g., university student health center). The University of Pennsylvania Institutional Review Board approved this study.

We used the American Community Survey (2008–2013) to determine characteristics of census tracts and tract-level population-to-provider ratios for adult primary care.⁵ We used a relative measure of low primary care access⁵; clusters of five or more contiguous census tracts in the lowest quintile for primary care supply.

Analyses

We defined availability and wait times as whether an appointment was offered (binary) and the number of days from the request to the appointment offered (continuous), respectively. We modeled the association of availability with census tract characteristics and our measure of low primary care supply using a multi-level random intercept logistic mixed effects model with clustering at the clinic and census tract levels. A linear mixed effects model was similarly used to examine wait times.

RESULTS

Practice Sample

We identified 399 practices in the study area—276 accepted Medicaid and private insurance, 111 accepted only private insurance, and 12 were only reached by our Medicaid callers. We excluded 12 due to inability to complete scheduling.

Appointment Availability

Callers were offered an appointment in 79% of the calls; fewer Medicaid callers received appointments than those with private insurance (68 vs. 87%; OR = 0.32; 95% CI = 0.21–0.47). There were no differences in appointment availability for privately insured callers at Medicaid participating vs. non-participating practices. Practices' census tract characteristics were not associated with appointment availability except for the uninsured rate (Table 1). Offices in census tracts with high rates ($\geq 30\%$) of uninsurance were less likely to offer appointments (OR = 0.24; 95% CI = 0.07–0.90). There was no association with location in a lower primary care supply area.

Appointment Wait Time

The median appointment wait time was 10 days (IQR = 4–21). Wait times were similar ($p = 0.29$) for Medicaid-insured (median = 12.5, IQR = 5–25.5) and privately insured callers (median = 9, IQR = 4–20). Findings were similar when the sample

Table 1 Appointment Availability by Census Tract Characteristics of Primary Care Practices

Census tract characteristics of primary care practices	% offered an appointment	Unadjusted odds ratio	P value for unadjusted ORs	Adjusted odds ratio* (95% CI) ¹	P value for AORs
% population with public insurance					
< 10%	77%	Ref	—	Ref	—
10–19%	82%	1.40 (0.83, 2.38)	0.21	1.32 (0.53, 3.29)	0.55
20–29%	75%	0.89 (0.53, 1.51)	0.68	0.83 (0.29, 2.43)	0.74
≥ 30%	80%	1.19 (0.70, 2.00)	0.52	1.18 (0.35, 4.05)	0.79
% population that is uninsured					
< 10%	82%	Ref	—	Ref	—
10–19%	78%	0.79 (0.43, 1.44)	0.45	0.46 (0.17, 1.25)	0.13
20–29%	80%	0.88 (0.48, 1.62)	0.68	0.45 (0.15, 1.33)	0.15
≥ 30%	69%	0.47 (0.22, 1.02)	0.06	0.24 (0.07, 0.90)	0.04
poverty level of population					
< 100%	74%	Ref	—	Ref	—
100–200%	82%	1.56 (0.96, 2.53)	0.07	2.04 (0.87, 4.80)	0.10
> 200%	76%	1.13 (0.67, 1.92)	0.65	1.27 (0.43, 3.80)	0.67
% population that is Black					
< 20%	78%	Ref	—	Ref	—
20–79%	77%	0.94 (0.62, 1.42)	0.76	1.16 (0.60, 2.26)	0.66
≥ 80%	85%	1.58 (0.90, 2.77)	0.11	2.60 (0.87, 7.78)	0.09
% population that is Hispanic					
< 5%	79%	Ref	—	Ref	—
5–10%	84%	1.4 (0.85, 2.31)	0.19	2.06 (0.99, 4.29)	0.05
10–20%	72%	0.7 (0.41, 1.19)	0.19	1.13 (0.46, 2.76)	0.79
> 20%	77%	0.87 (0.52, 1.48)	0.62	1.82 (0.65, 5.10)	0.25
Low access area					
No	78%	Ref	—	Ref	—
Yes	83%	1.35 (0.64, 2.84)	0.43	1.07 (0.4, 2.84)	0.90

¹Adjusted for clinic census tract characteristics in table as well as American Community Survey (ACS) median age, insurance type of caller, FQHC status, and practice size

was restricted to the primary care offices that accepted both types of insurance and when stratifying practices by insurance participation (both vs. Medicaid only). Practices' census tract characteristics were not associated with wait times (Table 2). Wait times were similar regardless of whether or not a practice was located in an area of lower primary care supply.

DISCUSSION

In this large urban area, we found differences in new appointment availability by insurance type with a magnitude similar to prior studies.² However, availability and wait times were not associated with neighborhood socio-demographic

Table 2 Wait Time by Census Tract Characteristics of Primary Care Practices

Census tract characteristics of primary care practices	Unadjusted median wait time (IQR)	Unadjusted average wait time	Unadjusted % change in wait time (95% CI)	Adjusted % change in wait time ¹ (95% CI)	P value ²
% population with public insurance					
< 10%	8 (4, 16)	17.8	Ref	—	—
10–19%	12 (4, 22)	17.5	18 (–19.4, 72.1)	16 (–31.2, 94)	0.58
20–29%	12 (5, 28)	19.4	21 (–20.9, 83.9)	3 (–44.1, 91.6)	0.91
≥ 30%	12 (5, 22)	16.5	13 (–23.4, 66.4)	–7 (–53.5, 87)	0.84
% population that is uninsured					
< 10%	8 (5, 15)	16.2	Ref	—	—
10–19%	10 (4, 22)	17.5	9 (–27.4, 64.6)	9 (–35.9, 86.6)	0.74
20–29%	12 (4, 21)	17.1	15 (–24.2, 73.4)	8 (–40.2, 95.9)	0.79
≥ 30%	15 (5, 32)	25.4	56 (–18.3, 197)	49 (–33.6, 232.2)	0.33
Poverty level of population					
< 100%	13 (6, 23)	16.7	Ref	—	—
100–200%	10.5 (4, 27)	18.9	–14 (–41.1, 25.8)	–16 (–47.6, 35.4)	0.48
> 200%	8 (4, 15)	15.7	–24 (–49.9, 15)	–22 (–58.1, 43.7)	0.42
% population that is Black					
< 20%	10 (4, 21)	18.1	Ref	—	—
20–79%	11 (5, 27)	18.3	15 (–17.1, 58.9)	3 (–29.6, 51.7)	0.87
≥ 80%	12 (4, 21)	15.5	–7 (–35.9, 35.9)	–19 (–56.5, 52.1)	0.52
% population that is Hispanic					
< 5%	11 (4, 22)	16.8	Ref	—	—
5–10%	11.5 (5, 20)	17.6	3 (–27.6, 45.2)	–8 (–38.4, 37.6)	0.68
10–20%	9 (3, 22)	17.9	1 (–34.3, 56.0)	–15 (–50.4, 45.8)	0.55
> 20%	10 (5.5, 28)	20.0	22 (–20.2, 85.1)	–6 (–49.7, 74.3)	0.83
Low access area					
No	11 (4, 21)	18.0	Ref	—	—
Yes	8 (4, 15)	11.2	–20 (–52.9, 34.7)	–17 (–52.8, 47.8)	0.53

¹Adjusted for clinic census tract characteristics in table as well as census tract median age, insurance type of caller, FQHC status of practice, and practice size

²P values are for log-transformed wait times

characteristics or the supply of nearby primary care except for the uninsurance rate. The lack of an association with primary care supply could be explained by patient travel patterns for care or if supply is adequate to meet population demand even in lower supply areas.

Our study has several limitations: simulated patients may represent a “best-case” scenario compared to patients unaccustomed to navigating health care, our methods do not address patient preferences for providers or plan-specific networks, our study was in a single city with a high provider density, and we were unable to account for practice characteristics such as panel size or “no-show” rates and their impact on practice scheduling systems. Future studies should examine the relationship between primary care supply and appointment access in other settings and seasons to determine the conditions under which decreased supply leads to differences in appointment access.

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