Impact of Changes in Medicaid Coverage on Physician Provision of Safety Net Care

Lindsay M. Sabik, PhD and Sabina Ohri Gandhi, PhD

Background: The Patient Protection and Affordable Care Act will expand Medicaid coverage substantially, with the goal of improving the health of low-income individuals and reducing disparities in coverage and access. Whether insurance expansions are successful in achieving this goal will depend in part on physician response to changes in insurance coverage mix and the effect of this response on access to care for low-income safety net populations.

Objectives: The objective of the study was to consider the impact of changes in market-level Medicaid coverage on measures of physician participation in care for safety net populations.

Research Design: We use 4 waves of the Community Tracking Study Physician Survey from 1996 to 2005. We estimate both market-level and physician-level fixed effects models, to consider changes in market-level Medicaid rates on measures of physician acceptance of new patients (both Medicaid patients and uninsured patients unable to pay), revenue from Medicaid, and provision of charity care. We also stratify the sample to investigate whether effects differ among office-based versus facility-based physicians.

Results: Increases in Medicaid coverage are associated with statistically significant decreases in the likelihood that physicians will accept new uninsured patients who are unable to pay, particularly among office-based physicians. Increases in Medicaid coverage are not associated with changes in acceptance of new Medicaid patients.

Conclusions: Past changes in Medicaid coverage rates are not associated with changes in physician acceptance of new Medicaid patients or provision of charity care, although they are associated with lower acceptance of new uninsured patients, particularly among office-based physicians.

Key Words: Medicaid, physicians, safety net, uninsured

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The Patient Protection and Affordable Care Act (ACA) is slated to expand Medicaid coverage, with the goal of improving the health of previously uninsured, low-income individuals. Whether or not expansions achieve this goal will depend in part on physician response to changes in insurance coverage mix and the effect of this response on access to care for safety net populations. Medicaid expansions beginning in 2014 will provide coverage to a large population of low-income individuals, many of whom were previously uninsured. The Congressional Budget Office estimates 11 million additional people to be enrolled in Medicaid or the Children's Health Insurance Program by 2022.[1] However, coverage does not guarantee access, and prior research documents limited provider participation in Medicaid.[2–4] Further, a substantial number of individuals will likely remain uninsured, even after planned expansions,[5] and some states may not expand Medicaid.[6] Whether new Medicaid enrollees and remaining uninsured individuals are able to access care will depend in large part on physician decisions about whether to accept these categories of patients, and these decisions may be affected by the insurance mix of the local patient population.

Physicians respond to financial incentives in making practice decisions,[7] although they may also be motivated by a range of factors, including altruism, and the weight of various factors is likely to vary by practice setting. This paper provides empirical evidence regarding how physician provision of care for low-income patients is associated with changes in public insurance coverage and how responses vary by practice setting. In considering the effects of market-level Medicaid coverage on physician provision of safety net care, this study builds on 2 strands of literature. The first considers how physicians respond to expansions in public insurance. The second investigates market-level spillover effects of uninsurance.

Physicians' response to changes in Medicaid coverage will depend on the marginal cost of providing patient care and on the mission of the physician's practice setting. For example, physicians in private practice, who may be practice owners, may be more likely to make decisions in line with maximizing profit. Even if these physicians are not purely profit maximizing, profit is likely to be weighted more heavily than for physicians working in public settings, in which the institution has a mission to treat patients regardless of insurance or ability to pay.

Studies examining physician Medicaid participation and response to expansions often consider 1 or a small number of states, and findings from these studies are mixed.[8–10] Baker

and Royalty use a national sample of physicians to consider the effect of Medicaid eligibility expansions in the 1990s on physician practices, including acceptance of new patients.[11] They differentiate between "public" physicians who generally provide care to all patients regardless of coverage or reimbursement levels, and "private" physicians who practice in settings in which there is control over the number of Medicaid patients and the number of patients is set to maximize profit.

Baker and Royalty find that increases in Medicaid eligibility led to increases in access to public physicians for poor patients and increases in Medicaid caseloads. They do not find evidence of increased acceptance of Medicaid patients among private physicians. Their results suggest that public physicians cover residual demand among safety net patients not met by private physicians who are more likely to be profit maximizing and have higher marginal costs. We build on this work by estimating the association between changes in Medicaid coverage rates within markets and physician provision of safety net care during a more recent time period. Limited previous research considers the effect of insurance expansions on physician provision of care for low-income populations but does not directly study the impact of changes in market-level Medicaid coverage rates.[12,13]

Also relevant to our work is recent literature finding evidence of negative effects of high market-level uninsurance rates on access to and quality of care.[14–16] Research to date has focused primarily on spillover effects of uninsurance on privately insured and Medicare patients. However, rates of Medicaid insurance coverage are also likely to impact local health care markets, and there have been considerable changes in Medicaid coverage over recent decades. Medicaid reimburses physicians at lower rates than Medicare and most private large-group insurance plans. As a result, physicians in markets with a larger Medicaid population may not accept Medicaid patients, may limit the number of Medicaid patients in their panels, and may face greater financial strain than those in areas where private coverage is more prevalent.[17]

Low physician reimbursement and participation rates may lead to access difficulties for the Medicaid population but may also affect other patient populations in the market. For example, expansions in Medicaid within a market may be associated with a decrease in the uninsurance rate on the one hand, which could potentially have positive effects on the local system.[15] On the other hand, Medicaid expansions may crowd out private insurance[18] and decrease average reimbursement for physicians in the local market, potentially leading to greater strain on physicians and reduced access for Medicaid or uninsured patients. Even in the absence of crowd-out, physicians may view Medicaid populations as similar to uninsured patients because of low Medicaid reimbursement rates.[19] Particularly if Medicaid payment rates are below marginal cost, physicians may limit the amount of care they provide to both Medicaid and uninsured individuals.

Another recent study finds a negative effect of increases in uninsurance rates within markets on access to care reported by uninsured patients.[20] This suggests that negative effects on access may be particularly acute among uninsured populations and other safety net populations, such as Medicaid enrollees, for whom resources are limited. If physicians have constraints on the amount of charity care they provide or the number of Medicaid patients they accept, then we may see effects on the provision of care for these populations.

METHODS

The primary source of data is the Community Tracking Study Physician Survey (CTS-PS) from 1996–1997, 1998–1999, 2000–2001, and 2004–2005.[21–24] The CTS is a nationwide, longitudinal study that tracked health care across a cohort of US communities, and the physician survey interviewed physicians about their medical practice, including practice setting, revenue, allocation of time, and provision of charity care. In each round, the CTS-PS sampled physicians providing direct patient care for at least 20 hours per week in 60 randomly selected sites. We use the restricted version of the CTS-PS data, which includes physician site identifiers and previous wave identifiers that allow us to construct a longitudinal panel of physicians by linking between waves. Geographic identifiers allow us to link physician data to market-level Medicaid coverage and uninsurance rates from the Community Tracking Study Household Survey, which collected data on individuals and households in the same sites. Site-level survey weights are used to generate market-level estimates of Medicaid coverage and uninsurance as well as Medicaid health maintenance organization (HMO) penetration. Because the Community Tracking Study Household Survey was not collected in 2004, market-level data from 2003 (the closest available year) are merged with the last wave of the CTS-PS. Nationally, rates of Medicaid coverage and uninsurance were similar between 2003 and 2004–2005.[25]

We categorize physicians as either facility based or office based. We assign physicians who report working in a medical school or university, a hospital, a state or local government clinic or other setting, a community health center, or a physician hospital organization to the former category. Physicians in solo or group practice, a free-standing clinic, or a physician practice management company are assigned to the latter category. In addition, we examine a subset of the facility-based sample who work in public settings, including state or local government hospitals, clinics, or other government settings, and community health centers.

We exclude physicians in certain practice settings for which the likely mission of the institution and incentives to the individual physician are less clear. Specifically, we exclude physicians working in health maintenance organizations or integrated health systems, management services organizations, employer-based clinics, foundations, locum tenens, as independent contractors, or in other unclassified settings. This removes 3615 observations, leaving us with an overall sample of 35,210 observations. The longitudinal sample of physicians responding to at least 2 waves of the CTS includes 24,119 observations from 9051 physicians.

We use repeated observations within markets and within physicians to estimate both market-level and physician-level fixed effects models of the effects of changes in Medicaid coverage and uninsurance on physician provision of safety net care. Outcome variables of interest include: (1) share of physician practice revenue from Medicaid;

(2) amount of time physicians spent providing charity care in the previous month as a proportion of total time spent in direct patient care; and whether the physician's practice accepts (3) new Medicaid patients or (4) new uninsured patients who are unable to pay. The last measure is only included in the 2 most recent waves of the survey, so our sample for these analyses is more limited.

Research has shown that, although physicians may tend to overestimate the total number of Medicaid patients in their practices, they are quite accurate in response to questions about program participation,[26] thus we focus on binary measures of physician acceptance of new patients. We estimate regression models for each of the 4 outcomes, for individual i, in market j, year t, where the percentage of the nonelderly population enrolled in Medicaid in market j and year t is the independent variable of interest, and we control for the percentage of the nonelderly population in market j and year t that is uninsured, as well. For ease of comparison across models we estimate linear models for all outcomes. All models include year dummies to control for overall trends. Standard errors are robust and clustered at the market level.

We begin by estimating a set of models on the full sample of pooled physician observations that include market fixed effects in order to control for any unobserved time-invariant market-level characteristics that may be correlated with Medicaid coverage and physician provision of care. We also control for a vector of physician characteristics including age, sex, practice type and size [solo practice, small-group practice (2–9 physicians), large-group practice (10+ physicians), hospital or medical school, clinic, or other], and whether the physician is a full or part owner of the practice. Next, our preferred specification estimates models using the longitudinal sample of physicians for whom we have repeated observations and includes individual physician fixed effects in order to estimate the effect of within-physician variation in market-level Medicaid coverage and uninsurance.

For both the market-level and individual-level fixed effects models, we estimate regressions for our full sample and stratified by office-based physicians (who are likely to have more control over the number of uninsured and Medicaid patients they serve and are more likely to be profit maximizing) versus facility-based physicians (who may have less control over the number of safety net patients they serve and may work in settings in which serving such patient populations is part of the institutional mission), as well as for the subset of physicians in public settings.

RESULTS

Table 1 summarizes the mean Medicaid and uninsurance rates, the distribution in coverage across our set of markets for each wave of the CTS, and the distribution of changes in coverage across the set of markets from beginning to end of the period. On average, Medicaid coverage shows statistically significant increases while uninsurance is decreasing (although the change is not statistically significant) over the period from 1996 to 2003, and there is considerable variation in changes in both uninsurance rates and Medicaid coverage across the markets in the CTS sample.

TABLE 1. Medicaid and Uninsurance Rates by Year and Changes in Coverage Rates

	Mean (%)	SD (%)	Min (%)	Max (%)
(A) Yearly coverage rates				
Nonelderly Medicaid coverage rate				
1996–1997	8.0	3.8	2.8	22.8
1998–1999	8.2	3.6	2.8	21.0
2000–2001	8.6	3.4	2.0	19.1
2004–2005[†]	11.1***	4.4	2.6	26.0
Nonelderly uninsured rate				
1996–1997	13.8	5.3	4.7	27.3
1998–1999	13.2	5.4	3.8	25.7
2000–2001	12.7	5.2	3.1	26.6
2004–2005[†]	12.7	5.8	2.2	28.5
(B) Change in coverage rates[‡]				
Change in Medicaid coverage rates				
Percentage point change	3.0	3.3	−5.4	10.2
Change in uninsurance rates				
Percentage point change	−1.0	4.0	−13.2	8.6

***P<0.01 in test of difference between 1996 and subsequent years.
[†]Because the Community Tracking Study Household Survey was not collected in 2004, data from 2003 (the closest available year) are merged with the 2004–2005 wave of the CTS-PS.
[‡]Represents average change across the 60 CTS markets over the entire period from first to last year.
CTS-PS indicates Community Tracking Study Physician Survey.

Demographic and practice characteristics for the full sample, as well as the subsamples of physicians in facility-based, office-based, and public practice settings, are presented in Table 2. The majority of the pooled sample (panel A) is male, and on average physicians are approximately 48 years old and have been practicing for 16 years. Approximately 71% of the sample is in solo or group practice, and 59% of physicians are a full or part owner of their practice. When we categorize physicians as practicing in office-based or facility-based settings, about three quarters fall into the former category and a quarter into the latter. Comparing our outcome measures across the office-based and facility-based samples, we see that, although a majority of respondents in both samples accept Medicaid and uninsured patients, facility-based physicians report spending more time providing charity care and are more likely to accept new Medicaid and uninsured patients. Mean demographics for the longitudinal sample of observations on physicians who respond in multiple waves are similar (panel B).

Main coefficients from market fixed effects models are reported in Table 3 (see Supplemental Digital Content 1 for full results, http://links.lww.com/MLR/A555). As the rate of Medicaid coverage increases within a market there is no significant effect on the share of practice revenue from Medicaid in the full sample. Coefficients for the facility-based sample and public subset are positive, although also insignificant. As uninsurance increases, physicians spend more of their time providing charity care on average, and this result is driven primarily by facility-based physicians, for whom a 1 percentage point increase in the rate of

TABLE 2. Physician Sample Characteristics for the Full, Private, and Public Samples

Physician Characteristics	Full Sample N = 35,210	Office-based Sample N = 26,199	Facility-based Sample N = 9011	Public Sample N = 1433
(A) Pooled sample				
Safety net care outcomes				
Percentage of practice revenue from Medicaid	14.9 (17.8)	12.2 (15.2)	22.9 (22.0)	34.1 (26.5)
Percentage of patient care time spent in charity care	4.3 (9.2)	3.9 (7.9)	5.3 (12.2)	8.3 (17.8)
Accept new Medicaid patients (%)	76.8	72.3	90.1	93.5
Accept new uninsured patients who are unable to pay* (%)	82.6	80.7	87.9	92.5
Demographics				
Age	47.8 (10.6)	48.6 (10.6)	45.4 (10.0)	47.7 (11.0)
Male (%)	76.3	79.5	66.7	61.6
Years practicing medicine	15.5 (10.6)	16.3 (10.7)	13.1 (9.9)	14.7 (11.0)
Practice size and type combination (%)				
Solo practice	32.5	43.7	—	—
Small-group practice (2–9)	25.8	34.6	—	—
Large-group practice (10+)	12.4	16.7	—	—
Hospital or medical school	22.5	—	88.1	36.2
Clinic	4.8	3.7	8.2	51.2
Other	2.0	1.4	3.8	12.6
Practice ownership (%)				
Full owner	35.9	48.2	0	0
Part owner	22.7	30.5	0	0
Not an owner	41.4	21.3	100	100
Practice setting (%)				
Office based	74.4	100	0	0
Facility based	25.6	0	100	100
	Full Sample N = 24,119	Office-based Sample N = 18,260	Facility-based Sample N = 5859	Public Sample N = 904
(B) Longitudinal sample				
Safety net care outcomes				
Percentage practice revenue from Medicaid	14.4 (17.4)	11.7 (14.7)	22.6 (21.8)	34.4 (26.9)
Percentage patient care time spent in charity care	4.2 (9.0)	3.8 (7.6)	5.2 (12.1)	8.7 (18.6)
Accept new Medicaid patients (%)	76.2	71.8	90.0	93.4
Accept new uninsured patients who are unable to pay (%)†	83.0	81.5	87.8	93.2
Demographics				
Age	48.7 (10.3)	49.4 (10.3)	46.4 (9.8)	48.8 (10.7)
Male (%)	77.6	80.6	68.1	62.5
Years practicing medicine	16.5 (10.4)	17.2 (10.4)	14.2 (9.7)	16.1 (10.7)
Practice size and type combination (%)				
Solo practice	33.5	44.2	—	—
Small-group practice (2–9)	26.6	35.2	—	—
Large-group practice (10+)	12.2	16.1	—	—
Hospital or medical school	21.5	—	88.3	35.3
Clinic	4.4	3.3	7.9	51.3
Other	1.8	1.2	3.7	13.4
Practice ownership (%)				
Full owner	37.8	50.0	0	0
Part owner	24.2	31.9	0	0
Not an owner	38.0	18.1	100	100
Practice setting (%)				
Office based	75.7	100	0	0
Facility based	24.3	0	100	100

Cells represent percentage or mean with SD in parentheses. Categories may not sum to 100% because of rounding. Longitudinal sample represents all observations for physicians included in multiple waves of the survey; results are similar when sample is limited to the first observation for each unique physician. Accept new uninsured patients who are unable to pay outcome is only available in the last 2 waves of the CTS-PS. Sample sizes for these regressions are as follows:

*N = 15,059 (full sample), N = 11,100 (office-based sample), N = 3959 (facility-based sample), N = 664 (public sample).

†N = 6570 (full sample), N = 4986 (office-based sample), N = 1584 (facility-based sample), N = 263 (public sample).

CTS-PS indicates Community Tracking Study Physician Survey.

TABLE 3. Market Fixed Effect Estimates for Safety Net Care Outcomes

	Proportion of Practice Revenue From Medicaid	Proportion of Patient Care Time Spent in Charity Care	Accept New Medicaid Patients	Accept New Uninsured Patients Who Are Unable to Pay[†]
Full sample (No. observations = 35,210) (No. markets = 60)				
% Medicaid	0.0003 (0.0431)	0.0228 (0.0326)	0.0712 (0.1230)	−0.4509** (0.1904)
% uninsured	−0.0033 (0.0328)	0.0528** (0.0260)	0.1853 (0.1713)	0.0122 (0.1765)
Office-based sample (No. observations = 26,199) (No. markets = 60)				
% Medicaid	−0.0197 (0.0464)	0.0293 (0.0342)	0.1196 (0.1429)	−0.4391* (0.2199)
% uninsured	−0.0137 (0.0432)	0.0067 (0.0213)	0.2586 (0.1880)	0.0526 (0.1848)
Facility-based sample (No. observations = 9011) (No. markets = 60)				
% Medicaid	0.1016 (0.0952)	0.003 (0.0720)	−0.1521 (0.1982)	−0.6266 (0.4519)
% uninsured	0.1466 (0.1304)	0.2138*** (0.0769)	−0.0060 (0.2481)	−0.2205 (0.3044)
Public sample (No. observations = 1433) (No. markets = 60)				
% Medicaid	0.1905 (0.3617)	0.0178 (0.3172)	0.2464 (0.3986)	−0.6337 (0.4987)
% uninsured	0.5430** (0.2610)	0.3501 (0.2252)	0.0396 (0.4008)	0.4966 (0.5045)

Independent variables represent the percentage of the nonelderly population within a given market enrolled in Medicaid and the percentage of the nonelderly population within a given market who are uninsured. All regressions include physician demographics and practice characteristics and market and year fixed effects. Robust standard errors, clustered at the market level, are in parentheses.

***$P < 0.01$, **$P < 0.05$, *$P < 0.1$.

[†]Accept new uninsured patients who are unable to pay outcome is only available in the last 2 waves of the CTS-PS. Sample sizes for these regressions are as follows: N = 15,059 (full sample), N = 11,100 (office-based sample), N = 3959 (facility-based sample), N = 664 (public sample).

CTS-PS indicates Community Tracking Study Physician Survey.

uninsurance is associated with a 0.2 percentage point increase in the proportion of time spent providing charity care, or approximately a 4% increase relative to the facility-based sample average. In addition, increases in uninsurance are associated with increases in the share of practice revenue from Medicaid among the public sample. We do not observe a significant effect of changes in Medicaid or uninsurance rates on the acceptance of new Medicaid patients, suggesting that physicians who were already accepting (or not accepting) Medicaid patients before changes in Medicaid coverage rates continue to do so. On average across all waves, about 90% of facility-based physicians report accepting new Medicaid patients, whereas only 72% of office-based physicians accept new Medicaid patients. Our regression results suggest that after changes in Medicaid coverage within a market, this mix remains similar.

Increases in the rate of Medicaid coverage within a market are associated with a decreased probability that physicians report accepting new uninsured patients who are unable to pay. Results from the full sample suggest that a 1 percentage point increase in the rate of Medicaid coverage leads to a statistically significant 0.5 percentage point decrease in the likelihood that physicians will accept new uninsured patients, conditional on the percentage uninsured in the market. When additional time-varying market-level factors (total grants for federally qualified health centers, hospital beds per capita, primary-care physicians and specialists per capita, percentage of the population in poverty, unemployment rate, and Medicaid managed care penetration among the nonelderly) are added to the models, results are similar (Supplemental Digital Content 2, http://links.lww.com/MLR/A556).

Main coefficients from physician fixed effects models, reported in Table 4 (see Supplemental Digital Content 3 for full results, http://links.lww.com/MLR/A557), are similar to those from market-level fixed effects models, suggesting that controlling for physician demographic and practice character-

istics captures much of the relevant variation in physicians across the sample. Table 4 shows that changes in Medicaid coverage are not significantly associated with changes in reported provision of charity care, although a 1 percentage point increase in the percent uninsured in a site is associated with a statistically significant 0.3 percentage point increase in the percentage of time that facility-based physicians spend on charity care and a marginally significant 0.8 percentage point increase among public physicians. The results also indicate that across the full sample a 1 percentage point increase in the rate of Medicaid coverage is associated with a −0.4 percentage point decrease in the probability that physicians accept new uninsured patients. This result is strongest among office-based physicians (−0.6 percentage points), and although point estimates are also negative, they are smaller and there is no significant association between Medicaid coverage rates and acceptance of new uninsured patients by facility-based or public physicians. The association between increases in the proportion of the nonelderly population covered by Medicaid and decreases in acceptance of new uninsured patients who are unable to pay, particularly among office-based physicians, is the most robust across our different sets of models.

DISCUSSION

Uninsured and Medicaid patients are served by physicians in a variety of settings, although physicians working in contexts with a mission to care for patients regardless of insurance or ability to pay are more likely to accept new Medicaid and uninsured patients and spend more time providing charity care. We examine how physician provision of care for these underserved groups changes when the percentage of the local population covered by Medicaid changes. Our results indicate that past changes in market-level Medicaid coverage have not been associated with changes in overall physician acceptance of new Medicaid patients or the share of a

TABLE 4. Physician Fixed Effect Estimates for Safety Net Care Outcomes

	Proportion of Practice Revenue From Medicaid	Proportion of Patient Care Time Spent in Charity Care	Accept New Medicaid Patients	Accept New Uninsured Patients Who Are Unable to Pay[†]
Full sample (No. observations = 24,119) (No. physicians = 9051)				
% Medicaid	0.0081 (0.0379)	0.0211 (0.0318)	0.0834 (0.1247)	−0.4199** (0.1892)
% uninsured	0.0174 (0.0374)	0.0531 (0.0332)	0.0866 (0.1543)	−0.2287 (0.1698)
Office-based sample (No. observations = 18,260) (No. physicians = 7343)				
% Medicaid	−0.0106 (0.0383)	0.0283 (0.0368)	0.1243 (0.1431)	−0.5884** (0.2436)
% uninsured	0.0024 (0.0400)	0.0091 (0.0282)	0.1555 (0.1644)	−0.1519 (0.2015)
Facility-based sample (No. observations = 5859) (No. physicians = 2803)				
% Medicaid	0.0344 (0.0884)	0.0005 (0.0874)	−0.0376 (0.2133)	−0.1220 (0.5288)
% uninsured	0.1917* (0.1135)	0.2874** (0.1121)	−0.0286 (0.2037)	0.0422 (0.4458)
Public sample (No. observations = 904) (No. physicians = 515)				
% Medicaid	−0.4872 (0.3321)	0.3730 (0.4718)	−0.4663 (0.4857)	−0.2848 (1.0363)
% uninsured	0.3995 (0.4792)	0.7862* (0.4124)	−0.4876 (0.5943)	0.6465 (0.5569)

Independent variables represent the percentage of the nonelderly population within a given market enrolled in Medicaid and the percentage of the nonelderly population within a given market who are uninsured. All regressions include physician and year fixed effects. Robust standard errors, clustered at the market level, are in parentheses.

***$P < 0.01$, **$P < 0.05$, *$P < 0.1$.

[†]Accept new uninsured patients who are unable to pay outcome is only available in the last 2 waves of the CTS-PS. Samples sizes for these regressions are as follows: number of observations = 6570 (full sample), number of physicians = 3285 (full sample); number of observations = 4986 (office-based sample), number of physicians = 2633 (office-based sample); number of observations = 1584 (facility-based sample), number of physicians = 932 (facility-based sample); number of observations = 263 (public sample), number of physicians = 169 (public sample).

CTS-PS indicates Community Tracking Study Physician Survey.

physician's practice revenue from Medicaid, although they have led to lower acceptance of uninsured patients, particularly among office-based physicians. We also find that facility-based physicians appear more likely to respond to increases in uninsurance rates with increases in charity care, whereas office-based physicians do not.

Our results suggest a few main conclusions. Importantly, responses of physicians to changes in the insurance mix within the local market differ across practice settings, particularly with respect to acceptance of uninsured patients. Those practicing in settings likely to have a mission to serve low-income populations appear to be more responsive to the needs of safety net populations. In addition, physicians, particularly those in private, office-based settings, may limit their acceptance of uninsured patients when Medicaid coverage increases in their local market.

This study faces some limitations. First, market-level rates of insurance coverage may reasonably be expected to be exogenous to individual physician practice decisions, particularly after controlling for time-invariant market-level factors. Nonetheless, there may be unobserved economic or demographic factors driving changes in enrollment in Medicaid and affecting physician decisions. We attempt to address this using 2 strategies. We include market-level time-varying factors that may be correlated with coverage and safety net care in market fixed effects models as a robustness check, and the inclusion of these variables does not change our results, indicating that the fixed effects models appear to be capturing important variation across markets. We also estimate more restrictive models that include physician fixed effects and thus estimate within-physician changes in behavior. Our results are very similar to the market fixed effects models. Second, the outcomes are based on self-report, which may lead to measurement error. In addition, our results do not capture changes in the number of new patients accepted or other forms of rationing, such as

increased wait times for appointments. Evidence indicates that physician response regarding whether they participate in Medicaid is reliable,[27] suggesting that the patient acceptance measures we use to consider the extensive margin (whether physicians accept any new Medicaid or uninsured patients) are likely to be relatively accurate measures. Third, data on physician acceptance of new uninsured patients who are unable to pay do not differentiate between patients who can pay nothing versus those who can only partially pay physician fees or must pay over time. Fourth, the CTS only asks whether physicians' practices are accepting new patients by insurance status and not about the full composition of the current patient panel, so we cannot observe changes in the overall share of the panel that is covered by different sources.

Although previous studies have examined effects of community-level uninsurance rates on access to health care, few have focused on the effects of changes in local Medicaid coverage. Further, studies considering the effect of changes in Medicaid policies may not account for differences across physician practice settings or geographic areas. Our results suggest that increases in local Medicaid coverage rates are associated with fewer physicians accepting uninsured patients who are unable to pay, especially among office-based physicians, which could negatively impact those who remain uninsured.

The results are in line with evidence of access issues and safety net provider strain after health insurance expansions under state health reform in Massachusetts. Health reform in Massachusetts dramatically increased the number of individuals with health insurance coverage, yet public safety net providers experienced significant increases in demand.[28] Results regarding access in Massachusetts have been somewhat mixed, with evidence of access problems initially, followed by some improvement, although with continued declines on certain measures.[29,30] A physician survey suggests that access to primary care is becoming more

restricted and wait times for appointments are increasing.[31] Further, models of Medicaid enrollment and physician supply under the ACA project an increase in annual primary-care visits from 15 to 24 million[32] and suggest that an additional 4500 to 12,100 physicians may be needed to care for new Medicaid patients.[33]

Our results suggest that after increases in Medicaid coverage within a market, access may be limited for the remaining uninsured patients. Given that a substantial number of individuals are likely to remain uninsured after the implementation of the ACA,[5] additional support for physicians in public settings or incentives to increase acceptance of low-income patients among physicians in office-based settings may be necessary to maintain access for these populations. Future research should assess how changes in physician workforce and incentives to physicians under the ACA affect care for those newly insured by Medicaid and the remaining uninsured.

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REFERENCES

1. Congressional Budget Office. Estimates for the Insurance Coverage Provisions of the Affordable Care Act Updated for the Recent Supreme Court Decision. 2012. Available at: http://www.cbo.gov/sites/default/files/cbofiles/attachments/43472-07-24-2012-CoverageEstimates.pdf. Accessed June 4, 2013.
2. Bisgaier J, Rhodes KV. Auditing access to specialty care for children with public insurance. *N Engl J Med*. 2011;364:2324–2333.
3. Boukus ER, Cassil A, O'Malley AS. *A Snapshot of U.S. Physicians: Key Findings From the 2008 Health Tracking Physician Survey*. Washington, DC: Center for Studying Health System Change; 2009.
4. GAO. Most physicians serve covered children but have difficulty referring them for specialty care. In: United States Government Accountability Office, ed. *Report to Congressional Committees*. Washington, DC: Government Accountability Office; 2011:1–55.
5. Buettgens M, Hall MA. Who will be uninsured after health insurance reform? 2011. Available at: http://www.rwjf.org/coverage/product.jsp?id=71998&cid=XEM_749842. Accessed September 27, 2011.
6. Kaiser Family Foundation. Implementing the ACA's Medicaid-related health reform provisions after the Supreme Court's decision. 2012. Available at: http://www.kff.org/healthreform/upload/8348.pdf. Accessed October 16, 2012.
7. McGuire TG. Physician agency. In: Culyer AJ, Newhouse JP, eds. *Handbook of Health Economics*. Amsterdam: Elsevier; 2000:461–536.
8. Bronstein JM, Adams EK, Florence CS. The impact of S-CHIP enrollment on physician participation in Medicaid in Alabama and Georgia. *Health Serv Res*. 2004;39:301–318.
9. Deprez RD, McQuinn LB. Access to physicians, obstetric care use, and adequacy of prenatal care for Medicaid patients in Maine: 1985-1989. *Obstet Gynecol*. 1996;88:443–450.
10. Baldwin LM, Greer T, Hart LG, et al. The effect of a comprehensive Medicaid expansion on physicians' obstetric practices in Washington state. *J Am Board Fam Pract*. 1996;9:418–421.
11. Baker LC, Royalty AB. Medicaid policy, physician behavior, and health care for the low-income population. *J Hum Resour*. 2000;35:480–502.
12. Garthwaite CL. The doctor might see you now: the supply side effects of public health insurance expansions. *Am Econ J Econ Policy*. 2012;4:190–215.
13. He F, White C. The effect of the children's health insurance program on pediatricians' work hours. *Medicare Medicaid Res Rev*. 2013;3:E1–E32.
14. Pagán JA, Pauly MV. Community-level uninsurance and the unmet medical needs of insured and uninsured adults. *Health Serv Res*. 2006;41:788–803.
15. Pauly MV, Pagán JA. Spillovers and vulnerability: the case of community uninsurance. *Health Aff*. 2007;26:1304–1314.
16. Gresenz CR, Escarce JJ. Spillover effects of community uninsurance on working-age adults and seniors: an instrumental variables analysis. *Med Care*. 2011;49:e14–e21.
17. Zuckerman S, McFeeters J, Cunningham P, et al. Changes in Medicaid physician fees, 1998-2003: implications for physician participation. *Health Aff*. 2004;w4(suppl web exclusive):374–384.
18. Gruber J, Simon K. Crowd-out 10 years later: have recent public insurance expansions crowded out private health insurance? *J Health Econ*. 2008;27:201–217.
19. Zuckerman S, Williams AF, Stockley KE. Trends in Medicaid physician fees, 2003–2008. *Health Aff*. 2009;28:w510–w519.
20. Sabik LM. The effect of community uninsurance rates on access to health care. *Health Serv Res*. 2012;47:897–918.
21. Center for Studying Health System Change. *Community Tracking Study Physician Survey, 2004-2005, ICPSR Version 2*. Washington, DC: Center for Studying Health System Change; 2006.
22. Center for Studying Health System Change. *Community Tracking Study Physician Survey, 2000-2001, ICPSR Version 2*. Washington, DC: Center for Studying Health System Change; 2003.
23. Center for Studying Health System Change. *Community Tracking Study Physician Survey, 1998-1999, ICPSR Version 2*. Washington, DC: Center for Studying Health System Change; 2009.
24. Center for Studying Health System Change. *Community Tracking Study Physician Survey, 1996-1997, ICPSR Version 2*. Washington, DC: Center for Studying Health System Change; 2001.
25. US Census Bureau. Health Insurance Historical Tables. 2012. Available at: http://www.census.gov/hhes/www/hlthins/data/historical/HIB_tables.html. Accessed June 15, 2012.
26. Backus L, Osmond D, Grumbach K, et al. Specialists' and primary care physicians' participation in Medicaid managed care. *J Gen Intern Med*. 2001;16:815–821.
27. Kletke PR, Davidson SM, Perloff JD, et al. The extent of physician participation in Medicaid: a comparison of physician estimates and aggregated patient records. *Health Serv Res*. 1985;20:503–523.
28. Ku L, Jones E, Shin P, et al. Safety-net providers after health care reform: lessons from Massachusetts. *Arch Intern Med*. 2011;171:1379–1384.
29. Long SK, Masi PB. Access and affordability: an update on health reform in Massachusetts, Fall 2008. *Health Aff*. 2009;28:w578–w587.
30. Long SK, Stockley K. Sustaining health reform in a recession: an update on Massachusetts as of Fall 2009. *Health Aff*. 2010;29:1234–1241.
31. Massachusetts Medical Society. Physician Workforce Survey. 2011. Available at: http://www.massmed.org/AM/Template.cfm?Section=Research_Reports_and_Studies2&CONTENTID=61512&TEMPLATE=/CM/ContentDisplay.cfm. Accessed October 4, 2011.
32. Hofer AN, Abraham JM, Moscovice I. Expansion of coverage under the patient protection and affordable care act and primary care utilization. *Milbank Q*. 2011;89:69–89.
33. Sommers BD, Swartz K, Epstein A. Policy makers should prepare for major uncertainties in Medicaid enrollment, costs, and needs for physicians under health reform. *Health Aff*. 2011;30:2186–2193.