

# Current Workforce of Pediatric Subspecialists in the United States

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on behalf of the Research Advisory Committee of the American Board of Pediatrics<sup>d</sup>

abstract

**BACKGROUND:** Concerns exist regarding the adequacy of the pediatric subspecialty workforce in the United States. Data on practice patterns and job characteristics are necessary to help develop policies to ensure availability.

**METHODS:** We performed survey data analysis of all pediatric subspecialists enrolled in Maintenance of Certification in 2013 and 2014, assessing demographic information, characteristics of current positions, plans for retirement, and satisfaction with allocation of professional and clinical responsibilities. Four logistic regression models examined the independent association of demographic variables collected along with variables of practice ownership and academic appointment with the outcome variables of pediatric subspecialists reporting match of desired with current actual professional duties, match of desired with current actual clinical responsibilities, current part-time employment, and expected age of retirement <65 years of age.

**RESULTS:** Data from 5100 subspecialists were analyzed (response rate 87.2%). Most (83%;  $N = 4251$ ) reported their current allocation of professional time was what they desired in their current position; similarly, 93% ( $N = 4755$ ) reported likewise for clinical responsibilities. Differences by gender and years in subspecialty were evident, with women much more likely to work part time than men (odds ratio 6.22); those >20 years in practice were less likely to retire before the age of 65 compared with those <10 years in practice (odds ratio 0.33).

**CONCLUSIONS:** This study is the largest to date of practicing pediatric subspecialists. Variation in work patterns found between genders, with time in practice, and between subspecialties suggests that future research should focus on these issues.

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**WHAT'S KNOWN ON THIS SUBJECT:** Assessments of the pediatric subspecialty workforce have raised concerns about shortages and oversupply, irregular geographic distributions affecting patient access, disconnects between positions and desired clinical duties, and attrition based on working environment. Gaps in understanding of these issues remain.

**WHAT THIS STUDY ADDS:** This study provides unique information on the largest sample to date of pediatric subspecialists. A majority have positions aligned with desired duties. Generational differences exist regarding position fit, access to part-time work, and retirement plans. Private practice employment is growing.

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Ensuring an adequate pediatric subspecialty workforce has been a long-standing focus in the United States.<sup>1</sup> Concern exists that there may be shortages in some pediatric subspecialties and that geographic maldistribution of subspecialists may affect access to care.<sup>2,3</sup> Others have postulated that there is a problem with the pipeline of pediatric subspecialists because of a scarcity of attractive employment positions in terms of professional responsibilities or clinical duties.<sup>4,5</sup> An additional fear is that the current working environment for doctors in general, and pediatric subspecialists in particular, is resulting in marked attrition or potentially early retirement.<sup>6-9</sup> Although there have been previous studies of the pediatric subspecialty workforce, significant gaps in our understanding of several issues remain.<sup>8,10-14</sup> Recent concerns have also arisen about a potential oversupply of specific hospital-based subspecialists such as neonatologists.

Some gaps in the literature are caused by the inherent limitations of previous studies of the pediatric subspecialty workforce. For example, limitations in sampling frameworks have included the use of membership rosters for the sampling frame, thus restricting the nature of the sample.<sup>10,15,16</sup> Other weaknesses have included low response rates that constrain the generalizability of the results because of concerns about response bias.<sup>8,17,18</sup>

Another shortcoming is that comprehensive studies of the physician workforce have often grouped together general and subspecialty pediatricians, potentially masking important differences between these groups.<sup>6,8</sup> For example, in contrast to pediatric subspecialists, most general pediatricians work in some type of private or independent practice.<sup>19</sup> Such issues can affect the ability to work part time or to possess an academic appointment. However,

the changing nature of the financial components of the health care system and the increased number of children surviving with chronic illness may be changing the public-private mix of subspecialty care.

Differences in practice patterns across subspecialties are also essential to consider. Two pediatric subspecialties, neonatology and critical care, almost exclusively limit their practice to inpatient care. This limitation may play a role in unique aspects of their workforce, such as part-time employment.

Other differences that may affect the available overall workforce of pediatric subspecialists include trends in gender balance, differences in work patterns between generations, the proportion of international versus American medical graduates, and the overall age distribution of practitioners.

The goal of this project was to improve the understanding of the current pediatric subspecialty workforce by assessing issues potentially affecting the subspecialty pipeline. We also sought to address gaps in the literature by determining the proportion of subspecialists who are currently in positions that match their desire with regard to overall professional responsibilities and clinical duties, current rates of part-time practice, and planned age of retirement. We then aimed to determine whether specific modifiable and nonmodifiable factors such as gender, years since completion of training, academic appointment, inpatient focus of practice, and planned duration of employment in the current position were associated with these issues affecting the workforce.

## **METHODS**

### **Sample**

Generally, training requirements for all of the 14 pediatric subspecialties

for which certification is offered by the American Board of Pediatrics (ABP) include completion of a residency program followed by a 3-year accredited training program specific to the area of subspecialization. Additional pediatric fellowship training programs are affiliated with other specialty boards, including pediatric neurology and pediatric allergy. However, only those associated with the ABP<sup>20</sup> are the focus of this study. All such defined subspecialists are given the opportunity to complete a survey at the time of their enrollment or reenrollment in the Maintenance of Certification (MOC) program.<sup>21</sup> The sample for this study was those who were presented with the survey in 2013 or 2014.

### **Survey Instrument**

In collaboration with the ABP Research Advisory Committee, the research team developed a structured questionnaire designed to be completed in  $\leq 10$  minutes. The survey focused on exploring trends associated with career choice, career paths, time spent in professional activities, and current practice characteristics. Professional activities were defined as direct or consultative clinical care, administration, research, medical education, and quality improvement activities.

### **Data Analysis**

Data from the surveys were transmitted from the ABP to the research team at the Child Health Evaluation and Research Unit in Microsoft Excel format (Microsoft Corporation, Redmond, WA). The Excel files were reviewed for accuracy in terms of survey branching and imported into SAS version 9.4 (SAS Institute, Inc, Cary, NC).

Frequency distributions were calculated for all survey items

for those who self-identified as subspecialists currently in practice. Next, we generated  $\chi^2$  statistics based on crosstabulation frequencies to examine the relationship of the survey items to gender (women versus men), site of medical education as designated by American medical graduate (AMG) versus international medical graduate (IMG), years since completion of training (<10 years vs 10–20 years vs  $\geq 20$  years) and part-time or full-time work status. We also used similar methods to examine the relationship between subspecialties with large inpatient populations (critical care and neonatology) and all other subspecialties in a fashion similar to our previous studies.<sup>22–24</sup> A *P* value <.05 was considered statistically significant.

Four logistic regression models were constructed with the outcome (dependent) variables of pediatric subspecialists reporting whether their allocation of professional time was what they wanted in their current position (versus not what they wanted in their current position), whether their allocation of clinical time was what they wanted in their current position (versus not what they wanted in their current position), current part-time employment (versus full-time employment), and planned age of retirement <65 years (versus  $\geq 65$  years of age). Predictor (independent) variables in the models were our demographic variables along with the variables of planned duration in current position, practice ownership, and academic appointment. Part-time employment was included as an independent variable in the 3 other models because we hypothesized that this variable may be associated with the other outcomes. Similarly, planned age of retirement years was also included as an independent variable in the 3 other models because we hypothesized that this

**TABLE 1** Demographics of Sample (*N* = 5100)

	% ( <i>N</i> )
Gender	
Women	46 (2339)
Medical education	
AMG	73 (3715)
Years since training	
<10 y	11 (564)
$\geq 10$ y but <20 y	38 (1949)
$\geq 20$ y	50 (2557)
Work status	
Part time	10 (533)
Practitioner type	
Neonatal–perinatal or critical care	29 (1462)
All other subspecialties	71 (3638)
Academic appointment	
Full-time academic appointment	47 (2379)
Part-time academic appointment	9 (457)
No academic appointment	26 (1314)
Adjunct, volunteer, or courtesy appointment	19 (950)
Which of the following best describes the ownership of your primary practice?	
University or medical school	44 (2252)
Independent practice or private practice	23 (1195)
Community or non–university affiliated hospital	17 (844)
Federal, state, or local government	4 (222)
Managed care network	4 (179)
Practice type	
Multispecialty group	44 (2235)
Single subspecialty group	33 (1688)
Solo practitioner	5 (245)
General pediatrics group	4 (206)

variable may be associated with the other outcomes.

This project was approved by the Institutional Review Board for the Protection of Human Subjects at the University of Michigan.

## RESULTS

There were 18 824 general pediatricians and subspecialists who registered for MOC in 2013 and 2014. Of these, 1224 used a separate method of registration for MOC that did not permit the opportunity to complete the survey. These 1224 either were permanent certificate holders (*N* = 1103) or served on committees of the ABP (*N* = 121). The remaining 17 600 were eligible to complete the survey.

The response rate was 87.2% (*N* = 15 351). Of those who fully completed the survey (*N* = 14 959), 5100 (34%) self-identified as

practicing pediatric subspecialists and are the foci of analyses.

## Demographic Information

Just under half (46%; *N* = 2339) of the respondents were women, and most (73%; *N* = 3715) were AMGs. Half had completed training  $\geq 20$  years ago. Only 10% (*N* = 533) were currently working part-time. Women were more likely than men to be working part-time (19% vs 3%; *P* < .001), but no differences were seen among those with increasing years since training. A quarter (27%) self-identified as neonatologists or critical care specialists. Approximately half (46%; *N* = 2379) of subspecialists held full-time academic appointments, with another 9% (*N* = 457) holding part-time academic appointments. A plurality (44%; *N* = 2252) were employed by a university or medical school, and 23% (*N* = 1195) were in private practice (Table 1).

## Satisfaction With and Characteristics of Current Position

Table 2 provides information on the characteristics of the subspecialists' current positions. Most respondents (83%;  $N = 4251$ ) reported that their allocation of professional time (eg, clinical, teaching, administration) was what they wanted in their current position, with neonatology or critical care pediatricians more likely to do so than all other subspecialties (87% vs 82%;  $P < .001$ ). An even greater proportion (93%) of all subspecialists reported that their allocation of clinical time (ie, inpatient versus outpatient assignments) approximated what they wanted in their current position. Those who worked full time were more likely than those who worked part time to endorse this position (94% vs 89%;  $P < .001$ ), as were those who were  $\geq 20$  years since training compared with those  $< 10$  years since training (94% vs 91%;  $P < .005$ ). Men were slightly more likely to hold full-time academic appointments than women (49% vs 44%;  $P < .001$ ).

## Work Hours and Duration

The majority of subspecialists (77%;  $N = 3502$ ) did not intend to work part-time at some point during the next 5 years. However, differences existed between women and men in this regard (70% vs 81%;  $P < .001$ ), and between those who were  $\geq 20$  years since training compared with those  $< 10$  years (71% vs 79%;  $P < .001$ ). Those who currently worked part time were less likely to hold academic appointments, as were IMGs. Full-time subspecialists were more likely to plan to be in their current position for  $\geq 5$  years than their part-time counterparts (72% vs 51%;  $P < .001$ ) (Table 3).

## Regression Analyses

Results of 4 regression analyses with the outcome variables of having a job with allocation of professional

time approximately what you wanted in your current position, having a job with allocation of clinical time approximately what you wanted in your current position, currently working part-time, and planned age of retirement  $< 65$  years are presented in Table 4.

## Desired Professional Duties

The odds of neonatologists and critical care subspecialists being more likely to be in positions that matched their desired professional duties was 1.32 times higher than for the other subspecialties combined (odds ratio [OR] 1.32; 95% confidence interval [CI], 1.10–1.58). Several groups were less likely to be in such positions, including those who planned to be in their current job for  $< 5$  years compared with those who planned to be in their current job for  $> 5$  years (OR 0.46; 95% CI, 0.39–0.54), full time versus part time subspecialists (OR 0.63; 95% CI, 0.48–0.82), those not in private practice versus those in private practice (OR 0.74; 95% CI, 0.60–0.92), and women versus men (OR 0.85; 95% CI, 0.73–0.99).

## Desired Clinical Duties

Subspecialists who had been out of training for  $\geq 20$  years were more likely to be in positions that matched their desired clinical duties compared with those  $< 10$  years out of training (OR 1.57; 95% CI, 1.12–2.22). Others with greater odds of being in such positions were those who worked full time versus part time (OR 1.40; 95% CI, 1.02–1.92) and neonatologists or intensivists versus all other specialists combined (OR 1.34; 95% CI, 1.02–1.77). Only those who intended to work  $< 5$  years in their current job versus  $\geq 5$  years (OR 0.44; 95% CI, 0.35–0.55) and those without an academic appointment versus those with an academic appointment (OR 0.73; 95% CI, 0.58–0.94) had lower odds of being in such a position.

## Working Part Time

Several factors were independently associated with subspecialists who work part time. The highest OR for working part time was seen among women versus men (OR 6.22; 95% CI, 4.88–7.93), followed by those whose planned duration in their job was  $< 5$  years versus  $\geq 5$  years (OR 2.27; 95% CI, 1.87–2.77). Other factors significantly associated with working part time were not having an academic appointment versus having an appointment (OR 1.64; 95% CI, 1.33–2.02) and being  $\geq 20$  years since the end of training versus  $< 10$  years (OR 1.51; 95% CI, 1.11–2.05). Factors associated with lower odds of working part time were being an IMG versus AMG (OR 0.41; 95% CI, 0.31–0.54), specializing in neonatology or critical care versus all other specialists combined (OR 0.41; 95% CI, 0.31–0.53), and an expected retirement age of  $\geq 65$  years versus  $< 65$  years (OR 0.67; 95% CI, 0.54–0.82).

## Planned Age of Retirement $< 65$ years

The factors independently associated with a planned age of retirement  $< 65$  years were female versus male gender (OR 1.78; 95% CI, 1.56–2.02), subspecialty of critical care or neonatology versus all other specialists combined (OR 1.38; 95% CI, 1.20–1.59), and not having an academic appointment versus having an appointment (OR 1.41; 95% CI, 1.23–1.62). Factors associated with a lower odds of retirement  $< 65$  years included having more years since the end of training (OR 0.81; 95% CI, 0.67–0.99 for 10 to 20 years since the end of training and OR 0.33; 95% CI, 0.27–0.41 for  $\geq 20$  years vs  $< 10$  years since the end training).

## DISCUSSION

Among the most important findings of our study are that a large majority of pediatric



**TABLE 3** Work Hours and Duration (N = 5100)

	Gender		Medical School		Work Status		Years Since Training			Practitioner Type		
	Total (N = 5100)	Women, 46 (2339)	Men, 54 (2761)	AMG, 73 (3715)	IMG, 27 (1385)	Full-Time, 90 (4567)	Part-Time, 10 (533)	<10 y, 11 (564)	≥10 y but <20 y, 38 (1949)	≥20 y, 50 (2557)	Neonatal- Perinatal or Critical Care, 27 (1462)	All Other Subspecialties, 73 (3638)
	% (N)	% (N)	% (N)	% (N)	% (N)	% (N)	% (N)	% (N)	% (N)	% (N)	% (N)	% (N)
Do you intend to work part-time at some point during the next 5 y?												
Yes, I plan to work exclusively part-time during the next 5 y	2 (103)	2 (41)	2 (62)	2 (70)	3 (53)	2 (103)	—	2 (8)	2 (27)	3 (66)	2 (25)	2 (78)
Yes, I plan to work part-time at some point during the next 5 y	8 (357)	9 (180)	7 (177)	9 (277)	6 (80)	8 (357)	—	6 (30)	4 (67)	11 (253)	8 (116)	8 (241)
No	77 (3502)	70 (1337)	81 (2165)	76 (2468)	78 (1034)	77 (3502)	—	79 (391)	84 (1482)	71 (1619)	76 (1060)	77 (2442)
Unsure	13 (605)	18 (339)	10 (266)	13 (435)	13 (170)	13 (605)	—	13 (65)	10 (184)	15 (350)	13 (186)	13 (419)
									<i>P</i> < .0001			<i>P</i> = .452
What is your planned duration of employment in your current position?												
<1 y	2 (85)	2 (49)	1 (36)	2 (67)	1 (18)	1 (68)	3 (17)	3 (16)	1 (19)	2 (50)	2 (26)	2 (59)
1 y to <5 y	14 (692)	14 (330)	13 (362)	14 (503)	14 (189)	13 (577)	22 (115)	19 (108)	8 (164)	16 (407)	14 (198)	14 (494)
≥5 y	69 (3564)	66 (1550)	73 (2014)	69 (2604)	69 (960)	72 (3293)	51 (271)	62 (347)	76 (1486)	67 (1720)	71 (1050)	68 (2514)
Unsure	15 (759)	18 (410)	13 (349)	15 (541)	16 (218)	14 (629)	24 (130)	16 (93)	14 (280)	15 (380)	13 (188)	16 (571)
									<i>P</i> < .0001			<i>P</i> = .075
At what age do you expect to retire?												
<60 y of age	7 (346)	9 (221)	5 (125)	7 (272)	5 (74)	6 (278)	13 (68)	14 (80)	9 (177)	3 (89)	6 (95)	7 (251)
60–64 y of age	24 (1245)	30 (705)	20 (540)	25 (928)	23 (317)	24 (1076)	32 (169)	32 (180)	31 (596)	18 (469)	26 (384)	24 (861)
65–69 y of age	42 (2141)	40 (926)	43 (1215)	42 (1556)	42 (585)	42 (1952)	35 (189)	36 (205)	38 (740)	47 (1191)	43 (630)	41 (1511)
≥70 y of age	27 (1368)	21 (487)	32 (881)	26 (959)	30 (409)	28 (1261)	20 (107)	18 (99)	22 (436)	32 (808)	24 (353)	28 (1015)
									<i>P</i> < .0001			<i>P</i> = .027

— Subspecialists working part time were not asked if they intend to work part time.

subspecialists are currently in positions that approximate their desired professional and clinical duties. Additionally, we found frequent differences between specialists who are early in their careers (<10 years) and those who are >20 years out since the end of their training. Although there were many similarities, important generational variations between new and veteran subspecialists are evident and should be taken into account when addressing the future pediatric subspecialty workforce. Also, the fact that almost 25% of subspecialists work in private practice is a finding with significant workforce distribution implications. This result is consistent with a trend toward private practice we have found in previous studies.<sup>19</sup>

### Match of Desired With Actual Professional Duties

A large majority of subspecialists (83%) reported that they were in positions where their current allocation of professional time approximated what they desired. Other factors that may affect overall job satisfaction were not measured in this study, including compensation, family leave policies, and other lifestyle issues. However, this finding is important to those considering a subspecialty career and those concerned with the ability to recruit residents into fellowship positions.

Although most subspecialists were in positions matching their desires, full-time subspecialists were less likely to be in such positions, perhaps indicating that part-time clinicians are more able to be selective in how they spend their time or that they are hired for specific duties that match their goals for professional time allocation. Also, those not in private practice were less likely to hold positions approximating their desired allocation of professional

**TABLE 4** Multiple Logistic Regression Models: Adjusted Odds of Outcome Variables from 4 Logistic Regression Analyses

Variable Description	Reference	OR	95% CI	
Regression 1 outcome variable: match of desired with actual professional duties (reference: professional duties not as desired)				
Variable description	Variable versus reference	Adjusted OR	95% CI	
Years since training	≥20 y vs <10 y (reference)	1.14	0.89	1.45
	≥10 y but <20 y vs <10 y (reference)	0.97	0.76	1.24
Planned duration in position	<5 y or unsure versus ≥5 y (reference)	0.46	0.39	0.54
Practice ownership	All other practice types versus independent or private practice (reference)	0.74	0.60	0.92
Work status	Full-time versus part-time (reference)	0.63	0.48	0.82
Medical education	IMG versus AMG (reference)	1.14	0.95	1.36
Gender	Women versus men (reference)	0.85	0.73	0.99
Critical care or neonatal	Critical care or neonatal versus not critical care or neonatal (reference)	1.32	1.10	1.58
Expected retirement age	≥65 y vs <65 y (reference)	1.03	0.87	1.22
Academic appointment	No appointment versus has appointment (reference)	1.08	0.91	1.28
Regression 2 outcome variable: match of desired with actual clinical duties (reference: clinical duties not as desired)				
Variable description	Variable versus reference	Adjusted OR	95% CI	
Years since training	≥20 y vs <10 y (reference)	1.57	1.12	2.22
	≥ 10 y but <20 y vs <10 y (reference)	1.02	0.73	1.42
Planned duration in position	<5 y or unsure versus ≥5 y (reference)	0.44	0.35	0.55
Practice ownership	All other practice types versus independent or private practice (reference)	0.95	0.71	1.27
Work status	Full-time versus part-time (reference)	1.40	1.02	1.92
Medical education	IMG versus AMG (reference)	1.13	0.87	1.47
Gender	Women versus men (reference)	0.81	0.64	1.02
Critical care/Neonatal	Critical care or neonatal versus not critical care/neonatal (reference)	1.34	1.02	1.77
Expected retirement age	≥65 y vs <65 y (reference)	0.90	0.71	1.15
Academic appointment	No appointment vs has appointment (reference)	0.73	0.58	0.94
Regression 3 outcome variable: working part time (reference: not working part time)				
Variable description	Variable versus reference	Adjusted OR	95% CI	
Years since training	≥20 y vs <10 y (reference)	1.51	1.11	2.05
	≥10 y but <20 y vs <10 y (reference)	1.13	0.83	1.54
Planned duration in position	<5 y or unsure vs ≥5 y (reference)	2.27	1.87	2.77
Practice ownership	All other practice types versus independent or private practice (reference)	0.97	0.75	1.24
Medical education	IMG versus AMG (reference)	0.41	0.31	0.54
Gender	Women versus men (reference)	6.22	4.88	7.93
Critical care or Neonatal	Critical care or neonatal versus not critical care or neonatal (reference)	0.41	0.31	0.53
Expected retirement age	≥65 y vs <65 y (reference)	0.67	0.54	0.82
Academic appointment	No appointment versus has appointment (reference)	1.64	1.33	2.02
Regression 4 outcome variable: plan to retire at age <65 y (reference: not planning to retire at age <65 y)				
Variable description	Variable versus reference	Adjusted OR	95% CI	
Years since training	≥20 y vs <10 y (reference)	0.33	0.27	0.41
	≥ 10y but <20 y vs <10 y (reference)	0.81	0.67	0.99
Practice ownership	All other practice types versus independent or private practice (reference)	0.87	0.75	1.03
Actual clinical duties	Clinical duties as desired versus clinical duties not as desired (reference)	0.92	0.72	1.18
Actual professional duties	Professional duties as desired versus professional duties not as desired (reference)	1.09	0.92	1.29
Work status	Full time versus part time (reference)	0.64	0.52	0.78
Medical education	IMG versus AMG (reference)	0.79	0.68	0.91
Gender	Women versus men (reference)	1.78	1.56	2.02
Critical care or neonatal	Critical care or neonatal versus not critical care or neonatal (reference)	1.38	1.20	1.59
Academic appointment	No appointment versus has appointment (reference)	1.41	1.23	1.62

duties. This finding may reflect that, in contrast to private practice, academic positions require balancing a complex constellation of duties (eg, educational mission, publications, academic service) that may not be mandatory in other employment settings. Women were also less likely than men to be in positions that matched their desired professional duties. Additional assessment of

this finding is necessary because the proportion of women in all pediatric subspecialties has increased in recent years.<sup>25</sup>

Neonatologists and critical care subspecialists were more likely to report being in positions that matched their desired professional duties. This finding may be the result of the unique

nature of their positions with regard to the practice of inpatient medicine, mostly in ICUs. Such an environment may lend itself to only the specific types of responsibilities these subspecialists most desire. Their work environment may also be affected more often by the opportunity to work in teams with other health care personnel.<sup>24</sup>

## Match of Desired With Actual Clinical Duties

It is important to note that most (93%) of the subspecialists reported they were in positions for which there was a match between their desired and actual clinical duties. This finding should reassure those concerned that a large proportion of subspecialists are not in roles that support their clinical interests. Yet some subspecialists were more likely to be in such positions than others.<sup>8</sup> Those who were  $\geq 20$  years since the end of their training and those who worked full time were more likely to endorse this perception. This finding may indicate that such subspecialists were able through seniority or other mechanisms to have greater control over their clinical care. In contrast, those without an academic appointment were less likely to report a match between their desired and actual clinical duties. It is possible that those without an academic appointment may be more limited by the current marketplace with regard to their clinical options.

## Working Part Time

In this sample, 1 in 10 pediatric subspecialists worked part time, with women more than 6 times as likely to work part-time as men. In contrast to other reports that younger pediatricians are more likely to work part time, we found that those  $\geq 20$  years since the end of their training were more likely to do so than those who finished training  $< 10$  years previously.<sup>21,26</sup> This finding may suggest that greater flexibility exists with advancement or seniority among subspecialists or that working part time may be a part of a phased retirement plan for some. However, limited availability of part-time work early in a career may be a disincentive for younger pediatricians to pursue a subspecialty career. Those without an academic appointment were also more likely to work part time. Academic centers

may need to increase workplace options and flexibility to maintain the workforce they need to provide patient care, education, and administrative functions.

## Plans for Retirement

Concerns have been expressed about the potential for early retirement among subspecialists exacerbating perceived shortages for some disciplines. These concerns may be linked to anecdotal reports of dissatisfaction with a variety of recent regulatory demands including medical documentation, meaningful use requirements, and MOC requirements. Overall, we found that just 31% of subspecialists plan to retire before age 65. However, those least likely to report plans for early retirement were those closest to traditional retirement ages. Those who were  $> 20$  years since the end of their training were the least likely to report plans for early retirement, and those  $< 10$  years since the end of training were the most likely. This finding suggests the potential presence of a generational impact on retirement planning that may have more to do with changing societal norms and preferences than other factors of hypothesized concern. Future studies should explore the changing generational nature of the perceptions of work and career that may have implications for the subspecialty workforce.

## Comparing the Subspecialty to the General Pediatric Workforce

When comparing the findings of this study with our recent report of the general pediatric workforce, we found several demographic differences between subspecialty and general pediatricians.<sup>22</sup> Women make up a smaller proportion of the subspecialty workforce compared with general pediatricians (46% vs 64%). The subspecialist workforce also may have a higher rate of retirement in the near term because a greater proportion have been out of

training for  $\geq 20$  years (50% vs 32%). This finding of an older subspecialty workforce has implications for both the future availability of clinical services and the potential magnitude for subspecialist research productivity.

A smaller proportion of pediatric subspecialists (10%) work part time compared with general pediatricians (25%). However, it is unclear whether this gap has been narrowing over time. Previous reports have shown a lower proportion of both part-time generalists and subspecialists.<sup>8,26</sup> A much greater proportion of subspecialists (44%) work for universities or medical schools compared with generalists (11%). However, the proportion of subspecialists working outside academic centers appears to be growing when compared with previous studies.<sup>19</sup> It is likely that the increasing number of children surviving with chronic illness is creating financial and practice opportunities in the private sector not previously available.

Although this is a study of a large sample of subspecialty pediatricians and it benefits from a high response rate, there are some limitations regarding its generalizability. The sample consists only of subspecialty pediatricians who registered for MOC. Therefore, our results may not represent those who choose not to maintain certification.

We were also limited by our sample in our ability to provide specialty-specific data for all 14 recognized subspecialties. The comparisons from the grouping of neonatology and critical care versus all other subspecialists are a step in this direction. Over time, as the longitudinal data set of the ABP matures and more robust data become available, future efforts will seek to provide additional granular detail for individual subspecialties. However, the data in this report can



serve as a baseline for those future analyses.

## CONCLUSIONS

This study provides unique information on the largest sample to date of practicing pediatric subspecialists. Understanding the current characteristics of the pediatric subspecialty workforce will help both government and academic policymakers in determining both the availability of the current workforce and planning for its future.

Tracking the trends and changes of subspecialty practice over time will provide information to help meet the needs of children going forward.

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## ABBREVIATIONS

ABP: American Board of Pediatrics  
AMG: American medical graduate  
CI: confidence interval  
IMG: international medical graduate  
MOC: Maintenance of Certification  
OR: odds ratio

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## Current Workforce of Pediatric Subspecialists in the United States

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