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Evaluating the Causal Effect of Insurance Access on Labor Market Outcomes Among Young Adults

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Evaluating the Causal Impact of Health Insurance Coverage on the Labor Market Outcomes of Young Adults

by

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Abstract

One of the first provisions enacted under the Patient Protection and Affordable Care Act (PPACA) was was the Young Adult Coverage Expansion, which took effect on September 23, 2010. Under this provision, individuals up to age 26, can remain on their parent's employer provided health insurance plan. Relatively little is known about the effect of insurance coverage on the labor supply of young adults. In this paper, I exploit the exogenous expansion of health insurance coverage among a segment of young adults as an instrumental variable to control for the endogeneity of health insurance status. This allows me to estimate causal labor market effects of insurance coverage. I leverage a difference-in-difference design in the first stage of a two-stage control function to estimate the effect of the law on the probability of insurance coverage and use the predicted residual from this stage as my instrument in the second stage regression. The main structural equation estimates the causal effect of insurance coverage on the likelihoods of working part time, full time, not working and being self-employed among 22-29 year olds. Using data from the 2006 to 2015 March Current Population Survey (CPS) I find that eligibility for the mandate is associated with a 5.2-5.7 percentage point increase in insurance rates among young adults. As a result of gaining access to insurance, 22-29 year olds are more likely to be self-employed, to not work, and to work part time. They are less likely to work full time. These results are consistent with the classical economics theory behind the role of social welfare provision and work incentives.

Keywords: Health insurance, labor supply, heterogeneous treatment effects, difference-in-difference design, control function models.

Contents

1 Introduction and Motivation

There is little evidence on the effects of health insurance access on labor supply among young adults in the U.S. There is a large body of literature on the effect of medicaid, medicare, and employment sponsored insurance on "job lock", and "entrepreneurship lock", among other labor market choices. However, prior literature has not looked specifically at the employment choices of young adults as a result of the provision of insurance. Recent evidence on the effects of health insurance on labor supply for the general population, exploits the 2006 Massachusetts health reform experiment (Kolstad & Kowalski, 2012). Also, the effect of Medicaid on work force participation by the poor and near poor in Tennessee is studied through through difference in difference analysis(Garthwaite, Gross, & Notowidigdo, 2013). However, there is scant new evidence on more current labor market choices among young adults. Most recent papers that have analyzed the effect of the young adult coverage mandate on the employment decisions among young adults have done so through a difference in difference analysis. They generally find that eligibility for the mandate has reduced employment probabilities and increased the incidence of part time work among young adults. This paper takes this form of analysis further by levering this first stage analysis in a two stage control function approach.

The young adult coverage expansion provision under the federal Patient Protection and Affordable Care Act (ACA), which took effect in September 2010, addresses the issue that uninsured rate among young adults in the U.S. is the highest among all age demographics (see Figure 1). This provision increases the eligibility age for individuals to be allowed to remain on their parents' health insurance plan. Recent evidence suggests that this expansion has had the desired effect on insurance coverage among young adults(Antwi, Moriya, & Simon, 2012).

In this paper, I exploit the exogenous expansion of health insurance coverage among a segment of young adults to estimate labor market effects of insurance coverage. This is because insurance coverage is endogenous determined and numerous prior studies show it

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it correlated with employment. This making studying the labor supply effects of insurance coverage difficult and requires some plausible exogenous variation in coverage. To do this, I use a difference-in-difference design to estimate the effect of the law on the probability of insurance coverage. The federal mandate stipulates that all individuals under the age of 26 can remain on their parent's private insurance plan. As such, in one specification, the differences-in-differences estimate calculated compares the changes in "treated" ages (19-25) to changes in "control" ages (26-29) before and after the enactment of the policy on September 23rd 2010. In another specification, the differences-in-differences estimate calculated compares the changes in "treated" ages (22-25) to changes in "control" ages (26-29) before and after the enactment of the policy on September 23rd 2010. This is the preferred specification because 22-25 year olds are most likely do be facing labor market decisions, while most 19-21 year olds, tend to still be in college.

Eligibility for the coverage expansion is used an exogenous instrument. Next, I use a control function approach to estimate causal effects of insurance coverage on labor market outcomes. A residual predicted from the first stage model is used in the second stage to control for the endogeneity of health insurance coverage.

This study of the federal mandate makes two contributions to the existing literature. First, it finds support for recent estimates that show that the federal mandate increased health insurance coverage among young adults. Second, this study employs a control function model to account for the endogenous nature of health insurance coverage to estimate the causal impact of having insurance on the labor market behavior of young adults. This is the first paper to examine the causal impact of insurance coverage on the labor supply of young adults with five years of post policy implementation data.

I find that the federal mandate increases the rate of insurance coverage among young adults. This paper focused on the effect of insurance access on labor market decisions, using 22-25 year olds as a treatment group as this age cohort is more likely to be facing employment choices. A set of results for a 19-25 year old treatment group is reported, for comparison.

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Among 22-29 year olds, having health insurance leads to an increase in the probability of working part time and being self employed, providing evidence of "entrepreneurship lock". Also, insurance access reduces the likelihood of working full time and increases the likelihood of not working. These results are consistent with the traditional micro-economic model of welfare provision and work incentives.

This paper proceeds as follows. My first section presents a review of results from recent literature on the effects of the federal young adult coverage mandate, prior state level insurance mandates, employer sponsored insurance, medicaid and medicare on labor market outcomes. Next, I outline the theoretical basis for the relationship between labor supply and health insurance access. Third, I describe the advantages and disadvantages of the public data source used in this paper. Fourth, I explain the two stage residual inclusion (2-SRI) control function used in this paper to determine the casual effect of having insurance on labor supply. Fifth, I present the main results from both my estimation stages. Finally, I outline how the results of this paper fit into the larger understanding of the labor market implications of health insurance access.

2 Literature Review

2.1 General Findings

There has been considerable research into the relationship between access to health insurance and labor market outcomes. Prior work has examined the impact of state level changes in insurance status, employer sponsored insurance, Medicare, and Medicaid on job mobility, "job lock", and various other labor market phenomena. Gruber and Madrian (2002) review over 50 papers on the topic of health insurance access and employment and reach five main conclusions(Gruber & Madrian, 2002). First, retirement decisions are impacted by health insurance options. Second, health insurance is not the main explanatory factor for the labor supply decisions of low income mothers. Third, health insurance is an important driver of

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employment decisions of secondary earners. Fourth, health insurance seems to have a greater effect on job mobility decisions in the long term than in the short run. Fifth, the welfare and efficiency implications of health insurance access remain ambiguous.

2.2   ACA Young Adult Coverage Expansion

Since the implementation of the federal young adult coverage mandate in 2010 a number of paper have assessed the impact of being eligible for the expansion on insurance rates and on various labor market outcomes. All of these papers have used a differences in differences (DID) design to estimate the insurance take up effect of the mandate. Sommers et al. (2013), provide evidence the young adult coverage expansion provided greater access to private insurance for young adults. Using data from the National Health Interview Survey (NHIS) from 2005 through the third quarter of 2011, they find a 5.1 percentage point increase in private insurance among young adults(Sommers, Buchmueller, Decker, Carey, & Kronick, 2013). Antwi et al. (2012), find evidence of a 3 percent reduction in weekly hours of work among young adults eligible for the mandate.

Slusky (2012) uses the Current Population Survey (CPS) March Supplement, the CPS October Supplement, the Behavioral and Risk Factor Surveillance Survey (BRFSS), and the Consumer Expenditure Survey (CE) and finds that the federal mandate had a small and statistically insignificant effect on whether a young adult was in the labor force or was employed(Slusky, 2012). However, it did have a significant effect on working hours. The estimates from the age-time DD model indicate that young adults were 1.8-2.1 percentage points less likely to work full-time (FT) and 1.3-1.5 percentage points more likely to work part-time (PT) as a result of the policy. Bailey (2013) uses data from the Integrated Public Use Microdata Series (IPUMS) of the American Community Survey (ACS) from 2000 to 2013 to estimate the impact of extending dependent insurance to young adults on their rates of entrepreunership(Bailey, 2013). Accounting for a number of robustness and placebo tests, the mandate had no statistically significant effect on the entrepreneurship rates of young

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adults. This suggests that "entrepreneurship lock" may not be a main concern for young adults.

Colman et al. (2015) use 2003 to 2013 American Time Use Survey data and differences in differences analysis to assess the effect of the young adult coverage mandate on time use(Colman & Dave, 2015). Specifically, they find that time spend working decreases among 19-25 year olds, which occurs mostly at the extensive margins, as the likelihood of employment fell 4-6 percentage points among this treatment group as a result of the mandate. Also, among the 23-25 year old treatment group the likelihood of employment fell 6-8 percentage points. Finally, Abramowitz (2015) examines the effect of the ACA youth coverage mandate on the propensity to marry. Using 2008–2013 American Community Survey and applying difference-in-differences-type methods, she finds that the provision is associated with decreases in the likelihood of marrying, cohabitation, and spousal health insurance coverage and an increase in the probability of divorce(Abramowitz, 2015). Due to this observed correlation between eligibility for the mandate and the propensity to marry, I leave marital status out as a regressor in one of my specifications, as it is an endogenous regressor.

2.3   State Level Insurance Reforms

Hahn and Young (2014) use data from the 2001-2010 March Current Population Survey (CPS) and find that previous state level expansions led to increased group dependent coverage rate and reduces labor supply of young adults by 2.1 percentage points(Hahn & Yang, 2014). The authors find that the probability of working full-time declines by 3.1 percentage points with usual hours worked decreasing by 0.555 hours per week. Monheit et al.(2012) use the 2000-2008 Annual Demographic Supplement of the CPS to evaluate the impact of the young adult coverage mandates in 19 early-adopting states state level on insurance status of young adults(Monheit, Cantor, DeLia, & Belloff, 2011). The difference-in-differences estimates from their LPM models suggest that dependent coverage increased 3.84 percentage points for those individuals ages 19-25 residing with parents. However, since this increase

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were mostly offset by a decrease in employer-sponsored insurance (ESI) in the young adults' own name, there was no significant change in the uninsured rates among the treated group of young adults.The Affordable Care Act was modeled after the 2006 Massachusetts health care reform. Kolstad and Kowalski (2012), use the 2004 Survey of Income and Program Participation (SIPP) panel which covers October 2003 to December 2007 to analyze the impact of the employer mandate on the compensating differential for Employer Sponsored Health Insurance (ESHI)(Kolstad & Kowalski, 2012). Using a differences in differences model they estimate that employers who offered ESHI payed $6,058 lower wages on average annually, implying that compensating differential for ESHI is marginally less than the average cost of ESHI to employers.

Garthwaite et al. (2013), consider the effect of losing eligibility for public insurance on labor supply(Garthwaite et al., 2013). Over 170,000 Tennessee residents lost access to Medicaid coverage as part of the 2005 TennCare reform. Using 2000 to 2007 data from the Current Population Survey (CPS) and a differences in differences model, these authors find a 4.6 percentage-point increase in employment among childless adults, which they attribute to an increase in labor supply. This provides strong evidence of "employment lock". In 2008 Oregon implemented its own health insurance experiment, in which randomly selected low income individuals were given the option to apply for Medicaid. Finkelstein et al. (2012) use data from administrative records from the Social Security Administration (SSA) as well as state records to estimate an IV regression assessing the impact of the medicaid eligibility on employment and earnings(Baicker, Finkelstein, Song, & Taubman, 2013). They find that enrollment in Medicaid causes a decline in employment of 1.6 percentage points relative to the control group. Using the 2008 SIPP panel, they yield DD estimates of the ACA implementation effect which indicate that there was a two percentage point reduction in the probability of working full time time and a 0.8 fall in hours worked per week amongst the treatment group relative to the control group(Antwi et al., 2012). Depew (2013) also uses the 2001, 2004 and 2008 panels of the Survey of Income and Program Participation

(SIPP) to determine the effect of state level dependent coverage mandates on a number of labor market outcomes(Depew, 2013). The differences-in-differences-in differences (DDD), estimates suggest that 19-25 year old females in treated states decreased their labor force participation (LFP) by 4.6 percentage points and 19-25 year old males decreased their LFP by 1.7 percentage points. Females reduced hours worked by 2.8 hours a week on average. Among males and females, there were also statistically significant decreases in full-time employment, the employment rate, number of jobs per month, and the proportion of the month employed.

2.4   Employer Sponsored Insurance (ESI)

The Tax Reform Act of 1986 introduced a tax subsidy for the self-employed to purchase their own health insurance. However, individuals that had health coverage through the insurance plan of a family member did not qualify for this benefit. Using data from the March and May CPS files for 1984 and 1985, Velamuri (2012) assesses whether the availability of health coverage through the spouse's health plan influences a married woman's self-employment decisions(Velamuri, 2012). The marginal effects from the DDD regression indicate that in the post-reform period, single women and married women who did not have access to spousal health insurance were 34% and 56% more likely to be self-employed, respectively, compared to their corresponding pre-reform rates. Bradley et al. (2012) use data from the Health and Retirement Study (HRS) surveys from 1996 through 2008 to determine if ESI "locks" men who experience a health shock into remaining at work(Bradley, Neumark, & Motika, 2012). In the absence of a health shock, 18% of older men routinely leave employment over a 2-year period. Among those with a new diagnosis only and ESI, the health shock does change employment. The difference-in- difference estimates suggest that men with an adverse health shock that raises the value of health insurance without increasing morbidity are more likely to remain employed if they had ESI prior to the shock. This provides the strongest evidence of the "employment lock" effect of ESI even in the midst of a health shock. Gilleskie and Lutz

(1999) use 1989-1993 National Longitudinal Survey of Youth (NLSY) data to estimate the effect of employer-provided health insurance (EPHI) on the job mobility of males(Gilleskie & Lutz, 1999). For married men, the offer of ESI reduces job mobility by 28%. For unmarried men, the offer of ESI reduces job mobility by 36%.

Buchmueller and Valletta (1996) use data from the April 1993 Current Population Survey Benefits Supplement, and exploit variation in coverage under a husbands' health plan to estimate the effects of employer-provided health insurance on the labor supply of married women(Buchmueller & Valletta, 1996). If a woman's husband has health insurance, she is expected to work 36 percent fewer hours and 12 percent less likely to be employed. In families with no kids, the insurance status of the husband has no effect on the employment decisions of the wife. Gai and Minniti (2015) use 2000 to 2008 Medical Expenditure Panel Survey (MEPS) data to determine whether the availability of health insurance among married individuals influences the supply of self-employment as well as transition choices(Gai & Minniti, 2015). The DD estimates such that when the spouse is the primary policy holder, the individual's probability of being self-employed increases, where the marginal effect ranges from 1.8% to 4.1%. Additionally, being the policy holder prior to transition significantly reduces the marginal probability of switching to self-employment. Using data from the 1987 National Medical Expenditure Survey, Madrian (1993) estimates that job-lock reduces the voluntary turnover rate of individuals with ESHI by 25 percent, from 16 percent to 12 percent per year(Madrian, 1993). Holtz et al. (1996) use 1984-1986 SIPP and Panel Study of Income Dynamics (PSID) data to assess whether ESI discourages entrepreneurship(Holtz-Eakin, Penrod, & Rosen, 1996). A number of states instituted a tax mandate that required employers to employers to continue providing insurance to employees that left the firm for an average of 6.7 months. The DD estimator, which is the measured effect for individuals who have left their previous employment but continued be covered by that employer and have the option to be covered under their spouses insurance, reveals no effect of ESI on the propensity to be self-employed.

2.5   Medicaid

Yelowitz (1995) assesses the impact of increasing the income limit for Medicaid on labor force participation among single mothers using 1989 to 1992 CPS data(Yelowitz, 1995). He finds that decoupling the AFDC income requirements from the Medicaid requirements increases labor force participation by 1.9%, indicating slight but significant evidence of the "Medicaid notch". Moffitt and Wolfe (1990) use 1983 to 1986 data from the Survey of Income and Program Participation (SIPP) to study the effect of Medicaid on the labor supply decisions of female heads of family(Moffitt & Wolfe, 1990). Increasing Medicaid receipts by $50 a month, reduces the employment rates among female heads of the household by 5.5 percentage points, however this effect is most pronounced among families with high expected medical expenditures. Pohl (2104) uses 1996 to 2010 restricted MEPS data to estimate the effect of state level Medicaid expansions on the labor supply decisions of single mothers(Pohl, 2014). After structurally estimating a model of labor supply and health insurance choice exploiting existing variation in Medicaid policies, the author finds that single mothers increase their labor supply at the extensive and the intensive margin by six and five percent, respectively. Additionally, raising the income threshold for medicaid eligibility to 138 percent of the FPL makes single mothers with a child under the age of four 3% more likely not to work, slightly more likely to work part-time, and 1 to 1.5% less likely to work full-time. These magnitude of theses effects is highest for single mothers who themselves or have children that have more medical conditions. This result suggests that less healthy individuals are constrained in their employment decisions as a consequence of their health insurance options. Strumpf (2011) analyses the effect of the introduction of the Medicaid program in the late 1960s and early 1970s on the labor supply decisions of single women using March CPS data from 1963 to 1975(Strumpf, 2011). The DDD estimates indicate that women who were eligible for Medicaid did not decrease their their labor supply relative to ineligible women, implying that the medicaid expansion had no effect on labor supply of single women and that public health insurance programs for low-income parents

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and children could improve access to care without major indirect costs from labor supply distortions.

2.6 Medicare

Fairlie et al. 2011 use 1996 to 2006 CPS data to examine whether employer-based health insurance discourages business creation by exploiting the discontinuity created at age 65 through the qualification for Medicare. Their RDD compares the probability of business ownership among male workers in the months just before turning age 65 and in the months just after turning age 65. They find that Business ownership rates increase from 24.6% for those just under age 65 to 28.0% for those just over age 65. This increase was statistically significant, suggesting strong evidence of "entrepreneurship lock" associated with traditional employer sponsored insurance(Fairlie, Kapur, & Gates, 2011).

This literature forms the basis for understanding the labor market effects of various forms of health insurance on a number of treatment groups. Analyzing these results allows for a set of hypotheses for the expected impact private insurance coverage on the labor supply of young adults. Since increased access to private insurance diminishes the link between health insurance and full-time work, full-time work is likely to decrease and part- time work is likely to increase. As previous literature has shown, gaining access to private insurance will likely result in fewer hours worked and a lower employment levels among young adults. These hypotheses will be tested below using the differences-in-differences (DD) with 2- stage residual inclusion (2-SRI) models.

3 Theoretical Framework for Insurance and Labor Supply

The existing literature and this paper's first stage regression results suggest that young adults are more likely to have health insurance coverage as a result of the 2010 young

adult coverage mandate. In this section I discuss the theoretical predictions of having health insurance coverage on the labor supply of young adults through a simple labor-leisure model.

In the status quo scenario a young adult who needs health insurance and does not qualify for Medicaid has two options; work full time or attend a four-year private university. Once they complete their schooling, there remains the single option, that is working full time. Before, an individual needing insurance was constrained in their employment choice set. Either work full time or remain uninsured. Post reform, the individual can leave school and continue to remain on their parent's insurance plan until they turn 26. What decisions will the individual who has been randomly assigned insurance access make in the labor market now? As a result of the dependent coverage option, the employment choice set has been expanded. The individual can now work full or part time, or be self employed and still be covered. 22-25 year olds are more likely to have completed college and be focused on starting a career, so their change in labor supply is likely to be different and more pronounced than for the 19-25 year old treatment group.

4   Data

This paper uses the Current Population Survey's Annual Social and Economic Supplement (ASEC), commonly referred to as the March Supplement. The CPS March Supplement is the most common source of data used for federal and state mandate difference-in-difference analysis. This annual survey provides data regarding family characteristics, household composition, marital status, educational attainment, health insurance coverage, foreign-born populations, previous year's income from all sources, work experience, receipt of non cash benefits, poverty, program participation, and geographic mobility which makes it a particularly useful data set for analyzing the impact of insurance coverage on labor market outcomes(U. S. Census Bureau, n.d.).

One potential drawback of the March CPS is the possibility for recall bias, which occurs

if individuals answer questions based on their situation in the survey month as opposed to their experience over the course of the year. However as Slusky (2012) mentions, the results obtained by Cantor et al. (2012) using the CPS basically match those of Antwi, Moriya, and Simon (2012) using SIPP, implying recall bias is not significantly impacting findings. Another possible concern is that, since the respondents are asked about any time in 2010, their responses could be to a reference period before or after the federal mandate took effect in September 2010. This paper has access to the March 2015 survey data, making it the only paper with five full treatment years of data. Unlike other previous papers, I have included 26 year olds in my analysis (in the control group), as failing to include them, could price a potentially overestimated marginal effect of insurance coverage on labor supply.

Using data from 2006 to 2015, the data set restricted to 19-29 year old individuals has 201,213 observations. The treatment and control groups look very similar with the exception of their age, which is to be expected, their marital status, their income level and their years of education. To perform the analysis, new weights were generated to make the average of the March CPS final weights the same in every year (from 2006 to 2015). This was done to make sure that an individual in an given year with a particular weight, had the same weight in a different year.

Summary statistics for the two treatment groups and the control group are reported in Table 1. Among the 22-25 year old treatment group 19% are married, 13.4% are black, 19% are Hispanic, and the individuals in this group get 10.2 years of education on average. group get 10.2 years of education on average. Only 3.6 % of the sample made below 50 % of the FPL, while 37% made over 300 % of the FPL. 44 % of the sample made between 100 % and 300 % of the FPL. Among the 22-25 year old treatment group 69 % are insured, 10.5 % are not working, 27 % are working part time, 59 % are working full time and 3 % are self employed. This group typically works 34 hours a week.

Among the 19-25 year old treatment group 14% are married, 13.5% are black, 20% are Hispanic, 3.8 % are Asian and the individuals in this group get 9.9 years of education on

average. Only 3.7 % of the sample made below 50 % of the FPL, while 37% made over 300 % of the FPL. 43 % of the sample made between 100 % and 300 % of the FPL. Among the 19-25 year old treatment group 70 % are insured, 12 % are not working, 35 % are working part time, 50 % are working full time and 3 % are self employed. This group typically works 31.5 hours a week.

Among the control group 40% are married, 13% are black, 20% are Hispanic, and the individuals in this group get 10.6 years of education on average. Only 3.7 % of the sample made below 50 % of the FPL, while 44% made over 300 % of the FPL. 42 % of the sample made between 100 % and 300 % of the FPL. Among the control group 73 % are insured, 8.2 % are not working, 18 % are working part time, 69 % are working full time and 4.6 % are self employed. This group typically works 38 hours a week.

Summary statistics for the full samples for the independent variables used in the analyses are reported in Table 2. Within the preferred 22-29 year old sample, the average age of persons in the study was approximately 25 years old, and approximately 50% of persons in the study were female. Approximately 12% of persons in the study were black, while 23% were Hispanic and 5% were Asian. Only 3.5 % of the sample made below 50 % of the FPL, while 35% made over 300 % of the FPL. 30 % of the sample made between 100 % and 300 % of the FPL. Among 22-29 years olds 30 % were married. Finally, the average years of education was 10 years.

5 Methodology

This paper uses age-time differences-in-differences analysis to study the effects of the the federal dependent coverage mandate on insurance rates and the effect of private insurance on the labor supply of young adults. It uses eligibility for the mandate as an instrument to control for the endogeneity of health insurance. The time dimension is before and after the federal mandate took effect in September 2010. In the preferred specification, the age

dimension for the treatment group is defined as those aged 22-25, and 26-29 year old individuals as controls. This is based on the assumption that those aged 19-21 are sufficiently different from the rest of the treatment group in their capacity to acquire insurance through school and for this group making employment decisions is more common. An alternative specification compares outcomes for 19-25 year olds to the control group of (26-29) year olds. The main analysis of this paper is concerned with the impact of having insurance on ones employment. Naïve OLS is not possible here since there is the problem of reverse causality between employment decisions and the type of insurance an individual has.

A two-stage residual inclusion control function analysis is used to avoid the endogeneity problem associated with the reverse causality discussed above. Eligibility for the federal mandate (the product of the "treat" and "post" difference-in-difference parameters from the 1st stage regression) satisfies both the relevance and exogeneity requirements of a good instrument. First, relevance is established due to the extremely statistically significant coefficient in the "treat*post" row of Table 4, meaning that eligibility for the existing federal mandate is strongly correlated with obtaining insurance. Furthermore, the instrument is independent of of any factors that could explain the labor supply decisions predicted in the main model. Namely, eligibility for the mandate is both entirely predetermined (i.e. no individual has control over their age or what year it is) and accounting for age and time fixed effects there is nothing left in the residual of the main model that is correlated with this instrument. Equipped with this instrument, the likelihood of accessing insurance is estimated in the first stage model. A residual is calculated which is included in the second stage model to determine the casual impact of insurance on the aforementioned labor market outcomes. The residual is the difference between the observed insurance coverage in the sample and the level the first stage model predicts. The differences-in-differences analysis is performed to estimate the first stage insurance effects of the mandate. The two-stage-residual-inclusion (2 SRI) control function measures the causal impact of having insurance on employment decisions among young adults.

The model estimated of the first stage insurance access effects is of the following form:

$$Y_{iats} = \beta_0 + \beta_1(Treat_a x Post_t) + \beta_2 Treat_a + \beta_3 Post_t + \beta_4 Age_a + \beta_5 Year_t + \beta_6 State_s$$
$$+ \beta_7 X_{iast} + \varepsilon_{at}$$

In the above equation, a refers to the age of the individual (i.e. 25), t refers to time, s refers to state (i.e. New York), and i refers to individual. Y is the outcome being studied (e.g. insurance type), Treat is equal to 1 if the individual is in the 22-25 "treated" group, in one specification, and Post is equal to 1 if the year of the observation is after 2010. Treat is equal to 1 if the individual is in the 19-25 "treated" group, in the other specification. Age, State, and Year are age, state, and time fixed effects. Finally, X is a vector of socioeconomic and demographic individual level controls, like marital status. β_1 is the differences-in-differences estimate of the effect of the mandate on the likelihood of having either private insurance or being uninsured.

Table 1 shows that the 19-25 year old treatment group and the 22-25 year old treatment group compared to the 27-29 year old control group only statistically differ by age, marital status, education, income, and insurance access (in terms of the right hand side variables). Since these variables are not exogenous to individual actions, I present separate specifications for both treatment groups and account for this endogeneity by dropping marital status in one specification, performing the analysis on an unmarried sub sample, performing the analysis on a high school or higher educated sub sample, and not controlling for income in a final specification.

Two Stage Residual Inclusion

$$Insured_{iats} = \beta_0 + \beta_1(Treat_a x Post_t) + \beta_2 Treat_a + \beta_3 Post_t + \beta_4 Age_a + \beta_5 Year_t + \beta_6 State_s$$
$$+ \beta_7 X_{iast} + \varepsilon_{at}$$

$$Labor\ Market\ Outcome_{iats} = \beta_0 + \beta_1 Insured_{iats} + \beta_2 R1_{iats} + \beta_3 Treat_a +$$
$$\beta_4 Post_t + \beta_5 Age_a + \beta_5 Year_t + \beta_6 State_s + \beta_7 X_{iast} + \varepsilon_{at}$$

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6 Results

Logit with controls and year and state fixed effects gives results that are consistent with the recent literature. Table 4 reports estimates from the first stage DD model of the effect of the dependent coverage mandate on likelihood of having any kind of insurance. The federal mandate is statistically significantly correlated with increased private insurance coverage by 5.2-5.7 percentage points.

The second stage is a multinomial logistic regression which predicts the effect of insurance coverage on the probability of "not working" (defined as not being in the labor force or being unemployed), being employed full time, being employed part time, and being self employed. Using naïve regressions subjects the results to reverse causality here, since labor market decisions are interdependent with insurance access. Accordingly, it is not novel that all of the coefficients are extremely statistically significant, with having insurance being negatively correlated with not working being part time employed, and being self employed. Having insurance is also positively correlated with full time employment. Findings from previous literature have supported these relationships and therefore these analyses are not presented.

Table 5 reports estimates from the second stage control function model which estimates the effect of having insurance coverage on the likelihood of four distinct employment outcomes. Row 1 of Table 5 shows that given a treatment group of 22-25 year olds, the localized average treatment effect (LATE) of insurance access is a 9.1 (90 %) percentage point increase in the probability of not working, a 16.3 (68 %) percentage point increase in the probability of working part time, a 28.4 (45%) percentage point decrease in the probability of working full time, and a 3 (75 %) percentage point increase in the probability of being self employed. All of these effects are statistically significant at the 1 % significance level.

The Endogeneity of Marital Status Marital Status is an endogenous variable in the first and second stage of the analysis. Marital status and insurance status are jointly determined. Being married and one's age (their treatment status) is strongly correlated. Also, the

covariates that determine labor supply also determine marital status. Because the treatment group is younger than the control group, those individuals will be less likely to be married and perhaps less likely to have access to spousal insurance, among other determinants of their labor supply.

The Endogeneity of Income Level Income level is also an endogenous variable as income and insurance status are jointly determined. As discussed in the literature on the "medicaid notch", income level and eligibility for medicaid are correlated. There is the potential for individuals to under report their income or work less to have a lower income in order to maintain eligibility for medicaid. As the main explanatory variable used in my analysis is having any kind of insurance, the "medicaid notch" phenomenon is potentially present. Also, the covariates that determine labor supply also determine income level.

For the reasons mentioned above, I present two different specifications where marital status or income level is removed from the analysis (Rows 2 and 3 respectively). Using these specifications, the sign and significance of the effect remains the same. However the absolute value of the effects do increase in magnitude for all the outcomes except for the likelihood of being self employed. This suggests that there is correlation between marital status and income level and having insurance. This suggests that the results are either biased slightly upward or downward. However, the signs and significance remain the same, so the results reported in Row 1 are consistent.

These results provide evidence for the "entrepreneurship lock" effect of insurance. Now that individuals have access to insurance through their parents, they can choose to start their own business and no longer have to depend on settling for a job they might otherwise not have taken, had they not needed insurance.

In Row 6 of Table 6 the same analysis is performed using a 19-25 year old treatment group, the sign and significance of the effects are the same as they were for the effects discussed previously. This supports the consistency of the results.

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7 Conclusion

This paper makes two significant contributions to the literature. Having noted that several papers have used the CPS March Supplement to study the effects of the federal mandate on coverage, none have used data for 5 completely treated reference years (2011-2015). Second, no other papers have used a control function regression to estimate the causal impact of private insurance coverage on labor market outcomes. Taking the whole body of literature on the federal mandate into account, it is clear that this policy's impacts have been far reaching. As intended, the proportion of young adults with insurance coverage has increased. As a result of gaining access to health insurance, among 22-29 year olds, there has been an increase in part time work and self employment. The results show substitution away from full time work. The first order effects are in line with the administration's overall goal for health insurance reform. As to the labor market implications, there is room to further explore the short and long run welfare and efficiency impacts of this consequential piece of American social policy.

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Tables

Table 1: Treatments vs Control Demographic Variable Means

Table 1. Independent Variable Descriptive Statistics from 2006-2015 March CPS

	Sample of ages 19-25	Sample of ages 22-25	Sample of ages 26-29
insured	0.699	0.692	0.728
female	0.474	0.472	0.459
marry	0.144	0.193	0.402
black	0.135	0.134	0.133
asian	0.038	0.043	0.055
hispanic	0.197	0.194	0.195
Under 50% of FPL	0.037	0.036	0.027
50-74% of FPL	0.046	0.043	0.035
75-99% of FPL	0.049	0.047	0.040
100-124% of FPL	0.057	0.056	0.045
125-149% of FPL	0.052	0.053	0.046
150-174% of FPL	0.055	0.055	0.050
175-199% of FPL	0.102	0.106	0.100
200-249% of FPL	0.090	0.095	0.094
250-299% of FPL	0.076	0.077	0.084
>300% of FPL	0.371	0.372	0.440
2 person HH	0.183	0.204	0.236
3 person HH	0.198	0.193	0.201
4 person HH	0.171	0.147	0.146
5 or more person HH	0.148	0.112	0.097
Years of Education	9.902	10.247	10.624
Midwest	0.229	0.223	0.220
South	0.360	0.364	0.368
West	0.240	0.240	0.240
Not Working Rate	0.120	0.105	0.082
Part Time Work Rate	0.350	0.273	0.179
Full Time Work Rate	0.501	0.589	0.693
Self Employed	0.029	0.032	0.046
Weekly Hours Worked	31.487	33.994	37.971

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Table 2: Demographic Variable Means by Sample

Independent Variable Descriptive Statistics from 2006-2015 March CPS

	Sample of ages 22-29	Ages 22-29, unmarried	Ages 22-29, HS grad or higher	Sample of ages 19-29
insured	0.696	0.667	0.725	0.698
marry	0.301	0.000	0.292	0.288
black	0.123	0.139	0.123	0.121
asian	0.051	0.055	0.054	0.045
hispanic	0.226	0.215	0.194	0.229
Under 50% of FPL	0.036	0.038	0.032	0.038
50-74% of FPL	0.044	0.045	0.039	0.047
75-99% of FPL	0.050	0.050	0.046	0.051
100-124% of FPL	0.057	0.057	0.054	0.057
125-149% of FPL	0.056	0.056	0.052	0.054
150-174% of FPL	0.057	0.057	0.056	0.056
175-199% of FPL	0.109	0.106	0.109	0.105
200-249% of FPL	0.097	0.095	0.099	0.093
250-299% of FPL	0.079	0.074	0.082	0.078
>300% of FPL	0.354	0.353	0.379	0.359
2 person HH	0.197	0.152	0.199	0.174
3 person HH	0.194	0.166	0.193	0.193
4 person HH	0.154	0.140	0.151	0.183
5 or more person HH	0.129	0.137	0.121	0.172
Years of Education	10.145	10.228	10.624	9.805
Midwest	0.228	0.226	0.233	0.233
South	0.317	0.311	0.313	0.310
West	0.281	0.274	0.277	0.281
female			0.504	0.486

Table 3: Outcome Variable Means by Sample

Dependent Variable Descriptive Statistics from 2006-2015 March CPS

	Sample of ages 22-29	Ages 22-29, unmarried	Ages 22-29, HS grad or higher	Sample of ages 19-29
Not Working Rate	0.100	0.111	0.092	0.110
Part Time Work Rate	0.239	0.248	0.241	0.282
Full Time Work Rate	0.620	0.605	0.626	0.568
Weekly Hours Worked	35.558	34.798	35.684	34.136
Self Employed	0.042	0.036	0.041	0.040

Table 4: First Stage

First Stage: Effect of Eligibility for Mandate on Insurance Coverage

	Sample of ages 22-29	Ages 22-29 excl. marital status	Ages 22-29 excl. income	Ages 22-29, unmarried	Ages 22-29, HS grad or higher	Sample of ages 19-29
treat*post	0.052***	0.053***	0.053***	0.059***	0.053***	0.057***
	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.006)

Robust standard errors (in parenthesis) are clustered at the state level, contr. for age and time fixed effects. March suppl. final weights. Significance: * 10% ** 5% *** 1%

Table 5: Second Stage

Second Stage: Effect of Insurance Coverage on Labor Supply

	Not working	Part time	Full time	Self employed
Sample of	0.091***	0.163***	-0.284***	0.030***
ages 22-29	(0.020)	(0.032)	(0.038)	(0.010)
Ages 22-29	0.113***	0.232***	-0.375***	0.030***
excl. marital status	(0.021)	(0.029)	(0.031)	(0.010)
Ages 22-29	0.114***	0.235***	-0.375***	0.026**
excl. income	(0.021)	(0.030)	(0.032)	(0.010)
Ages 22-29,	0.043*	0.299***	-0.370***	0.028**
unmarried	(0.026)	(0.032)	(0.031)	(0.013)
Ages 22-29,	0.074***	0.132***	-0.240***	0.034***
HS grad or higher	(0.022)	(0.037)	(0.041)	(0.009)
Sample of	0.065***	0.215***	-0.308***	0.028***
ages 19-29	(0.023)	(0.029)	(0.040)	(0.009)

Robust standard errors (in parenthesis) are clustered at the state level, contr. for age and time fixed effects. March suppl. final weights. Significance: * 10% ** 5% *** 1%

Figures

Figure 1: Health Insurance Coverage Rate by Age (2010)

Source: MEPS 2010

Insured Rates in Sample

Predicted Not Working Rate

Predicted Part Time Rate

Predicted Full Time Rate

Y-axis: Pr(Laborforcestatus4==Full_Time)

X-axis: 0, 1

Endogenous Result

Predicted Self Employed Rate

Endogenous Result