The Impact of Dependent Coverage Legislation on the Job Choices of Young Adults

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Abstract

One of the largest groups of individuals without health insurance is young adults. Between 2003 and 2009, 23 states passed legislation that required health insurance policies with dependent coverage to cover children young adults. Because these laws give young adults a non-employment source of affordable health insurance, they reduce the need for health insurance coverage from a full-time job. I present a model to illustrate that these laws reduce the value of full-time work. Then, I use a quasi-experimental strategy to study how these mandates affect rates of employment, choice of full-time versus part-time work, choice of hours worked, and choice of industry for young adults. Using the Outgoing Rotation Groups of the Current Population Survey from 2001-2009, I find that dependent coverage mandates decreased full-time employment by 3%, increased part-time employment of young adults by 2.4%, and increase the likelihood that an individual chooses to work in industries that do not typically offer health insurance.

Keywords Extended Dependent Coverage, Health Insurance, Hours of Work, Part-Time Work, Industry Choice

JEL Classification I13, J24

1. Introduction

Recent health insurance policy has targeted young adults in an attempt to increase their coverage rates. While health insurance coverage rates for children under age 18 and adults over age 28 have increased roughly 15% since the early 1980's, coverage rates have remained roughly constant over the same period individuals in their early twenties. Just prior to the passage of the Patient Protection and Affordable Care Act (PPACA) in 2009, young adults comprised nearly one-third of the uninsured population. One way state and federal government has attempted to increase coverage rates for young adults is by passing extended coverage laws.

In the absence of extended coverage laws, most private insurers drop dependents at age 19. Extended coverage laws were legislated in 23 states between 2003 and 2009, and a similar

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federal mandate was established by the Patient Protection and Affordable Care Act (PPACA) in 2010. These laws require private insurance plans that offer dependent coverage to extend benefits to young adult children up to ages 24-26, depending on the state, and often with some additional conditions, for example that they are unmarried or do not have children. These laws allow young adults with privately-insured parents to maintain coverage until they are 24-26.

A side effect of such laws is that they may reduce the value young adults attach to employer provided health insurance (EPHI) coverage. Since health insurance is most often provided to full-time workers, extended coverage laws may lead young adults to choose part-time work, self-employment, or no work. Large firms are more likely to offer health insurance as well, compared to small firms, so having an outside source of health insurance may make working for smaller firms more attractive, potentially altering the size and industry of a young adult's employer.

Previous work on the impact of health insurance coverage on possible labor market frictions has focused on older adults. Researchers have evaluated the extent to which EPHI discourages people from switching jobs or retiring. One of my major contributions is to be the first to study these outcomes for young adults, who are making career investments which impact their future human capital accumulation. Young adults are likely to value health insurance differently because they are generally healthier and have lower risks of catastrophic medical expenditure. Thus, it is possible that, while the literature shows that older adults change their labor market behavior in response to having an outside source of coverage, young adults may not.

I also use variation in coverage that is more likely to be exogenous. Previous work has used variation in spousal health insurance, retiree health insurance, and Medicaid eligibility to study the labor market frictions that arise from the link between employment and health insurance coverage. Spousal insurance may be endogenous if couples determine jobs jointly or there is assortative mating. Retiree health insurance may be endogenous if individuals who wish to retire early preferentially choose jobs that offer retiree health insurance. State extended coverage laws vary both in timing of implementation and in maximum age which allows for a variety of potential control groups for difference-in-difference analysis. These laws also impact

parent's health insurance plans and parent's insurance characteristics may be exogenous to their children.

To study the impact of extended coverage laws, I collect information on the dates when each state implemented dependent health insurance mandates from state legislature websites. I use the Outgoing Rotation Groups (ORG) of the Current Population Survey (CPS) to measure changes in employment outcomes for young adults. One potential issue with most data sets, including the ORG, is that data is not available for young adults and their parents unless they live in the same household. Since this selection is likely to be undesirable, I choose not to use any information on parents' employment characteristics, like whether they have employer provided health insurance. Moreover, the Employee Retirement Income Security Act (ERISA) exempts self-insured firms from state health insurance legislation. Thus, even if we knew that a parent has EPHI, in would not imply eligibility for their young adult children. For these reasons my analysis uses data on all young adults, regardless of their parents' health insurance status. Because not all young adults in my sample are necessarily impacted by the policy change, my intent-to-treat estimates yield a lower bound on the impact of having an outside source of health insurance coverage for all young adults.

Since extended coverage laws vary in timing and in the maximum age covered, I use two different comparison groups to measure the impact of mandated coverage on employment characteristics: the same aged individuals in states without mandates and slightly older individuals in states with mandates. I also combine both groups in a triple difference specification. In all three specifications I find that mandates increase part-time employment and decrease full-time employment. Using a quantile difference-in-difference (QDID) strategy, I show specifically that some individuals close to the full-time/part-time hours cutoff transitioned to part-time work. This suggests that constrained individuals optimally chose more leisure now that they could receive health insurance benefits at lower hours worked. I also show that individuals impacted by mandates choose to work in smaller firms and in industries less likely to offer health insurance, making different job choices that may involve better matches and/or increased human capital accumulation.

2. Related Literature

Several strands of literature are relevant to my analysis. These include papers analyzing the degree to which health insurance causes labor market frictions. They find that outside access to health insurance reduces labor supply. I expand on this literature by bringing using new and valuable variation in outside health insurance coverage, and by studying a different population we may expect to value health insurance differently than previous studies that focus on older adults. Another set of papers analyses the impact of extended dependent coverage laws on the health insurance coverage rate of young adults. This literature shows increases in dependent coverage among young adults from state laws, and generally larger increases from the PPACA. However, this is the first paper I know of that studies the impact of these laws on labor market outcomes.

2.1 Health Insurance and Labor Supply

Numerous papers analyze how health insurance impacts labor supply. The underlying theme is that health insurance ties individuals to particular jobs and therefore limits labor market mobility. To measure the impact on labor market outcomes, researchers have compared groups with and without non-employment sources of insurance. The literature has tended to focus on three groups, with correspondingly different sources of non-employment coverage: adults close to retirement age (who may have retiree health insurance), married females (who may have spousal coverage), and low-income unmarried mothers (who may have access to Medicaid). My work uses a new source of outside health insurance coverage, extended dependent coverage laws, which may offer more credible identification, and studies young adults, who may have different responses to health insurance provision.

How access to retiree health insurance impacts the timing of retirement has been studied by many papers. Using various techniques, the literature has found post-retirement health insurance has been found to increase the retirement rate by 30-80%. Karoly and Ragowski (1994) use the SIPP to show that access to health insurance from an outside source increases the probability of retiring between ages 55-64 by 50%. Gruber and Madrian (1995) use cross-state variation in the implementation of continuation of coverage laws and find that being able to purchase employer provided health insurance after retirement increases retirement hazard by 20% among adults aged 55-64. Rust and Phelan (1997) estimate a dynamic programming model

and find that having access to retiree health insurance increases the likelihood of retiring by 10-20%. Blau and Gilleskie (2001) use data from the Health and Retirement Study, with detailed information on EPHI that allows them to distinguish among many cost features of health insurance. They find that having access to insurance for which employers bear costs increases the retirement probability by 7.5 percentage points. Blau and Gilleskie (2006) extends this model to incorporate joint decisions of married households and finds more modest effects of outside health insurance on retirement. While the magnitude of the results varies, in general, the link between health insurance and employment is found to distort labor supply choices. Thus reducing the link between employment and health insurance for this population should increase utility.

Olson (1998), Buchmeuller and Valletta (1999), and Wellington and Cobb-Clark (2000) use reduced form models that treat access to spousal health insurance as exogenous. Olsen (1998) finds that access to spousal insurance decreases labor force participation of married women by 10 percentage points. Buchmeuller and Valletta (1999) use similar methods and estimate a reduction of 6-12%. Wellington and Cobb-Clark (2000) estimate the impact of spousal insurance for both spouses simultaneously, and they estimate a 19.5 percentage point reduction in labor force participation for either spouse.

Other work uses instruments to account for the potential endogeneity of spousal health insurance. If couples make joint employment decisions or match assortatively, then one spouse's health insurance status may not be exogenous. Olsen (2000) and Honig and Dushi (2005) both use husband's (wives) education and age as instruments since they should impact the husband's (wives) employer provided health insurance availability but not the wives. Royalty and Abraham (2006) accounts for the potential endogeneity of spousal health insurance using another fringe benefit, paid sick days, which may not be correlated with spousal characteristics. Each of these papers finds that access to spousal health insurance reduces full-time work and labor force participation. While this work shows the importance of health insurance in making labor supply decisions for this population, older adults may value health insurance differently than young adults.

The literature on poor single females identifies labor supply effects by exploiting variation in the ties between Medicaid and welfare receipt. This variation allows low income

single mothers to maintain Medicaid eligibility at higher levels of earnings. Yelowitz (1995) uses this variation in the timing of Medicaid expansions to show that they led to a small increase in labor force participation. Several other papers show no or small statistically insignificant effects of Medicaid expansions on single mother's labor force participation (Yacizi 1997; Montgomery and Navin 2000; Meyer and Rosenbaum 2000; Ham and Shore-Sheppard 2003; Tomohara and Lee 2006)

My work adds to the literature by studying a new group of individuals who may respond to health insurance availability differently. Young adults may have a lower valuation of health insurance because they are healthier than older individuals. As single adults, they may also have less elastic labor supply, so their labor supply may be less responsive to changes in benefits than married individuals or individuals close to retirement. As I discuss later, I also employ a new identification strategy that may not require as strong assumptions about exogeneity of other health insurance availability as in much of the previous literature. I also study a key side effect of a new national policy already in effect from the PPACA, and previous estimates on the impact of this policy on labor supply may not be as close as those obtained from similar state laws.

2.2 Dependent Coverage Mandates

My work is also related to a new literature on the impact of dependent coverage mandates. Recently there has been a great deal of research has analyzed the extended dependent coverage provision of the PPACA. The dependent health insurance mandate was one of the first provisions of the PPACA to be implemented. Several papers study both the PPACA dependent care mandate and the mandates passed by individual states to see how these mandates impact health insurance coverage of young adults.

Levine et al. (2011) use difference-in-difference methods to show that state dependent coverage mandates increase the health insurance coverage rates among young adults by 3.3 percentage points. Monheit et al. (2011) study the same expansions using additional years of data, and focus on rates of dependent health insurance rather than total health insurance. The latter finds that state dependent coverage mandates increase dependent insurance among young adults, and that these increases in coverage are offset by decreases in young adults covered by health insurance in their own name.

Antwi et al. (2012) study whether the PPACA increased coverage of young adults by comparing affected individuals aged 19-25 to individuals just above or below the age cut-off using the Survey of Income and Program Participation (SIPP). They find that the PPACA increased insurance coverage rose by 3.2 percentage points among the targeted group. Cantor et al. (2012) expand on their work by including more detailed controls for state dependent mandate laws while studying the impact of the PPACA on coverage. They confirm that the PPACA increased coverage overall for young adults by 3.5 percentage points. The analyses above show that extended dependent coverage laws lead to the young adult population taking up benefits. My work extends this literature in an important way by analyzing changes in labor market decisions for individuals who gain this new outside source of health insurance coverage.

3. Model

I present a stylized model of labor supply to explain how employment and work hours are likely to change in response to dependent health insurance coverage mandates. Dependent coverage mandates change the individual's budget constraint and potentially optimal labor supply. I do not treat the mandate as generating an income effect by providing free health insurance. Rather, the mandate provides a new source of EPHI and eliminates the need to take a job that offers EPHI.

Individuals in the model decide whether to purchase health insurance benefits and how many hours to work. Individuals get utility from consumption C, leisure L, and having health insurance HI.

$$U(C, L, HI) = f(C, L) + \alpha\, HI$$

I do not specify the exact form of preferences between consumption and leisure but assume that preferences are strictly convex and preferences for leisure vary across individuals. I assume that health insurance is a single uniform good, and utility from health insurance is linearly additive.[1] α is a parameter that may vary across individuals and represents how much the individual values coverage.

[1] This assumption follows Dey (2005) and others in the health insurance literature. It is equivalent to saying that health insurance does not affect the marginal substitution between consumption and leisure. This will be violated under certain preferences over risk since health insurance decreases the riskiness of consumption. While this simplification is useful for graphical analysis, relaxing it is not likely to change my main findings.

Employers are the primary providers of health insurance to prime-aged individuals. Employers enjoy two major cost advantages relative to individuals who may try to purchase insurance on their own, namely the tax-preferred treatment of non-wage compensation and risk pooling. Employers generally provide health insurance only to full-time employees. Because health insurance is a fixed cost, it is cost-effective to hire fewer full-time workers than a larger number of part-time workers. Non-discrimination laws also require companies that offer EPHI to make it available to all employees who work more than half-time. Because very few employers offer part-time positions with EPHI, I assume that individuals must work full-time in order to get this benefit.[2]

I assume labor markets are perfectly competitive, so individuals earn total compensation equal to their productivity. Suppose we compare two individuals with similar productivities, but one purchases health insurance privately and one receives it from his employer. Their total compensation package must satisfy the following equation.

$$w_{no\ insurance}L = w_{insurance}L - cost_{EPHI}$$

The individual who buys insurance privately will receive additional salary equal to the cost of EPHI. When this individual purchases his insurance on the private market his non-insurance consumption is equal to the other individual's consumption minus the difference in insurance costs. Since private insurance is more expensive and not tax-preferred, the private purchaser has lower non-insurance consumption.

For simplicity, my graphical analysis will show the impact of the mandates on individuals whose value of health insurance α is high enough that they would purchase it in the private market if they do not receive EPHI. [3] The resulting labor supply problem is shown below.

$$max_{C,L}\ f(C,L)$$
$$st.\ C + w_i L = 80w_i + Nonlabor\ Income - cost_{HI}$$

[2] In my data only 14% of part-time workers (working less than 35 hours per week) received health insurance through their employer.

[3] This simplifies the graphical analysis by reducing the dimensionality of the choice problem. However the main implications will also hold for individuals who value health insurance from employers more than its cost, but not enough to purchase on the private market. My model predicts individuals who do not value EPHI at its cost will not work in jobs with EPHI, and so will not change their behavior in response to a mandate.

I assume wages to be equal for full-time or part-time work for simplicity. Because the cost of EPHI is lower than the cost of private insurance and individuals value health insurance at its private market value, it is always optimal for individuals working full-time to take up health insurance benefits. Since EPHI is only available for full-time work, it creates a kink in the budget constraint. Choosing to work slightly less than full-time decreases wage income slightly but increases $cost_{HI}$ by the difference between privately purchased insurance and EPHI.

Coverage mandates will impact my model by giving all affected individuals access to these cost savings. Now instead of having to work for an employer that offers health insurance, an individual can purchase EPHI through their parents' plans. This effectively shifts up the budget constraint for part-time work by reducing the $cost_{HI}$ term and eliminates the kink in the budget constraint.

Figures 1-6 depict the optimal labor supply decision for individuals who have different relative values of leisure and who live in states with or without dependent care mandates. Figure 1 depicts the budget constraints for full-time and part-time work. The individual's budget constraint is the outer envelope of these two lines. In Figure 1, an individual with a high value of leisure optimally chooses to work full-time to receive EPHI cost benefits. However, he would prefer to work less if his budget set were not distorted. In Figure 2 the same individual can now receive EPHI for part-time work because of health insurance mandates. Now that he is not subject to the distortion, he optimally chooses to not work.

Figures 3 and 4 show the response of an individual with a moderate value of leisure. Now, the individual goes from optimally locating at the kink of the budget constraint in Figure 3, when EPHI requires full-time work, to choosing part-time work in Figure 4. The constraint between EPHI and full-time work is less binding now than for individuals with a high value of leisure. This is evident in the graph because the choice of hours changes less and because the marginal rate of substitution at the kink is smaller.

Figures 5 and 6 show how the budget constraint affects someone with a low value of leisure. This individual optimally chooses to work more hours than the cutoff between full-time and part-time work in both situations. Since his choices are not distorted by the nonlinearity, he does not benefit from these mandates.

These figures show the patterns of substitution I expect in a population with varying preferences for leisure. Some individuals will not change their behavior in response to the mandates. Some individuals who optimally chose the smallest hours worked possible to obtain EPHI will substitute to part-time work, and others will substitute towards no work. My empirical strategy will show that this pattern of substitution occurs in response to dependent care mandates.

My static model does not capture some additional frictions in the real world. Forward-looking individuals may not give up jobs that offer EPHI even with mandates in place, in anticipation of losing dependent care as they age. I also ignore general equilibrium effects related to the demand for labor. I believe these effects to be small since dependent care mandates impact a very small portion of the population, represented either in terms of workers or covered individuals, and I am looking at a relatively short-time frame after many of these laws are passed.

4. Data

4.1 Health Insurance Mandates

Table 1 below shows the 26 states that passed coverage mandates that cover non-students over age 21, the dates the mandates were implemented, and some key traits of the laws. The laws vary based on the maximum age allowed for dependent coverage (ranging between 23 and 30, with most between 24 and 26), whether the individual needs to be unmarried (yes, in most states), and whether the individual can have their own children (allowed in most states). I obtained dates on the 13 extended coverage laws implemented before 2008 from Levine et al. (2011), who studied their impact on coverage. I added dates for the additional 13 states that passed mandates after 2008 by searching state legislative histories.

[Table 1 about here]

Many states, including some that did not recently pass broader mandates, have long standing laws that allow for dependent coverage of university students to be extended up to age 22 or 23 (and I consequently omit students from my analysis). Because dependent benefits for children over age 18 are not tax exempt and require a substantial administrative cost, virtually all

insurers cancel dependent coverage at age 19 (Levine et al 2011).

4.2 Labor Supply

I obtained information on labor market outcomes from the Outgoing Rotation Group (ORG) of the CPS because it offers a large sample size and data on job choices. I use data between 2001 and 2009 because my state law changes start in late 2003 and end with the implementation of the federal Affordable Care Act in 2010.[4]

I begin with 356,350 observations aged 22-28 in the ORG between 2001 and 2009.[5] I drop 135,955 married individuals, and 26,556 additional individuals with dependents so that every observation is eligible for dependent coverage in every state that passed a mandate. I drop 30,141 students because most states allow college students to remain on their parents insurance until age 22 or 23. Students also have much different labor market incentives than non-students, so they should not be included in the comparison group. I choose to begin my sample at age 22, when most students have graduated or left college, in order to minimize this issue.

In total I have 163,698 observations after applying my selection rules. As long as individuals do not marry, have children, or attend school differentially in response to health insurance mandates, these rules will not impact the validity of my results.[6] To examine this, Table 2 compares the likelihood of being married, having a dependent, and being a student in the year before and year after a mandate is passed. None of the values in the table are statistically different between individuals covered by mandates and individuals not covered by mandates.

[Table 2 about here]

5. Estimation Strategy and Results

5.1 Hours Worked

[4] I have also estimated results where I begin using data as early as 2000. I choose 2003 as the initial date because the majority of the laws are passed after 2005. This choice does not impact the results. I do not use the Affordable Care Act as part of my identification because the implementation of the laws was clearly anticipated by insurers. There was a clear movement by insurers to expand dependent coverage between passage of the law and implementation of the mandate.

[5] I choose 28 as the maximum age because most extended coverage laws have a maximum age between 24-26. Individuals just over the maximum end of that range should serve as a good control group for individuals impacted by the laws. Lowering or increasing the maximum age does not substantively change my results.

[6] For example, dependent care mandates might induce some people to exit college, which would lead to biased results if I do account for this selection.

I study the choice of hours worked using two outcomes, continuous choice of hours and a discrete choice of full-time, part-time, and no work. In order to study the impact of dependent care mandates on choice of hours worked I use several quasi-experimental strategies that take advantage of the unique variation in passage of dependent care mandates. These laws vary over time, across states, and by the maximum age allowed. This allows for both difference-in-difference (DD) and triple differences (DDD) specifications. I can compare similarly aged individuals in states that never pass mandates to states that do pass mandates (state-time DD), individuals in states that pass mandates but just above and below the age cutoff (age-time DD), and combine both approaches for a triple difference (DDD) strategy.

I estimate the equation below for each of the quasi-experimental strategies. $Mandate_{ast}$ is an indicator for whether an individual of age *a*, in state *s*, and time *t* is covered by mandated dependent coverage. The unemployment rate in state *s* and year *t* is included to control for broad economic factors that may impact the employment of young adults.

$$Hours\ Worked_{iast} = \gamma Legislation_{ast} + \alpha Unemployment_{st} + \lambda_t + \mu_s + \nu_a + \epsilon_{iast}$$

For the "age-year" DD model I only include data for states that pass mandates between 2003 and 2009 and compare exposure to the mandates by age and year. For the "state-year" DD model I only include individuals under the age of 25, since that is the most common age cutoff for mandated coverage, and I compare exposure by state and year. When performing the DDD model I also include the full set of second-order effects (state*year, state*age, year*age), but I reduce the age dummies to "younger than 24" and "older than 24" binary variables.[7]

In Table 3 each of the three quasi-experimental strategies shows that dependent health insurance mandates decrease hours worked. Each of the strategies results in estimates that are statistically significant and suggest a decrease in average hours worked of 1.4 and 1.7 hours per week. The lowest estimate, of a 1.36 hour decline, results from the DDD approach.

[Table 3 about here]

[7] While the point estimates do not change much for the model with the full set of age dummies and all interactions, I lose statistical power and do not obtain statistically significant results.

I also study how individuals decide between working full-time, part-time, or not working. It is generally thought that this discrete choice model may better represent of workers options than a fully continuous hours of work model. I estimate linear probability models for either full-time work or part-time work, so my coefficients are interpreted as percentage point changes in the outcome as a result of dependent care mandates.

I estimate the same three "difference-in-difference" models with dummies with full-time or part-time work as outcomes. The estimation equation is shown below.

$$Full\ time(Part\ time)\ Work_{iast} = \gamma Mandate_{ast} + \alpha Unemployment_{st} + \lambda_t + \mu_s + \nu_a + \epsilon_{iast}$$

The results from the discrete choice models are similar for the three "quasi-experimental" strategies, with state*year variation for everyone of the same ages, age*year variation for individuals in states that pass extended coverage laws, or age*state*year variation. Dependent health insurance coverage mandates reduce full-time work among affected young adults by between 3 and 4.6 percentage points. These mandates also increase part-time work by between 2.4 and 3.2 percentage points. Not working necessarily increases by the difference of the above models; not working increases by between 0.6 and 1.4 percentage points.

[Table 4 about here]

In order to study how mandates impact the entire distribution of hours worked I also estimate a series of quantile differences-in-differences (QDID) models following Athey and Imbens (2006). My estimation strategies presented above are informative about the average change in hours worked and the pattern of substitution between full-time work, part-time work, and unemployment. However, these strategies ignore some information, with the work hours estimates overlooking unequal responses across the hours distribution and the discrete choice specifications overlooking the actual hours response. My model predicts that workers who choose to work well above the full-time work cutoff should not change their hours worked, and some workers close to the full-time/part-time hours worked cutoff will substitute to lower hours worked. A QDID model can test both of these predictions and show where in the distribution of part-time hours the full-time cutoff workers relocate.

A QDID estimator finds the impact of the treatment on quantile q of the distribution by

subtracting the change in quantile q in the treatment from the change in quantile q in the control group.[8] Median regression is common in the literature using the median, but the same method can be applied to any quantile. (Meyer, Viscusi, and Durbin 1995; Poterba, Venti, and Wise 1995) By using the QDID framework for several quantiles I can study the impact of mandates across the hours worked distribution.

Initially I simplify the problem in order to motivate the QDID analysis graphically. I limit the years and states in my sample in order to mimic a traditional pre and post DID estimation. For Figures 7-8b I use data from two years in my sample, 2005 and 2007, to construct the pre- and post-treatment hours worked distributions. I use the 9 states that pass mandates in 2006 as "treatment" states, and the 22 states that never pass mandates in my sample as "control" states. In figure 7 I show the distribution of hours worked in control states in 2005 and 2007. Note the large masses of people who report 0 and 40 hours worked per week. Over the two year period the distribution of hours worked shifted to the right, so more individuals were employed more worked full-time hours. For each quantile q the difference between the two distribution functions at that quantile is added to the same quantile in the 2005 treatment distribution to create the 2007 mandate counterfactual distribution, if the mandate had not been instituted in the treatment states, shown in Figure 8. The impact of the dependent health insurance mandate at each quantile is the difference between the counterfactual distribution and the actual distribution. Figure 8 shows that the distributions are similar for quantiles above 40 hours worked and the mandates shift the hours worked distribution to the left for quantiles below 40 hours worked. This is consistent with the predictions of my model; individuals close to the full-time hours cut-off shift to part-time employment.

[Figures 7-8b about here]

In table 5 below I present the QDID estimation for selected quantiles. I estimate the equation below for several deciles, listed in table 5.

$$Hours\ Worked\ below\ quantile\ q_{iast} = \gamma Legislation_{ast} + \lambda_t + \mu_s + \nu_a + \epsilon_{iast}$$

[8] I have to make an additional assumption in order to identify the appropriate effects for a QDID estimator. For identification I assume that there are no different trends between the control and treatment groups at each quantile q, rather than only no difference on average. This is a stronger assumption than the standard DID assumption, but is useful to see changes from health insurance mandates across the hours worked distribution.

The results in the table above confirm the patterns shown in the figures above. For quantiles of work associated with full-time work the mandate has no impact on hours worked. For lower quantiles related to part-time work or close to the full-time/part-time work cut-off the impact of the mandate is to work between 8-11 fewer hours per week.

[Table 5 about here]

5.2 Job Choice

Dependent health insurance mandates could also lead young adults to choose a job in industries or firms that are less likely to offer health insurance. Smaller firms are less likely to offer health insurance, as are certain industries like construction and auto repair, compared to office work or manufacturing. In those cases having an outside source of health insurance through dependent coverage should increase the value of working for such firms.

The firm-size variable in the ORG is categorical. I estimate a linear probability model for four firm-size categories: less than 10 employees, 10-99 employees, 100-499 employees, and 499+ employees.[9] Table 6 below shows that mandates induce individuals to work in smaller firms.

[Table 6 about here]

The point estimates have similar patterns across specifications, although the state-year DD results are not statistically significant. Health insurance mandates increase the probability that young adults work in firms with 10-99 employees by 1.1 to 2.1 percentage points and reduce the probability that they work in firms with 100-499 employees almost 1 percentage point, and the probability young adults work in firms with over 500 employees by 1.5-2.1 percentage points.

I use the NBER provided 2-digit industry codes included in the ORG to determine whether individuals with outside health insurance are more likely to be employed in low-coverage industries. To classify industries according to their EPHI coverage, I use the full ORG sample between 2003 and 2009 and show the percentage of workers in each industry who are

[9] I combine the 10-24 and 24-99 employee categories, and the 499-999 employee and 999+ employee categories. These industry groups have similar health insurance offers in my data set. Using all six categories leads to similar results.

offered employer provided health insurance. Industry codes related to government and manufacturing have high rates of workers who being offered health insurance and industries like construction and agriculture have low rates.

[Table 7 about here]

In order to see how insurance mandates impact choice of industry by 2-industry groups I use a linear probability model with a binary outcome for whether an individual is employed in a high-insurance offer industry or a low-insurance offer industry. Since it is not clear what the appropriate cutoff point is I present results for both the top half and top quarter of health insurance industries.[10] I limit my sample to individuals who are employed so as to focus on the job choice margin rather than the employment margin.

Table 8 shows that extended coverage laws lead young adults to choose jobs in industries that are less likely to offer health insurance. Individuals are 1.6 to 2.6 percentage points less likely to work in the top half of industries as ranked by health insurance coverage, and between 2.6 and 3.4 percentage points less likely to work in the top quarter of industries.

[Table 8 and 9 about here]

Table 9 shows results from estimation where the percentage of EPHI coverage in each industry is the outcome variable. It also shows that coverage requirements induce individuals to work in industries that are less likely to offer health insurance, giving another way to see the magnitude of the effect. These coefficients should be interpreted as individuals impacted my dependent care mandates work in industries that where between 2.6 and 4 percentage points fewer workers receive employer provided health insurance offers.

6. Discussion

Extended coverage laws have been a major part of the government's attempts to increase the rate of insurance among young adults. It is one of the first provisions of the PPACA to be implemented, and similar laws have recently been passed in over half the states. By giving young adults an outside source of health insurance I show how mandates impact the job market choices of young adults.

[10] I choose the cutoff such that half (or quarter) of the industries are in each category of the outcome variable. Setting the cutoff such that half (or quarter) of the workers yields results that are not substantively different.

I show that having access to outside health insurance reduces hours worked of young adults by 1.4 hours per week. My quantile difference-in-difference analysis shows that most of this reduction comes from full-time workers at the bottom end of the hours distribution classified as "full-time" work (35-40 hours) switching to part-time work. This is consistent with some workers who were constrained before the mandates and worked more hours than would otherwise be utility maximizing in order to obtain cheaper health insurance.

Young adults also choose to work in jobs that are less likely to offer health insurance when they have access to dependent health insurance. I show that young adults with an outside source of health insurance are between 1.5 and 2.1 percentage points less likely to work in firms with more than 500 employees and between 1.1 and 2.1 percentage points more likely to work in firms with between 10 and 99 employees. I also show that young adults impacted by mandates choose to work in industries that are less likely to offer health insurance.

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Table 1. State Mandatory Dependent Health Insurance Laws

State	Date	Age Expire	Unmarried Only	Dependents Not Allowed
Colorado	1/1/2006	25	YES	
Connecticut	1/1/2009	26	YES	
Delaware	6/1/2007	24	YES	
Florida	7/1/2007	25	YES	
Illinois	6/1/2009	26	YES	
Indiana	7/1/2007	24		
Iowa	7/1/2008	25	YES	
Kentucky	7/15/2008	26	YES	
Maine	9/20/2007	25	YES	YES
Maryland	1/1/2008	25	YES	
Minnesota	1/1/2008	25	YES	
Missouri	1/1/2008	26	YES	
Montana	1/1/2008	25	YES	
New Hampshire	9/15/2007	26	YES	
New Jersey	1/1/2006	30	YES	YES
New Mexico	7/1/2003	25	YES	
New York	9/1/2009	30		
Ohio	7/1/2010	28	YES	
Oregon	9/30/2005	23	YES	
Pennsylvania	9/1/2009	30	YES	YES
Texas	1/1/2004	25	YES	
Utah	1/1/1995	26	YES	
Virginia	7/1/2007	25		
Washington	1/1/2009	25	YES	
West Virginia	7/1/2007	25	YES	
Wisconsin	1/2/2010	27	YES	

Table 2. Comparison of Selection Criterion Before and After Mandates Pass

	Total Sample		Below Age 24		Above Age 24	
	Before	After	Before	After	Before	After
Probability of Ever Being Married	.371	.382	.298	.310	.520	.506
Probability of Any Dependents	.297	.295	.207	.212	.362	.354
Probability of Being Active Student	.103	.116	.156	.170	.045	.037

Table 3. Estimation Results for Hours Worked Per Week

	Hours Worked Per Week		
	State-Year DD	Age-Year DD	DDD
Mandate	-1.67	-1.51	-1.36
	(.072)	(.073)	(.075)

Hours worked is measured by hours worked last week and includes individuals who report "not working" as working zero hours. Data comes from the 2003-2009 Merged Outgoing Rotation Group (MORG) of the Current Population Survey. For all three regression models I include time and state fixed effects. The triple difference specification simplifies the age controls to a dummy variable for above age 24. All coefficients are statistically significant at the 1% level.

Table 4. Estimation Results for Mandate's Impact on rates of Full-time and Part-time Work

	Full-Time Work			Part-Time Work		
	State-Year DD	Age-Year DD	DDD	State-Year DD	Age-Year DD	DDD
Mandate	-4.6	-3.7	-3.0	3.2	2.6	2.4
	(.0031)	(.0032)	(.0036)	(.0037)	(.0022)	(.0024)

Full-time work is defined as hours worked with primary employer is greater than 35 hours. Part-time work is defined as any work where primary employment involves less than 35 hours. Data comes from the 2003-2009 Merged Outgoing Rotation Group (MORG) of the Current Population Survey. For all three regression models I include time and state fixed effects. All coefficients are statistically significant at the 5% level.

Table 5. Quantile Difference-in-Difference Estimation of Impact of Mandates on Hours Worked for Select Quantiles

Centile	30^{th}	40^{th}	50^{th}	60^{th}	80^{th}	90^{th}
Hours Worked	15	30	38	40	40	48
Impact of Mandates	-11	-8	-4	0	0	-1
	(1.32)	(0.84)	(0.48)	(0.016)	(0.088)	(0.53)

Each column is the result of a separate quantile difference-in-difference regression at a specified quantile. The hours worked gives the hours worked at that quantile in the full sample. Quantiles under 30 are not reported because estimation is unable to calculate standard errors for quantiles with 0 hours worked.

Table 6. Differences in Differences Estimation of how Mandates Impact Firm Size

	State-Year DD	Age-Year DD	DDD
Fewer than 10 employees	0.0002	0.0003	-0.0087
	(0.01)	(0.01)	(0.006)
10-99 employees	.011	.014**	.021**
	(0.01)	(0.007)	(0.009)
100-499 employees	-0.01	-0.009	-0.006
	(0.008)	(0.009)	(0.006)
499+ employees	-.015**	-.017**	-0.021**
	(0.007)	(0.007)	(0.008)

Each coefficient is the result of a separate linear probability model with a binary variable as the outcome. Each regression includes state, year, and age dummies. Data comes from the 2003-2009 Merged Outgoing Rotation Group (MORG) of the Current Population Survey.

Table 7. Summary of Employer Provided Health Insurance by NBER 2-digit Industry Grouping

Label	2-digit Code	HI %	N	Label	2-digit Code	HI %	N
Agriculture service	1	0.66	12100	Rubber and Plastics	27	0.86	2653
Other Agriculture	2	0.61	1571	Leather and Leather products	28	0.92	95
Mining	3	0.85	4335	Transportation	29	0.90	5952
Construction	4	0.63	57272	Communications	30	0.85	831
Lumber	5	0.80	2558	Utilities and Sanitary Services	31	0.86	1326
Furniture	6	0.84	9258	Wholesale Trade	32	0.90	22547
Stone, Clay, Glass Production	7	0.89	6205	Retail Trade	33	0.92	12525
Primary Metals	8	0.90	7382	Banking	34	0.79	12108
Fabricated Metal	9	0.88	2533	Insurance and Real Estate	35	0.75	2514
Not Specified Metal Industries	10	0.89	10374	Professional Services	36	0.88	42589
Non-electrical Machinery	11	0.74	2814	Business Services	37	0.89	379
Electrical Machinery	12	0.74	3160	Repair Services	38	0.58	28579
Motor Vehicles	13	0.79	6489	Waste Management	39	0.75	2162
Aircraft and parts	14	0.77	9166	Entertainment Services	40	0.90	65890
Other Transportation equipment	15	0.89	1142	Hospitals	41	0.91	29381
Photography	16	0.69	4191	Health Services, Not Hospitals	42	0.80	44075
Toys, amusements, and sporting goods	17	0.85	5988	Educational Services	43	0.70	17010
Miscellaneous Manufacturing	18	0.87	750	Social Services	44	0.76	14390
Food Products	19	0.90	5960	Other professional services	45	0.68	9367
Tobacco processing	20	0.84	3261	Foresty and Fisheries	46	0.55	44150
Textile Mills	21	0.83	21223	Repair and Maintenance	47	0.63	10676
Apparel	22	0.73	85416	Automotive repair and other services	48	0.64	10733
Paper products	23	0.77	30513	Personal services	49	0.83	9664
Publishing	24	0.93	6009	Private Households	50	0.45	4345
Chemicals	25	0.83	4166	Public Administration	51	0.92	34346
Petroleum and Coal products	26	0.77	1965	Armed Forces last job, currently unemployed	52	0.37	125

Table 8. Results from Industry Choice

	Top Half EPHI Offer Industry			Top Quarter EPHI Offer Industry		
	State-Year DD	Age-Year DD	DDD	State-Year DD	Age-Year DD	DDD
Mandate	-1.6**	-1.8**	-2.6**	-2.6**	-2.4**	-3.4**
	(0.73)	(0.82)	(0.89)	(1.2)	(1.1)	(0.84)

Table 9. Results from Industry Choice – HI industry percentage as an outcome

	State-Year DD	Age-Year DD	DDD
Mandate	-0.026**	-0.028**	-0.04**
	(0.001)	(0.001)	(0.002)

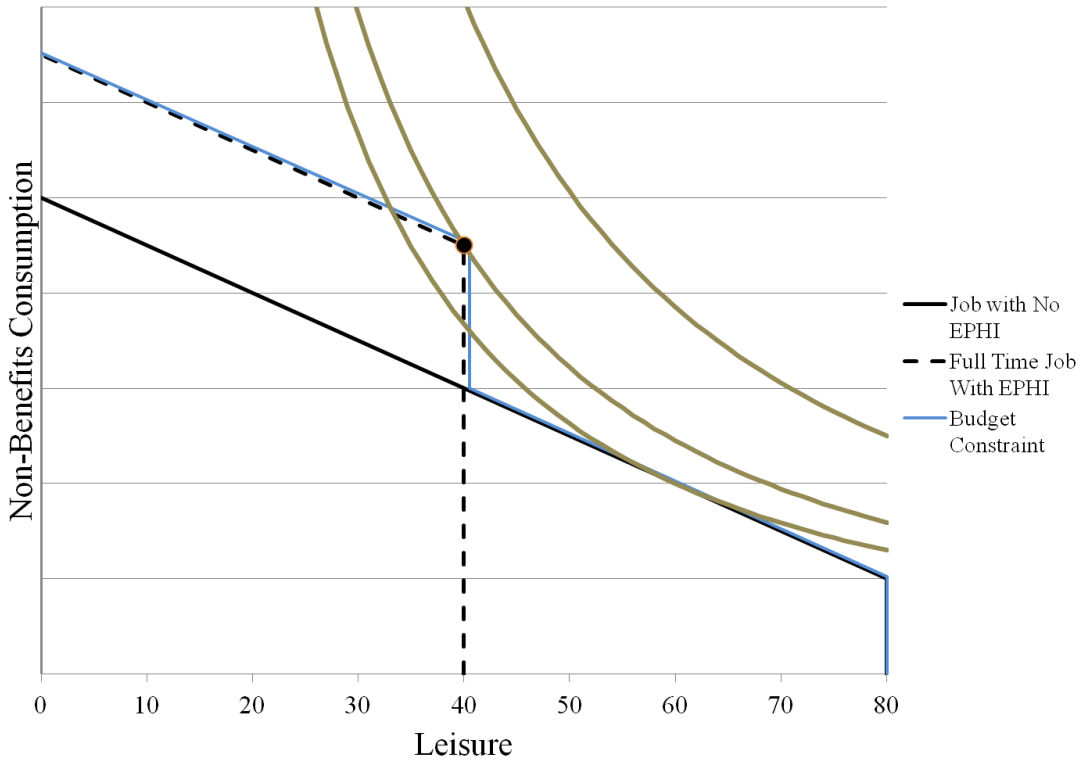

Figure 1. High Value of Leisure Individual Without Access to Dependent Care

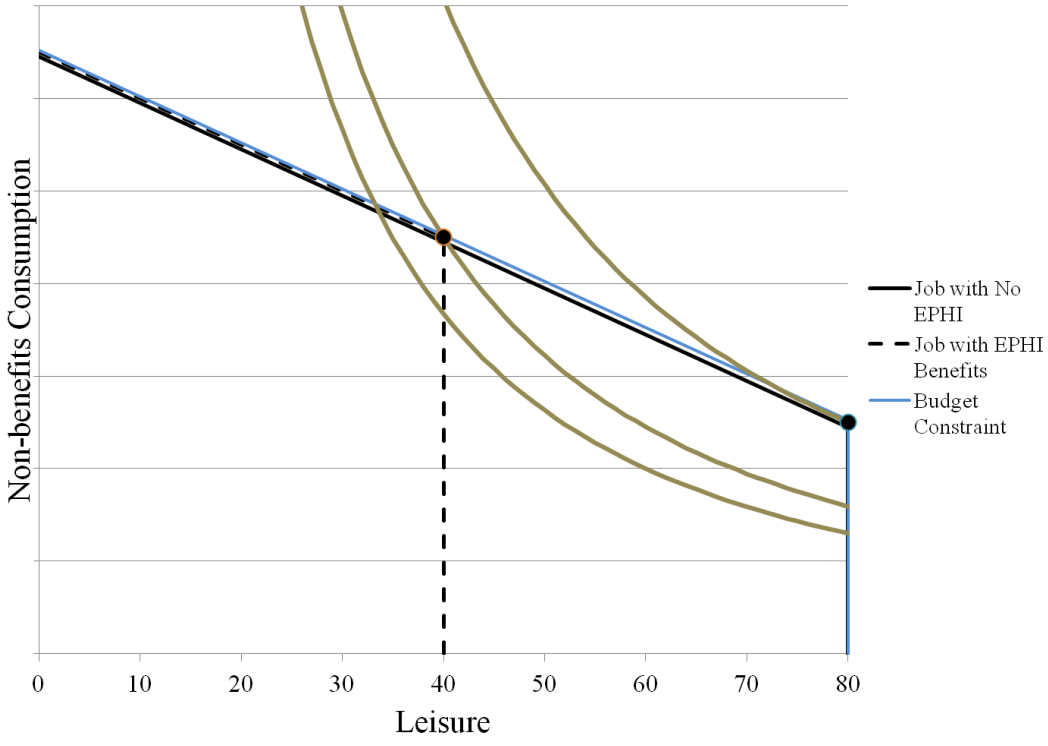

Figure 2. High Value of Leisure Individual With Access to Dependent Care

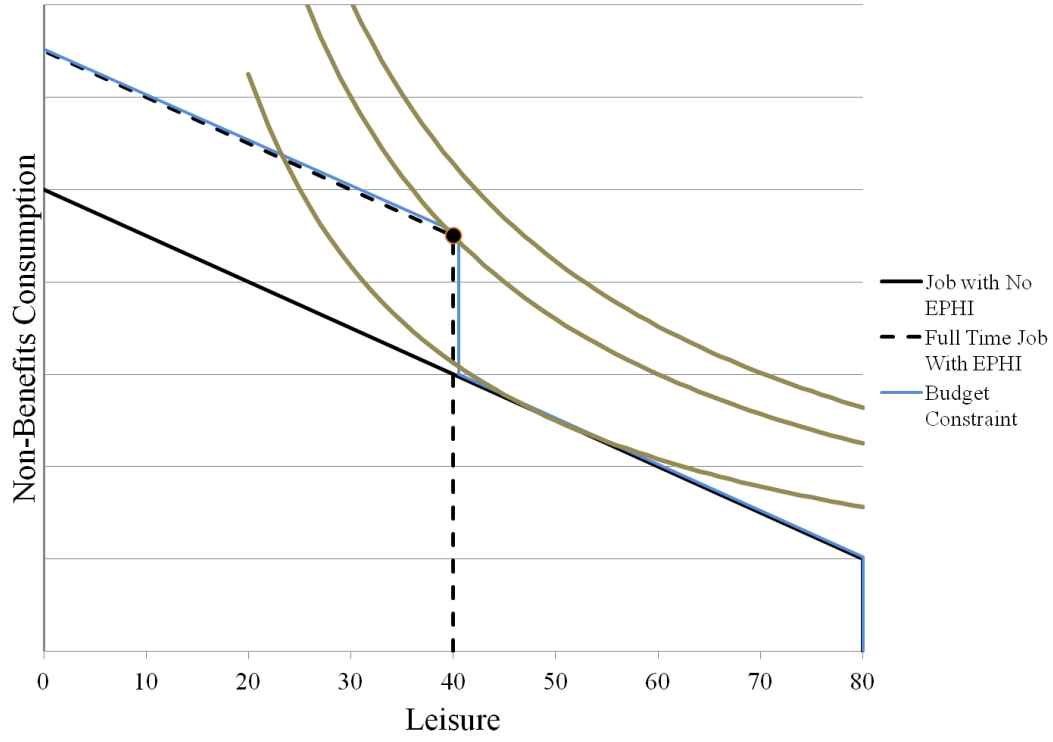

Figure 3. Moderate Value of Leisure Individual Without Access to Dependent Care

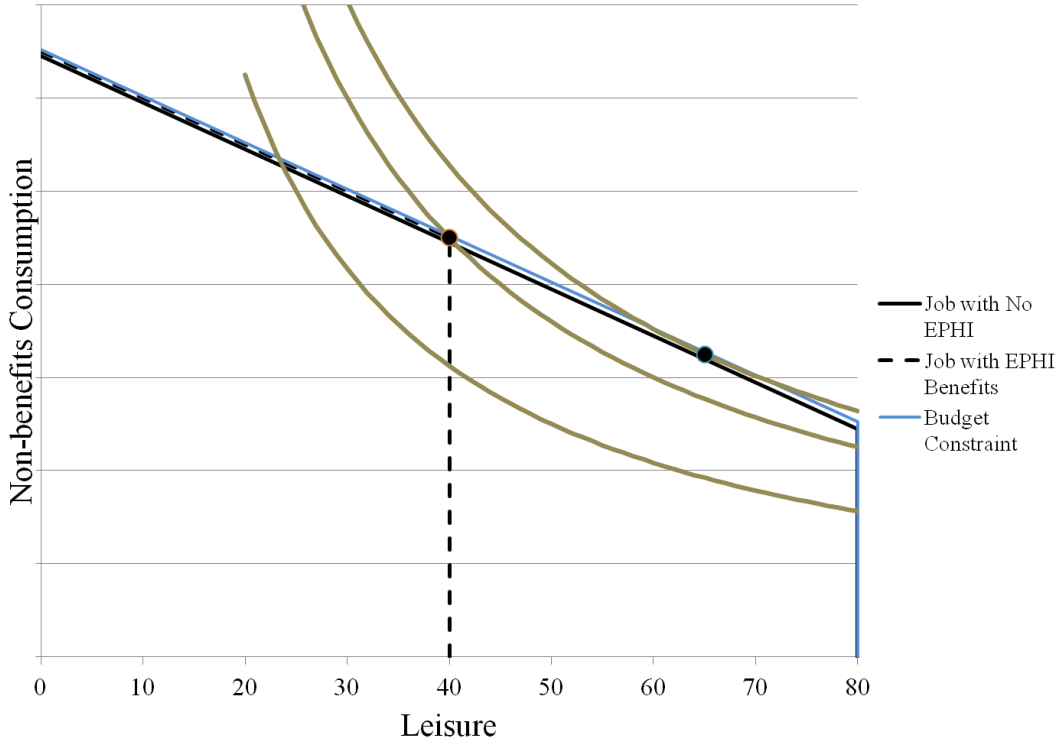

Figure 4. Moderate Value of Leisure Individual With Access to Dependent Care

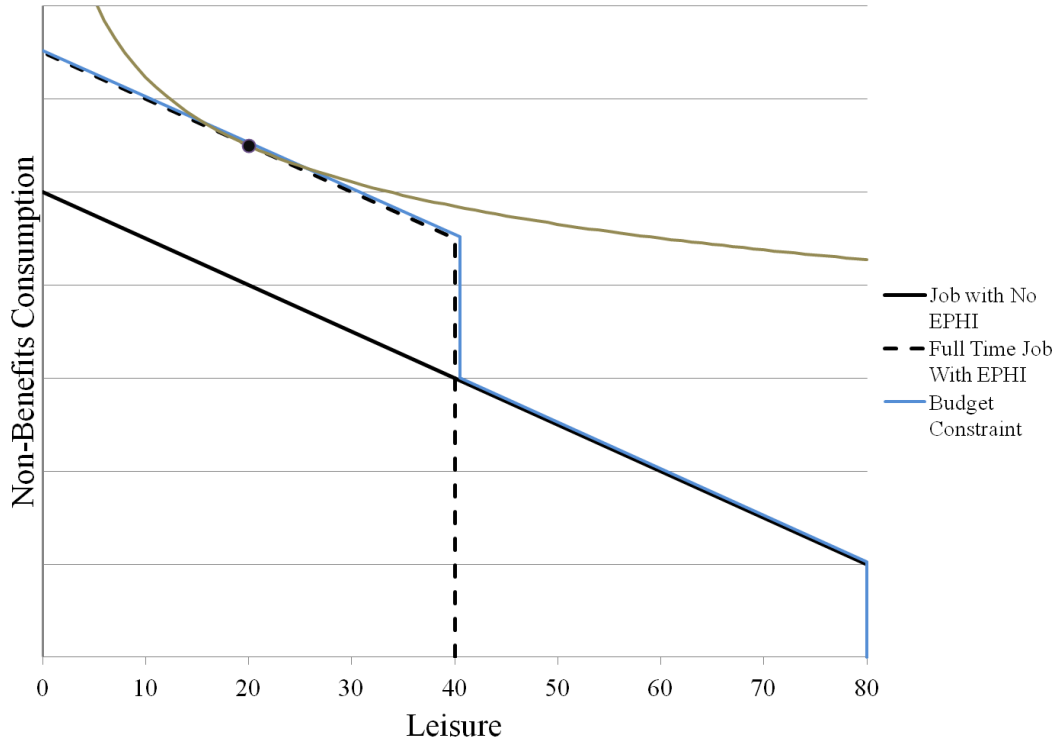

Figure 5. Low Value of Leisure Individual Without Access to Dependent Care

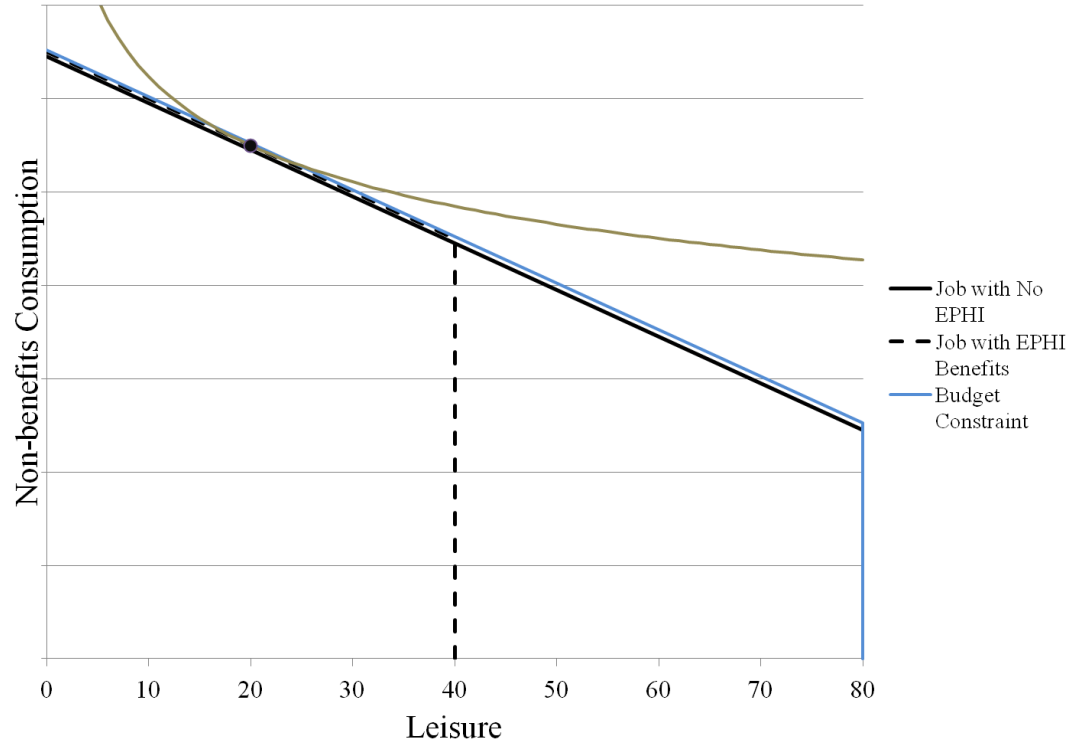

Figure 6. Low Value of Leisure Individual With Access to Dependent Care

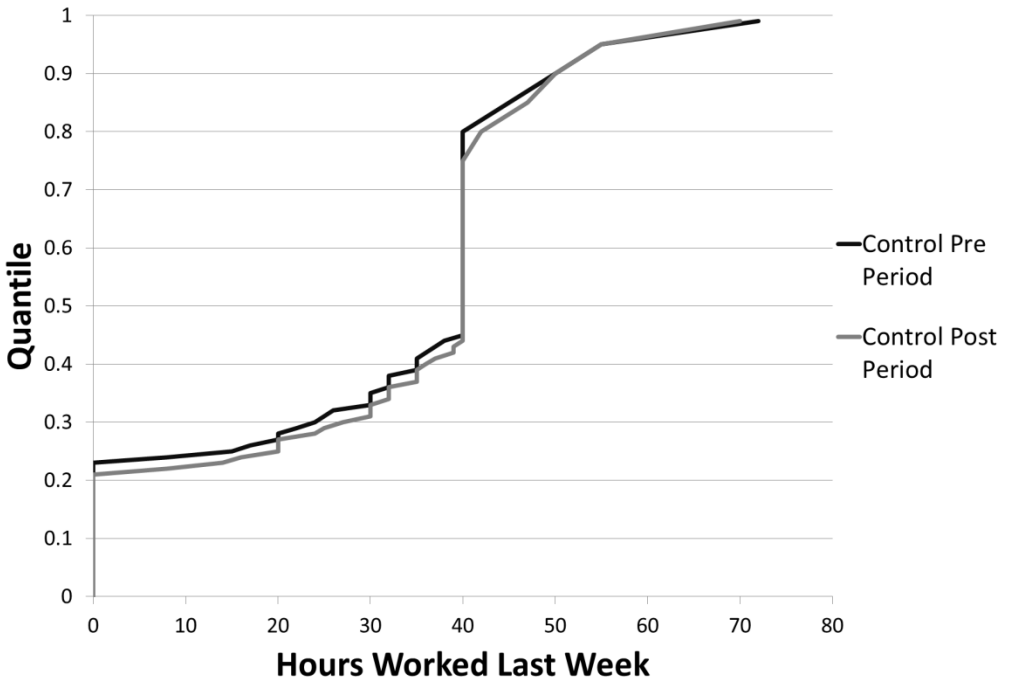

Figure 7. Hours Worked Distribution of Control States in 2005 and 2007

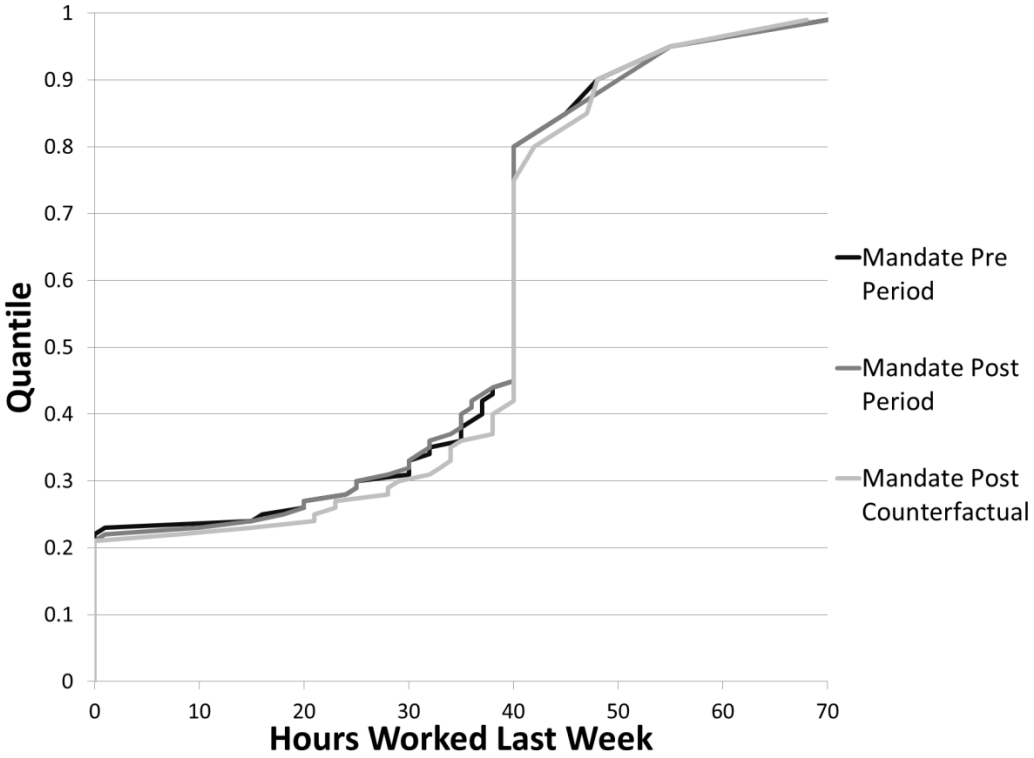

Figure 8a. Hours Worked Distribution and Quantile Difference-in-Difference for States with 2006 Mandates in 2005 and 2007

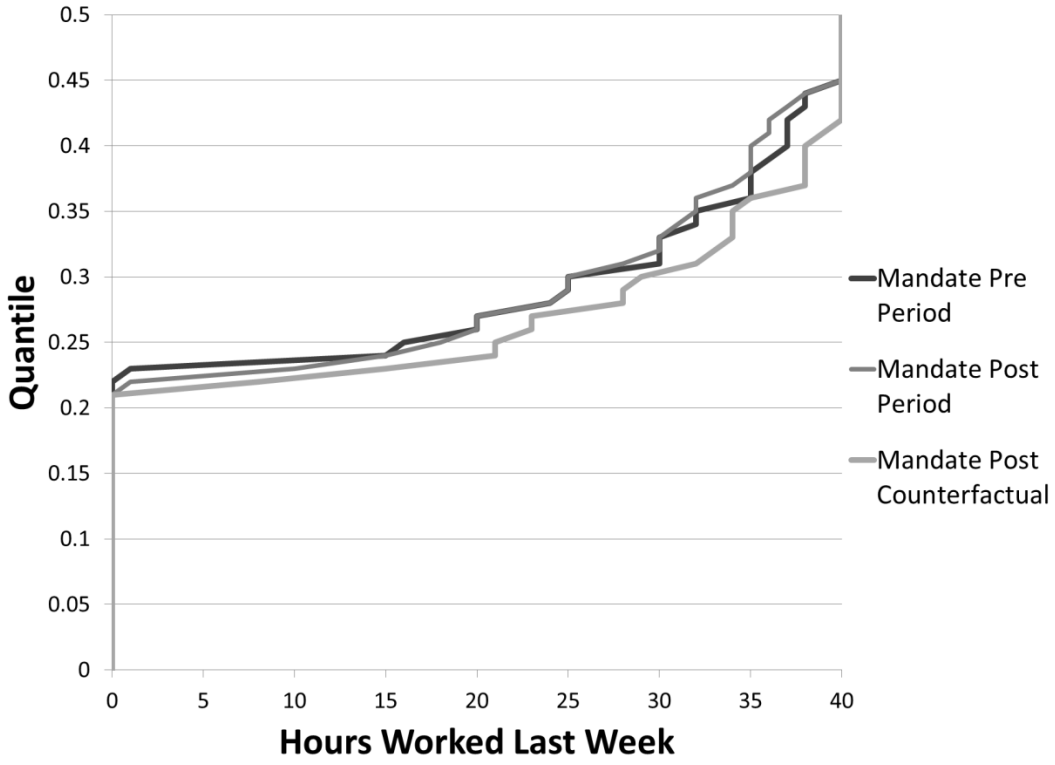

Figure 8b. Hours Worked Distribution and Quantile Difference-in-Difference for States with 2006 Mandates in 2005 and 2007