Do Reimbursement Delays Discourage Medicaid Participation By Physicians?

Simply raising fees might not be enough to entice physicians to take Medicaid patients, if they have to wait too long to receive payment for services rendered.

by Peter J. Cunningham and Ann S. O'Malley

ABSTRACT: Policymakers have focused primarily on increasing Medicaid reimbursement rates to increase physicians' participation in Medicaid, although physicians often complain of payment delays and other administrative burdens associated with Medicaid. Linking state-level data on average reimbursement times to the 2004–05 Community Tracking Study Physician Survey, this study examines how Medicaid reimbursement time affects physicians' willingness to accept Medicaid patients. Delays in reimbursement can offset the effects of high Medicaid fees, thereby lowering participation to levels that are closer to those in states with relatively low rates. Increasing these rates may be insufficient to increase physicians' participation unless accompanied by reductions in administrative burden. [*Health Affairs* 28, no. 1 (2009): w17–w28 (published online 18 November 2008; 10.1377/hlthaff.28.1.w17)]

INCREASING PHYSICIANS' PARTICIPATION IN MEDICAID is a policy concern of long standing. Surveys show that about half of physicians accept all new Medicaid patients into their practices, compared with more than 70 percent for privately insured or Medicare patients.[1] Moreover, trends over the past decade indicate that participation in Medicaid is declining for many physicians, in part because of declining practice incomes and changes in practice arrangements.[2]

Low Medicaid reimbursement rates relative to those of Medicare and private payers are usually considered to be the primary reason for low physician participation in Medicaid. Medicaid fee levels vary considerably across states, and research has consistently shown that Medicaid participation by physicians is higher in states with higher fees than in states with lower fees.[3] Thus, increasing Medicaid fees is one of the main tools that state policymakers use to increase physicians' participation in Medicaid, in order to improve access for enrollees.

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However, although physicians often complain of the high administrative burden associated with Medicaid patients, there has been less policy focus on reducing this burden as a way to increase participation. Administrative burden includes payment delays, rejection of claims because either the billing form was completed incorrectly or the physician was not able to verify the patient's Medicaid eligibility, preauthorization requirements for certain services, and complex rules and regulations on how claims are to be filed.[4] Indeed, although inadequate reimbursement is the reason most frequently cited by physicians for limiting Medicaid patients (cited by 84 percent of physicians), the majority of physicians also cite concerns about paperwork (70 percent) and billing delays (65 percent) as important reasons.[5] Another national survey found that concerns about administrative burden caused physicians to limit their acceptance of new Medicaid patients to a much greater extent than for Medicare or privately insured patients.[6]

Nevertheless, despite a sizable research literature on the effects of Medicaid fee levels, there is virtually no research on how Medicaid administrative burden varies across states, and how these variations influence physician participation. One of the few relevant studies found extensive variation across states in pediatricians' perceptions of paperwork burdens that were also correlated with their levels of Medicaid participation.[7] However, it was unknown whether these differences in perceptions of administrative burden were consistent with actual experiences, such as differences in length of time for payment and denial rates for claims.

This study links state-level data on Medicaid claims experiences with respect to one important measure of administrative burden—length of time for reimbursement—with physician survey data that include measures of Medicaid participation. The objective of the study is to examine the effect of variation in average reimbursement times across states on physicians' decisions to accept Medicaid patients. In addition, we compare the effects on physician participation in Medicaid of reimbursement times versus reimbursement rates. In particular, we determine whether slow reimbursement offsets any gains in participation that might be achieved through increasing fee levels.

Study Data And Methods

■ **Data.** The 2004–05 Community Tracking Study (CTS) Physician Survey is the main source of data for this study.[8] The survey is based on sixty randomly selected communities, defined as Primary Metropolitan Statistical Areas (PMSAs) or nonmetro parts of Bureau of Economic Analysis (BEA) Economic Areas. Sampled physicians within each of the sixty communities include MDs and DOs who spent at least twenty hours per week in patient care. All interviews were conducted by telephone, with an overall response rate of 52 percent. The total sample includes about 6,600 physicians.

■ **Methods.** The survey includes questions ascertaining the extent of each physician's involvement with Medicaid patients (based on percentage of total practice

revenue derived from Medicaid) as well as the extent to which they are accepting all, most, some, or no new Medicaid patients (both fee-for-service and managed care). Based on these questions, we included the following dependent variables: (1) the probability of having any Medicaid patients (based on whether or not they derived any Medicaid revenue); (2) the probability of accepting no new Medicaid patients; and (3) the probability of accepting all new Medicaid patients.

■ **Average reimbursement time in state.** The primary independent variable of interest is a state-level measure of average reimbursement time for physicians treating Medicaid patients. Average reimbursement time for Medicaid payment in the state is computed based on claims records maintained by AthenaHealth Inc., which contracts with physician practices in thirty-three states to provide claims processing for Medicaid as well as commercial insurance. These data are unique in that they are based on a uniform and standardized system of claims processing that largely negates differences in billing systems and billing practices between physicians that may contribute to differences in reimbursement time.

To compute average reimbursement time for Medicaid payment in the state, data on days in accounts receivable were aggregated across all Medicaid claims within each state. Only fee-for-service payments were used to compute reimbursement times. Days in accounts receivable reflect time between when a claim was submitted by AthenaHealth and when payment by Medicaid was made. If a claim was initially denied by the state Medicaid agency and resubmitted—or denied and resubmitted numerous times—it is considered a single claim for the purposes of computing days in accounts receivable.

Days in accounts receivable were computed as the sum of total charge days (the amount of the claim multiplied by the days in accounts receivable) for all claims for a physician's practice, divided by the average dollar amount per day of all claims for that physician's practice. This is a common method for computing days in accounts receivable, which also has the added benefit of adjusting for differences in reimbursement time between physicians' practices as a result of differences in claim amounts (that is, larger claims may be more complex, are more likely to be initially denied, and therefore may take longer to adjudicate than smaller claims).

State-level measures of average reimbursement time for Medicaid for 2006 were linked to sampled physicians in twenty-one of the thirty-six CTS states for which there are a large number of claims processed by AthenaHealth.[9] These include most of the largest states such as New York, California, Texas, Florida, Illinois, Pennsylvania, and Michigan, as well as regional representation in the Northeast, South, Midwest, and West. Excluded states are those for which AthenaHealth provides no Medicaid claims processing, or contracts with too few physicians to produce reliable measures of reimbursement time. About 4,900 of the 6,600 physicians in the survey are in the twenty-one states that have a measure of average reimbursement time; they represent the sample for this study.

Although data on reimbursement times for 2004 and 2005 would be more optimal in terms of linkage to the CTS Physician Survey, data are not available for many of the twenty-one states prior to 2006. Although average reimbursement times within a state may change from year to year, the relative position of states did not change between 2005 and 2006 among the fourteen states that had data for both years.[10] Because the rank-ordering of states is likely to be more accurate for 2004 and 2005 than the actual time amount, most of the analysis was based on a dichotomous measure that reflects practices in the 50 percent of states with above-average reimbursement times and practices in the other 50 percent of states with below-average reimbursement times.

■ **Medicaid reimbursement rates.** Medicaid reimbursement rates are based on a state survey of Medicaid fees conducted in 2003, the latest year for which these data are available.[11] The measure used in this study reflects a weighted average of the ratio of Medicaid to Medicare fees for thirty-three services for each of the twenty-one states.[12] Medicaid fees relative to Medicare were used because Medicare rates are adjusted for local practice costs; therefore, they serve as a benchmark for local markets. Only fee-for-service rates were included in the measure. More recent data for the years of the survey (2004–05) are not available. As with reimbursement times, the relative position of states is consistent from year to year. Most of the analysis was based on a dichotomous measure that reflects location in the half of states with the highest reimbursement rates and location in the other half of states with the lowest reimbursement rates.

■ **Analysis.** Because reimbursement times and Medicaid fees may be correlated with other factors affecting physicians' decisions to accept Medicaid patients, logistic regression analysis was used to examine the independent effects of reimbursement times and fee levels on Medicaid participation.[13] Physician characteristics controlled for in the analysis include physicians' sex, race/ethnicity, years in practice, specialty (medical, surgical, primary care), practice type and size (solo or small group practice, medium and large group practice, HMO practice, hospital-based practice, clinic, and other), practice income, percentage of revenue from capitation, and owner versus employee of practice.

Important health care market variables controlled for in the analysis include the percentage uninsured and the percentage of the population enrolled in Medicaid in the community, using data from the 2003 CTS Household Survey.[14] These measures control for both the relative size of the Medicaid population in the community and the potential opportunity costs to physicians of treating Medicaid patients relative to other paying patients (that is, acceptance of Medicaid might be higher if there are fewer higher-paying patients in the area relative to Medicaid patients). Because the survey did not distinguish between acceptance of Medicaid managed care and fee-for-service patients, we controlled for state variation in Medicaid managed care penetration rates, based on 2004 data from the Centers for Medicare and Medicaid Services (CMS). Other health care system variables

controlled for in the analysis include the relative number of physicians and hospital beds in the community.

The results are presented in terms of adjusted probabilities of accepting (or not accepting) Medicaid patients, based on high or low levels of Medicaid reimbursement times or fees, or both. To facilitate the presentation of results, dichotomous measures of Medicaid reimbursement times and fees were used in the analysis (described above).[15] The analysis was conducted for all physicians in the sample, as well as separately for primary care physicians and specialists.

Study Findings

■ **Variation in average Medicaid reimbursement times and rates.** Average reimbursement times for Medicaid varied considerably across states in 2006, from a low of 36.9 adjusted days in Kansas to a high of 114.6 days in Pennsylvania (Exhibit 1). Reimbursement times for Medicaid were longer on average than reimbursement times for commercial insurers in every state, although the size of the disparities ranged from small (Kansas, Ohio) to large (Pennsylvania, Illinois). Also, there was

EXHIBIT 1
Average Days For Medicaid Payment And Medicaid-To-Medicare Fee Ratio In Twenty-One States, 2003 And 2006

State	Average time for Medicaid reimbursement (adjusted days), 2006[a]	Average time for reimbursement for commercial insurers (adjusted days), 2006[a]	Medicaid fees as percent of Medicare fees, 2003[b]
Kansas	36.9	29.0	0.74
South Carolina	37.3	34.0	0.66
Ohio	41.1	35.1	0.73
Arkansas	44.9	35.1	0.89
North Carolina	44.9	29.2	1.00
Rhode Island	46.2	21.6	0.44
Virginia	49.3	33.3	0.82
Florida	50.8	43.8	0.65
Indiana	52.3	40.0	0.78
Massachusetts	55.9	28.6	0.77
New Jersey	56.0	32.4	0.41
Missouri	66.1	34.9	0.56
Georgia	67.4	42.7	0.83
Connecticut	73.6	36.4	0.82
Texas	75.1	38.1	0.78
Louisiana	76.8	54.9	0.81
California	86.7	53.6	0.65
Michigan	88.4	36.0	0.60
Illinois	103.4	39.7	0.67
New York	111.5	54.2	0.36
Pennsylvania	114.6	26.8	0.64

SOURCES: See below.

[a] AthenaHealth Inc.

[b] Survey of state Medicaid fees, from S. Zuckerman et al., "Changes in Medicaid Physician Fees, 1998–2003: Implications for Physician Participation," *Health Affairs* 23 (2004): w374–w384 (published online 23 June 2004; 10.1377/hlthaff.w4.374).

much less variation across states in reimbursement times for commercial insurers (about thirty-three days between the fastest and slowest states) compared to Medicaid (seventy-eight days). Medicaid fees as a percentage of Medicare fees also varied across states in 2003, from a low of 36 percent in New York to parity with Medicare in North Carolina (Exhibit 1).

■ **Physicians' participation in Medicaid.** About 85 percent of all U.S. physicians reported some revenue from Medicaid in 2004–05 (Exhibit 2). About one-fifth (21 percent) were not accepting new Medicaid patients, while 52 percent reported accepting all new Medicaid patients. There were no statistically significant differences in physicians' involvement with Medicaid between all physicians in the CTS survey (which reflects a nationally representative sample) and the physicians in-

EXHIBIT 2
Characteristics Of Physicians In Sample, And Their Distribution Among States With Faster Versus Slower Reimbursement Times, 2004–2005

		Physician in analysis sample[a]		
	All U.S. physicians (N = 6,628)	All (n = 4,915)	States with fast reimbursement[b] (n = 2,896)	States with slow reimbursement[c] (n = 2,019)
Percent with any Medicaid revenue	85.4%	84.3%	87.1%	82.7%**
Acceptance of new Medicaid patients				
No new patients	21.0%	22.8%	20.0%	24.7%*
Some new patients	17.8	17.6	15.2	19.3**
Most new patients	9.1	9.4	9.4	9.3
All new patients	52.1	50.3	55.5	46.6**
Specialty				
Primary care	36.7%	35.6%	36.7%	34.8%
Medical specialist	37.6	38.6	37.7	39.2
Surgical specialist	25.7	25.8	25.6	26.0
Average number of years in practice	16.7	16.8	16.7	17.0
Practice characteristics				
Owner of practice	54.4%	54.7%	56.6%	53.3%
Solo or small group practice	51.4	52.9	54.4	51.8
Medium or large group practice	12.7	11.6	13.8	10.1**
HMO	4.5	4.1	1.3	6.0**
Practice in medical school or hospital	9.3	9.9	9.3	10.3
Practice in public facility	4.7	4.9	4.4	5.3
Other	7.3	7.4	6.9	7.8
Average practice income in 2003 (thousands)	$203	$200	$202	$199
Percent of revenue that is capitated	13.5%	14.2%	9.5%	17.5%**
Medicaid enrollment in community	12.0	12.2	11.6	12.5
Medicaid fees as percent of Medicare fees	72.0	69.0	76.0	64.0**

SOURCE: Physician data based on 2004–05 Community Tracking Study Physician Survey.

NOTE: Statistical significance denotes difference with "fast reimbursement" states.

[a] Includes only physicians in twenty-one states with data on Medicaid reimbursement times (see Exhibit 1).

[b] Includes states with average reimbursement time of less than sixty days (Source: AthenaHealth Inc.; see Exhibit 1).

[c] Includes states with average reimbursement time of greater than sixty days (Source: AthenaHealth Inc.; see Exhibit 1).

*$p < 0.10$ **$p < 0.05$

cluded in the sample for this analysis. Similarly, there were no differences in other characteristics of physicians between the overall CTS survey sample and the analysis sample.

Compared with physicians in states with relatively slow reimbursement times, physicians in the states with the fastest reimbursement times were more likely to have some Medicaid revenue, more likely to be accepting all new Medicaid patients, and less likely to be accepting no or only some new Medicaid patients (Exhibit 2). Other physician characteristics were largely similar between states with high and low reimbursement times, except for managed care measures: physicians in states with slow reimbursement were more likely than their peers in states with fast reimbursement to be practicing in health maintenance organizations (HMOs) and to obtain a higher percentage of practice revenue from capitation.

Exhibit 2 also indicates some correlation between average reimbursement times and Medicaid reimbursement rates. In general, physicians in states with fast reimbursement times also tended to have higher Medicaid fee levels than those in states with slow reimbursement times.

■ **Effects of reimbursement time on Medicaid participation.** Overall, average reimbursement times had no independent effect on physician Medicaid participation when accounting for differences in Medicaid fees (Exhibit 3). When Medicaid fees were excluded from the logistic regression models (model 1), faster payment was associated with greater Medicaid participation, including a greater probability of having any Medicaid patients, a greater probability of accepting all new Medicaid patients, and a lower probability of accepting no new Medicaid patients. However, most of the association between payment times and participation occurred among specialists. When the analysis took fee levels into account (model 2), virtually all of the differences in Medicaid participation levels between physicians in slow- versus fast-payment states disappeared, including for specialists. Consistent with previous studies, Medicaid participation levels were much higher among physicians in states with relatively high fee levels than in those with low fee levels. These results are consistent across all three measures of Medicaid participation as well as across primary care physicians and specialists.

■ **Slow reimbursement offsets high Medicaid fees.** Although differences in reimbursement times have no independent effect on Medicaid participation, the effects of reimbursement time on Medicaid participation could depend on reimbursement levels. For example, since states with high fee levels also tended to have faster payment times, it might have been the combination of both high fees and relatively rapid payment that induced more physicians to participate. Conversely, physicians might have been less bothered by slow payment when fees were sufficiently high, but they might have been even more reluctant to accept Medicaid patients when low fees were combined with slow payment.

To examine this, we compared four groups of physicians based on different combinations of fee levels and reimbursement times: physicians in states with (1)

EXHIBIT 3
Effects Of Medicaid Reimbursement Times And Rates On Probability Of Accepting Medicaid Patients, 2004–2005

Model 1: excludes Medicaid fees	Number of physicians in sample	Probability of having any Medicaid patients	Probability of accepting no new Medicaid patients	Probability of accepting all new Medicaid patients
All physicians				
States with slow payment	2,896	82.1	25.6	46.1
States with fast payment	2,019	87.2**	19.2**	55.7***
Primary care physicians				
States with slow payment	1,424	84.8	28.6	40.0
States with fast payment	1,014	85.3	24.5	44.1
Specialists				
States with slow payment	1,472	80.7	23.7	49.6
States with fast payment	1,005	88.4***	16.3**	62.0***
Model 2: includes Medicaid fees				
All physicians				
Reimbursement time				
States with slow payment	2,896	83.7	23.6	48.4
States with fast payment	2,019	85.1	21.7	52.5
Medicaid fees				
States with high fees	2,124	89.7	16.2	58.5
States with low fees	2,791	80.1***	28.0***	43.6***
Primary care physicians				
Reimbursement time				
States with slow payment	1,424	86.0	27.2	41.8
States with fast payment	1,014	83.5	26.3	41.7
Medicaid fees				
States with high fees	1,060	89.4	21.9	48.7
States with low fees	1,378	80.9**	31.1**	36.2***
Specialists				
Reimbursement time				
States with slow payment	1,472	82.5	21.5	52.3
States with fast payment	1,005	86.2*	19.2	58.3
Medicaid fees				
States with high fees	1,064	90.0	12.8	64.3
States with low fees	1,413	79.5***	26.2***	47.6***

SOURCES: Medicaid reimbursement times are based on data from AthenaHealth Inc. Medicaid fees are from a state survey of Medicaid fees, from S. Zuckerman et al., "Changes in Medicaid Physician Fees, 1998–2003: Implications for Physician Participation," *Health Affairs* 23 (2004): w374–w384 (published online 23 June 2004; 10.1377/hlthaff.w4.374). Medicaid participation measures are based on the 2004–05 Community Tracking Study Physician Survey.

NOTES: Estimates reflect predicted probabilities based on multiple logistic regression analysis that included the following other variables: physician's sex, specialty, years in practice, race/ethnicity, international medical graduate status, board certification, owner versus employee of practice, practice type and size, practice income, percent of revenue from capitation, salaried, number of nonfederal patient care physicians in county, percent of community residents enrolled in Medicaid, and Medicaid managed care penetration in state. Statistical significance denotes difference from states with high fees.
*$p < 0.10$ **$p < 0.05$ ***$p < 0.01$

high fees and fast reimbursement; (2) high fees and slow reimbursement; (3) low fees and fast reimbursement; and (4) low fees and slow reimbursement. Binary indicators for these four groups were included in regression analyses that included the same control variables included in the results for Exhibit 3, and adjusted probabilities were computed (Exhibit 4).

EXHIBIT 4
Summary Of Predicted Probabilities From Logistic Regressions, Study Of Physicians' Participation In Medicaid, 2004–2005

	All physicians	Primary care physicians	Specialists
Percent with any Medicaid patients			
High-fee/fast-payment states	92.5	91.6	93.3
High-fee/slow-payment states	86.5***	86.9**	86.4***
Low-fee/fast-payment states	79.9***	76.0***	81.8***
Low-fee/slow-payment states	80.3***	83.0***	78.9***
Percent accepting no new Medicaid patients			
High-fee/fast-payment states	12.6	19.0	8.8
High-fee/slow-payment states	22.2***	28.0***	19.1***
Low-fee/fast-payment states	25.4***	30.2*	22.9***
Low-fee/slow-payment states	27.8***	30.0***	26.4***
Percent accepting all new Medicaid patients			
High-fee/fast-payment states	64.0	49.7	72.7
High-fee/slow-payment states	50.9***	43.3	55.2***
Low-fee/fast-payment states	48.4**	42.1	50.7***
Low-fee/slow-payment states	43.2***	37.0***	46.8***

SOURCES: Medicaid reimbursement times are based on data from AthenaHealth Inc. Medicaid fees are from a state survey of Medicaid fees, from S. Zuckerman et al., "Changes in Medicaid Physician Fees, 1998–2003: Implications for Physician Participation," *Health Affairs* 23 (2004): w374–w384 (published online 23 June 2004; 10.1377/hlthaff.w4.374). Medicaid participation measures are based on the 2004–05 Community Tracking Study Physician Survey.
NOTES: High-fee/fast-payment states include AR, NC, VA, IN, MA, KS. High-fee/slow-payment states include GA, CT, LA, TX. Low-fee/fast-payment states include SC, RI, FL, NJ, OH. Low-fee/slow-payment states include MO, CA, MI, IL, NY, PA. Estimates reflect predicted probabilities based on multiple logistic regression analysis that included the following other variables: physician's sex, specialty, years in practice, race/ethnicity, international medical graduate status, board certification, owner versus employee of practice, practice type and size, practice income, percent of revenue from capitation, salaried, number of nonfederal patient care physicians in county, percent of community residents enrolled in Medicaid, and Medicaid managed care penetration in state. Statistical significance denotes difference with physicians in high-fee/fast-payment states.
*$p < 0.10$ **$p < 0.05$ ***$p < 0.01$

The results strongly suggest that slow payment offset much of the effect of high Medicaid fees during the study period. For example, 64 percent of physicians were accepting all new Medicaid patients in states with both high fees and fast payment. However, when high fees were combined with slow payment, the percentage accepting all new Medicaid patients decreased to 50.9 percent. Reimbursement time appeared to make less of a difference in states with relatively low Medicaid fees, because the differential in acceptance rates between fast- and slow-payment states was only about five percentage points (48.4 in low-fee/fast-payment states versus 43.2 percent in low-fee/slow-payment states). Similar results are shown for the other measures of Medicaid participation: participation was highest among physicians in states with both the highest fees and fast reimbursement times, but significantly lower when high fees were combined with relatively slow payment. These patterns are similar for primary care physicians and specialists, although the combined effects of time and fees appeared to be stronger for specialists, especially for measures related to acceptance of new patients.

"Greater use of electronic claims processing using standardized formats should increase the speed of payment."

The greater sensitivity to price among specialists is consistent with previous research, and it likely reflects the generally higher opportunity costs between what specialists can earn from non-Medicaid versus Medicaid patients.[16] Opportunity costs are even greater for specialists than for primary care providers both because of specialists' higher practice incomes and because the gap between Medicaid and private payer rates is smaller for primary care providers than for specialists.[17] The combined effect of low fees and slow payment likely increases these opportunity costs even more for specialists.

Discussion And Policy Implications

The results from this study indicate that slower Medicaid reimbursement times were associated with lower physician participation in Medicaid, although the effect of reimbursement times depended on fee levels. Although Medicaid payment rates were consistently the most important indicator of Medicaid acceptance, the effects of payment rates on participation were diminished when high fees were accompanied by relatively slow payment.

■ **Study limitations.** Some limitations with this analysis should be noted. First, the measure of physicians' participation in Medicaid did not distinguish between managed care and fee-for-service patients, so the results pertaining to fee levels and reimbursement time (which includes fee-for-service only) might reflect in part correlation with Medicaid managed care that was not accounted for in the analysis. The ability to distinguish between acceptance of Medicaid fee-for-service and managed care patients in the analysis would have been useful, but it was not possible with the survey data. To address this issue, we controlled for physician practice in an HMO, the amount of capitation received from managed care (commercial and public), as well as Medicaid managed care enrollment rates in the state.

Also, the results for the combined effect of Medicaid fees and payment times were based on a relatively small number of states (four to six) in each of the four groups. Thus, the results for a particular group (for example, states with high fees/fast payment) might reflect other unique aspects of these states or of one or two large states within each group.

Although this was beyond the scope of this analysis, we were not able to identify literature explaining the reasons for state variation in Medicaid reimbursement times, or why payment times in Medicaid continue to lag behind those of commercial payers. Starting in October 2003, state Medicaid agencies were required, as part of the Health Insurance Portability and Accountability Act (HIPAA), to accept electronic claims for Medicaid using standardized formats, which was intended to speed claims processing and reduce errors.

In theory, greater use of electronic claims processing using standardized formats should increase the speed of payment and perhaps reduce the amount of variation in reimbursement time between states; however, other factors could still lead to delays. Complex rules and guidelines in Medicaid regarding documentation for claims, the use of detailed service and procedure codes, and patient eligibility determination mean that many claims are still likely to be initially denied.

Also, preventing fraud and waste in Medicaid is still a major concern that may contribute to longer payment times. For example, the CMS has developed a new measuring system—the Payment Error Rate Measurement (PERM) program—to measure improper Medicaid and State Children's Health Insurance Program (SCHIP) payments in a subset of states each year, beginning in 2007. Such efforts to reduce errors and fraud in Medicaid payments may slow payment to providers by increasing the number of claims that are initially denied, which could offset any gains from increased use of electronic claims processing. In addition, some states may purposefully defer payments on some Medicaid claims to the next budgetary cycle or fiscal year because of state budget cuts or shortfalls, especially during economic downturns.

■ **Policy implications.** Improving access to physicians for Medicaid enrollees is a concern among state policymakers, and increasing fee levels for physicians is often the preferred method for achieving increased access. Although low fees are one of the primary reasons discouraging physicians from participating in Medicaid, other factors—including payment times and administrative burden—are also important. In fact, the results of this study strongly suggest that higher fees will not have the desired effect on access if it takes physicians several months or longer to be reimbursed. In some states, reducing payment delays and administrative burdens may have more of an impact on access than modest increases in fee levels. In sum, there is no one-size-fits-all solution to increasing Medicaid patients' access to physicians. Each state will need to assess whether to target limited resources at fee increases, improve claims processing systems, or reduce other administrative burdens that result in barriers to physicians' participation in Medicaid.

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NOTES

1. P.J. Cunningham and J.H. May, "Medicaid Patients Increasingly Concentrated among Physicians," Tracking Report no. 16 (Washington: Center for Studying Health System Change, 2006).
2. P.J. Cunningham and J. Hadley, "Effects of Changes in Incomes and Practice Circumstances on Physicians' Decisions to Treat Charity and Medicaid Patients," *Milbank Quarterly* 86, no. 1 (2008): 91–123.
3. P.J. Cunningham and L.M. Nichols, "The Effects of Medicaid Reimbursement on the Access to Care of Medicaid Enrollees: A Community Perspective," *Medical Care Research and Review* 62, no. 6 (2005): 676–696; A.F. Coburn, S.H. Long, and M.S. Marquis, "Effects of Changing Medicaid Fees on Physician Participation and Enrollee Access," *Inquiry* 36, no. 3 (1999): 265–279; and J.D. Perloff et al., "Medicaid Participation among Urban Primary Care Physicians," *Medical Care* 35, no. 2 (1997): 142–157.
4. U.S. Department of Health and Human Services, Office of Inspector General, *Medicaid Hassle: State Responses to Physician Complaints* (Washington: DHHS, 1992).
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7. S. Berman et al., "Factors That Influence the Willingness of Private Primary Care Pediatricians to Accept More Medicaid Patients," *Pediatrics* 110, no. 2, Part 1 (2002): 239–248.
8. S. Williams et al., "Community Tracking Study, Physician Survey Methodology Report 2004–05 (Round 4)," Technical Pub. no. 70, 2006, http://www.hschange.org/CONTENT/888 (accessed 7 November 2008).
9. States included in the analysis generally had at least 20,000 Medicaid claims processed by AthenaHealth Inc., for which estimates of average reimbursement time are based. Estimates for smaller states are based on fewer claims (for example, about 6,000 in Arkansas), while estimates for larger states, such as Ohio, California, and Illinois, are based on more than 100,000 claims in each of these states. States excluded because of too few claims in which to compute average reimbursement time generally had several hundred claims or fewer processed by AthenaHealth.
10. Because our analysis was based on a binary measure of being in a "fast" versus "slow" reimbursement state, the relative position of states is more important than the actual value of reimbursement time.
11. S. Zuckerman et al., "Changes in Medicaid Physician Fees, 1998–2003: Implications for Physician Participation," *Health Affairs* 23 (2004): w374–w384 (published online 23 June 2004; 10.1377/hlthaff.w4.374).
12. Weights were constructed to reflect the relative importance of each service in each state. Service-specific weights were defined as the share of Medicaid physician spending for that service in each state, based on service-specific spending data from the CMS.
13. A problem that arises when state-level variables are merged to person-level data and included as independent variables in regression analysis is that the disturbances are correlated, which may cause the standard errors to be biased downward. See B.R. Moulton, "An Illustration of a Pitfall in Estimating the Effects of Aggregate Variables on Micro Units," *Review of Economics and Statistics* 72, no. 2 (1990): 334–338. However, most of the important results in this analysis associated with state-level fee and payment time variables have a high level of statistical significance (0.01), so we do not expect the results or conclusions to be seriously affected.
14. R. Strouse, B.L. Carlson, and J. Hall, "Community Tracking Study: Household Survey Methodology Report 2003 (Round 4)," Technical Pub. no. 62, 2005, http://www.hschange.org/CONTENT/757/757.pdf (accessed 29 September 2007).
15. The regression analysis was also run using linear versions of the state-level fee and payment time variables (that is, not collapsed into two groups). The results are consistent with the results using binary versions of these variables. However, we focus on the binary versions of these variables because it facilitates the computation of regression probabilities (that is, reflects the average for "low" and "high" states). Also, given the relatively small number of state observations (twenty-one states), binary measures reduce the risk that certain "outlier" states would drive the results.
16. L. Backus et al., "Specialists' and Primary Care Physicians' Participation in Medicaid Managed Care," *Journal of General Internal Medicine* 16, no. 12 (2001): 815–821.
17. T. Bodenheimer, R.A. Berenson, and P. Rudolf, "The Primary Care–Specialty Income Gap: Why It Matters," *Annals of Internal Medicine* 146, no. 4 (2007): 301–306; and H.T. Tu and P.B. Ginsburg, "Losing Ground: Physician Income, 1995–2003," Tracking Report no. 15 (Washington: HSC, 2006).