Health Impacts of the Affordable Care Act Insurance Expansions:
An Analysis of the 2014 Medicaid Expansions and the 2010 Young Adult Provision

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Abstract

We examine the health impacts of two insurance expansions that occurred through the Affordable Care Act: the Medicaid expansion for adults and the young adult dependent coverage expansion. These provisions targeted two highly-uninsured populations. While the young adult provision started in 2010, the majority of the Medicaid expansions did not occur until 2014. Thus, our data period allows us to report on early responses to Medicaid expansion, and more medium-term responses to the young adult expansion. We use the Behavioral Risk Factor Surveillance System data covering 2012-2014 to examine Medicaid expansion, and the National Health Interview Study 2007-2015 to study the young adult provision. To examine the Medicaid expansion, we use a quasi-experimental study design comparing Medicaid-expansion-eligible individuals in states that expanded ACA Medicaid to those in states that did not expand Medicaid. To examine the young adult mandate, we compare those in ages targeted by the policy (19-25), to those slightly older (27-29), in periods after the ACA provision compared to before the provision. We include in the Appendix a summary of existing literature studying the impact of insurance on coverage, access, utilization, health, and labor market outcomes. We find that the Medicaid expansion led to a significant increase in insurance enrollment, self-assessed health, and access to care for low-income childless adults, but did not change the probability of having a personal doctor. The young adult mandate significantly reduced the uninsurance rate of 19-25 year-olds, mainly through gains in parental insurance coverage, but did not lead to significant changes in disability, mental health, access and utilization outcomes.

Introduction

Young adults between the ages of 19 and 25 faced some of the highest uninsurance rates prior to the Affordable Care Act (ACA), with 37 percent in this age range being uninsured in 2008 (Akosa Antwi, Moriya, & Simon, 2013). Low-income non-elderly adults represent another population with high uninsurance rates prior to the ACA.[1] These two vulnerable populations were especially targeted by the ACA through the young adult provision and Medicaid expansions, and there is high interest in understanding the effect to which the new coverage has improved health status and wellbeing.

A substantial literature has built around examining the health impacts of health insurance in general. These studies examine mental and physical health, including disability status and closely connected labor market consequences. Although young adults with insured parents and non-elderly adults below the poverty level are diverse populations in many ways, they are both likely to have health conditions such as depression that, if untreated, could substantially affect labor market attachment and human capital formation.[2] Thus, our work is relevant for understanding how these two ACA expansions may improve access and health status in ways that enhance labor market attachment.

Policy Relevance

This project responds directly to the Social Security Administration (SSA)'s Quick Turnaround Request to examine whether provision of health insurance improves health outcomes, resulting in improved labor market outcomes. By examining the impact of two provisions of the ACA, we are able to shed light on insurance and health effects on diverse populations that experienced particularly large insurance gains through recent public policy. We also conducted an extensive literature review on existing studies that investigate the connections between health insurance, health and labor market outcomes; this includes the RAND and Oregon experiments, demonstrations (e.g. SSA's provision of early medical benefits to SSDI recipients through the Accelerated Benefits demonstration), as well as papers using quasi-

[1] Uninsurance rates for non-elderly adults are found at http://kff.org/uninsured/state-indicator/rate-by-gender/#

[2] Rates of depression by age are available at http://www.nimh.nih.gov/health/statistics/prevalence/major-depression-among-adults.shtml and rates of depression by income are available at http://www.cdc.gov/nchs/data/databriefs/db07.htm

experimental methods (policy variation due to prior Medicaid expansions and single state health reform including the Massachusetts experience, and regression discontinuity studies that use large discontinuities that occur at age 65 and at age 19 in insurance status prior to the ACA).

Our research ties closely to prior work in which we have investigated labor market impacts of these two ACA provisions (Akosa Antwi, Moriya, & Simon, 2013; Heim, Lurie, & Simon, 2015) and allows us to judge the extent to which health status changes may responsible for changes in labor market outcomes. Our research also studies work-limiting conditions and receipt of disability benefits as outcomes to push this connection further. This research agenda can be extended in the future to study impacts of improved prenatal and early childhood health care access due to the Medicaid expansion, as more women enter pregnancy with health insurance, and as other expansions of coverage to parents could also improve children's access to health care and their health status.

Literature Review

A large literature takes advantage of various populations and policy settings to examine the causal impact of health insurance on health. In one of the largest health insurance randomized controlled trials to date, the RAND Experiment assigned participants to insurance plans with varying levels of cost-sharing. Researchers found that usage of medical services varied significantly with the amount paid by the patients directly; with the exception of children's hospital services and some mental health services, those with large copayments used fewer services, suggesting that the demand for health responds to price changes. However, there was little evidence to support improved health outcomes for those in minimal cost-sharing or "free care" plans (Newhouse & Insurance Experiment Group, 1993).

Researchers have also used the 2008 Oregon experiment as a policy backdrop to examine the effects of health insurance. Oregon expanded Medicaid for low-income adults through a lottery drawing of about 30,000 names from a list of about 90,000 people. Finkelstein et al. (2012) studied the expansion's impact on health care use, financial strain, and health outcomes. They found that in the first year, the expansion group had higher probabilities of having insurance, getting recommended preventive care (cholesterol checks, blood tests, mammograms, and Pap tests), reporting better physical and mental health, exercising, and undergoing any

hospital admission. However, they did not find any significant impacts of Medicaid expansion on smoking or mortality.

In another randomized controlled experiment, the SSA designed a demonstration project to produce credible estimates on the costs and benefits of altering the 24 month Medicare waiting period for disability insurance beneficiaries. Evidence on health utilization, health outcomes, and labor participation from AB Demonstration on SSDI beneficiaries show that within a year of becoming a SSDI beneficiary, members who received health benefits during the 24 month interim period before Medicare benefits had significantly increased their health utilization and led to reduced unmet health needs and improved physical and mental health outcomes (Weathers & Stegman, 2012; Michalopolous et al., 2011; Weathers et al., 2010). In terms of labor market effects, Weathers and Stegman-Bailey (2014) found that only providing health insurance during the interim period before receiving Medicare did not lead to a significantly increase employment rate among participants. See Appendix B for detailed information on the accelerated benefits demonstration.

Another branch of literature focuses on the impact of Medicare insurance for the elderly population. Methods include difference-in-differences (Dave & Kaestner, 2009) and regression discontinuity to compare health outcomes among people just before and just after age 65 (Card, Dobkin, & Maestas, 2008). Most studies have found that Medicare insurance significantly increases primary care usage, hospitalizations, and inpatient care, while improving self-reported health, mobility, and agility (Card, Dobkin, & Maestas, 2008; Lichtenberg, 2002; McWilliams et al., 2007).

There is also a large literature of quasi-experimental studies that exploit exogenous policy variation in public insurance, such as the healthcare reforms in Massachusetts and New York. Insurance expansion in Massachusetts significantly increased insurance rates, self-assessed physical and mental health, and cancer screenings, while significantly decreasing mortality, non-urgent emergency department visits, and preventable inpatient admissions (Courtemanche & Zapata, 2014; Sommers, Long, & Baicker, 2014; Van Der Wees, Zaslavsky, & Ayanian, 2013; Kolstad & Kowalski, 2012; Miller, 2011).

Another set of quasi-experimental studies modeled Medicaid and CHIP expansions for childless adults, children, pregnant women, and low-income parents, employing difference-in-differences and simulated eligibility approaches to evaluate the policy's impact. Simulated

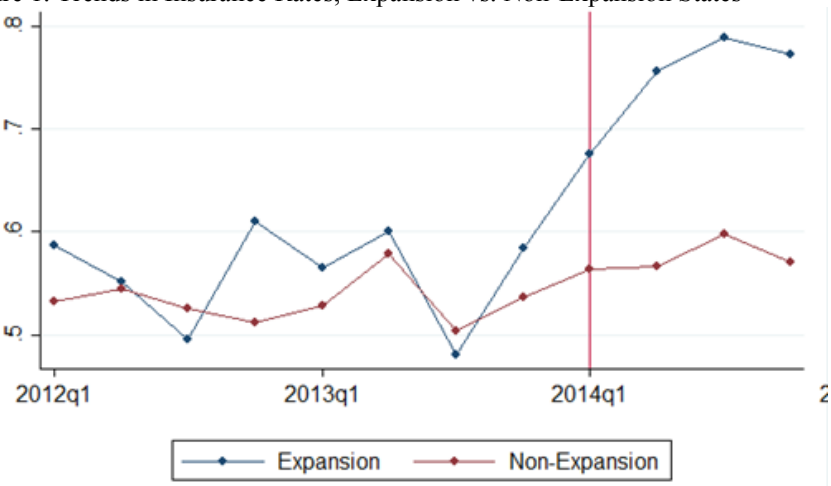
eligibility is a technique which collapses the variation in Medicaid policy into one index that measures the fraction of a standard population who would be eligible for Medicaid by the rules in place in a certain state and year. Some studies use this measure as an instrument for insurance status, while other studies just use this measure directly as the policy variable in a regression. Most of these studies conclude that Medicaid and CHIP expansions led to improved insurance rates and health outcomes among their target population, while reducing mortality and removing cost barriers to care (McMorrow et al., 2016; Sommers, Blendon, & Orav, 2016; Hamersma & Kim, 2013; Sommers et al., 2013; Long & Stockley, 2011; Cutler & Gruber, 1996). The impact of these expansions on the labor market is more ambiguous, with some studies finding significant reductions in labor supply among the target population (Dave et al., 2015; Depew, 2015; Garthwaite, Gross, & Notowidigdo, 2014), while others do not find any significant impact (Kaestner et al., 2015; Heim, Lurie, & Simon, 2015; Baicker et al., 2014). See Appendix A for detailed information for 70 published studies on insurance and health impacts.

Medicaid Expansion for Low-Income Childless Adults

Data and Methods

In this section of our report, we investigate the impact of the Affordable Care Act's (ACA) Medicaid expansion on health outcomes among low-income, non-elderly childless adults (18-64 year olds, below the poverty level, no dependent children). We do so by exploiting the Supreme Court ruling in *NFIB vs. Sebellius* that allowed states to decide whether to extend Medicaid for the low income population under the ACA. This allows us to apply a difference-in-differences method to determine whether the low-income population living in states that expanded Medicaid coverage was more likely to experience health improvements than those in non-expansion states, after the Medicaid expansion relative to the period before that state's Medicaid expansion. We use data from the Behavioral Risk Factor Surveillance System (BRFSS) for this analysis. As illustrated in Figure 1, the insurance rate displays an increase among low-income, non-elderly, childless adults, in expansion states relative to non-expansion states in 2014, despite trending similarly in the pre-expansion period.

Figure 1. Trends in Insurance Rates, Expansion vs. Non-Expansion States



Notes: Sample was restricted to include only low-income, non-elderly, childless adults who are not pregnant and not veterans. Data is adjusted by BRFSS sample weight. States that offered categorical eligibility for childless adults before 2014 are excluded from this analysis (CA CT DC MN NJ WA CO DE HI IA NY VT WI AR AZ).
Source: Author estimates based on BRFSS 2012-14.

Our primary data source, the 2012-2014 BRFSS, is an annual cross-sectional survey of almost half a million people conducted by the Centers for Disease Control and Prevention (CDC). The BRFSS includes data on respondents' insurance status, access to healthcare, self-assessed health, and demographic characteristics. We make two main restrictions on our dataset. First, we focus on the nonelderly childless adult population under poverty as the Medicaid expansion provides the "cleanest" study design for this population; prior to the ACA, parents under poverty were partially eligible for Medicaid (until 44% of the FPL in the median state {Kaiser, 2015}), whereas the median state had no provision for childless adults under Medicaid apart from pregnancy and disability related coverage. We therefore restrict our sample to those who are aged 19-64, do not have children under age 18, and report household incomes below 100% of the FPL.[3] Although Medicaid expansion was available for adults up to 138% FPL, we

[3] The BRFSS income variable is categorical and not continuous. Income is reported in the following categories: $0 to less than $10,000, $10,000 to less than $15,000, $15,000 to less than $20,000, $20,000 to less than $25,000, $25,000 to less than 35,000, $35,000 to less than $50,000, $50,000 to less than $75,000, and $75,000 or more. Fortunately, these align fairly well with federal poverty guidelines used to determine eligibility for Medicaid. We use the upper threshold of the BRFSS income category as well as the reported household size to assign each respondent a percentage of the federal poverty level. For example, in the year 2012, the federal poverty level for a family of 2 was $15,930. Respondents who had a household size of 2 and income in the "less than $10,000" were coded as 66.67% FPL, income in the "$10,000-$15,000" category were coded as 94% FPL, and income in the "$15,000-$20,000" category were coded as 126% FPL. After assigning an FPL value for each observation, we eliminated any observations with FPL values greater than 100%. (We also eliminated those -who reported household size greater than 6, as this was likely to be reporting error or outliers.)

only examine those under 100% FPL because adults with income 100%-138% FPL in non-expansion states became eligible for exchange subsidies in 2014. We also exclude veterans and pregnant women from our sample, as these groups were previously eligible for public insurance under different and more generous eligibility criteria than other adults.

Our second restriction is to exclude states with early Medicaid expansions prior to 2014, so that our analysis examines just the 2014 expansions. Of the 27 states that expanded Medicaid by 2014, six implemented the ACA expansion earlier than January 2014. Another nine states, including New York and Iowa, made comprehensive Medicaid benefits available to childless adults before the ACA; many of these states used income limits of 100% FPL or higher. We identify these "early expansion" states using detailed data on childless adult Medicaid eligibility criteria from the mid-2000s to 2014; these data encompass ACA Medicaid expansions as well as non-ACA expansions for childless adults via Section 1115 waivers. Because members of our study sample living in these early expansion states experienced no change in Medicaid eligibility in 2014, we exclude them from our analysis.

Our basic quasi-experimental method is a comparison between individual outcomes in states with and without Medicaid expansion, before vs. after 2014, among childless adults who are the target of Medicaid expansions. The model can be characterized as:

$$Outcome_{ist} = \alpha + \beta Expansion_s + \eta Post_t + \lambda Expansion*Post_{st} + \gamma \mathbf{X}_{ist} + \delta State_s + \vartheta Year_t + \varepsilon,$$

where s and t are indexes for state and time, respectively. Our key outcome variables are access to care (whether respondent is insured, whether cost is a barrier to care, whether there is a usual source of care) and self-assessed health status (self-reported 1-5 scale, number of days in poor health that prevented work in the past month, number of days in past month that mental health was not good). *Expansion* is a binary variable equal to 1 if the individual lives in an expansion state; *Post* is a binary variable equal to 1 if the year is 2014 or later; *Expansion*Post* is the interaction of the two variables; *X* represents a vector of state-year averages of demographic variables including household income, education, gender, race, unemployment status, age, gender, marital status, household size, cell phone dummy, and state unemployment rate; *State* represents state-fixed effects; and *Year* represents time-fixed effects. Thus, the

coefficient on *Expansion*Post* will inform us whether augmenting access to Medicaid improves adults' insurance enrollment, access to care, and self-assessed health.

Table 1. Regression Results Displaying Impact of Medicaid Expansion (ExpansionXPost) on Insurance Rate and Health Behaviors for Low-Income, Non-Elderly Childless Adults

	Mean in control group (1)	All (2)	Women (3)	Men (4)
Dependent Variable				
Indicator: Have insurance	0.514	0.151*** (0.0271) N=29,55	0.168*** (0.0265) N=18,213	0.134*** (0.0357) N=11,342
Access to care				
Indicator: Have personal doctor	0.604	0.027 (0.0248) N=29,552	0.022 (0.0221) N=18,214	0.029 (0.0311) N=11,338
Indicator: Cost a barrier to care	0.418	-0.030** (0.0114) N=29,487	0.003 (0.0562) N=18,165	-0.0593*** (0.0192) N=11,322
Health Status				
General health (range 1-5)	2.805	0.108** (0.0523) N=29,428	0.129*** (0.0437) N=18,135	0.102 (0.0784) N=11,293
Number days mental health not good (in past month)	8.722	-0.569 (0.515) N=28,787	-0.775 (0.716) N=17,763	-0.588 (0.878) N=11,024
Number days physical health not good (in past month)	8.983	-0.524 (0.459) N=28,643	-0.101 (0.619) N=17,663	-1.038 (0.637) N=10,980
Number days poor health prevented work (in past month)	10.331	-0.791* (0.415) N=21,707	-0.732 (0.679) N=14,018	-0.841 (0.866) N=7,689

Notes: Sample was restricted to include only low-income, non-elderly, childless adults who are not pregnant and not veterans. Column 1 displays variable's mean value for the control group in 2012-13. Each cell in columns 2-4 displays the DD coefficient estimate, state-clustered standard error, and sample size of a different LPM regression. All regressions also control for gender, marital status, household size, race, unemployment status, age, education, state unemployment rate, whether the respondent was part of the cell-phone sample, state-fixed effects, and year - fixed effects. All regressions account for BRFSS sample weights. "Expansion" indicates only those states that went from no Medicaid eligibility for childless adults pre-2014 to full eligibility in 2014. "Non-expansion" indicates states that did not offer any eligibility for childless adults before or during 2014. States that offered categorical eligibility for childless adults prior to 2014 are eliminated from this analysis (CA CT DC MN NJ WA CO DE HI IA NY VT WI AR AZ).
Source: Author estimates based on BRFSS 2012-14.
*** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Results

We find that expansion of Medicaid eligibility in 2014 increased the probability of having health insurance by 15.1 percentage points among the childless adult population ($p<0.01$). This result is consistent with the descriptive trends in Figure 1. The regression results indicate the impact of the expansion was stronger among women, with a 16.8 percentage point increase in the insurance rate of female childless adults ($p<0.01$) and a 13.4 percentage point increase in the insurance rate of childless men ($p<0.01$). We also find that the expansion had a significant impact on improving access to care and self-assessed health. The proportion of childless adults who responded that cost was a barrier to receiving medical care dropped by 3.0 percentage points as a result of the Medicaid expansion ($p<0.01$), indicating that the expansion made healthcare more affordable for this population. There is a 0.11 point increase in the overall self-ranked health status of childless adults (on a scale of 1 to 5) ($p<0.05$) and a 0.79 reduction in the number of days "poor health interfered with daily activities" ($p<0.05$). See Table 1 for full results.

Sensitivity Analyses

We run two falsification tests using subsamples that were unlikely to be affected by the Medicaid expansion: elderly and high-income adults. The elderly sample (defined as childless adults 65 years and above) should not display any causal effects of the ACA Medicaid expansions since Medicare did not change its enrollment criteria during our study period, and because we expect no spillover effect from the Medicaid expansion onto cover rates of the elderly. Similarly, the high-income sample (defined as non-elderly childless adults with household income above 400% FPL) was ineligible for Medicaid during the entire study period and consequently should experience no impact on insurance rates from the policy change. As verified in Table 2, the DD coefficient on expansion was insignificant for both these groups. Had we observed significant results in these two groups, concern would be raised about the accuracy of our results for the childless adults sample. In specifications summarized in Table 2, we expose our model to a number of sensitivity analyses and find none of the alternate specifications resulted in major changes to our results. See Table 2 for full results.

Table 2. Sensitivity Analyses Testing Impact of Medicaid Expansion on Childless Adults' Insurance Rates

	Elderly (1)	High-Income (2)	Linear time trend (3)	No cell phone sample (4)	Logit (5)	Drop MA and OR (6)
Dependent Variable						
Indicator: Have insurance	-0.001	-0.006	0.212***	0.146***	0.177***	0.165***
	(0.0038)	(0.0058)	(0.0050)	(0.0321)	(0.0242)	(0.0257)
	N=249,952	N=152,839	N=29,555	N=19,322	N=29,555	N=27,799

Notes: In columns 3-6, sample was restricted to include only low-income, non-elderly, childless adults who are not pregnant and not veterans. Individuals who reported household size greater than 6 are dropped. Each cell displays the DD coefficient estimate, state-clustered standard error, and sample size of a different LPM regression. All regressions also control for gender, marital status, household size, race, unemployment status, age, education, state unemployment rate, whether the respondent was part of the cell-phone sample, state-fixed effects, and year -fixed effects. All regressions account for BRFSS sample weights. "Expansion" indicates only those states that went from no Medicaid eligibility for childless adults pre-2014 to full eligibility in 2014. "Non-expansion" indicates states that did not offer any eligibility for childless adults before or during 2014. States that offered categorical eligibility for childless adults prior to 2014 are eliminated from this analysis.
Source: Author estimates based on BRFSS 2012-14.
*** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Dependent Coverage Expansion for Young Adults

Data and Methods

To examine the ACA young adult provision, we compare the experience of those who are aged 19-25 to those slightly older (aged 27-29) who are not affected by the provision, but should otherwise reflect national trends that influence the health insurance and health of all young adults. Because the study design of the young adult mandate is at the age group level nationally, we are able to use data from another CDC survey, the NHIS for this study; the NHIS has advantages over the BRFSS, as the NHIS is conducted in person, has higher sample response rates than the BRFSS, and contains a greater number of health measures. To analyze the impact of the young adult mandate on coverage, health, access and utilization, we utilize a series of dummy variables for these outcomes. We create dummy variables for whether the respondent is uninsured, has private insurance, is disabled,[4] delayed care due to cost in the prior year, did not obtain needed medical care due to affordability in past year and visited a doctor or healthcare

[4] For this study disability has been defined as an indicator variable taking the value of 1 if the respondent indicates any disability income receipt from Social Security or Railroad Pension, disability pension or receives Supplemental Security Income (SSI) due to disability.

professional in the 2 weeks preceding the interview. For health outcomes we use self-reported health status measured on 1-5 scale and the Kessler K6 index of psychological distress.

To study the impact of the young adult provision, we follow a difference in differences strategy. Our regressions take the form

$$y_{i,a,t} = \alpha + \beta\, Treat_a + \gamma Post_t + \theta\, Treat_a * Post_t + \tau_t + \eta_a + \delta(UnemploymentRate_t) + \Gamma X_i + ei$$

where y represents insurance and health status for an individual *i* in the age range (*a*) of the treatment group (19-25) or the control group (27-29), in the period (*t*) before or after the young adult provision in late 2010/early 2011. We control for time fixed effects, age fixed effects, and the state of the economy through the national monthly unemployment rate, as well as individual characteristics in Xi.

Results

Table 3 below reports the results from the DD model where we regress each outcome on an interaction between treatment status and the post policy change dummy variable. Other covariates included race, sex, marital status, educational attainment, categorical measure of the ratio family income to the federal poverty threshold, an indicator for geographic region, the quarterly state-level unemployment rate and age fixed effects. Our estimates indicate that the ACA dependent coverage provision reduced uninsurance by 7.2 percentage points among young adults in the treated age range of 19-25. The magnitude of this estimate is somewhat larger than that found in prior studies that fall in the range of 3-6.7 percentage points. This result is the closest to that of Barbaresco, Courtemanche, and Qi (2015) who compared young adults aged 23-25 with those aged 27-29 using BRFSS 2001-2013. However, the larger estimate is likely the results of an additional year of post-implementation period data in this study. We also find private insurance to have increased by 6.8 percentage points, which confirms the finding in the earlier literature that reductions in uninsurance among young adults occurred mainly through gains in parental insurance coverage.

We do not detect any statistically significant changes in disability, mental health, access and utilization outcomes. We find a very small but negative coefficient on overall health status

on the order of a 0.72 percent decrease (a 0.03 point estimate) relative to the pre-policy mean of 4.150, which is economically not meaningful.

Table 3. Effect of the dependent coverage provision on outcomes for 19- to 25-year-olds compared with 27- to 29-year-olds

	Pre-policy mean, dependent variable	DD estimate (percentage point)	Percentage effect	Observations
Dependent Variable				
Uninsured	0.321	-0.072*** (0.006)	-22.43%	86192
Private insurance	0.546	0.068*** (0.006)	12.45%	86912
Disability	0.018	0.000 (0.003)	0.00%	87063
Mental health status	1.420	0.008 (0.011)	0.56%	34720
Overall health status	4.150	-0.030*** (0.008)	-0.72%	87016
Delayed needed medical care due to cost	0.120	-0.008 (0.006)	-6.67%	87020
Forgone care due to affordability	0.091	-0.003 (0.006)	-3.30%	87009
Visited any doctor or health care professional	0.100	0.019*** (0.005)	19.00%	86944

Notes: Each outcome was regressed on an interaction between treatment status and the post policy change dummy variable. Other covariates included race, sex, marital status, educational attainment, categorical measure of the ratio family income to the federal poverty threshold, an indicator for geographic region, the quarterly state-level unemployment rate, fixed effects for each year-quarter and age fixed effects. Heteroscedasticity robust standard errors are reported in parentheses below estimates and standard errors are clustered by age. NHIS sampling weights were used**.** The results reported here are coefficient estimates for the interaction between treatment status and the post policy change dummy variable and are expressed in terms of percentage points.
Source: Authors' calculations based on NHIS 2007-2014.
*** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Sensitivity Analyses

The DD estimation strategy relies on the assumption of parallel trends meaning that absent the policy change the outcomes would have evolved similarly in the treatment and control groups. We test the validity of this assumption using data prior to the policy change. Table 4 presents these estimates and demonstrate that the pre-trends were largely similar across the two

groups. Out of the eight outcomes in our study, only two have statistically significant differences in estimated trends and are small in magnitude, compared to the coefficients of the main DD models. In addition, we check the robustness of our empirical specification, by changing treatment and control age bandwidths as done in prior research. We find these alternative specifications to have not produced meaningful differences in results, strengthening our conclusions from our main DD estimation strategy.

Table 4. Regression estimates of difference in trends in outcomes for 19- to 25-year-olds compared with 27- to 29-year-olds prior to implementation of the dependent coverage mandate

	Pre-trends	Observations
Dependent Variable		
Uninsured	0.000 (0.001)	34388
Private insurance	0.000 (0.001)	34388
Disability	0.000 (0.000)	34675
Mental health status	-0.002 (0.004)	13544
Overall health status	0.000 (0.003)	34656
Delayed needed medical care due to cost	-0.001* (0.001)	34647
Forgone care due to affordability	0.000 (0.001)	34613
Visited any doctor or health care professional	-0.001** (0.001)	34652

Notes: Each outcome was regressed on an interaction between treatment status and linear quarterly trend. Other covariates included race, sex, marital status, educational attainment, categorical measure of the ratio family income to the federal poverty threshold, an indicator for geographic region, the quarterly state-level unemployment rate, fixed effects for each year-quarter and age fixed effects. Heteroscedasticity robust standard errors are reported in parentheses below estimates and standard errors are clustered by age. NHIS sampling weights were used**.** The results reported here are coefficient estimates for the interaction between treatment status and the post policy change dummy variable and are expressed in terms of percentage points.
Source: Authors' calculations based on NHIS 2007-2010.
*** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

Discussion

Implication of Results

Our results suggest that insurance expansions such as the ACA Medicaid expansion and dependent coverage provision can significantly reduce uninsurance among vulnerable populations. The dependent coverage provision has also improved access to medical care among young adults. Specifically out-of-pocket medical spending has decreased and so have cost-related barriers to medical care, such as prescription drugs. Access to primary care doctor has increased along with significant declines in emergency department visits suggesting that improved access to non-urgent medical care has substituted reliance on more resource intensive emergency department-based care among young adults. There is also evidence that the mandate increased scheduled inpatient hospitalizations. However, the extant literature does not show the mandate to have affected use of preventive care and outpatient hospitalizations. There is also some empirical evidence of improvements in health status among the target population, particularly overall self-reported health and well-being. Among labor market outcomes, the majority of the evidence points to reductions in hours worked by young adults affected by the provision, along with a decrease in full-time work. The mandate, however, has not resulted in changes in other labor market outcomes such as employment status, job-lock and disability income receipt.

We also find evidence that expanding Medicaid improved self-assessed general health and access to care for low-income childless adults by reducing the cost barrier to care. Better health outcomes may improve labor market participation for this population by reducing the number of sick days and time taken off to seek medical care. However, the availability of insurance options outside employer-sponsored insurance plans may distort people's incentives to work full-time. The literature is divided on the direction of this impact, and additional years of data are needed to assess the overall impact of the ACA Medicaid expansion on the labor market.

Possible Future Projects:

In the short run, we plan to extend our study of the 2014 Medicaid expansions to examine low-income parents and the impact on their health. We do not study this population in this current project as the income eligibility rules for parental expansions changed in more complex manner, and additional time is needed to collect those details.

Once data on births that occurred in late 2014 and beyond are available through the Natality Detail (birth certificate) data, we plan to examine the impact of Medicaid expansion on infant and in-utero health. Medicaid eligibility during pregnancy was already set more generously than the ACA Medicaid expansion level (138% FPL) in every state, but many women do not sign up for Medicaid until later stages of pregnancy (Simon & Handler, 2008). Thus, Medicaid expansions may lead to early use of prenatal care, and improved birth outcomes. We also plan to study the role of parental insurance on child health by exploiting the spillover that may occur to children (whose eligibility for public health insurance was already set more generously than at 138% of FPL prior to the ACA). It is possible that when parents experience gains in insurance status and greater experience with the healthcare system themselves, children may be more likely to receive well-child visits and other health care, and thus improve health.

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Appendix A: Summary of Literature on Impact of Insurance Expansion on Coverage, Access, Utilization, Health, and Labor Market Outcomes

Authors	Title	Year	Journal	Setting	Method	Data	Results
Anderson, Dobkin, Gross	The effect of health insurance on emergency department visits: Evidence from an age-based eligibility threshold	2014	Review of Economics and Statistics	Young adults aging out of parents' plans	Regression discontinuity using 23rd birthday (students no longer eligible for parents' insurance)	NHIS	1.5% of young adults lose their health insurance upon turning 23, and this transition leads to a 1.6% decrease in ED visits and a 0.8% decrease in hospital stays
Anderson, Dobkin, Gross	The Effect of Health Insurance Coverage on the Use of Medical Services	2012	American Economic Journal: Policy	Young adults aging out of parents' plans	Regression discontinuity (fuzzy RD)	NHIS	Aging out results in an abrupt 5 to 8 percentage point reduction in the probability of having health insurance. Uninsured status leads to a 40 percent reduction in ED visits and 61 percent reduction in inpatient hospital admissions.
Depew	The effect of state dependent mandate laws on the labor supply decisions of young adults	2015	Journal of Health Economics	Young Adult Mandate (state laws)	DDD (by age, state, and time)	ACS	State mandates led to a decrease in labor supply on the intensive margin.
Akosa Antwi, Moriya, Simon	Access to Health Insurance and the Use of Inpatient Medical Care: Evidence from the ACA Young Adult Mandate	2015	Journal of Health Economics	Young Adult Mandate	DD using 19-25-year olds as treatment group and 27-29-year-olds as control	NIS	Increase in both emergency and non-emergency admissions to hospitals. Increase inpatient visits by 3.5%, increase mental illness visits by 9.0%. Uninsurance rate among hospitalized young adults decreased 12.5%. Does not appear that the intensity of inpatient treatmentchanged despite the change in reimbursement composition of patients.
Barbaresco, Courtmanche, Qi	Impacts of the Affordable Care Act Dependent Coverage Provision on Health-Related Outcomes of Young Adults	2015	Journal of Health Economics	Young Adult Mandate	DD using 23-25-year olds as treatment group and 27-29-year-olds as control	BRFSS	Increase in insurance (5.6-6.7 percentage point), primary doctor, risky drinker, excellent health. Decrease in BMI. No change in cost prevented care, flu shot, routine checkup, Pap, currently smokes, drinks per month, obese, exercise, pregnancy, mental health, physical health, days poor health.

Heim, Lurie, Simon	The Impact of the Affordable Care Act Young Adult Provision on Labor Market Outcomes: Evidence from Tax Data	2015	Tax Policy and the Economy	Young Adult Mandate	DDD (by age, post-law, and parents likely to have insurance)	IRS Compliance Data Warehouse	Insignificant impact on labor market outcomes by the YA provision.
Scott, Sommers, Tsai, et al	Dependent Coverage Provision Led To Uneven Insurance Gains And Unchanged Mortality Rates In Young Adult Trauma Patients.	2015	Health Affairs	Young Adult Mandate	DD	National Trauma Databank	3.4 percentage point decrease in uninsured status among younger trauma patients following the policy change. We did not detect significant changes in intensive care use or overall mortality.
Wallace, Sommers	Effect of Dependent Coverage Expansion of the ACA on Health and Access to Care for Young Adults	2015	Journal of American Medical Association	Young Adult Mandate	DD: 19 to25 years (treatment group) and26 to34 years (control group).	BRFSS	YA Mandate was associated with an increase of 6.6 percentage points in the probability of insurance coverage and a decrease of 0.8 percentage points in fair or poor self-reported health. The proportion of young adultswith a usual source of care increased by 2.4 percentage points while the proportion of young adults unable to see a physician because of cost declined by 1.9 percentage points. There was no statistically significant change in the percentage of young adults who reported a routine checkup in the previous year.
Busch, Golberstein, Meara	ACA dependent coverage provision reduced high out-of-pocket health care spending for young adults	2014	Health Affairs	Young Adult Mandate	DD using age 19-25 as treatment group and age 26-29 as control group	MEPS	YA Mandate was associated with a reduction in the share of young adults facing annual out-of-pocket expenditures greater than $1,500, compared to an increase in the proportion of their slightly older peers facing such expenditures , a net difference of −2.4 percentage points, or 57 percent. YA Mandate provides financial protection for young adults at a time when they often face high debt burden but low wages.

Chua, Sommers	Changes in Health and Medical Spending among Young Adults under Health Reform	2014	Journal of American Medical Association	Young Adult Mandate	DD using 19-25 as treatment group and 26-34 as control group	MEPS	Increase of 7.2 percentage points in the probability of insurance coverage, no statistically significant changes in health care use, an increase of 6.2 percentage points in the probability of reporting excellent physical health, and an increase of 4.0 percentage points in the probability of reporting excellent mental health. Decrease of 3.7 percentage points in the percentage of expenditures paid out-of-pocket among adults aged 19 to 25 years with any expenditures.
Kotagal, Carle, Kessler, Flum	Limited impact on health and access to care for 19- to 25-year-olds following the Patient Protection and A ordable Care Act.	2014	Journal of American Medical Association	Young Adult Mandate	DD	BRFSS, NHIS	YA Mandate increased health insurance coverage for 19- to 25-year-olds without significant changes in perceived health care affordability or health status. There was no significant change in the percentage who reported receiving a routine checkup in the past year or in the ability to afford prescription medications, dental care, or physician visits. There was also no change in the percentage who reported receiving a flu shot. Insured individuals were more likely to report having a usual source of care and a recent routine checkup and were more likely to be able to afford health care than uninsured individuals.
Akosa Antwi, Moriya, Simon	Effects of Federal Policy to Insure Young Adults: Evidence from 2010 ACA Dependent Coverage Mandate	2013	American Economic Journal: Policy	Young Adult Mandate	DD using 19-25-year olds as treatment group and younger/older as control	SIPP	High take-up of parental coverage, resulting in substantial reductions in uninsuranceand other forms of coverage. Preliminary evidence of increased labor market flexibility in the form of reduced work hours.

Mulcahy, Harris, Ginegold, et al	Insurance Coverage of Emergency Care for Young Adults Under Health Reform	2013	New England Journal of Medicine	Young Adult Mandate	DD (19-25 vs. 26-31)	IMS Health Charge Data Master	Private coverage of nondiscretionary visits to emergency departments by young adults increased by 3.1 percentage points. The percentage of visits by uninsured young adults also fell. The rates of nondiscretionary visits that were covered by Medicaid or other nonprivate insurers remained relatively steady throughout the study period. The coverage expansion led to an estimated 22,072 visits to emergency departments by newly insured young adults and $147 million in associated costs that were covered by private insurance plans during a 1-year period. Policy was associated with a significant increase in the proportion of young adults who were protected from the financial consequences of a serious medical emergency.
Sommers, Buchmueller, Decker, Carey, Kronick	The ACA has led to significant gains in health insurance and access to care for young adults	2013	Health Affairs	Young Adult Mandate	DD	NHIS, ASES	Sizeable coverage gains for adults ages 19–25, with the largest gains seen in unmarried adults, nonstudents, and men. Early gains in coverage were greatest for people in worse health. Strong evidence of increased access to care because of the law, with significant reductions in the number of young adults who delayed getting care and in those who did not receive needed care because of cost.
Cantor, Monheit, DeLia, Lloyd	Early Impact of the ACA on Health Insurance Coverage of Young Adults	2012	Health Services Research Journal	Young Adult Mandate	DD using 19-25 as treatment group and 27-30 as control group	CPS	YA Mandate led to a increase in dependent coverage and a reduction in uninsured rate in the early months of implementation. Models accounting for prior state dependent expansions suggest greater policy impact in 2010 among young adults who were also eligible under a state law.

Sommers, Kronick	The ACA and Insurance Coverage for Young Adults	2012	Journal of American Medical Association	Young Adult Mandate	DD	CPS	Insurance coverage increased significantly from the 2005-2009 period to 2010 for 19- to 25-year-olds (70.1% to 70.3%) compared with 26- to 34-year-olds (74.7% to 72.0%), a net gain of 2.9%. Private insurance increased significantly by 2.8%, with no significant change in Medicaid. White, black, Latino, Asian, and Native American young adults all experienced significant increases in coverage
Cutler, Zeckhauser	The Anatomy of Health Insurance	2000	Handbook of Health Economics	Theory	Theoretical model	N/A	Ex-ante moral hazard unlikely to besubstantial in the context of health insurance
Kenkel	Prevention	2000	Handbook of Health Economics	Theory	Theoretical model	N/A	If price of market insurance does not reflect change in prevention ex-ante moral hazard will result
Ehrlich, Becker	Market Insurance, Self-Insurance, and Self-Protection	1972	Journal of Political Economy	Theory	Theory	N/A	Theoretical model. When MB of self-protection drops with insurance, demand for self-protection is lower.
Garthwaite, Gross, Norowidigdo	Public Health Insurance, Labor Supply, and Employment Lock	2014	Quarterly Journal of Economics	Tennessee	DD (with other Southern states) and DDD (childless adults vs. other adults)	CPS	TN disenrollment caused large increases in labor supply, primarily along the extensive margin. Immediate increase in job search behavior and a steady rise in both employment and health insurance coverage following the disenrollment. ACA may cause large reductions in the labor supply of low-income adults.
Stanciole	Health Insurance and Lifestyle Choices: Identifying Ex Ante Moral Hazard in US Market	2008	Geneva Papers	Structural model (no policy change)	Structural model (maximum simulated likelihood)	PSID	Insurance increases heavy smoking, lack of exercise, and obesity. Insurance decreases heavy drinking.
Manning, Wells, Buchanan	Effects of Mental Health Insurance: Evidence from the Health Insurance Experiment	1989	RAND	RAND Experiment	Randomized controlled experiment	RAND	Overall no significant effects of cost-sharing variation on mental health, but those who initially had poor mental health fared better under the free care plan.
Manning, Newhouse, Duan, et al	Health Insurance and the Demand for Medical Care: Evidence from a Randomized Experiment	1987	American Economic Review	RAND Experiment	Randomized controlled experiment	RAND	The least generous insurance plan reduced medical expenditures by 31%, compared to the most generous insurance plan. Price elasticity is -0.2.

Brook, Ware, Rogers, et al	Does Free Care Improve Adults' Health? Results from a Randomized Controlled Trial	1983	New England Journal of Medicine	RAND Experiment	Randomized controlled experiment (treatment group provided free care, control group paid for portion of medical bills)	RAND	Free care improved vision and BP status for those with pre-existing issues. But for the average participant, no significant chagne in smoking, weight, cholesterol level, BP, vision, risk of dying, health perception, mental health status, physical health functioning, etc.
Allen, Wright, Baicker	New Medicaid Enrollees in Oregon Report HealthCare Successes and Challenges	2014	Health Affairs	Oregon	Interviews	Primary	40% of the newly insured did not use coverage much because perceived themselves to be healthy, confused about coverage, dissatisfied about care, or other access barriers such as long waits or stressful life circumstances.
Baicker, Finkelstein, Song, Taubman	The Impact of Medicaid on Labor Market Activity and Program Participation: Evidence from the Oregon Health Insurance Experiment	2014	American Economic Review	Oregon	Instrumental Variable	SSA, State records	No significant impact on (i) whether the individual had any earnings (i.e., employment), (ii) the amount of individual earnings, and (iii) whether individual earnings are above the federal poverty level (FPL). No evidence of crowd-out. Winning the lottery increases the probability of receiving food stamps by a statistically significant 2.5 percentage points
Taubman, Allen, Wright, Baicker, Finkelstein	Medicaid Increases Emergency-Department Use: Evidence from the Oregon Health Insurance Experiment	2014	Science	Oregon	Randomized controlled experiment	Portland's hospital data	Medicaid coverage significantly increases overall emergency use. Increases in emergency-department visits across a broad range of types of visits, conditions, and subgroups, including increases in visits for conditions that may be most readily treatable in primary care settings.

Baicker, Taubman, Allen, et al	The Oregon experiment—effects of Medicaid on clinical outcomes	2013	New England Journal of Medicine	Oregon	Randomized controlled experiment	Primary	No significant effect of Medicaid coverage on the prevalence or diagnosis of hypertension or high cholesterol levels or on the use of medication for these conditions. Medicaid coverage significantly increased the probability of a diagnosis of diabetes and the use of diabetes medication, but we observed no significant effect on average glycated hemoglobin levels or on the percentage of participants with levels of 6.5% or higher. Medicaid coverage decreased the probability of a positive screening for depression, increased the use of many preventive services, and nearly eliminated catastrophic out-of-pocket medical expenditures.
Finkelstein, Taubman, Wright, et al	The Oregon health insurance experiment: evidence from the first year	2012	Quarterly Journal of Economics	Oregon	Randomized controlled experiment	Oregon, Survey, TransUnion Consumer Credit	In the first year, the treatment group had substantively and statistically significantly higher health care utilization (including primary and preventive care as well as hospitalizations), lower out-of-pocket medical expenditures and medical debt (including fewer bills sent to collection), and better self-reported physical and mental health than the control group.
Dave, Kaestner	Health Insurance and Ex-Ante Moral Hazard: Evidence from Medicare	2009	International Journal of Healthcare	Medicare	DD	Health & Retirement Survey	Significant increase in smoking among males only, after controlling for doctor's visits. No effect on exercise, smoking, and drinking.
Card, Dobkin, Maestas	The Impact of Nearly Universal Insurance Coverage on Health Care Utilization: Evidence from Medicare	2008	American Economic Review	Medicare	Regression discontinuity to compare health-related outcomes among people just before and just after the age of 65	NHIS	Medicare increased usage of primary and hospital care.

McWilliams, Meara, Zaslavsky, Ayanian	Health of Previously Uninsured Adults after Acquiring Medicare Coverage	2007	Journal of American Medical Association	Medicare	Linear spline model	Health and Retirement Study	Medicare was associated with improved trends in self-reported health for previously uninsured adults, particularly those with cardiovascular disease or diabetes. Relative to previously insured adults with cardiovascular disease or diabetes, previously uninsured adults with these conditions reported significantly improved trends in summary health, change in general health, mobility, agility, and adverse cardiovascular outcomes, but not in depressive symptoms . By age 70 years, the expected difference in summary health between previously uninsured and insured adults with cardiovascular disease or diabetes was reduced by 50%
Lichtenberg	The Effects of Medicare on Health Care Utilization and Outcomes	2002	Frontiers in Health Policy Research	Medicare	Descriptive analysis	National Hospital Discharge Survey, NAMCS	Utilization of ambulatory care, inpatient care, number of physician visits in which at least one drug prescribed, and annual visits per capita increases suddenly and significantly at age 65. Age 65 also leads to a reduction in days spent in bed of about 13 percent and to slower growth in the probability of death after age 65.
DeLeire, Dague, Leininger, Voskuil, Friedsam	Wisconsin experience indicates that expanding public insurance to low-income childless adults has health care impacts	2013	Health Affairs	Medicaid expansion in Wisconsin	Randomized controlled experiment. AUTOMATIC, exogenous enrollment of childless adults in Wisconsin into Medicaid.	Wisconsin	1 year following enrollment in public insurance, outpatient visits for the study population increased 29 percent, and emergency department visits increased 46 percent. Inpatient hospitalizations declined 59 percent, and preventable hospitalizations fell 48 percent. Public insurance coverage expansions to childless adults have the potential to improve health and reduce costs by increasing access to outpatient care and reducing hospitalizations.
Cutler, Gruber	Does Public Insurance Crowd Out Private Insurance?	1996	Quarterly Journal of Economics	Medicaid expansion for pregnant and children (1987-92)	Simulated eligibility	CPS, NMES	50% of the increase in medicaid coverage was assoicated with reduction in private insurance. Employers contributed less for insurance and workers dropped coverage of dependents.

Decker,Dave, Kaestner, Simon	The Effect of Medicaid Expansion in the Late 1980s and Early 1990s on the Labor Supply of Pregnant Women	2015	American Journal of Health Economics	Medicaid expansion for pregnant	Simulated eligibility (fraction of women eligible for Medicaid in each state and year)	CPS	The 20 percentage point increase in Medicaid eligibility during the sample period was associated with an 11–13 percent decrease in the probability that a woman who gave birth in the past year was employed. Most of this reduction in labor supply was associated with crowd-out (i.e., movement from private to public insurance concurrent with the shift in labor supply).
Gruber, Simon	Crowd-out 10 years later: have recent public insurance expansions crowded out private health insurance?	2008	Journal of Health Economics	Medicaid expansion for parents and children	Simulated eligibility, cross-tabulations	SIPP	Crowd-out of about 60%: the number of privately insured falls by about 60% as much as the number of publicly insured rises. Estimates are much larger when family wide effects of eligibility are accounted for, incorporating the spillover onto other family members of eligibility expansions.
McMorrow, Kenney, Long, Goin	Medicaid Expansions from 1997 to 2009 Increased Coverage and Improved Access and Mental Health Outcomes for Low-Income Parents	2016	Health Services Research Journal	Medicaid expansion for parents	DD using thresholds	NHIS	Expanding Medicaid eligibility increases insurance coverage, reduces unmet needs due to cost and OOP spending, and improves mental health status among low-income parents.
Hamersma, Kim	Participation and crowd out: Assessing the e ects of parental Medicaid expansions.	2013	Journal of Health Economics	Medicaid expansion for parents	DD using "threshold" as independent variable	SIPP	Typical eligibilty expansion increases Medicaid coverage by 4% of baseline coverage rates. Participation effect larger for lower initial thresholds. No evidence of crowd-out.
Hamersma, Kim	The Effect of Parental Medicaid Expansions on Job Mobility	2009	Journal of Health Economics	Medicaid expansion for parents	DD using "threshold" as independent variable	SIPP	Expanded eligibility reduces job lock among unmarried women but not men or married women. Only weak evidence of reduced job push among men.
Wagner	Medicaid Expansions for the Working Age Disabled: Revisiting the Crowd-Out of Private Health Insurance	2015	Journal of Health Economics	Medicaid expansion for disabled	Simulated eligibility	CPS, SIPP	Crowd-out estimates range from 49% using an ordinary least squares procedure to 100% using two-stage leastsquares analysis.

Currie, Decker, Lin	Has public health insurance for older children reduced disparities in access to care and health outcomes?	2008	Journal of Health Economics	Medicaid expansion for children	Simulated eligibility. instrument for individualMedicaid/ SCHIP eligibility using an index of the generosity of the state's public health insurance programs. This index is the fraction of a fixed group of children drawn from the same age group and year who would be eligible for public health insurance in each state.	NHIS, CPS for simulated eligibility	Eligibility unambiguously improves current utilization of preventive care but has little effect on current health status. Some evidence that Medicaid eligibility in early childhood has positive effects on future health.
Dafny, Gruber	Public insurance and child hospitalizations: access and efficiency effects	2005	Journal of Political Economy	Medicaid expansion for children	Simulated eligibility	NHDS	Total hospitalizations increased significantly, with each 10 percentage-point rise in eligibility leading to an 8.4% increase in hospitalizations. Increase in hospitalizations for unavoidable conditions is much larger than that for avoidable conditions that are most sensitive to outpatient care. Expanded Medicaid eligibility reduced the average length of stay, but increased the utilization of inpatient procedures, so that the net impact on total costs per stay is ambiguous.

Currie, Gruber	Health Insurance Eligibility, Utilization of Medical Care, and Child Health	1996	Quarterly Journal of Economics	Medicaid expansion for children	Simulated eligibility. (select a national random sample of 300 children of each age (zero to fourteen), in each year, and calculate the fraction of children in this sample who would be eligible for Medicaid given the rules in each state in that year)	CPS (to analyze impact on coverage), NHIS (to analyze impact on health)	Eligibility for Medicaid significantly increased utilization of medical care, esp care delivered in physicians' offices. Increased eligibility also reduced child mortality.
Sommers, Blendon, Orav	Both The 'Private Option' And Traditional Medicaid Expansions Improved Access To Care For Low-Income Adults	2016	Health Affairs	Medicaid expansion	DD	Telephone survey	Uninsurance rate declined by 14 percentage points in the two expansion states, compared to the nonexpansion state. Skipping medications because of cost and trouble paying medical bills declined significantly. Share of individuals with chronic conditions who obtained regular care increased. Other than coverage type and trouble paying medical bills (which decreased more in Kentucky than in Arkansas), there were no significant differences between Kentucky's traditional Medicaid expansion and Arkansas's private option.

Kaestner, Garrett, Gangopadhyaya, Fleming	Effects of ACA Medicaid Expansions on Health Insurance Coverage and Labor Supply	2015	NBER	Medicaid expansion	DD, Synthetic controls	ACS, CPS	Among uneducated adults, Medicaid expansions increased Medicaid coverage by approximately 4 percentage points, decreased the proportion uninsured by approximately 3 percentage points, and decreased private health insurance coverage by 1 percentage point. Expansions had little effect on labor supply as measured by employment, usual hours worked per week and the probability of working 30 or more hours per week. Expansions increased employment slightly, although not significantly.
Kaufman, Chen, Fonseca, McPhaul	Surge in Newly Identified Diabetes among Medicaid Patients in 2014 within Medicaid Expansion States under the ACA	2015	Diabetes Care	Medicaid expansion	Descriptive analysis	Quest Diagnostics	Number of Medicaid-enrolled patients with newly identified diabetes increased by 23% in the 26 states (and District of Columbia) that expanded Medicaid compared with an increase of 0.4% in the 24 states that did not expand Medicaid during this period. In the states that expanded Medicaid under the ACA, an increased number of Medicaid patients with diabetes are being diagnosed and treated earlier.
Sabik, Tarazi, Bradley	State Medicaid Expansion Decisions and Disparities in Women's Cancer Screening	2014	AJPH	Medicaid expansion	Descriptive analysis	BRFSS	Women in states that are not expanding Medicaid had significantly lower odds of receiving recommended mammograms or Pap tests. The difference was larger among the uninsured. As women in nonexpansion states remain uninsured and others gain coverage, existing disparities in cancer screening by race and socioeconomic status are likely to widen.

Kenney, Lynch, Haley, Huntress	Variation in medicaid eligibility and participation among adults: Implications for the a ordable care act.	2012	Inquiry	Medicaid expansion	Descriptive analysis	ACS	4.5 million eligible but uninsured adults. Medicaid participation rate of 67% for adults; the rate is 17 percentage points lower than the national Medicaid participation rate for children, and it varies substantially across socioeconomic and demographic subgroups and across states. Achieving substantial increases in coverage under the ACA will require sharp increases in Medicaid participation among adults in some states.
Kenney, McMorrow, Zuckerman, Goin	A Decade of Healthcare Access Declines for Adults Holds Implications for changes in the ACA	2012	Health Affairs	Medicaid expansion	Descriptive analysis	NHIS	Access to health care and use of health services for adults ages 19–64 deteriorated between 2000 and 2010, particularly among those who were uninsured. More than half of uninsured US adults did not see a doctor in 2010, and only slightly more than a quarter of these adults were seen by a dentist...eliminating the law or curtailing the coverage expansion could result in continued erosion of adults' access to care.
Golberstein, Gonzales, Sommers	California's Early ACA Expansion Increased Coverage and Reduced Out-of-Pocket Spending for the State's Low-Income Population	2015	Health Affairs	Medicaid early expansion	DD, took advantage of the staggered timing of the insurance expansion across counties in California	NHIS	County-by-county rollout of expanded public insurance coverage in California significantly increased coverage, by 7 percentage points, and significantly reduced the likelihood of any family out-of-pocket medical spending in the previous year, by 10 percentage points, among low-income adults.
Bazzoli	Effects of Expanded CA Health Coverage on Hospitals: Implications for ACA Medicaid Expansions	2015	Health Services Research Journal	Medicaid early expansion	DD with hospitals in counties that did not implement expansion as control group	California Health Dept, U.S. census	California insurance expansions primarily benefited for-profit hospitals via significant decreases in self-pay patients, increases in county-covered patients, and reductions in charity care. No significant change in payer mix. Conflicting changes in unreimbursed care for nonprofit hospitals.

Sommers, Arnston, Kenney, Epstein	Lessons from Early Medicaid Expansions Under Health Reform: Interviews with Medicaid Officials	2013	Medicare & Medicaid Research Review	Medicaid early expansion	Qualitative	Interviews	Rxpansions built upon pre-existing state-funded insurance programs for the poor. Predictions about costs and enrollment were challenging, indicating the uncertainty in projections for 2014. Other themes included greater than anticipated need for behavioral health services in the expansion population, administrative challenges of expansions, and persistent barriers to enrollment and access after expanding eligibility—though officials overall felt the expansions increased access for beneficiaries. Finally, political context—support or opposition from stakeholders and voters—plays a critical role in shaping the success of Medicaid expansions.
Sommers, Baicker, Epstein	Mortality and access to care among adults after state Medicaid expansions	2012	New England Journal of Medicine	Medicaid early expansion	DD	Compressed Mortality File	Significant reduction in adjusted all cause mortality, mostly among older adults, nonwhites, and residents of poorer counties. Expansions increased Medicaid coverage by 2.2 percentage points, decreased rates of uninsurance by 3.2 percentage points, decreased rates of delayed care because of costs by 2.9 percentage points, and increased rates of self-reported health status of “excellent” or “very good” by 2.2 percentage points.
Long, Stockley	The Impacts of State Health Reform Initiatives on Adults in New York and Massachusetts.	2011	Health Services Research Journal	Medicaid early expansion	DD (subtract changes in the outcomes over the same time period for comparison groups of adults who were not affected by the policy changes)	NHIS	Initiatives in NewYork and Massachusetts expanded insurance coverage, with the greatest gains reported by MA. There is no evidence of improvements in access to care in NewYork, reflecting the small gains in coverage under that state’s reformeffort. In contrast, there were significant gains in access to care in MA, where there was more comprehensive reform.

Long, Zuckerman, Graves	Are adults benefiting from state coverage expansions?	2006	Health Affairs	Medicaid early expansion	DD using multiple control groups	National Survey of America's Families	Parents in Wisconsin and parents and childless adults in Massachusetts experienced the largest expansions in public coverage, with few, if any, offsetting reductions in private coverage. Coverage expansions for parents in California and New Jersey led to increased enrollment, but often at the expense of private coverage. Evidence that cutbacks will place more adults at risk of being uninsured.
Sommers, Kenney, Epstein	New Evidence on the ACA: Coverage Impacts of Early Medicaid Expansions	2014	Health Affairs	Medicad early expansion	DD using nearby states	ACS, States' Medicaid admin data	Strong evidence of increased Medicaid coverage in Connecticut (4.9 percentage points) and positive but weaker evidence of increased coverage in D.C. (3.7 percentage points). Medicaid enrollment rates were highest among people with health-related limitations. We found evidence of some crowd-out of private coverage in Connecticut (30–40 percent of the increase in Medicaid coverage), particularly for healthier and younger adults, and a positive spillover effect on Medicaid enrollment among previously eligible parents.
Courtemanche, Zapata	Does Universal Coverage Improve Health? The Massachusetts Experience	2014	JPAM	Massachusetts	DD using Massachusetts vs. other states	BRFSS	Increase in overall self-assessed health. Decrease in days not in good physical health, days not in good mental health. Decrease in BMI, no impact on exercise or smoking. No evidence of ex-ante moral hazard. Increase in constructed measure of health status (uses functional limitations, joint pain, BMI, exercise, and smoking)
Sommers, Long, Baicker	Changes in Mortality after Massachusetts Health Care Reform: A Quiasi-Experimental Study	2014	Annals of Internal Medicine	Massachusetts	DD	Compressed Mortality File	MA reform was associated with a significant decrease in all-cause mortality. Deaths from causes amenable to health care also significantly decreased. Changes were larger in counties with lower household incomes and higher prereform uninsured rates.

Meara, Golberstein, Zaha, et al	Use of Hospital-Based Services among Young Adults with Behavioral Health Diagnoses before and after Health Insurance Expansions	2014	Journal of American Medical Association	Massachusetts	DD	Hospital discharge records (4 sources from AHRQ)	YA Mandate was not associated with large increases in hospital-based care for behavioral health, but it increased financial protection to young adults with behavioral health diagnoses, and to the hospitals that care for them.
Van Der Wees, Zaslavsky, Ayanian	Improvements in Health Status after Massachusetts Health Care Reform	2013	Milbank Quarterly	Massachusetts	DD (MA vs. New England states)	BRFSS	MA residents reported greater improvements in general health (1.7%), physical health (1.3%), and mental health (1.5%). Massachusetts residents reported significant relative increases in rates of Pap screening (2.3%), colonoscopy (5.5%), and cholesterol testing (1.4%). Adults in Massachusetts households that earned up to 300% of the federal poverty level gained more in health status than did those above that level, with differential changes ranging from 0.2% to 1.3%.
Kolstad, Kowalski	The Impact of Health Care Reform on Hospital and Preventive Care: Evidence from Massachusetts	2012	Journal of Political Economy	Massachusetts	DD	CPS, HCUP, NIS, BRFSS	MA reform decreased uninsurance by 36% relative to its initial level and to other states. Reform affected utilization by decreasing length of stay, and the number of inpatient admissions originating from the emergency room. If control for patient severity, preventable admissions decreased. Hospital cost growth did not increase.

Miller	The Impact of the Massachusetts Health Care Reform on Health Care Use Among Children	2012	American Economic Review: Papers and Proceedings	Massachusetts	DD	NHIS	MA reform improved children's composition of health services and reported health outcomes. Reform only modestly increased total insurance coverage among the children surveyed (by about 2.4 percentage points), but had a large effect on the type of insurance that covered them, moving children off of less generous “stopgap” public programs and on to more comprehensive plans. Children in Massachusetts were less likely to visit the hospital emergency room after the reform. They increased their use of office visits and preventive care. Reduced the number of children who had forgone care due to costs and improved reported health quality.
Miller	The Effect of Insurance on Outpatient Emergency Room Visits: An Analysis of the 2006 Massachusetts Health Reform	2011	Journal of Political Economy	Massachusetts	DD using multiple sources of varation (exploit the variation in pre-reform uninsurance rate across counties)	Emergency Department Data	Reform reduced ER usage by between 2 and 8 percent, mostly because reduction in non-urgent visits. Expanding insurance coverage could have a substantial impact on the efficiency of health services.

Bhattacharya, Bundorf, Pace, Sood	Does Health Insurance Make You Fat?	2011	NBER	Insurance for young adults	IV using firm size as predictor of private coverage. Another IV uses probability of Medicaid coverage. (Regress a binary variable for Medicaid coverage on demographics, family composition, income, and state × time fixed effects. The state × time fi xed effects measure the generosity of Medicaid coverage in each state and year.)	NLSY	Private insurance increases BMI by 1.3 points, and public insurance increases BMI by 2.1 points. Both public and private insurance increase obesity
Kelly, Markowitz	Incentives in Obesity and Health Insurance	2009	Inquiry	Insurance	IV (percentage of each state's workforce employed in firms of different sizes)	BRFSS	Having insurance is associated with higher body mass but not the probability of being obese.

Sommers, Gunja, Finegold, Musco	Changes in Self-reported Insurance Coverage, Access to Care, and Health Under the Affordable Care Act	2015	Journal of American Medical Association	ACA Exchanges, Medicaid expansion	1. Regression discontinuity (Quarterly indicators to measure changes from baseline pre-ACA trends, Interrupted time series in which slope of changes in each outcome allowed to shift after expansion) 2. DD for low-income	Gallup	For all nonelderly adults: Decrease in uninsurance rate, lack personal physician, lack access to medicine, unable to afford care, fair/poor health, days with activities limited by health. Coverage changes largest among Hispanics. Positive trends in self-reported health among individuals with chronic medical conditions. For low-income adults: Medicaid expansion reduced uninsurance rate by 5.2 percentage points (DD estimate), reduced those lacking personal physician by 1.9 percentage points, and reduced difficulty accessing medicine by2.2 percentage points.
Donohue, Papademetriou, Henderson, et al	Early Marketplace Enrollees Were Older And Used More Medication Than Later Enrollees; Marketplaces Pooled Risk.	2015	Health Affairs	ACA Exchanges	Descriptive analysis	Express Scripts	Among Marketplace enrollees, those who enrolled earlier (October 2013–February 2014) were older and used more medication than later enrollees. Marketplace enrollees, as a whole, had lower average drug spending and were less likely to use most medication classes than the employer-sponsored comparison group. However, Marketplace enrollees were more likely to use medicines for hepatitis C and particularly for HIV.
Han, Yabroff, Guy, et al	Has recommended preventive service use increased after elimination of cost-sharing as part of the Affordable Care Act in the United States?	2015	Preventive Medicine	ACA Cost-sharing eliminated for preventive services	Descriptive analysis	MEPS	Blood pressure check, cholesterol check and flu vaccination increased significantly from 2009 to 2011/2012, primarily in the privately insured population aged 18–64 years. Few changes were observed for cancer screening.

Shartzer, Long, Anderson	Access To Care And Affordability Have Improved Following Affordable Care Act Implementation; Problems Remain	2016	Health Affairs	ACA	Descriptive analysis	Health Reform Monitoring Survey	Strong improvements in access to care for all nonelderly adults and across income and state Medicaid expansion groups. Improvements in the affordability of care for all adults and for low- and moderate-income adults. But there were still large gaps in access and affordability in March 2015, particularly for low-income adults.
Carman, Eibner, Paddock	Trends in Health Insurance Enrollment, 2013-15	2015	Health Affairs	ACA	Descriptive analysis	RAND Health Reform Opinion Study	Between September 2013 and February 2015, 22.8 million people gained coverage and 5.9 million people lost coverage, for a net increase of 16.9 million people with insurance.
McMorrow, Kenney, Long, Anderson	Uninsurance among Young Adults Continues to Decline, Particularly in Medicaid Expansion States	2015	Health Affairs	ACA	Descriptive analysis	NHIS	Young Adult Mandate disproportionately reduced uninsurance among higher-income young adults, while the 2014 coverage provisions were associated with substantial reductions for those with low and moderate incomes, particularly in Medicaid expansion states. About 20 percent of young adults remained uninsured in early 2014.
Garfield, Zuvekas, Lave, Donohue	The Impact of National Healthcare Reform on Adults with Severe Mental Disorders	2011	American Journal of Psychiatry	ACA	Descriptive analysis, Predictions	MEPS	Adults with psychological distress were more likely to be uninsured. Only one-fifth of individuals with severe mental disorders who lacked full-year insurance coverage had any mental health service use in the 2004–2006 period, compared with approximately half of those who had coverage. Expansion of insurance coverage under reform will lead to 1.15 million new users of mental health services, which represents a 4.5% increase.

Appendix B: Social Security Association (SSA) Accelerated Benefits Demonstration

Individuals experiencing a disability that prevents them from participating in the labor force and engage in SGA can apply for and receive healthcare and cash benefits as a Social Security Disability Insurance (SSDI) beneficiary. SSDI beneficiaries have to wait for 24 month before qualifying for Medicare (Weathers et al., 2010). In 2006, MDRC started conducting the Accelerated Benefits (AB) demonstration evaluation to examine the costs and benefits of altering the 24 month Medicare waiting period for DI beneficiaries (Weathers et al., 2010); (Michalopoulos et al., 2011). In the AB Demonstration, DI beneficiaries[1] were randomly assigned sample members into treatment—with two different arms called AB[2] and AB Plus[3], respectively—and control groups. Treatment group members in both arms were able to access health insurance benefits during the waiting period. Meanwhile, control group members did not receive health benefits, but were not restricted from obtaining health insurance coverage by other means (Weathers et al., 2010).

While the frequency of unmet needs was substantially lower for the treatment group, a significant percent in the treatment group still reported having unmet medical needs based on responses within the 6 months assignment (Weathers et al., 2010). In particular, 51.1 % of the members in the treatment group reported not filling a prescription. However, survey responses reveal that cost played a larger role as a barrier for unfilled prescription among members in the control group compared to the treatment group (Weathers et al., 2010). The results suggest that DI beneficiaries are likely to enroll is some health insurance plan during the interim period to cover the of their medical needs. Therefore, the early stage results of the AB Demonstration suggest that DI beneficiaries are usually able to ensure adequate health insurance coverage to meet medical needs during the waiting period. For instance, Weathers et al. (2010) report that 24.2 percent of the members in the control group obtained health insurance within the first six months of assignment. And about 30% of control group members secured access to health

[1] Beneficiaries were 18 to 54 year old beneficiaries who did not have health insurance coverage and did not have a representative payee (Weathers et al., 2010).
[2] AB group had access to health benefits designed for the project during the waiting period (Michalopoulos et al., 2011).
[3] AB Plus group had access to the same health benefits as members assigned to the AB group as well as voluntary services via telephone to help them navigate the health care system and return to work (Michalopoulos et al., 2011).

insurance coverage within a year following enrollment in the AB Demonstration (Weathers and Stegman, 2012). In addition, although at a lower rate than the treatment group, members randomly assigned to the control group generally received medical care (Weathers et al., 2010).

Furthermore Michalopolous et al. (2011) find that offering health care benefits to the treatment group increased healthcare utilization and reduced unmet needs within a year of random assignment. For instance, the AB health insurance package led to a 22 percentage point (46%) increase in beneficiaries who underwent surgery and a 40 percentage point (53%) reduction in beneficiaries reporting an unmet need for a prescription drug (Weathers and Stegman, 2012). In addition, Weathers and Stegman (2012) find health benefits packages led to improvements in health outcomes among beneficiaries. They find at least a 10 percentage point (30%) reduction in the percentage of beneficiaries reporting poor health and a 16 percentage point (88%) increase in beneficiaries reporting somewhat better or much better health condition a year after receiving the health package (Weathers and Stegman, 2012). Finally, Weathers and Stegman (2012) also find that providing health insurance coverage to the beneficiaries in the interim period prior to receiving Medicare coverage resulted in positive effects on mental health outcomes as well.

However, evidence on labor participation for beneficiaries two years after random assignment to the AB Demonstration shows that only providing health insurance during the interim period before receiving Medicare did not lead to a significantly increase employment rate among participants. Yet, the employment outcomes among members randomly assigned to the second arm of the treatment wing where they received help and resources regarding re-entry into the labor market (AB plus) in addition to the health benefits during the interim period, were significantly better relative to the control group. In fact, in the second calendar year after employment, there was a 5.4 percentage point (47 %) increase in employment among members in the AB Plus group compared to members in the AB and control group (Weathers and Stegman-Bailey, 2014).

Appendix C: Literature Review on Effect of the ACA Dependent Coverage Mandate on Coverage, Access, Utilization, Health, and Labor Market Outcomes[4]

Several studies have examined changes in insurance coverage, health care access, utilization, health and labor market outcomes among young adults after the dependent coverage mandate. These empirical studies mainly estimate a causal impact of the policy change using an age-time difference-in-differences framework that compares changes over time for adults aged 19-25 years who were subject to the treatment to changes among a slightly older control group. This identification strategy assumes that in the absence of the policy change, the outcomes would have evolved similarly over time for both groups.

Effect on coverage

A number of studies have shown that the dependent coverage mandate of the Affordable care Act improved insurance coverage rates among young adults. Prior to the policy change, in 2009, 31.4 percent of adults between ages 19 and 25 reported not having health insurance coverage (DeNavas-Walt, Proctor, & Smith, 2011). The earliest paper in the literature to evaluate the young adult mandate is Sommers and Kronick (2012)'s study using data from the Current Population Survey (CPS) for the years 2006 to 2011, which covered calendar years 2005 to 2010. They find that insurance coverage increased significantly by 2.8 percentage points in 2010, among all young adults aged 19-25 years in their sample. Furthermore, within private coverage, there was a 4.3 percentage point increase in dependent coverage along a 2.5 point decline in own-name private insurance.

In a follow up study, Cantor et al. (2012) re-evaluate the federal policy change by using the same data and controlling for additional covariates to take into account demographic differences across the treatment and control groups, existence of state legislation on dependent coverage, and unemployment rates. Additionally, the treated group in their study was composed of adults aged 19-23 years who are not full-time students and all 24-25 year olds regardless of

[4] Our literature review includes research articles published in peer-reviewed journals and non-peer reviewed research disseminated as part of the NBER working paper series. This review is based on searches of Econlit, Google Scholar and NBER working paper series (as well as our prior knowledge of the subject area); the search terms included dependent coverage mandate/ provision and young adult mandate.

student status. They estimate a 5.3 percentage point increase in non-spousal insurance coverage among those between ages 19-23 who are not full-time students, which is larger than the estimates of Sommers and Kronick (2012). Sommers et al. (2013) use nationwide survey data from the National Health Interview Survey (NHIS) and the CPS from the years 2005 to 2011 to investigate changes coverage across subgroups. They find that coverage gains were larger among young adults who were not married, non-students and among men. They do not find any evidence of racial disparities in coverage gain. They also documented improvements in access to care.

Akosa Antwi, Moriya, and Simon (2015) estimate that between October 2010 and November 2011, the mandate reduced uninsurance by 3.2 percentage points and that coverage gains were stronger towards the end of the year since implementation. Their estimates imply that, after the full implementation of the provision, nearly 938,000 young adults newly obtained coverage. They use data from the Survey of Income and Program Participation (SIPP) covering the period August 2008 to November 2011. Taking advantage of the detailed and point-in-time insurance questions in the SIPP, they further decompose sources of private insurance coverage using a triple-difference strategy. They estimate a 7 percentage point increase in dependent coverage, and that nearly half of this shift was associated with a reduction in own-name coverage through employers. Specifically, private non-group insurance decreased by 0.8 percentage and own-name employer sponsored insurance (ESI) decreased by 3.1 percentage point. By directly linking young adults to their parents, they ascertain that young adults gained coverage directly through their parents' plans as a result of the mandate – one of the few studies in the literature to do so. The research design also takes into account the status of state-specific dependent coverage mandates. In contrast to Sommers et al. (2013), they document higher coverage gains among whites relative to other races.

Studies conducted using newer data continue to show that the mandate led to significant coverage gains among young adults through increased private insurance coverage offset by reduced prevalence of uninsurance. However, the policy may not narrowed racial disparities. O'Hara and Brault (2012) find that while insurance coverage increased by 4.2 percentage points, there was a 4.6 percentage point increase in young adults with private insurance. They use data from the American Community Survey (ACS) 2008-2011 and similar to Akosa Antwi, Moriya

and Simon (2015) also find that the coverage effect was stronger among whites compared to other races, suggesting that the mandate did not narrow racial disparities in coverage. This is supported somewhat by the findings of Shane and Ayyagari (2014) who use survey data from the Medical Expenditure and Panel Survey (MEPS) for years 2008, 2009, and 2011. According to their estimates, insurance coverage among non-Hispanic whites increased by 9.3 percentage points, 9.4 percentage points among non-Hispanic blacks and 7.2 percentage points among Hispanic.

A large body of evidence from administrative encounter data has also documented improvements in coverage for young adults. Studies using encounter data from trauma registries have confirmed these earlier findings in the literature. Scott et al. (2015a) and (2015b) examine changes in overall coverage and racial disparities in coverage among the target population using data from the National Trauma Data Bank 2007-2012 which contains information on traumatic injury related encounters from trauma centers across the nation. Trauma encounters reimbursed by private insurance increased by 5.3 percentage points and this was associated with a 3.4 percentage point decrease in uninsurance in the data (Scott et al., 2015a). Scott et al. (2015b) finds that reduction in uninsurance was higher among non-Hispanic whites (4.9 percentage points) compared to Hispanic (1.7 percentage points) and black patients (2.9 percentage points), suggesting that even though the mandate produced gains in coverage among young adults across all races, gains among blacks and Hispanics were smaller compared to whites. Using data from the universe of all birth in the US from the years 2009-2012, Akosa Antwi et al. (2015) show that the mandate led to a significant increase in private insurance, offset by significant reductions in Medicaid-funded and uninsured childbirth among women 19 to 26 years of age.

Researchers have also noted spillover effects of the mandate on other types of health insurance coverage among the targeted group, such as prescription and dental coverage. In particular, Look and Arora (2014) examine MEPS 2008, 2009, and 2011 data and document that there was a 5.5 percentage point increase in private prescription coverage among young adults. They also find evidence that these effects were larger among young adults at middle- and high-income levels (annual family income higher than 125 percent of the federal poverty line). Shane and Ayyagari (2015)'s analysis of MEPS 2006-2011 indicates a 6.7 percentage point increase in young adults with private dental insurance coverage and that these coverage gains were higher

among those at middle-income levels (between 125 and 400 percent FPL).

Effect on access and utilization

Because of the high rates of uninsurance among young adults, substantial research has investigated the impact of the mandate on access to care and healthcare utilization following coverage gains. When previously uninsured individuals gain health insurance coverage, the lowering of out-of-pocket (OOP) costs of medical care is expected to improve access to care and increase utilization of care. It is possible that higher use of preventive care and physician visits may reduce emergency room visits. While the literature clearly finds coverage to have increased as a result of the mandate, the evidence on utilization is less unanimous.

Increase in coverage may be associated with greater visits to office-based physicians and ambulatory care, if insurance coverage reduces out-of-pocket medical costs. Evidence from the extant literature that uses national survey data is consistent with this hypothesis. Indeed, Chua and Sommers (2014) evaluate MEPS 2002-2011 and report improvements in coverage and a 3.7 percentage point reduction in OOP medical care expenses within the first year of implementation of the mandate. However, they do not find any significant changes in utilization of healthcare services such as primary physician visits, outpatient visits, inpatient visits, emergency department (ED) use and prescription medications. Shane, Ayyagari, and Wehby (2015) analyze the MEPS covering the years 2006-2009 and two years of post-implementation data (2011-2012), compared to one year of data since the policy change as used by Chua and Sommer (2014). They detect no statistical evidence of changes in overall utilization of medical services as well.

In contrast, Amuedo-Dorantes and Yaya (2016) finds the policy change to have reduced cost-related barriers to needed prescription medications among young adults. They use restricted-access NHIS data covering the years 2002-2013, and find evidence that the mandate was more effective at improving access to needed medical care among young adults, particularly those in the 23-25 age range, who were more likely to be out of college and hence lacking access to affordable healthcare services through college.

Wallace and Sommers (2015) use the Behavioral Risk Factor and Surveillance System (BRFSS) 2008-2011 data and find improvements in access to care, namely increase in the

proportion of young adults who have a usual source of care and reduction in the proportion reporting forgoing physician visits due to cost.[5] In another study, Barbaresco, Courtemanche and Qi (2015) examine the BRFSS data from years 2007 through 2013, which enables them to observe outcomes for 3 full years after the policy shift. They report increase in coverage and access to primary care doctor. However, they find utilization of preventive care such as receipt of flu vaccine, well-patient checkups and pap tests to have been unaffected by the provision of the law.

It is possible that improved access to less resource intensive medical care such as physician visits and prescription medications may reduce visits for emergent conditions that can be treated in office-based and ambulatory settings. Several studies test this using administrative medical records and find evidence of reductions in ED-based care. Indeed, Hernandez-Boussard et al. (2014) examine administrative hospital records from three states – California, Florida and New York – covering the period 2009 to 2011. They estimate a 1.5 percent reduction in the overall number of ED visits among young adults and a 0.2 percent drop in the likelihood of ever using the ED, implying that the reduction in total ED visits is driven by fewer ED visits by ED users, rather than a decrease in the number of young adults who ever visit an ED.

On the other hand, Mulcahy et al. (2013) consider the effect of the mandate on insurance status of emergency room visits among young adults aged 19 to 25 using claims data from a convenience sample of hospitals provided by IMS Health covering the years 2009 to 2011. They isolate ED admissions for - non-discretionary conditions - medical conditions that are likely to result in patients seeking emergency care regardless of insurance status. Within the first year of implementation, the share of non-discretionary ED visits that are privately insured increased by 3.1 percentage points and those without insurance declined by 1.7 percentage points.

In contrast, Akosa Antwi et al. (2015) examine the impact of the mandate on ED use among young adults using a 20 percent sample of nationwide hospital-based ED visits from 2009 to 2011. They find a decrease in overall ED admissions and a change in the insurance

[5] Kotagal et al. (2014)'s study of 2009-2012 microdata from the Behavioral Risk Factor and Surveillance System (BRFSS) and the NHIS document increase in coverage but do not find evidence of improvements in access to care – percentage having a routine checkup in the last year, improvement in affordability of physicians, prescriptions drugs, dental care and flu vaccine. In particular, the probability of having a usual source of care decreased among adults between ages 19-25, even though the decline was larger for the control group of adults aged 26-34. Not controlling for covariates.

composition of the visits – an increase in the fraction privately insured offset by reductions in Medicaid and uninsured visits. In particular, they find statistically significant decreases in ED admissions that were non-urgent, preventable, treat-and-release and occurred on weekdays. These findings are consistent with earlier results of improved access and such a response suggests that the mandate likely caused young adults to have improved access to non-urgent medical care leading them to substitute away from more resource intensive emergency department-based care. Using more recent data, Colman and Dave (2015) report similar findings on improvements in access to care. In particular, the dependent coverage mandate was associated with declines in time spent in receiving and waiting for medical care for young adults aged 23-25. Their estimates are based on data from the American Time Use Survey (ATUS) spanning the years 2003 to 2013.

Using data from a nationwide sample of inpatient hospital records from 2007 to 2011, Akosa Antwi et al. (2015) find a 3.5 percent increase in inpatient hospitalizations for conditions that are unrelated to childbirth. Direct hospital admissions that do not take place through the ED and that are likely scheduled, accounted for most of this increase. They also find positive and statistically significant coefficients for inpatient admissions for mental illnesses. This increase in scheduled inpatient admissions that are likely price-sensitive is consistent with the evidence in the literature that finds the dependent coverage mandate to have improved access to care. These results on medical care utilization such as inpatient hospitalizations and prescription medications indicate higher use of types of medical care that are price-sensitive.

Effect on health

The ACA provision may improve health status if newly insured young adults who were previously uninsured, have improved access to care. Because the results from the literature show that there were improvements in access and utilization of care, a growing literature has examined the impact of the young adult provision on health status using national survey data. Results from this literature indicate that the dependent coverage provision led to improved health status among the target population. Chua and Sommers (2014) evaluate survey data from the MEPS 2002-2011 and find that relative to the control group of adults aged 26-34, there was a 6.2 percentage

point increase in the likelihood of reporting excellent physical health and a 4 percentage point increase in the likelihood of reporting excellent mental health.

Similarly, Wallace and Sommers (2015) find a decline in the proportion of young adults with fair or poor self-assessed health status. They use data from the BRFSS covering the years 2005 to 2012. In another study, Barbaresco, Courtemanche, and Qi (2015) use BRFSS data from 2007, extending through 3 years after the mandate implementation and compare outcomes of adults in the age range 23-25 to those aged 27-29. They find that the provision led to an increase in the probability of young adults reporting excellent health status. However, there were no changes in the probability of reporting good or excellent health, suggesting that the mandate was more effective in improving health of those young adults with already good underlying health rather than those in relatively poor health in the lower end of the distribution. In their analysis using the American Time Use Survey, Colman and Dave (2015) find improvements in subjective well-being – as measured responses to questions on happiness and meaningfulness of pursuits covering the years 2010 to 2013 in the data. Aside from these findings on well-being, the literature finds no evidence of impact on other clinical health outcomes such as mortality. While analyzing data from the National Trauma Data Bank 2007-2012, Scott et al. (2015a) found that the policy shift had no impact on mortality among young adults.

Effect on labor market outcomes

The mandate may reduce labor supply among the target population if availability of parental insurance. The idea is that shifting to parental coverage delinks insurance coverage from labor force participation. This may encourage young adults affected by the provision to drop out of the labor force, change jobs or reduce number of hours worked, particularly those who held jobs mainly to obtain health insurance coverage. Akosa Antwi, Moriya, and Simon (2012) is the earliest in the literature to consider the effect on the ACA dependent coverage mandate on labor market outcomes among young adults. Their analyses of the SIPP reveals that the mandate had no effect on the extensive margin of labor supply but had a significant impact on the intensive margin. In their data they find that probability of working remained unchanged, but among those who were working, the mandate reduced the number of hours worked by 8 percentage points and full-time work by 2 percentage points, in the period between the implementation of the mandate

in October 2010 through September 2011. They also detect no change in the likelihood of switching jobs. Using more recent data, Colman and Dave (2015)'s analysis of the ATUS confirm that the mandate reduced was associated with a 9 percent reduction in hours worked by young adults and they do not find any effect on employment status suggesting that the overall decline in hours worked occurred primarily among young adults already engaged in the workforce.

In another study. Heim, Lurie, and Simon (2014) use data from the Internal Revenue Service (IRS) Compliance Data Warehouse (CDW) spanning the years 2008-2012. This unique dataset contains federal tax documents of most of the US population and link young adults to their parents' records, unlike most of the data used in the literature. The researchers draw a 1 percent sample of these linked tax records and examine several labor market outcomes such as employment status, job characteristics and educational enrollment. However they find no changes in these labor market outcomes of young adults after the implementation of the mandate. With slightly longer post-implementation data, covering the period May 2008 to June 2013, Bailey and Chorniy (2016) examine the impact on job switching among young adults using the CPS. They find no statistically significant impact on this outcome among 19-25 year olds. Taken together, these results suggest that job-lock may not have been a major concern among young adults gaining coverage through the mandate.