**Life Course Transitions
and Instability in Health Insurance Coverage**

by

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ABSTRACT

The piecemeal system of health insurance coverage in the United States is not structured to easily adapt to normal life course transitions. The typical routes by which individuals and families access insurance coverage are frequently threatened in times of change, and alternative, affordable sources of coverage are often difficult to come by. This dissertation examines the linkages between life course transitions and instability in health insurance coverage in the late 1990s and early 2000s. The three substantive chapters consider the extent to which divorce, job loss, and the transition to adulthood threaten the stability and continuity of health insurance, and how these linkages can be modified through changes in public policy. In Chapter 2, "Divorce and Women's Risk of Health Insurance Loss," I document that many women experience a significant risk of health insurance loss in the months following divorce, and that overall coverage rates remain depressed for more than two years after divorce. Chapter 3, "Job Loss and Health Insurance in the Great Recession: Did the COBRA Subsidy Work?," considers the difficulty of maintaining insurance coverage following job loss, and evaluates the effects of temporary policy change which reduced the price of purchasing COBRA through a former employer. Although workers with access to the subsidy purchased COBRA at moderately higher rates, many still experienced gaps in coverage after job loss. In Chapter 4, "Health Insurance in Young Adulthood: Less Instability Since the Affordable Care Act?," I assess changes in the level and stability in health insurance coverage of

young adults following the Affordable Care Act's expansion of parental dependent coverage up to age 26. I find that the policy change increased overall coverage rates for young adults primarily by filling gaps in coverage for those with higher-SES parents, rather than increasing coverage for the chronically uninsured. Looking forward, the full implementation of the Affordable Care Act in January 2014 may both enable greater access to health insurance for low-income individuals and families who currently face chronic barriers to coverage and enhance the security of health insurance over the life course.

CHAPTER 1

Introduction

Health insurance in the United States is not structured to easily adapt to normal life course transitions. The typical routes by which individuals and families access insurance coverage are frequently threatened in times of change, and alternative, affordable sources of coverage are often difficult to come by. This dissertation examines the linkages between life course transitions and instability in health insurance coverage. Specifically, the three substantive chapters consider the extent to which divorce, job loss, and the transition to adulthood threaten the stability and continuity of health insurance, and how these linkages can be modified through changes in public policy. Collectively, the studies have broader implications for demographers studying population dynamics and the linkages between life course transitions and social and health policies; for sociologists probing the ways in which the social systems and structures we collectively create lead to the often unequal distribution of valued resources; and for policymakers wanting to cover the uninsured.

Health Insurance in the U.S.

Health insurance in the United States, some form of which was held by approximately 85 percent of the population in 2012, comes from a complex blend of public and private sources (Cohen and Martinez 2012). Unlike in most other developed

countries, employers are the primary providers of insurance, covering just over half of the population (DeNavas-Walt, Proctor, and Smith 2012). Americans over 65 are nearly universally insured through the publicly-funded Medicare program, which also covers a small fraction of the disabled non-elderly (those who qualify for Social Security Disability Insurance). Public sources of insurance coverage—including Medicare, programs which target low-income families and children (Medicaid, CHIP, and other state programs), and insurance for military personnel, veterans, and their families— collectively insure one-fifth of the non-elderly population (Kaiser Family Foundation 2012b). An assortment of non-employer private plans provide the remainder of insurance coverage, such as group policies purchased through trade unions, professional associations, and universities, and non-group policies purchased on the private market.[1]

Paired with the rapidly rising costs of health care and the growing volatility in family and work lives, this piecemeal system results in large numbers of uninsured persons at any point in time and high volatility in health insurance coverage over the life course. Health care costs have risen substantially over the past decade, offsetting nearly all income gains for the median-income family (Auerbach and Kellermann 2011). These cost increases have made health insurance coverage more difficult to access, both inside and outside of employment relationships. Employee contributions to health insurance premiums have risen faster than wage growth, contributing to decreased take-up rates of employer-provided insurance, particularly among low-wage, young, and minority

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[1] The non-group market, also known as the individual market, is where individuals without group (typically employer-based) coverage purchase private health insurance. When individuals secure health insurance through a group (of fellow employees, for example), the health risks in the group are pooled, giving individuals in the pool more even premium costs. Non-group health insurance policies purchased on the private market tend to be priced higher (with occasional exceptions for the youngest and healthiest individuals) and often carry less comprehensive benefits.

workers (Cooper and Schone 1997; Gabel, Hunt, and Kim 1998; Gruber and Washington 2005). Premiums for coverage purchased on the non-group market have risen substantially as well (AHIP 2007, 2009). As such, the number of uninsured persons has increased over the past decade, and this increase accelerated during the recent recession (Kaiser Family Foundation 2012a). By 2012, more than 47 million Americans were uninsured (Cohen and Martinez 2012).

The risk of being uninsured is not spread evenly across segments of the population. Rather, insurance coverage in the U.S. is a heavily stratified resource, with coverage levels varying greatly by income and educational attainment. Only 28 percent of nonelderly adults without a high school diploma hold private health insurance coverage, compared to 85 percent of college graduates (Kaiser Family Foundation 2012b). And about one in three poor nonelderly Americans is uninsured, roughly six times the rate at which those with incomes greater than four times the poverty line lack health insurance (Kaiser Family Foundation 2012b). A major contributing factor to disparities in insurance coverage is the highly regressive tax exemption of premiums for employer-sponsored health insurance—by far the largest expenditure of the federal government—which disproportionately benefits higher-income workers (Gruber 2010). Nearly three-quarters of workers in high-wage occupations receive health insurance benefits, compared to about one-quarter of workers in low-wage occupations (BLS 2011).

The uninsured are also not a static population. Rather, those lacking coverage at any one point in time reflect the snapshot of a dynamic process in which many people gain and lose insurance coverage over time. Short and Graefe (2003) document that in

any given year, half to two-thirds of the uninsured cycle into or out of coverage. Insurance instability is an issue of concern because even short gaps in insurance coverage expose individuals and their families to substantial financial risks and pose a barrier to receiving medical care when needed.

Growth and Change in Life Course Transitions

Considering life course transitions is essential to understanding the dynamic composition of the uninsured population and for considering and evaluating policy responses designed to expand insurance coverage and facilitate access to medical care. Because of the piecemeal system of insurance coverage in the U.S., normal life course events frequently jeopardize the continuity of health insurance coverage, increasing the likelihood that individuals experience gaps in coverage (Quadagno 2004; Jacobs et al. 2011). Such events may include changes in income level, which modify the affordability of insurance coverage; changes in employment relationships, which may establish or sever access to group health insurance coverage; marital transitions, which may change both income level and establish or sever access to group health insurance coverage; and the transition to adulthood, which may eliminate various options for coverage (e.g., dependent coverage through a parent's employer, or Medicaid/CHIP received as a child). This dissertation examines health insurance as it relates to three common life course events—marital transitions, job transitions, and the transition to adulthood. Each has undergone important demographic changes in recent years which have implications for the distribution and continuity of health insurance coverage, and the overall insured rate in the population.

In the second half of the 20th century, patterns of marriage and divorce changed dramatically, resulting in people spending more time outside of marriage. For decades, the age of marriage has been rising (Cherlin 2010). By 2011, the median age at first marriage was 28.7 years for men and 26.5 years for women (U.S. Census Bureau 2012b). Rates of marital disruption rose significantly in the 1960s and 1970s, peaked in the 1980s, and have now plateaued at a high level; roughly half of all marriages are estimated to end in marital disruption (Goldstein 1999; Raley and Bumpass 2003). About one in five adults has ever been through a divorce, and nearly one million divorces occur each year (Kreider and Ellis 2011). Whites and college-educated people are more likely to ever marry, and also have a lower probability of divorce (Cherlin 2010). Because the shared economic resources within marriage can help facilitate access to health insurance coverage indirectly and because some spouses receive health insurance directly through a spouse's employer, the changing demography of marriage and divorce has important implications for health insurance coverage.

Also over recent decades, the U.S. labor market and that of other industrialized countries has witnessed the decline of stable long-term employment and the growth of temporary, contingent, and non-unionized jobs, particularly among less-educated workers (Smith 1997). While holding a single stable job throughout adulthood may have once been the norm, Americans born at the end of the baby boom held an average of eleven jobs between the ages of 18 and 44 (BLS 2012). The majority of jobs now last less than five years, even at middle age (BLS 2012). Part of the decline in job security is associated with the changes in the structure of the labor market, including the decline in manufacturing and unionized labor, the growth of the service sector, and the outsourcing

of some jobs to other countries (Lee and Mather 2008). Because the majority of health insurance coverage is tied to employers, the decline in job security has important implications for the stability of health insurance coverage.

Young adulthood is the phase of the life course in which individuals transition from dependence on parental resources to independence and acquisition of adult resources. Demographers have found that the timing of this transition has shifted later for young adults in the U.S. and other industrialized countries. Compared to even a decade ago, young people are taking longer to move away from home, to achieve economic independence, to get married, and to have children (Danziger and Rouse 2007; Berlin, Furstenburg, and Waters 2010). Because young adults are taking longer than in the past to secure stable, well-compensated jobs (particularly those from disadvantaged backgrounds), they are also taking longer to secure their own health insurance coverage (Levy 2007; Furstenburg 2008).

Three Papers on Life Course Transitions and Instability in Health Insurance Coverage

To investigate the linkages between life course transitions and the stability and continuity of health insurance, I analyze longitudinal data from the Survey of Income and Program Participation (SIPP). The SIPP follows a nationally representative sample of individuals for up to five years, collecting monthly data on health insurance coverage and other key variables. Because of its large sample size, the data capture a large number of life course transitions such as divorces, job losses, and college graduations. Additional information on the SIPP is provided in the substantive chapters.

Chapter 2, "Divorce and Women's Risk of Health Insurance Loss," which is co-authored with Pamela Smock, examines how women's health insurance coverage

changes after divorce. Past research has shown that single women have lower rates of health insurance coverage than married women, but the extent to which marital transitions are associated with changes in insurance coverage was previously unknown. Likely for this reason, recent policy debates surrounding health care reform have not acknowledged among the panoply of deficiencies of the current health care system that divorce jeopardizes health insurance coverage. This chapter finds that women experience a significant risk of insurance loss in the months following divorce, and that overall coverage rates remain depressed for more than two years after divorce. Health insurance loss has the potential to compound the well-documented decline in economic well-being many women experience after divorce and may threaten their health as well. Given the sustained high rates of divorce in the U.S., this issue affects tens of thousands of women each year.

Chapter 3, "Job Loss and Health Insurance in the Great Recession: Did the COBRA Subsidy Work?," considers the difficulty of maintaining insurance coverage following job loss, and evaluates the effects of a recent, temporary policy implemented to mitigate this risk. Because the majority of Americans receive health insurance through employers, job loss is the most common trigger of health insurance loss in the U.S. Although the federal COBRA law grants workers the option to purchase an extension of their employer-sponsored health insurance coverage following job separation, premiums are financially out-of-reach for many of the unemployed. As part of the American Recovery and Reinvestment Act (ARRA), the stimulus package passed in 2009, Congress established a temporary subsidy to help involuntary job losers purchase COBRA. I find that this subsidy resulted in moderate increases in COBRA utilization and small (non-

significant) increases in continuity of coverage after job loss, with the greatest effects among college-educated workers. Findings have important implications for predicting the success of subsidies for private coverage that will be made available under the Affordable Care Act, and can be instructive for developing future policies intended to help displaced workers maintain insurance coverage.

Chapter 4, "Health Insurance in Young Adulthood: Less Instability Since the Affordable Care Act?," assesses the health insurance coverage of young adults, and changes in the continuity of coverage during this period of the life course before and after a recent policy change. Young adulthood is a particularly turbulent phase of the life course in terms of geographic mobility, attachment to the labor market, and health insurance coverage. A significant proportion of young adults lose the coverage they had as children, either from their parents' policies or from public programs like Medicaid and the Child Health Insurance Program (CHIP). As a result, young adults have both the highest uninsured rate of any age group (DeNavas-Walt, Proctor, and Smith 2011) as well as the most frequent gaps in coverage (Collins et al. 2012; Schwartz and Sommers 2012; Short et al. 2012). The Affordable Care Act (ACA; 2010) required that private health plans allow young adult dependents to remain on their parents' policies up to age 26, permitting parents to cover their children for longer into early adulthood (previous age limits were typically 19 for non-students and 25 for full-time students). I find that the policy change increased overall coverage rates for young adults primarily by filling gaps in coverage for those with higher-SES parents, rather than increasing coverage for the chronically uninsured. Although these dependent coverage provisions of the ACA implemented in 2010 increased health insurance inequality in the short-term, the

implementation of the full set of ACA provisions in 2014 are expected to have a much more equalizing effect.

Considering Health Insurance Inequality

This dissertation probes how the structure of current U.S. health insurance system produces inequality in health insurance coverage before and after life course transitions, and how policy changes modify these linkages. For many years, sociologists have studied the way in which social systems and structures produce inequality in major domains such as income (Wright 1979), education (Mare 1981) and occupational status (Blau and Duncan 1967), and more recently have explored how these domains map onto inequality in other resources like wealth (Keister and Moller 2000) and health outcomes (House et al. 1994). Although rarely considered by sociologists to date, health insurance is another valuable resource, the distribution of which both reflects and compounds socioeconomic and health inequalities.

As articulated above, health insurance in the U.S. is unequally distributed by socioeconomic status, with higher-income and more highly educated people having substantially higher rates of coverage, particularly private coverage. My three substantive chapters also highlight disparities in insurance coverage by gender and marital status (unmarried women have substantially lower access to insurance coverage than married women); by employment status and occupation (workers are more likely to have insurance coverage than non-workers, but large numbers of workers still do not receive health insurance through their jobs); and by age (young adults have the lowest levels of insurance coverage of any age group).

Each of the chapters also addresses how instability in coverage during the three life course transitions (divorce, job loss, transition to adulthood) differs by social class. In interpreting the outcomes, it is important to consider who is included in and who is omitted from the comparison at hand. For example, Chapter 2 finds women with moderate family incomes before divorce are most likely to lose health insurance coverage after divorce. However, this finding does not imply they have lower absolute levels of insurance coverage after divorce than lower-income women. Rather, lower-income women are less represented in the risk set of those who *can* lose insurance after divorce, because they have lower baseline levels of coverage. Chapter 3 explicitly restricts the analysis sample to workers with employer-sponsored insurance in the last month on the job prior to involuntary job loss. Only one-quarter of involuntary job losses met this restriction, so the analysis sample represents a substantially more advantaged group of involuntary job separators compared to the overall population of involuntary job separators, many of whom are chronically uninsured.

Furthermore, more disadvantaged individuals are more likely than others to experience destabilizing life course events like divorce and job loss that may jeopardize insurance coverage. Less-educated women have higher rates of marital disruption compared to others (conditional on marital entry; Cherlin 2010), and less-educated workers have higher levels of job instability (Farber 2011). Everyone experiences the transition to adulthood, but disadvantaged young adults have particular difficulty gaining stable employment and acquiring sufficient resources to support themselves during this life phase (Danziger and Ratner 2010). Partially as a result, Chapter 4 finds substantially

lower rates of insurance coverage and greater levels of insurance instability among young adults from disadvantaged backgrounds.

The unequal distribution of health insurance coverage has the potential to compound existing economic inequalities. This resource helps to pay for routine medical care and protects individuals financially in the event of a major illness or injury. Being without coverage can be financially problematic; uninsured Americans have high levels of financial stress and many carry significant medical debt (Schoen et al. 2011). It may also compound health inequalities. A substantial body of research in sociology, social epidemiology, and public health has found that individuals with more income and education live longer and healthier lives (Adler 2001). Although these researchers have concluded that differential access to medical care is not the main cause of these health disparities (Adler 2001; Schoeni et al. 2008), nevertheless foregoing preventative medical care and lacking access to medical services when health problems arise may potentially exacerbate medical conditions and have negative long-term health ramifications for the uninsured. Indeed, the uninsured tend to experience significantly worse health and die at younger ages compared to their peers (Institute of Medicine 2002). Furthermore, recent quasi-experimental and experimental studies consistently find positive and often significant effects of health insurance on health outcomes, especially for low-income adults, those with chronic health conditions, and other vulnerable populations (Levy and Meltzer 2008; McWilliams 2009; Finkelstein et al. 2011).

Looking Forward

The health care system is in the midst of a period of substantial change, brought about by the passage of the recent health care reform law, the Affordable Care Act (ACA;

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March 2010). One of the major aims of this law is to achieve near-universal coverage of the population. Multiple provisions of the ACA were designed to further this goal, including the expansion of Medicaid eligibility to those with incomes up to 133 percent of the federal poverty line; and the provision of premium subsidies to help those with incomes up to 400 percent of the federal poverty line purchase private health insurance through new state-run health insurance exchanges. These major provisions, scheduled to go into effect in January 2014, are expected both to enable greater access to health insurance for low-income individuals and families who currently face chronic barriers to health insurance coverage and to enhance the stability of health insurance over time.

Chapters 2 and 3 in this dissertation help to identify current disparities in insurance coverage by marital status, and document pre-health-reform levels of instability in insurance coverage following divorce and job loss. After the new health system is up and running, new studies will be needed to measure how much these disparities have attenuated and the extent to which the reformed health system has reduced the risk of insurance loss following these common life course events. Chapter 4 explicitly examines the changes to young adult health insurance before and after an early policy change (implemented in September 2010) under the ACA that targeted 19- to 25-year-olds. Although this early policy change reduced the instability of health insurance coverage for some young adults, many—particularly those from more disadvantaged backgrounds—continue to lack stable coverage. After the ACA is fully implemented, additional research will be needed to examine how much further young adults' health insurance instability has been reduced and whether this resource is distributed more equally among young adults from different family backgrounds.

Introduction

Social scientists have accumulated a large body of evidence showing that married individuals tend to have better health than their never married and previously married counterparts (e.g., Waite and Gallagher 2000; Liu and Umberson 2008). Marriage is associated with lower mortality rates, better self-rated health, and lower prevalence of specific conditions such as heart disease (Carr and Springer 2010; Koball et al. 2010). One factor contributing to these marital health disparities is selection: healthier people are more likely to get and stay married (Canady and Broman 2003; Sbarra and Nietert 2009). But several studies have also found that health may deteriorate, at least temporarily, following marital disruption (Priegerson, Maciejewski, and Rosenheck 1999; Williams and Umberson 2004; Lorenz et al. 2006; Hughes and Waite 2009; Liu 2012).

The two primary pathways through which marital disruption is thought to impact health are stress and the loss of health-enhancing resources (Carr and Springer 2010). Our paper builds on this body of work by examining changes in health insurance coverage following marital disruption. Health insurance coverage has received surprisingly little

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[2] Chapter 2 is co-authored with Pamela J. Smock. A version of this chapter appears as: Lavelle, Bridget and Pamela J. Smock. 2012. "Divorce and Women's Risk of Health Insurance Loss." *Journal of Health and Social Behavior* 53:413-431. doi: 10.1177/0022146512465758

attention in discussions regarding the negative effects of marital disruption on health outcomes. The sparse research on marital status and health insurance has been acknowledged in recent reviews addressing the marriage-health link and multiple scholars have called for more information on the topic (Priegerson, Maciejewski, and Rosenheck 1999; Wood, Goesling, and Avellar 2007; Liu and Umberson 2008; Carr and Springer 2010; Koball et al. 2010).

Loss of health insurance coverage may help to account for the health declines that some individuals experience following marital disruption. Health insurance coverage is a resource more available within than outside of marriage, especially for women, and arguably one which is health-enhancing (Bernstein et al. 2008; McWilliams 2009). It facilitates access to medical care, which may in turn promote healthy behaviors (e.g., medical professionals may encourage exercise or discourage smoking). Losing health insurance may also induce additional stress during the process of marital disruption. Its loss signifies a loss of financial protection during a period of already heightened financial vulnerability, especially for women. Past research finds that uninsured women frequently worry about getting sick, and about whether they will be able to see a doctor, afford medications or pay their medical bills if they do (Vuckovic 2000).

To understand the role health insurance may play in the poorer health of the previously married, we must first document the changes to health insurance coverage following marital disruption. At present, the little research available shows that married women are more likely than others to be insured (Bernstein et al. 2008). But little is known about how transitions in marital status are associated with changes in coverage.

Using nationally representative panel data from the Survey of Income and Program Participation (SIPP), we provide the most comprehensive portrait to date of what happens to women's health insurance coverage upon divorce. We first document women's rates of health insurance coverage and the sources of this coverage both before and after divorce. We then test whether women tend to lose coverage after divorce, identify characteristics that heighten or buffer this risk, and examine the duration of observed effects. Our analytic approach exploits the strengths of panel data to help account for selection. Observed differences in health insurance coverage between married and divorced women shown in previous studies may result from the greater disadvantages of women who divorce relative to those remain married (see Smock, Manning, and Gupta 1999). Our fixed-effects models control for a set of observed time-varying characteristics, as well as stable unobserved characteristics, which may be correlated with both divorce and insurance coverage.

Background

In the current U.S. health system, non-elderly Americans access and pay for health care through a fragile patchwork of employer-sponsored group insurance policies, individual health plans purchased on the private market, and public programs. As a result, life course events such as job transitions, marital transitions, and the onset of health problems allow individuals to slip through the cracks (Quadagno 2004). Multiple studies have documented that job losses frequently trigger insurance loss (e.g., Gruber and Madrian 1997). In contrast, very little is known about how marital transitions relate to health insurance coverage.

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Most current knowledge on marital status and health insurance coverage is based on cross-sectional data (see Short (1998) for an exception). These studies find that unmarried women are between 1.5 and 2 times as likely as married women to be uninsured, and when insured, are more likely to rely on public insurance programs like Medicaid (Jovanovic, Lin, and Chang 1993; Meyer and Pavalko 1996; Bernstein et al. 2008; Montez, Angel, and Angel 2009). Observed differentials in insurance coverage by marital status may result from the higher likelihood of divorce among women with lower levels of socioeconomic resources or other unobserved differences.

But past research indicates that women who divorce not only start out with fewer resources than their counterparts that remain married, they also experience substantial declines in income after divorce, far greater than their spouses (Smock, Manning, and Gupta 1999). This study extends the economic consequences of divorce literature to examine the extent to which women lose another key economic resource—health insurance. As outlined in the next two sections, considering insurance loss can elaborate our understanding of the two primary mechanisms whereby marital disruption is thought to impact health—through the loss of health-enhancing resources and the stress of divorce.

The Loss of Resources Following Divorce

The loss of economic resources after divorce experienced by many women is predicated on their poorer compensation in the labor market relative to men and their continued economic dependence within marriage (Bianchi, Subaiya, and Kahn 1999; Smock, Manning, and Gupta 1999). These factors may similarly jeopardize women's health insurance coverage in the event of marital disruption.

One-quarter of women in the United States younger than 65 receive dependent health insurance coverage through the benefits package of a spouse or other family member, substantially higher than the dependent coverage rate for men (Kaiser Family Foundation 2011).[3] Part of this differential comes from married women's lower rates of labor force participation. Another part is because women tend to work in jobs and occupations with poorer fringe benefits than their husbands (Currie 1997). Women also frequently decline health insurance coverage through their own employers and instead elect coverage through a husband's employer, presumably because they assess this coverage to be more comprehensive or a better value (Buchmueller 1997).

Women may lose health insurance after marital disruption both directly through the loss of dependent coverage or indirectly through their inability to access or afford other forms of coverage. The federal COBRA law grants former spouses the option to temporarily purchase an extension of dependent coverage for up to 36 months, but premiums are high (nearly $500 per month for individual coverage in 2011; Claxton et al. 2011). Financial hardship may hinder women's ability to maintain uninterrupted insurance coverage, making it difficult to purchase COBRA or to continue paying premiums for coverage through their own employers or for private market policies. But despite women's substantial economic losses following divorce, few become eligible for public coverage. As of 2012, Medicaid, the state-run health insurance program for low-income people, was limited to parents with incomes (often substantially) below the poverty line in two-thirds of states, and was available to low-income childless adults in only nine states (Kaiser State Health Facts 2012). Medicare, the federal health insurance

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[3] Dependent health coverage comes mainly from spouses' employers. However, young adults may be eligible for health insurance through parents' employers and some cohabiting women have access to domestic partner benefits.

program for the elderly and disabled, is rarely available because most divorces occur before retirement age and few meet stringent disability standards.

Like the loss of economic and other health-enhancing resources after divorce, the loss of health insurance may harm women's health. Compared to those with coverage, uninsured adults experience significantly worse health outcomes and die at younger ages (Institute of Medicine 2002). Recent quasi-experimental and random assignment studies consistently find positive and often significant effects of health insurance on health outcomes, especially for low-income adults, those with chronic health conditions, and other vulnerable populations (Levy and Meltzer 2008; McWilliams 2009; Finkelstein et al. 2011). Health insurance loss is also associated with subsequent declines in health (Baker et al. 2002).

Health insurance may preserve health in large part because it facilitates access to more and higher-quality health care services; this is the primary mechanism articulated in the health economics and public health literatures (Hadley 2003; McWilliams 2009; Finkelstein et al. 2011). Uninsured individuals are more likely than those with coverage to postpone or forego medical checkups, prescribed medications, and other needed medical care, and may receive poorer quality care when they do seek medical attention (Berk, Schur, and Cantor 1995; Ayanian et al. 2000; Baker, Shapiro, and Schur 2000; Institute of Medicine 2002; Jovanovic, Lin, and Chang 2003; McWilliams 2009). If some women become uninsured after divorce and subsequently skip medications or forego visits to the doctor, this could compound existing health problems and lead to deteriorating health over time.

Health insurance may also encourage healthy behaviors. Employer-based health plans are increasingly tied to wellness programs that encourage participants to quit smoking, exercise and lose weight (Baicker, Cutler, and Song 2010). Losing health insurance may also eliminate the monitoring of one's health by medical professionals, making it less likely that one will take timely steps, for example, to change diet and exercise in response to high blood pressure.

<p style="text-align:center;">*The Stress that Accompanies Divorce*</p>

The second major reason posited to explain why health may decline in the wake of divorce is that the stress of marital disruption depletes both psychological and physical health (Johnson and Wu 2002; Williams and Umberson 2004). Becoming uninsured after divorce may compound the other stresses of the divorce process, potentially further damaging health. For those experiencing financial hardship and medical issues simultaneously, losing insurance coverage after divorce may initiate the need to make stressful tradeoffs such as either paying rent or complying with a doctor's orders for medication or treatment.

Whether or not one needs immediate access to medical services, health insurance may enhance well-being by providing an increased sense of security. It reassures that one will have access to medical services should the need arise, and that in that event, one will be financially protected (Hahn 1993). Uninsured Americans have high levels of financial stress and many carry medical debt, which itself is strongly associated with stress (Drentea 2000; Schoen et al. 2011).

A recent ethnographic study of uninsured women illustrates how the stress of being uninsured can harm women's health (Vuckovic 2000). Women in the study

frequently worried about getting sick and whether they would be able to see a doctor or cope financially if they did. One respondent summed it up: "Worry wears you down and you don't even realize it" (199).

The Present Study

Using a recent (1996-2007) longitudinal (up to 48 months per respondent) dataset, we provide the most comprehensive portrait to date of what happens to women's health insurance coverage upon divorce. We focus on divorce rather than marital disruption (separation and divorce) because most separations are informal rather than legal and do not change one's eligibility for dependent coverage.

We start by documenting the extent to which women who remain married and those who divorce differ on baseline (pre-divorce) characteristics and rates of health insurance coverage. We then examine descriptive estimates of total changes in health insurance coverage after divorce. Next we employ multivariate fixed-effects models to fulfill three additional research goals. Our first goal is to estimate the overall association between divorce and women's health insurance coverage, net of both measured (time-varying) and unmeasured (time-invariant) characteristics. By using women's pre-divorce insurance coverage as their own 'counterfactuals,' we control for those factors that are stable but not measured in SIPP (e.g., unmeasured aspects of family background, or 'taste' for insurance coverage). Our second goal is to determine whether the association between divorce and health insurance coverage is stronger for some groups of women than for others (subgroup heterogeneity). We consider factors that may moderate a woman's risk of insurance loss after divorce such as the source of coverage she has while married, her employment status, job tenure, age and health status. Our third goal is to

determine whether the association between divorce and health insurance wanes over time as women adjust to life after divorce (time heterogeneity).

Data and Methods

Data

We analyze pooled data from the three most recent complete panels of the Survey of Income and Program Participation (1996, 2001, and 2004), a series of longitudinal surveys administered by the Census Bureau. Each panel follows a large nationally representative clustered sample of civilian non-institutionalized households, and interviews household members every four months for between three and four years. Respondents are asked about core topics including demographic characteristics, labor force participation, income sources, program participation and health insurance coverage, reporting monthly data for each month since the prior interview.

The SIPP has three key advantages for studying divorce and changes in health insurance coverage. First, it follows individuals over time whether or not they remain in the original sampled household, essential for a study on marital transitions. Second, it allows us to construct a monthly calendar of marital and insurance history for a large nationally representative sample of women for a period of up to 48 months. For women who experience both divorce and insurance loss, this temporal detail allows us to determine precisely which event came first and how much time elapsed between the two. Third, whereas many datasets lack detailed information on sources of health insurance, SIPP data identify whether a private employer-based insurance policy is held in a woman's own name or in her spouse's name. This information enables us to examine

whether the source of a woman's insurance prior to divorce impacts her risk of insurance loss following divorce.

Together, the three SIPP panels cover the period from 1996 through 2007. The analytic sample includes 54,541 women who remain married and 1,442 women who divorce across the data collection period.[4] This sample includes original female sample members between the ages of 26 and 64 (no longer eligible for dependent coverage from parents, and not yet eligible for Medicare) observed as married in at least one month of the panel. Women enter the analysis sample in the first month in which they are married and in the valid age range (for many, the first month of the panel; we refer to this as the baseline month). Sample members who turn 26 or who turn 65 over the course of the panel are retained in the sample, but only contribute person-months while in the valid age range. Those who become widowed (1% of sample members) are censored in the month of husband's death. Women who divorce and then remarry are censored in the month of remarriage.[5] On average, women who divorce contribute 20.5 pre-divorce person-months and 14.0 post-divorce person-months.

As with any longitudinal data set, some attrition of the sample occurs over time. For example, at six months after divorce, we observe 997 of the 1,442 total women who divorce in our analysis sample. 18.4 percent of the original sample is censored before six months after divorce (because divorce occurred fewer than six months before the end of the panel or due to age or remarriage), 8.6 percent attrite before six months after divorce, and 3.9 percent have a missing time point at six months after divorce. To gauge the effect

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[4] Sample sizes reflect minor cleaning of the longitudinal marital status data for rare inconsistencies. Cleaning affected less than 1 percent of the total sample and less than 5 percent of the sample of women who divorce. Results presented are nearly identical to those using the raw marital status data.
[5] As a robustness check, we re-ran analyses including person-months of remarriage and controlling for remarried status; results were very similar.

of attrition on estimates, we re-estimated all analyses using final full-panel weights that adjust for attrition, available for slightly fewer than half of our study sample of women who divorce (676). Patterns of findings using the full analysis sample with baseline month weights or the reduced sample with attrition-adjusted panel weights are very similar. Final analyses use the full analysis sample with baseline weights to preserve statistical power.

Measures

Health insurance. The main analyses examine health insurance coverage as the key outcome variable. For each month, respondents report whether they are insured, and if so, by what type of coverage. Based on responses, we code a woman's health insurance coverage into five categories: (1) job-based coverage through a woman's own job; (2) job-based coverage through her husband's job; (3) other private coverage; (4) public insurance (Medicaid or Medicare)[6]; and (5) uninsured. For sake of simplicity and to minimize measurement error, coverage types are coded hierarchically; a woman who reports more than one type is coded as the first to appear on the above list. Job-based coverage includes insurance policies purchased through or received from a current employer, a former employer, a union, or the military, and held in a woman's own name or that of her husband. Other private coverage consists primarily of individual insurance policies purchased on the private market, but also includes a small number of cases in which employer-based coverage is accessed through a non-spouse family member or an

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[6] Although the SIPP has generally high reporting rates of public benefits relative to other surveys (Meyer, Mok, and Sullivan 2009), we coded an alternative version of the health insurance variable, re-categorizing any woman receiving TANF, SSI, or SSDI as being on Medicaid if she originally reported being uninsured, because these women may qualify as categorically eligible. Robustness analyses demonstrated little to no effect of the correction for under-reporting Medicaid on study results. Final analyses use the original self-reported values of health insurance status.

individual outside of the household. In many analyses, we collapse job-based and other private coverage into the larger category of private coverage (1, 2 or 3). Some analyses dichotomize insurance status, examining whether women had any coverage (1, 2, 3 or 4) or were uninsured (5).

Marital transitions. By design, all women in our analysis sample are married at baseline. The marital transition of interest, divorce, occurs when women revise their marital status to divorced. Nearly half of women who divorce report at least one month of marital separation preceding divorce. Although separation rarely initiates a change in eligibility for dependent health insurance coverage, it may be associated with residential and employment changes and decreased sharing of financial resources between spouses. For this reason, all multivariate models control for separation.

Employment. Women's labor force attachment also strongly predicts her health insurance status (Montez, Angel, and Angel 2009). As such, multivariate models control for women's employment status and job tenure. Employment status is tabulated in three categories: full-time (>=35 hours per week); part-time (0-34 hours per week); or not working. Because many employers have waiting periods before which new employees are eligible for health insurance, we dichotomize job tenure, indicating whether a woman has worked for the same employer for more than six months (Claxton et al. 2011). In addition to employment status and job tenure, descriptive analyses also examine women's (annualized) earnings in the baseline survey month, inflation-adjusted to 2010 real dollars using the Consumer Price Index for All Urban Consumers (CPI-U).

Health. We measure health in two ways. First, we code a woman's self-rated health (1=good, very good, or excellent; 0=poor or fair) at her earliest available time

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point prior to divorce (or censoring, if applicable). Using this variable, we consider how a woman's changes in health insurance after divorce relate to her pre-divorce health status. Self-rated health serves as a good summary measure of baseline health status because it captures both manifest illnesses and symptoms of conditions not yet diagnosed, and it predicts a range of subsequent health outcomes including physician assessments of health and mortality (Idler and Benyamini 1991; Ferraro and Farmer 1999). Second, we construct a monthly indicator for disability. This variable is equal to one if women responded yes to "hav[ing] a physical, mental, or other health condition that limits the kind of work [she] can do," and zero otherwise. All multivariate models control explicitly for time-varying disability status and implicitly for baseline health status (captured by fixed effect).

Marital characteristics. Descriptive analyses examine the baseline prevalence of first marriages and the length of marriages for women in the sample.

Demographics. A woman's overall economic situation is measured by her total family income relative to the poverty threshold for a family of that size and composition. In 2010, for example, the federal poverty line (FPL) for a family with two adults and two children was $22,113. The income-to-poverty ratio is then collapsed into four categories: poor (<100% FPL), near-poor (100-200% FPL), moderate-income (200-300% FPL), and higher-income (>300% FPL). Descriptive analyses consider the baseline differences between women who remain married and women who get divorced in age (years), poverty status (<100% FPL), presence of own children in the household (any children <18 years old), as well as women's education (less than high school, high school, some college, college graduate) and race/ethnicity (non-Hispanic white, non-Hispanic black,

Hispanic, and other). Multivariate models include monthly (time-varying) measures of age, children in the household, and income-to-poverty ratio.

Analytic Strategy

We utilize the longitudinal variation in health insurance coverage and marital status to estimate the association between divorce and changes in women's health insurance coverage. Because women who divorce differ from those who remain married, loss of coverage cannot be inferred from coverage differentials between married and divorced women in cross-sectional data. We use fixed-effects models to remove from our estimates as much selection bias as possible. Women who divorce are more socioeconomically disadvantaged than those who remain married, and may also differ on unobserved characteristics such as planning aptitude or 'taste' for health insurance coverage (Smock, Manning, and Gupta 1999). Fixed-effect models remove confounding from these and other stable, individual characteristics.

The general model specification is $p_{it} = \alpha_i + \beta X_{it} + \varepsilon_{it}$, where the dependent variable, p_{it}, represents the latent probability of individual i being insured in month t. This probability is modeled as a linear function of a vector of time-varying covariates including divorced status, X_{it}, an individual-level fixed effect, α_i, and a person-month random error, ε_{it}. Additional time-varying covariates include: separated status, full-time employment, job tenure, disability, age, any children, income-to-poverty ratio, as well as year and region.[7] We choose the linear probability model (LPM) specification primarily for ease of interpretation; fixed-effect logit analyses generate the same general findings.

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[7] As with all studies using this analytic approach, omitted factors that change across time and that are correlated with both divorce and health insurance coverage could result in bias in the estimation of our divorced status coefficients.

All analyses are run in Stata and weighted, and we utilize robust standard errors to account for clustered data. Our approach is consistent with Gruber and Madrian (1997), who utilize fixed-effects linear probability models to examine how job loss predicts health insurance loss.

We run three sets of multivariate models, which correspond to our three primary research questions. First, we examine how women's insurance coverage changes after divorce, holding other factors constant. Next, we add interaction effects to examine how various factors moderate the association between divorce and insurance loss. Last, we examine this association longitudinally by predicting insurance coverage from time since divorce.

One limitation of our study is that the SIPP does not measure overall health status at regular intervals. While controlling for variation in overall health over time would be ideal, we believe its omission is unlikely to substantially bias results for three reasons. First, by controlling for a time-varying indicator of work-limiting disability, major changes in health—those most likely to impact health insurance coverage—are captured in the analysis. Second, fixed-effects models control for stable aspects of overall health. If women who divorce are in generally poorer health (as has been suggested, but is not evident in these data), this will be captured by the fixed effect and not bias estimates. Third, while it is plausible that the negative impact of divorce on physical health documented in previous studies may eventually impact health insurance coverage, it is unlikely to happen in the relatively short timeframe of the SIPP panels. Furthermore, past studies suggest that divorce has delayed, not immediate, effects on physical health

(Lorenz et al. 2006), whereas our results show immediate, not delayed, effects of divorce on insurance coverage.

Results

Baseline Descriptives

Table 2.1 compares the baseline characteristics of women who remain married with those who divorce. Consistent with past studies, the two groups differ. Women who go on to divorce are less likely to be in a first marriage (64.3 vs. 77.0%); have been married a shorter time, on average (9.7 vs. 15.6 years); and are more likely to have children (60.9 vs. 50.3%) compared to women who remain married. They are also younger (37.8 vs. 42.1 years), have lower levels of education (20.8 vs. 27.7% college graduates), and are more likely to be poor (12.7 vs. 8.2%). There are no statistically significant baseline differences in self-rated overall health status or disability by marital trajectory, although the limited variability in these dummy variables may mask health differences in the two groups found in previous studies (e.g., Canady and Broman 2003). Women who go on to divorce are more likely to work full-time (59.4 vs. 51.1%) compared to women who remain married, yet exhibit shorter job tenure. While the average earnings for women who divorce is lower than for women who remain married, the difference does not attain statistical significance.

Women who go on to divorce may be more likely to work full-time at baseline for multiple reasons. Some scholars have suggested that women's economic independence reduces their incentive to remain married (Becker 1981), but this theory has received little empirical support (Oppenheimer 1997). Although wives who contribute a larger

Table 2.1 Baseline Descriptives by Marital Trajectory

	Women Who Remain Married	Women Who Divorce	Diff.[a]
Marital Characteristics			
First Marriage	77.0%	64.3%	***
Length of Marriage (years)	15.6	9.7	***
Employment			
Status			
Full-Time	51.1%	59.4%	***
Part-Time	17.0%	15.2%	
Not Employed	31.9%	25.3%	***
Job Tenure > Six Months			
Full-Time Workers	89.9%	85.6%	**
Part-Time Workers	83.6%	76.2%	*
Earnings (2010$)			
Full-Time Workers	$42,005	$40,398	
Part-Time Workers	$18,584	$17,498	
Self-Reported Health			
Good, Very Good or Excellent[b]	89.8%	89.8%	
Disabled	9.2%	10.4%	
Demographics			
Age (years)	42.1	37.8	***
Poor (<100% Federal Poverty Line)	8.2%	12.7%	***
Any Children	50.3%	60.9%	***
Education			
Less Than High School	10.9%	9.8%	
High School	29.1%	30.3%	
Some College	32.2%	39.0%	***
College Graduate	27.7%	20.8%	***
Race/Ethnicity			
NH White	75.2%	76.3%	
NH Black	7.5%	9.0%	
Hispanic	11.3%	10.3%	
Other	6.0%	4.5%	**
N (persons)	54,541	1,442	

Notes: Data reflect characteristics of sample members at baseline, at which point all women are married. Sample size reported reflects total sample, before dropping missing cases in each analysis. All variables presented have less than 10% missing, with the exception of self-reported health (14.4%) and length of marriage (12.6%); neither is used in multivariate models, except interaction models in Table 2.4. [a]Heteroscedasticity-robust t-tests are weighted and adjusted for the SIPP's clustered sampling design. [b]Measured at earliest available timepoint prior to divorce or censoring.
*p<.05; ** p<.01; ***p<.001 (two-tailed tests)

percentage to family income are more likely to divorce, the association becomes insignificant after accounting for gender ideology (Sayer and Bianchi 2000). On the other hand, women who anticipate divorce may prepare for economic independence by increasing their labor supply (Johnson and Skinner 1986). Rogers (1999) documented that increasing marital discord raises the odds that non-working women will enter the labor market. Although we do not observe a substantial increase in women's employment until the month of divorce in our data, we control for monthly employment status in all multivariate models to take account of changing employment situations.

Overall, Table 2.1 suggests that women who divorce are more socioeconomically disadvantaged than women who remain married. This is consistent with prior studies (Amato 2010; Smock, Manning, and Gupta 1999) and implies that selectivity underlies some of the observed differences in health insurance between married and divorced women.

Insurance Coverage by Marital Status

Women who get divorced are less likely to have health insurance coverage compared to those who remain married, even while married. But their probability of being uninsured climbs even higher following divorce.

Table 2.2 displays health insurance profiles by marital trajectory. The first two columns compare the baseline insurance coverage for women who remain married and women who divorce. At baseline, 11.6 percent of women who remain married are uninsured, compared to 15.9 percent of women who go on to divorce. Women who divorce are also less likely to be covered by private insurance at baseline (78.5 vs. 84.4%) and more likely to have public insurance such as Medicaid (5.6 vs. 3.9%). Additionally,

Table 2.2 Insurance Coverage by Marital Status

	Women Who Remain Married	Women Who Divorce		Women Who Divorce Insured at Baseline	
	Baseline	Baseline	Six Months After Divorce	Baseline	Six Months After Divorce
Insured					
Job-Based, Own Job	36.0%	42.4%	55.0%	50.5%	60.7%
Job-Based, Husband's Job	40.8%	28.9%	0.0%	34.4%	0.0%
Other Private	7.6%	7.2%	12.2%	8.5%	13.8%
Public	3.9%	5.6%	10.3%	6.6%	8.7%
Uninsured	11.6%	15.9%	22.5%	0.0%	16.8%
Net Loss of Coverage			6.6%		16.8%

Notes: Using heteroscedasticity-robust two-sample *t*-tests, all baseline differences between women who remain married and women who divorce found to be significant (p<.05) except for other private coverage. All pre-post divorce differences significant (p<.05) using paired-sample *t*-tests on reduced sample that included women with non-missing data at both timepoints (N=997; percentages shown for this sample).

those with private coverage are less likely to rely on husbands' health plans at baseline, and more likely to receive coverage through their own jobs.

Compounding divorced women's lower baseline probabilities of insurance coverage, some women lose insurance coverage after divorce. Women are 6.6 percent less likely to be insured six months after divorce than they had been before divorce. If we consider only the subgroup of women insured at baseline, nearly 17 percent are uninsured six months after divorce.

The proportion losing coverage would be greater if some women were not able to switch from private to public coverage. Six months after divorce, 10.3 percent of women hold public insurance coverage, compared to 5.6 percent at baseline. More women also acquire their own employer-based coverage after divorce. The majority of women insured through their own jobs six months after divorce were employed at the same job prior to

divorce, although some increased their hours from part- to full-time employment (analyses not shown).

Partitioning the sample by pre-divorce source of insurance coverage demonstrates substantial heterogeneity in the loss of coverage following divorce (not in table). In particular, nearly one-quarter (23.2%) of women insured as dependents on a husband's insurance policy at baseline become uninsured by six months after divorce, more than double the rate of women with their own employer-based health insurance at baseline (10.6%).

The risk of insurance loss also differs by a woman's family income at baseline, and the magnitude of economic loss she experiences after divorce (not in table). Women who experience the greatest economic losses after divorce (in terms of income-poverty ratio) are most likely to lose health insurance coverage. Significant declines in the probability of holding health insurance occur only for women from moderate- or higher-income families (> 200% FPL). The loss of private coverage experienced by low-income women is largely offset by their take-up of public coverage. In contrast, few moderate-income and higher-income women who lose private coverage can access public coverage because most states restrict Medicaid to families with incomes less than twice the poverty line (Kaiser State Health Facts 2012).

Changes in Insurance Coverage after Divorce

Women are less likely to be insured after divorce than before. Net of changes in employment, economic resources and other factors, divorce leads to an approximately 8 percentage point decline in women's private health insurance coverage, and an increase

of 3 percentage points in women's public health insurance coverage, for a total drop of 5 percentage points.

Table 2.3 presents a series of six multivariate fixed-effects models examining the relationship between divorced status and the likelihood of holding any insurance coverage (Models 1 and 2), private coverage (Models 3 and 4), and public coverage (Models 5 and 6), net of other factors. These models compare each woman's health insurance coverage in the months before divorce with the same woman's coverage in the following months.

Model 1 estimates the gross change in health insurance coverage after divorce. Compared to when they were married, divorced women are six percentage points less likely to have any type of health insurance. The addition of time-varying covariates in

Table 2.3 Changes in Insurance Coverage after Divorce: Evidence from Fixed-Effects Models

	Any Insurance		Private Insurance		Public Insurance	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Divorced	-.063 ***	-.046 ***	-.091 ***	-.076 ***	.028 ***	.031 ***
Covariates						
Separated		-.008		-.035 *		.026 **
Full-Time Work		.017		.042 **		-.024 **
Job Tenure > Six Months		.079 ***		.091 ***		-.012
Disabled		.068 *		.009		.059 *
Age		.003		-.002		.004
Any Children		.058 **		.024		.033 *
Income-to-Poverty Ratio						
Poor (<100% FPL[a])		-.113 ***		-.149 ***		.035 *
Near Poor (100-200% FPL)		-.072 ***		-.065 ***		-.007
Moderate Income (200-300% FPL)		-.023 *		-.013		-.009 *
Higher Income (>300% FPL)		---		---		---
Constant	.855 ***	.617 ***	.781 ***	.715 ***	.074 ***	-.106
N (persons)	1,410	1,410	1,410	1,410	1,410	1,410
N (person-months)	45,209	45,209	45,209	45,209	45,209	45,209

Notes: Sample includes person-months from women who divorce in 1996, 2001, and 2004 SIPP. Results based on weighted LPM models with robust standard errors. Coefficients for survey year and region fixed effects in Models 2, 4, and 6 not shown. [a]Federal Poverty Line.
*p<.05; ** p<.01; ***p<.001 (two-tailed tests)

Model 2 (including year and region fixed effects) attenuates the main effect by less than two percentage points. Findings show that when women have children in the household, when they are employed in stable jobs, and when they are disabled, they are more likely to be insured. Household financial resources are also important. When women are living in poverty, they are 11 percentage points less likely to have health insurance relative to when their incomes are more than three times the federal poverty line, holding other factors constant.

Models 3 through 6 examine private and public insurance separately. As Model 4 shows, after divorce, women are 8 percentage points less likely to have private insurance coverage than before, net of other factors. Results suggest that employment status, job tenure and financial resources are more strongly associated with private insurance coverage than with the overall probability of any coverage. The table also shows that separated status has a negative impact on women's private health insurance coverage. Rather than a single event, divorce may be best thought of as a longer process during which partners may prepare for and adjust to the impending divorce in the months prior to its occurrence (Amato 2000). For example, during this pre-divorce period partners may move out of the house and/or change jobs, both of which could be associated with instability in health insurance coverage. Individuals may also remove estranged spouses from employer-based health plans during annual open enrollment periods, even prior to any legal termination of eligibility for dependent coverage.

In contrast to private insurance, women's probability of holding public health insurance increases after divorce. Women are 3 percentage points more likely to have public health insurance coverage after divorce than before, net of other factors. When

women have children, are disabled, are poor, or are not working full-time they are more likely to hold public insurance coverage, consistent with eligibility requirements.

Changes in Insurance Coverage after Divorce: Subgroup Heterogeneity

To examine heterogeneity in the relationship between divorce and health insurance changes, we estimate a second series of models in which the divorced status dummy variable is fully interacted with time-invariant characteristics of interest (implicitly, the omitted comparison group is 'still married'). Table 2.4 presents these results. Each model includes the same covariates as the previous set of models.

Results indicate that some types of insurance coverage are more vulnerable to loss than others. Women with employer-based insurance in their own names before divorce are largely, although not fully, protected. In contrast, women insured as dependents through a husband's employer at baseline face a 14 percentage point decrease in overall probability of coverage, net of other factors, four times as large as the drop experienced by women with employer-based insurance in their own name. There is also a considerable risk of loss associated with other forms of private coverage (17 percentage point decrease; may be difficult to afford after divorce), and with public insurance coverage as well (13 percentage point decrease).

This magnitude of loss of public coverage is surprisingly high, given that women generally experience economic declines after divorce. Several factors could explain this finding. First, because divorce is a turbulent time of transition, some women may fail to recertify their eligibility. Second, some women may lose eligibility for Medicaid if they enter the labor market or increase their earnings levels after divorce, as documented by a recent study (Tamborini, Iams, and Reznik 2011), or if they move to states with less-

Table 2.4 Heterogeneity in Changes in Insurance Coverage after Divorce: Subgroup Interactions with Divorced Status

	Any Insurance	Private Insurance	Public Insurance
Insurance Status at Baseline			
Job-Based, Own Job	-.035 **	-.052 ***	.017
Job-Based, Husband's Job	-.136 ***	-.194 ***	.058 ***
Other Private	-.167 ***	-.249 ***	.082 **
Public	-.129 **	.004	-.133 **
Uninsured	.160 ***	.087 **	.073 **
Education at Baseline			
Less Than High School	-.041	-.132 ***	.091 **
High School	-.049 *	-.083 ***	.035 **
Some College	-.068 ***	-.092 ***	.023 *
College Graduate	-.004	-.015	.010
Employment Status at Baseline			
Full-Time	-.014	-.026 *	.012
Part-Time	-.076 *	-.141 ***	.065 **
Not Employed	-.110 ***	-.168 ***	.059 **
Job Tenure at Baseline			
More Than Six Months	-.016	-.033 *	.018 *
Less Than Six Months	-.067 *	-.110 ***	.042 *
Not Employed	-.109 ***	-.168 ***	.059 **
Race/Ethnicity			
NH White	-.060 ***	-.082 ***	.023 **
Hispanic or Non-White	-.001	-.056 **	.056 **
Poverty Status at Baseline			
Poor (<100% FPL[a])	-.042	-.062 *	.020
Near Poor (100-200% FPL)	-.061 *	-.128 ***	.067 **
Moderate Income (200-300% FPL)	-.071 **	-.110 ***	.039 **
Higher Income (>300% FPL)	-.032 *	-.050 ***	.019 *
Age at Divorce			
26 - 34 Years	-.053 **	-.083 ***	.029 *
35 - 49 Years	-.029 *	-.063 ***	.034 **
50 - 64 Years	-.082 **	-.107 ***	.024
Self-Reported Health Before Divorce[b]			
Poor or Fair	-.029	-.113 **	.085 *
Good, Very Good, or Excellent	-.054 ***	-.074 ***	.020 *
Any Children at Time of Divorce			
At Least One Child	-.061 ***	-.090 ***	.029 **
No Children	-.029	-.062 ***	.033 **

Notes: Sample includes person-months from women who divorce in 1996, 2001, and 2004 SIPP. Results based on weighted LPM models with robust standard errors. Only coefficients for divorced status interacted with subgroups of interest are shown.

Covariates not shown include those in Table 2.3 models, including year and region fixed effects. [a]Federal Poverty Line. [b]Self-reported health status is measured at earliest available timepoint in the sample prior to divorce or censoring.

*p<.05; ** p<.01; ***p<.001 (two-tailed tests)

generous Medicaid programs. Third, our finding may reflect the generally high instability associated with this form of coverage—what other researchers have termed "churning" (Summer and Mann 2006; Saunders and Alexander 2009)—rather than the impact of divorce on public insurance per se. Indeed, when we repeat the same analysis among the group of women who remain married using a randomly generated month in the survey as a cutpoint (rather than month of divorce), we still observe that many women with public insurance lose this coverage after the random cutpoint (18% for public coverage vs. 2% for job-based coverage) and become uninsured (9% for public coverage vs. 2% for job-based coverage). This supports the churning hypothesis.

The more education a woman has and the greater her attachment to the labor force at baseline, the less likely she is to lose insurance coverage. College graduates appear to be immune from the effect altogether. Women with less education tend to lose private coverage. However, for women with less than high school education the net effect is zero, as the loss of private coverage is fully offset by an uptake in public insurance after divorce.

Women working full-time and those in jobs for longer than six months appear to be largely protected from insurance loss. The importance of job tenure is not surprising: Three-quarters of workers whose firms provide health insurance face a short waiting period during which they are ineligible for coverage, meaning that newer employees more often lack coverage (Claxton et al. 2011). Additionally, workers in low-wage, benefit-poor occupations typically have high rates of turnover. Minorities are more likely to work in these occupations, and are less likely in general to have employer-based coverage than whites (Hall, Collins, and Glied 1999). Our analyses indicate that only

white women show a significant drop in net health insurance coverage after divorce, both due to a larger drop in private coverage and lower acquisition of public coverage. The smaller drop in private insurance that minorities experience is largely offset by public insurance coverage.

Financial resources at baseline, as measured by the income-to-poverty ratio, moderate the linkage between divorce and insurance coverage. Women in moderate-income families before divorce are most vulnerable to insurance loss, with an estimated drop of 7 percentage points. These women face an 11 percentage point decline in the probability of private insurance, and a 4 percentage point increase in the probability of public insurance, net of other factors. Many lower middle-class women may fall into the ranks of the near-poor after divorce, leaving them with too much money to qualify for Medicaid and other public insurance programs (as their poorer counterparts), but not enough to purchase private insurance policies (as their higher-income counterparts).

Table 2.4 also shows that women who divorce between ages 50 and 64 are more vulnerable to insurance loss than younger women. This result is consistent with recent findings suggesting that insurance coverage in later middle-age may be particularly tenuous. Angel, Montez, and Angel (2011) document greater reliance on dependent coverage among women in this age group relative to those at other ages, and Kirby and Kaneda (2010) find that adults in later middle-age (55-64) have the second highest rates of uninsurance of any age group (highest is young adults 18 to 25). Women are most likely to lose health insurance coverage when they report themselves in good, very good or excellent health before divorce (as opposed to poor or fair), perhaps because women in poorer health may place a greater priority on maintaining continuous coverage. Women

in poor or fair health do lose private insurance coverage more than others, but this is offset by their acquisition of public insurance coverage. Some of these women may have chronic illnesses or disabilities that qualify them for Medicare.

The presence of children in the household is associated with a greater risk of insurance loss after divorce. Women with children typically face greater financial troubles after divorce, as they frequently become the sole provider, which could help to explain this finding (Smock 1994). Surprisingly, we find that mothers and women without children are about equally likely to acquire public coverage. We would have expected that only mothers would a significant take-up of public coverage, due to eligibility restrictions in many states. One possible explanation is that a greater proportion of women without children at baseline are disabled, so that the take-up of public insurance may in part stem from this subgroup enrolling in Medicare.

Changes in Insurance Coverage after Divorce: Heterogeneity across Time

We now turn to the temporal pattern of insurance loss and recovery, relative to time of divorce. For this investigation, we use a simple form of non-parametric regression called piecewise linear regression. Piecewise linear regression, or spline regression, breaks a continuous variable into intervals and fits a separate linear slope for each interval (Marsh 2001). In our application, we group person-month observations into intervals based on time to divorce such that a sufficient number of observations in each group results (at least 500) to ensure adequate precision of the estimates.[8] Because the mass of data points

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[8] Specifically, we form one group for all person-month observations more than 12 months before divorce; the remaining observations are grouped into the maximum number of quantiles such that each has at least 500 observations. This procedure resulted in a total of 28 intervals. We examined various ways to group the observations into intervals. When time points are grouped into pairs (e.g., t=0 to 1 months after divorce, 2 to 3 months after divorce, etc.), the precision of the estimates drops quickly as t grows because sample sizes decline rapidly. When data are grouped into intervals with fewer than 500 observations, the trends remain

lies at or near the time of divorce, months close to divorce form their own groups; months further from divorce are grouped together.

Our three piecewise linear regressions—predicting any coverage, private coverage, and public coverage—are estimated using the same multivariate fixed-effects models (including controls) as in Table 2.3, but we replace our key predictor, divorced status, with the series of spline terms representing intervals of months relative to divorce. Predicted probabilities are generated from model estimates, and plotted in Figure 2.1. We calculate predicted probabilities holding constant all covariates at their average values (except separated status, held constant at its pre-divorce value, .188, before divorce, and at 0 post-divorce).

Figure 2.1 demonstrates a striking shift in the distribution of women's insurance coverage at the time of divorce. The height of the dark grey area in the bottom of the graph represents the estimated probability of women holding any form of private insurance coverage across time relative to time of divorce. The height of the light band across the middle of the graph represents the estimated probability of public insurance across time. The black area at the top of the graph represents the estimated probability of women being uninsured across time. The vertical line above zero on the *x*-axis represents the month of divorce; to its left are pre-divorce months and to its right are post-divorce months.

As the graph indicates, there is a significant probability of being insured in the month of divorce. This net loss of insurance (widening of black area) is the cumulative effect of an even larger decline in the probability of private insurance coverage (dark

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the same but the data exhibits more noise. When data are binned into intervals with more than 500 observations, the trends remain the same but the estimates are more smoothed.

**Figure 2.1 The Changing Distribution of Women's Health Insurance Coverage
Across Time Since Divorce**
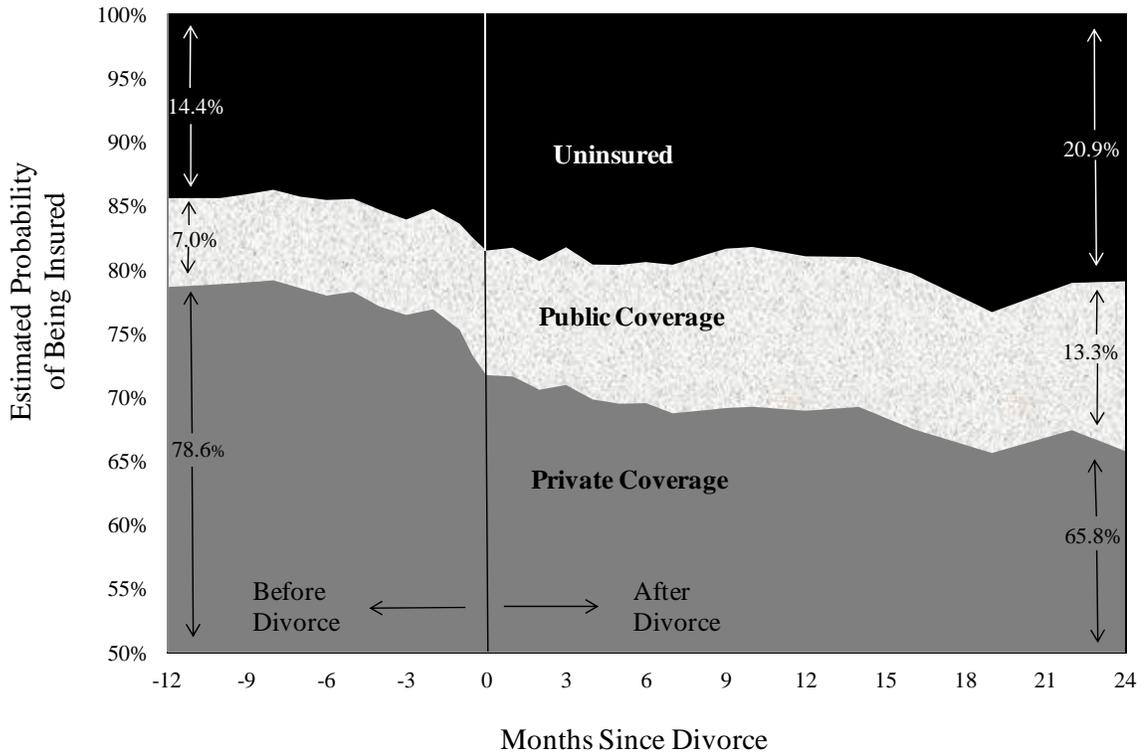
grey), which is only partially mitigated by an increase in public insurance coverage (light

grey). At twelve months before divorce, 14.4 percent of women are estimated to be

uninsured, increasing to 20.9 percent by twenty-four months after divorce. The loss of

insurance coverage is statistically significant for as long as our data extends, more than

two years after divorce.

Discussion

Using recent longitudinal data from the Survey of Income and Program Participation, we

examine how women's health insurance coverage changes after divorce. We find that,

even while married, women who later divorce are more likely to be uninsured than

women who remain married. Adding to this baseline disparity, a substantial number of

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women lose health insurance after divorce. Considering that approximately one million divorces occur in the United States every year (U.S. Census Bureau 2011), our descriptive estimates (see Table 2.2) suggest that roughly 115,000 women (1,000,000 × 11.3%) lose private health insurance annually in the months following divorce and that roughly 65,000 of these women (1,000,000 × 6.6%) become uninsured. The loss is not just a temporary disruption to women's health insurance coverage; rather, women's overall rates of health insurance coverage remain depressed for over two years after divorce, as long as our data allow us to test.

Not all women are equally likely to lose health insurance after divorce. Those insured as dependents on husbands' employer-based insurance plans are most vulnerable to insurance loss, while stable, full-time employment buffers against it. Women from moderate-income (200-300% FPL) families are particularly vulnerable. Many of these women fall into the ranks of the near-poor after divorce, with too much money to qualify for Medicaid, but not enough to purchase private health insurance coverage.

Moreover, the loss of health insurance coverage after divorce documented here may underestimate the true latent risk of health insurance loss for two reasons. First, the potential loss of economic resources, including health insurance, may deter divorce. Indeed, some couples choose to separate rather than divorce in order to maintain insurance coverage for both spouses. Second, divorce is not an exogenous shock. Spouses (or at least one spouse) generally anticipate it and may prepare ahead of time for financial independence. Thus women who lose health insurance may represent a subset of women, those who despite their efforts were unable to secure insurance coverage for themselves in advance of divorce.

Admittedly, our modeling strategy has some limitations. Fixed-effects models can control for observed and stable unobserved characteristics of women who divorce. But we cannot conclude that divorce *causes* women to lose health insurance coverage because in this context unobserved time-varying covariates are important. For example, one recent study suggests that women who divorce have greater risk tolerance than those who stay married (Light and Ahn 2010). If this is so, then some women may become uninsured after divorce not because they lack affordable insurance options, but because they do not place a high value on maintaining coverage. (This represents an omitted time-varying interaction between changing context and stable trait.) Additionally, we do not (nor do we have the data to) explicitly model the decision-making process behind divorce, but we do know from past studies that women are more likely than their husbands to initiate divorce (Wang and Amato 2000). Given this, we cannot claim that loss of health insurance coverage is something that *happens to* women. Rather, in many cases, a woman's decision to divorce may involve tradeoffs between loss of material resources and anticipated gains in well-being in other dimensions.

Regardless of the causes, the loss of health insurance following divorce has important implications for women's financial well-being and health. This study broadens the economic consequences of divorce literature by showing that not only income is at risk but also women's health insurance coverage—an important instrument of financial protection in the event of major injuries or illnesses and a means to pay for routine medical care. Women who experience the greatest economic losses also are most likely to lose insurance coverage. Future studies should assess whether, in parallel to their smaller economic losses after divorce, men are also less likely to lose health insurance coverage.

Women's loss of health insurance may contribute to our understanding of the health declines sometimes experienced following marital disruption (Lorenz et al. 2006; Hughes and Waite 2009). Losing health insurance may compound the other stresses of the divorce process, and stress has negative ramifications for health (Pearlin et al. 2005). Being uninsured also means women are less likely to go to the doctor or to get medical care when they do get sick, potentially exacerbating conditions and illnesses (McWilliams 2009). Future studies using longitudinal data on health as well as health insurance should formally test whether loss of insurance coverage helps to account for some of the health declines women experience after marital disruption (see Lavelle, Lorenz, and Wickrama, forthcoming, for preliminary evidence).

Our findings also add to the body of evidence that the current health care and insurance system in the United States is inadequate for a population in which multiple family and job changes over the life course are not uncommon. It remains to be seen how effectively the Affordable Care Act (ACA; 2010)—expected to be fully implanted by 2014—will remedy the problem of insurance loss after divorce. In spite of the fact that this issue was all but absent from discussions of insurance system inadequacies leading up to the ACA's passage, the law has provisions which may help substantially. The ACA is slated to expand the availability of insurance to women through their own jobs, make insurance more affordable to women on the private market, and expand eligibility for Medicaid. Moving forward, policymakers should be aware that a system which induces a *de facto* linkage between marital status and health insurance may have unintentional adverse consequences.

CHAPTER 3

Job Loss and Health Insurance in the Great Recession:

Did the COBRA Subsidy Work?

Introduction

Because the majority of Americans receive health insurance through their employers, the rise of unemployment during recessions threatens the well-being of the population above and beyond job losses and income shocks. Workers and their families frequently become uninsured in the wake of job separation, which is the leading cause of health insurance loss in the U.S. (Gruber and Madrian 1997; Glied 2001; Kapur and Marquis 2003). Lacking insurance coverage, even for short periods of time, poses significant health and financial risks. The uninsured face limited access to medical care and are vulnerable to accruing burdensome levels of medical debt in the event of an unforeseen illness or injury (Institute of Medicine 2002; Short, Graefe, and Schoen 2003; McWilliams 2009). The unemployed uninsured may be a particularly vulnerable group, as gaps in health insurance may coincide with constrained family budgets and aggravated health problems (Burgard, Brand, and House 2007; Dorn 2009).

One policy that addresses this problem is the Consolidated Omnibus Budget Reconciliation Act (COBRA) of 1985. COBRA grants workers the option to purchase an extension of their employer-sponsored health insurance coverage following job

separation by paying both the employer's and the worker's share of the plan's premium. While the law helps a modest number of families maintain coverage (Klerman and Rahman 1992; Gruber and Madrian 1997; Berger et al. 1999), the high cost of COBRA premiums make them financially out-of-reach for many of the unemployed.

To strengthen the safety net for working families amidst the Great Recession, the American Recovery and Reinvestment Act (ARRA) of 2009 established a temporary 65 percent subsidy for COBRA premiums. Workers who lost jobs involuntarily between September 2008 and May 2010 were offered COBRA at a substantially reduced price; they only had to pay 35 percent of the total monthly cost. The effects of this temporary policy change on COBRA utilization and post-job-loss insurance coverage have implications both for predicting the success of subsidies for private coverage that will be made available under the Affordable Care Act (ACA; 2010) and for developing future policies intended to protect health insurance after employment transitions.

In this study, I use nationally representative panel data from the Survey of Income and Program Participation (SIPP) to assess the effects of the COBRA subsidy on the usage of COBRA after job loss. I explicitly control for a number of potentially confounding factors, such as changes in state unemployment rates and in the demographic and geographic composition of job separators. To account for secular trends, I additionally utilize a difference-in-difference (DID) approach, comparing the change in COBRA usage for involuntary job separators (who were eligible for the COBRA subsidy, conditional on timing of job loss) with that for voluntary job separators (who are eligible for COBRA but were ineligible for the COBRA subsidy). To the extent that there is contamination between the two groups in terms of eligibility criteria, the DID

approach should yield conservative effect estimates. In subsequent sections of the chapter, I examine how the benefits of the subsidy differed by a worker's socioeconomic status and other characteristics and consider the subsidy's impact on inequality in insurance coverage; and I compare the effects on COBRA usage with those on overall insurance coverage to gauge the extent of crowd-out. The chapter closes with a summary of findings and a discussion of policy implications.

Background

Despite the rapid growth in health care costs in recent decades, more than half of employers in the U.S. continue to offer health benefits (60%; Claxton et al. 2011) and two-thirds of workers continue to hold employer-sponsored insurance (68%; U.S. Census Bureau 2012a).[9] In good part due to the exemption of health insurance premiums from payroll and income taxes, employer-sponsored health insurance (ESI) is heavily subsidized by employers. In 2011, employers paid on average 82 percent of total health insurance premiums for an individual worker and 72 percent of premiums for a worker plus his or her family (Claxton et al. 2011). On average, this left workers paying $81 per month (18% of total premiums) for individual coverage or $352 per month for family coverage (28% of total premiums).

COBRA permits most workers with health benefits the option to purchase an extension of employer-sponsored health insurance for up to 18 months after job termination, either voluntary or involuntary.[10] However, COBRA coverage is not

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[9] Through their own employer or that of a family member.

[10] All job terminations qualify, except in cases of gross misconduct. The federal COBRA law applies to private-sector employers with twenty or more employees, employee organizations/unions, and state and local governments, but exempts the federal government, small employers, and church-related organizations. However, workers of the federal government and in forty states, small employers, are covered under similar

subsidized by employers. COBRA enrollees pay the total premium themselves (plus a 2% administration fee). Thus, COBRA is substantially more expensive than health benefits received by current employees. Table 3.1 contrasts the average 2011 premium costs paid by current employees contributing to ESI premiums; by former employees purchasing COBRA; and by former employees purchasing COBRA with the 65 percent federal subsidy, temporarily made available to workers involuntarily terminated during the Great Recession.

Table 3.1 Comparison of Health Insurance Costs, 2011

	Current Employees	Former Employees	
	ESI	COBRA	Subsidized COBRA
Single Coverage	$81	$461	$162
Family Coverage	$352	$1,281	$448

Note: Table displays average monthly premium, paid by employees (for employer-sponsored insurance) and former employees (for COBRA and subsidized COBRA). *Source*: Author's calculations from the 2011 Kaiser/HRET Employer Health Benefits Survey (Claxton et al. 2011).

To continue coverage through COBRA after job loss, a worker would have to increase his or her premium contributions by three- to five-fold while simultaneously losing his or her primary income source. The average unemployed worker would need to spend roughly one-third of his or her monthly unemployment insurance check to purchase COBRA for himself, or more than four-fifths to purchase COBRA for his or her family (Fish-Parcham and McAndrew 2009; DOL 2012). Although past studies have documented a modest protective effect of COBRA on health insurance coverage for involuntary job separators and the unemployed, typical COBRA take-up rates are

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laws. Because the ARRA COBRA subsidy was made available to workers covered under federal COBRA and similar laws, COBRA coverage in this paper refers to continuation coverage under any of these laws (Bacon and Tucker 2010).

relatively low (commonly cited between 10 and 20 percent) and many laid-off workers experience insurance loss (Flynn 1992, 1994; Madrian 1998; Berger et al. 1999; Kapur and Marquis 2003; Spencer's Benefit Reports 2006).

In 2009, ARRA established a temporary 65 percent federal subsidy for COBRA premiums to help workers maintain health insurance coverage after involuntary job termination. In this chapter, I refer to involuntary job terminations as job losses or displacements.[11] For job losses occurring between September 2008 and May 2010, COBRA subsidies were made available to displaced workers for up to 15 months. To be eligible for the subsidy, workers had to be receiving employer-sponsored health insurance at the time of job loss, have neither access to alternative group insurance coverage (e.g., though an employed spouse) nor Medicare, and fall below income eligibility thresholds (see Table 3.2). Employers were legally obligated to notify eligible individuals of their right to elect subsidized COBRA (or to pay reduced premiums for ongoing COBRA coverage) and were permitted to reclaim lost premium revenues through a refundable payroll tax credit.

Qualified workers who lost jobs after ARRA's passage (March 2009 – May 2010) became eligible for subsidized COBRA immediately upon job loss (standard eligibles). Qualified workers who lost jobs prior to ARRA's passage (September 2008 – February 2009) were eligible for COBRA upon job loss, as usual, and became eligible for subsidies

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[11] ARRA legislation did not define "involuntary termination," but the IRS released a guidance document in April 2009 defining it as, "severance from employment due to the independent exercise of the unilateral authority of the employer to terminate the employment, other than due to the employee's implicit or explicit request, where the employee was willing and able to continue services" (IRS 2009). This definition, as clarified in the guidance document, is a relatively inclusive one. Among the qualifying events were: layoffs; terminations due to slack work or business conditions; failure to renew contract of contingent workers; and termination for cause (for reasons other than gross misconduct). Workers who quit or retired with the knowledge that they would otherwise have been involuntarily terminated also qualified.

Table 3.2 Key Eligibility Requirements for COBRA Subsidy

Requirement	Details
Involuntary job termination	Lost job involuntarily between September 2008 and May 2010. Includes both layoffs and terminations for cause (except in cases of gross misconduct).
Employer-sponsored health insurance	Insured through his or her own employer's group health insurance plan at time of job loss.
Not eligible for other group coverage	Not eligible to enroll in another group health insurance plan such as through the employer of a spouse or other family member.
Not eligible for Medicare	Not 65 or older or permanently disabled.
Income-eligible	*For full subsidy*: <$125,000 adjusted gross income (AGI) (<$250,000 AGI if filing jointly) *For reduced subsidy*: $125,000 - $145,000 AGI ($250,000 - $290,000 if filing jointly)

once ARRA passed in February 2009 (delayed eligibles). Delayed eligibles already enrolled in COBRA when ARRA passed paid reduced premiums thereafter (until their eighteen months of total COBRA eligibility, or fifteen months of subsidy eligibility expired, whichever came first). Premiums for months of COBRA already received were not reimbursed with retroactive subsidies. Delayed eligibles who either had not elected COBRA at the time of job loss, or who had elected COBRA but subsequently dropped coverage or failed to pay premiums were given a second chance to enroll in COBRA after ARRA's passage. Figure 3.6 in the Appendix presents a diagram of the timing and duration of eligibility for COBRA and the COBRA subsidy, by month of job loss.

In this chapter, I examine the effects of the ARRA COBRA subsidy on the COBRA usage and insurance coverage of displaced workers. The magnitude and distribution of these effects have important implications in two domains. First, they can help to predict the effects of subsidies for private coverage that will be made available under the ACA. Starting in 2014, individuals and families with incomes below 133 percent of the federal poverty level (FPL) will become eligible for Medicaid in most states and in all states those with incomes between 133 and 400 percent FPL will become

eligible for subsidies to purchase private health insurance through new state-run insurance exchanges. These subsidies will be based on a sliding scale, with participants' premium contributions limited to between 3 and 9.5 percent of family income. Second, the impacts of the ARRA COBRA subsidy can be instructive for developing future policies intended to help displaced workers maintain insurance coverage. While the implementation of the ACA in 2014 will facilitate access to both public and private insurance coverage in the U.S., the majority of Americans are expected to continue receiving coverage through employers. As such, the stability of health insurance coverage after employment transitions will continue to be an issue of concern.

Based on the limited success of other recent health insurance initiatives, we might hypothesize the COBRA subsidy program to have had weak effects on COBRA utilization. The Health Insurance Tax Credit Program (1991-1993), which provided a refundable tax credit for a portion of health insurance premiums to low-income workers, yielded only 19 to 26 percent take-up (Cebi and Woodbury 2009). The Health Coverage Tax Credit Program (2002), which provides an 80 percent premium subsidy for trade-displaced workers, has yielded only 12 to 15 percent take-up (Dorn 2008). There has also been surprisingly low participation in the Pre-Existing Condition Insurance Plan (2010), which offers uninsured individuals with pre-existing conditions the chance to buy high-quality coverage at group insurance rates (Kenen 2011). As of June 2012, this program had only 73,000 enrollees, far short of the 200,000 predicted by the Congressional Budget Office or the 375,000 predicted by the Centers for Medicare and Medicaid Services (CBO 2010b; CMS 2010; Healthcare.gov 2012).

One factor impeding the success of these and similar programs is limited public awareness. A recent telephone study of workers laid off in 2009 in California who were eligible for COBRA subsidies found that only half had known that subsidies were available (Graetz et al. 2012). This limited awareness may help to explain why federal revenue losses in 2009 due to the COBRA subsidy were smaller than anticipated (CBO 2010a). No nationally representative estimates of change in COBRA take-up under the program are yet available to my knowledge. Several human resources firms which administer COBRA benefits have reported widely varying estimates of change in COBRA take-up rates under the subsidy, likely due to the different pools of employers served by each firm.[12] Additionally, two small-scale 2009 surveys—one of COBRA subsidy eligibles in California and the other of unemployment insurance recipients in New Jersey[13]—documented higher than typical rates of COBRA enrollment in these populations (38 and 29 to 32 percent, respectively), suggesting at least some effect of the subsidy (U.S. Treasury Department 2010; Graetz et al. 2012).

In this chapter, I use nationally representative SIPP panel data to examine the change in COBRA utilization after involuntary job loss under the ARRA COBRA subsidy program. I consider the effect of subsidies on the rate at which displaced workers hold health insurance coverage through a former employer in the survey wave after job loss (a proxy for COBRA take-up), and on the duration of these effects in the months after job loss.

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[12] Among all COBRA eligibles (not specifically those eligible for the COBRA subsidy): Hewitt reported a near doubling in COBRA take-up from 19 to 39 percent; Ceridian reported a smaller increase from 12 to 18 percent; and Aon reported only a slight increase from 14 to 16 percent (Bovbjerg et al. 2009).
[13] Not all unemployment insurance recipients are eligible for COBRA or the COBRA subsidy. In the New Jersey study, slightly more than one-third of workers reported that they did not have employer-sponsored health insurance when they lost their jobs, meaning they were ineligible for COBRA.

I also asses the differential effects of the program on workers of different education and income levels and consider the subsidy's impact on inequality in post-job-loss insurance coverage. I expect workers with moderate education and income levels to benefit most from the subsidy. The highly educated and those with substantial economic resources are likely to maintain coverage even in the absence of the subsidy, and less-educated lower-income workers may either apply for Medicaid or do without coverage, as even subsidized COBRA may prove too expensive. Because employer-sponsored health insurance is a heavily stratified resource—24 percent of workers in low-wage occupations receive health benefits compared to 74 percent of those in high-wage occupations[14]—the COBRA eligibles who compose my sample disproportionately represent workers of higher socioeconomic status. I consider to what extent the implementation of the COBRA subsidy further exacerbated or mitigated inequality in access to private health insurance coverage.

I also consider how the effects of the COBRA subsidy differ by age, sex, family status, and spousal employment. Those with working spouses may have more financial resources with which to purchase COBRA; however, those with access to dependent coverage through a spouse's employer-based policy were not eligible for the COBRA subsidy. Lastly, I compare the effects of subsidies on COBRA usage with those on overall insurance coverage to gauge the extent of crowd-out. In other words, to what extent did COBRA subsidies help displaced workers maintain insurance coverage as opposed to reducing the financial burden for displaced workers who, in the absence of subsidies, would have found another, albeit more expensive, source of coverage?

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[14] Low-wage occupations are defined as those in the bottom quartile of average wages; high-wage occupations are those in the top quartile of average wages (BLS 2011).

Data and Methods

Data

The data for this analysis come from the 2008 panel of the Survey of Income and Program Participation (SIPP). The SIPP is a longitudinal survey conducted by the U.S. Census Bureau of a large nationally representative sample of households in the civilian non-institutionalized U.S. population. The 2008 SIPP panel contains approximately 40,000 households interviewed once every four months over a five-year period. This study utilizes the data currently available from waves 1 through 10, covering the period from May 2008 through November 2011.

The SIPP contains detailed information on demographic characteristics, labor force participation, health insurance coverage, income, and benefits. The longitudinal nature of the SIPP allows me to observe employment transitions, to examine how health insurance responds to job loss, and to gauge how this response differs by the availability of the COBRA subsidy.

Most variables in the SIPP are measured on a monthly basis. In each wave of data collection, respondents are asked to provide separate reports of survey topics for each of the past four months. However, a key variable for this study, type of health insurance coverage, is measured at the wave level. Additionally, there is some tendency for respondent reports to reflect artificially high consistency across months within the same four-month wave and for disproportionate numbers of transitions to occur between waves, a measurement error problem known as seam bias. For both of these reasons, the primary outcomes for this study are wave-level measures.

Subsidy Availability. The key predictor for this study is the availability of the COBRA subsidy in the survey wave following job termination. This availability is based on the timing and type of job termination. In the SIPP data, I record the month of job termination as the last full or partial month on the job, prior to one or more months not working. This definition is consistent with COBRA eligibility requirements; the job separation that triggers COBRA eligibility is considered to have occurred on the last day on the job (Bacon and Tucker 2010). All members of my analysis sample have employer-sponsored health insurance through their jobs during this last month on the job, another requirement for COBRA (whether subsidized or unsubsidized).

While termination from a job with health benefits entitles one to elect COBRA continuation coverage, only workers who experienced involuntary job terminations during a specified period gained access to subsidies that lowered COBRA premium costs. Terminations are coded as involuntary when workers reported that they were laid off or discharged, the job ended, the business dissolved, they were contingent workers or that they received unemployment benefits in the wave following termination.[15] Subsidy availability in the wave after job termination was based on the timing of job termination and survey waves relative to the implementation and eligibility requirements for the

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[15] Two-thirds of job separations are categorized as voluntary or involuntary based on responses to, "What is the main reason you stopped working for [Employer Name]?" Workers who selected one of six responses (on layoff; discharged/fired; employer bankrupt; employer sold business; job was temporary and ended; slack work or business conditions) were coded as involuntary. Workers who selected one of the remaining nine responses (retirement or old age; childcare problems; other family/personal obligations; own illness; own injury; school/training; quit to take another job; unsatisfactory work arrangements; quit for some other reason) were coded as voluntary. The question was not asked of contingent workers. The remaining one-third of terminations were coded as involuntary if workers received any unemployment insurance in the survey wave after job termination or were contingent workers, and voluntary if neither was true. Analyses that limit the sample only to workers with a reported reason for job separation find a slightly smaller effect of the COBRA subsidy on COBRA utilization in the survey wave after job loss (.037; n.s.) and a slightly larger effect of being insured in every month of the survey wave after job loss (.080; n.s.). Both effect estimates have 95% confidence intervals which overlap with those from the analyses reported here. Theoretically, any contamination between the involuntary and voluntary termination categories should lead to more conservative estimates of subsidy effects in difference-in-difference analyses.

COBRA subsidies. Subsidies are coded as available in the wave following job loss if the timing of job loss made them available in every month of that four-month wave. This distinction is not relevant for the majority of job terminations for which subsidies were available; involuntary terminations that occurred between March 2009 and May 2010 triggered eligibility for 15 months of subsidized COBRA coverage (including the survey wave after termination). But some delayed eligibles (those displaced before ARRA's passage who gained eligibility for subsidies starting in March 2009), had access to subsidies for only part of the wave following job loss. These individuals are coded as not having access to subsidies because their COBRA utilization in the wave after job loss was nearly identical to those with no access to subsidies (12.0 vs. 11.8% have COBRA in the wave after job loss), both substantially lower than those with access to subsidies in every month of the wave after job loss (21.9%).[16] Other delayed eligibles did have access to subsidies in every month of the four-month wave following job loss, and are included in the treatment group. Multivariate models control for whether eligibility is delayed rather than immediate upon job loss.

COBRA and Insurance Status. The key outcome for this study is whether or not a worker who experiences a job termination holds COBRA in any month of the following survey wave. Because the SIPP does not identify COBRA health insurance directly, I follow others (Berger et al. 1999; Fronstin 2010) in counting private insurance received through a former employer as a proxy for COBRA coverage. The vast majority of health insurance received through a former employer includes retiree coverage and COBRA coverage. By limiting the sample to workers under the standard early retirement age (55),

[16] Re-categorizing those with partial eligibility for subsidies in the survey wave after job loss to the treatment group changes results very little. The estimated effect of COBRA utilization becomes 0.067 (p<.05) and the estimated effect on being insured throughout the wave becomes 0.043 (n.s.).

we can be confident that nearly all former employer coverage is COBRA.[17] A secondary outcome measure indicates whether a worker who experiences a job termination holds some type of health insurance coverage in every month of the following survey wave (i.e., is always insured in this wave).

Additional Variables. Several additional variables are used as controls in multivariate models, including sex, age, education, race/ethnicity, foreign born, marital status and spousal employment, number of children, disability status,[18] logged hourly wage (2011$; measured in last month on the job), logged family income less earnings (2011$; measured in last month on the job), calendar month, and region of residence. I also control for whether an individual works any month in the wave after job termination and the state-month unemployment rate, because both a worker's economic prospects and his or her own changing employment situation may influence the choice of purchasing and maintaining COBRA coverage.[19]

Analytic Sample. Table 3.3 presents descriptive statistics of job terminations from jobs with health benefits in the final analysis sample. Most analyses include only involuntary job losses, but difference-in-difference analyses pull in the voluntary job terminations as a comparison. In waves 1 through 10 of the 2008 SIPP, I observe a total

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[17] Note that because type of health insurance is a wave-level variable, I am not able to measure COBRA in the same wave in which a job transition occurs. "Former employer" coverage reported in the same wave as the last month on a job may reflect retrospective reporting of having received employer-based coverage while employed rather than election of COBRA post-employment. For example, suppose in the first and second months of a four-month wave, a person works and receives insurance through his employer. In the third month, he terminates employment and his employer-sponsored coverage. In the fourth month, he purchases private health insurance coverage. When he reports his type of health insurance for the past four months, he may report "former employer" coverage since he received coverage through an employer for the majority of the time period, and at the time of report, this is a former rather than a current employer.

[18] I control for disability status because those with severe health impairments or other disabilities are likely to prioritize maintaining insurance coverage significantly more than the non-disabled; they may also have differential access to Medicare. Other measures of physical health status are not available at regular intervals in the SIPP.

[19] I do not control for receipt of unemployment insurance because this variable is used in part to define the sample. Nevertheless, the inclusion or exclusion of this control variable does not affect final estimates.

of 5,921 involuntary job losses to workers 26 to 54. I choose this age group because members are rarely eligible for retirement benefits or for dependent coverage through parents' employers. Roughly one in four of the jobs lost provided health benefits (23.5%), a requirement for COBRA. The sample is further restricted to job losses for which I have health insurance outcomes in the following wave (91.5%), and for which I observe all other covariates (93.9%). The final analysis sample contains 1,193 involuntary job losses (511 for which the COBRA subsidy is unavailable in the wave after job loss and 682 for which it is available) to a total of 1,042 workers. Difference-in-difference analyses pull in an additional 1,224 involuntary job terminations with the same sample restrictions. All analyses cluster standard errors at the person level to account for possible multiple job terminations per individual.

Men and women are about equally likely to terminate a job voluntarily over the study period, whereas men are more likely to experience involuntary job losses. Among involuntary job losses, those for which COBRA subsidies were available were to workers with somewhat higher incomes and somewhat greater likelihood of being white than those for which subsidies were unavailable. These and other potential compositional differences between the two groups might cause the workers whose timing of job loss gave them access to subsidies to have more favorable health insurance experiences following job loss even in the absence of the COBRA subsidy program. Multivariate models control for compositional differences between the two groups.

Table 3.3 Descriptive Statistics of Analytic Sample of Job Losses in 2008 SIPP

	Involuntary Job Losses		Voluntary Job Terminations
	COBRA Subsidy Unavailable	COBRA Subsidy Available[a]	All Months
Female	0.383	0.337	0.491
Age (years)	40.9	40.3	39.0
Education			
High School or Less	0.311	0.311	0.304
Some College	0.412	0.399	0.347
College Graduate	0.277	0.290	0.350
Hourly Wage (2011$; last month on job)	$23.6	$24.1	$22.8
Family Income (last month on job)			
Low Income (<200% FPL[b])	0.217	0.183	0.214
Moderate Income (200-399% FPL)	0.372	0.372	0.365
Higher Income (400+ FPL)	0.411	0.446	0.421
Race			
NH White	0.679	0.737	0.641
NH Black	0.133	0.111	0.134
Hispanic	0.126	0.088	0.126
Other	0.062	0.065	0.099
Foreign	0.141	0.120	0.169
Disabled	0.065	0.065	0.108
Family Status			
Single, No Children	0.415	0.438	0.411
Single Parent	0.113	0.091	0.110
Married, No Children	0.202	0.198	0.200
Married Parent	0.269	0.273	0.280
Spousal Employment			
Single	0.528	0.529	0.521
Married, Spouse Not Working	0.142	0.130	0.126
Married, Spouse Working, No ESI	0.213	0.221	0.201
Married, Spouse Working, Has ESI	0.117	0.120	0.152
N	511	682	1,224

Notes: Estimates weighted. [a]In all four months of survey wave after job loss. [b]Federal Poverty Line

Analysis

Using the sample of involuntary job losses to workers with health benefits (first two columns in Table 3.3), I estimate linear probability models for whether or not a worker reports holding health insurance through his or her former employer (a proxy for COBRA; see *Data* section) in the wave after job loss. The key predictor in these models is the availability of the COBRA subsidy in the wave after job loss. After estimating the bivariate model, I then add controls for whether the subsidy was available immediately after job loss or on a delayed basis;[20] for a variety of demographic characteristics and whether or not a worker was re-employed in the wave after job loss; and fixed effects for calendar month (to account for seasonality), age (to account for non-linearity in the association between age and COBRA utilization), and region (to account for heterogeneity in economies, public health insurance programs, and markets). This approach assumes that after using statistical controls to adjust for compositional differences, the workers whose timing of job loss made them eligible for the COBRA subsidy were similar to workers whose timing of job loss made them ineligible for the COBRA subsidy.

Even though these models include crude controls for secular changes, time-varying factors aside from the implementation of the COBRA subsidy may still influence the estimation of program effects. Such factors may include the ongoing decline in employer coverage, recessionary and recovery trends, and growing awareness for COBRA. To better account for these time-varying factors, I take a difference-in-

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[20] I opt to estimate the main effect for subsidy eligibility and then control for whether eligibility is delayed rather than estimate two main effects, the first for delayed eligibility and the second for non-delayed eligibility, so that I generate a single treatment effect estimate. This simplifies the application of the difference-in-difference approach.

difference approach, using voluntary job terminations across the same time periods as a comparison group.[21] Voluntary job terminators are eligible for COBRA, but were not included in the COBRA subsidy program. Thus they may arguably share time-varying factors that affect COBRA take-up aside from the COBRA subsidy. In difference-and-difference models, I compare the difference in COBRA receipt for involuntary job separators with and without access to the COBRA subsidy (based on timing of job loss) to the difference in COBRA receipt for voluntary job separators whose timing of job separation would or would not have given them access to the subsidy if the separation had been involuntary. This DID coefficient is the interaction between involuntary termination and subsidy-available timing. I choose the linear probability model specification primarily for ease of interpretation; DID relies on the correct interpretation of this interaction coefficient, which can be very misleading in nonlinear models (Ai and Norton 2003). Note that to the extent to which the eligibility criteria for inclusion in the involuntary and voluntary groups are fuzzy, contamination of the treatment group (involuntary job separators) with the untreated (voluntary job separators) will yield conservative estimates of subsidy effects.

A number of alternative models are also estimated to assess other outcomes and heterogeneity of effects. In one set of models, the same estimation strategy is used to examine the subsidy's effect on whether workers reported always being insured in the wave after job loss. Comparing effects on COBRA receipt and on insurance coverage overall allows me to gauge the extent of crowd-out under this policy. In another set of

---

[21] Note that there could be remaining time trends that influence COBRA utilization not accounted for by this difference-in-difference approach other than the availability of the subsidy itself. One example is the growing awareness of COBRA and the COBRA subsidy among people in social networks in which many individuals have lost jobs involuntarily.

models, I fully stratify the sample to look at heterogeneity across education and income categories and other characteristics of interest. This allows me to compare the effectiveness of the program across segments of the population and provides insight into how the program modified existing inequalities in access to health insurance coverage.

Results

Changes in COBRA Take-Up

As shown in Figure 3.1, workers with access to subsidies for COBRA under ARRA were substantially more likely to utilize COBRA. More than one in five workers (21.9%) whose timing of job separation granted them access to subsidized coverage in each month of the four-month-long survey wave following job loss held COBRA in that wave, nearly double the proportion of workers without access to the subsidy in one or more months (11.9%).

Figure 3.1 Percent of Workers with COBRA in Wave after Job Loss, by Subsidy Availability

***p<.001
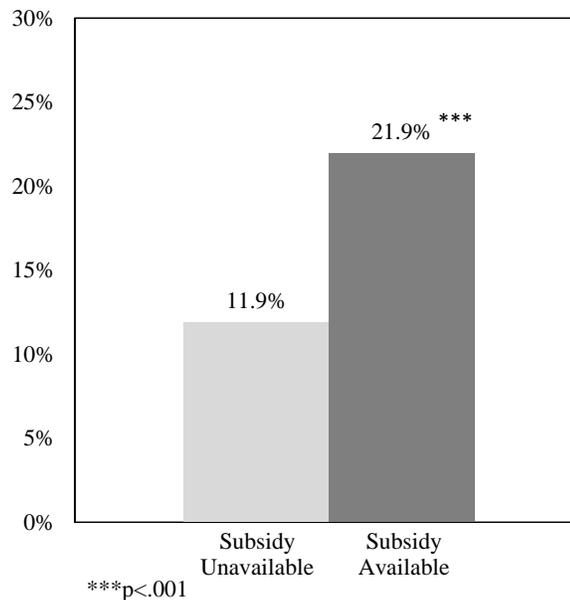
Although it exhibits significant imprecision due to limited sample sizes, an examination of the trend across time suggests that the COBRA take-up rate increased after ARRA established the subsidy in early 2009, and declined following the expiration of the subsidy program in mid-2010 (see Figure 3.2).

Figure 3.2 Percent of Workers with COBRA in Wave after Job Loss, by Quarter of Job Loss
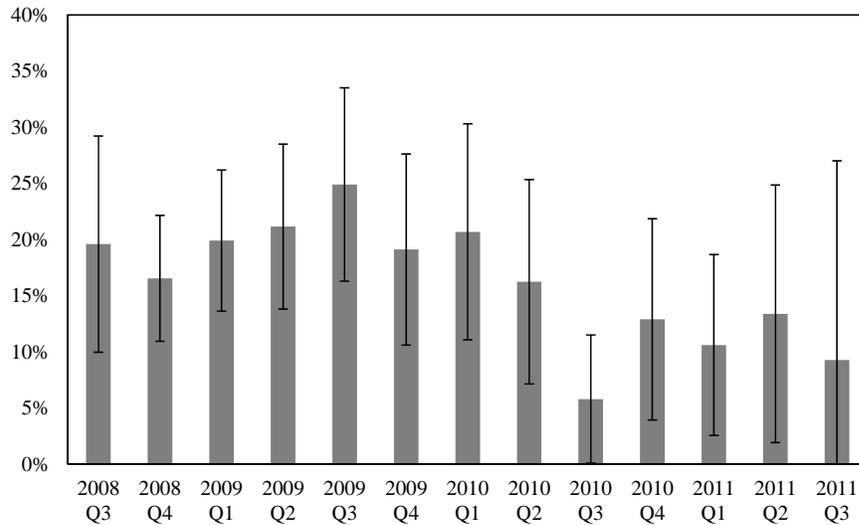
Note: Error bars display 95% confidence intervals.

To assess the extent to which compositional differences in the pool of displaced workers in the two periods or secular trends across time may account for the increase in COBRA take-up, I estimate multivariate models. Table 3.4 presents estimates from linear probability models. In these models, I regress the probability of holding COBRA in the wave after job loss on the availability of subsidies, controlling for a range of possible confounders. Model 1 replicates the bivariate finding in Figure 3.1, estimating a 10.1 percentage point increase in COBRA-take up when subsidies were available. Model 2 controls for whether the subsidy was available at the time of job loss (i.e., job loss occurred after ARRA was passed in Feb. 2009) or whether its availability was delayed (i.e., job loss occurred prior to ARRA's passage). Although the sign of the coefficient is

Table 3.4 Regression of Holding COBRA in Wave After Job Loss on Subsidy Availability

	Model 1	Model 2	Model 3
Eligibility for COBRA Subsidy			
Subsidy Available	0.101 ***	0.104 ***	0.120 ***
	(0.023)	(0.026)	(0.029)
Delayed Eligibility (vs. Elig. at Job Loss)		-0.014	-0.004
		(0.039)	(0.050)
Control Variables			
Sex (1=female)			0.070 **
			(0.026)
Education (omitted=high school or less)			
Some College			0.038
			(0.025)
College Graduate			0.141 ***
			(0.031)
Race/Ethnicity (omitted=NH white)			
NH Black			-0.039
			(0.038)
Hispanic			-0.037
			(0.036)
Other			-0.068
			(0.044)
Foreign Born			0.033
			(0.038)
Marital Status and Spousal Employment (omitted=single)			
Married, Spouse not Working			-0.018
			(0.037)
Married, Spouse Working, No ESI			-0.038
			(0.033)
Married, Spouse Working, Has ESI			-0.111 **
			(0.035)
Children (number)			-0.010
			(0.010)
Disabled			0.123 *
			(0.056)
Log Hourly Wage (last month on job; 2011$)			0.075 ***
			(0.021)
Log Family Income Less Earnings (last month on job; 2011$)			0.005
			(0.004)
Work Any Month in Wave After Job Loss			-0.099 ***
			(0.022)
State-Month Unemployment Rate			-0.019 **
			(0.006)
Fixed Effects (age, region, calendar month)			x
Constant	0.119	0.119	-0.175
N	1,193	1,193	1,193
R^2	0.017	0.017	0.173

Note: Estimates weighted. Standard errors adjusted for possible multiple job losses per sample member.
~p<.10; *p<.05; ** p<.01; ***p<.001.

negative, there is insufficient evidence to suggest that workers with delayed access to the subsidy were any less likely to hold COBRA than others with access in every month of the survey wave after job loss.

Model 3 controls for a battery of demographics, in addition to re-employment in the wave after job loss and age, region, and calendar month fixed effects. Results indicate that being disabled, having a college degree, and being a woman increase one's likelihood of electing COBRA, whereas having an employed spouse with ESI decreases this likelihood. Controlling for additional factors improves the model fit and increases the magnitude of the subsidy's estimated effect slightly to 12.0 percentage points.

To additionally control for pre-existing time trends in COBRA utilization, I conduct a difference-in-difference analysis, comparing the experience of involuntary job separators with and without access to the COBRA subsidy, with voluntary job separators who terminated jobs during the same time periods. Voluntary job separators are eligible for COBRA but were not included in the COBRA subsidy program regardless of the date of job termination. Although voluntary job separators are unlike workers who lost jobs involuntarily in many respects, they do share several time-varying factors that may affect changes in COBRA take-up over time, but not due to the subsidy itself. Table 3.5 presents results from difference-in-difference models. Somewhat smaller than the first set of estimates without the second difference, estimates here indicate that the COBRA subsidy increased the take-up of COBRA among involuntarily terminated workers by 6.5 percentage points overall.

Table 3.5 Regression of Holding COBRA in Wave after Job Termination on DID Interaction

	Model 1	Model 2	Model 3
Difference-in-Difference			
Involuntary Termination x Subsidy-Available Timing	0.071 *	0.071 *	0.065 *
	(0.031)	(0.031)	(0.030)
Subsidy Available Timing	0.030	0.030	0.027
	(0.020)	(0.021)	(0.022)
Involuntary Termination	0.015	0.015	0.015
	(0.020)	(0.020)	(0.020)
Delayed Eligibility (vs. Elig. at Job Loss)		0.000	0.024
		(0.031)	(0.036)
Control Variables			
Sex (1=female)			0.016
			(0.016)
Education (omitted=high school or less)			
Some College			0.044 *
			(0.018)
College Graduate			0.088 ***
			(0.020)
Race/Ethnicity (omitted=NH white)			
NH Black			-0.043 ~
			(0.023)
Hispanic			-0.065 **
			(0.022)
Other			-0.072 **
			(0.026)
Foreign Born			0.006
			(0.023)
Marital Status and Spousal Employment (omitted=single)			
Married, Spouse not Working			0.003
			(0.025)
Married, Spouse Working, No ESI			-0.008
			(0.023)
Married, Spouse Working, Has ESI			-0.073 **
			(0.023)
Children (number)			-0.009
			(0.007)
Disabled			0.113 ***
			(0.032)
Log Hourly Wage (last month on job; 2011$)			0.035 **
			(0.012)
Log Family Income Less Earnings (last month on job; 2011$)			0.004 ~
			(0.002)
Work Any Month in Wave After Job Loss			-0.076 ***
			(0.015)
State-Month Unemployment Rate			-0.008 *
			(0.004)
Fixed Effects (age, region, calendar month)			x
Constant	0.104	0.104	-0.046
N	2,417	2,417	2,417
R^2	0.018	0.018	0.111

Note: Estimates weighted. Standard errors adjusted for possible multiple job losses per sample member.
~p<.10; *p<.05; ** p<.01; ***p<.001.

Duration of COBRA

The availability of the COBRA subsidy increased the take-up of COBRA in the first months following job loss (see Figure 3.3). Additional descriptive analysis shows that the effect of the subsidy faded over time, and became non-significant between eight and nine months following job loss. Because type of insurance coverage is a wave-level variable in SIPP, this analysis assumes that wave-level reports of type of coverage are applicable to each month within a given wave. Additionally, because I cannot reliably assume that "former employer" coverage reported in the same wave of job loss is COBRA, months that occur in the same wave as job loss are omitted from this analysis. (As such, only job losses that occur in the fourth month of a wave contribute to the estimation of COBRA one month after job loss; job losses in the third and fourth months in a wave contribute to the estimate of COBRA one and two months after job loss, and so on.)

Past research has found that those who elect COBRA typically keep it for fewer than six months (Kapur and Marquis 2003). During the time period covered by the 2008

Figure 3.3 Percent of Workers with COBRA in the Months After Job Loss, by Subsidy Availability
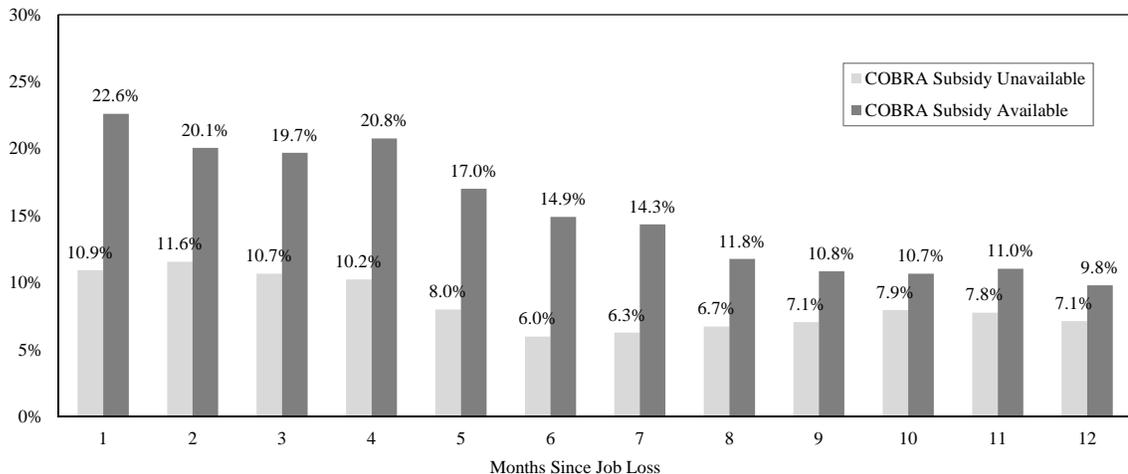
SIPP panel (mid-2008 to late 2011), the duration of COBRA may be somewhat longer regardless of subsidy availability, possibly reflecting the slack job market and difficulty of regaining employment during this period. Although COBRA subsidies reduced monthly premiums substantially for up to 15 months, remaining on COBRA for long periods of time was still uncommon.

Differential Effects by Worker Characteristics

COBRA take-up rates have historically been low because of the very high price of continuing group coverage through a former employer. As the earlier regression results indicate, COBRA is more utilized by those who are college educated and those with a higher hourly wage, groups more likely to be able to afford the high price tag. It is also more utilized by females and by older individuals, who may place greater importance on maintaining insurance coverage. When the price dropped under the COBRA subsidy program, did this serve to even out these baseline differences? And did it mitigate or exacerbate socioeconomic inequality in access to health insurance?

Figure 3.4 displays how access to COBRA subsidies was differentially related to changes in take-up across six different worker characteristics: sex; age; education; income; family status; and spousal employment. Results indicate that even though females and older workers had higher baseline COBRA utilization levels than their counterparts, their utilization also increased more under the subsidy program, perhaps indicating an interaction between stronger preferences for maintaining coverage and increased affordability.

Figure 3.4 Percent of Workers with COBRA in Wave After Job Loss, by Subsidy Availability and Worker Characteristics

Sex

- COBRA Subsidy Unavailable
- COBRA Subsidy Available

Men: 10.7%, 17.3% *
Women: 13.8%, 31.1% ***

Age

- COBRA Subsidy Unavailable
- COBRA Subsidy Available

26-34: 6.5%, 14.1% *
35-44: 9.6%, 17.9% *
45-54: 17.5%, 31.6% **

Education

- COBRA Subsidy Unavailable
- COBRA Subsidy Available

High School or Less: 8.0%, 12.8%
Some College: 10.4%, 19.7% **
College Degree +: 18.4%, 34.9% **

Income

- COBRA Subsidy Unavailable
- COBRA Subsidy Available

Low Income: 8.8%, 15.9%
Moderate Income: 7.9%, 18.6% **
Higher Income: 17.2%, 27.3% **

Family Status

- COBRA Subsidy Unavailable
- COBRA Subsidy Available

Single, No Children: 12.4%, 25.8% ***
Single Parent: 9.4%, 18.0%
Married, No Children: 13.3%, 27.7% *
Married Parent: 11.1%, 13.0%

Spousal Employment

- COBRA Subsidy Unavailable
- COBRA Subsidy Available

Single: 11.7%, 24.4% ***
Married, Spouse Not Working: 15.3%, 19.9%
Married, Sp. Working, No ESI: 9.1%, 25.9% ***
Married, Sp. Working, Has ESI: 13.4%, 5.9%

*p<.05;**p<.01;***p<.001

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Examining heterogeneity by education, results provide little evidence that the subsidy decreased inequality in post-job-loss health insurance coverage. College-educated workers not only had the highest baseline rates of COBRA take-up, but also showed the greatest increases under the COBRA subsidy program. Eighteen percent (18.4%) of college-educated workers held COBRA in the survey wave after job loss when the COBRA subsidy was unavailable. This proportion increased to 34.9 percent when subsidies were available, meaning more than one-third of all college-educated displaced workers took up COBRA while the subsidy program was in place. In contrast, only one in five (19.7%) displaced workers with some college education took up COBRA while the program was in place and one in eight (12.8%) of those with a high school diploma or less education. The ratio of COBRA utilization across the educational categories was more or less unchanged with the subsidy program in place.

However, the subsidy appears to have helped more moderate-income workers—those with family incomes between 200 and 400 percent of the federal poverty line in the last month on the job—purchase COBRA, relative to either higher- or lower-income workers. In the absence of the COBRA subsidy, this group was less than half as likely as higher-income workers to purchase COBRA (7.9 vs. 17.2% held it in the survey wave after job loss). Both groups increased their utilization with the subsidy program in place, but the differential dropped, with moderate-income adults now two-thirds as likely as higher-income workers to purchase COBRA (18.6 vs. 27.3%).

The effects of the subsidies also differed by family status and spousal employment. Baseline differences in COBRA utilization by family status (i.e., marital and parental status) were minor, but under the COBRA subsidy program, utilization increased most among workers without children. Among married workers, the biggest increases occurred for those with a working spouse who did not have his or her own source of employer-sponsored insurance (ESI). These workers likely had greater

Table 3.6 Effect of COBRA Subsidy on Probability of Holding COBRA in Wave after Job Loss: Heterogeneity by Worker Characteristics

	Unadjusted (bivariate)	Adjusted (DID+controls)
Full Sample[a]	0.101 ***	0.065 *
Age		
26-34	0.075 *	0.091 *
35-44	0.084 *	0.080
45-54	0.141 **	0.025
Sex		
Female	0.173 ***	0.157 **
Male	0.066 *	0.012
Education		
High School or Less	0.048	0.022
Some College	0.093 **	0.060
College Graduate	0.164 **	0.119 *
Family Income (last month on job)		
Low Income (<200% FPL[b])	0.071	0.061
Moderate Income (200-399% FPL)	0.107 **	0.117 *
Higher Income (400+ FPL)	0.101 **	-0.016
Family Status		
Single, No Children	0.134 ***	0.071
Single Parent	0.086	0.142 ~
Married, No Children	0.144 *	0.097
Married Parent	0.018	0.001
Spousal Employment		
Single	0.127 ***	0.093 *
Married, Spouse not Working	0.046	-0.024
Married, Spouse Working, No ESI	0.168 ***	0.063
Married, Spouse Working, Has ESI	-0.075	-0.091

Note: Results from subgroup models. Estimates weighted. Standard errors adjusted for possible multiple job losses per sample member. [a]Full sample results in Tables 3.4 and 3.5. [b]Federal Poverty Line
~p<.10; *p<.05; ** p<.01; ***p<.001.

economic resources in the household than those with non-working spouses to purchase COBRA, and greater need to do so in order to maintain coverage relative to those whose spouses had ESI (many of whom could access dependent coverage through their spouses' plans).

Table 3.6 displays key regression results by worker characteristics. These subgroup results are generated by stratifying the sample and fitting both the unadjusted and fully adjusted models separately by worker characteristics of interest. The unadjusted results test the significance of bivariate differences observed in Figure 3.4. Fully controlling for observed characteristics and estimating the effects using the difference-in-difference strategy, I find sizable and significant increases in COBRA take-up among women, college graduates, and moderate-income workers. These groups disproportionately benefitted from the COBRA subsidy.

Changes in COBRA vis-à-vis Changes in Coverage: Evidence of Crowd-Out?

In addition to considering the effect of the COBRA subsidy program on COBRA take-up, I also consider the effect on insurance coverage. For programs like the COBRA subsidy which change the price of one form of coverage relative to alternative forms, a conspicuous issue is the extent to which the program causes people to shift types of coverage, but without changing the total number of people insured. If the COBRA subsidy increased take-up but not coverage, then the subsidy may have simply reduced the financial burden of remaining insured during a period of financial hardship rather than preventing insurance loss for a larger pool of displaced workers.

The DID regression model with controls (Table 3.5) estimated that the program increased COBRA take-up by 6.5 percentage points. To gauge the extent of crowd-out, I

re-run the same model, replacing the outcome variable with "always insured" in the wave after job loss. The size of the effect of the COBRA subsidy program on the probability that displaced workers are insured in all four months of the survey wave after job loss is 4.1 percentage points (n.s.), although this estimate has a high standard error (0.041) and should be interpreted with caution. The size of this estimate, relative to the estimated 6.5 percentage point net increase in COBRA utilization, suggests that about one-third in the overall increase in COBRA take-up represents a shift in type of coverage for individuals who would have maintained coverage in the absence of the subsidy (see Figure 3.5). The remaining two-thirds of the increase in COBRA take-up represent individuals who would have become uninsured without access to COBRA subsidies.[22]

Figure 3.5 Comparing Estimated Effects on COBRA Utilization and Insurance Coverage

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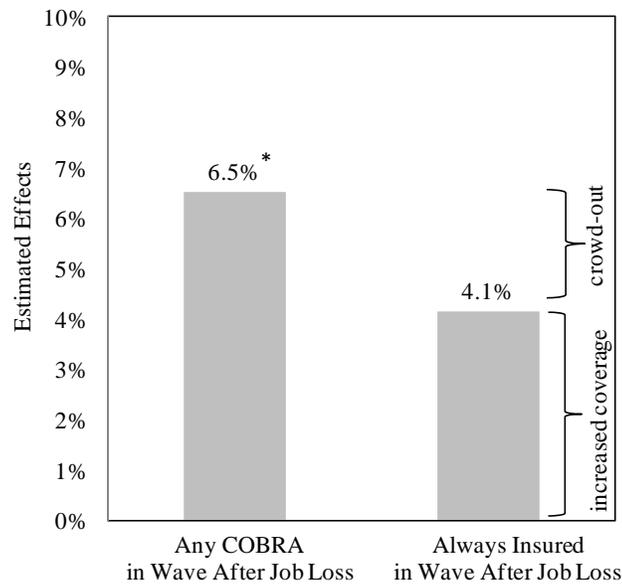
[22] These ratios are estimated imprecisely. Bootstrap 95% confidence intervals for the second ratio include both 0 (100% crowd-out) and 1 (0% crowd-out).

Discussion

I use data from the 2008 SIPP to produce the first nationally representative estimates of the impact of the 2009 ARRA COBRA premium subsidy on the COBRA usage of displaced workers. I document that reduced COBRA premiums are associated with a moderate increase in COBRA take-up. Among displaced workers with health benefits, the proportion receiving health insurance through a former employer in the survey wave after job loss increased from 11.9 percent to 21.9 percent when the COBRA subsidy was available (a gross increase of 10.1 percentage points). After controlling for secular changes and changes over time in the demographic and geographic composition of job separators using multivariate difference-in-difference models, I estimate the net effect of the COBRA subsidy on COBRA take-up at 6.5 percentage points. Findings also suggest that the majority of the COBRA subsidy monies helped displaced workers maintain health insurance coverage after job loss, rather than crowding out other types of coverage.

I estimate that the COBRA subsidy program yielded participation of just over one-fifth of my sample (21.9%). This is somewhat lower than the estimates of two recent small-scale surveys. A survey of subsidy-eligible displaced workers in California in 2009 found that 38 percent of eligibles enrolled in COBRA and a survey of unemployment insurance recipients in New Jersey in 2009 found that between 29 and 32 percent of subsidy eligibles enrolled in COBRA. My study may yield a lower estimate for two reasons. First, my measure of take-up—the receipt of health insurance in the four-month survey wave after job loss—may miss some very short spells of COBRA thus slightly underestimate the rate. Second, individuals in the California study (who received health

insurance through Kaiser Permanente before job loss; Graetz et al. 2012) and in the New Jersey study (who received unemployment insurance after layoff; U.S. Treasury Department 2010) may disproportionately represent higher-SES displaced workers relative to my nationally representative sample. Indeed, the study population for the California study was significantly better educated and more female, and unlike my sample included older workers between 55 and 64 years of age. Each of these factors is associated with higher rates of COBRA take-up.

The moderate successes of the COBRA subsidy program are tempered by the fact that, even with the program in place, still more than 40 percent of displaced workers experienced at least one month without health insurance in the survey wave after job loss (42.4%). This figure demonstrates that a large number of displaced workers were still vulnerable to gaps in health coverage and the accompanying lack of financial protection and barriers to medical care. After the income shock of job loss, even subsidized COBRA premiums remain unaffordable for many (the average individual premium for subsidized COBRA was roughly $162 per month). The California survey found that of subsidy eligibles who did not enroll in COBRA, 89 percent reported that they could not afford COBRA premiums (Graetz et al. 2012).

The financial barrier to enrolling in COBRA is even more pronounced for displaced workers with lower levels of education and income. These groups are less likely to have a second income source in the household or to have cushions of savings to fall back upon, and thus more likely to lack the resources to purchase COBRA. They may also have a number of non-financial barriers that limit their COBRA take-up including

less familiarity with COBRA; lower general literacy[23] or literacy for financial documents such as COBRA election forms; and greater residential mobility which reduces their timely receipt of COBRA election forms. As a result of all these barriers, those with a high school or less education showed substantially lower baseline COBRA take-up rates and relatively small increases in COBRA utilization under the subsidy program (from 8.0 to 12.8%; n.s.) while displaced workers with a college degree showed both higher baseline utilization and larger and significant increases (from 18.4 to 34.9%; p<.001). However, the subsidy did appear to make COBRA affordable for a larger proportion of moderate-income workers. The COBRA utilization of this group more than doubled while subsidies were available, somewhat decreasing the disparity in post-job-loss insurance coverage across income categories.[24]

In thinking about the disparities in post-job-loss insurance coverage, we must consider the total pool of displaced workers. Many displaced workers do not have ESI, and thus are ineligible for COBRA and not included in my sample. Employer-sponsored health insurance is a highly stratified resource. A major driver in inequality in this resource is the highly regressive tax exemption of premiums for employer-sponsored health insurance—by far the largest tax expenditure of the federal government—which disproportionately benefits higher-income workers (Gruber 2010).[25] This contributes to

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[23] In preliminary analyses, I controlled for whether a non-English language was spoken in the home; this was not a significant predictor of COBRA usage.

[24] It is ambiguous how my measure of COBRA take-up, which may miss some very short spells of COBRA, affects the findings regarding distributional effects by education and income. On the one hand, lower-SES workers may disproportionately have short COBRA spells because purchasing COBRA more than one or two months may be unaffordable. On the other hand, higher-SES workers may disproportionately have short COBRA spells because they are able to more quickly secure new employment with health benefits.

[25] According to the Tax Policy Center (2012), the regressive tax exemption for ESI actually raises the after-tax cost of health insurance for low-income workers who qualify for a negative tax rate under the Earned Income Tax Credit (EITC).

the overall disparity in private coverage. In 2011, 85 percent of nonelderly college graduates held private health insurance coverage compared to only 28 percent of those with less than high school education (Kaiser Family Foundation 2012b). Due to differential take-up of COBRA, the financial and health protection that health insurance affords is even more stratified after income shocks. Those individuals and families with the best resources to cope with those shocks—higher-income workers with bigger cushions of savings who also more frequently have employed spouses—are the ones with access to the security of continued health insurance through COBRA. The subsidy moderated this disparity somewhat by making the price of COBRA more affordable to a larger pool of moderate-income workers.

Policy Implications

The lessons learned from the COBRA subsidy have implications for the implementation and future success of subsidies that will be made available under the ACA. In most states, starting in 2014, Medicaid will be available to individuals and families with incomes below 133 percent of the federal poverty level.[26] In all states, subsidies to purchase private coverage through new state-run health insurance exchanges will be available to individuals and families with incomes between 133 and 400 percent of the federal poverty level based on a sliding scale, with premium contributions limited to between 3 and 9.5 percent of family income.

Impacts of the ARRA COBRA subsidy program have at least three major implications for the subsidies that will be made available through state health insurance

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[26] Plus a 5 percent income disregard. The final number of states which will implement this provision is unknown. Several governors have declared that they will not accept federal money to expand their state Medicaid programs.

exchanges. First, findings provide strong support for the sliding-scale design of the ACA subsidies. The flat 65 percent subsidy rate of the ARRA COBRA subsidy resulted in only moderate increases in COBRA take-up, primarily among moderate- and higher-income workers, while more than 40 percent still experienced gaps in coverage after job loss. A subsidy structure that provides more assistance to those with more limited resources will help lower-income families gain access to health insurance as well. Subsidies on a sliding scale are expected to be more effective than flat subsidies at reducing inequalities in access to health insurance coverage.

The exchange subsidies may enable greater access as they will likely cover a significantly higher portion of premiums for low-income individuals and families. As shown in the Appendix (see Table 3.7), an individual whose income is at 133 percent of the poverty line whose premium contributions are limited to 3 percent of his or her total income purchasing an insurance plan valued at $5,538 (the average price of COBRA in 2011) will receive a 92 percent subsidy. A four-person family whose income is at 133 percent of the poverty line whose premium contributions are also limited to 3 percent of his or her total income purchasing a family insurance plan valued at $15,374 (the average price of a COBRA family policy in 2011) will receive a 94 percent subsidy. The subsidy rates decline as income increases. Assuming these premium prices, the implied subsidy rates for an individual and a family with incomes at 400 percent of the federal poverty line are 23 percent and 43 percent, respectively. Subsidy rates will be greater in states with more expensive health insurance coverage, and lower where policies meeting the quality standards set by the ACA have lower premiums. The increased subsidy rates for

low-income individuals and families, in combination with the mandate to carry insurance coverage, will likely result in substantially higher coverage.

Second, the public's limited awareness of the COBRA muted the potential effects of the COBRA subsidy (Graetz et al. 2012). The success of expanding health insurance coverage through exchanges may hinge upon clearly communicating to the public the purpose of exchanges and the availability of premium assistance; and designing and demonstrating their ease of use.

Third, lessons from the COBRA subsidy demonstrate that stronger policies are needed to help displaced workers maintain insurance coverage. As the ACA builds upon the current system of employer-sponsored health insurance in the U.S., the stability in health insurance coverage after employment transitions will continue to be an issue of concern. Although ACA subsidies may facilitate access to more affordable coverage through Medicaid or insurance exchanges, it remains to be seen how seamless the transitions will be between ESI and Medicaid and between ESI and private coverage purchased through exchanges. However, these concerns are being thoughtfully addressed as regulations for the implementation of the ACA are developed. For example, while the primary determination of eligibility for Medicaid or exchange subsidies will be made based on a family's modified adjusted gross income from the previous tax year, the final federal regulations require that exchanges provide special enrollment opportunities and timely adjustment in benefit levels following income changes and job terminations (HHS 2012b).

The regulations also suggest a tenuous future for COBRA health insurance coverage. Individuals and families who lose access to employer-sponsored coverage after

an employment transition will become eligible for exchange subsidies, conditional on meeting income requirements, even if they are eligible to purchase COBRA (HHS 2012b). Because the cost of subsidized private coverage purchased through exchanges is likely to be substantially cheaper than unsubsidized COBRA, I predict that COBRA take-up rates will become negligible for all those with incomes below 400 percent of the federal poverty line, the upper threshold for qualifying for exchange subsidies. There will, of course, be substantial variation across states in what exchanges look like, how well they operate, and in how regulations are implemented, so time will tell how displaced workers and their families will fare after the full implementation of the ACA.

Appendix

Figure 3.6 Diagram of Eligibility for COBRA (shaded box) and COBRA Subsidy (X) by Month of Job Loss

Month of Job Loss	Subsidy Eligibility	Jun 2008	Jul 2008	Aug 2008	Sep 2008	Oct 2008	Nov 2008	Dec 2008	Jan 2009	Feb 2009	Mar 2009	Apr 2009	May 2009	Jun 2009	Jul 2009	Aug 2009	Sep 2009	Oct 2009	Nov 2009	Dec 2009	Jan 2010	Feb 2010	Mar 2010	Apr 2010	May 2010	Jun 2010	Jul 2010	Aug 2010	Sep 2010	Oct 2010	Nov 2010	Dec 2010	Jan 2011	Feb 2011	Mar 2011	Apr 2011	May 2011	Jun 2011	Jul 2011	Aug 2011	Sep 2011	Oct 2011	Nov 2011	Dec 2011	Jan 2012	Feb 2012
Jun 2008	No		▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓																											
Jul 2008				▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓																									
Aug 2008					▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓																								
Sep 2008	Delayed Eligibility					▓	▓	▓	▓	▓	X	X	X	X	X	X	X	X	X	X	X	X	X																							
Oct 2008							▓	▓	▓	▓	X	X	X	X	X	X	X	X	X	X	X	X	X	X																						
Nov 2008								▓	▓	▓	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X																					
Dec 2008									▓	▓	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	▓																				
Jan 2009										▓	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	▓	▓																			
Feb 2009											X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	▓	▓	▓																		
Mar 2009	Standard Eligibility											X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	▓	▓	▓																	
Apr 2009												X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	▓	▓	▓																
May 2009													X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	▓	▓	▓															
Jun 2009														X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	▓	▓	▓														
Jul 2009															X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	▓	▓	▓													
Aug 2009																X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	▓	▓	▓												
Sep 2009																	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	▓	▓	▓											
Oct 2009																		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	▓	▓	▓										
Nov 2009																			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	▓	▓	▓									
Dec 2009																				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	▓	▓	▓								
Jan 2010																					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	▓	▓	▓							
Feb 2010																						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	▓	▓	▓						
Mar 2010																							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	▓	▓	▓					
Apr 2010																								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	▓	▓	▓				
May 2010																									X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	▓	▓	▓			
Jun 2010	No																										▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓		
Jul 2010																											▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	
Aug 2010																												▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓

ARRA Passes (Feb. 2009)

Notes: Grey boxes identify the 18 months after job loss of COBRA eligibility. X's identify up to 15 months of subsidy eligibility. Involuntary job terminators with standard eligibility may receive the COBRA subsidy for up to 15 months starting the month after job loss. Those with delayed eligibility may (a) elect COBRA in the month after job loss, continue COBRA coverage, and begin receiving subsidies in March 2009; (b) elect COBRA coverage in the month after job loss, discontinue coverage, and then re-elect subsidized COBRA coverage in March 2009; or (c) decline COBRA coverage in the month after job loss, and then elect subsidized COBRA coverage in March 2009. They stop receiving subsidized COBRA 18 months after job loss, or 15 months after their first month receiving subsidies, whichever comes first.

Table 3.7 Implied Subsidy Levels Under ACA Exchange Subsidies, Assuming COBRA Premium Prices

Income as Percent of Federal Poverty Line	Premium Contribution Limit under ACA Exchange Subsidies	Individual				Four-Person Family				ARRA COBRA Subsidy Level
		Annual Income[a]	Monthly Premium Contribution Under ARRA COBRA Subsidies	Monthly Premium Contribution Under ACA Exchange Subsidies	Implied ACA Exchange Subsidy Level	Annual Income[a]	Monthly Premium Contribution Under ARRA COBRA Subsidies	Monthly Premium Contribution Under ACA Exchange Subsidies	Implied ACA Exchange Subsidy Level	
133%	3.0%	$14,856	$162	$37	92%	$30,657	$448	$77	94%	65%
150%	4.0%	$16,755	$162	$56	88%	$34,575	$448	$115	91%	65%
200%	6.3%	$22,340	$162	$117	75%	$46,100	$448	$242	81%	65%
250%	8.05%	$27,925	$162	$187	59%	$57,625	$448	$387	70%	65%
300%	9.5%	$33,510	$162	$265	43%	$69,150	$448	$547	57%	65%
400%	9.5%	$44,680	$162	$354	23%	$92,200	$448	$730	43%	65%

[a]Based on 2012 HHS Poverty Guidelines (HHS 2012a).

ARRA provided a flat 65% subsidy for COBRA premiums for eligible workers after job loss. The health insurance exchanges that will become operational in 2014 under the ACA provide a sliding scale for subsidies, such that an individual or family's premium contribution is limited to a certain proportion of their total annual income. These premium contribution limits range from 3.0% of income for those with incomes at 133% of the federal poverty line to 9.5% of income for those with incomes at 400% of the federal poverty line.

Table 3.7 above displays how the subsidies that will be made available through ACA insurance exchanges compare in dollar value and in subsidy level to those made temporarily available to involuntarily terminated workers in the recession under ARRA. The example assumes that the full price of a private health insurance policy for an individual is $5,538 per year or $461 per month and that the full price of a private health insurance policy for a family is $15,374 per year or $1,281 per month. These represent the average full price of COBRA in 2011, as estimated based on the average total employer-sponsored health premiums found in the 2011 Employer Health Benefits Survey plus the 2% COBRA administration fee (Claxton et al. 2011). **Implied subsidy levels under insurance exchanges will be higher in states where the cost of plans meeting the quality standards set by the ACA is higher, and lower where their cost is lower.**

As the table indicates, an individual at 133% of the poverty line whose premium contributions are limited to 3.0% of their total income purchasing an insurance plan valued at $5,538 will receive a 92% subsidy. An individual at 400% of the poverty line whose premium contributions are limited to 9.5% of their total income purchasing the same insurance plan will receive a 23% subsidy. A family at 133% of the poverty line whose premium contributions are limited to 3.0% of their total income purchasing an insurance plan valued at $15,374 will receive a 94% subsidy. A family at 400% of the poverty line whose premium contributions are limited to 9.5% of their total income purchasing the same insurance plan will receive a 43% subsidy. Thus in a state with this level of insurance premiums, ACA exchange subsidies are as or more generous than COBRA subsidies for individuals up to between 200 and 250% of the federal poverty line and for families up to between 250 and 300% of the federal poverty line. Higher-income individuals and families will have lower subsidy levels.

CHAPTER 4

Health Insurance in Young Adulthood:
Less Instability Since the Affordable Care Act?

Introduction

In recent years, demographers have documented a lengthening timetable to adulthood. Compared to even a decade ago, young people are taking longer to move away from home, to achieve economic independence, to get married and to have children (Danziger and Rouse 2007; Berlin, Furstenberg, and Waters 2010). The establishment of stable health insurance coverage is no exception. Levy (2007) documents that recent cohorts of young adults are taking longer than previous ones to secure their own private health insurance.

Until recently, the health insurance options for young adults have not kept pace with this changing timetable. As such, the lag between loss of childhood health insurance coverage (either through parents' policies or public programs) and acquisition of adult health insurance coverage results in a sharp rise and peak in the probability of being uninsured in early adulthood (Levy 2007). Not only do young adults have the highest uninsured rate of any age group (DeNavas-Walt, Proctor, and Smith 2011), but they also have the greatest levels of health insurance instability, experiencing more frequent gaps in coverage than either older or younger Americans (Collins et al. 2012; Schwartz and Sommers 2012; Short et al. 2012).

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In 2010, the Affordable Care Act (ACA) extended the availability of dependent coverage through parents' private health insurance policies up to age 26. Previously, non-students frequently lost eligibility for dependent coverage at age 19 and students frequently lost eligibility at age 25. The young adult coverage provisions in the ACA thus allowed parents to continue to cover their grown children under their own private health plans for longer into early adulthood. By potentially decreasing the gap between the loss of childhood health insurance coverage and the acquisition of adult health insurance coverage for a large number of young adults, this policy has had the potential to substantially lower the uninsurance rate and increase the stability of coverage for young adults 19 to 25, the target age range for the policy.

Using recent nationally representative panel data from the Survey of Income and Program Participation (SIPP), I assess the effects of the ACA's young adult coverage provisions on the level and stability of health insurance coverage among 19- to 25-year-olds as well as on their receipt of parental coverage. I first present trends over time in rates of insurance coverage, showing increases in coverage since the ACA's passage that mirror published estimates from other national data sources. I then exploit the strengths of panel data by examining changes in the stability of young adult coverage and receipt of parental coverage between a one-year period prior to the ACA's passage (Sept. 2008 – Aug. 2009) and a one-year period after the implementation of the ACA's young adult coverage provisions (Sept. 2010 – Aug. 2011). My difference-in-difference modeling strategy uses the changes over time in a slightly younger (15-18) and a slightly older (26-34) comparison group as a counterfactual. In subsequent sections of the chapter, I

examine which young adults benefitted most from the policy, and look in particular at how the policy affected insurance coverage for those graduating from college.

Background

Health Insurance in Young Adulthood

Sometimes referred to as the "young invincibles," young adults are generally very healthy relative to older adults. Nevertheless, health insurance is important for their physical and financial health, as it permits access to medical care when health issues do arise and protects against major financial losses in the event of unforeseen injuries and illnesses. Nearly one in six young adults has a chronic illness such as cancer, diabetes, or asthma (DOL 2010). Young adults also disproportionately require medical services related to child birth, sexually transmitted diseases, and injuries. Roughly forty percent of uninsured young adults reported that they would wait "as long as possible" to seek care when they got sick (Quinn, Schoen, and Buatti 2000). One survey found that slightly more than half of 19- to 29-year-olds reported foregoing medical care due to cost in 2009 (Collins and Nicholson 2010). And nearly half of uninsured young adults have difficulty paying medical bills (DOL 2010).

Even given the importance of insurance coverage, nearly one-third (31.4%) of 19- to 25-year-olds were uninsured in 2009 (DeNavas-Walt, Proctor, and Smith 2011). These young adults are the most likely to be uninsured of any age group, about twice as likely as all other age groups combined. Some have posited that these high uninsurance rates result from young adults not valuing coverage. However, survey evidence indicates that most do want health insurance. In the Commonwealth Fund's 1999 National Survey of

Workers' Health Insurance, 7 of 10 young adults said that health insurance was very important in deciding whether to take a job, and another 2 of 10 said it was somewhat important. These numbers are very similar to responses from older adults. Furthermore, when offered health insurance on the job, young workers are only slightly less likely than older workers to elect coverage (80 vs. 84%). Most young adults who decline coverage from an employer cite cost as the reason (Quinn, Schoen, and Buatti 2000).

Rather than not valuing health insurance, young adults frequently lack coverage because of limited access. Many lose access to the coverage they had as children, and have difficulty securing their own coverage as they enter adulthood. Children insured under their parents' employer-sponsored health insurance policies often lose coverage at age 18 or 19 unless they go to college. Full-time students whose parents have employer-sponsored insurance often have the option to remain on a parent's health plan until age 24 or 25 (Claxton et al. 2010). Public insurance received in childhood also lapses on one's nineteenth birthday, when eligibility for the Children's Health Insurance Program (CHIP) expires.

When childhood coverage lapses, many young adults have trouble securing health insurance coverage on their own. COBRA is temporarily available to young adults who lose dependent coverage through a parent's employer, but is very expensive (COBRA averaged over $450 per month in 2011; Claxton et al. 2011). Some young adults enrolled in school purchase coverage through colleges and universities, but this is not always available. Others obtain insurance through an employed spouse. But most young adults are not married, and if they are, their spouses may, like them, have difficulty accessing health insurance through their jobs.

The types of jobs that young adults tend to occupy—low-wage, entry-level jobs—and their frequent job transitions make it difficult to access health insurance coverage from employers. Many young people work part time, and only 16 percent of employers with health plans offer coverage to part-time employees (Claxton et al. 2010). Young workers also tend to change jobs more frequently and have shorter job tenures. Since almost three-quarters of workers face a waiting period before which they qualify for health benefits, shorter job tenures imply that more of young adults' time working is spent without access to health benefits (Claxton et al. 2010). Among young adults working full time all year, only 59 percent have employer-based coverage from their own jobs, compared to 70 percent of older full-time, full-year workers (Quinn, Schoen, and Buatti 2000). Young adults also disproportionately work in low-wage jobs for small, private employers, the types of employers that less commonly offer health coverage (Quinn, Schoen, and Buatti 2000).

Dependent Coverage Before and After the Affordable Care Act

Before the ACA was passed, the rules of eligibility for insuring young adult dependents varied from employer to employer and from state to state. Generally, the age limits for dependent coverage were higher for full-time students than for other young adults. In early 2010, about half of all employers limited dependent coverage (in the plan with the largest enrollment) to age 18 or 19 for non-students and age 24 or 25 for students (see Figure 4.1). As such, full-time college students could often remain on a parent's health plan, but part-time students and non-students faced much greater difficulty maintaining coverage.

Figure 4.1 Pre-ACA Age Limits for Dependent Coverage,
**by Student Status**
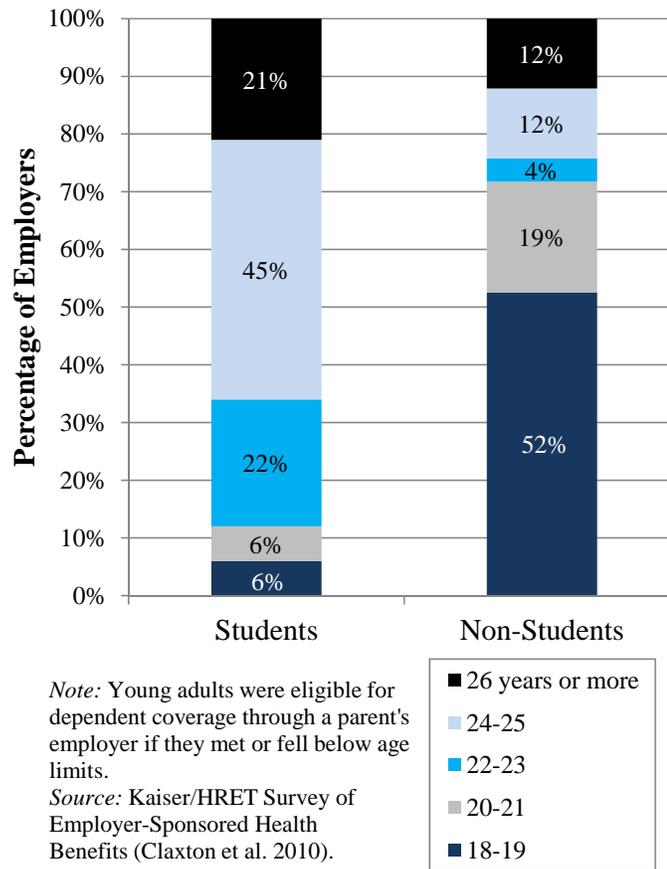
Figure 4.1 presents statistics on limits on dependent coverage that reflect the laws on the books prior to the ACA. Many states (37 as of June 2010; NCSL 2010) had laws that mandated that insurers extend insurance coverage through certain ages for different categories of young adults (e.g., students, unmarried, legal dependents). There was substantial variability among these laws, but few of them pushed age limits up to age 26 as the ACA did. Additionally, state insurance laws do not apply to self-funded health plans, the type held by most large employers. Monheit and colleagues (2011) found that the implementation of these state policies in the mid- to late-2000's resulted in small increases in the proportion of young adults receiving parental coverage, but that these

were largely offset by declines in employer-sponsored coverage from young adults' own employers. They did not decrease the proportion of young adults uninsured.

The pre-ACA age limits are borne out by young adults' reports of their health insurance experiences. Levy's (2007) analysis of the 1996 and 2001 SIPP panels found that the decline in the proportion of young people covered by parents' employers started about four years later for full-time students than for non-students (around age 21 rather than age 17). For both groups, the proportion receiving parental coverage was minimal by age 24.

In 2010, the Affordable Care Act (ACA) required health insurance plans that offer coverage to child dependents to permit young adults to remain as dependents on parents' plans until age 26. Under the law, young adults may remain on parents' plans regardless of whether they are married, employed, in school, living with parents, residing in the same state as parents, or identified as a dependent on a parent's tax return. Health plans were required to send written notices of eligibility and provide a 30-day election period to both young adults who qualified for dependent coverage under the new law and their parents (DOL 2010).

The marginal cost of adding a young adult dependent to one's employer-sponsored health insurance policy differs based on the employers' health plan premium structure and the family members currently enrolled on the policy. ACA regulations do not dictate what premium structures are allowable, with the exception that there can be no special surcharges applied to young adult dependents (HHS 2010). In other words, both before and after the ACA, an employer could choose a simple two-tiered premium structure (two different prices: individual; family), a common four-tiered premium

structure (individual; individual plus spouse; individual + children; individual + spouse + children), a multi-tiered structure that charges an incrementally higher cost for each enrolled family member (individual; individual + 1; individual + 2; individual + 3; etc.), or any other structure, as long as the pricing does not discriminate based on the age of the child (up to age 26). For employers using structures like the two- or four-tiered examples here, the marginal cost to the employee of adding a young adult dependent is $0 if there is at least one other dependent already enrolled on the policy.[27] While detailed statistics on how many employers utilize which premium structures are not readily available, one survey indicates that half of employers used the common four-tiered premium structure in 2011 (Sammer 2012). As such, the effects of the ACA young adult coverage provisions are likely greater for young adults whose parents already insure a younger sibling.

The ACA was passed in March 2010, and the young adult coverage provisions officially went into effect in September 2010, although some early implementation occurred. Health plans were required to conform to the new policy for plan years starting on or after September 23, 2010. Because group health insurance plans operate on a yearly cycle, and the start of the cycle varies by plan, this official rule captures all health plans (except "grandfathered plans") between September 2010 and September 2011.[28] Because of these nuances in the timing of implementation, it is likely that the biggest changes

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[27] Note that in general, employees receiving individual coverage implicitly subsidize part of the cost of family coverage for fellow employees. It is likely that this implicit subsidy has increased, particularly if premium structures have been revised little to reflect larger family sizes following the implementation of the young adult coverage provisions. But some evidence suggests that more employers have moved towards multi-tiered systems that charge higher premiums for each additional dependent since the ACA was passed (Sammer 2012).

[28] Until 2014, "grandfathered plans" are exempt from the requirement to cover children until age 26 if they are eligible for group health plans through their own employers or another source. A private health insurance plan may qualify as a grandfathered plan if it covered a worker when the ACA was passed (March 23, 2010) and if the plan has not made significant changes to benefits or employee costs since that date (Fernandez 2011). According to the Employer Health Benefits Annual Survey, 72 percent of firms had at least one grandfathered health plan in early 2011 (Claxton et al. 2011).

under the new provisions occurred in late 2010 and early 2011, although some effects likely occurred as early as April 2010 and effects may grow in magnitude through 2014 when all private health insurance plans become subject to the policy without exceptions.

Past Findings on the ACA Young Adult Coverage Provisions

Three surveys have provided preliminary estimates of the aggregate changes in uninsurance rates for young adults since the implementation of the young adult coverage provisions. Using Current Population Survey (CPS) data collected in March 2010 and March 2011, the U.S. Census Bureau estimates that young adults 19 to 25 were the only age group whose uninsurance rate decreased over the year (from 31.4 to 29.8%; DeNavas-Walt, Proctor, and Smith 2011). Given that young adults experience greater unemployment rates compared to older workers, we would expect in the absence of the policy that their uninsurance rate would rise at least as fast as that of other age groups in the recession. CPS data from March 2012 indicate that the rate dropped again the following year (to 27.7%; DeNavas-Walt, Proctor, and Smith 2012). The Census Bureau's analysis of American Community Survey (ACS) data and the National Center for Health Statistics' analysis of National Health Interview Survey (NHIS) data show similar declines (Cohen and Martinez 2012; Rodean 2012).

Antwi, Moriya, and Simon (2012) conduct analyses of the 2008 SIPP panel, examining changes in point-in-time measures of health insurance coverage and parental coverage before and after the implementation of the ACA's young adult coverage provisions in 2010. They find that the policy's implementation substantially reduced the uninsurance rate among 19- to 25-year-olds (estimated net effect of 3.2 percentage

points), and increased the proportion of young adults receiving parental coverage (estimated net effect of 7.0 percentage points) at any point in time.

Aside from these aggregate changes in point-in-time coverage rates, little information is available about how the ACA provisions are affecting young adult health insurance. One exception is a survey of employers in early 2011 which found that 19 percent of firms with fewer than 200 workers and 70 percent of larger firms enrolled at least one young adult under the ACA provision who would not have otherwise been eligible for dependent coverage (Claxton et al. 2010). A second exception is a mid-2011 survey of U.S. adults conducted by the Commonwealth Fund that found that nearly half (46%) of 19- to 25-year-olds reported either staying on or joining a parent's insurance policy in the previous 12 months (Collins et al. 2012). Because the policy change is so recent, few data sources have yet released data applicable to estimate effects of the ACA young adult coverage provisions.

Current Study

Using a recent (May 2008 – November 2011) longitudinal dataset, this study examines the effects of ACA's young adult coverage provisions on both 19- to 25-year-olds' overall health insurance coverage rates (point-in-time outcome), as well as the instability of their health insurance coverage over time (longitudinal outcome). To date, no published findings to my knowledge have addressed the latter outcome.

Past research has found that the uninsured are not a static population. Rather, those uninsured at any one point in time reflect a snapshot of a dynamic process in which many people gain and lose insurance coverage over time. Short and Graefe (2003) document that in any given year, half to two-thirds of the uninsured cycle into or out of

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coverage. The inflows and outflows to the uninsured population are largest among young adults, who experience greater insurance instability than any other age group (Collins et al. 2012; Schwartz and Sommers 2012; Short et al. 2012).

Even if the ACA increased health insurance coverage levels for young adults, as previous estimates indicate, it remains a possibility that their insurance instability remains high. For example, if they face difficulty enrolling quickly in parents' employer-based policies following job losses which terminate their own employer-based insurance coverage, then many young adults would still experience a temporary gap in coverage even though they ultimately are able to enroll in parental coverage (thus increasing their overall coverage rates while non-employed). Alternatively, if the overall increase in young adult coverage represents an increase in coverage among the chronically uninsured rather than among the sporadically uninsured, then coverage instability would be little affected among the latter group.

Insurance instability is an issue of concern because even short gaps in insurance coverage expose individuals and their families to substantial financial risks and pose a barrier to receiving medical care when needed. Compared to adults who are stably insured, those with coverage gaps are less likely to have a regular doctor and less likely to receive recommended preventive care; these rates decline as gaps in insurance coverage grow longer (Collins et al. 2012). Furthermore, when medical problems arise for uninsured young adults, roughly forty percent say that they will wait "as long as possible" to seek care, potentially exacerbating their medical conditions and having negative long-term health ramifications (Quinn, Schoen, and Buatti 2000).

In this chapter, I start by examining trends across time in rates of uninsurance and receipt of parental coverage for the target age group of ACA's young adult coverage provisions—19 to 25. I compare my estimates on changes in uninsurance from the 2008 SIPP panel to published estimates from the ACS, CPS, and NHIS datasets. Previously published estimates on trends in parental coverage are not available to my knowledge.[29]

I then turn to the question of how the ACA young adult coverage provisions have affected insurance stability and the receipt of any parental coverage over a year-long period. I compare the health insurance experiences for young adults 19 to 25 in a year before the ACA was passed (Sept. 2008 – Aug. 2009), a year during which the ACA was passed (Sept. 2009 – Aug. 2010), and a year after the ACA young adult coverage provisions were implemented (Sept. 2010 – Aug. 2011). Changes in these outcomes among slightly younger (15-18) and slightly older (26-34) comparison age groups are used as a counterfactual in difference-in-difference models. As the ACA did not expand access to parental coverage for these comparison age groups, any changes in insurance outcomes across the time periods among these groups reflect underlying time trends not attributable to the ACA. I also examine which young adults benefitted most from the policy change, and take a closer look at how the change affected the insurance coverage of young adults graduating from college, who experienced particularly large effects.

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[29] Antwi, Moriya, and Simon (2012) present estimates of parental coverage in discrete time categories, but do not display the trend over time.

Data and Methods

Data

Data for this study come from the 2008 panel of the Survey of Income and Program Participation (SIPP). The SIPP is a longitudinal survey conducted by the U.S. Census Bureau of a large nationally representative sample of civilian non-institutionalized households. The approximately 40,000 households represented in the 2008 SIPP panel are followed over a five-year period, reporting every four months on core topics including demographic characteristics, labor force participation, income sources, program participation, and health insurance coverage. In each wave of data collection, respondents are asked to provide monthly reports on most core topics for each month since the prior interview. This study utilizes the data currently available from waves 1 through 10 of the 2008 SIPP panel, covering the period from May 2008 to November 2011.

The SIPP has three key advantages for studying health insurance coverage in young adulthood. First, it follows individuals over time and tracks monthly changes in health insurance status over a multi-year period. This allows me to assess the stability of health insurance coverage, and to examine how this stability changed before and after the young adult coverage provisions of the ACA were implemented. Second, whereas many datasets lack information on the source of health insurance, SIPP data can be used to identify when a young adult's private health insurance policy is received through his or her parents. This information enables me to assess changes in parental coverage after the ACA's implementation. Third, because the SIPP also collects monthly data on employment and school attendance, I can observe not only how health insurance changes

for all young adults, but also how these changes differ for those experiencing job terminations, college graduations, and college dropouts.

Measures

Monthly Health Insurance Coverage—Any Coverage and Any Parental Coverage. Health insurance outcomes in this study are measured in two different ways. This first set of measures assesses health insurance at any one point in time, whereas the second set (next section) cumulates the health insurance experiences of individuals across a one-year period to assess the stability of coverage and the likelihood of ever having parental coverage over the course of a year. The point-in-time measures are most consistent with published estimates of the ACA's effects on young adult health insurance from other datasets. As such, I use these measures to examine the trends in the overall proportion of young adults with any health insurance (and compare this with previously published estimates) as well as examine the trends in the overall proportion of young adults with parental health insurance coverage.

The first point-in-time measure indicates whether one holds any type of health insurance in a given month, or conversely, whether he or she is uninsured in that month. The second point-in-time measure indicates whether an individual holds health insurance as a dependent through a parent's insurance policy in a given month. Because parental health insurance cannot be directly identified in the SIPP when young adults are living outside of the parental home, I use logical imputation to identify parental coverage. Specifically, I code individuals as holding parental coverage if they have private health insurance in a given month as a dependent, and they are not currently married. This measure likely slightly overestimates parental coverage, as it may capture some cases of

health insurance provided by an unmarried partner. The overestimate does not confound the current study, however, since there is no reason to expect that the magnitude of the overestimate should differ before and after the implementation of the ACA's young adult coverage provisions.

Annual Health Insurance Coverage—Stability of Coverage and Ever Parental Coverage. Looking solely at point-in-time measures of health insurance coverage may mask substantial underlying instability in health insurance across time, particularly for young adults who have tended to experience more frequent gaps in coverage than other age groups (Collins et al. 2012; Schwartz and Sommers 2012; Short et al. 2012). When one considers these underlying dynamics, it is an open question whether the ACA's young adult coverage provisions only increased coverage rates for young adults or whether they additionally increased the stability of insurance coverage. If the documented post-ACA increases in young adult coverage rates reflect the acquisition of health insurance among young adults who previously would have gone chronically uninsured, then the policy change could have increased overall coverage rates without reducing insurance instability. If, however, the increases in young adult coverage rates reflect the utilization of parental coverage to fill what otherwise would have been gaps in coverage, then the policy change indeed reduced insurance instability. To address this question, my second set of health insurance measures reflects the cumulative experiences of an individual across a one-year period.

I split the longitudinal survey data into three years. The first year, Pre-ACA, spans from September 2008 to August 2009, all months prior to the ACA's passage. The second year, which I refer to as Early Implementation, spans from September 2009 to

August 2010. The ACA was passed in the middle of this year (March 2010), and some insurance companies implemented the provisions during this time period, in advance of their required implementation in September 2010. The third year, Post-ACA, spans from September 2010 through August 2011, all months during which the new provisions were in effect.

I assess both one's stability of coverage over the course of each year and whether or not he or she ever held parental coverage in any month of the year. I tabulate each person's health insurance stability in three categories—insured in all twelve months of the year, unstable coverage (insured in some but not all months), and uninsured in all twelve months of the year. It is likely that the data somewhat underestimate the proportion of individuals in the unstable coverage category. Because SIPP interviews are conducted every four months, monthly responses tend to be correlated within waves and transitions such as health insurance changes tend to be disproportionately reported between rather than within waves. This so-called "seam bias" biases estimates of insurance stability upward. However, because there is no reason to expect that the magnitude of seam bias changed over time, and I can still effectively compare estimates of young adult health insurance stability before and after the implementation of the ACA young adult coverage provisions. The second measure of annual health insurance coverage is whether a young adult ever held parental health insurance coverage at any point over the year.

Young Adult Characteristics and Transitions. I examine how changes in young adult insurance coverage over the course of a year differ by four young adult characteristics, measured in the first month of that year. Because the ACA may have

differentially affected older or younger individuals in the target age range of 19 to 25, I examine how effects differed across three age groups (19-20; 21-22; 23-25). I also examine effects by sex, family status (single, no children; single parent; married), and student status (full-time student; part-time/non-student).

The young adult coverage provisions may also have had differential effects on young adults experiencing job and school transitions. As such, I look to see whether the stability of health insurance coverage and receipt of parental coverage over the course of a year differ for young adults who terminate a job, graduate from college, or leave college without a degree during the course of that year.[30] Past research has shown that job separation is the leading cause of health insurance loss in the U.S. (Gruber and Madrian 1997; Glied 2001; Kapur and Marquis 2003); the expanded availability of parental coverage may have lessened this risk for young adult workers. Prior to the ACA, leaving school typically triggered the loss of eligibility for parental coverage, so the expanded availability of parental coverage to non-student young adults may have decreased this risk.

Parental Characteristics. A young adult's access to parental health insurance depends on his or her parent's resources and receipt of employer-sponsored health insurance. Parental characteristics are observed in the SIPP when young adults reside in the same household with at least one parent or guardian. For this subset of young adults, I examine how the changes in health insurance stability and receipt of parental coverage

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[30] I record job termination as the last full or partial month on a job, prior to one or more months not working. I record college graduation as the last month of the first wave in which an individual reports attending his or her "senior year of college" and is listed as a "college graduate" (both wave-level variables), or if no overlap occurs, the first month of the wave in which an individual is listed as a "college graduate," having stopped attending school in the previous wave. I record leaving college without a degree when a young adult is in college full time and then in the subsequent (non-summer) month is no longer enrolled and does not have a college degree.

differ by parental poverty status, education, and receipt of employer-sponsored insurance. Parental poverty status is based on the ratio of family income to the federal poverty line (FPL), and is tabulated in three categories: low income (0-199% FPL), moderate income (200-399% FPL), and higher income (400+% FPL). Highest parent education reflects the highest level of education received by either co-resident parent in three categories: high school or less, some college, or college degree or more. Parent receipt of employer-sponsored insurance (ESI) is tabulated in three categories: either parent has ESI, and there is at least one (other) minor child in the family; either parent has ESI, and there is no (other) minor child in the family; neither parent has ESI.[31] I choose to separate parents with ESI by the presence of minor children in the family because the marginal cost of adding a young adult to one's ESI policy in many cases is significantly lower for parents whose ESI already covers at least one child.

Analysis

I utilize the changes in young adult health insurance coverage and stability across time in the 2008 SIPP panel to estimate the effects of the ACA's young adult coverage provisions. This study consists of four sets of analyses. All analyses are weighted and standard errors are clustered at the person level.

The first set of analyses is entirely descriptive, tracking month-by-month changes in the proportion of young adults with any coverage and with parental coverage. I compare the estimated trends for the policy's target age range—19 to 25—with trends in two comparison age groups, one of which is slightly younger (15-18) and the other of

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[31] For young adults 18 or older, the variable indicates whether there are any minor (age<18) children in the family. For children 15 to 17, the variable indicates whether there are any other minor children in the family.

which is slightly older (26-34). I also compare my estimated trends for 19- to 25-year-olds with published trends from the ACS, CPS, and NHIS datasets.

The second set of analyses looks at health insurance stability and receipt of parental coverage for young adults over the course of a year, and examines how this changes over three time periods—pre-ACA (Sept. 2008 – Aug. 2009), early implementation (Sept. 2009 – Aug. 2010), and post-ACA (Sept. 2010 – Aug. 2011). I compare changes across these three time periods among young adults in the target age range (19-25) with the younger and older comparison age groups (15-18 and 26-34, respectively). I then estimate the difference-in-difference treatment effect, controlling for young adult characteristics and transitions over the course of the year. Note that each individual can contribute up to three observations to the analytical sample of person-years, one in each time period. Standard errors are adjusted for multiple person-years per individual. The analytical sample is limited to person-years from persons who are observed in every month of the survey so that attrition does not artificially inflate estimates of post-ACA insurance stability relative to the pre-ACA period.

The third set of analyses builds upon the second, and examines the heterogeneity of effects across a variety of young adult and parental characteristics. Analyses examining heterogeneity by parental characteristics are limited to the subset of cases in which young adults lived with their parents in the first month of the year-long-period. Sixty percent of young adults 19 to 25 lived at home in this first month (September), and are included in the subsample for these analyses.

Table 4.1 presents descriptive statistics for the person-year sample used in analyses examining cumulative health insurance experiences across a year-long period.

As expected, the subgroup of young adults living at home is clearly a non-random sample. Among the target age group of 19- to 25-year-olds, those living at home are slightly younger than their peers in the same age group; they are more likely to be students and less likely to work full-time; and they are more likely to be single and childless relative to those living outside the parental home. More generally, those living at home may have achieved lower levels of economic independence and job stability relative to the larger population of all young adults 19 to 25. The young adults who *have* achieved economic independence, and are thus omitted from analyses the "living at home" subsample, are likely to be children of higher-SES parents. Thus it may be that my numbers underestimate true baseline differences in health insurance experiences by SES. Among the two comparison age groups, the composition of those living and not living at home are as one might expect: across age groups, those living at home are more likely to be younger, to be students, and to be single and those living outside the parental home are more likely to be older, to hold full-time jobs, and to be married.

The fourth set of analyses looks more closely at young adults between 19 and 25 years old who graduate from college in the course of a year, a subgroup which experiences particularly large effects of the policy change. This set of analyses uses point-in-time measures of any insurance coverage and parental insurance coverage to examine how the pre-post graduation health insurance profiles of young college graduates differed before and after implementation of the ACA's young adult coverage provisions. Specifically, it compares the coverage rates of young adults who graduate before the ACA's passage (May 2008 – March 2010) with those who graduate after the ACA's implementation (September 2010 – November 2011).

Table 4.1 Sample Characteristics by Age Group and Co-Residence with Parent(s)

	15-18 year-olds			19-25 year-olds			26-34 year-olds		
	Living at Home at Start of Year	Living Away from Home at Start of Year	Diff.	Living at Home at Start of Year	Living Away from Home at Start of Year	Diff.	Living at Home at Start of Year	Living Away from Home at Start of Year	Diff.
Age (years)	16.5	17.7	***	21.3	22.9	***	29.2	30.1	***
Female	0.485	0.600		0.460	0.547	***	0.421	0.531	***
NH White	0.596	0.461	*	0.594	0.661	***	0.537	0.652	***
Family Status									
Single, No Children	0.982	0.576	***	0.923	0.494	***	0.734	0.250	***
Single Parent	0.009	0.124	**	0.053	0.148	***	0.139	0.128	
Married	0.009	0.301	***	0.024	0.358	***	0.128	0.622	***
Full-Time Student	0.887	0.483	***	0.459	0.189	***	0.083	0.056	**
Full-Time Job	0.033	0.235	***	0.271	0.545	***	0.554	0.665	***
Poverty Status									
Low Income (<200% FPL[a])	0.378	0.704	***	0.296	0.544	***	0.252	0.366	***
Moderate Income (200-399% FPL)	0.307	0.199	*	0.306	0.295		0.351	0.316	*
Higher Income (400+% FPL)	0.315	0.098	***	0.399	0.161	***	0.397	0.317	***
Transitions in Year									
Terminated Job	0.170	0.288	*	0.221	0.199	*	0.153	0.114	***
Graduated College	0.000	0.000		0.040	0.029	**	0.010	0.006	~
Left College without Degree	0.024	0.042		0.071	0.029	***	0.023	0.012	**
N (person-years)	8,187	90		6,116	4,079		2,185	13,379	

Notes: Those living at home defined as young adult residing in same household with at least one parent or guardian at the beginning of the year (September). Estimates weighted; standard errors adjusted for multiple person-years per individual. [a]Federal Poverty Line

~p<.10; *p<.05; ** p<.01; ***p<.001.

Aggregate Changes in Any and Parental Coverage Over Time

Examining the trend in health insurance coverage over time for young adults 19 to 25 (see medium grey line in Figure 4.2), we see a sizable decline in the proportion uninsured between the ACA's passage in March 2010 and the end of 2011, with particularly large decreases occurring after the official implementation date of September 2010. Results indicate that the uninsured rate for this age group hovered between 33 and 35 percent between mid-2008 and March 2010, and then steadily fell to 28.4 percent by November 2011.

In the same target age group, we observe an accelerated increase in parental insurance coverage over the same time period (see Figure 4.3). Parental health insurance coverage grew slowly between May 2008 and March 2010, from 22.8 percent to 27.8 percent, but the rate of increase roughly doubled following the ACA's passage. Between March 2010 and November 2011, the rate of parental insurance coverage among young adults 19 to 25 jumped 10 percentage points, from 27.8 percent to 37.8 percent.

The striking changes in the proportion of the target age group uninsured and receiving parental health insurance coverage after the ACA's passage stand in contrast to the relative stability in rates of uninsurance and parental coverage for the two comparison age groups. The levels uninsured among children 15 to 18 were the lowest of the three age groups, fluctuating between 10 and 15 percent across the time period, while adults 26 to 34 were generally second lowest, with rates between 27 and 29 percent. However, the coverage gap between young adults 19 to 25 and adults 26 to 34 narrowed after the

**Figure 4.2 Percent of Young Adults Uninsured, May 2008 - November 2011**
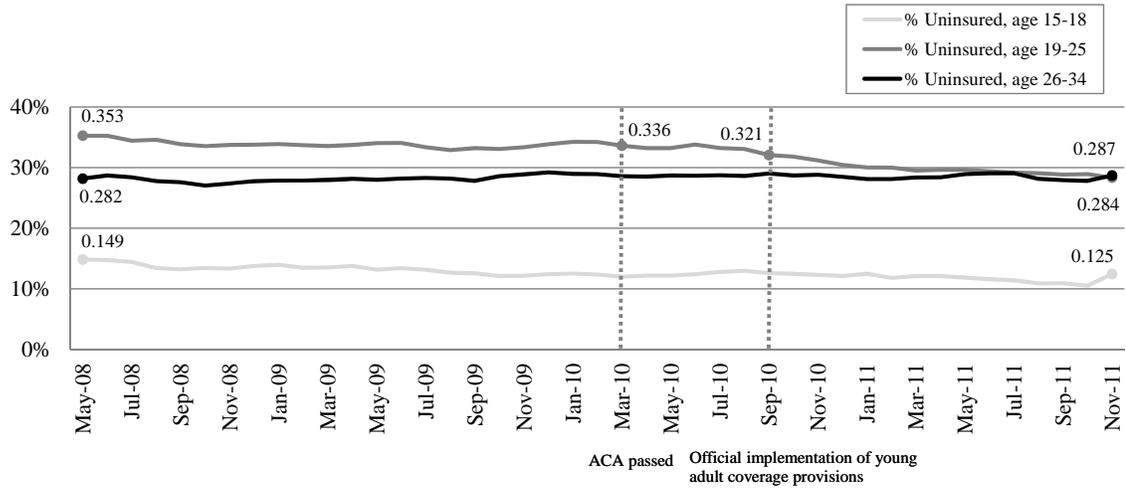
**Figure 4.3 Percent of Young Adults with Parental Coverage, May 2008 - November 2011**
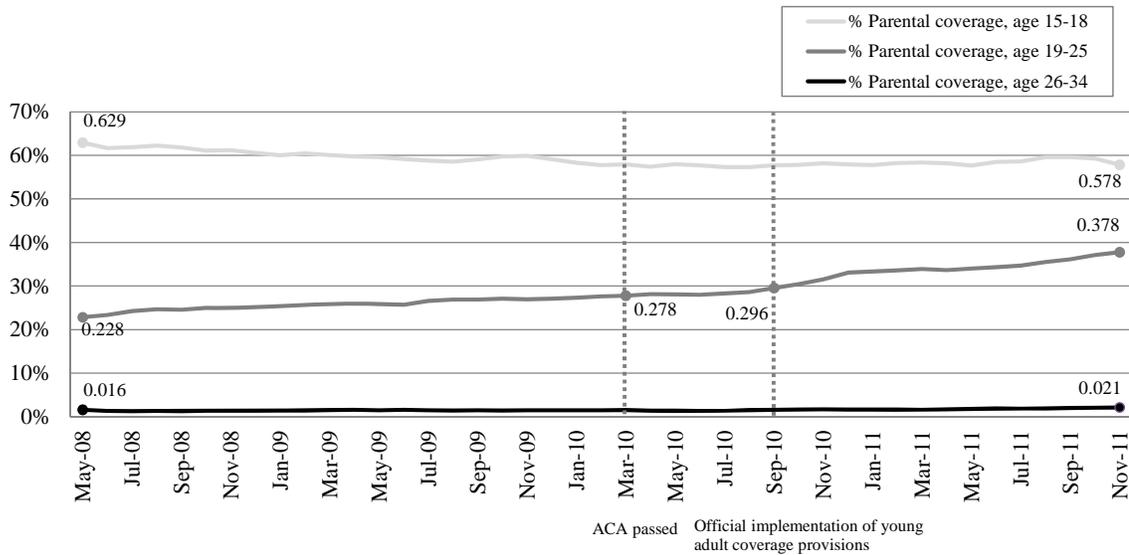
ACA's passage and closed by mid-2011. As one might expect, the levels of parental coverage were greatest (around 60%) for children 15 to 18, whereas this type of coverage was rare among adults 26 to 34 (between 1 and 2%). As for rates of uninsurance, the rates of parental coverage in the comparison age groups did not show

substantial changes over the time period examined, in contrast to those for the target age group.

The increase in overall rates of insurance coverage for young adults 19 to 25 evident in 2008 SIPP data mirrors the trend in published estimates from three other national datasets. Figure 4.4 compares the trend in uninsurance for young adults from my analysis of SIPP data with the declines estimated by the National Center for Health Statistics from National Health Interview Survey (NHIS) data (Cohen and Martinez 2012) and by the U.S. Census Bureau from Current Population Survey (CPS) and American Community Survey (ACS) data (DeNavas-Walt, Proctor, and Smith 2011; DeNavas-Walt, Proctor, and Smith 2012; Rodean 2012). Note that the SIPP estimates are monthly, the NHIS estimates are quarterly, and the CPS and ACS estimates are annual.

Figure 4.4 Trends in Uninsurance Rates among Young Adults 19-25 from Four Data Sources
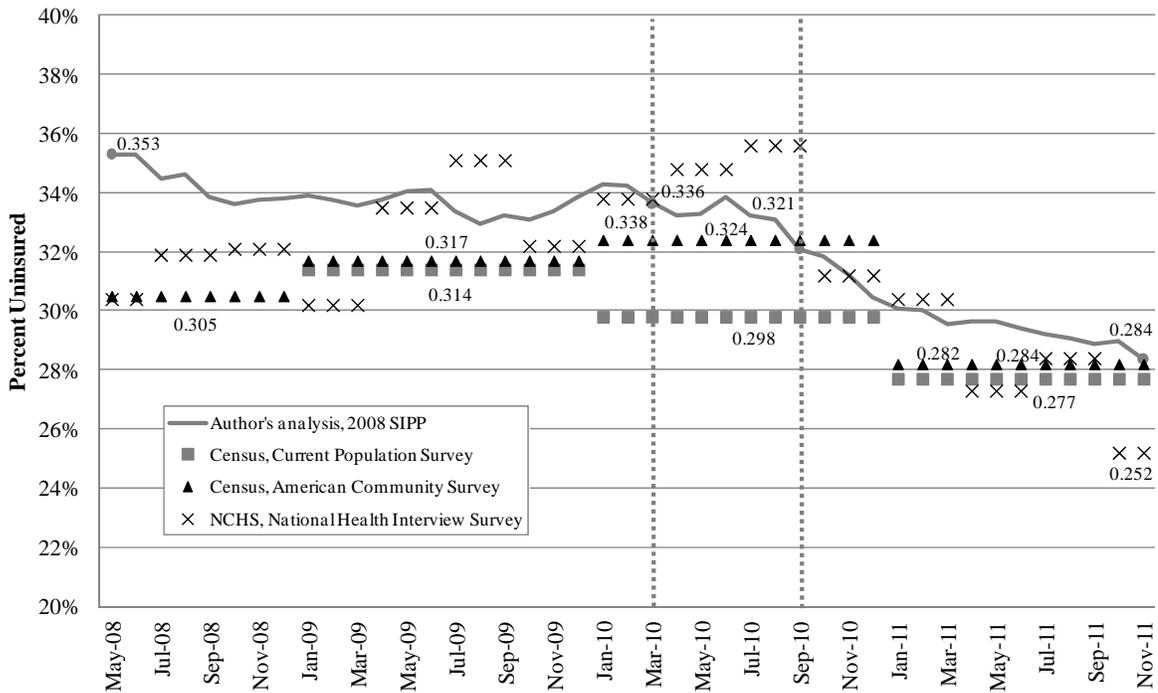
Sources: Census CPS ASEC results from DeNavas-Walt, Proctor, and Smith (2011) and DeNavas-Walt, Proctor, and Smith (2012). Census ACS results from Rodean (2012). NCHS results from Cohen and Martinez (2012).

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Estimates from all four datasets demonstrate a substantial decline in uninsurance rates for 19- to 25-year-olds between 2010 and 2011. The NHIS and ACS estimates, which like SIPP estimates are based on point-in-time measures of health insurance coverage, track SIPP estimates particularly closely. All three datasets estimate a decline from between 32 and 34 percent uninsured in March 2010 to roughly 28 percent uninsured in the third quarter of 2011. The annual estimates of uninsurance from the CPS are somewhat lower in general because the measures are intended to capture people uninsured *all year* rather than at a single point in time (although the technical documentation notes that due to the ways in which individuals respond to the survey, the actual estimates may more closely approximate the number of people uninsured at a specific point in time). The CPS data show a drop in the uninsured rate among young adults 19 to 25 from 31 percent in 2009 to 30 percent in 2010 to 28 percent in 2011.

In summary, the rates of overall insurance coverage and parental coverage for young adults 19 to 25 increased substantially between early 2010 (when the ACA was passed) and late 2011 (approximately one year following the official implementation of the new young adult coverage provisions). Both substantial changes in coverage for 19- to 25-year-olds contrast the relatively constant rates of overall coverage and parental coverage in the younger (15-18) and older (26-34) comparison groups, indicating a significant effect of the ACA's provisions on coverage.

Stability of Coverage and Receipt of Parental Coverage Over a One-Year Period:

Changes Before and After the ACA

Past research indicates that not only have young adults traditionally had the lowest health insurance coverage rates of any age group, but they have also had particularly high instability in health insurance coverage (Collins et al. 2012; Schwartz and Sommers 2012; Short et al. 2012). Gaps in coverage pose significant financial risk and may limit access to needed medical care. Because insurance instability has not yet been considered in other research on the effects of the ACA, this section focuses on the effect of the ACA provisions on young adults' cumulative experience of health insurance coverage over a one-year period.

Figure 4.5 compares the proportion of individuals insured in all twelve months of a year for three twelve-month time periods: pre-ACA (Sept. 2008 – Aug. 2009), early implementation (Sept. 2009 – Aug. 2010), and post-ACA (Sept. 2010 – Aug. 2011). The proportion of young adults 19 to 25 with stable coverage over the course of a year increased 5.3 percentage points from the pre-ACA period to the post-ACA period. Results from analyses not shown here (see Table 4.3, next section) indicate that this was entirely offset by a decline in the proportion of people who had unstable coverage over the course of the year (i.e., who were insured in some but not all months of the year). Children 15 to 18 years old experienced an increase in insurance stability only half as large (2.5 percentage points) and the stability of adults 26 to 34 did not change significantly over this period.

Figure 4.6 compares the proportion of individuals ever receiving health insurance coverage through a parent's insurance plan over the course of a year for the same three

Figure 4.5 Young Adults Insured All Year, by Age and Time Period
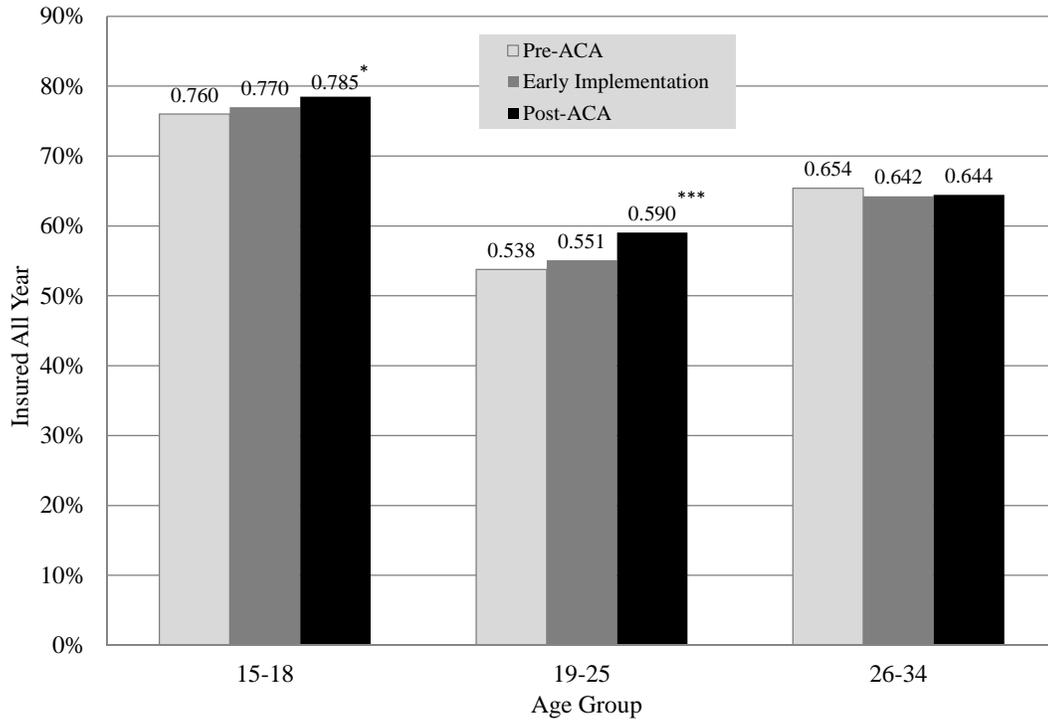
Difference from Pre-ACA time period indicated by: *p<.05; ** p<.01; ***p<.001.
Pre-ACA: Sep. 2008 - Aug. 2009; Early Implementation: Sep. 2009 - Aug. 2010; Post-ACA: Sep. 2010-Aug. 2011.

Figure 4.6 Young Adults Ever with Parental Coverage in Year, by Age and Time Period
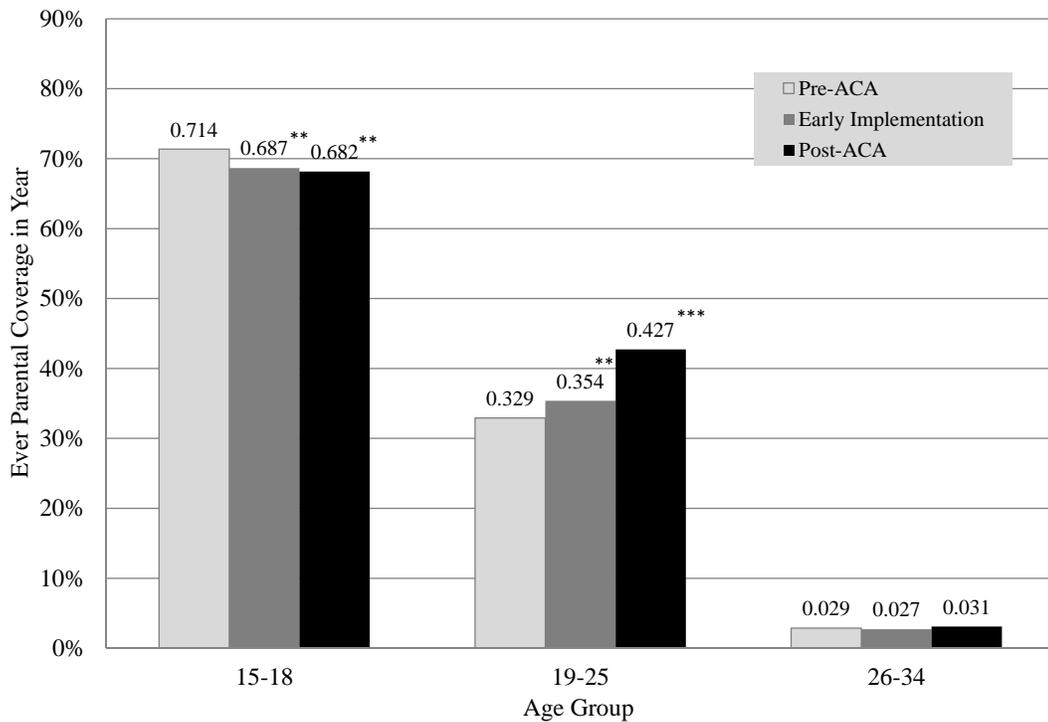
Difference from Pre-ACA time period indicated by: *p<.05; ** p<.01; ***p<.001.
Pre-ACA: Sep. 2008 - Aug. 2009; Early Implementation: Sep. 2009 - Aug. 2010; Post-ACA: Sep. 2010-Aug. 2011.

time periods. The proportion of young adults who ever rely on parental coverage over the course of a year increased 9.8 percentage points from the from the pre-ACA period to the post-ACA period. In contrast, *fewer* children 15 to 18 years old ever received parental coverage in the post-ACA period (-3.2 percentage points) and the receipt of parental coverage among adults 26 to 34 remained low.

Considering the changes in stability of coverage and receipt of parental coverage in the two comparison age groups helps to identify the counterfactual; that is, the changes in these outcomes we would expect to see for the target age group absent the policy intervention. For example, parents of individuals in all three age groups are exposed similarly to the recession and recovery trends in the economy which change their access to employer-sponsored health insurance across time and consequently their ability to provide health insurance for both their minor and adult children. To formalize the comparison of changes in cumulative coverage in a one-year period across the age groups, Table 4.2 presents estimates from difference-in-difference models.

The first three columns in Table 4.2 report results for models in which the outcome is insurance coverage in all twelve months of the year and the outcome for the latter three columns is the receipt of parental coverage in any month of the year. As models are linear probability models, coefficients (except for age group intercepts) can be interpreted as the percentage point change in the outcome variable associated with the predictor variable, holding constant other variables in the model. I choose the linear probability model specification primarily for ease of interpretation; DID relies on the correct interpretation of this interaction coefficient, which can be very misleading in nonlinear models (Ai and Norton 2003). The models contain three separate intercepts to

Table 4.2 DID Estimates of the Effects of ACA Young Adult Coverage Provisions on Insurance Outcomes Over a One-Year Period

	Insured All Year			Ever Parental Coverage in Year		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Age Group (intercept-free model; no omitted category)						
Age 15-18	0.773 ***	0.774 ***	0.616 ***	0.692 ***	0.699 ***	0.347 ***
Age 19-25	0.562 ***	0.538 ***	0.317 ***	0.375 ***	0.329 ***	-0.014
Age 26-34	0.647 ***	0.648 ***	0.454 ***	0.029 ***	0.035 ***	0.014
Time Period (pre-ACA omitted)						
Early Implementation		-0.005	0.041 ***		-0.009 **	-0.003
Post-ACA		0.001	0.047 ***		-0.009 *	-0.003
Treatment						
Early Implementation x 19-25		0.018 ~	0.014		0.034 ***	0.014 ~
Post-ACA x 19-25		0.051 ***	0.047 ***		0.107 ***	0.062 ***
Controls - Young Adult Characteristics at Start of Year						
Female			0.064 ***			-0.001
NH White			0.142 ***			0.080 ***
Family Status (omitted=single, no kids)						
Single Parent			-0.011			-0.028 **
Married			0.052 ***			-0.117 ***
Full-Time Student			0.162 ***			0.187 ***
Full-Time Job			0.085 ***			-0.103 ***
Lives with Parent(s)			-0.111 ***			0.059 ***
Poverty Status (omitted=low-income)						
Moderate Income (200-399% FPL[a])			0.206 ***			0.134 ***
Higher Income (400+% FPL)			0.346 ***			0.209 ***
State-Month Unemployment Rate			-0.010 ***			-0.002
Fixed Effects (age, region)			x			x
Controls - Young Adult Transitions in Year						
Terminated Job			-0.127 ***			0.037 ***
Graduated College			0.068 **			0.125 ***
Left College without Degree			-0.096 ***			-0.014
N (person-years)	34,036	34,036	34,036	34,036	34,036	34,036
R^2	0.657	0.657	0.732	0.529	0.531	0.651

Notes: Estimates weighted; standard errors adjusted for multiple person-years per individual. [a]Federal Poverty Line
~p<.10; *p<.05; ** p<.01; ***p<.001

account for the different baseline levels of insurance stability and parental coverage in each age group.

In Model 1, a simple cell means model, we see that across all three time periods, children 15 to 18 have the highest insurance stability (77.3% insured all year), followed

by adults 26 to 34 (64.7% insured all year). Young adults 19 to 25 have the lowest insurance stability across the three time periods (56.2% insured all year).

Model 2 estimates the unadjusted difference-in-difference effect of how the change in insurance stability between the pre-ACA time period and the early implementation and post-ACA time periods differed for 19- to 25-year-olds relative to the change in the other age groups. This model finds a small and marginally significant effect of the ACA young adult coverage provisions on insurance stability in the early implementation period (1.8 percentage points), and a larger and significant increase (5.1 percentage points) in insurance stability for young adults in the post-ACA period.

Model 3 controls for young adult characteristics, measured at the start of the time period, and whether or not young adults terminated a job or graduated from or dropped out of college in the course of the year. The association between controls and insurance stability generally align with expectations, with those with higher incomes and either in school or working full-time having a higher likelihood of continuous coverage, and those exposed to higher state-month unemployment rates or experiencing job terminations or dropping out of college within the year having a lower likelihood. Controlling for these additional factors, the effect of the ACA on insurance stability in the early implementation time period becomes insignificant, but the effect on stability in the post-ACA time period attenuates only slightly (to 4.7 percentage points).

The same series of three models is presented in the next three columns (Models 4, 5, and 6), but now looking at receipt of parental coverage as the outcome. Model 4 is the cell means model of whether or not an individual ever had parental coverage in the course of a year, averaged across the three time periods. Consistent with earlier

descriptive estimates, children 15 to 18 have the highest rates of parental coverage (69.2% ever in year), followed by young adults 19 to 25 (37.5% ever in year). Very few adults 26 to 34 receive coverage from parents (2.9% ever in year).

Model 5 identifies the unadjusted difference-in-difference estimates. The ACA increased the probability of any parental coverage over the course of a year for the target age group (19 to 25) by 3.4 percentage points in the early implementation period and by 10.7 percentage points in the post-ACA period. Controlling for additional factors in Model 6, the net effect of the ACA on parental coverage in the early implementation period is small and marginally significant (1.4 percentage points) and the net effect in the post-ACA period (i.e., after the official implementation date of the ACA young adult coverage provisions) was a significant increase of 6.2 percentage points.

In summary, not only did young adults' rates of insurance coverage and parental coverage increase following the implementation of the ACA young adult coverage provisions (as we saw in the previous section), but these provisions also increased the stability of young adult coverage and the likelihood of ever receiving parental coverage over the course of a year. This indicates that because the ACA expanded the accessibility of parental coverage for young adults, young adults have utilized this source during months in which they otherwise would have experienced gaps in coverage. It is also important to note that the estimated effect of the provisions on receipt of parental coverage over the course of a year (6.2 percentage points) is greater than the estimated effect on insurance stability over the year (4.7 percentage points) indicating that some of the increased take-up of parental coverage was offset by a decline in other sources of coverage for young adults. This offset might reflect, for example, the higher quality or

better value health insurance available through parents' employers relative to health insurance available through young adults' own employers or through the private market.

Differences by Young Adult and Parental Characteristics and Transitions in Year

Young adults as a whole experienced significantly greater health insurance stability and higher utilization of parental insurance following implementation of the ACA's young adult coverage provisions in September 2010. But which young adults reaped the greatest benefits from the policy?

To answer this question, I first examine descriptive statistics of insurance stability and receipt of parental coverage across the three time periods (pre-ACA; early implementation; post-ACA), separately across a range of young adult characteristics and parental characteristics (see Table 4.3). For these analyses, young adult and parental characteristics are measured in the first month of each year-long period (September), with the exception of young adult transitions in year (which indicate whether young adults terminated a job, graduated from, or dropped out of college in the course of the year). Note that in the SIPP dataset, parental characteristics are only observed in months during which young adults are residing in the same household with at least one parent or guardian. For this reason, analyses that examine heterogeneity by parental characteristics limit the analyses to a 60 percent subsample of young adults living at home in the first month of each year-long period (September).

The first row in Table 4.3 reports results for the full sample. Recalling full-sample results from the previous section, young adults 19 to 25 are 5.3 percentage points more likely to be insured in all twelve months of the year in the post-ACA period (after the implementation of the ACA's young adult coverage provisions) compared to

Table 4.3 Stability of Insurance Coverage and Receipt of Any Parental Coverage in a One-Year Period, Young Adults 19-25, by Year

	Health Insurance Stability in One-Year Period												Ever Parental Coverage in One-Year Period			
	Pre-ACA Sep. 2008 - Aug. 2009			Early Implementation Sep. 2009 - Aug. 2010			Post-ACA Sep. 2010 - Aug. 2011			Change (Post-ACA - Pre-ACA)			Pre-ACA	Early Impl.	Post-ACA	Change (Post-Pre)
	Insured All Year	Unstable Coverage	Uninsured All Year	Insured All Year	Unstable Coverage	Uninsured All Year	Insured All Year	Unstable Coverage	Uninsured All Year	Insured All Year	Unstable Coverage	Uninsured All Year	Ever Parental Coverage	Ever Parental Coverage	Ever Parental Coverage	Ever Parental Coverage
Full Sample	0.538	0.291	0.171	0.551	0.254	0.196	0.590	0.240	0.170	+0.053 ***	-0.051 ***	-0.002	0.329	0.354	0.427	+0.098 ***
By Young Adult Characteristics at Start of Year and Transitions in Year																
Age																
19-20	0.577	0.273	0.150	0.582	0.237	0.181	0.633	0.231	0.136	+0.055 *	-0.042 *	-0.013	0.594	0.596	0.626	+0.032
21-22	0.498	0.321	0.181	0.516	0.270	0.214	0.581	0.243	0.176	+0.082 **	-0.078 **	-0.005	0.362	0.411	0.495	+0.133 ***
23-25	0.534	0.285	0.181	0.551	0.255	0.195	0.565	0.244	0.191	+0.031 ~	-0.041 *	0.010	0.129	0.151	0.220	+0.091 ***
Sex																
Female	0.566	0.306	0.128	0.590	0.259	0.151	0.624	0.238	0.138	+0.058 ***	-0.068 ***	0.010	0.317	0.348	0.418	+0.101 ***
Male	0.510	0.276	0.215	0.512	0.248	0.240	0.558	0.241	0.200	+0.049 **	-0.035 *	-0.014	0.341	0.359	0.436	+0.095 ***
Family Status																
Single, No Children	0.546	0.277	0.177	0.561	0.238	0.201	0.604	0.229	0.167	+0.058 ***	-0.048 ***	-0.009	0.451	0.460	0.534	+0.083 ***
Single Parent	0.383	0.428	0.189	0.386	0.363	0.251	0.418	0.358	0.224	+0.035	-0.070 ~	0.035	0.092	0.117	0.095	+0.002
Married	0.587	0.270	0.143	0.594	0.263	0.143	0.618	0.231	0.151	+0.031	-0.039	0.008	0.006	0.007	0.004	-0.002
Student Status																
Full-Time Student	0.675	0.229	0.096	0.686	0.205	0.110	0.729	0.177	0.094	+0.054 **	-0.051 **	-0.002	0.674	0.679	0.693	+0.019
Part-Time/Non-Student	0.476	0.319	0.205	0.479	0.280	0.242	0.504	0.279	0.217	+0.028 *	-0.040 **	0.012	0.176	0.181	0.263	+0.087 ***
Transitions in Year																
Terminated Job	0.451	0.343	0.206	0.490	0.287	0.222	0.543	0.281	0.176	+0.092 **	-0.063 *	-0.030	0.401	0.465	0.486	+0.085 **
Graduated College	0.694	0.255	0.051	0.691	0.251	0.058	0.871	0.116	0.013	+0.177 **	-0.139 **	-0.037 ~	0.671	0.711	0.846	+0.175 **
Left College without Degree	0.440	0.383	0.177	0.469	0.337	0.193	0.540	0.320	0.141	+0.100 ~	-0.063	-0.037	0.488	0.570	0.547	+0.059
By Parental Characteristics, For Those Living at Home at Start of Year																
Poverty Status																
Low Income (0-199% FPL[a])	0.298	0.355	0.347	0.292	0.313	0.396	0.309	0.327	0.364	+0.010	-0.028	0.017	0.280	0.255	0.274	-0.006
Moderate Income (200-399% FPL)	0.491	0.359	0.151	0.520	0.297	0.183	0.582	0.279	0.138	+0.092 **	-0.079 **	-0.012	0.491	0.499	0.570	+0.079 **
Higher Income (400+% FPL)	0.727	0.200	0.073	0.756	0.175	0.069	0.834	0.130	0.036	+0.107 ***	-0.071 ***	-0.037 **	0.680	0.693	0.771	+0.091 ***
Highest Education																
High School or Less	0.314	0.401	0.286	0.334	0.318	0.348	0.351	0.335	0.314	+0.037	-0.065 *	0.029	0.260	0.234	0.270	+0.009
Some College	0.529	0.297	0.174	0.532	0.282	0.186	0.610	0.245	0.145	+0.081 **	-0.052 *	-0.029	0.500	0.525	0.594	+0.094 ***
College Graduate	0.717	0.199	0.084	0.743	0.173	0.084	0.792	0.144	0.064	+0.075 ***	-0.055 **	-0.020	0.722	0.721	0.766	+0.045 *
Employer-Sponsored Insurance (ESI)																
ESI, Children<18 in Family	0.651	0.249	0.100	0.671	0.241	0.088	0.742	0.203	0.055	+0.091 **	-0.046 ~	-0.044 *	0.718	0.752	0.809	+0.091 **
ESI, No Children<18 in Family	0.636	0.268	0.096	0.670	0.236	0.094	0.754	0.182	0.065	+0.117 ***	-0.086 ***	-0.031 *	0.616	0.623	0.711	+0.095 ***
No ESI	0.305	0.357	0.338	0.311	0.284	0.406	0.311	0.323	0.366	+0.005	-0.034	0.028	0.213	0.202	0.210	-0.003
N (person-years)		3,310			3,369			3,516					3,310	3,369	3,516	

Notes: Living at home defined as residing in same household with at least one parent or guardian at the beginning of the year (60% of sample). Estimates weighted; standard errors adjusted for multiple person-years per individual. [a]Federal Poverty Line
~p<.10; *p<.05; ** p<.01; ***p<.001

the pre-ACA period, and 9.8 percentage points more likely to hold parental coverage in at least one month of the year. Considering how these changes differ across young adult characteristics, we find that the greatest changes occur for young adults 21 to 22, for unmarried young adults without children, and those not in school full-time at the start of the year; changes did not differ by sex. The finding that single parents and married young adults benefit little from the policy is consistent with expectations, because both groups potentially have access to alternative sources of coverage—the former (most of whom are single mothers) through Medicaid or SCHIP and the latter through spousal coverage. The age heterogeneity is particularly interesting. Young adults 19 to 20 experienced only very small and non-significant increases in parental coverage (3.2 percentage points), compared to the large increases for young adults 21 to 22 (13.3 percentage points) and 23 to 25 (9.1 percentage points). But a much greater proportion of young adults 21 to 22 gained continuity in coverage (8.2 percentage points) relative to those 23 to 25 (3.1 percentage points), indicating perhaps that a greater proportion of 21- to 22-year-olds who gained parental coverage under the ACA used it to avoid coverage gaps relative to 23- to 25-year-olds, who were more likely to switch to parental coverage from less favorable (in terms of quality or value) alternative sources of coverage.

Examining heterogeneity of changes by transitions in the year, we see that young adults terminating jobs or graduating from college had particularly large increases in parental coverage after the implementation of the ACA's young adult coverage provisions. The effects for those leaving college without a degree were smaller. The increases in continuity of coverage were also large for job terminators and college graduates (the corresponding point estimate for college dropouts was similarly sized, but

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much greater in magnitude than the change in parental coverage in this group, so was possibly attributable to other factors besides the ACA provisions). Out of all subgroups identified, those graduating from college during the year showed the biggest increases in parental coverage over the course of the year (17.5 percentage points) and in stability of coverage over the course of the year (17.7 percentage points).

Looking at the heterogeneity of changes by parental characteristics for the subset of young adults living at home at the start of the year, we see that young adults of parents with higher socioeconomic status and with employer-sponsored insurance (ESI) are more likely than others to experience increased health insurance stability and parental coverage in the post-ACA period. As expected, there was no increase in either outcome among young adults whose parents had no access to health insurance coverage through their jobs. Interestingly, results differed little between young adults whose parents had ESI and had minor children in the family and those whose parents had ESI and had no minor children in the family. Because at many employers the marginal cost of adding a young adult dependent is substantially lower when there are other children already insured through the policy, one would have predicted higher increases in parental coverage for young adults with younger brothers and sisters in the household.

Moving from descriptive estimates among 19- to 25-year-olds only to difference-in-difference estimates which compare the changes among 19- to 25-year-olds with the younger and older comparison age groups, Table 4.4 presents DID estimates by young adult and parental characteristics. These estimates are from a series of models with the same full set of controls as used in Table 4.2, in which the key DID interaction (post-ACA x 19-25) and its components (age group and time period) are interacted with

Table 4.4 DID Estimates: Post-ACA Effect Heterogeneity by Young Adult and Parental Characteristics

	Insured All Year	Ever Parental Coverage in Year
Full Sample	0.047 ***	0.062 ***
By Young Adult Characteristics at Start of Year and Transitions in Year		
Age		
19-20	0.043 *	0.004
21-22	0.065 **	0.096 ***
23-25	0.036 ~	0.081 ***
Sex		
Female	0.053 **	0.060 ***
Male	0.039 *	0.063 ***
Family Status		
Single, No Children	0.040 **	0.068 ***
Single Parent	0.040	-0.006
Married	0.044 ~	0.021 *
Student Status		
Full-Time Student	0.042 *	0.036 ~
Part-Time/Non-Student	0.042 **	0.067 ***
Terminated Job	0.055 ~	0.058 *
Graduated College	0.207	0.194 **
Left College without Degree	0.041	0.050
All Living at Home at Start of Year	0.027 ~	0.052 **
By Parental Characteristics, For Those Living at Home at Start of Year		
Poverty Status		
Low Income (0-199% FPL[a])	-0.032	-0.010
Moderate Income (200-399% FPL)	0.049	0.062 *
Higher Income (400+% FPL)	0.059 *	0.084 ***
Highest Education		
High School or Less	-0.033	0.020
Some College	0.064 *	0.119 ***
College Graduate	0.056 *	0.026
Employer-Sponsored Insurance (ESI)		
ESI, Other Children<18 in Family	0.035	0.038
ESI, No Other Children<18 in Family	0.091 ***	0.095 ***
No ESI	-0.053 ~	0.001

Notes: Living at home defined as residing in same household with at least one parent or guardian at the beginning of the year (48% of sample 15-34; 60% of sample 19-25). Estimates weighted; standard errors adjusted for multiple person-years per individual. [a]Federal Poverty Line
~p<.10; *p<.05; ** p<.01; ***p<.001

characteristics of interest. Using changes over time for 15- to 18-year-olds and 26- to 34-year-olds as an implicit counterfactual, and controlling for a range of young adult characteristics, many of the same general patterns of effect heterogeneity emerge as from the descriptive statistics in Table 4.3. In particular, young adults 21 to 22 benefitted more from the ACA young adult coverage provisions compared to others in the target age range (23- to 25-year-olds also increased their usage of parental coverage substantially but a greater proportion represented crowd-out of other types of coverage). Young adults who were unmarried without their own children and non-full-time students appeared to benefit much more from the policy than others. Differences by sex were not apparent.

The policy only had effects on young adults whose parents had employer-sponsored insurance and had particularly strong effects on children of high-income parents, and those with some college education but no college degree. In descriptive findings, we also saw slightly higher effects among young adults whose parents had some college education but no degree than those whose parents were college educated, but the difference is more pronounced in multivariate findings. Descriptive findings indicate that in every time period, young adults whose parents had college degrees were substantially more likely to be insured all year, and to hold parental health insurance in at least one month of the year. As such, it may be that part of the greater effects observed among young adults whose parents had some college education but no degree is due to a saturation effect; they had significantly lower baselines on both outcomes so had more room for improvement.

Another change from descriptive findings in the multivariate DID models is that the net effects are estimated to be larger for young adults living at home without any

younger siblings compared to those with younger siblings. This is contrary to expectations, because the marginal cost of maintaining or adding coverage for these young adults should be higher at many employers when no other children are on the policy. It could be, however, that parents of young adults without younger children in the household are on average older and have greater incomes and assets compared to those whose parents have younger children in the household, and thus more likely to have the resources to purchase dependent coverage, despite the potentially higher premium.

By far, the greatest effects of the policy were seen among young adults 19 to 25 who graduated from college after the provisions were implemented in September 2010. I estimate that the young adult coverage provisions significantly increased the proportion of this group utilizing parental coverage in any month of the year by nearly 20 percentage points, and find a similarly sized effect (n.s.) in the proportion continuously insured throughout the year.

College Graduation and the Young Adult Coverage Provisions

This section looks more closely at changes in insurance coverage for young adults 19 to 25 graduating from college before the ACA's passage (up until March 2010) and after the implementation of the ACA's young adult coverage provisions (September 2010 or later). It is no surprise that college graduates enjoyed particularly large effects of the ACA young adult coverage provisions. Before the ACA was passed, the majority of college students lost access to parental coverage at the time of graduation. Furthermore, college graduates disproportionately have highly educated parents with high incomes and access to ESI, all characteristics associated with larger effects of the policy in this analysis. A survey of U.S. adults conducted by the Commonwealth Foundation also found that

higher-income adults were more aware of the new ACA young adult coverage provisions compared to lower-income adults (73% of those >250% FPL vs. 44% of those <250% FPL; Collins et al. 2012). Additionally, young college graduates have had particular difficulty finding employment in recent years, especially during the Great Recession (Stone, Van Horn, and Zukin 2012).

Figure 4.7 graphs the overall rate of health insurance coverage and the rate of parental health insurance coverage in the months leading up to and following college graduation among young adults 19 to 25 in the 2008 SIPP panel. The average levels of each outcome are shown for four-month-long periods due to low sample sizes and to reflect the fact that the timing of college graduations in the SIPP is measured only up to

Figure 4.7 Pre- and Post-College Graduation Insurance Coverage:
Before ACA's Passage vs. After Implementation
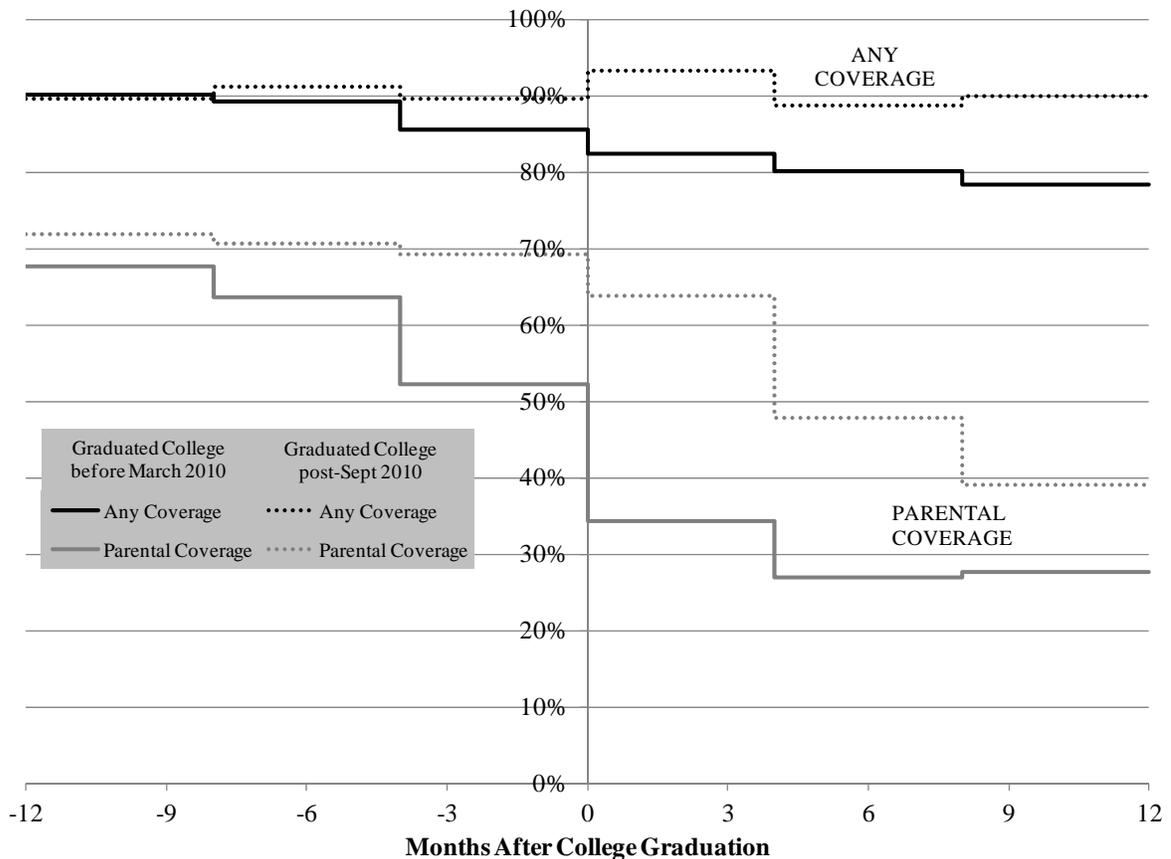
four months of precision.

As the graph shows, young adults graduating from college before the ACA was passed had similar overall rates of insurance coverage (between 86 and 91%) in the year prior to college graduation compared to those who graduated after the implementation of young adult coverage provisions. But post-implementation graduators had higher rates of parental coverage in the year prior to college graduation (only statistically significant in the four months prior to college graduation). The biggest differences, however, are observed in the four months following graduation. Both groups experienced a decline in parental coverage during this time period, but the decline was much steeper for those graduating before the ACA's passage. Between one and four months following college graduation, 64 percent of those graduating in the post-implementation period remained on parental coverage, nearly double the proportion (34%) among those graduating before the ACA passed. This finding is consistent with pre-ACA rules for dependent coverage; the majority of group health insurance plans in the pre-ACA period covered dependents into young adulthood only as long as they remained full-time students.

As earlier descriptive analyses showed, students and college graduators have health insurance stability higher than the average young adult. But within this group, those who graduated from college before the ACA's passage were more likely to be uninsured in the eight months following college graduation compared to those who graduated in the post-implementation period (18 vs. 7% between 1-4 months following graduation; 20 vs. 11% between 5-8 months following graduation).

Discussion

Using recent longitudinal data from the SIPP, this study examines how young adult health insurance changed after the ACA extended the availability of dependent health insurance coverage through parents' private health plans up until age 26. I find that in addition to increasing the utilization of parental coverage and decreasing the proportion of young adults 19 to 25 who are uninsured at any point in time, the policy significantly decreased the instability in health insurance coverage in young adulthood. The proportion of 19- to 25-year-olds with unstable coverage over the course of a year decreased from 29.1 to 24.0 percent after implementation, and there was a corresponding five percentage point increase in the proportion of young adults with stable, continuous all-year coverage (53.8 to 59.0%; see Table 4.3).

The greatest increases in parental coverage and in health insurance stability were experienced by single young adults with no children and those between 21 and 22 years old, particularly those with high-SES parents with employer-sponsored insurance. The ACA provisions are especially helpful for maintaining the insurance coverage of young adults graduating from college. In a one-year period before the ACA provisions were implemented, 31 percent of those earning bachelor's degrees experienced at least one month uninsured. In a one-year period following implementation, only 13 percent of those earning bachelor's degrees experienced gaps in coverage. Furthermore, because some health plans are exempted from the ACA's young adult coverage provisions until the end of 2014, the effects of the policy may continue to grow in upcoming years.

A couple of notes should be made in interpreting the magnitude of my estimates. First, because of the seam bias issue in the SIPP,[32] the data may systematically produce underestimates of month-to-month insurance instability. However, this bias should be constant over time and thus should not confound my estimation of the effects of the ACA's young adult coverage provisions. Second, comparing the magnitude of difference-in-difference estimates on stability in insurance coverage for the full sample with that on any receipt of parental coverage over the course of a year (net increases of 4.7 percentage points vs. 6.2 percentage points, respectively) demonstrates that the increase in insurance stability was smaller than the uptake of parental coverage. This indicates that a portion of young adults taking advantage of the expanded availability of dependent coverage would have maintained coverage even in the absence of the new policy, although perhaps gained higher quality or more affordable coverage.

The significant increases in stability of young adult health insurance coverage—particularly for those graduating from college—are important to document in light of the ongoing political discussion about whether the Affordable Care Act should be repealed. The ACA has made health insurance more accessible to a large number of young adults who would have otherwise experienced gaps in coverage. Because of potential implications of health insurance for financial and physical health, the ACA's expansion of health insurance for young adults can be seen as a long-term investment in the well-being of the future workforce.

It is also important to consider which young adults disproportionately benefitted from the ACA's extension of dependent coverage, and which others may need additional

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[32] People tend to report artificially high consistency among monthly survey responses recorded in the same four-month-long survey wave.

protections. Health insurance in the U.S. is a highly stratified resource. Prior to the ACA's passage, parental income level was highly predictive of young adults' health insurance instability. Fewer than one-third of young adults whose parents had low incomes (<200% FPL) were insured all 12 months in a year, compared to nearly three-quarters of those with higher-income parents (400+% FPL). The ACA's expansion of dependent coverage magnified this disparity.

However, the remainder of the ACA provisions, currently scheduled to be implemented in 2014, may provide the additional protections needed for the young adult children of lower-income parents to catch up with their peers. Currently, most states are expected to expand Medicaid to individuals and families with incomes up to 133 percent of the federal poverty line,[33] and to provide subsidies to help those with incomes up to 400 percent of the federal poverty line purchase private insurance. Thus young adults with higher-income parents will likely qualify both for subsidies to purchase their own private coverage and for dependent coverage through parents' employers; many may continue electing dependent coverage. Young adults with low-income parents in many states will be allowed to remain on public insurance even after they transition to adulthood or will qualify for subsidies to purchase private coverage. So although the dependent coverage provisions of the ACA implemented in 2010 increased health insurance inequality in the short-term, the implementation of the full set of ACA provisions is expected to have a much more equalizing effect.

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[33] Plus a 5 percent income disregard.

CHAPTER 5

Conclusion

This dissertation examines the impact of life course transitions on health insurance coverage in the United States in the late 1990s and early 2000s. During this period, between 14 and 16 percent of Americans were uninsured at any one point in time and between 18 and 20 percent experienced one or more gaps in insurance coverage each year (Cohen and Martinez 2012). My three substantive chapters document the heightened instability in health insurance coverage following three specific life course transitions—divorce, job loss, and the transition to adulthood. Using SIPP data covering the period from 1996 through 2007, Chapter 2 documents the loss of insurance coverage that many women experience after divorce. Using the most recent SIPP data from 2008 through 2011, Chapter 3 addresses the difficulty of maintaining insurance coverage after involuntary job loss, and identifies modest effects of a temporary subsidy program (2009-2010) made available to workers during the Great Recession on COBRA utilization. Also using recent SIPP data from 2008 through 2011, Chapter 4 finds that the Affordable Care Act's (2010) expansion of parental insurance coverage to young adults up until age 26 decreased health insurance instability during this relatively unstable life phase.

While life course transitions such as divorce, job loss, and the transition to adulthood jeopardized individuals' health insurance coverage in the late 1990s and early 2000s, the full implementation of Affordable Care Act in 2014 has the potential to greatly

reduce this risk in the future. The statute includes multiple provisions that expand access to affordable health insurance coverage. These provisions are expected both to enable greater access to health insurance for low-income individuals and families who currently face chronic barriers to coverage and to enhance the security of health insurance over the life course. The ACA may substantially reduce the risk of insurance loss when people lose or change jobs, get divorced or become widowed, transition to adulthood, move, or encounter new health problems.

The Affordable Care Act provides economic assistance for Americans who need help accessing health insurance coverage through two primary mechanisms. First, the law expands access to public health insurance coverage. Currently, most states limit Medicaid to low-income children and parents with sub-poverty income levels; in few states do childless adults qualify. Under the ACA, most states will expand Medicaid to cover all Americans with incomes up to 133 percent of the federal poverty line (up to roughly $15,000 for an individual or $31,000 for a family of four in 2012 dollars; HHS 2012a). Second, the law provides subsidies for other low- and moderate-income Americans (up to 400% FPL) to purchase private health insurance policies through new state-run health insurance exchanges (up to roughly $45,000 for an individual or $92,000 for a family of four in 2012 dollars; HHS 2012a). These subsidies will be provided on a sliding scale, such that low-income individuals will pay less than 5 percent of their incomes on health insurance premiums, and moderate-income individuals will pay between 5 and 10 percent on health insurance premiums. These new avenues through which to acquire affordable insurance coverage should enable Americans with chronically low or temporarily reduced

economic resources to maintain health insurance coverage at higher rates than under the old system.

By one year following my completion of this dissertation—December 2013—enrollment will already be underway in new state-run health insurance exchanges established under the Affordable Care Act, for coverage starting in January 2014. It will likely be several years beyond that before we know what the amended health insurance system, with its multitude of reforms, will look like after it is fully implemented. And as the data become available, researchers will measure the extent to which levels of and inequality in health insurance coverage have improved following the reforms, and whether they have successfully reduced instability in coverage following common life course transitions.

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