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DOI: 10.1111/1475-6773.12793
RESEARCH ARTICLE

Impact of Recent Medicaid Expansions on Office-Based Primary Care and Specialty Care among the Newly Eligible

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Objective. To quantify the effect of Medicaid expansions on office-based care among the newly eligible.

Data Source. 2008–2014 Medical Expenditure Panel Survey.

Study Design. The main sample is adults age 26–64 with incomes $\leq 138\%$ of poverty who were not eligible for Medicaid prior to the Affordable Care Act. For this population, difference-in-differences linear probability models compare utilization between expansion and nonexpansion states and between 2008–2013 and 2014.

Extraction Methods. Medicaid eligibility is simulated using data on family relationships, state of residence, and income.

Principal Findings. Relative to comparable adults in nonexpansion states, newly eligible adults in expansion states were 9.1 percentage points more likely to have any office-based primary care physician visit in 2014, a 21.4% increase from 2013 (p -value = .004); 6.9 percentage points more likely to have a specialist visit, a 25.2% increase from 2013 (p -value = .036); and 5.1 percentage points more likely to have a visit with a nurse practitioner, nurse, or physician assistant, a 34.5% increase from 2013 (p -value = .016).

Conclusions. State Medicaid expansions in 2014 were associated with greater likelihoods of visits with a variety of office-based providers. The estimated effects are larger among newly eligible compared with previous estimates on broader populations of low-income adults.

Key Words. Primary care, Medicaid, utilization of services

The Affordable Care Act (ACA) provided generous federal matching funds for states to expand their Medicaid programs to all nonelderly adults (ages 19–64) with income ≤ 138 percent of the federal poverty level (Assistant Secretary for Planning and Evaluation, 2016). By April of 2014, the first year of implementation, 26 states, and the District of Columbia had expanded their Medicaid programs (Henry J. Kaiser Family Foundation [KFF] 2016). By July of

2016, six additional states expanded their programs. As a result, nearly 15 million individuals have enrolled in Medicaid or the Children's Health Insurance Program between the beginning of open enrollment in October 2013 and March 2016, with higher rates of increased enrollment among expansion states (CMS, 2016).

A major objective of the ACA is to improve access to comprehensive primary and preventive services (Patient Protection and Affordable Care Act 2010; Department of Health and Human Services 2016). Expanding Medicaid eligibility provides a pathway for uninsured individuals to overcome financial barriers to accessing primary care and preventive services. Having a usual primary care physician is associated with greater likelihood of receiving preventive services (Bindman et al. 1996; Blewett et al. 2008) as well as lower incidence of emergency department use (Gill, Mainous, and Nserekro 2000), lower mortality, and lower health care costs (Council on Graduate Medical Education 2010). Nonelderly adults without insurance are significantly less likely than Medicaid-covered adults to have a usual source of care and are much more likely to delay or go without medical care due to cost (KFF 2013). Compared with insured adults, being uninsured is also associated with lower likelihood of having any visits with medical specialists or midlevel providers, specifically nurse practitioners or physician assistants (Ferrer 2007).

Previous research has investigated the effect of Medicaid expansion on the use of physician care among nonelderly adults who have household income below 138% of the federal poverty level, that is, those who would be eligible for Medicaid if all states expanded eligibility under the ACA. Sommers et al. (2015) studied data from the Gallup-Healthways Well-Being Index survey and found that Medicaid expansion was associated with an increase in the probability of reporting having a personal physician; a 1.4 percentage point increase in the first quarter of 2014 that increased to a 3.5 percentage point increase by the first quarter of 2015. Sommers et al. (2016) found that survey respondents in Kentucky and Arkansas, which expanded Medicaid in 2014, experienced a 12.1 percentage point increase in reporting having a personal physician in 2015 relative to Texas, which did not expand Medicaid. They found no effect of expansion on the likelihood respondents had any

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office visits in the past year, but they did find a 0.69 visit increase in the average number of office visits in the last year when comparing utilization from 2015 to 2013. Wherry and Miller (2016) found that National Health Interview Survey (NHIS) adults interviewed in the second half of 2014 were 6.6 percentage points more likely to have seen or talked to a general physician in the past year if they lived in an expansion state. They found no effect of expansion on whether low-income adults had seen or talked to a medical specialist.

The population included in these previous studies, however, has two limitations. First, the estimated effects have a complex interpretation. The population includes adults who would have been eligible for Medicaid even without the expansion, many of whom were enrolled in Medicaid before the expansion. These studies estimate the combined effects of Medicaid expansions on the newly eligible, the already enrolled, and so-called “welcome-mat” effects, in which Medicaid participation increases among those already eligible, but not enrolled (Sonier, Bouderaux, and Blewitt 2013). Although it is possible for Medicaid expansion to motivate changes in utilization among previously enrolled adults, the effects of Medicaid expansion are likely concentrated among adults who gained eligibility through the expansion. Thus, the effects of the expansion on those who gained eligibility are likely to be larger than the effects on all low-income adults in these studies. Second, the estimated effects for all ages are diluted by the presence of young adults. Specifically, these studies include adults under age 26, many of whom had access to their parents’ health insurance under the 2010 dependent coverage provision of the ACA (Employee Benefits Security Administration [EBSA] n.d.) or pregnancy-related Medicaid coverage at higher pre-ACA eligibility thresholds. Moreover, young adults use primary care services at significantly lower rates than older adults (Kirzinger, Cohen, and Gindi 2012; Kao-Ping, Schuster, and McWilliams 2013; National Center for Health Statistics 2015), which may mask changes in primary care use overall when the two groups are combined.

This paper focuses on the effect of Medicaid expansion on adults aged 26–64 who gained eligibility under the expansion in 2014. We use the detailed income, health insurance coverage, and demographic data available in the Medical Expenditure Panel Survey (MEPS) and Medicaid eligibility rules to identify consistently over time two low-income adult populations: (1) nondisabled adults who were eligible for Medicaid coverage without the ACA expansion and (2) those not in the first group with income below 138% of the federal poverty line. In the first subpopulation, we estimate potential “welcome-mat” effects, and in the second, we estimate expansion effects

comparing those in states that expanded Medicaid to those in nonexpansion states. We exploit state-level variation in Medicaid expansion using difference-in-differences methods to estimate changes in the probability of having any office-based visits to primary care physicians, specialists, and nonphysician providers. We also provide unique estimates of effects on visits to two types of nonphysician providers: (1) nurse practitioners, nurses, and physician assistants; and (2) other nonphysician providers.

METHODS

Medical Expenditure Panel Survey

Data are from the 2008–2014 Medical Expenditure Panel Survey (MEPS), a nationally representative survey conducted by the Agency for Healthcare Research and Quality (AHRQ). The MEPS collects detailed information on health care utilization and expenditures, health insurance, and health status, as well as a wide variety of social, demographic, and economic characteristics for the U.S. civilian noninstitutionalized population.

The analytic sample starts with U.S. citizens ages 26–64 in families with modified adjusted gross income (MAGI) $\leq 138\%$ of the federal poverty level (FPL). We exclude adults ages 19–25, as they may fall under the dependent coverage provision, which allows them to remain covered by their parents' health insurance plans if those plans offer dependent coverage (EBSA n.d.). We also exclude adults who were Medicare beneficiaries or had any Supplemental Security Income during the year, because they should be unaffected by the welcome-mat effect and have much more service use than other beneficiaries.

Expansion and Nonexpansion States

We define expansion states as those that implemented the ACA's Medicaid expansion by April 1, 2014. These are shown in Table S1. Using April as the date cutoff includes Michigan, which expanded its Medicaid program on April 1, 2014, but puts New Hampshire, which expanded Medicaid in August, among the nonexpansion states. Under the ACA, states could expand eligibility prior to 2014 ("early expansion states"). The early expansion states were California, Connecticut, Minnesota, New Jersey, Washington, and the District of Columbia (Sommers et al. 2013). Enrollment sharply increased in the early expansion states in 2014 (KFF 2017).

Omitting New Hampshire, Michigan, and the early ACA expansion states does not significantly alter our findings.

Pre-ACA Eligible and Newly Eligible Subpopulations

We study two subpopulations under 138% of FPL. The first is adults who would have been eligible for Medicaid under the 2010 eligibility rules (“pre-ACA eligible”). We use this sample to estimate “welcome-mat” effects by comparing those in 28 expansion states to those in 23 nonexpansion states between 2008–2013 and 2014. The same eligibility criteria were used in all years in the sample, regardless of the actual rules in place in the survey year to hold the population constant over time.

The second subpopulation is adults under 138% of FPL who were not pre-ACA eligible, which we label “newly eligible” regardless of whether their states expanded eligibility. State expansion status is then used to estimate the expansion effects. For this analysis, we compare 23 expansion states and 22 nonexpansion states. Table S2 shows the mean income thresholds by expansion status. We exclude states with income thresholds above 138% of FPL for both parents and childless adults in 2010 (Hawaii, Iowa, Massachusetts, Vermont, and Wisconsin) and the District of Columbia, because the income eligibility thresholds did not rise. Table 1 shows a further refinement to the “newly eligible” in the nonexpansion states: In 2014, income eligibility thresholds in nonexpansion states were their 2010 thresholds, plus a 5% disregard, and we drop the small population that became eligible in 2014 due to the application of the 5% disregard.

Table 1: Treatment and Comparison Groups

<i>Year</i>	<i>Expansion States</i>	<i>Nonexpansion States</i>
Newly eligible		
2008–2013	MAGI $\leq$ 138% FPL and not eligible under 2010 rules ($N = 4,973$)	MAGI $\leq$ 138% FPL and not eligible under 2014 rules ($N = 7,388$)
2014	MAGI $\leq$ 138% FPL and not eligible under 2010 rules ($N = 841$)	MAGI $\leq$ 138% FPL and not eligible under 2014 rules ($N = 1,266$)
Pre-ACA eligible		
2008–2013	Eligible under 2010 rules ($N = 4,516$)	Eligible under 2010 rules ($N = 1,812$)
2014	Eligible under 2010 rules ($N = 764$)	Eligible under 2010 rules ($N = 323$)

ACA, Affordable Care Act; FPL, federal poverty line; MAGI, modified adjusted gross income.

An eligibility simulation model is used to define both subpopulations (Hill et al. 2014; Davidoff et al. 2015). Specifically, detailed state-specific Medicaid eligibility rules are applied to information from the MEPS about family relationships, state of residence, and amounts and sources of income. For this paper, we used annual income and family structure as of the end of the calendar year. The eligibility pathways simulated include blind or disabled, family coverage for parents, and waiver programs for parents or childless adults. Table S1 summarizes state 2010 MAGI thresholds. For each adult, pre-ACA eligibility is based on that state's 2010 eligibility categories and income thresholds that states converted to the MAGI rules of the ACA. For example, a single mother with two children, with annual earnings of \$20,000 in 2011, and living in New York had MAGI about 108% of FPL and was classified as pre-ACA eligible, because the threshold for parents was 150% of FPL in that state in 2010 (Table S1). If she had the same characteristics but lived in South Carolina, she would be classified as newly eligible, because the threshold for parents was 67% of FPL, regardless of the fact the state had not expanded Medicaid.

Office-Based Visits

The outcomes are indicators of whether the individual had any visits to an office-based primary care physician, physician specialist, or nonphysician provider. MEPS respondents enumerate each office-based visit and report the physician specialty if the provider seen was a physician, and the type of medical person seen if not. Primary care physicians are general practitioners, family practitioners, internists, pediatricians, osteopaths, obstetricians, and gynecologists. Physicians in any other specialty are considered specialists. Nonphysician providers are separated into (1) midlevel providers, which for our study are comprised of nurses, nurse practitioners, and physician assistants, and (2) all other nonphysician providers, such as chiropractors, or physical and occupational therapists. For each of these types of visits, we also studied the total number of visits and, among those with at least one visit, the number of visits.

Statistical Methods

We perform a difference-in-differences analysis of the effect of the Medicaid expansion, comparing outcomes in expansion and nonexpansion states between 2008–2013 and 2014. We use eligibility rather than actual enrollment because enrollment is endogenous. All models include dummy variables for whether a respondent was observed in 2014, in an expansion state, and the

interaction of these terms, which captures the difference-in-differences effect of the Medicaid expansion. All estimates are obtained from linear probability models, which allow for direct interpretation of estimated coefficients as percentage point changes in the mean probability of having a visit. Consistent with the literature, we also report unadjusted difference-in-differences effects by regressing the outcome on indicators for 2014, expansion, and their interaction with no additional controls. All standard errors and statistical tests account for the complex survey design of MEPS.

Adjusted regression models control for gender, age, residence in a metropolitan statistical area (MSA), race/ethnicity, highest level of education, household composition, marital status, interview language, family income, activity of daily living limitations (ADLs), chronic condition count, perceived physical and mental health, whether the respondent self-reported their information, generalist and specialist physicians per capita computed at the county-level from the Area Health Resource File (Health Resources and Services Administration 2017), year fixed effects, and census division fixed effects. We also introduce additional controls to account for any effects due to a major effort begun in 2013 to improve the quality and completeness of utilization data collected in the MEPS (AHRQ 2016). In particular, MEPS respondents in the West South Central census division reported less increase in use, especially for nonminority sample members, compared with other areas. Because only one state in the West South Central census division, Arkansas, expanded Medicaid, this differential increase in reporting would tend to bias upward the estimated effect of the Medicaid expansion in difference-in-differences models. To account for person and geographic differences in the extent of the improvements in reporting, we include the full set of interactions between an indicator for 2013 or later, West South Central census division, highest level of education, and nonminority in all of our adjusted difference-in-differences regressions. This allows us to distinguish between the effects of the Medicaid expansions and survey reporting improvement effects.

Our estimates of the impact of Medicaid expansion are unbiased as long as underlying time trends in the probability of using office-based care are the same in both expansion and nonexpansion states. If different regions experience distinct changes in utilization over time, then our estimates of the impact of Medicaid expansion will be biased, particularly if anomalous regions are mostly comprised of expansion or nonexpansion states. We explore the robustness of the difference-in-differences common trend assumption using specification tests. We test the common trend assumption by omitting observations from 2014 and interacting the expansion indicator

with each of the year fixed effects. We then perform an *F*-test of the joint significance of these interactions to test whether trends in the outcomes differ by expansion status prior to 2014.

We also test our additional controls for the smaller improvements in utilization reporting that occurred in the West South Central census division using two specification tests. We omit observations from 2014 and treat 2013 as the postperiod in a placebo treatment test using our additional controls. Any placebo effects of expansion status in 2013, before implementation of Medicaid expansion, would suggest our controls are failing to fully account for any trend breaks beginning in 2013. Because this test does not allow us to verify whether we adequately control for geographic difference in survey improvements through 2014, we replicate our analysis on a falsification sample of respondents with employer-sponsored health insurance (ESI) for which we do not expect to observe any change in health care utilization associated with the Medicaid expansion. The sample consists of respondents who report 12 months of ESI or who report ESI coverage in all months in which they are observed in the survey. We drop from this sample any adults with incomes below 138% of FPL regardless of whether their state expanded or not. Adults with full-year ESI in this sample are not eligible for Medicaid under the expansion, and do not take-up Medicaid during the survey year, and are thus unlikely to change their medical care utilization due to implementation of the Medicaid expansion. Any observed effect of Medicaid expansion for adults with full-year ESI after controlling for person and geographic differences in survey improvement would challenge the validity of our additional controls to control for trend breaks through 2014.

RESULTS

Table 2 reports descriptive statistics for both the newly eligible and the pre-ACA eligible adults. Newly eligible adults in expansion states were more likely to be male, nonminority, have a bachelor's degree or higher level of education, and be unmarried relative to those in nonexpansion states. Newly eligible adults in expansion states also lived in households that were less likely to have children and had higher income on average. Measures of underlying demand for health, perceived physical and mental health did not differ significantly by expansion status for newly eligible adults. Having an activity of daily living limitation and the number of reported chronic conditions did not differ significantly by expansion status for newly eligible adults.

Figure 1 shows the unadjusted mean probability of having any office-based visit with a primary care or specialist physician, a midlevel provider, or a nonprimary care nonphysician provider by expansion status for newly eligible adults. For both primary care and specialist visits, the trend is relatively flat, with a widening in the post-2014 means in expansion states relative to nonexpansion states. In contrast, the unadjusted mean probability of having any office-based primary care or specialist physician visit among the pre-ACA eligible (shown in Figure S1) is flat across all years and very similar between expansion and nonexpansion states.

The probability of having an office-based visit with a midlevel provider, such as a nurse practitioner, nurse, or physician assistant among the newly eligible is relatively flat and very similar by expansion status from 2008 to 2012, with a small divergence by expansion status in 2013, and a larger divergence in 2014 (Figure 1). For other nonphysician providers, the mean visit probability increases for all states in 2013, but more pronounced for expansion states, and the gap persists through 2014. This pre-expansion rise in the probability of having any office-based other nonphysician visit is consistent with improved reporting of these types of events due to survey improvements beginning in 2013. We observe this same increase in the reporting of office-based other nonphysician visits in the pre-ACA eligible and the full-year ESI sample (shown in Figure S2), suggesting that this 2013 bump in reporting is driven by survey improvements. After controlling for nonuniform improvements, any increase in 2013 will be the same in both expansion and nonexpansion states and will be differenced out as part of the common trend in our difference-in-differences analysis.

Table 3 contains the unadjusted and adjusted difference-in-differences estimates of the Medicaid expansion for the newly eligible and the pre-ACA eligible (for detailed regression results, see Tables S3–S6). We observe an unadjusted 8.2 percentage point effect of the Medicaid expansion on the probability of having an office-based physician visit among the newly eligible. After controlling for individual and household characteristics, we find a 9.2 percentage point increase in the probability of having any office-based physician visit associated with the expansion. This translates into a 17.9% increase relative to the 51% mean probability of having any office-based physician visit in an expansion state in 2013 (p -value = .005). For primary care visits, we find a 9.1 percentage point effect, a 21.4% increase from 2013 (p -value = .004). For physician specialists visits, we find a 6.9 percentage point effect, a 25.2% increase from 2013 (p -value = .036). For nurse practitioners, nurses, and physician assistants provider visits, we find a 5.1 percentage point increase

Table 2: Unadjusted Means by Medicaid Expansion Eligibility Status, 2008–2014

	<i>Newly Eligible 2008–2014</i>		<i>Pre-ACA Eligible 2008–2014</i>	
	<i>Nonexpansion States</i>	<i>Expansion States</i>	<i>Nonexpansion States</i>	<i>Expansion States</i>
Any office-based physician visit	0.51	0.55**	0.61	0.60
Primary care	0.42	0.45**	0.50	0.51
Specialist	0.26	0.3***	0.33	0.30*
Any office-based nonphysician visit	0.25	0.31***	0.28	0.31
Midlevel provider	0.10	0.13**	0.12	0.11
Other	0.18	0.23***	0.20	0.24**
Female	0.54	0.49***	0.70	0.60***
Age 25–34	0.31	0.32	0.40	0.35**
Age 35–44	0.24	0.21**	0.31	0.30
Age 45–54	0.24	0.24	0.21	0.22
Age 55–64	0.21	0.23*	0.08	0.12***
Resides in an MSA	0.78	0.83	0.76	0.88***
Number household members aged 0–5	0.29	0.2***	0.52	0.50
Number household members aged 6–17	0.66	0.44***	1.23	1.11
Number household members aged 18–64	1.90	1.94	1.88	1.98**
Number household members aged 65+	0.12	0.14	0.08	0.10
White	0.57	0.62**	0.54	0.50
Hispanic	0.13	0.15	0.09	0.21***
Black	0.25	0.15***	0.31	0.19***
Asian	0.03	0.04***	0.02	0.06**
Other race	0.03	0.03	0.04	0.04
Married	0.39	0.33***	0.30	0.37***
Less than high school diploma	0.17	0.16	0.23	0.20*
High school diploma	0.40	0.38	0.44	0.39**
Some college	0.30	0.29	0.26	0.29*
Bachelor's degree	0.09	0.13***	0.05	0.08***
Masters degree or higher	0.02	0.04**	0.01	0.03***
MAGI <100% FPL	0.64	0.59***	0.98	0.86***
Interview language not english	0.06	0.07	0.04	0.10***
Any activity of daily living limitation	0.04	0.05	0.09	0.04***
Number of chronic conditions	1.20	1.23	1.36	1.12***
Perceived health is poor or fair	0.21	0.24***	0.29	0.21***
Perceived mental health is poor or fair	0.12	0.13**	0.15	0.12***
Respondent self-reported	0.42	0.43	0.37	0.41**

Continued

Table 2: *Continued*

	<i>Newly Eligible 2008–2014</i>		<i>Pre-ACA Eligible 2008–2014</i>	
	<i>Nonexpansion States</i>	<i>Expansion States</i>	<i>Nonexpansion States</i>	<i>Expansion States</i>
Primary care physicians per 1,000 county residents	0.71	0.83***	0.71	0.91***
Physician specialists per 1,000 county residents	1.34	1.57***	1.34	1.77***
Number of observations	8,654	5,814	2,135	5,280

Notes: Data are from 2008–2014 Medical Expenditure Panel Survey (MEPS). Descriptive statistics are for adults age 26 to 64 with modified adjusted gross income (MAGI) $\leq$ 138% of FPL. The pre-ACA eligible are adults who would have been eligible for Medicaid under the 2010 eligibility rules. Newly eligible are adults who were not pre-ACA eligible regardless of whether their states expanded eligibility. We test the difference in unadjusted means between expansion and nonexpansion states within each eligibility group.

*** $p < .01$, ** $p < .05$, * $p < .1$.

ACA, Affordable Care Act; FPL, federal poverty line; MAGI, modified adjusted gross income; MSA, metropolitan statistical area.

associated with Medicaid expansion, a 34.5% increase from 2013 (p -value = .016). The estimated effect for office-based other nonphysician visits is small and not statistically significant. The bottom panel of Table 3 contains the difference-in-differences estimates of the Medicaid expansion for the pre-ACA eligible. The estimated effects for both physician and nonphysician visits are small and imprecisely estimated. In addition, we used linear regression difference-in-differences models to estimate the impact of the Medicaid expansion on the number of visits, both unconditional and conditional on having any visits. All estimated marginal effects were small and imprecisely estimated (results not shown).

The first specification test considers violations of the common trend assumption that do not coincide with the policy implementation. We omit observations from 2014 and include interactions between all year fixed effects and expansion status. We report the F -statistics for the joint significance of the year-expansion interactions in the first column of Table 4. We fail to reject the null hypothesis that trends in the outcome did not vary by expansion status in the preperiod. The second specification test uses the same sample from 2008 to 2013 and estimates our difference-in-differences models with 2013 as the postperiod and 2008–2012 as the preperiod. This placebo test examines whether there are any changes in utilization associated with living in an expansion state in 2013 that are not associated with the Medicaid expansion. The second column of Table 4 contains the estimated effects for expansion states in 2013. We do not find any

Figure 1: Unadjusted Mean Probability of Having Any Office-Based Visit for Newly Eligible Adults Ages 26–64

Notes. Data are from 2008–2014 Medical Expenditure Panel Survey (MEPS). ACA, Affordable Care Act; FPL, federal poverty line; MAGI, modified adjusted gross income. 95% confidence intervals are adjusted for the MEPS complex survey design. Newly eligible are adults aged 26 to 64 with modified adjusted gross income (MAGI) $\leq 138\%$ of FPL who were not pre-ACA eligible regardless of whether their states expanded eligibility.

significant preimplementation effects of Medicaid expansion in our main sample for any outcome, but the direction of the effects is consistent with the inclusion of early expansions somewhat biasing the estimates in Table 3 toward zero.

Our third specification test replicates the difference-in-differences analysis using a sample of respondents who are full-year enrolled in ESI and are not eligible for Medicaid under expanded eligibility criteria. The full-year ESI in this sample are not eligible for Medicaid under the expansion and do not take-up Medicaid during the survey year. Thus, we should not observe any expansion effects for this group. Any significant expansion effects for the full-year ESI would suggest that respondents in expansion states experienced differential trends compared to respondents in nonexpansion states independent of the policy implementation. The third column of Table 4 contains the adjusted difference-in-differences estimates for the full-year ESI sample. All estimated

Table 3: Changes in Mean Probability of Having Any Office-Based Visit by Medicaid Expansion Eligibility Status and Provider Type, 2008–2014

	2013 Mean in Expansion States	Unadjusted Difference-in- Differences		Adjusted Difference- in-Differences	
		Estimate (SE)	p-Value	Estimate (SE)	p-Value
Newly eligible adults ages 26–64 (N = 14,468)					
Physician visits	0.514	0.082 (0.035)	.020	0.092 (0.033)	.005
Primary care	0.426	0.084 (0.033)	.012	0.091 (0.031)	.004
Specialist	0.275	0.065 (0.033)	.053	0.069 (0.033)	.036
Nonphysician visits	0.350	0.047 (0.029)	.110	0.034 (0.026)	.194
Midlevel provider	0.148	0.058 (0.022)	.009	0.051 (0.021)	.016
Other	0.263	0.031 (0.030)	.303	0.023 (0.029)	.429
Pre-ACA eligible adults ages 26- 64 (N = 7,415)					
Physician visits	0.605	0.001 (0.038)	.978	0.011 (0.037)	.760
Primary care	0.498	0.020 (0.040)	.617	0.030 (0.042)	.474
Specialist	0.339	0.010 (0.050)	.847	0.001 (0.043)	.974
Nonphysician visits	0.359	0.036 (0.041)	.382	0.024 (0.040)	.549
Midlevel provider	0.128	0.048 (0.037)	.195	0.036 (0.037)	.328
Other	0.280	0.029 (0.038)	.458	0.028 (0.039)	.466

Notes: Data are from 2008–2014 Medical Expenditure Panel Survey (MEPS). ACA, Affordable Care Act; FPL, federal poverty line; MAGI, modified adjusted gross income. Standard errors are adjusted for the MEPS complex survey design. The pre-expansion period is 2008–2013, and 2014 is the postexpansion period. The pre-ACA eligible are adults aged 26 to 64 with modified adjusted gross income (MAGI) $\leq$ 138% of FPL who would have been eligible for Medicaid under the 2010 eligibility rules. Newly eligible are adults aged 26–64 with MAGI $\leq$ 138% of FPL who were not pre-ACA eligible regardless of whether their states expanded eligibility.

coefficients are smaller than those in Table 3, close to zero, and statistically insignificant.

DISCUSSION

This study estimates the effects of expanding Medicaid eligibility among low-income adults aged 26–64 on the probability of using office-based primary and specialty care. We isolate the effect of expanded eligibility by comparing changes in probability of use in 2014 in states that expanded Medicaid eligibility with those that did not expand among adults who were not eligible for Medicaid before the ACA. We find that among newly eligible adults, gaining Medicaid eligibility is associated with a 21.4% increase in the probability of having any office-based physician primary care visit from 2013, and a 25.2% increase in the probability of having an office-based physician specialist visit from 2013. We additionally find that Medicaid expansion is associated with a

Table 4: Specification Tests: Changes in Mean Probability of Having Any Office-Based Visit by Provider Type, 2008–2014

<i>Sample</i>	<i>Newly Eligible Ages 26–64, 2014 Omitted</i>		<i>Newly Eligible Ages 26– 64, 2014 Omitted</i>		<i>Full-Year ESI Adults Ages 26–64</i>	
	<i>F-Statistic[†]</i>	<i>p-Value</i>	<i>Estimate (SE)</i>	<i>p-Value</i>	<i>Estimate (SE)</i>	<i>p-Value</i>
Physician visits	1.62	.156	0.039 (0.030)	.196	0.023 (0.016)	.145
Primary care	1.62	.155	0.050 (0.032)	.120	0.008 (0.016)	.627
Specialist	1.24	.291	–0.007 (0.029)	.823	0.009 (0.016)	.561
Nonphysician visits	0.57	.480	0.046 (0.034)	.179	–0.010 (0.021)	.618
Midlevel provider	0.21	.957	0.022 (0.023)	.346	–0.018 (0.015)	.230
Other	1.08	.374	0.035 (0.030)	.235	–0.011 (0.019)	.563
Additional controls						
Person and geographic controls	Yes		Yes		Yes	
Year*Expansion interactions	Yes		No		No	
Number of observations	12,351		12,351		53,812	

Notes: Data are from 2008–2014 Medical Expenditure Panel Survey (MEPS). The pre-expansion period is 2008–2013, and 2014 is the postexpansion period. Full-year ESI has employer-sponsored insurance for all observed months in MEPS and is not otherwise eligible for Medicaid pre- or post-expansion. Newly eligible are adults aged 26 to 64 with modified adjusted gross income (MAGI) $\leq$ 138% of FPL who were not pre-ACA eligible regardless of whether their states expanded eligibility.

[†] *F*-statistic from joint test of coefficients on interactions between year fixed effects and expansion status.

ACA, Affordable Care Act; FPL, federal poverty line; MAGI, modified adjusted gross income.

34.5% increase from 2013 in the probability of having an office-based midlevel provider visit, which may include some visits to nurses. We find no effect of Medicaid expansion on the use of other office-based nonphysician visits.

The association between gaining Medicaid eligibility and increased likelihood of using physician primary care is consistent with the stated objective of the ACA to improve access to comprehensive primary and preventive services. Medicaid expansion in 2014 (and to a lesser extent introduction of state insurance exchanges) was associated with significant reductions in the uninsurance rate among low-income adults (Cohen, Martinez, and Zammitti 2016), and most newly insured individuals in 2014 with incomes below 139% of FPL had been uninsured for at least 1 year (Decker and Lipton 2017). Our estimates show how much the expansion increased access to both primary and specialty care for the newly eligible.

We find no strong evidence of increased likelihood of utilization among pre-ACA eligible adults. Some research suggests that the Medicaid expansion would be accompanied by welcome-mat effects, in which pre-expansion Medicaid eligible, but not enrolled, would increase their participation after Medicaid expansion. Sonier, Bouderaux, and Blewitt (2013) found substantial welcome-mat effects of pre-ACA Medicaid expansions in Massachusetts on Medicaid participation. There may be three reasons we do not find welcome-mat effects on use of primary care. First, our pre-ACA eligible sample contains adults already enrolled in Medicaid as well as those not enrolled despite their eligibility. Thus, our small point estimates may be due to new enrollees who increase their health care use being a small share of this sample. Second, our sample of pre-ACA-eligible adults is smaller than our sample of newly eligible adults, which may contribute to lack of precision. Third, the pre-ACA eligible adults that previously were not enrolled in Medicaid may be healthier (Hill et al. 2014) and hence have a low propensity to use health care services.

Our estimated effects of the Medicaid expansion on use of office-based physician visits differ from those found in previous research for a few key reasons. Previous studies estimated the effect of Medicaid expansion on the use of physician care for the full population of adults with family income below 138% of FPL. Effects estimated for this larger population combine the probability of use by adults who gained coverage through the expansion with changes in utilization among adults who were eligible before the expansion. We estimate each effect separately, and we find larger effects among the newly eligible and no changes in utilization for adults who were already eligible pre-expansion. Thus, we expect the estimated effect on the probability of visits for the full population of low-income adults to be smaller than the probability of visits for newly eligible adults.

Some previous studies have separately addressed utilization of physician primary care and specialist care. Wherry and Miller (2016) estimated the effect of Medicaid expansion on whether a low-income adult saw or talked to a general physician and whether they saw or talked to a medical specialist. They found a 6.6 percentage point effect of Medicaid expansion on the probability of having seen or talked to a general physician, but they found no effect for having seen or talked to a medical specialist. Sommers et al. (2016) found that low-income adults in Arkansas and Kentucky were more likely to have a personal physician postexpansion relative to low-income adults in Texas. However, they did not find any effect of expansion in these states on the probability of having any office-based care, or whether there was trouble in obtaining a primary care or specialist appointment. MEPS contains detailed

information on all reported visits, allowing us to estimate nationally representative effects of Medicaid expansion on the probabilities of having any primary care physician and specialist visits, as well as office-based visits to two categories of nonphysician providers.

Increasing primary care use by newly eligible adults may be hampered by inadequate supply of primary care providers. In 2010, less than one-third of practicing physicians were in primary care specialties (Heisler 2013), and one-third of physicians and nurses are expected to retire in the next decade (Okrent 2011). The ACA introduced a number of provisions to expand the supply of primary care providers in order to accommodate the expected increases in demand. For example, the ACA increased Medicaid payments for primary care providers and contains new incentives for physicians to coordinate care. Additionally, the ACA allocates funds to support primary care training and to increase the number of primary care residency positions. The ACA includes similar measures to increase the supply of nurses, nurse practitioners, and physician assistants trained in primary care through grant programs to fund new training, loan repayment, and nurse-managed clinics. In particular, the ACA provided \$11 billion for Federally Qualified Health Centers (Hill 2012), which were associated with increased capacity (Han, Luo, and Ku 2017).

There are limitations to our analysis. First, expansion was not a randomly assigned treatment, and differences in visits may partially reflect underlying regional differences in utilization that are correlated with whether a state opted to expand its Medicaid program. Second, the earliest individuals to enroll in Medicaid through the expansion may have had higher underlying demand, which could result in our estimates exceeding those that incorporate future post-expansion years. We do not anticipate that individuals with the greatest underlying demand for health care might have migrated into states that implemented early expansions under the ACA or in anticipation of expansion in 2014, as there is little evidence of such anticipatory migration (Schwartz and Sommers 2014). In contrast, any upward bias due to pent-up demand may be offset by delays in receiving care due to the time cost of enrollment and searching for a provider. Third, Medicaid eligibility is simulated based on annual income, but income, and hence Medicaid eligibility, fluctuate during the year (Sommers and Rosenbaum 2011). Simulated eligibility also depends on respondents' answers in the MEPS, which are subject to misreporting. The direction of bias due to incorrect sample definition on the regression results is unknown. Fourth, to keep the population for our welcome-mat analysis constant, we applied 2010 eligibility rules for the entire pre-ACA period. Using year-specific eligibility rules might yield somewhat different results. Fifth, we do not explicitly control for heterogeneity

in the generosity of state Medicaid programs, and we do not control for early expansion by some states and late expansion by Michigan in April 2014. Although our results are robust to omitting these states from the analysis, future work will exploit the reported date of visit available in MEPS to more finely tailor the pre- and postperiods for adults in these states.

CONCLUSION

Our results suggest that the Medicaid expansion significantly increased the use of office-based care among newly eligible adults. We find that the Medicaid expansion increased the probabilities of having an office-based visit with a primary care physician by 9.1 percentage points and with a physician specialist by 6.9 percentage points. We also find that gaining Medicaid eligibility is associated with a 5.1 percentage point increase in the probability of having office-based visits with a nurse practitioner, nurse, or physician assistant. These increases in the use of office-based care suggest Medicaid expansion was associated with improvements in access to primary and specialist medical care.

ACKNOWLEDGMENTS

Joint Acknowledgment/Disclosure Statement: The authors would like to thank Sandra Decker, Thomas Selden, Joel Cohen, and two anonymous reviewers for their very helpful and insightful comments. The authors also thank Salam Abdus for providing expertise about Medicaid eligibility. This paper represents the views of the authors, who are employees of the Agency for Healthcare Research and Quality, and no official endorsement by the Agency for Healthcare Research and Quality or the Department of Health and Human Services is intended or should be inferred.

Disclosures: None.

Disclaimer: None.

REFERENCES

- Agency for Health Care Research and Quality. 2016. "MEPS HC-171 2014 Full Year Consolidated Data File" [accessed on March 17, 2016]. Available at https://meps.ahrq.gov/data_stats/download_data/pufs/h171/h171doc.pdf

- Assistant Secretary for Planning and Evaluation. 2016. "Impacts of the Affordable Care Act's Medicaid Expansion on Insurance Coverage and Access to Care" [accessed on September 8, 2016]. Available at <https://aspe.hhs.gov/pdf-report/impacts-affordable-care-acts-medicaid-expansion-insurance-coverage-aand-access-care>
- Bindman, A., K. Grumbach, F. Osmond, K. Vranizan, and A. Stewart. 1996. "Primary Care and Receipt of Preventive Services." *Journal of General Internal Medicine* 11 (5): 269–76.
- Blewett, L. A., P. J. Johnson, B. Lee, and P. B. Scal. 2008. "When a Usual Source of Care and Usual Provider Matter: Adult Prevention and Screening Services." *Journal of General Internal Medicine* 23 (9): 1354–60.
- Centers for Medicare and Medicaid Services. 2016. "Medicaid & CHIP: June 2016 Monthly Applications, Eligibility Determinations and Enrollment Report" [accessed on September 8, 2016]. Available at <https://www.medicaid.gov/medicaid-chip-program-information/program-information/downloads/June-2016-enrollment-report.pdf>
- Cohen, R. A., M. E. Martinez, and E. P. Zammitti. 2016. "Health Insurance Coverage: Early Release of Estimates from the National Health Interview Survey" [accessed on March 23, 2017]. Hyattsville, MD: National Center for Health Statistics; 2016 May[cited 2016 Nov 10]. Available from <https://www.cdc.gov/nchs/data/nhis/earlyrelease/insur201605.pdf>
- Council On Graduate Medical Education. 2010. *Twentieth Report, Advancing Primary Care*. Rockville, MD: Council on Graduate Medical Education.
- Davidoff, A., S. C. Hill, D. Bernard, and K. R. Yabroff. 2015. "The Affordable Care Act and Expanded Insurance Eligibility among Nonelderly Adult Cancer Survivors." *Journal of the National Cancer Institute* 107(9): djv181.
- Decker, S. L., and B. J. Lipton. 2017. "Most Newly Insured People in 2014 Were Long-Term Uninsured." *Health Affairs* 36 (1): 116–20.
- Employee Benefits Security Administration. n.d. "Young Adults and the Affordable Care Act: Protecting Young Adults and Eliminating Burdens on Businesses and Families FAQs" [accessed on September 8, 2016]. Available at <https://www.dol.gov/agencies/ebsa/about-ebsa/our-activities/resource-center/faqs/young-adult-and-aca>
- Ferrer, R. M. 2007. "Pursuing Equity: Contact with Primary Care and Specialist Clinicians by Demographics, Insurance, and Health Status." *Annals of Family Medicine* 5 (6): 492–502.
- Gill, J. M., A. G. Mainous, and M. Nsereko. 2000. "The Effect of Continuity of Care on Emergency Department Use." *Archives of Family Medicine* 9: 333–8.
- Han, X., Q. Luo, and L. Ku. 2017. "Medicaid Expansion and Grant Funding Increases Helped Improve Community Health Center Capacity." *Health Affairs* 36 (1): 49–56.
- Health Resources and Services Administration. 2017. "Area Health Resources Files (AHRF) National, State and County Health Resources Information Database" [accessed on March 23, 2015]. Available at <http://ahrh.hrsa.gov/download.htm>
- Heisler, E. J. 2013. *Physician Supply and the Affordable Care Act*. Washington, DC: Congressional Research Service.

- Henry J. Kaiser Family Foundation. 2013. "The Uninsured A Primer 2013 – 4: How Does Lack Of Insurance Affect Access To Health Care?" [accessed on September 8, 2016]. Available at <http://kff.org/report-section/the-uninsured-a-primer-2013-4-how-does-lack-of-insurance-affect-access-to-health-care/>
- Henry J. Kaiser Family Foundation. 2016. "Status of State Action on the Medicaid Expansion Decision" [accessed on September 8, 2016]. Available at <http://kff.org/health-reform/state-indicator/state-activity-around-expanding-medicaid-under-the-affordable-care-act>
- Henry J. Kaiser Family Foundation. 2017. "Total Monthly Medicaid and CHIP Enrollment" [accessed on March 23, 2017]. Available at <http://kff.org/health-reform/state-indicator/total-monthly-medicaid-and-chip-enrollment>
- Hill, I. 2012. *Cross-Cutting Issues: Will There Be Enough Providers to Meet the Need?* Washington, DC: Urban Institute. Available at <https://www.urban.org/sites/default/files/publication/26226/412700-Will-There-Be-Enough-Providers-to-Meet-the-Need-Provider-Capacity-and-the-ACA.PDF>
- Hill, S. C., S. Abdus, J. L. Hudson, and T. M. Selden. 2014. "Adults in the Income Range for the Affordable Care Act's Medicaid Expansion Are Healthier Than Pre-ACA Enrollees." *Health Affairs* 33 (4): 691–9.
- Kao-Ping, C., M. A. Schuster, and J. M. McWilliams. 2013. "Differences in Health Care Access and Utilization between Adolescents and Young Adults with Asthma." *Pediatrics* 131(5): 892–901. <https://doi.org/10.1542/peds.2012-2881>
- Kirzinger, W. K., R. A. Cohen, and R. M. Gindi. 2012. "Health Care Access and Utilization among Young Adults Aged 19–25: Early Release of Estimates from the National Health Interview Survey, January–September 2011," National Center for Health Statistics [accessed on September 29, 2016]. Available at <http://www.cdc.gov/nchs/nhis/releases.htm>
- National Center for Health Statistics. 2015. "Health, United States, 2015: With Special Feature on Racial and Ethnic Health Disparities" Hyattsville, MD [accessed on September 29, 2015]. Available at <http://www.cdc.gov/nchs/2015/content/2015.htm#065>
- Okrent, D. 2011. *Health Care Workforce: Future Supply vs. Demand*. Washington, DC: Alliance for Healthcare Reform.
- Patient Protection and Affordable Care Act. 2010. Pub. L. No. 111-418, Section 5501.
- Schwartz, A. L., and B. Sommers. 2014. "Moving for Medicaid? Recent Eligibility Expansions Did Not Induce Migration from Other States." *Health Affairs* 33 (1): 88–94.
- Sommers, B., and S. Rosenbaum. 2011. "Issues in Health Reform: How Changes in Eligibility May Move Millions Back and Forth between Medicaid and Insurance Exchanges." *Health Affairs* 30 (2): 228–36.
- Sommers, B. D., E. Arntson, G. M. Kenney, and A. M. Epstein. 2013. "Lessons from Early Medicaid Expansions under Health Reform: Interviews with Medicaid Officials." *Medicare & Medicaid Research Review* 3 (4): E1–19.
- Sommers, B. D., M. Z. Gunja, K. Finegold, and T. Musco. 2015. "Changes in Self-reported Insurance Coverage, Access to Care." *Journal of the American Medical Association* 314 (4): 366–74.

- Sommers, B. D., R. J. Blendon, J. Orav, and A. M. Epstein. 2016. "Changes in Utilization and Health among Low-Income Adults after Medicaid Expansion or Expanded Private Insurance." *JAMA Internal Medicine*, 1501–9. <https://doi.org/10.1001/jamainternmed.2016.4419>
- Sonier, J., M. H. Bouderaux, and L. A. Blewitt. 2013. "Medicaid 'Welcome-Mat' Effect of Affordable Care Act Implementation Could Be Substantial." *Health Affairs* 32 (7): 1319–25.
- U.S. Department of Health and Human Services. 2016. "HHS Strategic Plan FY 2014 – 2018: Strategic Goal 1: Strengthen Health Care" [accessed on September 8, 2016]. Available at <http://www.hhs.gov/about/strategic-plan/strategic-goal-1/index.html#>
- Wherry, L. R., and S. Miller. 2016. "Early Coverage, Access, Utilization, and Health Effects Associated with the Affordable Care Act Medicaid Expansions a Quasi-experimental Study." *Annals of Internal Medicine* 164 (12): 795–803.

SUPPORTING INFORMATION

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

Appendix SA1: Author Matrix.

Table S1: Medicaid Income Eligibility Thresholds in 2010 as Percentages of Federal Poverty Guidelines and 2014 ACA Expansions

Table S2: Mean Medicaid Income Eligibility Thresholds in 2010 among States with Thresholds ≤ 138 as Percentages of Federal Poverty Guidelines and 2014 ACA Expansions

Table S3: Difference-in-Differences Regressions for Office-Based Physician Primary Care Visits for Newly Eligible Adults Ages 26–64

Table S4: Difference-in-Differences Regressions for Office-Based Physician Specialist Visits for Newly Eligible Adults Ages 26–64

Table S5: Difference-in-Differences Regressions for Office-Based Non-Physician Mid-Level Provider Visits for Newly Eligible Adults Ages 26–64

Table S6: Difference-in-Differences Regressions for Office-Based Non-Physician Other Provider Visits for Newly Eligible Adults Ages 26–64

Figure S1: Unadjusted Mean Probability of Having Any Office-Based Visit for Pre-ACA Eligible Adults Ages 26–64

Figure S2: Unadjusted Mean Probability of Having Any Office-Based Visit for Full-Year ESI Adults Ages 26–64