© Health Research and Educational Trust
DOI: 10.1111/1475-6773.12698
RESEARCH ARTICLE

The Effect of Medicaid Physician Fee Increases on Health Care Access, Utilization, and Expenditures

Kevin Callison and Binh T. Nguyen

Objective. To evaluate the effect of Medicaid fee changes on health care access, utilization, and spending for Medicaid beneficiaries.

Data Source. We use the 2008 and 2012 waves of the Medical Expenditure Panel Survey linked to state-level Medicaid-to-Medicare primary care reimbursement ratios obtained through surveys conducted by the Urban Institute. We also incorporate data from the Current Population Survey and the Area Resource Files.

Study Design. Using a control group made up of the low-income privately insured, we conduct a difference-in-differences analysis to assess the relationship between Medicaid fee changes and access to care, utilization of health care services, and out-of-pocket medical expenditures for Medicaid enrollees.

Principal Findings. We find that an increase in the Medicaid-to-Medicare payment ratio for primary care services results in an increase in outpatient physician visits, emergency department utilization, and prescription fills, but only minor improvements in access to care. In addition, we report an increase in total annual out-of-pocket expenditures and spending on prescription medications.

Conclusions. Compared to the low-income privately insured, increased primary care reimbursement for Medicaid beneficiaries leads to higher utilization and out-of-pocket spending for Medicaid enrollees.

Key Words. Affordable Care Act, Medicaid payment rates, health care access, health care utilization, health care expenditures

Compared to the fees paid by Medicare or private insurers, Medicaid provides relatively low levels of reimbursement for physician services (Zuckerman, Willimas, and Stockley 2009; Buchmueller, Orzol, and Shore-Sheppard 2015). For example, in 2012, the state-level ratio of Medicaid-to-Medicare physician fees was 0.66, on average, and 0.59 for primary care (Zuckerman and Goin 2012). Medicaid reimbursement rates have long been thought to hinder access to primary care for medically underserved communities as

many physicians have expressed reluctance to accept new Medicaid patients (Decker 2012; Rosenbaum 2014). Moreover, in accordance with the Affordable Care Act (ACA), a number of states began expanding requirements for Medicaid eligibility in January of 2014, further increasing demand for primary care services. To ensure adequate access to primary care, beginning in 2013 and lasting through 2014, a provision of the ACA increased Medicaid fees for primary care services to Medicare levels. For the average state, this fee change represented an increase in Medicaid fees for primary care of approximately 28 percent.¹ This two-year federally financed primary care fee increase is the backbone of a strategy aimed at boosting access to care among Medicaid enrollees, many of whom are newly insured and likely to have pent-up demand for health care services (Hofer, Abraham, and Moscovice 2011; Finkelstein et al. 2012). Beginning January 1, 2015, in the absence of renewed federal funding for the Medicaid fee increase, states have had the option to either maintain primary care fee levels or to revert back to pre-ACA Medicaid reimbursement rates. As of April 2015, fifteen states have indicated their willingness to continue funding the elevated Medicaid primary care fees (MAC-PAC, 2015).

Understanding the impact of changes in physician financial incentives on access to care and utilization of health care services for Medicaid beneficiaries is a particularly pressing issue. Several studies have attempted to estimate the impact of Medicaid fee increases on access to care and generally find that higher payment rates are associated with improved access (Shen and Zuckerman 2005; Decker 2007, 2009; Chen unpublished data; Buchmueller, Orzol, and Shore-Sheppard 2015). Recent evidence suggests that higher Medicaid fees under the ACA increased providers' willingness to see new Medicaid patients (Polsky et al. 2015). However, other analyses have failed to find a link between higher Medicaid fees and increased preventive care or other measures of primary care access (Baker and Royalty 2000; Atherly and Mortensen 2014). In light of the recent Medicaid expansions and the temporary increase in Medicaid physician fees under the ACA, additional evaluation of the impact of Medicaid reimbursement changes on access, utilization, and health care expenditures for Medicaid beneficiaries remains a priority.

In this study, we exploit data on state-level Medicaid fee changes to analyze the effect of increased payments for Medicaid primary care services on a

Address correspondence to Kevin Callison, Ph.D., Department of Economics, Grand Valley State University, 50 Front St. SW, Grand Rapids, MI 49504; e-mail: callisok@gvsu.edu. Binh T. Nguyen, Ph.D., is an Independent Research Consultant, Mountain View, CA.

variety of measures pertaining to the health care access, utilization, and expenditures of Medicaid enrollees. We match Medicaid fee changes from 2008 to 2012 with individual-level data from the Medical Expenditure Panel Survey (MEPS) to examine the potential impact of the ACA's temporary increase in Medicaid primary care rates. We use a difference-in-differences approach that compares changes in outcomes for Medicaid enrollees to changes for a control group composed of the low income, privately insured. Our paper makes several contributions to the existing literature on the impacts of Medicaid fee changes. For instance, our use of relatively recent changes in the Medicaid-to-Medicare fee ratio is likely to provide a reasonable proxy for the large-scale fee increases associated with the ACA. Secondly, we include a variety of measures of health care utilization and evaluate their responsiveness to changes in Medicaid fees. Despite several studies of the relationship between fee increases and access to care for Medicaid enrollees, there is a lack of evidence on related changes in utilization.² Finally, we appear to be the first to include analyses of the changes in the utilization of prescription medication and out-of-pocket expenditures for Medicaid beneficiaries associated with Medicaid fee changes. As most state Medicaid programs require some form of cost sharing and several limit prescription drug benefits, any change in the utilization of physician services accompanying rising Medicaid fees has important implications for pharmaceutical use and enrollee spending.

Our results indicate that an increase in the Medicaid payment rate for primary care services (measured as the ratio of Medicaid rates to Medicare rates) results in an increase in physician visits, emergency department utilization, prescription fills, and out-of-pocket expenditures. We find no impact of a fee increase on Medicaid enrollees' access to care or their propensity to delay care due to cost, although we do find that higher fees are associated with a small increase in reporting a usual source of care.

EVIDENCE ON THE RELATIONSHIP BETWEEN MEDICAID PHYSICIAN FEES AND HEALTH CARE ACCESS, UTILIZATION, AND EXPENDITURES

Changes in the reimbursement rate for the treatment of Medicaid patients have the potential to affect service provision on both the extensive and intensive margins of care. For example, higher Medicaid reimbursements for primary care could increase the average annual number of primary care visits conditional on seeking any primary care. Similarly, increased reimbursement

rates could incentivize primary care providers to shift their payer mix in favor of Medicaid beneficiaries, allowing for greater access to primary care services and increasing the probability that a Medicaid enrollee seeks primary care. Additionally, given the evidence of complementarity between outpatient and inpatient care, increased exposure to primary care providers could impact the utilization of nonprimary care services, including inpatient and emergency department (ED) care (Manning et al. 1987; Finkelstein et al. 2012; Kaestner and Lo Sasso 2015).

Several papers have documented increased access for various subgroups resulting from an increase in Medicaid physician fees (Baker and Royalty 2000; Shen and Zuckerman 2005; Decker 2011, 2015; Buchmueller, Orzol, and Shore-Sheppard 2015; Gangopadhyaya, Long, and Kaestner unpublished data). Decker (2007) reported both extensive and intensive margin changes in care for Medicaid beneficiaries associated with Medicaid fee increases. Using the 1989, 1993, 1998, and 2003 waves of the National Ambulatory Medical Care Surveys (NAMCS), Decker found that increases in Medicaid reimbursement rates resulted in an increase in the number of physicians accepting Medicaid patients and an increase in the average visit times for Medicaid patients. Similarly, Decker (2009) found that reductions in Medicaid physician fees were associated with fewer physician visits for Medicaid enrollees and a shift in the setting of Medicaid patient encounters from physicians' offices toward outpatient hospital care and ED care. Finally, in an effort to directly measure the impact of the ACA's primary care Medicaid fee increase on access to care, Polsky et al. (2015) employed trained staff posing as Medicaid beneficiaries who sought to obtain new-patient appointments with primary care physicians in periods immediately preceding and directly following the reimbursement increase. Results indicated that the proportion of trained staff able to acquire a primary care appointment increased from 58.7 percent before the fee increase to 66.4 percent after the fee increase.

While the majority of studies examining changes in Medicaid fee rates focus on access to care for Medicaid beneficiaries, a relatively small number of studies have examined effects on utilization of services for adult Medicaid beneficiaries (Shen and Zuckerman 2005; Atherly and Mortensen 2014; Gangopadhyaya, Long, and Kaestner unpublished data). For example, Atherly and Mortensen (2014) analyzed the impact of increased Medicaid fees on the use of preventive services for Medicaid enrollees. Specifically, the authors examined the probability of receiving a test for colorectal, cervical, or breast cancers; hypertension; or high cholesterol. Results indicated that increases in the Medicaid primary care fee rate had no effect on moving recipients closer

to the recommend testing levels developed by the U.S. Preventive Services Task Force.

Less clear is the relationship between Medicaid fee increases and out-of-pocket expenditures on health care services for Medicaid enrollees. While many Medicaid programs are largely comprehensive in terms of coverage, several states have implemented various cost-sharing mechanisms to shift some of the cost burden onto the program's beneficiaries (KFF, 2013).³ Conceptually, the impact of increases in Medicaid physician fees on out-of-pocket expenditures is unclear. If Medicaid fee increases lead to additional physician encounters, then in the presence of cost-sharing arrangements, out-of-pocket expenditures would be expected to increase. However, if physicians react to increased demand for their services from Medicaid patients by reducing average treatment intensity in order to maintain a consistent workload, then it would be feasible for out-of-pocket expenditures to fall.

DATA

Medical Expenditure Panel Survey

Our study sample was based on pooled data from the Medical Expenditure Panel Survey (MEPS) Household Component from 2008 and 2012. The MEPS is a nationally representative survey of the US civilian noninstitutionalized population conducted by the Agency for Healthcare Research and Quality (AHRQ). The MEPS collects data on health insurance, health care access, utilization, and expenditures through household interviews supplemented by a self-administered questionnaire on health and health opinions. The sample for our analysis includes 6,106 civilian, nonpregnant adults aged 18 to 64 with incomes below 200 percent of the federal poverty level and who are either privately insured or obtain their health insurance through the Medicaid program. Our reason for limiting the sample to relatively low-income individuals is to compare changes in outcomes associated with physician fee increases for Medicaid beneficiaries to a control group comprised of insured individuals who are presumably unaffected by the change in Medicaid physician fees.⁴

We measure access to care using a series of questions on individuals' ability to get necessary medical treatment, dental care, and prescription medication; whether the individual has delayed obtaining necessary medical treatment, dental care, or prescription medication; and whether the individual has a usual source of care. We use the number of physician office visits, outpatient hospital visits, ED visits, hospital discharges, dental visits, and prescription

drug fills to measure health care utilization. Expenditures are defined as annual out-of-pocket expenditures for office-based care, outpatient hospital care, ED care, dental care, prescription fills, and total health care spending. All expenditures are reported in 2003 dollars to ensure consistency across estimation years. Table 1 displays descriptive statistics for the treatment group, those on Medicaid, and the control group, the low-income privately insured. On average, Medicaid enrollees tend to be slightly younger and less educated than the privately insured and consist of a disproportionate share of minorities. Medicaid enrollees are far less likely to be employed than the privately insured and, as a result, have higher rates of poverty. In addition, we test for changes in these characteristics over time for each group. We find little evidence that, based on observable characteristics, the sample composition of either group is changing from 2008 to 2012. Mean values for our dependent variables are included in the regression tables.

Medicaid-to-Medicare Fee Ratio

Data on Medicaid fee changes were obtained from Zuckerman and Goin (2012). Specifically, we measure changes in Medicaid reimbursements for primary care services as the ratio of the Medicaid-to-Medicare fee in each state. Data on Medicaid payment rates are based on field surveys conducted by the Urban Institute and exclude payments made through Medicaid managed care plans.⁵ We use two years of available data, 2008 and 2012, and we focus on the Medicaid-to-Medicare fee index for primary care services. Figure 1 displays changes in the primary care Medicaid-to-Medicare fee ratios across all states from 2008 to 2012. Most states appear to have reduced their fee ratio from 2008 to 2012, with a small number of states reporting rate increases.

Area Resource Files

We use data from the Area Resource Files (ARF) to control for a number of covariates that may be related to access and utilization of primary care services. Specifically, at the state level, we include controls for the per capita supply of MDs, the per capita supply of general practice MDs, the per capita supply of hospital beds, per capita income, and the poverty rate. We also control for a state's unemployment rate in 2008 and 2012 based on the Bureau of Labor Statistics' local area unemployment data as evidence suggests that as county unemployment rates rise, physicians treat fewer privately insured patients in both inpatient and outpatient settings (He, McInerney, and Mellor 2015).

Table 1: Descriptive Statistics for Medicaid Beneficiaries and the Low-Income Privately Insured

<i>Variable</i>	<i>Medicaid</i>		<i>p-value of Difference</i>	<i>Privately Insured</i>		<i>p-value of Difference</i>
	<i>2008</i>	<i>2012</i>		<i>2008</i>	<i>2012</i>	
Age	36.61	37.60	.071	39.41	38.30	.047
Male	0.318	0.349	.043	0.473	0.475	.938
White	0.500	0.430	.008	0.642	0.626	.370
Black	0.251	0.247	.843	0.151	0.144	.556
Hispanic	0.220	0.245	.148	0.165	0.162	.825
Other race	0.029	0.077	.000	0.042	0.068	.003
Less than high school	0.413	0.379	.121	0.171	0.153	.252
High school	0.355	0.349	.753	0.358	0.359	.961
Some college	0.180	0.207	.146	0.287	0.314	.165
College	0.052	0.065	.328	0.183	0.174	.667
Employed	0.480	0.444	.084	0.819	0.781	.023
PIR < 100%	0.599	0.610	.567	0.239	0.257	.356
100% < PIR ≤ 125%	0.118	0.153	.012	0.136	0.133	.807
125%<PIR ≤ 200%	0.284	0.237	.013	0.625	0.610	.465
Metro area	0.820	0.811	.697	0.799	0.835	.106
Self-reported health	2.87	2.82	.302	2.30	2.32	.756
Overweight rate	0.272	0.290	.261	0.315	0.305	.556
Obesity rate	0.396	0.389	.721	0.331	0.324	.744
Medicaid managed care rate	0.710	0.729	.079	0.727	0.747	.048
MDs per 1,000 population	2.73	2.74	.904	2.49	2.59	.252
GPs per 1,000 population	0.228	0.232	.562	0.243	0.248	.385
Hospital beds per 1,000 population	3.36	3.16	.030	3.39	3.01	.005
State unemployment rate	6.29	8.77	.00	5.90	8.12	.00
Observations	1,439	1,559		1,460	1,648	

Notes: Data are from the 2008 and 2012 waves of the Medical Expenditure Panel Survey. Self-reported health is measured on a scale of 1 to 5, where 1 corresponds to excellent health and 5 corresponds to poor health. We include self-reported health in Table 1 to minimize concerns related to compositional change in our treatment and control groups over time. However, we do not include self-reported health as a covariate in our regression specifications as changes in health may be an indirect result of changes in Medicaid fees.
PIR, poverty-to-income ratio.

Medicaid Eligibility

Because changes in the Medicaid-to-Medicare primary care fee ratio may be related to expansions in Medicaid eligibility, we control for the share of a state’s population that is eligible for Medicaid coverage (Hahn 2013; Chen unpublished data). Controlling for extensive margin changes in Medicaid enrollment allows us to be confident that any observed effects of Medicaid payment rate changes on our outcomes of interest are not influenced by

Figure 1: Changes in Medicaid-to-Medicare Fee Ratio by State, 2008 to 2012

Notes: Fee ratios are based on surveys of fee-for-service Medicaid programs conducted by the Urban Institute and collected from the Kaiser Family Foundation. Tennessee has no fee-for-service Medicaid program and, therefore, data on the Medicaid-to-Medicare fee ratio for Tennessee are unavailable.

changes in the observable characteristics of the marginal Medicaid patient. We obtain each state's Medicaid eligibility requirements from the Kaiser Family Foundation's 2008 and 2012 reports on Medicaid and SCHIP coverage (KFF, 2008, 2012).

EMPIRICAL METHOD

To examine the effects of changes in Medicaid primary care fees on access to care and utilization of health care services, we construct the following standard difference-in-differences model:

$$Y_{ist} = \alpha + \pi_1 Medicaid_{ist} + \pi_2 Ratio_{st} + \pi_3 (Medicaid_{ist} * Ratio_{st}) + \pi_4 Elig_{st} + X_{ist}\beta + Z_{st}\lambda + \delta_s + \tau_t + \varepsilon_{ist} \quad (1)$$

In equation (1), Y_{ist} is a series of outcomes related to health care access, utilization, and expenditures for individual i in state s in year t . The coefficient

π_1 represents the baseline difference in outcomes between Medicaid and low-income privately insured patients. Similarly, the coefficient π_2 represents the baseline difference in outcomes between the treatment and control groups due to differences in the Medicaid-to-Medicare fee ratio. The parameter of interest, π_3 , illustrates the relative effect of changes in the Medicaid-to-Medicare fee ratio on outcomes for Medicaid enrollees compared to the low-income privately insured. $Elig_{st}$ is the Medicaid eligibility rate for state s in year t . The vector X_{ist} represents individual-level controls, including age, gender, race/ethnicity, marital status, education, employment status, residence in a metropolitan statistical area, and body weight status (obese and overweight). Z_{st} is a vector of state-level controls that includes measures of the unemployment rate, poverty rate, and per capita income along with the Medicaid managed care penetration rate and the per capita supply of physicians, general practitioners, and hospital beds.⁶ Lastly, δ_s and τ_t are state and year fixed effects, respectively.

Although we control for the state-level Medicaid eligibility rate in equation (1), we are concerned that changes in the extensive margin of Medicaid enrollment could affect access to care and service utilization. Given the presence of substantial changes in Medicaid enrollment in response to fee increases, instead of measuring intensive margin responses to the higher reimbursements, we risk finding effects related to the changing demographics of Medicaid enrollees. To further alleviate concerns that our estimates are driven by the demographics of Medicaid patients seeking treatment, we re-estimate equation (1) omitting the individual-level covariates in the vector X_{ist} . Similar estimates of the effect of increases in the Medicaid-to-Medicare payment ratio with and without individual covariates should indicate that the influence of extensive margin changes in enrollment is minimal.

Finally, we also estimate specifications that include a state-year trend. The inclusion of a state-year trend will capture any policy endogeneity that may occur at the state level. For example, it may be that states are increasing Medicaid fees to address issues with access or utilization of health care services. In this case, failing to address this endogeneity would lead to biased estimates of the effect of a Medicaid fee change.

RESULTS

Table 2 displays regression results of the effect of a change in the Medicaid-to-Medicare fee ratio on outcomes associated with access to care. Column (1)

Table 2: The Effect of Changes in Medicaid Fees on Access to Care

	(1)	(2)	(3)
<i>A. Unable to access medical care</i>			
Medicaid*ratio	0.005 (0.003)	0.005 (0.003)	0.004 (0.003)
Medicaid	0.009 (0.021)	0.016 (0.022)	0.020 (0.022)
Primary care ratio	0.000 (0.008)	0.001 (0.009)	0.004 (0.044)
Mean of dependent variable	0.047	0.047	0.047
Observations	6,098	6,098	6,098
<i>B. Unable to access dental care</i>			
Medicaid*ratio	0.001 (0.004)	0.001 (0.004)	0.001 (0.004)
Medicaid	0.057** (0.027)	0.070** (0.027)	0.072*** (0.027)
Primary care ratio	-0.004 (0.010)	0.009 (0.011)	-0.058 (0.055)
Mean of dependent variable	0.079	0.079	0.079
Observations	6,093	6,093	6,093
<i>C. Unable to access prescription medication</i>			
Medicaid*ratio	0.003 (0.003)	0.002 (0.003)	0.002 (0.003)
Medicaid	0.014 (0.019)	0.021 (0.019)	0.020 (0.019)
Primary care ratio	0.005 (0.007)	0.007 (0.008)	0.006 (0.039)
Mean of dependent variable	0.037	0.037	0.037
Observations	6,096	6,096	6,096
<i>D. Have a usual source of care</i>			
Medicaid*ratio	0.019*** (0.007)	0.016** (0.006)	0.016** (0.006)
Medicaid	-0.080* (0.044)	-0.059 (0.043)	-0.056 (0.043)
Primary care ratio	-0.002 (0.002)	-0.005 (0.017)	-0.144* (0.085)
Mean of dependent variable	0.746	0.746	0.746
Observations	6,033	6,033	6,033
Individual controls	No	Yes	Yes
State controls	Yes	Yes	Yes
State and year fixed effects	Yes	Yes	Yes
State-year trend	No	No	Yes

Note: Standard errors clustered at state level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

presents results from a regression specification that omits individual demographic and socioeconomic controls, column (2) adds individual controls, and column (3) adds a state-year trend. We multiply the primary care Medicaid-to-Medicare fee ratio and, therefore, the interaction term between the fee ratio and an indicator for Medicaid enrollment by 10 to interpret all results as the effect of a 10 percentage point increase in the fee ratio. Compared to low-income individuals with private insurance, Medicaid enrollees are more likely to experience problems with access to dental care but appear to report similar access to medical care and prescription medication. Reduced access to dental care for Medicaid enrollees is particularly likely as adult dental benefits are not federally mandated under the Medicaid program but are left up

to the states’ discretion (McGinn-Shapiro 2008). Increases in the Medicaid-to-Medicare fee ratio appear to have no effect on Medicaid enrollees’ ability to access medical care, dental care, or prescription medication. Estimates of the interaction between the fee ratio and indicator for Medicaid coverage for these outcomes are small in magnitude and statistically insignificant. However, estimates in the bottom panel of Table 2 do suggest a positive association between the fee ratio and the probability that an individual reports a usual source of care. A 10 percent increase in the fee ratio leads to a 1.6 to 1.9 percentage point increase (2.1 percent to 2.5 percent increase) in the likelihood that a Medicaid enrollee has a usual source of care. Estimates between all columns are fairly consistent and provide no indication that extensive margin changes or policy endogeneity is influencing the results.

Table 3 examines outcomes associated with the propensity to delay care due to cost. Compared to the low-income privately insured and in the absence of Medicaid fee changes, Medicaid enrollees are more likely to delay dental

Table 3: The Effect of Changes in Medicaid Fees on the Propensity to Delay Care

	(1)	(2)	(3)
<i>A. Delayed medical care</i>			
Medicaid*ratio	−0.001 (0.004)	−0.001 (0.004)	−0.001 (0.004)
Medicaid	0.032 (0.025)	0.036 (0.025)	0.035 (0.025)
Primary care ratio	−0.013 (0.009)	−0.016 (0.010)	−0.061 (0.050)
Mean of dependent variable	0.063	0.063	0.063
Observations	6,092	6,092	6,092
<i>B. Delayed dental care</i>			
Medicaid*ratio	−0.002 (0.004)	−0.002 (0.004)	−0.004 (0.004)
Medicaid	0.053** (0.023)	0.065*** (0.023)	0.073*** (0.023)
Primary care ratio	0.001 (0.008)	0.003 (0.009)	−0.073 (0.047)
Mean of dependent variable	0.056	0.056	0.056
Observations	6,093	6,093	6,093
<i>C. Delayed prescription fill</i>			
Medicaid*ratio	−0.000 (0.003)	−0.001 (0.003)	−0.001 (0.003)
Medicaid	0.033 (0.020)	0.041** (0.020)	0.042** (0.021)
Primary care ratio	−0.010 (0.007)	−0.012 (0.008)	0.003 (0.041)
Mean of dependent variable	0.042	0.042	0.042
Observations	6,097	6,097	6,097
Individual controls	No	Yes	Yes
State controls	Yes	Yes	Yes
State and year fixed effects	Yes	Yes	Yes
State-year trend	No	No	Yes

Note: Standard errors clustered at state level.
* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.

care and prescription medication refills due to cost. However, once again we find no effect of an increase in the Medicaid-to-Medicare fee ratio for Medicaid enrollees compared to the low-income privately insured. Results in Table 3 provide no evidence that an increase in the fee ratio is associated with a reduction in the propensity for Medicaid beneficiaries to delay medical or dental treatment, or to delay filling prescription medications due to cost.

The next two tables focus on changes in the utilization of health care services associated with changes in the Medicaid-to-Medicare fee ratio. Table 4 examines changes in the utilization of preventive services following an increase in Medicaid fees. Specifically, we focus on blood pressure screening, cholesterol screening, flu vaccination, and Pap smear testing.

Table 4: The Effect of Changes in Medicaid Fees on Preventive Services

	(1)	(2)	(3)
<i>A. Blood pressure check past 2 years</i>			
Medicaid*ratio	0.003 (0.005)	0.002 (0.004)	0.002 (0.004)
Medicaid	0.001 (0.030)	-0.003 (0.029)	0.016 (0.030)
Primary care ratio	-0.005 (0.011)	-0.015 (0.012)	-0.014 (0.059)
Mean of dependent variable	0.907	0.907	0.907
Observations	5,987	5,987	5,987
<i>B. Cholesterol check past 2 years</i>			
Medicaid*ratio	-0.004 (0.008)	-0.001 (0.007)	-0.002 (0.007)
Medicaid	0.058 (0.050)	0.058 (0.045)	0.068 (0.045)
Primary care ratio	-0.001 (0.018)	-0.044** (0.018)	-0.064 (0.089)
Mean of dependent variable	0.629	0.629	0.629
Observations	5,768	5,768	5,768
<i>C. Flu vaccination past year</i>			
Medicaid*ratio	-0.005 (0.008)	-0.004 (0.007)	-0.004 (0.008)
Medicaid	0.058 (0.050)	0.031 (0.050)	0.031 (0.050)
Primary care ratio	0.043** (0.018)	0.022 (0.020)	-0.115 (0.099)
Mean of dependent variable	0.424	0.424	0.424
Observations	5,982	5,982	5,982
<i>D. Pap smear test past 3 years</i>			
Medicaid*ratio	0.009 (0.007)	0.011 (0.007)	0.012* (0.007)
Medicaid	-0.082* (0.047)	-0.089* (0.047)	-0.094** (0.047)
Primary care ratio	0.007 (0.017)	0.014 (0.019)	-0.155 (0.123)
Mean of dependent variable	0.847	0.847	0.847
Observations	3,704	3,704	3,704
Individual controls	No	Yes	Yes
State controls	Yes	Yes	Yes
State and year fixed effects	Yes	Yes	Yes
State-year trend	No	No	Yes

Note: Standard errors clustered at state level.

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.

Consistent with the results reported in Atherly and Mortensen (2014), we find no indication that changes in the fee ratio lead to changes in preventive care utilization for Medicaid enrollees compared to our control group. Interestingly, with the exception of Pap smear testing, we find no statistically significant differences in the rate of preventive care utilization between Medicaid beneficiaries and the low-income privately insured. In their study, Atherly and Mortensen note that these similar utilization rates may explain the absence of an effect of a change in the fee ratio on the consumption of preventive care of for Medicaid enrollees.

Table 5 examines changes in the utilization of health care services, including the number of physician office visits, outpatient visits, emergency department visits, hospital discharges, dental visits, and prescription refills. If increasing Medicaid fees increase the willingness of primary care physicians to treat Medicaid beneficiaries, then we would expect to see corresponding changes in these utilization measures. Panel A of Table 5 indicates that, compared to the low-income privately insured, an increase in the fee ratio leads to an increase in the average number of office visits for Medicaid enrollees. Specifically, a 10 percentage point increase in the fee ratio results in approximately 0.63 additional office visits per year, on average, for a Medicaid beneficiary compared to the low-income privately insured, an increase of 11 percent. Estimates in Panel B suggest that increases in the Medicaid-to-Medicare fee ratio are associated with large increases in the number of outpatient visits. Specifically, we estimate that a 10 percentage point fee increase leads to a 21 percent increase in outpatient visits. We report results on changes in the number of ED visits for Medicaid enrollees in panel C. Preferred estimates in column (3) indicate that a 10 percentage point increase in the fee ratio leads to a 14.2 percent increase in the number of ED visits. Results for changes in hospital discharges are reported in panel D. After adding covariates and a state-year trend, we find a small and statistically insignificant effect of an increase in Medicaid fees on hospital discharges for Medicaid beneficiaries compared to the low-income privately insured. Similarly, estimates in panel E provide evidence that changes in the fee ratio have little impact on changes in the number of dental visits. Finally, Panel F presents the results for changes in the number of prescription drug fills associated with a change in the Medicaid-to-Medicare fee ratio. Our results indicate that a 10 percentage point increase in the fee ratio leads to a 10.7 percent increase in the number of prescription fills.

Table 6 presents estimates of the relationship between changes in the Medicaid-to-Medicare fee ratio and annual out-of-pocket health care

Table 5: The Effect of Change in Medicaid Fees on Service Utilization

	(1)	(2)	(3)
<i>A. Number of office visits</i>			
Medicaid*ratio	0.665*** (0.209)	0.623*** (0.203)	0.631*** (0.204)
Medicaid	-0.760 (1.376)	-0.731 (1.350)	-0.659 (1.354)
Primary care ratio	-0.001 (0.502)	0.651 (0.532)	-0.462* (0.272)
Mean of dependent variable	5.651	5.651	5.651
Observations	6,106	6,106	6,106
<i>B. Number of outpatient visits</i>			
Medicaid*ratio	0.114** (0.049)	0.111** (0.049)	0.105** (0.049)
Medicaid	-0.341 (0.320)	-0.324 (0.323)	-0.280 (0.325)
Primary care ratio	0.105 (0.117)	0.101 (0.127)	-0.034 (0.651)
Mean of dependent variable	0.496	0.496	0.496
Observations	6,106	6,106	6,106
<i>C. Number of ED visits</i>			
Medicaid*ratio	0.055*** (0.013)	0.051*** (0.013)	0.046*** (0.013)
Medicaid	-0.054 (0.088)	-0.074 (0.088)	-0.048 (0.089)
Primary care ratio	-0.060 (0.032)	-0.033 (0.035)	-0.349* (0.178)
Mean of dependent variable	0.323	0.323	0.323
Observations	6,106	6,106	6,106
<i>D. Number of hospital discharges</i>			
Medicaid*ratio	0.015* (0.008)	0.013 (0.008)	0.012 (0.008)
Medicaid	0.077 (0.055)	0.057 (0.055)	0.069 (0.055)
Primary care ratio	-0.015 (0.020)	-0.007 (0.022)	-0.105 (0.111)
Mean of dependent variable	0.160	0.160	0.160
Observations	6,106	6,106	6,106
<i>E. Number of dental visits</i>			
Medicaid*ratio	0.029 (0.021)	0.030 (0.021)	0.033 (0.021)
Medicaid	-0.353** (0.142)	-0.324** (0.142)	-0.339** (0.142)
Primary care ratio	-0.037 (0.052)	-0.094* (0.056)	0.155 (0.285)
Mean of dependent variable	0.634	0.634	0.634
Observations	6,106	6,106	6,106
<i>F. Number of prescription fills</i>			
Medicaid*ratio	1.677*** (0.402)	1.576*** (0.353)	1.496*** (0.353)
Medicaid	0.954 (2.653)	-0.079 (2.348)	0.492 (2.342)
Primary care ratio	-0.681 (0.968)	-0.937 (0.925)	-0.408 (0.470)
Mean of dependent variable	14.013	14.013	14.013
Observations	6,106	6,106	6,106
Individual controls	No	Yes	Yes
State controls	Yes	Yes	Yes
State and year fixed effects	Yes	Yes	Yes
State-year trend	No	No	Yes

Note: Standard errors clustered at state level.

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.

Table 6: The Effect of Changes in Medicaid Fees on Out-of-Pocket Expenditures (ln)

	(1)	(2)	(3)
<i>A. Total OOP expenditures (ln)</i>			
Medicaid*ratio	0.170*** (0.040)	0.168*** (0.037)	0.181*** (0.037)
Medicaid	-2.193*** (0.265)	-1.992*** (0.246)	-2.053*** (0.247)
Primary care ratio	0.037 (0.097)	-0.167* (0.097)	-0.801 (0.496)
Mean of dependent variable	3.755	3.755	3.755
Observations	6,106	6,106	6,106
<i>B. Office-based OOP expenditures (ln)</i>			
Medicaid*ratio	0.045 (0.034)	0.053 (0.032)	0.051 (0.033)
Medicaid	-1.848*** (0.222)	-1.712*** (0.215)	-1.683*** (0.216)
Primary care ratio	0.154* (0.081)	0.043 (0.084)	-0.417 (0.434)
Mean of dependent variable	1.921	1.921	1.921
Observations	6,106	6,106	6,106
<i>C. Outpatient OOP expenditures (ln)</i>			
Medicaid*ratio	-0.003 (0.016)	-0.001 (0.016)	-0.001 (0.016)
Medicaid	-0.161 (0.106)	-0.143 (0.106)	-0.149 (0.106)
Primary care ratio	0.056 (0.039)	0.052 (0.042)	-0.010 (0.213)
Mean of dependent variable	0.228	0.228	0.228
Observations	6,106	6,106	6,106
<i>D. ED OOP expenditures (ln)</i>			
Medicaid*ratio	-0.030 (0.018)	-0.034* (0.018)	-0.036** (0.018)
Medicaid	0.050 (0.121)	0.037 (0.122)	0.047 (0.122)
Primary care ratio	0.104** (0.044)	0.193*** (0.048)	-0.016 (0.025)
Mean of dependent variable	0.291	0.291	0.291
Observations	6,106	6,106	6,106
<i>E. Dental OOP expenditures (ln)</i>			
Medicaid*ratio	-0.007 (0.030)	-0.000 (0.029)	0.023 (0.029)
Medicaid	-0.679*** (0.196)	-0.559*** (0.195)	-0.683*** (0.195)
Primary care ratio	0.217*** (0.071)	0.122 (0.077)	0.601 (0.391)
Mean of dependent variable	0.837	0.837	0.837
Observations	6,106	6,106	6,106
<i>F. Rx OOP expenditures (ln)</i>			
Medicaid*ratio	0.133*** (0.038)	0.123*** (0.034)	0.127*** (0.034)
Medicaid	-1.213*** (0.249)	-1.154*** (0.227)	-1.173*** (0.229)
Primary care ratio	-0.103 (0.091)	-0.147 (0.090)	-0.639 (0.459)
Mean of dependent variable	2.553	2.553	2.553
Observations	6,106	6,106	6,106
Individual controls	No	Yes	Yes
State controls	Yes	Yes	Yes
State and year fixed effects	Yes	Yes	Yes
State-year trend	No	No	Yes

Note: Standard errors clustered at state level.

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.

expenditures for Medicaid beneficiaries compared to the low-income privately insured. While the Medicaid program provides largely comprehensive medical coverage, as of 2013, 45 states required some form of copayment from enrollees seeking care (Kaiser Family Foundation (KFF) 2013).⁷ Furthermore, the current literature on the effects of Medicaid fee increases has thus far omitted any examination of changes in associated out-of-pocket costs for Medicaid enrollees. However, given the relatively large increases in utilization reported in Table 5, effects of fee changes on out-of-pocket expenditures have especially consequential implications for beneficiaries in the Medicaid program. Panel A examines the effect of a fee increase on total annual out-of-pocket spending for Medicaid beneficiaries compared to the low-income privately insured. Estimates in panel A suggest that a 10 percentage point increase in the fee ratio results in a 19.8 percent increase in total out-of-pocket expenditures or an additional \$83.45 in annual out-of-pocket spending for those enrolled in Medicaid. Panels B, C, and E report results for office-based expenditures, outpatient expenditures, and dental expenditures, respectively. In all cases, increases in the fee ratio do not appear to lead to changes in spending on these services. Despite the increase in ED visits reported in Table 5, we find a slight decrease in out-of-pocket expenditures on ED care associated with an increase in the fee ratio in panel D. Finally, panel F contains estimates of the impact of a fee increase on changes in annual out-of-pocket expenditures for prescription medications. In all specifications, membership in Medicaid is associated with lower baseline spending on prescription medications. However, a 10 percentage point increase in the fee ratio results in a 13.5 percent increase in prescription expenditures for Medicaid enrollees compared to the privately insured. On average, this represents an annual spending increase of \$22.29 for Medicaid members for every 10 percentage point increase in the fee ratio.

CONCLUSION

Beginning in January 2013 and lasting through December 2014, the Affordable Care Act (ACA) provided federal funding to increase the reimbursement rate for primary care services administered to enrollees in the Medicaid program. While a number of studies have attempted to identify the effect of an increase in the Medicaid fee rate on access to care for Medicaid beneficiaries, relatively little work has been done to analyze associated changes in utilization and out-of-pocket expenditures.

In this study, we add to the literature on physician financial incentives and Medicaid fees by providing an examination of the relationship between recent changes in Medicaid physician fees for primary care services and access to care, utilization of health care services, and annual out-of-pocket expenditures for Medicaid enrollees. Using data from two waves of the Medical Expenditure Panel Survey (MEPS) along with state-level changes in the Medicaid fee schedule for primary care, we show that recent increases in the Medicaid-to-Medicare fee ratio have had little impact on access to care, but they have significantly increased utilization and out-of-pocket expenditures for Medicaid beneficiaries compared to a control group made up of the low-income privately insured. Specifically, our results indicate that a 10 percentage point increase in the fee ratio leads to an 11 percent increase in the number of physician visits, a 14 percent increase in the number of emergency department visits, and an 11 percent increase in the number of prescription fills for Medicaid members. Translating these utilization increases into changes in spending, we find that for every 10 percentage point increase in the Medicaid-to-Medicare fee ratio, Medicaid enrollees experience an annual increase in total out-of-pocket expenditures of approximately \$80, of which nearly 30 percent is attributable to increased spending on prescription medications. Similar to Shen and Zuckerman (2005), we also find that an increase in the fee ratio is associated with a small increase in the probability that a Medicaid beneficiary reports a usual source of care.

Our study has its limitations. First, due to a lack of available data, we focus on the period immediately preceding the ACA's 2013 Medicaid primary care fee increase and so we are unable to quantify the effects of this specific policy change on access or utilization for Medicaid members. Similarly, we cannot isolate changes for those newly enrolled in Medicaid as a result of the 2014 state Medicaid expansions. This is particularly unfortunate as this group potentially faces larger challenges with access to care as a result of their lack of longstanding ties with the health care community. Finally, our data on fee ratios come from surveys of state fee-for-service Medicaid programs and omit reimbursement rates for Medicaid enrollees in managed care plans. Therefore, to the degree that managed care reimbursements are unrelated to fee-for-service rates, within-state differences in FFS and MMC fees will not be reflected in our results.

Our findings have clear implications for recent policy directives involving the Affordable Care Act's state Medicaid expansions. Our results indicate that the ACA's temporary fee increase will have a minimal impact on access to care for Medicaid beneficiaries, but it will increase the likelihood that

enrollees establish a usual source of care. Similarly, we would not expect to find large effects of the fee increase on Medicaid enrollees' propensity to delay care due to cost, in part because relatively few beneficiaries report cost-related issues when seeking care. On the other hand, our results indicate that, compared to the low-income uninsured, utilization for Medicaid beneficiaries will increase following the Medicaid fee change. Prior evidence on the utilization response to changes in Medicaid fees has been mixed with Chen (unpublished data) finding a negative relationship between Medicaid fees and ED admissions, Decker (2009) reporting that lower Medicaid fees resulted in fewer ambulatory care visits, and Buchmueller, Orzol, and Shore-Sheppard (2015) finding that increases in Medicaid dental fees increased utilization of dental services. As noted earlier, our results indicate that increased utilization resulting from the ACA primary care fee increases is likely to take the form of additional office visits, emergency department visits, and prescription fills. Despite the relative generosity of many state Medicaid plans, our results suggest that out-of-pocket expenditures for Medicaid enrollees would increase due to the ACA fee adjustment. These additional out-of-pocket expenditures are primarily due to incomplete prescription drug coverage for Medicaid beneficiaries in many states.

Finally, consistent with the results reported in Atherly and Mortensen (2014), we find no indication that changes in the fee ratio lead to changes in preventive care utilization—measured by blood pressure and cholesterol checks, flu vaccinations, and Pap smear tests—for Medicaid enrollees compared to the low-income privately insured. As Atherly and Mortensen suggest, and our findings support, there do not appear to be large *ex ante* differences in preventive care utilization for Medicaid enrollees and the privately insured. Therefore, an increase in the Medicaid fee ratio may be unlikely to alter utilization for Medicaid enrollees compared to our control group.

ACKNOWLEDGMENTS

Joint Acknowledgment/Disclosure Statement: This research was supported by Grand Valley State University's Seidman College of Business. We would like to thank Ray Kuntz at the Agency for Healthcare Research and Quality for his assistance with the Medical Expenditure Panel Survey data.

Disclosures: None.

Disclaimer: None.

NOTES

1. Authors' calculations using data on state Medicaid-to-Medicare fee ratios reported in Zuckerman and Goin (2012).
2. Decker (2009), Atherly and Mortensen (2014), Chen (unpublished data), Buchmueller, Orzol, and Shore-Sheppard (2015), and Gangopadhyaya, Long, and Kaestner (unpublished data) include analyses of changes in the intensity of health care service utilization. However, Decker (2009) only examines the number of physician visits; Atherly and Mortensen (2014) focus on the use of preventive services; and Buchmueller, Orzol, and Shore-Sheppard (2015) examine dental services.
3. For example, as of 2013, 40 states charged a premium for at least one class of Medicaid beneficiary and 45 states required copays (including Washington, DC).
4. We also attempted a matching strategy to pair our control sample to our treatment sample based on demographic observables. However, the decision to exclude the uninsured from our control group meant that we did not observe a high degree of variation in the quality of the match between our treatment and control groups. In other words, there was no particular advantage to be had by employing the matching strategy over using the full sample of low-income privately insured as the control group in our analysis.
5. The exclusion of Medicaid managed care (MMC) payment data is unfortunate given the large degree of MMC penetration in many states. Although we lack data on MMC provider fees, a 2014 report from the Government Accountability Office found that for 26 evaluation and management services, FFS and MMC provider fees were closely aligned in the majority of states that were analyzed (GAO, 2014).
6. We also estimated specifications that allowed the effects of the unemployment rate, per capita income, and the poverty rate to vary by Medicaid enrollment to capture any differential response to changes in these conditions based on insurance status. We found little evidence of a differential effect by insurance status and the inclusion of these terms left our coefficients of interest largely unchanged. For these reasons, we do not include these estimates in the results presented below, but we will make them available upon request.
7. The count of states with copay requirements includes Washington, DC.

REFERENCES

- Atherly, A., and K. Mortensen. 2014. "Medicaid Primary Care Physician Fees and the Use of Preventive Services among Medicaid Enrollees." *Health Services Research* 49 (4): 1306–28.
- Baker, L. C., and A. B. Royalty. 2000. "Medicaid Policy, Physician Behavior, and Health Care for the Low-Income Population." *Journal of Human Resources* 35 (3): 480–502.

- Buchmueller, T. C., S. Orzol, and L. D. Shore-Sheppard. 2015. "The Effect of Medicaid Payment Rates on Access to Dental Care among Children." *American Journal of Health Economics* 1 (2): 194–223.
- Decker, S. L. 2007. "Medicaid Physician Fees and the Quality of Medical Care of Medicaid Patients in the USA." *Review of Economics of the Household* 5 (1): 95–112.
- . 2009. "Changes in Medicaid Physician Fees and Patterns of Ambulatory Care." *Inquiry* 46 (3): 291–304.
- . 2011. "Medicaid Payment Levels to Dentists and Access to Dental Care among Children and Adolescents." *Journal of the American Medical Association* 306 (2): 187–93.
- . 2012. "In 2011 Nearly One-Third of Physicians Said They Would Not Accept New Medicaid Patients, but Rising Fees May Help." *Health Affairs* 31 (8): 1673–79.
- . 2015. "Acceptance of New Medicaid Patients by Primary Care Physicians and Experiences with Physician Availability among Children on Medicaid or the Children's Health Insurance Program." *Health Services Research* 50 (5): 1508–27.
- Finkelstein, A., S. Taubman, B. Wright, M. Bernstein, J. Gruber, J. P. Newhouse, H. Allen, and K. Baicker. 2012. "The Oregon Health Insurance Experiment: Evidence from the First Year." *Quarterly Journal of Economics* 127 (3): 1057–106.
- Government Accountability Office (GAO). 2014. "Medicaid Payment: Comparison of Selected Services under Fee-for-Service, Managed Care, and Private Insurance." Report to Congressional Committees, July 2014.
- Hahn, Y. 2013. "The Effect of Medicaid Physician Fees on Take-Up of Public Health Insurance among Children in Poverty." *Journal of Health Economics* 32 (2): 452–62.
- He, D., M. McInerney, and J. Mellor. 2015. "Physician Responses to Rising Local Unemployment Rates: Healthcare Provision to Medicare and Privately Insured Patients." *Journal of Health Economics* 40: 97–108.
- Hofer, A. N., J. M. Abraham, and I. Moscovice. 2011. "Expansion of Coverage under the Patient Protection and Affordable Care Act and Primary Care Utilization." *Milbank Quarterly* 89 (1): 69–89.
- Kaestner, R., and A. T. Lo Sasso. 2015. "Does Seeing the Doctor More Often Keep You Out of the Hospital?" *Journal of Health Economics* 39: 259–72.
- Kaiser Family Foundation (KFF). 2008. "Health Coverage for the Children and Families in Medicaid and SCHIP: State Efforts Face New Hurdles." Kaiser Family Foundation Policy Brief, January 2008.
- Kaiser Family Foundation (KFF). 2012. "Performing Under Pressure: Annual Findings of a 50-State Survey of Eligibility, Enrollment, Renewal, and Cost-Sharing Policies in Medicaid and CHIP, 2011–2012." Kaiser Family Foundation Policy Brief, January 2012.
- Kaiser Family Foundation (KFF). 2013. "Medicaid and the Uninsured: Premiums and Cost-Sharing in Medicaid." Kaiser Family Foundation Policy Brief, February 2013.

- Manning, W. G., J. P. Newhouse, N. Duan, E. B. Keeler, and A. Leibowitz. 1987. "Health Insurance and the Demand for Medical Care: Evidence from a Randomized Experiment." *American Economic Review* 77 (3): 251–77.
- McGinn-Shapiro, M. 2008. "Medicaid Coverage of Adult Dental Services." *State Health Policy Monitor* 2 (2): 1–6.
- Medicaid and CHIP Payment Access Commission (MACPAC). 2015. "An Update on the Medicaid Primary Care Payment Increase." [accessed on February 5, 2016]. Available at <https://www.macpac.gov/wp-content/uploads/2015/03/An-Update-on-the-Medicaid-Primary-Care-Payment-Increase.pdf>
- Polsky, D., M. Richards, S. Bassey, D. Wissoker, G. M. Kenney, S. Zuckerman, and K. V. Rhodes. 2015. "Appointment Availability after Increases in Medicaid Payments for Primary Care." *New England Journal of Medicine* 372: 537–45.
- Rosenbaum, S. 2014. "Medicaid Payments and Access to Care." *New England Journal of Medicine* 371: 2345–7.
- Shen, Y., and S. Zuckerman. 2005. "The Effect of Medicaid Payment Generosity on Access and Use Among Beneficiaries." *Health Services Research* 40 (3): 723–44.
- Zuckerman, S., and D. Goin. 2012. "Medicaid and the Uninsured: How Much Will Medicaid Physician Fees for Primary Care Rise in 2013? Evidence from a 2012 Survey of Medicaid Physician Fees." Kaiser Family Foundation Issue Paper, December, 2012.
- Zuckerman, S.A. F. Willimas, and K. E. Stockley. 2009. "Trends in Medicaid Physician Fees, 2003–2008." *Health Affairs* 2 (3): w510–w519.

SUPPORTING INFORMATION

Additional supporting information may be found online in the supporting information tab for this article:

Appendix SA1: Author Matrix.