

THE IMPACT OF EMPLOYER-SPONSORED HEALTH INSURANCE ON
LABOR MARKET OUTCOMES

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By

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ABSTRACT

The US does not have universal healthcare coverage for all its citizens. Instead, institutions have been cobbled together, with coverage varying from person to person. Some forms of health insurance are part of the compensation for employment, while others can be accessed whether the person is employed or not. Employers and the government provide most people their health insurance. The Affordable Care Act has mandated all employers with at least 50 full time employees to cover the health insurance of at least 95 percent of the employees. This coverage is borne as a cost by the employer. My thesis uses longitudinal data from the March Current Population Survey (CPS) conducted by the Census for the Bureau of Labor Statistics (which includes individual-level responses to many demographic and socioeconomic questions) to estimate the impact of insurance cost by observing two sets of time periods (before the mandate is imposed and after the mandate is imposed) to study what has been the impact on variables such as wages, for people who are the heads of their households and what the variation is based on (such as race, age, level of education, and marital status).

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1. INTRODUCTION

In my thesis, I will estimate the impact of the Affordable Care Act's (ACA's) employer mandate for health insurance, which requires certain employers (including those in the private sector) with at least 50 full-time employees to provide health insurance to at least 95 percent employees or pay a penalty, on various indicators of labor market outcomes including employment, wages, and hours worked. Specifically, my hypothesis is that employers face a large cost of covering a majority of their employees (mostly in the form of premiums), because of which they would attempt to shift the burden away from them, and onto the employees, in the form of lower compensation in hand (wages), a fall in full-time employment (and a rise in part-time employment or unemployment), and a lower demand for labor.

The US does not have universal healthcare coverage for all its citizens. Instead, institutions have been cobbled together, with coverage varying from person to person. Some forms of health insurance are part of the compensation for employment, while others can be accessed whether the person is employed or not. Employers and the government provide most people their health insurance. (Madrian, 2006).

“In 2018, 8.5 percent of people, or 27.5 million, did not have health insurance at any point during the year. The uninsured rate and number of uninsured increased from 2017 (7.9 percent or 25.6 million). The percentage of people with health insurance coverage for all or part of 2018 was 91.5 percent, lower than the rate in 2017 (92.1 percent)...[P]rivate health insurance coverage continued to be more prevalent than public coverage, covering 67.3 percent of the population and 34.4 percent of the population, respectively. Of the subtypes of health insurance coverage,

employer-based insurance remained the most common, covering 55.1 percent of the population for all or part of the calendar year.”^a

In the United States, employer-sponsored insurance plays an important role in financing healthcare. According to data from the Kaiser Family Foundation (KFF), in 2017 about 156 million Americans, or around 49 percent of the country’s total population, received employer-sponsored health insurance (also called group health insurance).^b

The 2010 national health reform (as part of the Affordable Care Act) focused on three key provisions to expand insurance coverage: a mandate that employers offer coverage or pay a penalty, a mandate that individuals obtain coverage or pay a penalty, and expansions in publicly-subsidized coverage (Kolstad and Kowalski, 2012). The employer-sponsored health insurance is private and paid for by the businesses on behalf of employees as part of their benefits. Typically, employers pay about 85 percent of the premium for the employees and 75 percent for the employees’ dependents. The inclusion of this benefit usually means that the workers are paid less in cash wages – which can be favorable as it eliminates the adverse selection problem (premiums are lower when all employees participate in a group, rather than just the sickest).

As the national reform focused on employer role in covering the healthcare for its employees, it is necessary to discuss the cost of coverage. In 2018, the average annual single premium per enrolled employee for employer-based health insurance was \$6,715, out of which \$5,288 was the employer share and \$1,427 was the employee share of the premium.^c The average

^a Source: <https://www.census.gov/library/publications/2019/demo/p60-267.html> (last accessed November 22, 2019).

^b Kaiser Family Foundation: <https://www.kff.org/other/state-indicator/total-population/?dataView=0¤tTimeframe=0&selectedDistributions=employer&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D> (last accessed November 20, 2019).

^c Source: <https://www.kff.org/other/state-indicator/single-coverage/?dataView=0¤tTimeframe=3&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D> (last accessed November 20, 2019).

premium for family coverage has increased 22 percent over the last five years and 54 percent over the last ten years, significantly more than either workers' wages or inflation.^d

Given the high cost borne by the employers, which they try to shift away from them, there are bound to be disruptions in the labor market due to extraordinary movements in labor demand and supply. On the supply side, employees nearing retirement age may delay their retirement if there is a period where they will not have a source of healthcare coverage (before they become eligible for Medicare), other employees might be dependent on their existing jobs, reluctant to leave even if wages have stagnated because they become afraid they will be unable to find affordable insurance at all on their own ("job lock" effect). On the labor demand side, the high cost of coverage may reduce the demand for full-time workers and (in some, but not all, cases) may increase the demand of part-time workers, or may even lead to a freeze in hiring altogether.

My thesis uses longitudinal data from the March Current Population Survey (CPS) conducted by the Census for the Bureau of Labor Statistics (which includes individual-level responses to many demographic and socioeconomic questions) to estimate the impact of the intervention by observing two sets of time periods (before the mandate is imposed and after the mandate is imposed) to study what has been the impact on variables such as wages, for people who are the heads of their households, and what the variation is based on race, age, level of education, and marital status.

The next section explores the background on the national employer mandate of the Affordable Care Act and existing literature linking healthcare and labor market effects. Section 3 provides a theoretical and conceptual model of what relationship I expect would exist between

^d Source: <https://www.kff.org/report-section/ehbs-2019-summary-of-findings/> (last accessed November 20, 2019).

coverage and labor market outcomes. Section 4 describes the data and descriptive statistics used to estimate the model. Section 5 looks at the econometric model I estimate. Section 6 provides the empirical results and discussions arising from estimating the model. Finally, the last section summarizes and concludes the results, and delves into policy recommendations, as well as limitations and direction for further research.

2. BACKGROUND AND LITERATURE REVIEW

2.1 Background

The United States is characterized by a high cost of healthcare and fragmented sources of insurance, the most significant sources of which are employers (who provide insurance as a benefit of employment), and the government. Employers provide coverage to a majority of full-time workers and their families but this has not always been the case. Health policy experts have argued for a long time that it should be the duty of the employers to extend coverage to their workers as part of employment benefits. These requirements would compel large employers to pay a share of the cost of their employees' coverage or a fee to help subsidize coverage for the uninsured.^e

Historically, employers have been offering health insurance and other fringe benefits as way of attracting skilled workers since World War II. To control wartime inflation, the federal government had frozen prices and wages. Thus, employers couldn't compete for workers by offering higher wages, so they started offering additional benefits instead, including health insurance. In the present day, many firms offer insurance to recruit and retain workers, and to improve workers' health and productivity.^f

Health insurance through employers has been dominant in US health policy debates for a long time. Hawaii enacted an employer mandate in 1974. President Richard Nixon proposed a national mandate. President Bill Clinton also did so 1993, but Congress did not pass either of these proposals (Enthoven and Fuchs, 2006). Employer mandates were features of health care reform plans proposed by several US presidential candidates in the 2008 election, including then-Senator Barak Obama, who eventually signed the ACA.

^e Source: <https://www.healthaffairs.org/doi/10.1377/hpb20100115.893036/full/> (last accessed November 8, 2019).

^f Source: <https://www.healthaffairs.org/doi/10.1377/hpb20100115.893036/full/> (last accessed November 9, 2019).

This contributed to the development of coverage provided by employer or employer shared responsibility provisions. Under the Patient Protection and Affordable Care Act (ACA), which is a US federal statute enacted by the 111th United States Congress and signed into law by President Barack Obama in 2010, a major provision was the employer mandate, where as beginning January 1 2015, certain larger employers may be assessed a penalty if they do not provide affordable health care coverage and at least one full-time employee qualifies for a premium tax credit^g and uses it to purchase coverage in the health insurance exchange.^h Additionally, the mandate requires employers to provide prescribed health coverage while, at the same time, penalizing some employers who may fail to offer what is defined by the law as “affordable” coverage.ⁱ This act of either covering the employees or paying a penalty was colloquially termed as “the pay or play provisions”.

The ACA does not necessarily require firms to provide health benefits to their employees, but eligible large employers may face penalties if they don’t make affordable coverage available. The penalty amount that must be paid by the employer varies based on whether the employer fails to offer any health care coverage at all to FTEs, or offers coverage that is not affordable and/or does not provide the minimum value required.^j

^g The premium tax credit is a refundable tax credit designed to help eligible individuals and families with low or moderate income afford health insurance purchased through the Health Insurance Marketplace, also known as the Exchange. The size of an employee’s premium tax credit is based on a sliding scale. Those who have a lower income get a larger credit to help cover the cost of their insurance. Source: <https://www.irs.gov/affordable-care-act/individuals-and-families/questions-and-answers-on-the-premium-tax-credit> (last accessed November 19, 2019).

^h In determining whether you have 50 or more full-time equivalent employees, you must include the hours worked by your part-time employees.

ⁱ Source: <https://www.uschamber.com/health-reform/employer-mandate> (last accessed November 8, 2019).

^j Source: <https://www.uschamber.com/health-reform/employer-mandate> (last accessed November 8, 2019).

To avoid a penalty, the employer must offer coverage to at least 95 percent of its FTEs and their dependent children (children of employees who are under the age of 26).^k If not, then the penalty for each month the employer fails to offer coverage is \$2,500 divided by 12, times the number of FTEs (minus up to 30 employees). Moreover, the insurance must pay at least 60 percent of the covered health care expenses (called the minimum value) for a standard population. If this provision is not met, the employer is not offering coverage that is affordable and provides minimum value. In that case, a penalty must be paid for each month, which is equivalent to \$3,750 divided by 12, for each FTE receiving a premium tax credit for that month (up to a maximum of \$2,500 divided by 12, times the number of FTEs, minus up to 30 employees).^l

Many of the provisions of the ACA apply to the individual market, and therefore analysis of the employer-sponsored market is often left out. This is not an ideal situation; since employer-sponsored health insurance is one of the most common forms of coverage, the impact of ACA's mandate on coverage, cost, and labor market outcomes is significant. There have been studies that have attempted to ascertain the impact of employer coverage on various labor market outcomes such as wages, employment rate, hours of employment, probability of retirement before the age of 65 (which could lead to a loss of coverage, since Medicare kicks in after 65), and overall labor market decisions. Some of these studies are discussed in Section 2.2 below.

^k Employers do not face a penalty under the ACA if they do not offer coverage to the spouse of an FTE.

^l Source: <https://www.kff.org/infographic/employer-responsibility-under-the-affordable-care-act/> (last accessed November 8, 2019).

2.2 Literature Review

There have been various studies over the years that have estimated key empirical relationships between health insurance coverage at the workplace and various labor market outcomes and decisions, some of which are discussed in this section.

To determine the impact of employer-sponsored insurance on wages, one needs to look at both labor demand choices made by employers and labor supply choices made by workers. Gruber and Krueger (1991) found using data from the trucking and carpentry industries (for which insurance costs are large) that changes in costs of workers' compensation insurance are largely shifted to employees in the form of lower wages. In addition, higher insurance costs were found to have a negative but statistically insignificant effect on employment. Gruber (1994) studied several state and federal mandates that stipulated that childbirth must be covered extensively in health care plans, which raised the cost of covering women of childbearing age. He found that there was substantial shifting of costs through a reduction in the wages of these women.

Royalty (2008), who examined whether workers valued health benefits or cash wages, and obtained estimates of insured workers' marginal valuation of health benefits, concluded that insured workers value health benefits less than wages. Workers still value health benefits highly. Baicker and Chandra (2005) medical malpractice costs and their effect on insurance premiums to identify the causal effect of rising premiums on wages. They estimated that a 10 percent increase in health insurance premiums resulted in an offsetting decrease in wages by 2.3 percent, thus increasing the burden on workers.

Besides the direct offsetting impact on wages, there may be some indirect effects too. Health insurance can have an impact on the job search and job matching process. Individuals might

stay in their current jobs even if better jobs are available (Madrian, 2006). Gruber and Madrian (1997) documented that employment separation leads to lower insurance coverage and showed that state laws requiring continued access to employer-sponsored health insurance for the unemployed increases the likelihood of having insurance after separating from a job by 6.7 percent. This also leads to unemployed people who have insurance to be jobless for longer periods looking for better job options, that they then find with higher wages.

Another labor market effect of interest is the retirement of older workers. When we look at health insurance coverage by employers, it is important to note while workers can opt out of it and choose to buy their own private insurance with benefits and coverage that suit them better, for many workers job-linked insurance is the cheapest way of obtaining insurance. Health insurance is a more important factor in the decision about whether or not to be employed for individuals who place high value on health insurance—those with high anticipated medical expenditures either for themselves, or their dependents. Because medical expenditures tend to increase with age, individuals approaching retirement should be particularly interested in maintaining their health insurance coverage. If health insurance does not carry into retirement, it can lead to delay in leaving the workforce (Madrian, 2006). Rust and Phelan (1997) studied the labor supply for older males and estimated that insurance availability in retirement increases workers' probability of retiring before 65 by 12 to 21 percent (varying by age).

Karoly and Rogowski (1994) study post-retirement health insurance and how it effects the decision of men to retire early using data from the 1984, 1986, and 1988 panels of the Survey of Income and Program Participation (SIPP). They conclude that availability of retiree health benefits increases probability of retiring before 65 by 50 percent. They also find evidence that the presence

of a source of insurance coverage in addition to the coverage provided by the worker's employer significantly increased the likelihood of retirement before age 65. For most men in their sample, the additional coverage was through the spouse's employer.

Madrian et al. (1994) examined the effect of retiree health insurance on the age of retirement and found that those with employer-provided postretirement health insurance retire 5 to 16 months earlier than those without such insurance. They also estimate that universal coverage would reduce the labor force participation of men aged 60 to 64 by 4.3 percentage points, and increased availability of postretirement health insurance can explain between 10 and 20 percent of the overall decline in the labor force participation of older men.

Johnson, et al. (2003) have found that insurance costs significantly reduce retirement rates for full-time wage workers ages 51 to 61. A \$1,000 increase in the net present value of health insurance premium costs reduces the probability of early retirement by 0.17 percentage points for men and by 0.24 percentage points for women, with elasticities being -0.22 and -0.24 respectively. More generally, the higher the insurance costs, the less likely the workers are to retire early before the age of 65.

When it comes to labor force participation, it is important to consider the role of married women (and married men) who are dependent on their spouses for health insurance coverage. Given the large elasticity of labor supply and thus, large responsiveness to changes in wage rates, one could expect the same level of sensitivity to availability of health insurance as well (Madrian, 2006). In many cases, firms offer health insurance to their workers and spouses so many married women are covered through their spouses. Buchmueller and Valletta (1999) investigated the impact of employer-provided health insurance on married women and their estimations indicated

a strong negative effect of husbands' health insurance on wives' work hours by 15 to 36 percent. Various other studies suggest that among the married women that do work, they are much more likely to be employed in part-time jobs that typically do not provide health insurance than full-time jobs (Buchmueller and Valletta, 1999; Olson 1998; Schone and Vistnes, 1997; Wellington and Cobb-Clark, 2000).

An important phenomenon associated with job market participation is the job lock effect. Health insurance benefits may impact the initial decision to enter the job market – the initial choice of where to work, whether to become self-employed instead, or other decisions. Health insurance can also impact job turnover because not all firms offer health insurance. Individuals who place a high value on the availability of insurance through work may be unwilling to switch to a job that provides no insurance, or, if they do not have insurance currently, may only apply to firms that offer such benefits (Madrian, 2006). Quite a few studies have concluded that there is a significant effect of availability of health insurance on job choice – the potential loss of employer-provided health insurance associated with job change reduces mobility by 25 to 50 percent (Cooper and Monheit, 1993; Madrian, 1994; Buchmueller and Valletta, 1996; Stroupe, Kinney and Kniesner, 2001).

Since health insurance premiums are a fixed cost for employers and increase as they hire more (FTE) workers, some employers try to avoid this cost by either hiring fewer full-time workers and increasing their hours, or they may try to terminate the employment of full-time workers and instead hire more part-time workers who are not eligible for health insurance benefits. Baicker and Chandra (2006) examined the impact of rising health insurance costs on employment and found

that a 10 percent increase in health premiums reduced the aggregate employment rate by 1.6 percent.

There is also some evidence of employers switching from full-time to part-time employees. In 1974, Hawaii mandated employer provision of health insurance to full-time, but not part-time, workers. Thurston (1997) found that those industries most affected by the mandate, saw large increases in the fraction of workers employed in part-time jobs. Baicker and Chandra (2006) also found a shift to part-time employment as a result of recent increases in health insurance costs.

Finally, we can also look at the impact of a state or federal mandate, making it compulsory to provide health insurance to FTEs on labor market outcomes (in light of the ACA mandate). For this we look at two states that enacted such a mandate – Hawaii and Massachusetts. Buchmueller et al. (2011) examined the effects of Hawaii’s Prepaid Health Care Act, using Current Population Survey data covering the years 1979 to 2005, and found that coverage for previously low-coverage workers increased in the market. They also found that there was no statistically significant support for the hypothesis that the mandate reduced wages and employment probabilities. Rather, the primary effect was an increased reliance on part-time workers. For the state of Massachusetts, Kolstad and Kowalski (2016) looked at the impact of the reform implemented in 2006 and found that jobs with employer-sponsored insurance pay wages that are lower by an average of \$6,058 annually, indicating that the compensating differential for the coverage is only slightly smaller in magnitude than the average cost of insurance to employers. Because the newly-insured in Massachusetts valued this coverage, they were willing to accept lower wages, and the deadweight loss of mandate-based health reform was less than 5 percent of what it would have been if the government had instead provided health insurance by levying a tax on wages.

In light of existing literature, my contribution will look at the impact of the ACA mandate in the US, which was put in place in January 2015 on the wage earned from income and salary. The next section will look at the theoretical model of the relationship I present in this thesis.

3. THEORETICAL FRAMEWORK

In order to examine the impact of health insurance coverage on labor market outcomes, I will develop the theoretical model described below. This model will create a framework from which I will go into the empirical model that will be estimated.

$$wage_{it} = f(\text{ACA coverage, individual factors, demographic factors}) \quad (1)$$

The equation above shows that the wage from income and salary, which will be estimated for each individual worker i (head of the household) at time t , will be determined by a number of factors such as whether the individual has coverage, individual factors (such as education level, race, and so forth), and demographic factors.

4. DATA AND DESCRIPTIVE STATISTICS

My main analysis relies on longitudinal data from the March supplement of the Current Population Survey (CPS), which is sponsored jointly by the US Census Bureau and the US Bureau of Labor Statistics (BLS), and is the primary source of labor force statistics for the population of the United States.^m The March supplement is used because every March, the Census Bureau collects a series of supplemental information on income, non-cash benefits, health insurance, and work experience.

In addition, the Center for Economic and Policy Research (CEPR) in the United States has released a beta version of several datasets of the March CPS which is available for analysis on various platforms (such as Stata). This makes analysis easier since the raw data from the Census website is already transformed and the variables are created, ready for use. The transformed data is available for the years 1980 through 2018 (inclusive), and the website also provides a file explaining how the raw data were transformed.ⁿ

The variables in the transformed dataset include all variables of interest for my analysis, including individual statistics (such as age, gender, race, ethnicity, marital status, status with regard to the household, education level), data on labor market (wage from income and salary), type of health insurance coverage (employer-sponsored), and other measures. In short, this dataset provides comprehensive information on demographic characteristics, employment and labor market participation, and health insurance coverage.

^m Source: <https://www.census.gov/programs-surveys/cps.html> (last accessed November 22, 2019).

ⁿ For details, please see <http://ceprdata.org/cps-uniform-data-extracts/march-cps-supplement/march-cps-data/> (last accessed November 19, 2019).

Unless otherwise indicated, my analysis will focus on workers who are the heads of their households, aged 18 to 64 years. The years I will be focusing on will be period prior to the mandate being put into effect (2006, 2007 and 2008) and the period after the mandate was put in place to see the effects on coverage, and labor market outcomes (2016, 2017 and 2018).

The tables of summary statistics, describing the variables and frequencies, are given below.

Table 1: Descriptive Statistics

VARIABLES	(1) N	(2) mean	(3) sd	(4) min	(5) max
<i>rincp_wag</i>	307,139	40,058	63,983	0	1.206e+06
<i>aca</i>	307,139	0.468	0.499	0	1
<i>age</i>	307,139	47.65	15.06	15	85
<i>agesq</i>	307,139	2,498	1,544	225	7,225
<i>parttime</i>	307,139	0.112	0.315	0	1
<i>unem</i>	305,161	0.0277	0.164	0	1

Table 2: Frequency of Marital Status

Status of Head of Household	Frequency	Value
Married	229,080	1
Divorced, widowed or separated	45,650	2
Never been married	32,409	3

Table 3: Frequency of Race or Ethnicity

Head of Household Race or Ethnicity	Frequency	Value
White	199,599	1
African American or Black	33,865	2
Hispanic	49,446	3
Asian	16,267	4
Mixed race/ethnicity or Native American	7,962	5

Table 4: Frequency of Education Attainment

Head of Household Education Attainment	Frequency	Value
Less Than High School	33,056	1
High School degree	90,927	2
Some college	87,319	3
College degree	60,263	4
Advanced degree	35,574	5

5. EMPIRICAL MODEL

The empirical model depicting the effect of employer-sponsored health insurance coverage on employment, wages, hours worked, and the composition of employment (division of jobs between full-time and part-time work) is a challenging task, since the data from CPS do not adequately capture the costs borne by the employer or the generosity of plans. In addition, it is important to control for worker characteristics.

Overall, we can look at the impact of coverage on various labor market outcomes for each individual i in the year t .

$$Outcome_{it} = \beta_0 + \beta_1 HI_i + \beta_2 X_i + \mu \quad (2)$$

Here, $Outcome_{it}$ is the labor market outcome of interest (wage from income and salary), HI_i measures whether employer-sponsored healthcare is being provided (and may even capture the premium associated with providing each individual i with coverage). X_i captures the person-level covariates, including controls for family structure, marital status, education, and industry one is working in. μ is the error term.

The dependent variable in my model is the wage received from income and salary. I will only be looking at heads of households' wage that is derived from their primary work. I will not be looking at secondary or passive sources of income (side jobs, investments, aid, etc.). Based on my hypothesis, I would expect my wage from income and salary to fall after the ACA mandate is put in place, as employers would offset the cost of health care coverage on the workers, who will earn less. I expect to see this for all heads of households in my study.

My independent variable of interest is an indicator for whether the ACA mandate has been put in place (in the years 2016, 2017, 2018) or not yet (in the years 2006, 2007, 2008) to examine

the effect of the mandate on wages. Consistent with my hypothesis, I expect a negative, statistically significant coefficient for this variable, indicating lower real wages once the mandate was put in place. I also have control variables for age and age squared of the head of household, for which I would expect a head of household to earn more as they get older (for a positive coefficient on age), up to a point, after which the wage would fall as they get older (showing a negative coefficient on age squared). I further control for the racial and ethnic characteristics of the head of households. Based on socio-economic conditions and factors, I would expect the white heads of households to earn more than their Black, Asian American, Hispanic, and Native American/mixed race counterparts, even after the ACA mandate was put in place. Therefore, I expect negative coefficients on these variables because white is the reference category for each of them. I also control for the education level of the head of household. Since as the educational level/qualification increases, I would expect the head of household to earn more, I expect each of these coefficients to be positive because the reference category is less than a high school degree, or the lowest recorded level of educational status. Finally, I control for the marital status of the head of households. The reference category is married, and based on previous studies showing higher income for those who are married, I expect the coefficients for both other categories (divorced/separated/widowed and never married) to be negative.

The OLS estimation might lead to biased estimates (omitted variable bias - μ may capture effects such that it would be correlated with one or more of the other variables such as *HI*). Despite this possibility, I believe the results, discussed in the next section, are highly informative. Additionally, the large number of observations reduces this potential error.

6. RESULTS

I run a simple OLS regression to gauge the impact of the ACA mandate on real income from wage and salary for every head of household. The results are reported in the table below.

Table 5: Results of the OLS Regression

VARIABLES	(1) rincp_wag
<i>aca</i>	-417.8* (219.4)
<i>marstat3=2</i>	-6,406*** (248.2)
<i>marstat3=3</i>	-8,405*** (295.1)
<i>black</i>	-6,239*** (286.7)
<i>hispanic</i>	-5,256*** (256.7)
<i>asian</i>	1,123* (584.0)
<i>native american</i>	-6,178*** (600.0)
<i>high school degree</i>	6,882*** (226.5)
<i>some college</i>	12,751*** (243.5)
<i>college degree</i>	33,157*** (347.1)
<i>advanced degree</i>	58,704*** (581.7)
<i>age</i>	3,429*** (34.01)
<i>age squared</i>	-39.19*** (0.318)
Constant	-40,765*** (868.4)
Observations	307,139
R-squared	0.144

Robust standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

The model supports my hypothesis. Running a simple OLS regression, we can see that once the ACA mandate is put in place, there is a fall in the real wage from income and salary (*rincp_wag*). In the years and states for which the ACA mandate exists (2016, 2017, 2018; *aca* = 1), there is a fall in the real wages by \$417.79, all other variables taken to be constant. This variable is not quite significant at the 95% level of confidence, but almost.

This can be attributed to the fact that employers are making up for the cost of health insurance they incur in order to insure their employees by reducing the wages paid to the employees, such that the ultimate cost of insurance is borne by the employees themselves.

Looking at the relationship between real wage and marital status of the head of the household, the coefficients are interpreted relative to a head of household who is married (*marstat3* = 1). If the head of the household is widowed, divorced or separated (*marstat3* = 2), their real wage is \$6,406 lower on average than a married head of household, all else constant, and if the head of household has never been married (*marstat3* = 3), then the real wage is \$8,404.61 lower, all else being constant. These are in line with other studies and my expectations. The marriage variables are both extremely statistically significant at great than the 99% level of confidence.

In order to interpret the racial disparities, we look at the variable *race5*. The coefficients are interpreted relative to a head of household who is white (*race5* = 1). If the head of the household is Hispanic, real wage is \$5,256.40 lower, all else equal; if the head of household is Black, real wage is \$6,239.21 lower; if the head of the household is Asian, real wage is on average \$1,123.02 higher; and if the head of the household is of mixed race or is Native American, real wage is \$6,178.05 lower on average. These variables are all highly statistically

significant except for the variable denoting Asian head of household, which is nearly significant at the 95% level of confidence.

The regression model supports the theory that wages increase with an increase in education level. If we look at the variable for education level (*educ*), we can see that as the education levels keep increasing relative to some high school (the reference category) up to possessing an advanced degree, the real wages from income and salary keep rising. For example, we can see in the model that if a head of household has a college degree, their wage from salary and income will rise by \$33,156.71, all other factors remaining constant, and possessing an advanced degree leads to average wages higher by \$58,703.79. Not surprisingly, all of the education variables are extremely statistically significant, at greater than the 99% level of confidence.

If we look at the *age* variable, we can see that as the head of the household gets older, the real wage increases; for every year older, on average, a head of household earns \$3,429.38 more in wages. However, the coefficient of the squared age variable (*age squared*) is negative, indicating that there is a negative quadratic relationship between real wage from income and salary and age. As one gets older after a point, the real wage starts falling, probably due to lower wages in retirement. This can be also be attributed to the age bias/discrimination – older people after an age are not too appealing to employers, so they draw a lower wage.

In the next section, I conclude with the policy implications of these findings.

7. POLICY RECOMMENDATIONS AND CONCLUSION

My thesis set out to study the hypothesis is that when employers are mandated to provide health insurance benefits to eligible workers, the high cost of premium and coverage would cause them to shift the burden onto the workers, which could lead to adverse labor market outcomes. On the demand side, this would lead to a fall in full-time employment (and a rise in part-time employment or unemployment), a lower overall demand for labor, and fall in wage in hand. On the supply side, this would impact decisions such as when to retire, whether to enter the labor market at all (especially spouses who are already covered), and whether to switch jobs (the “job lock” effect).

Based on the dataset in hand and past research, the results are consistent with my hypothesis. A rise in cost to the employer in the form of insurance coverage mandate is transferred onto the worker in the form of lower wages from income and salary. The results are even more jarring once socio-economic and demographic factors are taken into consideration. The fact that the employee is dependent on the employer for health insurance due to non-availability of other affordable options means that the employee may be facing job lock effect, or is not retiring over the fear of losing out on insurance, or is in a bad job only for the benefits. Radical changes are necessary in the health care and insurance sectors to ensure that the population is not left paying exorbitant costs for health care, and is also not unwillingly tied to a job just for the insurance benefits.

One way to remedy this is for government insurance to cover all who need it. The government stepping in and providing insurance for all (a single payer system) would also solve

the problem of adverse selection and moral hazard caused by asymmetric information in the health care and insurance markets.

Another policy to look at would be increasing competition and price transparency to lower the cost burden of health care costs. Price transparency would help patients shop for the best care available and would also prevent health care providers from anticompetitive behavior.

A third policy recommendation would be in terms of lowering the cost of health care by providers. This can be done by requiring providers to publicly justify their prices, having states discourage high prices by these providers, or setting prices via regulation.

Past literature as well as my analysis have shown that health insurance is an important factor in almost every labor market decision made by individuals – whether to work, how much to work and where to work. It also plays an important role for employers in their decisions - how many workers to hire, whom to hire, and how to structure the terms and conditions of employment (Madrian, 2006).

While the impact of the employer mandate can lead to higher coverage (at least for full-time employees), thus reducing the problems of adverse selection and moral hazard prevalent in the insurance market, the cost of providing this coverage is ultimately being transferred to the employees which can lead to adverse labor market outcomes and the employee ultimately bearing the burden of health insurance coverage costs and not being better off in any way. Every person has a right to quality health care, and this should not be determined by their labor capabilities.

BIBLIOGRAPHY

- Baicker, K. and Chandra, A., 2006. The labor market effects of rising health insurance premiums. *Journal of Labor Economics*, 24(3), pp.609-634.
- Buchmueller, T.C. and Valletta, R.G., 1999. The effect of health insurance on married female labor supply. *Journal of Human Resources*, pp.42-70.
- Buchmueller, T.C., DiNardo, J. and Valletta, R.G., 2011. The effect of an employer health insurance mandate on health insurance coverage and the demand for labor: Evidence from hawaii. *American Economic Journal: Economic Policy*, 3(4), pp.25-51.
- Cooper, P.F. and Monheit, A.C., 1993. Does employment-related health insurance inhibit job mobility?. *Inquiry*, pp.400-416.
- Enthoven, A.C. and Fuchs, V.R., 2006. Employment-based health insurance: Past, present, and future. *Health Affairs*, 25(6), pp.1538-1547.
- Gruber, J., 1994. The incidence of mandated maternity benefits. *The American economic review*, pp.622-641.
- Gruber, J. and Krueger, A.B., 1991. The incidence of mandated employer-provided insurance: Lessons from workers' compensation insurance. *Tax policy and the economy*, 5, pp.111-143.
- Gruber, J. and Madrian, B.C., 1997. Employment separation and health insurance coverage. *Journal of Public Economics*, 66(3), pp.349-382.
- Johnson, R.W., Davidoff, A.J. and Perese, K., 2003. Health insurance costs and early retirement decisions. *ILR Review*, 56(4), pp.716-729.
- Karoly, L.A. and Rogowski, J.A., 1994. The effect of access to post-retirement health insurance on the decision to retire early. *ILR Review*, 48(1), pp.103-123.
- Kolstad, J.T. and Kowalski, A.E., 2016. Mandate-based health reform and the labor market: Evidence from the Massachusetts reform. *Journal of health economics*, 47, pp.81-106.
- Madrian, B.C., 1994. Employment-based health insurance and job mobility: Is there evidence of job-lock?. *The Quarterly Journal of Economics*, 109(1), pp.27-54.

Madrian, B.C., 2006. The US health care system and labor markets (No. w11980). National Bureau of Economic Research.

Madrian, B.C., Burtless, G. and Gruber, J., 1994. The effect of health insurance on retirement. *Brookings Papers on Economic Activity*, 1994(1), pp.181-252.

Olson, C.A., 1998. A comparison of parametric and semiparametric estimates of the effect of spousal health insurance coverage on weekly hours worked by wives. *Journal of Applied Econometrics*, 13(5), pp.543-565.

Royalty, A.B., 2008. Estimating workers' marginal valuation of employer health benefits: Would insured workers prefer more health insurance or higher wages?. *Journal of health economics*, 27(1), pp.89-105.

Rust, J. and Phelan, C., 1997. How social security and medicare affect retirement behavior in a world of incomplete markets. *ECONOMETRICA-EVANSTON ILL-*, 65, pp.781-832.

Schone, B.S. and Vistnes, J.P., 1997. The relationship between health insurance and labor force decisions: An analysis of married women. Available at SSRN 99668.

Stroupe, K.T., Kinney, E.D. and Kniesner, T.J., 2001. Chronic illness and health insurance-related job lock. *Journal of Policy Analysis and Management: The Journal of the Association for Public Policy Analysis and Management*, 20(3), pp.525-544.

Thurston, N.K., 1997. Labor market effects of Hawaii's mandatory employer-provided health insurance. *ILR Review*, 51(1), pp.117-135.

Wellington, A.J. and Cobb-Clark, D.A., 2000. The labor-supply effects of universal health coverage: what can we learn from individuals with spousal coverage?. In *Research in Labor Economics* (pp. 315-344). Emerald Group Publishing Limited.