Impact of the Affordable Care Act on Young Adult's Health Insurance, Employment, and Education: A Three-Essay Dissertation

by

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ABSTRACT

The Patient Protection and Affordable Care Act (PPACA or ACA) Public Law No: 111-148, substantially changed health insurance access in the United States. One group that the law particularly affects is young adults, defined as individuals between the ages of 19 to 26. Specifically, the expansion of young adult dependent coverage was one of the first provisions that went into effect after the ACA's enactment. This dissertation comprehensively studies the impact of the ACA's dependent coverage provision on young adults. Across three empirical chapters, the dissertation examines outcomes related to health insurance coverage, labor market outcomes, and educational enrollment. Chapter 1, titled "Impact of the Affordable Care Act on Young Adults Insurance Coverage," documents the changes in health insurance take-up for the young adults population, which has historically had the lowest rates of such coverage. Changes in coverage are also evaluated separately for sub-groups of young adults. Chapter 2, titled "Labor Market Outcomes for Young Adults," evaluates whether the law altered employment decisions and earnings for this group. It also assess whether the ACA led to increased job mobility for young adults. Finally, Chapter 3, titled "Does having Dependent Coverage from the ACA impact Educational Enrollment," evaluated changes in educational enrollment levels for young adults following the expansion of parental dependent coverage. The research conducted in this dissertation provides evidence of the ACA's impact on health insurance coverage, employment, and education. It also provides support for the claim that the ACA covers insurance gaps that young adults might experience as they go through life transitions when they are likely to lose coverage.

DEDICATION

This dissertation is dedicated to my parents and my sisters

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INTRODUCTION

Health insurance access in the United States has changed over the years, with movement towards expanded coverage for all. The typical channel to health insurance access was through employer sponsored insurance (ESI) and private insurance for those who could afford it. Programs such as Medicaid, Medicare, and military care for the poor, elderly and veterans covered the rest. These prior provisions were, however, not enough to provide coverage to everyone. Many groups such as children, divorced women, and those who relied on dependent coverage found themselves to be uninsured or underinsured.

This dissertation examines the role of the Patient Protection and Affordable Care Act (PPACA or ACA) of 2010 on one such group that previously had the highest uninsured rates among any age group. Young adults, aged between 19 and 26, experience a drop in insurance once they reach the age of 19 and lose dependent coverage. The lack of insurance coverage continues for those young adults who don't have access to ESI. These tend to be individuals who are not in collage and working in low paying jobs.

The ACA has a number of provisions that makes it easier to get health insurance coverage. For instance, the ACA legislates the individual mandate, enacted since 2014, to prohibit insurers from denying coverage based on health status of individuals. The ACA mandates each state to establish a health insurance exchange, also referred to as an Affordable Insurance Exchange, that allows individuals to compare insurance plans, and select the plan that works best for them. In addition, Medicaid eligibility is expanded under the law to extend coverage to more individuals.

The ACA gives individuals tax credits as a cost reduction incentive to purchase insurance from exchanges and insurers aren't allowed to charge higher prices due to pre-existing conditions.[1] In 2014, the law required premiums for health insurance coverage in the individual and small group market to be based on age alone regardless of coverage type (individual, family, or location). Tax credits are offered for small employers and penalties for those who fail to comply. The law further benefits small businesses as it allows for a creation of small business exchanges.

Young adults are considered to be in a transition stage in their life where they move from having parental household safety net to moving out on their own and trying to achieve economic independence. This also implies transitioning out of dependent health insurance coverage to getting their own coverage. Having health insurance coverage has implications for this group as they were previously tied down (experiencing job-lock) to their employment when on ESI. This changed as some states started to expand coverage to this age group and the ACA completely overhauled the way this group could access health insurance[2]. Having insurance from a source other than ESI is expected to increase job mobility for this group. It also meant greater freedom to seek employment elsewhere or be enrolled in college.

Given the major change in access to insurance and the wide-ranging changes that young adults are expected to undergo, it is important to understand how the extended coverage mandate will impact their health insurance outcomes as it is the only provision in the law that targets a specific population. It also becomes important to understand

[1] The ACA expanded Medicaid to 133 percent of the Federal Poverty Level while providing tax credits and cost-sharing reductions to reduce out of pocket premium costs for individuals purchasing insurance from exchanges.
[2] Between 1995 and just before the ACA enactment, 29 states enacted expanded coverage for young adults with conditions. These conditions included having no children, being unmarried, and had strict state residency guidelines; the ACA removed all these.

other implications of the mandates that will affect young adults such as their labor outcomes and education.

Prior health provisions such as SCHIP expansion targeted different populations such as children and low-income mothers with children by providing them with coverage options and increasing their take-up of Medicaid. The new mandate under the ACA targets a more specific population, and is different. The prior mandates were funded by public money while the ACA offers dependent coverage through parental health insurance, which is usually private.

Health insurance in the United States

Health insurance access in the United States comes from public and private sources. These two sources accounted for approximately 85 percent of health insurance coverage in 2012 (Cohen & Martinez, 2012). A major chunk of the health insurance provided in the Unites States comes from ESI, according to DeNavas-Walt, Proctor, & Smith (2012) and covers nearly half of those insured. In 2010, 55 percent of Americans received health insurance coverage through their employers (GAO, 2011). Medicare covers those aged 65 and over while Medicaid and SCHIP enable the poor and children to get coverage.

With increasing healthcare costs owing to high cost of treatment, prescriptions, and deductibles, health insurance has steadily become out of reach for many. A large group of individuals became uninsured due to spiraling costs in health care and incomes that did not keep up with these rising costs. While median income in the United States for a family of four increased from $76,000 in 1999 to $99,000 in 2009, the increase was

offset by spending on health care (Auerbach & Kellerman, 2011).[3] Therefore, cost increases have led to changes for those who access health insurance through their employers. Additionally, as Gruber and Washington (2005) find, subsidizing employee premiums leads employees to choose more expensive plans, which leads to further increases in costs. Health insurance through employment also does not imply continuous coverage. As Short & Graefe (2003) find few to have continuous coverage in a study done over a four year period, which can lead one to conclude that these gaps in insurance have implications on the health and financial well being for those experiencing it.

The risk of losing insurance however, is not limited to one group and is spread across groups. Coverage levels vary by income and educational attainment. Even though the number of firms offering benefits declined from 66 percent in 1999 to 57 percent in 2013, those with college degrees were more likely to have insurance when compared to those with high school diplomas (Majerol, Newkirk, & Garfield, 2014). A total of 41.3 million non-elderly were uninsured in 2013 citing affordability as the main reason (Majerol, Newkirk, & Garfield, 2014).

Individuals with incomes below poverty levels as well as those with incomes at 100 to 200 percent of Federal Poverty Level (FPL) experienced higher uninsured rates (27 and 25 percent respectively) compared to those with higher incomes (Kaiser Family Foundation, 2014).[4] Adults were more likely to be uninsured compared to children. And minorities were more likely to not have insurance when compared to whites (Kaiser Family Foundation, 2014).

[3] Gross annual income
[4] In 2013 the FPL for a family of two adults and one child was $18,751

Ageing out and health insurance

Changing circumstances during life transitions can lead to gaps in health insurance coverage. Health insurance gaps are usually seen as a snapshot in time (Short et al., 2012). To understand how life transitions impact insurance, one needs to consider individual level health insurance coverage over time. This is because the uninsured population is not static and can cycle in and out of coverage in a given time period as a result of life transitions (Jacobs et al., 2011)

Life transitions can include events such as marriage and divorce, change of employment (leading to changes in income), widowhood, aging out (turning 19), disability, etc. These have the potential to change an individual's health insurance coverage. A change in employment, for instance, can impact access to health insurance coverage if coverage is linked to an employer.

Changes in the labor market over time have resulted in changes in access to health insurance. Over the last decade, the labor market in the United States has undergone shifts where non-standard employment such as part-time work, temporary and contract positions, and independent contracting have eroded full time employment with benefits (Kalleberg, 2000). These non-standard positions, particularly, part-time and temporary positions are generally associated with individuals with lower education levels who are more likely to move from job to job. Job security has declined and employers have shown greater inclination to reduce or eliminate benefits as the manufacturing sector shrinks and the service sector grows.

Studying health insurance outcomes resulting from life transitions becomes essential to understanding why some groups have higher uninsured rates. The extended coverage provision of the ACA requiring young adult coverage is a clear example of targeting a specific age group transitioning from their parents' dependent coverage to ageing out once they reach 19. Studying the mandate and its outcomes for young adults is important in understanding how policies are designed to expand insurance coverage and access to certain populations that might be in greater need. The purpose of this dissertation is to examine health insurance for young adults and their labor and educational outcomes as this age group transitions into adulthood.

Three essays on the impact of ACA on young adults

The purpose of the three essays in this dissertation is to investigate health insurance changes for young adults, as they go through life transitions, and the ACA's impacts on their employment and education. The essays also show how policy changes can impact and make a difference for this age group. Disparities in access to coverage are well documented. There is ample evidence of unequal care by socioeconomic status. Changes in health care laws have tried to target those who are most in need. The three substantive chapters presented in this dissertation highlight the disparities in access to health insurance coverage of young adults. This groups tends to be in a weaker position due to lower socioeconomic status and lower levels of education. As a result they experience the lowest levels of insurance coverage of any age group.

The three chapters in this dissertation focus on the instability in coverage experienced by young adults and how having a steady source of coverage can impact outcomes for this group. It becomes important to understand who is affected, as there is expected variability in outcomes. For instance, young adults from lower socioeconomic backgrounds will experience lower rates of insurance coverage and higher levels of instability in coverage. Having higher levels of instability and gaps in insurance coverage has potential implications for increasing financial burden and risk as well as the possibility of accumulating medical debt. Even though young adults perceive themselves to be in better physical state and forgo care as long as possible, this behavior can compound medical conditions and have ramifications for their health. Recent studies such as Finklestein et al. (2011) consistently find having health insurance has significant effects on health outcomes for those with lower socioeconomic status and those more vulnerable to experiencing gaps in coverage.

The ACA overhauls the healthcare system in a way that is expected to achieve near universal coverage in a number of ways. Provisions expand coverage of programs such as Medicaid and subsidies to the poor and uninsured while the individual mandate (effective January, 2014) aims at covering every eligible individual. The extended dependent coverage provided to young adults under the ACA is expected to increase rates of insurance for this age group. To further investigate the impact of the ACA on young adults, I analyze data from the Current Population Survey (CPS). The CPS is a data set from the U.S Census Bureau and collects data on individuals and households. The CPS collects a large sample of data on several key health insurance variables such as health insurance source, type, and coverage status. Additionally, it also provides other key

variables such as employment, hours worked, levels of educational attainment, self reported health status, earnings, and other variables required for the analysis, which are discussed in the three chapters.

In Chapter 1, titled "Impact of the Affordable Care Act on Young Adult coverage" I assess how the ACA changes health insurance for young adults. While it is expected that young adults will experience increased levels of insurance, the chapter takes the analysis further by examining not only the overall health insurance status post ACA but also presents subgroup analysis to examine differential coverage across different groups of young adults. It is expected that some groups will have greater take-up rates as a result of the reform compared to others. I evaluate outcomes by gender, marital status, race, education, and age subgroups within the young adult population. Lastly, I assess the self-reported health status for young adults to evaluate if they report better health status after the reform. I also examine changes in reported health status for the aforementioned subgroups Chapter 1 findings show that the ACA had a significant impact on health insurance coverage of young adults. The estimates from the analysis of sub-groups indicate differences by gender, race, and marital status. Also, the law has larger impacts on young adults with lower education levels. Lastly, the law results in an improved self-reported status among young adults indicating a positive response about their health.

In Chapter 2, I evaluate the impact of the law on the labor market outcomes for young adults. Having health insurance has implications for employment and this age group is no different. However, young adults are different from the rest as they have greater job mobility (Kaiser Family Foundation, 2015). Having health insurance from a

source different than ESI also eases job-lock and increases job mobility (Antwi et al., 2013; Depew, 2015). This chapter examines whether young adults experience a change in their labor outcomes due to the reform. Outcomes measured are full time vs. part-time employment, number of hours worked, overall employment, and job mobility. Additionally, I estimate employment changes by sub-groups. I find that the law has significant impact on certain outcomes and no statistically significant impact on others. Overall, employment for young adult declines as a result of the law, as does full-time employment. However, the results are not significant for job mobility. Men are more likely to separate from their jobs compared to women and unmarried women are less likely to work part-time.

Ease of job-lock and increased job mobility can give young adults several options such as reducing the number of hours they work, becoming self employed, working for a smaller firm which might not offer benefits, or work on their education by being enrolled in college. Also, decline in full-time employment could mean increased educational enrollment. In Chapter 3, I evaluate the impact on education outcomes. Among the young adult population, non-college going individuals are likely to be impacted the most by the law; they are also more likely to have lower educational attainment. Therefore, it is possible that these young adults will head back to college or university since they have freedom from ESI (Sommers et al., 2013; Barbaresco, Courtmanche, & Qi, 2015). I find that the ACA increases 2-year public college enrollment while leading to a decline in 4-year public college enrollment. Full-time college enrollment also declines. Overall enrollment rates for men are higher than for women and men are also more likely to be enrolled in part-time and in two-year colleges. Unmarried young adults are also more

likely to have higher enrollment rates compared to married young adults. Lastly, Hispanics show greater enrollment rates in 4-year colleges possibly due to traditionally lower enrollment rates in 4-year colleges.

Contribution

My dissertation explores how the Affordable Care Act of 2010 impacts those undergoing life transitions, in this case ageing out. The health insurance market in the United States has traditionally resulted in unequal coverage. People with higher socioeconomic status have higher rates of coverage and are more likely to be covered by their employers or have private coverage. The focus of my study, young adults, is one group that the traditional insurance market seems to have overlooked. This group is less likely to be educated or have employment with benefits. Each chapter of this dissertation addresses how the ACA improves different outcomes for young adults since this group is considered most vulnerable to loss of insurance.

This dissertation contributes to the literature in a number of ways. My study is the first to examine the differences between the overall impact of the law and on the 21 states and District of Columbia that didn't have prior dependent coverage mandates. There is a difference between the prior state mandates and the Federal mandate. Prior plans, also known as the grandfathered plans, were different and more restrictive. Prior state provisions to expand coverage to young adults only applied to state regulated plans and not employer funded plans. The state mandates didn't have consistent effects on health insurance coverage for young adults since state laws imposed restrictions based on age, marital status, student etc. as discussed earlier. Also, the Internal Revenue Service (IRS)

code was amended effective March 2010, effectively changing the reporting of additional dependents on tax returns[5]. Lastly, prior state mandates expanding coverage did not apply to self-insured plans because of the exemption from Employee Retirement Income and Security Act (ERISA). It was also highly likely that state provisions weren't understood as well or that people even knew of the existence of such plans. These are strong arguments for not only including all states in the analysis but also studying the differential impacts of the ACA on states with prior dependent coverage provisions and those without any.

Second, for all three chapters, I use the most recent CPS data. My chapters also use more years of data compared to some other studies. I use specific data for the three chapters. For chapter 1, I use the March CPS since this has all the information about health insurance. For chapter 2, I use the monthly CPS data as this gives me detailed information on employment variables. For chapter 3, I use the October Supplement of the CPS as this contains the educational supplement that no prior study on ACA has used.

Third, I examine the heterogeneity of the law in different sub-groups for each of my chapters. I conduct a comprehensive analysis of the sub-groups by evaluating impacts by gender, race, marital status, educational status, employment status, and age. In my first chapter I examine the impact of the law on the self-reported health status of young adults to assess whether the law changes how young adults view and report their health. I also examine the self-reported health status by subgroups to provide the most comprehensive estimates for differential impacts of the law on the young adult population.

[5] IRS: Tax free employer provided health coverage now available for Children under age 27 (IRS.GOV): Effective March 2010 health coverage for an employee's children under the age of 27 is tax free to the employee (IRS.GOV). Employees with children under the age of 27 are eligible for new tax benefits beginning March 30, 2010 if they are on dependent coverage. The ACA amends the IRS tax code for dependent coverage to those with eligible children who can be a son or a daughter but also, a stepson, stepdaughter, a legally adopted child, or an eligible foster child

Fourth, I include event study models in all three chapters as checks to ensure my estimates weren't influenced by pre-existing trends in the market. An event study model provides estimates over an event period to assess whether any trends other than the policy itself influence the outcomes.

Fifth, my chapters provide a comprehensive analysis of employment outcomes. While some prior work has limited labor outcomes, my chapter builds on basic estimates and goes into greater detail. I estimate changes in job separation, hours worked, private sector employment vs. self-employment, working more than one job, and wages.

Sixth, my chapter on educational outcomes is the first study to assess ACA's impact on education. No other study, to my knowledge, has been done on this topic. My study evaluates the impact on educational outcomes such as part-time/full-time college enrollment, 2-year/4-year college enrollment, and vocational training.

Additional Information

The ACA has radically changed access to health insurance by expanding coverage through the dependent coverage mandate. The individual mandate, effective January 2014, covers even more individuals and provides subsidies to those who cannot afford coverage and have incomes up to 400 percent of the Federal Poverty Level. The individual mandate along with the earlier dependent coverage provision is one of the several ways in which the ACA tries to strive for universal coverage. Another way is the expansion of Medicaid eligibility for those with incomes up to 133 percent of the Federal Poverty Level. State exchanges have made it possible for individuals and small businesses to compare plans before deciding on one. Access to coverage cannot be denied

based on pre-existing conditions and providers cannot charge individuals more based on geographic variability.

The three chapters of this dissertation identify disparities in health insurance coverage for young adults while also documenting instability in coverage between different subgroups of the young adult population. While it has been over six years since the implementation of the extended coverage provision of the ACA, it has only been three years since the individual mandate of 2014. This calls for additional research and new studies looking into health insurance coverage for young adults. Previously, young adults with no access to parental coverage could not get on a dependent coverage plan and continued to lack coverage despite the 2010 provision. Additional research will be needed to examine the effects of the full implementation of ACA to assess whether the individual mandate played a role in further reducing disparities in coverage for young adults.

Chapter 1: IMPACT OF THE AFFORDABLE CARE ACT ON YOUNG ADULT HEALTH INSURANCE COVERAGE

1.1 Introduction

One of the primary provisions in the Patient Protection and Affordable Care Act (PPACA or ACA) is the extended coverage provision for young adults. This provision permits young adults up to the age of 26 to be covered as dependents on their parents insurance.[6] Prior to the provision, 31.4 percent of young adults between the ages of 19-25 lacked coverage since most private insurers drop dependent coverage when a dependent beneficiary turned 19; young adults experienced a gap in insurance coverage once they reached the age of 19 till they could find another option for coverage which increased their probability of being uninsured as a young adult (DeNavas, Proctor, & Smith, 2012; Levy, 2007).

Extended coverage provided by the ACA is expected to change health insurance for young adults. Prior to the extended coverage option in the ACA, most young adults transitioning from dependent insurance to their own health insurance often lost coverage if they weren't enrolled at university or had a full time job that provided benefits (Collins et al., 2012). Even college going students often found themselves to be uninsured soon after graduation. Choices such as State Children's Health Insurance Plan (SCHIP) were

[6] Dependent coverage ended at 18 prior to the ACA. The extended coverage provision changes this and allows individuals 19 years and older to remain on their parents health insurance plan (dependent coverage) till they turn 26. Prior to the law, young adult coverage was dependent on the state of residence as some states had dependent coverage laws with restrictions such as residency requirements, not being married, not having any kids etc. Other than that, young adults had to rely on employer insurance if available, parental coverage up to the age of 22 if in college, private insurance if they could afford it, or go uninsured.

not an option due to age ineligibility and COBRA insurance being unaffordable for most (Kaiser Family Foundation, 2014).[7]

The ACA has significantly changed the way young adults access insurance. The present provision allows young adults to be on their parent's private insurance, which reduces their uninsured rates. The expanded coverage under ACA builds on prior state mandates enacted by several states that sought to expand coverage for young adults. Although 29 states had mandated extending coverage to young adults there was variability in these laws across states. The ACA removed any variability and required health insurance plans to cover young adults and allowed them to remain as dependents on their parents insurance up to the age of 26. Also, they could no longer be denied insurance on account of being married or employed[8].

The extended coverage provision of the ACA was passed in September 2010. However, early implementation happened, as some plans were required to start providing access as early as September 23, 2010.[9] Most health plans are annual and vary by plan start date. Due to differences in the timing of plan implementation, the biggest impacts of the extended coverage provision were expected in early 2011 as it took a few months from the time the law was implemented to the time the law had effects.

Three studies provide early estimates of the aggregate changes in rates of uninsured young adults. Two of these studies use Current Population Survey Data (CPS) while the third one uses the National Health Interview Survey (NHIS). DeNavas, Proctor, & Smith (2011) find young adults to be the only age group to experience a decline in

[7] Employer Health Benefits, Annual Survey 2014. Kaiser Family Foundation.
[8] Plans prior to ACA known as grandfathered plans did not require young adults to be enrolled if they were offered employer sponsored insurance which changed after the ACA as these plans now are required to offer insurance even if young adults are offered insurance through work.
[9] September 22, 2010 is when most prior plan years ended.

uninsured rates. Using the CPS they find early estimates of the decline from 31.4 percent to 29.8 percent. A study conducted by the same authors in 2012 finds that the uninsured rates for the same group at 27.7 percent. In another study using the CPS, Sommers and Kronick (2012) look at preliminary data to find a net gain of 2.9 percentage points for young adults.

According to a 2012 study conducted using National Health Interview Survey, 15.4 percent of the overall population was uninsured in the first three months of 2012. Among the young adults population, 27.5 percent were uninsured in 2012 compared to 35.6 percent in the third quarter of 2010. Private coverage too increased for young adults from 49.3 percent in 2010 to about 55 percent in 2012 (Cohen & Martinez, 2012). Other results from the same study find declines in uninsured rates for both male and female young adults as well as for Hispanic young adults who have the highest uninsured rates. These early findings make a compelling argument for further studying the impact of the law on this age group.

This chapter examines the impact of the ACA's extended coverage provision on young adults insurance by comparing their rates of insurance before and after the reform using nationally representative data from the Current Population Survey (CPS). The subsequent analysis looks at several subgroups of young adults to show the difference in policy impacts by gender, marital status, education, and race. The final section looks at the self-reported health status of this age group to estimate the change post-ACA, overall and by young adult subgroups.

The models presented in this chapter control for factors that might influence health insurance outcomes and also includes time varying characteristics. The difference

in differences (DD) modeling uses younger (16-18 years) and older (26-30 years) individuals as comparison groups. The older comparison group follows similar trends to young adults when it comes to making employment and insurance decisions whereas the younger control group reflects the changing circumstances of employer-dependent coverage.[10] Over time, employers have exhibited a pattern consistent with a decline in benefits to their employees, which in turn also impacts dependent coverage. Keeping these trends for the two comparison groups in mind, I use CPS data from the March supplement for the years 2007-2013 (calendar years 2006-2012) allowing for a more comprehensive analysis than some prior work on the same topic.[11]

Contributions to the literature

This chapter makes several contributions to the literature. First, using more years of data from the March CPS than some other studies allows me to follow the impact of the law starting in the early implementation years to the most recent post enactment year. This allows me to breakdown the impact of the law over time, starting in the early enactment period (2010-2011) and all the way through to the final enactment period (2012-2013) to estimate the greatest increases in take-up rates of health insurance coverage for young adults in the years immediately following 2010. It also allows me to assess the impact of the law on key outcomes such as individually purchased health

[10] While including the younger comparison group lets me test the sensitivity of results, including it as a comparison group reflects the changing nature of employer dependent coverage. Employer provided health insurance benefits show a declining trend over time that might impact this age group. According to Gould (2008) the rates of employer provided benefits have declined from 68.3 percent in 2000 to 61.9 percent in 2008 translating to 7.5 million people becoming uninsured. Parents who lack continued coverage or work in low-income positions can also impact their children's insurance. Therefore, when included as a comparison group in the model, it is expected this group will show no change in rates as a result of the ACA's extended coverage mandate.

[11] Discussed in more detail in the data & methods section

insurance, private insurance, and public insurance over the post implementation period and to see how these outcomes changed. No prior study to my knowledge does this.

Second, I examine the difference between states with no prior dependent coverage laws and compare them to states with prior dependent coverage laws. Prior work does not separate out the two sets of states even though studies claim a difference might exist.[12] I test the sensitivity of the results by running separate models for pre-ACA and post-ACA states and by including only the older comparison group.

Third, I examine the heterogeneity of the law's impact on different subgroups to see whether the law impacts some groups more than others. I do a comprehensive analysis of the subgroups looking at gender, race, marital status, educational status, employment status, older (23-25 years) vs. younger (19-22 years) young adults, and self-reported health status. I look at the self-reported health status as an indicator of whether health of young adults has improved as a result of the ACA. For this purpose, I estimate the overall health status for young adults and subgroups (men vs. women, married vs. unmarried, Hispanics vs. non-Hispanics, employed vs. unemployed). This analysis provides the most comprehensive estimates for differential impacts on subgroups of the young adult population.

Fourth, I include an event study model as a robustness check to confirm that the ACA's dependent coverage mandate was responsible for the increase in insurance and not any pre-existing trends prior to the ACA. An event study model provides estimates over an event period to assess whether pre-existing trends prior to the actual event affect

[12] Prior studies show either all states in their analysis or have claimed the post ACA states to be different as the ACA is a new law and therefore should be separately studied. The reasons for these differences are discussed later in the chapter. In this chapter, I run separate models for states with prior dependent coverage mandates as well as states with no prior dependent coverage mandates.

outcomes, in this case the ACA signed in 2010. I compare rates of any available coverage or private coverage for young adults to those for the two comparison groups. No prior study on the topic has looked at an event study model to analyze the change as a result of the law.

Summary of results

I find that the ACA had a significant impact on insurance coverage for young adults. The impact of the law broken down by 21 states and District of Columbia with no prior mandate and the remaining 29 states with prior mandates shows statistically significant results for both. The impacts are not very different for the states with no prior mandates – at a little over 3 percentage point increase in coverage compared to a 2.8 percentage point increase for all states following the passing of ACA. However, the results when only the 29 states (pre-ACA states) are included show an estimate that's different indicating smaller effect size compared to post-ACA states. The results also find a small increase in coverage between 2010 and 2011 suggesting that when the dependent coverage law was signed in September of 2010, it took a few months before any impact could be felt. The majority of the increase in coverage was between 2012 and 2013 as more young adults opted for dependent coverage and a declining trend in individually purchased insurance was estimated for this group. Testing my results to the sensitivity of the control group, I find when only the older comparison group gets included, the effect size increases suggesting the older comparison group closely follows young adults when it comes to health insurance decisions.

The results by subgroups find differences in the impact by gender, race, marital status, education and age group. Take up rates for insurance are higher for men than for women as men tend to have lower coverage. Women also have higher rates of private health insurance coverage compared to men. The difference in coverage however between the two is not significant as indicated by the results. Hispanics who traditionally have low rates of insurance experience greater increases in coverage compared to non-Hispanics although the take up rates of private coverage for Hispanics are much lower. The results by marital status show a strong significant outcome; unmarried young adults experience greater take-up of coverage compared to those who are married. Other results by education and age subgroups show those with lower education being more impacted, and the younger young adults having higher take up rates, and an improved self reported status.[13]

The rest of the paper is as follows; section 1.2 provides the background and discusses some of the prior work on the topic of ACA and young adult insurance, also mentioned is the plan for this chapter. Section 1.3 discusses data and methodology used in this chapter. This section also includes the measures that are used to estimate the outcome. Next, the chapter discusses results in section 1.4. The results section is broken down by a discussion of the demographic characteristics of the population, aggregate changes in health insurance coverage, the main DD regression results, heterogeneity in policy impacts by sub-groups, and lastly some robustness checks for the validity of the estimates. The chapter concludes with section 1.5 with a discussion of the results and the policy's impact on young adults.

[13] Younger young adults (19-22), older young adults (23-25)

1.2 Background

Health Insurance

While young adults are known to be in better shape and healthier than other age groups such as children or the elderly, they are still at risk if they experience gaps in insurance and forgo or postpone care (Quinn, Schoen, & Buatti, 2000). A major reason cited for this age group to forgo coverage was inability to afford medical costs (Collins & Nicholson, 2010). Not having health insurance can mean financial instability and can lead to bankruptcy as young adults can need access to medical services for cancer, child birth, sexually transmitted diseases, etc.

According to the Center for Medicaid and Medicare Services (CMS), over 30 percent of young adults were uninsured prior to the ACA in 2010, which represents one in five of the overall uninsured population. Gaps in health insurance can prove costly. For most age groups, a loss of insurance can imply loss of health and overall wellbeing. It also means reduced medical care and use of emergency rooms when care is required. This gap is more frequent for young adults than any other age group (Collins et al., 2012; Short et al., 2012). And like other age groups, they are equally, if not less prone to getting sick and require care at some stage. Those who are uninsured usually have a harder time paying their medical bills and the young adult age group is no different.

Coverage prior to ACA

Before the ACA, young adults were highly likely to lose dependent coverage if they couldn't afford private coverage, college coverage, or insurance received through

their employers. In a study by Levy (2007) using the Survey of Income and Program Participation (SIPP) found a sharp increase in uninsured rates in young adulthood at the time of losing dependent coverage after controlling for employment and marital status. They found that this age group took longer to gain economic independence and in turn get their own insurance.

Prior to the ACA, 29 states had mandated extended coverage provision for young adults[14]. State mandated activity pertaining to young adult coverage began in Utah in 1995. The state mandated laws were conditional on being unmarried, not having any dependents, and strict residency requirements. There was some variability in eligibility age of the state mandated plans and these did not apply to those who had an option of getting coverage through their employers. In 2012, an average of 40 private coverage mandates existed in each state (Bunce, 2012).[15]

A study done by Monheit et al., (2011), finds that implementation of state policies to expand health insurance coverage of young adults resulted in small increases in coverage of between 1.5 and 3.8 percentage points which represents an increase between 8.5 percent and 11.9 percent relative to the base. However, these increases were largely offset by declines in Employer Sponsored Insurance (ESI) for the same group. Levine et al. (2011) find that state dependent coverage mandates increased health insurance among young adults by 3.3 percentage points. They find introduction of SCHIP and state mandated extended provisions were effective in increasing rates of insurance for children below poverty levels and for young adults.

[14] See appendix Table 1 for states and date of mandates
[15] See appendix Table 2

Coverage after the ACA

Recent work on the impact of ACA on health insurance status of young adults finds the provision has reduced the proportion of uninsured. A study done by Antwi et al. (2012) using SIPP data suggests that the extended provision in the ACA increased insurance by 3.2 percentage points for young adults between the ages of 19-25. Another study by Cantor et al. (2012a) includes controls for state mandated laws while examining the impact of ACA. They also find an increase in coverage for young adults.

Results from the early release of estimates from the National Health Interview Survey suggest a substantial impact of the ACA as Cohen and Martinez (2012) find rates of uninsured 19-25 year olds on the decline with the onset of the ACA. Similar studies such as Fronstin (2012) find employment-based coverage increasing for young adults in 2010 and also an increase in private insurance and a decline in the percent uninsured. The number of additional young adults insured between September 2010 and June 2011 jumped to 2.5 million according to Schwartz and Sommers (2012).

The evidence supports studying the impacts of dependent coverage in states before the ACA separately as well as for including them with post-ACA states. Even though 29 states had passed some kind of mandate extending coverage to young adults, there are several reasons to study the impact of the Federal mandate.[16] The state mandates had effects that could not be uniformly assessed due to different state requirements and variability in age limits. States also imposed several restrictions such as requiring prior creditable insurance coverage, being single, strict residency requirements etc. Another

[16] As stated earlier, this chapter contributes to the existing literature on the topic by delineating the differences between post-ACA and pre-ACA states. The idea being to isolate the impact of the Federal mandate only on those states with no prior dependent coverage laws. While some other studies estimate one overall model, the chapter estimates separate model for states with and without dependent coverage.

major area of difference between the state and the Federal mandate is that the Internal Revenue Service (IRS) code was amended starting March 2010, which effectively changed how adding dependents was reported on taxes[17]. Lastly, prior state mandates expanding coverage did not apply to self-insured plans because of the exemption from Employee Retirement Income and Security Act (ERISA). It was also highly likely, according to Cantor et al. (2012) that state provisions weren't well understood and people were not aware of the existence of such plans.

Subgroups

Previous work on subgroup analysis has examined certain subgroups that will benefit more from the law particularly, non-college going young adults who don't have the option of getting insured through their employer, and those with chronic conditions. People with chronic conditions find having insurance valuable in taking care of their long-term conditions that might not have been possible before and therefore, benefit more from insurance than those not suffering from similar conditions (Sommers et al., 2013).

Among subgroups based on race and ethnicity, Hispanics are more likely to be uninsured than non-Hispanic whites, non-Hispanic blacks and non-Hispanic Asians. In 2012, Hispanic young adult uninsured rates were 50.3 percent compared to 32.5 percent for non-Hispanic blacks and 18.6 for non-Hispanic whites (Cohen & Martinez, 2012). Another study done by Callahan, Hikson, & Cooper (2006) finds disproportionate rates of access to care for Hispanic young adults. Using National Health Interview Survey data

[17] Tax-free employer provided health coverage is now available for children under the age of 27 (IRS.Gov). Effective March 2010, health coverage for an employee's children below the age of 27 is tax free to the employee. Employees with children under the age of 27 are eligible for new tax benefits beginning March 30, 2010 if they are on dependent coverage. The ACA amends the IRS code for dependent coverage to those with eligible children who can be a son or a daughter but also a stepson, stepdaughter, a legally adopted child, or an eligible foster child.

for 19-29 year olds, they find Hispanic young adults are more likely to be uninsured and that the rates are greater for non-citizens.

Evaluating the subgroups of young adults, O'Hara & Brault (2013) use data from the American Community Survey to study the law's impact on the young adult population. Their findings are consistent with some of the other work. They find net increase in private insurance coverage was greater for non-Hispanic whites compared to Hispanics. Non-citizens and those with limited English ability were more likely to experience lower gains in insurance.

Current Chapter

This chapter builds on prior research examining impact of the ACA on young adults. Using data from 2007-2013 ensures more post implementation data than earlier studies and increases the power to detect differences between the sub-groups that are being analyzed in this chapter. Some of the major studies have used limited post implementation data. For instance, Cantor et al (2012) and Antwi et al. (2013) use one year of post implementation data. Sommers et al. (2013) uses less than one year of post implementation data, limiting their analysis to include only the first three quarters of 2011. The importance of evaluating subgroups to see the differences in impact can be attributed to previous studies that conclude increases in levels of insurance for young adults based on early mandates passed at the state level as well as some studies conducted after the ACA but do not mention the differential impact within the young adult population. These estimates tell us that the ACA increased levels of coverage; but that it is also possible that some groups will keep experiencing insurance instability and gaps

while others will not reach the same levels of coverage. In other words, levels of coverage will differ between subgroups. Limited prior analysis of sub-groups finds that the law has a differential impact. In a study by Sommers et al., (2013) the differences in policy impacts between some of the sub-groups are statistically significant. Given the additional years of post-implementation data in this chapter, similar significant differences between sub-groups are expected with bigger effect sizes. This chapter examines the impact of the ACA on several subgroups. It assesses the health insurance status of young adults by gender, marital status, and race. It also compares the self-reported health status of young adults, their education, employment, and the difference between the younger (19-22 years) and older (23-25 years) young adult groups.

Next, the extended provision for young adults is only as good as the number of young adults who can get covered. For instance, those who face difficulties in enrollment onto dependent coverage due to not having access to it can experience gaps in coverage, which can expose them to substantial financial and health risks.[18] Hispanic young adults are at a higher risk of not having coverage as they traditionally have the lowest insured rates. It also implies that compared to those with coverage, Hispanics will have lower access to medical care which could mean a higher potential for decline in health in the long run. The sub-group analysis in this chapter examines the differences between non-Hispanic whites and other races to see if there is a difference in policy impact by race. The analysis will also look at the difference in the type of coverage for the two groups by comparing private coverage with any other source of coverage.

[18] In particular Hispanic young adults will be less likely to enroll in dependent coverage as their parents are less likely to have employer sponsored insurance or their own coverage.

In summary, the purpose of this chapter is to examine the overall change in health insurance coverage for young adults from 2007-2013. It estimates the differences between the impacts of the mandate on different young adult sub-groups. It is expected that some young adults will experience different levels of coverage or place greater value on insurance. This might include those with chronic health conditions who place a greater value on insurance as well as those with lower socioeconomic status who might not benefit as much from the law. This chapter looks at sub-groups by marital status, gender, race, and education. Lastly, it also assesses whether the ACA has improved the self-reported health status for this age group by examining the difference between their health status before and after the mandate. The self-reported health status of young adults by subgroups is also examined to assess if some young adults subgroups report improved health status compared to others. Insurance coverage is expected to improve the self-reported health status for this age group. Prior to the ACA, the uninsured faced poorer health conditions and restricted access to coverage and hence, were more likely to report poor health status. We might expect this to change as gains in insurance will improve access and lead to improved self-reported health status for this age group.

1.3 Data and Methods

Data

This chapter uses the March supplement of the Current Population Survey (CPS) data from 2007 up through 2013, which allows for more years of post-implementation

data and a total of seven years of data.[19] The CPS is a joint effort by the Census Bureau and the Bureau of Labor Statistics and includes data on topics such as employment, earnings, health insurance, and a set of comprehensive demographics. The CPS collects data from all 50 states and District of Columbia and is representative of the non-institutionalized civilian population. Data is collected for each individual of the household making it a comprehensive survey. The March CPS, also know as Annual Social and Economic (ASEC) supplement is a key component of the CPS which surveys participants every year on topics related to health insurance coverage, poverty, and income making it one of the most widely used data sets.

This dataset has certain advantages for estimating health insurance status for young adults. The yearly data available in the CPS gives the user a snapshot of health insurance and employment status of young adults in that particular year. This allows the examination of health insurance status and employment characteristics before and after the ACA. Next, the dataset allows identification of the source of young adult insurance (employer, public, private coverage etc.) which helps to delineate the change in the type of insurance for young adults before and after the ACA as well as to estimate the highest take up rates by type of insurance. The March CPS also oversamples to include a Hispanic ethnicity sample, and those covered by State Children's Health Insurance (SCHIP) program. This allows for additional analysis as it helps estimate the type of insurance by ethnicity and by coverage through public programs other than Medicaid and Medicare. Data collection in the CPS is at the national, regional, state, and metropolitan

[19] Several studies on the topic only utilize limited post implementation data (a year to less than a year in some cases), which reduces the power to detect differences between subgroups. Some of the studies using limited post implementation data are mentioned in an earlier footnote.

levels. This allows for separating the analysis for pre-ACA state versus post-ACA states. Lastly, in addition to being the primary source of information on the United States population, the CPS supplement also provides information on summary health insurance, which combines different types of insurance questions from the survey to create summary health insurance variables. These get used in the analysis as they provide an overall measure of insurance availability (yes or no) that is a combination of private, public, employer, or any other type of insurance.[20] These get collected annually and are an integral part of the March CPS.

Analyzing the data begins with an examination of the health insurance status of young adults aged 19-25. This includes examining the type of insurance this age group has for a particular year – private insurance versus other type of coverage. The CPS has some shortcomings when it comes to measuring insurance. Since the survey of health insurance variables is yearly and not monthly or quarterly, it is not possible to capture the month-to-month changes in insurance status. The March CPS data just provides a snapshot of the health insurance status for a particular point in time.

To evaluate the changes brought about by the policy, the data spans the pre-implementation stage from the years 2007-2010 and the post implementation stage from 2011-2013. Since the March CPS survey's respondents on last year's health insurance status, my post implementation year starts in 2011 even though some insurance companies started implementing the provision in 2010. Some of this early implementation gets captured in the March 2011 CPS. However, a time lag in insurance

[20] Summary health insurance variables are constructed using other health insurance coverage variables. For example, any insurance variable is constructed using any type of insurance, public or private. Similarly, any private insurance is constructed using all variables that indicate any kind of private insurance (employer, individually purchased, etc.)

take up is also expected as more young adults learned about the provision and sign up for dependent coverage.

The CPS-based analysis dataset includes all individuals aged 16-30. The total number of observations is 283,551 and includes all states and District of Columbia. Young adults comprise 119,773 observations while 16-18 year olds comprise 72,398 observations and 26-30 year olds comprise 91,380 observations. For the post-ACA states, I drop 29 states with prior mandates, which give me a total of 119,798 observations comprising 21 states and Washington, D.C. This includes 50,974 observations for 19-25 year olds, 29,840 for 16-18 year olds, and 38,984 for 27-30 year olds. The 29 states that had prior state health insurance mandates are not included in this dataset. Appendix Table 1 lists these 29 states. These states will be used to compare results with the states that did not implement the reform and waited for the ACA. The data set comprising these 29 states has a total of 163,753 observations out of which 68,799 are aged 19-25, 52,396 are aged 26-30, and 42,588 are aged 16-18.

Outcomes Measures

This section of the chapter discusses the measures used for estimating change in the health insurance rates. I analyze health insurance coverage overall for young adults and by type of coverage, young adult subgroups, and their reported health status. Health insurance outcomes are measured in the following ways. First, I assess whether individuals have any health insurance. Second, I examine the type of insurance individuals have. This includes public, private, or individually purchased. My next measure assesses insurance coverage by subgroups using binary indicator variables to

estimate the impact of the ACA on different groups of young adults. My last measure evaluates the change in self-reported health status as a result of the provision. These measures are discussed below.

Health insurance coverage: The first set of measures includes health insurance coverage for the respondent as of last year as the key outcome variable. This variable is a binary indicator variable, coded 1 if covered by any kind of insurance last year and 0 if not covered. This initial measure does not distinguish between different types of insurance (public, private, employer) and helps to examine differences in overall health insurance coverage trends. Other binary health insurance indicator variables include any private coverage, individually purchased coverage, and public coverage. For the purposes of coding, these variables get coded as 1 for being covered (private, individual, public) else 0. The health insurance coverage type variable estimates coverage by private, public, individually purchased to examine differences in the take up rates of insurance and the change in type of coverage for the young adults over the analyzed time period.

Table 1.1 shows the insurance coverage (for any type of insurance) trends for young adults between 2007 and 2013. We see increasing rates of coverage starting in 2011. Table 1.2 shows only private coverage. Both tables show a declining trend in coverage leading up to the year when the ACA was passed, after which an increasing trend in coverage is noted. The rates of coverage go from a high of 69 percent coverage of any type in 2007 to a low of 65 percent in 2010. This rises to 72 percent by the year 2013. Similarly, private coverage dips to 52 percent coverage from a high of 58 percent in 2007 and goes back up to 58 percent in 2013.

The initial comparison of uninsured rates over time by age group is shown in Table 1.3. The table shows the years 2007 to 2013 and compares the uninsured rates for treatment group to those of the comparison groups. The table shows change in uninsured rates over time for the treatment and the two comparison groups. Young adults have the highest uninsured rates in 2007 out of the three groups; this number slowly declined from about 31 percent in 2007 to 28 percent in 2013. The rates remain relatively constant for the comparison groups. The younger comparison group's uninsured rates remain between 14 and 12 percent whereas the uninsured rate for older comparison group remains somewhat stable at 30 percent in the years after the reform.

Subgroups: This chapter examines the differences in policy impact by gender, marital status, race, age (19-22 vs. 23-25 year old young adults) and education. The provision is expected to have differential impacts for different subgroups of the young adult population. Hence, I explore whether the provision has same effects for men and women, those who are married vs. single, non-Hispanic whites vs. others, and by levels of education. The purpose of the subgroup analysis is to look at the differential impact of the provision across different sub-populations of young adults. All the subgroup variables in subgroup analysis are binary indicator variables.[21]

Self-reported Health status: Having insurance might change how young adults report their health status. It is likely that they would report better health status when insured. Self-reported health status is coded from 1 to 5 in CPS (1= excellent, 2=very good, 3=good, 4=fair, 5=poor) and indicates how respondents rated their health status on a five-point scale. I code health status as a binary variable where 1 indicates excellent and

[21] Gender: 1 = male, 0 = female; marital status: 1 = married, 0 = unmarried, race: 1 = Hispanic, 0= non-Hispanic; education; 1 = Bachelors and greater, 0 = education less than a bachelor's degree.

very good and 0 indicates good, fair, poor. Self-reported status is included in the analysis as a measure of how young adults felt about their health in the years prior to the ACA compared to the years after the ACA. Prior to the ACA, young adults experienced high-uninsured rates and were more likely to report an unfavorable health status. This is likely to change post-ACA, as young adults are more optimistic about having better health outcomes with access to medical care. Health status is examined in two ways in this analysis. First, I report overall health status of young adults to assess whether their self reported health status changed as a result of the ACA. Second, I estimate health status for subgroups of young adults to assess the differences by gender, race, marital status, and education. This allows for a detailed inquiry into the change in self-reported health status as a result of the mandate.

Methods

To estimate the impact of the ACA on young adult health insurance, the change in insurance rates for 19-25 year olds is compared to the change for two comparison groups – a younger group (16-18 years) and an older group (26-30 years).[22] The comparison groups will account for other factors that might have caused the treatment group to experience different rates in insurance coverage post ACA.

This analysis compares the change in insurance status for the years prior to the reform (2007-2010) with the years post reform (2011-2013). A Difference in Differences (DD) regression is used to estimate the effects. A DD regression uses a treatment and a comparison group along with two time periods (pre and post reform). DD models

[22] The selection criterion for the two comparison groups is discussed earlier. An advantage of selecting two comparison groups is that the sensitivity of the results can be tested using each comparison group separately.

estimate the differences in the means for the treatment and control groups across the pre and post time periods.

A DD regression is used to evaluate the differences in means between the groups selected here and to assess how the ACA changed the coverage for young adults. Using a quasi-experimental method such as DD is advantageous as it allows me to analyze the difference between the young adults and the comparison groups (16-18 & 26-30) by types of coverage (private, any source) while controlling for any unobserved variation or transition over the course of the year due to non-policy related factors that may affect coverage or eligibility.

The underlying assumption of DD is that the comparison group will account for other time varying factors that would have led the treatment group to experience different insurance rates post-reform. Difference-in-differences relies on the parallel trend assumption; this is seen in Figure 1.1. It is imperative that the treatment and comparison groups, in the absence of the treatment, follow similar trends when using a difference in differences model. In situations where this is not the case it can give us an outcome that is not consistent with the true impact of the policy. The two comparison groups follow parallel trends to the treatment group prior to the intervention. Prior to the ACA, young adults experienced the highest uninsured rates while 26-30 year olds experienced relatively lower uninsured rates and the younger control group the lowest rates. Post ACA (2010) we see a decline in uninsured rates for young adults while uninsured rates for the comparison groups remain unchanged.

Using the two comparison groups may lead to a more comprehensive analysis; it can also imply other potential benefits. For instance, the older age group having similar

characteristics to the young adults when it comes to making insurance and employment decisions qualifies it as a good comparison group. Similarly, including the younger age group as a comparison group reflects change in employers declining generosity in benefits (Gould, 2010;Yamauchi et al., 2013).[23] Models testing the sensitivity of results based on the comparison groups are included in the results section of the chapter. In young adults and the older comparison group assessing whether the two groups had similar or different sources of insurance and employment can be useful. Since young adults are more likely to work part time jobs and less likely to have higher levels of education compared to the older age group it is possible that they don't have insurance access at the same level as the older age group. ESI is tied to full time work, which is more likely for the older age group, which accounts for some differences in labor markets between the two groups. Similarly, the younger comparison group is more likely to have dependent coverage, as they are more likely to be covered through parental insurance, which most young adults do not have.

Figure 1.2 shows the private coverage rates. These rates are highest for the younger comparison group and lowest for the treatment group, a trend that shows change post 2010. There is a steady rise in private coverage for young adults while rates of coverage remain somewhat stable for the two comparison groups. Towards 2013, young adult private coverage rates are almost similar to the older comparison group.

The overall DD model specification is

$$Y_{ist} = \beta_0 + \beta_1 PostACA_t + \beta_2 Treat + \beta_3 (PostACA_t * Treat) + X_{ist} + \varsigma_t + \sigma_s + \varepsilon_{ist}$$

[23] See footnote 5

Where:

Y_{ist} denotes the insurance coverage for an individual i in year t and in state s. This can be any coverage, private coverage, or public coverage.

X_{ist} denotes demographic factors such as gender, race, marital status, educational attainment, employment, all of which can impact health insurance and are controlled for in the model.[24]

The year dummies are denoted by ς_t and state dummies are denoted by σ_s accounting for any state variability such as differences across states in population composition.

The dummy variable for age is *Treat*, which is equal to 1 for the 19-25 age group and 0 for the other two age groups. When only using one comparison group, the variable *Treat* gets coded as 1 for the treatment group and 0 for the comparison group.

PostACA denotes another dummy variable for the years after the reform and is coded as 1 for the year 2010 and later else 0 for the years prior to 2010.

The coefficient of the interaction term denoted by β_3, the interaction between age and time dummy variables (*PostACA*Treat)* captures the reform impact after implementation by comparing it with coverage before implementation. For the ease of estimation, all models are estimated using linear probability models.

[24] The controls included in the model are gender (male/female), race (white, black, Hispanic, others), marital status (married, divorced, single, separated, widowed), education status (some high school, high school, some college, bachelors and above), employment status (employed, unemployed).

1.4 Results

Descriptive characteristics

In Table 1.4, demographic characteristics are shown for the treatment and comparison groups. As expected, there are similarities and differences between the age groups with the older age group following the treatment group closely. Uninsured rates are highest for 19-25 year olds followed by the older age group. Over 70 percent of young adults have some kind of insurance compared to 87 percent for 16-18 year olds and 72 percent of 26-30 year olds. The trends are also similar for private insurance with young adults having the lowest rates for private insurance coverage while those aged 16-18 having the highest levels of coverage. However, young adults are more likely to have private insurance coverage in their own name (23 percent) compared to the younger comparison group while almost 46 percent of the older comparison group had private insurance in their own name. Approximately 44 percent of young adults have ESI compared to 56 percent of 26-30 year olds, young adults were also morel likely to be unemployed compared to the 26-30 age group. Among the young adults, 73 percent reported a health status as excellent or very good compared to 70 percent of 26-30 year olds and 77 percent of 16-18 year olds.

Aggregate changes in coverage

On examining trends in health insurance coverage over time, we see a marked decline in uninsured rates after the passage of the ACA along with increases in private coverage. Insurance rates for young adults were at approximately 70 % coverage in 2007 and around 67 % in 2010. By 2013, these rates increased to 73% overall coverage. The

comparison groups reflect similarities in insurance with the treatment group as shown earlier. After the reform both comparison groups show some decline in uninsured rates. However, the treatment group shows a greater decline compared to the two-comparison groups. Also there is an increasing trend in private insurance coverage for the young adult age group as seen in Figure 1.2. This represents the growing take up of dependent coverage for young adults. Between 2010 and 2013, private insurance for young adults increased by 4.5 % while it stayed relatively unchanged for the two comparison groups. Post ACA, the young adults age group moved closer to the older comparison group as their differences in private coverage narrowed.

The overall increase in insurance rates for young adults is in agreement with other studies. Overall insurance rates increased by 3.2 percentage points, which is consistent with the results found by (Antwi et al., 2013), who used the 2008 Survey of Income and Program Participation (SIPP) panel. It also reflects closely the numbers collected by the National Health Interview Survey Data (NHIS) by Cohen and Martinez (2012) who find approximately 30 percent of young adults to be uninsured prior to September 2010 and a subsequent decline in uninsured rates after September 2010. From the above analysis it's evident that the overall rates of insurance coverage for young adults steadily increased post-ACA relative to the two comparison groups based on results from the three different data sets (CPS, SIPP, NHIS). There's also an increase in private insurance rates for this age group indicating that the policy had a significant effect on the target population.

DD estimates

Some prior research indicates that states with some law mandating coverage for young adults wouldn't be impacted by the ACA and therefore, should not be in the analysis. Other research indicates there isn't any difference between states enacting early laws and those with enacted provision post-ACA. Differences in requirements for the earlier laws such as age, residency, marital and family status restrictions, etc. made these older mandates different from the ACA. Also, as mentioned earlier the Internal Revenue Service (IRS) code was amended effective March 2010, which changed how adding dependents got reported on taxes. Lastly, the exemption from Employee Retirement Income and Security Act (ERISA) no longer applied to self-insured plans.

Keeping these prior requirements in mind, separate models are run. All models presented here control for non-policy related variables such as race, sex, education, employment, and other state fixed effects. Standard errors are clustered at the state level and all regressions are weighted using person level weights. The outcome variable is having insurance coverage and the average impact of the policy is the interaction of the dummy variable for treatment and the dummy variable for time after the implementation.

The first two models in Table 1.5 only include post-ACA states (21 states and District of Columbia). These are states that didn't have any prior mandates and dependent coverage laws only came into effect after the ACA was signed. Model I looks at the overall change in insurance of young adults with the two comparison groups while Model II only includes young adults and the older comparison group aged 26-30 since the older age group reflects closer trends in insurance to the treatment group. In Model I, we see an

overall increase in insurance for young adults by approximately 3.2 percentage points relative to the comparison group for the post-ACA states. This changes when we consider only the older comparison group to approximately 4.5 percentage points (in Model II). Both the results are significant and show an increase in coverage stability for the treatment group when controlling for all other non-policy related factors.

Model III includes the pre-ACA states only and both comparison groups. In total, 29 states that had already some provision prior to the ACA. Most of these states passed some reform prior to 2010 that mandated various options for young individuals to gain some kind of dependent coverage. The results indicate that compared to the younger and older comparison groups, there is a significant increase in coverage for young adults (by 2.5 percentage points) in these states. This is not as high at the states that passed reform post-ACA but still shows gains in coverage implying that prior state mandates did make some difference to dependent coverage for young adults despite restrictions on who could get covered under the state dependent coverage and how much knowledge individuals had regarding these state based mandates.

Model IV includes all states regardless of prior extended coverage mandates for young adults. From the first three models, we see that despite the late and early adopting states, there has been an increase in coverage between 2 to 3 percentage points for young adults since the ACA was enacted. The estimates from Model IV shows a different coefficient compared to Model III indicating a small increase in take-up rates estimated at approximately 2.8 percentage points[25].

[25] The 2.8 percentage point's increase translated to approximately 910,000 young adults getting coverage. This number is higher when only considering those with access to parental dependent coverage.

To summarize, when all 50 states are included in the model, the estimates, while being significant, are different from post-ACA states. In Table 1.5, the coefficients from model III and IV are different compared to the coefficients for post-ACA states indicating greater effect sizes for post-ACA states. Therefore, it can be concluded that the dependent coverage mandate had a greater impact on health insurance coverage of young adults in states with no prior dependent coverage mandates.

In Table 1.6, an alternate specification is presented that splits the time of the post implementation years of the ACA into three periods. The post implementation period is split as the following: the first period being immediately after the implementation (2010-2011); the second, between 2011 and 2012; and third, between 2012-2013. Coverage is split into having any source of coverage, private coverage, and individually purchased coverage.

As expected, insurance rates increase in later time periods compared to the time period immediately following the law. In the 2011-2012 period most insurance providers were expected to comply with the dependent coverage mandate. This drastically increased the take up rates in private insurance during this period. The last period (2012-2013) shows the largest coefficient at 4.8 percentage points while as the 2011-2012 period shows the largest take up rates for private insurance at 4.6 percentage points. Individually purchased insurance declined the most during the 2012-2013 phase by about .8 percentage points compared to the estimates from earlier time periods although this is not statistically significant. These results imply that even as some providers offered early coverage to young adults, the actual impact of the law was not felt until a much later

stage. The impacts were not immediate but took some time before any impacts could be felt.

The rates of change are shown graphically in Figure 1.3; the percentage insurance rates starting from the year of implementation for the three groups are shown. Young adults have the lowest rates of insurance amongst all three age groups in 2010 however, this changes as can be seen in the post implementation years with the other groups remain relatively unchanged while young adult insurance showing an increase every year. The gap between young adults and the older comparison group decreases every year and this difference in rates of coverage is the least in 2013.

In conclusion, the ACA not only increased insurance coverage for young adults in states that implemented reforms after 2010 but there's also evidence that states that had enacted prior dependent coverage reforms also saw some increase in coverage rates. The rates of coverage in pre-ACA states are a lot less when compared to the rates of coverage of only post-ACA implementation states which leads one to believe that states mandating grandfathered plans prior to the ACA did not have similar levels of coverage due to severe restrictions imposed on them. It is also possible that these plans were not well known or mandated strictly enough to result in large numbers of young adults enrolling in health insurance.

Heterogeneity by Sub-groups

The results presented in the previous section represent all young adults in the data set from 2007-2013 regardless of gender, marital status, or race. The law is expected to have different impacts on the take-up rates of insurance coverage for various sub-groups

among the young adult population. For this purpose, this section shows the impacts by different subgroups of the young adult population: by gender; race; employment; marital status, health status; education; and by age (19-22 and 23-25) to see if older young adults will experience different rates of coverage. The results from the subgroup analysis are presented in Table 1.7.

The first column of the table estimates any source of coverage. The second column provides private coverage estimates only. The last column in the table is the difference between the two sources of health insurance coverage and results of a test of whether the difference in coefficients is significant. The difference is based on assumptions that some groups will benefit more on account of having private insurance through either parents or a spouse compared to those with no access to private dependent coverage.

The differences highlight the heterogeneity of the law's impact on different sub-groups within the young adult population. The results indicate that men gained more from the law than women. Traditionally, men have lower insurance rates compared to women. The post-ACA impact for men is an estimated increase in take-up of coverage by 4.7 percentage points compared to 4.2 percentage points for women. This difference is small and not statistically significant. However, women show higher take-up rates of private coverage than men, as they could be dependents on their spousal insurance. In Figure 1.4, males and females follow somewhat parallel trends in insurance coverage; both show increases post-ACA. However, men show a steeper increase in coverage immediately after the ACA because they historically have had lower rates of coverage compared to women.

Comparing Non-Hispanic whites to other races indicates lower take-up rates in coverage for Non-Hispanic whites as they are more likely to have higher rates of coverage. Young adults from other races such as Hispanics and African Americans have traditionally lower rates of insurance and are more likely to be effected by the mandate. The estimates indicate higher take-up of coverage both from any source and from private coverage for those who are not Non-Hispanic whites. These coefficients in Table 1.7 indicate statistical significance however; the difference between the coefficients is not significant.

The differences are more significant when one compared married and unmarried young adults. Married young adults are more likely to have reached financial independence and married women are also more likely to have insurance through their spouse. The results in Table 1.7 indicate a statistically significant difference between the coefficients of married (.002) and unmarried (.052) young adults, which indicates unmarried young adults traditionally have lower rates of insurance and show a greater change in take-up rates of coverage as its expected that they do have any alternatives. It is also possible that unmarried young adults are less likely to have established financial independence and careers and hence, experience greater increases in take-up rates. Figure 1.5 shows the trend over time for the two groups. Unmarried young adults show an increase in coverage rates post-ACA compared to the relatively stable rise for married young adults even as their insurance rates continue to remain low compared to married young adults.

Comparing estimates for employed and unemployed young adults, both groups show a coefficient that's significant. Those who are employed are more likely to have

health insurance coverage through their employer. As a result, unemployed young adults have greater take-up of private coverage compared to employed young adults as they traditionally have lower rates of private coverage.

CPS data does not specify chronic health conditions that could impact health status of individuals, however a self-reported health status variable is available for the sample and coded 1-5 (Excellent-Poor). Typically, young adults are more likely to report a very good or excellent health status compared to others, however, not having insurance will also determine health status as the inability to get required medical care can result in a reported health status that is more likely to be poor. Approximately 73 percent of young adults reported their health status as excellent or very good.

Figure 1.6 shows an increase in an excellent or very good self-reported health status over time and a similar decline in a self-reported health status that's good, fair, or poor. The two follow somewhat parallel trends but show an increasing (for excellent or very good) and a declining trend (for good, fair, or poor) respectively after 2010. The self-reported health status coefficient (Table 1.7) is larger for those reporting a good, fair, or poor status due to a larger base compared to those reporting an excellent or very good status. Testing the difference between the coefficients shows the coefficients are not statistically different from each other as shown in Table 1.7.

As Table 1.7 shows the difference in coefficients between excellent and very good reported health status and good, fair, and poor health status is small but the large p-value indicates the lack of statistical significance between the two outcomes. The larger coefficient on those reporting a poorer outcome is due to this group having a lower

coverage rate to begin with compared to those in "excellent" health conditions and hence, shows greater take-up rates of coverage.[26]

There is also a significant difference between different age groups among the young adult population. Young adults in the19-22 age group are significantly influenced compared to the 23-25 year age group since older young adults have greater access to ESI while younger adults could have parental coverage provided they were full time students due to prior laws that allow full time students to be on dependent coverage up to the age of 22. Even though the individual impact is significant for both, the younger young adults show greater take-up rates for both types of coverage.

The level of education too is seen as influencing insurance take up rates. The difference between those with an education lower than a bachelor's degree compared to those with bachelors or higher is significant. Those with lower levels of education might be impacted more compared to those with higher levels of education because higher education is associated with full time employment and thus access to ESI whereas those with less education are more likely to work in part time positions or in places that don't offer any benefits.

The above estimates only show overall change in health status for young adults. In a second set of analysis shown in Table 1.8, estimates reporting health status of subgroups of the young adults' population are compared. The table shows differences in health status reported by gender, race, marital status, education, employment, and age. The comparison between genders shows men reporting a greater improvement in their self-reported health status compared to women. This result is a statistically significant

[26] This implies those reporting a health status as good, fair, or poor also being more likely to not have coverage.

increment of almost 3 percentage points compared to the insignificant result for women. This is also consistent with the prior estimates showing men to have greater take up rates in health insurance compared to women. The results are not significant by race and employment status, however. When health status is compared by marital status a weaker level of statistical significance is estimated; unmarried individuals report an improvement in health status, which is significant at the 5 percent significance level. Younger young adults also reported an improvement compared to older young adults while those with higher education reported an improved health status. These results provide some consistency as they indicate that those subgroups that were more likely to report not having coverage show greater levels of improved self-reported health status in some cases. For instance, men and unmarried individuals who have had lower rates of coverage in the past report an improvement.

Robustness checks

When using a difference in differences model certain assumptions have to hold or else the net estimate of the policy impact will be biased. For instance, making sure the comparison groups follow similar trends. In situations where this is not the case it can give us an outcome that is not consistent with the true impact of the policy. This limitation is an inherent weakness of the model as it's only as good for random events conditional on time varying changes that are consistent for both treatment and comparison groups. Therefore, time varying variables should not change between pre and post time periods, and if they do change, the changes should be in an identical manner. Hence it becomes imperative to control for conditions that lead to policy changes and

other unobservable outcome variables that can change pre and post treatment (Besley & Case, 2000). To test the results, this section presents additional models for robustness checking.

Several models were run to check the robustness of the estimates. First, a model was run with only the younger comparison group. A second specification was run with reduced age bandwidth for the older comparison group from 26-30 to 27-29 years and a third specification increased the age threshold of the older comparison group to 34 years. When only the younger comparison group is included, the effect size is much smaller compared to when only the older comparison group is included. Model 1 in Table 1.9 shows the estimates when only the younger comparison group gets included. The impact of the ACA is small and not significant. When comparing any source of insurance, using the older comparison group leads to greater effect sizes compared to the younger comparison group. If only private insurance is considered the effect size is greater for the younger comparison group. Changing the age bandwidth to 27-29 and 26-34 leaves the outcomes relatively unchanged, this is show in Table 1.9 as Model II & III. The results are very similar to using 26-30 year olds as a comparison group. When the age bandwidth is reduced to 27-29 years as a comparison group, overall insurance for young adults increases by 5 percentage points compared to the comparison group, when the age bandwidth is expanded to 26-36 the coefficient is still statistically significant and indicated increase in overall coverage by 4.2 percentage points.

A placebo regression estimates a placebo effect and can be run using a variable that indicates time (years) before the ACA mandate. Here, the coefficient of interest is the DD estimator, which measures the average difference in the treatment group and the

comparison group. For a placebo regression, we assume that the dummy variable for time of enactment is replaced by another time period that represents the time before the ACA. If the coefficient of interest (the DD estimator) is not very close to 0, then that implies that the treatment and comparison group experienced similar outcomes even before the ACA was mandated. This method is a good way to check for robustness of the model and can tell whether the mandate actually made any impact. For this purpose the year of implementation is changed to 2009 and running the model yields an estimate, which is small, statistically insignificant and very different from the DD estimates from the main model. These results are presented in Table 1.9 as Model IV.

Event study analysis

An event study analysis is a specification that can be run as a robustness check. The event study specification defines the event of interest and identifies the period over which changes in insurance get analyzed. The period over which events get examined is known as an event window. For the purpose of running this specification, I look at all age groups in the analysis starting from 16-29, leaving the 30 year olds out for comparison. The purpose of running an event study is to ensure that results are not driven by pre-existing trends that could have impacted health insurance coverage. The specification used here includes age dummies and a dummy=1 for the post-ACA time period along with the interaction between the age dummies and the time dummy.[27] The model specification is presented below.

[27] For example age 19 is coded as 1 if individual is 19 years old else 0 and so on. Time dummy is coded as 1 denoting time after the ACA else 0.

$$Y_{it} = \beta_0 + \beta_1 17_i + \beta_2 18_i + \beta_3 19_i + \beta_4 20_i + \beta_5 21_i + \beta_6 22_i + \beta_7 23_i + \beta_8 24_i$$
$$+\beta_9 25_i + \beta_{10} 26_i + \beta_{11} 27_i + \beta_{12} 28_i + \beta_{13} 29_i + \beta_{14} PostEnact_t + \beta_{15}(16_i * PostEnac_t)$$
$$\beta_{16}(17_i * PostEnact_t) + \beta_{17}(18_i * PostEnact_t) + \beta_{18}(19_i * PostEnact_t) + \beta_{19}(20_i * PostEnact_t)$$
$$+\beta_{20}(21_i * PostEnact_t) + \beta_{21}(22_i * PostEnact_t) + \beta_{22}(23_i * PostEnact_t) + \beta_{23}(24_i * PostEnact_t)$$
$$+\beta_{24}(25_i * PostEnact_t) + \beta_{25}(26_i * PostEnact_t) + \beta_{26}(27_i * PostEnact_t) + \beta_{27}(28_i * PostEnact_t) + \beta_{28}(29_i * PostEnact_t) + \varepsilon_{it}$$

Where Y_{it} denotes health insurance coverage (any type and private coverage).

The coefficients of age dummies are denoted by β_1 to β_{13} and are coded as binary variables indicating age.

The dummy denoting time after the ACA is denoted by *PostEnact* and β_{15} to β_{28} denotes the coefficient of the interaction of age and time dummies. The coefficients of these interactions give me the coverage status after the ACA for ages 19 to 29.

The results from the specification are presented in Table 1.10, which shows the change in any coverage and change in private coverage for all ages. Post ACA results show an increase in coverage rates with highly statistically significant results for private coverage for the treatment group. For instance, post-enactment, 22 year old's take up rates of any type of insurance increased by almost 5 percentage points and by 7.5 percentage points for private coverage. Similarly, those not in the young adult age group such as someone aged 17 or someone aged 27 shows no statistically significant results for take up rates of insurance. Therefore, results indicate young adults experiencing increases in coverage relative to the comparison groups who do not experience any increases as a result of the law. The table shows pre and post trends for any kind of insurance coverage

and private coverage only. The estimates for the treatment and the comparison group show differential effects; coverage becomes significant for the treatment group while it stays insignificant for the comparison group. And an increase in the private coverage indicates an increase in take up rates in dependent coverage for young adults.

1.5 Discussion

This chapter uses data from the CPS (2007-2013) to examine how young adult insurance coverage changed after the ACA. The extended provision allowing young adults to be on their parents insurance until the age of 26 increased insurance rates for young adults. Additionally, the policy decreased the proportion of uninsured young adults as uninsured rates for this age group declined by almost 4.5 percent after the implementation. Using four separate models, this chapter illustrates the differences in insurance rates for the young adult group when compared to older and younger comparison groups. The chapter looks at pre and post implementation states to evaluate the difference between states with earlier dependent coverage mandates and those with enacted mandates after the ACA. This chapter uses more post implementation data than previous studies, which increases the power to detect differences between subgroups of young adults.

The ACA increased coverage of young adults; it impacted post-ACA implementation states more than pre-ACA implementation states (states that already had some health care coverage mandates prior to the ACA). The effect of the law increased over time, it steadily increased coverage from 2010-2011 to 2012-2013. There is a small

decline in individually purchased insurance, which could possibly reflect a switch from purchasing own insurance to obtaining coverage as a dependent.

The greatest increases in take-up rates of coverage were for young adults who were between the ages of 19-22. Males had higher rates of increases in insurance take-up rates compared to females although the difference between the two is not statistically significant. Unmarried individuals also experienced greater increases in insurance stability. Married individuals are expected to be independent and to have reached some levels of financial stability while unmarried individuals are more likely to being uninsured and lack financial stability. Unmarried young adults show increased gains in both private as well as any types of coverage.

Differences in education also influenced coverage. Those with a BA or more education did not experience significant changes as much as those will lower levels of education. This leads to the conclusion that with lower education the probability of finding other options of coverage or having private insurance is also very low as ESI is often tied to full time work. Those with lower levels of educational attainment are more likely to be working in positions that don't offer benefits.

The results also show that while an improvement in self-reported health status was expected, the results point to a small increase in improvement over time with a self-reported health status of excellent and very good while a decline in a reported health status of good, fair, and poor. As discussed earlier, the difference between the coefficients are not significant. Those reporting a self-reported health status of "good", "fair", and "poor" have a larger base but with lower rates of coverage and hence, report

bigger coefficients compared to those reporting an "excellent" or "very good" health status.

The law significantly increases coverage for those who might be economically in a weaker position. While it does significantly increase coverage for unmarried young adults, it also has a greater impact on those with lower education. These young adults are vulnerable and more exposed to experiencing gaps in insurance or not having any insurance at all when compared to those with higher education. Also, younger young adults are impacted more than older young adults who could be more financially stable.

The take up rates of non-whites are higher when compared to non-Hispanic whites, and these groups are more likely to have lower coverage to begin with. Their rates dramatically increase after the ACA however; the law doesn't change much for Hispanic young adults. While non-Hispanic blacks and other races show an increase in coverage, Hispanics show a decline in coverage. This is likely due to traditionally lower insurance rates in the family and access to dependent coverage not being possible on account of Hispanic parents having lower access to individually purchased coverage or ESI. The individual mandate that went into effect in 2014 is expected to increase coverage for such groups.

This chapter provides a comprehensive analysis of the dependent coverage provision of the ACA on the target group of the population. It also evaluates the heterogeneity in impact between different subgroups of the population to examine who is more likely to have greater rates of coverage as a result of the law. The chapter provides a comprehensive breakdown of some of the subgroups along with other estimates measuring the impact.

Despite these estimates, there are issues that could set back getting coverage for some. Some of these issues involve adding additional dependents to existing coverage plans, which depends on the cost of adding additional members. These additional costs in the form of increased premiums might be borne by the employers but eventually costs could shift to the policyholder.

Other problems such as price differentials for health plans have always been a tool for employers to differentiate between types of coverage offered. In a typical plan, the employee pays one premium for themselves and while those purchasing coverage for a family or a spouse pay a higher premium. Employees can choose different tiered plans based on the number of individuals getting coverage. For instance, a two tiered plan that covers the employee and family and offers two different prices. Similarly, a four tiered plan, which covers the employee; employee and spouse; employee and children; employee, spouse, and children will offer four different premiums based on selection. When adding dependents to the coverage, the cost of adding young adults to these two or four tiered plans will be zero provided another dependent is already enrolled since plan rates don't change if a dependent is already enrolled into the plan. However, there is no guarantee that premiums won't change or increase year to year. As already seen, plans under the ACA have increased premiums every year making it hard to have consistent coverage.

It is possible that despite its impact, the ACA might not successfully enroll young adults if getting enrolled into dependent coverage plans is not easy. Not being able to get added on to their parental coverage as they transition into young adulthood could leave young adults vulnerable to experiencing a gap in coverage. Also, the marginal cost of

adding young adults to dependent coverage is relevant in determining whether young adults are more likely to opt out of parental coverage. In situations where the marginal benefits of getting added are high while marginal cost are low, young adults would be more likely to opt for dependent coverage. For instance, individuals who need coverage more than others such as the chronically ill will opt for coverage compared to those who are relatively healthy as their marginal benefits exceed the marginal costs.

Table 1.1: Overall insurance trends for 19-25 year olds

Year	2007	2008	2009	2010	2011	2012	2013
Have insurance	.692	.696	.700	.656	.690	.704	.720

Note: Weighted tabulations of the 2007-2013 Current Population Survey

Table 1.2: Insurance coverage by private insurance for 19-25 year olds

Year	2007	2008	2009	2010	2011	2012	2013
Private coverage	.580	.579	.575	.524	.545	.561	.579

Note: Weighted tabulations of the 2007-2013 Current Population Survey

Table 1.3: Percentage uninsured, by age group

Age groups	2007	2008	2009	2010	2011	2012	2013
16 -18	.146	.135	.131	.140	.125	.125	.120
19-25	.308	.303	.300	.343	.311	.295	.281
26-30	.287	.267	.274	.300	.309	.295	.300

Note: Weighted tabulations of the 2007-2013 Current Population Survey

Table 1.4: Demographic characteristics by age group

	16-18 years	19-25 years	26-30 years
Age (average)	17	22	28
Health Insurance (HI)			
Covered by any HI	.869	.701	.722
ESI	.560	.446	.558
Private Insurance	.660	.565	.605
Public Insurance	.279	.178	.153
Private Insurance in Own name	.028	.227	.458
Self-reported Health Status			
1 (excellent, very good)	.774	.730	.700
Sex (percent)			
Male	.507	.491	.479
Female	.492	.508	.523
Race (percent)			
NH-White	.546	.500	.530
NH-Black	.130	.130	.118
Hispanic	.205	.233	.220
Other	.119	.137	.132
Married (percent)			
Single	.990	.813	.456
Married	.009	.160	.471
Education (percent)			
Some high school	.860	.134	.129
High School	.077	.320	.289
Some college	.061	.432	.298
Bachelors and above	.001	.113	.286
Employment (percent)			
Employed	.225	.613	.741
Unemployed	.774	.387	.259
Fulltime	.056	.446	.682
Part time	.245	.271	.133

Note: Tabulations of the 2007-2013 March Supplement of the Current Population Surveys. Self reported health status is coded 1 for excellent and very good reported health status and 0 for good, fair, and poor.

Table 1.5: DD regression estimates of the impact of ACA for young adults

		Post-ACA states only	Pre-ACA states	All states
	Model 1	Model II	Model III	Model IV
PostACA	-0.00651	-0.0193***	-0.00670	-0.00663*
	(0.00408)	(0.00483)	(0.00467)	(0.00315)
Treat	-0.0741***	0.0199**	-0.0701***	-0.0718***
	(0.00639)	(0.00685)	(0.00801)	(0.00520)
PostACA*Treat (DD)	0.0319***	0.0450***	0.0254***	0.0281***
	(0.00475)	(0.00626)	(0.00468)	(0.00346)
N	119,798	89,958	163,753	283,551

Notes: The table contains coefficients and standard errors in parentheses.

* p<0.05 ** p<0.01 *** p<0.001 The average impact (ACA) is the interaction of the dummy variable for a treatment group and a dummy variable for the time period after the implementation of the ACA. Standard errors are clustered at the state level and all regressions are weighted using person level weights. Model 1 and Model II only include states with no prior mandates (21 states and District of Columbia). Model 1 includes both the treatment groups (16-18 & 26-30) while model II only includes the older comparison group (26-30). Model III includes states that had passed early mandates (29 states passed pre-ACA mandates) allowing young adult's dependent coverage. Model IV does not distinguish between the pre and post ACA states and looks at the impact when all states are included from the time period 2007-2013. All four models control for sex, race, education, employment, and other state fixed effects.

Table 1.6: DD regression estimates of the impact of ACA for young adults post implementation

	Any source	Private	Individually Purchased
Between 2010-2011	0.0128	0.00669	-0.00409
	(0.00720)	(0.00650)	(0.00676)
Between 2011-2012	0.0286**	0.0460***	-0.00406
	(0.00882)	(0.0108)	(0.00565)
Between 2012-2013	0.0475**	0.0453**	-0.00782
	(0.0127)	(0.0139)	(0.0106)

Notes: Standard errors are in parentheses. The variable for time includes three separate dummies for each time period and all three indicate post implementation period.
* p<0.05 ** p<0.01 *** p<0.001

Table 1.7: Effects of ACA on young adults, results by sub-groups

Sub-groups	Any source (I)	Private (II)	Net difference (I)	p-value (1)	Net difference (II)	p-value (II)
Gender						
Male	0.0467***	0.0484***				
	(0.00785)	(0.00721)	.500	.59	-.003	.55
Female	0.0418***	0.0520***				
	(0.00761)	(0.00971)				
Race						
NH-White	0.0378***	0.0453***				
	(0.00646)	(0.00736)	-.015	.27	-.009	.47
Others	0.0526***	0.0542***				
	(0.0132)	(0.0131)				
Marital Status						
Married	0.00234	-0.00188				
	(0.0104)	(0.0169)	-.050	0	-.0500	0
Unmarried	0.0524***	0.0487***				
	(0.0074)	(0.00908)				
Employment						
Employed	0.0354**	0.0395**				
	(0.0103)	(0.0125)	-.007	.68	-.013	.41
Unemployed	0.0430**	0.0532***				
	(0.0125)	(0.0102)				
Health status						
1 (excellent, good)	0.0423***	0.0441***				
	(0.0063)	(0.00547)	-.010	.44	-.011	.51
0 (good, fair, poor)	0.0530***	0.0558**				
	(0.0137)	(0.0196)				
Age						
19-22	0.0529***	0.0543***				
	(0.0137)	(0.00726)	.022	.11	.014	.31
23-25	0.0297*	0.0402**				
	(0.0113)	(0.0133)				
Education (23-25 only)						
Less than B.A	0.0347***	0.0464***				
	(0.007)	(0.00835)	.019	.57	.016	.47
B.A or greater	0.0162	0.0277				
	(0.0333)	(0.0297)				

Notes: Estimates based on weighted samples from the 2007-2013 CPS. Any source indicates health insurance from any type of insurance and is a dummy indicating 1 for covered and 0 otherwise while private indicates having private insurance coverage. The difference column is split into net difference and p-values. The net difference is the difference between the sub group coefficients. For example, the difference between gender, race, or any other subgroup here by type of coverage labeled as 1 and 2. The last sub-group education only included young adults aged 23-25. Standard errors in parentheses

* p<0.05 ** p<0.01 *** p<0.001

Table 1.8: Health status by subgroups

Subgroup	Health status (1= excellent and very good)
Gender	
Male	0.0272**
	(0.00915)
Female	0.00163
	(0.00977)
Race	
NH-White	0.0166
	(0.0117)
Others	0.0107
	(0.00849)
Marital Status	
Married	-0.00774
	(0.00667)
Unmarried	0.0169*
	(0.00630)
Employment Status	
Employed	0.00766
	(0.00667)
Unemployed	0.0203
	(0.0123)
Age	
19-22	0.0186*
	(0.00797)
23-25	0.00503
	(0.00588)
Education	
Less than B.A	-0.0144
	(0.0165)
B.A or greater	0.0254**
	(0.00725)

Notes: Estimates based on weighted samples from the 2007-2013 CPS. The last sub-group education only included young adults aged 23-25. Standard errors in parentheses * p<0.05 ** p<0.01 *** p<0.001

Table 1.9: Models for robustness checks

	Model I	Model II	Model III	Model IV
PostACA	0.0173*	-0.0264***	-0.0200***	-0.00526
	(0.00715)	(0.00450)	(0.00409)	(0.00549)
Treat	-0.248***	0.0111	0.0156***	-0.0662***
	(0.00901)	(0.00728)	(0.00394)	(0.00674)
PostACA *Treat (DD)	0.00574	0.0508***	0.0418***	0.00808
	(0.00625)	(0.00571)	(0.00355)	(0.00499)

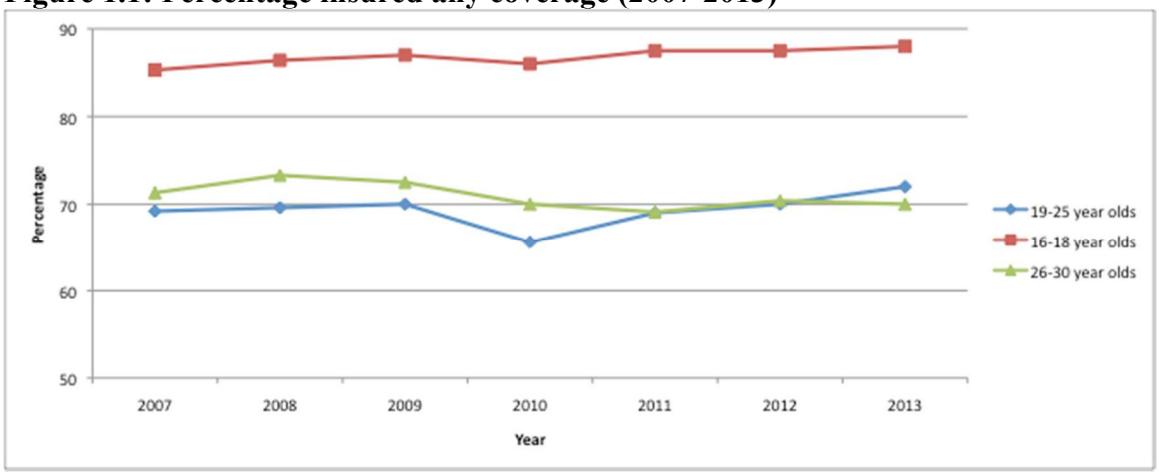
Notes: Model 1 only includes the younger age comparison group (16-18) for the analysis. Model II included a reduced bandwidth for the older comparison group and only included 27-29 year olds as the comparison group. Model III expands the age for the older comparison group and includes all between the ages 26-34. Model IV uses a placebo date and assumes the reform took place in a different year (2009). Standard errors are in parentheses. * $p<0.05$ ** $p<0.01$ *** $p<0.001$

Table 1.10: Event study results

Age	Any insurance	Private insurance
16	0.151***	0.0175
	(0.00953)	(0.0107)
17	0.142***	0.0261*
	(0.00952)	(0.0107)
18	0.0926***	-0.00178
	(0.00965)	(0.0109)
19	-0.00127	-0.0522***
	(0.00991)	(0.0112)
20	-0.0179	-0.0647***
	(0.00973)	(0.0110)
21	-0.0650***	-0.0976***
	(0.00967)	(0.0109)
22	-0.0667***	-0.106***
	(0.00970)	(0.0109)
23	-0.0572***	-0.0809***
	(0.00967)	(0.0109)
24	-0.0605***	-0.0818***
	(0.00975)	(0.0110)
25	-0.0546***	-0.0774***
	(0.00967)	(0.0109)
26	-0.0416***	-0.0652***
	(0.00967)	(0.0109)
27	-0.0249**	-0.0457***
	(0.00967)	(0.0109)
28	-0.0114	-0.0316**
	(0.00962)	(0.0108)
29	0.00524	-0.00871
	(0.00963)	(0.0108)
PostEnact	-0.00865	-0.0535***
	(0.0104)	(0.0117)
(16*PostEnact)	0.0196	0.0106
	(0.0145)	(0.0164)
(17*PostEnact)	0.0211	0.00589
	(0.0145)	(0.0164)
(18*PostEnact)	0.0307*	0.0296
	(0.0147)	(0.0166)
(19*PostEnact)	0.0290	0.0271
	(0.0150)	(0.0169)
(20*PostEnact)	0.0290*	0.0487**
	(0.0146)	(0.0164)
(21*PostEnact)	0.0429**	0.0734***
	(0.0146)	(0.0164)
(22*PostEnact)	0.0497***	0.0755***
	(0.0146)	(0.0164)
(23*PostEnact)	0.0123	0.0449**
	(0.0146)	(0.0165)
(24*PostEnact)	0.0133	0.0315
	(0.0148)	(0.0166)
(25*PostEnact)	0.0128	0.0552***
	(0.0148)	(0.0166)
(26*PostEnact)	-0.00485	0.0192
	(0.0147)	(0.0165)
(27*PostEnact)	-0.0187	0.0125
	(0.0147)	(0.0166)
(28*PostEnact)	-0.0181	0.00112
	(0.0147)	(0.0166)
(29*PostEnact)	-0.0129	0.00398
	(0.0146)	(0.0165)

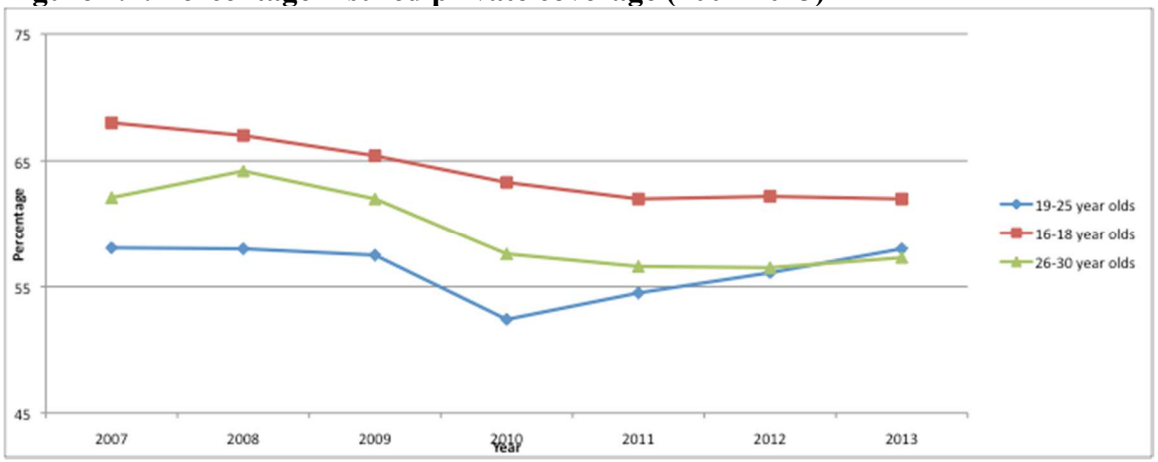
Notes: Ages in both the treatment and comparison groups are included and coded as dummies; age 30 is left out as the comparison. Post is a dummy variable indicating years after the reform implementation. The interaction between Post and age gives the coefficients for insurance coverage for the specific ages after the ACA. Standard errors are in parentheses. * p<0.05** p<0.01 *** p<0.001

Figure 1.1: Percentage insured any coverage (2007-2013)



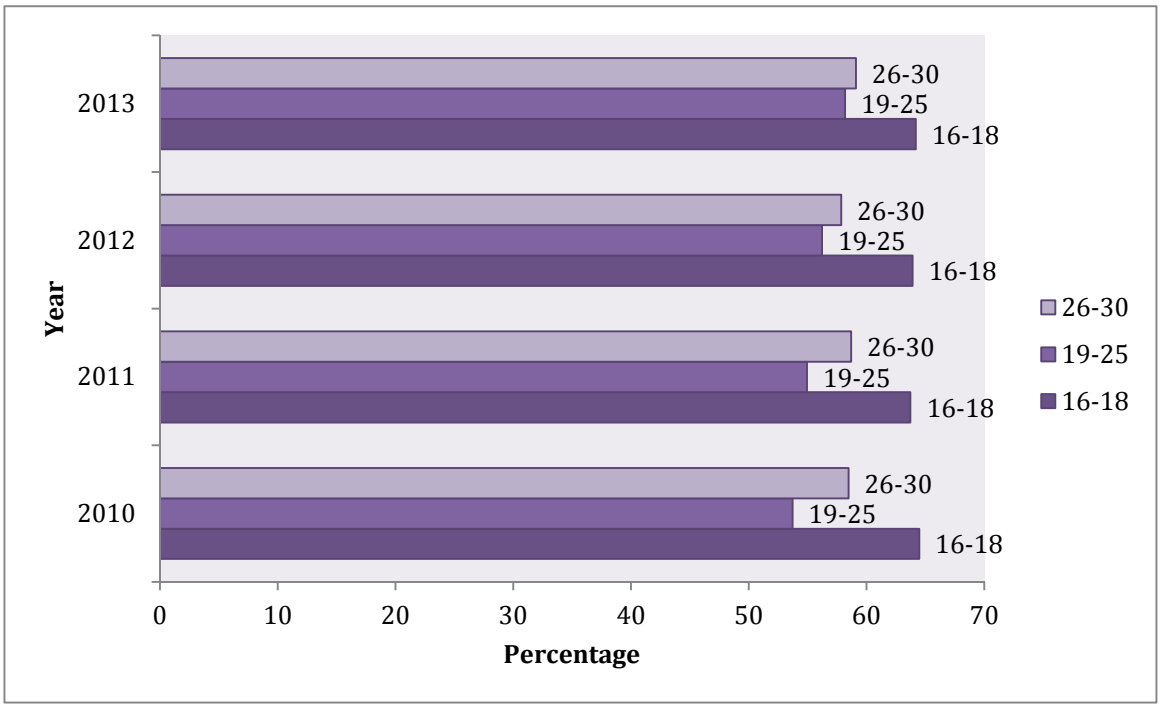
Note: Tabulations of the 2007-2013 Current Population Surveys

Figure 1.2: Percentage insured private coverage (2007-2013)



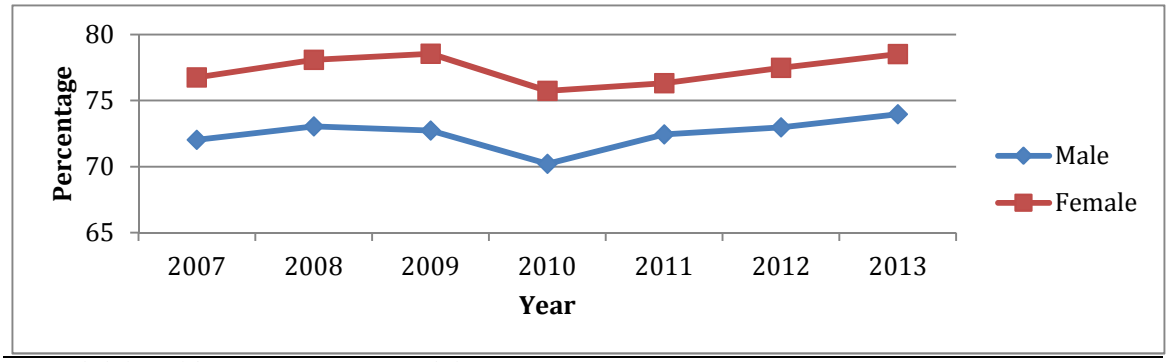
Note: Tabulations of the 2007-2013 Current Population Surveys

Figure 1.3: Percentage change by age group post-implementation



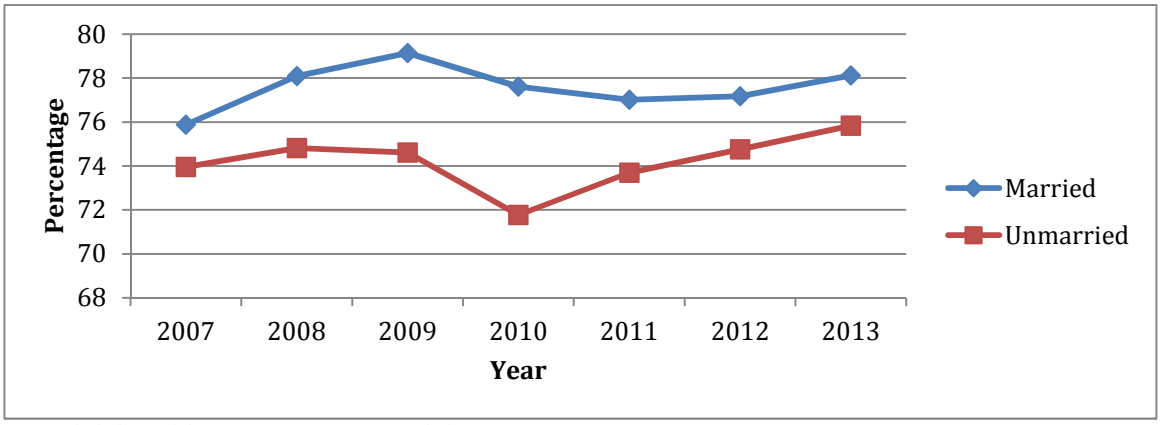
Note: Tabulations of the 2010-2013 Current Population Surveys

Figure 1.4: Percentage young adults insured male vs. female 2007-2013



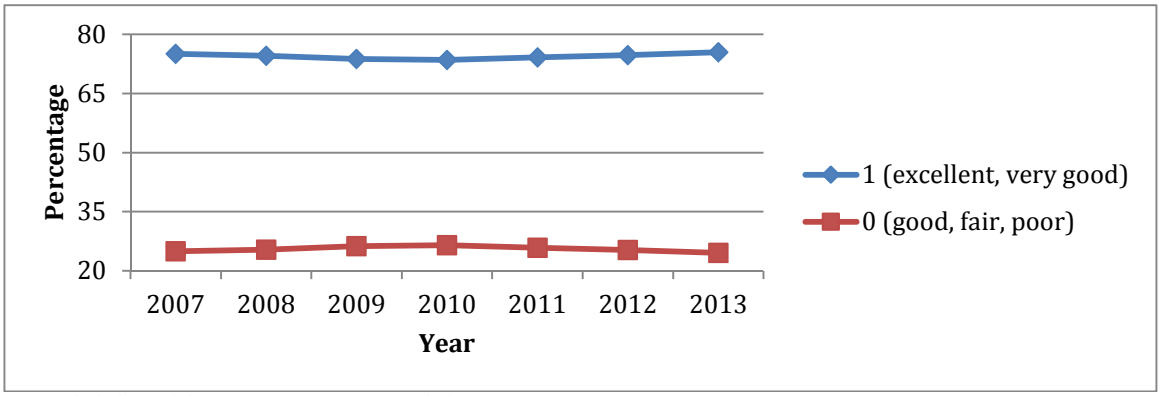
Note: Tabulations of the 2007-2013 Current Population Surveys

Figure 1.5: Percentage young adults insured married vs. unmarried 2007-2013



Note: Tabulations of the 2007-2013 Current Population Surveys

Figure 1.6: Self-reported health status among young adults 2007-2013



Note: Tabulations of the 2007-2013 Current Population Surveys

Chapter 2: LABOR MARKET OUTCOMES FOR YOUNG ADULTS POST-ACA

2.1 Introduction

Chapter 1 examines the impact of the ACA's extended coverage mandate on the health insurance status of young adults. In this chapter, I take the inquiry a step further by evaluating the labor market outcomes for young adults as a result of the ACA. As discussed in chapter 1, in the absence of extended coverage laws, health insurance providers will drop coverage when the beneficiary turns 18. Those who are not college-bound might get insurance through alternative sources such as Employer Sponsored Insurance (ESI), if available, or private coverage. It is also very likely that young adults might not have any insurance at all. While earlier state dependent coverage provisions, enacted in 29 states did allow young adults to get coverage, as discussed in Chapter 1, it wasn't as comprehensive as the ACA.

Most Americans rely on employer provided health insurance as a form of coverage. This type of insurance is subsidized by the employer and costs the employees a lot less to purchase in comparison to purchasing private coverage.[28] Smaller employers are less likely to offer health insurance citing affordability as a major reason. Almost all employers with more than 200 employees offer coverage. Employers with less than 200 employees tend to offer coverage through health exchanges or a small business exchange (Kaiser Family Foundation, 2014).[29] Due to this majority coverage rule, insurance

[28] According to the 2010 census, 55 percent of Americans received some kind of employer provided health insurance coverage. 31 percent received coverage from public programs such as Medicare and Medicaid and about 12-14 percent were uninsured. Most of these plans are subsidized. Workers were responsible for 18 percent of the costs for individual coverage and 29 percent for family coverage in 2014 (KFF.Org).

[29] Kaiser Family Foundation, 2014. Employer Health Benefits Survey 2014 Annual Survey

coverage through employment creates a lock-in effect.[30] Prior work on health insurance and employment provides strong evidence of this lock-in effect and studies have shown employees are influenced to stay in their jobs in order to keep their insurance. As a result, the ACA is expected to ease job lock and increase job mobility.

The importance of understanding why easing job lock can have implications for workers can be narrowed down to worker productivity and their ability to move between jobs. Freedom from job lock creates opportunities for workers and allows them to not be tied down to a specific job on account of health insurance coverage. While many factors such as wages, education, and personal choices impact job mobility; health insurance is seen as one of the major factors that determine a worker's willingness to stay on the job.

The ACA provides a number of provisions that make access to quality health insurance possible at an affordable price. The employer mandate encourages employers to provide affordable health insurance to employees and incentivizes them by offering tax credits for smaller employers, play-or-pay for larger firms, and establishing health insurance exchanges specifically for small businesses to purchase affordable coverage. More specifically, the ACA impacts outcomes by covering those with pre-existing conditions by creating a federally funded high-risk insurance pool program for those who didn't have access to health insurance from an employer or were ineligible for any government programs.[31] Health insurance providers are prohibited from denying insurance or charging higher premiums. The law also reduces premiums on plans and

[30] The majority of insurance coverage being provided by employers creates less incentive to leave work for employees
[31] High-risk pool is for those uninsured for more than 6 months. The program ended on January 1 2014 with the onset of the individual mandate.

incentivizes employers to provide insurance.[32] All these provisions play a part in increasing coverage and easing job lock.

In this chapter, I focus on understanding how the ACA changes labor market outcomes for young adults. The above arguments for freedom from job-lock along with the literature review provide a strong justification for exploring how extended coverage mandates impact young adults. This chapter will examine whether the impacts on employment, job mobility, hours worked, and wages remain consistent with prior literature or differ due to the unique nature of this age group.

Traditionally, young adults are more likely to have lower levels of education and work in part-time positions or work multiple jobs to make up for low income. They are also more likely to work fewer hours (Kaiser Family Foundation, 2015). This makes them a unique age group compared to others, as access to health insurance might have an different impact on young adults compared to older individuals with higher educational levels or those with significant work experience.

As a result of extended coverage mandates, the value attached to employment for this age group may decline. Prior reforms such as the Massachusetts Health Reform of 2006 indicate declines in uninsured rates by 36 percent relative to the base and change in levels of employment (Kolstad & Kowalski, 2010; Heim & Lurie, 2014). Since health insurance is usually provided to full time workers, it is possible that having a source of insurance other than employer sponsored insurance (ESI) might lead young adults to

[32] The law allows states to expand Medicaid to 133 percent FPL that will increase coverage. Providers are expected to carry the bulk of reimbursements for services; they are expected to cover 80 to 85 percent of the reimbursement for clinical services and on enhancing the quality of care. Those with incomes between 133 and 400 percent FPL will be provided tax credits to lower costs for buying insurance coverage. All individual plans and small group plans are required to offer health benefits package that will cover specific benefits and will not charge a deductible on preventive services. Premiums on plans will be based on age, location, tobacco use, and whether the coverage is purchased for individual or a family. Individuals are expected to have some creditable coverage and employers are expected to provide minimum essential coverage or pay a penalty. Tax credits are provided for small businesses with less than 25 employees.

work part time, become self-employed, or not work. It is also typical of larger employers to provide ESI compared to smaller firms, hence, having a different source of health insurance might make working for smaller employers less prohibitive. These outcomes have implications for the labor supply of young adults as they could potentially change their employment decisions.

Prior work on health insurance and labor supply finds workers depending on ESI are less likely to separate from their jobs compared to workers with alternatives to ESI. However, prior work focused on several different age groups of men and women, find that having employer-sponsored insurance creates a job-lock and discourages workers from switching jobs.[33] Earlier work also found mandates leading to increases in health insurance by providing an alternative to ESI, reduced job-lock and increased job mobility.[34]

Those with access to spousal insurance also experience greater job mobility; married individuals are less likely to separate from their jobs when they rely on ESI. Married individuals are more likely to leave when they have access to spousal insurance. Similarly, those with certain chronic and pre-existing conditions are also less likely to leave work if they depend on ESI.[35] Although insurance providers can no longer deny coverage based on pre-existing conditions, this group pays a lot less in premiums when covered through ESI as employers cover the majority portion of the costs associated with coverage plans.

[33] Job lock refers to employees being unwilling to leave work for another alternative job, self-employment, or retirement due to costs incurred as a result of having own health insurance.
[34] Includes earlier mandates in Medicaid, SCHIP, and dependent coverage in states prior to the ACA
[35] Some of these studies get discussed in the literature review

In this chapter, I evaluate the impact of the dependent coverage mandate on labor market outcomes such as job transitions, hours worked, type of employment (full time vs. part time), number of jobs worked, and wages for young adults. I make the following contributions in this chapter. First, using five years of post-implementation data and a total of 10 years' worth of data, I examine trends in the labor market for young adults. Prior work done on examining the impact of ACA on labor market outcomes for young adult is limited to one study and only uses a year of post-implementation data.[36]

Second, this is one of the first studies to undertake a comprehensive analysis of the changes in labor outcomes for young adults as a result of the law. Prior studies evaluating labor impacts on young adults as a result of the ACA have only done preliminary work on selected outcomes such as employment, full-time work, hours, and job change. By building on these basic estimates from prior work, I take a more detailed approach estimating the changes in job separation, full-time versus part-time work, hours worked, working more than one job, having the same employer, and working in private sector vs. being self-employed. By evaluating education as a determinant for wages and hours worked to assess if levels of education impact these outcomes, my work advances the research on levels of educational attainment on wages of young adults post-ACA.

My third contribution is investigating sub-groups of the young adults' population to analyze whether different groups experience different outcomes. No other study, to my knowledge, has done this. I examine subgroups based on gender, marital status, and race. Fourth, my analysis includes two event study models as checks for robustness that no prior work on young adults has done; these models estimate any employment and full-

[36] Some of these earlier studies are mentioned in chapter 1. Only 1 study has examined labor outcomes for young adults after the ACA and uses 1 year of post implementation data and offers limited analysis of labor outcomes.

time employment by age and year separately to assess whether outcomes are affected by any pre-existing trends and to ensure all changes are policy related.

My analysis looks at the differences in above-mentioned labor market outcomes before and after the ACA to estimate the average impact of the policy on labor outcomes for young adults using nationally representative data from the Current Population Survey (CPS). I use a difference in differences (DD) model to estimate changes as a result of the law using 26-30 year olds as counterfactuals.[37] I re-estimate outcomes for hours worked and estimate wages for young adults using education (low vs. high) as a further control group using a triple differences (DDD) model. For the triple differences model, I only include older young adults aged 23-25 since they are more likely to have reached higher educational levels. I also run other models for checking the robustness of my results; these include the original regression with only post-ACA states and event study models. These models and the results are discussed in the later sections.

Summary of results

I find the ACA had a significant impact on outcomes such as employment and full-time work while it didn't impact job mobility for young adults. The overall impact of the law resulted in a decline in employment, which is consistent with the prior literature. The decline in employment is statistically significant at 1.7 percentage points. The results also find a decline in full-time work, a decline in hours worked, and a decline in the probability of working more than one job as a result of the ACA. The decline indicates

[37] I use the older individuals (26-30) as a comparison group for 19-25 year olds as they closely follow similar trends and make similar decisions for work

workers are less likely to be tied down by ESI.[38] The treatment group is less likely to work full time after the law as they have access to alternative source of health insurance coverage. However, the results did not find a statistically significant outcome for job separation.[39] It is possible that the economic slowdown during the years prior to and after the ACA compelled young adults to stay with the same employer. Lastly, the analysis from the triple differences model shows educational attainment as having no influence over wages earned or hours worked.

The result from the analysis of subgroups indicates that men experienced a greater likelihood of job separation and reduced full-time work compared to women. Among married and unmarried women, the unmarried women were less likely to work part-time compared to married women. The estimates for employment for married and unmarried women are not significant. They are however, significant for Hispanics compared to Non-Hispanics. Hispanics are less likely to work full-time compared to Non-Hispanics, they are also less likely to be employed. This result is significant at a 5 percent significance level.

The rest of the chapter is organized as follows: Section 2.2 discusses the background and summarizes prior work on health insurance and labor market outcomes. This section also discusses the limited work done on job mobility for young adults and on job choices when health insurance is available through an alternative to ESI.[40] Section 2.3 discusses data and methodology used in this chapter. This section also includes the measures used to estimate outcomes and how they are coded. The results follow in the

[38] Since ESI is usually associated with full-time work

[39] Job separation refers to changing employers

[40] Most of the prior literature on young adult labor outcome is restricted to state based mandates passed prior to the ACA.

data and methodology Section 2.4. The results are broken down by main DD results, followed by results from the triple differences estimator, sub-group analysis, and robustness checks. The chapter concludes with Section 2.5 with a discussion and summary of the findings.

2.2 Background

The literature review finds health insurance changes labor market decisions for all age groups. Almost all studies find that having health insurance from another source not tied to employment will reduce labor supply. I add to this literature by including a new age group that hasn't been previously studied.[41] I also evaluate previously untested impacts of the law. I assess whether young adults are more likely to work full time or reduce their number of hours and also assess their earnings, likelihood to work more than one job, work in private sector over being self-employed, and sub-groups of race, marital status, and gender.

Most studies conclude that health insurance coverage through Employer Sponsored Insurance (ESI) is a deciding factor in choosing a job. ESI can tie an individual to their employers. Young adults, although healthier than other age groups such as the elderly or the middle aged, also make job decisions based on ESI. Young adults often work in low wage and entry-level positions, which makes comprehensive coverage difficult. They are also more likely to change jobs frequently and due to frequent moves, are less likely to be offered ESI (Kaiser Family Foundation, 2015).

[41] As discussed earlier under contributions and additions to the existing literature

Depew (2015) finds prior state based provisions for extending health insurance to young adults resulted in a decline in the labor supply of young adults.

Health Insurance and Labor Supply

ESI and labor participation has been a widely debated topic with economists as they study life transitions for different demographic groups. These groups include low-income single mothers, married couples, construction workers etc. Moffitt and Wolfe (1992) use the Survey of Income and Program Participation (SIPP) data to estimate the impact of Medicaid on female heads of family. They find Medicaid to have a strong and significant negative effect on the labor participation of women while having private insurance has the reverse outcome. Other studies such as those by Winkler (1991) and Montgomery & Navin (2000) also find significant reduction in labor supply of single mothers as Medicaid increases. Gruber and Madrian (2002) don't find any significant relationships between having health insurance and determining labor supply for low-income mothers. However, they do find a significant relationship between having health insurance and the labor supply decisions of secondary earners and that health insurance can have a role in job mobility.

Several other studies have also looked into population subgroups to see effects of health insurance coverage on labor participation. Adams (2004) assesses married men between the ages of 25-55 to estimate the impact of ESI on job mobility. Using CPS data, he finds ESI lowers job mobility for those without alternative coverage by approximately 22.5 percentage points; there is a strong evidence of job lock as a result of ESI. Similarly Bansak & Raphael (2008) look at working fathers to see whether the State Children's

Health Insurance Program (SCHIP) impacts job mobility. They estimate that married working fathers were more likely to separate from their current employer after the introduction of the SCHIP initiative. Evaluating only unmarried men, Gilleskie & Lutz (1999) use the National Longitudinal Survey of Youth (NLSY) to find that unmarried males aged 24-35 experience drops in job mobility by 10-15 percent indicating the outcomes can be different for married and unmarried men depending on available alternatives to ESI.

Health insurance coverage also has implications for worker retention (Kim & Phillips, 2010). Using SIPP data, they find full-time construction workers working in the industry to have retention rates between 30 to 41 percent for unionized and 13-18 percent for non-unionized workers when offered health insurance. In the same vein, Rashad & Sarpong (2008) assess single employed individuals using National Health Interview Survey (NHIS) data and find that having ESI increased employee retention. They find that employees with ESI were 16 percent more likely to stay with the same employer and were 60 percent less likely to voluntarily leave compared to those with other means of coverage.

Health insurance coverage impacts retirement decisions as well. Several studies have documented the impact of health coverage on leaving work. Blau and Gilleskie (2001) study men between the ages of 50 and 61 to estimate the impact of employer provided retiree health insurance. The study finds an increase in the exit rate from the labor force by about 2 percent when employees share the retiree health insurance cost with the employer. This number increases to 4.3 percent if employer bears all the cost. French & Bailey (2011) also find exit rates at age 62 to be 8.5 percentage points higher

when workers have health coverage not tied to work. Other studies find similar results estimating an increase in the likelihood to retire by 5 to 7.5 percentage points (Marton, Woodbury, & Wolfe, 2007) and by 29-55 percent when other options for coverage are available (Marton & Woodbury, 2010)

While most studies on the topic find some effect of ESI on employment and other labor outcomes, a small number of studies also find little or no effect. Holtz-Eakin (1994) finds little to no evidence that health insurance provision impacts job mobility. While there is some evidence for married females being impacted, there was no evidence for married males. Berger, Black, and Scott (2004) find no evidence of job lock. Using SIPP data, the study doesn't find a statistically significant evidence of job lock. However, they do find some evidence of shorter employment spells for those with ESI and spousal insurance and longer employment spells for those with ESI and large families. Similarly Kapur (1998) also finds no significant effects, using National Medical Expenditure Survey (NMES) data, she finds insignificant estimates to indicate any kind of job lock even though she uses the same data set as an older study that did find evidence of job lock.

Labor Supply by Subgroups

The employment outcomes of having health insurance coverage from a source other than ESI differs for married couples by gender. For both married women and men, health insurance availability affects labor participation. All studies on this topic find that the labor force participation of married women is tied to the availability of health insurance through their spouse's employment. Labor force participation for married

women declined between 6 to 12 percent according to Buchmueller & Valletta (1999). Similarly, Olson (1998) estimated a 7 percent decline for married women with access to spousal insurance. Another study by Wellington &Cobb-Clark (2000) finds a greater decline compared to some previous studies. According to their estimates, married women's labor participation declined by 20-percent. Murasko (2008) finds married women work 1 hour less per week, which translates to 7.9 percent reduction in the likelihood to work when access to spousal coverage is available. In a more detailed analysis of the impact of health insurance on the labor supply for married women, Hamersma & Matthew (2009) find Medicaid expansion reduced job lock for unmarried women. They find for every 100 USD change in Medicaid threshold, unmarried women's probability of quitting their job increased by 1.1 percentage points, which represents a 4 percent increase in turnover relative to the baseline.

Bradely, Neumark, & Barokowski (2013) assess the employed married women population to understand the effect of employment contingent insurance on married women with breast cancer diagnosis. They compare women who are dependent on their own employment for insurance with women who are less dependent on employer coverage. They find that women who depend on their jobs for health insurance reduce their labor supply less that non-dependent women following breast cancer diagnosis. Similarly, Bradely, Neumark, Luo, & Bednarek (2007) find a negative health diagnosis for women leads to the decreased likelihood of working compared to women on their own coverage.[42]

Job Choice

[42] Negative health diagnosis includes a breast cancer diagnosis or a chronic condition

The literature on health insurance and job choice offers an insight into job mobility decisions. It could also explain job choice and job mobility decisions of young adults. Several studies have found mixed results indicating significant as well as insignificant effects of job choice and health insurance. Buchmuellar and Valletta (1996) find strong evidence of job lock in women while weak in men. Holtz-Eakinn, Penrod, & Rosen (1996) & Kapur (1998) find no such evidence. Other studies find ESI would reduce job mobility for those who find coverage expensive (Anderson, 1997) and those who frequently change jobs are more likely to be employed in positions that don't carry any benefits (Slade, 1997). Job mobility also varies for those dealing with their own or a family member's chronic illness (Stroupe, Kinney, & Kniesner, 2001). It could depend on demand for ESI by an individual; the higher the demand the lower the job turnover (Dey, 2001). Gooptu, Moriya, and Simon (2010) study the expansion of Medicaid under the ACA to access the impact on labor outcomes. They test for eased job lock for non-elderly as they believe newly available insurance not through ESI for this population group will enable them to move to other jobs. Their findings indicate no evidence of strong effects from the expansion of the mandate on job mobility.

Another aspect of job choice is the option to become self-employed. A source other than ESI can mean individuals can become self-employed, as they no longer need employer benefits. DeCicca (2010) examines the impact of New Jersey's individual health coverage plan on self-employment. He finds evidence indicating the program-increased self-employment by 14-20 percent compared to some neighboring states that didn't have similar programs. He also found larger estimates for those who are

unmarried, older, and have health issues such as obesity. Another study by Fairlie, Kapur, & Gates (2011) finds large negative effects of health insurance demand on self-employment for those without spousal coverage compared to those with spousal coverage. Additionally, they also examine business ownership in males in the months just before turning 65 years old and in the months just after turning 65 year old. They find the rates of business ownership increase from under the age of 65 to over the age of 65 while no changes in the months before and after for other ages in their sample.[43]

Job mobility in young adults

The literature on young adults and labor market has been growing as research and interest on this topic gathers momentum. Most current work is limited to the pre-ACA time period or for states like Massachusetts where universal coverage and dependent coverage have been available since 2007. Only one post-ACA study examines the impact of the ACA on young adults and their labor market choices. Studies indicate a decline in overall labor supply. Heim & Lurie (2014) look at evidence from the Massachusetts health reform to examine if it led to increased job mobility. They used tax returns data from 2002-2010 and identify job changes based on employer information on W-2 forms. Their estimates of job separation lie between 1.5 and 3.8 percentage points. In a more updated version of the tax returns study for Massachusetts, Heim, Lurie, and Simon (2014) look at the impacts of the ACA on labor market outcomes. Using tax records from 2008 to 2012, they compare young adults whose parents have access to benefits to

[43] Under 65 being pre Medicare, over 65 being post Medicare. Therefore, the study finds when Medicare kicks in, individuals are more likely to be business owners compared to those ineligible for Medicare. Additionally, bundling of health insurance and employment creates a "lock" that might lead to an inefficient level of business creation.

slightly older age group before and after the law. They find young adults to be more likely to work in lower paying jobs that offer no benefits or to become self- employed. Dillender (2014) examines wages for young adults and finds having insurance through an alternative source other than ESI leads young adults to have greater wages, which could suggest increased job mobility. He finds that for those aged 18 and younger, having dependent coverage increased wages by 1.6 percent and predicts that the ACA will have greater future impacts on wages for this group.[44] Similarly Depew (2015) examines states that mandated early extended coverage provisions for young adults and finds that state mandates led to a decrease in labor supply of young adults.

Current Chapter

This chapter adds to the limited prior work done on looking at ACA's impact on labor market outcomes for young adults. It also adds to the past research looking at the impact of having health insurance coverage from an alternative source. While most studies have found significant impacts of having an alternative to ESI, only preliminary work has been done on ACA and its impact on young adults. In this chapter, I examine these impacts in greater detail. Using 10 years of monthly data (2005-2015) that gives me five years of post-implementation data as well as five years of pre implementation data to examine outcomes such as employment, hours worked, full-time/part-time work, having the same employer, working in the private sector vs. self-employed, and wages. The ACA is expected to have significant impacts on different populations. As in Chapter 1, it impacts young adults by increasing their levels of coverage. In this chapter, I assess

[44] Dillender (2014) estimates are based on states with dependent coverage provisions passed prior to the ACA.

how the law will go beyond access to coverage and impact the labor market outcomes for this group.

This chapter contributes by examining the labor market outcomes for young adults post-ACA by analyzing employment and full-time versus part-time work for this age group. This chapter also examines the law's impact on young adult wages, their hours worked as well as several other outcomes such as job mobility, type of employment, and the likelihood of working multiple jobs making it the first study to do so. The chapter also assesses differences in outcomes by subgroups to estimate the heterogeneity in results. I examine all states regardless of whether they had prior dependent coverage mandates. Next, I estimate employment outcomes for this age group in comparison to the counterfactual age group. To estimate employment choices and hours, I use a quasi-experimental model discussed in the next section. Lastly, I also estimate wage change for young adults. Prior work on ACA's impact on young adults are limited to job choices (full/part) and hours worked. I add to this by assessing the ACA's impact on several other outcomes for young adults; these are discussed in the subsequent sections.

2.3 Data & Methods

Data

For this chapter, I use the Current Population Survey (CPS) monthly data from 2005 to 2015. CPS collects monthly demographic and labor market data from individuals. Data are collected on a rotation basis from 60,000 households. These data are collected for four months after which there is a gap for eights months following which interviews commence for the next round, which is again four months. As a result, households are

interviewed eight times over a 16-month period. Those being interviewed in the 4th and 8th month of the sample are referred to as Outgoing Rotation Groups (ORG). These groups account for all earnings data collected in the CPS.

CPS provides certain advantages when looking at the labor outcomes for individuals in the United States. First, CPS is the primary source of information on labor force characteristics of the US population; this allows me to estimate several additional labor market outcomes than previously examined. Second, it provides estimates at several levels (national, regional, state, and metropolitan level); this allows me to run separate models for pre and post ACA states for estimation of labor market outcomes to assess any differences. Third, the rotational method used by CPS improves estimates, as the probability of keeping the same respondents in their monthly survey remains high. The data collection design (collecting data for four months with an interim gap of eight) enables a higher percentage of the same respondents for the monthly data as it provides some year-to-year overlap and improves estimates of change on a month-to-month and year-to-year basis. Approximately 75 percent of the respondents between successive monthly data remain the same while 50 percent for the yearly data, thereby providing better estimates of change (Bureau of Labor Statistics, 2016). CPS also provides earnings data from its Outgoing Rotation Groups, which is where earnings information used in this chapter is obtained. Fourth, using CPS data for outcomes such as employment is the way in which the variable gets defined and coded in the CPS. All individuals in the CPS are classified as employed if they worked in any kind of paid position last week. This could include working for themselves, family business, farm work etc. Those who work but are temporarily absent from their jobs are also included.

The unemployed population includes those not working in the reference week or those actively looking for work but not employed. This allows me to code my employment variable to include all those who worked last week or held a position last week even if absent from work as being employed. Everyone not employed or looking for work but not employed gets coded as unemployed. This enables a higher accuracy when estimating change in employment as a result of the law. These measures are discussed further in the measures section. Other advantages of using CPS for estimating labor outcomes is the detailed data on employment status by demographics, occupation, industry, class of worker, work status, number of jobs held, all of which are utilized in this chapter.

There are some limitations, however to using these data. One limitation in using Current Population Survey data for measuring the employment outcomes for young adults is the lack of data availability for young adults not living with their parents. This implies not knowing whether the parents of young adults will have access to ESI, which has implications for dependent coverage. All data on young adults used in this chapter ignores the parent's health insurance status.

From the monthly data set I only keep individual aged 19-30, this gives me a total of 2,649,121 observations that includes young adults aged 19-25 and the older comparison group aged 26-30. Out of this 1,525,897 observations are 19-25 year olds and 1,123,224 observations are 26-30 year olds. This number represents all states. For the post-ACA states analysis, I drop 29 states, which leaves me with 1,114,091 observations for 21 states and District of Columbia. These include 639,772 observations for 19-25 year olds and 474,319 for 26-30 year olds.

I begin by examining whether young adults are more or less likely to be unemployed, working full-time or working for the same employer. I also look at their hours worked, type of employment (private vs. self-employed), and whether they hold more than one job. Having ESI is closely tied to job lock while having a source of health insurance other than ESI could imply freedom from job lock. The analysis looks at all these measures of the new labor market outcome for young adults post ACA. These measures are discussed below.

Measures

This section of the chapter discusses the different measures used for estimating changes in labor market outcomes as a result of the ACA. I begin by assessing the overall employment for young adults to evaluate whether they are more likely to be employed as a result of having dependent coverage. Following this, I examine their full-time and part-time work to see changes associated with having insurance. My third measure examines whether young adults are more or less likely to work for the same employer. This is a measure of job mobility. I also evaluate whether young adults are more/less likely to work in the private sector, or as a result of increased job-mobility, become self-employed. The next measure examines hours worked to assess any changes in work hours as a result of the law. My last set of measures estimates the probability of working more than one job and wages earned.

Employment: The first measure evaluated is employment of young adults to see whether the ACA has had some impact on their employment. In Table 2.1, employment

rates are shown for the treatment and comparison groups. The employment percentage drops from 2008 to 2009. However, young adults are expected to have increased rates of unemployment given their limited education and lack of requisite skills compared to other groups. Employment in the CPS is coded under various categories and includes employed, unemployed, not in labor force, armed forces etc. As mentioned earlier the "employed" measure here includes everyone who worked in any kind of paid position last week. This could include working for themselves, family business, farm work etc. People who work but are temporarily absent from their jobs are also included. Classified as "unemployed" are individuals not working in the reference week or individuals actively looking for work but not employed. For the purpose of estimation, employment is coded as a binary variable; anyone who is employed is coded 1, otherwise the variable is coded as 0.

Full-time/Part-time work: Young adults are likely to work less given the option of dependent coverage. From the literature review it becomes evident that when presented with an alternative to ESI, full-time work declines. A similar trend is expected with young adults who show greater inclination to work part-time. This measure examines full-time and part-time employment for young adults. The CPS codes full-time work as working over 35 hours, working full-time hours but not at work, or working full-time hours but working part-time for economic reasons. Part-time work is considered as working less than 35 hours and includes part-time hours; these part-time hours could be for economic as well as non-economic reasons. This measure is split into two outcomes, which are estimated separately. The variable full-time is coded as 1 if the number of reported working hours are greater than 35 hours per week and also includes those

reporting full-time work but not at work; it gets coded as a 0 if no work is reported. Part-time is coded as 1 if reporting less than 35 hours of work per week or those who are full-time but working part-time for economic reasons else 0 if no work is reported.[45]

Hours: The number of hours worked by young adults is also expected to go down as they shift from full-time to part-time employment. Since they are not tied to ESI, young adults have a choice to work part-time or fewer hours. This measure examines both hours and log hours to see if implementing the mandate led to a reduction in hours worked by young adults. Hours worked last week measure the total number of hours respondents were at work during the previous week. It includes all the hours spend on work or attending to business. It also includes hours working on family business or at a farm. I use hours worked last week as an outcome variable to assess whether there is a reduction in working hours for young adults.

Job change: With greater job mobility and access to other positions young adults might be more likely than others to switch jobs if they are no longer dependent on ESI. Since they are less likely to have reached financial independence and stability, young adults might look for better paying jobs with higher wages that increases job mobility (Kaiser Family Foundation, 2015). Previously, if they were covered through ESI, job mobility was limited. After the ACA, job mobility is expected to increase for this age group making them more likely to switch employment as they look to work fewer hours or for a different employer. I examine whether the ACA has increased the probability of young adults switching employers. The CPS asks respondents whether they are still

[45] The full time and part-time variables get coded from the "WKSTAT" variable from the CPS. This variable includes those working greater than 35 hours and those working less than 35 hours last week, those who work full time and part-time but were not at work last week, and those who are unemployed and not in the labor force.

working with the same employer. I code this as a binary variable indicating 1 if respondents answer yes and 0 otherwise.

Private sector employment and self-employment: Mentioned earlier, having freedom from job lock enables young adults to seek other employment opportunities. They are free to move about the labor market seeking alternative opportunities. Many can also shift from working in private industry to becoming self-employed. Using this measure, I seek to examine if there's a shift in work sector for young adults. Private sector work and self-employment are treated as separate measures. Since there is some decline in employment expected from the reform, it is also likely that some decline will be seen in private sector employment. I code these variables using type of work variable in the CPS that measures the respondents' job sector in the previous week.[46] I only include those who report working currently in private sector or those who report being self-employed. Both the private sector employment and self-employment variables are coded as binary variables indicating 1 for working in private sector or being self-employed, else coded 0.

More than one job: This measure looks at the probability of working more than one job. Young adults will often work multiple jobs to make up for their lower wages.. They are more likely to be working fewer hours per job or part-time. This measure analyzes how the ACA impacts the probability of young adults working more than one job since they experience different working conditions post-ACA. Working additional jobs can include working part-time, weekends, or evenings. I code this variable as a binary indicating 1 if responding to working more than one job and 0 otherwise.

[46] In the CPS, the variable "classwrk" indicates whether the respondent was employed in the private sector, self-employed, public sector, or armed forces.

Wages: The last measure looks at wages to examine if wages changed for young adults as a result of the law while using level of educational attainment as a further control. Studies show that employers pass the increased cost of providing benefits down to the employee in the form of lower wages. The labor effects from the Massachusetts Health Reform suggests that employer mandate put into effect as part of the reform led to an decline in wages (Kolstad & Kowalski, 2012). For the purpose of looking at how the ACA impacts wages of young adults, I examine weekly wages for employees. Using the Outgoing Rotation Groups (ORG) in the CPS, I use log of wages estimate percentage changes in wages to examine the impact of the reform.

Methods

To estimate the impact of the ACA on labor outcomes of young adults, I use a difference-in-difference (DD) strategy comparing them to an older comparison group aged 26-30. I use the older comparison group since they show similar trends to young adults when it comes to employment decisions and are more likely to be employed compared to younger individuals (16-18 year olds). It is also known that while the comparison group doesn't get impacted by the law, they are more likely to have insurance through their employer compared to young adults. My analysis estimates several outcomes for my treatment group, as discussed earlier in this section.

The analysis compares difference in labor outcomes for this age group pre and post ACA using data from the CPS. I use a DD regression model to estimate the policy effects based on the assumption that the comparison group will account for other time

varying factors that would have led the treatment group to experience different outcomes post reform. For ease of estimation, all specifications are linear probability models.

The DD model specification is:

$$Y_{ist} = \beta_0 + \beta_1 PostACA_t + \beta_2 Treat + \beta_3 (PostACA_t * Treat) + X_{ist} + \varsigma_t + \sigma_s + \varepsilon_{ist}$$

Where Y_{ist} is the labor market outcome for individual *i* in range *g*, state *s* and time *t*.[47] Any demographic factors such as gender, race, marital status, student status can impact the outcome and are controlled for, these are denoted by X_{ist}

σ_s denotes state dummies that account for any state variability such as differences across states in population composition and ς_t denotes year dummies.[48]

The dummy variable for the year after the reform implementation is denoted by PostACA_t and is coded as 1 for years after 2010 and 0 for the years before 2010.

The dummy variable for age is *Treat* and coded as 1 for being 19-25 else 0.

The coefficient of the interaction term between year and age is captured by the term β_3 and denotes the reform impact after implementation.

A second set of analysis involves using a difference- in difference- in differences (DDD) estimation utilizing education as a further control group to estimate weekly wages and the hours worked. Education as a further control group is a dummy where bachelors' degree and higher gets coded 1, else 0. It is expected that higher education would be an indicator for increased wages and hours worked since full-time work is associated with

[47] This can be employment, full-time/part-time work, hours worked, private employment/self employment, working more than one job.

[48] The demographic controls included in the model are gender (male/female), race (white, black, Hispanic, others), marital status (married, divorced, single, separated, widowed), and education status (some high school, high school, some college, bachelors and above).

higher levels of education and higher wages. For this specification, I only include older young adults in my treatment group. These are individuals aged 23-25 and are more likely to have reached some level of higher educational attainment compared to the younger young adults.

The DDD model specification is:

$$Y_{igst} = \alpha + X_{igst} + \sigma_s + \gamma ACA_t + \delta Age_g + \phi Educ_i + \eta(ACA_t * Age_g) + \omega(Age_g * Educ_i) + \nu(ACA_t * Educ_i) + \theta(ACA_t * Age_g * Educ_t) + \varepsilon_{igst}$$

Where Y_{igst} denotes the outcome variable log of wages and/or hours worked.

The ACA and Age specifications are the same as the DD model above.

The new control group is denoted by $Educ_i$ is a dummy for education and coded 1 for bachelors degree or higher, else 0.

The coefficients for the interactions for *ACA*Age*, *Age*Educ*, and *ACA*Educ* are denoted by η, ω, ν. The coefficient for the triple difference estimator is θ which denotes the triple interaction between Age, ACA, and Education and captures the average policy effect.

2.4 Results

Descriptive characteristics

In Table 2.2 insured and uninsured rates for young adults are shown by firm size. Working in larger firms is associated with lower uninsured rates for young adults as

larger firms are more likely to offer them full or partial benefits. Approximately 77 percent of young adults were insured in firms with more than 1,000 employees while 60 percent were insured in small firms with fewer than 10 employees. This also explains the employer mandate; firms with more than 200 employers are required to provide insurance or pay a penalty.

Table 2.3 shows the demographic and labor characteristics by age group for the treatment and comparison group. Young adults have higher rates of unemployment (compared to 26-30 years olds) while having lower rates of education attainment. About 64 percent of young adults were employed compared to 76 percent of 26-30 year olds. Out of those who were employed, 61 percent were part-time workers. Since young adults are more likely to work in part-time positions, they work fewer hours and hence, earn less. The weekly wage comparison between the two groups shows the treatment group earning $438 compared to $711 by the older group. Looking at some of the basic characteristics of young adult employment in Figure 2.1, we see that employment rate declines around 2008 and then slowly picks up, but not at the levels prior to 2008. Full time work, having the same employer, and having more than one job all show declining trends over the years with full-time work, working more than one job, and employment rate showing steeper declines.

DD estimates

Table 2.4 shows the results from the difference-in-differences model. Separate models are run to estimate the impact of the law on labor market outcomes of young adults in states with no prior mandates these are discussed later. The results presented in

Table 2.4 include all states irrespective of whether they had prior dependent coverage laws or not. Outcomes include employment, full-time and part-time employment, working for the same employer (to test job mobility), hours, employment in private sector, self-employed, and working for more than one employer. For ease of estimation, all models are run as linear probability models.

The results indicate that the law is associated with a decline in employment of about 1.7 percentage points, which is approximately a 2.6 percent decline in overall employment. This coefficient is small but statistically significant. Table 2.4 also shows a significant result for the overall decline in full-time work as a result of the law by approximately 3 percentage points or about a 5.5 percent decline. This finding is also consistent with prior work on health insurance access from a source other than ESI and decline in full-time work.[49] Since the probability of working full-time declines, it is also expected that hours of work will decline. Hours worked show a decline in Table 2.4 with a statistically significant coefficient. Figure 2.2 shows the decline in the hours of work over time. The work hours show a declining trend starting in 2008 that continues post-ACA.

The next set of specifications assess whether young adults are more or less likely to have the same employer. The results indicate a statistically insignificant coefficient on having the same employer. Post-ACA young adults are less likely to work more than one job; the probability of young adults having more than one job declines by about 2 percentage points indicating a reduced labor supply. Employment in the private sector declines by 2 percentage points, which can be attributed to a decline in full-time

[49] E.g. Heim & Lurie (2014) find declines in full-time work between 1.5 and 3.8 percent.

employment as well as young adults seeking alternative opportunities as a result of freedom from job-lock. An increase in the probability of being self-employed was one of the hypothesized outcomes. However, the results do not indicate as such.

The overall DD results indicate decline in full-time work and hours worked with declines in the probability of being employed but don't really show any indication of increase job mobility or any evidence of movement between employers. It is possible that the lack of job mobility indicated in the results might have to do with the economic downturn around the time, which could have impacted young adults more than others.

DDD estimates

Table 2.5 shows the estimates from the triple differences model. For estimating the triple differences, I only use young adults aged between 23-25, as they are more likely to have reached some level of higher education compared to the younger young adults aged 19-22. Separate models are run for log wages, hours, and log hours. Higher education indicates higher wages and impacts hours worked. Full-time positions are associated with higher educational levels. All the results indicate insignificant coefficients even as the coefficient signs are in the expected direction. In Figure 2.3, wages rise from a base of around $400 per week for young adults and then drop around 2009. After 2009 the wages stagnate and then increase after 2012, possibly indicating a shift in employment after the economic downturn or higher wages due to the fact that this age group was less likely to depend on ESI.

The lack of any significance in the DDD estimation results could indicate that there is not much difference when education is added as a further control group and that the treatment group shows no difference from the control group due to the possibility that there is little difference between the treatment group and the comparison group. Labor market outcomes for older young adults (23-25) are more likely to resemble the control group (26-30) and therefore, fail to show any significant difference. Using education as a further control group and by limiting the age to 23-25 from 19-25 was expected to show some difference but it didn't.

Subgroups

According to prior literature, employment outcomes for married individuals particularly women are different than those experienced by unmarried women. According to studies by Olson (1998) and Buchmueller & Valletta (1999) a reduction in labor force ranging anywhere from 6 to 12 percent was reported for married women. Since it's possible that married women can get health insurance coverage through their spouse, their labor supply will decline compared to others. It is also possible that this trend might be similar for young adults as well. To test if married women's labor outcomes are impacted by the ACA, I run additional models to estimate whether they are more likely to be employed as well as work part-time compared to full-time.

I also analyze the impact on employment outcomes for both men and women to see if the ACA had a significant impact for either group. Lastly, I analyze employment outcomes by race evaluating Hispanics to estimate if they are more/less likely to have the

same employment outcomes as non-Hispanics. The results for these models are show in Table 2.6.

Table 2.6 shows results for different subgroups by employment and working full-time. Men experience a greater decline in employment and full-time work compared to women, although the difference between the declines in full-time work for the two groups is not that different. Differences exist between the declines in full-time employment of married vs. unmarried women. Married women are more likely to reduce full-time work by 3 percentage points compared to 1 percentage point decline for unmarried women. These results are significant at the 10 and 5 percent significance levels respectively. Lastly, comparing Hispanics vs. Non-Hispanics finds a greater decline in full-time employment for Hispanics.

Figure 2.4 shows both male and female young adults having parallel trends in employment. However, males show greater declines compared to females. Next, as shown in Figure 2.5, married women experience lower rates of employment compared to unmarried women. Unmarried women experienced a steeper drop in employment rates right before the 2010 law, which could also be possible due to the economic downturn but have traditionally higher rates of employment compared to married women. The differences between Hispanics and Non-Hispanics in Figure 2.6 shows Hispanics having a lower rate of employment and experiencing greater declines in employment compared to Non-Hispanics.

Overall the results show employment to be somewhat similar for subgroups and even insignificant in the case of married and unmarried women. The statistically significant changes are for full-time work for the subgroups as some show greater

declines in full-time employment. Married women can get health insurance coverage through their spouses hence they are more likely to reduce the number of hours worked compared to unmarried women. Hispanics are more likely to have greater declines in full-time work as they are one group expected to have higher take up rates of coverage post-ACA compared to others since Hispanic young adults' typically experienced higher uninsured rates in the past and with health insurance access are more likely to reduce full-time work.

Robustness checks

In this section, I run separate models to check for the robustness of my results. This involves running the same specification as earlier but only for 21 states and Washington DC. I also run the above specification by dropping 2008 and 2009 to assess the impact without the recession years. Next, I only include the older young adults aged 23-25 as they are more likely to be working compared to 19-22 year olds. Lastly, I conduct an event study analysis that looks at how employment and full-time work changes based on age and year. These are run as two separate models. These checks are further discussed in the following paragraphs.

The first set of specifications include running the original model using only the post-ACA states (states that had no prior dependent coverage provisions). The results for these specifications are presented in Table 2.7. When only considering the post-ACA states, the effect sizes are greater compared to the main model. In Table 2.7, employment declined in post-ACA states by 2.5 percentage points while full-time employment declined by 4 percentage points compared to 1.6 and 3 percentage points shown in the

main results. Both results indicate strong statistical significance. Other significant results indicate decline in private employment, reduced hours and working more than one job. This set of checks shows greater impacts on states that mandated dependent coverage after 2010, which means that while ACA did impact all states by reducing full-time employment, hours worked etc. for young adults, it had bigger impacts on late adopters as these states had no prior laws for dependent coverage. Figures 2.7 & 2.8 show differences between pre-ACA and post-ACA states for the two age groups. Figure 2.7 shows employment trends for 19-25 and 26-30 year olds. The trends between the two groups are parallel; employment is higher for the two groups in the pre-ACA states. This corroborates finding higher impacts when my model only includes post-ACA states. Similarly, Figure 2.8 shows full-time work, which declines in both pre and post ACA states with a higher decline in post-ACA states after 2010.[50]

Table 2.8 and 2.9 show additional specifications. Table 2.8 shows results when the years 2008 and 2009 are dropped from the analysis. As mentioned previously, job separation was not significant due to the possibility of the economic downturn around 2008 and 2009. I rerun the original regressions without observations from these two years. I don't find any changes in my outcome, as job separation is still insignificant indicating the years of economic downturn cannot explain the lack of any job separation. I also run an alternative specification with only older young adults aged 22-25 shown in Table 2.9. I find the coefficients for employment and full-time work are still significant however, smaller. For instance, decline in full-time work drops to approximately 2 percentage points compared to over 3 percentage points from the main model. These

[50] Note that for 19-25 year olds the employment and full-time work is almost the same in 2005 and over time gets more pronounced for the post-ACA states.

results indicate older young adults were less likely to be affected compared to younger young adults.

The last set of specifications involves conducting an event study that defines the event of interest and identifies the time period over which the changes in employment and full-time work get examined. The period over which events get examined is known as an event window and in this case it will be examining ages ranging from 19-30 years and for the years 2005-2015 as used in this chapter. This allows for the analysis along the timeline of the event. Event study analysis is used here to check the robustness of results to ensure the results are not driven by pre-existing trends existing in the labor market. The models presented below include age and year dummies with their interactions as shown in specification (1) and year and treatment dummies with their interactions as shown in specification (2).

By Age

$$Y_{it} = \beta_0 + \beta_1 19 + \beta_2 20 + \beta_3 21 + \beta_4 22 + \beta_5 23 + \beta_6 24 + \beta_7 25$$
$$+\beta_8 26 + \beta_9 27 + \beta_{10} 28 + \beta_{11} 29 + \beta_{12} Post + \beta_{13}(19 * Post) + \beta_{14}(20 * Post)$$
$$+\beta_{15}(21 * Post) + \beta_{16}(22 * Post) + \beta_{17}(23 * Post) + \beta_{18}(24 * Post) + \beta_{19}(25 * Post)$$
$$+\beta_{20}(26 * Post) + \beta_{21}(27 * Post) + \beta_{22}(28 * Post) + \beta_{23}(29 * Post) + \varepsilon_{it}$$

----------(1)

By Year

$$Y_{it} = \beta_0 + \beta_1 2006 + \beta_2 2007 + \beta_3 2008 + \beta_4 2009 + \beta_5 2010 + \beta_6 2011$$
$$+\beta_7 2012 + \beta_8 2013 + \beta_9 2014 + \beta_{10} 2015 + \beta_{11} Treat + \beta_{12}(2006 * Treat)$$
$$+\beta_{13}(2007 * Treat) + \beta_{14}(2008 * Treat) + \beta_{15}(2009 * Treat) + \beta_{16}(2010 * Treat)$$
$$+\beta_{17}(2011 * Treat) + \beta_{18}(2012 * Treat) + \beta_{19}(2013 * Treat) + \beta_{20}(2014 * Treat) + \beta_{21}(2015 * Treat) + \varepsilon_{it}$$

----------(2)

For the two specifications above, the outcome variable employment and full time employment is denoted by Y_{it}. In equation 1,

β_1 to β_{11} denotes the coefficient of individual dummy for age from 19 to 29 years old;

Post is the dummy variable denoting time after the ACA, and

β_{13} to β_{23} denoting the coefficient of interaction between the dummy for age and time

In equation 2,

β_1 to β_{10} denotes the coefficient of individual dummy for year;

Treat denotes the dummy for treatment group, and

β_{12} to β_{21} denotes the coefficient of interaction between the treatment dummy and year

In specification (1) those aged 30 are used as a comparison group (omitted group) while in specification (2) the comparison year is 2005. The results for these two specifications are presented in Tables 2.10 and 2.11.[51]

[51] The dummy variables included in the event study models are coded similarly to the dummy variables in the main model.

The results from the two specifications are presented in Table 2.10 and 2.11. For specification (1), the output shows the treatment group to be the one impacted by the ACA shown by the statistically significant results for both employment and full-time work indicating no impact on the control group. Secondly, the treatment effect is the greatest for younger young adults compared to older young adults which confirms that younger young adults are more likely to not be working or work part-time compared to older young adults. For instance, in Table 2.10, coefficients for the treatment group are significant post-enactment (5.9 percentage point decline in full-time work for 21 year olds) compared to the comparison group. In specification (2), the estimates shows the time trends before and after that ACA. In Table 2.11, starting in 2006, the results show no significance until 2009 as employment and full-time work declined. The ACA impact starting in 2010 for young adults shows a strong statistical significance for the year's post 2010.

2.5 Discussion

This chapter provides an in-depth analysis of changes in labor outcomes for young adults following the ACA. I analyze several key labor outcomes to determine how the law impacts the young adult population using monthly data from the CPS (2005-2015). I find that dependent coverage laws allowing young adults to be on parental insurance impacted the labor supply of this age group. The overall decline in employment is approximately 1.7 percentage points, which is a statistically significant change. However, the major decline was in full-time work by this age group, which declined by a little over 3-percentage points. These coefficients change in the models that only look at

states with dependent coverage mandates post-ACA. Using separate models for several labor outcomes such as full-time work, part-time work, hours worked, private vs. self employed this chapter illustrates the difference for young adults by comparing them to an older group aged 26-30.

Consistent with prior literature on the relationship between health insurance and employment, this chapter finds that the ACA impacted employment and full-time work. Changes were statistically significant for both states with prior dependent coverage mandate and those with dependent mandates post-ACA, even though the impacts were larger for post-ACA states. While full-time work declined so did the probability for working more than one job, which declined by approximately 2 percentage points. This result is consistent with an overall decline in hours of work. As young adults work fewer hours post-ACA, the probability of them working additional jobs also declines.

The results are consistent with earlier studies on changes in employment and non-employer based health insurance coverage. Studies find job separation in the range of 15 to 25 percent. While earlier studies find big drops in job separation, this chapter does not find any evidence of job separation (change in job mobility). However, as mentioned above, the results are consistent with changes in employment when an alternate source of health insurance is available even as I examine a very different age group. The estimates for change in employment levels for young adults are also consistent with estimates in studies done on the Massachusetts Health Reform of 2006 by Heim & Lurie (2014). Young adults tend to be different than other age groups or more specifically, those working in a particular industry as discussed in the literature review. It is possible that declines in employment for young adults will differ when analyzed by industry type.

Their decisions are different from those of other age groups when it comes to employment or full-time and part-time work. For instance, they can still decide to be employed and work fewer hours while investing more time on education once they have the dependent coverage option. While the results do not indicate a significant increase in young adults becoming self-employed, there is a significant decline in private sector employment. It's possible that leaving private sector employment indicates willingness to work in other sectors or in positions that might not offer any benefits and includes independent work, working for a family business or small business, or not work.

Using education as a further control group, I estimated a triple differences model to evaluate whether having higher education among older young adults has any impact on wages and hours worked. However, the results are not significant, implying that education does not have any impact in this age group. It's more likely that the control and treatment groups are similar since labor market outcomes for older young adults aged 23-25 could closely resemble 26-30 year olds.

I also examine the differences between selected subgroups to estimate labor outcomes. The literature review provides overwhelming support for existing differences between married and unmarried women's labor force participation. I find insignificant results for employment for the two groups but significant estimates for working full-time. Consistent with prior work, I find married women to reduce their number of work hours compared to unmarried women. Analyzing other subgroups, I don't find significant differences between men and women however; working full-time among Hispanics and Non-Hispanics shows a strong significance indicating Hispanics are more likely to work

part-time. Regardless of gender, marital status, and race, employment is not impacted by the ACA as much as working full-time.

To check the validity of my results I run additional models that only look at post-ACA implementation states. I find results with larger coefficients on these states indicating that the ACA had bigger impacts on late adopter states. Next, I run two other specifications. First, I drop the years 2008 and 2009 from the analysis to see if job separation becomes significant, as these are the recession years. Despite dropping these years, I don't find the results to be statistically significant. It might be possible for future research to test this result with other additional controls such as access to parental insurance or source of insurance to see if the results become significant. Second, I run another specification with older young adults. The results indicate smaller coefficients indicating lesser impact on older young adults compared to younger young adults. I also run two separate event analysis models to check whether the results are driven by pre-existing trends. I find consistent results from the event study model indicating no prior trends between the treatment and control group in the first model when employment and full-time work are estimated. There is also a lack of evidence showing any specific trends for the same employment and full-time work variables when the second model is run using years prior to the ACA. Any change that can be attributed to the economic downturn happened before 2010 as the results from this model show. The recession accounts for declines from 2008 to 2009. The ACA was effective in 2010 and therefore, the results show statistical significance starting in the year the law was signed, not earlier. This indicates any impact the law had on young adults was after 2010.

The results show no significant impact on job mobility even though they indicate a significant decline in job separation and in full-time work. Unlike prior literature that finds increased job mobility, I do not find any evidence of job mobility. This is likely as outcomes such as job lock or job mobility are expected to be different depending on the population studied. Young adults might not show the same willingness to separate from work as some older age groups who might be closer to retirement or switching jobs compared to more experienced workers. Similarly, the literature review in this chapter highlights several groups such as married women from different age groups as well as those with diagnosed illnesses. Their employment outcomes will also be very different compared to the outcomes for young adults when health insurance is available from a source other than ESI. The decreased job mobility could have indicated young adult's unwillingness to leave their current employer given the recession and recovery during the years before and after the ACA that make any instances of job lock or job mobility hard to distinguish. However, even after I drop the two recession years from the analysis, I don't see any changes in young adult job mobility. Despite this finding, it is seen that young adults are less likely to work multiple jobs. In the future, it is possible the individual mandate requiring mandatory coverage, which came into effect starting in 2014, might change some outcomes as the economic conditions continue to improve. One such change might include increased coverage for those who previously didn't get coverage under dependent plans.

It is also possible that job mobility isn't significant since premiums on new plans under the ACA might be a factor in impacting job mobility. If adding a individual on dependent coverage increases premium than its possible that those with access to

employer plans might decide to keep them instead of switching to dependent coverage. Higher premiums would have a negative effect on job mobility for young adults when they get added to a dependent coverage plan compared to having ESI. If dependent coverage is not as comprehensive as the ESI then the marginal benefit of adding an additional individual to the plan outweighs the marginal cost when ESI is available.

Table 2.1: Employment rates

Year	19-25 year olds	26-30 year olds
2005	.691	.791
2006	.697	.796
2007	.693	.800
2008	.679	.788
2009	.631	.751
2010	.620	.747
2011	.618	.746
2012	.625	.757
2013	.628	.761
2014	.638	.768
2015	.644	.771

Note: Weighted tabulations of the Current Population Survey data. Table shows percentage of employed 19-25 year olds and 26-30 year olds from 2005-2015.

Table 2.2: Working young adults by firm size and health insurance (percentage)

Firm size (employees)	Uninsured	Insured
Under 10	.402	.598
10-24	.358	.642
10-49	.319	.681
25-99	.323	.677
50-99	.289	.711
100-499	.267	.733
500-999	.249	.751
Over 1,000	.233	.767

Note: Weighted tabulations of the Current Population Survey data. Table shows percentage of uninsured and insured employed young adults by firm size.

Table 2.3: Descriptive Statistics

	19-25 year olds	26-30 year olds
Age (years)	22.04	28.01
Employed	.643	.761
Unemployed	.357	.239
Full-time employment	.388	.590
Part-time employment	.612	.410
Private employment	.630	.660
Weekly wages	$437.90	$711.30
Hours (average)	35.55	39.54
Some high school	.119	.109
High school diploma	.315	.274
Some college	.430	.295
Bachelors and higher	.137	.323
Male	.498	.485
Female	.502	.515
NH-White	.587	.601
NH-Black	.121	.111
Hispanic	.172	.164
Others	.120	.117
N	1,525,897	1,123,224

Note: Tabulations of the 2005-2015 Current Population Survey monthly data.

Table 2.4: DD estimates of the impact of ACA on labor market outcomes of young adults (all states)

	Employed	Full-time	Part-time	Hours	Same-Emp	Private-Emp	Self-Emp	Working >1 job
PostACA	-0.0290***	-0.0336***	-0.0287***	-0.434***	0.00332***	-0.00807***	-0.00403	0.0248***
	(0.00288)	(0.00333)	(0.00331)	(0.0671)	(0.000950	(0.00226)	(0.00160)	(0.00258)
Treat	-0.0884***	-0.134***	-0.0171***	-3.340***	-0.0119***	-0.0403***	-0.0228***	-0.0858***
	(0.00464)	(0.00567)	(0.00358)	(0.0949)	(0.00124)	(0.00423)	(0.00122)	(0.00461)
PostACA*Treat (DD)	-0.0166***	-0.0311***	0.00789	-0.471***	0.000546	-0.0202***	0.00211	-0.0186***
	(0.00323)	(0.00378)	(0.00517)	(0.133)	(0.00164)	(0.00424)	0.00165)	(0.00347)

Notes: The average impact (DD impact) is the interaction of the dummy variable for the treatment variable and the dummy variable for the enactment (time) period. Standard errors are in parentheses and are clustered at the state level. All regressions are weighted using person level weights. Data: Monthly CPS data from 2005-2015. Outcome variables are employed in column 1 and indicates 1 if employed 0 otherwise. Working full time in column 2 and indicates working over 35 hours as 1 and 0 if not working. Working part-time in column 3 and indicated working less than 35 hours as 1 and 0 if not working at all. Column 4 outcome variable is number of hours per week individual works. In column 5 whether the individual has the same employer coded as 1 if yes and 0 otherwise. In column 6 and 7 whether the individual is private or self-employed, 1 indicates a yes response and 0 otherwise. The last column the indicator variable equals 1 if working more than 1 job else 0.

*p<0.05 ** p<0.01 *** p<0.001

Table 2.5: DDD estimates of the impact of ACA on specific labor outcomes for young adults (by education)

	Log wages	Log hours	Hours
Enact	0.00134	-0.0157***	-0.558***
	(0.0170)	(0.00316)	(0.106)
Treatment	-0.177***	-0.0479***	-1.489***
	(0.00921)	(0.00349)	(0.0800)
Education	0.489***	0.0712***	2.607***
	(0.0209)	(0.00765)	(0.208)
Enact*Treatment	-0.0409*	-0.0151	-0.354*
	(0.0178)	(0.00758)	(0.145)
Treatment*Education	0.00535	-0.00272	-0.00804
	(0.0225)	(0.00692)	(0.229)
Enact*Education	-0.0951***	-0.00426	-0.385
	(0.0182)	(0.00627)	(0.189)
Impact (DDD)	0.0556	0.0155	0.333
	(0.0384)	(0.00978)	(0.361)

Notes: Includes only 23-25 year olds, standard errors are in parentheses. The outcome variable is log wages, hours, and log of hours in the first, second, and third column respectively. The coefficients in the first, second, and third row are the coefficients for enactment period of the ACA, the treatment age group, and education; all dummy variables. In the 4th row, the coefficient is the interaction between enactment and treatment. In the 5th row the coefficient is the interaction between treatment and education. In the 6th row the coefficient in the interaction between enactment and education. The last row is the triple differences estimator, which is the three-way interaction between enactment, treatment, and education. * p<0.05** p<0.01*** p<0.001

Table 2.6: Subgroups

	Employed	Full-time
Sex		
Male	-0.0225***	-0.0278***
	(0.00538)	(0.00405)
Female	-0.0139***	-0.0241***
	(0.00346)	(0.00345)
Marital Status		
Married females	-0.0159	-0.0300**
	(0.00994)	(0.00916)
Unmarried females	-0.00936	-0.0107*
	(0.00524)	(0.00460)
Race		
Hispanic	-0.0192*	-0.0394***
	(0.00739)	(0.00494)
Non-Hispanic	-0.0180***	-0.0224***
	(0.00369)	(0.00338)

Notes: Estimates based on weighted samples from the 2005-2015 CPS. The outcome variable Employed is a dummy for being employed indicating 1 else 0. The outcome variable Full-time is a dummy indicating 1 if working greater than 35 hours else 0. Standard errors are in parentheses.* p<0.05** p<0.01*** p<0.001

Table 2.7: Models for robustness checks (Post-ACA states only)

	Employed	Full-time	Part-time	Hours	Same-Emp	Private-Emp	Self-Emp	Working >1 job
PostACA	-0.0307***	-0.0357***	-0.0288***	-0.523***	0.00374*	-0.00648*	-0.00705**	-0.0252***
	(0.00438)	(0.00473)	(0.00527)	(0.0714)	(0.00144)	(0.00266)	(0.00224)	(0.00407)
Treat	-0.0823***	-0.127***	-0.0124	-3.386***	-0.0102***	-0.0354***	-0.0235***	0.0773***
	(0.00722)	(0.00882)	(0.00733)	(0.126)	(0.00220)	(0.00595)	(0.00231)	(0.00686)
PostACA*Treat (DD)	-0.0252***	-0.0403***	-0.00179	-0.501*	0.00101	-0.0316***	0.00457	-0.0298***
	(0.00403)	(0.00502)	(0.00635)	(0.207)	(0.00241)	(0.00562)	(0.00265)	(0.00395)

Notes: See notes in Table 2.4. Only includes 21 states and District of Columbia

Table 2.8: Models for robustness checks (years 2008 and 2009 dropped)

	Employed	Full-time	Part-time	Hours	Same-Emp	Private-Emp	Self-Emp	Working >1 job
PostACA	-0.0359***	-0.0434***	-0.0263***	-0.681***	0.00477***	-0.0115***	-0.00387*	-0.0313***
	(0.00321)	(0.00368)	(0.00402)	(0.0761)	(0.00107)	(0.00215)	(0.00185)	(0.00290)
Treat	-0.0864***	-0.130***	-0.0132**	-3.325***	-0.0117***	-0.0383***	-0.0229***	-0.0840***
	(0.00440)	(0.00550)	(0.00438)	(0.104)	(0.00147)	(0.00418)	(0.00171)	(0.00452)
PostACA*Treat (DD)	-0.0188***	-0.0352***	0.00308	-0.483**	0.000594	-0.0216***	0.00217	-0.0203***
	(0.00362)	(0.00472)	(0.00629)	(0.162)	(0.00175)	(0.00493)	(0.00195)	(0.00378)

Notes: See notes in Table 2.4. Only includes years 2005-2007 & 2010-2015

Table 2.9: Models for robustness checks (ages 23-25 years only for treatment group)

	Employed	Full-time	Part-time	Hours	Same-Emp	Private-Emp	Self-Emp	Working >1 job
PostACA	-0.0300***	-0.0356***	-0.0286***	-0.487***	0.00325**	-0.00917***	-0.00402*	-0.0258***
	(0.00287)	(0.00342)	(0.00322)	(0.0683)	(0.000945)	(0.00230)	(0.00159)	(0.00259)
Treat	-0.0358***	-0.0510***	-0.00433	-1.533***	-0.00663***	-0.00128	-0.0168***	0.0367***
	(0.00374)	(0.00462)	(0.00352)	(0.0636)	(0.000954)	(0.00345)	(0.00151)	(0.00385)
PostACA*Treat (DD)	-0.0110**	-0.0196***	0.00585	-0.280*	0.000421	-0.190**	0.000522	-0.0123**
	(0.00342)	(0.00458)	(0.00512)	(0.118)	(0.00128)	(0.00423)	(0.00219)	(0.00374)

Notes: See notes in Table 2.4. Only includes older young adults (23-25) in the treatment group.

Table 2.10: Results of event study by age

Age	Employed	Full-time
19	-0.0665***	-0.339***
	(0.00412)	(0.00863)
20	-0.0473***	-0.247***
	(0.00285)	(0.00761)
21	-0.0315***	-0.199***
	(0.00249)	(0.00740)
22	-0.0305***	-0.123***
	(0.00273)	(0.00527)
23	-0.0220***	-0.0684***
	(0.00199)	(0.00518)
24	-0.0170***	-0.0388***
	(0.00269)	(0.00402)
25	-0.00685**	-0.0189***
	(0.00253)	(0.00309)
26	-0.00560*	-0.00636
	(0.00254)	(0.00483)
27	-0.00334	0.000428
	(0.00270)	(0.00355)
28	-0.00400	0.00417
	(0.00291)	0.00489
29	-0.000488	0.00489
	(0.00234)	(0.00362)
Enactment	-0.0166***	0.00233
	(0.00364)	(0.00458)
19*post	-0.0241***	-0.0493***
	(0.00569)	(0.00918)
20*post	-0.0156*	-0.0660***
	(0.00641)	(0.0108)
21*post	-0.0157**	-0.0594***
	(0.00489)	(0.00928)
22*post	-0.00735	-0.0552***
	(0.00511)	(0.00688)
23*post	-0.00605	-0.0320***
	(0.00416)	(0.00662)
24*post	-0.00172	-0.0292***
	(0.00526)	(0.00578)
25*post	-0.0112*	-0.0210**
	(0.00434)	(0.00616)
26*post	0.00175	-0.0219**
	(0.00485)	(0.00747)
27*post	0.000320	-0.00755
	(0.00457)	(0.00579)
28*post	-0.00207	-0.00758
	(0.00440)	(0.00604)
29*post	-0.00181	-0.0164*
	(0.00380)	(0.00628)

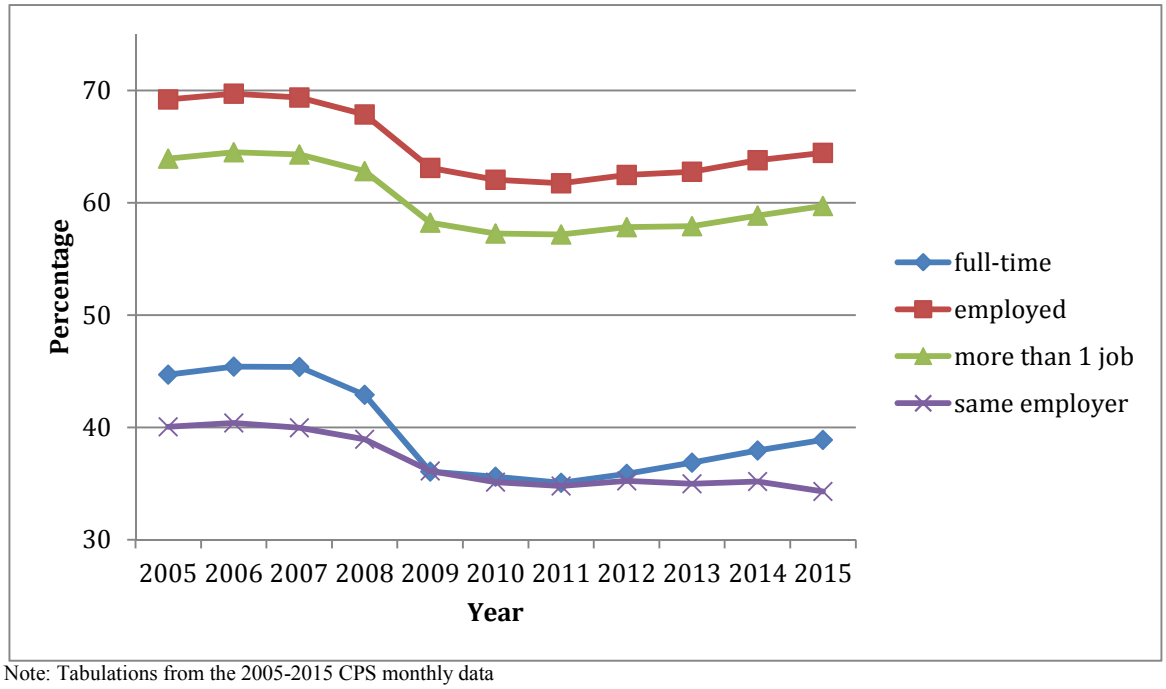
Notes: Individuals in both the treatment and comparison groups are included and are coded as dummies; age 30 is left out as the comparison. Post is a dummy variable indicating the years after the reform implementation. The interaction between Post and age gives the employment and full-time work coefficients for the specific ages after the ACA. Standard errors are in parentheses. *p<0.05 **p<0.01 ***p<0.001

Table 2.11: Results of event study by year

Year	Employed	Full-time
2006	0.00518	0.00418
	(0.00331)	(0.00320)
2007	0.00673	0.00167
	(0.00339)	(0.00355)
2008	-0.00800*	-0.00336
	(0.00318)	(0.00368)
2009	-0.0449***	-0.0491***
	(0.00380)	(0.00349)
2010	-0.0486***	0.0258***
	(0.00377)	(0.00400)
2011	-0.0508***	-0.0244***
	(0.00341)	(0.00386)
2012	-0.0421***	-0.0194***
	(0.00339)	(0.00411)
2013	-0.0394***	-0.0108*
	(0.00369)	(0.00411)
2014	-0.0344***	-0.0169***
	(0.00390)	(0.00385)
2015	-0.0282***	-0.0191***
	(0.00376)	(0.00386)
Treat	-0.0708***	-0.104***
	(0.00505)	(0.00481)
Treat*2006	-0.000543	0.00221
	(0.00452)	(0.00406)
Treat*2007	-0.00755	0.00864
	(0.00459)	(0.00513)
Treat*2008	-0.00950	-0.00738
	(0.00504)	(0.00597)
Treat*2009	-0.0204**	-0.0208**
	(0.00586)	(0.00688)
Treat*2010	-0.0275***	-0.0413***
	(0.00706)	(0.00537)
Treat*2011	-0.0276***	-0.0481***
	(0.00551)	(0.00730)
Treat*2012	-0.0302***	-0.0486***
	(0.00674)	(0.00696)
Treat*2013	-0.0323***	-0.0438***
	(0.00722)	(0.00698)
Treat*2014	-0.0273***	-0.0311***
	(0.00645)	(0.00751)
Treat*2015	-0.0230**	-0.0232**
	(0.00718)	(0.00665)

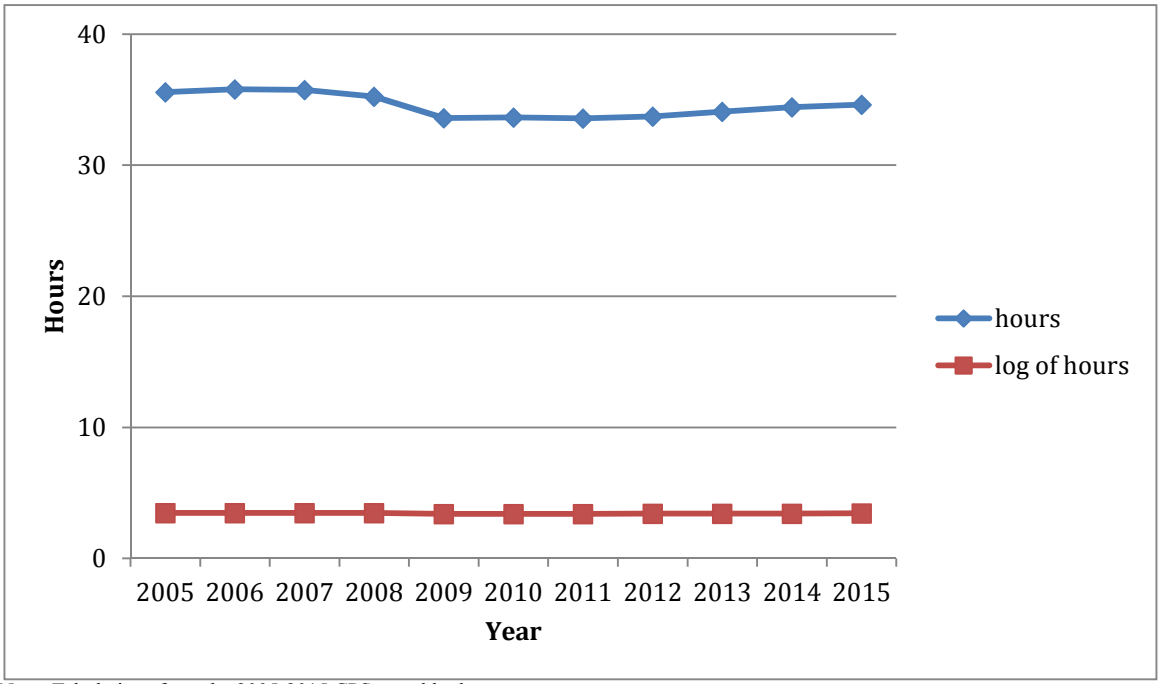
Notes: Years include 2005 to 2006 with 2005 being left out for comparison and are coded as dummies. Treat is a dummy indicating being in the treatment or comparison group. The interactions between Treat and year give the employment and full-time work coefficients for years before and after the ACA. Standard errors are in parentheses.
*p<0.05 **p<0.01 ***p<0.001

Figure 2.1: Basic employment characteristics



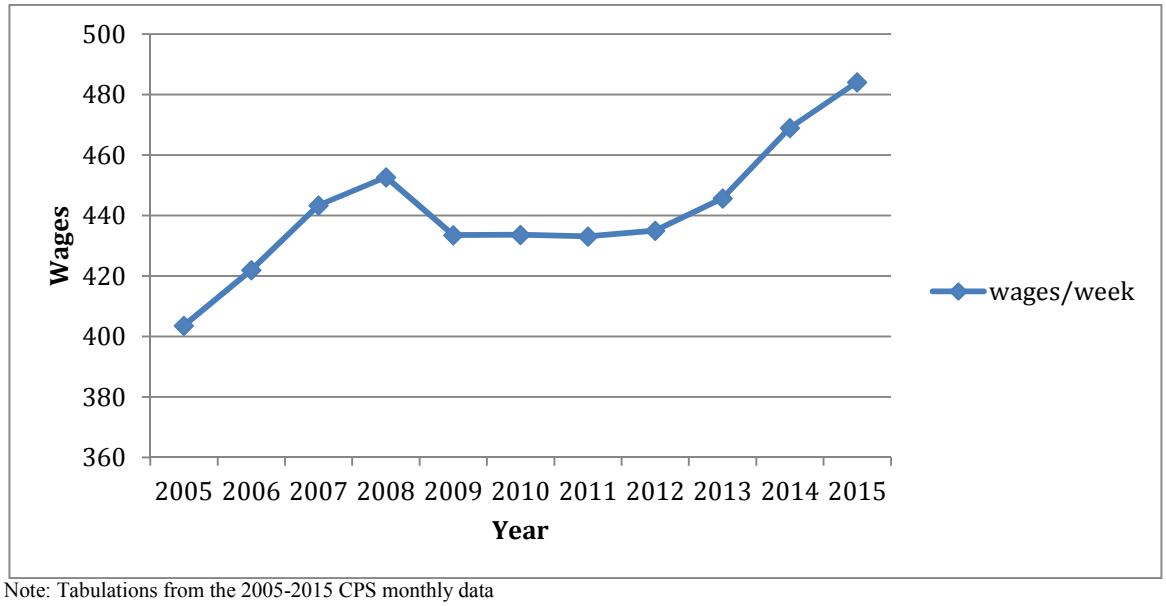
Note: Tabulations from the 2005-2015 CPS monthly data

Figure 2.2: Average Hours and log of hours worked per week



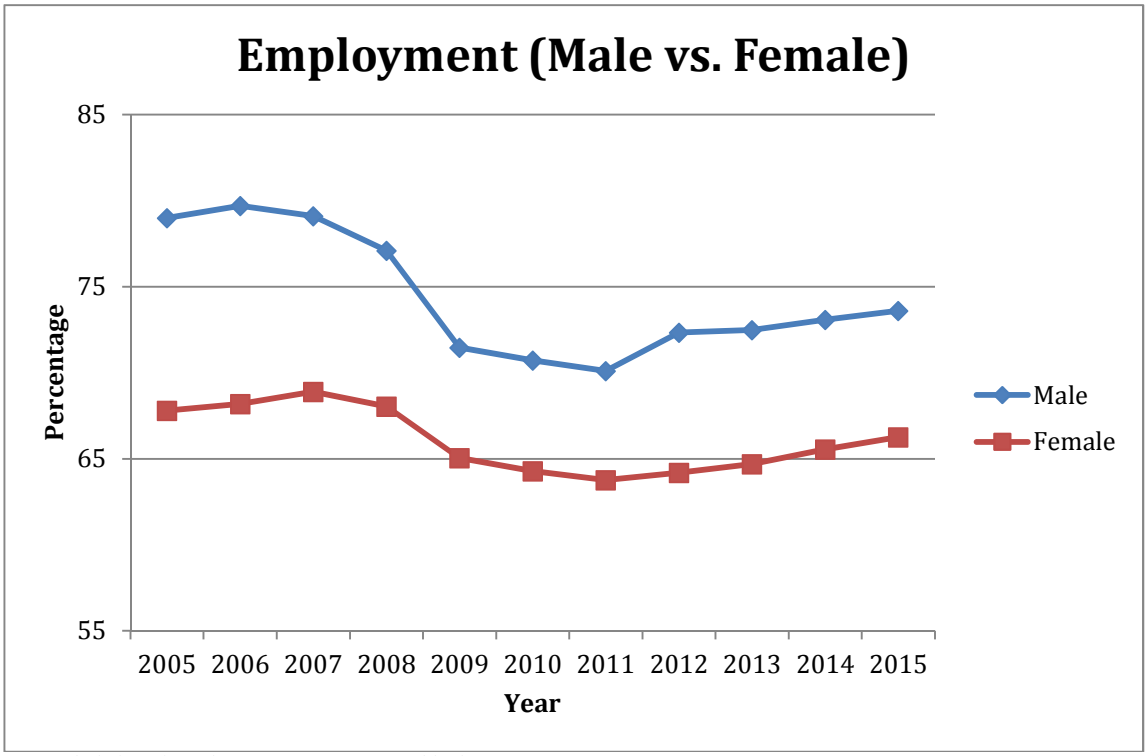
Note: Tabulations from the 2005-2015 CPS monthly data

Figure 2.3: Weekly wages



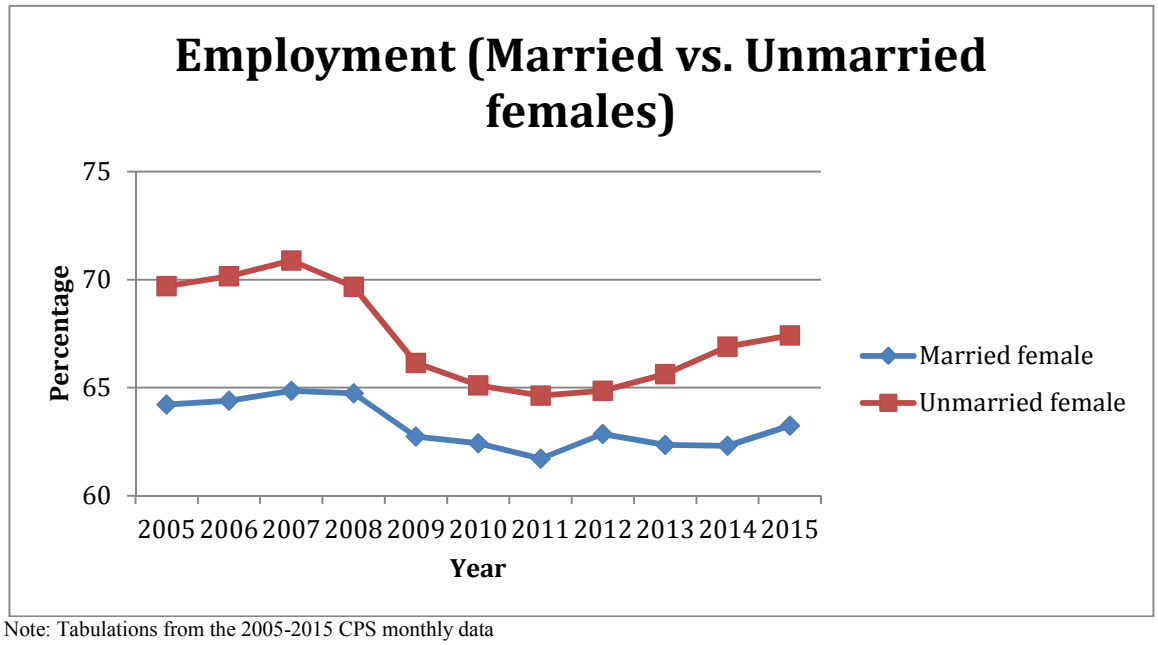
Note: Tabulations from the 2005-2015 CPS monthly data

Figure 2.4: Employment



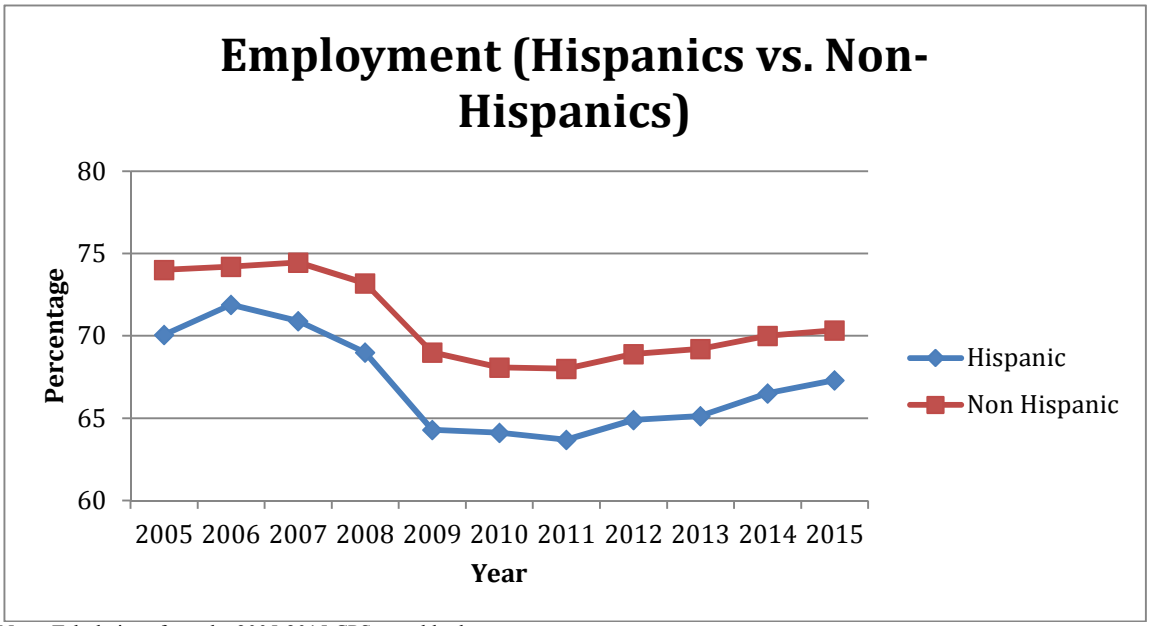
Note: Tabulations from the 2005-2015 CPS monthly data

Figure 2.5: Employment



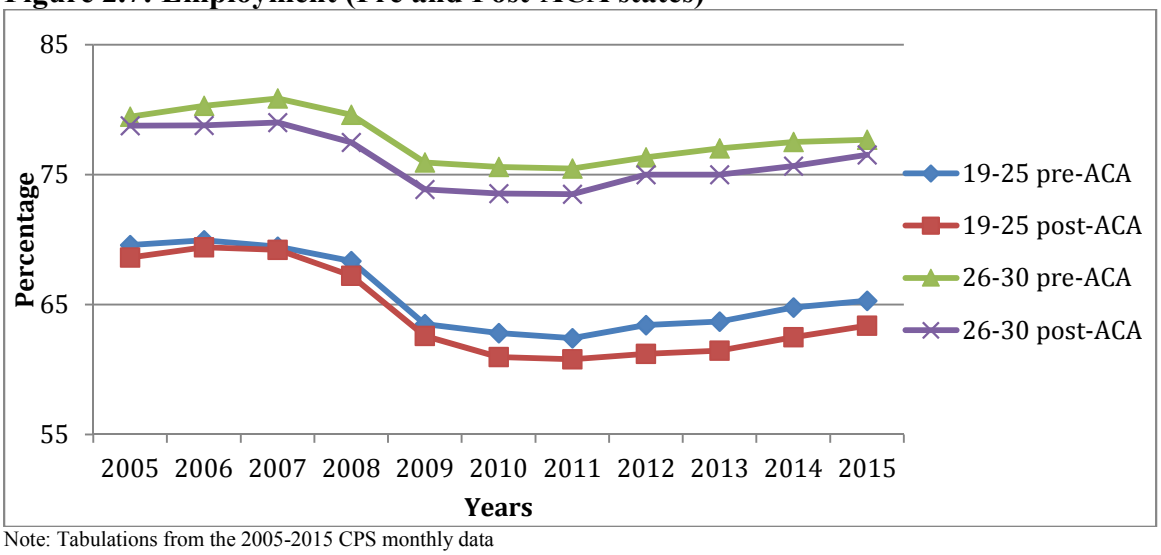
Note: Tabulations from the 2005-2015 CPS monthly data

Figure 2.6: Employment



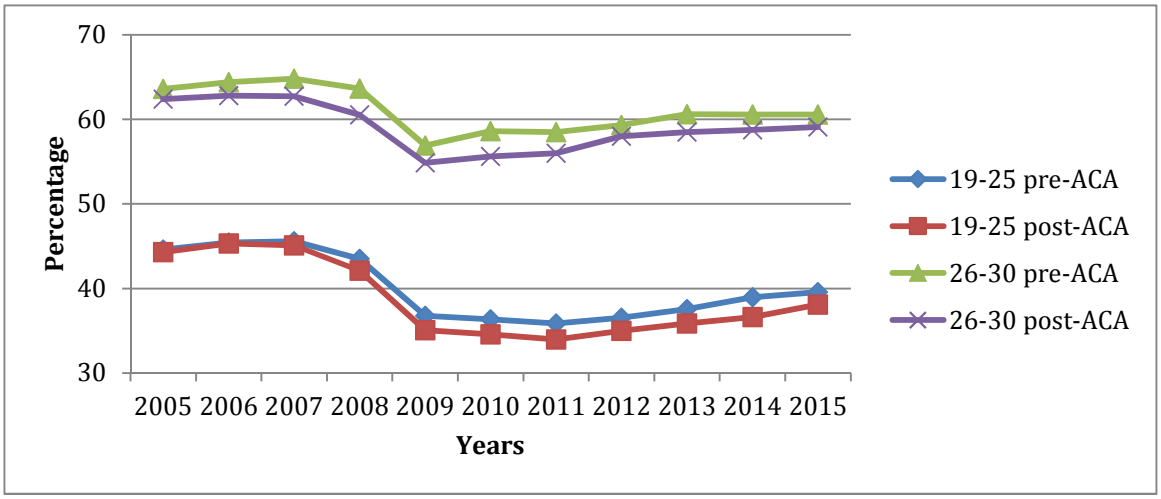
Note: Tabulations from the 2005-2015 CPS monthly data

Figure 2.7: Employment (Pre and Post-ACA states)



Note: Tabulations from the 2005-2015 CPS monthly data

Figure 2.8: Full-time work (Pre and Post-ACA states)



Note: Tabulations from the 2005-2015 CPS monthly data

Chapter 3: DOES HAVING DEPENDENT COVERGE FROM THE ACA IMPACT EDUCATIONAL ENROLLMENT

3.1 Introduction

In this chapter, I assess the ACA's impact on educational outcomes for young adults. The impact of access to dependent insurance coverage on education of young adults is an unexplored topic. As we saw in Chapter 2, the flexibility of not being tied to Employer Sponsored Insurance (ESI) offers young adults opportunities for changing their employment status. Additionally, young adults might also be more likely to enroll as students, given the declines in full-time work.[52]

Health insurance for children and young adults is strongly correlated to their parent's income and employment (Kriss et al., 2008). For college going young adults, it is also correlated to their enrollment status. Those enrolled in college full-time prior to the ACA had dependent coverage access due to their full-time enrollment status. However, insurance coverage for young adults not enrolled in college was different from those enrolled in full-time college. Prior to the ACA, financial aid, fellowships and the availability of parental health insurance were possible incentives for a student to remain enrolled full-time. Full-time students are more likely to complete college degrees than part-time students (Chen & Carroll, 2007). As a result parental health insurance provided full-time students with an opportunity to complete college and also, with a significant tax break (Jung, Hall, & Rhoads, 2013)[53].

[52] Implies some level of college enrollment
[53] When students get dependent coverage, they or their parents no longer have to pay a fee they would have owed if the dependent weren't covered. Also dependent coverage is income tax free.

Prior to the ACA, young adults going to college at later ages such as 22 or 23 might not have had the same incentives to be a college student as they do now. Previously, employers allowed their employees' children to be on dependent coverage until the age of 22, making the opportunity cost of attending college after 22 higher compared to the forgone wages. Since ESI provides more comprehensive coverage compared to individual insurance, it was convenient to choose work over attending college (Dillender, 2014). Because having dependent coverage makes it possible to have similar comprehensive coverage and not require obtaining it through work, alternatives such as post-secondary education become possible as a result of the ACA. Another possible advantage of having dependent coverage is the reduction in cost of college, which often includes the cost of health insurance. This can reduce the psychological and financial burden associated with paying tuition.[54]

To understand the potential benefits of ACA for educational attainment we can think of how enacted policies impact education and college enrollment levels. Policies such as merit based state scholarships and Federal grants have shown to be effective in increasing college enrollment for those from disadvantaged backgrounds.[55] In this case, the dependent coverage provision of the ACA was implemented keeping young adults in mind since they are more likely to be uninsured. At the same time, the law had some secondary benefits for this age group. As discussed in Chapter 2, freedom from job-lock creates opportunities for young adults. Another benefit of freedom from job-lock is freedom to pursue post-secondary education as either a full-time or part-time student and

[54] Most colleges require students to have health insurance. According to the GAO, 57 percent of all colleges (public, private, two year) offer health insurance, which is a part of the tuition package. While 82 percent of 4-year colleges nationwide offer health insurance to students, only 29 percent of two year colleges offer health insurance. In 2008, 30 percent of colleges required students to have health insurance (Government Accountability Office, 2008)

[55] Some of these policies get discussed in the literature review

enroll in either a 2-year or a 4-year college. Dependent coverage provision can mean increased opportunities for pursuing higher education and in turn higher future wages throughout adulthood. Allowing individuals to go back to school at later ages could also result in more specialized and advanced degrees and an increase in their earning potential over their lifetime.

Prior to the ACA, many students, particularly, those from disadvantaged backgrounds might not have had an opportunity at a post-secondary education since most colleges required mandatory insurance. Minorities along with students from lower socioeconomic backgrounds are usually less likely to be insured (Governmental Accountability Office, 2008). The percentage of college-going students uninsured stood at 20 percent or 1.7 million students in 2006. These uninsured students incurred between $120 million and $255 million in uncompensated care for non-injury related medical events in 2005 (Government Accountability Office, 2008). Hence, not having insurance impacts not only those who are not enrolled in college but also those who are. The cost of attending college and the additional cost of health insurance made higher education out of reach for many.

As a result of dependent coverage under the ACA, higher education is an option even if one enrolls as a student at a later age. Having the option of dependent coverage also gives young adults other options such as enrolling in vocational training programs. At the same time, enrollment in a 2-yr college or part-time enrollment also becomes a possibility since enrollment status does not determine insurance coverage anymore since dependent coverage extends up to the 26th birthday.

Main Hypothesis

This chapter evaluates the impact of the ACA on educational outcomes for young adults. My analysis investigates whether the availability of dependent coverage has an effect on the college enrollment of young adults. I investigate whether young adults are more likely to be full-time or part-time students, attend a 2-year college over a 4-year college, or be enrolled in some vocational training program.

To understand how the law might impact young adults consider Figure 3.1. Prior to the ACA, those young adults aged 22 years and younger had a lower incentive to work full-time and a higher incentive be enrolled as full-time students to benefit from the dependent coverage allowed for full-time college going students compared to older young adults.[56] After the ACA, the full-time enrollment requirement was removed. All young adults were eligible for dependent coverage up to their 26th birthday regardless of college enrollment status. Therefore, post-ACA, there is a greater likelihood to attend a 2-year college instead of a 4-year college as it's cheaper, and one could work part-time since there was no longer a full-time enrollment requirement.[57] This allows more flexibility in pursuing education while still working. Figure 3.1 also shows older young adults (23-25) had low incentives to enroll in college and a higher incentive to work pre-ACA. Post-ACA the same group were less likely to participate in full-time work and become more likely to be enrolled in college. It is also more likely that they attend college part-time and work.[58] Therefore, I hypothesize that the ACA will likely lead to an

[56] Young adults aged 19-22 can be referred to as younger young adults while 22-25 are older young adults
[57] As already discussed in chapter 2, ACA reduced full-time work and increased part-time work among young adults.
[58] Chapter 2 discusses freedom from job lock as a result of the ACA. In the same vein, it is also possible that the ACA causes freedom from college lock as it grants dependent coverage to all despite their enrollment status and increases incentive to avoid college. While many might be reluctant to drop out of college, they might choose an alternate by enrolling in a 2-year college and finishing up sooner.

increased enrollment in 2-yr colleges and a decline in enrollment in 4-yr and full-time colleges.[59] The increase in 2-year college is hypothesized due to tuition cost, insurance through the ACA, and enrollment at a later age. The decline in 4-year college is hypothesized due to increased enrollment in 2-year colleges. Additionally, prior literature on college enrollment also finds increased access to community colleges diverts students from attending a 4-year college (Rouse, 1995).

Contribution

In this chapter, I evaluate the potential impact of the ACA on educational outcomes for young adults. I make several contributions in this chapter. First, no prior work has evaluated the impacts on education resulting from the ACA. The limited prior work done by Dillender (2014) evaluated educational outcomes resulting from the state dependent coverage mandates prior to the ACA. Another study by Yasekwich (2015) compares New Jersey to Pennsylvania to evaluate if dependent coverage in New Jersey impacted college enrollment. My study makes a contribution using CPS data for multiple years and evaluating previously unexplored outcomes such as enrollment in a 2-year college versus a 4-year college to understand change in trends of enrollment as a result of the provision.[60] I also evaluate whether the law impacted vocational training for young adults.

Second, I estimate educational outcomes for different subgroups of young adults to evaluate if some subgroups are more sensitive to the effects of the law compared to others. I include subgroups by gender, race, and marital status. I include these particular

[59] The hypothesis is based on the assumption that those indifferent between 2-year and 4-year college will enroll in a 4-year college however, those sensitive to costs such as minorities and those from lower socioeconomic backgrounds will opt for a either a 2-year or a part-time college.
[60] Additionally, I evaluate 2-year full-time, 2-year part-time, 4-year full-time and 4-year part-time enrollment.

subgroups based on my findings from prior chapters. The differences between men/women, Hispanics/Non-Hispanics, and married/unmarried individuals have been significant in my earlier chapters on health insurance and labor market outcomes, and I include these to further understand how the ACA influences their educational outcomes.

Third, I include separate models as robustness checks. These models estimate results using placebo regression, where I assume the law went into effect in a different year. I also estimate other models as robustness checks by dropping the recession years of 2008 and 2009, using post-ACA states only, and by only including the older age group (26-30) as a counterfactual.

Fourth, I estimate a multinomial logistic model to evaluate the effect on employment and education. The model is a cross category model offering a choice between any employment and any type of college enrollment.

Fifth, I estimate an event study model that examines changes in enrollment (2-yr/4-yr college enrollment and full-time/part-time enrollment) over the study period (2006-2014). These models assess whether pre-existing trends are likely to impact outcomes and ensure all observed changes are policy related.

My analysis uses CPS data to evaluate the differences in the above-mentioned outcomes before and after the ACA to estimate average policy impact. I use a difference in differences (DD) estimation using a younger (16-18) and an older (26-30) age group as the comparison groups. Both groups follow similar trends to the treatment group of young adults aged 19-25. I select these counterfactuals based on my assumptions from earlier chapters.[61]

[61] For additional explanation on selection of comparison groups, please refer to chapter 1.

Summary of results

I find that the ACA has a significant impact on young adults' educational outcomes. In particular, I find that young adults are more likely to enroll in a two-year college over a four-year college. I also find a decline in four-year public and private college enrollment and an increase in two-year public college enrollment. My results show a decline in full-time college enrollment, which is statistically significant. However, I find insignificant results for part-time college enrollment even though the results indicate an increase in part-time enrollment. In summation, while the law appears to impact college enrollment, there is strong evidence of a decline in full-time and four-year college enrollment due to freedom from college-lock.[62]

The results from the analysis of subgroups indicate differences in enrollment levels. Overall enrollment rates for men are higher than for women. Men are also more likely to be enrolled part-time and in a two-year college. Overall enrollment rates are higher for unmarried young adults compared to those who are married. The results also indicate statistical significance for unmarried young adults as being more likely to be enrolled part-time and in a two-year college while married young adults are more likely to be enrolled in a four-year college.[63] Lastly, comparing Hispanics with Non-Hispanics I find Hispanics to be more likely to be enrolled full-time and in a 4-yr college, possibly due to their traditionally lower enrollment rates in 4-yr colleges.[64]

[62] College lock implies being enrolled as a full-time student in order to be eligible for health insurance coverage pre-ACA.
[63] Married individuals are considered as being more likely to have reached some financial stability.
[64] The increased enrollment among Hispanics is due to having a much lower base enrollment rate compared to Non-Hispanics

The remainder of this chapter is organized as follows: Section 3.2 discusses the prior work on policy impacts on education and college enrollment. The section also cites limited work done on dependent health coverage and education. Section 3.3 presents the data and methodology and the measures used to estimate educational outcomes for young adults. Results-- summary statistics, DD model results, and subgroup analysis are discussed in Section 3.4. In addition, a discussion of enrollment levels by public/private schools, age (19-22 and 23-25), and family income levels is also presented in Section 3.4. The chapter concludes with a discussion and summary of findings in Section 3.5.

3.2 Background

Three literature streams are discussed in the three chapters of this thesis. Chapter 1 examines the overall impact of dependent coverage laws on young adults. Chapter 2 presents a literature review on the impact of insurance coverage on labor market outcomes. Chapter 3 presents literature on the impact of various types of policies on educational attainment. Only limited work has evaluated the impact of dependent coverage on education. However, the literature on policies targeting post-secondary education is vast. Prior research has found that policies passed at the state level such as the Adams scholarship in Massachusetts or the Pell grant at the Federal level have been successful in improving college enrollment. Studies find that policies targeting low-income families are most effective in increasing enrollment compared to merit based scholarships open to all as are incentives offered in the form of scholarship or aid that offsets tuition costs (Yaskewich, 2014).

The labor supply of young adults declines as a result of the ACA as already estimated in chapter 2. As a result, there will be a decline in on-the-job training (Depew, 2012)[65]. Exiting the labor force could possibly mean young adults making alternative decisions such as reinvesting in post-secondary education by enrolling in college. Estimating young adults' college enrollment levels post-ACA tells us their preference for enrolling either full-time or part-time or whether they are more likely to attend a 2-year college over a 4-year college.

Prior work evaluating state dependent coverage mandates finds some implications for education. Using data from the American Community Survey, Dillender (2014) finds that extended provisions at the state level prior to the ACA increased education, with a higher attainment for men compared to women. He finds men to experience an average of .17 years in educational increase. Depew (2013) found that having insurance through the state based dependent coverage mandate increased the probability of being a full time student for both males and females. Apart from the two studies mentioned here, only two other studies evaluate the impact of dependent coverage on education. These are discussed in the sections below.

State and Federal policies targeting education

Previous studies have found that college attendance increases with parental education and income. Also, college attendance decreases as tuition increases; Hemelt & Marcotte (2011) find a $100 increase in tuition leads to a decline in enrollment by .25 percent. However, tuition has a lower impact on students with high-income families.

[65] With a declining labor supply of young adults, low retention levels, and transitions in employment, employers are less willing to provide on the job training.

Studies also find that the effect of parental education on college enrollment decisions declines as family income rises (Kohn, Mansk, & Mundel, 1976). Using data from the National Longitudinal Survey of Youth (NLSY) Sorokina (2013) estimates about 20 percent of college going youth will be less likely to attend college due to credit limitations. Hence, one can assume that policies aimed at those with lower family incomes would benefit from college enrollment. Bishop (1977) found tuition costs and high admission standards to have negative impact on college attendance and impacts students in the low-income strata the most. He also finds public policies targeted at lower income students in the form of subsidy programs improved college attendance. Wright et al. (2012) using the example of Tennessee found students from low-income families are more likely to delay college completion, which has further implications for near-term labor market outcomes such as income.

Most studies evaluating the effect of merit based scholarship programs assess whether policies introduced either in the form of a state sponsored scholarship program or financial aid change access to higher education. Over the years, states have moved from need-based financial aid to introducing merit-based programs. State mandates providing scholarships have impacted college enrollment. Goodman (2008) evaluates one such program introduced in Massachusetts in 2004 - the Adams Scholarship program providing free tuition to all public colleges in Massachusetts. As a result of this policy, Goodman (2008) found a 6 percent increase in the likelihood of scholarship recipients attending public universities. A similar study evaluating the Tennessee Education Lottery Scholarship Program of 2002 finds that while the program did not increase enrollment, it did improve the quality of institutions students choose and made students more likely to

opt for a four-year college over a two-year college (Bruce & Carruthers, 2014). Other studies done at the state level on programs such as Georgia's Hope scholarship finds large impact on college attendance in the range of an increase of 7 to 7.9 percentage points (Dynarski, 2000) and of 5.9 percent (Cornwell, Mustard, & Sridhar, 2006).

Federal programs such as the Pell Grant and Stafford Loans have provided the majority of the aid to students from low-income backgrounds.[66] However, studies have found conflicting impacts resulting from these policies. Kane (1995) found no evidence of an impact from the introduction of the Pell Grant on college enrollment of low-income students. More recent studies done by Seftor & Turner (2002) and Bettinger (2004) find evidence supporting Pell grant's impact on the likelihood of attending college. Using CPS data Seftor & Turner (2002) find Pell Grant impacts students in their 20s and 30s. Their results indicate significant effects with older students being more likely to attend college once eligible for the grant. Bettinger (2004) finds that state and Federal needs-based aid policies such as the Pell Grant matter, and influence the likelihood of continued enrollment in college and thus affect educational attainment. In the same vein, Dynarski (2003) finds an additional spending in the amount of $1,000 dollars in Federal aid increased college attendance by 3.6 percentage points. Similarly, a decrease in a state's funding for grants leads to a decline in enrollment, with greater impacts for community college enrollment (Heller, 1999).

Other work examining the impact of policies on education finds financial aid ineligibility to impact college enrollment. Changes made to the Higher Education Act

[66] Programs such as Pell Grant and Stafford loans provide the bulk of the aid to college students. Pell grants offer aid to families with incomes below $40,000. In addition to the two sources of aid, the Hope and Lifetime Learning tax credits are also available for paying college tuition. Parents can also claim children under 24 as dependents for tax credits if the children are enrolled in college.

that made students convicted of drug offences ineligible for financial aid for two years were found to have a negative impact on college attendance. Using data from the NLSY, Lovenheim & Owens (2014) find a financial aid ban increased the time between graduating high school and enrollment in college by two years. They also find affected students to be less likely to be enrolled in college by 16 percentage points.

Health insurance access and college enrollment

The impact of health insurance on educational outcomes or college retention is a relatively new topic. The limited work in this area focuses on whether dependent coverage impacts college enrollment. Having dependent parental coverage has been linked to improved educational outcomes according to Levine & Schanzenbach (2009). They find a 50-percentage point increase in health insurance eligibility to improve educational outcomes in reading test scores by .09 standard deviations. Jung, Hall & Rhoads (2013) use the Survey of Income and Program Participation (SIPP) to estimate enrollment levels for those with access to parental coverage. Their results indicate that having dependent parental coverage makes a student 5.5 percent more likely to enroll as a full-time student compared to a student without access to parental coverage. They also find students with parental coverage to be 2.6 percent less likely to enroll as part-time students.

In another study Yaskewich (2015) compares a state that had dependent coverage mandate prior to the ACA to another state with no dependent coverage mandate for ages 19-22 and finds having dependent coverage results in reduced college enrollment. Yaskewich (2015) compares New Jersey, which passed dependent coverage laws prior to

the ACA, to Pennsylvania, which had no such laws. He finds college enrollment in New Jersey declined by 15-24 percent relative to Pennsylvania for those in upper income households, although the rates of enrollment for students from low-income backgrounds increased between 14.5-27 percent.[67] Cohodes et al. (2015) assess the impact of expansions in entitlement programs such as Medicaid in the 1980s and 1990s to find a 10 percentage point increase in Medicaid eligibility increased college enrollment by .35 percentage points as well as attaining a bachelor's degree by .66 percentage points.

Change in type of insurance

It is possible that the shift in the type of insurance frees additional resources that would have typically been used to cover insurance costs. As individuals change their coverage type from a private option to a public option, they free up resources. The shift in insurance from private to public insurance, also known as crowd-out, is a much-explored topic (Cutler & Gruber, 1996; Dubay & Kenney, 1996; Shore-Sheppard, 2005; Gruber and Simon, 2008).[68] Although crowd-out is more relevant to actual public insurance programs such as Medicaid and Medicare, it is also possible in the case of ACA. While the shift might not be a movement from private sector insurance to public insurance since dependent coverage is still considered private insurance, adding a dependent to a parental coverage plan is cheaper compared to buying individual insurance for young adults, which frees up resources. These resources in turn could be used towards other pursuits such as education. Prior research finds program expansions such as Medicaid in the

[67] Enrollment for 19-22 year olds from upper income households declined as this group has the highest likelihood of attending college and therefore, dependent coverage lead to weakening in college lock. For those from low income background, the increases were also expected, due to the low level of college enrollment for this group prior to the law in New Jersey.
[68] Crowd-out refers to decline in private insurance as a result of increased take up of public insurance.

1980s & 1990s allowed household spending to increase significantly in other areas. Gruber and Yelowitz (1999) find households targeted by Medicaid expansions significant increase their spending in other areas such as education.

Current Chapter

This chapter is a new addition to the literature on the Affordable Care Act's impact on education and builds on the limited work done prior to the ACA on dependent coverage and educational outcomes in states with dependent coverage laws. No prior work to my knowledge has examined the impacts of the ACA on educational outcomes of young adults, making this the first study to do so. The literature review assessing the impact of dependent coverage at the state level have found dependent coverage to impact college enrollment. Those on dependent coverage were found to be more likely to be enrolled in college when access to dependent coverage became available. In this chapter, I estimate college enrollment outcomes for young adults to evaluate the impact of the ACA. Using 8 years of data (2006-2014), I examine the above-mentioned outcomes by estimating the likelihood of attending college full-time vs. part-time. I also evaluate educational outcomes including 2-year and 4-year college enrollment (along with 2-year full-time & part-time, 4-year full-time & part-time), public vs. private college enrollment, vocational training, and impact on subgroups of the young adult population.

From these educational outcomes, I will evaluate the impact of the ACA on enrollment status of young adults. In doing so the chapter makes the following contributions: it examines the likelihood of a change in young adults' college enrollment status as a result of the Affordable Care Act. It also examines if they more likely to attend

a two-year public or private college, a four-year college public or private college, full-time enrollment, and part-time enrollment. Mentioned earlier, while there is motivation to go back to school, it is likely that there is a preference for a two-year college over 4-year college due to tuition costs, time it take to complete a degree, and freedom from college-lock. Similarly, young adults may also prefer to be enrolled part-time over full-time as they might choose to work part-time. The chapter also includes an analysis of different subgroups of young adults based on marital status, race, and gender. Prior work on impact of policies targeting education has shown men to experience greater educational increases compared to women. In this chapter I examine subgroups to evaluate whether some subgroups are more likely to enroll in a particular type of college than others. Lastly, to check the validity of my results, I include several models to check for the robustness of my results. All results are discussed in the subsequent sections.

3.3 Data and methods

Data

For this chapter, I use the educational supplement from the CPS also known as the October Supplement, from 2006 to 2014. Since 1968, the CPS provides the educational supplement surveying school enrollment and educational related outcomes such as grade levels, vocational training, current enrollment status, year of most recent enrollment, etc. The supplement is administered every October and surveys the status of individuals from ages three and older.

The October supplement of the CPS collects school and college enrollment status every October and the survey asks respondents their most recent enrollment status. For

instance, whether they have obtained a high school degree or a GED, associates, bachelor's degree. Also, whether the respondents are enrolled in public or private college, whether they've had any vocational training, current year enrollment status, prior year enrollment status, and years of college credit completed. All of these questions are utilized in this chapter to assess the impact of the ACA. Unlike the ASEC (March supplement) of the CPS, which asks respondents information from last year, the October supplement assesses the individual's current educational status. This provides more up-to-date information and reduces recall bias. The March supplement does contain some information on education. However, the school or college enrollment information is limited to individuals' aged 16-24. For this reason, the March supplement cannot be used in this chapter.[69]

A limitation of using the October supplement is that it cannot be linked to the March supplement of the CPS. This makes it impossible to have the health insurance variables and the educational variables in the same data set. Therefore, it not possible to estimate enrollment levels based on type of insurance. It is also not possible to determine whether those not living with their parents and have access to parental coverage are more or less likely to attend a 4-yr college over a 2-yr college.

From the October supplement for the years 2006-2014 I only keep those aged 16-30 in the sample. This gives me a total of 230,697 observations. The treatment group comprising young adults accounts for104,037 observations. The younger comparison group of 16-18 year olds accounts for 49,401 observations while the older comparison group aged 26-30 has 77,259 observations. This includes observations from all states and

[69] The variable SCHLCOLL in CPS indicated whether respondents were enrolled in high school or college during the previous week and limits the age of respondents from 16-24.

the District of Columbia. For the post-ACA states analysis, estimating outcomes for states with dependent coverage provisions enacted after the ACA, I drop the 29 states that had prior state provisions and only keep 21 states and the District of Columbia. After I drop the 29 states, I have 96,324 observations. Out of this 43,487 are in the treatment group, 20,296 in the younger comparison group, and 32,541 in the older comparison group.

Outcome Measures

This section of the chapter discusses the different measures used for estimating educational outcomes for young adults as a result of the ACA. I begin by examining whether young adults are currently enrolled in school and if the current enrollment rates are different compared to enrollment in the prior year. Following this, I assess whether young adults attend school full-time or part-time. My next set of measures examine the likelihood of being enrolled in a two-year college vs. a four-year college and whether the ACA impacts enrollment in vocational training programs. Lastly, I examine levels of family income to evaluate enrollment levels since family income is a determinant of college income. These measures are further discussed below.

Currently attending/enrolled in school: The first outcome measure evaluated is current school/college enrollment status. Table 3.1 shows the current enrollment rates for the sample. Enrollment rates increase from 2008 to 2011 for young adults. They also increase for 16-18 year olds however, these increases are small while enrollment rates decline after 2011 for 26-30 year olds. To estimate whether young adults are enrolled in

some kind of college (associates, bachelors, graduate), I use current enrollment status as my first measure. This variable identifies whether a respondent is currently enrolled regardless of whether the respondent is enrolled full time or part time. The variable includes all who are either enrolled or not enrolled currently; I code this as an indicator variable, indicating 1 for those currently enrolled and 0 otherwise.

Enrolled in school in the previous year: This measure is somewhat similar to the first measure except that it looks at the enrollment status in the previous year. This variable examines school status for respondents in the previous year and includes regular school, college, universities, and professional schools and is coded the same as the first measure (an indicator variable for prior year enrollment status coded as enrolled (1) or not enrolled (0) in school in the previous year). Respondents could be enrolled full-time or part-time.

Attending college full-time/part-time: I also estimate whether ACA impacts full-time vs. part-time college attendance, for young adults. The expectation is that college enrollment will increase. However, some people might still have to work either full-time or part-time while attending college part time. Table 3.1 shows the full-time and part-time enrollment rates over time for young adults and the older comparison group. Full-time enrollment declines starting in 2009 and 2010 while part-time enrollment increases for young adults for the same time period. Mentioned previously, as per the ACA legislation, students are not required to enroll in college as a condition for having dependent coverage. This variable covers all those attending college full-time and part-

time. I code these outcomes as separate indicator variables indicating whether the respondent is enrolled full or part-time.[70]

Two-year vs. four-year college: If the ACA is expected to increase educational levels for young adults, it is also likely that despite having access to dependent coverage some might opt to attend a two-year college compared to a four-year college due to higher tuition costs and length of time it takes to finish a four-year degree. The 2-year and 4-year enrollment rates are shown in Table 3.1 from 2006 to 2014. The rates show an increase from 23.9 percent in 2009 to 26 percent in 2010 for 2-year enrollment while a decline in 4-year enrollment from 72 percent in 2009 to 68.8 percent in 2010.

As Figure 3.1 shows, it is likely that there's an incentive to attend 2-year college over a 4-year college, as dependent coverage is more readily available and because of the possibility that older young adults seeking a degree might prefer enrolling in a program that takes a shorter time to finish. It is also likely that 2-yr colleges divert students from 4-yr colleges, given lower tuition costs and early degree completion. As mentioned in the literature 4-yr colleges are typically preferred over 2-yr if a scholarship and financial aid are available and if the individual is indifferent to costs. However, the ACA does not directly focus on the tuition cost, rather eases college-lock. To evaluate if the ACA changes 2-yr/4-yr enrollment rates, I include this measure. The CPS includes all those over 15 years and older who are either enrolled in a 2-year or 4-year college. I code the two outcomes separately as indicator variables, coded as 1 in enrolled in 2 year or 4-year college, else coded as 0.

[70] The CPS does not explicitly state the coding scheme for full-time or part-time enrollment based on credit hours or any other factor. The variable is coded in the CPS as those who are enrolled as full-time and those enrolled as part-time.

Enrolled in vocational training: It is also possible that instead of attending a college, young adults might choose vocational training to enhance their existing skill set. Vocational training typically includes training programs other than regular schools as well as on the job training such as business, technical, trade, or correspondence courses. These programs are often cheaper than attending college and can take less time to complete. Vocational training rates for the period of the study are shown in Table 3.1 and have remained relatively stable over the years. Vocational training is coded as a yes/no question in the CPS for any respondent who answers yes for being enrolled in a vocational program. I code this as an indicator variable where enrollment in a vocational training program is coded as 1.

Bachelors/Grad-school: To access whether the ACA increases the likelihood of getting a bachelors or graduate degree, I include all those who have a bachelors or a graduate degree in my sample. I code these variables separately as indicator variables where having a bachelor's degree or a graduate degree is coded as 1, else 0.

Current college enrollment level: This variable identifies the respondent's current level of college enrollment. The variable includes all those currently enrolled in any kind of college by the freshman, sophomore, junior, and senior level to assess any changes in enrollment rates. Table 3.1 shows the current college enrollment levels for young adults and shows them as being likely have more than one year of college. I code all outcome variables as dummies. For this specification, I only include the older comparison group since I am estimating college enrollment levels even though some 16-18 year olds are enrolled at the freshman and sophomore level. I individually code each of these as 1 if a respondent is a freshman, sophomore, junior, or senior and 0 otherwise.

Public/Private enrollment: Along with assessing enrollment status by full-time/part-time and 2-year/4-year enrollment, I am also interested in examining whether public/private school enrollment changes. The October supplement of the CPS identifies all those enrolled in school by Public/Private School and those not enrolled. Public and private enrollment rates for young adults are shown in Table 3.1. Public enrollment is on the rise while private enrollment on the decline, which is consistent with my hypothesis. I code these as separate indicator variables indicating a 2-year public, 2-year private, 4-year public, and 4-year private school enrollment to assess the type of school enrollment along with the 2-year or 4-year enrollment status. I code these as 1 for being enrolled in 2-year public, 2-year private, 4-year public, and 4-year private schools and 0 if not enrolled.

Methods

To estimate the impact of the ACA on educational outcomes of young adults aged 19-25, I use a difference-in-differences (DD) strategy comparing them to a younger (aged 16-18) and older comparison group (aged 26-30). Both comparison groups are included as they account for other factors that might have caused the treatment group to experience different enrollment rates post-ACA. The younger control group often has parental coverage and the older control group has access to coverage through employment or private coverage, and with the appropriate controls mentioned below, can be a reasonable counterfactual.[71] The ACA is unlikely to affect the comparison groups as the dependent coverage mandate is intended for those aged 19-25 only.

[71] I control for gender, race, marital status, employment, and any state variability

The analysis compares changes in educational outcomes for young adults pre-and post ACA. I use a DD regression model to estimate the policy effects based on the assumption that the comparison groups will account for other time varying factors that would have led the treatment group to experience different outcomes post reform. All specifications are estimated using linear probability models.

The main DD specification is:

$$Y_{ist} = \beta_1 + \beta_2 PostACA_t + \beta_3 Treat + \beta_3 (PostACA_t * Treat) + X_{ist} + \varsigma_t + \sigma_s + \varepsilon_{ist}$$

(Equation 1)

Where Y_{ist} denotes any educational outcome for individual *i*, state *s* and time *t* and can indicate current enrollment, prior year enrollment, 2-year or 4-year college enrollment, full-time or part-time enrollment, or vocational training. Since the law was signed in the year 2010, and the changes being estimated are evaluating the differences in the time periods before and after the law was enacted I code the dummy variable for the year after the reform implementation, denoted by $PostACA_t$, as 1 for years after 2010 and 0 otherwise.

Age is coded using a dummy variable $Treat_g$ and is coded as 1 for being in the treatment group aged 19-25 and 0 for the comparison group aged 16-18 or 26-30.

The coefficient of interest here is β_3, which is the coefficient of the interaction between time and age and is the difference-in-differences estimator for the effect of ACA's dependent coverage laws on young adults' educational outcomes.

Demographic factors such as gender, race, and marital status are controlled for in the model and are denoted by X_{ist}. The model also includes state dummies that account for

any state variability such as the differences across states in population composition; these are denoted by σ_s and year dummies denoted by ς_t.

Besides the full model (equation 1), the chapter also includes tests for robustness with restricted control groups. I restrict the analysis to the older comparison group to see the change in coefficients of my outcomes. I also run a specification dropping the 29 states with prior dependent coverage mandates as well as dropping the recession years of 2008 and 2009. Similarly, the younger control group is omitted for all results estimating any kind of college enrollment. I also include an event study analysis model. These specifications are discussed in more detail in the results section.

3.4 Results

Descriptive characteristics

Table 3.2 shows the demographic and educational characteristics by age group for the treatment and comparison groups. Young adults are more likely to be enrolled in college compared to the older comparison group who are more likely to be employed. The younger comparison group, on account of its age is more likely to be enrolled in high school. However, small portions of 16-18 year olds are also enrolled in college. As Table 3.2 shows, 13.2 percent of 16-18 year olds are enrolled in full-time college and 9.2 percent of them are in a 4-year college. Young adults enrollment in full-time college was almost 80 percent and their 4-year college enrollment stood at 71 percent with another 24 percent being enrolled in a 2-year college. The older comparison group had

approximately 58 percent full-time enrollment and a 7- percent 4-year college enrollment, which is not different from the young adult population.

Table 3.2 also shows part-time enrollment rates in college of 19-25 and 26-30 year olds. Young adults are more likely to be enrolled in full-time college whereas 26-30 year olds are more likely to be enrolled in part-time college. Enrollment in 2-year colleges is at 24 percent for young adults compared to 28 percent for the older comparison group. The older comparison group is also more likely to be enrolled in a private school compared to young adults who are more likely to be enrolled in public schools. Comparing the vocational training rates for the two groups also show that young adults are more likely to be enrolled in a vocational training program compared to 26-30 year olds.

Graphical representation for enrollment rates over time for 19-25 year olds are shown in Figure 3.2 and are shown as full-time, part-time, 4-year and 2-year enrollment rates from 2006 to 2014. The graph shows a steep decline for full-time college enrollment from 2009 to 2010, with a eventual rise from 2013 to 2014. Part-time enrollment shows a small increase and then remains stable up until 2012. Consistent with the hypothesis, 4-year college enrollment is on the decline while as 2-year college enrollment rises in 2010 and again in 2012.

Differences in enrollment trends between pre and post-ACA states are graphically shown in Figure 3.3. Overall enrollment in pre-ACA and post-ACA states indicate after 2010 enrollment levels declined for both starting around 2011 which is consistent with the expectation that ACA lead to decline in overall enrollment rates. Full-time enrollment levels indicate after 2010, there's a decline in full-time enrollment for pre-ACA states

while an increase in enrollment in post-ACA states. This trend changes in 2011 when full-time enrollment increases in post-ACA states and drops in pre-ACA states. Pre-ACA states show a drop in 2-year college enrollment from 2010 to 2011, after which enrollment levels rise. The 2-year college enrollment levels also increase for post-ACA states steadily, but remain lower than pre-ACA states. Part-time enrollment rises in pre-ACA states after 2010 while enrollment in part-time college remains lower in post-ACA states. The trends differ by 4-year college enrollment as the enrollment level decline steadily in post-ACA states while as the rise in pre-ACA states followed by a decline. Detailed results from the analysis of models including post-ACA states only are discussed later in the chapter.

Main DD estimates

The results from the main (equation 1) DD analysis are shown in Table 3.3. The results shown in Table 3.3 represent the full model and include all states and the District of Columbia. Outcomes include current enrollment, prior year enrollment, full-time and part-time college enrollment, 2-year and 4-year college enrollment, vocational training, Bachelors degree, and Graduate school. All specifications are run as linear probability models. Separate models for robustness checking were run to estimate impacts on states with no prior mandates. These are discussed later.

The results indicate that the ACA increased the probability of being enrolled; the result is significant at the 1 percent level of significance. However, enrollment level for the prior year shows a stronger significance, which could imply that the ACA has lead to some decline in overall enrollment. The ACA led to a decline in full-time college

enrollment by approximately 3 percentage points, a statistically significant result. The part-time college enrollment as a result of the ACA was not significant. The ACA also led to a decline in 4-year college by about 4 percentage points however, an increase in the likelihood of 2-year college enrollment by 1.7 percentage points and significant at the 5 percent level of significance.

Vocational training shows a small but significant coefficient indicating the likelihood of increasing enrollment in vocational training program for those preferring vocational school to traditional school. Consistent with the declines in full-time and 4-year college enrollment, the ACA also is more likely to have reduced the probability of attaining a bachelor's degree. The results indicate a 2-percentage point decline in bachelor's degree while as no significant impact of graduate school.

I further explore the current college enrollment levels and public/private enrollment levels; these results are shown in Table 3.4 and Table 3.5. Table 3.4 shows estimates at the freshman, sophomore, junior, and senior levels. The results from Table 3.4 show a decline in enrollment status at the junior and senior level in college by 2 and 1.5 percentage points respectively while the coefficients for freshman and sophomore are not statistically significant. The statistically significant negative coefficients are consistent with the earlier results indicating a decline in four-year college enrollment post ACA.

To test whether there exists any preference for a public college over a private college, I estimate DD outcomes shown in Table 3.5. When considering tuition costs, it might be likely that young adults prefer to attend public colleges. Also, as mentioned in the literature, many state-based scholarship programs provide full funding to state public

colleges. Keeping this in mind, I evaluate the type of 2-year/4-year college program. Table 3.5 shows the estimates for public/private college enrollment broken down by 2yr public/private and 4-yr public/private college. As a result of the reform, enrollment in two-year public colleges increased by approximately 2 percentage points while it declined in four-year public and private colleges by 2.5 and 1.6 percentage points respectively. These are all significant at the 5 percent level of significance. From the above results discussed in this section, it can be concluded that the ACA led to a decline in full-time and 4-year college and it increased the probability of being enrolled in a 2-year public college.

The last specification combines enrollment variables for 2-year, 4-year, full-time, and part-time college enrollment. I estimate 2-year full-time, 2-year part-time, 4-year full-time and 4-year part-time enrollment. The estimates from these analyses are presented in the appendix Table 1 for chapter 3. Consistent with my main model, I find an increase in 2-year part-time college enrollment by 3.9 percentage points, which is a 16 percent increase in enrollment. The 4-year full-time college shows a decline by about 5.4 percentage points or a 7.6 percent decline.

Subgroups

I run separate models for subgroups of young adults based on gender, marital status, and race. I selected these sub-groups based on differences in results as shown in the prior two chapters and the literature review from the prior two chapters. However, with educational outcomes, there is no specific literature that informs whether any differences will exist. Although, as estimated in the prior chapters when assessing

subgroups by marital status, married individuals were less sensitive to the effects of the reform compared to those who were unmarried. Similarly, it is expected that ACA will have a less of an impact on educational outcomes of the married, as dependent coverage doesn't influence their decisions if they have access to spousal coverage. Similarly, from prior chapters, men have benefitted more compared to women and Hispanics have experienced higher take up rates of insurance and higher rates of decline in employment compared to non-Hispanics.

Estimates provided in Table 3.6 show males experience statistically significant increases in enrollment compared to females who also show a statistically significant coefficient that is smaller and weaker. Overall enrollment rates increase for men by 2.6 percentage points compared to 1.5 percentage points for women. They also show a statistically significant coefficient for enrollment in part-time college. Both males and females experience statistically significant increases in 2-year college enrollment with females showing a stronger statistically significant coefficient. Comparing enrollment rates for males and females over the study period, Figure 3.4 shows increasing enrollment rates for both males and females post 2010. Males experienced declines in full-time enrollment around 2009 and 2010 while women experienced some increases during the same time period. The part-time enrollment trend is similar for both; an increase in part-time enrollment is seen in Figure 3.4 with both males and females experiencing a increase starting in 2009 with declines for females post 2010. Lastly, two-year college trends show an increase for males and a decline for females while 4-year enrollment rates decline for both from 2009 to 2010, with males showing greater declines.

The next set of estimates assesses the differences between married and unmarried young adults. In Table 3.6 unmarried young adults show an increase in enrollment that is statistically significant by approximately 3 percentage points compared to married young adults. Their part-time enrollment increased by .7 percentage points and two-year college enrollment increased by 1.5 percentage points. These results are significant at the 10 percent and .1 percent significance levels respectively. Married individuals show an increase in four-year college enrollment by 1.8 percentage points possibly because married individuals are more likely to be financially stable. Figure 3.5 shows the trends for married and unmarried young adults over time. Married young adults show lower rates of overall enrollment as well as lower full-time enrollment rates. Married young adults do show higher part-time enrollment rates as well as two-year college enrollment rates compared to unmarried young adults. However, their 2-yr enrollment rates decline sharply after 2012. Unmarried young adults have higher enrollment rates in 4-yr college compared to married young adults. The rates show a declining trend over the years while married young adults show a spike in enrollment rates in four-year college from about 65 percent in 2012 to 73 percent in 2013.

Lastly, Hispanics show a statistically significant increase in enrollment by about 3 percentage points. Due to traditionally lower rates of enrollment in college, the results in Table 3.6 show statistically significant coefficients for Hispanic young adults for full-time, part-time, 2-year, and 4-year college enrollment in the years after the ACA. The only statistically significant coefficient for Non-Hispanics is for 2-year college, consistent with the overall results indicating the increased likelihood of being enrolled in a 2-year college post-ACA. Looking at the trends over the years between the two groups

in Figure 3.6, enrollment shows an increase leading up to 2010 and keeps increasing post 2010 for Hispanics. They also experience increased full-time enrollment post 2010 with Non-Hispanics show a declining trend in part-time enrollment. The two-year and four-year college enrollment for Hispanics shows an increasing trend particularly, with four-year college enrollment starting in 2010, yet their enrollment rates remain lower compared to Non-Hispanics.

Enrollment by age

I also estimate enrollment by younger young adults aged 19-22 and older young adults aged 23-25 and by gender. Prior work by Stratton, O'Toole, and Wetzel (2004) finds younger students being more likely to enroll as full-time students. To see if any differences or similarities exist between enrollment patterns based on age, I estimate full-time, part-time, 2-yr, and 4-yr college enrollments. The results from the analysis are shown in Table 3.7.

The results don't indicate any major differences between 19-22 year and 23-25 year old young adults. The younger age category (19-22) shows statistically significant outcomes for part-time and 2-year college enrollment while the older category (23-25) shows a greater likelihood for 2-year college enrollment. There isn't any difference when I look at these two categories by gender either, with the exception of 19-22 year old males showing a statistically significant coefficient of 1.7 percentage point increase in part-time college enrollment. Both males and females in the older young adult category do not show any significant results by types of enrollment.

Cross category model for education and employment

To understand and combine the effects of the law on employment and college enrollment, I run a multinomial logistic regression as a function of difference-in-differences. Using a categorical outcome variable, I estimate an alternative specification. The outcome variable is coded from 1-4, 1 indicating individual reporting no work and no college enrollment, 2 indicating any work and no college enrollment, 3 indicating no work and any college enrollment, and 4 indicating any work and any college enrollment. The model can be written as the equation below.

$$\log it(Empedu) = \beta_0 + \beta_1 PostACA_t + \beta_2 Treat + \beta_3 (PostACA_t * Treat) + X_{ist} + \varsigma_t + \sigma_s + \varepsilon_{ist}$$

Where *Empedu* is the categorical variable coded 1 to 4. The variable is a cross-categorical variable indicating any kind of college enrollment and employment. The right hand side of the equation is the same as the main model. The baseline (comparison) category is 1, denoting any individual reporting no work and no college enrollment. Table 2 in the appendix reports the outcomes from this model as relative risk ratios (rrr).

The estimates in appendix Table 2 for chapter 3 show the joint decision for education and employment effects to be isolated. In (2) coded as any work and no college enrollment, the estimates are not significant. The estimate also implies a decline in the relative risk by a factor of .968 for a 1-unit increase in the baseline (no work and no college enrollment). The estimates show significance for (3) and (4), in (3) coded as no work and any college enrollment, the estimates are significant and show a 6.7 percent increase in the odds of not working and being enrolled in any college. Finally, in (4)

coded as any work and any college enrollment, the estimates show a 16 percent increase in the odds of being employed or being enrolled in any college.

These results are a preliminary investigation on young adult's joint decisions on college enrollment and employment making this the first study to do so. These results indicate "college-lock" does impact young adults and the hypothesis stating freedom from "college-lock" has enrollment implications holds water. While these results only estimate overall college enrollment, future research can look into college enrollment by part-time and full-time enrollment, 2-year and 4-year enrollment, and even by subgroups of young adults.

Robustness checks

Placebo regression: In Table 3.8 I run a placebo regression to check the robustness of my results. A placebo regression estimates a placebo effect and can be run using a variable that indicates time (years) before the ACA mandate. Here, the coefficient of interest is the DD estimator, which measures the average difference in the treatment group and the comparison group. For a placebo regression, I assume that the dummy variable for time of enactment is replaced by another time period that represents the time before the ACA. If the coefficient of interest (the DD estimator) is not very close to 0, then that implies that the treatment and comparison group experienced similar outcomes even before the ACA was mandated. For the purpose of estimation, I assume the date of implementation to be 2009. The placebo regression results from Table 3.8 indicate a different estimate for enrollment levels. The coefficients are much smaller and

statistically insignificant such as 2-year college enrollment, 4-year college enrollment, and a bachelor's degree.

Additional robustness checks: I run additional specifications to check for the robustness of my results. These additional specifications include estimating the specification with the exclusion of recession years of 2008 and 2009, with the older comparison group only, with post-ACA states only, and running event study analysis to look at changes in full-time/part-time enrollment and 2-yr/4-yr enrollment over the period of the event.

I drop the recession years of 2008 and 2009 to re-estimate my main specification. Table 3.9 shows the estimates. Dropping these two years makes the estimates for current year and prior year enrollment different.[72] The coefficients for full-time and part-time enrollment are not similar to the results in the main model. Also, 2-year college enrollment is statistically significant with a positive coefficient and so is enrollment in 4-year college with a negative coefficient, consistent with the estimates from the main DD results. The recession years did not seem to have an impact on the educational enrollment of young adults although, the results do indicate declining overall enrollment.

The next specification only includes post-ACA states. These are all the states that did not have any prior dependent coverage mandate. These include 21 states and the District of Columbia. The results from this alternative specification are presented in Table 3.10. When only considering these post-ACA states we see that while current and prior year enrollment is not very different, the outcomes of interest i.e. 2-year and 4-year college show a significant difference. As the main results indicate, the ACA is associated

[72] Compared to the results in the main estimates

with a decline in 4-year college enrollment and an increase in 2-year college enrollment. Assessing the coefficients for post-ACA states, we see an increase in the effect sizes. Enrollment in 4-year college declines by 5.5 percentage points and enrollment in 2-year colleges increases by 2.6 percentage points approximately. This set of checks shows greater impacts on states that mandated dependent coverage after 2010, which means even as the ACA changed educational outcomes for young adults overall, its impacts were greater for late adopters.

I also estimate the main DD regression with the older comparison group only. The outcomes presented in Table 3.11 shows the coefficients of interest change once the younger comparison group is not included. Enrollment levels declined as estimates indicate, full-time college enrollment declined by 2.8 percentage points in the main model whereas it declines by 4.4 percentage points with the older comparison group. Part-time enrollment, not statistically significant in the main model now becomes significant. It increases by 3.5 percentage points and is statistically significant at the 5 percent level. However, 2-year college enrollment is no longer significant. It is possible that using the older comparison group only, the likelihood of attending a two-year college goes down while a preference for attending college part-time goes up. The full-time and part-time trends over the years between 19-25 and 26-30 year olds are very different. While young adults are more likely to be enrolled full-time, individuals in the 26-30 age brackets show a greater inclination to be enrolled part-time.

Event study analysis: Lastly, I continue to use the event study analysis model as checks along the timeline of the event. For my event study analysis I use similar models

shows in the earlier chapters. The model presented below include year dummies with their interactions as shown in specification below:

$$Y_{it} = \beta_0 + \beta_1 2007_t + \beta_2 2008_t + \beta_3 2009_t + \beta_4 2010_t + \beta_5 2011_t + \beta_6 2012_t$$
$$+\beta_7 2013_t + \beta_8 2014_t + \beta_9 Treat_i + \beta_{10}(2007_t * Treat_i) + \beta_{11}(2008_t * Treat_i)$$
$$+\beta_{12}(2009_t * Treat_i) + \beta_{13}(2010_t * Treat_i) + \beta_{14}(2011_t * Treat_i) + \beta_{15}(2012_t * Treat_i)$$
$$+\beta_{16}(2013_t * Treat_i) + \beta_{17}(2014_t * Treat_i) + \varepsilon_{it}$$

For the specifications above, the outcome variable is denoted by Y_{it} and is coded as a binary variable. It indicates type of enrollment (full-time/part-time/2-yr/4-yr) and is coded as 1 if indicating enrollment, else indicating 0

β_1 to β_8 denotes the coefficient of individual dummy for year and is coded as 1 of the particular year, else 0.

Treat denotes the dummy for treatment group and is coded as 1 for young adults aged 19-25 and 0 for 26-30 year olds, and

β_{10} to β_{17} denotes the coefficients of interaction between the treatment dummy and year, these are the coefficients of interest and show estimated for change in enrollment levels for young adults from 2007 to 2014.

The result from the above specification is shown in Table 3.12. In Table 3.12, the enrollment status for young adults shows changes in full-time/part-time/2-year/4-year enrollment. In the years prior to the ACA enrollment coefficients are small and insignificant indicating the no pre-existing trend that could have led to any changes. In

2010, both full-time and part-time enrollment show declines of 3.6 and 2.4 percentage points respectively. Similarly, the coefficient for 4-year college enrollment shows a statistically significant coefficient of decline in enrollment by almost 8-percentage point and indicates a consistent decline over time. Enrollment in 2-year college is significant at the 5-percent level of significance in 2011 and becomes insignificant with time.

3.5 Discussion

This chapter provides an in-depth analysis of the Affordable Care Act's impact on education outcomes for young adults. Using the October Supplement of the CPS (2006-2014), I evaluate key outcomes to determine how the law impacts the young adult population. I find dependent coverage laws change enrollment status for young adults by making them more likely to be enrolled in a 2-year public college compared to a 4-year college. The law also leads to a decline in full-time college enrollment for young adults as well as an overall decline in college enrollment. As a result of the law, full-time enrollment declined by 2.8 percentage points. I find that these coefficients increase when I only include the older comparison group in my model.

The ACA impacts education for young adults by changing the incentive structure for college enrollment. Since a full-time enrollment status is no longer required, dependent coverage incentivizes 2-year college enrollment while 4-year college enrollment declines as it might be too expensive and time consuming for some young adults who might possibly want to continue to work. In other words, the incentive to attend a college part-time or attend a 2-yr college is higher. Just like the idea of job-lock discussed in chapter 2, "college-lock" is a term used to describe the circumstance where

young adults previously were tied down to their full-time student status in order to keep their coverage. As a result of the ACA, the full-time enrollment status is not required since dependent coverage becomes available to all. Freedom from "college-lock" allows young adults to attend alternatives to 4-yr colleges such as 2-yr colleges and vocational training programs and also to enroll in colleges at later ages. It is also likely that some students postpone graduation.

While there is no other study documenting the impact of the Affordable Care Act on education, there is some prior work evaluating the impact of dependent coverage laws enacted before the ACA in certain states. These studies find an increase in educational attainment for men compared to women. My results are consistent with this finding. In my analysis of subgroups, I find men as being more likely to be enrolled part-time and in 2-year colleges compared to women. Other subgroups in the analysis include young adults by marital status and race. I find unmarried young adults to have higher enrollment rates compared to married young adults. Unmarried young adults are also more likely to be enrolled part-time and in 2-year college, while married individuals are more likely to be enrolled in 4-year college. Lastly, the law is also associated with increased overall enrollment rates for Hispanics compared to non-Hispanics. Hispanics are also more likely to be enrolled full-time as well as part-time when compared to non-Hispanics.

The results also indicate a decline in enrollment in public and private college enrollment. Enrollment in 4-year public colleges declined by 2.5 percentage points compared to a decline of 1.6 percentage points in 4-year private colleges. At the same time, enrollment in 2-year public colleges increased by 1.9 percentage point. Therefore, the results from the main DD model and the analysis presented in this chapter indicate

that the ACA increased 2-year public college enrollment. Vocational training enrollment also indicates an increase; the coefficient is small but statistically significant indicating that as full-time and 4-year college enrollment declines, young adults are also more likely to enroll in vocational training programs.

Just as in my prior two chapters, I run robustness checks to test my results. My checks include running specifications with post-ACA states, an older comparison group, and event study models. I find post-ACA states to have bigger coefficients. For instance, 2-year college enrollment is higher in post-ACA states compared to the overall model. Similarly, decline in 4-year college enrollment rates are also higher for the post-ACA states. Next, I run my specification with the older comparison group only. I find higher declines in full-time enrollment. However, a statistically insignificant coefficient for 2-year college enrollment, possibly due to the rates of enrollment for the treatment and comparison group in 2-year colleges not being very different.

The result from the event study analysis also corroborates the findings. The analysis shows young adults to be more likely to attend part-time and 2-year colleges and attend school at later ages. It wasn't expected that the ACA would impact education as the policy had unintended consequences for education. However, as the results indicate, young adults might be more likely to be enrolled as college students at later ages, as they are no longer bound by the age restriction to qualify for dependent coverage.

The impact of the law on young adults' education is consistent with the literature on state and Federal policies aimed at increasing enrollment. However, the difference here is that impact on educational enrollment is an unintended consequence of the ACA as its focus is health insurance and providing means for increased coverage. Due to the

unique nature of this age group, the role of education cannot be understated. The ACA impacts educational outcomes differently than some of the policies that solely focus on grants and aid. It provides an indirect impetus to young adults by allowing them to access dependent coverage despite their college enrollment status and age, which allows them to enroll in 2-year college, enrolled part-time, or enroll at later ages. As 4-yr colleges become out of reach for many due to higher costs associated with attending them, alternatives such as community colleges, 2-yr colleges, and vocational training are gaining popularity. Prior to the ACA, 71 percent of 4-year private colleges and 82 percent of 4-year public colleges offered student health insurance, while only 29 percent of 2-year public colleges offered health insurance (GAO, 2008). After enactment, it was immaterial whether colleges offered insurance as long as students enrolling could access dependent coverage.

The literature review shows scholarships and aid do impact enrollment in 4-year public colleges. Given a choice, those indifferent between a 4-year and 2-year college are more likely to attend the 4-year college. Those who are more sensitive to costs will choose a 2-year college. A 2-year college might also be suitable for those who are working. As seen in chapter 2, full-time employment levels have declined for young adults. One of the implications of declined full-time work can be an increase in college enrollment for the same age group, if they previously weren't enrolled in a post-secondary educational institution.

While my result indicates the ACA impacted college enrollment for the 19-25 year olds, it is also likely that their college enrollment decisions go beyond access to dependent coverage. Since dependent coverage only offsets a small part of costs

associated with college, other factors such as access to loans, scholarships, and financial aid also factor into college enrollment decisions. The results from the ACA also do not imply the increased enrollment in 2-yr colleges will have an impact on the socio-economic status of young adults as those finishing 4-yr colleges are still more likely to earn more than those with a 2-yr college degree. However, it does give those young adults who otherwise might not have had the opportunity to get a post-secondary education enroll in college.

At the same time, the effect on college enrollment has some important implications for the labor market. Previously, students attending 4-yr colleges took a longer time to graduate and were less likely to be working. As a result of getting dependent coverage, it is likely that young adults might enter the labor force much sooner if they pick a 2-yr college over a 4-yr college.

Table 3.1: Enrollment rates over time

	2006	2007	2008	2009	2010	2011	2012	2013	2014
Age group									
16-18	.877	.879	.880	.880	.890	.895	.898	.871	..869
19-25	.345	.356	.364	.388	.383	.400	.394	.380	.369
26-30	.103	.107	.111	.112	.125	.130	.112	.101	.111
Rates of enrollment for 19-25									
Less than 1 year	.075	.073	.075	.072	.075	.071	.072	.073	.065
Freshman	.210	.212	.202	.200	.204	.201	.183	.187	.200
Sophomore	.224	.240	.246	.245	.240	.248	.240	.231	.226
Junior	.185	.169	.163	.174	.153	.159	.163	.171	.166
Senior	.054	.047	.051	.045	.051	.057	.062	.060	.069
Public/Private enrollment for 19-25									
Public	.798	.788	.802	.801	.820	.822	.810	.818	.824
Private	.202	.212	.198	.192	.180	.178	.191	.182	.175
FT/PT college enrollment rates									
19-25 FT	.788	.793	.805	.810	.792	.793	.791	.784	.805
26-30 FT	.545	.542	.534	.602	.580	.586	.592	.593	.620
19-25 PT	.166	.162	.149	.150	.157	.161	.154	.168	.142
26-30 PT	.433	.438	.434	.377	.390	.396	.390	.378	.347
2-yr/4-yr college enrollment rates									
2-yr 19-25	.217	.242	.248	.239	.261	.252	.263	.247	.221
2-yr 26-30	.254	.279	.307	.305	.279	.283	.291	.262	.246
4-yr 19-25	.738	.712	.705	.720	.688	.702	.682	.705	.726
4-yr 26-30	.724	.691	.662	.675	.692	.699	.691	.710	.721
Employment rates									
19-25	.550	.550	.541	.501	.492	.499	.498	.485	.498
26-30	.719	.725	.706	.633	.630	.631	.651	.627	.677
Vocational Training									
19-25	.030	.029	.032	.035	.033	.035	.030	.032	.030
26-30	.024	.022	.024	.024	.027	.025	.024	.021	.022

Source: Weighted tabulations of the 2006-2014 October supplement of the CPS.

Table 3.2: Summary statistics

	16-18 years	19-25 years	26-30 years
Current enrollment	.880	.375	.115
Prior year enrollment	.920	.414	.123
College enrollment			
Attends full-time	.132	.795	.579
Attends part-time	.012	.157	.400
2-year college	.052	.243	.280
4-year college	.092	.710	.700
Attended school/college			
Current year	.881	.375	.115
Some previous year	.918	.413	.123
Vocational training	.040	.031	.023
Public school	.802	.810	.760
Private school	.079	.190	.240
Levels of enrollment			
Less than one year	.836	.072	.045
Freshman	.149	.200	.100
Sophomore	.011	.240	.172
Junior	.001	.170	.105
Senior	N.A	.055	.052
Married	.008	.146	.449
Single	.982	.829	.484
Male	.515	.500	.486
Employed	.261	.647	.773
Race			
Nh-White	.623	.640	.650
Nh-Black	.120	.111	.100
Hispanic	.165	.160	.160
Other	.090	.090	.093
Some high school	.779	.105	.100
High school	.144	.301	.270
Some college	.075	.442	.292
B.A and greater	.002	.150	.340
Age (average)	17	22	28
N	49,401	104,037	77,259

Source: Weighted tabulations of the 2006-2014 October supplement of the CPS.

Table 3.3: Main results

	Enrolled in CY	Enrolled in PY	Full-time	Part-time	2-yr college	4-yr college	Vocational	Bachelors	Grad school
PostACA	-0.0183***	-0.0121**	0.0209***	0.0104*	0.00608	0.0252***	-0.00144	0.0233***	0.00805**
	(0.00431)	(0.00408)	(0.00506)	(0.00399)	(0.00307)	(0.00474)	(0.00152)	(0.00427)	(0.00298)
Treat	-0.0626***	-0.0512***	0.565***	0.0408***	0.123***	0.483***	0.00437***	0.579***	0.0270***
	(0.00777)	(0.00703)	(0.0114)	(0.00437)	(0.00808)	(0.0158)	(0.00103)	(0.0108)	(0.00485)
PostACA*Treat (DD)	0.0229**	0.0266***	-0.0286***	0.00426	0.0170*	-0.0413***	0.00464**	-0.0207**	-0.00358
	(0.00690)	(0.00656)	(0.00814)	(0.00554)	(0.00716)	(0.0101)	(0.00173)	(0.00609)	(0.00346)

Notes: The impact (DD) is the interaction of the dummy for the treatment variable and the dummy for the enactment (PostACA) period. Standard errors are in parentheses and are clustered at the state level. All regressions are weighted using person level weights. Data: October Educational supplement of the CPS from 2006 to 2014. Outcome variables are enrollment in school in the current year in column 1 and indicate 1 if individual is currently enrolled in school. Enrollment in school in the prior year indicates whether individual was enrolled in school last year and indicates 1 if enrolled last year, this is presented in column 2. Full-time and part-time enrollments are in column 3 and 4 and indicate whether individuals are enrolled as full-time and part-time. Column 5 and 6 shows 2-year and 4-year college attendance. Column 7 shows any kind of vocational training and column 8 and 9 shows bachelors degree and grad school.

*p<0.05 ** p<0.01 *** p<0.001

Table 3.4: ACA impact by college level

	Freshman	Sophomore	Junior	Senior
PostACA	0.00275	0.00524	0.00763*	0.00763***
	(0.00428)	(0.00277)	(0.00323)	(0.00142)
Treat	0.00100	0.234***	0.197***	0.146***
	(0.00923)	(0.00463)	(0.00381)	(0.00672)
PostACA*Treat (DD)	0.00672	0.00756	-0.0193*	-0.0157**
	(0.00613)	(0.00635)	(0.00761)	(0.00526)

Notes: All outcomes variables are coded as dummies indicating type college enrollment levels. For a detailed description see Table 3.3.

Table 3.5: Estimates for public/private college enrollment

	2-year public	2-year private	4-year public	4-year private
PostACA	0.00614*	-0.0000591	0.0162***	0.00900***
	(0.00283)	(0.00138)	(0.00393)	(0.00238)
Treat	0.113***	0.00994***	0.374***	0.109***
	(0.00768)	(0.00202)	(0.0127)	(0.0132)
PostACA*Treat (DD)	0.0190*	-0.00200	-0.0251*	-0.0162*
	(0.00724)	(0.00194)	(0.0109)	(0.00714)

Notes: All outcomes variables are coded as dummies indicating type of enrollment including public/private status. For a detailed description see Table 3.3.

Table 3.6: Subgroups

	Enrolled in CY	Full-time	Part-time	2-year college	4-year college
Male	0.0266***	0.00302	0.0118**	0.0148*	0.0076
	(0.00696)	(0.00557)	(0.00359)	(0.00627)	(0.00590)
Female	0.0152*	0.00886	0.00180	0.0123***	-0.00164
	(0.00707)	(0.00734)	(0.00402)	(0.00306)	(0.00582)
Married	0.0199*	0.0178	0.00274	0.00209	0.0184*
	(0.00935)	(0.00950)	(0.00598)	(0.00398)	(0.00878)
Unmarried	0.0291***	-0.000245	0.00736**	0.0151***	-0.00796
	(0.00671)	(0.00483)	(0.00249)	(0.00408)	(0.00553)
Hispanic	0.0294*	0.0450**	0.0122**	0.0321***	0.0250**
	(0.0120)	(0.0129)	(0.00352)	(0.00523)	(0.00847)
Non-Hispanic	0.0216**	-0.000405	0.00545	0.00925*	-0.00420
	(0.00635)	(0.00493)	(0.00273)	(0.00375)	(0.00485)

Notes: For a detailed description see Table 3.3.

Table 3.7: Estimates by age (19-22 and 23-25)

	Full-time	Part-Time	2-year college	4-year college
19-22 year olds	0.0132	0.0104**	0.0133*	0.0103
	(0.00841)	(0.00316)	(0.00550)	(0.00893)
23-25 year olds	0.00462	0.00705	0.00781*	0.00386
	(0.00627)	(0.00421)	(0.00315)	(0.00495)
19-22 Male	0.00510	0.0176***	0.0181	0.00462
	(0.00988)	(0.00308)	(0.00988)	(0.0120)
19-22 Female	0.0208	0.00299	0.00821	0.0156
	(0.0105)	(0.00518)	(0.00494)	(0.00945)
23-25 Male	0.00445	0.0112	0.00713	0.00848
	(0.0106)	(0.00568)	(0.00570)	(0.00815)
23-25 Female	0.00464	0.00277	0.00841	-0.00100
	(0.00745)	(0.00712)	(0.00435)	(0.00747)

Notes: Columns indicate enrollment by college types and rows indicate two groups of young adults, 19-22 and 23-25.

Table 3.8: Placebo DD regression results

	Enrolled in CY	Enrolled in PY	Full-time	Part-time	2-yr college	4-year college	Vocational	Bachelors	Grad school
PostACA	-0.0287***	-0.0197***	0.0116	0.000184	-0.00265	0.0144*	-0.00464*	0.00971	0.00205
	(0.00527)	(0.00459)	(0.00779)	(0.00395)	(0.00490)	(0.00697)	(0.00217)	(0.00641)	(0.00304)
Treat	-0.0585***	-0.0455***	0.556***	0.0408***	0.130***	0.467***	0.00441***	0.573***	0.0246***
	(0.00747)	(0.00650)	(0.0121)	(0.00463)	(0.00933)	(0.0172)	(0.00126)	(0.0102)	(0.00457)
PostACA*Treat(DD)	0.0244*	0.0215*	-0.0230*	0.0152	0.00966	-0.0174	0.00593*	-0.0147	0.00691
	(0.0105)	(0.0103)	(0.0112)	(0.00805)	(0.0111)	(0.0121)	(0.00237)	(0.0100)	(0.00534)

Notes: Assumes reform took place in 2009 instead of 2010.

Table 3.9: Results with recession years 2008 and 2009 dropped

	Enrolled in CY	Enrolled in PY	Full-time	Part-time	2-yr college	4-yr college	Vocational	Bachelors	Grad school
PostACA	-0.0270***	-0.0292***	0.0313***	0.0164**	0.0181***	0.0295***	0.00891	0.0394***	0.00826*
	(0.00470)	(0.00473)	(0.00616)	(0.00573)	(0.00516)	(0.00598)	(0.00475)	(0.00632)	0.00826*
Treat	-0.0758***	-0.0694***	0.565***	0.0521***	0.126***	0.491***	0.00815	0.594***	0.0225***
	(0.00970)	(0.0100)	(0.0128)	(0.00696)	(0.00877)	(0.0149)	(0.00468)	(0.0142)	(0.00642)
PostACA*Treat (DD)	0.0333***	0.0434***	-0.0278**	-0.00739	0.0150*	-0.0502***	-0.00405	-0.0364***	0.00114
	(0.00635)	(0.00678)	(0.00920)	(0.00584)	(0.00781)	(0.0129)	(0.00578)	(0.00997)	(0.00549)

Notes: Years 2008 and 2009 are dropped from the analysis.

Table 3.10: Post-ACA states only

	Enrolled in CY	Enrolled in PY	Full-time	Part-time	2-yr college	4-yr college	Vocational	Bachelors	Grad school
PostACA	-0.0137*	-0.00981*	0.0202*	0.0117	0.00491	0.0269***	0.00271	0.0301***	0.00176
33	(0.00600)	(0.00411)	(0.00743)	(0.00712)	(0.00527)	(0.00667)	(0.00210)	(0.00670)	(0.00436)
Treat	-0.0623***	-0.0543***	0.559***	0.0405***	0.128***	0.472***	0.00184	-0.599***	0.0203***
	(0.0151)	(0.0141)	(0.0217)	(0.00607)	(0.0126)	(0.0297)	(0.00135)	(0.0184)	(0.00476)
PostACA*Treat (DD)	0.0215*	0.0221**	-0.0283*	-0.000913	0.0257*	-0.0549***	-0.000924	0.0292***	0.000108
	(0.00932)	(0.00745)	(0.0102)	(0.00800)	(0.0105)	(0.00976)	(0.00283)	(0.00513)	(0.00542)

Notes: Only includes 21 states and District of Columbia. States with no prior dependent coverage mandate

Table 3.11: Older comparison group only

	Enrolled in CY	Enrolled in PY	Full-time	Part-time	2-yr college	4-year college	Vocational	Bachelors	Grad school
PostACA	-0.00102	0.00121	0.0320	-0.0204	-0.00441	0.0160	0.00177	0.0303*	-0.0188
	(0.00377)	(0.00321)	(0.0164)	(0.0161)	(0.0110)	(0.0118)	(0.00161)	(0.0148)	(0.0157)
Treat	0.192***	0.222***	0.179***	-0.188***	-0.0206	0.0120	0.00724***	0.245***	-0.254***
	(0.00702)	(0.00655)	(0.0114)	(0.0119)	(0.0126)	(0.0117)	(0.00109)	(0.0125)	(0.0131)
PostACA*Treat (DD)	0.0167**	0.0245***	-0.0438*	0.0348*	0.0237	-0.0326*	0.000218	-0.0322*	0.0233
	(0.00544)	(0.00510)	(0.0165)	(0.0163)	(0.0141)	(0.0155)	(0.00163)	(0.0135)	(0.0139)

Notes: Only includes older comparison group

Table 3.12: Event study results by year

Year	Full-time	Part-time	2-year college	4-year college
2007	0.0154	0.00244	0.00604	0.0118
	(0.00785)	(0.00414)	(0.00471)	(0.00736)
2008	0.0292***	0.00708	0.0201***	0.0161
	(0.00832)	(0.00420)	(0.00615)	(0.00846)
2009	0.0360***	0.0120*	0.0221***	0.0259***
	(0.00811)	(0.00540)	(0.00615)	(0.00710)
2010	0.0403***	0.0207***	0.0239***	0.0371***
	(0.00825)	(0.00557)	(0.00590)	(0.00862)
2011	0.0388***	0.0174***	0.0161**	0.0400***
	(0.00815)	(0.00488)	(0.00525)	(0.00803)
2012	0.0348***	0.0143*	0.0212***	0.0279***
	(0.00704)	(0.00545)	(0.00487)	(0.00731)
2013	0.0348***	0.0144**	0.0131*	0.0360***
	(0.00833)	(0.00484)	(0.00503)	(0.00728)
2014	0.0372***	0.00720	0.00830	0.0361***
	(0.00800)	(0.00406)	(0.00461)	(0.00808)
Treat	0.590***	0.0591***	0.118***	0.532***
	(0.0141)	(0.00840)	(0.00789)	(0.0145)
Treat*2007	-0.0108	-0.00753	0.0180	-0.0364
	(0.0130)	(0.00894)	(0.00911)	(0.0122)
Treat*2008	-0.0127	-0.0224*	0.0109	-0.0461
	(0.0139)	(0.00976)	(0.0101)	(0.0143)
Treat*2009	-0.0152	-0.0210	0.00103	-0.0373**
	(0.0128)	(0.0108)	(0.0100)	(0.0134)
Treat*2010	-0.0358**	-0.0239**	0.0200	-0.0797***
	(0.0128)	(0.00865)	(0.0118)	(0.0167)
Treat*2011	-0.0314*	-0.0136	0.0214*	-0.0665***
	(0.0118)	(0.00888)	(0.0106)	(0.0138)
Treat*2012	-0.0280*	-0.0164	0.0276	-0.0720***
	(0.0127)	(0.0103)	(0.0150)	(0.0160)
Treat*2013	-0.0351**	-0.00332	0.0165	-0.0549**
	(0.0112)	(0.0100)	(0.0121)	(0.0160)
Treat*2014	-0.0178	-0.0198	-0.00440	-0.0332**
	(0.0139)	(0.0104)	0.0102)	(0.0123)

Notes: Years include 2007 to 2014 with 2006 being left out for comparison and are coded as dummies. Treat is a dummy indicating being the treatment or comparison group. The interaction between Treat and year gives the coefficients for 2-yr college, 4-year college, full-time, and part-time enrollment. Standard errors are in parentheses. *p<0.05 **p<0.01 ***p<0. 001

Figure 3.1: Pre and Post ACA college reform

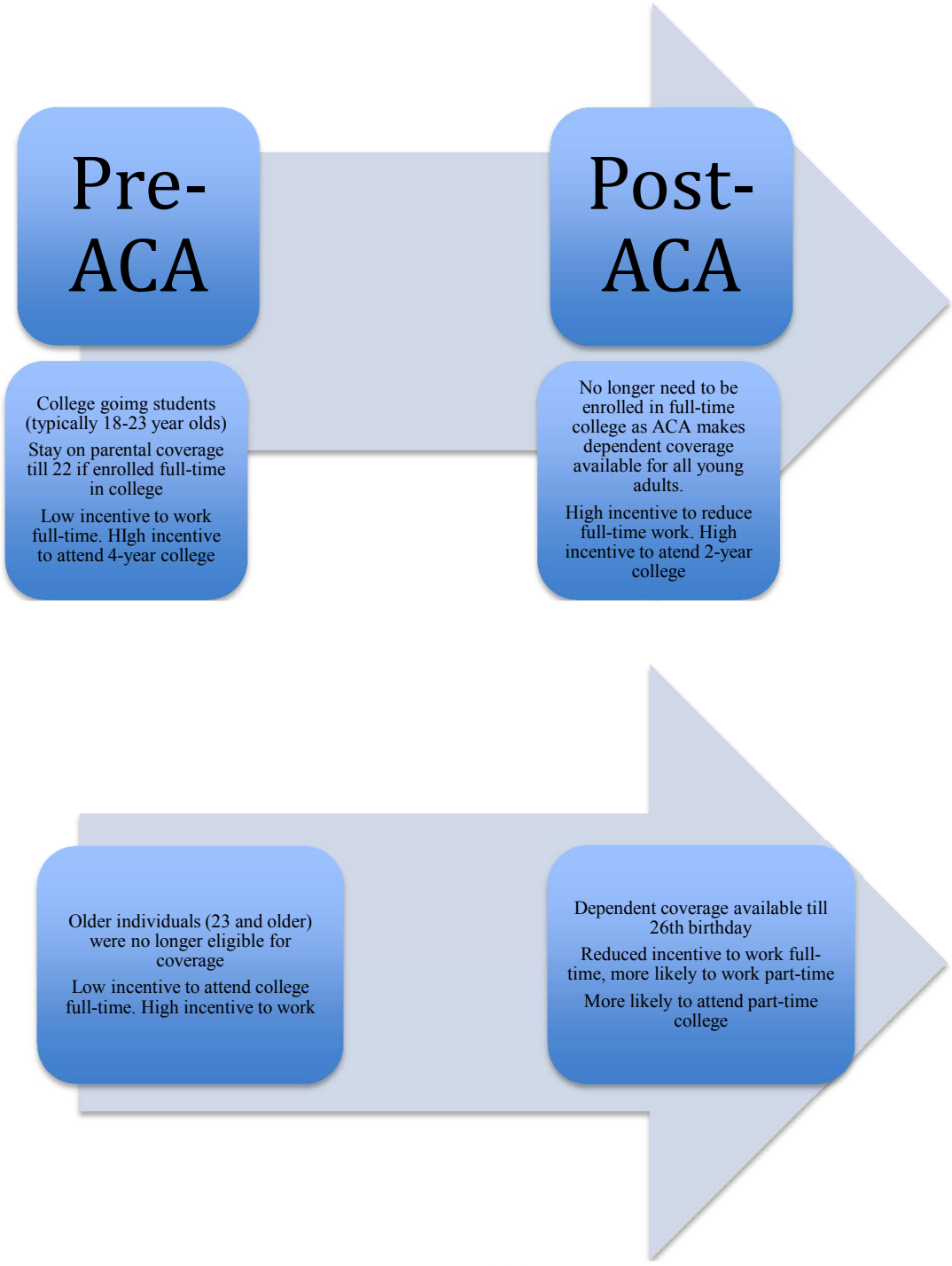
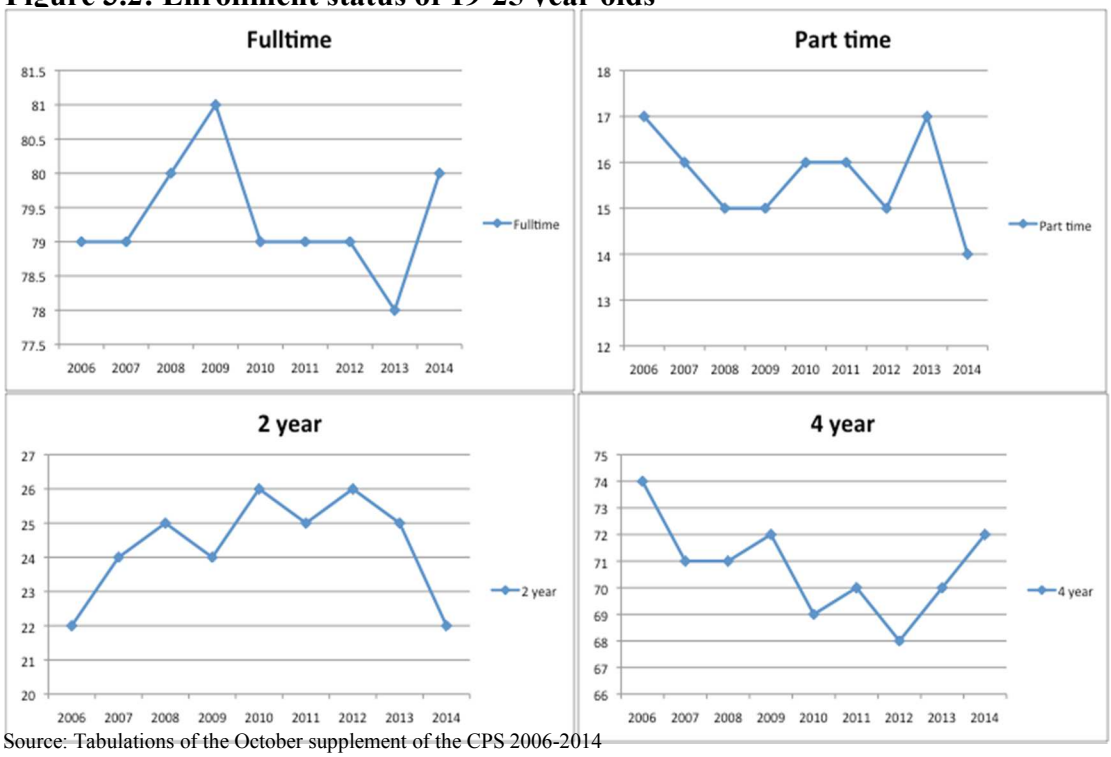


Figure 3.2: Enrollment status of 19-25 year olds

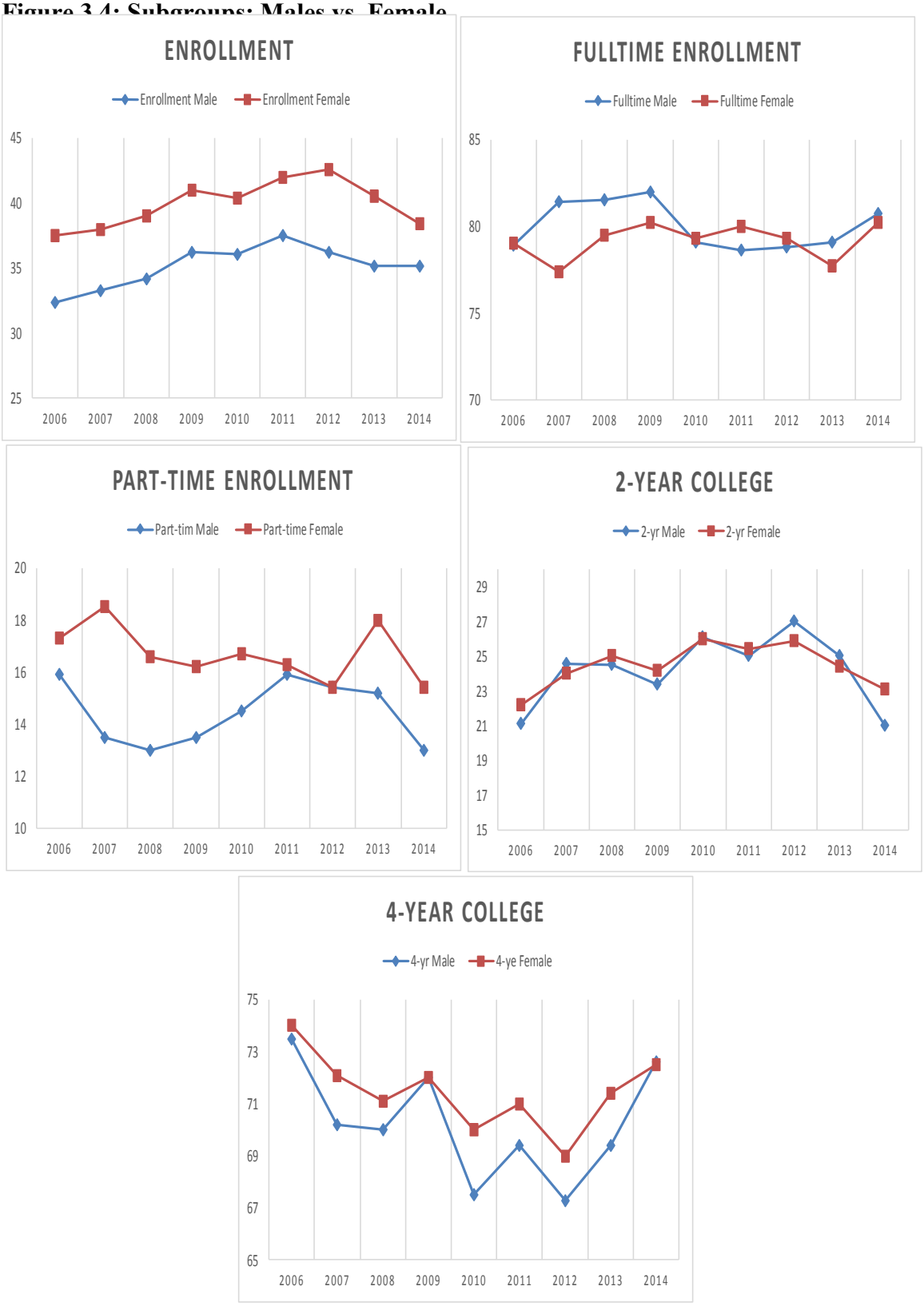


Source: Tabulations of the October supplement of the CPS 2006-2014

Figure 3.3: Pre and post ACA states enrollment levels

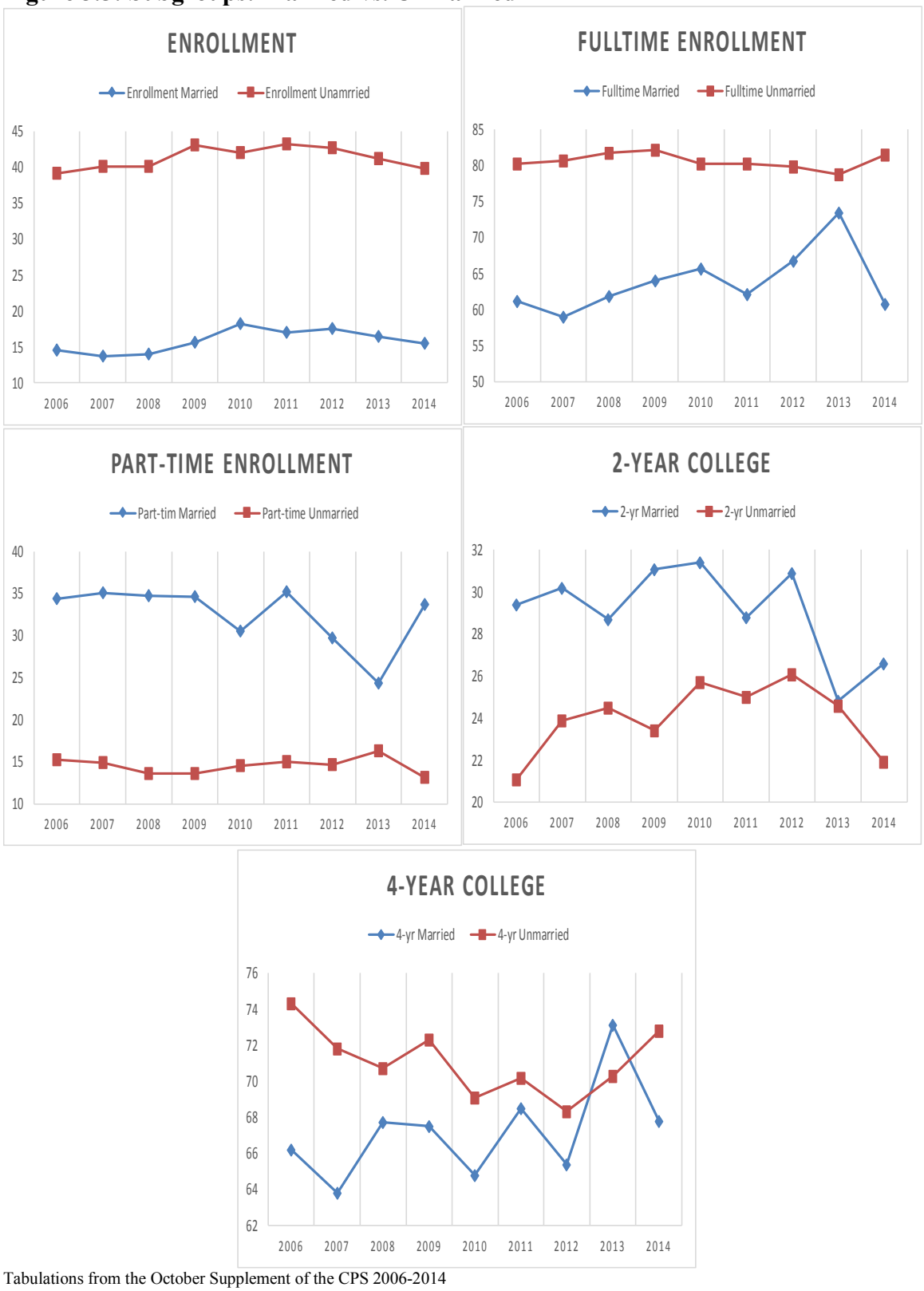
Tabulations from the October supplement of the CPS 2006-2014

Figure 3.4: Subgroups: Males vs. Female



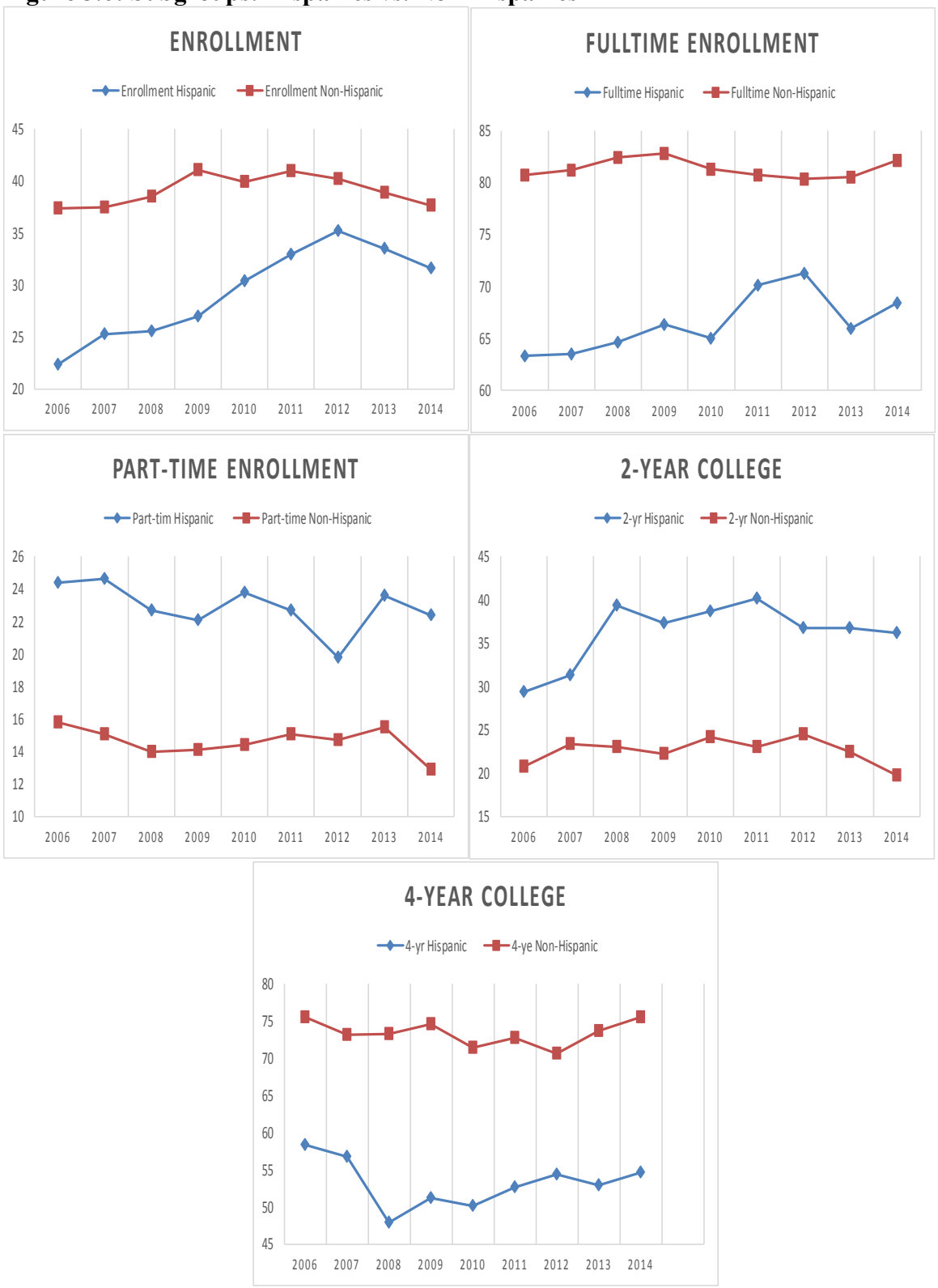
Tabulations from the October supplement of the CPS 2006-2014

Figure 3.5: Subgroups: Married vs. Unmarried



Tabulations from the October Supplement of the CPS 2006-2014

Figure 3.6: Subgroups: Hispanics vs. Non-Hispanics



Tabulations from the October Supplement of the CPS 2006-2014

Chapter 4: POLICY IMPLICATIONS AND CONCLUSIONS

4.1 Implications

In my three substantive chapters, I have examined three different outcomes of the ACA on the young adult population. This concluding chapter briefly discusses some of the implications followed by a conclusion and ideas for future research. The policy implications get discussed in this section; I begin with discussing some of the outcomes from the ACA and the implications from those outcomes and conclude this section by discussing how policymakers could address shortcomings.

The ACA has extended health insurance coverage to millions of young adults. The analysis in this dissertation finds that those with traditionally lower access to insurance experienced greater take up rates of health insurance coverage after the ACA; in particular, younger young adults between 19-22 years and single young adults. However, despite the dependent coverage mandate, minorities continue to have lower insurance rates than the broader young adult population. The ACA is not effective for individuals those whose parents lack employer sponsored health insurance, which is more often the case for minorities. As a next step, the individual mandate, requiring all to be covered as of January 2014 might change coverage to those without access to parental dependent coverage.

The ACA not only reduces cost of coverage but also increases access to coverage and reduces uncompensated care in hospitals. Dependent coverage provision can also be applicable to young adults' need for emergency care since increased coverage for this age

group could imply declines in uncompensated hospital care and trips to the emergency room. Prior to the ACA, states had to bear the burden of providing uncompensated care to those who couldn't afford it. The law lowers the risks associated with not having health insurance coverage for young adults and provides a health and financial safety net. Even prior to the ACA, states with universal coverage such as Massachusetts had spent millions in uncompensated care, significantly reduced any such spending after mandating universal coverage in the state.[73]

However, many young adults still remain uninsured. These include individuals falling through eligibility loopholes for Medicaid or those who might not have access to parental dependent coverage. The individual mandate enacted in 2014 may offer coverage to those young adults without access to parental dependent coverage in the form of subsidies, but despite that, the remaining out of pocket costs still pose a serious barrier to coverage. Even those getting coverage through their parents will experience increase in premiums in existing plans. These added costs are not borne just by the parents who are the health insurance policyholder but also the employers. But as previously seen, employers on their part eventually shift the cost of providing coverage back to the employee in the form of lower wages (Gruber, 1994; Bhattacharya & Bundorf, 2009), the ultimate burden will fall on the policy holder. The most common alternative for coverage is the non-group market option for those young adults without access to ESI as the costs in this market can be lower than dependent coverage (Cantor et al, 2012). The cost issue is key as it is one of the ultimate factors in determining whether uninsured rates for young adults will decline. Prior to the ACA, some states required parents to pay an incremental

[73] In 2004/2005 Massachusetts spent nearly $1 billion on uncompensated care (Mass.Gov)

cost for covering young adults. After the ACA, even though this practice might be eliminated, those adding dependent coverage will face significant cost increases as they add more family members[74].

A key finding from chapter 2 is the overall decline in employment. From the analysis in chapter 2, a decline in labor supply for 19-25 year olds is estimated with a small decline in overall employment and a bigger estimate for decline in full-time work since full-time work is associated with employer sponsored health insurance. With a decline in employment and full-time work, this age group was free to explore options such as education. Surprisingly, Chapter 2 results also indicate no evidence of job mobility, which was unexpected. It is likely that due to recession and lower levels of education and work experience, young adults were less likely to separate from their current employer.

Increased job mobility can have implications for other outcomes, such as education, as discussed in Chapter 3. The literature review showed that health insurance options not tied to ESI can mean greater movement and ease in job-lock. Policies such as the Common Omnibus Budget Reconciliation Act (COBRA) were passed to ease job-lock by allowing employees to remain on ESI for 18 months after leaving their job. Similarly, the expanded coverage provision for young adults was expected to increase job mobility for a group already know to have higher rates of movements between jobs and between working and not working. The lack of job mobility from the results in this

[74] The marginal cost of adding an additional individual to an existing plan depends on the structure of the plan as well as the number of members enrolled. Employers can pick between different options such as a two-tiered premium plan, which indicates two different prices, one for individual and other for family. The other option is four tiered plan and includes different pricing for individual; individual and spouse; individual and children; and individual, spouse and children. Lastly, a multi-tiered plan where premiums increase for each additional member added. For employers using the two and four-tiered plan, the marginal cost of adding another individual is zero. However, employers might be motivated to move towards the multi-tiered plan that charge higher premiums for each added beneficiary.

dissertation indicate the financial crisis of 2008 and 2009 most likely created job-lock that most likely spilled over into the next few years and made job separation statistically insignificant.

Having dependent coverage has important implications for educational enrollment of young adults. It allows 19-25 year olds an opportunity at career advancement through additional years of post-secondary education or vocational training and boosting incomes over their lifetime. Having dependent coverage up until their 26th birthday also implies young adults delaying graduation to remain on dependent coverage pre-ACA and having a lower inclination to enter the labor market now have a better shot at finishing college without having to worry about their health insurance. Known as college-lock, the law eases college-lock as it allows dependent coverage irrespective of college enrollment status. Particularly, for students from low-income families who previously, couldn't afford full-time or 4-yr college enrollment now can attend school part-time or 2-yr college. The ease in college-lock has implications not only for enrollment, but also future implications for those who previously did not have the opportunity to enroll in colleges.[75]

The results indicate certain groups of young adults show greater changes in insurance, employment, and enrollment than others. These differences are evaluated by gender, marital status, and race. Enrollment outcomes are similar to the overall results that indicate increased enrollment in 2-yr college however; the outcomes for Hispanics are not similar. Stated earlier, Hispanics experience higher uninsurance rates and have lower access to dependent coverage. As a result of the ACA they have experienced higher take up rates in insurance. Similarly, their enrollment outcomes also differ as they

[75] Future implications include better employment, wages, and socioeconomic status

show a higher enrollment rates compared to others. A possible explanation for this is that those from traditionally low-income backgrounds experience lower rates of enrollment prior to policy change. The literature also confirms that policies and programs focused in increasing enrollment by targeting lower income groups are more beneficial than standard scholarships. Therefore, if Hispanics have had lower enrollment rates in the past, their enrollment rates will be higher than the rest after the intervention.

A policy implication from the first empirical chapter that could help revamp ACA includes focusing on subgroups that continue to show lower take up rates of coverage such as minorities. The dependent coverage provision doesn't work for this group if they can't get access, are not eligible for Medicaid, or qualify for subsidies. Policy makers should focus on those from disadvantaged background and young adults living in poverty to improve the provision's effectiveness.

The results from chapter 3 on educational enrollment have implications for 2-year and 4-year college enrollment. Policymakers concerned with declining enrollment in 4-year colleges could look into reasons for the decline beyond the costs of education. The results from this dissertation indicate increase in 2-year college enrollments. Policymakers and stakeholders interested in improving 2-year college enrollment could focus on improving 2-year college enrollment for those who otherwise might not have had the opportunity at any post-secondary education.

4.2 Conclusion

In this thesis, I discuss the impacts of the expanded coverage provision of the ACA on young adults. From the three chapters it becomes evident that the mandate has

not only changed access to insurance for young adults but has also had some impact on young adult's employment and education. The evaluation of the sub-group analysis examines the heterogeneity of the policy's impact. One of the most common sub-groups of young adults includes those with access to dependent coverage through parental insurance. It is expected that those with this access, are more likely to be insured since the marginal cost of adding a dependent to the family plan is lower than the marginal benefit. In particular, literature indicates that those young adults with chronic conditions have benefitted from dependent parental coverage more than others, as these individuals are more likely to value health insurance access.

Other subgroups that are expected to benefit as estimated from the analysis include men, single unmarried individuals, and minorities who traditionally have lower insurance rates of health insurance coverage. From the analysis, we can conclude that men benefit more from the extended coverage provision compared to women. Women are more likely to either keep working if they have the ESI option or in some cases if they are married and have access to spousal coverage. In the same vein, married individuals did not benefit as much as those who are unmarried; single individuals are expected to benefit more from the provision because they are less likely to have spousal coverage to begin with[76]. We also see some racial differences in access to dependent coverage. Minority young adults are less likely to have a dependent coverage option through their parents as minorities have lower access to ESI. For them the individual mandate is more likely to influence take-up rates as they could qualify for subsidies.

[76] For those who are married, the benefits might be lesser than those not married. Since married individuals have options such as spousal insurance or are more likely to have stable jobs, they might not benefit as much as those who are not married.

From the empirical analysis in the 3 chapters it also becomes evident that there is a marked difference between pre and post-ACA states. Since prior dependent coverage mandates had several restrictions, after the passage of the ACA, the states that had not enacted any provisions for young adults coverage (the post-ACA states) showed bigger effect sizes for health insurance, labor market, and educational enrollment outcomes. However, only a handful of studies acknowledge this difference between the impact on states with prior dependent coverage laws and those with no coverage laws up until the ACA. Even in states with dependent coverage provisions enacted before the ACA, the state based dependent coverage prior to the ACA had restrictions that limited coverage and denied access to dependent coverage. The ACA removed all these restrictions.

The results for education indicate changes in college enrollment for this age group. Young adults are expected to enroll in college; they could also chose to enroll at a much older age given the availability of dependent coverage up until their 26th birthday. They are more likely to enroll in a public 2-yr college as full-time and 4-yr college enrollment drops. A more detailed analysis finds increase in 2-year part-time college enrollment and a decline in 4-year full-time college enrollment. College might become more affordable for this group as they no longer have to worry about adding insurance to their overall tuition and expenses, which can make it seem a more attractive option leading to the conclusion that an educational attainment increased post reform. The freedom from job lock can also mean increased wages due to increase in education and vocational training, but also because not having ESI could also mean earning more as employers tend to shift the burden of ESI on the employees.

The ACA has added stability to an otherwise unstable group by allowing extended coverage for young adults and mandatory coverage starting in 2014. But as I write this dissertation the new administration in Washington has increased the possibility of repealing the ACA. This could mean reversing the expansion of Medicaid under the ACA to cover all those with incomes up to 133 percent of the FPL, allowing states to revert to pre-ACA guidelines for Medicaid. New proposals include Health savings accounts, high-risk pools, and block grants for Medicaid. However, these have documented disadvantages that are likely to increase the number of uninsured.[77]

Another issue that has plagued the policy and has been argued as a valid justification for repeal has been the rising costs in premiums each year and the inability of individuals to keep the same insurance plan or a physician. This has raised further questions about the long-term viability of the ACA. Despite the average increase of 25 percent in premium payments, a vast majority of individuals have also received subsidies. However, with the change in administration it is possible that the policy could no longer continue to provide a safety net to millions. While there is plenty of talk about repealing the ACA, the alternative plan presented to repeal the ACA is estimated to leave millions of Americans uninsured and making affordable care out of reach. The new plan drastically cuts subsidies to pay for health insurance and removes the individual mandate. While the new proposed plan keeps the dependent coverage provision intact, it is too early to evaluate whether changes brought on by the new plan will affect young adult health insurance coverage.

[77] Health savings accounts benefit only healthy younger individuals. Low-income earners don't make enough to benefit from them. These plans are also no insured by the FDIC and hence, are subject to risk. High-risk pools have premiums above the standard health insurance market rates; those with pre-existing conditions are excluded for at least 6-12 months, and also have lifetime and annual limit on care and prescription drugs along with high deductibles. Block grants cap yearly spending limits, and therefore, limit the number of individuals becoming eligible for coverage on state funded programs such as Medicaid.

4.3 Future research

As other insurance related changes are implemented, it becomes imperative to understand how health insurance might change the life choices that young adults make. Those who are not insured through the dependent coverage provision might ultimately be covered by the individual mandates. Additional studies could look into the change in health insurance markets when young adults enter individual market, a move that might improve the risk pool, as this age group tends to be healthier, and which could imply a lower premium and reduce overall costs of getting covered.

The research and findings from this dissertation call for future research on the impact of the individual mandate and what would it mean if the mandate was repealed. Future research can evaluate the impact of the individual mandate and whether outcomes for young adults change after it went into effect in 2014. This is a new topic and no study has been done on the impact of the individual mandate to evaluate outcomes for any age group. Starting 2014, all individuals are required to get coverage or pay a penalty While the mandate does not directly impact young adults, as many can continue to be on dependent coverage until their 26th birthday, those who don't have coverage options through their parents can now get their own coverage in the individual marketplace. They may also qualify for subsidies. These policy changes will most likely increase insurance rates in this age group. The push from the ACA to increase coverage, which takes place in a better economic climate compared to 2010, raises the possibility that some of the outcomes on health insurance coverage, employment, and education will also change. Therefore, future research should look into any changes brought on by the new mandate. Additionally, evaluating whether young adults prefer ESI to parental dependent coverage

if offered a choice could also be evaluated. If the mandate gets repealed there would be much to be gained in assessing the effect of the repeal on insurance, employment and education outcomes.

Due to some data limitations of the CPS some outcomes were not analyzed in this dissertation. These include labor and educational outcomes of young adults based on the health insurance status of their parents. This dissertation assumes young adults who become eligible for coverage will have dependent coverage as their parents are already covered. However, in reality, re-estimating outcomes for only those with available parental coverage would provide for a robust analysis. Similarly, estimating education outcomes based on parental education levels, poverty levels, and access to some kind of governmental aid would also assist in understanding the effects of the law on a in more concise way.

Since many provisions of the ACA are not fully implemented, it only makes sense to look into the future as some of the other components of the law are enacted and to evaluate the changes brought on by them. As of now, the individual mandate of 2014 has been the last major provision of the ACA. The next major provision of the law, known as the Cadillac tax does not go into effect until 2018. The Cadillac tax is a 40 percent tax imposed on insurance providers providing expensive health plans with extensive benefits to individuals and families. In 2020, the Medicare prescription drug benefit gap, also known as the "doughnut hole", is set to close[78]. Provisions such as the Cadillac tax could mean reduced private coverage and closing the doughnut hole could imply more

[78] Doughnut hole is the Medicare Part D coverage gap. This mean that after a individual and their drug plan have spent a certain amount of money for covered drugs, all costs have to be paid out of pocket for prescriptions up to a yearly limit. Once a individual reaches the yearly limit, the coverage gap ends and the drug plan pays for covered drugs again.

affordable prescription drugs. Future research looking at the long-term impacts of the ACA could examine the impact of these mandates to estimate who gets impacted and how health insurance coverage is affected.

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APPENDIX A

SUPPORTING TABLES FOR CHAPTER 1

Table 1: Prior State Mandates

State	Implementation date
Colorado	1/1/2006
Connecticut	1/1/2009
Delaware	6/1/2007
Florida	7/1/2007
Idaho	7/1/2007
Illinois	6/1/2009
Indiana	7/1/2007
Iowa	7/1/2008
Kentucky	7/15/2008
Louisiana	1/1/2009
Maine	9/20/2007
Maryland	1/1/2008
Massachusetts	1/1/2007
Minnesota	1/1/2008
Missouri	1/1/2008
Montana	1/1/2008
New Hampshire	9/15/2007
New Jersey	1/1/2006
New Mexico	7/1/2003
New York	9/1/2009
North Dakota	7/1/1995
Pennsylvania	9/1/2009
Rhode Island	1/1/2007
South Dakota	7/1/2007
Texas	1/1/2004
Utah	1/1/1995
Virginia	7/1/2007
Washington	1/1/2009
West Virginia	7/1/2007

Source: Cantor et. al. (2012)

Table 2: Total mandates by state

State	Total Mandates	State	Total Mandates
AK	37	MT	39
AL	19	NC	55
AR	46	ND	40
AZ	35	NE	47
CA	56	NH	46
CO	58	NJ	47
CT	63	NM	59
DC	27	NV	45
DE	29	NY	61
FL	49	OH	29
GA	45	OK	43
HI	24	OR	44
IA	28	PA	54
ID	13	RI	70
IL	49	SC	30
IN	36	SD	28
KS	6	TN	41
KY	47	TX	62
LA	51	UT	26
MA	48	VA	70
MD	67	VT	46
ME	53	WA	58
MI	23	WI	43
MN	65	WV	43
MO	54	WY	37
MS	31		

Source: Bunce (2012)

Table 3: List of Abbreviations

Patient Protection and Affordable Care Act	PPACA or ACA
Employer sponsored insurance	ESI
State Children's Health Insurance Plan	SCHIP
Federal Poverty Level	FPL
Common Omnibus Budget Reconciliation Act	COBRA
Center for Medicaid and Medicare Services	CMS
Current Population Survey	CPS
Survey of Income and Program Participation	SIPP
Employee Retirement Income and Security Act	ERISA
Kaiser Family Foundation	KFF

APPENDIX B

SUPPORTING TABLES FOR CHAPTER 3

Table 1: Enrollment

	2-yr FT	2-yr PT	4-yr FT	4-yr PT
PostACA	0.0229	-0.0228	0.0396*	0.00500
	(0.0194)	(0.0176)	(0.0185)	(0.0214)
Treat	0.187***	-0.109***	0.103***	-0.229***
	(0.0196)	(0.0128)	(0.0115)	(0.0183)
PostACA*Treat (DD)	-0.0192	0.0390*	-0.0543**	0.00616
	(0.0217)	(0.0192)	(0.0203)	(0.0231)

Note: Outcomes indicate, 2-yr full-time college enrollment, 2-yr part-time college enrollment, 4-yr full-time college enrollment and 4-yr part-time college enrollment. For a detailed description, see Table 3.3

Table 2: Results from multinomial logistic regression

	(2)	(3)	(4)
PostACA	0.8475***	0.8770***	0.6812***
	(0.0286)	(0.0334)	(0.0272)
Treat	0.9213***	0.4089***	0.9488*
	(0.0202)	(0.0103)	(0.0242)
PostACA*Treat (DD)	0.9680	1.0678*	1.1609***
	(0.0278)	(0.0351)	(0.0391)

Note: Outcomes presented are results from the multinomial logistic regression run as a function of difference-in-differences. The values represent the relative risk ratios (RRR) and standard errors are in parentheses. The baseline specification (1) (comparison) includes those reporting no work and no college enrollment. (2) Indicates any work and no college enrollment. (3) Indicates no work and any college enrollment. (4) Indicates any work and any college enrollment.