THE AFFORDABLE CARE ACT DEPENDENT HEALTH INSURANCE MANDATE'S EFFECT ON THE LIFE SATISFACTION OF YOUNG ADULTS

by

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ABSTRACT

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On September 23, 2010, the dependent health insurance mandate of the Affordable Care Act (ACA) increased the family health insurance coverage of young adults up to age 26. The present study principally examined the effect of this mandate on life satisfaction of young adults, in addition to health care access, self-reported health, preventative care, and labor market outcomes. Through health insurance coverage, it is hypothesized that the ACA mandate will lead to a higher life satisfaction in young adults. Using the Behavior Risk Factor Surveillance System data of 2005 through 2013 to assess the effect of the ACA mandate, this paper estimates difference in difference models with either ages 19-25 or 23-25 as the treatment groups and 18 or 27-29, or even both, as the control groups. No evidence of an effect of the ACA mandate on life satisfaction was found. However, the dependent coverage increased the percentage of having health insurance, probability of being employed, and having a doctor; it also decreased the probability of forgoing care due to cost and the chance of receiving a flu vaccination.

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CHAPTER ONE

INTRODUCTION

A. Briefing on Subjective Well-Being & Affordable Care Act Mandate

On September 23rd, 2010, a provision of the Affordable Care Act (ACA) increased the dependent health insurance coverage of young adults on their family's plan until their 26th birthday (Collins et al. 2014). The ACA has led to an increase in health insurance coverage of 9.5 million individuals, of which the greatest increase was through young adults due to the dependent health insurance mandate (Collins et al. 2014). In regards to overall sentiment after passing of the ACA, 81% of Americans said they were very or somewhat optimistic the new coverage will improve their ability to get the health care they need, 58% of them said they are better off now than before getting their new plan, and 78% of them are very or somewhat satisfied with their new coverage (Collins et al. 2014). To a degree, it seems that this added insurance coverage through the ACA has benefitted Americans with a greater peace of mind and overall subjective well-being.

The extensive literature has suggested that the ACA mandate has led to many effects on young adults (Antwi et al. 2012; Bailey 2013; Barbaresco et al. 2015; Cantor et al. 2012; Chua and Sommers 2014; Depew 2012; Slusky 2012; Sommers and Kronick 2012). Along with greater insurance coverage, there has been an increase in primary care doctor visits and a decrease in foregone care due to excessive costs (Barbaresco et al. 2015; Slusky 2012). Studies have also reported mix effects on labor market opportunities, educational attainment, and marital decisions for young adults (Bailey 2013; Depew 2012; Slusky 2012). However, very little studies have examined the effect of the ACA mandate on the subjective well-being, i.e. happiness or life satisfaction, of young adults.

There are several factors that have shown to have an impact on life psychological well-being. For example, Kapteyn et al. (2007) found that happiness is affected more by anxiety related to financial or health difficulties rather than having to deal with those problems themselves. Also, using a life-satisfaction survey, Lelkes (2006) saw that unemployment reduced happiness by 15%. In addition, Ferrie et al. (1995) found that privatization of public organizations raised job insecurity for employees and decreased happiness. Lastly, Deker and Schaufeli (1995) found that individuals experienced an increase in psychological well-being after they knew they were going to be laid off. It seems that overall economic conditions, job insecurity, and health difficulties play a major role in overall subjective well-being.

B. Purpose & Organization:

Despite the extensive literature on the effects of the ACA mandate and factors affecting subjective well-being, very little is known on how the ACA mandate has impacted the life satisfaction of young adults. Bridging this gap, the present study principally uses a difference in difference (DD) model to investigate the effect of the ACA dependent mandate on the overall life satisfaction of young adults. Other various effects of the ACA mandate are also examined. With more freedom to make certain decisions because of added insurance coverage through the ACA mandate, it is hypothesized that there will be greater overall life satisfaction among young adults.

The DD models examined the effects of the ACA mandate on young adults of various age brackets. The present study found that the ACA mandate has had a favorable effect on health insurance coverage throughout all analyses. However, compared to only 27-29 year olds, 19-25 year olds benefited from having greater access to primary care doctors and having less care

prevented because of costs. The ACA mandate only marginally benefitted young adults in increased use of flu vaccinations. The principal hypothesis of the study was not supported as no effect on improved life satisfaction among young adults was found. Further, young adults seemed to show no real improvement in days of having poor mental or physical health, but there was a benefit of greater employment from the ACA mandate for the lower age group of young adults (19-25 years).

To investigate this relatively novel empirical question, the present study is organized as follows. Chapter 2 is a literature review. The economic, econometric, and estimation models of the study are later developed in Chapter 3. A description of the data and empirical results are in Chapters 4 and 5, respectively. Chapter 6 is a conclusion summarizing the results, limitations and future implications of the study.

CHAPTER TWO

LITERATURE REVIEW

On September 23rd, 2010, the United States witnessed the implementation of the ACA's national dependent health insurance mandate. The extant literature has discussed heavily about the effects of this recent health insurance mandate on young adults and on various factors affecting well-being. However, very little is known on how this wide reaching health mandate has impacted well-being of young adults. It is possible that the ACA mandate could be linked to an increase in life satisfaction of young adults. To investigate this idea further, it is important to review the literature on pertinent themes: background for the ACA mandate, effects of the ACA mandate on young adults, background on well-being research in economics, and well-being and health insurance.

A. Background of the ACA mandate

The health insurance status of young adults in the US was very poor leading up to the implementation of the ACA dependent mandate. In 2006, based on a calculation in Levy (2007), about half of uninsured individuals in the US were between the ages of 18-34. Furthermore, in 2008, according to an analysis by Depew (2012), it was found that 90 percent of Americans had some form of health insurance at age 18, but this percent dropped to 70 percent at age 19.

There are several economic and social consequences of this historical national difficulty faced by young adults to obtain health insurance. Research has shown that young adults have a significant reduction in health care service (Collins 2006). They tend to be insured by poor sources because of "job-lock" or imperfections in the market for individually purchased insurance (Madrian 1994). Further, young adults who do not have health insurance are tied to

financial problems as well (Himmelstein et al. 2005); they will likely suffer from adverse health shocks such as large out-of-pocket medical expenses or loss of income (Blanchflower 2009). Merluzzi and Nairn (1999) also found that uninsured young adults tend to suffer from obesity, and alcohol and tobacco use that leads to health and economic problems in their adult years.

Prior to the ACA mandate in 2010, there have been other policies implemented to increase the health insurance access from children to young adults. In 1997, the State Children's Health Insurance Program was passed. One of its provisions is increased dependent health insurance until the child turns 19 years old for those with incomes slightly higher than the Medicaid level (Medicaid.gov 2014). Further, in 1995, Utah was the first to enact a law that increased dependent health insurance coverage up to age 26, but by January 1st, 2010, 31 states had implemented state laws that increased dependent insurance coverage. However, depending on the state, certain restrictions apply. Depending on whether a young adult is married, a student, a resident of the state, or has health insurance could all affect eligibility for the dependent family coverage (National Conference of State Legislatures 2010). Also, there were many young adults without dependent health insurance coverage who still had health insurance through college and university plans. About 38% and 79% of public and private universities, respectively, require students to have health insurance (Nicholson et al. 2009).

It was expected that the ACA dependent health insurance coverage would improve upon these prior state expansions. The law requires health insurers and employer group plans, including self-insured plans, to provide coverage to dependents up till age 26, regardless of any of the restrictions listed by the individual state mandates (HealthCare.gov 2014). Certain plans known as "grandfathered plans" that already existed prior to the ACA mandate are not required to enroll young adult dependents who have insurance through a job. However, after 2014, the

grandfathered plans must offer a package of "essential health benefits" that provides dependent health insurance to the young adults, regardless of wether the individual has employer-provided health insurance (Barr 2013). Finally, while many believe that the law's effects took place right after the September 23rd implementation date, the Secretary of Health and Human Services, Kathleen Sebelius, called on leading insurance companies to cover young adults as early as May 2010. She believed it would have been too costly to wait, as the companies would have had to un-enroll those who were graduating from college and then re-enroll them in six months (Dol.gov 2014).

B. Effects of the ACA Mandate

As with most other implemented policies, there have been several studies that have examined various effects of the recent ACA mandate on young adults. Across the extant research, authors have examined seven main effects: health insurance coverage, health access, preventative care, risky health behaviors, labor market behavior, school enrollment, and various social outcomes. To determine these effects, all authors used an age-time difference-in-difference (DD) model. The age dimension defines those in treatment group as those either in the "19-25" or "23-25" age bucket, and depending on the data set, either the "16-18", "18", "27-33", "26-34", "27-29" age groups served as the controls. In addition, across the various, the time dimension for the control and treatment groups were before and after either September 2010, May 2010, or the year 2010.

While many authors have had various methods of measuring insurance take-up as a result of the ACA mandate, the findings consistently show that the recent health care policy led to a rare success in the effort to cover the uninsured. Using the Current Population Survey (CPS),

Cantor et al. (2012), Slusky (2012), and Sommers and Kronick (2012) found an increase in health insurance coverage. The CPS is the most popular dataset for federal and state mandate difference-in-difference analysis. It offers demographic and employment information, including retrospective questions about health insurance coverage from the previous year. Further, with the Survey of Income and Program Participation (SIPP), Antwi et al. (2012) and Depew (2012) found an increase in health insurance coverage as well. The SIPP is a household-based nationally representative longitudinal survey of the civilian non-institutionalized population. Using the Behavioral Risk Factor Surveillance System (BRFSS) data, Barbaresco et al. (2015) found a statistical increase in insurance coverage. The BRFSS is a telephone survey conducted by state health departments in conjunction with the US Center for Disease Control (CDC). Finally, using the Medical Expenditure Panel Survey (MEPS), Chua and Sommers (2014) found an increase in percentage points in probability of having health insurance coverage. The MEPS is the most comprehensive source of data on the cost and use of health care and insurance coverage in the US; it is an annual household survey conducted of the US civilian population by the Agency for Healthcare Research and Quality.

Along with health insurance coverage, there were studies that examined several natural correlates, such as health care access, preventative care utilization, and risky behaviors. Slusky (2012) and Barbaresco et al. (2015) found an increase in the use of a primary care doctor and a decrease in care forgone due to excessive costs. In addition, the studies also found an increase in use of flu vaccinations. Also, Chua and Sommers (2014) found no effect of the mandate on outpatient and primary care visits, emergency department visits, hospitalizations, and use of prescription medicine. Finally, Barbaresco et al. (2015) saw an increase in probability of being a risky drinker and decrease in overall body mass index.

Studies also have found that the ACA mandate affected the labor market decisions of young adults, such as full-time employment, self-employment, etc. Depew (2012) found that the ACA mandate led to a decrease in labor force participation of young adults. With greater health insurance coverage, there is a lesser need for young adults to seek out a job that provides insurance (Depew 2012). Consistent with this argument, using the Integrated Public Use Microdata Series (IPUMS) of the American Community Survey (ACS), Bailey (2013) found an increase in self-employment in young adults as a result of the ACA. Further, Antwi et al. (2012) and Slusky (2012) found no significant effect on probability of employment. However, when examining hours worked, Antwi et al. (2012) found a decrease in number of hours worked and an increased desire of part-time work due to the ACA mandate. Similarly, Depew (2012) and Slusky (2012) found a significant increase in part-time employment. Since individuals are forced to work full-time to get health insurance benefits, young adults with health insurance under the ACA will be freer to work on a part-time basis (Buchmueller and Valletta 1998). This finding is also similar to the work of Buchmueller and Valletta (1998), which investigated an economic model that represented an increase in utility of working part-time for women who gained health insurance coverage through their husbands' jobs.

Along with job employment, it is also very important to consider the effect of the ACA on educational attainment. Depew (2012) found an increase in the probability of being a full-time student, but the author saw no difference in the probability of being a part-time student. Using the CPS School Enrollment Supplement, Slusky (2012) found an increase in likelihood of being a college student, an increase in attending a public university, and a decrease in attending a private university. Further, young adults were more and less likely to attend a 2-year and 4-year school, respectively (Slusky 2012). These findings are consistent with the argument that the

desire to attend the more expensive educational option-either private university or a 4 year school-to get a better paying job with many benefits may not be as strong with an increase in health insurance coverage.

The ACA mandate certainly played a role in other social outcomes of young adults as well. Depew (2012) found a decrease in likelihood to be married among female young adults, but there was no difference in males. This trend is expected because females demand more healthcare, and in marriages, women tend to be secondary earners and rely on husbands for health coverage. Thus, with this new health insurance coverage, young adult females may not be willing to tie the knot just yet (Depew 2012).

C. Background on Subjective Well-being Research in Economics

Traditionally, subjective well-being has been a main area of study in psychological and sociological research. It was mainly after the work of Easterlin (1974) that happiness research emerged to play a particular role in economic studies. The availability of subjective well-being data has provided economists an alternative venue to examine the welfare effects of a policy change, rather than through just observing the choices made by people. Specifically, scholars have been listening to what people say satisfies them through incorporating data that involves questions such as: "Are you very happy, pretty happy, or not too happy?," or "Generally speaking, how satisfied are you with your life?" (Di Tella and MacCulloch 2006; Graham 2008). Particularly, subjective well-being data can serve as a proxy utility measure of choices made (Oswald and Wu, 2011).

With these various studies that have evaluated policy changes through well-being research, scholars have raised questions on the merit of using this method to determine utility.

The skeptical position is that talk is cheap, and unstructured dialogue with open-ended questions such as "Are you happy (satisfied)?" is not meaningful; well-being research is just a bunch of "noise" (Di Tella and MacCulloch 2006). To test if this hypothesis is true, one could see if happiness scores correlate with other variables that are associated with utility. For example, Winkelmann and Winkelmann (1998) found that unemployed individuals tend to report low happiness scores. This outcome is plausible because other "bads" like divorce, addiction, depression, and violence are linked to unemployment. Nonetheless, researchers understand that happiness and satisfaction scores measure internal utility with some noise, but they believe that the signal-to-noise ratio in the available data is high enough to make empirical research worthwhile (Di Tella and MacCulloch 2006).

Further, individuals question how similar the responses are to well-being questions from one person to another. Simply, the skeptics state that the unobservable variable of "exaggeration" is not included in the well-being equation and one could derive more utility from a choice than the other (Di Tella and MacCulloch 2006). However, subjective well-being researchers in economics state that the well-being data is often compared among large groups of people, which will decrease the chance of systemic differential reporting biases (Di Tella and MacCulloch 2006).

D. Well-being and Health Insurance

The extant literature suggests that there might not be a clear link between subjective well-being and health insurance coverage. While there have been studies that have shown an increase in happiness with greater insurance coverage, there are also recent studies that have shown no effect of the ACA mandate coverage on improving those with poor mental or physical health.

Literature has suggested that insurance coverage may not improve access to care, utilization of preventative health insurance measures, or overall health in the way one would expect.

The effect of health, and health insurance coverage, on well-being both on the micro-and-macro level of a nation has been well documented. Graham (2008) found that health had a strong impact on happiness in United States, Latin America, and Russia. Also, in 2004, the author found that happiness and health insurance coverage were highly correlated in Latin America. Keng and Wu (2013) found an increase in days of not feeling depressed, happiness, and enjoying life among the elderly population for those who gained insurance coverage through Taiwan's National Health Insurance law. Further, using BRFSS data from 2005-2009, Blanchflower (2009) found a negative relationship between level of overall satisfaction and inability to see the doctor or lack of insurance coverage. Finally, when 10,000 Oregon citizens were randomly given Medicaid health insurance coverage, Finkelstein et al. (2012) saw an improvement in self-reported physical and mental health. Through these studies, while measuring different aspects of subjective well-being, happiness and life-satisfaction questions have been shown to have very high correlations.

Despite the significant evidence showing a link between happiness and health insurance, recent studies examining the ACA dependent mandate found no effect on improving self-report health measures. Using BRFSS, Slusky (2012) discovered that added insurance coverage had no effect on the number of young adults that reported a decrease in poor health. Further, Barbaresco et al. (2015) reported no effect on decreasing the number of days with poor mental or physical health, in addition to no effect on decreasing days of limited activity due to poor health. However, Barbaresco et al. (2015), Chua and Sommers (2014), and Slusky (2012) still found a significant increase in the percentage of young adults reporting days of having excellent health.

It seems that the ACA mandate has led to an improvement only on the higher end of the health distribution, or days of having "good" or "excellent" mental or physical heath.

The lack of improvement on young adults' health on the lower end of the health distribution, or days with poor health, could be due to several reasons. Grossman (1972) suggested that health could only be improved to a certain amount. The gains in health depend on the initial level of health capital. Because the uninsured can often still obtain necessary care by paying directly or receiving charity care, these uninsured young adults may not always have an initial poor baseline level of health. Certain young adults lead riskier lifestyles than others, i.e. smoking, excessive drinking, or over eating. Since medical professionals are limited in the help they can provide, i.e. only information strategies and medical drugs, it is possible that these lifestyle changes will not become better. Further, young adults may choose to live even riskier lifestyles because of health insurance through the *ex ante* moral hazard. Because these individuals realize that they no longer are responsible for the financial losses of adverse health shocks, they may have a greater propensity to take more health risks (Ehrlich and Becker 1972). In addition, the greater income as a result of subsidized health coverage or drop in out-of-pocket medical expenses may not only lead to more consumption of preventative tests, but also more money for health risky activities (Ehrlich and Becker 1972). Finally, the reported increase in the higher end of the health distribution could be due to the "warm glow" effect. Individuals will report more days of "excellent" or "great" health just from being happier with having health insurance coverage, not from the added benefits of increased health care consumption (Finkelstein et al. 2012). While the goal of the mandate is to insure young adults, it still up to question if there will be true health benefits.

While there is conflicting evidence on whether the ACA mandate will lead to improved overall mental or physical health among young adults, it is still possible that the life satisfaction of young adults will be better. Regardless of whether they were utilizing the added health benefits or choosing to lead riskier lives because of the increased health insurance coverage, the young adults were still making decisions from which they derive the most utility. Therefore, it is hypothesized that the ACA dependent mandate will lead to increased life satisfaction among young adults. A statistical DD model that incorporates BRFSS data to establish a link between life satisfaction and the ACA dependent health insurance law is developed. As the age dimensions of the DD model, "19-25" or "23-25" age brackets serve as the treatment groups, and "18" or "27-29" age brackets serve as the control groups. For the time dimension, January 2005 to April 2010 is the control group, and May 2010 to December 2013 is the treatment group. Along with the principal life satisfaction DD model, to further verify other studies' findings, there are 9 other DD models to investigate ACA effects related to health care access, utilization of preventative care, self-assessed health, and labor market decisions.

CHAPTER THREE

EMPIRICAL MODELS

A. Economic Model

As a supplement to the work of Buchmueller and Valletta (1998), the present study also investigates an economic model for the utility maximization of self-employment. Buchmueller and Valletta (1998) found an increase in utility for part-time work by women who have husbands with health insurance. Just like the wives who gained health insurance coverage through their husbands' job, the young adults have now gained health insurance coverage through their families' plans as a result of the ACA mandate. The findings by Slusky (2012) and Antwi et al. (2012) have shown that young adults have decreased their full time employment as a result of the ACA mandate; Bailey (2013) found an increase in self-employment.. If an increase in subjective well-being, a decrease in full-time employment, and an increase in self-employment are found through the DD models of the present study, it is practical to apply the economic model shown in Figure 1.

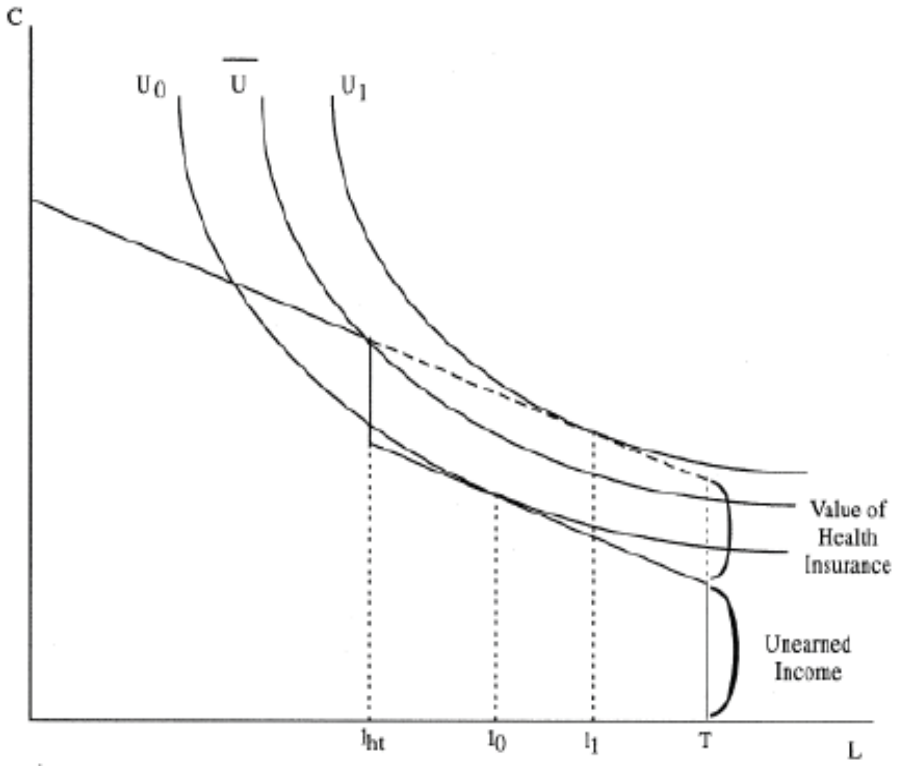

Figure 1: The Effect of the ACA Mandate-Provided Health Insurance on Hours of Work.

Note: *h=health insurance mandate, t=time, u=utility, T=total hours worked, L=leisure, C=Consumption,*

A young adult faces a standard consumption (C) and leisure (L) tradeoff, subject to hourly wage rate and total hours available (T). The solid line segment in Figure 1 portrays the restraining budget constraint. Without health insurance provision, the young adults maximize their utility at point 1_o and work $T - 1_o$ hours. For those jobs that require a minimum of $T - 1_{ht}$ hours worked to get health insurance, the second vertical line represents the consumption value of health insurance coverage. The young adult will now maximize utility at 1_{ht}. However, with health insurance coverage through the ACA, the dotted portion now represents the budget constraint. The new utility maximization will be at 1_1. Young adults are now receiving higher utility through the health insurance coverage provided by their families, along with greater leisure time. These young adults now have more time to pursue start-up companies, or be self-employed (Largely adopted from Buchmueller and Valetta 1998).

B. Econometric Model

DD Model: $y_{iats} = \beta_0 + \beta_1(age\_d_a \, x \, year\_d_t) + \beta_2 \, age\_d_a + \beta_3 year\_d_t + \beta_4 State_s + \beta_5 Year_t + \beta_6 StateUnemp_{st} + \beta_7 AgeUnemp_{at} + \beta_8 StateMandate_{ast} + \beta_9 X_{iast} + \varepsilon_{at}$

Dependent Variables:

- ***Health Access:***

Any health insurance 1 if individual (age 18-64) has health insurance coverage; 0 otherwise
Any primary provider 1 if individual has a personal doctor or health care provider; 0 otherwise
Cost prevented care 1 if forgone seeing a doctor because of cost in past 12 months: 0 otherwise

- ***Preventative Care:***

Flu Vaccination 1 if individual had flu shot or spray in past 12 months; 0 otherwise

- ***Life Satisfaction:***

Life Satisfaction Satisfaction with life (Very Satisfied, Satisfied, Dissatisfied, Very Dissatisfied)

- ***Self Reported Health:***

Mental Health Number of days in the past 30 days an individual's mental health was not good
Physical Health Number of days in the past 30 days an individual's physical health was not good

Limited Activity	Number of days poor physical or mental health kept individual from doing physical activities

• ***Labor:***

Employed	1 if employed for wages; 0 otherwise
Self Employed	1 if self-employed; 0 otherwise

Independent Variables:

age_d	1 if the individual is in the 19-25 "treated" age bucket; 0 if the individual is 18; 0 if the individual is between 27-29
year_d	1 if the observation is from after September 2010; 0 if the observation is before May 2010
State	State fixed effects at the state level
Year	Time fixed effects at the year level
StateUnemp	State-level unemployment rate
AgeUnemp	Age-specific unemployment rate
StateMandate	In-effect state mandate that the individual meets the age requirement
X	Vector of individual level controls, such as race and sex
a	age
t	time
s	state
I	individual
y	outcome being studied

C. Estimation Model

For the health access, preventative care, and labor measures, a probit estimation method is used. It is a type of regression where the probability a dependent variable will take either one value or another, i.e. employed or not employed, is estimated. For the life satisfaction model, an ordered probit estimation method is used. It is similar to the probit estimation method, except there are more than two outcomes for the ordinal dependent variable, i.e. very satisfied, satisfied, dissatisfied, very dissatisfied. For the self reported health measures, ordinary least squares (OLS) estimation is used. It is a statistical technique to find the function that most closely approximates the data.

CHAPTER FOUR

DATA DESCRIPTION

A. Overview & Advantages of the Behavioral Risk Factor Surveillance System (BRFSS)

The BRFSS is the cross-sectional data set for the present study. In the early 1980s, there was significant scientific research that showed that personal health behavior played a key role in premature morbidity (CDC 2013). In 1984, the Center for Disease Control established the BRFSS to collect data on actual behaviors, rather than on attitudes or knowledge, that would be useful for planning. It became a nationwide surveillance system in 1993, and by 2011, more than 500,000 interviews had been conducted (CDC 2013). Data is collected each month in all 50 states, the District of Columbia, American Samoa, Palau, Puerto Rico, the U.S. Virgin Islands, and Guam. The first year that mental health questions were incorporated in the survey was 2005 (CDC 2013). Further, to account for the controls of age- and state-specific unemployment levels, the cross-sectional monthly CPS data was used as well.

There are several advantages to using the BRFSS. First, the survey provides a large number of observations than other datasets with necessary variables (CDC 2013). Also, it contains demographic characteristics, such as state, month, and year identifiers to help control for several different factors. Finally, the BRFSS provides several pre-treatment waves that allow detail testing of differential trends in the outcomes between treatment and control groups (CDC 2013).

B. Description of Difference in Difference Models & Selection of Sample Sizes

For the DD models, the treatment groups vary in the age dimension from “19-25” to “23-25”, and the control groups vary from “18” and “27-29” to only the “27-29” age group. While

Barbaresco et al. (2015) only used the "23-25" as the treatment group because these ages tend to not be affected by the state mandates, Slusky (2012) used "19-25" and "23-25" age groups. Consistent with Slusky (2012), this study uses both of these groups because not all states had mandates; therefore, it will be worthwhile to examine the effect of the ACA dependent mandate on both treatment groups. For the time dimension, January 2005 to April 2010 is the control group, and May 2010 to December 2013 is the treatment group. These time periods are used to control for Secretary of Health Katheleen Sebelius's call on insurance companies to take on young adults prior to the ACA dependent official implementation date. There will be 10 DD models to investigate outcomes related to life satisfaction, self-assessed health, health care access, preventative care, and labor market decisions. First, as the principal DD model of the study and a proxy for utility derived from the welfare effects of the mandate, life satisfaction is measured by individuals responding to how satisfied they are with life: very satisfied, satisfied, dissatisfied, very dissatisfied. The self-assessed health measures are the number of days in the past 30 days that one did not have good physical or mental health and the number of days poor health has prevented work. For health care access, the measures include dummies for having insurance, a primary care doctor, and any forgone care because of cost. Further, the preventative care measure is a dummy for a recent flu vaccination. Finally, the labor market decision measures are dummies for employment and self-employment.

There were also several control variables. Similar to Slusky (2012), the DD models control for race, sex, state, year, and age. Further, the individual state mandates were also controlled for whether an individual's state had any dependent coverage with regards to her age and student status group in the survey year (National Conference of State Legislatures, 2010).

With monthly data from the CPS, the state-level unemployment and age-specific unemployment rates were controlled for as well.

The largest sample for this study is 150,023 respondents. The DD models incorporated in this are those within the ages from 18-29, except for the age 26. The group specifically includes those who gave a response to the survey questions, as those who were not sure or provided no response were dropped from the sample. Naturally, as the number of age groups decrease, the number of respondents decreases in the DD models as well, with 138,139 respondents for those in the ages 19-29 and 94,101respondents for those in the ages 23-29. Across all the DD models, there was a smaller amount of respondents for the "overall life satisfaction" variable due to the shorter span of the data (no data past 2010).

C. Descriptive Statistics & Means of Outcome Variables

Table 1 presents the descriptive statistics for the largest sample size of respondents. From the *any health insurance* row, it is great that 75% of young adults have some form of health insurance plan, given that they have historically shown to have the highest un-insurance rate in the country. However, just because they have a health plan, it does not mean that they have a doctor, as only 66% report having a primary care doctor in the *any provider* row. Also, through the *cost prevented care* row, it seems that having insurance does not seem to completely curtail costs to provide complete access to care with 24% of respondents still reporting having costs that prevent care; in addition, the *flu vaccination* row indicates health insurance does not always increase preventative measures because only 25% in this age group utilized a flu shot or spray. The *overall life satisfaction* row shows that young adults seem to be between very satisfied to satisfied with life. From the *days of poor physical health* row, the number of days with poor

physical health is relatively low at 4 days. In the following row, it seems that young adults tend to show poor mental health for 7 of the past 30 days. In addition, given the great health of this age group, these young adults were only limited by about 3 days because of poor health (*days with health limitations* row). Finally, given that these are the years that a significant percent of young adults are in school, it is expected that slightly more than half of them would be employed and a very small percent would be self-employed (*employed* and *self-employed* rows, respectively).

Table 2 reports the pre- and post-sample means of the outcome variables for the treatment and control groups, including the calculated simple difference-in-difference of means. The difference-in-difference values are positive and significant for *any insurance coverage* and *any provider*, while the value for *cost prevented care* was negative and marginally significant. Further, the difference-in-difference values of the other variables had no statistical significance. Without controls, Table 2 provides preliminary evidence that changes over time in observables and un-observables may not be substantially different between 19-25 year olds and 18 or 27-29 year olds.

CHAPTER FIVE

EMPIRICAL RESULTS

Table 3 presents the results of the DD models examining the effect of the ACA mandate on 19-25 year olds compared to 18 or 27-29 year old age groups. Through columns 1-4 and 9-10, there is a probit model with marginal effects. In column 5, there is an ordered probit model with marginal effects, and finally, in Columns 6-8, there is an ordinary least squares model with regression coefficients. In column 1, given it was the intended goal of the ACA mandate, there is a 5.8 percentage point increase in the probability of having health insurance. However, as seen through columns 2-3, there is no effect of the mandate on the other health access measures. Interestingly, in column 4, contrary to Slusky (2012) that found no effect on flu shots, at the 10 percent level, there is a significant 1.5 percentage point decrease in the probability of having flu shots taken. As already discussed by Ehrlich and Becker (1972), this finding might reflect the *ex ante* moral hazard. Because of greater insurance coverage, young adults may choose to lead riskier lives and forgo flu shots; possibly, they think they can now afford the more expensive care necessary when they get the flu. In column 5, there is no ACA dependent provision marginal effect on overall life satisfaction. It is logical to conclude that there is no utility derived from the ACA mandate, but a caveat is that there was limited data for this variable, as the BRFSS did not collect information past the year 2010. More conclusive findings can only be determined when adequate data is obtained. For columns 6-8, consistent with the findings of Barbaresco et al. (2015), there is no effect of the mandate on improving self-reported health, which could be due to the high intrinsic health capital of young adults.

For the labor market outcomes, the results differed from those of the existing studies. In column 9, there is a marginal effect of a 3.3 percentage point increase in the probability of a

young adult being employed, and in column 10, there is no effect on being self-employed. However, using CPS data, Slusky (2012) found a decrease in being employed full time and an increase in being employed part time. Further, using SIPP data, Antwi et al. (2012) found a greater probability of having hours that vary per week. In addition, using the ACS, Bailey (2013) had instead found an increase in self-employment due to the ACA. Therefore, this discrepancy in findings could be due to the fact that BRFSS does not differentiate between part time and full time employment, which the data sources (CPS, SIPP & ACS) of the other literature do specify. Because BRFSS respondents cannot specify whether they are part-time or full-time employed, there might be an over response to being employed, thus biasing this statistically significant finding. Further, given that young adults do not benefit as much from health insurance, the ACA mandate may not have had as great as an effect on young adults' desire to become self-employed. With no reported effect of increased life satisfaction, decreased employment, and increased self-employment due to the ACA mandate, the suggested utility maximum model cannot be supported.

Table 4 presents the results of the DD models examining the effect of the ACA mandate on 19-25 year olds compared to just the 27-29 year old age group. While most DD models stayed constant, a few changed after removing the 18 year olds. For example, two health access DD models in column 2 and 3 have become statistically significant. At the 1% level, there is a marginal effect of an increase in 3.1 percentage points of the probability of having a health care provider. In addition, at the 1% significance level, there is a marginal effect of a decrease in 3.3 percentage points of the probability of forgoing care due to medical costs. By removing 18 year-olds who tend to still be under the guidance of parents and probably do not engage in as much risky behavior as independent 27-29 year olds, it seems that the access benefits of having

health insurance coverage for young adults have become more defined. In column 6, for self-reported physical health, the greater benefit from the ACA mandate has led to a decrease in 0.378 percentage points of days of reported poor physical health. Further, in column 9, the significant marginal effect of the probability of being employed due to the ACA dependent health insurance mandate is no longer apparent. Given that the comparison group is the oldest age bracket of young adults older and tend to be educated with college degrees, they have greater employment opportunities. In addition, since these age groups are not benefiting as much from health insurance coverage, the mandate may not have relieved as much pressure as expected to get a job with health insurance benefits.

Finally, to remove as much variability as possible from the state's dependent mandate, the oldest treatment (23-25) and control groups (27-29) were used in the DD models presented in Table 5. While the majority of health access measures were consistent with Barbaresco et al. (2015), the cost prevented care measure is different in column 3. There is a marginal effect of a 2.4 percentage point decrease in the probability of forgoing care due to cost. As compared to Barbaresco et al. (2015), the number of pre-treatment years in the present study is greater by two (2005-2013 vs' 2007-2013). Therefore, it is possible that the present study incorporated more 27-29 year olds that are greater in debt and would benefit more from health insurance. With an older age comparison group, consistent with Barbaresco et al. (2015), the marginal effect of the mandate on preventative care in column 4 is now insignificant. Along with Barbaresco et al. (2015), in Columns 6-8, respectively, there is no effect of the ACA mandate on the self-reported health measures.

In sum, there were a few ACA mandate effects that did and did not change as the treatment and control group ages were altered across the various DD models. As expected, there

has been a statistically significant increase in probability of health insurance coverage as a result of the mandate throughout all models. However, there was only a marginal effect of the mandate on flu vaccination use when the youngest treatment and control groups were used. The present study found no evidence for the effect of the ACA mandate on life satisfaction due to limited available data[1]. Of the various self-report measures, it seems that only the physical health benefits of the ACA mandate became apparent only for 19-25 year olds compared to just 27-29 year olds. Finally, as the labor market opportunities increased with the older comparison age groups, the ACA mandate had less of an effect, particularly through employment.

[1] External life satisfaction DD models were run with a smaller amount of control waves (08-10) of BRFSS data to limit variability. There was still no effect of the ACA mandate found on life satisfaction across all various age groups.

CHAPTER SIX

CONCLUSION

The dependent health insurance law was one of the most successful components of the recently implemented Affordable Care Act. From November 2011 to March 2013, the number of young adults uninsured decreased from 39% to 34%, or about 18 million young adults to 15.7 million young adults (Goldman 2013). To determine the extent of the utility derived from the welfare effects of similar policy changes, economists have examined subjective well-being measures, either through happiness or life satisfaction questions. Using the BRFSS data, the present study principally used life satisfaction data as a proxy to determine the utility derived from this ACA policy. Other various effects of the mandate were also observed.

Through all these various analyses of the different DD models, several consequences of the ACA mandate were evident. As intended, probability of having health insurance coverage increased. Compared to just 27-29 year olds, the 19-25 and 23-25 year olds benefited from a greater probability of having primary care providers and a decrease in probability of forgoing care due to medical costs as a result of the mandate. Young adults seem to have marginal benefit in receiving flu vaccinations through the dependent mandate. There was no benefit of increased life satisfaction for young adults or improved health conditions through self-reported health measures, except for physical health of 19-25 year olds compared to 27-29 year olds. Lastly, as the age brackets of the DD models became older, this provision of the ACA played no advantage to the labor market opportunities of young adults.

Future research is necessary to understand the mechanism of how exactly the mandate improves health. While increased health care utilization is a certain possibility, early evidence on the ACA provision's impact on health care consumption is mixed. Antwi et al. (2013) found an

increase in hospitalizations using administrative data, but the present study found only marginal evidence for increased preventative care and the older age groups benefited from little increased health care access. Given that the present study incorporates years of good (2005-2006) and poor overall economic (2007-2009) activity prior to the ACA provision, this could increase the variability of the sample in the control group. Because job employment opportunities are greater in times of top economic growth, some young adults may have greater chances to receive their families' employer sponsored health insurance. Future studies that re-examine the results of the preventative care & health care access DD models of the present study should limit their pre-treatment waves to only after 2007. This might provide a more clear and reliable empirical model from which to interpret the mechanism of how the ACA mandate impacts health care access and preventative care use.

Economists have found consistent evidence linking subjective well-being and income, cigarette taxes, and etc., but the investigation of the relationship between subjective well-being and health insurance coverage has yet to develop a clear correlation (Di Tella and MacCulloch 2006). While Blanchflower (2009) found a negative relationship with the inability to see a doctor and life satisfaction data, the present study found no effect of the dependent health insurance mandate on the life satisfaction of young adults. Throughout all models, overall life satisfaction had the smallest amount of observations because BRFSS data for this variable was lacking after 2010. For future research, it would be better to re-run the models with more post-treatment overall life satisfaction data, i.e. incorporate BRFSS years of 2014 & 2015 data. Also, other survey data such as the General Social Survey and Gallup Poll that also ask life satisfaction questions can be incorporated for future research.

Further, for self-assessed health measures, there was no apparent effect of the ACA mandate on improving severe health conditions across the different models. Consistent with Barbaresco et al. (2015), the added coverage was not very effective on decreasing days of poor health in young adults (only the physical health of 23-25 year olds seemed to get better). As aforementioned, it is possible that the mandate has only led to an increase in the high end of the health distribution, or more days of "good health' (Barbaresco et al. 2015; Chua and Sommers 2014; Slusky 2012). To further verify the finding that the ACA mandate seems to be concentrated only on the high end of the health distribution among young adults, BRFSS variables that involve reporting days of "good or excellent health" using similar DD models should be examined.

Finally, there was no supporting evidence of the self-employment utility maximum model through the ACA mandate effects on labor market measures. Given that the extant literature has also reported an increase in part-time employment as a result of the dependent mandate, it is possible that a part-time employment utility maximum model might exist (Slusky 2012; Antwi et al. 2012). While the BRFSS does not differentiate between full time and part time employment, the General Social Survey also reports on labor market decisions. Future research should be directed on examining this proposed utility model with the General Social Survey.

The present study is one of the first to use life satisfaction data as a proxy to investigate the utility derived from the welfare effects of the ACA mandate. It adds to the recent trend of economists to use subjective well-being data in their research. In addition, the results also further verify previous findings to provide scholars of the field a better understanding of how this wide-reaching law is affecting the young generation of the US. Nonetheless, continuous research

examining various effects of the law is necessary to determine how it will help shape the future of American health care.

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Table 1. Descriptive statistics for DD models examining effects of ACA mandate

Variables	Mean (Stdv)	Min:Max
Health Access		
Any health insurance	0.75 (0.43)	0:1
Any provider	0.66 (0.47)	0:1
Cost prevented care	0.24 (0.43)	0:1
Preventative Care		
Flu vaccination	0.25 (0.43)	0:1
Life Satisfaction		
Overall life satisfaction	3.26 (0.630)	1:4
Self-Assessed Health		
Days of poor physical health	3.86 (6.85)	0:30
Days of poor mental health	7.07 (9.04)	0:30
Days with health limitations	2.58 (5.92)	0:30
Labor Market		
Employed	0.55 (0.50)	0:1
Self employed	0.05 (0.21)	0:1
Control		
Age_D	0.57 (0.50)	0:1
Year_D	0.47 (0.50)	0:1
StateUnemp	0.48 (0.17)	0.01:0.12
AgeUnemp	0.08 (0.02)	0.03:0.16
StateMandate	0.30 (0.46)	0:1
Black	0.09 (0.29)	0:1
Hispanic	0.12 (0.32)	0:1
Other	0.09 (0.29)	0:1
Female	0.61 (0.49)	0:1
Number of Observations*	150,023	

Notes: BRFSS Sampling Weights are used. *Overall life satisfaction had 88,234 observations due to lack of data. Sample size only incorporates treatment group, 19-25, and control groups, 18 & 27-29.

Table 2. Means for Outcome Variables

Outcome Variable	Pre-treatment Period		Post-Treatment Period		Difference-in-Differences
	Control (Ages 18, 27-29)	Treatment (Ages 19-25)	Control (Ages 18, 27-29)	Treatment (Ages 19-25)	
Health Care Access					
Any health insurance	0.777	0.690	0.737	0.725	0.074***
Any provider	0.216	0.256	0.245	0.255	-0.030***
Cost prevented care	0.700	0.629	0.651	0.600	0.020**
Preventative Care					
Flu vaccination	0.233	0.198	0.273	0.237	-0.001
Life Satisfaction					
Overall life satisfaction	3.269	3.226	3.243	3.237	0.038
Self Assessed Physical Health					
Days of poor physical health	3.807	3.645	4.188	3.810	-0.227
Days of poor mental health	6.645	6.808	7.187	7.212	-0.138
Days with health limitation	2.580	2.420	2.836	2.624	-0.052
Labor Market					
Employed	0.542	0.523	0.496	0.469	-0.007
Self employed	0.056	0.044	0.050	0.039	0.004

Note: BRFSS Sampling Weights are used. Means are reported. *** p<0.01, ** p<0.05, * p<0.1 Sample size only incorporates treatment group, 19-25, and control groups, 18 & 27-29