Effects of Changes in Incomes and Practice Circumstances on Physicians' Decisions to Treat Charity and Medicaid Patients

PETER J. CUNNINGHAM and JACK HADLEY

Center for Studying Health System Change; George Mason University

Context: The decline over the past decade in the percentage of physicians providing care to charity and Medicaid patients has been attributed to both financial pressure and the changing practice environment. Policymakers should be concerned about these trends, since private physicians are a major source of medical care for low-income persons. This study examines how changes in physicians' practice income, ownership, and size affect their decisions to stop or start treating charity care and Medicaid patients.

Methods: This study uses panel data from four rounds of the Community Tracking Study Physician Survey. The dependent variables are the likelihood of physicians' (1) dropping charity care, (2) starting to provide charity care, (3) no longer accepting new Medicaid patients, and (4) starting to accept new Medicaid patients. The primary independent variables are changes in physicians' practice income, ownership, and practice type/size. Multivariate analysis controls for the effects of other physician practice characteristics, health policies, and health care market factors.

Findings: A decline in physicians' income increased the likelihood that a physician would stop accepting new Medicaid patients but had no effect on his or her decision to provide charity care. Those physicians who switched from being owners to employees or from small to larger practices were more likely to drop charity care and to start accepting Medicaid patients, and physicians who made the opposite practice changes did the reverse.

Conclusions: Changes in their income and practice arrangements make physicians less willing to accept Medicaid and uninsured patients. Moreover, physicians moving into different practice arrangements treat charity and Medicaid

Address correspondence to: Peter J. Cunningham, Center for Studying Health System Change, 600 Maryland Ave., S.W., Suite 550, Washington, DC, 20024 (email: pcunningham@hschange.org).

The Milbank Quarterly, Vol. 86, No. 1, 2008 (pp. 91–123)

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patients as substitutes rather than as similar types of patients. To reverse these trends, policymakers should consider raising Medicaid reimbursement rates and subsidizing organizations that encourage private physicians to provide charity care.

Keywords: Charity care, uninsured, Medicaid, access, physicians, safety net.

IN A VARIETY OF WAYS BUT MAINLY THROUGH THE MEDICAID program and charity care to uninsured patients, physicians provide care to poor and low-income persons who cannot afford to pay them. Moreover, most physicians provide care to at least some Medicaid and charity patients. Although such patients usually make up a very small percentage of the physicians' practice (Cunningham and May 2006a, 2006b), in 2001 the total cost of charity care provided by office-based physicians was \$5.1 billion, and in 2005 the cost of care for Medicaid patients was \$17.5 billion (CMS 2005; Hadley and Holahan 2003). This exceeds the amount provided by the federally funded Community Health Centers (about \$2.5 billion for uninsured and \$3.4 billion for Medicaid), which serve an almost exclusively low-income population but are not available in all U.S. communities (Bureau of Primary Health Care 2007b). The importance of physicians to the care of low-income persons is also demonstrated by the fact that about one-third of uninsured persons and 58 percent of Medicaid enrollees report that a physician's office is the place where they usually receive medical care, a higher percentage than that reported for both health centers and hospital-based facilities (unpublished estimates from the 2003 Community Tracking Study Household Survey).

Given the importance of office-based physicians as a source of care for low-income uninsured and Medicaid enrollees, policymakers should be concerned about recent trend data from the Community Tracking Study Physician Survey showing that the number of physicians providing charity care and accepting Medicaid patients has been decreasing since the mid-1990s. The percentage of physicians providing any charity care has fallen fairly substantially, from 76.3 percent in 1996/1997 to 68.2 percent in 2004/2005 (see table 1 and Cunningham and May 2006a). Also, a growing number of physicians derive no revenue from Medicaid and are not accepting new Medicaid patients, although the change between 1996/1997 and 2004/2005 has not been as great as that for physicians' charity care (Cunningham and May 2006b).

TABLE 1
Changes in Charity Care, Acceptance of Medicaid Patients, and Other Key
Practice Characteristics, 1996–2005

	1996/1997	2000/2001	2004/2005
Charity care			
Percentage providing any charity care	76.3	71.5 ^a	68.2 ^a
Average number of charity care hours in prior month of practice (for physicians providing any)	11.1	11.0	10.6
Acceptance of new Medicaid patients			
Percentage accepting no new patients	19.4	20.9 ^a	21.0 ^b
Percentage accepting all new patients	51.1	51.9	52.1
Income from the practice of medicine (in constant 1995 dollars)	180,930	170,850 ^a	168,122 ^a
Percentage of owners of practice	68.9	58.3 ^a	57.6 ^a
Practice type			
Percentage of solo or two-physician practice	40.7	36.1 ^a	34.0 ^a
Percentage of small-group practice	19.3	21.0 ^a	19.4
Percentage of medium- or large-group practice	9.5	9.3	12.5 ^a
Percentage of institutions (hospitals, medical schools, community health centers)	19.3	22.2 ^a	22.3 ^a
Percentage of others	11.2	11.4	11.8

Notes: ^aChange from 1996/1997 is statistically significant at .05 level.

^bChange from 1996/1997 is statistically significant at .10 level.

Sources: Charity care: Cunningham and May 2006a.

Acceptance of new Medicaid patients: Cunningham and May 2006b.

Income from the practice of medicine: Tu and Ginsburg 2006.

Physicians' care of people who cannot afford to pay them is deeply rooted in the medical profession's ethical obligations to care for the needy (Lundberg and Bodine 1987). Historically, much of this care was provided by private physicians, who typically practiced alone or

in small groups and treated at least some uninsured people without charge or for a reduced fee. Then, the establishment of Medicaid and Medicare in the mid-1960s shifted much of the responsibility for care of the medically indigent from individual physicians exercising their private charitable obligations to a social responsibility embodied in public insurance for many, though by no means all, people without private insurance coverage.

Medicaid and Medicare clearly removed much of the charity care burden from private physicians and at the same time helped underwrite their ability to continue providing charity care by boosting their incomes, largely by using reimbursement methods modeled on the “usual, customary and reasonable” system of most Blue Cross and Blue Shield insurance plans. Although historical data are sparse, one survey reported that in 1982, 77 percent of physicians in fee-for-service practices offered charity care (Bristow 1986).

The payers, however, inevitably experienced the flip side of the providers’ growing incomes, as rapidly increasing health care costs typically exceeded both national income growth and general inflation rates. In response, beginning with the adoption in the early 1970s of the prospective payment system for hospitals, public insurance programs established much more restrictive payment methods for physicians’ services, with Medicare introducing a physician fee schedule in the early 1990s. Also in the 1990s, large employers embraced the rapid expansion of the managed care movement, and many private insurers adopted Medicare’s physician fee schedule as a benchmark in setting or negotiating payment rates for physicians’ services.

As a result, physicians’ incomes have been largely stagnant, and have even declined over the past ten years. Long-term trend data show physicians’ real incomes growing rapidly through the early 1970s and then flattening out through the early 1990s (Tenerelli and Rosen 1996). More recent data from the Community Tracking Study Physician Survey indicate that between 1995 and 2003, the average income from the practice of medicine dropped about 7 percent after accounting for general inflation (Tu and Ginsburg 2006; also see table 1). Now that payments and profits from insured patients have become more constrained, physicians have fewer resources available to cross-subsidize the care of uninsured or Medicaid patients, for whom the reimbursement rates are, on average, only about two-thirds the payment for Medicare patients.

Reimbursement and income pressures also have contributed to changes in physicians' practice organizations, especially the shift to larger practices. For many physicians, the advantages of larger groups compared with solo or small-group practices include (1) greater leverage in negotiating payment rates with health plans; (2) greater economies of scale necessary for managing higher practice costs and a more complex business and regulatory environment, as well as for purchasing new equipment and information systems; and (3) lifestyle benefits, such as collegiality, sharing on-call and vacation coverage, and—for salaried physicians—potentially greater financial security, which may be especially attractive to younger and less established physicians (Casalino et al. 2003; Casalino, Pham, and Bazzoli 2004). Consequently, for many physicians, the traditional solo or small-group practice managed by physician owners is becoming less tenable and increasingly unattractive. Between 1983 and 2001, the percentage of self-employed solo physicians decreased from 41 to 23 percent, and the percentage of owners of their practices fell from 76 to 61 percent (Kaiser Family Foundation 2002). More recent data from the Community Tracking Study indicate that this trend is continuing, with only 58 percent of physicians owning their practice in 2004/2005 (see table 1).

These changes in incomes and practice arrangements undoubtedly have had negative consequences for private practice physicians' care of both uninsured and Medicaid patients. Earlier research has examined factors associated with either physicians' provision of charity care or their acceptance of Medicaid patients (Adams 1995; Baker and Royalty 2000; Berman et al. 2002; Blumenthal and Rizzo 1991; Coburn, Long, and Marquis 1999; Culler and Ohsfeldt 1986; Cunningham et al. 1999; Cunningham and Nichols 2005; Emmons and Rizzo 1993; Lee and Hadley 1981; Mitchell 1991; Perloff et al. 1997), but no studies have focused on individual physicians' decisions to stop (or start) providing charity care or Medicaid as a consequence of changes in their practice arrangements and their incomes from medical practice. In this study we used data from nationally representative panels of physicians to investigate how changes in physicians' provision of charity care and acceptance of Medicaid patients were related to changes in their incomes, practice characteristics, and other policy- and market-level factors that might influence their provision of care to low-income patients.

Previous Research

Although altruism and a sense of community obligation to serve economically disadvantaged individuals have been long-standing traditions in the medical profession, it is generally accepted that the provision of care to low-income persons also is influenced by economic incentives, primarily the opportunity costs of forgoing the care of more affluent and higher-paying patients. Most of the research on the acceptance of Medicaid patients uses a “dual-market” framework, which views physicians as accepting lower-paying Medicaid patients only when their private marginal revenue fell below the set fees for Medicaid (Sloan, Mitchell, and Cromwell 1978). A substantial amount of research shows that higher Medicaid fees (compared with Medicare or privately insured fees) increase physicians’ participation in Medicaid (Adams 1995; Baker and Royalty 2000; Berman et al. 2002; Coburn, Long, and Marquis 1999; Cunningham and Nichols 2005; Lee and Hadley 1981; Mitchell 1991; Perloff et al. 1997).

There has been much less research on the specific effects of physicians’ overall income—and changes in income—on their decisions to treat Medicaid and uninsured patients. Moreover, economic theory does not clarify the direction of the hypothesized income effect on charity care. Drawing on Becker’s theory (1965) of the allocation of time, Culler and Ohsfeldt (1986) argued that as income increases, the price of “time-intensive” activities (e.g., charity care) relative to that for “goods-intensive” activities (e.g., care for insured patients) also increases, thereby leading physicians to substitute more of the latter for the former (i.e., decreasing the amount of charity care). An analysis of data from the 1982 American Medical Association’s Socioeconomic Monitoring System (SMS) appeared to confirm Culler and Ohsfeldt’s hypothesis, showing that physicians’ higher hourly wages were associated with the provision of less charity care.

However, Emmons and Rizzo contended that the effect of a change in income cannot be determined *a priori* because “it depends on the relative strength of the income and substitution effects” (1993, 413–14). Furthermore, they argued that Culler and Ohsfeldt’s analysis was limited because key variables were imputed; physicians who had not cared for any uninsured patients in the previous month were excluded; and time devoted to uncompensated care was included when calculating

the wage variable. After correcting for these errors and using more recent data from 1987, they concluded that physicians' wages did not have a significant effect on their provision of charity care.

Physicians' initial decision to provide any charity care is likely to differ in important ways from their decision about the amount of charity care to provide, given that they have decided to offer such care. In a study based on the 1996/1997 Community Tracking Study Physician Survey, Cunningham and his colleagues (1999) used a two-step approach to determine, first, the factors associated with the decision to provide any charity care in the month before the survey interview, with the second step determining, for those physicians who were providing care, the number of hours spent on charity care. They found that although physicians' higher hourly wages (based on data from the preceding calendar year) were associated with a greater likelihood of providing any charity care, these higher wages also were associated with fewer hours of charity care provision by those who offered any care. Cunningham and his colleagues' study also found that greater financial pressures on physicians—as indicated by a high percentage of practice revenue from managed care plans—lowered the probability of providing charity care. Higher incomes and lower financial pressure may give physicians a greater “comfort level” for engaging in any charitable activities, with the actual quantity being influenced by the opportunity costs of lost potential income from higher-paying patients.

In addition, relatively little research has been done on how physicians' practice arrangements—as well as changes in practice arrangements—affect their decisions to care for low-income patients. Analyses of cross-sectional data suggest that the factors associated with providing charity care appear to be the opposite of those associated with accepting Medicaid patients. Although physician owners and those in traditional solo or small-group practices are more likely than employed physicians and those in larger groups to provide charity care, they are less likely to accept Medicaid patients (Cunningham et al. 1999; Cunningham and Nichols 2005; Ohsfeldt 1985). Conversely, physicians employed in large group practices or institutional settings, such as public clinics and hospitals, are less likely to provide charity care but are more likely to accept Medicaid patients.

These differences suggest that for physicians in traditional solo or small-group practices, the incentives to provide charity care and treat

Medicaid patients differ from those for physicians in larger practices and organizations and that their decisions to treat low-income patients may involve trade-offs between the financial and administrative burdens of treating Medicaid and charity care patients. Moreover, the changes in physicians' practice organization and ownership that were noted earlier imply differential effects on changes in the provision of care to charity and Medicaid patients. The movement away from physician ownership and solo practice to employed physicians in larger groups tends to decrease the provision of charity care but to increase the provision of care to Medicaid patients.

Conceptual Framework

As noted earlier, our empirical analysis builds on the "dual-market" economic model that views the physician as a firm allocating services among markets (patients) with different demand curves (types of insurance coverage: private, Medicare, Medicaid, or uninsured) reflecting expected revenues and potential demand (Blumenthal and Rizzo 1991; Lee and Hadley 1981; Sloan, Mitchell, and Cromwell 1978). This model assumes that if Medicaid fees are sufficiently high to cover their costs, including the administrative burden of filing Medicaid claims (e.g., claim denials, requests for further information, long waits for reimbursement), physicians will prefer Medicaid patients to patients who seek charity care in the form of either reduced or no fees. But the amount of care they give to Medicaid patients will be limited by the size of the Medicaid market, that is, the percentage of people covered by Medicaid. Thus, some physicians will provide both Medicaid and charity care if (1) they exhaust the supply of available Medicaid patients or (2) they maintain low-cost practices to accommodate the typically low Medicaid fees and accept uninsured patients who are able to afford either all or some of their lower fees. Conversely, some physicians will treat charity patients but not Medicaid patients if the Medicaid fees are not high enough to cover the marginal costs of their time, medical supplies, and the administrative resources needed to bill Medicaid; and they view charity care as an obligation to the community or to those of their patients who may be temporarily uninsured.

Although the underlying theory and past research are useful guides for developing hypotheses, it is important to emphasize that no prior work

has addressed the question of physicians' care to charity and Medicaid patients in a truly general equilibrium framework, in which the physician chooses how to allocate services simultaneously among several groups of patients characterized by different and changing revenue and cost implications. Nor has past work developed an explicitly dynamic model that views changes in practice arrangements as potential responses to the changes in fees and costs associated with various types of patients and subsequently leads to changes in the payer mix of physicians' patients.

Recognizing the limitations of the relatively simple dual-market economic model while drawing on observations from the prior literature on the institutional arrangements under which physicians deliver care, we formulated the following partial hypotheses: First, physicians who change from being owners of solo or small-group practices to being employees of larger groups or institutions are more likely to drop charity care patients and to begin accepting Medicaid patients. Conversely, physicians who change from being employees of large groups or institutional practices to being owners of solo or small-group practices are more likely to drop Medicaid patients and to start accepting charity care patients.

The substitution of charity care patients for Medicaid patients reflects the different incentives and constraints for physicians in different practice arrangements. For physicians in solo practice or small groups, the low Medicaid fees may be insufficient to cover the high administrative burden associated with Medicaid patients, so they may find it preferable and less costly to meet their community obligations by providing charity care in their practice or by volunteering in a free clinic. However, the Medicaid administrative costs per patient may be much lower in larger practices, which benefit from greater economies of scale and centralized billing and information systems. Thus, Medicaid patients provide some net economic benefit to the practice and therefore are preferred to the lowest-paying (i.e., uninsured) patients. In addition, larger practices and organizations may have more formal barriers and explicit payment policies (e.g., payment required at the time of service) that discourage the uninsured (O'Toole, Simms, and Dixon 2001).

A second set of hypotheses concerns the effects of changes in physicians' incomes. Empirical predictions are ambiguous, however, because of potentially offsetting influences that depend on the relative strengths of underlying income and substitution effects. For example, if reimbursements by private insurance and Medicare become less generous

and reduce the physician's income, then the opportunity cost of not treating a privately insured or Medicare patient falls, and the physician may be more willing to substitute a Medicaid patient for a privately insured patient.

Such an effect would be intensified if the decline in private payer rates were accompanied by an increase in Medicaid fees. At the same time, however, the effect on charity care patients would be more ambiguous. While physicians may also be more willing to take on more charity patients as the opportunity cost of not treating Medicare and privately insured patients falls, their decision also will depend on the relative attractiveness (i.e., fee levels) of Medicaid patients and the physicians' overall ability to fill their practice with paying instead of nonpaying patients.

Conversely, if physicians view caring for charity and Medicaid patients as normal goods that must be cross-subsidized through higher fees from Medicare and privately insured patients, then they will have a clear incentive to cut back both Medicaid and charity care as their incomes decline. In other words, the lower fees from private payers reduce physicians' ability to cross-subsidize their care of Medicaid and uninsured patients. In fact, if they are trying to maintain their incomes, they might actually try to increase the amount of care to higher-paying patients in their practice. Whether the income or substitution effect dominates is an empirical question.

Sources of Data

Our study was based on data from four rounds of the Community Tracking Study Physician Survey conducted in 1996/1997, 1998/1999, 2000/2001, and 2004/2005 (Williams et al. 2006). These surveys used nationally representative samples of physicians (both MDs and DOs) who spent at least twenty hours per week in patient care. The survey samples were drawn from practicing physicians in sixty randomly selected communities (or sites) nationwide, defined as Primary Metropolitan Statistical Areas or nonmetro parts of the Bureau of Economic Analysis's Economic Areas (nine nonmetro sites in all were selected). The size of the sample was about 12,000 physicians each in the first three rounds of the survey, and about 6,600 physicians in the 2004/2005 survey. All the interviews were conducted by telephone, and the overall response rates

for the surveys were 65 percent for the 1996/1997 survey, 61 percent for 1998/1999, 59 percent for 2000/2001, and 52 percent for 2004/2005.¹

The samples for rounds 2 through 4 incorporated a “rolling panel” design that combines randomly selected physicians from the previous round plus a “fresh” random sample. The percentages of the samples that are reinterviews from the prior rounds were 58 percent for the 1998/1999 survey, 69 percent for the 2000/2001 survey, and 67 percent for the 2004/2005 survey. Response rates for the “reinterview” sample were about 75 percent in the three surveys that had a reinterview sample.

The sample for this study pooled the three panels of physicians interviewed in two consecutive survey rounds, that is, the panel for the 1996/1997 and 1998/1999 surveys, the panel for the 1998/1999 and 2000/2001 surveys, and the panel for the 2000/2001 and 2004/2005 surveys. Only those physicians in the panel sample who were eligible in both rounds in which they were interviewed (i.e., spent at least twenty hours per week in patient care) were included in the panel samples for this analysis. Overall, the size of the combined panel sample was 15,966 separate physicians.

Empirical Specifications

Dependent Variables

We analyzed two sets of dichotomous dependent variables, one focusing on the decision to add or drop charity care patients and the other on whether to start or stop accepting new Medicaid patients. The surveys asked physicians how many hours of care they provided for free or at a reduced fee (due to the patient’s financial need) in the month before the survey interview.² A physician in the panel sample was designated as “adding charity care” if he or she did not provide any charity care in the first interview but reported positive charity care hours in the second interview. Conversely, the physician was designated as “dropping charity care” if the number of his or her charity care hours was positive in the first interview but zero in the second interview.

We focused on the decision to provide any charity care—rather than number of hours of charity provision—for several reasons. First, as Cunningham and his colleagues showed (1999), the decision to provide any charity differs in important ways from the decision on the quantity of

charity care, especially regarding the effects on the physician's income. Second, physicians' reports of whether they provided any charity care were likely to be more accurate than the number of hours of charity care, since the latter is based on the physicians' recall during the interview rather than on his or her patients' records. Finally, trend data from the CTS show that the proportion of physicians providing charity care has declined in the past ten years but that the average number of charity care hours for those who offer any care has remained relatively stable (Cunningham and May 2006a). This suggests that most, if not all, of the change pertains to the decision to provide any charity care, rather than the quantity provided.³

The primary measure for changes in care to Medicaid patients was based on a survey question asking physicians whether they accepted all, most, some, or no new Medicaid patients. Physicians in the panel sample who reported in the first interview that they were *not* accepting any new Medicaid patients but reported in the second interview that they *were* accepting new Medicaid patients were defined as having started accepting Medicaid patients. Conversely, physicians who reported in the first interview that they were accepting some, most, or all new Medicaid patients but reported in the second interview that they were not accepting new Medicaid patients were defined as having stopped accepting Medicaid patients. Alternative classifications based on incremental changes in physicians' acceptance of new Medicaid patients (e.g., a change from accepting "some" new patients to "most" new patients) did not yield results that were sensitive to the primary variables of interest in this study. As with charity care, information about whether a physician is accepting any new Medicaid patients is likely to be more reliable and accurate than self-perceived assessments of undefined categorical measures (some and most) of the quantity of patients.⁴

Independent Variables

Ownership and Type of Practice. The CTS Physician Survey collects detailed information on ownership status (full owner, part owner, or employee) and practice setting (small, medium, and large office-based practices and various types of institutional settings such as hospitals, medical schools, clinics, and community health centers). Because of the large number (twenty-one) of possible combinations of ownership and practice settings in each period and movements over time among these

combinations, we combined cells with relatively few physicians and used preliminary analysis to combine cells that had similar quantitative effects (regression coefficients) on the dependent variables. The final specification distinguishes owners (full and part) from employees and identifies those physicians who change ownership status between survey rounds. Practice types were collapsed into two categories: small, office-based practices (nine or fewer physicians) and all other practice types, that is, office-based practices with ten or more physicians and institutional practices (hospitals, medical schools, clinics, HMOs). Changes in practice setting were measured by shifts between these two types of settings. (In our preliminary analysis, we also explored interactions between ownership and practice setting changes, but this did not indicate substantially different results from those models without these interactions.)

Change in Income. The survey asked physicians to report their net income from medical practice in the year before the date of the survey. After adjusting for inflation so that all incomes are expressed in 2003 dollars, we calculated the percentage change in income between survey rounds. (A small number of outlier cases, which had percentage changes exceeding ± 500 percent, were excluded from the analysis.) Although changes in charity care and care of Medicaid patients can affect physicians' incomes, we treated this variable as exogenous because it measured income in the calendar year before the survey, whereas the reference periods for treating charity and Medicaid patients were the month before and the month of the survey, respectively.

Coverage and Medicaid Fees. The underlying economic model suggests that the amount of care provided to Medicaid patients or as charity may depend on the proportions of the population who are uninsured or covered by Medicaid. In other words, physicians may be more likely to provide charity and Medicaid care in areas with higher proportions of uninsured people and Medicaid enrollees. Similarly, large changes in these proportions may also affect physicians' decisions about their care of these patients. The theory also predicts that relatively more generous Medicaid fees and/or large changes in Medicaid fees should induce physicians to increase their care of Medicaid patients and could reduce the amount of their charity care. We measured the percentages of the population who are uninsured or covered by Medicaid at the site level using data from the CTS Household Surveys, which were conducted in the same sixty sites and at approximately the same time periods as the physician survey (Strouse, Carlson, and Hall 2005). The variable measuring Medicaid fees relative to Medicare is defined at the state level

and comes from independent studies of Medicaid fee levels and changes (Norton and Zuckerman 2000; Zuckerman et al. 2004).

Other Medicaid policy variables, particularly the level of Medicaid managed care penetration in the community, may also be important to the decision to stop or start accepting uninsured and Medicaid patients. Under managed care, decisions about accepting or not accepting Medicaid patients are made in the context of contracts with managed care organizations in which the physician agrees to serve the patients covered by that plan, rather than on an individual patient basis, as with fee-for-service. Reliable indicators of Medicaid managed care penetration, however, are not available for the CTS sites (sample sizes of Medicaid enrollees are too small to construct these measures from the CTS Household Survey). As discussed later, the inclusion of dummy variables for the sixty CTS communities in the analysis controlled for the effects of other state and local policy variables, including Medicaid managed care.

Initial Payer Mix. Another implication of the economic model is that physicians in lower-cost practices should be more likely to care for charity and Medicaid patients. Although we do not have a direct measure of practice costs, we can infer that practices reporting high percentages of revenue from Medicaid in the baseline period are likely to be lower-cost practices than those having relatively low percentages of revenues from Medicaid (Lee and Hadley 1981; Sloan, Mitchell, and Cromwell 1978).

A second payer mix variable hypothesized to capture potential dimensions of both revenue pressures and institutional situations is the percentage of revenues from capitation. On the one hand, this variable may reflect lower revenues from insured patients. In this case, the physician might be more likely to report treating charity and Medicaid patients. On the other hand, practices with a high proportion of revenues from capitation are likely to be HMOs or PPOs that care primarily for closed panels of patients who, by definition, are insured. Since the question does not identify whether the capitation revenues include Medicaid managed care, the effect on care to Medicaid patients is ambiguous. More generally, it is not possible to make an unambiguous prediction about this variable because it contains potentially offsetting effects.

Control Variables. All models also include several variables to control for basic characteristics of the sample physicians and the geographic areas. The physicians' characteristics are gender, medical specialty, domestic or foreign medical school graduate, board certification, number of years in practice, and initial levels of and changes in weeks worked per

year and hours worked per week. (The last two variables are designed to control for physicians who work less than full time or change their work schedule between full and part time.) Area characteristics are the numbers of physicians and hospital beds per capita in the CTS site, and a set of dummy variables for each CTS site, which controls for unmeasured differences in state regulations and local market structures that do not vary with physicians' decisions about supplying care to charity and Medicaid patients.

Statistical Analysis

Because all the dependent variables are dichotomous, we used multivariate logistic regression analysis to estimate the effects of the key independent variables and to test hypotheses about their effects. All models were adjusted for the complex survey design of the CTS Physician Survey. The three two-year panel samples were pooled into a single regression. Baseline values of the variables came from the first survey in the panel, and changes in characteristics were computed by comparing responses in each panel's baseline (T1) and follow-up (T2) surveys. All the models included control variables for whether the physician observation was drawn from the second or third survey panel (compared with the first panel).

Since the dependent variables were conditional on whether the physician did or did not treat charity or Medicaid patients in the baseline survey, each of the regression models was estimated on a different subsample of physicians. Thus the sample for estimating the likelihood of starting charity care in the follow-up period (T2) was limited to physicians who were not providing charity care in the baseline survey (T1). Conversely, the model for the likelihood of stopping charity care in T2 was estimated with the sample of physicians who were providing charity care in T1. Samples were similarly defined for the models involving acceptance of Medicaid patients.

Findings

Sample Characteristics

Table 2 compares the characteristics of physicians in the cross-sectional sample (i.e., the full sample pooled across the four surveys) with the

TABLE 2
Means and Standard Errors of the CTS Physician Survey Sample: All Patient
Care Physicians and Physicians in Panel Sample

	Cross-Sectional Sample (All 4 Survey Rounds)	Panel Sample (Baseline Characteristics)
Sample size	35,267	15,966
Dependent variables		
Percentage providing any charity care	72.7 (0.48)	74.6 (0.57)
Percentage not accepting new Medicaid patients	20.2 (0.62)	19.5 (0.80)
Independent variables		
Male	78.5 (0.40)	80.0 (0.54)
Primary care physician	38.9 (0.60)	40.1 (0.72)
Medical specialist	34.5 (0.53)	33.4 (0.62)
Surgical specialist	26.6 (0.59)	26.5 (0.71)
Board certified	88.6 (0.65)	88.3 (0.67)
In practice 5 years or less	15.3 (0.32)	20.7 (0.63)
In practice 6 to 10 years	18.8 (0.31)	19.7 (0.46)
In practice 11 to 25 years	48.2 (0.48)	46.7 (0.67)
In practice > 25 years	17.6 (0.40)	12.9 (0.49)
Owner of practice	58.7 (0.76)	57.5 (0.89)
Non-office-based setting	44.4 (0.66)	43.3 (0.83)
Percentage of capitated revenue	15.1 (0.52)	16.9 (0.66)
Percentage of revenue from Medicaid	15.1 (0.32)	14.4 (0.37)
Practice income, in 2003 dollars (thousands)	203 (1.9)	199 (2.1)
Hours of patient care in past week	45.2 (0.16)	45.5 (0.20)
Number of weeks practicing medicine in past year	47.8 (0.04)	47.9 (0.04)
Percentage of uninsured in site	11.7 (0.44)	11.7 (0.50)
Percentage enrolled in Medicaid/SCHIP in site	9.2 (0.25)	8.1 (0.26)
Medicaid fee in state (relative to Medicare)	0.70 (0.01)	0.69 (0.01)
Number of physicians per capita in county	0.29 (0.005)	0.29 (0.005)
Hospital beds per capita in county	0.36 (0.009)	0.37 (0.009)

Note: Samples exclude physicians who worked fewer than 20 hours or more than 80 hours in their last week of practice or who practiced fewer than 32 weeks in the previous year. Standard errors are in parentheses.

Source: Community Tracking Study Physician Surveys, 1996/1997, 1998/1999, 2000/2001, 2004/2005.

characteristics of the panel sample at baseline. In general, overall levels of charity care provision, Medicaid acceptance, characteristics of physicians and their practices, and market characteristics are very similar in the two samples. With one notable exception, the differences between the cross-sectional and panel samples are either very small and/or not statistically significant. The one exception is the variables for the physician's years of practice, in which the panel sample appears to have a higher percentage of physicians who have been practicing for five years or less, compared with the cross-sectional sample, and fewer physicians who have been practicing for more than twenty-five years. On further investigation, these differences appear to be an artifact of observing years in practice at baseline for the panel sample. There is a noticeable decrease in the percentage of physicians practicing for five years or less between T1 and T2 (from 20.7 percent at T1 to 10.3 percent at T2), and an increase in the percentage practicing for more than twenty-five years (from 12.9 percent at T1 to 19 percent at T2). In other words, these changes reflect the normal "aging" of the panel sample, which averages out when estimating years in practice based on a cross-sectional sample.

Distribution of the Panel Sample and Dependent Variable Means

Table 3 shows the distribution of the panel sample based on the combination of T1 and T2 responses to charity care and Medicaid acceptance. Overall, the great majority of physicians in the panel sample provided charity care and Medicaid in both T1 and T2 (62.9 percent for charity care and 72.4 percent for Medicaid). A higher percentage of physicians in the panel stopped providing charity care and Medicaid in T2 than started providing care to these patients, although the difference was much smaller for charity care (11.7 percent stopped and 10.6 percent started) than for Medicaid (8.1 percent stopped and 5.5 percent started).

Although the changes in charity care and Medicaid provision across the panels are not directly comparable to the cross-sectional estimates shown in table 1, changes in the distribution of the sample across the three panels are consistent with the declining percentage of physicians providing Medicaid and charity care over time. By panel 3 (covering 2000 to 2005), smaller percentages of physicians were accepting charity care and Medicaid patients in both T1 and T2 compared with panel 1 (1996 to 1999), while the percentage of physicians who stopped

TABLE 3
Distribution of the Sample for the Panel of Physicians

	Charity Care	Medicaid
All panels		
Sample size	15,966	15,966
Percentage not accepting patients in T1 and T2	14.8	14.1
Percentage accepting patients in both T1 and T2	62.9	72.4
Percentage started accepting patients in T2	10.6	5.5
Percentage stopped accepting patients in T2	11.7	8.1
Panel 1 (1996–1999)		
Sample size	5,718	5,718
Percentage not accepting patients in T1 and T2	13.6	13.9
Percentage accepting patients in both T1 and T2	65.7	73.1
Percentage started accepting patients in T2	9.5	5.7
Percentage stopped accepting patients in T2	11.1	7.2
Panel 2 (1998–2001)		
Sample size	6,693	6,693
Percentage not accepting patients in T1 and T2	16.0	13.6
Percentage accepting patients in both T1 and T2	61.8	74.3
Percentage started accepting patients in T2	11.1	5.1
Percentage stopped accepting patients in T2	11.2	7.0
Panel 3 (2000–2005)		
Sample size	3,555	3,555
Percentage not accepting patients in T1 and T2	15.0	14.7
Percentage accepting patients in both T1 and T2	61.2	69.8
Percentage started accepting patients in T2	11.1	5.6
Percentage stopped accepting patients in T2	12.7	10.0

Source: Community Tracking Study Physician Surveys, 1996/1997, 1998/1999, 2000/2001, 2004/2005.

accepting Medicaid patients was almost twice as large as the percentage who started accepting Medicaid patients.

*Changes in Charity Care and Medicaid
Provision for Individual Physicians Based
on Changes in Practice Income and Practice
Characteristics*

Table 4 shows the dependent variable means for starting and stopping charity care and accepting Medicaid patients in T2. (These means are based on different samples, since they are conditional on charity care

TABLE 4
Change in Provision of Charity Care and Acceptance of Medicaid Patients, by Changes in Physicians' Income and Key Practice Characteristics

	Percentage of physicians in panel sample	Provision of Charity Care		Acceptance of New Medicaid Patients	
		Percentage started charity care in T2 ^a	Percentage dropped charity care in T2 ^b	Percentage started Medicaid in T2 ^a	Percentage dropped Medicaid in T2 ^b
All physicians in panel	100.0	41.6	15.7	27.9	10.1
Change in income					
Large decrease (>20%)	20.0	47.7 ^c	15.8	28.2	13.0 ^c
Small decrease (5–20%)	21.9	39.7	14.0 ^c	28.8	10.1
Little or no change (+/–5%)	17.7	38.2	16.7	28.0	9.6
Small increase (5–20%)	16.4	38.1	17.6	27.9	8.7
Large increase (>20%)	24.0	44.2 ^d	15.1	26.8	8.9
Change in ownership					
Changed from owner to employee	4.5	33.4	21.1 ^c	53.4 ^c	8.0
Changed from employee to owner	7.6	57.0 ^c	14.2	31.1	17.4 ^c
No change	87.9	40.4	15.5	26.3	9.5
Change in practice type					
Small office to large office or institution	6.5	37.8	22.2 ^c	46.8 ^c	6.3
Large office or institution to small office	7.0	51.8 ^c	15.7	30.6	14.8 ^c
No change	86.5	40.8	15.2	26.5	9.9 ^c

Notes: ^aFor percentages starting charity care and Medicaid in T2, sample includes only those physicians who were not providing charity care (or not accepting Medicaid patients) in T1.

^bFor percentages dropping charity care and Medicaid in T2, sample includes only those physicians who were providing charity care (or accepting Medicaid patients) in T1.

^cDifference from “no change” group is statistically significant at .05 level.

^dDifference from “no change” group is statistically significant at .10 level.

and Medicaid provision in T1.) Of all physicians not providing charity care in T1, 41.6 percent started providing charity care in T2, and of all physicians providing charity care in T1, 15.7 percent stopped providing charity care in T2. Similarly, of all physicians not accepting Medicaid patients in T1, 27.9 percent started accepting Medicaid patients in T2, and of all physicians accepting Medicaid patients in T1, 10.1 percent stopped accepting Medicaid patients in T2.

Table 4 also shows the differences in starting and stopping Medicaid and charity care provision according to the key practice characteristics used in this study: changes in practice income (expressed as percent changes), ownership, and practice type. The association between changes in income and decisions to stop or start providing charity care is unclear. Physicians who had both large increases and large decreases in income between the two time periods were more likely to start providing charity care compared with physicians with little or no change in income. With respect to accepting new Medicaid patients, there were virtually no differences in the decision to start accepting Medicaid patients linked to changes in practice income, although physicians who had a large decrease in income were more likely to stop accepting Medicaid patients.

The associations between the change in ownership or practice type and the decision to start or stop accepting charity care or Medicaid patients are clearer and more consistent with expectations. Compared with physicians who did not change ownership between T1 and T2, those physicians who changed from being owners to employees were more likely to drop charity care and start accepting Medicaid patients. Likewise, those changing from being employees to owners were more likely to drop Medicaid patients and start providing charity care.

Similar patterns are shown for changes in practice types, which reflect in part the strong correlation between practice type and ownership. Those physicians changing from small practices to large or institution-based practices were more likely to drop charity care and start accepting Medicaid patients, while those changing their practice type in the opposite direction were more likely to drop Medicaid patients and start providing charity care.

Multivariate Results

Table 5 presents selected results (odds ratios) from the logistic regression models for adding/dropping charity care and starting/stopping accepting

TABLE 5
Odds Ratios for Changes in Charity Care and Acceptance of All New
Medicaid Patients

Variable	Change in Charity Care		Change in Acceptance of New Medicaid Patients	
	Dropped charity care in T2 ^a	Added charity care in T2 ^b	Stopped accepting new Medicaid in T2 ^a	Started accepting new Medicaid in T2 ^b
Ownership status				
Owner (baseline)	.556 ^c	1.640 ^c	1.033	.511 ^c
Change in ownership				
Employee to owner	.621 ^c	2.629 ^c	1.921 ^c	.618 ^c
Owner to employee	1.995 ^c	.503 ^c	.764	3.859 ^c
Practice type				
Large/non-office-based (baseline)	1.426 ^c	.661 ^c	.621 ^c	1.467 ^d
Change in practice type				
Small to large/non-office	2.164 ^c	.427 ^c	.405 ^c	1.856 ^c
Large/non-office to small	.648 ^e	2.417 ^c	1.752 ^e	1.225
Percent change in income	.999	.999	.996 ^c	.998
Practice revenue shares				
Capitation	1.005 ^c	.995 ^c	1.000	1.007 ^c
Medicaid	1.003	1.002	.963 ^c	1.047 ^c
Medicaid fees				
Medicaid/Medicare fee (baseline)	12.987 ^c	.565	.664	6.237
Change in fee	2.286	.222	.149 ^c	1.285
Population characteristics				
Percent uninsured	1.039	1.009	1.039	.943
Change in percent uninsured	.978	.982	.990	.980
Percent with Medicaid	1.017	1.048	1.013	.976
Change in percent Medicaid	.999	.985	1.003	.978
Sample size	11,654	4,312	12,451	3,482

Notes: ^aSample includes only physicians providing charity care (or accepting Medicaid patients) in T1.

^bSample includes only physicians not providing charity care (or not accepting Medicaid patients) in T1.

^c $p \leq .01$.

^d $.01 < p \leq .05$.

^e $.05 < p \leq .10$.

Results are based on logistic regressions that also included the following variables: physician's gender, medical and surgical specialty, board certification, international medical graduate, years in practice, number of weeks in patient care in the preceding year, hours of patient care in the past week, changes in hours of patient care between T1 and T2, number of physicians per person in the county, number of hospital beds per person in the county, binary indicator for panels 2 and 3, and binary indicators for the 60 CTS sites.

Medicaid patients. Overall, it appears that baseline levels and changes in ownership, practice type, and Medicaid/Medicare fee ratios have symmetrical effects on physicians' decisions to reduce or expand charity care and care of Medicaid patients, and are consistent with the descriptive results in table 4.

Looking first at the likelihood of dropping charity care, assuming that those physicians were providing charity care at baseline (column 1), they were significantly less likely to drop charity care if they were owners at baseline or switched from being employees to owners. Conversely, those physicians who switched from being owners to employees were much more likely to stop providing any charity care. Consistent with the effects of ownership status, physicians practicing in large office-based or institutional practices, who were more likely to be employees, were significantly more likely to drop charity care. Similarly, physicians who changed practice types from small office-based practices to large office-based or institutional practices were also significantly more likely to drop charity care, whereas physicians who switched from a large practice to a small office-based practice showed the reverse. Comparing these results with those for physicians who added charity care, given that they did not provide any at baseline (column 2), indicates that baseline status and changes in ownership and practice type also have highly significant effects on adding charity care but in the opposite direction; that is, their effects are symmetrical.

Columns 3 and 4 report the relative odds associated with ownership and practice type with respect to accepting all or no new Medicaid patients. Again, the associations tend to be highly significant and symmetrical, although they are the opposites of those for the provision of charity care. For example, physicians who switch from being employees to owners of their practices are significantly more likely to report that they no longer accept new Medicaid patients and are significantly less likely to start accepting new Medicaid patients, while the opposite pattern holds for physicians who switch from being an owner to becoming an employee. The only exception to this pattern is for physicians who switch from practicing in a large office-based or institutional setting to practicing in a small office-based setting. Both the relative odds associated with this change are greater than 1, although neither is statistically significant at the .05 level.

We found only one statistically significant association between a change in practice income and decisions to accept charity care and

Medicaid patients, and the results do not suggest a clear pattern of either symmetrical or complementary effects. All four odds ratios are less than 1, which suggests that a given percentage increase in income simultaneously reduces the odds of both adding and dropping charity care and accepting all new Medicaid patients. The only statistically significant finding was that increases in practice income were associated with a lower likelihood of dropping Medicaid patients.⁵

Turning to the variables representing Medicaid fee levels and changes, the results also suggest that Medicaid fees (relative to Medicare fees) have symmetrical effects on the decision to drop or add charity care, although there were only two statistically significant associations. Physicians are much more likely to drop charity care in states with high Medicaid fees relative to Medicare fees, whereas higher fees reduce the likelihood that they will stop accepting new Medicaid patients. The other results suggest symmetrical effects with respect to adding charity care and starting to accept Medicaid patients (i.e., high or rising fees reduce the likelihood of adding charity care and increase the likelihood of starting to accept new Medicaid patients), although none of these results was statistically significant.

The variables representing the practice's baseline shares of revenues from capitation and from Medicaid indicate that physicians in practices with a high share of revenue from capitation are significantly more likely to drop, and significantly less likely to add, charity care, which is consistent with the findings of earlier research suggesting that a high share of revenues from capitation creates financial pressures on the practice. However, these physicians are also significantly more likely to start accepting new Medicaid patients, which may reflect the shift of Medicaid patients into Medicaid managed care arrangements. The share of revenues from Medicaid does not affect decisions about charity care but is significantly associated with decisions to stop or start accepting all new Medicaid patients. Not surprisingly, a high share of revenues from Medicaid reduces the odds of stopping and raises the odds of starting to accept all new Medicaid patients.

The final set of results suggests that the sizes of and changes in the percentages of the population who are either uninsured or covered by Medicaid do not affect physicians' decisions about whether to care for these types of patients. These findings are consistent with those for physicians who face excess demand from these populations, so that

further increases in the population's size have no additional influence on the physicians' decisions.

Conclusion and Discussion

The proportion of physicians providing charity care and accepting Medicaid patients has been falling for at least the past ten years. These declines have been attributed to stagnant reimbursement rates from public and private payers, decreasing incomes from the practice of medicine, and changes in physicians' practice arrangements, although very little research has systematically examined decisions to stop providing care to Medicaid and charity patients. In this study, we used panel data from four nationally representative surveys of physicians to examine individual physicians' decisions to stop or start providing care to Medicaid and uninsured patients.

Contrary to expectations, we did not find that changes in physicians' incomes from the practice of medicine were significantly associated with their decision to stop providing charity care, either in terms of a bivariate association or after controlling for numerous physicians' practice and market characteristics. But decreases in physicians' income were associated with decisions to stop accepting Medicaid patients. For those physicians who were not accepting any Medicaid or charity care patients, changes in income were not associated with their decision to start accepting these patients. In sum, the changes in income were not as strong or consistent as expected in regard to their effects on the physicians' decision to stop or start accepting Medicaid or charity care patients.

One explanation is that changes in practice income both cause and are caused by changes in practice circumstances. For example, a loss of practice income may prompt physicians in solo or small practices to shift to a salaried position in a larger practice, in which their income is more predictable and stable. Conversely, those physicians who change their practice arrangements may be more willing to accept lower pay in exchange for more regular hours, fewer on-call responsibilities, and less concern about having to compete for patients.

Differences in the causes of changes in physicians' incomes may also elicit different responses. For example, an income drop caused by lower private or Medicare reimbursements may make it harder for physicians to provide charity care. But if the income drop is caused by formerly

insured patients who have lost their coverage, then physicians' charity care may increase because of their existing ties to established patients.

Although the exact causal mechanisms are complex and difficult to delineate, changes in financial circumstances may set off a chain of events that only indirectly influence physicians' decisions to stop or start accepting certain types of patients. Similarly, some physicians may switch from a salaried to a self-employed practice if they anticipate significant income gains from becoming practice owners, even if ownership also may mean greater charity care liability compared with that of a salaried practice.

Changes in practice income may not be especially good indicators of the financial pressures from payers that may lead to changes in physicians' decisions to accept charity care or Medicaid patients, perhaps because physicians are able to compensate more quickly for reduced revenue from one source by increasing revenues from other sources. To the extent that this involves Medicaid, then the results regarding the effects of income could be endogenous, even though the income measure is based on data from the years before the physicians' reports on Medicaid and charity care acceptance.

More direct measures of relative reimbursement rates (and changes in reimbursement rates) may be more reflective of how financial pressures influence physicians' decisions to accept certain types of patients, as indicated by previous research on Medicaid reimbursement rates and the results in our study. The effects of baseline Medicaid reimbursement rates and changes in Medicaid fees were clearer and more consistent in the pattern of their effects on physicians' acceptance of charity and Medicaid patients, although few of the results were statistically significant. Also, since Medicaid fees were largely unchanged during most of the study period (and even increased slightly), changes in fee levels probably do not account for the decrease in Medicaid acceptance over time.

Our findings indicate that changes in physicians' practice arrangements were more strongly associated with decisions to stop or start providing charity care than changes in practice income. Overall, the proportion of physicians who are employees of their practice (as opposed to full or part owners) has been increasing over the past ten years, as has the proportion of physicians in large or non-office-based practices (compared with solo or small office-based practices). Our results indicate that physicians who change from being owners to employees are more likely to drop charity care from their practice and are less

likely to begin providing charity care, compared with physicians with no change in their ownership status. Similarly, physicians who change from small to large or non-office-based practices are more than twice as likely to drop charity care and half as likely to start providing charity care. Decisions to stop providing charity care for physicians who change practice settings may be influenced by organizational arrangements and restrictions. Larger organizations or institutional settings may have fixed policies regarding care of the uninsured, and more formal barriers may prevent many low-income uninsured patients from seeking care in these settings. In addition, some non-office-based settings, such as hospitals and community health centers, receive public subsidies to care for the uninsured, thereby reducing the need for physicians to subsidize care to the uninsured out of their incomes or earnings from other patients.

As suggested by the descriptive trends in table 1, the same changes in practice arrangements that are reducing charity care seem to have the opposite effect on the acceptance of Medicaid patients. Physicians who became employees and who changed from small to large practices or non-office-based practices were less likely to stop accepting Medicaid patients and more likely to start accepting Medicaid patients. Compared with smaller practices, larger practices were less affected by the high administrative burdens in Medicaid, and some received greater reimbursement for Medicaid patients (e.g., Community Health Centers).

The contrary results for the effects of changes in physicians' practice arrangements on Medicaid and charity care acceptance have two important implications. First, while the shift to more physicians working as employees in larger practices or non-office-based settings is at least partially responsible for the decrease in physicians' charity care over the past ten years, the results suggest that the decrease in Medicaid acceptance over the same time period would have been even greater without this change in practice arrangements. Combining the results for changes in income with changes in practice arrangements finds that the downward pressure on accepting Medicaid patients resulting from decreases in physicians' income was greatly offset by the increase in the proportion of physicians in practice arrangements that are more likely to accept Medicaid patients.

A second implication of these results is that physicians moving into different practice arrangements treat charity and Medicaid patients as substitutes rather than similar types of patients. Physicians in solo or small office-based practices may not view Medicaid's low reimbursement

rates as worth the high administrative burden and instead prefer offering care free or at reduced fees as part of a desire to provide community service. To the extent that many of their charity care patients are long-standing patients who are temporarily uninsured, the social desirability of treating charity care patients may be greater to these physicians than the desirability of treating Medicaid patients. By contrast, employed physicians in larger practices or organizational settings have less control over which patients they see. Moreover, larger organizations are more likely to have centralized and sophisticated billing systems that both reduce the high administrative costs of Medicaid on a per-patient basis and shield physicians from having to deal with billing and administrative issues.

Note that this substitution of Medicaid and charity care patients is related primarily to the specific changes in practice arrangements observed in this analysis, rather than to physicians' general behavior, regardless of practice settings and changes. Overall, there is little correlation between the decisions to start or stop accepting Medicaid and charity care patients: the percentage of all physicians who started accepting Medicaid patients was similar, regardless of whether they added charity care, dropped charity care, or had no change in charity care (5 to 6 percent; findings not shown). Similarly, the percentage of all physicians who dropped charity care was similar, regardless of whether they dropped Medicaid, started accepting Medicaid, or had no change in Medicaid (12 to 14 percent). Because the percentage of physicians changing their practice arrangements between two time periods was fairly small (e.g., only 12 percent changed ownership between T1 and T2), the substitution effects associated with changes in practice arrangements are not noticeable for the general physician population in this short period.

Note also that other changes in the health care system and public policy not directly observed in this analysis may also contribute to decreases in the provision of charity care and acceptance of Medicaid patients. For example, the Bush administration has substantially increased the funding of Community Health Centers since 2001, resulting in the expansion of existing centers, the building of new centers, and increases in the number of uninsured persons receiving services from health centers (Bureau of Primary Health Care 2007a, 2007b). These expansions may reduce the demand for charity care and Medicaid at private physicians' offices, and the physicians themselves may feel less obligated to care for these patients if there are alternative sources of care in the

community. Because our analysis controls for variation across communities and states—and therefore implicitly controls for changes in health center capacity and other policy and market factors that are not observed directly—these changes are unlikely to affect the primary results of this analysis. However, more explicit consideration of the effects of policy and market changes on decisions to provide care to charity and Medicaid patients would be worthwhile for future research.

Increasing competition in health care and pressure from payers are likely to continue in the foreseeable future, inducing physicians to continue to seek practice arrangements that offer both a buffer against the uncertainties of the health care market and greater leverage with which to maximize revenues. Almost by necessity, the traditional self-employed solo practitioner will continue to give way to larger and more organized groups of physicians that have both the capacity and the infrastructure to negotiate a more competitive and complex health care environment. As such, charity care provided to the uninsured will continue to decline as part of physicians' primary practice. Volunteering at free clinics or settings outside the primary practice may continue, although this is likely to be constrained by greater time-costs. In any event, "free care" will become increasingly concentrated in safety net providers—such as public hospitals and community health centers—that have an explicit mission to provide such care and often receive public subsidies to do so. Unless steps are taken to reduce the number of uninsured, safety net providers are likely to be overwhelmed by this increasing concentration of care at their facilities, and as a consequence, more uninsured patients will not receive any care at all.

Subsidizing individual physicians to provide charity care may be prohibitively expensive and inefficient. In response, policymakers should consider subsidizing organizations that coordinate and formalize physicians' volunteer activities, through either free clinics or organizations that act as centralized referral centers. Often referred to as "donated care" models, these organizations began to emerge during the 1990s in response to shortages of physicians—especially specialists—willing to treat uninsured patients (Taylor, Cunningham, and McKenzie 2006). By coordinating the efforts of a large group of volunteer physicians through a single entity, the administrative and clinical burden of caring for uninsured patients may be reduced or more equally shared among a larger group of physicians, which may induce more physicians to join these efforts.

Predictions for future trends in Medicaid acceptance are more complex. While a continued shift to larger practices may increase physicians' acceptance of Medicaid patients, continued low reimbursement in Medicaid and decreases in physicians' income are likely to severely limit any such gains. Even if there is a net increase in the number of physicians accepting Medicaid patients as a result of continued trends in practice arrangements, the growing concentration of Medicaid patients in larger practices and organizational settings will likely lower the number of practice settings or sites at which Medicaid patients can obtain care. Unlike in charity care, policymakers have a much greater ability to influence these trends through higher Medicaid fees, which tend to have even greater effects on the acceptance decisions of physicians in solo or small office-based practices (Cunningham and Nichols 2005).

Endnotes

1. The decline in response rates between the 1996/1997 and 2004/2005 surveys is consistent with a more general trend of declining survey response rates. Survey weights used in the analysis incorporate adjustments for differential nonresponses. In addition, earlier analyses of the CTS Physician Survey showed that lower response rates were not associated with increased bias in estimates of charity care (Schoenman et al. 2003).
2. Although the CTS survey question used to obtain information about charity care was derived from the American Medical Association's Socioeconomic Monitoring System (SMS) surveys, several important differences make direct comparisons of the two surveys difficult. First, the CTS asks about charity care provided in the last month of practice, compared with the last week of practice used in the SMS. The longer reference period in the CTS likely explains the higher probability of CTS physicians reporting any charity care (76 percent in 1996/1997) compared with the SMS (68 percent in 1994) (Emmons 1995). Second, the CTS asks a single question intended to capture all care provided for free or reduced fees (including physicians who do not provide any care), whereas the SMS measure is based on three questions that ascertain whether the physician provides any charity care, the number of hours of free care, and the number of hours of reduced-fee care. Along with a shorter recall period, the SMS's more detailed measures probably explain why the number of charity care hours per week is considerably higher in the SMS (7.2) than in the CTS (2.8).
3. This conclusion is supported by sensitivity analyses (findings not shown) that tested alternative specifications of the dependent variable that measured the quantity of charity care provided. Specifically, the following alternative specifications of change in charity care provision were tested: (1) the likelihood of going from providing ten or more hours of charity care in T1 to not providing any charity care in T2 (and vice versa); (2) the likelihood of going from providing four or more hours of charity care in T1 to not providing any charity care in T2 (and vice versa); (3) the change in the actual number of charity care hours between T1 and T2 for physicians who started providing charity care in T2; and (4) the change in the actual number of charity care hours for physicians who dropped charity care in T2. In general, the effects of the main independent variables of interest in this study on the alternative measures of change in charity care were qualitatively consistent, although they tended to be smaller in magnitude

- and generally not statistically significant. These results suggest that changes in the proportion of physicians adding or dropping charity care are not heavily influenced by those decisions by physicians who make relatively large changes in their commitments but instead reflect the behavior of physicians along the full spectrum of the amounts of care to the poor and uninsured.
4. We acknowledge that the Medicaid and charity care measures in this study are not entirely equivalent in regard to the decisions they represent, since the Medicaid measure refers to accepting or not accepting any *new* patients, and the charity care measure refers to *any* patients. We selected the measure of acceptance of new patients for Medicaid because it is a standard and commonly used measure to assess the openness of a physician's practice to certain types of patients. We tested an alternative measure for Medicaid—based on whether or not the practice received any revenue from Medicaid—that more closely resembles the charity care measure, and the results were generally similar to the measure used in this study. Alternatively, the 2000/2001 and 2004/2005 surveys also measure whether physicians were accepting new uninsured patients (similar to the measure of accepting new Medicaid patients), but these were available for only the 2000/2001 and 2004/2005 surveys (panel 3 only). The much smaller sample size using this measure (3,555 observations for panel 3 versus 15,966 for all three panels) would dramatically decrease the statistical precision of many of the analyses. Also, a problem with this measure is that it does not distinguish some higher-income uninsured patients who are able to pay out-of-pocket the full cost of a physician's visit from lower-income uninsured patients who cannot afford to pay (and which is the primary focus of this study). In other words, this measure would confound the decision to accept new uninsured patients who are able to pay the full charge with the decision to provide charity care to lower-income uninsured patients who cannot afford to pay.
 5. An alternative specification of the income variable as the combination of the level of income in the prior round and dummy variables for whether the percentage in income was large or small produced similar results: physicians whose income dropped dramatically were significantly more likely to stop accepting new Medicaid patients, but they were not significantly likely to start accepting new Medicaid patients or to start or stop providing charity care.

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Acknowledgments: This study was funded by the Robert Wood Johnson Foundation. The authors would like to thank Cynthia Saiontz-Martinez of Social Scientific Systems, Inc., for providing excellent programming support.