Early ACA Medicaid Expansions:

Impacts on Enrollment and Access *

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Abstract

We use four states that were early adopters of Medicaid expansion to study how this expansion affects enrollment and access to physicians for Medicaid enrollees. We use the universe of Medicaid enrollment and claims data to construct state-month-level measures of enrollment, enrollee composition, and access to physicians. Using a difference-in-differences framework, we find that Medicaid expansion leads to a 13 percent increase in overall enrollment and a 27 percent increase in enrollment among adults ages 23 to 65. These increases also reflect transfers from existing state health insurance programs. Medicaid expansion also leads to a 16 percent increase in the number of Medicaid patients seen by primary care physicians. We find no statistically significant increase in the number of Medicaid patients seen among obstetricians/gynecologists and pediatricians, who are less likely to be directly affected by the expansion. We find that Medicaid expansion increases physician participation on the intensive margin but not on the extensive margin.

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"The uninsured rate is the lowest it's ever been. Let's keep at it until every American has quality, affordable health insurance."
–President Barack Obama's Twitter feed on June 25, 2015

"You know why there are more people insured? Because a lot more people are on Medicaid. . . . And giving people Medicaid insurance is almost like giving them nothing. Because . . . you can't find a doctor that [sic] will see Medicaid patients."
–House Speaker John Boehner on "Meet the Press" on May 3, 2015

1 Introduction

The Affordable Care Act (ACA) has led to one of the most dramatic expansions of health insurance in the United States in decades. Since going into effect in 2014, the uninsured population has been reduced from 40.7 million in 2013 to 31.4 million in 2014 (Carman and Eibner (2014)). Over the same time period, enrollment in Medicaid, the government's large health insurance program targeted at the poor, increased from 12.3 million to 18.2 million (see Figure 1). Thus, nearly two-thirds of the decline in the uninsured is a direct result of the ACA's expansion of Medicaid. Medicaid expansion has sparked political controversy, with many governors choosing not to enact the expansion in their states. This debate partially centers around the question of whether Medicaid enrollees are able to find physicians. The aim of this paper is to provide direct empirical evidence on how Medicaid expansion affects access to physicians.

To understand the effect of Medicaid expansion on access to physicians, we estimate the policy's effects on Medicaid enrollment and physician visits for Medicaid enrollees. We use detailed administrative data on the near-universe of Medicaid enrollees from 2008 through 2012. These data allow us to observe the demographics of new Medicaid enrollees. We also observe detailed claims for their visits with physicians. We use physician identifiers on the claims to examine results separately for physician specialties that are most and least affected by the Medicaid expansions. We examine four states that were early adopters of the ACA's Medicaid expansions. We use a difference-in-differences estimation strategy to

quantify the impact of the expansion on enrollment by demographic characteristics and access to physicians.

Understanding the impact of the ACA's Medicaid expansion on overall enrollment is important in order to assess the extent to which the policy accomplishes its goal of expanding health insurance for the poor. Knowing the composition of new enrollees is also critical for making projections about program cost. The impact on enrollment is not obvious for two reasons. First, although expansions in eligibility follow straightforward criteria based on income, measures of the uninsured rate in the population have typically relied on survey data that contain substantial measurement error. Second, the take-up rate of social insurance programs in the United States has generally been quite low, ranging from 66 percent for unemployment insurance (Blank and Card (1991)) to 73 percent for Medicaid (Gruber (2003)) to 75 percent for the Earned Income Tax Credit (Bhargava and Manoli (Forthcoming)). These social insurance programs have typically not been accompanied by an individual mandate, as is the case with the ACA. This has difficult-to-predict consequences for take-up and enrollment. It is not ex ante clear how the expansion affects the number and composition of new enrollees. We provide direct estimates of these impacts.

It is equally crucial to understand the impact of Medicaid expansion on the program's quality. The Medicaid program has historically been plagued by problems with access to physicians. Because Medicaid physician payment rates are typically lower than those paid by private insurance or Medicare, many Medicaid enrollees report difficulty in finding a physician who will accept Medicaid insurance. There is a large literature of survey evidence and audit studies documenting this; Decker (2012) finds that 31 percent of physicians in 2011 said they would be unwilling to accept new Medicaid patients, compared to 17 percent who would not accept new Medicare patients and 18 percent who would not accept new privately insured patients. We view our paper as complementary to this literature in that we also measure physician access, albeit from a slightly different perspective. Instead of measuring physician access at a point in time, we estimate how a large program expansion impacts

physician access. One important feature of this approach is that we can assess whether this large expansion has general equilibrium effects on the supply of physician visits. Because two of the states we examine increased Medicaid PCP fees and two did not, we also separately examine impacts of Medicaid expansion in states with and without fee increases.

We measure physician access differently than in many other papers. Many rely on surveys that ask physicians if they would be willing to treat new Medicaid patients. Others have relied on audit studies, where researchers hire people posing as patients to request medical appointments, and then measure outcomes such as waiting time. Because we observe the universe of Medicaid enrollment and claims data for almost all states between 2008 and 2012, we construct a claims-based measure of physician access. The claims contain physician identifiers, which allows us to quantify numbers of Medicaid visits for individual physicians and to classify these physicians based on specialty. We are able to directly measure the number of unique physicians treating Medicaid patients at any given point in time. Our approach has a couple of advantages. The first is that it is comprehensive and allows us to make comparisons across many states at different points in time, which lends itself to a difference-in-differences identification strategy. The second is that it does not suffer from some of the biases or measurement error that are likely present in survey data.

Our strategy is to exploit four states[1] that were early adopters of the ACA Medicaid expansion: Connecticut, Minnesota, New Jersey, and Washington, D.C. These four states adopted the ACA Medicaid expansions during 2010 and 2011, several years before the main expansion that took place in 2014. We focus on these states due to current data availability, as there is a lag of several years between the time when Medicaid administrative data are collected and when it becomes available to researchers. One advantage of examining these early adopters is that there are more unaffected states in the control group, which lends itself to a more credible difference-in-differences estimation than might be possible after the full expansion to 26 more states in 2014.

[1]For brevity, we refer to Washington, D.C., as a state.

We find that Medicaid expansion has large impacts on program enrollment. In our four states of interest, Medicaid expansion leads to a 13 percent increase in overall enrollment, and a 27 percent increase in enrollment among adults ages 23 to 65. There is a 16 percent increase in enrollment among Blacks and a 19 percent increase in enrollment among Whites. We also find relatively large increases in the number of Medicaid patients seen. We find a 16 percent increase among primary care physicians; these is no statistically significant increase among obstetricians/gynecologists and pediatricians. Thus, the increase in the number of Medicaid patients seen is concentrated among physicians who treat adults. This suggests that the increase is driven by the expansion of the program among the new enrollees, who are more likely to be adult men instead of women and children.

Interestingly, the Medicaid expansion has no statistically significant effect on a physician's probability of seeing a Medicaid patient. Furthermore, we find that the expansion has no statistically significant effect on the mean distance that a Medicaid enrollee travels to see a physician. Thus, we find that the Medicaid expansion affects physician participation on the intensive margin but not on the extensive margin. That is, the same group of physicians who were already accepting Medicaid patients respond to the Medicaid expansion by seeing more patients. The intensive margin response is most pronounced among primary care physicians, whom we estimate to have 17 percent more Medicaid visits as a result of the expansion. We do not find evidence of increased Medicaid participation among physicians who were not previously seeing Medicaid patients. When focusing on expansion states that also increased fees to primary care physicians compared to those that do not, we do find some evidence that the average distance traveled increases in states that do not increase fees. This suggests that, while physicians are still willing to see Medicaid patients in both scenarios, access to care is a bit more limited when physicians do not experience an increase in fees for Medicaid patients.

This study is closely related to a body of work that examines the impacts of ACA Medicaid expansions on the insurance rate and access to care. One other study examines the

impacts of early ACA Medicaid expansions on uninsurance rates but not on access to care (Sommers, Kenney and Epstein, 2014). Several studies examine the impact of the (non-early) ACA Medicaid expansions on insurance rates and access to care (Sommers et al., 2015, 2016*b*, 2014). Using 2012 - 2015 data from the American Community Survey, Frean, Gruber and Sommers (2016) model all aspects of the ACA at once (subsidy changes, Medicaid expansion, and the individual mandate) using a triple-differences strategy. They find that Medicaid expansion increased insurance coverage among the newly eligible by 14 percentage points in 2015. They find that early ACA Medicaid expansions increased insurance coverage by 10 percentage points. They also find that nearly 30 percent of the ACA's impact on insurance coverage in 2014 - 2015 is via the "woodwork effect," where previously eligible individuals enroll in Medicaid. This study finds no evidence that Medicaid expansion led to offsetting reductions in private insurance. Wherry and Miller (2016) examine (non-early) ACA Medicaid expansions and find that Medicaid expansions lead to higher insurance coverage, increase use of physician and hospital services, and higher diagnosis rates for chronic diseases.

Our study differs from previous work in several important ways. The first key difference is that our measures of Medicaid enrollment are based on comprehensive administrative enrollment data, as opposed to survey-based measures (Benitez, Creel and Jennings, 2016; Sommers et al., 2015). We also present results separately by racial and ethnic groups (impacts of ACA Medicaid expansions on racial and ethnic disparities in insurance are also examined by Buchmueller et al. (2016)).

The second key difference is that we measure "access to physician care" directly using Medicaid claims data. In contrast, other studies have relied on surveys with low response rates. For instance, Sommers et al. (2014) and Sommers et al. (2015) use two survey-based measures of access: whether a respondent says he has a personal doctor and whether a respondent says he had difficulty paying for medical care in the past year. These measures are taken from the Gallup-Healthways Well-Being Index (WBI), a survey with a response

rate of 11 percent. Because our measures rely on comprehensive administrative Medicaid claims data, they are not subject to sampling or non-response biases. In addition, because we are able to link the administrative claims to physician identifiers, we can break out our measures of "access" separately for different groups of physicians: primary care physicians, pediatricians, and obstetricians/gynecologists. Furthermore, because we observe patient zip code and physician zip code, we are able to construct a novel measure of access: the distance traveled to see a physician. Our main contribution to the literature on Medicaid expansions is our examination of claims-based measures of access to physicians.

Our study is also related more broadly to work on the impacts of Medicaid expansions in other settings. In an evaluation of a randomized expansion of Medicaid in Oregon, Baicker et al. (2013) find that individuals with Medicaid coverage experience no statistically significant improvement in physical health but do experience positive improvements in mental health and financial stability. While the Oregon study examined a small-scale randomized Medicaid expansion, we examine a Medicaid expansion large enough in scale to plausibly affect provider behavior. Thus, we shed light on the important empirical question of whether such a large expansion leads to a strain on physicians and a decline in program quality. In this paper, we do not seek to estimate the causal impact of Medicaid coverage on health outcomes.

Our results are informative for policymakers seeking to weigh the costs and benefits of a key policy decision: whether and how to expand the Medicaid program. A government with limited funds could expand Medicaid in two distinct ways. The first is to expand the pool of enrollees by relaxing eligibility requirements. The second is to increase program generosity, for example by raising physician payment rates. The estimates from this paper are informative about the direct trade-off between Medicaid eligibility expansion and program quality. We document the extent to which physicians adjust their supply of visits for Medicaid patients as a result of this large Medicaid expansion, in states with and without a Medicaid fee increase.

In the following section we describe the ACA Medicaid expansions and the expansions we focus on in our analysis. Section 3 describes the data we use to assess the effects of early Medicaid expansions and Section 4 describes our empirical strategy. Our main results are presented in Section 5, and Section 6 concludes.

2 Background: Early ACA Medicaid Expansions

2.1 Medicaid Eligibility

The Affordable Care Act (ACA) was signed into law in March 2010. One goal of the ACA was to expand Medicaid to anyone under the age of 65 whose family is below 133% of the federal poverty line (FPL) by January 2014. While a 2012 Supreme Court decision made this expansion optional, as of December 2017, thirty-three states (including Washington, D.C.) have adopted the Medicaid expansion. In fact, six states expanded Medicaid before 2013: California, Connecticut, the District of Columbia, Minnesota, New Jersey and Washington. In this paper, we focus on the expansions in Connecticut, the District of Columbia, Minnesota, and New Jersey.[2]

Prior to the ACA, Medicaid was limited to individuals in mandatory eligibility groups. Eligibility requirements varied from state to state, but a low-income individual would typically need some other qualifying condition to be eligible, such as being disabled or having a child. In states that adopted the ACA expansion, individuals now qualify solely on the basis of being low income. Many low-income adult men have become newly eligible for Medicaid as a result of the expansion. In each of the four states that we study, access to Medicaid was expanded to include all individuals falling under some income threshold.

Table 1 describes Medicaid expansions in each of these four states. States were able

[2]California and Washington are less suitable for this analysis because their Medicaid programs underwent other policy interventions. For instance, California transitioned many children from the Children's Health Insurance Program (CHIP) to Medi-Cal and rolled out their expansion at the county level. For an examination of the California expansion, see Sommers et al. (2016*a*).

to expand through the ACA option or by obtaining a Section 1115 waiver. States that exercise the ACA option must meet the federal cost sharing requirements and cannot cap enrollment. States that exercised the waiver option were able to expand Medicaid without meeting all federal requirements. For example, they could provide more limited benefits and cap enrollment. Some states, such as Minnesota, adopted both options to cover adults above 133% of the FPL. Those that adopted the ACA option could receive matching funds from the federal government to cover adults with incomes up to 133% of the FPL, though Table 1 indicates that some states chose a lower threshold.

2.2 Medicaid Payment Rates

Medicaid provider payment rates are typically well below Medicare or private provider payment rates. As a result, Medicaid enrollees and policymakers have frequently expressed concern over a lack of provider participation in the Medicaid program. To address this issue, the ACA Medicaid expansion requires participating states to temporarily raise their Medicaid payment levels to Medicare levels for many primary care services. This "fee bump," which applies in 2013 and 2014, is fully federally funded, which means that the federal government must cover the difference between the new fees and the state's Medicaid fees in effect on July 1, 2009 (as is described in Zuckerman and Goin (2012)). The "fee bump" only applies to primary care physicians for particular types of office visits, and it was always publicly known that the "fee bump" would expire at the end of 2014.

Our entire observation period, from 2008 through 2012, takes place prior to the nationwide "fee bump," which did not go into place until 2013. Early expansion states could choose to implement their own state-specific fee bump. Zuckerman and Goin (2012) report results from the Kaiser Commission on Medicaid and the Uninsured (KCMU) / Urban Institute 50-state survey of Medicaid physician fees in 2012. The state fees were collected from state websites and supplemented with telephone interviews. The same survey of physician fees was also conducted in 2008, so it is possible to assess whether there were changes in Medicaid

physician fees from 2008 to 2012.

According to this survey, from 2008 to 2012, Medicaid physician fees changed in our four states of interest as follows: fees in Connecticut declined by 3.4 percent; fees in the Washington, D.C., increased by 69 percent; fees in Minnesota increased by 29 percent; and fees in New Jersey increased by 1.1 percent. Thus, in our analysis we combine two states with almost no change in fees (Connecticut and New Jersey) and two states with large increases in fees (the Washington, D.C., and Minnesota).

3 Data

3.1 MAX Data

We use confidential and restricted access administrative data on the universe of Medicaid enrollees, covering nearly all states between 2008 and 2011, as well as some states in 2012. Our data source is the Medicaid Analytic eXtract (MAX), which is the standardized data source that CMS collects from state-run Medicaid programs. We observe individual-level data on enrollment as well as demographics for each month from 2008 through 2012. We observe each individual's state and zip code of residence. We also observe individually-linked claims on inpatient, outpatient, physician, and prescription drug utilization. There is a multi-year lag for MAX data to become available; the data we use are the most current MAX data available.

In particular, we have a substantial amount of data in the pre- and post-periods for our four states of interest (Connecticut, Minnesota, New Jersey, and Washington, D.C.). We observe Connecticut data through December 2012; we observe Minnesota and New Jersey data through December 2011; and we observe Washington, D.C., data through December 2010. The post-expansion period for each of these states spans at least four months. This gives us enough of a time period to see how early expansion affects the quantity of Medicaid enrollees as well as the quality of Medicaid insurance (as measured by access to physicians).

We use the detailed enrollment and demographic data to construct enrollment at the state-month level, overall and for subgroups that are likely to be of particular interest to policymakers. Because we observe the full history of enrollment from 2008 on, we are also able to identify whether an individual is a new Medicaid enrollee (as of the expansion start date) or a continuing Medicaid enrollee. With this, we are able to examine overall enrollment as well as new enrollment, broken down by age, gender, and race/ethnicity.

Table 5 shows summary statistics for the sample of Medicaid enrollees used in the main analysis. The table contains exactly one observation for every individual enrolled in Medicaid at any time from 2008 through 2012, as observed in the MAX Personal Summary files from those years. We observe 106,364,816 unique Medicaid enrollees during this time period. The sample of Medicaid enrollees is 58 percent female, which reflects the fact that the Medicaid program has typically served low-income women with children. This is due to the fact that, prior to the ACA, having a child would qualify a low-income person to receive Medicaid coverage. Medicaid enrollees are 41 percent white, 20 percent Black, and 25 percent Hispanic. The majority of Medicaid enrollees (52 percent) are children between the ages of 0 and 19. About 29 percent of Medicaid enrollees are adults between the ages of 20 and 45.

3.2 NPPES Data

In order to construct our measures of physician access, we combine the MAX data with individual-level data on physicians. We use the National Plan and Provider Enumeration System (NPPES) to create a denominator file of active physicians and other health care providers, such as nurses. The NPPES is a public use file disseminated by CMS. It is a comprehensive list of all health care providers in the United States. In the NPPES, each health care provider has a unique identifier, known as the National Provider Identifier (NPI). Physicians and other health care providers must register for an NPI in order to bill public health insurance programs, such as Medicaid and Medicare. They may also need an NPI in order to bill private insurers. Thus, the NPI database covers the universe of physicians and

health care providers in the United States.

We use the December 2015 version of the NPPES, which contains all physicians and health care providers who were active between 2005 and 2015. This covers our entire sample period, which is from 2009 through 2012 for the physician access analysis (we omit the year 2008 from this set of results because the MAX files from those years lack data on NPI and zip code). For our main analysis, we restrict the file to those who are physicians, according to the NPPES provider taxonomy variables. Summary statistics for the denominator file of physicians are shown in Table 6. We observe about 1.2 million physicians who have active NPIs between 2005 and 2015. About 17 percent are primary care physicians (PCPs), 5.5 percent are obstetricians/gynecologists (OB-GYNs), and 9 percent are pediatricians.

We use the MAX Other Therapy files for 2009 through 2012 to construct a data set of all office visits for Medicaid enrollees. The MAX claims contain information on the date of the office visit as well as the NPI of the health care provider. Thus, in the MAX claims we directly observe the NPIs of all of the physicians who treated any Medicaid enrollees in a particular state and month. This is summarized in Table 6. We use the same fixed denominator of physicians for all years of the analysis. About 58 percent of physicians see a Medicaid patient in January 2009, versus about 63 percent in January 2012. Because we observe the NPI for each office visit, we can also compute measures of physician access by specialty, which we report in the section on results. In the NPPES data, we observe the physician's practice zip code. From this we can also construct a measure of distance between the patient's zip code and the physician's practice zip code, in order to measure whether the Medicaid expansion affects the distances that Medicaid enrollees must travel in order to see a physician or health care provider.

3.3 Medicaid Costs

We also present results showing how overall Medicaid costs changed in the early ACA expansion states. In the MAX Personal Summary File, we observe three payment variables on an

annual basis. The first variable is the "total Medicaid payment amount" (description), which is equal to the total amount of money paid by Medicaid for the recipient during the calendar year. This includes fee-for-service and premium payments. The second variable is the "fee-for service Medicaid payment amount" (description), which is equal to the amount of money paid by Medicaid for the recipient during the calendar year for fee-for-service claims. The third variable is the "premium payment Medicaid payment amount" (description), which is equal to the amount of money paid by Medicaid for the recipient during the calendar year as premium payments to prepaid plans. For each individual, we use the "total Medicaid payment amount" as our main measure of total Medicaid costs.

4 Empirical Strategy

4.1 State-Month-Level DiD

Our identification strategy uses a difference-in-differences estimator that exploits variation at the state-month level to understand the effects of Medicaid expansion. The main estimating equation is:

$$y_{st} = \delta \cdot \text{Expansion} \times \text{Post}_{st} + \gamma_s + \rho_t + \epsilon_{st} \tag{1}$$

where s indexes the state and t indexes the month; y_{st} is an outcome of interest such as Medicaid enrollment; $\text{Expansion} \times \text{Post}_{st}$ is an indicator for whether state s is a Medicaid expansion ("treated") state with the expansion already in place in month t; γ_s captures a state fixed effect; ρ_t captures a month fixed effect; and ϵ_{st} is an error term. The coefficient of interest is δ, which is the causal effect of the Medicaid expansion on outcome y. The outcomes of interest are overall enrollment and enrollment among particular subgroups based on age, gender, and race/ethnicity. In our results tables, we use the natural logarithm of enrollment so that we may interpret δ as the percent change in y due to the expansion of Medicaid.

Minnesota implemented two Medicaid expansions. The first was most similar to the expansions in the other states in terms of the federal poverty line limits. The second expansion was much more generous, even relative to the ACA requirements. We modify Equation 1 by constructing a separate indicator for the second expansion and we report the coefficient on the second indicator separately in the tables.[3]

4.2 Physician-Level DiD

We also report results from a physician-level analysis of participation in the Medicaid program. We use a difference-in-differences specification. The main estimating equation is:

$$y_{ist} = \delta \cdot \text{Expansion} \times \text{Post}_{ist} + \gamma_s + \rho_t + \epsilon_{ist} \tag{2}$$

where i indexes the physician, s indexes the physician's state, and t indexes the month; y_{ist} is an outcome of interest such as the number of visits with Medicaid enrollees; Expansion $\times$ Post_{st} is an indicator for whether state s is a Medicaid expansion ("treated") state with the expansion already in place in month t; γ_s captures a state fixed effect; ρ_t captures a month fixed effect; and ϵ_{ist} is an error term. The coefficient of interest is δ, which is the causal effect of the Medicaid expansion on outcome y. The main outcomes of interest are measures of physician participation in the Medicaid program: the number of visits with Medicaid patients and an indicator for seeing any Medicaid patient.

[3] An alternative specification, which we may explore in future work, is to allow treatment intensity to be a continuous variable. This would allow us to capture the fact that the expansions differed in terms of the magnitude of the change in eligibility requirements.

5 Results

5.1 Demand

First we evaluate the demand response to early Medicaid expansion. Demand for Medicaid can be measured by the number of Medicaid enrollees. Figures **??** through 5 depict the change in new enrollees from February 2008 through December 2012 in Connecticut, Minnesota, New Jersey, and Washington, D.C. The vertical lines indicate the date at which each state expanded its Medicaid program. In each state, new enrollment spikes as soon as Medicaid is expanded and then continues to grow. These immediate changes reflect transfers from existing state programs. Sommers, Kenney and Epstein (2014) interviewed state officials and report the number of new enrollees in early expansion states who are transfers from existing state health insurance programs. We report their numbers in Table 3. Our estimates of new enrollment and subsequent analysis of access to physicians includes these enrollees, who are new to Medicaid but were previously covered under other state health insurance programs. Because the goal of our paper is to understand physician access for the post-expansion Medicaid population, we view these new enrollees as part of our study sample. Thus, our estimates of new Medicaid enrollment do not necessarily reflect a decline in the uninsurance rate. For estimates of the decline in the uninsurance rate, see Sommers, Kenney and Epstein (2014).

Figures 3 through 5 break down the change in new enrollment by age group, race/ethnicity, and gender. Figure 3 indicates that adults 19 to 64, not surprisingly, make up much of the increase in Medicaid enrollment. Figure 4 shows that in Connecticut, there are sizable increases in new enrollment among those who are White, Black, and Hispanic. In Washington, D.C., the large increase in enrollment is primarily concentrated among those who are Black. In Minnesota and New Jersey, the increases in enrollment are primarily driven by those who are White. Figure 5 shows that the increase in enrollment is higher among men. Taken together, these figures highlight a change in the composition of Medicaid enrollees upon

expansion.

Table 4 describes the composition of Medicaid enrollees before and after Medicaid expansion in each state. The table highlights changes in the percent of adults, males and Blacks enrolled in Medicaid. Adults are defined as those who are at least 19 years old. The "before" column shows the percent of total enrollees the month before Medicaid expansion and the "after" column shows the percent of enrollees in the first month of expansion. For example, for Connecticut, "before" indicates percentages in March 2010 and "after" indicates percentages in April 2010. Not surprisingly, in each of these states adults make up a much larger percentage of the Medicaid population after expansion. The largest increase is in Washington, D.C., where the percentage of Medicaid enrollees who are adults increased from 53.7 percent to 61.2 percent.

Table 7 shows estimates of the impact of Medicaid expansion on overall enrollment as well as enrollment among particular subgroups. Standard errors are clustered at the state level and the sample includes all states except for California and Washington state. The table indicates that initial Medicaid expansion leads to a 12.6 percent increase in total enrollment. Further expansion in Minnesota leads to a 13.7 percent increase. The increase in enrollment is primarily concentrated among individuals aged 23 - 65, as expected given the expansion of Medicaid eligibility to these groups. On average, expansion leads to a 26.9 percent increase in this group. Men experience a 16.1 percent increase in enrollment. Prior to expansion, few men qualified for Medicaid, so these results are consistent with what one would expect. Surprisingly, the increase is not very different between Blacks and Whites. The increase in enrollment was 16 percent among Blacks and 19 percent among Whites. All of these estimates are statistically significant at the 1 percent level. There is little evidence that Hispanic enrollment increased upon Medicaid expansion.

In Figure 6, we focus on expansion states and estimate the same specification as in Table 7 separately for each age. We find large positive increases in enrollment for ages 22 through 64, ranging from approximately 30 percent to 60 percent. For other ages, the changes in

enrollment are not statistically significantly different from zero. The figure confirms the fact that the Medicaid expansion primarily impacts adults, and that these impacts are large in magnitude. Overall, these results indicate a shift in the demand for Medicaid insurance similar to the shift is depicted in Figure 8, the increase in enrollment suggests an outward shift from demand curve D to D'. We will elaborate upon this figure in section 5.2.2.

5.2 Supply

Next, we evaluate the supply response to Medicaid expansion by estimating Equation 2, in which the outcomes of interest are the log number of Medicaid patients seen by physicians and log number of visits with Medicaid patients. These are measures of physician participation in the Medicaid program. Given the change in Medicaid enrollment, and the influx of adult men into Medicaid, we expect changes to be most apparent among primary care physicians. We do not expect to see much change among OB-GYN physicians or pediatricians, since mothers and children already had access to Medicaid prior to the expansion.

Tables 8 and 9 show how the number of Medicaid patients and number of Medicaid visits change after expansion, respectively. In both tables, the first column includes all physicians (but does not include other health care providers, such as nurses). The subsequent columns show results separately for primary care physicians, obstetricians/gynecologists, and pediatricians. Standard errors are clustered at the state level.

We estimate that Medicaid expansion leads to an increase in the number of Medicaid patients seen of nearly 10 percent and an increase in the number of visits with Medicaid patients of 10.7 percent. While these estimates are not statistically significant, they are economically significant. A breakdown by sub-specialty indicates that the increases are driven by primary care physicians, who are more likely to see those most affected by the expansion, such as adult men. When we look at primary care physicians in the third column of these tables, we find an increase of 15.6 percent in the number of Medicaid patients seen and an increase of 17.2 percent in the number of visits with Medicaid patients. The estimated

increases among primary care physicians are statistically significant at the 5 percent level.

In the fourth and fifth columns of Tables 8 and 9, we examine impacts on two groups of physicians who are expected to be least affected by Medicaid expansions: OB-GYN physicians and pediatricians. The results align with our expectations. For these physicians, we estimate small impacts that are not statistically significantly different from zero. For instance, while we find an increase in the number of Medicaid patients seen by OB-GYN physicians of about 7.2 percent, this increase is not statistically significant. For OB-GYN physicians, we find little evidence of an increase in the number of visits with Medicaid patients. Likewise, Tables 8 and 9 indicate an increase of 6.5 percent in the number of Medicaid patients seen by pediatricians and in the number of visits with Medicaid patients for pediatricians. These estimates are not statistically significant and indicate that the overall increase in Medicaid patients seen and visits with Medicaid patients is primarily driven by physicians who are more likely to treat adult men.

Finally, our data also allow us to examine how the Medicaid expansion impacts physician participation in the Medicaid program on the extensive margin. We evaluate this using a specification where the dependent variable is an indicator for whether the physician saw any Medicaid patients during the observation month. These results are shown in Table 10. We estimate that expansion leads to a 3.5 percentage point increase in the probability that a physician sees a Medicaid patients. Estimates are not statistically significant at conventional levels. Overall, it seems that the Medicaid expansion has little impact on physician supply on the extensive margin. The main impact of the expansion is to increase physician supply on the intensive margin. While there is some indication that physicians may be participating in the Medicaid program, we find that the physicians who are already participating in the Medicaid program respond to the expansion the most by seeing more Medicaid patients.

5.2.1 Distance Traveled to See a Physician

Our findings in the previous sections show that physicians see more Medicaid patients overall in response to the Medicaid expansion. Next, we evaluate whether the distance a Medicaid patient travels to see a physician changes in response to the expansion. The distance traveled by patients functions as a measure of access to physicians. In this section, we necessarily restrict our analysis to the set of observed office visits between Medicaid patients and physicians for which we observe the zip code of the patient and zip code of the physician. This allows us to construct a measure of distance traveled for each office visit. In this section, we restrict the sample to visits from 2010 to 2012, due to data limitations.

Table 11 summarizes how the average distance traveled for an office visit with a physician changes as a result of the Medicaid expansion.[4] The dependent variable, mean distance, is the mean distance traveled by patients at the state-month level. To construct this, we calculate the distance from the patient's zip code to the physician's zip code for each office visit observed in the MAX claims. For each patient, we compute the mean of these distances to get the mean distance traveled at the patient-state-month level. The mean of the patient-state-month distance traveled at the state level is the mean distance and the dependent variable in Table 11. Overall, the table shows that the mean distance traveled increases slightly, by 2.6 miles for all physicians and 5.4 miles for primary care physicians. However, none of these results is statistically significant. We find small decreases in the distance traveled to OB-GYN and pediatrics offices, however, these estimates are very imprecise.

In Table 12, we assess whether the Medicaid expansion affects the probability that a Medicaid patient has a visit with a physician. With this specification, we do not find any statistically significant impacts of the expansion. This is suggestive that the "new" Medicaid enrollees do not use Medicaid at a higher rate than those already enrolled in the program.

[4]The results are similar for alternative specifications in which we weight observations by the number of Medicaid patients or in which we use the median distance traveled as our dependent variable.

5.2.2 States that Increase Physician Fees

Medicaid physicians are paid a state-based fixed rate for treating patients. This rate is typically below Medicare and private provider payment rates. This would suggest that the pre-expansion Medicaid price ceiling was below the equilibrium rate of P* in Figure 8, leading to a physician shortage of Q^D - Q^S. Section 5.1 indicated a shift in the demand curve like that from D to D' in figure 8. In the absence of an increase in the price ceiling, and assuming no change in physician supply, this shortage would increase to $Q^{D'}$ - Q^S.

As mentioned in Section 2, some states that expanded the Medicaid program substantially increased primary care physician fees during the period we study. In particular, Minnesota increased fees by 29% and Washington, D.C. increased fees by 69%. In this section, we compare these two types of expansion states and to test how increased payment rates are related to access to care. It is possible that access to physician care differs among states that increased physician fees and those that did not. Given figure 8, we expect that patients in expansion states that did not increase payment rates are expected to face more limited access to care than patient in expansion states that increased payment rates.

To account for this, we modify Expansion $\times$ Post_{st} in Equation 2 to be Expansion $\times$ Post_{st} $\times$ Fee Increase which indicates whether state s is a Medicaid expansion state with the expansion in place in month t and also increased physician fees. We can then estimate how Medicaid patients seen and Medicaid visits differ in states that also increased physician fees relative to those that did not. In this section, we will focus on the sample of primary care physicians.

Columns 1 and 2 of Table 13 show how the number of Medicaid patients seen and Medicaid patient visits differ among states that also increase physician fees. The table indicates that expansion states that did not increase physician fees had a 11.2 percent increase in patients seen (relative to non-expansion states), but this increase is not statistically significant at conventional levels. Expansion states that also increased physician fees saw an 18.3 percent increase that is statistically significant at the 1 percent level. Both types of expansion

states also experienced a large increase in Medicaid patient visits. Expansion states that did not increase physician fees had a 15.3 percent point increase in Medicaid patient visits, relative to non-expansion states. Once again, states that also increased physicians' fees saw an increase of 18.4 percent points relative to non-expansion states. While the estimated increase in log patients and log visits in states that increased physician fees are not statistically different from the estimates for states that did not increase physician fees, these results suggest that physicians in states that increased fees responded more on the intensive margin than those that did not.

Column 3 of Table 13 indicates that the response also differs between states that increased physician fees and those that did not on the extensive margin. In states that did not increase physician fees, the probability of seeing a Medicaid patient increased by nearly 5.0 percentage points relative to control states. This estimate is statistically significant at the 10% level. The second row, however, indicates that states that increased physician fees experienced an increase of 1.8 percentage points. These estimates are statistically different from each other, indicating that primary care physicians in states that did not increase fees responded more on the extensive margin than primary care physicians in states that did increase fees.

Columns 4 and 5 of Table 13 restrict the sample to the years from 2010 to 2012 and observations are at the state-month level. The estimates in column 4 are consistent with those in column 1 and indicate that patients in states that did not increase fees experienced more limited access to care than patients in states that increased physician fees. We find that the average distance traveled to visit a primary care physician increased by 15.8 miles in expansion-states that did not increase physician fees, relative to non-expansion states. This estimate is statistically significant at the 10% level. Patients in states that increased fees, however, did not experience a similar increase in the distance traveled. The estimates suggest the distance traveled did not change much in states that increased fees, relative to non-expansion states, and decreased if anything. The estimated coefficients in rows 1 and 2 of column 4 are statistically different from each other, indicating that changing physician

incentives can affect patients' access to medical care.

5.3 Costs

Finally, we evaluate the overall cost implications of Medicaid expansion. Since our data on total costs are at the annual level, we do not have sufficient variation in the data to estimate difference-in-differences specifications. Instead, we use the MAX annual cost data to provide descriptive statistics on the annual costs in the early Medicaid expansion states. In this section we focus on Medicaid costs in 2009, before any states implemented a Medicaid expansion, and in 2011, which is immediately after our four states of interest had implemented the expansion. We compare changes in costs separately for each of the early Medicaid expansion states, and we also include a row with the average across states that did not have an early Medicaid expansion. We exclude California and Washington from this analysis.

Table 14 summarizes the total cost of Medicaid in billions. Costs are broken down into fee-for-service (FFS) costs and premium costs (premiums paid by the state to Medicaid HMO plans). Table 15 summarizes the percentage change in costs from 2009 to 2011. Total costs increased by 9 percent in states that did not implement any change, reflecting an overall time trend in healthcare spending. However, total costs increased much more in the states that implemented an early Medicaid expansion. Connecticut and Washington, D.C., experienced the largest increases, with total costs rising 19 and 18 percent, respectively. Total costs increased by 15 percent in Minnesota and 13 percent in New Jersey. Table 15 also shows that the largest increases, in percentage terms, were for premiums. States without an expansion saw an increase in premiums of 25 percent while states with an expansion saw larger increases. The largest was in Washington, D.C., where the cost of premiums increased by 81 percent. This increase in costs is primarily driven by an increase in cost for male enrollees.

Tables 14 and 15 also show the breakdown in costs separately for male and female Medicaid enrollees. In non-expansion states, costs for men increased by 16 percent while costs

for women increased by 13 percent. The differences in costs between male and female enrollees were generally larger in the early Medicaid expansion states. The total cost for male enrollees increased by 24 percent in Connecticut and 21 percent in Minnesota. New Jersey and Washington, D.C., saw more modest increases in male enrollee costs of 16 percent and 13 percent, respectively. The changes in costs for females in all of these states, except for Washington, D.C., were substantially lower. The costs for female enrollees increased by 15 percent in Connecticut, 11 percent in Minnesota, 10 percent in New Jersey, and 14 percent in Washington, D.C. It is possible that the larger differences in cost changes for male enrollees are partially explained by greater changes in the age composition of the male enrollees.

6 Conclusion

The ACA is one of the most sweeping overhauls of the health insurance system in United States history. In this paper, we examine the impact of a major component of this legislation, the expansion of Medicaid. Using detailed confidential administrative data on the universe of Medicaid enrollees for nearly all states from 2008 through 2012, we use a difference-in-differences strategy to provide estimates of the expansion's impact on enrollment and access to physicians. Our analysis focuses on four states that were early adopters of the ACA policy, expanding their Medicaid eligibility requirements in 2010 and 2011.

Our results are informative for policymakers seeking to weigh the costs and benefits of expanding Medicaid, particularly by expanding eligibility. By documenting the extent to which physicians adjust their supply of visits for Medicaid patients as a result of the early Medicaid expansions, we assess the direct trade-offs between eligibility expansion and program quality. In particular, we find an expansion in physician supply that can accommodate some of the expansion in enrollment.

We have shown that Medicaid expansion has large impacts on program enrollment. In our states of interest, Medicaid expansion leads to a 13 percent increase in overall enrollment,

and a 27 percent increase in enrollment among adults ages 23 to 65. We also find relatively large increases in the number of Medicaid patients seen. Medicaid expansion leads to a 16 percent increase in the number of Medicaid patients seen by primary care physicians. This increase is concentrated among physicians who treat adults, suggesting that the increase in visits is driven by the expansion of the program among new enrollees who are more likely to be adult men.

In general, we find no statistically significant effect on a physician's probability of seeing a Medicaid patient or on the mean distance that a Medicaid enrollee travels to see a physician. This indicates that Medicaid expansion increases physician participation on the intensive but not extensive margin. However, when focusing on states that increase physician fees and those that did not, we find that patients in Medicaid expansion states that did not increase physician fees travel about 15 miles more on average to visit a physician. Patients in states that did increase fees, on the other hand, do not need to travel further to visit a physician. Our findings are inconsistent with the narrative that all of the new Medicaid enrollees find themselves unable to see any physician at all, though we do find evidence that access to care is more limited if physician fees do not increase.

References

Baicker, Katherine, Sarah L. Taubman, Heidi L. Allen, Mira Bernstein, Jonathan H. Gruber, Joseph P. Newhouse, Eric C. Schneider, Bill J. Wright, Alan M. Zaslavsky, and Amy N. Finkelstein. 2013. "The Oregon Experiment Effects of Medicaid on Clinical Outcomes." *New England Journal of Medicine*, 368(18): 1713–1722.

Benitez, Joseph A., Liza Creel, and J'Aime Jennings. 2016. "Kentuckys Medicaid Expansion Showing Early Promise On Coverage And Access To Care." *Health Affairs*, 10.1377/hlthaff.2015.1294.

Bhargava, Saurabh, and Dayanand Manoli. Forthcoming. "Psychological Frictions and the Incomplete Take-Up of Social Benefits: Evidence from an IRS Field Experiment." *American Economic Review*.

Blank, Rebecca, and David Card. 1991. "Recent Trends in Insured and Uninsured Unemployment: Is There an Explanation?" *The Quarterly Journal of Economics*, 106(4): 1157–1189.

Buchmueller, Thomas C., Zachary M. Levinson, Helen G. Levy, and Barbara L. Wolfe. 2016. "Effect of the Affordable Care Act on Racial and Ethnic Disparities in Health Insurance Coverage." *American Journal of Public Health*, 106(8): 1416–1421.

Carman, Katherine Grace, and Christine Eibner. 2014. "Changes in Health Insurance Enrollment Since 2013: Evidence from the RAND Health Reform Opinion Study." *RAND Corporation*.

Decker, Sandra L. 2012. "In 2011 Nearly One-Third of Physicians Said They Would Not Accept New Medicaid Patients, But Rising Fees May Help." *Health Affairs*, 31(8): 1673–1679.

Frean, Molly, Jonathan Gruber, and Benjamin D. Sommers. 2016. "Disentangling the ACAs Coverage Effects Lessons for Policymakers." *New England Journal of Medicine*, 375(17): 1605–1608.

Gruber, Jonathan. 2003. "Medicaid." In *Means Tested Transfer Programs in the United States*. , ed. Robert Moffitt. Chicago:University of Chicago Press for NBER.

Sommers, Benjamin D., Genevieve M. Kenney, and Arnold M. Epstein. 2014. "New Evidence On The Affordable Care Act: Coverage Impacts Of Early Medicaid Expansions." *Health Affairs*, 33(1): 78–87.

Sommers, Benjamin D., Kao-Ping Chua, Genevieve M. Kenney, Sharon K. Long, and Stacey McMorrow. 2016*a*. "California's Early Coverage Expansion under the Affordable Care Act: A County-Level Analysis." *Health Services Research*, 51(3): 825–845.

Sommers, Benjamin D., Munira Z. Gunja, Kenneth Finegold, and Thomas Musco. 2015. "Changes in Self-reported Insurance Coverage, Access to Care, and Health Under the Affordable Care Act." *JAMA*, 314(4): 366–374.

Sommers, Benjamin D., Robert J. Blendon, E. John Orav, and Arnold M. Epstein. 2016*b*. "Changes in Utilization and Health Among Low-Income Adults After Medicaid Expansion or Expanded Private Insurance." *JAMA Internal Medicine*, 176(10): 1501–1509.

Sommers, Benjamin D., Thomas Musco, Kenneth Finegold, Munira Z. Gunja, Amy Burke, and Audrey M. McDowell. 2014. "Health Reform and Changes in Health Insurance Coverage in 2014." *New England Journal of Medicine*, 371(9): 867–874.

Wherry, Laura R., and Sarah 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.

Zuckerman, Stephen, and Dana Goin. 2012. "How Much Will Medicaid Physician Fees for Primary Care Rise in 2013? Evidence from a 2012 Survey of Medicaid Physician Fees." *The Kaiser Commission on Medicaid and the Uninsured*, December.

7 Figures

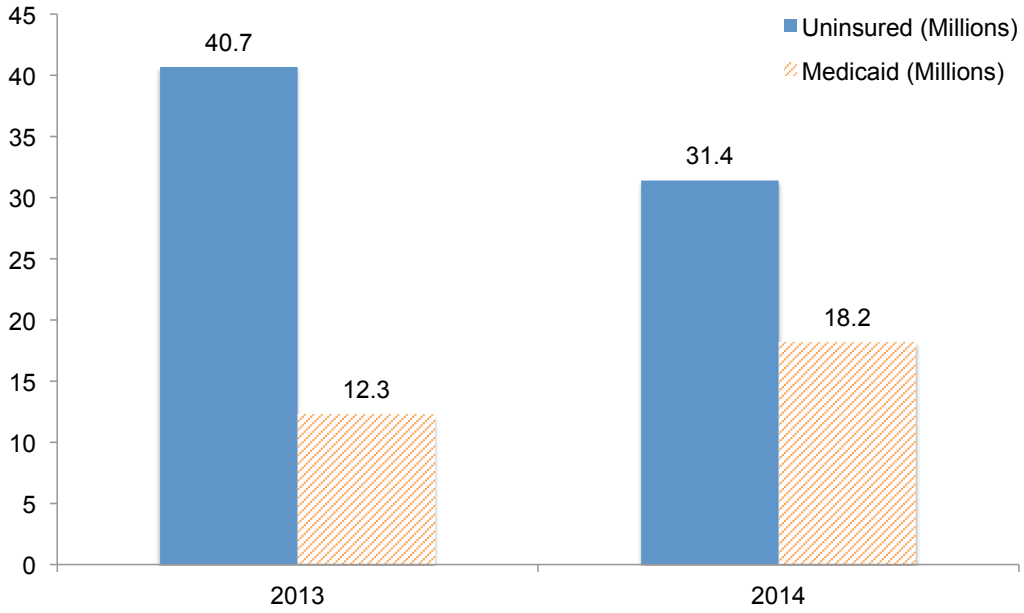

Figure 1: Post-ACA Reduction of Uninsured and Expansion of Medicaid

Notes: The figure shows that between 2013 and 2014, the number of uninsured people in the United States declined from 40.7 million to 31.4 milion. Over the same time period, the number of people enrolled in Medicaid increased from 12.3 million to 18.2 million. These estimates are based on data from the RAND American Life Panel (Carman and Eibner, 2014).

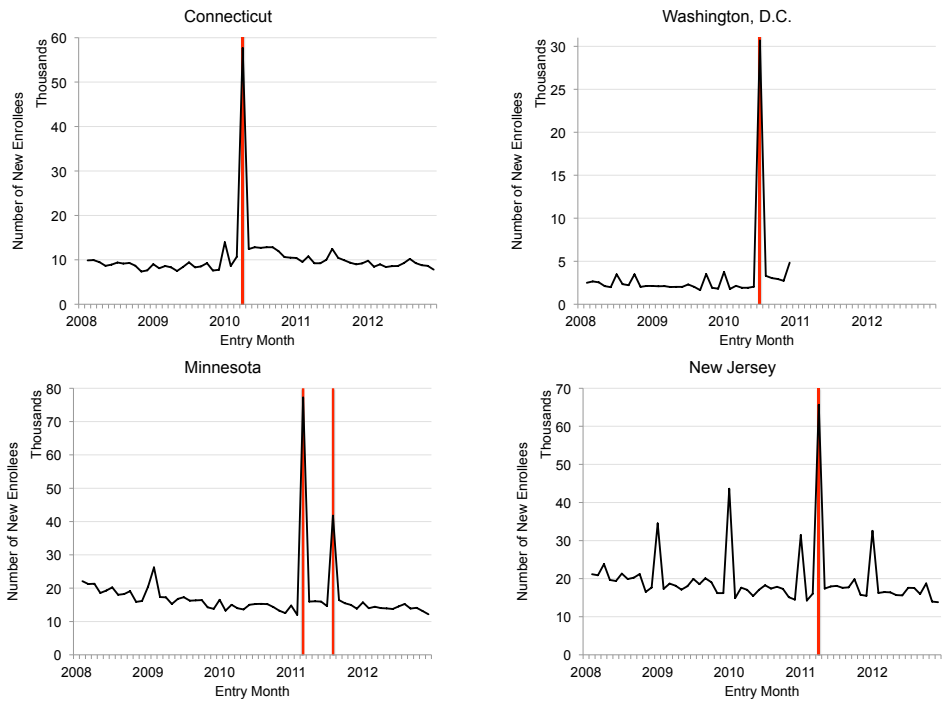

Figure 2: New Medicaid Enrollees

Notes: The figure shows the number of new Medicaid enrollees (in thousands) by calendar month from February 2008 through December 2012. These numbers are based on the authors' calculations from the MAX Personal Summary files for 2008 through 2012. Each individual is considered a "new enrollee" in the first month in which he appears in the data. For an individual already enrolled in Medicaid as of January 2008, we do not observe the date at which he was a "new enrollee," so these individuals are omitted from the figure. Vertical lines indicate the date at which Medicaid was expanded in each location. Each of these four states expanded Medicaid prior to the 2014 ACA expansion. Some states expanded Medicaid through waivers and also adopted the ACA proposal for expansion. Minnesota enacted two separate expansions.

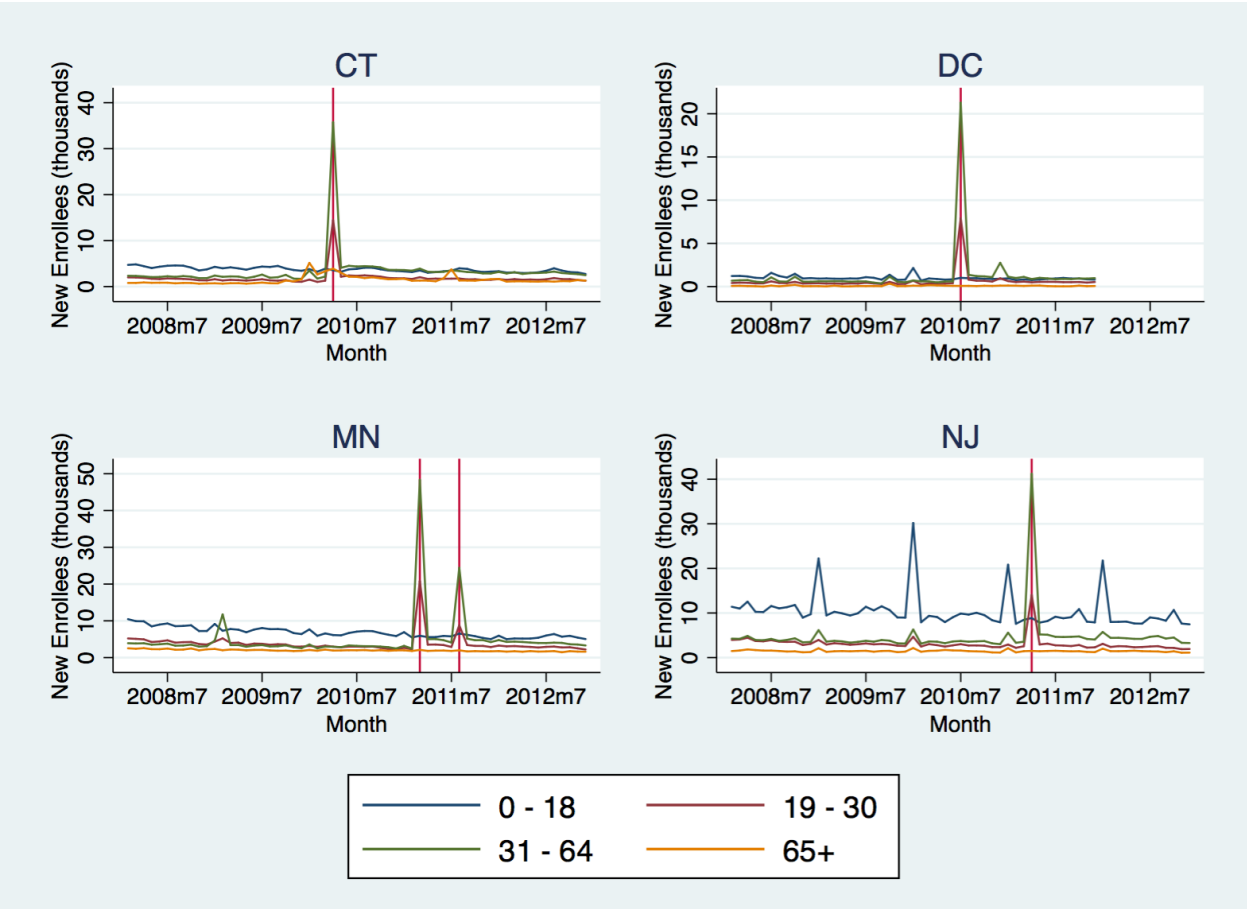

Figure 3: New Medicaid Enrollees by Age Group

Notes: The figure shows the number of new Medicaid enrollees (in thousands) by calendar month from February 2008 through December 2012. These numbers are based on the authors' calculations from the MAX Personal Summary files for 2008 through 2012. Each individual is considered a "new enrollee" in the first month in which he appears in the data. For an individual already enrolled in Medicaid as of January 2008, we do not observe the date at which he was a "new enrollee," so these individuals are omitted from the figure. Vertical lines indicate the date at which Medicaid was expanded in each location. Each of these four states expanded Medicaid prior to the 2014 ACA expansion. Some states expanded Medicaid through waivers and also adopted the ACA proposal for expansion. Minnesota enacted two separate expansions.

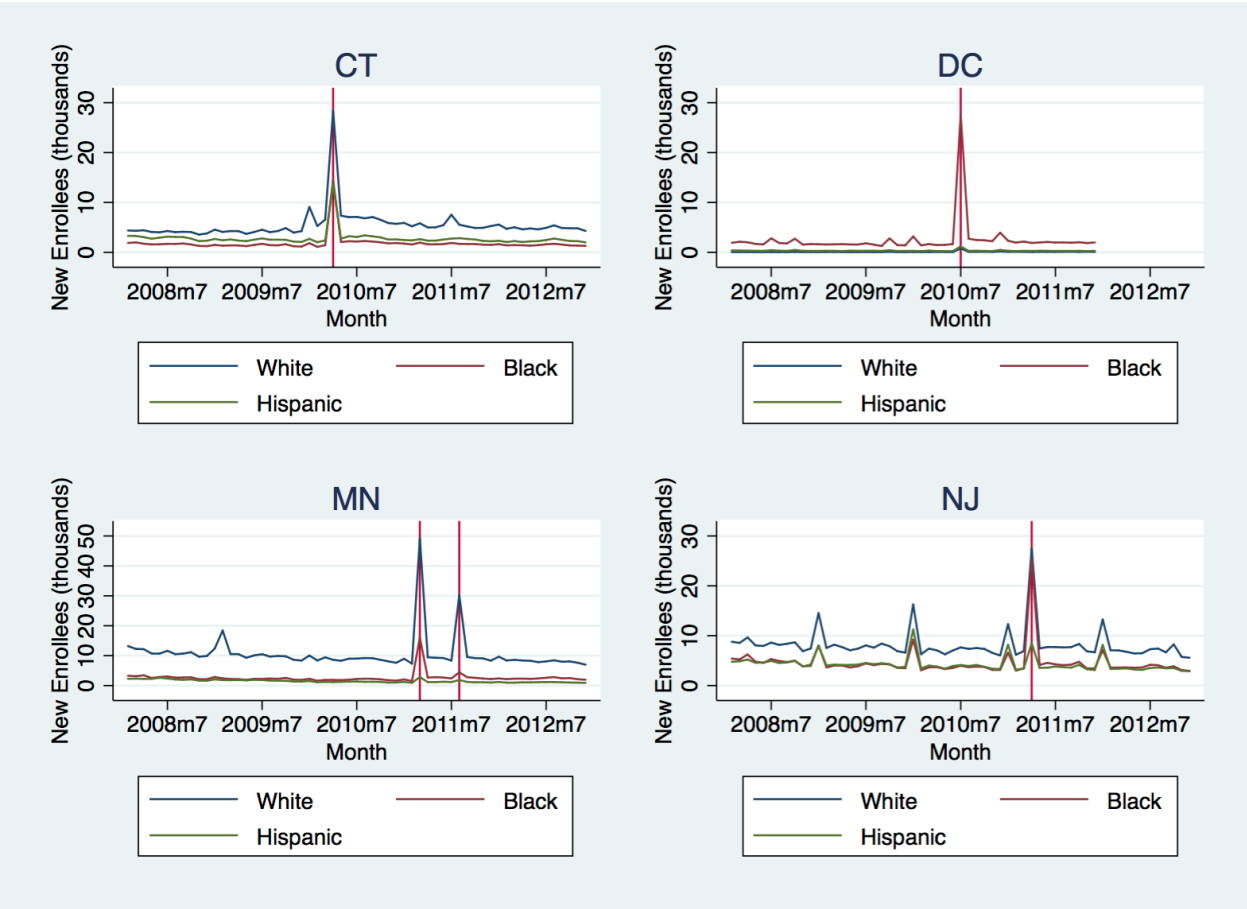

Figure 4: New Medicaid Enrollees by Race

Notes: The figure shows the number of new Medicaid enrollees (in thousands) by calendar month from February 2008 through December 2012. These numbers are based on the authors' calculations from the MAX Personal Summary files for 2008 through 2012. Each individual is considered a "new enrollee" in the first month in which he appears in the data. For an individual already enrolled in Medicaid as of January 2008, we do not observe the date at which he was a "new enrollee," so these individuals are omitted from the figure. Vertical lines indicate the date at which Medicaid was expanded in each location. Each of these four states expanded Medicaid prior to the 2014 ACA expansion. Some states expanded Medicaid through waivers and also adopted the ACA proposal for expansion. Minnesota enacted two separate expansions.

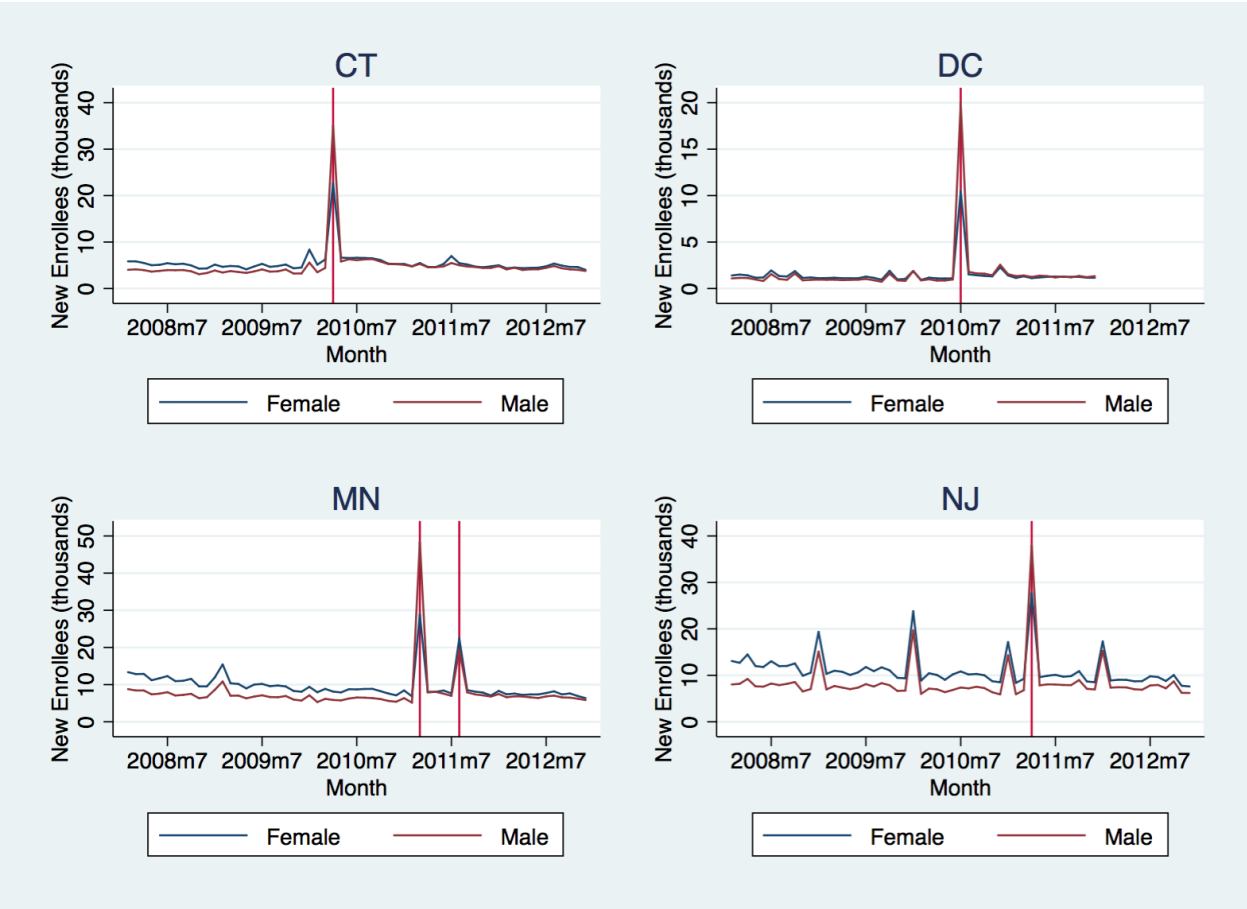

Figure 5: New Medicaid Enrollees by Gender

Notes: The figure shows the number of new Medicaid enrollees (in thousands) by calendar month from February 2008 through December 2012. These numbers are based on the authors' calculations from the MAX Personal Summary files for 2008 through 2012. Each individual is considered a "new enrollee" in the first month in which he appears in the data. For an individual already enrolled in Medicaid as of January 2008, we do not observe the date at which he was a "new enrollee," so these individuals are omitted from the figure. Vertical lines indicate the date at which Medicaid was expanded in each location. Each of these four states expanded Medicaid prior to the 2014 ACA expansion. Some states expanded Medicaid through waivers and also adopted the ACA proposal for expansion. Minnesota enacted two separate expansions.

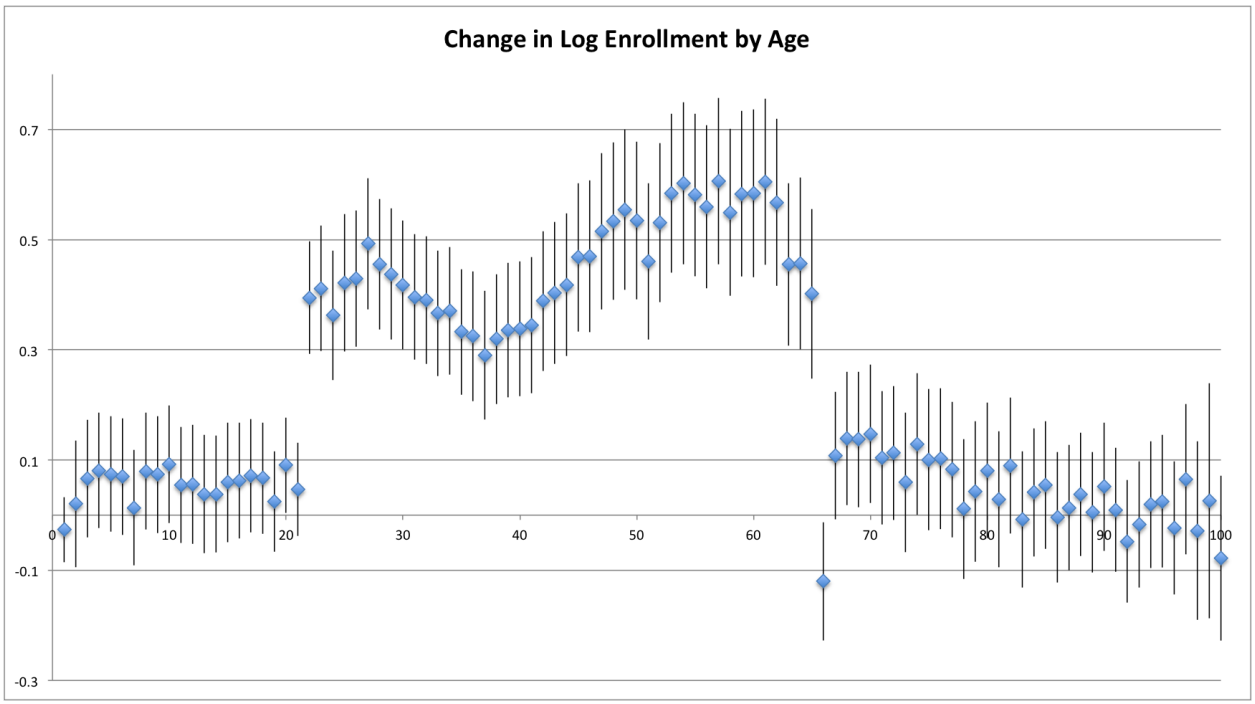

Figure 6: Change in Enrollment by Age

Notes: The figure shows coefficients on age dummies from a difference-in-differences specification where the dependent variable is the natural logarithm of enrollment. Each plotted coefficient is the difference-in-differences estimate of the impact of Medicaid expansion on Medicaid enrollment for a particular age group. Controls include state and year fixed effects only. California and Washington are excluded.

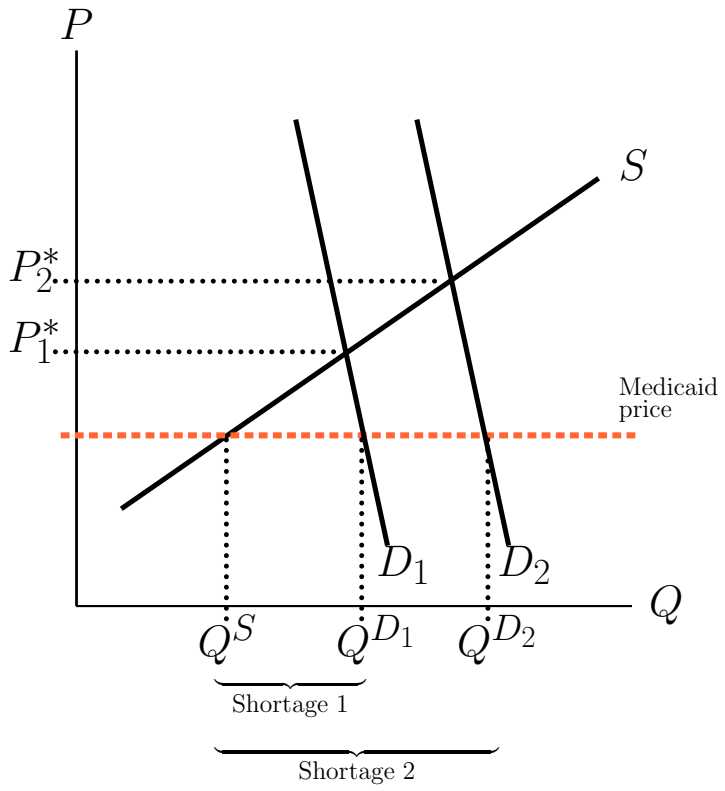

Figure 7: Demand and Supply for Physician Services in Medicaid

Notes: The figure depicts the administrative price in Medicaid, or "Medicaid price." Medicaid physicians are paid a fixed payment rate that is administratively set by each state. If the Medicaid price is below the equilibrium price, then the quantity of physician services supplied is less than the quantity of physician services demanded, and there is a physician services "shortage." In states where the ACA Medicaid expansion leads to an outward shift in the demand curve, this will lead to a more severe "shortage."

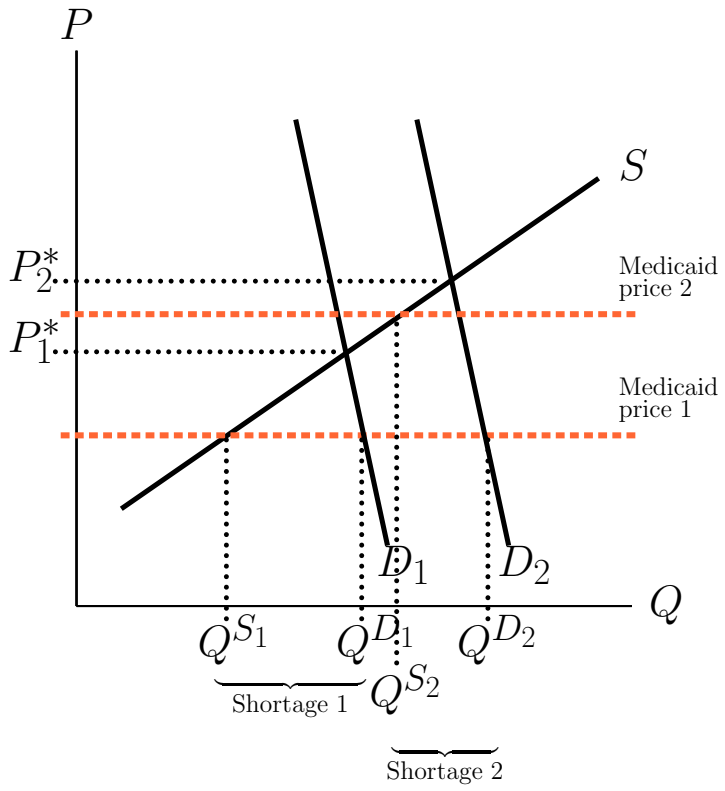

Figure 8: Demand and Supply for Physician Services in Medicaid, Response to Fee Increase

Notes: The figure depicts the administrative price in Medicaid, or "Medicaid price." Medicaid physicians are paid a fixed payment rate that is administratively set by each state. If the Medicaid price is below the equilibrium price, then the quantity of physician services supplied is less than the quantity of physician services demanded, and there is a physician services "shortage." In states where the ACA Medicaid expansion leads to an outward shift in the demand curve, this will lead to a more severe "shortage."

8 Tables

Table 1: Medicaid Changes

	Coverage Authority	**Effective Date**	**Income Limit**
Connecticut	ACA	April 1, 2010	56% FPL
Washington D.C	ACA	July 1, 2010	133% FPL
Minnesota	ACA	March 1, 2011	75% FPL
	Waiver	August 1, 2011	250% FPL
New Jersey	Waiver	April 14, 2011	23% FPL

Notes: The table shows the four states with early ACA Medicaid expansions. "ACA" indicates states that exercised the ACA option and follow the federal cost sharing requirements. "Waiver" indicates states that exercised the Section 1115 waiver option. "FPL" stands for the Federal Poverty Line.

Table 2: Medicaid Fees for Primary Care

	Medicaid-to-Medicare fee ratio before early ACA expansion (2008)*	Medicaid-to-Medicare fee ratio after early ACA expansion (2012)*	% change in Medicaid-to-Medicare fee ratio, 2008 - 2012	% change in Medicaid fees, 2008 - 2012
Connecticut	0.80	0.71	-11.3	0.0
Washington, D.C.	0.45	0.80	77.8	93.8
Minnesota	0.58	0.73	25.9	58.8
New Jersey	0.40	0.48	20.0	-0.3

Notes: Source: Zuckerman and Goin (2012) analysis of Kaiser Commission on Medicaid and the Uninsured (KCMU) / Urban Institute 50-state survey of Medicaid physician fees.

Table 3: Transfers from Existing State Programs

State	Transfers from Existing State Programs
Connecticut	45000
District of Columbia	34000
Minnesota	77000

Notes: The table shows the number of new Medicaid enrollees who are transfers from existing state programs, according to interviews with state officials done by Sommers, Kenney and Epstein (2014). This table is adapted from Exhibit 1 of Sommers, Kenney and Epstein (2014).

Table 4: Medicaid Population Composition

	Percent Adult		**Percent Male**		**Percent Black**	
	Before	**After**	**Before**	**After**	**Before**	**After**
Connecticut	53.2	57.5	40.7	42.6	20.0	20.6
Washington D.C	53.7	61.2	42.1	45.9	85.4	86.5
Minnesota	52.1	56.5	42.1	44.1	17.7	18.2
	55.9	57.4	44.2	44.1	18.5	18.1
New Jersey	46.6	49.1	42.4	43.3	27.2	28.0

Notes: The table shows the composition of the Medicaid population before and after Medicaid expansion for the four states with early ACA Medicaid expansions. "Before" indicates percentages in the month before Medicaid expansion. "After" indicates percentages in the first month of Medicaid expansion. Minnesota had two changes; the first row shows the ACA option adopted in March 2011 and the second row shows the waiver obtained in August 2011. Adults are defined as those ages 19 and over.

Table 5: Summary Statistics for Medicaid Enrollees

	(1) Mean
Female (%)	57.9
White (%)	40.8
Black (%)	20.0
Hispanic (%)	25.0
Asian (%)	4.1
Other race (%)	10.1
Ages 0 - 19 (%)	51.9
Ages 20 - 45 (%)	28.8
Ages 46 - 64 (%)	9.9
Ages 65+ (%)	8.0
No. of Medicaid Enrollees	106,364,816

Notes: The table shows summary statistics for the sample of Medicaid enrollees used in the main analysis. Observations are at the enrollee level. The sample consists of every individual enrolled in Medicaid at any time from 2008 through 2012, as observed in the MAX Personal Summary files from those years (though not all states have data for all years). Age is measured at the first time a Medicaid enrollee is observed.

Table 6: Summary Statistics for Physicians

	(1) Mean
Physician specialty:	
Primary care	16.9
OB-GYN	5.5
Pediatrics	9.1
Saw any Medicaid patient in Jan. 2009	57.7
Saw any Medicaid patient in Jan. 2010	65.3
Saw any Medicaid patient in Jan. 2011	67.4
Saw any Medicaid patient in Jan. 2012	62.9
No. of Physicians	1,166,402

Notes: The table shows summary statistics for the sample of physicians used in the main analysis. Observations are at the physician level. The sample consists of every physician with a National Provider Identifier (NPI) in the National Plan and Provider Enumeration System (NPPES) public use files. The NPPES file used contains all physicians active from May 2005 through December 2015. The physician specialty is constructed from the variables in the NPPES. Medicaid office visits are observed in the MAX Other Therapy files for 2009 through 2012, which contain the NPI of the physician. The year 2008 is omitted from the physician analysis because it contains incomplete information on NPI and zip code. The statistics on Medicaid patients seen are constructed by merging on NPI.

Table 7: The Impact of Medicaid Expansion on Log Enrollment

	(1) Overall	(2) Ages 23 - 65	(3) Male	(4) Black	(5) White	(6) Hispanic
Expansion × Post	0.126***	0.269***	0.161***	0.160***	0.187***	0.00525
	(0.0287)	(0.0405)	(0.0356)	(0.0443)	(0.0392)	(0.0468)
Second Expansion (MN) × Post	0.137***	0.343***	0.181***	0.184***	0.158***	0.0314
	(0.0101)	(0.0130)	(0.0111)	(0.0115)	(0.0137)	(0.0569)
Observations	2,544	2,544	2,220	2,544	2,544	2,504

Notes: The table shows the impact of Medicaid expansion on Medicaid enrollment. The dependent variable is the natural logarithm of Medicaid enrollment in the population (Column 1) and by subgroups of the population (Columns 2 through 6). Observations are at the state-month level from 2008 through 2012 (not all states have data for all months). The variable Expansion × Post takes the value 1 for a Medicaid expansion state with the policy in place, and is 0 otherwise. The variable Second Expansion (Minnesota) × Post takes the value 1 for the state of Minnesota with the second Medicaid expansion policy in place, and is 0 otherwise. All specifications include state and month fixed effects. Standard errors, clustered by state, are shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 8: The Impact of Medicaid Expansion on Log Number of Medicaid Patients Seen

	(1) All Physicians	(2) Primary Care	(3) OB-GYN	(4) Pediatrics
Expansion × Post	0.0995	0.156***	0.0724	0.0646
	(0.0665)	(0.0576)	(0.0800)	(0.0773)
N	18,253,010	2,710,869	1,056,839	2,001,331

Notes: The table shows the impact of Medicaid expansion on the number of Medicaid patients seen. The dependent variable is the natural logarithm of the number of Medicaid patients seen by any physician (Column 1) and by physician sub-specialty (Columns 2 through 6). Observations are at the physician-month level from 2009 through 2012 (not all states have data for all months). The variable Expansion × Post takes the value 1 for a Medicaid expansion state with the policy in place, and is 0 otherwise. All specifications include state, year, and month fixed effects. Standard errors, clustered by state, are shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 9: The Impact of Medicaid Expansion on Log Number of Medicaid Patient Visits

	(1) All Physicians	(2) Primary Care	(3) OB-GYN	(4) Pediatrics
Expansion × Post	0.107	0.172***	0.0706	0.0649
	(0.0681)	(0.0518)	(0.0861)	(0.0813)
N	18,253,010	2,710,869	1,056,839	2,001,331

Notes: The table shows the impact of Medicaid expansion on the number of Medicaid patient visits. The dependent variable is the natural logarithm of the number of Medicaid patients seen by any physician (Column 1) and by physician sub-specialty (Columns 2 through 6). Observations are at the physician-month level from 2009 through 2012 (not all states have data for all months). The variable Expansion × Post takes the value 1 for a Medicaid expansion state with the policy in place, and is 0 otherwise. All specifications include state, year, and month fixed effects. Standard errors, clustered by state, are shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 10: The Impact of Medicaid Expansion on Probability of Seeing Medicaid Patient

	(1) All Physicians	(2) Primary Care	(3) OB-GYN	(4) Pediatrics
Expansion × Post	0.0345	0.0351	0.0228	0.00812
	(0.0301)	(0.0272)	(0.0313)	(0.0294)
N	48,668,928	8,229,024	2,680,752	4,442,976

Notes: The table shows the impact of Medicaid expansion on the probability of seeing a Medicaid patient. he dependent variable is an indicator for whether any physician (Column 1) or a particular type of physician (Columns 2 through 6) saw a Medicaid patient during the observation month. Observations are at the physician-month level from 2009 through 2012 (not all states have data for all months). The variable Expansion × Post takes the value 1 for a Medicaid expansion state with the policy in place, and is 0 otherwise. All specifications include state, year, and month fixed effects. Standard errors, clustered by state, are shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 11: The Impact of Medicaid Expansion on Mean Distance Traveled to See a Physician

	(1) All Physicians	(2) Primary Care	(3) OB-GYN	(4) Pediatrics
Expansion × Post	2.589	5.385	-2.902	-2.824
	(2.868)	(6.749)	(8.000)	(7.711)
Observations	1,512	1,511	1,509	1,509

Notes: Impact of Medicaid expansion on the mean distance traveled (miles) to see a physician (Column 1) or a particular type of physician (Columns 2 through 6). Observations are at the state-month level from 2010 through 2012 (not all states have data for all months). The variable Expansion × Post takes the value 1 for a Medicaid expansion state with the policy in place, and is 0 otherwise. All specifications include state, year, and month fixed effects. Standard errors, clustered by state, are shown in parentheses. Columns denoted with a * indicate that the sample is restricted to 2010 - 2012.

Table 12: The Impact of Medicaid Expansion on Probability of Visiting a Physician

	(1) All Physicians	(2) Primary Care	(3) OB-GYN	(4) Pediatrics
Expansion × Post	-0.00349	-0.000843	-0.0000961	0.00221
	(0.00936)	(0.00346)	(0.000919)	(0.00261)
Observations	1,620	1,620	1,620	1,620

Notes: The table shows the impact of Medicaid expansion on the probability of seeing a physician (Column) or a particular type of physician (Columns 2 through 6). Observations are at the state-month level from 2009 through 2012 (not all states have data for all months). The variable Expansion × Post takes the value 1 for a Medicaid expansion state with the policy in place, and is 0 otherwise. All specifications include state, year, and month fixed effects. Standard errors, clustered by state, are shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 13: States That Increased Physician Fees vs. States That Did Not

	(1) Log Patients	(2) Log Visits	(3) Prob. See Patient	(4) Distance*	(5) Prob. of Visit*
No Fee Increase × Post	0.112	0.153*	0.0496*	15.82*	0.00327
	(0.0533)	(0.0908)	(0.0253)	(8.550)	(0.00360)
Fee Increase × Post	0.183***	0.184***	0.0183	-3.778	-0.00446
	(0.0339)	(0.0393)	(0.0289)	(4.706)	(0.00319)
N	2,710,869	2,710,869	8,229,024	1,511	1,620

Notes: The table shows the impact of Medicaid expansion on the natural logarithm of patients seen (Column 1), number of patient visits (Column 2), probability of seeing a patient (Column 3), distance traveled (Column 4) and probability of a patient visit (Column 5). In all columns the sample is restricted to primary care physicians. Observations are at the state-month level from 2009 through 2012 in columns 1 through 3 and from 2010 to 2012 in columns 4 and 5 (not all states have data for all months). No Physician Expansion × Post represents Medicaid expansion states that did not increase physician fees with the policy in place, Physician Expansion × Post represents Medicaid expansion state that also increased physician fees with the policy in place, and the base category is states with no expansion. All specifications include state, year, and month fixed effects. Standard errors, clustered by state, are shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 14: Medicaid Cost in Billions

	2009			2011		
	Total Cost	Total FFS Cost	Total Premium	Total Cost	Total FFS Cost	Total Premium
All Enrollees						
Connecticut	4.83	4.05	0.781	5.75	4.83	0.913
Washington, D.C	1.77	1.42	0.346	2.00	1.38	0.625
New Jersey	8.23	6.14	2.08	9.27	6.01	3.26
Minnesota	7.10	4.64	2.46	8.20	5.07	3.14
No Change	5.77	4.20	1.58	6.31	4.32	1.98
Male Enrollees						
Connecticut	1.97	1.72	0.247	2.45	2.15	0.294
Washington, D.C	0.808	0.681	0.127	0.915	0.660	0.255
New Jersey	3.40	2.64	0.761	3.96	2.71	1.25
Minnesota	3.13	2.23	0.898	3.79	2.51	1.28
No Change	2.45	1.82	0.630	2.83	2.00	0.839
Female Enrollees						
Connecticut	2.86	2.33	0.534	3.30	2.68	0.619
Washington, D.C	0.950	0.733	0.217	1.08	0.715	0.369
New Jersey	4.77	3.46	1.31	5.25	3.27	1.98
Minnesota	3.96	2.41	1.56	4.41	2.55	1.86
No Change	3.31	2.36	0.942	3.74	2.51	1.24

Notes: The table shows the total annual cost of the Medicaid program in each of the four states with early ACA Medicaid expansions. The row entitled "No Change" shows the mean total annual cost for states that did not enact early ACA Medicaid expansions. The "Total Cost" column shows the total cost to the state, which is the sum of "Total FFS Cost" (total fee-for-service costs) and "Total Premium" (total premiums paid to Medicaid HMOs). The total costs are shown for 2009, which is prior to the early ACA Medicaid expansions, and 2011, which captures the time period immediately after the early ACA Medicaid expansions. Total costs are shown for the entire sample, and then separately for male and female Medicaid enrollees.

Table 15: Percent Change in Medicaid Cost

	Percent Change 2009 - 2011		
	Total Cost	Total FFS Cost	Total Premium
All Enrollees			
Connecticut	19	19	17
Washington, D.C	18	-3	81
New Jersey	13	-2	57
Minnesota	15	9	28
No Change	9	3	25
Male Enrollees			
Connecticut	24	25	19
Washington, D.C	13	-3	100
New Jersey	16	3	64
Minnesota	21	13	43
No Change	16	10	33
Female Enrollees			
Connecticut	15	15	16
Washington, D.C	14	-2	70
New Jersey	10	-5	51
Minnesota	11	6	19
No Change	13	6	32

Notes: The table shows the percent change in total annual cost of he Medicaid program in each of the four states with early ACA Medicaid expansions. The row entitled "No Change" shows the mean percent change for states that did not enact early ACA Medicaid expansions. The "Total Cost" column shows the percent change for the total cost to the state, which is the sum of "Total FFS Cost" (total fee-for-service costs) and "Total Premium" (total premiums paid to Medicaid HMOs). The table shows percent change from 2009, which is prior to the early ACA Medicaid expansions, to 2011, which captures the time period immediately after the early ACA Medicaid expansions. The percent change is shown for the entire sample, and then separately for male and female Medicaid enrollees.