SPECIAL ARTICLE

Health and Access to Care during the First 2 Years of the ACA Medicaid Expansions

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ABSTRACT

BACKGROUND

By September 2015, a total of 29 states and Washington, D.C., were participating in Medicaid expansions under the Affordable Care Act. We examined whether Medicaid expansions were associated with changes in insurance coverage, health care use, and health among low-income adults.

METHODS

We compared changes in outcomes during the 2 years after implementation of the Medicaid expansion (2014 and 2015) relative to the 4 years before expansion (2010 through 2013) in states with and without expansions, using data from the National Health Interview Survey. The sample consisted of 60,766 U.S. citizens who were 19 to 64 years of age and had incomes below 138% of the federal poverty level. Outcomes included insurance coverage, access to and use of medical care in the past 12 months, and health status as reported by the respondents.

RESULTS

A total of 29 states and Washington, D.C., expanded Medicaid by September 1, 2015. In year 2 after implementation, uninsurance rates were reduced in expansion states relative to nonexpansion states (difference-in-differences estimate, −8.2 percentage points; P<0.001) and rates of Medicaid coverage were increased (difference-in-differences estimate, 15.6 percentage points; P<0.001). Expansions were not associated with significant changes in the likelihood of a doctor visit or overnight hospital stay or health status as reported by the respondent. However, as compared with nonexpansion states, expansion states had a decrease in reports of inability to afford needed follow-up care (difference-in-differences estimate, −3.4 percentage points; P=0.002) and in reports of worry about paying medical bills (difference-in-differences estimate, −7.9 percentage points; P=0.002) and an increase in reports of medical care being delayed because of wait times for appointments (difference-in-differences estimate, 2.6 percentage points; P=0.02).

CONCLUSIONS

Medicaid expansion was associated with increased insurance coverage and access to care during the second year of implementation, but it was also associated with longer wait times for appointments, which suggests that challenges in access to care persist.

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The Affordable Care Act (ACA) expanded Medicaid eligibility to persons earning up to 138% of the federal poverty level, as part of the largest expansion of coverage to nonelderly adults since the 1960s. Although the expansion was originally intended to be enacted nationally, a 2012 U.S. Supreme Court decision made it optional for states. A total of 24 states decided not to expand in 2014, which affected 6.7 million uninsured low-income adults who otherwise would have gained eligibility.[1] Since 2014, an additional 5 states have implemented expansions, although 19 states still have not adopted the expansion as of January 2017.[2]

Several early studies used data from 2014 to explore the immediate effect of these expansions on access to health care, health care use, and the health of persons who gained coverage.[3-7] Although they were informative, reports from the first year of the expansions may not depict the full effects of the policy. Several states adopted the Medicaid expansion after January 2014; in addition, it may have taken time for newly eligible persons to learn about Medicaid and enroll. As a result, the early effects documented in previous studies may not be relevant for 2015 and beyond. Our study is one of several recent studies to take advantage of newly available 2015 data to evaluate the ACA Medicaid expansions through their second year,[8-10] and it contributes to this area of ongoing policy interest by using high-quality national survey data to examine a wide range of measures.

Methods

Study Design

We used a quasi-experimental difference-in-differences design to compare changes in outcomes among persons residing in expansion versus nonexpansion states before and after implementation of the ACA Medicaid expansions. Our study period included 4 years before the expansions (2010 through 2013) and 2 years after the expansions (2014 and 2015). We considered as expansion states those states that implemented the ACA Medicaid expansion during 2014 or 2015, and we defined the postexpansion period on the basis of the implementation date in each state. We excluded five states that already provided Medicaid or similar coverage to low-income adults during 2010 through 2013 (see Section 1 of the Supplementary Appendix, available with the full text of this article at NEJM.org).

Data

In this study, we used data from the National Health Interview Survey (NHIS), a nationally representative annual survey conducted by the National Center for Health Statistics (NCHS). The study sample (60,766 adults) included U.S. citizens 19 to 64 years of age with family incomes lower than 138% of the federal poverty level for whom information on race, ethnic background, age, sex, marital status, and educational attainment was available. For approximately 9.6% of persons, information on family income was missing; in these cases, imputed values from multiple imputation files provided by the NCHS were used.[11] We excluded noncitizens from the analysis, since some persons in this group are ineligible for Medicaid.[12] A diagram of our sample definition is provided in Figure S1 in the Supplementary Appendix. In our study, we used restricted-access state identifiers and performed the analysis in a Federal Statistical Research Data Center. The study was deemed to be exempt from review by the investigators' designated institutional review boards.

Outcome Measures

The first set of outcome measures described insurance coverage and the use of health care. The three insurance coverage variables were no insurance (defined as no coverage through Medicare, Medicaid, private insurance, military, or other government programs, excluding the Indian Health Service), Medicaid coverage, and private health insurance coverage at the time of interview. The health care use measures referred to respondents' experiences in the previous 12 months. These included whether the respondent saw or spoke to a doctor in general practice, family medicine, or internal medicine; was hospitalized overnight (excluding in the emergency department [ED]); went to a hospital ED; saw or spoke to a medical specialist (excluding obstetricians and gynecologists, psychiatrists, and ophthalmologists); or saw or spoke to a nurse practitioner, physician assistant, or midwife. Measures related to preventive services during the previous 12 months included whether the respondent report-

ed having his or her blood cholesterol level or blood pressure checked or received an influenza vaccination. For respondents 50 years of age or older, we examined whether the respondent had undergone a test for colon cancer or, in women only, mammography. With the exception of the influenza vaccination, data on preventive services measures were available only from 2011 through 2015.

We next considered outcome measures related to access to medical care and financial strain. We used binary variables that indicated whether the respondent had a usual source of care and whether, during the previous 12 months, the respondent had needed to see a specialist or needed follow-up care but could not afford it (2011 through 2015), did not obtain or delayed needed medical care because of the cost, or skipped or took less medication to save money (2011 through 2015). We also considered whether the respondent had worried about his or her ability to pay medical bills in the event of an illness or accident, currently had and was unable to pay medical bills, or had problems paying medical bills in the previous 12 months; information on each of these measures was available from 2011 through 2015. In addition, we investigated whether the respondent reported delaying care during the previous 12 months because of an inability to get an appointment soon enough or because the wait time at the doctor's office was too long.

Finally, we examined health conditions and health status as reported by the respondent. We investigated whether the respondent reported ever having received a diagnosis of diabetes, hypertension, or high cholesterol levels from a doctor or health professional. Data on diagnoses of high cholesterol levels were available only for 2012, 2014, and 2015. We examined whether the respondent reported his or her health to be very good or excellent and whether the respondent mentioned depression as a health problem. Some outcomes were available for all members of surveyed households, whereas others were available for only one sampled member of the household (see Section 2 and Table S1 in the Supplementary Appendix).

STATISTICAL ANALYSIS

Multivariate regression models were used to compare changes in outcomes over time in expansion versus nonexpansion states. Regressions included a set of interactions between a binary variable indicating whether the state adopted the ACA Medicaid expansion and binary variables indicating whether the respondent was interviewed during the first 6 months after expansion, during year 1 (excluding the 6-month transition period), or during year 2 after the expansion. The estimated coefficients for each of these interaction terms provided the mean difference in outcomes between expansion and nonexpansion states during the specified postexpansion period, as compared with the period before expansion, adjusted for covariates (race and ethnic background, marital status, number of children and adults in the family, educational attainment, and age) and for fixed effects for state and quarter-year in which the interview took place. We used linear regression to facilitate a direct interpretation of the coefficients and estimated Huber–White robust standard errors clustered according to state.[13,14] In the text and tables, we report estimates for year 1 (excluding the 6-month transition period) and year 2; estimates for the 6-month transition period are provided in Tables S2 and S3 in the Supplementary Appendix. We calculated P values, adjusted for the familywise error rate, that accounted for multiple hypothesis testing within each group of outcomes.[15] All analyses were conducted with Stata/IC software, version 14.0, accounted for the sampling design of the NHIS, and were conducted with the use of procedures for performing multiple imputation analyses with complex survey data.[11,16] Details on the regression model and estimation methods are provided in Sections 3, 4, and 5 in the Supplementary Appendix.

We conducted several analyses to evaluate the assumptions of our model and assess the sensitivity of our results to alternative model specifications. We tested for preexisting differential trends across expansion and nonexpansion states. We assessed the sensitivity of our results to the inclusion of linear time trends for expansion and nonexpansion states and the state unemployment rate during this period, as well as to alternative sample definitions that included states that expanded Medicaid before the ACA, excluded California (because of the early expansion that was implemented in certain counties), included noncitizens, included only adults with incomes be-

low 100% of the federal poverty level, and excluded adults younger than 26 years of age. We estimated a triple difference model that included respondents with high incomes as an additional comparison group. Finally, we examined the sensitivity of our results to an alternative method of conducting inference.[17] Details of these analyses are provided in Section 6 in the Supplementary Appendix.

RESULTS

STUDY SAMPLE

Of the states included in the analysis, 20 implemented Medicaid expansion on January 1, 2014, and had a full 2 years of post-implementation data available; 3 states implemented expansion by January 2015, and 2 states implemented expansion after January 2015 (Table S1 in the Supplementary Appendix). Table 1 shows the demographic characteristics of respondents in the expansion states and nonexpansion states, on the basis of data from 2010 through 2013. Low-income adults in expansion states were more likely to be male (45.3% vs. 43.5%), less likely to be black (18.9% vs. 29.9%), and more likely to be white (74.0% vs. 66.3%) or to state their race as a category other than white or black (7.1% vs. 3.8%).

Table 1. Baseline Characteristics of Respondents According to State Medicaid Expansion Status.*

Characteristic	Expansion States (N=19,100)	Nonexpansion States (N=21,327)	P Value
Male sex (%)	45.3	43.5	0.01
Race (%)			0.04
White	74.0	66.3	
Black	18.9	29.9	
Other	7.1	3.8	
Hispanic ethnic background (%)	17.0	13.6	0.67
Mean age (yr)	37.4±13.7	37.7±13.8	0.49
Family composition			
Married (%)	28.2	30.0	0.20
Mean number of children	1.07±1.38	1.06±1.37	0.92
Mean number of adults	2.04±1.13	2.02±1.06	0.83
Education (%)			0.41
Less than high school diploma	21.5	22.6	
High school diploma or equivalent	33.8	36.2	
Some college education	34.6	32.8	
College degree or more	9.6	8.0	

* Plus–minus values are means ±SD. Weighted baseline characteristics were estimated with the use of pooled data from the 2010 through 2013 National Health Interview Survey. The sample included U.S. citizens 19 to 64 years of age with family incomes lower than 138% of the federal poverty level. All the information was reported by the respondents.

TRENDS IN OUTCOMES

Figure 1 shows plots of selected unadjusted insurance measures for low-income adults in expansion and nonexpansion states, according to year, from 2010 through 2015. To facilitate interpretation, the figures in this article show outcomes for expansion states that implemented ACA Medicaid expansions in January 2014. The variables describing insurance coverage trended similarly in the nonexpansion and expansion states before 2014 and began to diverge in 2014, at which point expansion states had larger reductions in the uninsurance rate and larger increases in Medicaid coverage. Figure 2 shows trends in access to care and appointment availability. For these measures, different patterns emerged for the two groups of states in 2014 and 2015 (for additional outcomes, see Section 8 and Figs. S2 and S3 in the Supplementary Appendix).

INSURANCE COVERAGE AND HEALTH CARE USE

The adjusted difference-in-differences estimates for changes in health insurance coverage and health care use are provided in Table 2, which shows estimates of the net change during year 1 (excluding the first 6 months) and year 2 in expansion states as compared with nonexpansion states. When discussing the significance of findings in our study, we refer to the per-comparison P values, unless otherwise specified.

As compared with the rates in nonexpansion states, rates of Medicaid coverage in the expansion states increased significantly during both year 1 and year 2 relative to the preexpansion period, with a significantly larger increase in the second year (difference in differences, 15.6 percentage points; P<0.001). Significant decreases in uninsurance and private health insurance were associated with Medicaid expansion in both years; the difference-in-differences estimate for the uninsurance rate was −8.2 percentage points in year 2 (P<0.001). In expansion states relative

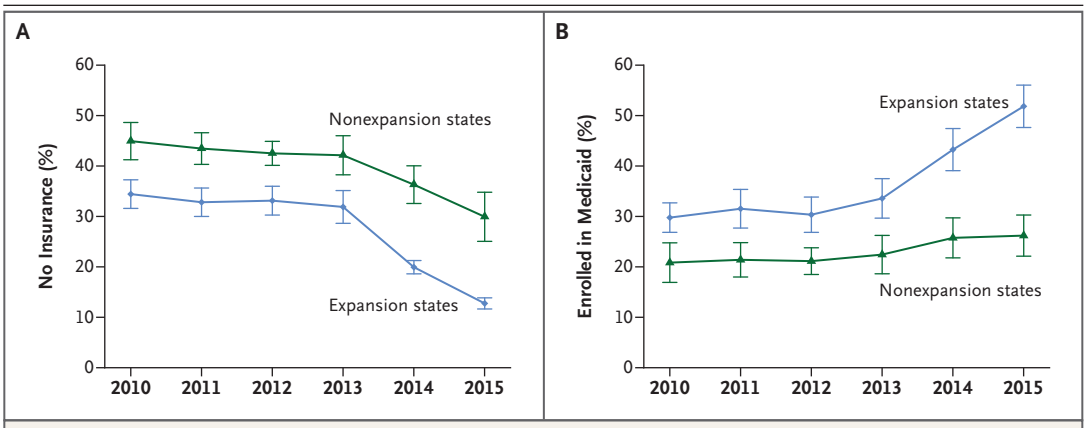

Figure 1. Unadjusted Trends in Insurance Coverage According to ACA Medicaid Expansion Status.

Shown are unadjusted weighted means with 95% confidence intervals (I bars) calculated for states that implemented Affordable Care Act (ACA) Medicaid expansions in January 2014 and nonexpansion states according to survey year, 2010 through 2015. The sample included U.S. citizens 19 to 64 years of age with family incomes that were lower than 138% of the federal poverty level.

to nonexpansion states, overnight hospital stays increased significantly in year 1, but the difference-in-differences estimate for year 2 was not significant. Visits with a general doctor; visits with a nurse practitioner, physician assistant, or midwife; and visits to the ED did not change significantly in either year. Visits with a specialist increased in association with expansion in the later period, but the familywise error rate–adjusted P value for the estimate indicated that the change was not significant. In expansion states, rates of checks of blood cholesterol levels increased significantly in both years relative to the preexpansion period, but there were no significant changes in the rates of the use of other preventive services.

HEALTH STATUS AND ACCESS TO CARE

Table 3 shows changes in access to care, financial strain, and appointment availability and wait times associated with Medicaid expansion. For measures related to access to care, we did not detect significant changes during the first year after expansion. In year 2, expansion was associated with significant reductions in reports that patients needed follow-up care but could not afford it (difference-in-differences estimate, −3.4 percentage points; P=0.002), needed to see a specialist but could not afford it, needed medical care but could not afford it, or skipped or took less medication to save money. There were no significant changes in expansion states as compared with nonexpansion states in delays in care because of worry about cost or in respondent reports of having a usual place to receive health care.

There were no significant changes in measures of financial strain during the first year. In year 2, expansion was associated with significant decreases in respondent reports of worry about the ability to pay medical bills in the event of an illness or accident (difference-in-differences estimate, −7.9 percentage points; P=0.002) and problems paying medical bills. There was no significant change in respondent reports of current medical bills they were unable to pay. During both years, expansion was found to be associated with significant increases in the probability that a respondent would delay obtaining medical care because no appointment was available (difference-in-differences estimate, 2.6 percentage points in year 2; P=0.02) or because time spent in the waiting room was too long.

Table 3 also shows changes in the rates of diagnoses of certain conditions and in health status as reported by the respondent in the expansion states relative to the nonexpansion states. In year 1, expansion was associated with significant increases in respondents reporting diagnoses of diabetes and high cholesterol levels and mentioning depression as a health problem; however, for year 2, the difference-in-differences estimates for these outcomes were not significant.

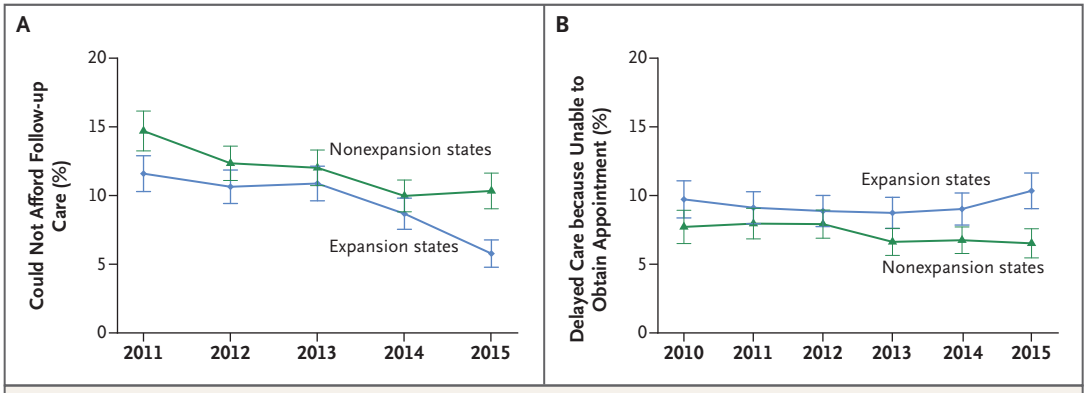

Figure 2. Unadjusted Trends in Access to Care and Appointment Availability, According to ACA Medicaid Expansion Status.

Shown are unadjusted weighted means with 95% confidence intervals (I bars) calculated for states that implemented ACA Medicaid expansions in January 2014 and nonexpansion states according to survey year, 2010 through 2015. The sample included U.S. citizens 19 to 64 years of age with family incomes that were lower than 138% of the federal poverty level.

We detected no significant change in either year in hypertension diagnoses or health status as reported by the respondent.

SENSITIVITY ANALYSES

The use of alternative models and sample definitions produced results similar to those presented in the main analysis, with a few minor differences (Section 6 and Tables S2 and S3 in the Supplementary Appendix). Tests for differences in trends in outcomes for the two state groups before the Medicaid expansions revealed a significant decline in reports of problems paying medical bills and in hypertension diagnoses in states with expansions relative to states without expansions (Table S5 in the Supplementary Appendix). When a wild cluster bootstrap procedure was used to conduct hypothesis testing, the results were similar to those of the main analysis (Table S6 in the Supplementary Appendix).

DISCUSSION

In this study, we explored the consequences of the ACA Medicaid expansions by comparing changes in health insurance coverage, health care use, access to care, and health status as reported by the respondents among low-income, nonelderly adults in states that did and states that did not implement the expansions by the end of 2015. We found that changes in outcomes associated with the ACA Medicaid expansions differed in the first and second years after implementation. Whereas hospitalizations increased during the first year, there was no change during the second year as compared with the preexpansion period. This pattern is consistent with "pent-up" demand for medical care resulting in a spike in certain types of health care use that persists for only a short period.[18]

However, we found significant improvements with regard to several measures of access to care and financial strain in year 2 that were not apparent in the first year. By the second year after implementation, there were larger reductions among low-income adults in expansion states than in nonexpansion states in reports that participants needed health care but could not afford it or that they took less medication to save money. This is in contrast to previous research, based on NHIS data through 2014 only, that showed no effects on measures of access to care.[3] The delayed effect may reflect the time needed for persons to enroll in Medicaid and establish care. Our results are consistent with improvements in access that have been reported in other national studies, in which changes up to 2 years after the ACA Medicaid expansions were analyzed with the use of the Behavioral Risk Factor Surveillance Survey (BRFSS) and Gallup polling data,[4,8] as well as some studies that focused on one or more specific states.[6,7,10,19] When scaled according to the estimated change in Medicaid enrollment, the magnitudes of our

Table 2. Changes in Health Insurance Coverage, Health Care Use, and Preventive Care Among Low-Income Adults in States with Medicaid Expansion.*

Outcome	Baseline	Year 1†			Year 2		
	Mean Percentage in Expansion States‡	Difference-in-Differences Estimate (95% CI)§	P Value	Adjusted P Value¶	Difference-in-Differences Estimate (95% CI)§	P Value	Adjusted P Value¶
Health insurance							
No insurance coverage	33.0	−6.6 (−9.7 to −3.5)	<0.001	<0.001	−8.2 (−12.1 to −4.3)	<0.001	<0.001
Medicaid coverage	30.8	11.5 (8.4 to 14.5)	<0.001	<0.001	15.6 (11.0 to 20.1)‖	<0.001	<0.001
Private health insurance coverage	26.5	−4.1 (−7.8 to −0.3)	0.03	0.007	−7.6 (−11.1 to −4.0)	<0.001	<0.001
Health care use in past 12 months							
Saw or talked to general doctor	58.6	4.5 (−0.5 to 9.5)	0.08	0.08	0.2 (−4.9 to 5.3)**	0.94	0.92
Overnight hospital stay	11.0	2.0 (0.4 to 3.5)	0.01	0.01	−0.6 (−2.4 to 1.2)‖	0.52	0.80
Emergency department visit	32.1	4.0 (−0.3 to 8.3)	0.07	0.08	0.4 (−4.5 to 5.4)	0.86	0.92
Saw or talked to nurse practitioner, physician assistant, or midwife	18.6	2.7 (−0.9 to 6.2)	0.14	0.13	3.3 (−0.4 to 7.0)	0.08	0.11
Saw or talked to medical specialist	20.3	2.2 (−2.5 to 6.9)	0.35	0.27	3.4 (0.1 to 6.6)	0.04	0.052
Preventive services in past 12 months							
Blood cholesterol level check	44.8	6.0 (1.4 to 10.7)	0.01	0.02	5.8 (1.1 to 10.4)	0.02	0.02
Blood pressure check	75.3	2.2 (−1.7 to 6.2)	0.26	0.29	1.8 (−2.9 to 6.6)	0.44	0.48
Influenza vaccination	26.1	−0.9 (−5.6 to 3.7)	0.68	0.63	−1.2 (−5.4 to 3.0)	0.58	0.48
Mammogram, women 50 years of age or older	44.9	9.8 (−0.8 to 20.4)	0.07	0.11	−5.5 (−13.6 to 2.5)‖	0.17	0.24
Colon cancer test, adults 50 years of age or older	17.2	5.3 (−0.7 to 11.3)	0.08	0.11	5.1 (−0.5 to 10.8)	0.08	0.11

* All analyses were conducted with the use of multiple imputation methods. CI denotes confidence interval.
† Data from the 6-month transition period are excluded.
‡ The mean baseline value for expansion states was calculated with the use of data from 2010 through 2013.
§ Difference-in-differences estimates are the percentage-point differences between changes in outcomes in expansion states and changes in outcomes in nonexpansion states during the specified period relative to the period before Medicaid expansion. The estimates were adjusted for race and ethnic background, age, marital status, number of children and adults in family, educational attainment, and state and quarter-year fixed effects.
¶ P values in this column are adjusted according to the family-wise error rate to account for the multiple outcome measures examined in each category.
‖ The year 2 estimate differs significantly from year 1 estimate at the 5% level.
** The year 2 estimate differs significantly from year 1 estimate at the 10% level.

Table 3. Changes in Access, Financial Strain, Diagnoses, and Health Status Among Low-Income Adults in States With Medicaid Expansion.*

Outcome	Baseline	Year 1†			Year 2		
	Mean Percentage in Expansion States‡	Difference-in-Differences Estimate (95% CI)§	P Value	Adjusted P Value¶	Difference-in-Differences Estimate (95% CI)§	P Value	Adjusted P Value¶
Access to health services							
Needed follow-up care but did not receive it because could not afford it, past 12 months	11.1	1.6 (–0.9 to 4.0)	0.22	0.34	–3.4 (–5.5 to –1.3)‖	0.002	0.006
Needed to see specialist but did not because could not afford it, past 12 months	11.8	–0.4 (–2.5 to –1.7)	0.69	0.69	–3.2 (–5.7 to –0.8)**	0.01	0.02
Needed medical care but did not receive it because could not afford it, past 12 months	18.7	–1.2 (–3.2 to 0.8)	0.23	0.34	–2.9 (–5.3 to –0.4)	0.02	0.03
Delayed medical care because of worry about cost, past 12 months	21.3	–0.4 (–3.2 to 2.3)	0.75	0.69	–2.5 (–5.8 to 0.9)	0.14	0.20
Had a usual place to receive health care	75.1	2.6 (–1.4 to 6.6)	0.20	0.34	1.5 (–4.6 to 7.6)	0.63	0.63
Skipped medication doses to save money, past 12 months	14.1	–4.5 (–9.7 to 0.6)	0.08	0.17	–5.2 (–9.0 to –1.4)	0.008	0.02
Took less medicine to save money, past 12 months	14.7	–2.9 (–8.3 to 2.6)	0.29	0.42	–4.7 (–8.3 to –1.0)	0.01	0.02
Financial strain							
Worried about ability to pay medical bills if become sick or have accident	61.6	–4.2 (–8.8 to 0.3)	0.07	0.04	–7.9 (–12.8 to –3.0)	0.002	<0.001
Currently have medical bills unable to pay	21.4	–0.7 (–4.3 to 2.8)	0.69	0.86	–3.8 (–7.9 to 0.3)	0.07	0.02
Problems paying or unable to pay medical bills, past 12 months	32.0	0.3 (–3.9 to 4.5)	0.89	0.79	–6.2 (–10.5 to –1.8)††	0.006	<0.001
Appointment availability and wait time							
Delayed medical care because unable to obtain appointment soon enough, past 12 months	8.0	3.8 (0.8 to 6.9)	0.02	0.02	2.6 (0.4 to 4.8)	0.02	0.007
Delayed medical care because had to wait too long to see doctor in office, past 12 months	6.4	2.7 (0.2 to 5.1)	0.03	0.03	2.7 (0.7 to 4.7)	0.008	0.003
Diagnoses of health conditions							
Ever received a diagnosis of diabetes	8.5	4.0 (1.2 to 6.8)	0.006	0.007	1.8 (–0.8 to 4.4)	0.16	0.16
Ever received a diagnosis of hypertension	25.2	3.7 (–0.6 to 7.9)	0.09	0.04	–1.1 (–4.7 to 2.5)**	0.54	0.44
Ever received a diagnosis of high cholesterol	18.0	3.7 (0.5 to 7.0)	0.02	0.009	3.5 (–0.7 to 7.7)	0.10	0.12

Health status and mental health							
Excellent or very good health	46.2	−3.5 (−7.1 to 0.1)	0.06	0.04	−2.7 (−6.0 to 0.5)	0.09	0.06
Depression mentioned as health problem	8.5	4.0 (1.2 to 6.8)	0.006	0.49	1.8 (−0.8 to 4.4)	0.16	0.25

* All analyses were conducted using multiple imputation methods.
† Data from the 6-month transition period are excluded.
‡ The mean baseline value for expansion states was calculated with the use of data from 2010 through 2013.
§ Difference-in-differences estimates are the percentage-point differences between changes in outcomes in expansion states and changes in outcomes in nonexpansion states during the specified period relative to the period before Medicaid expansion. The estimates were adjusted for race and ethnic background, age, marital status, number of children and adults in family, educational attainment, and state and quarter-year fixed effects.
¶ P values in this column are adjusted according to the family-wise error rate to account for the multiple outcome measures examined in each category.
‖ The year 2 estimate differs significantly from year 1 estimate at the 1% level.
** The year 2 estimate differs significantly from year 1 estimate at the 10% level.
†† The year 2 estimate differs significantly from year 1 estimate at the 5% level.

estimates are similar to those in the Oregon Health Insurance Experiment (see the discussion in Section 7 in the Supplementary Appendix).[20,21]

Despite documenting improvements with regard to several measures of access, we also report evidence that low-income adults had increased wait times and difficulty securing appointments after implementation of the Medicaid expansions. In expansion states as compared with nonexpansion states, we found significant increases in respondents delaying care because appointments were not available soon enough or because wait times were too long. This may have resulted from additional strain on medical providers to absorb new demand for medical care or may reflect provider reluctance to accept Medicaid patients because of low reimbursement rates. Policies that aim to increase the supply of primary care doctors and encourage physicians to provide care to underserved patients may help alleviate these delays in care.

Finally, we found no significant change associated with the ACA Medicaid expansions in health status as reported by respondents, a finding that is in contrast to some recent evidence from Arkansas and Kentucky and a national study of BRFSS data.[8,10] Both our study and results from analyses of BRFSS data showed significant increases in some types of preventive care, which may affect the future health status of newly eligible Medicaid beneficiaries[7]; however, our analysis revealed no significant changes in blood pressure checks, influenza vaccinations, or cancer screenings.

This study had several limitations. We measured changes associated with the Medicaid expansion that took place during a period when other changes were occurring under the ACA. We cannot definitively exclude the possibility that a contemporaneous change that was unrelated to the ACA Medicaid expansions was confounding the results. In addition, the survey data that we use are based on participants' recall of their use of health services and their subjective health status, and these data may be less accurate than administrative or clinical data. Despite these limitations, our study provides new evidence regarding the effect of ACA Medicaid expansions on the use of health care, access to care, health status, and diagnosis of chronic conditions beyond the first year of implementation and offers important insights into how this

policy has shaped experiences and outcomes for low-income adults.

Disclosure forms provided by the authors are available with the full text of this article at NEJM.org.

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