

Employment-Seeking Experiences of Resident Physicians Completing Training During 1996

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Context.—Studies analyzing the physician workforce have concluded that the United States is verging on a physician oversupply, yet we lack persuasive evidence that this is resulting in physician underemployment and/or unemployment.

Objective.—To determine the degree to which graduating residents have difficulty finding or are unable to find employment in their primary career choices.

Design.—Two 1-page surveys sent separately to residents and to program directors to collect information on the employment status of residents who were completing a graduate medical education program at the end of the 1995-1996 academic year.

Setting.—A total of 25 067 resident physicians scheduled in the spring of 1996 to complete a residency program accredited by the Accreditation Council on Graduate Medical Education, and 4569 program directors in 31 specialties and subspecialties.

Main Outcome Measure.—Both the graduates' employment status and the degree of difficulty they experienced securing a practice position, as reported by resident physicians and program directors.

Results.—After 6 months of data collection, 12 135 (48.4%) of 25 067 resident physicians responded to the survey. Of the respondents, 11 200 had completed their training, and 7628 (68.1%) were attempting to enter the workforce, 28.4% were seeking additional training, and 3.5% were fulfilling their military obligations. Of the 7628 resident physicians who sought employment, 67.3% obtained clinical practice positions in their specialties, 15.5% took academic positions, 5.0% found clinical positions in other specialties, 5.1% had other plans, and 7.1% did not yet have positions but were actively looking. In addition, 22.4% of resident physicians who found clinical positions reported significant difficulty finding them. The subgroup reporting greater difficulty finding clinical positions included international medical graduates (more than 40%), those completing programs in the Pacific or East North Central region, and those in several specialties. The 1996 graduating residents reported significantly higher rates of difficulty finding suitable employment than program directors reported for their graduates (22.4% vs 6.0%); however, the percentage of graduates reported by both groups as entering the workforce was the same (68.1%). Program directors reported an unemployment rate of only 1.2%, for their 1996 graduates, which was less than the rate reported by the resident physicians (7.1%).

Conclusions.—Resident physicians' direct reports of their employment-seeking experiences differ from what program directors report. Program directors accurately determined the number of residents pursuing further training; however, they did not have complete information about the employment difficulties experienced by their graduates. Based on graduates' reports, we conclude that employment difficulties are greatest among international medical graduates and vary by specialty and geographic region.

THERE IS a consensus within the medical profession that the country is on the verge of a serious oversupply of physicians. This consensus has been forged largely by the results of analytic studies strongly suggesting that by the end of the century the size of the physician workforce will exceed requirements.¹⁻⁷ However, without persuasive evidence that market forces are producing physician underemployment and/or unemployment, health economists challenge the validity of the conclusions reached from the analytic studies.⁸

For editorial comment see p 822.

To gain insight into the impact of the evolving medical market on physician practice opportunities, we have conducted for the past 3 years annual surveys of directors of graduate medical education (GME) programs to learn about the career choices made by the resident physicians who completed their programs in 1994, 1995, and 1996. Program directors also provided their perceptions about the difficulty these residents experienced in finding practice positions. The results of the first 2 surveys showed consistent findings and suggested that practice opportunities were limited in some specialties and in certain regions of the country.^{9,10}

We recognized after our previous surveys of program directors that their data collection methods to track program

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graduates were not always systematic or complete. Therefore, we surveyed 1996 residency program graduates to learn directly about their experiences in seeking professional positions. From prior survey experience, we knew that a survey of residents would likely yield a limited response rate. Nonetheless, we believed surveying residents directly was a necessary next step for gaining additional insight into the impact of the market on professional opportunities for physicians. In this article, we report the results of this survey and compare the responses provided by program graduates with those of program directors.

METHODS

Data Collection

A 1-page survey instrument was mailed in May 1996 to 25 067 resident physicians scheduled to complete an Accreditation Council on Graduate Medical Education–accredited residency program in 1 of 31 specialties and subspecialties that, according to American Medical Association (AMA) records, account for approximately 91% of all resident physicians in training. Follow-up mailings of the survey instrument occurred in June and August 1996. Responses returned by mid November 1996 were included in the data analysis.

The survey instrument first asked each resident physician to verify that he or she would complete or had completed the GME program indicated by the AMA database. Residents who verified that they were completing a program were asked to provide information about their confirmed plans for the upcoming year. Resident physicians were asked to indicate whether they were going to take an extra year of training as chief resident, enter another training program, enter the military, enter an academic position in their specialty or subspecialty, enter clinical practice in their specialty or subspecialty, enter clinical practice in another specialty or subspecialty, pursue other interests, or continue to look for a professional position if currently unemployed (unable to secure a position at the time of survey completion).

Residents who indicated they were entering clinical practice in their specialties or subspecialties were asked to provide some information about the position they obtained. Specifically, they were asked whether the position was part-time (<30 hours), with a closed-panel health maintenance organization, with a group practice (at least 3 physicians), located in a town with a population less than 50 000, and located in a state different from the one in which they trained. They also were asked if they had received more than 1

job offer, if the position they accepted was their first choice, if the position was in the location of their first choice, and if the salary they were to receive met their expectations. Lastly, they were asked whether they experienced significant difficulty finding practice positions compatible with their primary career choices.

In January 1997, a 1-page survey instrument^{9,10} was sent to 4569 residency program directors in the same 31 specialties and subspecialties as the residents who were surveyed to gain their views about the employment experiences of their 1996 graduates. Follow-up mailings were sent in March and May 1997. Responses received by June 15, 1997, were included in the data analysis.

Data Analysis

To assess whether a response bias might affect the interpretation of the survey results, the demographic information (sex, race/ethnicity, type of medical school attended, and region of the country) of respondents and nonrespondents was compared. We obtained these demographic data for the entire survey population from the AMA GME database.

In the analysis of results, we used χ^2 tests to determine the extent to which each of the demographic factors was independently associated ($P<.05$) with both difficulty experienced finding a professional position and with unemployment. Factors that were shown by univariate analysis to be associated with difficulty finding suitable employment were entered into a logistic regression model for multivariate analysis.

RESULTS

Of the 25 067 resident physicians who were mailed survey instruments, 12 135 (48.4%) had responded by mid November 1996 (Table 1). The response rates varied by specialty or subspecialty, ranging from 35.5% in general surgery and hematology to 64.4% in dermatology. We first tested for significant overall differences between groups with regard to sex, race/ethnicity, and type of medical school attended. In the aggregate, males, international medical graduates (IMGs), and underrepresented minorities (blacks, Native Americans, or Hispanics) were less likely to respond to the survey ($P<.001$). However, analysis of specialty-specific data indicated that some demographic differences existed among respondents and nonrespondents only for the specialties of family practice, emergency medicine, internal medicine, and pediatrics.

Of the 12 135 respondents, 11 200 (92.3%) indicated they had completed all of the training required for the program in which they were enrolled. Of these,

7628 (68.1%) attempted to enter the professional workforce, 3179 (28.4%) pursued additional training, and 393 (3.5%) entered active military service. Of special note, 268 (8.4%) of the residents who pursued additional training indicated that they did so because they felt there were insufficient employment opportunities available in their specialties. The percentage of graduating residents pursuing additional training because they thought that job opportunities were lacking was highest among graduates in the hospital-based specialties and lowest among graduates in surgery, psychiatry, and all the generalist specialties.

Table 2 shows by specialty and subspecialty the employment status of residents who wished to enter the professional workforce. Most of the resident physicians obtained clinical practice positions in their specialties or subspecialties (67.3%). Of the remaining, 15.5% took academic positions, 5.1% had other plans, and 5.0% were working in other specialties. Importantly, 7.1% of all graduates who wished to enter practice reported they had not found professional positions by the time they had completed the survey. Even if all of the nonrespondents likely to enter the workforce found jobs, the unemployment rate would be approximately 3.3%. International medical graduates (14.2%), underrepresented minorities (10.7%), and women (7.9%) reported higher rates of unemployment, respectively, than did US medical graduates (USMGs) (4.8%), nonminorities (6.7%), and men (6.6%; $P<.05$).

Among the 31 specialties, the percentage of graduates who did not have a position was greatest in hematology (19.0%), pathology (14.7%), geriatric medicine (14.3%), oncology (12.5%), ophthalmology (11.6%), and general internal medicine (11.1%). The unemployment rate was less than 5% in 8 of the 31 specialties. As might be expected, the overall unemployment rate reported by respondents decreased as the time since completion of residency increased; however, this was not the case within each specialty. The only specialties showing a significant decrease in unemployment over time were anesthesiology, internal medicine, and pathology ($P<.05$). The unemployment rate for graduates who responded during the first third of the survey cycle was 8.4%, but was 4.5% for graduates responding during the last third of the survey cycle ($P<.001$).

Of those entering clinical practice, 72.2% joined a group practice and 8.4% joined a closed-panel health maintenance organization. About 34% of the graduates took practice positions in small towns, and 46.3% left the states in which they completed their training.

Table 1.—Number of Resident Physicians Reporting That They Completed Training in 1996 and Were Seeking Employment

| Specialty and Subspecialty* | No. of Residents Completing Training | No. (%) of Residents Pursuing Additional Training | No. (%) of Residents Potentially Entering the Workforce† |
|--|--------------------------------------|---|--|
| Core specialties | | | |
| Family practice (n = 1405; 51.0%) | 1291 | 62 (4.8) | 1153 (89.3) |
| Internal medicine (n = 2858; 47.6%) | 2720 | 1091 (40.1) | 1590 (58.4) |
| Pediatrics (n = 1274; 53.0%) | 1200 | 357 (29.8) | 818 (68.2) |
| Obstetrics and gynecology (n = 691; 55.2%) | 669 | 50 (7.5) | 579 (86.5) |
| Surgery-general (n = 574; 35.5%) | 443 | 213 (48.1) | 210 (47.4) |
| Psychiatry (n = 477; 42.2%) | 410 | 116 (28.3) | 288 (70.2) |
| Hospital-based specialties | | | |
| Anesthesiology (n = 832; 50.5%) | 753 | 175 (23.2) | 547 (72.6) |
| Radiology-diagnostic (n = 431; 42.2%) | 402 | 256 (63.7) | 119 (29.6) |
| Pathology—atomic and clinical (n = 280; 50.7%) | 223 | 107 (48.0) | 109 (48.9) |
| Physical medicine and rehabilitation (n = 176; 50.7%) | 166 | 19 (11.4) | 146 (87.0) |
| Emergency medicine (n = 399; 48.3%) | 382 | 17 (4.5) | 343 (89.8) |
| Surgical subspecialties | | | |
| Ophthalmology (n = 275; 52.7%) | 253 | 106 (41.9) | 129 (51.0) |
| Orthopaedic surgery (n = 334; 53.3%) | 318 | 193 (60.7) | 104 (32.7) |
| Otolaryngology (n = 165; 57.1%) | 157 | 47 (29.9) | 97 (61.8) |
| Plastic surgery (n = 129; 62.0%) | 126 | 37 (29.4) | 87 (69.0) |
| Urology (n = 141; 54.9%) | 136 | 20 (14.7) | 105 (77.2) |
| Internal medicine subspecialties | | | |
| Cardiovascular disease (n = 329; 42.9%) | 307 | 54 (17.6) | 246 (80.1) |
| Critical care medicine (n = 32; 36.0%) | 29 | 4 (13.8) | 25 (86.2) |
| Endocrinology, diabetes, and metabolism (n = 80; 52.6%) | 71 | 11 (15.5) | 60 (84.5) |
| Gastroenterology (n = 188; 49.6%) | 176 | 18 (10.2) | 156 (88.6) |
| Geriatric medicine (n = 36; 43.9%) | 30 | 2 (6.7) | 28 (93.3) |
| Hematology (n = 22; 35.5%) | 21 | 0 (0.0) | 21 (100.0) |
| Hematology and oncology (n = 83; 41.3%) | 76 | 7 (9.2) | 67 (88.2) |
| Infectious disease (n = 115; 43.9%) | 101 | 12 (11.9) | 87 (86.1) |
| Nephrology (n = 94; 42.0%) | 87 | 8 (9.2) | 76 (87.4) |
| Oncology (n = 49; 40.5%) | 44 | 4 (9.1) | 40 (90.9) |
| Pulmonary disease (n = 75; 49.3%) | 67 | 18 (26.9) | 49 (73.1) |
| Pulmonary disease and critical care medicine (n = 96; 41.2%) | 87 | 8 (9.2) | 78 (89.6) |
| Rheumatology (n = 59; 50.9%) | 49 | 3 (6.1) | 44 (89.8) |
| Other specialties | | | |
| Dermatology (n = 192; 64.4%) | 185 | 24 (13.0) | 150 (81.1) |
| Neurology (n = 244; 51.8%) | 221 | 140 (63.3) | 77 (34.8) |
| Total (N = 12 135; 48.4%) | 11 200 | 3179 (28.4) | 7628 (68.1) |

*Number of residents responding to the survey and the corresponding response rate.

†Total number of resident physicians completing training minus the number going on to further training and minus those fulfilling military obligations; 393 residents entered the military.

Graduates of geriatric medicine, psychiatry, and family practice were the least likely to move to another state (33.3%, 35.5%, and 36.2%, respectively). For those residents who have secured clinical positions in their own specialties, 5.7% were working part-time. Graduates in dermatology (23.6%), psychiatry (18.5%), and pathology (15.6%) reported working part-time most often. Female physicians reported working part-time more than males (11.2% vs 2.5%; $P < .001$). Our data do not allow us to determine if part-time work was by choice or necessity.

Table 3 provides some insight into the difficulty that graduates experienced finding a practice position. For those resident physicians who found clinical positions in their specialties, 22.4% indicated they had experienced significant difficulty finding positions compatible with their career goals; the degree of dif-

ficulty reported by respondents did not decrease during the 6-month reporting period. Male physicians (25.5%) reported experiencing difficulty more than did female physicians (17.2%; $P < .001$), despite female physicians reporting greater unemployment. More than 40% of IMGs reported having significant difficulty finding a suitable position ($P < .001$), and IMGs are most often in the specialties with residents reporting the greatest degree of difficulty finding positions. Underrepresented minorities, regardless of medical school attended, did not report experiencing any more difficulty finding jobs than did nonminorities ($P = .24$). Again, if none of the nonrespondents who were likely to take practice positions experienced difficulty securing their jobs, the overall difficulty rate would still be about 10.1%.

Most respondents (75.8%) indicated that they were practicing in the location

of their choices; however, this varied by specialty, with graduates in pathology (53.8%), infectious disease (54.3%), physical medicine and rehabilitation (57.3%), and anesthesiology (58.4%) less likely to find employment in their most preferred locations. In addition, salary was lower than expected for 22.2% of the responding resident physicians. About 13% of graduates received only a single job offer upon employment. Graduates in pathology (49.2%), radiology (31.4%), plastic surgery (28.8%), infectious disease (28.6%), and anesthesiology (27.8%) were the most likely to receive a single offer. Male and female physicians did not differ in the number of offers received ($P = .38$); IMGs (17.1%) were more likely than USMGs to receive only a single offer ($P < .001$).

The factors associated with reported difficulty finding a practice position in the univariate analysis were subject to

Table 2.—Career Status Reported by Resident Physicians Completing Training in 1996 and Entering the Workforce

| Specialty and Subspecialty* | Residents Entering US Clinical Practice Within Specialty, % | Residents Entering US Academic Positions, % | Residents With Other Plans, %† | Residents Entering US Clinical Practice in Another Specialty, % | Residents Unemployed at the Time of Survey, %‡ |
|---|---|---|--------------------------------|---|--|
| Core specialties | | | | | |
| Family practice (n = 1153) | 74.6 | 8.8 | 4.9 | 6.8 | 4.9 |
| Internal medicine (n = 1590) | 62.5 | 15.4 | 4.7 | 6.4 | 11.1 |
| Pediatrics (n = 818) | 69.3 | 11.1 | 6.5 | 3.8 | 9.3 |
| Obstetrics and gynecology (n = 579) | 80.0 | 13.8 | 1.6 | 2.6 | 2.1 |
| Surgery-general (n = 210) | 69.0 | 12.4 | 10.0 | 2.4 | 6.2 |
| Psychiatry (n = 288) | 59.0 | 21.5 | 9.4 | 4.9 | 5.2 |
| Hospital-based specialties | | | | | |
| Anesthesiology (n = 547) | 60.5 | 23.0 | 4.4 | 4.8 | 7.3 |
| Radiology-diagnostic (n = 119) | 72.3 | 16.0 | 2.5 | 2.5 | 6.7 |
| Pathology—atomic and clinical (n = 109) | 59.6 | 13.8 | 11.0 | 0.9 | 14.7 |
| Physical medicine and rehabilitation (n = 146) | 67.8 | 15.8 | 5.5 | 3.4 | 7.5 |
| Emergency medicine (n = 343) | 65.0 | 27.4 | 1.2 | 5.0 | 1.5 |
| Surgical subspecialties | | | | | |
| Ophthalmology (n = 129) | 72.9 | 7.0 | 6.2 | 2.3 | 11.6 |
| Orthopaedic surgery (n = 104) | 77.9 | 9.6 | 7.7 | 3.8 | 1.0 |
| Otolaryngology (n = 97) | 73.2 | 13.4 | 7.2 | 4.1 | 2.1 |
| Plastic surgery (n = 87) | 75.9 | 9.2 | 3.4 | 2.3 | 9.2 |
| Urology (n = 105) | 82.9 | 5.7 | 3.8 | 3.8 | 3.8 |
| Internal medicine subspecialties | | | | | |
| Cardiovascular disease (n = 246) | 70.3 | 17.1 | 2.8 | 4.1 | 5.7 |
| Critical care medicine (n = 25) | 48.0 | 20.0 | 20.0 | 4.0 | 8.0 |
| Endocrinology, diabetes, and metabolism (n = 60) | 58.3 | 16.7 | 11.7 | 6.7 | 6.7 |
| Gastroenterology (n = 156) | 65.4 | 19.2 | 3.2 | 5.8 | 6.4 |
| Geriatric medicine (n = 28) | 32.1 | 39.3 | 7.1 | 7.1 | 14.3 |
| Hematology (n = 21) | 38.1 | 23.8 | 9.5 | 9.5 | 19.0 |
| Hematology and oncology (n = 67) | 37.3 | 38.8 | 7.5 | 10.4 | 6.0 |
| Infectious disease (n = 87) | 40.2 | 26.4 | 11.5 | 11.5 | 10.3 |
| Nephrology (n = 76) | 59.2 | 19.7 | 10.5 | 2.6 | 7.9 |
| Oncology (n = 40) | 55.0 | 25.0 | 2.5 | 5.0 | 12.5 |
| Pulmonary disease (n = 49) | 57.1 | 30.6 | 2.0 | 4.1 | 6.1 |
| Pulmonary disease and critical care medicine (n = 78) | 70.5 | 19.2 | 3.8 | 5.1 | 1.3 |
| Rheumatology (n = 44) | 54.5 | 20.5 | 6.8 | 11.4 | 6.8 |
| Other specialties | | | | | |
| Dermatology (n = 150) | 73.3 | 16.0 | 3.3 | 2.7 | 4.7 |
| Neurology (n = 77) | 59.7 | 16.9 | 10.4 | 6.5 | 6.5 |
| Total (N = 7628) | 67.3 | 15.5 | 5.2 | 5.0 | 7.1 |

*Number of residents who were entering the workforce.

†Includes nonmedical interests, family leave, leaving the country, and unknown status.

‡The overall unemployment rate decreased over the 6-month reporting period but not necessarily with each specialty/subspecialty.

logistic regression analysis to determine multivariate predictors of difficulty finding a practice position (Table 4). This analysis revealed that a resident was more likely to experience difficulty finding a practice position if he or she were an IMG, completing a program in the Pacific or East North Central regions of the country, or had graduated from a residency program in anesthesiology, gastroenterology, infectious disease, pulmonary disease and critical care medicine, ophthalmology, pathology, plastic surgery, or radiology. On the other hand, graduates from the core specialties (of family practice, pediatrics, internal medicine, obstetrics and gynecology, and psychiatry), as well as graduates of emergency medicine, were not as likely to experience employment difficulty. The region of the country where residents were less likely to experience

employment difficulty was the West South Central.

A comparison of the data reported by resident physicians and program directors was conducted and revealed several interesting findings (Table 5). A total of 3720 program directors (81.4%) reported complete information on 19 833 residents graduating in 1996, a response rate that was substantially higher than the 48.4% resident physicians rate. However, both groups reported the same percentage of graduates entering the professional workforce (68.1%) and virtually the same percentage of residents entering academic positions (15.5% vs 16.0%). Both groups also reported a similar percentage of graduates pursuing additional training within each specialty.

Despite these similarities, the percentage of resident physicians reporting significant difficulty securing practice

positions was almost 4 times higher than the percentage reported by program directors. Although the overall degree of difficulty reported by program directors and residents was quite different, both groups of respondents indicated that graduates in the specialties of pathology, plastic surgery, ophthalmology, gastroenterology, and radiology experienced the most difficulty. Only the 1996 graduates reported difficulty finding employment in anesthesiology and the internal medicine subspecialties. The percentage of residents who reported being unemployed also was much higher than the rate reported by program directors (7.1% vs 1.2%). Even if all the nonresponding resident physicians were employed and did not experience difficulty finding a practice position, the percentage of unemployment and difficulty experienced by resident physicians (ap-

Table 3.—Indicators of the Impact of the Market on Professional Opportunities*

| Specialty and Subspecialty | Residents Reporting Significant Difficulty Finding a Practice Position, % | Residents Receiving Only 1 Job Offer, % | Residents Reporting Position Was Not First Choice, % | Residents Reporting Location Was Not First Choice, % | Residents Reporting Salary Lower Than Expected, % |
|---|---|---|--|--|---|
| Core specialties | | | | | |
| Family practice (n = 860) | 6.6 | 4.4 | 7.5 | 12.7 | 11.2 |
| Internal medicine (n = 994) | 22.7 | 12.4 | 11.4 | 21.7 | 20.9 |
| Pediatrics (n = 567) | 17.0 | 15.0 | 9.2 | 16.8 | 18.2 |
| Obstetrics and gynecology (n = 463) | 11.4 | 5.0 | 8.0 | 21.9 | 18.6 |
| Surgery-general (n = 145) | 24.1 | 23.1 | 14.1 | 27.9 | 29.3 |
| Psychiatry (n = 170) | 15.4 | 7.2 | 15.8 | 25.9 | 29.2 |
| Hospital-based specialties | | | | | |
| Anesthesiology (n = 331) | 48.6 | 27.8 | 23.1 | 41.6 | 34.7 |
| Radiology-diagnostic (n = 86) | 43.5 | 31.4 | 22.4 | 39.5 | 31.0 |
| Pathology—atomic and clinical (n = 65) | 50.8 | 49.2 | 15.4 | 46.2 | 23.1 |
| Physical medicine and rehabilitation (n = 99) | 33.0 | 17.3 | 14.4 | 42.7 | 26.8 |
| Emergency medicine (n = 223) | 15.1 | 5.4 | 13.2 | 24.5 | 20.0 |
| Surgical subspecialties | | | | | |
| Ophthalmology (n = 94) | 41.3 | 16.1 | 16.5 | 37.6 | 38.7 |
| Orthopaedic surgery (n = 81) | 17.5 | 6.3 | 7.5 | 16.5 | 19.8 |
| Otolaryngology (n = 71) | 24.6 | 8.6 | 8.6 | 37.1 | 30.0 |
| Plastic surgery (n = 66) | 44.6 | 28.8 | 10.6 | 31.8 | 41.9 |
| Urology (n = 87) | 15.1 | 8.0 | 6.9 | 20.7 | 27.6 |
| Internal medicine subspecialties | | | | | |
| Cardiovascular disease (n = 173) | 29.9 | 7.6 | 10.0 | 29.2 | 21.8 |
| Critical care medicine (n = 12) | 45.5 | 8.3 | 8.3 | 33.3 | 25.0 |
| Endocrinology, diabetes, and metabolism (n = 35) | 32.3 | 14.7 | 21.3 | 27.3 | 36.4 |
| Gastroenterology (n = 102) | 43.9 | 16.7 | 16.3 | 37.5 | 33.0 |
| Geriatric medicine (n = 9) | 25.0 | 0.0 | 44.4 | 14.3 | 44.0 |
| Hematology (n = 8) | 25.0 | 25.0 | 12.5 | 37.5 | 25.0 |
| Hematology and oncology (n = 25) | 24.0 | 12.0 | 12.0 | 24.0 | 20.0 |
| Infectious disease (n = 35) | 52.9 | 28.6 | 17.8 | 45.7 | 35.3 |
| Nephrology (n = 45) | 30.2 | 6.7 | 28.6 | 33.3 | 26.7 |
| Oncology (n = 22) | 38.1 | 19.0 | 22.2 | 42.1 | 19.0 |
| Pulmonary disease (n = 28) | 40.7 | 14.8 | 21.2 | 29.6 | 33.3 |
| Pulmonary disease and critical care medicine (n = 55) | 56.0 | 11.8 | 28.6 | 38.5 | 46.2 |
| Rheumatology (n = 24) | 34.8 | 17.4 | 17.4 | 26.1 | 34.8 |
| Other specialties | | | | | |
| Dermatology (n = 110) | 16.8 | 13.2 | 7.4 | 19.4 | 20.8 |
| Neurology (n = 46) | 28.9 | 15.9 | 15.9 | 27.3 | 25.6 |
| Total (N = 5131) | 22.4 | 12.5 | 12.0 | 24.2 | 22.2 |

*Based on the number of resident physicians who entered a clinical position in their specialties/subspecialties; however, the denominator varies slightly because not all residents answered each question.

proximately 3.3% and 10.1%) would still be higher than the percentages reported by program directors (1.2% and 6.0%).

COMMENT

The results of our previous surveys of residency program directors provided important information about the career choices made by graduates of residency programs and suggested that market forces were limiting practice opportunities for graduates in some specialties and in some regions of the country. Based on previous research, we now believe program directors generally do not systematically collect complete information from their graduates about their experiences in seeking practice opportunities; therefore, the usefulness of the program directors' responses is open to question. Twenty program directors

were contacted at random to inquire about the methods they used to track program graduates. These program directors reported that they rely on word of mouth and contact initiated by their graduates to update their graduate records. In addition, some programs gathered information from their program graduates with an exit survey administered during the last few months of residency, and others used the alumni association for updated information. If these methods of data gathering are frequently used, program directors could underestimate the difficulty their graduates experienced finding a practice position and the percentage who were unemployed. Although program directors reported consistent information over the last 3 years, it may not be the most up-to-date or detailed information. The sur-

vey work described in this article was designed to provide insight into this issue by collecting information about the experience of 1996 program graduates both from those completing a program and from their program directors.

Interpretation of the results described in this article is limited by 2 major methodological factors. First, less than 50% of the program graduates responded to the survey. In contrast, more than 80% of the program directors responded to the survey. There were slightly more than 11 000 responses from program graduates, but program directors reported on more than 19 000 graduates. The differences in the response rates and the number of graduates could account for the overall discrepancies between the program graduates and program directors survey results, de-

Table 4.—Predictors of Significant Employment Difficulty Experienced While Securing a Practice Position*

| Significant Predictors | P Value | Adjusted Odds Ratio (95% CI) |
|--|---------|------------------------------|
| International medical graduate | <.001 | 4.1 (3.4-5.0) |
| Specialties | | |
| Anesthesiology | <.001 | 2.9 (2.3-3.8) |
| Emergency medicine | <.001 | 0.6 (0.4-0.8) |
| Family practice | <.001 | 0.2 (0.1-0.3) |
| Internal medicine | <.001 | 0.5 (0.4-0.6) |
| Gastroenterology | .008 | 1.8 (1.2-2.8) |
| Infectious disease | .04 | 2.1 (1.0-4.3) |
| Pulmonary disease and critical care medicine | <.001 | 2.9 (1.6-5.2) |
| Obstetrics and gynecology | <.001 | 0.4 (0.3-0.6) |
| Ophthalmology | <.001 | 2.5 (1.6-3.9) |
| Pathology | <.001 | 3.4 (2.1-5.7) |
| Pediatrics | <.001 | 0.5 (0.3-0.6) |
| Plastic surgery | <.001 | 2.9 (1.7-4.8) |
| Psychiatry | <.001 | 0.4 (0.2-0.6) |
| Radiology | <.001 | 2.9 (1.9-4.6) |
| Region | | |
| East North Central† | <.003 | 1.3 (1.1-1.6) |
| West South Central‡ | <.001 | 0.6 (0.5-0.8) |
| Pacific§ | <.001 | 1.8 (1.4-2.2) |

*The model correctly classifies 77.7% of the resident physicians. CI indicates confidence interval.

†This region includes Illinois, Indiana, Michigan, Ohio, and Wisconsin.

‡This region includes Arkansas, Louisiana, Oklahoma, and Texas.

§This region includes Alaska, California, Hawaii, Nevada, Oregon, and Washington.

Table 5.—Comparison of the Employment Status of 1996 Graduates Reported by Resident Physicians and Program Directors

| | % Reported by Resident Physicians | % Reported by Program Directors |
|--|-----------------------------------|---------------------------------|
| Response information | | |
| Surveys returned | 48.4 | 81.4 |
| Residents going into another training program | 28.4 | 30.3 |
| Residents entering the workforce* | 68.1 | 68.1 |
| Employment status | | |
| Practice in specialty/subspecialty | 67.3 | 79.1 |
| Nonmedical or other plans | 5.1 | 2.5 |
| Academic position | 15.5 | 16.0 |
| Practice in another specialty/subspecialty | 5.0 | 1.2 |
| Unemployed | 7.1 | 1.2 |
| Employment difficulty | | |
| Residents experiencing significant difficulty securing a practice position | 22.4 | 6.0 |

*Excludes resident physicians entering the military.

pending on the degree to which the experiences of the 2 populations are not comparable or representative of all program graduates. We did not attempt to address this issue using standard post-survey follow-up methods because of the difficulty in contacting nonrespondents. However, it is noteworthy that both groups reported a similar percentage of residents entering the workforce even within specialty or subspecialty and a similar percentage of residents taking a professional academic position. And even if the resident physicians who did not respond were all employed or had experienced no difficulty, the unemployment and difficulty rates would be higher than the rates reported by program directors.

Second, the surveys of the program graduates and the program directors were not conducted simultaneously. The

first wave of surveys was sent to potential program graduates in May 1996 in an effort to establish contact with them before they left the programs in which they were enrolled. In contrast, the first wave of surveys was sent to program directors in January 1997 to maintain the survey schedule used in our prior surveys. It is conceivable that discrepancies between the responses of program graduates and program directors could be due to the different time frame in which each group was surveyed and had responded.

However, the differences in the timing of the surveys is not the likely explanation for the survey result differences. It is counterintuitive to believe that program directors who do not systematically collect information from their residents about their experiences in seeking professional positions would be more ac-

curate and up-to-date than the residents themselves. Similarly, since program graduates clearly would prefer to be employed at the time they completed their residencies, there is no reason to believe that the graduates' perceptions about the degree of difficulty experienced in finding a position would decline over time. In fact, the percentage of employed respondents who experienced difficulty did not decrease from the first mailing to the second follow-up mailing.

Given these limitations and caveats, the results of the survey work provide several interesting observations. First, the results of the resident survey tend to corroborate the findings of the program director survey with regard to the career choices pursued by program graduates and the positions obtained by those entering clinical practice. Both program graduates and directors reported that about two thirds of the residents finishing a training program wished to begin their professional careers rather than pursue additional training. The similarity in proportions was true not only in the aggregate but also on a specialty and subspecialty basis.

Second, in contrast to data reported by program directors, graduates who entered clinical practice reported greater difficulty in finding a position consistent with their career goals. In some specialties and subspecialties, more than 40% of the graduates fell into this category, and both groups reported similar specialties as experiencing the most difficulty. Given the magnitude of the difference (22.4% vs 6.0%) between the responses of the graduates and the program directors, there is little doubt that the program directors underestimated the degree of difficulty experienced by the graduates. These differences would still exist even if differential bias in response rates existed. If one assumes that the graduates who did not respond to the survey experienced no difficulty finding a practice position, the percentage of the residents who experienced difficulty would still exceed the percentage reported by program directors. This could also indicate that the perceived meaning of "significant difficulty" was different for the 2 groups.

Third, consistent with the observation noted in the previous paragraph, a much higher percentage of the graduates who wished to enter clinical practice reported that they were unemployed than was reported by program directors. Once again, the magnitude of the difference in the responses of the program graduates and the program directors suggests quite strongly that the program directors underestimated the degree to which their graduates had been

able to find full-time employment in the specialties of their training. This would be the case even if all nonresponding resident physicians were employed.

Finally, a comparison of the responses of general internal medicine program graduates and program directors in general internal medicine is particularly revealing. About 11% of the program graduates reported that they were unemployed at the time of the survey (during a 6-month period following residency). In contrast, program directors reported that 1.3% of their graduates were unemployed. Assuming that all of the nonrespondents were practicing full-time general internal medicine, the program directors' response still would underestimate the percentage of unemployed graduates. However, two thirds of the unemployed internists were IMGs. These results are particularly noteworthy, since they suggest market forces may be limiting opportunities for newly trained general internists.

Another observation drawn solely from the results of the resident physi-

cian survey that deserves attention is that a much higher percentage of graduates from non-US medical schools than graduates of US medical schools reported being unemployed, and of those who were employed, more IMGs reported having difficulty in finding suitable practice positions than US graduates. Although the differences are potentially subject to some degree of response bias (a slightly smaller percentage of IMGs than USMGs responded to the survey), the magnitude of the reported differences strongly suggests that the observation probably reflects real circumstances. Rather than reflecting the impact of market forces on employment opportunities for IMGs, the reported unemployment and difficulty experienced in finding a practice position could be due to other factors such as a delay or failure to get J-1 visa waivers.

In summary, this article provides additional information on the career choices of recent residency program graduates and on the challenges they faced in finding a professional position compatible

with their career goals. Most importantly, the results suggest that program directors are likely to underestimate the degree to which these challenges affect their graduates. There is no reason to believe that program directors intentionally underreport the problems experienced by their graduates. Rather, it seems likely that the discrepancies between responses of graduates and program directors show that program directors do not systematically collect complete information from their graduates on their employment status. Despite the methodological limitations of this study, the results suggest that efforts to monitor accurately the changing impact of market forces on professional opportunities for residency program graduates must be based on the experiences reported directly by those graduates.

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References

1. Institute of Medicine. *The Nation's Physician Workforce: Options for Balancing Supply Requirements*. Washington, DC: National Academy Press; 1996.
2. Pew Health Professions Commission. *Critical Challenges: Revitalizing the Health Professions for the Twenty-first Century*. San Francisco: University of California, San Francisco, Center for the Health Professions; 1995.
3. Council on Graduate Medical Education. *Fourth Report: Recommendations to Improve Access to Health Care Through Physician Workforce Reform*.

Rockville, Md: US Dept of Health and Human Services; 1994.

4. Bureau of Health Professions. *Seventh Report to the President and Congress on the Status of Health Personnel in the United States*. Washington, DC: National Academy Press; 1996.
5. Ginsburg JA. The physician workforce and financing of graduate medical education. *Ann Intern Med*. 1998;128:142-148.
6. Council on Graduate Medical Education. *Tenth Report: Physician Distribution and Health Care Challenges in Rural and Inner-city Areas*. Rockville, Md:

US Dept of Health and Human Services; 1998.

7. Mitka M. Consensus panel offers response to oversupply. *American Medical News*. February 24, 1997;72, 74.
8. Rinehardt UW. Planning the nation's health workforce: let the market in. *Inquiry*. 1994;31:250-263.
9. Miller RS, Jonas HS, Whitcomb ME. The initial employment status of physicians completing training in 1994. *JAMA*. 1996;275:708-712.
10. Miller RS, Dunn MR, Whitcomb ME. Initial employment status of resident physicians completing training in 1995. *JAMA*. 1997;277:1699-1704.