Health Insurance Reform and Retirement: Evidence from the Affordable Care Act

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ABSTRACT

The Affordable Care Act (ACA) has provided millions of Americans with medical insurance but may have led to an increase in retirement among older individuals who are utilizing the newly available coverage options as a substitute for employer provided insurance. Using data from the American Community Survey from 2009-2016, this hypothesis is tested by estimating the effect of the premium subsidies and Medicaid expansions of the ACA on retirement transitions for the non-Medicare eligible cohort of older Americans aged 55-64. Research results indicate a 2% and 8% decrease in labor force participation resulting from the premium subsidies and Medicaid expansions, respectively. Slightly larger estimates are found among a sub-group of adult couples. The study also finds suggestive evidence of crowd-out of employer-sponsored insurance by subsidized marketplace plans but finds no such effects from the Medicaid expansions.

Keywords: Retirement, Affordable Care Act, Job lock, Medicaid, Health Insurance

JEL: I13, I18, J18, J26, J22

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1. INTRODUCTION

Large interest exists among policy makers in measuring the impact of government provided benefits on labor supply. The enactment of the Affordable Care Act (ACA) provides an opportunity to learn about responses of individuals to the provision of lower cost health insurance. The availability of free or heavily subsidized medical coverage has ambiguous effects on individual work decisions. Newly available insurance may improve health and productivity, enabling some workers to enter the workforce or to have greater flexibility within it if they were previously excluded from coverage due to the presence of pre-existing health conditions or experiencing health insurance induced job-lock. On the other hand, these provisions may loosen labor force attachments by decreasing the value of employer-sponsored insurance (ESI) relative to newly available public or subsidized non-group coverage. This paper provides an empirical investigation of the net effect of the ACA's Medicaid expansion and premium subsidies on labor force withdrawal decisions for the pre-Medicare eligible cohort of Americans aged 55-64.

The price of non-group health insurance decreased for older pre-Medicare-eligible individuals resulting from the ACA's extensions of Medicaid coverage to all individuals with incomes less than 138 percent of the federal poverty line (FPL) including childless adults, marketplace premium subsidies, coverage of pre-existing conditions, and restrictions on underwriting. Historically, employers have been the main provider of health insurance to working aged citizens in the United States, and public insurance was only made available to the elderly, the disabled and impoverished children and their parents (Madrian 2007). The ACA's Medicaid expansion and subsidized marketplace exchanges detach health insurance from employment. Consequently, an argument supporting the legislation was that it should mitigate

job lock, a situation when a worker tied to sub-optimal employment is prevented from transitioning to a more productive opportunity due to the potential loss of insurance.

This concept has been extended to retirement and referred to as retirement- or employment-lock, where a worker remains in the labor force due to the absence of comparable non-employment insurance options (Gruber 2000; Garthwaite et al. 2014). Thus, the ACA's provisions would be expected to allow older individuals to decrease work hours, move to bridge jobs, or fully exit the labor force while utilizing public or subsidized non-group marketplace coverage as a form of retiree health insurance (RHI). Such transitions may be welfare improving if unhealthy older workers are now able to leave their positions and be replaced by healthier employees. However, if *healthy* older workers were to enter early retirement in response to the ACA, society would suffer a productivity loss (Boyle and Lahey 2010).

The main claim of this paper is that the ACA lowered the opportunity cost of retirement for older pre-Medicare eligible individuals by decreasing the price of non-employer insurance, which led to an increase in early retirement. The ACA imposed a 3:1 pricing ratio restriction on age-based underwriting for marketplace premiums. That is, an older individual cannot be charged more than three times the amount of a young individual for a plan. Thus, older individuals who have higher costs of actual care benefit from a subsidized price decrease *at the expense* of those with below average actual costs, primarily younger participants. Indeed, Orsini and Tebaldi (2017) find that age-rating restrictions raised pre-subsidy premiums by $230 a year for under-age-50 buyers and decreased them by $900 a year for buyers over age 50.

Furthermore, all marketplace plans in 2014 are subject to guaranteed issue and are prohibited from using health as a medical underwriting criterion. Since the likelihood of poor health increases with age, older individuals on average are at a higher risk for having a pre-

existing condition. Thus, these restrictions should mitigate any employment-lock caused by possible rejection for coverage in the non-group market.

Extensive research demonstrates the importance of health insurance in employment and retirement decisions. Several authors have shown that the availability of RHI, which extends a form of ESI to the retiree until Medicare eligibility, increases the probability of early retirement (Blau and Gilleskie 2001; Rogowski and Karoly 2000). For example, Nyce et al. (2013) use administrative data on firms' offering subsidized RHI to examine its impacts. They find that its availability considerably reduces employment for pre-Medicare eligible individuals. Fitzpatrick (2014) studies RHI availability for public school teachers in the state of Illinois and shows that it leads employees to retire about 2 years earlier. Shoven and Slavov (2014) generalize this result to all government employees by finding a reduction in labor supply among workers aged 55-64 with RHI using data from the Health and Retirement Study (HRS).

A wealth of recent studies also supports the hypothesis of disincentives to labor supply from increased provision of public or subsidized coverage among older workers. Dague et al. (2017) study the temporary expansion of Medicaid to childless adults in Wisconsin and find large decreases in labor supply for adults over age 55. Boyle and Lahey (2010) examine an expansion of Veteran's health insurance to all service members in the 1990s and find the increased availability of this public coverage increases early retirement by 3%. Conversely, Garthwaite et al. (2014) examine labor supply responses to a contraction of Medicaid benefits in Tennessee. Their results suggest there to be a strong increase in labor supply among those disenrolled.

The prior studies measuring the effect of the ACA on labor supply for the working age population (ages 18 to 64) have shown little to no effect on labor force participation, and small

declines in hours worked (Kaestner et al. 2017; Gooptu et al. 2016; Moriya et al. 2016). Thus far, three published studies focus solely on ACA-induced retirement. Aslim (2019) finds that newly Medicaid eligible women slightly reduced participation but finds no effect for males. Ayyagari (2019) and Gustman et al. (2019) use data from the HRS to estimate the effect of the ACA on early retirement expectations. Gustman et al. use data from 2010 to 2014 and find no significant response, but also estimate a structural model that predicts an increase in early retirement of less than one percentage-point. Ayyagari uses a longer panel of data from 1998 to 2014, indicates the post-policy period as the date of the policy's passage in 2010, and finds a 5.6 percentage point decrease in expected retirement age.

These previous studies identify initial effects of the ACA as it was being phased in through state level variation in Medicaid expansion. One other paper examines labor supply responses of individuals following the opening of the marketplace exchanges during the 2014 implementation while simultaneously controlling for the Medicaid expansions (Duggan et al. 2019). The authors identified significant work disincentive effects from the subsidized marketplaces among the general population (ages 26-64), however, such results were non-significant in a subgroup analysis of the near elderly (ages 45-64).[1] In the analysis presented here, which looks at a sample most likely to be observed in retirement lock, older pre-Medicare eligible households (ages 55-64), estimates consistently yield negative significant effects. This result is found in the main analysis of the paper, which focuses on the household insurance unit as the center of decision making, as well as for other models run on the individual decisions of older and younger spouses. Possible explanations for these discrepant results are reserved for the discussion section.

[1] See Column 2 of Table 4 in Duggan et al. (2019) for the general population and Column 10 of Table 6 for estimates of the near elderly subsample.

This current study exploits variation in the Medicaid eligibility rules of each state with respect to household income, family structure, and disability status in order to create variables that measure eligibility prior to the policy implementation. Similarly, the marketplace premium subsidy for each household in the data is calculated using premium prices from HIX Compare, a public database that provides ACA-marketplace plan information beginning in 2014.[2] Combining the area specific premiums with the national subsidy schedule, both the size of the government transfer as well as the relative generosity of that subsidy is computed for a given income level in an ACA rating area. This variation allows for the estimation of the elasticity of nonparticipation with respect to subsidy generosity. Thus, this analysis contributes directly to the health insurance job-lock literature that previously utilized estimated values of insurance in similar computations (Boyle & Lahey 2010, 2016) to calculate the subsidy-generosity point elasticity of non-employment as a critical parameter for the policy evaluation of work disincentives.

This study estimates a triple difference model, which yields negative effects on labor force participation from the premium subsidies and the Medicaid expansions. Implied treatment-on-the-treated effects are consistent with the estimates found in RHI studies, though tending towards the lower end of the range observed in the prior literature. The same pattern of estimates with a slightly larger magnitude is found when the sample is restricted to childless adult couples.

Additionally, estimates of insurance outcomes with this older cohort are examined to probe for potential crowd-out of ESI by public or subsidized non-group coverage. Small crowd-out effects are found from the subsidized plans and no effects from the increased availability of public insurance. Overall, this study finds evidence supporting the presence of work

[2] See https://hixcompare.org

disincentives generated through the provision of low cost non-employer health insurance for older American workers.

2. METHODS

The paper utilizes the empirical framework developed by Frean, Gruber, and Sommers (FGS) (2017).

2.1 DATA

The study uses data from the 2009 to 2016 American Community Survey (ACS). The ACS is a nationally representative annual survey of about 3 million persons. Its large sample size and mutually exclusive within-state geographic identifiers provide the ability to identify different rating areas without concern for underpowered statistics. The unit of analysis is the household insurance unit (HIU). A HIU differs from a typical household identifier by including only members considered when determining eligibility for government welfare programs. For example, the ACA allows adult children to remain on their parent's ESI until age 26, yet any adult-child above age 19 would be regarded as a separate HIU when determining eligibility for Medicaid or marketplace subsidies. I follow the State Health Access Data Assistance Center's coding to construct HIUs in the ACS (SHADAC 2013).

HIUs are coded as three types: single adults, adult couples, and families. I restrict the data to include only HIUs with at least one member between ages 55-64.[3] The dataset is composed of roughly 50% adult couples, 30% single adults, and 20% families, totaling 2,725,384 unweighted observations. The key outcome variable is the proportion of the adults in the HIU participating in the labor force. Income measures for the HIU are constructed by taking the sum of total personal

[3] Medicare-eligible individuals cannot purchase plans on the marketplace, except for special circumstances. An individual cannot be simultaneously enrolled in Medicare and marketplace plans.

income for all members. The HIU's distance from the FPL is determined by this value, adjusted for HIU size.[4]

The geographic-location of the HIU is determined using the Consistent–PUMA (CPUMA). A public use microdata area (PUMA) is a mutually exclusive within-state geographic area containing roughly 100,000 people. The ACS survey years 2012 onward utilize PUMA boundaries from the 2010 census, while the previous years are based upon the boundaries drawn from the 2000 census. Each CPUMA is an aggregate of at least one 2010 PUMA that matches closely to the PUMAs from the 2000 census. Therefore, the CPUMA is used to locate HIUs across the temporal boundary changes. There are 1,078 CPUMAs covering the country, each contained exclusively within one state.

2.2 MEASURES

2.2.1 MEDICAID ELIGLBILITY

Prior to the ACA, each state determined their eligibility rules based upon household income, family structure, and disability status. The eligibility for each HIU is coded according to the annual state eligibility criteria with respect to income, family structure, and disability status using information from Kaiser and CMS (Kaiser 2010; CMS 2014).[5] This allows for differentiation between the previously eligible and those becoming newly eligible through the expansions. Thus Medicaid eligibility consists of two groups: state level eligibility through 2013 consistent with state expansions and those becoming eligible after the main 2014 expansion.[6]

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[4] Each HIU-members income was determined using the 'INCTOT' variable, adjusted for inflation. This variable reports the total pre-tax personal income or losses from all sources for the previous year. The relative location to the poverty level of households is a function of household size. See https://aspe.hhs.gov/poverty-guidelines

[5] Disabled individuals are identified using the ACS disability recode variables.

[6] The original framework of FGS estimates the effects of the ACA's Medicaid expansion, premium subsidies, and individual mandate on changes in health insurance outcomes. Their model separately considers the early expansion states and those participating in the main implementation. In an attempt to have the estimates of this paper comparable to the prior studies on ACA labor supply effects, state level eligibility through 2013 is coded to be

The pre-ACA eligible group, often referred to as the 'wood-work' or 'welcome-mat' group, is included to be consistent with the literature. This group consists of the members in HIUs, in all states, that were already Medicaid eligible and possibly not enrolled, who may have chosen to utilize the program because of the increased awareness, or decreased stigma with utilizing public insurance, acquired through the publicity surrounding the ACA (Sonier et al. 2013). This group experienced considerable increases in Medicaid coverage following the 2014 expansion (FGS 2017). Furthermore, independent of state expansion, the ACA mandated a national change in

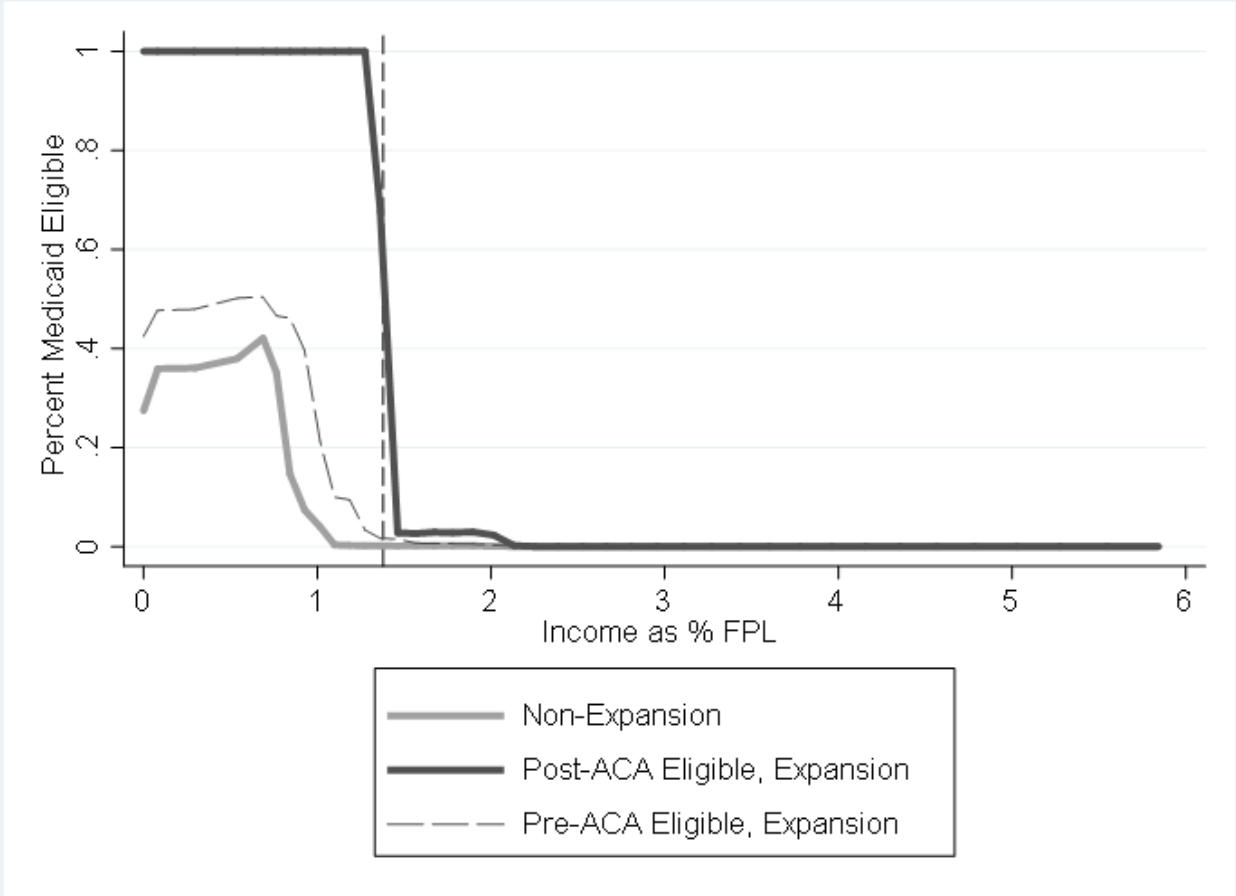

FIGURE 1. Average Medicaid eligibility, by state expansion status. *Note*. Data from 2009 to 2016 ACS presented at the Household Insurance Unit level. Description is contained in the text. Eligibility determined from CMS. The vertical dashed lined indicated 138% of the FPL. ACS = American Community Survey; CMS = Center for Medicare and Medicaid Services; FPL= Federal poverty level.

consistent with state expansions and those becoming newly eligible through the main 2014 expansion. An alternative specification that separately considers the early expanding states is included in Appendix Table A1. The estimated impact of the early expansions on LFP is negative for 2014, though insignificant in the following years.

financial need eligibility assessment to 'Modified Adjusted Gross Income' (MAGI) in 2014, and with it the exemption of asset testing.

Figure 1 depicts average Medicaid eligibility of individuals by state expansion status, before and after the full implementation of the ACA in 2014. The expansion states offered Medicaid to more individuals prior to the ACA, typically through higher income-based eligibility standards. Following the 2014 implementation, the primary difference between expansion and non-expansion states is driven through the extension of eligibility to childless adults.

2.2.2 PREMIUM SUBSIDIES

State marketplaces are partitioned into geographic rating areas where private insurers may offer plans at different prices. Each rating area is a collection of counties, 3-digit zip codes, or both. I use a crosswalk from the Missouri Census data center to link rating areas to a CPUMA.[7] When a CPUMA covers multiple rating areas, I assign to it the population-weighted premium. I use the HIX Compare database, public use data on ACA compliant plans, to assign premium prices from the second-lowest priced silver plan in each rating area, which is the statutory basis of the actual ACA subsidies.

The ACA restricts insurers' underwriting based on age to a 3:1 ratio between the oldest and youngest individuals. Some states developed their own curvature within these limits; all others conform to the federal standard. HIU members' premium prices are adjusted based on their age and location (CMS 2017). The final premium assigned to the HIU is the sum of premiums for all household members under age 65.[8]

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[7] See http://mcdc.missouri.edu/applications/geocorr2014.html

[8] Since the ACA subsidies are not applicable to the Medicare eligible.

The ACA subsidy schedule is set nationally, whereas premium prices vary by rating area. The subsidy rules state that a HIU shall pay no more than a particular proportion of their annual income for a marketplace plan.[9] Thus, subsidy generosity varies for each HIU by their income level and the premium pricing in their rating area. Subsidy eligibility ranges from 100-400% of the FPL for non-expansion states, and from 138-400% otherwise. The subsidy generosity is computed as:

Percent Subsidy = [subsidy / unsubsidized premium] * 100%.

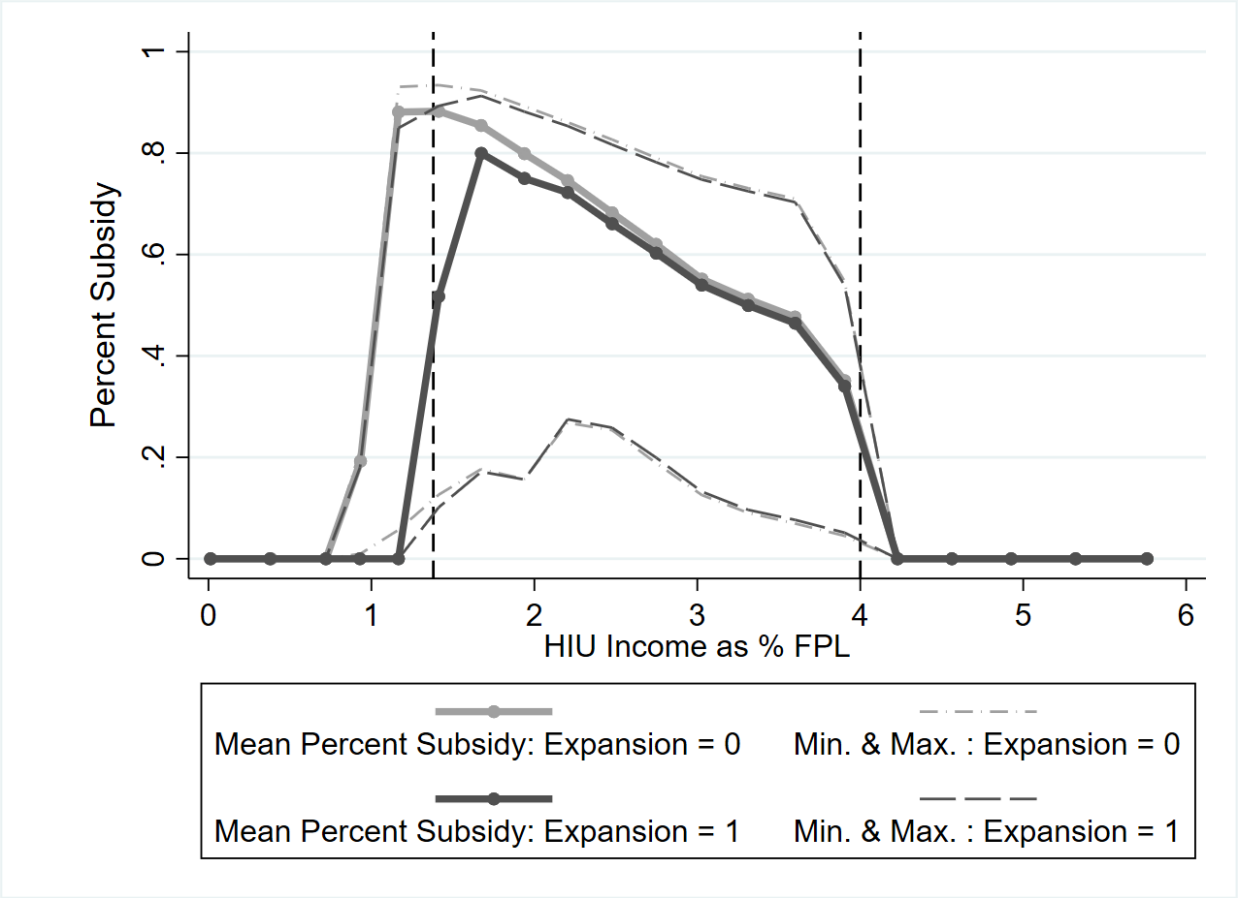

FIGURE 2. Variation in Subsidy Generosity in 2015, by state expansion status. *Note*. Data from 2009 to 2016 ACS presented at the Household Insurance Unit level. Premium pricing data from the RWJF HIX Compare database. The vertical dashed lines indicated 138% and 400% of the FPL. ACS = American Community Survey; FPL=Federal poverty level.

[9] Any premium amount exceeding this upper limit is subsidized. The limits are as follows: 2% of annual income for HIUs below 133% of FPL; 3–4% between 133–150% of FPL; 4.0–6.3% between 150–200% of FPL; 6.3–8.05% between 200–250% of FPL; 8.05–9.5% between 250–300% of FPL; and 9.5% between 350–400% of FPL.

Since insurers determine marketplace premiums annually, a separate subsidy generosity variable is assigned to the HIU based upon the pricing each year to capture the dynamic effects of the policy. Figure 2 illustrates the variation in generosity across income levels and location.

2.3. EMPIRICAL STRATEGY

The empirical approach identifies the policy effects on labor force participation by estimating a triple difference model that exploits variation across location, income, and time. A separate policy parameter is included for each year following the 2014 implementation to capture the changes in annually set premium prices and the post-2014 Medicaid expansions.[10] The pre-policy period ranges from 2009 to 2013. The baseline model for this analysis is:

$$
\begin{aligned}
&\mathrm{LFP}_{ijt} = \beta_0 + \beta_1 PercentSubsidy2014_{ij} + \beta_2 PercentSubsidy2015_{ij} \\
&+\beta_3 PercentSubsidy2016_{ij} + \beta_4 PreMedicaidElig_{ij} + \beta_5 NewlyMedicaidElig2014_{ij} \\
&+ \beta_6 NewlyMedicaidElig2015_{ij} + \beta_7 NewlyMedicaidElig2016_{ij} + \\
&+ \beta_8 PercentSubsidy2014_{ij} * Y2014_t \\
&+ \beta_9 PercentSubsidy2015_{ij} * Y2015_t \\
&+ \beta_{10} PercentSubsidy2016_{ij} * Y2016_t \\
&+ \beta_{11} PreMedicaidElig_{ij} * Y2014_t \\
&+ \beta_{12} PreMedicaidElig_{ij} * Y2015_t \\
&+ \beta_{13} PreMedicaidElig_{ij} * Y2016_t \\
&+ \beta_{14} NewlyMedicaidElig2014_{ij} * Y2014_t \\
&+ \beta_{15} NewlyMedicaidElig2015_{ij} * Y2015_t \\
&+ \beta_{16} NewlyMedicaidElig2016_{ij} * Y2016_t \\
&+ \gamma Area_j * HIUType_i + \delta Income_i * HIUType_i + \sigma Year_t * HIUType_i \\
&+ \beta_X X_{ijt} + \epsilon_{ijt}
\end{aligned}
$$

Subscripts ‘i’, ‘j’, and ‘t’ indicate the HIU, location, and time period, respectively. The coefficients β_1 to β_7 capture the direct effects of the policy provisions. The outcome variable (LFP) of the baseline model is the proportion of all adults in the HIU participating in the labor force in any capacity.[11] This variable measures LFP for single adults and single parent families,

[10] Late expansion states were Indiana, Pennsylvania, and Alaska in 2015; Montana and Louisiana in 2016.

[11] Note that the sample is restricted to HIUs with at least one member aged 55-64. Thus, the sample contains adult couples and families that may have a younger spouse or an older Medicare eligible spouse. The baseline model includes these couples to capture effects of older spouses who may be working to provide ESI to their younger

as well as captures the joint decisions made by childless adult couples and traditional families. The probability of leaving the labor force conditional on working fulltime in the prior 12 months is included as a robustness check in section 3.5. Percent subsidy is a continuous variable on the unit interval and the Medicaid parameters measure the proportion of the HIU that is eligible.[12] The key effects of interest are captured by β_8 to β_{16}. These are the triple difference terms, as each policy parameter is a function of the HIU's location and income level interacted with the post-period year dummy variable. Individual year interactions are included beginning with the year of full ACA implementation in 2014 to capture the dynamics of the policies' evolution.[13] The model includes fixed effects for geographic area, income band, and year; each interacted with HIU-type to control for differential effects by household structure. All model specifications include ACS survey weights at the HIU-level, robust standard errors clustered at the CPUMA-level and controls are included for gender, age, education, race and ethnicity, and number of children.

The effects of the premium subsidies are identified by the variation in generosity at a particular income level *relative to what would have been received had the HIU been located in a lower (higher) priced rating area*. Ceteris paribus, a subsidy-eligible HIU of a given income residing in a low-priced area receives a less generous subsidy than if they had lived in a higher-priced area, since the subsidies are based on income *uniformly across the nation*. The effect of the Medicaid expansions is identified by the variation in the state-determined eligibility rules across geography and time.

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partner. The subgroup analysis in section 3.3 shows there to be no significant difference between the policy coefficients when restricting the sample to adult couples with both members aged 55-64. See Column 4 of Table 3.

[12] The Medicaid eligibility parameters are binary for single adults, take a value of zero, ½, or one for adult couples, and range from zero to one depending upon family size.

[13] Insurers set premiums for the marketplaces yearly, and therefore the subsidies vary. In addition, some states elected to expand Medicaid in 2015 and 2016 (listed in footnote ten above).

This empirical strategy has three potential threats to identification: (1) that local income distributions may be endogenous with expansion and rating area pricing and (2) that other unobservable characteristics such as health and economic environments may be correlated with income and unobservable tastes for work.[14] Thus, estimated parameters may be biased because they may capture tastes and characteristics endogenous to the locality. Lastly, a link between labor force participation and household income exists that may affect eligibility for coverage under the ACA. To the extent that exiting the labor force alters annual household income, the ability to make meaningful comparisons between the pre- and post-policy periods is limited, given the nature of the pooled cross-sectional data.

To correct for this, I calculate simulated instrumental variable (IV) estimates. In the procedure, HIUs in the main sample are binned into eight income bands.[15] For each income band and HIU type, 200 HIUs are randomly selected from the national sample to form a collection of 4,800. The policy parameters are simulated for the respective HIU type-income band, in each CPUMA, using this nationally representative sample. These simulated values are then assigned to those actually residing in that CPUMA to be used as instrumental variables in the estimation (FGS 2017; Currie and Gruber 1996; Cutler and Gruber 1996). This decouples local eligibility from possible endogenous sorting prior to the policy by using broad income bands and reduces bias from area-specific unobservables. The identification of the Medicaid expansion then comes solely from differences in state-legislative environments and the effect of the premium subsidies from variation in rating area prices.

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[14] See Figure 1. Expansion states had considerably more generous eligibility prior to expansion. Thus, the marginal cost associated with expanding was less than that for the states that opted out of expansion.

[15] The income bands are as follows: 0-50% FPL, 50-100% FPL, 100-138% FPL, 138-200% FPL, 200-300% FPL, 300-400% FPL, 400-600% FPL, and all else beyond 600%.

The income bands were chosen in an attempt to permit retiring households to exit the labor force while remaining in the same band. In other words, I assume exogenous assignment of income bands, but allow for endogenous movement within a given band. This assumption requires the retirement-income replacement ratio to be high, which for the groups targeted by the ACA needs-based provisions concentrated in the lower percentiles of the income distribution is reflective of empirical evidence (Smith 2003, Purcell 2012).

Since the estimated model is a differences model, the validity of the estimation strategy rests on the assumption of parallel trends between the comparison groups and those impacted by the policy change. That is, one must assume that the differences between these groups were trending in a parallel fashion prior to the policy implementation, and that this trend would have persisted had the policy not occurred. I motivate this assumption in two ways. First, I show that labor force participation across the income bands did not have statistically significant differences in trends across the 2009-2013 pre-policy periods, while controlling for geographic differences. Second, using CPUMA premium prices, I partition areas at the median and show that labor force participation between low-priced relative to high-priced areas did not have significantly different pre-policy trends. Appendix Table A2 contains this analysis.[16]

3. RESULTS

3.1. TIME-SERIES DESCRIPTIVE STATISTICS

Pre- and post-policy means of labor force participation and health insurance coverage types are tabulated by eligibility group and provided in Table 1. Three groups are displayed for

[16] These models use HIU-level controls and ACS survey weights, consistent with the models presented in the results section.

expositional purposes: Medicaid eligible, Subsidy eligible, and Non-eligible (>400% of FPL).[17] The changes in insurance outcomes provided in the table probe for potential crowd-out from the ACA provision of public and low cost non-group coverage. The differences in means are tested for statistical significance across time periods using t-tests. The Medicaid eligible group experienced a 2.5% decrease in LFP post-implementation, a roughly 11% increase in Medicaid coverage, a 1.7% increase in coverage by non-group marketplace plans, and virtually no change in employer coverage. The 11.9% decrease in the uninsured for this group, roughly equivalent to the sum increase in coverage, suggests little crowd-out and provides strong descriptive support

Table 1: Time Series of Labor Force Participation and Insurance Coverage

	Outcome	Pre-policy Avg.	Post-policy Avg.	Difference
Medicaid Eligible	LFP	29.5%	27.0%	-2.5%**
	% Uninsured	30.1%	18.2%	-11.9%**
	% Medicaid	38.9%	50.0%	11.0%**
	% ESI	16.3%	16.1%	-0.1%
	% Non-group	11.3%	13.1%	1.7%**
Subsidy Eligible	LFP	60.1%	60.2%	0.1%
	% Uninsured	16.5%	10.4%	-6.0%**
	% Medicaid	9.6%	13.5%	3.9%**
	% ESI	57.9%	55.4%	-2.4%**
	% Non-group	15.2%	19.6%	4.3%**
Non-Eligible (>400% FPL)	LFP	77.1%	77.9%	0.7%**
	% Uninsured	3.4%	2.5%	-0.8%**
	% Medicaid	1.6%	2.2%	0.6%**
	% ESI	85.7%	84.3%	-1.4%**
	% Non-group	13.6%	14.4%	0.8%**

Note. Calculations are based on the author's tabulations of 2009 to 2016 ACS data; the Post-policy period begins in 2014. The subsidy eligible group in expansion states ranges from 138-400% FPL and from 100-400% in states that did not expand. Sample sizes are as follows: Medicaid Eligible 560,264; Subsidy Eligible 942,315; Non-Eligible 1,224,392. Outcomes are reported at the HIU level. ACS = American Community Survey. HIU = Household Insurance Unit. *p<0.05. **p<0.01.

[17] Individuals are eligible for marketplace subsidies if they are non-Medicaid eligible. Therefore, the 'Subsidy eligible' group in expansion states ranges from 138-400% FPL whereas the range is from 100-400% in states that did not expand.

for the policy's effectiveness. There is almost no change in LFP for the subsidy-eligible group, but there is suggestive evidence of crowd-out, shown by a 2.4% decline in ESI, a 3.9% increase in Medicaid, and a 4.3% increase in non-group marketplace coverage. There is very little apparent change in LFP or type of coverage for the non-eligible population as would be expected. Although the unconditional average of LFP for the subsidy eligible shows little movement across the implementation period, simple temporal changes do not exploit the variation in subsidy generosity across ACA rating areas as will be examined in the multivariate models below.

3.2 BASELINE MODEL

Table 2 provides estimates of the effect of the premium subsidies and Medicaid eligibility on HIU labor force participation (LFP). Results are first presented from the two-stage-least-squares model, hereafter IV, discussed in the method section followed by results from a 'reduced form' model (RF). The RF model is identical in structure to the model stated in the methods section, but differs computationally by directly using the simulated variables in place of the policy parameters and interaction terms (β_1 to β_{16}), rather than utilizing them in a two-stage IV-estimation. A very strong correlation exists between the policy parameters and the simulated instruments in the first stage estimates. Consequently, the estimates from the IV and RF are nearly identical. For this reason, beyond Table 2, estimation results will be reported from the RF model only. The RF model is preferred due to computational constraints associated with the inclusion of various PUMA-level fixed effects encountered with the two-stage-IV-estimation.

The baseline RF estimates for the full sample indicate a moderate reduction in labor supply in response to the policy changes associated with the ACA, as seen in Column 2 of Table 2. In 2014, there was no significant effect from the percent subsidy, but this changed in 2015 and

2016 to a 1.2 to 1.4 percentage point decrease (statistically significant), respectively. In other words, a 10 percentage point increase in the generosity of the premium subsidy led to a 1.2 (1.5) percentage point decrease in HIU LFP in 2015 (2016) corresponding to a subsidy-generosity point elasticity of nonparticipation of 0.12 (0.14). There was a significant negative effect on the LFP of the woodwork group, those previously eligible for Medicaid prior to the ACA, which increased in magnitude across time: from 2014 to 2016, estimated impacts are 2.1, 3.3, and 4.9 percentage points. This is due in part to the national change to MAGI for determining eligibility

Table 2: Instrumental Variables Model vs. Reduced Form Model

Interaction Terms	Full Sample	
	(1) IV	(2) RF
2014 Percent Subsidy * 2014	-0.003	-0.004
	(0.003)	(0.003)
2015 Percent Subsidy * 2015	-0.012**	-0.012**
	(0.003)	(0.003)
2016 Percent Subsidy * 2016	-0.014**	-0.014**
	(0.003)	(0.003)
Previously Medicaid Eligible * 2014	-0.022**	-0.021**
	(0.005)	(0.005)
Previously Medicaid Eligible * 2015	-0.034**	-0.033**
	(0.006)	(0.006)
Previously Medicaid Eligible * 2016	-0.050**	-0.049**
	(0.006)	(0.005)
Medicaid Newly Eligible * 2014	-0.019**	-0.019**
	(0.005)	(0.005)
Medicaid Newly Eligible * 2015	-0.017**	-0.017**
	(0.005)	(0.005)
Medicaid Newly Eligible * 2016	-0.026**	-0.026**
	(0.005)	(0.005)
Adj. R-Square	0.299	0.3

Note. The dependent variable is the percentage of adult LFP for each HIU. Data are from the 2009 to 2016 ACS. Table presents coefficients from a linear probability model. Each column reports estimates from a separate regression. HIU-level control variables included for gender, age, education, race and ethnicity, number of children, as well as fixed effects for year, state, and income band; each interacted with HIU type. Robust standard errors in parenthesis are clustered at the Consistent-PUMA level. N=2,725,384 for the full sample. LFP = labor force participation; HIU = Household Insurance Unit; ACS = American Community Survey. *p<0.05. **p<0.01.

and potentially also to the decreased stigma associated with the utilization of public insurance. The estimates indicate that those newly eligible for Medicaid upon national expansion in 2014 experienced a relatively stable 2-percentage point decrease in participation.

3.3 SUB-GROUP ANALYSIS: ADULT COUPLES

Childless adult couples should be most affected by the policies due to joint retirement decisions. Although couples in families also make joint retirement decisions, ongoing support of a dependent child likely promotes a stronger attachment to the labor market than would otherwise exist. In addition, childless adults were excluded from Medicaid eligibility in the majority of states prior to expansion. A supplementary subgroup analysis of childless adult couples is thus provided here in Table 3 where two additional outcomes are examined, LFP of the older and younger spouse, using the RF model. Additionally, results are reported on a restricted sample of adult couples with both members aged 55 to 64.[18,19]

Column 1 of Table 3 shows estimates of the policy effects on the dependent variable of LFP of the childless adult couple. There was no significant effect of the subsidy in 2014, and a significant 1.6 and 1.7 percentage point decrease in LFP for 2015 and 2016. The pre-eligible Medicaid group decreased LFP by 3.5 percentage points in 2014, 7.1 in 2015, and 7.9 in 2016. The Medicaid expansions led to a 2.1 percentage point decrease in 2014 and a roughly 3-percentage point decrease through 2015 and 2016. All coefficients besides the 2014 premium subsidy are statistically significant.

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[18] Appendix Table A3 compares the reduced form to the two-stage-IV estimates for the Adult couple subsample as was performed with Table 1.

[19] The estimations contained in Table 3 are replicated with the subsample of families and reported in Appendix Table A4. All policy coefficients are insignificant besides than a negative significant effect from the woodwork group in 2016.

Table 3: Policy Effects on Adult Couples

Interaction Terms	HIU LFP	Older Spouse LFP	Younger Spouse LFP	HIU LFP: Both age 55-64
2014 Percent Subsidy * 2014	-0.004	-0.010	-0.003	-0.006
	(0.003)	(0.005)	(0.005)	(0.005)
2015 Percent Subsidy * 2015	-0.016**†	-0.016**	-0.016**	-0.019**
	(0.003)	(0.005)	(0.005)	(0.005)
2016 Percent Subsidy * 2016	-0.017**†	-0.019**	-0.019**	-0.019**
	(0.003)	(0.004)	(0.005)	(0.005)
Previously Medicaid Eligible * 2014	-0.035*	-0.021	-0.042*‡	-0.042*
	(0.014)	(0.020)	(0.018)	(0.018)
Previously Medicaid Eligible * 2015	-0.071**†	-0.061*	-0.073**‡	-0.071**
	(0.015)	(0.021)	(0.019)	(0.019)
Previously Medicaid Eligible * 2016	-0.079**†	-0.082**	-0.071**‡	-0.092**§
	(0.014)	(0.018)	(0.017)	(0.021)
Medicaid Newly Eligible * 2014	-0.021*†	-0.043**	-0.002‡	-0.019
	(0.008)	(0.009)	(0.010)	(0.011)
Medicaid Newly Eligible * 2015	-0.028**†	-0.032*	-0.023‡	-0.029**
	(0.008)	(0.010)	(0.010)	(0.011)
Medicaid Newly Eligible * 2016	-0.029**	-0.030**	-0.033**	-0.028**
	(0.007)	(0.009)	(0.009)	(0.010)
Adj. R-Square	0.286	0.164	0.141	0.220

Note. The dependent variable is the percentage of adult LFP, LFP of the older spouse, and LFP of the younger spouse for each HIU in columns 1-3, respectively. Data are from the 2009 to 2016 ACS, restricted only to adult couples. Table presents coefficients from a linear probability model. Each column reports estimates from a separate regression. HIU-level control variables included for gender, age, education, race and ethnicity, number of children, as well as fixed effects for year, state, and income band. Robust standard errors in parenthesis are clustered at the Consistent-PUMA level. N=1,362,090 for models in Column 1 to 3; N= 676,996 for Column 4. LFP = labor force participation; HIU = Household Insurance Unit; ACS = American Community Survey. † indicates a significant difference between the Adult Couple subsample and the full sample. Statistically significant differences between the coefficients of Column 2 & 3 are indicated by ‡ and the coefficients of Column 1 & 4 by §. *p<0.05. **p<0.01.

The impacts of most policy parameters are larger in magnitude for the childless adult couple subset. The difference between each parameter of the full sample and the adult couple subsample (Columns 2 of Table 2 and Column 1 of Table 3) is empirically tested by including a full set of interactions terms between adult couples and each of the policy parameters.[20] Statistically significant differences between the coefficients are specified by a '†' in Column 1 of Table 3. Larger effects exist for the 2015 and 2016 subsidy and previously eligible woodwork groups, as well as larger effects for the newly Medicaid eligible in 2014 and 2015.

[20] Results from this model are not include in the body of the paper, but are available from the author upon request.

Columns 2 and 3 estimate the same model for LFP of the older and younger spouse. For each policy parameter, a cross-model hypothesis test is implemented under the null that the policy coefficients are identical. The superscript of '‡' for coefficients in Column 2 is used to denote statistically significant differences between the coefficients of Column 2 and 3. Stronger woodwork effects occurred for younger spouses in 2014 and 2015 while the older spouses experienced larger effects from new eligibility at the same time.

Column 4 estimates the model on a restricted sample of childless adult couples with both spouses aged 55 to 64. Statistical differences between this restricted model and the full adult couple sample is empirically tested by including a full set of interaction terms between the age restricted group and each of the policy parameters. Only one parameter is significantly different, the woodwork group in 2016, indicated by '§' in Column 4 of Table 3. This result suggests that the findings are not sensitive to the sample specification.

3.4 EMPLOYER SPONSORED INSURANCE CROWD-OUT

The study by FGS (2017) found little to no evidence of ESI crowd-out following the ACA implementation among non-elderly persons (ages 0-64). I estimate the FGS model on insurance outcomes for the older cohort used in this analysis to examine potential crowd-out of ESI by public or subsidized non-group coverage (provided in the Appendix, Table A5).[21] Empirical results suggest a small effect resulting from the premium subsidies, a 1 to 2 percentage point decrease in the likelihood of ESI, but no significant effects from the Medicaid expansions. Since those choosing not to work after gaining Medicaid eligibility are more likely to be in jobs that provide limited or no insurance, Medicaid coverage may be acting as a substitute for wages used towards financing health care. The small crowd-out effects of ESI for publicly subsidized

[21] A replication of Table 6 from Frean, Gruber, and Sommers 2017.

insurance among the group examined in this study suggests that workers exiting the labor market following the ACA were previously uninsured or perhaps prevented from purchasing plans due to pre-existing health problems.

3.5 ROBUSTNESS TO SPECIFICATION

I test the sensitivity of the baseline reduced form model to changes in model specification for the full sample and report the results in Table 4. Model 1 is the same as the baseline model, but with CPUMA fixed effects rather than state level. The coefficients all retain their significance and decrease only slightly in magnitude. Model 2 includes a second-order interaction of CPUMA and income band with a year fixed effect to test for omitted variables at the income-area level. The results remain comparable to the baseline model. I then estimate a model with a second order interaction of CPUMA and year to test for area specific labor market shocks, while including a fixed effect for income, and again find the results to be stable, actually slightly increasing in magnitude. Model 4 includes a fixed effect for CPUMA with income-band time trends. The coefficients for the premium subsides retain their significance and direction, but decrease in magnitude. Model 5 and 6 estimate the baseline model using the alternate dependent variable of adult labor force participation given fulltime work in the previous 12 months. Model 5 is the same as the baseline model, using state level fixed effects. The effects of the subsidies and Medicaid expansions are persistent, though some coefficients decrease in magnitude. The woodwork effects lose significance and tend towards the null, likely because fulltime workers would not have earnings sufficiently low to be previously eligible. Model 6 is the same as Model 5, but with CPUMA fixed effects and the results remain comparable.

In summary, the results are generally robust to various model specifications. Slight movements of the coefficients occur, but the pattern remains relatively stable.

Table 4: Robustness to Model Specification

Interaction Terms	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
2014 Percent Subsidy * 2014	-0.004	-0.004	-0.004	-0.002	-0.004	-0.004
	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)
2015 Percent Subsidy * 2015	-0.012**	-0.013**	-0.012**	-0.010**	-0.006*	-0.006*
	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)
2016 Percent Subsidy * 2016	-0.014**	-0.016**	-0.014**	-0.009**	-0.013**	-0.013**
	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)
Previously Medicaid Eligible * 2014	-0.020**	-0.019**	-0.023**	-0.022**	-0.004	-0.005
	(0.005)	(0.005)	(0.006)	(0.005)	(0.005)	(0.005)
Previously Medicaid Eligible * 2015	-0.033**	-0.033**	-0.035**	-0.033**	-0.003	-0.003
	(0.006)	(0.006)	(0.006)	(0.005)	(0.005)	(0.005)
Previously Medicaid Eligible * 2016	-0.049**	-0.051**	-0.052**	-0.046**	-0.007	-0.006
	(0.005)	(0.005)	(0.006)	(0.005)	(0.005)	(0.005)
Medicaid Newly Eligible * 2014	-0.019**	-0.017**	-0.023**	-0.021**	-0.009	-0.009
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Medicaid Newly Eligible * 2015	-0.017**	-0.017**	-0.023**	-0.018**	-0.013*	-0.013*
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Medicaid Newly Eligible * 2016	-0.025**	-0.025**	-0.030**	-0.023**	-0.016**	-0.017**
	(0.004)	(0.004)	(0.005)	(0.004)	(0.004)	(0.004)
Fixed Effects						
Year FE	X	X			X	X
Income band FE	X		X		X	X
State FE					X	
CPuma FE	X			X		X
CPuma-X-Year FE			X			
CPUMA-X-Income FE		X				
Income-X-Year trends				X		
Adj. R-Square	0.304	0.314	0.309	0.299	0.472	0.470
Number of Obs	2725384	2725247	2725380	2725384	2129822	2129822

Note. The dependent variable is the percentage of adult LFP for each HIU in Model 1 to 4 and adult LFP conditional on full time work in the past 12 months for Columns 5 & 6. Data are from the 2009 to 2016 ACS. Table presents coefficients from a linear probability model. HIU-level control variables included for gender, age, education, race and ethnicity, number of children. Robust standard errors in parenthesis are clustered at the Consistent-PUMA level. LFP = labor force participation; HIU = Household Insurance Unit; ACS = American Community Survey.
*p<0.05.**p<0.01

4. DISCUSSION

This study measures the impact of government provided benefits on labor supply by considering a group likely to be affected by the ACA, older pre-Medicare eligible individuals. The ACA's provisions lowered the opportunity cost of retirement for this older cohort by decreasing the price of non-employer insurance, which loosened labor force attachments. There was about a 2% decrease in LFP from the premium subsidies and roughly, an 8% decrease from the Medicaid expansions, including both the state expansions and woodwork effects found for the entire adult population. Slightly larger estimates are found among the sub-group of childless adult couples, likely due to their joint retirement decision. Results are consistent with previous work in finding disincentives to labor supply arising from government provided benefits (Boyle and Lahey 2010; Garthwaite et al. 2014; Dague et al. 2017). The main contribution of this paper to the developing literature examining labor supply responses from recent health reform is the disentangling of the effects of the premium subsidies and Medicaid expansions on later-life labor force participation and providing estimates for the elasticity of nonparticipation with respect to subsidy generosity from the opening of the subsidized marketplaces (Gooptu et al. 2016; Moriya et al. 2016; Kaestner et al. 2017; Aslim 2019; Duggan et al. 2019).

These results are robust when examining the household insurance unit making joint decisions as well as for individual members of the household. Few of the prior studies focusing on the effects of the ACA Medicaid expansions obtain statistically significant results for individual labor supply in the working age population. Gooptu et al. (2016) utilize the monthly panel structure of the Current Population Survey (CPS) to examine the effect of Medicaid expansions for low-income adults on job loss, job switching between employers, and changing from full-time to part-time status. They found the Medicaid expansions had no significant effect

through 2015. Similarly, Moriya et al. (2016) also use the CPS and find suggestive increases in part-time work among those ages 60-64 although the results are not significant. Kaestner et al. (2017) use both the CPS and ACS to estimate effects of the Medicaid expansion on labor supply of low-income and -education working age persons. They find no significant evidence that the expansions reduced labor market activity. The direction of some of their findings actually suggests there may have been positive labor supply responses.

In the one prior paper studying labor market effects from the implementation of the exchanges, which also controlled for Medicaid expansions, results indicate that work disincentives were experienced by the working age population through the opening of the subsidized exchanges, but no significant effects were found related to the Medicaid expansions (Duggan et al. 2019). In a subsample analysis of the near elderly (ages 45-64), more similar to the group studied here, all results were statistically insignificant. In the present analysis, negative (significant) impacts on labor supply were found in the near elderly population (ages 55-64) from both the Medicaid expansions and the provision of subsidized marketplaces plans.

However, a key difference between that study and the analysis presented in this paper that may explain the greater precision of estimates is the utilization of more precise policy specific variation. The prior paper uses the proportion of uninsured individuals beneath 138% or 139 to 400% of the FPL as a proxy for geographic areas where the policy would potentially have a larger effect. In the analysis of this paper, Medicaid eligibility for each HIU in the sample was coded using each state's eligibility rules based upon income, family structure, and disability status, which allows the cohort of newly eligible individuals to be identified. In addition, data on the premiums faced by each household according to their geographic rating area were used to compute the actual subsidy received, which serves as a proxy for the price change in non-group

plans. Therefore, identification of the Medicaid expansions comes from differences in state-legislative environments and the effect of the premium subsidies from actual variation in rating area premium prices. This framework allows for the estimation of a triple difference model that compares eligible to ineligible individuals in the same area, which helps to control for local labor market effects and other unobservables that may bias estimates. Furthermore, this study focuses on the group likely to have the most salient labor market effects, those aged 55-64 and thus within a decade of eligibility for Medicare and Social Security retirement benefits.

Confidence intervals for the impact of gaining coverage on the likelihood of employment can be reported by following the procedure of Gooptu et al. (2016). In essence, this provides a rough conversion of estimates obtained in the paper into treatment-on-the-treated estimates. The increase in likelihood of retirement for those who obtained coverage through the main Medicaid expansions lies between 5 to 19% and the impact for those utilizing subsidized marketplace coverage increased retirement by around 2 to 21%.[22] Thus, these estimates are similar to recent studies that have shown the effects of employer provided RHI to increase the odds of early retirement by 20 to 30% (Shoven et al. 2014; Nyce et al. 2013; Fitzpatrick et al. 2014) although they would be at the low end of the range of prior estimates.

A limitation of this study is the use of pooled cross-sectional data that results in the inability to observe potential income responses to the policy's needs-based provisions. The structure of the subsidy schedule and the increased income threshold through Medicaid expansions creates kink points on individual's budget sets. Reexamining this question with

[22] These numbers are generated by taking the confidence interval on the likelihood of retirement for the provision and then dividing it by the fraction of those who obtained coverage by means of that provision. For example, the 95% confidence interval on retirement from the 2014 Medicaid expansion is between 0.76 to 3.68 ppts and the increase in Medicaid coverage is 11.3 ppts. The ranges stated in the text are weighted average of the policy impacts from 2014 to 2016. These figures may be expressed as percentage point estimates by weighting them by the probability of employment for that eligibility group.

longitudinal data could shed light on the degree to which individuals altered their incomes and bunched about these kinks, though the size of currently available public datasets may result in underpowered statistics. In addition, future work on the ACA should attempt to disentangle labor demand due to the employer mandate from labor supply among the general population (Kofoed & Frasier 2019). Overall, this study is consistent with the previous retirement literature in finding that the provision of lower cost health insurance increases the likelihood of early retirement. However, the relatively small effects for the entire adult population indicate that other factors are playing an important role in later-life labor force participation

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APPENDIX

Table A1: Instrumental Variables Model vs. Reduced Form Model with Separate Early Expansion Parameters

Interaction Terms	Full Sample	
	(1) IV	(2) RF
2014 Percent Subsidy * 2014	-0.003	-0.004
	(0.003)	(0.003)
2015 Percent Subsidy * 2015	-0.012**	-0.013**
	(0.003)	(0.003)
2016 Percent Subsidy * 2016	-0.014**	-0.014**
	(0.003)	(0.003)
Previously Medicaid Eligible * 2014	-0.022**	-0.021**
	(0.005)	(0.005)
Previously Medicaid Eligible * 2015	-0.034**	-0.033**
	(0.006)	(0.006)
Previously Medicaid Eligible * 2016	-0.050**	-0.049**
	(0.006)	(0.005)
Medicaid Newly Eligible * 2014	-0.019**	-0.019**
	(0.005)	(0.005)
Medicaid Newly Eligible * 2015	-0.017**	-0.017**
	(0.005)	(0.005)
Medicaid Newly Eligible * 2016	-0.026**	-0.026**
	(0.005)	(0.005)
Early Expansion Eligible * 2014	-0.048*	-0.049*
	(0.022)	(0.023)
Early Expansion Eligible * 2015	-0.036	-0.035
	(0.030)	(0.030)
Early Expansion Eligible * 2016	0.004	0.004
	(0.023)	(0.023)
Adj. R-Square	0.299	0.299

Note. The dependent variable is the percentage of adult LFP for each HIU. Data are from the 2009 to 2016 ACS. Table presents coefficients from a linear probability model. Each column reports estimates from a separate regression. HIU-level control variables included for gender, age, education, race and ethnicity, number of children, as well as fixed effects for year, state, and income band; each interacted with HIU type. Robust standard errors in parenthesis are clustered at the Consistent-PUMA level. N=2,725,384 for the full sample. LFP = labor force participation; HIU = Household Insurance Unit; ACS = American Community Survey. *p<0.05. **p<0.01.

Table A2: Pre-trends for Income Bands and CPuma Pricing

Time-trend Interaction Terms	(1)	(2)
Income bands		
1	-0.0004	-
	(0.0017)	-
2	-0.0004	-
	(0.0017)	-
4	-0.0029	-
	(0.0015)	-
5	0.0002	-
	(0.0014)	-
6	0.0019	-
	(0.0014)	-
7	0.0016	-
	(0.0013)	-
8	0.002	-
	(0.0013)	-
Rating Area Pricing		
Low-price CPuma	-	-0.0008
	-	(0.0005)
Fixed Effects		
Income band		X
State	X	
Adj. R-Square	0.283	0.285

Note. The dependent variable is the percentage of adult LFP for each HIU. Data are from the 2009 to 2013 ACS. Table presents coefficients from a linear probability model. Each column reports estimates from a separate regression. Column 1 (2) reports the coefficients on the time-trend interaction term for income bands (low-priced rating areas). Rating areas were partitioned at the median. Income band 3 omitted. The income bands are as follows: 0-50% FPL, 50-100% FPL, 100-138% FPL, 138-200% FPL, 200-300% FPL, 300-400% FPL, 400-600% FPL, and all else beyond 600%. HIU-level control variables included for gender, age, education, race and ethnicity, and number of children. Robust standard errors in parentheses are clustered at the Consistent-PUMA level. N=1,654,320. LFP = labor force participation; HIU = Household Insurance Unit; ACS = American Community Survey. *p<0.05. **p<0.01.

Table A3: Instrumental Variables Model vs. Reduced Form Model

Interaction Terms	Childless Adult Couples	
	(1) IV	(2) RF
2014 Percent Subsidy * 2014	-0.004	-0.004
	(0.003)	(0.003)
2015 Percent Subsidy * 2015	-0.016**	-0.016**
	(0.003)	(0.003)
2016 Percent Subsidy * 2016	-0.017**	-0.017**
	(0.003)	(0.003)
Previously Medicaid Eligible * 2014	-0.035*	-0.035*
	(0.013)	(0.014)
Previously Medicaid Eligible * 2015	-0.070**	-0.071**
	(0.014)	(0.015)
Previously Medicaid Eligible * 2016	-0.077**	-0.079**
	(0.014)	(0.014)
Medicaid Newly Eligible * 2014	-0.021*	-0.021*
	(0.008)	(0.008)
Medicaid Newly Eligible * 2015	-0.028**	-0.028**
	(0.008)	(0.008)
Medicaid Newly Eligible * 2016	-0.029**	-0.029**
	(0.007)	(0.007)
Adj. R-Square	0.286	0.286

Note. The dependent variable is the percentage of adult LFP for each HIU. Data are from the 2009 to 2016 ACS. Table presents coefficients from a linear probability model. Each column reports estimates from a separate regression. HIU-level control variables included for gender, age, education, race and ethnicity, number of children, as well as fixed effects for year, state, and income band; each interacted with HIU type. Robust standard errors in parenthesis are clustered at the Consistent-PUMA level. N=1,362,090. LFP = labor force participation; HIU = Household Insurance Unit; ACS = American Community Survey. *p<0.05. **p<0.01.

Table A4: Policy Effects on Family Subsample

Interaction Terms	HIU LFP	Older Spouse LFP	Younger Spouse LFP	HIU LFP: Both age 55-64
2014 Percent Subsidy * 2014	-0.007	0.000	-0.018	-0.009
	(0.008)	(0.011)	(0.011)	(0.015)
2015 Percent Subsidy * 2015	-0.006	0.005	-0.020	0.002
	(0.008)	(0.010)	(0.011)	(0.014)
2016 Percent Subsidy * 2016	0.000	0.011	-0.002	0.013
	(0.008)	(0.010)	(0.011)	(0.014)
Previously Medicaid Eligible * 2014	-0.010	-0.012	-0.008	-0.013
	(0.008)	(0.011)	(0.010)	(0.014)
Previously Medicaid Eligible * 2015	-0.018	-0.013	-0.020	-0.020
	(0.009)	(0.011)	(0.010)	(0.014)
Previously Medicaid Eligible * 2016	-0.032**	-0.031*	-0.010	-0.027
	(0.009)	(0.011)	(0.010)	(0.015)
Medicaid Newly Eligible * 2014	-0.053	-0.015	-0.037	-0.054
	(0.047)	(0.060)	(0.053)	(0.080)
Medicaid Newly Eligible * 2015	0.020	-0.040	0.067	0.039
	(0.044)	(0.056)	(0.047)	(0.071)
Medicaid Newly Eligible * 2016	-0.015	-0.015	-0.023	-0.066
	(0.048)	(0.055)	(0.053)	(0.076)
Adj. R-Square	0.316	0.253	0.390	0.272

Note. The dependent variable is the percentage of adult LFP, LFP of the older spouse, LFP of the younger spouse, and adult LFP for each HIU in columns 1-4, respectively. Data are from the 2009 to 2016 ACS, restricted only to adult couples. Column 4 restricts the sample to only couples with both spouses age 55-64. Table presents coefficients from a linear probability model. Each column reports estimates from a separate regression. HIU-level control variables included for gender, age, education, race and ethnicity, number of children, as well as fixed effects for year, state, and income band. Robust standard errors in parenthesis are clustered at the Consistent-PUMA level. N=255,845 for models in Column 1 to 3; N= 97,477 for Column 4. LFP = labor force participation; HIU = Household Insurance Unit; ACS = American Community Survey. *p<0.05. **p<0.01.

Table A5: Insurance Changes on Full Sample

Interaction Terms	Uninsured	Medicaid	ESI	Non-Group Private
2014 Percent Subsidy * 2014	-0.052**	0.026**	-0.008	0.036**
	(0.002)	(0.002)	(0.003)	(0.003)
2015 Percent Subsidy * 2015	-0.090**	0.051**	-0.012**	0.062**
	(0.003)	(0.003)	(0.003)	(0.003)
2016 Percent Subsidy * 2016	-0.091**	0.060**	-0.025**	0.066**
	(0.003)	(0.003)	(0.003)	(0.003)
Previously Medicaid Eligible * 2014	-0.075**	0.075**	0.004	0.004
	(0.004)	(0.004)	(0.003)	(0.003)
Previously Medicaid Eligible * 2015	-0.124**	0.126**	0.008	0.008**
	(0.004)	(0.005)	(0.003)	(0.003)
Previously Medicaid Eligible * 2016	-0.141**	0.136**	0.005	0.014**
	(0.004)	(0.005)	(0.003)	(0.003)
Medicaid Newly Eligible * 2014	-0.109**	0.113**	0.007	0.011
	(0.007)	(0.008)	(0.008)	(0.005)
Medicaid Newly Eligible * 2015	-0.135**	0.155**	-0.010	0.019**
	(0.006)	(0.008)	(0.006)	(0.006)
Medicaid Newly Eligible * 2016	-0.148**	0.180**	-0.010	0.007
	(0.006)	(0.008)	(0.006)	(0.005)
Adj. R-Square	0.162	0.329	0.352	0.023
Number of Obs	2725384	2725384	2725384	2725384

Note. The dependent variable is stated at the top of each column. Each column reports estimates from a separate regression. Data are from the 2009 to 2016 ACS. Table presents coefficients from a linear probability model. HIU-level control variables are included for gender, age, education, race and ethnicity, and number of children, as well as fixed effects for year, state, and income band; each interacted with HIU type. Robust standard errors in parentheses are clustered at the Consistent-PUMA level. N=2,725,384. LFP = labor force participation; HIU = Household Insurance Unit; ACS = American Community Survey. *p<0.05. **p<0.01.