

# Physicians as Mediators of Health Policy: Acceptance of Medicaid in the Context of Buprenorphine Treatment

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## Abstract

*Increasing numbers of individuals with opioid use disorder (OUD) are insured by Medicaid. Little is known about whether providers of buprenorphine, an evidence-based OUD pharmacotherapy, accept this type of payment. Data are scant regarding whether Medicaid acceptance varies by physician and state-level characteristics. To address these gaps, national survey data from 1174 buprenorphine-prescribing physicians (BPPs) and state characteristics were examined in a multi-level model of Medicaid acceptance. Only 52.0% of BPPs accepted Medicaid for buprenorphine-related office visits. Specialists in addiction and psychiatry were significantly less likely to accept Medicaid than other specialties, as were BPPs delivering buprenorphine in individual medical practice. Perceived adequacy of Medicaid reimbursement was positively associated with accepting Medicaid. Medicaid acceptance was not associated with states' implementation of the Medicaid expansion. Individuals who are covered by Medicaid may face barriers to accessing buprenorphine treatment, which has high public health significance given the ongoing opioid epidemic.*

## Introduction

Opioid use disorder due to prescription opioids and heroin has escalated in the past 15 years.<sup>1-4</sup> Untreated OUD is responsible for large-scale increases in the number of overdose deaths.<sup>5-7</sup> The prevalence of OUD exceeds the nation's treatment capacity, with only about 26% of individuals with OUD receiving any form of treatment in the past year.<sup>8</sup> Even fewer individuals are treated with pharmacotherapy, such as buprenorphine. Similar to other medications for treating substance use disorder,<sup>9</sup> adoption and implementation of buprenorphine in counseling-based specialty SUD treatment programs has been slow<sup>10</sup> due to financial barriers, attitudinal opposition to pharmacotherapy,<sup>11</sup> and lack of access to medical professionals.<sup>12</sup> Buprenorphine is now largely

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delivered in office-based medical practice as opposed to the specialty OUD treatment system that dispenses methadone or counseling-based programs that specialize in treating SUD.<sup>13</sup> Although the expansion of buprenorphine treatment over time has begun to reduce county-level shortages in OUD treatment,<sup>14</sup> treatment needs in the USA continue to outpace treatment capacity,<sup>15</sup> pointing to ongoing implementation challenges.

These capacity challenges are exacerbated by inadequate access to buprenorphine treatment based on patients' ability to pay for care, even in the era of US health reform under the *Patient Protection and Affordable Care Act* (ACA). Notably, the ACA included SUD treatment as an essential health benefit within health plans and expanded parity for SUD care.<sup>16–18</sup> It has reduced the number of uninsured Americans, particularly in Medicaid expansion states,<sup>19,20</sup> and reduced the number of individuals with OUD who lack insurance.<sup>21</sup> However, there remain no requirements that buprenorphine-prescribing physicians (BPPs; or any other medical provider) accept insurance plans for reimbursement of treatment services, raising the possibility that insured individuals cannot use their insurance benefits to pay for care. Given the gains in the number of individuals with OUD insured under Medicaid since implementation of the ACA,<sup>22</sup> understanding the acceptance of this type of public insurance by BPPs is particularly critical when considering its implementation. The public health impact of increasing numbers of BPPs is limited if a substantial proportion of BPPs will not accept Medicaid patients.

Little is known about the extent to which BPPs accept Medicaid for payment, despite a growing number of individuals with OUD being covered by Medicaid.<sup>22</sup> Previous research on the intersection of Medicaid with buprenorphine treatment has focused on patient-level outcomes, the supply of prescribers, and state Medicaid policies. Studies have examined buprenorphine's effectiveness for individuals covered by Medicaid,<sup>23,24</sup> and patient-level characteristics in predicting the odds of accessing buprenorphine treatment.<sup>25,26</sup> Efforts to document the availability of buprenorphine treatment, as measured by the supply of physicians waived to prescribe this medication, have shown that state Medicaid policies providing reimbursement and the percentage of residents covered by Medicaid are correlated with buprenorphine physician supply.<sup>27,28</sup> Health policy researchers have analyzed pharmacy benefits within Medicaid formularies. By 2013, all state Medicaid programs included buprenorphine on their formularies, at least for some populations.<sup>29</sup> Nearly all states, however, require prior authorization procedures to be completed and about 20% of states have imposed lifetime treatment limits on coverage for the medication.<sup>30,31</sup>

Although pharmacy benefits are an important element of health policy, Medicaid also provides reimbursement for medical services to physicians and organizations that provide care. During buprenorphine-related office visits, BPPs evaluate new patients regarding the appropriateness of buprenorphine treatment, write prescriptions, and monitor patients' clinical progress over time. Yet, BPPs are free to decide whether or not to accept Medicaid for payment.<sup>32</sup> Data from other medical specialties have indicated that fewer physicians accept Medicaid relative to private insurance and cash payment.<sup>32–35</sup> However, none of the previous surveys of BPPs have provided information about prescribers' acceptance of Medicaid,<sup>36–41</sup> which is one gap addressed by the present study.

In addition, it is unknown whether Medicaid acceptance for buprenorphine treatment varies by practice setting and medical specialty. Buprenorphine is delivered in a number of practice settings, including individual and group medical practices,<sup>42,43</sup> the Veterans Administration health care system,<sup>44</sup> OTPs,<sup>45</sup> and specialty SUD treatment facilities.<sup>46,47</sup> It is unknown whether practice settings are correlated with Medicaid acceptance. Addiction specialists (e.g., those specializing in addiction medicine or addiction psychiatry) and general psychiatrists are likely to have additional skills that may be beneficial in helping patients with complex OUD-related needs, but research has not addressed whether these types of BPPs are more or less likely than other physicians to accept Medicaid.

Furthermore, it is unclear whether attitudes toward the Medicaid program are associated with the likelihood that BPPs accept this form of payment. Research in other fields of medicine has shown

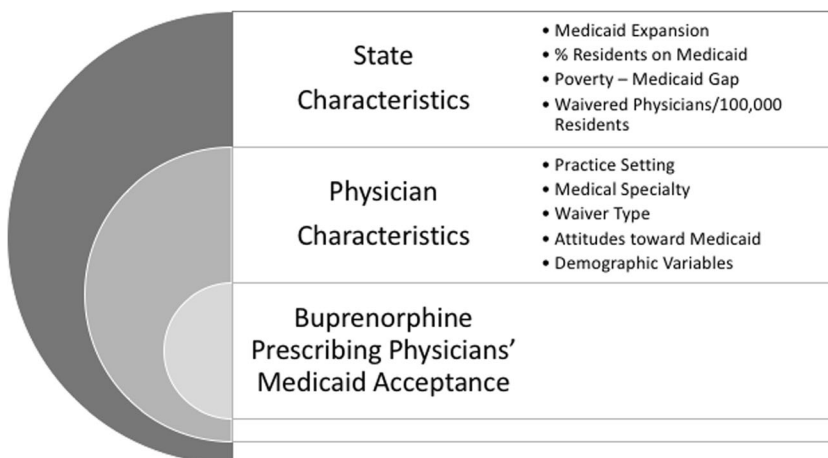
that physicians are often critical of the Medicaid program’s reimbursement and administrative structure. Inadequate reimbursement is a potent barrier to physician accepting patients who are insured by Medicaid.<sup>48,49</sup> Administrative burdens, such as cumbersome prior authorization processes, may also be an additional deterrent to treating Medicaid-insured patients.<sup>50</sup> However, few studies have examined whether such attitudes are correlated with whether BPPs accept Medicaid as payment.

Physicians’ participation in Medicaid may also reflect the broader state context. As noted by Rosenbaum,<sup>51</sup> states have historically had enormous discretion over how they implement the Medicaid program, so long as they met minimum requirements set by the federal government. Historically, only about half of individuals living in poverty were covered by Medicaid.<sup>51</sup> The percentage of state residents covered by Medicaid likely reflects the poverty rate within the state as well as the state’s willingness to provide coverage to a wider group of individuals, beyond federally mandated groups. From a resource dependence perspective,<sup>52,53</sup> a more sizeable pool of residents covered by Medicaid may encourage physicians to accept Medicaid for payment. Another way to conceptualize the beneficence of state policy is to compare the percentage of residents who are poor to the percentage who are covered by Medicaid. A larger gap between these two percentages would be indicative of a state that is more restrictive in its Medicaid eligibility policies, while a smaller gap would suggest that a state is more generous in defining eligibility. Finally, state-level decisions about expanding Medicaid under the ACA may be associated with whether physicians accept this form of payment.

Drawing upon a national survey of BPPs and secondary sources of state characteristics, this study has three aims (Fig. 1). First, this research examines whether there are differences in Medicaid acceptance across practice settings and by physician specialty, which may point to disparities faced by patients who have this type of insurance and reveal an important barrier to effective implementation. Second, this study considers whether BPPs’ perceptions of their states’ Medicaid program are correlated with the odds of accepting Medicaid. Finally, associations between state-level measures of the Medicaid expansion, rates of Medicaid coverage, and the Medicaid-poverty gap on BPPs’ acceptance of Medicaid are estimated.

**Figure 1**

Conceptual model of Medicaid acceptance by buprenorphine-prescribing physicians (BPPs)



## Methods

### Physician sampling and data collection

This study draws upon data collected from a national sample of civilian physicians who prescribe buprenorphine for the treatment of OUD. To build the sampling frame, the May 2014 issue of the Drug Enforcement Agency's Controlled Substances Act (CSA) Active Registrants database was purchased. In May 2014, there were 24,506 physicians in the USA who were waived to prescribe buprenorphine. Physicians were sorted by state, and randomly sampled from each state so that states were proportionally represented in the sample.

Study eligibility was assessed via telephone screening. The primary criterion for eligibility was current treatment of at least one opioid-dependent patient with buprenorphine, as reported by either the physician or her/his office staff. Up to 10 attempts were made to obtain the screening information; after 10 attempts, the sampled physician was replaced by a randomly selected physician from the same state. Thus, this sample constitutes BPPs.

The data collection protocol was informed by Dillman's tailored design method.<sup>54</sup> Specifically, it included (1) sending an advance notification letter, (2) express-mailing (i.e., FedEx® or US Priority Mail) the survey packet approximately 1 week later, (3) sending a postcard reminder 2 weeks later, and (4) calling BPPs after 6 weeks of non-response and sending a second survey packet. BPPs were coded as a refusal if no response was received after 10 weeks. Participating BPPs received an honorarium of \$100 by mail. This manuscript presents data from 1174 BPPs who were recruited between July 2014 and January 2017 (response rate = 33.0%). Study procedures were approved by the medical Institutional Review Board (IRB) at the University of Kentucky.

### Physician-level variables

The dependent variable was a dichotomous measure of whether the BPP accepted Medicaid as payment for buprenorphine-related office visits. BPPs accepting Medicaid fee-for-service insurance and/or Medicaid managed care insurance were coded "1," while those that did not accept these types of Medicaid were coded "0." For comparison, data regarding acceptance of private insurance for office visits was also collected.

Three domains of physician characteristics specific to OUD treatment and medical specialty were measured. First, *practice settings* were measured by a set of six indicators. BPPs were asked to identify the settings in which they delivered buprenorphine treatment, which included (1) individual medical practice, (2) group medical practice, (3) Veterans Administration medical center (VAMC), (4) hospital (non-VAMC), (5) opioid treatment program (OTP), and (6) substance abuse treatment program (non-OTP). BPPs could select more than one practice setting. Type of *buprenorphine waiver* was also measured. At the time of the study, BPPs were limited to either treating up to 30 concurrent patients (=0) or 100 concurrent patients (=1), and this information was extracted from the May 2014 CSA Active Registrants database. *Medical specialty* was coded from responses to an open-ended question that asked, "What is your specialty/areas of medical practice?" Responses were coded into three mutually exclusive groups: addiction (e.g., addiction medicine, addiction psychiatry), psychiatry (with no mention of addiction), and all other specialties, which represented the reference group.

Two attitudes about Medicaid in the BPP's primary state of practice were measured. First, BPPs rated their agreement with the statement, "Medicaid reimbursement for buprenorphine-related office visits is adequate." Then, BPPs were asked to rate their agreement with the statement, "Medicaid's prior authorization process for buprenorphine treatment is burdensome." Both items used a five-point Likert scale with 1 representing "strongly disagree" and 5 representing "strongly agree."

Finally, three demographic characteristics and the year of survey completion were included as control variables. Age in years and gender (1 = female, 0 = male) were measured. Race/ethnicity categorized respondents as white (reference group), Asian, or a third group of all others (i.e., African American/black, Hispanic/Latino, multiracial). A dummy variable for year of survey completion consisted of three groups: participation in 2014 (reference category), 2015, or 2016, with the three surveys received in January 2017 included in the 2016 group.

### State-level characteristics

Four state-level characteristics were measured. First, state decisions regarding the Medicaid expansion, as of June 2014 (when survey data collection began), were drawn from data published by the Henry J. Kaiser Family Foundation.<sup>55</sup> Second, Medicaid coverage was measured by the percentage of the state population covered by Medicaid, averaged between 2012 and 2013, according to the Census Bureau's Current Population Survey.<sup>56</sup> Third, a measure of the poverty-Medicaid gap was constructed by subtracting the percentage of residents covered by Medicaid from the percentage of the total population in 2011–2012 living at or below 138% of the Federal Poverty Line.<sup>57</sup> This threshold of poverty was selected because it is the cutoff established in the Medicaid expansion under the ACA.<sup>58</sup> Higher values of this measure are indicative of a larger gap, meaning more restrictive eligibility Medicaid requirements within states. Finally, the supply of buprenorphine physicians was constructed using the number of waived physicians at the state level per 100,000 residents based on data from the May 2014 DEA CSA database and 2014 Census data on state population.<sup>59</sup>

### Data management and analysis

Study data were managed using the REDCap (Research Electronic Data Capture) electronic data capture tools hosted at the University of Kentucky.<sup>60</sup> All analyses were conducted using *Stata 15.1* (StataCorp, College Station, TX). Descriptive statistics were calculated for all physician-level and state-level variables. BPPs accepting Medicaid and those not accepting Medicaid were compared on the physician-level variables using chi-squared and independent sample *t* tests, depending on the level of measurement.

Prior to estimating the multi-level mixed effect logistic regression model of Medicaid acceptance, multiple imputation by chained equations was implemented using *Stata's* "mi impute chained" command to address physician-level missing data. Multiple imputation reduces the bias that is associated with listwise deletion,<sup>61</sup> which would have resulted in the loss of 12.9% ( $n = 151$ ) of physicians in the sample. The "mi impute chained" command estimates a series of iterative imputation models.<sup>62–65</sup> A notable strength of "mi impute chained" is that the appropriate link function is specified for each variable with missing data based on the level of measurement (e.g., logistic regression for dichotomous variables, multinomial logistic regression for variables of unordered categories, Poisson regression for counts). When imputing data, "mi impute chained" begins with the variables containing the least amount of missing data before addressing variables with greater proportions of missing data.<sup>66</sup>

This specification of "mi impute chained" included the dependent variable and the physician-level independent variables. Thirty datasets were generated, which is consistent with recommendations that the number of imputed datasets should exceed the percentage of observations with missing data.<sup>65</sup> Then the "mi estimate" command was deployed in combination with "mefrlogit" during the estimation of the mixed effect logistic regression model (QR decomposition) of Medicaid acceptance; the former pooled the results from the 30 imputed datasets while the latter resulted in a model that accounted for the nesting of BPPs within states and allowed for entering both physician-level and state-level variables into the model.

## Results

### Descriptive statistics

In this sample of physicians who prescribe buprenorphine to treat OUD, about 52.0% accepted Medicaid as payment for office visits. The rate of Medicaid acceptance was considerably lower than the percentage of BPPs who accepted private insurance (72.0%) for payment.

Table 1 presents descriptive statistics for the physician-level independent variables and compares BPPs who did and did not accept Medicaid as payment for office visits. These two groups differed on most variables. There were notable differences by practice settings, with Medicaid-accepting BPPs being less likely to deliver buprenorphine treatment in individual medical practices and Veterans Administration facilities than physicians who did not accept Medicaid. BPPs who accepted Medicaid were more likely than non-accepting BPPs to deliver buprenorphine in group medical practices, hospitals, opioid treatment programs (OTPs), and substance use disorder (SUD) treatment programs. Furthermore, there were differences by medical specialty, with lower prevalence of addiction specialists and psychiatrists in the group of BPPs who accepted Medicaid. Perceived adequacy of Medicaid reimbursement was greater among Medicaid acceptors than non-acceptors, although the means for both groups were below the midpoint of the Likert scale. There were differences between these two groups with regard to age and gender, and race/ethnicity, with Medicaid acceptors being younger and more likely to be female.

Regarding the state characteristics, as of June 2014 when survey data collection began, 26 states and the District of Columbia (52.9%) were implementing the Medicaid expansion. The average state had about 16.0% (SD = 3.8) of its residents covered by Medicaid, and the average state's poverty-Medicaid gap was 10.7 percentage points (SD = 4.4). States averaged 8.3 waived physicians per 100,000 residents (SD = 5.3).

### Multi-level multivariate model of Medicaid acceptance

Table 2 presents a multi-level model of Medicaid acceptance that integrates physician-level and state-level characteristics while accounting for the nesting of BPPs within states. Regarding the first aim about practice settings and medical specialties, the multivariate model revealed several differences. Five of the six practice settings were significantly associated with Medicaid acceptance. BPPs working in individual practice were about 64.6% less likely to accept Medicaid than BPPs working in non-individual practice. Similarly, BPPs working in VA medical centers were 82.6% less likely than all others to accept Medicaid. Delivering buprenorphine treatment in a hospital, an opioid treatment program (OTP), and a specialty SUD treatment program (that was not an OTP) were all positively associated with the likelihood of accepting Medicaid. Furthermore, differences by medical specialty were statistically significant, such that addiction specialists were 50.9% less likely and psychiatrists were 60.8% less likely to accept Medicaid than BPPs from other specialties.

There was a significant positive association between the perceived adequacy of Medicaid reimbursement and the likelihood of Medicaid acceptance. A 1-unit increase in the five-point Likert scale on the adequacy of Medicaid reimbursement was associated with a 47.1% increase in the odds that BPPs accepted this form of payment. However, BPPs' attitudes regarding Medicaid's prior authorization requirements were not associated with the odds of accepting Medicaid.

Regarding the four state-level characteristics, only one variable was associated with the odds of accepting Medicaid. There was a negative association between the poverty-Medicaid gap and the odds that a physician accepted Medicaid for office visits. This association indicated that physicians

**Table 1**  
Descriptive statistics of buprenorphine-prescribing physicians (BPPs)

	<b>Total sample, % (N) or mean (SD)</b>	<b>Medicaid-accepting BPPs, % (N) or mean (SD)</b>	<b>Medicaid-refusing BPPs, % (N) or mean (SD)</b>
Accepts Medicaid for office visits	52.0% (594)	–	–
Individual medical practice***	50.8% (568)	37.2% (217)	65.9% (359)
Group medical practice***	35.2% (406)	46.3% (270)	24.2% (132)
Veterans Administration medical center***	4.6% (53)	1.2% (7)	8.4% (46)
Hospital***	13.2% (152)	16.3% (95)	8.6% (47)
Opioid treatment program (OTP)***	6.2% (71)	8.6% (50)	3.5% (19)
Substance use disorder (SUD) treatment program***	13.9% (161)	17.8% (104)	9.7% (53)
Medical specialty***			
Addiction (medicine or psychiatry)	21.6% (248)	20.4% (119)	22.5% (121)
Psychiatry (non-addiction)	27.2% (312)	21.9% (128)	33.1% (178)
All others	51.3% (589)	57.7% (337)	44.4% (239)
Can treat up to 100 patients with buprenorphine	57.8% (678)	55.3% (329)	60.7% (3330)
Medicaid reimbursement is adequate***	2.3 (1.1)	2.5 (1.1)	2.1 (1.1)
Medicaid prior authorization is burdensome	3.8 (1.1)	3.8 (1.2)	3.8 (1.1)
Age**	55.5 (11.4)	54.3 (11.5)	56.5 (11.0)
Female*	22.9% (267)	25.9% (153)	19.6% (107)
Race/ethnicity			
White	76.5% (878)	76.0% (439)	77.1% (417)
Asian	12.5% (144)	12.1% (70)	12.9% (70)
Black/African American, Hispanic/Latino, and all others	11.0% (126)	11.9% (69)	10.0% (54)
Survey participation year*			
2014	20.5% (241)	23.6% (140)	17.7% (97)
2015	54.3% (637)	53.5% (318)	55.7% (306)
2016	25.2% (296)	22.9% (136)	26.6% (146)

Significant differences between physicians who accept Medicaid and those who do not: \* $p < 0.05$ , \*\* $p < 0.01$ , and \*\*\* $p < 0.001$  (two-tailed tests). The three surveys received in January 2017 are included in the 2016 group

were significantly less likely to accept Medicaid when working in states where the poverty-Medicaid gap was larger.

**Table 2**

Mixed effect logistic regression model of Medicaid acceptance on physician-level variables and state characteristics

	Adjusted odds ratio	95% CI
Physician characteristics		
Individual medical practice	0.354***	0.232–0.541
Group medical practice	1.187	0.768–1.833
Veterans Administration medical center	0.084***	0.033–0.216
Hospital	1.883**	1.202–2.948
Opioid treatment program (OTP)	2.021*	1.055–3.874
Substance use disorder (SUD) treatment program	1.700*	1.080–2.678
Medical specialty		
Addiction (medicine or psychiatry)	0.492***	0.333–0.725
Psychiatry (non-addiction)	0.392***	0.274–0.561
All others	Reference	
Can treat up to 100 patients with buprenorphine	0.897	0.672–1.197
Perception that Medicaid reimbursement is adequate	1.471***	1.282–1.689
Perception that Medicaid prior authorization is burdensome	1.132	0.993–1.291
Age	0.998	0.985–1.011
Female	1.279	0.898–1.822
Race/ethnicity		
White	Reference	
Asian	1.497	0.970–2.311
Black/African American, Hispanic/Latino, and all others	1.828**	1.159–2.883
State characteristics		
Adopted the Medicaid expansion (vs. not adopted)	1.095	0.694–1.730
Percentage of residents insured by Medicaid	0.998	0.933–1.069
Poverty-Medicaid gap (% residents living $\leq$ 138% federal poverty line minus % residents insured by Medicaid)	0.904**	0.843–0.969
Number of waived physicians per 100,000 residents	1.002	0.940–1.068
Constant	2.276	0.357–14.528
State cluster	0.454	0.270–0.763

Results represent the pooled estimates from 30 imputed datasets with each dataset consisting of 1174 physicians

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$  (two-tailed tests)

## Discussion

This national survey of BPPs is one of the first to examine physician-level and state-level covariates of physicians' acceptance of Medicaid. There was no evidence of greater Medicaid acceptance in states that expanded Medicaid under health reform. While that policy change had no measurable impact on Medicaid acceptance, these results point to several areas of disparities that individuals who are insured by Medicaid may face when seeking this lifesaving treatment for OUD.

Almost half of the BPPs in the sample do not accept Medicaid, which creates a substantial barrier to treatment for individuals with this type of health insurance and, therefore, represents an



important barrier to buprenorphine implementation. The lower rate of accepting Medicaid relative to private insurance was not entirely unexpected. Surveys of other types of physicians have yielded similar results, with much higher percentages of physicians being willing to accept new patients with private insurance or patients paying out of pocket than patients with Medicaid.<sup>32–35</sup>

Similarly, the reduced acceptance of Medicaid among BPPs in individual practice is similar to findings from the broader medical field, where solo practitioners are significantly less likely to indicate that they are willing to accept new Medicaid patients and are less likely to report that they receive any revenue from Medicaid.<sup>32</sup> Nonetheless, this difference by practice setting has implications for health disparities in access to buprenorphine treatment. Individual practice is the most common setting in which buprenorphine treatment is delivered, and yet more than 60% of BPPs working in solo practice do not accept Medicaid. Other differences are less problematic. Very few providers working in VA medical centers reported accepting Medicaid, but this likely reflects the fact that their patients' treatment is primarily covered through veteran health benefits.

Access to specialists is another type of disparity that patients with Medicaid appear to be more likely to face. These findings indicated that two types of specialists—addiction specialists and psychiatrists—were significantly less likely to accept Medicaid. While general practitioners can effectively treat patients with buprenorphine, they likely have less expertise addressing complex co-occurring psychiatric conditions and ongoing use of other substances than addiction specialists and psychiatrists. From this perspective, the disparate rates of accepting Medicaid between these three types of BPPs are troubling.

This analysis did not find relationships between Medicaid acceptance, the percentage of residents covered by Medicaid, and the Medicaid expansion. Although the associations were not significant, it may be useful to note two other areas of treatment access that are correlated with Medicaid coverage and the expansion. First, previous research has found a positive correlation between the percentage of residents covered by Medicaid and a population-adjusted measure of the number of waived physicians in the state.<sup>28</sup> The Medicaid expansion when coupled with state-based health insurance exchanges has been associated with greater growth in the number of waived physicians over time, when compared to states that have not implemented these elements of the ACA.<sup>67</sup> Second, research on Medicaid-covered utilization of buprenorphine has also shown greater increases in the number of prescriptions and the dollars spent in Medicaid expansion states.<sup>68,69</sup> Thus, while physicians in Medicaid expansion states were not more likely to accept this form of payment, the Medicaid expansion remains important for broader questions of buprenorphine treatment supply and access to treatment.

While the size of the Medicaid population was not significant in the model, these data did indicate that magnitude of the gap between the rates of Medicaid coverage and overall poverty was negatively correlated with the odds that BPPs accepted Medicaid. Conceptually, this gap likely represents individuals who are uninsured and is also indicative of how restrictive states are in defining who is eligible for Medicaid. From a policy perspective, if Medicaid expansion states are ultimately successful in increasing the percentages of residents covered by Medicaid (hence, reducing the poverty-Medicaid gap), it may eventually attract more BPPs to accept Medicaid in those states. It may be that the full impact of the Medicaid expansion has yet to be felt, given that large-scale efforts to enroll individuals into insurance via the exchanges did not begin until late 2013.<sup>70</sup> Future research should consider whether narrowing the poverty-Medicaid gap increases the proportion of BPPs who accept Medicaid for payment.

## Limitations

A number of limitations should be noted. First, this is an observational study that cannot establish causality because the survey resulted in cross-sectional data. Second, the response rate to the survey was low, which is a common problem when conducting national surveys of

physicians.<sup>71</sup> It is not known whether a web-based survey or a larger financial incentive would have resulted in a greater rate of response, although the literature continues to suggest that physicians are more likely to respond to mailed surveys than web-based surveys.<sup>72</sup> The study was restricted in the size of the financial incentive by institutional policies; a larger incentive would have required obtaining a Social Security number, which would have increased risks to participants. It is unknown how the response rate impacted the model estimates, although the literature on response rates suggests that impacts may not be as large as commonly assumed.<sup>73</sup> Finally, it is unknown how unmeasured state and BPP characteristics may affect the results.

## Implications for Behavioral Health

This study of physician acceptance of Medicaid in the context of buprenorphine treatment for OUD revealed that individuals who are insured by Medicaid may face barriers to care and less access to specialists because of the substantial proportion of BPPs who do not accept Medicaid for payment. Furthermore, acceptance of Medicaid was lower in states where there was a larger gap between the percentage of economically disadvantaged residents and the percentage who were covered by Medicaid. From a policy perspective, the ACA was envisioned as a major mechanism for increasing access to SUD treatment.<sup>74</sup> These findings suggest that the Medicaid expansion has not increased the proportion of BPPs who accept Medicaid, and many BPPs still do not accept this type of payment. Given the scope of the opioid epidemic, there is a substantial need to identify mechanisms to increase providers' willingness to accept Medicaid in order to expand the implementation of buprenorphine treatment.

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## Compliance with Ethical Standards

*Conflicts of Interest* The authors declare that they have no conflicts of interest.

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