ABSTRACT Through the expansion of Medicaid eligibility and increases in core federal grant funding, the Affordable Care Act (ACA) sought to increase the capacity of community health centers to provide primary care to low-income populations. We examined the effects of the ACA Medicaid expansion and changes in federal grant levels on the centers’ numbers of patients, percentages of patients by type of insurance, and numbers of visits from 2012 to 2015. In the period after expansion (2014–15), health centers in expansion states had a 5 percent higher total patient volume, larger shares of Medicaid patients, smaller shares of uninsured patients, and increases in overall visits and mental health visits, compared to centers in nonexpansion states. Increases in federal grant funding levels were associated with increases in numbers of patients and of overall, medical, and preventive service visits. If federal grant levels are not sustained after 2017, there could be marked reductions in health center capacity in both expansion and nonexpansion states.

As of October 2016, thirty-one states and the District of Columbia had expanded Medicaid eligibility to nonelderly adults with incomes up to 138 percent of the federal poverty level under a provision of the Affordable Care Act (ACA). Evidence is mounting that this provision increased the number of Medicaid beneficiaries and lowered the uninsurance rate in states that expanded Medicaid. Other provisions of the law, such as the one that created health insurance Marketplaces, increased insurance coverage in these and other states as well. However, increased coverage may be of limited benefit if there are not enough places where patients can obtain care.

Federally funded community health centers are nonprofit organizations that provide comprehensive primary care to patients in medically underserved areas, and the majority of the centers’ patients are on Medicaid or uninsured. In 2015, 1,375 such centers were in operation, with nearly 10,000 service delivery sites collectively—covering every US state and territory. Between 2013 and 2015, the number of patients served in the centers rose from 21.3 million to 24.3 million, and the share of Medicaid patients served increased from 40 percent to 48 percent, while the share of uninsured patients fell from 35 percent to 24 percent.

Although Medicaid is the largest source of funding for the centers, community health center grants, authorized under section 330 of the Public Health Service Act, provide core support to the centers for infrastructure and cover the costs of care for the uninsured and unreimbursed services for the insured. The ACA augmented health center funding by mandating that $11 billion in additional federal funds be provided over a five-year period, starting with $1 billion in fiscal year 2011 and increasing to $3.6 billion in fiscal year 2015. The Medicare Access and
CHIP Reauthorization Act of 2015 extended this funding by adding $3.6 billion in fiscal year 2016 and $3.7 billion in fiscal year 2017.6

As safety-net providers, community health centers are important for ensuring adequate and timely access to primary care for low-income populations, especially the newly insured. Under section 330, the centers must serve all patients regardless of their ability to pay. However, the role of the safety net after health insurance expansions has been questioned. For example, as more patients gain insurance, they might drift away from safety-net facilities to other private providers or seek care for conditions treatable by primary care in other settings.7,8

Nonetheless, recent research has indicated that community health centers are responsive during periods of insurance expansion. After health care reform in Massachusetts, the number of patients receiving care at centers in the state increased by 31 percent from 2005 to 2009, while the share of uninsured patients at the centers fell by 44 percent.8 Analyses of Oregon’s Medicaid expansion have demonstrated that the use of preventive services and primary care at community health centers increased significantly, especially among the newly insured.9,10

Other research in four Medicaid expansion states found that in 2014, Medicaid patients’ visits to health centers increased by 36 percent, while uninsured patients’ visits fell by 40 percent, compared to centers in five nonexpansion states.11 Use of health center preventive services also increased in expansion states studied but was unchanged in nonexpansion states.12 Moreover, a recent analysis found that the ACA Medicaid expansion increased the share of health center patients on Medicaid, while lowering the share of uninsured patients.13

We used data about all federally funded health centers in the fifty states and the District of Columbia to examine the impact of Medicaid expansions and of the amounts of federal grants under the ACA for the period 2012–15 on the number of community health center patients and their use of services. We provide information about the effect of Medicaid expansions and grant funding on health centers’ capacity and the care they provide to low-income patients.

**Study Data And Methods**

**DATA** Our primary data source was the Uniform Data System for the period 2012–15 (calendar years).14 The data in this system are collected by the Bureau of Primary Health Care, Health Resources and Services Administration (HRSA). Each year community health centers that receive federal grants under section 330 report organi-

**zation-level information, including their operations, numbers of medical visits and patients, diagnostic categories of visits, and other characteristics. Most health centers operate multiple sites, and the data aggregate information from each site administered by a health center grante.

Our secondary data source was the Area Health Resources Files maintained by HRSA. The files contain various types of county-level information on health resources and socioeconomic characteristics. We used addresses of all health centers’ headquarters reported in the Uniform Data System to identify corresponding Federal Information Processing Standard county codes, which allowed us to merge the data from our two sources.

**ANALYSIS** We examined two sets of health center outcomes: patient volume and type of insurance (Medicaid, no insurance, private insurance, or other public insurance), and visits overall and visits by service categories (medical, mental health, preventive, or dental).

We employed a difference-in-differences approach to estimate the effects of the state-level Medicaid expansions. This approach compared changes in outcomes for centers in expansion states before and after expansion to the changes in nonexpansion states over the same period. Because full implementation of the Medicaid expansion began January 1, 2014, we defined the pre-expansion period as 2012 and 2013 and the post-expansion period as 2014 and 2015.

The treatment group was health centers in the nineteen states that expanded Medicaid on January 1, 2014. We excluded health centers in five states (California, Connecticut, Minnesota, New Jersey, and Washington) and the District of Columbia, all of which expanded Medicaid before January 2014. We also excluded centers in five states (Arkansas, Indiana, Michigan, New Hampshire, and Pennsylvania) that expanded Medicaid later in 2014 or in 2015. The comparison group was centers in the other twenty-one states that did not expand Medicaid as of January 2014. Demographic characteristics of patient populations and other characteristics of health centers before the expansion were similar in the treatment and control groups (online Appendix Exhibit A1).15 This allowed us to control for any state-specific, time-invariant unobserved factors and to disentangle the effect of Medicaid expansion from the effect of preexisting differences between the expansion and nonexpansion states.

We also excluded community health centers that began or terminated operations during the study period because they might differ from most other centers, and by virtue of their entry or
Community health center grants cover the costs of care for the uninsured and unreimbursed services for the insured.

exit, their patient and visit volumes could only grow or shrink. After the exclusion, our study sample included a panel balancing 805 federally funded health centers throughout the period 2012–15, which gave us 3,220 center-year observations.16

We first examined unadjusted trends in health center patient volume and type of insurance, visits, and amounts of federal grants in Medicaid expansion and nonexpansion states between the pre-expansion and post-expansion periods. We then constructed multivariate linear regression models to examine the change in each outcome among expansion states compared to the change among nonexpansion states. The difference-in-differences indicators of interest were the interaction terms of being in an expansion state and the post-expansion period.

All regression models controlled for the following center-level indicators: amounts of grant funding, rural versus urban location, characteristics of the patient population (whether the patient was served in English, sex, age, race/ethnicity, and income), and county-level factors (population profiles and availability of health resources).

The models controlled for center amounts of grant funding and patient population characteristics in different ways. The models for patient volume and type of insurance controlled for the grant per center in nominal dollars (that is, not adjusted for inflation) and the percentages of center patients by the characteristics listed above. The models for type of insurance were weighted by the number of patients at each center, to account for the effect of center size. The patient visit models controlled for grant per center’s average number of patients in 2012 and the number of center patients in each year by age and other factors. To account for the effect of the change in patient volume on visit volume, in the visit models we measured health center grants using the grant amount per total number of patients in 2012, which was calculated as the grant amount to a center in each year divided by the number of total patients of that center in 2012.

We adjusted for state fixed effects, and we clustered standard errors at the state-year level to control for other unmeasured state-specific factors. We also included year dummy variables to adjust for national trends over time.

All analyses were performed using Stata, version 14.

LIMITATIONS This analysis had several limitations. First, the data were observational instead of experimental in nature. We used a difference-in-differences approach and fixed effects to increase the precision of our estimates of health center outcomes after Medicaid expansion. This approach provided us with greater confidence in our ability to determine that Medicaid expansions and grant funding increases led to stronger health center capacity.

Second, while we analyzed changes in numbers of visits by service category, we could not describe the effect of insurance source on changes in the volume of visits by service. Adults with household incomes of 100–138 percent of poverty in nonexpansion states were eligible for subsidized coverage through the Marketplaces. As a result, a center in a nonexpansion state might have a higher rate of private insurance coverage for its adult patients in that income range, compared to a center in an expansion state. Thus, we could not determine the changes in numbers of visits and visits by service category that were attributable to changes in type of insurance.

Study Results

TRENDS IN EXPANSION AND NONEXPANSION STATES Both before and after Medicaid expansion, community health centers in nonexpansion states had a lower percentage of Medicaid patients and a higher share of uninsured patients, compared to centers in expansion states (Exhibit 1). In centers in expansion states, the percentages of Medicaid patients surged from about 39 percent in 2013 to almost 48 percent in 2014 and then rose to more than 49 percent in 2015, while the uninsured share fell from more than 30 percent in 2013 to about 21 percent in 2014 and about 18 percent in 2015. In comparison, centers in nonexpansion states experienced a small increase in the share of Medicaid patients and a decrease in the percentage of uninsured patients.

The numbers of patients in health centers in both expansion and nonexpansion states increased during the post-expansion period
However, the increase was slightly larger in expansion states than in nonexpansion states. Notably, there were modest increases in the share of patients with private insurance in both groups of states, but the increase was higher in nonexpansion states than in expansion states.

Compared to centers in nonexpansion states, (Exhibit 2).
centers in expansion states had higher numbers of both patients and visits (Exhibit 2). But centers in both groups experienced growth in the numbers of medical, mental health, preventive, and dental visits in the post-expansion period. The amounts of federal grants rose in both groups of states, although the increase was slightly higher in nonexpansion states than in expansion states.

### Effects of Expansion and Grant Amounts

The average numbers of patients served annually in health centers during the post-expansion period grew by almost 1,000 more per center in expansion states than in nonexpansion states, after the factors listed in the Notes to Exhibit 3 were controlled for. For full results of the models, see Appendix Exhibit A2. Every additional million dollars in federal grants was associated with about 8,000 more patients per center.

There was an 8-percentage-point increase in the share of Medicaid patients in the post-expansion period among centers in expansion states, compared to the change in that share at centers in nonexpansion states (Exhibit 3). However, changes in amounts of grants were not associated with changes in patient type of insurance, which indicates that increases in grants increased the numbers of patients regardless of their type of insurance.

After we controlled for the number of patients in each health center, we found a significant association between a center’s being in an expansion state and average increases of about 1,500 (difference-in-differences estimates, 1.51) visits overall and about 1,000 (difference-in-differences estimates, 0.88) mental health visits in the post-expansion period, compared to changes for centers in nonexpansion states (Exhibit 4). For full results of the models, see Appendix Exhibit A3.15 There were no significant differences in medical, preventive, or dental visits associated with expansion status, although the signs of the coefficients for preventive and dental visits suggest that the status had positive effects. Increases in the amount of federal grants per total patients in each center in 2012 were significantly associated with increases in visits overall and in medical and preventive service visits.

### Discussion

These analyses indicate that both Medicaid expansions and increases in federal community health center grant funding contribute to growth in the capacity of health centers to serve low-income patients. Medicaid expansion significantly increased the number of patients at health centers by an average of almost 1,000 patients per center in expansion states, compared to nonexpansion states. This is roughly equivalent to a 5 percent increase in patient volume. In expansion states, the share of Medicaid patients rose...
Medicaid expansion states

<table>
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<th>Medicaid expansion states</th>
<th>Annual visits (1,000s)</th>
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<th>Mental health visits</th>
<th>Preventive visits</th>
<th>Dental visits</th>
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<td>13.54***</td>
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Federal grants per total number of patients in 2012 (thousands of dollars)

|                          | 2.22**               | 1.23***        | 0.31                | 1.1***           | −0.44        |

Adjusted R²

|                          | 0.89                 | 0.86           | 0.49                | 0.88             | 0.59         |

Source: Authors’ analysis of data from the Uniform Data System (see Note 14 in text). Notes: The exhibit shows the results of the regression analyses. Each column indicates a multivariate ordinary least squares regression model for which the coefficient is displayed for five dependent variables: number of total visits, medical visits, mental health visits, preventive service visits, and dental health visits. For example, on average, each additional thousand dollars of federal grants per total number of patients in 2012 was significantly associated with increases in 2,220 annual visits overall. The analysis used a balanced panel (explained in the Notes to Exhibit 1 and Note 16 in text). The analysis excluded ten states and the District of Columbia, as explained in the Notes to Exhibit 1. All models were adjusted for state and year fixed effects and controlled for the factors listed in the Notes to Exhibit 3. Standard errors were clustered at the state-year level. More details are provided in the text and Appendix Exhibit A3 (see Note 15 in text). *The difference-in-differences estimates indicate the differences from the pre-expansion period (2012–13) to the post-expansion period (2014–15) between states that did and did not expand eligibility for Medicaid. *p < 0.10 **p < 0.05 ***p < 0.01

by 8 percent, while the shares of uninsured or privately insured patients fell by 5 percent and 3 percent, respectively. Grant funding levels had a substantial effect on the centers’ total patient capacity but did not alter the shares of patient type of insurance. These findings are consistent with previous analyses of the impact of Medicaid expansion on health center patient volume and type of insurance, and with previous models of the changes in section 330 grant funding on health center capacity.11,12,17

In addition, centers in nonexpansion states experienced larger increases in the share of privately insured patients during the post-expansion period, compared to centers in expansion states. It is plausible that the decrease in uninsured patients in nonexpansion states is attributable to the gains in private coverage from the Marketplaces. In states that did not expand Medicaid, Marketplaces subsidize private coverage for people with family incomes of 100–138 percent of poverty, while in expansion states, people in that income range are eligible for Medicaid. After we controlled for the number of center patients, we found that Medicaid expansion was associated with increases in the numbers of visits overall and of mental health visits. Both the ACA and the Mental Health Parity and Addiction Equity Act of 2008 sought to increase access to mental health services, but high out-of-pocket expenses and deductibles have remained serious barriers to mental health care by people who are privately insured or uninsured.17 Medicaid and health centers provide particularly important support for accessing and using mental health services because Medicaid beneficiaries incur minimal out-of-pocket expenses for the services, and health centers have sought to bolster the integration of primary and mental health services.18,19 However, shortages of mental health care providers remain commonplace, particularly in rural areas, and these shortages can limit access to appropriate mental health care both at and outside of health centers.20

Although our study included two years of post-expansion data, it is likely that we did not witness the full impact of Medicaid expansions. State Medicaid enrollments continued to rise in 2016.21 Moreover, changes in health centers’ ability to increase capacity by hiring more staff, expanding existing sites, or opening new sites could lag behind states’ decisions to expand Medicaid. After a state decides to expand, Medicaid enrollment gradually increases, and health centers are reimbursed for serving patients in months after those services are provided. Thus, the revenue to fuel staffing or space increases is not available until months after state policy decisions are made and enrollment increases.

Although both Medicaid expansions and increased grant funding contribute to increased revenue at health centers, because of their non-profit status and the requirement that they serve patients regardless of their ability to pay, health centers must use other funds to increase capacity.22 Centers might delay expansions as they
build capital over several years to pay for structural increases, such as opening new sites. In contrast, grants provide annual levels of funding that can be used to fuel expansions for the coming year.

The Bureau of Primary Health Care has offered various types of grants to expand the number of community health center sites, improve the centers’ infrastructure and health information technology, and increase their capacity for services such as mental health and dental care. For example, a recent grant funding announcement was intended to increase access to oral health services and improve oral health outcomes for health center patients.23 Positive impacts of grant funding and Medicaid expansion could continue after 2015.

One previous study found that a ten-year investment made in health centers in the period 1996–2006 clearly translated into an increase in the types of services available to patients, and mental health services were particularly responsive to increases in federal grant dollars.24 Hence, it would be worth revisiting our study to evaluate the longer-term effects of expansion and funding when data from 2016 or 2017 become available. Another approach for future research might be to examine these issues using other types of data, such as electronic health record or survey data.

Policy Implications
Our study's results highlight two important policy implications that could affect the future capacity of community health centers. First, there may be further expansions or contractions of the Medicaid program in the future. At various times, federal policy makers have proposed canceling Medicaid expansions or converting Medicaid into a block grant for states, and states that have already expanded Medicaid eligibility have the option of reversing those decisions. The results of the 2016 election further increase the uncertainty about federal and state decisions on expanding Medicaid, given various statements during the campaign that a Republican priority would be to repeal and replace the ACA. Changes to Medicaid's eligibility requirements or to other aspects of the program would likely affect community health centers.

Second, both the ACA and the Medicare Access and CHIP Reauthorization Act bolstered federal grant funds to support core funding for community health centers, but the additional mandatory funding expires at the end of fiscal year 2017—creating a “funding cliff.” If health center funding drops because these provisions are not renewed or strengthened, there could be a sharp reduction in the number of patients served by the centers. In turn, this could mean that millions of low-income patients, whether or not they have insurance, would find it much harder to access primary and preventive care (including mental health care). This could have negative effects regardless of states’ Medicaid expansion status, but it could harm health centers in nonexpansion states in particular because they appear to be more reliant on increases in federal grants than on increases in Medicaid reimbursements for ongoing support.

Previous research has demonstrated that community health centers provide comprehensive primary care services that help reduce the need for future specialty care, emergency department visits, and hospitalizations—which has the effect of reducing medical expenditures overall.25,26 Timely action by federal and state governments could avoid the funding cliff and continue to provide access to low-income Americans who need health care at community health centers.


15 To access the Appendix, click on the Appendix link in the box to the right of the article online.

16 A balanced panel means that only health centers that have observations for all four years were included. Centers that began or terminated operations during the study period were not included.


