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An Analysis of the Impact of Gender on Physician Practice Patterns

Ann K. Boulis, PhD
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ABSTRACT. Through analysis of Community Tracking Study Physician Survey, a nationally representative survey of U.S. physicians, we find that women physicians are significantly less satisfied with time for patients than their male colleagues. Among primary care physicians, about one third of the gender difference is explained by physician attributes, practice characteristics, geographical location and patient profiles. Control variables explain all of the gender gap among specialist physicians. Among primary care physicians, the effects of practice type and perceptions of patient complexity on satisfaction with time for patients are mediated by physician gender. Among specialist physicians, gender interacts with practice ownership and hours spent in medically related activity to determine satisfaction with time for patients. *[Article copies available for a fee from The Haworth Document Delivery Service: 1-800-HAWORTH. E-mail address: <docdelivery@haworthpress.com> Website: <<http://www.HaworthPress.com>> © 2003 by The Haworth Press, Inc. All rights reserved.]*

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Over the past thirty years, the proportion of the active physician workforce made up by women tripled, climbing from 6.8 percent in 1970 to 23.0 percent in 1997. By 2010, women physicians are projected to constitute 29.4 percent of U.S. physicians (Frank et al., 1997). Since the growth of female medical students began, policy analysts have been trying to assess the implications of this trend for the supply and distribution of medical professionals as well as for the delivery of medical services (Bowman and Gross, 1986; Heins and Braslow, 1981; Mawardi, 1977).

Previous research has documented substantial differences in how male and female physicians approach interactions with patients. Women physicians are concentrated in specific medical fields like pediatrics (Collins et al., 1997). They work fewer hours than their male colleagues and earn less money (Baker, 1996). Women spend more time with patients (Roter and Hall, 1998); and they provide more preventive care services, especially to their female patients (Lurie et al., 1997; Woodward et al., 1996). Women physicians are more likely to counsel patients about specific healthy behaviors such as condom use (Maheux et al., 1997; Woodward et al., 1996; Barnsley et al., 1999); and address psycho-social issues in practice (Bensing et al., 1993). Women physicians are more likely to maintain patient relationships that decrease the risk of malpractice, and have a communication style that improves health outcomes (Frank et al., 1999).

Now that women constitute a major portion of the medical workforce, it is no longer possible to ignore their experiences. Understanding whether women physicians have unique concerns is an important step in accomplishing this objective. Hospitals, practices and managed care companies seeking to remain competitive will have to attract and retain a sizeable workforce of female physicians.

Given the pronounced gender differences in approach to patients and practice, it seems highly likely that significant gender differences in perceptions of medical practice would also exist. Some research has sought to explore the practice patterns of women physicians, but relatively little effort has been made to assess the concerns and perceptions of women physicians.

In this paper, we examine gender differences regarding one key issue confronting physicians—time for patients during their patient encounters. We consider three aspects of this issue. First, we estimate male and female physicians' satisfaction with time for patients and compare differences within gender to differences across gender. Second, we assess the extent of the gender gap in satisfaction with time for patients that can be explained by other characteristics such as years of experience, specialty and type of practice. Finally, we examine how gender affects the relationship between

satisfaction with time for patients and other physician characteristics such as practice type and income. Because of dramatic differences in their training and work environments, we examine primary care physicians and specialists separately in the second and third phases of our analysis.

Clinical office visits are a critical facet of health services. They not only constitute the primary environment for the delivery of therapeutic health care, but also offer key opportunities to build constructive and trusting provider-patient relationships. Under optimal conditions, clinicians can use office visits not only to cure biomedical pathology, but also to provide critical preventive and screening services, encourage healthful behavior, address psychosocial problems, offer basic health education, and ultimately avoid high cost, acute care services.

While office visits have great potential, providers cannot utilize them fully if they are curtailed prematurely or inappropriately limited. In other words, rushed office visits can reduce providers' capacity to provide high quality health care. To begin with, limited visits restrict the capacity of providers to offer a full menu of services. For example, Blumenthal and Chang (1999) found that, while the average U.S. adult primary care visit during 1991 and 1992 lasted 16 minutes, visits which included three or more preventive screenings tests lasted an average of 20 minutes, or 25 percent longer. Similarly, in a study of British general practitioners, Morrell et al. (1986) found that compared to physicians using 7.5- and 10-minute consultations, doctors using 5-minute consultation intervals identified fewer problems, and were significantly less likely to record patient blood pressure. Rechovsky et al. (2001) recently examined physicians' satisfaction with time spent with patients, among other outcomes, but did not examine the gender effect in any detail. Collins et al. (1997) found a gender difference in satisfaction with time for patients but did not attempt to explain the disparity.

Further, rushed visits may also result in missed diagnoses and other medical mistakes. Studies reveal that primary care and specialist clinicians who spend longer periods with their patients are less likely to be sued, suggesting a potential relationship between medical error or patient satisfaction and time for patients (Levinson et al., 1997; Adams and Zuckerman, 1984).

Finally, limited time for patients may contribute to a harsh and intimidating experience for patients (Ramsey and Paauw, 1998). Empirical evidence indicates that: (1) attention to psycho-social problems and non-verbal communication, both activities which inevitably increase average visit length, significantly enhance patient satisfaction and that (2) satisfied

patients have higher rates of compliance with medical advice (Safran et al., 1998; Harris et al., 1995; Bertakis, Roter and Putnam, 1991).

The standard view on the relationship between gender and medical care is that the sex of a physician does not affect the provision of care to patients. Because physicians are carefully screened and rigorously trained, patients can count on physicians to diagnose, treat and refer patients as medically indicated regardless of whether they wear pants or skirts under their medical garb (Mattila-Lindy et al., 1998). Although the article admits there are some sex differences, they conclude "socialization into the medical profession makes physicians' practices more alike and diminishes gender differences" (1998: 15).

Yet there are at least two reasons why gender differences in practice styles and associated concerns may exist. First, research suggests that men and women prioritize different factors when choosing medical specialties. For example, in a study of 1,367 male and 1,265 female doctors, Neittaanmaeki et al. (1993) found that more women than men mentioned lifelong calling, interest in helping people, and success at school as major reasons motivating their decision to become a doctor. In contrast, more men than women mentioned the medical profession as being regarded as a highly paid and high status profession as major reasons motivating their decision to become a doctor. The different motives for entering the profession may color male and female perceptions of everyday issues such as time for patients.

Another potential reason for a gender gap in satisfaction about time for patients is that male and female physicians differ in their position within the medical profession. Physicians' career paths reflect gender differences: women are paid less and are less likely to be self-employed (Collins et al., 1997; Kikano et al., 1998); women are underrepresented in positions of authority within medical organizations and academia (Bickel, 2000; Nonnemaker, 2000; Martin et al., 1998); and women are more likely to work in health maintenance organizations (Collins et al., 1997). Differences in satisfaction with time with patients may well reflect the different positions men and women doctors occupy within the medical world.

We focus on four categories of covariates in our analysis: physician characteristics, practice characteristics and community and patient characteristics. First, we examine physician characteristics including training and qualifications, specialty, work time and income. Physician qualifications may influence ideas about the nature of patient visits, and, in turn relate to their capacity to address patient problems in the time available. Similarly, because of evidence suggesting that physicians' motivations and priorities depend on their specialty (Kassebaum and Szenas, 1994), we believe that specialty will influence satisfaction with time for patients. Since there are

significant differences in the qualifications, specialties and work time of male and female physicians, there is reason to believe that these characteristics may contribute to explaining gender differences in satisfaction with time for patients.

The second category of covariates, practice characteristics, includes type of practice, sources of practice revenue, ownership of practice, HMO penetration in the area of the practice and health resources in the area of the practice. There are several reasons to expect a relationship between practice characteristics and physicians' satisfaction with time for patients. For example, physicians in solo practice or partnerships have greater discretion about the time they spend with patients than their colleagues in HMOs or group practices. Similarly, practices that earn large portions of revenue from Medicaid must cope with dramatically reduced reimbursement schedules and with a unique patient panel. Practices with large portions of revenues from managed care must deal with bureaucratic obstacles such as pre-screening of procedures and utilization review. Since women and men physicians are distributed differently across the various practice types, it follows that practice characteristics will affect the relationship between gender and satisfaction about time for patients.

Third, community characteristics may affect physician satisfaction about time during patient visits. Physicians in communities with larger supplies of health resources may be less stressed about the treatment of their patients because health resources are easily accessible. On the other hand, physicians in areas with a large supply of doctors may be more concerned about time with patients because their patients have more power to find other providers if they are not satisfied. There are similar arguments for a relationship between patient education and income. On the one hand, educated and affluent patients may be more inquisitive and contentious, thus encouraging physicians to spend more time explaining procedures and conditions and conducting tests. On the other hand, relative to the educated and affluent, poorly educated or low income patients often delay seeking medical treatment and present with conditions in need of more attention.

Finally, recent changes in the organization and financing of medicine may influence physician responsibilities and, in turn, shape physicians' satisfaction. Because of fundamental differences in the delivery of primary and specialty care, physician satisfaction should depend on the type of services they provide. For example, primary care physicians who feel they must treat patients with conditions that warrant referrals may be less satisfied with time for patients than other physicians. Relatedly, specialists who are experiencing a decline in referrals and an increase in the average severity of patient panels may have increased satisfaction with time for patients.

For substantive and practical reasons, we divide the sample into primary care physicians and specialists. Professionally, primary care and specialist physicians differ in years of training and experience. (On average, specialists are younger.) They face dramatically different earnings opportunities and are paid via different reimbursement mechanisms. Finally, as implied by their titles, primary care and specialist physicians treat patients with different medical conditions and expectations. (Patients referred to specialists may be more impatient, on average, since they have already endured difficult symptoms.) In practical terms, the CTS survey includes series of questions that apply either to primary care physicians or to specialists. These differences prevent us from treating primary care and specialists as a single population.

DATA

The data for this study are drawn from the Community Tracking Study (CTS) Physician Survey, a telephone survey of licensed physicians funded by the Robert Wood Johnson Foundation and conducted by the Center for Studying Health System Change. Interviews with 12,385 physicians were completed between August 1996 and August 1997. There are 12,528 records on file because 143 physicians were sampled twice and thus appear on the file twice. However, each of these physicians was interviewed only once.¹ In order to be interviewed, the physician had to be characterized as active, i.e., practicing at least 20 hours per week. The sample design of the CTS Physician Survey allows for estimates of conditions in the continental United States. After relevant weights are applied, estimates from this sample reflect the national distribution of physicians. The CTS project is described in detail elsewhere (Kemper, 1996; Keil et al., 1998). Data weights allow for nationally representative descriptive statistics. The characteristics of the sample are described in Appendix A.

DEPENDENT VARIABLE

As mentioned earlier, the focus of this analysis is physician satisfaction with time for patients. The dependent variable assesses the strength of physicians' agreement with the following item, "I have adequate time to spend with my patients during their office visits," or, if the physician does not have an office, "I have adequate time to spend with my patients during a typical patient visit." Physicians who disagree strongly with this item were

scored a -2 . Those who disagreed somewhat received a -1 ; those who neither agreed nor disagreed received a 0 ; those who agreed somewhat received a 1 ; and those who agreed strongly received a 2 .

INDEPENDENT VARIABLES

In our analysis, we examine three main groups of correlates with satisfaction with time with patients. The first group involves characteristics of individual physicians. The second group involves characteristics of physician practices. The third involves characteristics of physicians' patient panels. Each group of variables is described here in detail.

Physician Characteristics

There are 7 categories of physician characteristics in this analysis: (1) gender, (2) years of experience practicing medicine, (3) board certification in primary subspecialty and (4) whether a physician is a graduate of a foreign medical school, (5) principal specialty, (6) time spent working, and (7) income.² The measure of primary specialty has seven categories: (1) general internal medicine, (2) general pediatrics, (3) family or general practice, (4) medical specialty, (5) surgical specialty, (6) psychiatry, (7) obstetrics-gynecology. The sixth category of physician characteristics, time spent working, includes three separate variables: (1) number of hours spent during the previous week in medically related activity, (2) number of hours spent during the previous week in direct patient care, and weeks spent practicing medicine during the previous year.³

Practice Characteristics

There are three categories of practice characteristics in this analysis: (1) practice ownership, (2) practice type, and (3) source of practice revenue. Our measure of practice ownership has three categories. Physicians indicate if they are full owners, partial owners or non-owners of their primary practices. Our measure of practice type has six categories: (1) solo practice or partnership, (2) group practice or 3 or more physicians, (3) HMO, (4) hospital based practice, (5) medical school based practice, and (6) other. (The HMO option includes group and staff model HMOs.) Our measure of source of practice revenue includes four separate variables. We specifically address: (1) the percentage of practice revenue from Medicaid, (2) the percentage of practice revenue from Medicare, (3) the percentage of practice

revenue from capitated managed care, and (4) the percentage of practice revenue from all types of managed care.

Community Attributes

There are 10 categories of community attributes in our analysis. The first five categories address health resources: (1) active physicians per capita in the county where the physician practices, (2) short-term hospital beds per capita in the county where the physician practices, (3) traditional HMOs or HMOs that deliver health services through a physician group that is controlled by the HMO unit, (4) Independent Practice Association (IPA)-HMOs or HMOs that contract directly with physicians in independent practices and/or with associations of physicians in independent practices and/or with one or more multi-specialty group practices, (5) Other HMOs or HMOs that contract with two or more independent group practices and HMOs that use a combination of model types. The remaining community attributes are demographic and financial measures: (1) population density, (2) per capita income, (3) persons in poverty per capita, (4) high school graduates per capita, and (5) college graduates per capita. We measure population density with a three-category variable. Physicians indicate if they work in a large metropolitan area, a small metropolitan area or a non-metropolitan area. Our measure of per capita income is from 1996, the same year as the survey. However, our measure of persons in poverty is from 1995, and our measures of education are from 1990. Our measures of membership in HMOs, the supply of health resources, the income of area residents, the poverty of area residents and the education of area residents all come from the 1999 Area Resource file (Health Resource Services Administration, 1999).

Patient Attributes

Finally, we assess the patients of primary care practitioners with four items. Item one measures perceived change in the complexity of patients treated by respondents without referral. Item two asks physicians if the complexity of patients whom they treat without referral is appropriate. Item three measures perceived change in referral rates. Item four asks respondents to estimate the percentage of patients for whom they serve as gatekeeper.⁴

We assess the patients of specialists with three items. The first variable considers change in the complexity of patients' conditions at the time of referral. The second variable asks physicians if the complexity of patients'

conditions at the time of referral is appropriate. The third item asks specialists about changes in the number of patients referred to them.⁵

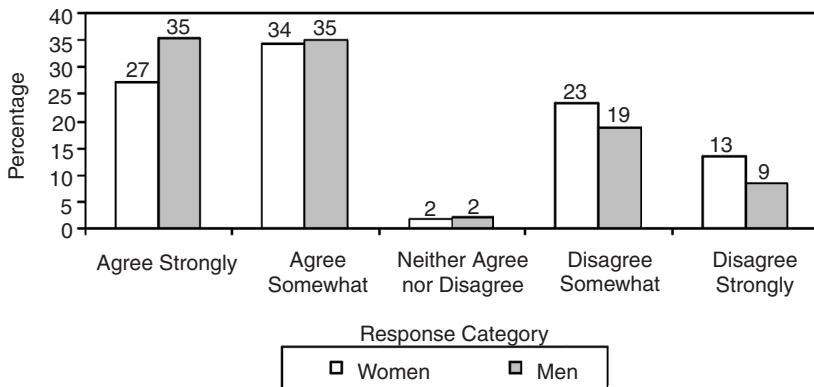
METHODS

Our analysis has two phases. We begin by comparing male and female responses to our dependent variable. We then create a series of nested ordinary least squares models, which we use to explain the gender gap in satisfaction with time for patients. In the second phase of our investigation, we present a series of gender specific ordinary least squares models. This analysis highlights those correlates of satisfaction with time for patients that affect male and female respondents differently.

RESULTS

Taken together, most doctors report being either somewhat or strongly satisfied with their time for patients. (Responses to the dependent variable are depicted in Figure 1.) However, a significant minority of physicians indicate moderate or low satisfaction with their time for patients. Further, male and female physicians differed notably in their satisfaction with time for patients—36.7% of women and 27.3% of men were somewhat or strongly concerned about their time for patients.

FIGURE 1. Adequate Time for Patients During Visits



Explaining the Gender Gap

We next consider how physician characteristics influence the relationship between gender and satisfaction with time for patients. Table 1 displays 4 nested OLS regression models. The first model considers the relationship between gender and satisfaction with time for patients at the bivariate level. The second model adds the effects of physician characteristics on the relationship between gender and satisfaction with time for patients. In Model 3, we add the effect of practice characteristics. In Model 4, we add measures of community demographics.

When the variable "female" is estimated as the sole determinant of satisfaction with time for patients, we see a significant gender gap. Women are .31 points less satisfied than men on a five-point scale. When physician characteristics are added to the analysis, the gender gap declines 25.8% to .23. In Model 3, we add physician practice characteristics to the equation. At this point, the gender gap narrows another 13.0% to .20. The addition of community attributes in Table 1 fails to further narrow the gender gap in satisfaction with time for patients.

In additional analysis not shown, we find that much of the explainable portion of the gender difference in satisfaction with time for patients is attributable to years of experience. The gender coefficient declines from $-.30$ to $-.19$ in a model that regresses gender and years of experience on satisfaction with time for patients.

Let us turn now to the determinants of satisfaction with time for patients (see Table 1, Model 4). We find that years of experience are positively related to satisfaction with time for patients. We believe that the positive association between years of experience and satisfaction with time for patients may stem from age-related differences in how physicians define and approach clinical visits. Research indicates that office visits are evolving to include more discussion and fewer procedures (Mitchell, Shurman and Cromwell, 1988). It could be that older physicians have a fundamentally different definition of a "quality patient visit." That definition may involve less time-consuming consultation or discussion with patients. If this is true, then it may be easier for older physicians to meet their expectations for patient visits.

The negative relationship between board certification and satisfaction with time for patients may stem from the additional familiarity of board certified physicians with state of the art procedures and techniques. In other words, board certified physicians may wish to spend more time with patients because they can use that time productively. On the other hand, physicians who train in foreign countries may be more satisfied with their time

for patients because they have a fundamentally different reference point. That is, since health services are relatively available in the United States, foreign medical graduates may be more satisfied on average with their time for patients.

Table 1 also reveals significant differences by specialty in satisfaction with time for patients. We find that general internists have a lower average satisfaction with time for patients than all other physicians except psychiatrists and family practitioners. There is no statistical difference between the satisfaction of general internists and family practitioners; and psychiatrists have significantly lower satisfaction with their time for patients. As suggested earlier, one possible reason for the specialty-related differences might stem from differences in the underlying motivations of physicians in specific specialties. In a nationally representative study of graduating medical students, Kassebaum and Szenas (1994) find a significant relationship between the types of job characteristics that students prioritize or most highly value and the types of specialties they choose. For example, patient contact factors were rated higher by future generalists, while intellectual opportunity factors, challenging diagnostic problems and opportunity for research were more important to future specialists. Finally, leadership and prestige factors were more important to students pursuing surgery. Thus, the disproportionate interest in patient contact might explain the low satisfaction of family practitioners and general internists with time for patients. On the other hand, the unique needs of patients with mental health problems might explain the low satisfaction of psychiatrists. Table 1 indicates that hours spent in a medically related activity are negatively related to satisfaction with time for patients, but that time spent in direct patient care is positively related to our outcome. These results are not surprising. It follows that physicians who spend more time with patients would be more satisfied with their time for patients. It seems equally logical that the longer a physician works, the more stressed he or she will become generally. It is possible that this general strain influences satisfaction with time for patients.

We find that physicians who are full owners of their primary practices are significantly more satisfied with their time for patients than their colleagues. Here again, the results are not surprising. Physicians who own their practices have the liberty to adjust to changing medical markets as they deem appropriate. Under such circumstances, those physicians who are seriously concerned about time for patients can react to stressed financial conditions by earning less money rather than by limiting patient interaction.

Practice Ownership (ref = no ownership)						
Full Owner	0.138	0.05**	0.14	0.05**	0.141	0.05**
Part Owner	0.000	0.04	0.00	0.04	0.000	0.04
Practice Type (ref = solo prac or partner)						
Group (3 or More)	-0.190	0.04**	-0.19	0.04**	-0.199	0.04**
HMO	-0.355	0.07**	-0.35	0.07**	-0.366	0.07**
Hospital Based	-0.045	0.06	-0.04	0.06	-0.059	0.06
Medical School	-0.159	0.06*	-0.16	0.06*	-0.159	0.06*
Other	-0.180	0.06**	-0.18	0.06**	-0.188	0.06**
Practice Revenues						
% of revenue from Medicaid	-0.001	0.00	0.00	0.00	-0.001	0.00
% of revenue from Medicare	-0.001	0.00	0.00	0.00	-0.001	0.00
% of revenue from Managed Care	-0.004	0.00**	-0.0041	0.0006**	-0.004	0.00**
% of revenue from capitated Managed Care	-0.001	0.00	-0.0009	0.0006	-0.001	0.00
HMO Penetration						
HMO-IPA Members per capita	-0.05	0.10	0.077	0.10	0.077	0.10
HMO-Traditional Members per capita	-0.10	0.17	-0.10	0.17	-0.001	0.18
HMO-Other Members per capita	0.10	0.07	0.10	0.07	0.239	0.08**
Health Resources						
Active MDs per capita	-36.65	10.44**	-36.65	10.44**	0.000	0.00
Hospital Beds per capita	15.67	7.62**	15.67	7.62**	0.000	0.00
Population Density						
Non-metropolitan area	0.103	0.05*	0.103	0.05*		
Small metropolitan area	0.277	0.08**	0.277	0.08**		
Demographics						
High School Graduates per capita	0.000	0.00	0.000	0.00		
College Graduates per capita	-1.618	0.69*	-1.618	0.69*	0.000	0.00
Income per capita					0.000	0.00**
People in poverty per capita					0.000	0.00**

Notes: **p < .01, *p < .05, #p < .1

Table 1 suggests that relative to other practice environments, physicians in solo practice or partnerships are most satisfied with their time for patients. This result closely parallels our findings on practice ownership. We suspect that physicians in solo practice or partnership are more satisfied than colleagues in group practice, HMOs, and medical schools because they do not have to accept externally imposed productivity expectations. Research currently suggests that productivity expectations can have negative implications for patients' health by discouraging and limiting periodic health exams (Plauth and Pearson, 2000). The idea is that since periodic health exams reduce emergency room visits and preventable hospitalizations, encouraging such exams ultimately saves insurers money. Thus, it is possible that the productivity expectations that are often associated with HMOs and large medical organizations will ultimately diminish the earnings and financial stability of these organizations.

If they choose, they can accept lower earnings or seek patients whose insurance does not involve additional regulations.

Table 1 indicates that, of the four practice revenue streams, Medicare, Medicaid, capitated, managed care and general managed, only general managed care influences satisfaction with time for patients. We suspect that the productivity expectations and utilization review associated with managed care is responsible for the correlation between general managed care and satisfaction with time for patients.⁶

Finally, we see a strong positive association between practicing in a small metropolitan area and satisfaction with time for patients. On the other hand, there is a strong negative association between the number of people with four years of college or more per capita and satisfaction with time for patients. We also find a strong negative association between persons in poverty per capita and satisfaction with time for patients. We hypothesize that high numbers of low-income patients stress physician resources because these populations often endure disproportionately severe health problems and thus need additional attention. Relatedly, high numbers of college educated patients stress physicians because these populations demand more attention, interaction and education from their physicians.

Primary Care vs. Specialist Physicians

Because of the dramatic differences in the nature of primary care and specialty practices discussed earlier, we investigated gender differences among these two groups separately. As discussed earlier, the CTS survey asked primary care physicians four questions and specialists three questions about their patients. Item one asks PCPs about change in the com-

plexity of patients treated without referral. Item two measures the appropriateness of PCPs' perceived expectations to treat patients of a particular complexity. Item three addresses change in the number of referrals a PCP makes. Item four asks PCPs the portion of patients for whom they serve as gatekeepers. Item five asks specialists about change in the complexity of patients referred to them. Item six asks specialists about the appropriateness of patient complexity upon referral. Item seven asks specialists to assess change in the number of referrals they receive. Table 2 summarizes physician perceptions of their patient panel.

There are many statistically significant gender differences in physicians' assessments of their patient panel. It appears that, on average, female primary care practitioners felt that they reduced the number of patients they refer to specialists slightly (mean = $-.074$) during the two years prior to the interview, 1994 and 1995. In contrast, male PCPs indicated their referral patterns did not change during this period. Further, at the time of the interview both male and female PCPs felt that the complexity of patients' conditions for which they were expected to provide care was higher than it should be. However, women respondents expressed significantly stronger agreement with this item than male respondents. Similarly, both male and female primary care physicians believed that the complexity of the conditions that they treat without referral increased during the two years prior to the interview. Nevertheless, relative to their male colleagues, women physicians perceived a significantly greater increase in complexity of treated patients. Finally, women PCPs report serving as gatekeepers for 50.9 percent of their patients, compared to 39.2 percent for men.

Gender differences are also evident among specialists. On average, both male and female specialists believe that the complexity or severity of patients upon referral has increased. However, on average, female specialists perceive a significantly larger increase than male specialists. Also, at the time of the interview, female specialists indicated that, on average, they had been experiencing an increase in referrals. In contrast, male specialists believed that their referral level remained essentially constant. These findings suggest that the gender gap in satisfaction with time for patients may result from gender differences in physicians' assessments of their patients.

Tables 3 and 4 each display 5 nested OLS regression models. Table 3 examines the determinants of satisfaction with time for patients among primary care physicians and Table 4 pertains to specialists, respectively. The sequence of models is the same as in Table 1 except that we now have an additional model that addresses physician perceptions of patients. The first model in both Tables 3 and 4 considers the relationship between gender and satisfaction with time for patients at the bivariate level. The second

TABLE 2. Physician Perceptions of Patients

	Men	Women
Primary Care Physicians		
1) During the last two years, has the number of patients that you refer to specialists increased a lot, increased a little, stayed same, decreased a little, decreased a lot?	0.006	-0.074**
2) In general, would you say that the complexity or severity of patients' conditions for which you are currently expected to provide care without referral is much greater than it should be, somewhat greater than it should be, about right, somewhat less than it should be, much less than it should be?	0.218	0.324**
3) During the last 2 years, has the complexity or severity of patients' conditions for which you provide care without referral to specialists increased a lot, increased a little, stayed same, decreased a little or decreased a lot?	0.281	0.415**
4) Some insurance plans or medical groups require their enrollees to obtain permission from a primary care physician before seeing a specialist. For roughly what percent of your patients do you serve this role?	39.151	50.902**
Specialists		
In general, would you say that the complexity or severity of patients' conditions at the time of referral to you by primary care physicians is much greater than it should be, somewhat greater than it should be, about right, somewhat less than it should be, much less than it should be?	0.366	0.380
During the last two years, has the complexity or severity of patients' conditions at the time of referral to you by primary care physicians increased a lot, increased a little, stayed same, decreased a little, decreased a lot?	0.639	0.808**
During the last two years, has the number of patients referred to you by primary care physicians increased a lot, increased a little, stayed same, decreased a little, decreased a lot?	0.030	0.125**

Note: Data are from the CTS Physician Survey

**p < .01, *p < .05, #p < .1

model adds the effects of physician characteristics on the relationship between gender and satisfaction with time for patients. In Model 3 of Tables 3 and 4, we add the effect of physicians' practice characteristics. In Model 4, we add community demographics. In Model 5, we add physicians' perceptions of patients.

Let us first consider PCPs. When the variable "female" is estimated as the sole determinant of satisfaction with time for patients, we see a significant gender gap for primary care physicians. As illustrated by Table 3, women PCPs are .29 points less satisfied than men PCPs. When physician characteristics are added to the analysis, the gender gap among primary care physicians declines 14 percent to .25. In Model 3 of Table 3, we add physician practice characteristics to the equation. At this point, the gender gap among primary care physicians narrows another 3 percent to .24. In Model 4, we add community characteristics and perceptions of patients. The addition of these covariates does not explain any of the PCP gender gap in satisfaction with time for patients. Finally, in Model 5, we add physicians' assessments of patient panels. The addition of these variables narrows the gender gap another 16 percent to .19. Thus, together, physician characteristics, practice characteristics, community characteristics and perceptions of patients account for approximately one third of the gender gap in satisfaction with time for patients among primary care physicians.

Table 4 suggests that the determinants of satisfaction with time for patients among primary care physicians are strikingly similar to the general physician population. There are only a few differences worth mentioning. First, in Table 2, we found that doctors in medical schools are significantly less satisfied with their time for patients than their colleagues in solo practice or partnerships. This relationship does not hold for primary care physicians. Second, among the general physician population, there is a strong negative association between persons in poverty per capita and satisfaction with time for patients. This relationship also does not apply to primary care physicians.

Finally, it appears that several measures of physicians' perceptions of patients influence the satisfaction of PCPs with their time for patients. To begin with, gatekeeping is negatively associated with satisfaction with time for patients. Also, primary care physicians who believe that they are expected to care for patients of an inappropriate complexity are significantly less satisfied than their colleagues with their time for patients. Relatedly, physicians who perceive an increase in the complexity of the patients who they treat without referral are significantly less satisfied with their time for patients than their colleagues.

TABLE 3. Primary Care Physician Characteristics and Satisfaction with Time for Patients

	R ² = .011 n = 7152 Model 1	R ² = .069 n = 7135 Model 2	R ² = .098 n = 7130 Model 3	R ² = .097 n = 7130 Model 3	R ² = .099 n = 7130 Model 4	R ² = .128 n = 7019 Model 5
	B	std err	B	std err	B	std err
Physician Characteristics						
Intercept	0.6	0.0**	1.480	0.169	1.561	0.309
Gender (Female = 1)	-0.291	0.038**	-0.246	0.040**	-0.244	0.040**
Physician Qualifications						
Years of Practice			0.013	0.002**	0.014	0.002**
Board Certification			-0.353	0.041**	-0.282	0.042**
Foreign Medical School Graduate			0.265	0.040**	0.232	0.041**
Doctor Type MD vs DO			-0.035	0.056	-0.095	0.056
Specialty (ref = gen intl med.)						
Family Medicine			0.037	0.038	0.017	0.040
Pediatrics			0.204	0.045**	0.289	0.052**
Work Time						
Hours in Direct Patient Care			0.004	0.002	0.003	0.002
Hours in Medically Related Activity			-0.012	0.002**	-0.011	0.002**
Weeks worked during previous year			-0.003	0.003	-0.003	0.003
Compensation						
Yearly Income			0.000	0.000	0.000	0.000
Practice Ownership (ref = no ownership)						
Full Owner			0.141	0.060*	0.137	0.060*
Part Owner			-0.037	0.054	-0.039	0.054
Practice Type						
Group (3 or More)			-0.194	0.052**	-0.199	0.053**
HMO			-0.314	0.080**	-0.328	0.080**
Hospital Based			0.047	0.071	0.028	0.071
Medical School			-0.087	0.091	-0.102	0.091
Other			-0.141	0.071**	-0.146	0.071**
Practice Revenues						
% of revenue from Medicaid			-0.002	0.001	-0.002	0.001
% of revenue from Medicare			0.000	0.001	0.000	0.001
% of revenue from Managed Care			-0.005	0.001**	-0.004	0.001**
% of revenue from capitated Managed Care			-0.001	0.001	-0.001	0.001
					B	std err
					1.644	0.31**
					-0.197	0.040**
					0.012	0.00**
					-0.297	0.04**
					0.268	0.04**
					-0.026	0.06
					-0.008	0.04
					0.288	0.05**
					0.003	0.00*
					-0.010	0.00**
					-0.003	0.00
					0.000	0.00
					0.126	0.060*
					-0.043	0.05
					-0.215	0.05**
					-0.344	0.08**
					-0.006	0.070
					-0.193	0.091
					-0.171	0.07*
					-0.001	0.00
					0.000	0.00
					-0.003	0.00**
					0.000	0.00

HMO Penetration	0.031	0.133	0.142	0.139	0.121	0.14
HMO-IPA Members per capita	-0.067	0.272	0.005	0.275	-0.025	0.27
HMO-Traditional Members per capita	0.161	0.092#	0.345	0.104**	0.334	0.103**
HMO-Other Members per capita						
Health Resources						
Active MDs per capita	-36.950	14.105**	0.000	0.000	0.000	0.000
Hospital Beds per capita	7.471	10.250	0.000	0.000	0.000	0.000
Population Density						
Non-metropolitan area			0.063	0.058	-0.003	0.06
Small metropolitan area			0.199	0.126	0.148	0.124
Demographics						
High School Graduates per capita			0.000	0.000	0.000	0.000
College Graduates per capita			-2.689	0.930**	-2.784	0.920**
Income per capita			0.000	0.000*	0.000	0.000*
People in poverty per capita			0.000	0.000	0.000	0.000
Perceptions of Patients						
Referral to Specialists					0.023	0.02
% of Patients for Whom you are gatekeeper					-0.004	0.00**
Cmplx of Pats Treated w/o referral					-0.066	0.02**
Expectation to Treat w/o referral					-0.288	0.03**

Notes: Data are from the CTS Physician Survey

**p < .01, *p < .05, # p < .1

TABLE 4. Specialist Physician Characteristics and Satisfaction with Time for Patients

	R ² = .005 n = 5338	R ² = .042 n = 5322	R ² = .061 n = 5313	R ² = .065 n = 5312	R ² = .082 n = 5323
	B	B	B	B	B
	std err	std err	std err	std err	std err
Intercept	0.80	1.394	1.808	2.511	2.401
Gender (Female = 1)	-0.26	0.052**	-0.140	-0.130	-0.089
Physician Qualifications					
Years of Practice	0.012	0.002**	0.010	0.010	0.009
Board Certification	-0.044	0.04	-0.043	-0.046	-0.028
Foreign Medical School Graduate	0.03	0.04	0.043	0.039	0.05
Physician Type MD vs DO	0.077	0.08	0.073	0.070	0.088
Specialty (ref = med spec.)					
Surgical Specialties	0.2133	0.042**	0.135	0.044**	0.082
Psychiatry	-0.303	0.060**	-0.381	0.063**	-0.320
Ob-Gyn	0.061	0.064	0.030	0.067	-0.060
Work Time					
Hours in Direct Patient Care	0.004	0.002*	0.003	0.002	0.003
Hours in Medically Related Activity	-0.013	0.002**	-0.013	-0.013	-0.012
Weeks worked during previous year	-0.005	0.00354	-0.007	-0.006	-0.004
Compensation					
Yearly Income			0.000	0.000	0.000
Practice Ownership (ref no ownerships)			0.110	0.072	0.119
Full Owner			0.018	0.067	0.049
Part Owner					
Practice Type					
Group (3 or More)			-0.172	0.067**	-0.206
HMO			-0.450	0.12**	-0.487
Hospital Based			-0.196	0.09*	-0.185
Medical School			-0.235	0.09*	-0.205
Other			-0.242	0.09*	-0.322

Practice Revenues								
% of revenue from Medicaid	-0.001	0.00	-0.001	0.001	-0.002	0.00	-0.001	0.00
% of revenue from Medicare	-0.002	0.00*	-0.002	0.001**	-0.002	0.00*	-0.001	0.00
% of revenue from Managed Care	-0.004	0.00**	-0.004	0.001**	-0.003	0.00**	-0.002	0.00**
	0.000	0.00	0.000	0.001	0.000	0.00	0.000	0.00
HMO Penetration								
HMO-IPA Members per capita	-0.181		-0.181	0.137	-0.044	0.14	-0.079	0.14
HMO-Traditional Members per capita	-0.160		-0.160	0.227	-0.052	0.23	0.039	0.26
HMO-Other Members per capita	0.035		0.035	0.101	0.116	0.11	0.121	0.12
Health Resources								
Active MDs per capita	-3		-3	15.577*	0.000	0.00	0.000	0.00
Hospital Beds per capita	6.776		6.776	11.378*	0.000	0.00	0.000	0.00
Population Density								
Non-metropolitan area					0.181	0.07*	0.139	0.08
Small metropolitan area					0.300	0.11**	0.268	0.11*
Demographics								
High School Graduates per capita					0.000	0.00	0.000	0.00
College Graduates per capita					-0.312	1.04	0.142	1.05
Income per capita					0.000	0.000	0.000	0.000
People in poverty per capita					0.000	0.000**	0.000	0.000**
Practice Patterns								
Complexity of patients referred to you							-0.159	0.02**
Change in complexity of patients referred to you							-0.114	0.03**
Number of patients referred to you							0.008	0.02

Notes: Data are from the CTS Physician Survey

**p < .01, *p < .05, #p < .1

Now we turn to specialists. Table 4 suggests that the gender gap in satisfaction with time for patients is slightly smaller among specialists than among primary care physicians. Women specialists are .26 points less satisfied than their male colleagues. Physician characteristics account for 26 percent of the gender gap among specialists, which declines from .26 to .19 between Models 1 and 2 of Table 4. In Model 3, we add physician practice characteristics to the equation. At this point, the gender gap among specialists narrows an additional 19 percent to .14. In Model 4, we add geographic and community attributes. At this point the gender gap declines an additional 4 percent to .13. Finally, we add physicians' assessments of patients. These variables cause the gender gap to decline to .09 and become statistically insignificant. Thus, among specialists, physician, practice, community, and patient characteristics explain the entire gender gap in satisfaction with time for patients.

Gender and the Determinants of Satisfaction with Time for Patients

Our next phase in the analysis involved examining how gender affects the determinants of satisfaction with time for patients. We estimated the determinants of satisfaction with time for patients separately for female PCPs, male PCPs, female specialists and male specialists. We find that most factors affect male and female satisfaction with time for patients similarly. However, there are significant gender differences for a few control variables.

Among primary care physicians, we find significant interactions between gender and three key characteristics – (1) physician practice type, (2) change in referral rates, and (3) expectations to treat without referral.⁷ It appears that, regardless of gender, primary care practitioners in group practice are less satisfied with their time for patients than their colleagues in solo practice or partnerships. However, the size of this disparity is substantially greater for women physicians. Tests for interactions also revealed that women primary care practitioners based in medical schools are significantly less satisfied with their time for patients than their female colleagues in solo practice or partnerships. For male PCPs, there is no relationship between practicing in a medical school and satisfaction with time for patients. We suspect that these differences stem from how male and female PCPs define quality patient visits. As mentioned earlier, research suggests that women spend longer with patients and earn less money (Roter and Hall, 1998; Baker, 1996). Women in solo practice can maintain patient visit length by seeing fewer patients and earning less money. Women in group practice and medical schools do not have that option. They must meet productivity expectations. Low satisfaction with time for patients is a logical

outcome of women's inability to structure patient visits as they deem appropriate.

Our results indicate that, regardless of gender, there is a positive association between perceived increases in referral to specialists and satisfaction with time for patients. However, we find that this relationship is significantly more pronounced for women PCPs. We also find that regardless of gender, primary care physicians, who perceive an expectation to treat certain patients without referral, are significantly less satisfied with their time for patients than their colleagues. However, the extent of this effect is substantially greater for female physicians. One possible explanation for these differences involves the interests and priorities of male and female PCPs. If men are more interested in meeting the challenge of treating medically complex conditions without referral, then they will be less stressed by expectations to treat patients of increasing severity. Women, in contrast, may view the new practice environment as a barrier to providing more holistic care. This possibility is consistent with the findings of Neittaanmaeki et al. (1993) cited earlier regarding gender differences in the reasons given for choosing specialties. If it is true that women are less satisfied with their time for patients because they strive to provide more holistic care, then there may ultimately be systematic differences in the quality of care that male and female primary care physicians provide.

Another possibility involves systematic differences in the needs of patients that male and female physicians treat. McMurray et al. (2001) find that among general internists, females care for significantly more patients with psychosocial problems such as depression, anxiety and eating disorders. Britt et al. (1996) find that female Australian general practitioners manage more female specific, endocrine and psychosocial problems while male Australian general practitioners manage more cardiovascular, musculoskeletal and respiratory problems. It could be that the tendency of female PCPs to treat a disproportionate share of psycho-social conditions may be responsible for their unique reaction to limits on referrals and to limits on time with patients. Unfortunately, these data do not allow for a thorough investigation of this hypothesis. Further research needs to be done in order to investigate this issue.

We now turn to specialists. Although we find that most effects are similar for primary care and specialist physicians, our analysis reveals a few key differences. Among specialist physicians, gender influences the relationship between satisfaction with time for patients and two key characteristics—practice ownership and hours spent in a medically related activity. First, among female specialists there is a significant positive association between hours spent in a medically related activity and satisfaction with time for patients. Among male specialists, the opposite relationship exists.

We suspect that this interaction reflects a fundamental difference in how specialists use their medically related hours. Women who work longer hours could be devoting those hours to longer patient visits. Men, in contrast, could be devoting their time to additional visits or to treating more complex cases. Here again, these data do not allow for a thorough investigation of this hypothesis. Further research needs to be done in order to investigate this issue.

Second, there is a positive association between full ownership of a medical practice and satisfaction with time for patients among female specialists but not among their male colleagues. Logic suggests that physicians who own their primary practices should be more satisfied with time for patients because they are better able to control their time so that they can address patient needs. A gender difference in the approach to earnings may explain this interaction as well. When faced with an opportunity to control visit length, women physicians may react by limiting their earnings and maintaining visit length. Male physicians may react to similar situations by limiting visit length so that they can see more patients and ultimately enjoy higher earnings. This interpretation is supported by research revealing gender differences in income expectations among medical students. Women medical students report lower peak income expectations in most specialties (Veloski et al., 1981).

DISCUSSION

We find women physicians are substantially less satisfied with their time for patients than their male colleagues. However, much of this difference is attributable to structural and personal differences between male and female physicians. Among primary care physicians, approximately one third of the gender gap in satisfaction with time for patients can be explained by systematic differences in the characteristics of male and female physicians, the nature of their patients and the structure of their practices. Among specialists, the entire difference between male and female specialists can be explained by variables factors in our analysis. Examples of such factors include, but are not limited to: gender differences in the mean years of experience practicing medicine, gender differences in percent of practice revenue stemming from managed care, gender differences in the percent of patients for whom primary care physicians must serve as gatekeepers, and gender differences in the rate of referrals among specialists.

We also find that the satisfaction of female specialists and primary care practitioners with time for patients is disproportionately affected by practice conditions that limit physicians' capacity to provide holistic primary

care services and force physicians to treat patients with increasingly complex medical conditions.

Finally, our analysis also reveals significant relationships between satisfaction with time for patients and physicians' practice environment. For example, for both specialists and primary care physicians, there are significant negative relationships between satisfaction with time for patients and several factors including: (1) hours spent in medically related activity, (2) the percent of practice revenues earned from managed care, and (3) working in a group practice or HMO rather than in a solo practice or partnership. These results suggest that the evolution of our health care industry away from self-employment and fee-for-service reimbursement may be a major source of physicians' satisfaction with time for patients.

As suggested earlier, it is possible that the satisfaction of female providers with their time for patients is disproportionately affected by specific practice conditions because male and female physicians approach patient care differently. If this belief is correct, and female PCPs seek to provide more holistic care that includes prevention and attention to psycho-social issues, while male primary care practitioners are most interested in the biomedical aspects of their profession, then it follows that women primary care practitioners would be disproportionately influenced by conditions that limit their capacity to provide what they believe to be high quality care. If it is true that women are less satisfied with their time for patients because they strive to provide more holistic care, then there may ultimately be systematic differences in the quality of care that male and female primary care physicians provide.⁸ Under these conditions, policy makers might want to consider adopting changes that make it easier for providers to offer the services which they deem most essential for their patients. On the other hand, another possibility is that women are systematically more concerned about time for patients because they tend to see patients whose conditions demand more time. Unfortunately, our data do not allow for an exhaustive investigation of these hypotheses. Further research needs to be done in order to fully understand the source of women physicians' disproportionately low satisfaction with time for patients.

If left unaddressed, the low satisfaction of female primary care physicians may result in general dissatisfaction among female physicians and eventual attrition of women from medicine. As discussed earlier, the continued presence of women in medicine will not only benefit those patients who prefer female providers, it also has the potential to enhance the quality of medical care and medical research generally. Thus, policy makers seeking to improve medical care need to consider both additional research and potential remedies to current conditions within our health system.

While low satisfaction with time for patients does not necessarily imply declines in care quality, it should serve as a red flag to policy makers interested in sustaining adequate, effective and efficient health care services. As discussed earlier, office visits offer clinicians a major opportunity to provide therapy. Low satisfaction with time for patients may represent underlying problems with the productivity expectations that are associated with the modern health care system.

NOTES

1. Hospital based physicians—radiologists, anesthesiologists and pathologists—were not included in the survey.

2. We could not include both age and years of practice in the multivariate models because of the high correlation between these variables, $r = 0.90$.

3. Our category of physician income involves self-reports of earnings during the previous year. There are seven categories in our measure of income. We take the midpoint for each category. For the highest category, \$300,000 or more, we estimate \$350,000. We conducted sensitivity analysis to assess the accuracy of our estimate of the highest income category. That is, we estimated our final models with four different versions of the income variable: one model with \$350,000 as the estimate, one model with \$400,000 as the estimate, one model with \$450,000 as the estimate and one model with \$500,000 as the estimate. Our results did not change significantly.

4. Item one reads, “During the last 2 years, has the complexity or severity of patients’ conditions for which you provide care without referral to specialists increased a lot, increased a little, stayed same, decreased a little or decreased a lot?” Item two reads, “In general, would you say that the complexity or severity of patients’ conditions for which you are currently expected to provide care without referral is much greater than it should be, somewhat greater than it should be, about right, somewhat less than it should be, much less than it should be?” Item three reads, “During the last two years, has the number of patients that you refer to specialists increased a lot, increased a little, stayed same, decreased a little, decreased a lot?” Item four reads, “Some insurance plans or medical groups require their enrollees to obtain permission from a primary care physician before seeing a specialist. For roughly what percent of your patients do you serve this role?”

5. Item one reads, “During the last two years, has the complexity or severity of patients’ conditions at the time of referral to you by primary care physicians increased a lot, increased a little, stayed same, decreased a little, decreased a lot?” Item two reads, “In general, would you say that the complexity or severity of patients’ conditions at the time of referral to you by primary care physicians is much greater than it should be, somewhat greater than it should be, about right, somewhat less than it should be, much less than it should be?” Item three reads, “During the last two years, has the number of patients referred to you by primary care physicians increased a lot, increased a little, stayed same, decreased a little, decreased a lot?”

6. There is a relatively high correlation between capitated managed care and general managed care ($r = .64$). The correlation may explain the lack of a “capitated managed care” effect. (There is a strong positive association between satisfaction with time for patients and capitated managed care in a model without general managed care.)

7. Interactions between gender and other traits are significant in some versions of this analysis. However, these effects are not consistent throughout the analysis.

8. Historically, advocates of health care reform have stressed the need to generally re-focus the health care system on more primary and holistic care so as to increase the coordination of patients' treatments and to ensure that patients receive comprehensive services (Rivo and Satcher, 1993; Rivo and Kindig, 1996). Yet, there is a growing body of literature suggesting that specialists manage certain adult conditions in a more knowledgeable and efficient manner than general internists (Levetan et al., 1999; Breuer et al., 1998).

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APPENDIX. Physician and Practice Characteristics, by Sex

	Men	Women	Zero Order	Multivariate		Men	Women
				1	2		
Physician Characteristics							
Personal Characteristics							
Age	49.6	43.9**	-0.308** 0.023**	-		13.505	18.966**
Practice Revenue % from Medicaid						31.193	22.781
% from Medicare						18.019	26.398
% from Capitated Managed Care						41.721	51.026**
% from Managed Care							
Physician Qualifications							
Years of Practice	17.527	11.378**	0.021**	+		0.049	0.046**
Board Certification	0.784	0.806**	0.216**	-		0.008	0.010**
Foreign Medical School Graduate	0.198	0.227**	-0.328**	+		0.126	0.150**
Managed Care Penetration						0.183	0.206
HMO — IPA Members per capita							
HMO — Traditional Members per capita							
HMO — Other Members per capita							
HMO — Total Members per capita							
Specialty							
Internal Medicine	0.187	0.194	Ref Group	Ref Group		0.00074	0.00083**
Family Medicine	0.260	0.224**	0.089*	NS		0.00347	0.00348*
Pediatrics	0.093	0.274**	0.171**	+			
Medical Specialties	0.204	0.155**	0.233**	+			
Surgical Specialties	0.170	0.038**	0.454**	+			
Psychiatry	0.046	0.064**	0.040	-			
Ob-Gyn	0.039	0.052**					
Health Resources							
Medical Specialists per capita							
Hospital Beds							
Work Time							
Hours in Direct Patient Care	45.271	38.776				0.881	0.923**
Hours in Medically Related Activity	56.186	48.301**	-0.005**	NS		0.026	0.018**
Weeks worked during previous year	47.501	46.123**	-0.009**	-		0.092	0.059**
Weeks worked during previous year			-0.001	+			
Compensation**							
Yearly Income	\$173,410	\$117,622	0.000**	+		23045.99	23935.50*
Income per capita						0.133	0.127
Poverty per capita (95)							
Geographic Location							
Large Metropolitan Area							
Small Metropolitan Area							
Non Metropolitan Area							
Financial/Demographic Characteristics							

	Zero Order	Multivariate		0.111# 0.469	0.118# 0.476
		1	2		
Practice Ownership**					
Full Owner	0.234	—		0.111	0.118#
Part Owner	0.244	-0.126**	NS	0.469	0.476
Not Owner	0.382	-0.126**			
		NS			
		NS		0.006	-0.074
Practice Characteristics				0.218	0.324
Practice Type**	0.281	0.415		0.281	0.415
Solo Practice or Partnership	0.300	-0.126		0.281	0.415
Group (3 or More)	0.287	-0.016		39.151	50.902**
HMO	0.057	NS	NS		
Hosp/Med Schl Based	0.172	NS		0.366	0.380
Other	0.086	—	—	0.639	0.808
				0.030	0.125