Factors In The Physician Practice Location Puzzle: A Survey Of New York State Residency-Trained Family Physicians

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Abstract: ***Background:*** **For the past 5 years fewer medical students have selected primary care specialties, and one-third of all physicians have indicated they will move in the next 5 years. These two factors make family physicians one of the most recruited specialties in medicine.**

Methods: **A questionnaire about practice profiles and factors that have an impact on a physician's location decision was mailed to all physicians who graduated from New York State family medicine residencies between 1970 and 1989. Data from completed responses were analyzed by year of graduation from residency, community size, and whether the responder remained in New York State or chose to locate outside New York State.**

Results: **There were 711 (46 percent) physicians who responded. The number of minorities remained stable at 14 percent during these years, but women graduates increased from 12 percent to 21 percent. The graduates in the 1980s, when compared with those in the 1970s, were more likely to be salaried, make less money, and to believe employment for the physician's spouse to be important in practice location. The 38 percent of responders from communities of fewer than 25,000 were less likely to be salaried, were more likely to practice in a group, worked more hours, offered a broader range of services including obstetrics, made less money, and placed less importance on availability of hospital consultants. Extended family, previous negotiated obligations, and geographic or climate issues were the reasons 64 percent of out-of-state responders gave for leaving New York. Spouse's opinion, hospital consultants, hospital services, colleague interaction, and after-hours coverage were most frequently rated as important factors for family physician practice location.**

Conclusions: **Factors important in attracting new physicians to a community include the spouse's opinion, institutional and colleague support, and lifestyle issues. (J Am Board Fam Pract 1992; 5:265-73.)**

Since 1985 fewer US medical students have chosen primary care specialties, and many communities find basic health services less accessible.[1] Between 1980 and 1987, 13 percent of US medical school graduates entered family medicine, but in 1989 only 10.8 percent entered family medicine residencies. Following an even more discouraging trend, only 4.9 percent of New York State's medical school graduates entered family medicine residencies in 1989.[2] Several states, such as New York, have a reasonable physician-to-population ratio, yet they suffer a shortage of primary care providers.[3] In response to this shortfall, the New York State Council on Graduate Medical Education in 1988 recommended that the majority of residencies in New York State should be in primary care.[4] Even if successful, some authors believe that increasing the number of medical students choosing primary care will not in and of itself correct physician maldistribution.[5]

The limited supply and mobility of primary care physicians confound attempts to meet America's diverse health care needs and create a need for greater understanding of practice location factors. A review of the literature shows that many medical graduates returned to communities resembling their community of origin, but the actual decision about practice location was made in residency.[6] Economic considerations and

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spouse's area of origin can have more impact on this decision than personal preference.[7-9] Graduates of primary care residencies who had training experience in underserved areas were more likely to practice in rural or inner-city localities.[10-14] Although practicing physicians were generally satisfied with their present practice location, up to one-third planned to move within 5 years.[15-17]

As a highly regulated state with major urban and rural regions, New York State provides a representative laboratory to study the physician location decision process. The New York State ratio of 1 family physician for every 4000 persons (recommended ratio is 1:2750) indicates a shortage of as many as 2000 family physicians.[18] There are 22 family practice residency programs in New York State that graduated 113 physicians in 1989. Presently one-third of the residency graduates leave the state. Retaining more primary care physicians is a state priority.[19] In this paper, we report our survey of the graduates of New York State family practice residencies since 1970 to determine practice satisfaction, profiles, and location factors. The data were analyzed by year of residency completion, community size, and by practice location in New York State versus out of state.

Methods

We surveyed all of the graduates from New York State family medicine residencies since 1970, the first possible year of graduation from an approved residency. A mailing list prepared in 1986 by the Research and Education Foundation of the New York State Academy of Family Physicians for a survey on practice profiles was expanded to include the lists of 1987, 1988, and 1989 residency graduates that were obtained from the New York State family medicine program directors (unpublished data, R. Golden, Utica, NY). Directories provided by the American Medical Association, the Medical Society of New York State, and the New York State Academy of Family Physicians were used to correct or update addresses whenever possible. A total of 1551 addresses were obtained, representing 93 percent of the 1662 total physicians known to have completed New York State family medicine residencies and 5.7 percent of all family medicine residency graduates in the United States.[18] Three mailings were completed between December 1989 and May 1990. The 46 percent response rate was not adjusted for potential responders who might have died, become disabled, or recently moved because there was no reliable way to identify why a response was not received. The residency programs did not maintain telephone lists, precluding telephone contact of nonresponders.

The survey instrument consisted of 23 questions and required 20 minutes to complete. It was developed in conjunction with the Research and Education Foundation of the New York State Academy of Family Physicians using results of previous studies and pretested on current family practice residents.[7,8,10,12,15-18,20] Answers were multiple choice or were designed to have the respondent fill in the blank. After a practice profile was obtained, a list of 24 factors that can have an impact on a physician's decision to choose a practice site was offered. The physicians were asked to rate each factor from 1 to 5, 1 being least important or least satisfied and 5 being most important or most satisfied. A rating of 4 or 5 was considered evidence that the factor was important to the respondent's present practice location decision or was evidence of satisfaction.

Data were analyzed using the Statistical Package for the Social Sciences (SPSS).[21] The chi-square test was employed for comparison of proportions. Pairwise linear regression was used to investigate the strength of any associations determined by the chi-square test. The Student t-test was used to determine relations between means. All reported percents were rounded to the nearest whole percent.

Results

Of the 1551 questionnaires mailed, 711 responses were received for an unadjusted response rate of 46 percent. Fifty-nine percent of the questionnaires were mailed to New York State addresses. The response rate was 48 percent for those mailed to New York State addresses and 43 percent for those mailed to physicians with out-of-state addresses.

The average age of responders was 38.5 years (SD = 5.9, median = 38, mode = 36), and the years since completion of residency averaged 8.27 (SD = 1.4). Minorities comprised 14 percent (104) of responders, distributed as Asian (6 percent), African-American (3 percent), Hispanic (3 percent), other (2 percent). The percentage of minorities held stable from 1972–1977 to the

1982–1987 groups. Twenty-five percent of the women responders were minorities versus 9.6 percent of the men. The majority of this difference was in the Asian group, representing 15 percent women and 4 percent men.

Women made up 21 percent (145) of all responders. There were more women responders in the 1982–1987 group than in the 1972–1977 group. Compared with men, women were less likely to be in solo practice (19 percent versus 30 percent), less likely to have paid start-up costs (21 percent versus 49 percent), and less likely to live in small communities (32 percent versus 40 percent). Women averaged fewer patients per week (81 versus 106), but the mode for both groups was 100 patient visits per week. Women were on call less often, were less likely to see patients after hours, and were just as likely to accept Medicaid. There was no difference in overall satisfaction between men and women (89 percent and 85 percent, respectively). Although income was substantially less for women ($61,000 per year versus $82,000), the income for women who reported seeing 100 patients each week was not statistically different when compared with men seeing 100 patients each week (women: $76,700; men: $77,800).

Physicians were grouped for analysis by: (1) year of graduation, (2) community size, and (3) location within New York State or out of state. Residency graduates for the years 1972 through 1977 (n = 131) were compared with graduates from 1982 through 1987 (n = 286). These 6-year intervals were chosen because they represented the earliest and latest periods for which there were adequate numbers of responses and years of experience in the responders' locations to assess satisfaction.

Community Size

Thirty-eight percent (n = 272) were located in communities of 25,000 or fewer persons. Sixty-two percent (n = 423) lived in communities of more than 25,000. Thirty percent of all responders described their community as rural, but the majority (74 percent) of those living in communities of fewer than 25,000 considered their communities rural. This natural break at 25,000 ($P < 0.001$) was the rationale for group analysis by community size. Further analysis revealed no significant difference in responses between the physicians in self-described rural communities and those practicing in communities of fewer than 25,000. Therefore, throughout the remainder of the analysis, the group practicing in communities of fewer than 25,000 persons was considered to represent physicians in rural practice locations.

Significantly more of the 1980s cohort (42 percent) were located in communities with fewer than 25,000 compared with the 1970s cohort (31 percent, $P < 0.01$). Out-of-state respondents were more likely to be located in a community of fewer than 25,000 than those who remained in New York State.

Practice Profiles

To understand the factors influencing practice location and satisfaction, it is necessary to appreciate the existing differences in practice structure, services, and workload. While graduates of the mid-1970s were somewhat more likely to be in solo practice (33 percent versus 24 percent, $P > 0.05$), only the increased percentage of 1980s graduates in salaried positions was significantly different (22 percent versus 36 percent, $P < 0.05$). Physicians who completed their residencies in the mid-1980s were significantly less likely to have paid practice start-up costs (49 percent versus 36 percent, $P < 0.05$) and more likely to have received financial assistance when they did (17 percent versus 30 percent, $P < 0.05$).

Family physicians in communities of fewer than 25,000 were significantly more likely to be in private groups (41 percent versus 26 percent, $P < 0.01$) and less likely to be salaried (26 percent versus 36 percent, $P < 0.05$) than those located in larger communities. They were also less likely to have paid their own start-up costs (42 percent versus 58 percent, $P < 0.01$) but more likely to have received assistance when they did (35 percent versus 15 percent, $P < 0.01$). Those who practiced in New York State were more likely to have paid start-up costs (43 percent versus 35 percent, $P < 0.05$) and less likely to have received assistance (20 percent versus 30 percent, $P < 0.05$) than those from out of state.

Physicians in the 1970s graduate cohort were more likely to perform sigmoidoscopy (58 percent versus 46 percent, $P < 0.05$). Out-of-state physicians were more likely to practice obstetrics (30 percent versus 22 percent, $P < 0.05$), first assist at surgery (32 percent versus 13 percent, $P < 0.001$), and care for fractures (51 percent

versus 36 percent, $P < 0.001$). Similarly, those in communities of fewer than 25,000 were more likely than colleagues in larger communities to practice obstetrics (35 percent versus 21 percent, $P < 0.01$), see children (97 percent versus 91 percent, $P < 0.01$), perform minor office surgery (97 percent versus 87 percent, $P < 0.01$), first assist at surgery (35 percent versus 13 percent, $P < 0.01$), provide fracture care (53 percent versus 37 percent, $P < 0.01$), and care for patients in the intensive care units (80 percent versus 71 percent, $P < 0.05$).

Practice profiles are presented in Table 1. There was little difference between the 1970s cohort and the 1980s cohort. Responders in smaller communities, however, saw 13 percent more patients each week, worked more hours each week, were on call more frequently, saw a patient after hours more often, and were more likely to accept Medicaid. Also, physicians from small communities more frequently believed that their area needed additional manpower.

Out-of-state physicians were more likely to see a patient after hours and to accept public reimbursement for services, yet most other work measures were similar. Out-of-state physicians were less likely to believe that their community needed more physicians. Adjusted gross personal pretax income averaged $77,800. This figure was calculated from the ranges asked for in the questionnaire. More experienced physicians and those in larger communities earned more money, but the average income for out-of-state physicians versus those in New York was the same. Physicians in the 1980s cohort were more likely to predict relocation in the next 5 years than the older group. Overall, 30 percent anticipated a move in 5 years, but there was no significant difference by community size or state location.

Factors Important to Practice Location

The 12 factors rated as important or most important (scored 4 or 5 on the questionnaire) by the

Table 1. Profiles of Respondents' Practice Patterns.

Factor	Year of Residency Graduation		Community Size		Location in US		All Responses Received (n = 711)
	1972–1977 (n = 131)	1982–1987 (n = 286)	<25,000 (n = 284)	>25,000 (n = 414)	Outside of New York (n = 274)	New York (n = 433)	
Years in present location	10	4.9	6.5	5.6	6.2	5.7	5.9
Patients seen per week	106	100	113	100*	100	102	101
Hours worked per week	51	50	53	49†	51	51	51
On call every third night or more often (%)	46	50	68	46‡	54	48	51
Frequently see a patient after hours (%)	44	39	56	37‡	44	36§	39
Accept Medicaid (%)	66	67	89	62‡	72	60‖	64
Area needs more physicians (%)	37	43	60	34‡	39	43§	41
Adjusted mean personal gross income in thousands ($)	91.5	74.6†	74.6	79.9†	77.8	77.8	77.8
Plan to relocate within 5 years (%)	20	34§	29	32	29	30	30
Percent located in communities <25,000 (%)	31	43§			44	35§	39

*$P < 0.001$, statistical significance by t-test analysis.
†$P < 0.01$, statistical significance by t-test analysis.
‡$P < 0.01$, statistical significance by multiple regression.
§$P < 0.05$, statistical significance by multiple regression.
‖$P < 0.001$, statistical significance by multiple regression.

Table 2. Factors Rated Important or Most Important to Practice Location by Majority of Responders (Percent).

Factor	Year of Residency Graduation		Community Size		Location in US		All Responses Received (n = 711)
	1972–1977 (n = 131)	1982–1987 (n = 286)	<25,000 (n = 284)	>25,000 (n = 414)	Outside of New York (n = 274)	New York (n = 433)	
Spouse opinion	86	87	85	86	84	87	86
Hospital consultants	70	71	65	77*	73	74	73
Hospital services	65	73	71	71	65	75†	71
Colleague interaction	64	68	66	71	64	73‡	70
After-hours coverage	67	74	73	67	64	72‡	70
Quality of schools	77	61†	69	66	68	67	67
Proximity to hospital	61	62	59	62	58	62	61
Recreation	56	64	63	59	62	60	61
Family health and education needs	58	59	57	62	57	62	60
Personal income	56	56	57	60	56	60	59
Employment for spouse	50	59†	56	56	55	57	56
Cultural opportunities	55	50	43	60*	50	54	53

*$P < 0.001$, statistical significance by chi-square.
†$P < 0.01$, statistical significance by chi-square.
‡$P < 0.05$, statistical significance by chi-square.

majority of the total group of responders are presented in Table 2. Other factors included on the survey (with the percentage of responders rating it important) were group practice opportunity (50 percent), local economic factors (49 percent), local continuing medical education (48 percent), social opportunities (45 percent), proximity to extended family (45 percent), distance to referral center (42 percent), insurance coverage of patients (42 percent), academic teaching opportunity (41 percent), regulations (38 percent), transportation and traffic issues (38 percent), physician shortage area (32 percent), and previously negotiated obligation (24 percent).

The spouse's opinion was rated an important factor by the largest proportion in all analysis groups. Three of the five factors receiving the highest percentage of important ratings were hospital related (availability of consultants and services and colleague interaction). Personal income ranked tenth across all groups. Hospital consultants and cultural opportunities were ranked important less often by physicians who were located in small communities. High-quality schools were rated important less often but employment for spouse was rated more important by the graduates of the 1980s. New York State physicians ranked after-hours coverage, hospital services, and colleague interaction important more often than out-of-state physicians.

Out-of-state respondents were asked to list the most important factors in their decision to leave New York State. The most frequent responses were previously negotiated obligation (29 percent), proximity to extended family (20 percent), climate and geography (15 percent), spouse's opinion (9 percent), group practice opportunity (7 percent), malpractice insurance costs (6 percent), and New York State regulations (4 percent).

Satisfaction with Practice Location

Table 3 presents the satisfaction ratings. Overall satisfaction was high for all responders. The older group was more likely to be satisfied with their spouses' opinion, spouses' employment, and school quality. Those within New York State were significantly more likely to rate themselves as satisfied with the schools and family health and education needs. Physicians in small communities were less likely to rate themselves as satisfied with hospital consultants,

Table 3. Satisfaction with Important Factors by Responders Rating Themselves Satisfied or Most Satisfied (Percent).

Factor	Year of Residency Graduation		Community Size		Location in US		All Responses Received (n = 711)
	1972–1977 (n = 131)	1982–1987 (n = 286)	<25,000 (n = 284)	>25,000 (n = 414)	Outside of New York (n = 274)	New York (n = 433)	
Spouse opinion	82	69*	74	75	70	77	74
Hospital consultants	72	73	63	80†	73	74	73
Hospital services	76	72	70	74	74	71	72
Colleague interaction	71	63	57	70†	60	68	65
After-hours coverage	69	66	63	70*	66	68	67
Quality of schools	70	56*	61	64	57	66*	63
Proximity to hospital	76	66	66	68	67	67	67
Recreation	73	70	75	70	72	71	71
Family health and education needs	73	66	62	74‡	62	73‡	69
Personal income	62	57	55	59	57	58	58
Employment for spouse	73	60*	64	66	63	65	65
Cultural opportunities	65	57	50	69†	60	61	61
Overall satisfaction	95	85*	87	90	85	89	88

*$P < 0.05$, statistical significance by chi-square.
†$P < 0.001$, statistical significance by chi-square.
‡$P < 0.01$, statistical significance by chi-square.

colleague interaction, after-hours coverage, family health and education needs, and cultural opportunities.

Discussion

As of 1988 (most recent year for which data are available) there were 29,217 graduates of family practice residencies in the United States; 3271 graduated between 1972 and 1977 and 13,930 graduated between 1982 and 1987. Seventy percent of the American Academy of Family Physician members are younger than 45 years of age,[18] a characteristic similar to the responder group represented here. A survey completed in 1987 of New York State residency graduates provided a profile of age, sex, income, and practice structure that was very similar to the study profile reported here (unpublished data, R. Golden, Utica, NY). These comparisons suggest that our responder group reflected the demographic nature of other family physician groups; therefore, the results could have meaning for physicians, health care planners, and communities involved in recruitment of family physicians.

Factors Important to Site Selection

Our survey results and others have established the importance of the spouse's opinion in the selection of a practice location. In a Texas survey, the spouse's opinion was also rated the most important personal factor in site selection.[15] When both members of the couple are from communities of similar size, it is likely they will choose a community similar to their common background. If, however, a spouse and physician are from communities of different sizes, they will tend to choose a community consistent with the spouse's background.[7] Looked at differently, if the spouse's community of origin is not rural, the chance is much lower that the physician will choose a rural location.[9]

Respondents were not asked to rank practice location factors; therefore, the factor receiving the highest percentage of important ratings was not necessarily the single most important factor. That factor was, however, important for a large percentage of physicians. Consistency was great across all groups in the rating of the six most important factors (Table 2). With three of these top factors related directly to hospital facilities,

our respondents added their vote to others who have emphasized the importance of the local hospital or medical facilities in the recruitment of physicians.[12,15,17] That hospital issues have been more problematic in rural areas could be a disadvantage to small communities.[22] The importance of colleague interaction could explain the often-observed experience that physician-to-physician recruitment has been particularly meaningful to the success of any effort to attract physicians.[23]

Personal income was rated important or most important by only a little more than one-half of the responders, with little variation between groups. Family physicians, at the lowest end of the physician income range, had a nationwide average net income of $86,360 in a study reported in 1990.[24] This figure was higher than the $74,650 average for rural physicians and the overall average of $77,800 reported here. Because family physicians have been at the low end of earnings, their location choices could be more responsive to direct income inducements.[25] Fewer physicians are interested in investing in a practice, and recent graduates are more likely to be in salaried positions. Compass, the physician's placement service of the American Academy of Family Physicians, has reported that 76 percent of the 1989 and 1990 placement candidates preferred salaries for the beginning arrangement. Only 24 percent were willing to make an immediate financial investment in a practice.[23] The 1988 American Medical Association count of solo practices (all specialties) showed an 11 percent decrease since 1984.[26] The most significant increase in salaried positions was among the urban responders, an option that might be attracting more physicians to urban practice. The increased proportion of women in the 1980s cohort also might contribute to this trend.

Satisfaction with Practice Location

With the exception of the less satisfied 1980s graduates who have not had as long a period to make adjustments, the overall satisfaction rating for all analysis groups was not statistically different. On closer inspection, responders from larger communities indicated significantly greater satisfaction with five individual factors (hospital services, consultants, after-hours coverage, cultural opportunities, and family health and education needs) in spite of a similar overall satisfaction rating. An Arkansas study reported that 39 percent of all physicians in the survey moved at least once, usually in the first 2 years of practice; but one-half of physicians in small towns moved in the first 2 years, and one-half of these moved into more urban areas. Only 5 percent of urban physicians who relocated moved to rural communities.[20] The mobility of today's physician makes physician retention as important as recruitment. Rural physicians in our survey indicated no greater anticipation of relocation than urban physicians, but for those who do relocate, the specific five factors mentioned above need to be addressed or the rural physician shortage will not likely be solved. Often these issues can be addressed only at the local community level.

The Sex Factor

Women physicians have become more numerous. In 1970 women made up only 12 percent of US medical students.[27] In 1987, women made up 32 percent of the US medical school graduates and 29 percent of entering family practice residents.[28] Women responders in our survey were less likely to practice in small communities, earned only 74 percent of men's income but worked 75 percent of the weekly hours men worked, saw 76 percent of the number of patients, and were on call only 62 percent as frequently. Those physicians of either sex who saw 100 patients per week had incomes that were not significantly different. The contributions of women to primary care are likely to induce flexibility in the profiles of practices and present new challenges in such areas as spouse recruitment.

Community Size

Family physicians have been more likely than other specialists to practice in rural areas. In 1986, 12 percent of all physicians and 25 percent of all family physicians lived in federal nonmetropolitan areas compared with 24 percent of the US population.[29] In this survey, responders from smaller communities were more likely to practice in group arrangements, more likely to include services that require after-hours attention such as obstetrics and intensive care, and less likely to rate a location by availability of consultants when compared with responders from larger communities. As a member of a group practice, it might be that the rural physician has found a secure arrangement for colleague interaction

and demanding after-hours coverage. Urban physicians might have found it easier to arrange coverage with other solo physicians and to rely on the more available consultant for second opinions.

Our results showed that responders from smaller communities worked 8 percent more hours, saw 13 percent more patients, and were more likely to believe their area needed physicians than did their urban counterparts. Other studies have found the rural physician's work week to be 6 percent longer.[30] Rural physicians in our study earned 6.6 percent less, which was partly explained by acceptance of Medicaid. It has been reported that rural physicians often charge less than the insurance-approved charge for procedures even when it is covered by a third party payor.[18] More work, less income, and perceived decreased ability to charge could partly explain the usefulness of income subsidies in attracting physicians to rural areas.[31] Business naiveté, irregular hours, peer interaction, and increased numbers of women in medicine might contribute to the greater acceptance of salaried positions noted in all responder groups.

Graduates Who Leave the State

Figures reported in 1990 indicated New York State, with a population that was 6.5 percent of the US population, trained only 5.7 percent of America's family medicine residents and lost one-third of these to other states.[18] Our out-of-state responders were less likely to have paid start-up costs and more likely to have received assistance when they did. They reported a more inclusive practice profile, particularly in regard to procedures and obstetrics, and were more likely to live in small communities. Out-of-state responders earned equivalent incomes and were more likely to see patients after hours. For 64 percent of out-of-state responders, the reasons for leaving New York (previously negotiated agreements, proximity to extended family, and climate and geography) could not be altered by recruitment, but 36 percent gave reasons that might have been amenable to persuasion.

Conclusions

Changes over time that have had an impact on the need to update recruitment programs include more women physicians, more acceptance of salaried positions, greater mobility, and increased need for considering the spouse's opinions and employment opportunities. The persistent difficulty in meeting the needs of rural communities can be related to longer work weeks, lower incomes, fewer salaried positions, and medical facilities that differ from the urban training model.

The 1980 predictions of a physician surplus by the Graduate Medical Education National Advisory Committee fueled federal complacency about physician distribution.[32] Unfortunately, the need for primary care physicians has become critical in some areas of the United States. Public policies and medical school experiences can have an impact on physician specialty selection and distribution, but the ability of an individual community to attract physicians will rely on how well it can confront problems, define goals, and take action. Solutions will include regionalized health systems (to improve colleague interaction), expanded primary care facilities (to enhance services and decrease business pressures), improved reimbursement for the primary care of poor people (to enhance financial reward), and nontraditional community support (to have an impact on lifestyle issues). And, perhaps most importantly, consideration of the evolving needs of the physician's spouse.

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