

Solo and Small Practices: A Vital, Diverse Part of Primary Care

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ABSTRACT

PURPOSE Solo and small practices are facing growing pressure to consolidate. Our objectives were to determine (1) the percentage of family physicians in solo and small practices, and (2) the characteristics of and services provided by these practices.

METHODS A total of 10,888 family physicians seeking certification through the American Board of Family Medicine in 2013 completed a demographic survey. Their practices were split into categories by size: solo, small (2 to 5 providers), medium (6 to 20 providers), and large (more than 20 providers). We also determined the rurality of the county where the physicians practiced. We developed 2 logistic regression models: one assessed predictors of practicing in a solo or small practice, while the other was restricted to solo and small practices and assessed predictors of practicing in a solo practice.

RESULTS More than one-half of respondents worked in solo or small practices. Small practices were the largest group (36%) and were the most likely to be located in a rural setting (20%). The likelihood of having a care coordinator and medical home certification increased with practice size. Physicians were more likely to be practicing in small or solo practices (vs medium-sized or large ones) if they were African American or Hispanic, had been working for more than 30 years, and worked in rural areas. Physicians were more likely to be practicing in small practices (vs solo ones) if they worked in highly rural areas.

CONCLUSIONS Family physicians in solo and small practices comprised the majority among all family physicians seeking board certification and were more likely to work in rural geographies. Extension programs and community health teams have the potential to support transformation within these practices.

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INTRODUCTION

Outpatient primary care is the largest health care delivery platform in America,¹ with solo practice historically its most common organizational structure.² These practices, however, are in decline³ and facing growing pressure to consolidate.⁴ Policies within the Patient Protection and Affordable Care Act (ACA) have sharpened the focus on population health and value-based payment,⁵ and payers are following suit. Large groups benefit from economies of scale, distributing the costs of practice transformation across clinicians.^{6,7} On the revenue side, larger practices have more negotiating power in some markets.⁸⁻¹³ Practicing in a larger group may have other benefits, including increased control over work hours, shared resources, access to capital, and greater ability to manage risk.¹⁴ These market forces are fueling a race to get larger, absent any discussion of the consequences or acknowledgment that transformation for a large practice differs radically from that for a small practice.

Research has revealed some potentially negative consequences of practice consolidation with a study concluding that small practice size was associated with fewer preventable hospitalizations.¹⁵ Citing literature on ease of access,¹⁶⁻¹⁸ the authors suggested that this association stems from

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stronger relationships among physicians, patients, and staff, and improved continuity.¹⁸ Despite these benefits, small practices are less likely to use care coordinators or participate in quality improvement collaboratives.¹⁹ The association between practice size and clinical quality is undetermined, with studies demonstrating no effect or trends favoring larger practices.^{20,21}

Recent efforts to characterize practice size have relied on a variety of data sources. One study, using National Provider Identifier data to collocate physicians, reported that 45% of primary care physicians practiced in sites with 5 or fewer physicians.²² In 2011, Welch et al²³ used tax identification numbers linked to Medicare claims to determine that approximately 20% of physicians across all specialties were in solo practice, similar to American Medical Association estimates for family physicians specifically.²⁴ A 2008 survey of physicians across specialties indicated that 32% were in practices of 1 to 2 physicians.²⁵ Although these studies counted the numbers of small practices, they did not describe their characteristics. Assuming further erosion, policy makers will need to know the types of physicians and communities that will be disproportionately affected by practice consolidation. A study of Scottish general practices found that smaller practices were more likely to be located in areas of socioeconomic deprivation and to care for patients with poorer health compared with larger practices, differences not yet confirmed for US practices.^{26,27}

We undertook a study to shed additional light on this topic. Our work builds on previous estimations in several ways. First, rather than inferring practice size based on the number of physicians at the same address, we used data from a survey that asked physicians to declare their practice sizes. Second, by linking our data set to other available data, we were able to make observations about the characteristics of these practices, the services they provide, the physicians staffing them, and the communities they serve.

The objectives of our analysis were to determine (1) the percentage of family physicians practicing in solo and small practices, and (2) the characteristics of and services provided by solo and small practices.

METHODS

Data Sources

We used a sample of 10,888 family physicians seeking to sit for the Maintenance of Certification examination through the American Board of Family Medicine (ABFM) in 2013. To maintain certification, family physicians take the examination every 7 to 10 years assuming they maintain their license, complete self-assessment modules, and participate in quality

improvement projects. The physicians in this analysis represented approximately 13% of all board-certified Diplomates. We excluded Diplomates who did not recertify in 2013, physicians certifying for the first time (as they are frequently residents who have not yet started their first postresidency jobs), and Diplomates whose addresses we were unable to geocode. Because we excluded first-time certifiers, our sample is older than the nonrecertifying Diplomates, although we contend that the difference (2.7 years) is not meaningful (Supplemental Appendix 1, available at <http://www.annfammed.org/content/14/1/8/suppl/DC1>).

Our internal analysis of ABFM administrative data indicated that of the 94,238 family physicians who completed a residency approved by the Accreditation Council for Graduate Medical Education between 1980 and 2014, fully 96% were certified at one point, whereas 85% were certified as of December 22, 2014. We focused on board-certified family physicians rather than all family physicians because we were concerned that those who graduated from family medicine residencies but did not seek board certification may have been practicing in nontraditional settings or have non-primary care scopes of practice.

We determined the region (Northeast, South, West, and Midwest) and rurality from the practice address provided by the physician. We geocoded these addresses and used Federal Information Processing Standard codes to determine if the county served by the ABFM Diplomate was rural or urban based on the United States Department of Agriculture 2013 Rural-Urban Continuum Code. Rural was collapsed into 3 categories by the code: (1) codes 4 and 5 (20,000 to 50,000 people), (2) codes 6 and 7 (2,500 to 19,999 people), and (3) codes 8 and 9 (<2,500 people). We categorized codes 1 to 3 as metropolitan counties.

Poverty status in the county served by the physician was constructed from the 5-Year American Community Survey (2008-2012) Summary Data File. We created a continuous variable representing the percentage of people within each county earning less than 100% of the federal poverty level.

Variables

As part of the registration process, applicants completed a demographic questionnaire (Supplemental Appendix 2, available at <http://www.annfammed.org/content/14/1/8/suppl/DC1>). All questions were required, and the response rate was 100%. In addition to a question about practice size, the questionnaire included questions regarding physician characteristics, practice characteristics, and services provided by the physician.

We grouped Diplomates into 4 categories based on the size of their practice: solo practices, small practices

consisting of 2 to 5 providers, medium practices consisting of 6 to 20 providers, and large practices consisting of more than 20 providers. The questionnaire was designed to automatically code solo physicians as a single-specialty practice.

We collapsed the 16 options for primary practice ownership into 4 categories. The "solo" category included respondents selecting "private solo or group practice" for the ownership and "solo practice" for practice size. The "group" category included respondents selecting "private solo or group practice" for ownership but not "solo practice" for practice size. The "safety net" category included mental health centers, non-federal government clinics, federally qualified health centers or look-alikes, rural health clinics, Indian Health Service, and public health service. The "other" category included urgent care facilities, hospital emergency departments, hospital outpatient departments, ambulatory surgical centers, industrial outpatient facilities, institutional settings, academic health centers/faculty practices, health maintenance organizations, federal facilities, and respondent-specified others. The survey also included questions regarding practice transformation, such as whether care coordination services were provided and patient-centered medical home certification status.

The number of obstetric deliveries per year was categorized as none, 1 to 25, 26 to 50, and more than 50. The newborn care variable originally contained 4 categories and was collapsed to a single indicator variable for providing any newborn care. There were 2 hospital-related survey questions. The first question asked whether the respondent had admitting privileges, while the second asked about providing inpatient care. We treated these as 2 separate variables.

To capture a holistic measure of scope of practice, we used the Individual Scope of Practice (I-SOP) Scale developed by the ABFM.²⁸ This scale is based on a cohort of recertifying family physicians who completed the same demographic survey referenced in this analysis; possible scores range from 0 to 30, with higher scores indicating greater scope. Components of the scale include the age range of patients seen, patient care settings, and the types of services offered (such as major surgery, deliveries, prenatal care, and palliative care).

Statistical Analysis

Using Stata 13.0 (StataCorp LP), we computed descriptive statistics for the demographic and practice characteristics of the physician respondents and then conducted bivariate analyses by practice size. Significant differences in services provided by the physicians by practice size were determined using χ^2 tests for the categorical variables and analysis of variance (ANOVA) tests for continuous variables.

To identify characteristics associated with small or solo practices, we developed 2 separate logistic regression models. For the first model, hereafter model 1, the dependent variable was practice size (solo or small practice), and the independent variables were sex, race, ethnicity, years in practice, percentage of the county population earning less than 100% of the federal poverty level, rurality of the practice's county, and region of the country. As our results suggested heterogeneity between solo and small practices, we generated a second model, hereafter model 2, after restricting the sample to only solo and small practices. In model 2, the dependent variable was solo practice, while the independent variables were identical to those in model 1.

Noting that the percentage of physicians working in rural geographies was highest in the small practice size category, we performed an additional bivariate analysis examining the percentage of physicians working in rural health clinics (RHCs), by practice size. We had embedded RHCs within the safety net category of the practice ownership variable.

The American Academy of Family Physicians Institutional Review Board determined that the study was exempt from full review.

RESULTS

More than one-half of respondents worked in either solo or small practices (Table 1). We found significant differences in physician characteristics across the practice size categories. For example, physicians in solo practices were more likely to be male, African American, Asian, or Hispanic, and to have been in practice for more than 30 years. Small practices were the largest group (36% of the entire sample) and most likely to be located in rural areas (20%). The rural finding was partially driven by a higher percentage of respondents in small practices working in RHCs; of the 278 respondents working at these clinics, 56% worked in small practices, while 37% worked in medium-sized practices. To become an RHC, a clinic must employ a nurse practitioner or physician assistant, automatically increasing the practice size.²⁹ Solo practices were located in counties that had the highest percentage of the population earning less than 100% of the federal poverty level. Although the differences in poverty were statistically significant, the absolute differences were small.

Medium-sized practices had the highest percentage of physicians working in safety net settings (Table 2). Twenty-two percent of solo practices had a care coordinator, compared with 63% of large practices. Only 7% of solo practices and 19% of small practices were certified as patient-centered medical homes, whereas 35% of large practices had this certification.

Table 1. Characteristics of Physicians and Their Practices, by Practice Size

Characteristic	Solo	Small (2-5 Providers)	Medium (6-20 Providers)	Large (>20 Providers)	P Value
Family physicians, No. (%) ^a	1,677 (15.4)	3,913 (35.9)	3,371 (31.0)	1,927 (17.7)	–
Sex, No. (%) ^b					
Male	1,130 (67.4)	2,459 (62.8)	2,086 (62.9)	1,216 (63.1)	
Female	547 (32.6)	1,454 (37.2)	1,285 (38.1)	711 (36.9)	.002
Race, No. (%) ^b					
White	1,258 (75.0)	3,208 (82.0)	2,763 (82.0)	1,514 (78.6)	<.001
Black or African American	134 (8.0)	237 (6.1)	186 (5.5)	99 (5.1)	.001
Asian	257 (15.3)	404 (10.3)	366 (10.9)	272 (14.1)	<.001
Others	28 (1.7)	64 (1.6)	56 (1.7)	42 (2.2)	.46
Ethnicity, No. (%) ^b					
Non-Hispanic	1,544 (92.1)	3,700 (94.6)	3,212 (95.3)	1,801 (93.5)	<.001
Hispanic	133 (7.9)	213 (5.4)	159 (4.7)	126 (6.5)	<.001
Years in practice, No. (%) ^b					
0-10	316 (18.8)	1,137 (29.1)	1,000 (29.7)	542 (28.1)	<.001
11-20	592 (35.3)	1,291 (33.0)	985 (29.2)	583 (30.3)	<.001
21-30	510 (30.4)	1,099 (28.1)	1,046 (31.0)	613 (31.8)	<.009
≥31	259 (15.4)	385 (9.8)	340 (10.1)	189 (9.8)	<.001
Percent of county earning <100% of FPL	14.9	14.5	14.7	14.7	<.000
Rurality of county, No. (%) ^b					
Urban	1,402 (83.6)	3,117 (79.7)	2,799 (83.0)	1,755 (91.1)	<.001
Rural: 20,000-50,000 people	113 (6.7)	271 (6.9)	255 (7.6)	101 (5.2)	.01
Rural: 2,500-19,999 people	149 (8.9)	428 (10.9)	280 (8.3)	69 (3.6)	<.001
Rural: <2,500 people	13 (0.8)	97 (2.5)	37 (1.1)	2 (0.1)	<.001
Combined rural	275 (16.4)	796 (20.3)	572 (17.0)	172 (8.9)	<.001
Region of country, No. (%)					
North	262 (15.6)	629 (16.1)	488 (14.5)	202 (10.5)	<.001
South	704 (41.1)	1,387 (35.4)	966 (28.7)	517 (26.8)	<.001
West	328 (19.6)	748 (19.1)	910 (27.0)	671 (34.8)	<.001
Midwest	355 (21.2)	1,096 (28.0)	961 (28.5)	525 (27.2)	<.001

FPL = federal poverty level.

^a Percentage across groups.

^b Percentage within groups.

Table 2. Practice Organization Characteristics, by Practice Size

Characteristic	Solo	Small (2-5 Providers)	Medium (6-20 Providers)	Large (>20 Providers)	P Value
Practice organization, No. (%) ^a					
Solo	1,487 (88.7)	0	0	0	
Group	0	2,243 (57.3)	1,427 (42.3)	721 (37.4)	<.001
Safety net	26 (1.6)	386 (9.9)	432 (12.8)	156 (8.1)	<.001
Other	164 (9.8)	1,284 (32.8)	1,512 (44.9)	1,050 (54.9)	<.001
Care coordinator, No. (%) ^a					
Yes	370 (22.1)	1,356 (34.7)	1,623 (48.2)	1,210 (62.8)	<.001
No	1,307 (77.9)	2,557 (65.4)	1,748 (51.9)	717 (37.2)	
PCMH certification, No. (%) ^a					
Yes	110 (6.6)	737 (18.8)	1,046 (31.0)	681 (35.3)	<.001
No	1,567 (93.4)	3,176 (94.2)	2,325 (69.0)	1,246 (64.7)	

PCMH = patient-centered medical home.

^a Percentage within groups.

Solo practices had the highest percentage of physicians providing care in Spanish (24%) and other non-English languages (13%). Although physicians in medium-sized and large practices were more likely to attend deliveries, perform prenatal care, and work in multispecialty groups, the broadest scopes of practice were seen in the small and medium-sized practices (Table 3). In contrast, physicians from solo and large practices were more likely than those from small and medium-sized practices to have admitting privileges and provide hospital care.

In model 1, physicians were more likely to practice in small or solo practice (vs a medium-sized or large one) if they were African American or Hispanic, had been working for more than 30 years, and worked in rural geographies (Table 4). In contrast to previous research, we found that physicians in solo practice were not more likely to practice in high-poverty counties. In model 2, physicians were more likely to practice in solo practice (vs a small practice) if they

were male; African American, Asian, or Hispanic; and had been working for 11 or more years. Working in a highly rural geographic areas was associated with small as opposed to solo practice.

DISCUSSION

Family physicians working in solo and small practices still outnumber those working in medium-sized and large practices. Contrary to preconceived notions, solo practitioners are diverse and less likely than those in small practices to work in rural areas. As policy makers and national initiatives such as Family Medicine for America's Health³⁰ revisit the future composition of the primary care workforce, they will need to consider the unique needs of family physicians in these settings.

Our findings have implications for the future of family medicine. First, smaller practices may be missing out on new payment models that are dependent

Table 3. Services Provided, by Practice Size

Service ^a	Solo	Small (2-5 Providers)	Medium (6-20 Providers)	Large (>20 Providers)	P Value
Patient care in a language besides English, No. (%)					
Spanish	404 (24.1)	747 (19.1)	787 (23.4)	462 (24.0)	
Other	218 (13.0)	292 (7.5)	207 (6.1)	170 (8.8)	
No	1,055 (62.9)	2,874 (73.4)	2,377 (70.5)	1,295 (67.2)	<.001
Newborn care, No. (%)					
Yes	741 (44.2)	2,326 (59.4)	2,064 (61.2)	1,043 (54.1)	<.001
No	936 (55.8)	1,587 (40.6)	1,307 (38.8)	884 (45.9)	
Prenatal care, No. (%)					
Yes	140 (8.4)	436 (11.1)	607 (18.0)	394 (20.5)	<.001
No	1,537 (91.7)	3,477 (88.9)	2,764 (82.0)	1,533 (79.6)	
Obstetric deliveries per year, No. (%)					
0	1,627 (97.0)	3,666 (93.7)	2,964 (87.9)	1,689 (87.7)	<.001
1-25	27 (1.6)	114 (2.9)	244 (7.2)	135 (7.0)	
26-50	10 (0.6)	72 (1.8)	106 (3.1)	71 (3.7)	
≥51	13 (0.8)	61 (1.5)	57 (1.7)	32 (1.7)	
Other specialists at primary practice site, No. (%)					
Multispecialty	0	642 (16.4)	1,466 (43.5)	1,414 (73.4)	<.001
Single specialty	1,677 (100.0)	3,271 (83.6)	1,905 (56.5)	513 (26.6)	
Provides inpatient care, No. (%)					
Yes	635 (37.9)	1,225 (31.3)	1,164 (34.5)	724 (37.6)	<.001
No	1,042 (62.1)	2,688 (68.7)	2,207 (65.5)	1,203 (62.4)	
Has admitting privileges, No. (%)					
Yes	1,136 (67.7)	2,424 (62.0)	2,117 (62.8)	1,240 (64.4)	<.001
No	541 (32.3)	1,489 (38.1)	1,254 (37.2)	687 (35.7)	
Scope, I-SOP score, mean (SD) ^b	14.1 (3.4)	14.8 (3.4)	15.0 (3.7)	14.5 (3.6)	<.001

I-SOP = Individual Scope of Practice.

^a Percentage within groups.

^b Possible scores range from 0 to 30, with higher scores indicating greater scope.

Table 4. Characteristics Associated With Practicing in Solo or Small Practices, and in Solo Practices

Characteristic	Model 1: Solo or Small vs Medium or Large		Model 2: Solo vs Small	
	OR (95% CI)	P Value	OR (95% CI)	P Value
Sex				
Male (ref)	1.00		1.00	
Female	0.95 (0.87-1.03)	.22	0.87 (0.76-0.99)	.03
Race				
White (ref)	1.00		1.00	
Black or African American	1.22 (1.03-1.44)	.02	1.57 (1.25-1.99)	<.001
Asian	1.13 (1.00-1.27)	.058	1.97 (1.65-2.36)	<.001
Others	0.96 (0.72-1.29)	.80	1.27 (0.81-2.01)	.30
Ethnicity				
Non-Hispanic (ref)	1.00		1.00	
Hispanic	1.33 (1.13-1.58)	<.001	1.62 (1.28-2.05)	<.001
Years in practice				
0-10 (ref)	1.00		1.00	
11-20	1.27 (1.15-1.40)	<.001	1.70 (1.45-2.00)	<.001
21-30	1.02 (0.92-1.14)	.68	1.91 (1.61-2.27)	<.001
≥31	1.31 (1.13-1.51)	<.001	2.74 (2.22-3.40)	<.001
Percent of county earning <100% of FPL	0.99 (0.98-0.99)	.001	1.01 (1.00-1.02)	.24
Rurality of county				
Urban (ref)	1.00		1.00	
Rural: 20,000-50,000 people	1.17 (1.00-1.37)	.046	0.97 (0.76-1.23)	.79
Rural: 2,500-19,999 people	1.76 (1.52-2.03)	<.001	0.83 (0.67-1.01)	.07
Rural: <2,500 people	3.16 (2.18-4.58)	<.001	0.33 (0.18-0.59)	<.001
Region of country				
South (ref)	1.00		1.00	
Northeast	0.90 (0.79-1.02)	.09	0.82 (0.69-0.98)	.03
West	0.47 (0.43-0.53)	<.001	0.86 (0.73-1.02)	.08
Midwest	0.66 (0.59-0.73)	<.001	0.67 (0.57-0.78)	<.001
Constant	3.59	<.001	0.29	<.001

FPL = federal poverty level; OR = odds ratio; ref = reference group.

on patient-centered medical home certification. We found the likelihood of having a care coordinator and patient-centered medical home certification increased with practice size. Second, we lack evidence regarding whether changes in practice size are associated with reduced costs or improved patient satisfaction. Although a study found that larger primary care practices were associated with lower spending, this difference disappeared for practices owned by hospitals.³¹

Policies to help small practices continue to advance the triple aim are worthy of further consideration. The Primary Care Extension Program is one such solution, building on the successful agricultural extension model, which used change agents to disseminate best practices and innovations to increase crop yields.³² Studies have indicated that practice facilitators can fulfill a similar role in primary care.³³

Although the ACA authorized but did not fund the Primary Care Extension Program, these concepts are being tested by Centers for Medicare & Medicaid Services (through the Transforming Clinical Practices Initiative) and the Agency for Healthcare Research and Quality (through Infrastructure for Maintaining Primary Care Transformation).^{34,35} The extension model has already shown success in support of the widespread adoption of electronic health records, both in the United States and in international examples such as Australia's General Practice Divisions and New Zealand's Primary Health Care Organizations.^{36,37} The Health Information Technology for Economic and Clinical Health Act of 2009 created health information technology regional extension centers, which enrolled 52% of rural primary care clinicians and helped them implement electronic health records.³⁸

Several models allow small practices to profit from economies of scale without sacrificing the benefits of being small. For example, small practices collaborating through accountable care organizations can share

resources while generating potential shared savings revenue.³⁹ In Vermont, interdisciplinary community health teams have allowed primary care offices to implement patient-centered medical home functionality. The marginal revenue from these services may be insufficient to match the expenses for small practices; however, the return on investment may increase if the expenses are shared across multiple practices. The 3 private insurers and Medicaid fund community health teams in Vermont, and it remains to be seen whether other states will be able to replicate this model.⁴⁰

Several limitations should be taken into consideration. First, our sample did not include general internists and general pediatricians; therefore, our results may not apply to all primary care practices. Second, our survey results are self-reported, although our findings are similar to figures reported from other studies

that used nonsurvey methods. In the survey, we did not ask about how the practice negotiated contracts. For example, the respondent may work in a small practice that negotiates contracts through a larger independent physician association. Thus, some respondents may have described the size of their immediate practice while others may have described the size of the superstructure. Finally, we captured only physicians undergoing recertification in 2013, although our internal analysis suggests that this cohort is similar to the more than 72,000 Diplomates who did not recertify.

Future studies should assess trends in practice size, whether our findings apply to smaller geographic areas such as states, and factors that influence practices to consolidate. More research is needed to determine the impact of practice size on triple aim outcomes as the magnitude and directionality of these associations are unclear. Finally, additional study is needed to explain why solo practices are more diverse than practices of other sizes.

Although physicians working in solo and small practices are vital to primary care, particularly in rural areas, they are missing out on practice transformation. Extension programs and community health teams have the potential to facilitate this transformation.

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