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Perceived Impacts of the Affordable Care Act: Perspectives of Buprenorphine Prescribers

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Abstract

The Affordable Care Act (ACA) has been heralded as a major policy change that is expected to transform the delivery of substance use disorder (SUD) treatment. Few studies have reported on the perceived impacts of ACA from the perspectives of SUD treatment providers, such as physicians who prescribe buprenorphine to patients with opioid use disorder. The present study describes buprenorphine prescribers' perceptions regarding impacts of the ACA on the delivery of buprenorphine and examines whether state-level approaches to implementing ACA are associated with its perceived impacts. Data are drawn from a national sample of current buprenorphine prescribers (n=1,174) who were surveyed by mail. On average, buprenorphine prescribers reported ambivalence regarding the impacts of the ACA, as indicated by a mean of 2.75 (SD=0.69) on a scale that ranged from 1 ("strongly disagree") to 5 ("strongly agree"). A multi-level mixed effects regression model indicated that physicians practicing in states that were supportive of ACA, as indicated by adopting both the Medicaid expansion and implementing a state-based health insurance exchange, had more positive perceptions of the ACA than physicians in states that had declined both of these policies. This study suggests that state approaches to ACA may be associated with varied impacts.

Keywords

Affordable Care Act; health reform; buprenorphine; substance use disorder treatment delivery; physician survey

The passage of the Patient Protection and Affordable Care Act of 2010 (ACA) has been heralded as one of the most significant changes to the US health care system and substance use disorder (SUD) treatment in decades (Buck 2011; Garfield, Lave & Donohue 2010; Mechanic & Olshon 2016). Its major goals are to reduce the number of uninsured Americans, to increase access to care, and to improve population health (Buck 2011; Holahan & Headen 2010). Mechanisms to expand coverage included requirements that large employers offer affordable insurance, all individuals without employer-sponsored insurance must purchase health insurance (i.e., the individual mandate), the establishment of health

insurance exchanges, and the expansion of Medicaid (French et al. 2016; Price & Eibner 2013).

The ACA instituted requirements regarding ten categories of essential health benefits, which required coverage for SUD treatment (Beronio, Glied & Frank 2014; Garfield & Druss 2012; McLellan & Woodsworth 2014; Pating et al. 2012; Roy III & Miller 2012). The ACA also expanded parity for SUD treatment (Barry, Goldman & Huskamp 2016; Horgan et al. 2016). The combination of parity, SUD treatment as an essential health benefit, and the Medicaid expansion were anticipated to expand greatly the number of individuals with SUD who were insured, thus decreasing barriers to treatment (Andrews et al. 2015; Buck 2011; Humphreys & Frank 2014; Mark et al. 2015; Mechanic 2014).

These efforts to re-engineer the US health care system have been contested through lawsuits aiming to reduce ACA's scope and implementation (Mayer, Kenter & Morris 2015) (Bagley, Jones & Stoltzfus Jost 2015; Jost 2014). In *National Federation of Independent Business v. Sebelius*, the Supreme Court ruled that the Medicaid expansion was unconstitutional, which means states can decide whether or not to expand their Medicaid programs (Henry J. Kaiser Family Foundation 2012). As of late 2016, 31 states and the District of Columbia have adopted the Medicaid expansion (Henry J. Kaiser Family Foundation 2016).

Other elements have allowed states some flexibility in their implementation of ACA. Notably, states can choose how to implement health insurance exchanges (also known as marketplaces) that sell subsidized insurance (Blumenthal & Collins 2014; Gluck 2014). Some states have declined to take any action, so their residents must rely on the federal Healthcare.gov exchange (Nadash & Day 2014). Other states have established state-based exchanges, while some have pursued models of partnership with the federal government (Buttorff et al. 2015). States with their own marketplaces were required to prepare plans for marketing their exchanges to consumers (Krinn, Karaca-Mandic & Blewett 2015). Large-scale efforts to enroll individuals in these insurance exchanges began in late 2013 (Henry J. Kaiser Foundation 2014).

A growing literature has measured the impacts of the ACA (French et al. 2016). Researchers have documented reductions in the percentage of young adults who were uninsured and greater access to care within this sub-population (Look, Kim & Arora in press; Sommers et al. 2013). The Medicaid expansion has significantly reduced the percentage of uninsured individuals overall and has reduced barriers to care in expansion states (Benitez, Creel & Jennings 2016; Sommers et al. 2015).

Evidence regarding the impacts of ACA on SUD treatment has shown uneven results. Projections have indicated that the Medicaid expansion would likely increase service utilization (Ali et al. 2016), and claims data from private insurance has shown increases in SUD treatment spending (Thomas et al. 2016). National Survey of Drug Use and Health (NSDUH) data have shown reductions in the percentage of low income adults with behavioral health needs who lack insurance and who have unmet treatment needs in Medicaid expansion states (Wen, Druss & Cummings 2015). However, NSDUH data through 2013 have not shown increases in treatment rates among those with SUD in contrast

to rising treatment rates for individuals with mental health conditions (Creedon & Cook 2016; Saloner et al. 2016). Similarly, insurance financing, meaning the proportion of care that is reimbursed by public or private insurance, has not increased for SUDs despite increasing for mental health conditions (Mark et al. 2016).

The impacts of ACA on SUD treatment providers are even less clear. Early work suggested that many specialty SUD treatment facilities, particularly smaller programs, lacked the information technology infrastructure necessary to take full advantage of the opportunities under ACA (Molfenter et al. 2012; Molfenter 2014). Funding from single state substance abuse agencies to support ACA implementation has largely focused on technical assistance to support collaboration between specialty SUD programs and other health care providers and expansion of the counseling workforce; less attention has been focused on assisting programs to respond to the expansion of health insurance (Andrews et al. 2015). In general, specialty SUD programs have been slow to integrate themselves into accountable care organizations, despite the changes under ACA that intended to encourage such integration (D'Aunno et al. 2015).

In addition, medical professionals are increasingly delivering treatment in office-based practice, with buprenorphine treatment for opioid use disorder (OUD) being a prime example. There are few data regarding the impact of the ACA on buprenorphine treatment in the US. An analysis of growth in state-level measures of buprenorphine treatment supply (defined as the number of physicians who hold the DATA 2000 waiver for prescribing buprenorphine per 100,000 state residents) found growth rates varied by state-level approaches to implementing the ACA (Knudsen et al. 2015). States that expanded Medicaid and established a state-based insurance marketplace experienced greater growth than states that had only adopted one of these elements or neither of these elements (Knudsen et al. 2015). Prior surveys of buprenorphine physicians were conducted before the implementation of the ACA (Arfken et al. 2010; Edelman et al. 2012; Kissin et al. 2006; Netherland et al. 2009; Reif, Thomas & Wallack 2007; Thomas et al. 2008; Westat 2006). To date, no studies have examining the perspectives of buprenorphine providers regarding the impact of the ACA.

The current study has two primary aims. First, we present descriptive data from buprenorphine prescribers regarding their perceptions of the impacts of the ACA on buprenorphine treatment. Second, we examine whether state-level approaches to the Medicaid expansion and establishment of a state-based health insurance exchange are associated with the perceived impacts of ACA on buprenorphine treatment.

Methods

Sampling and data collection

Survey data were collected from a national sample of US civilian physicians who prescribe buprenorphine for treatment of OUD. The May 2014 issue of the Drug Enforcement Agency's Controlled Substances Act (CSA) Active Registrants database was purchased, and a computer script was written to extract the names and addresses of all civilian physicians who had requested and received the buprenorphine waiver (i.e., those with C-1 and C-4

activity codes). We extracted 24,506 physicians who held the buprenorphine waiver as of May 2014. We then stratified physicians by state so that we could randomly sample physicians in a manner that yielded a sample where states were proportionally represented.

Trained research staff conducted brief telephone screening to establish study eligibility. To be eligible, physicians were required to be currently treating at least one opioid-dependent patient with buprenorphine, as reported by the physician or their office staff. We made up to 10 attempts to obtain the screening information; after 10 attempts, individuals were replaced by another randomly selected physician from the same state.

Our data collection protocol drew upon Dillman's (2007) tailored design method. Physicians were initially mailed an advance notification letter. Next, the survey packet, containing the survey, two informed consent forms, and a postage-paid return envelope, was express-mailed about one week later via FedEx® or US Priority Mail. All potential respondents were mailed a postcard reminder about two weeks after the survey mailing. Research staff called non-respondents about 6 weeks after the survey packet was sent and sent a second packet. Physicians were coded as a refusal if no response was received after 10 weeks. Participating physicians were mailed a check for \$100. This manuscript presents data from 1,174 physicians (32.7% of those who were sent the survey) who were recruited between July 2014 and January 2017. This study was approved the medical Institutional Review Board of the University of Kentucky.

Measures

To measure the perceived impact of the ACA, we designed eight items specifically for this study. These items were informed by the literature describing the ACA (Beronio, Glied & Frank 2014; Frank, Beronio & Glied 2014; Garfield & Druss 2012; Pating et al. 2012) and by 21 qualitative telephone interviews that we conducted with buprenorphine experts. Specifically, we recruited expert mentors affiliated with the Physician Clinical Support System-Buprenorphine (PCSS-B; now known as the PCSS-MAT). In these qualitative interviews, we asked expert mentors to describe how the ACA may impact physicians who deliver buprenorphine treatment. Based on those interviews and the literature, we constructed eight items about the ACA, which are presented in Table 1. Response options for each item ranged from "1" representing "strongly disagree" to "5" representing "strongly agree."

Our primary independent variable of interest was a state-level typology of ACA implementation. As described in Knudsen et al. (2015), the 50 US states and District of Columbia were assigned into one of three mutually exclusive groups based on state approaches to the establishment of state-based health insurance exchanges and the expansion of Medicaid as of May 2013 (Henry J. Kaiser Family Foundation 2013; Henry J. Kaiser Family Foundation 2013). States in the ACA-supportive group were those that expanded Medicaid and established a state-based insurance exchange (31.4%, n=16). ACA-hybrid states were those that chose to either expand Medicaid or establish a state-based insurance exchange (21.6%, n=11); most hybrid states chose to expand Medicaid but not establish a state-based health insurance exchange. The ACA-resistant group represented states that did not expand Medicaid and did not establish a state-based insurance exchange (47.1%, n=24).

Three additional state characteristics were measured. Region was based on the US Census Bureau's (2015) regions of Northeast, Midwest, South, and West. Regions of the US have not only sizeable differences in political ideology which may be associated with attitudes toward the ACA, but regions outside the Northeast have significantly smaller supplies of buprenorphine-waivered physicians (Knudsen 2015). The average percentage of state residents covered by Medicaid in 2012–2013 (Henry J. Kaiser Family Foundation 2014) was included as a control variable. Because attitudes toward the ACA may also reflect broader political trends within states, we drew upon a state-level measure of political ideology that categorized states into three mutually exclusive groups based on control of the state legislature and governorship in 2014 (National Conference of State Legislatures 2014). Democratic control represented states where Democrats controlled the legislature and held the governorship (reference group), divided control reflected states where either the legislature was split between the two parties or the legislature and the governor differed in party affiliation, and Republican control indicated that Republicans controlled both the legislature and held the governorship. For Nebraska, which has a unicameral non-partisan legislature, its coding was based on the governorship in 2014 (i.e., Republican). The District of Columbia was coded as Democratic control based on control of its City Council and the Mayor (Wikipedia 2016). In 2014, 31.4% (n=16) of states were controlled by Democrats, 21.6% (n=11) had divided control, and 47.1% were controlled by Republicans (n=24).

Four aspects of buprenorphine practice were measured at the level of physicians. First, physicians were asked if they accepted Medicaid (1=yes, 0=no) and private insurance (1=yes, 0=no) as payment for buprenorphine office visits; physicians accepting these forms of payment may be more impacted by the ACA. Second, physicians were asked to indicate the types of settings in which they deliver buprenorphine treatment using six dichotomous variables: representing individual medical practice, group medical practice, Veterans Administration medical center (VAMC), non-VAMC hospital, opioid treatment program, and substance abuse treatment program. Physicians could select more than one practice setting. Third, physicians reported the number of locations in which they delivered buprenorphine treatment. Finally, information regarding whether the physician held the waiver to treat up to 30 patients (=0) or up to 100 patients (=1) was extracted from the May 2014 CSA database.

Demographic characteristics including gender (1=female, 0=male), age in years, and race/ethnicity (using a set of dummy variables representing Asian, African American/black, Hispanic, or Multiracial/Other with white as the reference category) were measured. Physicians were asked an open-ended question about their medical specialty, which were then coded into three mutually exclusive groups: physicians who indicated an addiction specialty (i.e., addiction medicine or addiction psychiatry), physicians who reported psychiatry as their specialty with no mention of addiction, and all others. To control for potential changes in attitudes across the three calendar years of data collection, year was included as a set of dummy variables to demarcate physicians who participated in 2014 (reference category), 2015, or 2016. Three surveys received in January 2017 were included in 2016 group.

Data Management and Analysis

Study data were managed REDCap (Research Electronic Data Capture), which is a secure, web-based application (Harris et al. 2009). Our version of REDCap is hosted by the University of Kentucky. Stata 13.1 was utilized for all analyses (StataCorp, College Station, TX). Descriptive statistics were calculated for the survey measures. For the new ACA attitudinal measures, we conducted a principal components factor analysis with orthogonal varimax rotation to guide the selection of items for the multi-item scale.

Before estimating the multi-level mixed effects regression model of perceived impacts of the ACA, we used multiple imputation by chained equations by implementing the “mi impute chained” command (Royston 2005; Royston 2005; Royston 2004) to address missing data on the independent variables. If we had not used a multiple imputation strategy, we would have incurred the known biases that are associated with listwise deletion (Allison 2002), even though rates of missing data for the independent variables were low (ranging from 0.8% of cases missing for gender to 2.6% missing for acceptance of Medicaid). Because this analysis is cross-sectional, we only imputed values for the independent variables, per the recommendations of Allison (2009). Physicians with missing data on the dependent variable of perceived ACA impacts were dropped from the dataset ($n=80$, 6.8%), leaving a sample size of 1,094 buprenorphine prescribers. When implementing the “mi impute chained” command, we included all of the physician-level independent variables described above to generate 30 datasets. This number of imputed datasets is consistent with recommendations that the number of imputed datasets should be larger than the percentage of respondents with missing data (White, Royston & Wood 2011). We then used the “mi estimate” command in combination with “mixed” to estimate a model of perceived ACA impact that pooled the regression results from the 30 imputed datasets while also accounting for the nesting of physicians within states and allowed us to include four state-level variables. To test the stability of our results, we also repeated the imputation procedures during which the dependent variable was also imputed (not shown), allowing for the full sample ($n=1,174$) to be included. There were no substantive changes to the findings regarding directions of association or the significance of specific variables (results available by request).

Results

The eight ACA items are presented in Table 1. The means for the items ranged from 2.55 to 3.54. Given that a score of 3 represented “neither agree nor disagree,” for most items physicians indicated ambivalence or modest disagreement with these specific impacts of the ACA. The factor analysis yielded a two-factor solution, as indicated by two eigenvalues that were larger than 1.0 (also Table 1). The first factor of six items represented positive outcomes of the ACA (eigenvalue = 3.75), while the second factor included two negative consequences of the ACA (eigenvalue = 1.20). Cronbach’s alpha was calculated for the items in each factor. Factor 1 had acceptable reliability ($\alpha = .87$), but Factor 2 did not ($\alpha = .27$). Therefore, the ACA scale used in the multi-level model included only the items associated with Factor 1, which had a mean of 2.75 ($SD = 0.69$). Other characteristics of current buprenorphine prescribers in the sample appear in Table 2.

The multi-level mixed effects regression model is presented in Table 3. Of the state-level characteristics, only the ACA implementation typology was associated with the ACA scale. Compared to physicians working in ACA-resistant states, physicians in ACA-supportive states reported significantly more positive attitudes regarding the impact of the ACA on buprenorphine treatment. The comparison between physicians in ACA-hybrid states and ACA-resistant states was not statistically significant. The proportion of state residents covered by Medicaid and political ideology was not associated with attitudes toward the ACA. There were no significant differences by region, although the difference between physicians in Southern states, relative to physicians in Northeastern states approached significance ($p=.090$).

Of the buprenorphine practice measures, two variables were significantly associated with the ACA scale. First, physicians who accepted Medicaid as payment for office visits had more positive attitudes toward the ACA than physicians who did not accept Medicaid. Acceptance of private insurance was not associated with perceived impacts of the ACA. Second, physicians who delivered buprenorphine in Veterans Administration medical centers (VAMCs) perceived the ACA as more positive than physicians working in non-VAMC settings. The five other practice settings and the number of buprenorphine treatment locations were not associated with the ACA scale. Physicians holding the 100-patient waiver trended toward lower ratings on the ACA scale compared to physicians with the 30-patient waiver, but this difference did not achieve statistical significance ($p=.058$).

Two additional physician characteristics were associated with the ACA scale. Age was positively correlated with the ACA scale, indicating that older physicians had more positive attitudes regarding the impacts of the ACA. One of the comparisons by race was significant. Physicians who identified as Asian had significantly more positive attitudes toward the impact of the ACA, relative to white physicians. Gender, medical specialty, and year of study participation were not associated with the ACA scale.

Discussion

This study represents one of the first attempts to measure the perceived impact of the Affordable Care Act among physicians who prescribe buprenorphine for opioid use disorder. This large national sample of physicians generally expressed ambivalence regarding the impacts of the ACA on buprenorphine treatment. However, physicians practicing in states that had expanded Medicaid and adopted state-based health insurance exchanges reported more favorable impacts of ACA relative to physicians practicing in states that had declined to implement these two elements of ACA.

Physicians' ambivalence about the impact of the ACA on buprenorphine treatment suggests that some caution is warranted when considering earlier commentaries about the transformative power of the ACA for people with substance use disorders. This sample of physicians did not, on average, endorse that the ACA had improved buprenorphine treatment access; instead the mean for this item represented a lack of change. In part, this finding may point to how the complexities of treatment access extend beyond the patient's ability to pay for care. Surveys of individuals with SUD report that the vast majority of these individuals

do not perceive a need for or a desire for treatment (Edlund, Booth & Feldman 2009; Hedden & Gfroerer 2011). Lack of insurance may be a less salient barrier. Insurance coverage is only associated with the receipt of treatment among the subset of individuals who perceive a need for treatment; in the absence of perceived treatment need, insurance is not associated with the odds of receiving treatment (Ali, Teich & Mutter 2015). It is also important to note that insurance plans vary in terms of their out-of-pocket costs for patients, such deductibles and co-insurance, and research has not thoroughly considered how these features may impact treatment utilization. Although the ACA may reduce some of the cost barriers by expanding insurance coverage and by including SUD treatment as an essential benefit, it is perhaps less likely to have impacts on perceived need for treatment. The ambivalence expressed by our sample of physicians with regard to treatment access under ACA actually aligns with studies that have not found increased rates of SUD treatment as a result of ACA (Creedon & Cook 2016; Saloner et al. 2016).

Although physicians in the sample generally did not perceive large positive impacts of the ACA on buprenorphine treatment, a notable finding was that perceived impacts were significant greater among physicians working in ACA-supportive states relative to ACA-resistant states. In part, this difference may reflect the additional requirements that were placed on states that elected to establish state-based health insurance exchanges. Specifically, these states were required to develop and implement plans for marketing and outreach to consumers (Krinn, Karaca-Mandic & Blewett 2015), which likely made ACA implementation more visible within those states. Furthermore, a three-state comparison found a significantly greater increase in health insurance enrollment in the ACA-supportive state (i.e., Kentucky) relative to the ACA-resistant state (i.e., Texas), but no difference between the ACA-hybrid state (i.e., Arkansas) and the ACA-resistant state (Sommers et al. 2015). The differential achievement of expanded insurance coverage in ACA-supportive states may help to explain the perceived difference in ACA impacts that we found in our survey of buprenorphine prescribers.

Some elements of the ACA may have limited relevance to many of the physicians who deliver buprenorphine treatment. For example, only about half of the sample accepts Medicaid for payment of buprenorphine-related office visits, which means that the Medicaid expansion is largely irrelevant for about half of providers. However, it is important to note that those who do accept Medicaid had more positive attitudes about the impacts of the ACA. Nearly half of the sample deliver buprenorphine treatment in individual medical practice, which may help to contextualize why the average physician disagreed with impacts such as the integration of buprenorphine treatment in patient-centered medical homes or accountable care organizations. As noted by Mechanic and Olfson (2016), patient-centered medical homes tend to be most successful in large health systems. Because many of our respondents are not delivering buprenorphine treatment in larger systems of care, they may be less aware of impacts with regard to patient-centered medical homes. However, this perception may indeed reflect the reality of the slow pace of integration. Similarly, accountable care organizations are, by definition, groups of providers (Colla et al. 2014), so physicians in individual practice are less likely to be impacted by them. Recent evaluations have shown that many affordable care organizations have not achieved significant integration of behavioral health services, such as the co-location of behavioral health and primary care

services or inclusion of behavioral health expertise within multidisciplinary teams (Lewis et al. 2014). Such data help to contextualize why the average buprenorphine prescriber disagreed that the ACA had impacted integration in these types of settings.

The finding about greater perceived impact of the ACA among physicians practicing within VA medical centers (VAMCs) was somewhat surprising. It is possible that, as federal employees, VAMC physicians have a tendency toward being somewhat more supportive of federal legislation and initiatives. It would also seem that the ACA would have little impact on the VA system of care. However, it was anticipated that the ACA would encourage veterans who had not previously sought coverage through the VA to do so because of the individual mandate (Panangala & Jansen 2014). Initial evaluations indicate that VA enrollment significantly increased under ACA (Silva et al. 2016), which may partly explain why VAMC physicians perceived greater ACA impacts than physicians practicing in other settings.

Limitations

There are notable study limitations that should be mentioned. First, the data were collected from a cross-sectional sample, precluding causal inferences, over a substantial period of time. Although we did not find differences in ACA impact by year of participation, it remains a limitation that we were unable to send out all of our surveys at the same time. The screening process to identify eligible prescribers took considerably longer than we anticipated. Our study team is in the midst of collecting 12-month and 24-month follow-up data, which will allow us to test whether individual physicians' attitudes toward the ACA change over time. It will be important to examine whether attitudes change more among physicians in ACA-supportive states, as might be reasonably hypothesized given our cross-sectional results.

Second, the measure of perceived ACA impact was generated for this study because there was no existing scale in the literature. Although the items were constructed based on pilot data that we gathered through qualitative interviews, it is possible that some impacts of the ACA may not have been addressed by our measure. Furthermore, additional variables may be associated with perceptions of the ACA's impacts.

Third, the low response rate represents a limitation of the study. Surveys of physicians, particularly those that are national in scope, often struggle with achieving a high response rate. We cannot determine whether respondents differed from non-respondents; such an analysis will be possible after the 12-month follow-up survey is completed when we can compare baseline characteristics on the likelihood of completing the 12-month survey. It is unknown if fielding the survey via a web-based platform would have achieved a greater response rate. When we designed the study, there was evidence that online surveys among physicians had worse response rates than those conducted via mail (Akl et al. 2005; McMahon et al. 2003; VanGeest, Johnson & Welch 2007). A limitation of mail-based surveys is that office staff within the practice may intercept the mailing and choose to not give it to the physician. The extent to which non-response in our study was influenced by these behaviors is unknown.

A larger financial incentive may have encouraged a higher response rate. We chose the \$100 incentive because it was the maximum that our institution would allow us to pay without obtaining a Social Security number; asking physicians to provide their Social Security numbers would have placed them at some risk of identity theft, which in our team's view was an unnecessary risk. A previous survey of buprenorphine-waivered physicians in the Northeast that achieved a higher response rate may have benefited from enclosing remuneration for participation within the survey mailing itself due to institutional regulations.

Although changes in the design may have yielded greater response rates, it is important to note that research has shown that low response rates may not be as problematic as is often assumed. Studies have shown how differences in response rates have little impact on point estimates (Davern et al. 2010) or the substantive relationships between variables (Mealing et al. 2010). Despite the long tradition of considering higher response rates as indicative of less bias, a meta-analysis by Groves and Peytcheva (2008) concluded that "the nonresponse rate of a survey, by itself, is a poor predictor of the absolute relative response bias" (p. 174).

Conclusions

The Affordable Care Act has reduced the number of uninsured Americans, but our study suggests that its impacts on the buprenorphine treatment system have not been extensive. In light of the 2016 election results, the health care landscape may shift again as there have been calls for repealing the ACA and replacing it with a different set of reforms. This shifting landscape suggests the need for ongoing research regarding how federal health care policy affects not only the delivery of buprenorphine treatment but also other types of SUD treatment.

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Table 1

Descriptive statistics and factor analysis for items on perceived impact of the Affordable Care Act on buprenorphine treatment

	Mean (SD)	Factor 1 Loading	Factor 2 Loading
The ACA has increased access to buprenorphine treatment in my state.*	3.03 (1.02)	.72	-.36
The ACA has encouraged the integration of buprenorphine treatment into patient-centered medical homes in my state.*	2.76 (0.90)	.83	-.16
The ACA has ensured parity in reimbursement for buprenorphine treatment relative to medical care for other conditions.*	2.72 (0.92)	.74	-.20
The impact of the ACA on buprenorphine treatment access is limited because many physicians in my state do not accept Medicaid for payment.	3.54 (1.00)	.04	.63
The ACA has encouraged more physicians to obtain the X-license so they can prescribe buprenorphine.*	2.55 (0.89)	.77	.17
The ACA has supported the integration of buprenorphine treatment within accountable care organizations (ACOs).*	2.75 (0.77)	.82	.11
The ACA has reduced access to buprenorphine treatment in my state.	2.67 (0.85)	-.12	.81
The ACA has improved the quality of buprenorphine treatment in my state.*	2.71 (.87)	.79	-.14

Notes. Responses ranged from 1=strongly disagree to 5=strongly agree. Items with the asterisk symbol represent the six items included in the final scale.

Table 2

Characteristics of current buprenorphine prescribers

	Mean (SD) or % (N)	Available N
Affordable Care Act scale	2.75 (0.70)	1,094
Physician accepts Medicaid for buprenorphine office visits	52.0% (594)	1,143
Physician accepts private insurance for buprenorphine office visits	72.0% (824)	1,144
Delivers buprenorphine in individual medical practice	50.8% (587)	1,155
Delivers buprenorphine in group medical practice	35.2% (406)	1,155
Delivers buprenorphine in Veterans Administration medical center (VAMC)	4.6% (53)	1,155
Delivers buprenorphine in hospital (non-VAMC)	13.2% (152)	1,155
Delivers buprenorphine in opioid treatment program (OTP)	6.2% (71)	1,155
Delivers buprenorphine in substance use disorder program	14.0% (161)	1,155
Number of locations where physician delivers buprenorphine treatment		
Physician is waived to treat up to 100 patients	57.8% (678)	1,174
Physician is female	22.9% (267)	1,165
Age in years	55.5 (11.4)	1,160
Race/ethnicity		1,148
White	76.5% (878)	
Asian	12.5% (144)	
African American/Black	4.7% (54)	
Hispanic	4.4% (50)	
Multiracial/Other	1.9% (22)	
Medical specialty		1,149
Addiction (i.e., addiction medicine, addiction psychiatry)	21.6% (248)	
Psychiatry (with no mention of addiction)	27.2% (312)	
Non-addiction/non-psychiatry	51.3% (589)	
Year of study participation		1,174
2014	20.5% (241)	
2015	54.3% (637)	
2016	25.2% (296)	

* Notes. Some percentages may sum to greater than 100% because of rounding. The 2016 group of respondents includes 3 surveys received in January 2017.

Table 3

Multi-level mixed effects regression model of perceived impacts of the Affordable Care Act on buprenorphine treatment

	Unstandardized Coefficient	95% Confidence Interval
<i>State-Level Variables</i>		
Typology of ACA implementation		
ACA-resistant states	Reference	
ACA-hybrid states	.045	-.112-.202
ACA-supportive states	.300 **	.079-.520
Region		
Northeast	Reference	
Midwest	-.078	-.250-.094
South	-.115	-.249-.018
West	-.036	-.177-.106
Percentage of state residents covered by Medicaid (grand mean-centered)	-.009	-.024-.006
Political control of state government		
Democratic control of legislature and governorship	Reference	
Split control	.001	-.177-.178
Republican control of legislature and governorship	.019	-.187-.226
<i>Physician-Level Variables</i>		
Accepts Medicaid for buprenorphine office visits (vs. does not accept)	.104 *	.006-.202
Accepts private insurance for buprenorphine office visits (vs. does not accept)	-.011	-.117-.095
Delivers buprenorphine in individual medical practice (vs. does not)	-.012	-.136-.113
Delivers buprenorphine in group medical practice (vs. does not)	.048	-.078-.174
Delivers buprenorphine in Veterans Administration medical center (VAMC; vs. does not)	.401 ***	.181-.622
Delivers buprenorphine in hospital (non-VAMC; vs. does not)	-.075	-.203-.053
Delivers buprenorphine in opioid treatment program (OTP; vs. does not)	.116	-.066-.300
Delivers buprenorphine in substance use disorder program (vs. does not)	-.062	-.194-.071
Number of locations where physician delivers buprenorphine treatment (grand mean-centered)	-.031	-.077-.016
Waivered to treat up to 100 patients (vs. 30 patients)	-.081	-.164-.003
Female (vs. male)	.055	-.045-.155
Age in years (grand mean-centered)	.004 *	.0002-.008
Race/ethnicity		
White	Reference	
Asian	.158 *	.034-.283
African American/Black	.191	-.003-.384
Hispanic	-.043	-.242-.155
Multiracial/Other	-.083	-.396-.230
Medical specialty		
Addiction (i.e., addiction medicine, addiction psychiatry)	.014	-.097-.125

	Unstandardized Coefficient	95% Confidence Interval
Psychiatry (with no mention of addiction)	-.014	-.118-.090
Non-addiction/non-psychiatry	Reference	
Year of study participation		
2014	Reference	
2015	.059	-.052-.171
2016	.004	-.131-.139
<i>Constant</i> (intercept)	2.592	2.316-2.869
<i>Random Effects Parameters</i>		
sd (constant)	.052	.005-.501
sd (residual)	.662	.633-.692

Notes. Results from 30 imputed data sets with 1,094 physicians per dataset. The model accounts for the clustering of physicians within states.

*
 $p < .05$,

**
 $p < .01$,

 $p < .001$ (two-tailed tests).