Working Paper

Professions Theory vs. Career Theory: Explaining Physician Employment in HMOs

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Abstract

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Observers have noted an historical trend toward bureaucratization in the professions. But what exactly is the role of the large-scale organization in professional contexts? This paper investigates physicians, who are increasingly likely to be employees of large-scale organizations such as Health Maintenance Organizations (HMOs) rather than working as private practitioners in solo offices or small partnerships. Professions theory, and conventional wisdom among physicians, suggests that HMOs will be staffed with lower-quality physicians who have fewer labor market alternatives. Career theory offers an alternative prediction, however, based on the fact that HMOs provide reduced schedules and new career alternatives. Career theory thus predicts the HMO to be populated by physicians who value schedule and career options—including female physicians and those physicians in dual-earner families. I evaluate these two alternatives using a large dataset, and find support for the careers perspective over professions theory. This research underscores the importance of studying the career options generated by different organizational settings in order to grasp the full import of changing professional organizations.

Keywords: career theory, career options, HMOs, professions theory, physicians, part time

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INTRODUCTION

Which physicians practice as employees of Health Maintenance Organizations (HMOs) and why? This paper applies two different lenses, from professions theory and career theory, to address this question. Professions theory represents a prevailing perspective on understanding the relationship between professionals and large bureaucratic organizations. This approach focuses on the importance of autonomy to professionals, and the potential for alienation under the constraints of bureaucracy (Scott 1965; Freidson 1970; Bailyn 1985; Wallace 1995). Applying professions theory to the question of HMO employment produces the expectation that lower quality physicians would be over-represented in them, because they have fewer more-desirable labor market options. However, an alternative approach involving the importation of ideas from career theory focuses attention on the importance of individuals' work and family roles—an issue that has emerged as central to the current career choices of physicians and other professionals (Hinze 2000; Hull and Nelson 2000; Wharton and Blair-Loy 2002). The careers perspective suggests that individuals who experience greater work and family role conflict may seek out large organizations if in fact they provided superior access to jobs which accommodate work-life balance.

I test these two perspectives using representative data on physicians in HMOs and traditional private practice settings. The findings provide no support for the professions theory perspective; while large organizations are indeed more bureaucratic in terms of constraining autonomy, they do not appear to house lower-ability individuals. Instead, several findings are consistent with the second theoretical approach which emphasizes individual career interests and work-family considerations in guiding organizational membership: large organizations involve reduced schedules; women physicians are strongly over-represented in such settings; and the pattern of hours and hours-preferences among physicians in these settings also fits these expectations. Further, while women are uniformly over-represented in large organizations regardless of family or other circumstances, among men the pattern of organizational representation is contingent on family structure. These findings are extended in a number of ways that provide support against alternative explanations including employer discrimination.

HMOs that employ doctors are not simply alienating the enthusiasts of professional autonomy, but rather they are also enabling individual schedule and career preferences to be realized.

This paper contributes to research on professional labor markets and organizations by elaborating the role of the large bureaucratic organization in accommodating different interests in the professional workforce. HMOs that employ doctors are not simply alienating the enthusiasts of professional autonomy, but rather they are also enabling individual schedule and career preferences to be realized. Therefore research on contemporary professional labor markets must incorporate an understanding of the varied ways in which new organizational forms such as the HMO generate the professional jobs sought by individuals. Other important issues related to the quality of medical care and economic efficiency are not addressed here; rather, the focus is on the career activities of physicians in joining or avoiding such organizational settings.

These findings are also important for policy. If it were the case that high-quality physicians were repelled by the large bureaucratic setting, then the expansion of larger medical practice organizations would appear troubling. The best prospective physicians might choose other occupations where they could retain autonomy, and existing high-ability physicians might leave clinical practice in order to avoid such unfavorable organizational contexts. If instead, however, membership reflects preferences for work hours and schedules that are facilitated in the large organization, then the trend could be viewed as beneficial with respect to accommodating the interests of a changing professional workforce.

The paper proceeds with a discussion of how the professions and careers perspectives can be brought to bear on the question of organizational employment among physicians. Next I describe the phenomenon of the large medical organization, focusing on the HMO, and outline the methods and data used in the analyses. I proceed directly with my findings by reporting on a series of related expectations flowing first from the professions and then the careers perspective. I discuss the logic of each expectation and the findings on it together. Separate sections on sex discrimination and methodological extensions are also included, followed by a discussion and conclusion.

Theory: Professions vs. Careers

Professionals have long been thought to dislike bureaucracy (Goode, 1957; Hall, 1968). Theories of the professions use this assumption to motivate accounts of the relative success that professionals have had in avoiding bureaucratic work settings (Freidson, 1970a; Derber, 1982; Abbott, 1988). The archetypal occupation invoked in these accounts is medicine. Doctors were

thought to be both averse to bureaucracy and, until recently, to have largely avoided it in practice. The organizational size distribution of medical practices was dominated by self-employed solo practitioners or small private practice owners (Starr, 1982; Burns and Wholey, 2000). Now, however, a small but growing share of physicians is employed in large medical practice organizations (Robinson, 1999; Havlicek, 1999).

According to professions theory, individuals are oriented against bureaucracy because it constrains their freedom (Scott, 1965; Hall, 1968; Leicht and Fennell, 2001). Two assumptions underlie this perspective. First, professionals are assumed to be a homogeneous group who uniformly adopt professional values and who can therefore by defined in part through their common interest in autonomy. Second, large bureaucratic organizations are assumed to be seen by individual professionals principally through their constraint on autonomy and assumed lower quality, and not other job or career features.

Following professions theory, if there is a generalized aversion in professional occupations to larger organizations, then we should expect those who *can* avoid the large organization to do so. If the highest-quality physicians have more labor market options from which to choose, then they are more likely to be able to avoid practicing in the undesirable large organization. Lower-quality physicians, in contrast, will have fewer labor market options and therefore be more likely to default to a position in a large organization. As a result, the pool of less qualified individuals should be over-represented in such settings.

In contrast to this professions-based approach, Hoff (1998; 2001) has pointed to the need for research on professions to focus on variation *within* the occupation in terms of individual values and preferences. In research investigating which physicians become employees, Hoff (1998) found demographic characteristics to be important explanatory factors. Such a difference-within-the-profession perspective is applied here to the key question of which physicians work in large medical practice organizations. If large organizations are associated not just with curtailed autonomy or income, but also with a range of other job or career characteristics, then some segments of the professional workforce are likely to be interested enough in those other characteristics to overwhelm any distaste for curtailed autonomy. In short, the large organization may be an attractive practice option for some subset of physicians. Under these revised assumptions, the labor market matching process would likely involve a more

complex voluntary selection on the part of individuals into organizational forms such as the salaried HMO.

What positive job characteristics might be involved in the large organization? The focus here is on a reduced work schedule. Larger bureaucracies tend to organize work in such a way as to provide access to shorter work weeks as well as more regular working hours. They do this through the use of elaborated internal systems that handle the flow of patients, and greater organizational scale that absorbs unanticipated shocks in that flow (Briscoe 2003). The impacts of unanticipated patient needs on a given physician are minimized through the use of urgent care systems, team-based practice arrangements, and similar services that systematically address those needs during nights, weekends, and other times that physician plans to not be practicing. In addition, myriad time-consuming responsibilities involved in organizational administration, human resources, and physical plant are centralized away from the physician staff. These various features allow a degree of schedule control that is ironically unavailable in the traditional private practice where physicians ostensibly have more generalized control over their work.[i]

Under these conditions, and the assumption that a degree of choice is possible by individuals in the labor market, we should expect individuals in large medical organizations to be disproportionately drawn from the pool of physicians who prefer a reduced work schedule. Research on work-family role conflict suggests that women professionals and those individuals in dual-career families are more likely to exhibit such preferences (Moen and Dempster-McClain, 1987; Lundgren et al., 2001; Wharton and Blair-Loy, 2002). This may particularly be the case in medicine because of the exceptionally demanding work hours and schedules. In surveys, physicians routinely report an average of 60 hours per work week (Gonzales and Zhang, 1998). Despite these long hours and schedules, the professional workforce—in medicine as well as other professional occupations—includes many more women and dual-career professionals than it did two decades ago. For example, the percentage of women in medicine grew from 8% to 22% from 1970 to 1999 (AMA, 2002), and in medical schools it grew from 9% in 1968 to 44% in 1998 (Barzansky et al., 1999). This provides a growing supply of individuals with potentially strong preferences over their work schedules.

Taken together, the two perspectives outlined here ask whether the physician labor market for positions in large organizations is guided more by collective professional norms or by individual career choices. The relative importance of these two mechanisms informs our view of

contemporary professional labor markets. If physicians share a collective orientation toward autonomy and against bureaucracy, then a primary explanation for sorting into large organizations is that lower ability physicians get 'stuck' there. Support for the professionalist perspective in the present study would reinforce this image of professional labor markets.

If, however, labor market decisions were influenced by career and schedule concerns, then labor market outcomes should be seen more as the outcome of varying preferences among individuals. Support for the career perspective, as operationalized here, would suggest that individual physicians are choice makers guided by role tensions and time constraints between their work and family lives (see Hakim 2002). The work-family perspective has received increasing attention lately in efforts to understand professional labor markets (Bailyn 1993; Fuchs Epstein, et al. 1999; Barnett and Gareis 2000). Support for this perspective would show the necessity of incorporating work-family into professional labor markets in order to understand the role of large organizations in those markets.

Support for both perspectives is possible as well. For example, it may be that male physicians as a group tend to hold collective professionalist norms and therefore the only men joining large practice organizations are those of lower quality—whereas women physicians as a group orient toward the organization using a career perspective, being attracted to the reduced schedules available, and therefore are over-represented in large organizations independent of their abilities. Another possibility, that discrimination in the hiring process shapes the allocation of physicians into large organizations, is also considered because it could also contribute to the over-representation of women in large organizations. These explanations are evaluated below using data on physicians in a range of practice settings. First, however, the next section describes the type of large medical organization that is the focused on here: the HMO.

The Health Maintenance Organization

Perhaps the largest and most formalized medical practice organization is the salaried HMO. At the time that these data were collected in 1990, the typical HMO employed physicians as salaried service providers. A spectrum of various other organizational forms and sizes existed across the medical landscape, including large private partnerships where physicians were owners, and smaller employment-based organizations. However, the fact that HMOs lie at the extreme end of that spectrum in terms of formal organization and size, and their widely recognized and unambiguous identity among physicians and the lay communities, make them an attractive group to examine in order to answer the question of which physicians are working in large medical bureaucracies.

The analyses below focus on comparing three distinct organizational categories: HMO employees, employees of medical practice organizations other than an HMO ("non-HMO"), and owners. Owners work in private practices held by themselves and sometimes other physicians. They represent the other extreme in terms of size and structure from the HMO, tending to follow the professional tradition (more below).

The advantages of this classificatory scheme are accuracy and parsimony. The main alternative, using self-reported data on the type or size of organization in which physicians conduct their practice activities, is more problematic. While solo practitioners are owners of their own one-person practices, many physicians practice in medium-sized groups which may have varying and complex ownership structures involving internal and external ownership. Those groups may also be affiliated with much larger organizations such as a medical system or hospital. Some confusion can also be introduced in distinguishing between the office in which a physician practices and the larger formal organization of which that office is part.

During the 1980s and early 1990s, HMOs represented the leading edge of a wave of organizational innovation which continues today (Bazzolli et al., 1999; Scott et al., 2000). Although HMOs grew in number and frequency during the years immediately following the data collection period, other organizational forms have proliferated and the nature of HMOs has changed. Many traditional HMOs which employed physicians on salary (many called "staff-model HMOs") separated their service delivery functions from their insurance and marketing functions, so that the physicians and the rest of the service delivery staff became employees of a separate medical care delivery organization distinct from the health insurance company. Other

large medical practice organizations were acquired by various external entities, including hospitals seeking to channel more patients to them. From the perspective of classifying the organizations in which physicians practice, this heterogeneity is problematic.

One disadvantage of using the classificatory scheme chosen here (HMO, non-HMO employee, owner) is thus the amount of heterogeneity hidden within the categories of non-HMO employee and owner. However, the next logical level of granularity in terms of organizational type—breaking out clinics, university settings, and state hospitals—produces many small-sized fragments while still leaving largely intact the two major categories of private practice employee and private practice owner. Another option, using organizational size regardless of type or ownership status, was investigated as well. The results of identical analyses using this scheme are presented in Appendix A using a cut-point of 30 physicians to define a large organization; the findings are similar to those presented using the HMO classification.

Methods

The data used for these analyses come from the 1991 Practice Patterns of Young Physicians Survey (YPS). This is a publicly available survey of physicians from a single generational cohort. It includes 6000 physicians born on or after 1951 who completed residency in 1986-1989, selected from a simple random sample of the American Medical Association physician master file (Hadley, 1991). It also includes an oversampling of minority physicians. As a result, in all statistical analyses and regressions, weights devised by the survey authors were applied to correct for sampling strata and any resulting biases. All reported statistics reflect these weights, although they generally had negligible impact on the analyses presented here.

At the time of the survey in 1991, these physicians had an average age of 37, with a standard deviation of 3 years. Put another way, four-fifths (80%) of them were between the ages of 33 and 40.

... a majority of the sample was in their late 30s and faced the twin challenges of demanding work and demanding family life

One quarter were female (24%), reflecting the gender composition of that cohort. Further, 86% of them were married, and 85% of those who were married had children of some age living at home. In fact, 69% of those who were married had children under the age of 6 at home. Therefore, a majority of the sample was in their late 30s and faced the twin challenges of demanding work and demanding family life.

The YPS is among the few large-scale surveys of physicians that include questions concerning family demographics, work preferences and characteristics, and organizational settings. These data are well suited to the present study in the sense that they are all from one cohort, which helps to control for the natural co linearity of cohort, gender, and family structure. Since physician gender and family structure differ markedly from one broad cohort to the next, focusing on just one (in this case, baby-boomer) cohort helps to isolate the gender and family effect.[ii]

The analyses presented here exclude hospital employees and medical school faculty, as well as government employees who tend to also be hospital-based (34% of the entire sample). The decision to exclude employees of these organizations was based on three factors. First, the hospital usually involves fundamentally different work activities involving research and teaching, making individuals in those settings less comparable. Second, the 'employment relationship' for physicians in these institutions has a long history of ambiguity. Like academic faculty, individual autonomy is much more institutionalized in hospitals than in most other organizational settings (Freidson, 1963; Harris, 1977). Therefore the general association of size with constraint on the individual is less likely to apply in these institutions.

Finally and most importantly, including teaching hospitals and medical schools in the analyses would have upwardly biased the ability and status scores of the large-organization group. Hospitals and medical schools are populated by the intellectual elite, and are relatively large in size. Had the analysis sample included these academic physicians, it would have artificially raised the ability scores of the large-organization category, thereby potentially counteracting any potential main effect of high-ability physicians deliberately avoiding the large organization. As a result, the restricted sample used in final analyses actually represents a more rigorous test of the professions perspective.

The final dataset consists of a cross-sectional panel of 3784 individuals, of whom about half (49%) were employees rather than owners. Of the employees, about one in twelve (8%, or 233) were in HMOs. Organizational size differed systematically for these three categories. Owners practiced in organizations of very small average size. This can be seen graphically in Figure 1, where the log size of practice settings reported by owners was skewed toward the very lowest possible values. Table 1 indicates a median size of 2 for owners' practices, compared

with 5 for non-HMO employees and 25 for HMO employees. Mean organization size followed the same pattern.[iii]

The YPS includes linked data from the Student and Applicant Information Management System database (SAIMS) of the Association of American Medical Colleges. This includes separately-gathered information on Medical College Achievement Test (MCAT) scores, medical school application records, college Grade Point Average (GPA), and some socioeconomic information taken from application files. This information is superior to self-reported survey data because it represents official data collected directly by the professional association for purposes of evaluating quality and aiding medical school admissions decisions. However, these data were not available for all individuals. Therefore, sample sizes vary for the analyses presented below.

Controls were included in all regressions for year entering the labor market (dummies for each entering year from 1982 to 1989), age (dummies for each birth year from 1950 to 1959), race (dummies for Black, Hispanic, Asian), geographic region (dummies for three of four regional U.S. Census divisions), and medical specialty (dummies for 12 of 13 major specialty categories).[iv]

Results: The Profession-Centered Account

Autonomy

In order for professional theory to apply, a first condition is for physicians practicing in larger organizations to report less autonomy and control. A widely studied and confirmed relationship exists between organizational size and the elaboration of rules and structures which constrain individual autonomy (Blau, Heydebrand, and Stauffer, 1966). Several sociological and administrative studies have pursued this relationship (e.g., Blau, 1972; Marsden et al., 1996) and its implications for the medical occupation (e.g., McKinlay, 1982).

Table 2 reports several indicators of autonomy in clinical activities for physicians employed by HMOs, for those employed in other organizations, and for owners. Note that these indicators are relatively objective in nature; the questions ask about whether certain restrictive policies and practices exist in the organization. The results show a lower average level of autonomy for those in HMOs. Those in HMOs were more often required to follow clinical protocols. Protocols outline appropriate clinical steps, such as which tests to order, when a

patient presents a particular symptom. Seventy-one percent of HMO respondents reported use of protocols, compared with 66% of non-HMO employees and 58% of owners. The reason many owners also reported the use of protocols is likely due to the influence of health insurance companies with which they contract.

Similarly, physician decisions on a variety of matters appear to more often require approval or be subject to review in larger organizations. Table 2 shows consistently higher incidence of such factors for HMO physicians. This was the case even though the sample that was asked these questions was restricted to physicians in groups of at least 5 physicians, and therefore excluded those in the smallest practices where approval would assumedly be most infrequent.

... physician decisions on a variety of matters appear to more often require approval or be subject to review in larger organizations

Members of HMOs also reported lower annual incomes (on average $96,000 vs. $102,000 for non-HMO employees and $163,000 for owners). This is another factor that might lead higher-ability physicians to be less inclined to pursue positions in these organizations. Overall, then, these comparisons suggest that positions in HMOs on average involve lower autonomy as well as lower annual income. While these effects are not overwhelming, they appear to be consistently in the expected direction and are statistically significant. According to professions theory, these differences should make the HMO broadly distasteful in the physician labor market, biasing individuals against employment in such settings.

Physician Ability

I have argued that if professions theory obtains, then HMO membership should reflect the greater relative success of high-ability physicians in their effort to avoid such settings. Tables 4 and 5 report on regressions using several measures of individual ability and educational status. This and all subsequent maximum likelihood regressions model the probability of an individual physician being in a given organizational setting, using a dichotomous dependent variable. The valence on all coefficients can be interpreted intuitively; positive coefficients indicate an increase in the probability of practicing in that setting.

Table 4 shows the results of regressions on the probability of being employed by an HMO. In order to assess the utility of the ability and status indicators, table 5 shows the results

of parallel regressions run on the probability of reporting a primary practice as a medical school faculty. The assumption here is that higher ability and status physicians should be found among medical school faculty, and therefore the indicators should show significance if they in fact capture the intended constructs.

The first set of regressions in Tables 4 and 5 (model 1) test for the influence of science MCAT scores on organizational affiliation. The expectation for this case would be that physicians with higher scores would be less likely to be HMO members (and more likely to be medical school members). The results indicate that those practicing in medical schools have clearly higher MCAT scores (significant at the 0.01 level), but those practicing in HMOs do not statistically differ from their counterparts in other settings. This remained the case after the science MCAT variable was interacted with gender to test for independent effects for men and women. Regressions using overall MCAT scores as opposed to science MCATs produced the same outcome (not shown).

The second set of regressions (model 2 in tables 4 and 5) similarly tests the impact of science GPA on organizational membership. The expectation was similar to that for MCAT score. Here again, science GPA was positively associated with medical school practice (0.001 level) but not with HMO practice. The non-finding for HMOs remained after interacting science GPA with gender.

A third set of regressions (model 3 in tables 4 and 5) used the number of times that a physician had applied to medical school as a proxy for individual quality. The expectation here was that physicians who had applied more than once should be over-represented in HMOs (and under-represented in medical school practices). The results indicate that multi-year applicants were negatively associated with working in a medical school (0.001 level). However, no statistical relationship to HMO employment was found.

The final set of regressions tested the impact of coming from an international medical school on HMO membership (model 4 in tables 4 and 5). International medical school graduates (IMGs) have historically been treated as lower status in the medical community, a fact indicated by the use of IMG ratios as an indicator of residency program quality (Vagelos, et al., 2002: 42). The logic behind this view is apparently that those coming from non-U.S. medical schools are of lower average quality compared with those from domestic schools. IMGs were indeed less likely to be practicing in U.S. medical schools (0.001 level). However, instead of being over-

represented in HMOs, the regressions indicated that IMGs were actually statistically *less* likely to be HMO employees (0.01 level). After interacting IMG with gender, this effect appeared to be driven by male physicians in the sample. In separate regressions, parents' occupation and socio-economic class status were also examined, with no significant findings for either medical school or HMO membership (not shown).

The conclusion from these large-scale, nationally representative data appears to be that observable quality and status characteristics are not associated with HMO membership.

The conclusion from these large-scale, nationally representative data appears to be that observable quality and status characteristics are not associated with HMO membership. The evidence does not support the prediction based on professions theory that lower-quality physicians would be found in larger organizational settings.

Results: The Career-Centered Account

Reduced Schedule

The careers perspective proposed above suggests that reduced schedules are influencing employment in the HMO setting. Returning to Table 2, the following section first investigates the extent to which these organizational types vary in terms of average hours and schedule. The hours of physicians in HMOs appeared to be markedly lower than those of non-HMO employed physicians, whose hours are in turn lower than those of owners. Table 2 shows average hours for those in HMOs at 49.6, compared with 55.6 for non-HMO employees and 61.3 for owners. Because a minority of physicians (about 10%) reported practicing in more than one organizational location, mean hours are also presented for just the main practice, showing similar results (48.3, 53.0, and 60.0 hours respectively). Median values reflect the same pattern (50, 55, and 60 respectively). The differences between HMO and non-HMO employees, and between non-HMO employees and owners, were all statistically significant at the 0.001 level.

Physicians may not only seek to work a given level of total hours, but also to limit the amount of irregular hours, such as night and weekend hours during which physicians are often on-call. Respondents were also asked about the number of hours they had worked during nights and weekends in their main practice. The exact definition of night and weekend was not provided to respondents, so these figures may have a degree of measurement error in them. Nonetheless, they follow the same pattern. HMO physicians indicated an average of 7.7

night/weekend hours, compared with 8.9 for non-HMO employees and 11.6 for owners. The difference between HMO and non-HMO employees was not statistically significant, but that between non-HMO employees and owners was. This measure is correlated with total hours as a result of the simple fact that any hours over the first 50 are likely to have to fall during nights or weekends. Nonetheless, it still tells a part of the story of the schedule conditions associated with work in different organizational settings.

These average hours figures reflect a wide underlying distribution within each organizational setting. Therefore, the portion of physicians working a moderate-hours week was also examined. The rate of physicians working less than 40 hours per week was significantly greater in the HMO setting, at 33%, compared with 20% for non-HMO employees and 12% for owners. These HMO/non-HMO and non-HMO/owner differences were significant at the 0.001 level.

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Finally, it is worth noting that when individual income is adjusted to take into account differences in weekly work hours and annual weeks worked, the HMO income gap disappears. Hourly income is no different for HMO employees than non-HMO employees, although owners reported higher hourly incomes.[v]

Physician Gender

Which physicians may seek practice conditions with such reduced schedules? More women than men may be expected to prefer reduced work hours because of either strong household gender norms (Pleck, 1977) or greater benefits to the household of their specialization in parenting work (Mincer and Polachek, 1974). For women currently in families, these roles result in a greater strain on their time compared with men in families. For women not in families but expecting to be so engaged in the future, gender roles may already be enacted in a form of anticipatory socialization. Women physicians do, in fact, work fewer average hours (Powers et al., 1969; Hinze, 2000). Given these different apparent preferences, the potential availability of better schedules in the large organization should lead more women to pursue employment there.

Women are clearly over-represented in HMOs relative to other settings, forming 40% of their ranks compared with 29% of non-HMO employees and 18% of owners (differences significant at 0.001 level). However, several spurious factors may influence these unadjusted

means. For example, women disproportionately choose primary-care specialties that are likely to practice in larger organizational settings, artificially correlating gender and organizational size. Women in any sample of physicians will also be disproportionately from more recent graduation years, and if graduates from these more recent years also faced a labor market with fewer private practice opportunities then this would also cause some spurious correlation between gender and organization size.

Regression results in Table 6 indicate that even after controlling for age and specialty, as well as several other factors, gender appears to remain associated with HMO membership. In the sample of employee physicians (model 1A of table 6), women are significantly more likely to be in HMOs. The odds ratio for women compared to men is 1.47, suggesting that the odds of a woman being in an HMO are 50% greater than for a man, after accounting for controls. For the full sample, including owners (model 2A), the odds ratio is 1.98, making women twice as likely to be in HMOs. These findings hold even after controlling for individual ability using the two most compelling measures, MCAT and GPA scores (and for the other measures, although the sample size drops due to missing data). Models 1B and 2B show that with these controls included, sex remains significant with a similar odds ratio, and ability variables add nothing to coefficient significance or model fit improvement.[vi]

The sex difference in HMO membership can be extended by examining it in the presence of various family conditions. If the reason women are more likely to be HMO employees is related to their perceived work-family role strain, then we should expect to see the gender gap widen as family strains increase. One such factor that is observable in this dataset is the number of children. When the sample is restricted to only those with large families—three or more children—the impact of sex on HMO employment increases. Using the same controls and regression strategy on the subset of physicians who fit this restriction (23% of the sample), the coefficients and odds ratios increase substantially to 2.88 in the employee sample and 3.00 in the full sample (n=543 and n=1344 respectively; results not shown). However, regressions that interacted sex and children were not significant, and regressions using two children as the cut-point behaved differently, weakening confidence in the relationship between family size and HMO employment.

Physician Families

Following a similar logic, spousal status may also be expected to influence individual schedule preferences and hence organizational setting. Life-course theory has illuminated ways in which spousal careers may impact the focal individual's own career activities (Moen and Dempster-McClain, 1987; Han and Moen, 1999). In particular, those whose spouses work under demanding schedules may experience greater time pressure in terms of fulfilling household and parenting roles. The most extreme instance of this is a spouse who is also a physician, with the associated long and inflexible hours. Therefore those individuals whose spouses are physicians may value more highly the hours and schedule advantages of large organizations, and seek employment there.

These spousal effects may not manifest uniformly across both sexes. However, whether effects are likely to be greater for men or women is indeterminate. On the one hand, if women's household gender roles are strong enough women may be expected to prefer reduced schedules—and HMO settings—at a higher rate irrespective of their spousal circumstances. In this case, analyses among men should show a greater sensitivity to spousal status than women. On the other hand, men's roles as providers—or professionals—may be strong enough to overwhelm any family consideration for them. If this were the case, women would show a greater sensitivity to spousal status. In other published research, the hours (and income) of women physicians have been found to vary with spousal circumstances much more than those of male physicians (Tesch et al., 1992; Sobecks et al., 1999; Uhlenberg and Cooney, 1990: 376). Here, of course, we are looking for effects with respect to large organization employment, not hours.

The right-hand regressions in Table 6 examine these spousal effects separately for men and women. When considering these results, it is helpful to keep in mind that the great majority of this sample is in their mid to late 30s, and married with young children. As a result, these physicians are at a point in the life-course where they are likely to be striving to establish themselves in their practice, and also have pressures at home related to young children.

Spouse's time pressure was operationalized with a dummy variable for whether the physician's spouse was also a physician. A spouse in the medical occupation, with relatively demanding and inflexible hours, should increase the likelihood of the focal physician being an HMO employee because they feel greater time pressure and role conflict. The results (model 3B

of table 6) suggest that for men the impact of having a physician spouse increases the likelihood of being an HMO employee. The magnitude of this effect is substantial, yielding an odds ratio estimate of 1.65 (coefficient significant at 0.10 level). For male physicians, then, spousal effects emerged while for women there were no effects (model 4B of table 6).

On the other hand, the effects of spousal *earnings* might be quite different. A spouse earning high compensation may enable the family to 'buy time' through the procurement of time-saving services like nannies, thereby alleviating the pressure to work a reduced schedule in an HMO setting. In this case, greater spousal income would decrease the likelihood of working in a large organizational setting. This effect should therefore move in the opposite direction of the spousal occupation effects tested above.

To evaluate this claim, logged spousal income was derived from survey questions asking about the focal physician's income and their contributing share of total family income. Specifically, spousal earnings were calculated to be: [respondent's earnings] * [100 – respondent's % contrib. to family income] / [respondent's % contrib. to family income]. Some measurement error is likely to be introduced because spousal income was not measured directly. The results in models 3B and 4B of table 6 show that for male physicians, higher spousal income does in fact reduce the probability of HMO employment (0.05 level). Again, there were no effects for women.

These spousal effects were not only stronger for men than women, but for women actually *no* dimension of spousal circumstances predicted HMO employment, and the regression model showed no improvement in fit with any of these factors included. In contrast, for men the model fit was significantly improved (chi-squared change of 8.6, significant at 0.05 level). Similar results were obtained using various permutations of the spouse's percentage contribution to family income.

Work Hours and Preferences

If the mechanism through which women came to be overrepresented in HMOs involves reduced hours in those settings, then we should expect hours for women in HMOs to be lower than those for women in non-HMO settings. Table 7 shows the weekly work hours for respondents within each of the three organizational settings, by gender. Among women, hours ranged from 43 in the HMO to 46 in non-HMO employment settings to 52 for owners in private

practice settings. Men's hours similarly ranged from 52 in HMOs to 56 in non-HMO employers and 62 among owners. Least-squares regressions with controls indicate an even larger HMO effect on hours. Table 8 shows that among women, HMO employees worked 5 fewer hours per week (sig. at 0.05 level); among men, HMO employees worked 5½ fewer hours (sig. at 0.01 level). For both men and women, these organization-type variables significantly improved model fit, increasing R-squared values by 4% and 5% respectively.

These results suggest that women in particular gained access to significantly reduced schedules in the HMO.

These results suggest that women in particular gained access to significantly reduced schedules in the HMO. Using the intercepts in Table 8, average hours for women with default characteristics on all control variables were 43, but they dropped to 38 if they were employed in an HMO. Thus the HMO appears to play a role in women's access to positions that drop below the 40-hours threshold. This effect can also be seen in Table 7, which indicates the portion of respondents working 40 or fewer hours per week. Fully 44% of HMO women worked 40 or fewer hours, compared with 39% of non-HMO women and 28% of owner women. Among men, the figures are 26%, 13% and 9% respectively.

Table 7 also shows the night and weekend hours reported by men and women in these settings. The results generally follow a similar pattern, except that there is no difference for women between HMO and non-HMO employees. Interestingly, female employees appear to work fewer off-hours than their male counter-parts regardless of whether they work in an HMO or another employment-based setting. Men, on the other hand, work fewer such off-hours in the HMO than they do in other settings.

In addition to actual hours, physicians working in the larger organizational setting should indicate a preference for fewer hours compared with those in the smaller private practice setting. A measure of ideal hours was constructed using actual weekly work hours and questions that immediately followed which asked if the respondent wanted ideally to work fewer, more, or the same hours and, if more or less, how many. If the respondent indicated wanting to work X fewer hours, then they were assigned [ideal hours] = [actual hours] – X; if they said they wanted to work Y more hours, they were assigned [ideal hours] = [actual hours] + Y. If they said they wanted nothing different than their current hours, then they were assigned [ideal hours] = [actual hours].

Table 7 indicates the portion of respondents in each setting who reported ideal work hours less than 40. The results show that men and women in HMOs are more likely than their counterparts outside HMOs to prefer such reduced hours conditions. These data must be interpreted with caution, however, since they may reflect cognitive adjustments made by respondents "post-hire."

If hours are in fact important to explaining the over-representation of women in the HMO setting, then entering weekly work hours as an independent variable in regressions predicting HMO membership should have the result of weakening the magnitude and significance of the gender variable. This is indeed the case; with the addition of hours, the coefficient on gender drops from 0.39 (shown in table 1.5) to 0.18 (not shown), and its significance drops from the 0.01 level to nowhere near significant. This suggests that hours mediate the relationship between gender and HMO employment to a considerable extent. Causal ordering cannot be established in these data, since hours and HMO employment are simultaneously measured (and simultaneously determined as well, to an extent, at the moment of hire). However, we can say that the link between sex—which is causally prior—and HMO status is strongly mediated by weekly work hours.

Sex Discrimination

An alternative explanation for the over-representation of women in larger organizations is the possibility of gender discrimination. Rather than being selected from the demand side of the labor market based on quality criteria such as those explored under the professions theory above, individuals could be being categorized based on sex for other reasons—which may or may not involve private assumptions about the relationship between sex and ability.

The most obvious place for discrimination to be occurring is at the point of hire. One way in which discrimination might lead to organizational-type sorting is if small practice organizations engage in discrimination based on perceptions of 'fit' between incumbents and potential hires. This could be the case if decisions are made using ascriptive characteristics like sex, or cultural cues associated with sex, as indicators of such a fit. Large employers, in contrast, tend to have more formal and centralized hiring mechanisms, with more-developed criteria used for evaluating potential hires as part of their personnel systems (Baron, Dobbin and Jennings, 1986). In other labor markets, large employers have indeed been found to discriminate less often (Holzer and Newmark, 2000).

If discrimination against women in the medical labor market were affecting HMO employment rates, then those women who were in HMOs should more often have been turned down in attempts to gain more-desirable positions outside the HMO sector. This line of reasoning assumes women were not deterred from at least pursuing other positions. Rather, if women were pursuing more desirable (non-HMO) positions just much as men were, but failing to obtain them at as high a rate because of discrimination at the point of hire, this would force more of them into the HMO sector.

In a limited way, the survey data can be brought to bear on this issue. Respondents were asked if, when they took their current practice position, there was another work choice that they would have preferred but did not obtain. The exact question read, "When you were deciding to work in your current practice, was there a position or practice arrangement that you applied for that would have been your first choice but was not offered?" There could be reluctance among respondents to admit having wanted a job they could not get, though there seems no strong reason to suspect this potential bias to be problematic for the findings.

Table 9 reports these lost-position results. Women in HMOs were no more likely to report the loss of a desired position than were women employed outside HMOs (7% vs. 7%), and women overall were less likely to have reported a loss when compared to men. Therefore, the evidence does not support the notion that women are employed in HMOs at greater rates as a result of having more often lost opportunities to practice in other settings. Regarding sex it is worth noting that overall in the entire sample women were no more likely to report a lost position at the time they took their current one (7.5% vs. 7.0%, n.s.).

Interestingly, Table 9 indicates that men in HMOs were almost twice as likely to report a loss when compared to men employed outside HMOs (15% vs. 8%). This relationship persisted in regressions on the likelihood of having reported a lost position, with full controls (significant at 0.01 level; not shown). This raises the possibility that men of some particular type are being discriminated against in non-HMO settings and are ending up in HMOs. Another explanation is that an unobserved but "legitimate" dimension of individual quality is leading non-HMO organizations to reject some men, who then end up in HMOs in a manner consistent with the professions theory.

Discrimination may also occur in capital markets, limiting the ability of women to become owners of solo practice or private partnerships as opposed to employees. This concern is

not strongly relevant to the main analyses presented here because they do not involve owners. Nonetheless, the data provide some limited evidence on whether women in HMOs were more likely to have been blocked from accessing the ownership sector. Respondents who reported a lost position (as described above) were asked if that lost position involved being an owner. Results are reported in the lower portion of Table 9. The key finding is that no women physicians in HMOs reported having unsuccessfully pursued an ownership position (not statistically different from the very small number of non-HMO women who reported as much).

In sum, the limited evidence available does not seem to support a view that women are over-represented in the HMO because of discrimination blocking their entry into other employment or ownership settings.[vii]

Extensions and Robustness

These analyses were extended in several ways. First, identical analyses were run using the categorical variable of 'large medical organization' defined as 30 or more physicians. This approach has data limitations, as described above, but produced qualitatively similar findings in terms of the direction of effects and rough magnitude (shown in Appendix A). Also, where owners were noted to be excluded from regressions, separate analyses have included them (not shown) with the result of almost always producing even stronger effects.

Additional controls were also used in regressions but excluded from the final results shown because they limited the sample size significantly. For a subsample of physicians, geographical population density in their practice locale was available. This appeared to be positively correlated with HMO employment, as would be expected given the volume of patients required to efficiently run such centralized services. However, the inclusion of population density did not eliminate the significance or magnitude of key effects, including the sex gap in HMO employment.

Finally, where logistical regressions were used, comparable multinomial regressions were also conducted using three categories (HMO, non-HMO, and owner). These produced similar results to those presented, but were deemed less accessible for readers. The dichotomous dependent variable of HMO versus non-HMO employee appeared to present the highest-quality data and the cleanest test of whether various effects influenced the likelihood of being a member of a large medical practice organization.

DISCUSSION

In this research I have sought to evaluate the efficacy of two theoretical approaches to understanding the HMO in the physician labor market. The first approach, drawing on the sociology of the professions, emphasizes autonomy and constraint in shaping those outcomes. The second approach, drawing on career theory, calls attention to the potential for systematic differences in schedule preferences, bringing a new perspective to understanding the large medical organization. The following discussion first summarizes the findings and then interprets them.

The results suggest that the HMO—an archetypal formalized large medical practice organization—involves both the curtailment of autonomy and a reduced work schedule. These findings suggest a trade-off generated by the large organizational structure: access to schedules with fewer weekly work hours but lower practice autonomy. The lower hours in the large organization also appear to be traded-off against lower pay, though it is important to recognize that hourly pay rates are identical across the HMO and non-HMO employment settings.

The results suggest that the HMO ... involves both the curtailment of autonomy and a reduced work schedule.

While the key characteristics of HMO positions were consistent with both of the broad theoretical approaches to understanding the physician labor market, the evidence on which physicians are in fact employed in these settings did not provide equally uniform support. Professions theory was not supported by the data in terms of HMO membership being influenced by individual quality or status. Instead, stronger evidence was found that was consistent with the theoretical linkage of individual schedule interests and HMO employment.

Perhaps the foremost finding was the association of sex with HMO membership; women physicians were about twice as likely to work in HMO settings. This was true with controls, including ability, age, and specialty. Evidence was also consistent with the notion that this gender gap in HMO membership was motivated by access to reduced hours. This evidence included hours differences for women (and men) in the HMO, as well as hours preferences of women (and men) in the HMO. The gender gap in HMO membership appeared to widen where physicians had large families, with 3 or more children, also consistent with the view that time pressures and schedule interests underlie the observed pattern. Finally, in controlled regressions,

weekly work hours were found to mediate the impact of sex on HMO membership, suggesting again that hours play a key role in the over-representation of women in HMOs.

With regard to the influence of spouses' careers, effects were found for men but not women. First, men with physician wives were more likely to be HMO employees, consistent with the view that they experience greater time pressure and therefore seek the better hours available there. Second, men with wives who earned more income were *less* likely to be HMO employees, consistent with the view that these high-income dual career couples could purchase services that reduced their time pressure and thus the need to seek better hours in the HMO setting. These findings for men were observed in regressions with controls, and each of the two findings held in the presence of the other. For women physicians, however, no spousal effects were observed.

A final set of analyses explored the possibility that gender differences in HMO membership might be the result of discrimination on the demand side of the labor market. These efforts looked at whether respondents reported having wanted a more desirable position when they took their current one. If the over-representation of women in HMOs was the result of discrimination, we would expect more women in HMOs to report such an alternative position. No support for this view was found, nor was any found for the possibility that HMO women were being systematically excluded from the ownership sector. However, intriguingly, men in HMOs had a higher rate of position loss than their male colleagues employed outside HMOs.

A common pattern emerges from these sex-difference findings. At first glance, a potential inconsistency appears to exist between the finding that women were more likely to be HMO employees, assuming this was driven by their stronger schedule interests, and the finding that men were more responsive in HMO employment to their spouse's career circumstances. However, these facts can be reconciled if women are seen to always take on greater household roles and responsibilities, as has been found repeatedly in other research (Bianchi, et al., 2000). In that case, women would categorically tend to favor the HMO setting with better hours, as was found. Women would behave in this manner regardless of their spouse's career, or even their own marital status, explaining why they show no response to those factors. Men, on the other hand, would have greater or lesser interest in the HMO work schedule depending on their spousal circumstances, and thus show more responsiveness to these factors.

Other findings were also consistent with this idea that women physicians had a categorically greater interest in the better hours of the HMO setting, whereas men differed depending on their circumstances. For example, this could explain why very few women in HMOs reported that they would have preferred another position over their current one, since they were in fact choosing the HMO deliberately. On the other hand, the fact that men in HMOs were more likely to report that there was another position that they would have preferred but failed to obtain suggests that a portion of them joined the HMO not because of hours preferences but rather due to their limited labor market options. However, the reason for such potentially limited options among HMO men is unclear since they were not of lower quality or status in the observable characteristics examined.

The finding that male physicians appear more responsive to spousal characteristics than do women physicians—at least in regards to their choice of work organization—is intriguing. Other studies have reported the opposite finding that women are more responsive to spousal circumstances than are men. This has been found both with respect to work careers overall (Han and Moen, 1999) and among physicians in particular (Sobecks et al., 1999; Uhlenberg and Cooney, 1990: 376). The present research highlights the role of the work setting in linking individuals to career activities and work hours: women physicians are more likely to work in the HMO, and in that setting they work fewer hours regardless of their spousal circumstances.

One potential reason for this contradictory finding involves the fact that selecting an employment setting is a relatively longer-term commitment for physicians, due to the difficulties involved in moving a physician's patients from one organization to another. As a result, selecting a work setting may be one choice in which long-term future career issues are strongly taken into account, and therefore it heavily reflects the impact of a spouse's long-term career concerns. In contrast, similar studies of how spousal circumstances impact the focal individual which focus on weekly work hours as the dependent variable may reflect shorter-term decision processes of a different nature.

This paper did not focus on physicians who were owners, in part because the issue of ownership would have complicated the focal analysis on organizational structure. Hoff (1998) used a similar earlier dataset to examine the demographic stratification of individual physicians into employment versus ownership positions. Among other findings, Hoff reported that women were over-represented in the employment sector. Such was also the case in the data presented

here. In addition, owners tended to work in smaller practices (Table 1), and earn higher overall incomes than employees (Table 2). Regressions (Table 7) indicate that male owners worked 3 hours more per week than even those male employees not in HMOs; female owners worked 5 more such hours. These differences in hours are consistent with explanations involving both the smaller size of owner organizations, making a reduced schedule more difficult to obtain, and from ownership status which confers greater economic incentive to spend long hours producing revenue (Newhouse, 1973).

Overall, the data presented here suggest that assumptions from professions theory do not describe the dynamics of the current physician labor market. Rather, evidence is more consistent with career choice factors that have to do with schedules or other work conditions. One way to reconcile these findings with professions theory, however, involves a shift in occupational values. When the cohort sampled in these data was completing medical school in the 1980s, new demographic patterns were transforming the medical profession. The young physicians in this cohort hailed from the first generation to grapple in large numbers with dual-career families, and were also likely to be affected by the women's rights movement. Many physicians of this cohort incorporated these family and gender considerations into their professional career goals, yet prevailing values in medical schools and professional associations still reflected the earlier professional system. The implication is that professions theory may have applied more forcefully in the earlier era, but individual career issues were coming to the fore in this and subsequent generations.

Overall, the data presented here suggest that assumptions from professions theory do not describe the dynamics of the current physician labor market.

A few caveats are in order. In general, caution is merited in interpreting the causality of these cross-sectional post-hire data. Direct evidence was not available on the labor market sorting mechanisms hypothesized here, in terms of individual schedule preferences or organizational selection policies. Therefore alternative mechanisms could also explain the observed distributions of individuals into organizational settings. For example, important schedule characteristics beyond weekly work hours or night/weekend hours could be at play. Two key schedule features not observable in these data are the predictability of schedules in terms of unplanned hours in the office, and their flexibility in terms of the ability to accommodate unplanned events outside the office. Some evidence suggests that the large

practice organization provides advantages to the individual physician in both these schedule aspects (Briscoe 2003). This could contribute to the disproportionate number of women in HMOs.

The over-representation of women in HMOs could also be related to individual preferences on margins other than hours or schedules. For example, it could be that women physicians tend simply to be less averse to the curtailment of autonomy, or find greater satisfaction in the team-based work required in the larger medical practice organization. They may see the larger organizations as entailing less employment or financial risks, or they may value the simplicity of having more centralized services available to them. Prior research has found gender differences in career values around time issues and work involvement, both generally (Bartol, 1976; Betz and O'Connell, 1989) and among physicians (Richardsen and Burke, 1990). However, other recent research suggests these differences may be diminishing over time (Rowe and Snizek, 1995; Tolbert and Moen, 1998).

Finally, other demand-side factors could also be influencing the gender representation in large organizations. While evidence of discrimination in the non-HMO sector was not found, another alternative is that a positive bias toward women in the large organization contributed to their over-representation there in rates greater than in the overall occupation. For over-representation to occur, after all, not only must more women apply to HMOs, but more must also be allowed in the door. This could have occurred because HMOs saw women as potentially more compliant with rules, or more team-oriented. It could also relate to the fact that HMOs' large size made them more visible to Equal Employment Opportunity regulation or discrimination lawsuits (Salancik, 1979).

CONCLUSION

This research was done in order to understand a current professional labor market of great importance. I focused on the role of the HMO, a large bureaucratic organization, in the physician labor market. Professions theory, a sociological perspective rooted in the exceptionalism of the professions, does little to explain the pattern of employment in HMOs despite strong predictions. Instead, a degree of explanatory leverage emerges from a career-based perspective that focuses on individual career interests and work-family roles. Because of their capacity to provide reduced hours opportunities, HMOs offer an attractive setting for doctors seeking such rarely-available practice arrangements.

This work contributes toward an understanding of professionals that emphasizes heterogeneity in individual interests and the possibility of accommodating those interests in large organizations. By neglecting this diversity, we run the risk of generating professional labor market models that cast large organizations in an overly rigid role as efficient yet alienating monoliths. In contrast, incorporating individual diversity into models of the professional labor market focuses attention on which individuals choose employment in large organizations because they value working there. A future challenge to understanding large-scale organizations across a range of professional labor markets will be to understand exactly how those organizations generate schedule options and career flexibility—as well as the more familiar ways in which those organizations constrain work autonomy or stratify internal career systems.

NOTES

[i] Note that such factors provide the *potential* for shorter hours, not the functional necessity of them. Yet as long as some large organizations are providing reduced schedules, average hours in that sector will fall, and information about those fewer hours should influence labor market behavior at the margin.

[ii] This "Baby-Boomer" survey population represents a transitional cohort between the "golden era of medicine" (McKinlay and Marceau, 2002) and a new era in which medical school graduates have no direct memory of that earlier time period. The baby boomer cohort is the first to include large numbers of physicians who were women or in dual-career families—yet the norms passed on to them in medical school were those of the earlier era. For example, few mentors or role models would have been available to offer advice on achieving career and family balance to physicians in dual-earner families.

[iii] There appears to be a degree of measurement error in these self-reported size values because of the high complexity of medical organizations and physician affiliations. For example, a few implausibly large outliers upwardly bias the owner average, and the fact that some HMO-employed physicians reported organizational sizes below 50 suggests that they had in mind their office or department or team rather than the entire organization. Size variables were *not* relied on as the basis for the analyses presented below, though the raw size results are consistent with expectations, as shown in Appendix A.

[iv] They were: Internal Medicine, Specialty without subspecialty (includes Emergency Medicine, Dermatology, Allergy, Immunology, Neurology, Physical Medicine, Occupational Medicine), Medical subspecialty, General surgery, Surgical specialty, Pediatrics, Obstetrics/Gynecology, Radiology, Psychiatry, Anesthesiology, Pathology, and Other. Base case was General/Family Practice.

[v] Regressions which control for specialty and other factors are presented and discussed below. For more extensive analyses of income using these data, see Baker (1996) and Sasser (2001).

[vi] The results for several control variables, not reported in tables due to space constraints, are worth noting. Physicians entering the labor market in later years appear to actually have had a reduced likelihood of working in HMOs in 1991, after controlling for sex (which is correlated with labor market cohort year). Second, blacks were much more likely to be HMO employees. Third, men in the Western region of the United States had a greater chance of being HMO members, although this was not the case for women.

[vii] Evidence *is* consistent with black physicians being discriminated against. Overall, 16% of blacks reported a lost position compared with 7% of non-blacks (including whites and Asians). This relationship holds in regressions with a full set of controls including ability scores (odds ratio estimate on coefficient for black is 7.6, significant at 0.001 level). These controls are important, because black physicians have significantly lower average MCAT scores than do non-blacks.

The greater lost-position frequency among black physicians may also be influencing their employment in HMOs. Among blacks in HMOs, the lost-position rate was highest, at 19% (compared with 11% of non-HMO blacks, and lower rates across the board for non-blacks).

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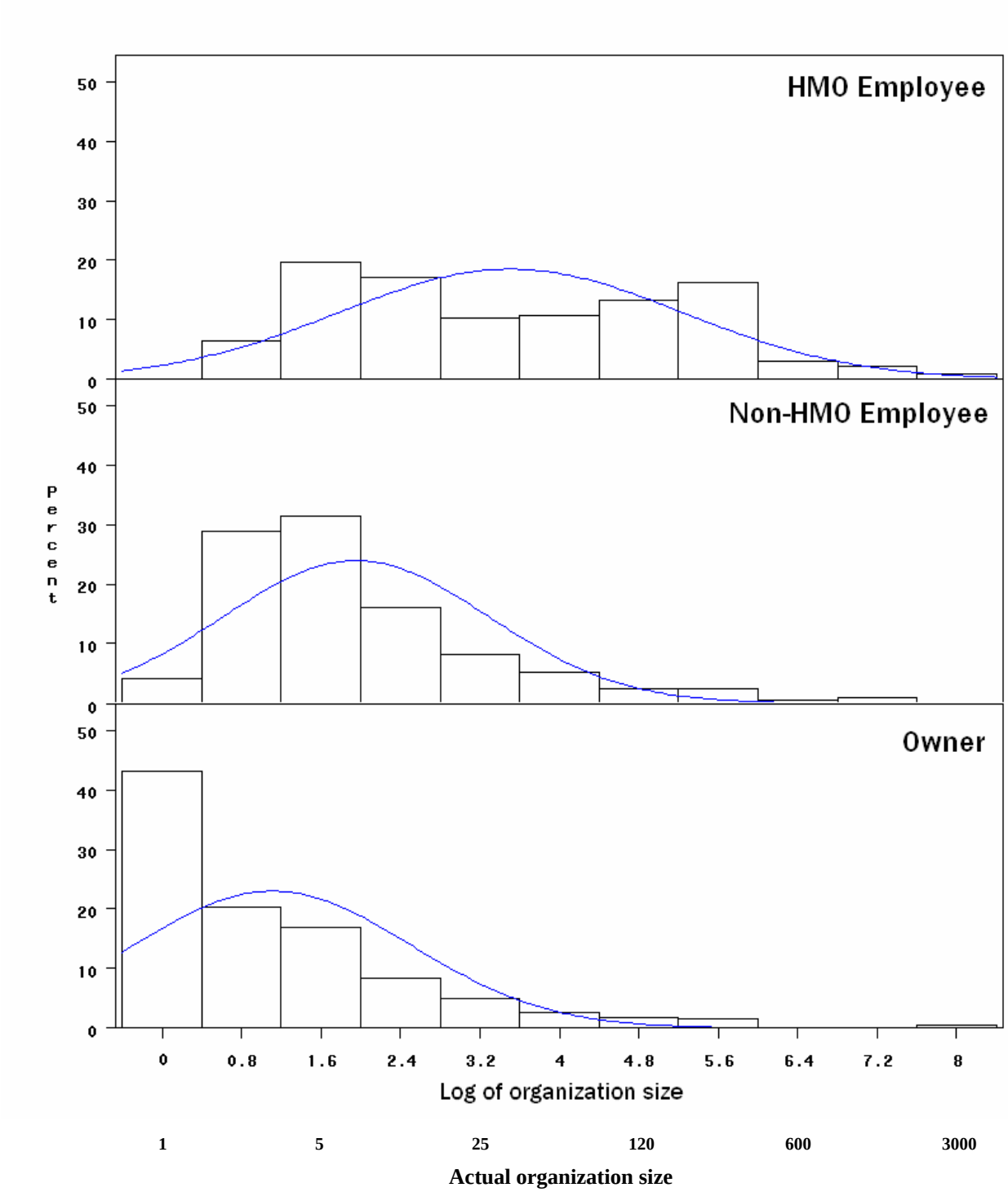
Figure 1: Histograms of Reported Organization Size Distribution for HMO Employees, Non-HMO Employees, and Owners



Smooth lines indicate fitted normal curves

Table 1: Organizational Size Distribution
for HMO Employees, Non-HMO Employees, and Owners

	Median	Mean	Std	N
HMO	25	138	320	233
Non-HMO employee	5	32	125	917
Owner	2	23	170	2878

Table 2: Autonomy, Ownership Status, Income, Hours and Schedule Characteristics
for HMO Employees, Non-HMO Employees, and Owners

Category Question	HMO employee	Non-HMO employee	Owner[1]
Autonomy			
Use clinical protocols	71%	66%+	58%
Need formal approval for referrals[2]	39%	19%***	
Need formal approval for new treatments[2]	56%	33%***	
Need approval for expensive procedures[2]	53%	38%***	
Clinical decisions reviewed by someone else[2]	78%	56%***	
Income			
Annual income	$96,000	$102,000+	$163,000
Hourly income	$45	$45	$60
Hours and schedule			
Total weekly hours (all practices)	49.6	55.6***	61.3
Night and weekend hours	7.7	8.9	11.6
Working less than 40 hours per week	33%	20%***	12%

[1]Differences between non-HMO employees and owners were all statistically significant at the 0.001 level.
[2]Questions only asked of physicians who reported working in groups of at least 5 (Not analyzed for owners; sample size 1280).
T-test results for difference in means between HMO and non-HMO employees: ***0.001 level, **0.01 level, *0.05 level, +0.10 level.

Table 3: Descriptive Statistics for Variables Used in Regressions

Variable	Mean	Std	N
Sex (female=1)	.32	.46	2887
Single (unmarried)	.19	.39	2863
Ln(spouse income)	1.55	8.55	2744
Spouse is physician	.18	.39	2863
Science MCAT	9.15	2.18	1321
Science GPA	3.38	.47	2255
Years applied to medical school	1.22	.47	967
International medical school	.12	.32	1235
Parents class (5=upper class)	2.92	.99	2865

Table 4:

Impact of Individual Ability and Educational Quality on Employment in an HMO: Analysis of Maximum Likelihood Estimates[1]

Variable	1A	1B	2A	2B	3A	3B	4A	4B
Sex (female=1)		.67		2.52+		0.55		.34
		(1.04)		(1.38)		(.78)		(.25)
Science MCAT	.01	.04						
	(.06)	(.07)						
Sex*Science MCAT		-.03						
		(.11)						
Science GPA			.16	.40				
			(.22)	(.28)				
Sex*Science GPA				-.65				
				(.40)				
Years applied					-.23	-.14		
					(.29)	(.33)		
Sex*Years applied						-.29		
						(.65)		
International med. school							-1.25**	-1.63**
							(.46)	(.65)
Sex*Int'l. med. school								.78
								(.79)
Intercept	-.23	-.69	-2.58**	-3.51***	-1.63***	-1.79***	-1.86***	-1.92***
	(1.46)	(1.54)	(.85)	(1.03)	(.59)	(.63)	(.41)	(.42)
Full controls	X	X	X	X	X	X	X	X
N	1318	1318	2250	2250	962	962	1229	1229
-2LL	606	604	1084	1079	511	511	609	605

[1]Among employees; similar results obtained when owners are included in sample.

Controls include age, cohort, region, race, and specialty.

***0.001 level, **0.01 level, *0.05 level, +0.10 level.

Table 5:

Impact of Individual Ability and Educational Quality on Employment in a Medical School: Analysis of Maximum Likelihood Estimates

Variable	1A	1B	2A	2B	3A	3B	4A	4B
Sex (female=1)		-.85		-2.06		1.04+		.41*
		(1.13)		(1.52)		(.62)		(.19)
Science MCAT	.16**	.13*						
	(.05)	(.06)						
Sex*Science MCAT		.08						
		(.12)						
Science GPA			.79***	.63**				
			(.19)	(.21)				
Sex*Science GPA				.63				
				(.42)				
Years applied					-.52**	-.41+		
					(.20)	(.22)		
Sex*Years applied						-.45		
						(.52)		
International med. school							-.97**	-.69*
							(.32)	(.34)
Sex*Int'l. med. school								-1.38+
								(.79)
Intercept	-18.5	-18.2	-5.83***	-5.36***	-2.50***	-2.76***	-3.09***	-3.20***
	(18.0)	(18.1)	(.72)	(.79)	(.48)	(.50)	(.35)	(.36)
Full controls	X	X	X	X	X	X	X	X
N	2248	2248	4396	4396	2330	2330	2957	2957
-2LL	790	790	1930	1956	1021	1013	1370	1363

Controls include age, cohort, region, race, and specialty.

***0.001 level, **0.01 level, *0.05 level, +0.10 level.

Table 6:

Impact of Sex and Spousal Status on Employment in an HMO:

Analysis of Maximum Likelihood Estimates

Variable	1A: Employee sample [1]	1B: Employee sample [1]	2A: Total Sample[1]	2B: Total sample[1]	3A: Employee men only[2]	3B: Employee men only[2]	4A: Employee women only[2]	4B: Employee women only[2]
Sex (female=1)	.39** (.16)	.38+ (.20)	.62** (.24)	.63** (.24)				
Science MCAT		.02 (.07)		.04 (.06)				
Science GPA		.17 (.33)		.06 (.32)				
Single						0.29 (.23)		-.47 (.40)
Spouse is MD						0.50+ (.30)		-.34 (.30)
Ln (spouse income)						-0.15* (.08)		-.06 (.08)
Intercept	-2.20*** (.33)	-1.24 (1.86)	-2.08+ (1.19)	-2.64+ (1.58)	-2.60*** (.45)	-2.55*** (.46)	-1.32* (.53)	-0.97 (.61)
Full controls	X	X	X	X	X	X	X	X
N	2881	1195	2031	2031	1899	1899	839	839
-2LL	1390	543	631	631	784	779	503	500
Chi-squared	105.3***	105.8***	112.0***	112.5***	146.6***	155.2***	57.2**	59.5**
Δ Chi-squared		0.5(n.s.)		0.5(n.s.)		8.6*		2.3(n.s.)

[1]Chi-squared values and tests use identical subsamples without missing values on MCAT or GPA (n=1195 for employee sample and n=2031 for full sample).
***0.001 level, **0.01 level, *0.05 level, +0.10 level.
[2]Results shown for employee sample' similar results produced with full sample.

Table 7:

Average Hours and Schedule Comparisons by Sex

for HMO Employees, Non-HMO Employees, and Owners

		HMO employee	Non-HMO employee	Owner
Average weekly work hours in main practice	Men	52	56	62
	Women	43	46	52
Percent reporting work hours of 40 or fewer	Men	26%	13%	9%
	Women	44%	39%	28%
Average weekly night and weekend hours	Men	8.2	9.7	11.9
	Women	6.9	6.8	10.5
Percent reporting ideal hours of 40 or fewer	Men	42%	24%	22%
	Women	65%	55%	47%

N=135, 1834 & 2348 for men
and 98, 814 & 523 for women
(HMO, non-HMO & owner respectively)

Table 8:

Impact of organizational type on weekly work hours:

OLS estimates[1]

Variable	1A: Men	1B: Men	2A: Women	2B: Women
HMO		-5.56**		-4.72*
		(1.48)		(1.95)
Owner (private practice)		2.92***		4.95**
		(.53)		(1.04)
Intercept	59.69***	58.22***	45.39***	43.49***
	(1.22)	(1.26)	(2.47)	(2.49)
Full controls	X	X	X	X
N	4308	4308	1434	1434
R^2	0.08	0.12	0.09	0.14
ΔR^2		0.04		0.05

[1]Results shown for full sample; similar results obtained with employee sample. Controls include age, cohort, region, race, and specialty.

***0.001 level, **0.01 level, *0.05 level, +0.10 level.

Table 9:

Percentage of Respondents Who Sought Another Practice Position But Did Not Obtain It

		HMO employee	Non-HMO employee	Owner
Percentage reporting another practice position that they wanted but did not obtain	Men	15%	8%**	7%
	Women	7%	7%	8%
Percentage reporting another ownership position that they wanted but did not obtain	Men	8%	2%***	4%
	Women	0%	2%	3%

N=135, 1828, 2328 for men and 98, 805, 520 for women

(HMO, non-HMO, owner respectively)

T-test for difference in means between HMO employees and non-HMO employees: ***0.001 level, **0.01 level, *0.05 level, +0.10 level.

APPENDIX: REPLICATION USING ORGANIZATIONAL SIZE VARIABLE

I also classified the respondent's organizational affiliation according to size, irrespective of ownership, using a variable called "large medical practice organization" (LMPO) that encompassed 14% of respondents. LMPO was defined to include the 233 employees of HMOs, as well as all 207 owners of practices with 30 or more physician staff and all 90 employees of such large private practice organizations. Making up the comparison group for the LMPO variable are 2671 owners of practices with fewer than 30 physician staff, and 583 are employees of such smaller-sized practices.

Broadly similar findings resulted from using the LMPO variable compared with the HMO variable. Autonomy, ownership status, income, hours, and schedule characteristics followed a similar pattern for LMPO as they do for HMO. In controlled logistic regressions, the likelihood of practicing in an LMPO was not any greater for those with higher MCATs or GPAs, nor was it greater for those from international medical schools or those of lower class backgrounds. Table A1 shows that women were clearly more likely to work in LMPO settings, and among men those with physician spouses were more likely to work in LMPO settings. (All results available from the author on request.)

Table A1: Impact of Sex and Spousal Status on LMPO Membership: Analysis of Maximum Likelihood Estimates

Variable	All	Men only	Women only
Sex (female=1)	.44***		
	(.12)		
Single		.42*	-.49
		(.18)	(.34)
Spouse is MD		.35+	.12
		(.21)	(.25)
Ln (spouse income)		.03	-.03
		(.04)	(.06)
Intercept	-2.19***	-2.30***	-1.29*
	(.23)	(.29)	(.54)
Full controls	X	X	X
N	3780	2764	755
-2LL	2836	1939	662
Chi-squared	214.7	174.7	68.9

***0.001 level, **0.01 level, *0.05 level, +0.10 level.

Table A2: Hours and Schedule Differences among Men and Women in Large Medical Practice Organizations (LMPOs) and Other Settings

		LMPO	Non-LMPO
Percent of respondents reporting 40 weekly work hours or fewer	Men	17%	9%***
	Women	32%	34%
Average weekly work hours	Men	58	63***
	Women	50	50
Average weekly night and weekend hours	Men	9.7	11.9***
	Women	8.1	9.8+

n=360 & 2574 for men, and 170 & 673 for women (LMPO & non-LMPO respectively)

Similar results using all physician practices or just primary practice setting.