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Three Essays on the Costs and Economic Implications of Health Limits

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ABSTRACT

The dissertation considers the influence that the arrival of work limiting health conditions has on labor market activity but also on broader social behavior of those that experience them. The primary data source used in the analysis is the 2004 *Survey of Income and Program Participation* (SIPP).

The first chapter examines demographic correlates of the evolution of work limiting health conditions in the United States. Beyond a basic description of the onset and incidence of specific health conditions and their association with common demographic covariates, a set of specific health conditions that arrive largely unexpectedly are identified. The primary method used is logistic regression.

The second chapter then divides the reported health conditions in the SIPP into those that are less predictable (exogenous) versus those that are more predictable (endogenous). How the onset of work limiting health conditions affects the subsequent divorce behavior is studied across those groups. Using retrospective histories contained in the topical module on "work disability history" of SIPP, I find that for men and women divorce behavior is not explained by the onset or evolution of exogenous health conditions while it is closely related to the onset or evolution of a broader, arguably, endogenous set of health conditions. The patterns of response are shown to vary by race and origin. The primary estimation method is

a panel linear probability model with fixed effects.

In the third chapter, the effects of exogenous health conditions and more predictable health conditions on employed people's earnings and employment are examined. Using information contained in all waves of the core data and the topical module on "work disability history", I find that people who are observed employed and later experience the onset of any work related health conditions tend to have lower subsequent earnings and a lower probability of being employed compared to the people who stay healthy. The adverse impact is even greater for people with exogenous health conditions. The impact of any work limiting health condition exists among different demographic groups to varying degrees. The primary estimation method is a difference-in-differences regression model with person and year fixed-effects.

Three Essays on the Costs and Economic Implications of Health Limits

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Chapter 1

1.1 Introduction

From multiple disciplinary perspectives, the timing of the onset of health problems in the U.S. population that limit work is of importance. In the U.S., more than some other industrial societies, social benefits are contingent on prior work. In gauging population health, work limitations have been shown to be correlated with medical diagnoses of disability. And from the perspective of life course studies, the onset of work related health problems would be expected to be predictive of or move in tandem with other events such as divorce or reduced labor market activity. While other research has investigated the relationship of demographic correlates with alternative measures of health, this research provides a similar investigation for work limiting health problems.

As a related matter, there are alternative information sources that might be used in this study. One possibility would be the *National Health Interview Survey* (NHIS) that asks individuals about the timing of onset of different work limiting health conditions. However, a deficit of those data is that they would only provide information as of the date of interview regarding characteristics of individuals that might be related to health conditions that might have occurred much earlier. Thus, I make use of retrospective modules that are contained in each panel of the *Survey of Income and Program Participation* (SIPP) which provides reports on marital history, educational attainment, and fertility as well as the timing of onset of health problems in the analysis. This provides the advantage of being able to use measures of these

time specific demographic characteristics in the analysis as well as static measures such as race and ethnicity.

Prior to examining the demographic correlates of the onset of health limitations, I first compare reports of work limitations obtained from the NHIS to those found in the SIPP for all work limitations as well as individual reports. I also examine whether there is evidence of recall bias in the distributions of recently reported onsets of work limitations by age relative to more distant ones. On average, I find that reports of the age at which any work limitation began correspond closely between the SIPP. Additionally, I find that SIPP reports for the incidence of the majority of health limiting conditions correspond well with those obtained from the NHIS when reported categories match across the two surveys. I find little evidence of recall bias in the SIPP data when comparing reports of recent onsets of work limitations to those that occurred long ago.

When I examine demographic correlates of the onset of work limiting health conditions using logistic regression models, most characteristics are related based on standard tests of statistical significance. However, I do find that there are six specific types of work limitations that are not related to many demographic factors other than age, these include cancer, deafness or serious trouble hearing, paralysis, thyroid, tumor cyst or growth, and carpal tunnel syndrome. From a demographic perspective, their incidence appears to be exogenous conditional on age and usually one or two other observable covariates.

The chapter proceeds with a review of the relevant literature followed by a description of the data used in the analysis. The comparisons of the incidence of the onset of work limiting health conditions using the SIPP and NHIS follow along with the analysis of possible

recall bias in the SIPP. Then estimates of logistic regressions of work limiting health and demographic covariates are provided. A summary of the results concludes the analysis.

1.2 Literature Review

The timing of the onset of health limitations is relevant to multiple disciplines. Since I describe the evolution of individuals' health over time by age, a natural perspective is that of the life course. The life course approach can be traced back to Thomas' and Znaniecki's landmark study, "The Polish Peasant in Europe and America", published in five volumes in the years 1918 to 1920. An important aspect of the life course perspective is its focus on the relationship between early life events and later years, including for example, how early events affect future events such as the onset of health conditions (Elder & Giele, 2009).

The life course perspective also emphasizes that multiple dimensions of people's lives change at the same time. Thus, demographic changes such as marital status may be associated with both alterations in individuals' work lives (Tamborini, Couch, and Reznik 2015a) and may impact their health as well (Couch, Tamborini and Reznik 2015b; Couch, Tamborini, Reznik 2016).

Beyond the life course perspective, health is also seen as an important characteristic associated with productivity in the labor market and thus gains attention from health economists. Health status plays a crucial role in determining the kind or amount of work a person can do at a job. As stated by Jean Mitchell (1990, pp. 928), "Poor health is associated with reduced hours of work, lower wage rates, early retirement and disability transfer programs."

A number of papers have taken this perspective and made use of either cross-sectional or longitudinal data to examine the relationship between poor health in general and labor force participation. Nich Drydakis (2010) examined the labor market outcomes for individuals who self-report health conditions and found evidence of a penalty for the implied productivity limitation as well as wage discrimination. Campolieti and Krashinsky (2006) focused on the relationship between disabled male workers and earnings and found that wage losses are larger and more persistent for workers who did not return to work with their time-of-accident employer than for those who returned.

Rather than studying poor health in general, some researchers focus on specific health conditions. For example, Mitchell (1990) used the 1978 *Survey of Disability and Work* to explore the effect of the onset of chronic disease – arthritis – on work behavior over the life cycle and concluded that workers with arthritis lose a significant portion of their working career (as much as 13 years) due to poor health. Crook and Moldofsky (1994) examined the probability of recovery and return to work from a work related injury—musculoskeletal pain impairment -- and they found that men are more likely to return to work while women are more likely to remain at work once they return; older workers are less likely to return and they have a higher probability of recurrence. Johnson, Baldwin and Butler (1998) compared labor force participation for people with back pain to those with other accidental injuries and concluded that they are much less likely to return to work or remain employed.

A diverse literature has established the association between marital status and health. It is widely accepted that marriage can bring about health benefits. Compared to the unmarried, married persons have lower mortality rates (Hu & Goldman, 1990; Umberson, 1992; Lillard

& Waite, 1995; Dupre & Beck & Meadows, 2009; Weden & Waldron, 2011; Shor et al. 2012), lower prevalence of cardiovascular disease (Zhang & Hayward), less chronic disease conditions, functioning problems and disabilities (Pienta & Hayward & Jenkins, 2000; Hughes & Waite, 2009), lower odds of reporting either ADL or IADL disability (Liu & Zhang, 2012), and better self-assessed physical health (Williams & Umberson, 2004; Hughes & Waite, 2009).

Explanations of the relationship between marital status and health mainly focus on two processes: (1) selection of healthier people into marriage and (2) health-protective effects of being married. The selection perspective argues that as people choose their spouses, mentally and physically healthy individuals are more likely to be selected. Further, people may get divorced because of their mental or physical health problems. The protection hypothesis argues that marriage can promote health through various mechanisms. For example, marriage leads to healthier behaviors due to spousal monitoring (Sherbourne & Hays, 1990; Umberson, 1992); marriage provides people with a sense of responsibility and belonging and reduces the probability of risk-taking (Waite 1995, Hibbard and Pope 1993); and marriage allows people to get access to more economic resources through their spouse (Becker, 1991). The influence of selection or additional marital resources would result in a positive correlation between marriage and better health.

In contrast to these health benefits of marriage, divorce is often linked to poor health. Teachman (2010) found that work-related health limitations are associated with an increased risk of divorce for men. In a paper that examines marital dissolution and work disability in Norway, Blekesaune and Barrett (2005) found that divorce can negatively affect health as

indicated by receipt of health-related benefits, especially for parents and young men. In recent analyses for the U.S., Couch, Reznik and Tamborini (2016) found that divorce increases work related health limitations for women but not for men (Couch, Tamborini and Reznik 2015b).

When studying the relationship between marital status and health, several factors have been demonstrated to drive heterogeneous impacts among sub-groups. For example, Blekesaune and Barrett (2005) found stronger negative effects of divorce on health among people who have children and among young men. Shor et al. (2012) showed that the association between marital dissolution and mortality risk is greater for men than for women. Williams and Umberson (2004) found that divorce impacts men more than women but that most effects with respect to self-assessed health occur shortly after transitions. Teachman (2010) used 25 years of data (N=7919) from the 1979 *National Longitudinal Study of Youth* (NLSY-79) to examine the relationship between work-related health limitations and risk of marital disruption and found that health limitations increase the risk of divorce for husbands but not for wives and that education exacerbates the effect for White men but attenuates it for Black men. Hu and Goldman (1990) found that divorced men have the highest mortality of any group compared to married men. Zhang and Hayward (2006) found that marital loss increases the risk of cardiovascular disease for women in late midlife but not for men. Umberson (1992) claimed that marriage is more beneficial to men than women in regard with lower mortality rates and it was explained by a model of social integration and social control. Rendall et al. (2011) and Lillard and Waite (1995) examined marriage's protective effects for survival for U.S. men and women, using SIPP data and PSID data respectively. Comparing

their results, Rendall et al. found a stronger marriage effect for men than women whereas Lillard and Waite did not, but Lillard and Waite suggested that the improved financial resources associated with marriage explains much of marriage benefits for women but not for men. Similarly, Dupre et al. (2009) supported the argument that marriage protects women's health by increasing financial stability and resources while it protects men's health through behavioral pathways (e.g. a healthier life style).

In the existing literature, researchers have investigated the relationship between health conditions and marital status; however, most of those studies use cross-sectional data with measures of relationship status and other demographic correlates that do not align with the timing of the onset of the condition. In addition, most papers focus on one specific health condition, like diabetes or arthritis, or one specific aspect of functioning. Here, I temporally align the demographic correlates of the onset of work limitations with the timing of that event. While I examine the onset of any work related limitation, I also provide a more detailed perspective by examining 30 separate health conditions in the analysis.

1.3 Data

1.3.1 Comparison between the SIPP and NHIS data

This chapter is going to examine the evolution of individuals' health conditions by age and other demographic characteristics over time. Two sources of survey data are available for use in the research: the *Survey of Income and Program Participation* (SIPP) and the *National Health Interview Survey* (NHIS). The SIPP is a series of national panels, providing

comprehensive information about individuals' and households' income and participation in government transfer programs in the United States. The NHIS is a cross-sectional survey that provides information on individuals' health status, effects of illness and disability and health care utilization in the United States since 1957.

The SIPP data appears to be more suitable for the purpose of this research, since it contains retrospective modules in the second wave regarding the timing of the onset of work related health limitations and also similar retrospective surveys of the timing of educational attainment, changes in relationship status, and the fertility histories of women in addition to information on time invariant covariates. The NHIS also provides recall data on the onset of health related work limitations but not for the other demographic correlates I seek to make use of in this analysis. The NHIS is much more commonly used in health related research. Thus, I begin this analysis with a comparison of the two data sources.

The duration of each individual SIPP panel varies from 2.5 to 4 years. Within the panel, there are sequenced interviews over 4-month recall periods, called waves. Here, I make use of data from the 2004 SIPP Panel and correspondingly, make comparisons to 2004 NHIS data.

In Wave 2 of the 2004 SIPP Panel (from Jun 2004 to Sep 2004), "work disability history" is included in the topical module. The questionnaire lists 30 health conditions and asks individuals to mark every applicable condition that leads to their work limitation and to mark the main condition among those. It also asks the year when the person's work limitation began. Combining these reports of the timing of work limitations with individuals' ages, it is possible to observe the age at which individuals report their health related work limitation

began, i.e. the age of onset for each health condition, and the main health condition reported as a work limitation for each age group. However, some ambiguity exists since the survey asks the beginning year of work limitation but does not specify the beginning year of each individual health condition a person can identify as being associated with their work limitation. Thus, I will make use of the reported year of onset in two ways. First, I will assign the year of onset only to the main condition but then I will assign the year of onset to all reported conditions. I will compare the two different uses of the measures to the NHIS data to see which corresponds more closely.

In comparison, the 2004 NHIS lists 36 health conditions and asks specifically "What conditions or health problems cause limitations" and "How long have you had a problem" for each individual condition or health problem. Participants in the survey can identify every condition that contributes to their work limitation and specify different onset dates for each condition. Again, using individuals' self-reported ages, I can easily determine the age of onset for each work related health limit. Since the NHIS reports provide more specific dating information for the onset of health conditions than is available in the SIPP, this also provides further motivation for a comparison between the two data sources.

The comparisons I make between the SIPP and NHIS are based on tabulations of the age of onset of specific conditions responsible for individuals' self-reported work limitations. The set of health conditions that SIPP and NHIS take into consideration are not exactly the same. In the SIPP, there are 30 listed conditions but 36 in the NHIS. There are 19 overlapping conditions that can be found in either survey: alcohol or drug problem or disorder, arthritis or rheumatism, back or spine problems, blindness or vision problems, broken bone or fracture,

cancer, cerebral palsy, deafness or serious trouble hearing, diabetes, head or spinal cord injury, heart trouble, high blood pressure, lung or respiratory trouble, mental or emotional conditions, intellectual disability, missing limbs or foot or hand or finger, stomach trouble, stroke, and tumor cyst or growth. However, there are 10 specific conditions in the SIPP (except for "other") that do not correspond directly with the NHIS. Similarly, there are 15 conditions (except for "other impair or problem (1)" and "other impair or problem (2)") listed in the NHIS that do not correspond to the detailed conditions listed in the SIPP. Here, I make comparisons across conditions the two surveys have in common.

The SIPP questionnaire for the work limitation questions includes all persons 16 to 67 years old with a health condition that limits the kind or amount of work they can do, while NHIS includes all persons 18 years of age and older who have at least one limitation. So the possible onset ages of any health condition are from 0 to 67 years old for SIPP; while there is no upper limit for NHIS.

To make the tabulations across surveys comparable, I take the 19 health conditions that can be found in both the SIPP and NHIS and divide individuals who are 18 to 67 years old and have work limitation into 11 onset age groups: younger than 16, 16—20, 21—25, 26—30, 31—35, 36—40, 41—45, 46—50, 51—55, 56—60, 61—67. I apply relevant survey weights to both the SIPP and NHIS data and tabulate the proportions of people in the total population of 18 to 67 years old who ever have those 11 health conditions based on 11 onset age groups; the weighted statistics are shown in Table 1-1, Table 1-2 and Table 1-3.

Table 1-1 and Table 1-2 are based on the Wave 2 sample of SIPP 2004 Panel. Table 1-1 is based on the question "Which of these conditions cause your work limitation, mark all that

applies", so each person with work limitation may have more than one health problem. Table 1-2 is based on the question "Which condition is the main cause for work limitation", so each person with work limitation is only assigned this one main condition. Table 1-3 is from NHIS 2004 survey. Since it asks individuals to report all conditions responsible for their work limitation, each individual may have more than one health problem. In short, Table 1-1 and Table 1-3 are about all conditions and are from SIPP and NHIS respectively; Table 1-2 is about main condition and is based on the SIPP.

As can be seen in all three tables, people suffer from work limitations most often because of back or spine problems, arthritis or rheumatism, mental or emotional condition, heart trouble, diabetes and high blood pressure. Some health problems, such as cerebral palsy, deafness, or mental retardation, are usually found to first occur among the youngest group (<16) and are relatively rare at older ages. There are some conditions that appear later in a person's life, such as back or spine problems, cancer, heart trouble, and stroke. Cases of alcohol or drug problems are rarely reported. Other conditions that rarely occur include missing or amputated limb or finger or digit, cerebral palsy, and tumor or cyst. The tables also show that the most common onset ages for any health related work limitation are from 46 to 55.

I conduct t-tests across the marginal distributions of the tables, examining incidence by age and condition. This allows me to compare whether the SIPP and NHIS provide the same average onset age for any one of the health conditions, and whether they provide the same proportion of individuals experiencing a health condition for any one of the onset age groups. I make use of a .05 level of significance in conducting the tests.

The asterisks in the margins of Table 1-1 show whether the null hypothesis that the marginal probabilities from the SIPP estimates and corresponding NHIS estimates are equal is rejected. I reject the null hypothesis that the mean difference equals zero for three out of nineteen health conditions: alcohol or drug problem, broken bone or fracture, and head or spinal cord injury. Also, I cannot reject the null hypothesis for any onset age groups. Thus, there is a very close correspondence between the SIPP tabulations in Table 1-1 and the NHIS reports in Table 1-3.

On the other hand, the asterisks in Table 1-2 show that statistically significant differences exist among nine out of nineteen health conditions and one out of eleven onset age groups—many more differences than are shown in Table 1-1. Thus, based on the t-test results, the data based on all conditions from the SIPP in Table 1-1 closely resemble the data from the NHIS.

1.3.2 Examination of Recall Bias in the SIPP

I am also concerned about the possibility of recall bias in the SIPP. One might think that more recent reports of the onset of health limitations would be more accurate than onsets that occurred many years ago. To investigate this issue, I tabulate the proportion of people who report the initial onset of a health limit within the past five years; then do a t-test against the onset of any condition for the entire sample in the SIPP. If the proportions are not significantly different, this would be evidence that is consistent with the lack of recall bias.

Table 1-4 shows the proportions of people who report any beginning of work limitation within the last five years and Table 1-5 is the corresponding table without this constraint.

Notice that now there are only 10 onset age groups from "16--20" to "61--67". This is because the survey did not collect exact beginning year if the person had work limitation before age 16. So for onset age group "<16", I cannot tell whether they began to experience limitations within the last five years. Also, since I am working with the SIPP data, I now consider all 30 health conditions reported. Excluding the 1186 individuals who reported their work limitation before age 16, there are 6935 individuals who ever reported work limitation, and among them 3155 reported the beginning of work limitation within the last five years. Comparing the total number of reports of onset in the subset (4483, sum of Sample N in Table 1-4) to the whole sample (10629, sum of Sample N in Table 1-5), approximately 40% of onsets of work limitations occur within the last five years.

Results of the t-tests for the null hypothesis that the differences between tables are zero are shown by asterisks in the margins of Table 1-4. The p-values are far greater than 0.05 for each t-test and I cannot reject the null hypothesis that the mean difference across table entries equals zero. This means that the proportions of individuals who experience health limits within the age groups examined and for the specific conditions are not significantly different for people who reported limitation within the past five years and the entire sample. Thus, there is no strong evidence of recall bias in the data.

Based on the preceding analysis, I will make use of all individuals' reports in Wave 2 of the 2004 SIPP data of any health condition that causes work limitations in the subsequent analysis. These data closely resemble those found in the NHIS and there does not appear to be any evidence that recall of distant events suffer from recall bias due to timing.

1.4 Descriptive Statistics of Estimation Sample

I report the weighted descriptive statistics of the variables I constructed from the retrospective modules: age, onset age, race, origin, education level, marital status and number of children (only for women) for the 30 detailed health conditions contained in the SIPP. The data are reflective of characteristics at the age at which the conditions occur. Table 1-6, Table 1-7 and Table 1-8 contain information for the whole sample, men and women respectively. As can be seen in Table 1-6, the greatest proportions of people experience work limitations because of back or spine problems, arthritis, mental or emotional conditions, heart trouble and diabetes. As can also be seen in Tables 1-7 and 1-8, those five health conditions are also the most common ones for both men and women although the prevalence by gender differs a bit. The average ages for people who have some health conditions (e.g. arthritis, cancer, diabetes, heart trouble, high blood pressure, stroke and thyroid trouble) are relatively older. The proportions of people experiencing some specific limitations also increase with the onset age, which illustrates that people begin to suffer from those conditions beyond mid-life.

There are, however, some health conditions, such as mental retardation, learning disability and cerebral palsy where the mean age of onset is less than 37 and a large proportion of people have very young onset ages. These health conditions appear earlier in people's lives. Some likely are present at birth. Despite these early occurring limitations, the most common onset age groups are 45-50 (0.94%) and 51-55 (0.91%).

Four racial categories are contained in the SIPP. In the sample, the proportions are: White (80.56%), Black (12.54%), Asian (3.42%) and other (3.48%). People are also asked

about their ethnic origin, 14.1% report being Hispanic, Spanish or Latino.

I also tabulate the proportions of people who have any of 30 health conditions based on time-varying variables such as education level, marital status and number of children. The highest education level that most people have achieved is high school diploma (21.62%) or some college (25.85%); and most people either stay married (about 41.12%) or never get married (43.48%) due to their young age at the time of the survey. For women, SIPP asks about the number of children they ever gave birth to and the answer ranges from zero to six. Having children or not may also affect a person's likelihood of experiencing the onset of some health conditions.

Tables 1-7 and 1-8 allow me to descriptively compare men and women. In the survey, there are 49,951 males and 53,877 females that make up 48.9% and 51.1% of the weighted population respectively. There are 13 conditions experienced by a higher proportion of men than women: an alcohol or drug problem, AIDS, blindness, broken bone, deafness, head injury, heart trouble, hernia, learning disability, mental retardation, missing limbs, paralysis, and stiff foot/ hand. The average age for men in the SIPP (with or without health conditions) is 34.99, younger than that of women 37.12; however for one third of health conditions, the average ages for men with those health conditions are older than for women, such as alcohol problems, AIDS, cerebral, head injury, heart trouble, learning disability, mental retardation, multiple sclerosis, paralysis and stroke. So men and women experience some health limits at different stages in life and also have different onset patterns for some conditions. For example, compared to women, there are higher proportions of men that experience back problems and broken bone during their younger ages, but lower percentages of men have these problems at

older ages.

1.5 Methods

Following the prevalent method in the related literature, I use logistic regression models in this chapter. I estimate logistic regression models of the relative probability of the onset any health condition given the measures of fixed and time-varying characteristics. The dependent variable is a categorical indicator of whether the individual reports any health condition that causes a work limitation, $Healthcond_i$. Except for age, which is a continuous covariate, I generate dummy variables for each category. To examine gender differences, I run separate models for men and women. The models for men and women are specified identically except that for women the number of children is also taken into account.

In the main regression model, the relative probability of the onset of any health condition for individual i, $Healthcond_i$ ($Healthcond_i = 0 \ or \ 1$), is a function of (1) the current age, Age_i; (2) a series of indicator variables for races, $Race_{i,k}$, where $k = 1$ for Whites, $k = 2$ for Blacks, $k = 3$ for Asians, and $k = 4$ for residuals; (3) a series of indicator variables for educational achievement, $Edu_{i,l}$, where $l = 1$ for less than high school, $l = 2$ for high school graduate, $l = 3$ for some college, $l = 4$ for Bachelor's degree, and $l = 5$ for Master's or higher degree; (4) a series of indicator variables for marital status, $MS_{i,m}$,where $m = 1$ for married, $m = 2$ for widowed, $m = 3$ for divorced, $m = 4$ for never married; (5) a series of indicator variables for number of children, $Chld_{i,n}$, where $n = 1$ for no child, $n = 2$ for one child, $n = 3$ for two children, $n = 4$ for three or more children; and (6) the error term, ε_i, which is distributed by the standard

logistic distribution.

The probability that $Healthcond_i = 1$ is referred to as $\hat{p}$, and the probability that $Healthcond_i = 0$ is referred to as $1 - \hat{p}$. Then the logistic regression model is stated as:

$$ln\left(\frac{\hat{p}}{1-\hat{p}}\right) = \alpha Age_i + \sum_{k=2}^{4} \beta_k Race_{i,k} + \sum_{l=2}^{5} \gamma_l Edu_{i,l} + \sum_{m=2}^{4} \delta_m MS_{i,m} + \sum_{n=2}^{4} \theta_n Chil_{i,n} + \varepsilon_i \quad (1)$$

Here, "Whites", "less than high school", "married", and "no child" are the reference groups and thus not included in the Eq. (1). Based on Eq. (1), the probability of having a health condition (probability that $Healthcond_i = 1$) is stated as:

$$\hat{p} = \frac{1}{1 + \exp\left[-\left(\alpha Age_i + \sum_{k=2}^{4} \beta_k Race_{i,k} + \sum_{l=2}^{5} \gamma_l Edu_{i,l} + \sum_{m=2}^{4} \delta_m MS_{i,m} + \sum_{n=2}^{4} \theta_n Chil_{i,n} + \varepsilon_i\right)\right]} \quad (2)$$

Alternatively, the odds of having a health condition (odds of $Healthcond_i = 1$) can be stated as:

$$\text{odds} = \frac{\hat{p}}{1-\hat{p}} = \exp\left(\alpha Age_i + \sum_{k=2}^{4} \beta_k Race_{i,k} + \sum_{l=2}^{5} \gamma_l Edu_{i,l} + \sum_{m=2}^{4} \delta_m MS_{i,m} + \sum_{n=2}^{4} \theta_n Chil_{i,n} + \varepsilon_i\right) \quad (3)$$

The coefficients are hard to interpret in usual way as "the change in the dependent

variable with one unit change in the independent variable". Instead, I have to translate the parameter estimates using the exponential function to obtain an odds ratio. For example, the odds ratio for the first term Age_i is e^{α}, which means that the odds that $Healthcond_i = 1$ is e^{α} times as likely as the value of Age_i is increased by one unit. The odds ratio for the Black can be explained in another way since $Healthcond_i$ and $Race_{i,2}$ are both dichotomous. The odds ratio is the odds that $Healthcond_i = 1$ when $Race_{i,2} = 1$ compared to the odds that $Healthcond_i = 1$ when $Race_{i,2} = 0$. An odds ratio that is greater than 1 indicates a positive relationship between dependent variable and independent variable; an odds ratio that is less than 1 indicates a negative relationship between dependent and independent variable; and an odds ratio of 1 indicates that there is no relationship between dependent and independent variable.

1.6 Results

The logistic regression results are contained in Table 1-9. In Model 1, I include only age as a control. In Model 2, I add available measures of fixed characteristics (race and origin). In Model 3, I additionally include controls for the time-varying socio-demographic variables (education level and marital status). Model 4 is only available for women and adds to Model 3 a control for the number of children.

In all three models for men, I find strong and statistically significant results indicating that all of the included covariates are related to the onset of health conditions that limit work. For women, I also get statistically significant results except for the categorical indictor for never being married and the number of children.

Considering the race and ethnicity indicators, Asians appear to be less affected by health conditions. The odds ratio of 0.585 <1 in Model 3 for men in Table 1-9 indicates that the odds of reporting any health condition decreases 41.5% (i.e. (1-0.585)*100) more for Asians than for Whites with all other covariates controlled. The parameter estimate associated with the indicator for being Asian in the women's sample of 0.713 in Model 3 implies that the odds of reporting any work limiting health condition is 28.8% lower for Asians. Compared to Whites, Blacks are more likely to have work limiting health conditions. The odds ratios in Model 3 are 1.442 (>1) for Black men and 1.389 (>1) for Black women. Probabilities of reporting health conditions are lower for Hispanic, Spanish or Latino than for non-Hispanics, Spanish or Latino; as are seen in Model 3. Relative to non-Hispanic, Spanish or Latino, the odds ratios are 0.689 for men and 0.770 for women in Model 3.

People with higher educational levels have lower odds of having a work limiting health condition. Divorced individuals have a much higher probability of having work limiting health conditions compared to married individuals in the sample. For men, the never married have a higher probability of having a health limitation (1.638>1) while the odds ratio of widowers is less than one. For women, the odds ratio for widows (0.601) is similar to that of men and the probability of having a work limiting health condition is lower for widowed than for married women; however, there are no significant results for the parameter associated with being a never married woman. The number of children does not have a statistically significant effect on the probability of having a work limiting health condition for women.

The demographic covariates are highly related to the onset of any health limit, but I am also interested in whether this pattern is also observed for individual disaggregated conditions.

I make use of categorical indicators of whether an individual experiences each of the individual 30 health conditions as dependent variables, and run a set of logistic regression models for each condition on the available covariates for men and women separately. The regression results of Model 3 for men and Model 4 for women are summarized in Table 1-10 and Table 1-11 respectively.

I find significant relationships between the demographic covariates and the existence of health limitations for most of the 30 health conditions as was observed for the aggregated outcome of any health limitation. However, for some specific health conditions, many of the demographic controls are not statistically related to the health condition at conventional levels for both men and women. There are six particular conditions where I find that few of the demographic covariates are predictive of the specific work limiting problems other than age particularly for men. The regression results for these six health conditions – cancer, carpal tunnel syndrome, deafness or serious trouble hearing, paralysis, thyroid, and tumor cyst or growth are contained in Table 1-12 to Table 1-17. In those tables, it can be seen that for men, the only demographic characteristic that is significantly related to having a tumor, paralysis, or cancer is divorce, other than age. Thus, among samples of married men, the arrival of these conditions controlling for age is not predictable in this sample based on the other observed characteristics. None of the covariates other than age are predictive of thyroid problems that limit work. Only higher education is predictive of carpal tunnel problems and deafness that limit the type or amount of work men may do.

For women, similarly, the only significant correlate of cancer or paralysis other than age is divorce. Thus, among samples of married women, these conditions may be observed as

arriving randomly controlling for age. For thyroid problems, being African American appears to be significantly related to experiencing related work limitations. Widowed women also appear to be more likely to experience hearing problems and tumors. While the demographic covariates examined are somewhat more related to these six conditions for women than for men, they are far fewer covariates related to these conditions than for others where alternative model estimates are not provided.

1.7 Conclusion

In this chapter, I make use of the topical module on work disability history from Wave 2 of the 2004 SIPP to describe the onset of health conditions among different demographic groups. I find that most people, men and women, experience work limitations because of back or spine problems, arthritis, mental or emotional conditions, heart trouble and diabetes. People of different races or origins have some differences in the prevalence of health conditions. Asians and Hispanics both appear to experience fewer work limiting health conditions.

Most people report the onset of work limiting health conditions when they are younger than 16 or beyond the age of 46. The most common ages for first experiencing different work limiting health problems vary a lot depending on the specific condition being examined. Arthritis, cancer, diabetes, heart trouble, high blood pressure, stroke and thyroid trouble occur in later stages of the lives of the sample members while mental retardation, learning disability and cerebral palsy occur earlier. Men and women face unequal risks of having different health conditions and the conditions occur in different stages of their lives. The demographic

covariates examined in this chapter (age, race, origin, marital status and educational level) are highly related to the odds of experiencing both any work limiting health conditions and also the vast majority of the 30 detailed limitations in the 2004 SIPP. However, there is a subset of conditions that are not highly related to these demographic covariates. In particular, there appear to be some conditions that among married populations, controlling for age and one or two additional covariates, would be seen as arriving unexpectedly.

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1.9 Appendix I

Table 1-1 SIPP 2004 Wave 2, Mark All Conditions that Cause Work Limitation (%)

	1**	3	4	5	6**	7	9	10	11
Onset Age Groups	Alcoholor Drug problem or Disorder	Arthritis or Rheumatism	Back or Spine Problems	Blindness or Vision Problems	Broken Bone/ Fracture	Cancer	Cerebral Palsy	Deafness or Serious Trouble Hearing	Diabetes
<16	0.0093	0.066	0.14	0.087	0.02	0.0092	0.066	0.074	0.068
16–20	0.0076	0.021	0.084	0.004	0.022	0.0085	0.002	0.0052	0.005
21–25	0.006	0.035	0.18	0.018	0.045	0.012	0.0025	0.0029	0.02
26–30	0.012	0.062	0.21	0.029	0.038	0.022	0.0021	0.01	0.044
31–35	0.017	0.085	0.31	0.014	0.037	0.028	0.00086	0.0084	0.043
36–40	0.0086	0.16	0.39	0.034	0.043	0.044	0.00083	0.019	0.074
41–45	0.01	0.14	0.41	0.03	0.058	0.035	0	0.018	0.12
46–50	0.0079	0.23	0.44	0.049	0.051	0.049	0	0.012	0.13
51–55	0.0055	0.27	0.35	0.047	0.047	0.096	0.0023	0.02	0.16
56–60	0.002	0.17	0.26	0.046	0.026	0.065	0	0.015	0.1
61–67	0.0012	0.085	0.12	0.013	0.024	0.036	0	0.0023	0.049
Average	0.008	0.141	0.295	0.041	0.039	0.041	0.010	0.022	0.088
Sample (N)	73	1003	2075	285	307	281	57	132	625

13**	14	16	19	20	21	22	26	27	29
Head or Spinal Cord Injury	Heart Trouble	High Blood Pressure	Lung or Respiratory Trouble	Mentalor Emotional Conditions	Intellectual Disability	Missing Limbs/ Foot/ Hand/ Finger	Stomach Trouble	Stroke	Tumor, Cystor Growth
0.036	0.064	0.041	0.048	0.25	0.24	0.015	0.021	0.0099	0.0041
0.017	0.02	0.0075	0.016	0.06	0.0055	0.0027	0.005	0.00075	0.0046
0.032	0.023	0.012	0.028	0.1	0.0054	0	0.019	0.0055	0.0038
0.029	0.051	0.041	0.044	0.092	0.0048	0	0.021	0.015	0.0088
0.043	0.055	0.052	0.036	0.14	0.0052	0.0091	0.024	0.016	0.0097
0.044	0.11	0.072	0.061	0.16	0.0096	0.011	0.032	0.027	0.02
0.031	0.13	0.1	0.06	0.14	0.0039	0.0057	0.032	0.048	0.0094
0.048	0.17	0.13	0.078	0.15	0.0062	0.015	0.038	0.052	0.018
0.039	0.22	0.13	0.11	0.081	0.0043	0.0074	0.043	0.051	0.0063
0.01	0.2	0.075	0.084	0.035	0.0058	0.0049	0.02	0.062	0.0086
0.0034	0.085	0.043	0.056	0.0069	0.0021	0.0018	0.012	0.035	0.0015
0.034	0.118	0.075	0.063	0.127	0.037	0.008	0.028	0.033	0.010
254	854	546	468	922	221	54	206	238	66

Note: All Persons 18 to 67 years old. All statistics are weighted proportions except the sample numbers, proportions are shown in percentage (%), observations= 65299, population size=186487388. Two-Sample Mean-Comparison T-tests are based on the corresponding columns from Table 1-1 and Table 1-3, and rows from Table 1-1 and Table 1-3; H0: Mean Difference=0, Ha: Mean Difference !=0. ** $p<0.05$, *** $p<0.01$.

Table 1-2 SIPP 2004 Wave 2, Mark the Main Condition that Causes Work Limitation (%)

	1**	3**	4	5**	6***	7	9	10	11***
Onset Age Groups	Alcoholor Drug problem or Disorder	Arthritis or Rheumatism	Back or Spine Problems	Blindness or Vision Problems	Broken Bone/ Fracture	Cancer	Cerebral Palsy	Deafness or Serious Trouble Hearing	Diabetes
<16	0.0077	0.038	0.11	0.064	0.0095	0.0064	0.059	0.068	0.033
16–20**	0.0034	0.013	0.069	0.0026	0.014	0.0085	0.002	0.0029	0.005
21–25	0.0047	0.02	0.15	0.0078	0.029	0.0077	0.0025	0	0.0079
26–30	0.0095	0.027	0.19	0.019	0.024	0.0082	0	0.0061	0.021
31–35	0.0097	0.047	0.26	0.0043	0.026	0.023	0	0.007	0.024
36–40	0.0049	0.096	0.33	0.018	0.023	0.029	0	0	0.033
41–45	0.0044	0.096	0.34	0.017	0.036	0.026	0	0.0082	0.05
46–50	0.0053	0.14	0.35	0.026	0.029	0.041	0	0.0065	0.052
51–55	0.0019	0.17	0.3	0.032	0.033	0.075	0.0023	0.007	0.058
56–60	0.0009	0.11	0.22	0.027	0.019	0.052	0	0.007	0.037
61–67	0.0012	0.059	0.1	0.0084	0.022	0.033	0	0	0.023
Average	0.005	0.087	0.246	0.025	0.025	0.031	0.009	0.014	0.037
Sample (N)	41	600	1695	167	189	212	48	72	271

13***	14	16***	19**	20	21	22	26***	27	29
Head or Spinal Cord Injury	Heart Trouble	High Blood Pressure	Lung or Respiratory Trouble	Mentalor Emotional Conditions	Intellectual Disability	Missing Limbs/ Foot/ Hand/ Finger	Stomach Trouble	Stroke	Tumor, Cystor Growth
0.024	0.039	0.0082	0.032	0.21	0.21	0.0087	0.01	0.0056	0
0.013	0.011	0.0014	0.0095	0.045	0.0055	0.0015	0	0	0.0028
0.027	0.012	0.00062	0.02	0.081	0.003	0	0.0037	0.005	0.0033
0.024	0.031	0.014	0.029	0.071	0.0048	0	0.0049	0.01	0.0046
0.033	0.029	0.0089	0.017	0.11	0.0045	0.0079	0.006	0.012	0.0023
0.034	0.061	0.016	0.033	0.12	0.0051	0.0087	0.0079	0.02	0.011
0.017	0.089	0.026	0.032	0.1	0.0039	0.0057	0.0086	0.038	0.0055
0.024	0.12	0.026	0.04	0.1	0.0046	0.011	0.0072	0.032	0.008
0.023	0.16	0.023	0.064	0.06	0.00065	0.0048	0.013	0.042	0.0029
0.0053	0.14	0.023	0.06	0.023	0.0058	0.0038	0.0099	0.043	0.0049
0.0014	0.061	0.0041	0.042	0.0035	0.0021	0.001	0.002	0.023	0
0.022	0.079	0.016	0.037	0.097	0.032	0.006	0.008	0.024	0.005
168	553	106	284	697	191	38	52	165	30

Note: All Persons 18 to 67 years old. All statistics are weighted proportions except the sample numbers, proportions are shown in percentage (%), sample size= 65299, population size=186487388. Two-Sample Mean-Comparison T-tests are based on the corresponding columns from Table 1-2 and Table 1-3, and rows from Table 1-2 and Table 1-3; H0: Mean Difference=0, Ha: Mean Difference !=0. ** $p<0.05$, *** $p<0.01$.

Table 1-3 NHIS 2004, Mark All Conditions that Cause Work Limitation (%)

	1	3	4	5	6	7	9	10	11
OnsetAge Groups	Alcoholor Drug problem or Disorder	Arthritis or Rheumatism	Back or Spine Problems	Blindness or Vision Problems	Broken Bone/ Fracture	Cancer	Cerebral Palsy	Deafness or Serious Trouble Hearing	Diabetes
<16	0	0.076	0.16	0.17	0.056	0.009	0.18	0.094	0.052
16–20	0.0053	0.073	0.17	0.028	0.099	0.0063	0.0081	0.016	0.02
21–25	0	0.086	0.21	0.018	0.087	0.0063	0	0.016	0.041
26–30	0	0.11	0.29	0.026	0.08	0.0052	0	0.017	0.06
31–35	0.0021	0.15	0.35	0.03	0.11	0.03	0.002	0.017	0.062
36–40	0.007	0.18	0.39	0.031	0.12	0.045	0.0015	0.023	0.1
41–45	0.0022	0.25	0.32	0.058	0.11	0.06	0.0021	0.016	0.14
46–50	0.0049	0.27	0.27	0.072	0.12	0.071	0.001	0.019	0.2
51–55	0	0.29	0.21	0.054	0.088	0.084	0.00054	0.028	0.2
56–60	0	0.17	0.13	0.051	0.074	0.062	0	0.013	0.14
61–67	0	0.076	0.045	0.039	0.029	0.041	0	0.008	0.042
Average	0.005	0.196	0.273	0.083	0.097	0.058	0.166	0.045	0.135
Sample (N)	12	1042	1497	358	573	251	109	158	679

13	14	16	19	20	21	22	26	27	29
Head or SpinalCord Injury	Heart Trouble	High Blood Pressure	Lung or Respiratory Trouble	Mentalor Emotional Conditions	Intellectual Disability	Missing Limbs/ Foot/ Hand/ Finger	Stomach Trouble	Stroke	Tumor, Cystor Growth
0.23	0.075	0.026	0.23	0.28	0.26	0.014	0.018	0.0028	0.0045
0.098	0.011	0.032	0.039	0.15	0.0077	0.0054	0.013	0.0022	0
0.1	0.022	0.048	0.047	0.15	0.005	0.015	0.024	0.0096	0.0098
0.12	0.02	0.06	0.04	0.11	0.0043	0.0028	0.02	0.012	0.0067
0.12	0.059	0.1	0.062	0.14	0.00079	0.0038	0.04	0.021	0.012
0.12	0.11	0.12	0.084	0.16	0	0.0074	0.034	0.027	0.01
0.12	0.13	0.16	0.1	0.15	0.0018	0.0026	0.047	0.049	0.0085
0.093	0.2	0.14	0.1	0.14	0.0048	0.0064	0.038	0.066	0.0095
0.078	0.19	0.11	0.13	0.079	0	0.0092	0.028	0.073	0.012
0.062	0.17	0.095	0.074	0.048	0	0.011	0.017	0.1	0.0033
0.029	0.11	0.028	0.058	0.015	0	0.0054	0.017	0.059	0
0.128	0.143	0.108	0.119	0.163	0.238	0.010	0.031	0.064	0.009
679	667	595	562	846	155	49	188	252	45

Note: All persons 18 to 67 years old. All statistics are weighted proportions except the sample numbers, proportions are shown in percentage (%), sample size=59593, population size=186978093.

Table 1-4 SIPP 2004 Wave 2, Mark All Conditions that Cause Work Limitation within 5 Years (%)

	1	2	3	4	5	6	7	8	9
Onset Age Groups	Alcohol or Drug problem or Disorder	AIDS or AIDS Related Condition	Arthritis Rheumatism	Back or Spine Problems	Blindness or Vision Problems	Broken Bone/ Fracture	Cancer	Carpal Tunnel Syndrome	Cerebral Palsy
16–20	0.03	0	0.066	0.73	0.064	0.16	0.14	0.025	0.044
21–25	0.021	0	0.21	1.07	0.072	0.45	0.076	0.034	0.056
26–30	0.069	0	0.26	1.83	0.096	0.26	0.1	0.23	0.047
31–35	0.098	0.075	0.2	1.79	0.046	0.34	0.18	0.2	0
36–40	0.074	0.083	0.87	3.03	0.094	0.3	0.38	0.52	0
41–45	0.18	0.096	0.87	3.88	0.2	0.57	0.48	0.39	0
46–50	0.023	0.046	1.99	4.14	0.31	0.58	0.66	0.64	0
51–55	0.059	0	2.66	3.67	0.66	0.66	1	0.48	0
56–60	0.024	0	2.15	3.95	0.66	0.49	0.97	0.12	0
61–67	0.027	0	1.73	2.42	0.27	0.5	0.8	0.095	0
Average	0.062	0.032	1.454	3.136	0.327	0.484	0.608	0.331	0.007
Sample (N)	22	10	371	835	88	146	148	82	4

10	11	12	13	14	15	16	17	18	19	20
Deafness or Serious Trouble Hearing	Diabetes	Epilepsy or Seizures	Head or Spinal Cord Injury	Heart Trouble	Hernia	High Blood Pressure	Kidney Stones/ Kidney Trouble	Learning Disability	Lung or Respiratory Trouble	Mental or Emotional Conditions
0	0.04	0.15	0.17	0.13	0	0	0.051	0.15	0.16	0.44
0.028	0.016	0.16	0.3	0.098	0.046	0.014	0.067	0.26	0.32	0.69
0.051	0.12	0.34	0.064	0.29	0.045	0.34	0.022	0.093	0.25	0.57
0.012	0.21	0.29	0.33	0.4	0.12	0.26	0.27	0.029	0.11	0.78
0.13	0.67	0.25	0.18	0.55	0.33	0.42	0.32	0.024	0.47	1.3
0.14	0.62	0.26	0.3	0.8	0.29	0.61	0.18	0.16	0.32	1.45
0.12	1.14	0.21	0.4	1.12	0.24	0.65	0.29	0.042	0.54	1.26
0.29	1.73	0.28	0.42	1.98	0.13	1.51	0.36	0.12	1.21	1.21
0.18	1.34	0.12	0.21	2.14	0.24	0.72	0.15	0.034	1.15	0.46
0.05	0.99	0	0.074	1.66	0.11	0.91	0.19	0.019	1.16	0.15
0.132	0.915	0.206	0.269	1.177	0.186	0.695	0.222	0.081	0.693	0.917
32	230	62	80	312	47	197	56	30	186	278

21	22	23	24	25	26	27	28	29	30
Intellectual Disability	Missing Limbs/ Foot/ Hand/ Finger	Multiple Sclerosis	Paralysis of Any Kind	Stiff/ Deformed/ Foot/ Hand/ Finger	Stomach Trouble	Stroke	Thyroid Trouble or Goiter	Tumor, Cyst or Growth	Other
0.09	0.034	0	0.059	0.026	0	0.049	0	0.039	1.14
0.07	0	0	0.05	0.14	0.17	0	0.049	0.072	1.77
0.016	0	0.028	0.059	0.15	0.16	0.1	0.083	0.095	1.78
0.023	0.017	0.12	0.094	0.21	0.1	0.062	0	0.063	2.29
0.12	0.03	0.16	0.033	0.13	0.29	0.15	0.054	0.2	2.66
0.019	0.053	0.15	0.16	0.32	0.22	0.39	0.11	0.13	3.03
0.082	0.16	0.19	0.29	0.38	0.22	0.3	0.15	0.15	4.58
0.019	0.12	0.11	0.11	0.45	0.52	0.55	0.22	0.11	4
0.031	0.076	0.13	0.11	0.21	0.22	0.74	0.17	0.093	3.9
0.046	0.023	0	0.027	0.12	0.26	0.74	0.13	0.032	2.11
0.048	0.069	0.110	0.118	0.257	0.257	0.392	0.123	0.109	3.156
17	16	31	32	65	73	100	33	28	872

Note: All statistics are weighted proportions except the sample numbers, proportions are shown in percentage (%), observations=3155, population size=8410368.8. Two-Sample Mean-Comparison T-tests are based on the corresponding columns from Table 1-4 and Table 1-5, and rows from Table 1-4 and Table 1-5; H0: Mean Difference=0, Ha: Mean Difference !=0. ** p<0.05, *** p<0.01

Table 1-5 SIPP 2004 Wave 2, Mark All Conditions that Cause Work Limitation (%)

	1	2	3	4	5	6	7	8	9
Onset Age Groups	Alcoholor Drug problem or Disorder	AIDS or AIDS Related Condition	Arthritis or Rheumatism	Back or Spine Problems	Blindness or Vision Problems	Broken Bone/ Fracture	Cancer	Carpal Tunnel Syndrome	Cerebral Palsy
16–20	0.079	0.03	0.22	0.88	0.047	0.24	0.088	0.029	0.02
21–25	0.062	0.035	0.36	1.81	0.19	0.46	0.12	0.085	0.026
26–30	0.12	0.02	0.64	2.16	0.3	0.39	0.23	0.26	0.022
31–35	0.17	0.099	0.87	3.22	0.14	0.38	0.29	0.33	0.0088
36–40	0.088	0.22	1.6	4.03	0.35	0.44	0.45	0.47	0.0086
41–45	0.11	0.086	1.47	4.25	0.31	0.59	0.37	0.35	0
46–50	0.081	0.04	2.36	4.56	0.51	0.53	0.51	0.59	0
51–55	0.057	0.0096	2.78	3.63	0.48	0.49	0.99	0.46	0.024
56–60	0.02	0	1.73	2.66	0.47	0.27	0.67	0.057	0
61–67	0.013	0	0.87	1.27	0.14	0.24	0.37	0.044	0
Average	0.083	0.063	1.562	3.297	0.343	0.436	0.478	0.333	0.010
Sample (N)	67	31	959	1981	218	293	274	182	7

10 Deafness or Serious Trouble Hearing	11 Diabetes	12 Epilepsy or Seizures	13 Head or Spinal Cord Injury	14 Heart Trouble	15 Hernia	16 High Blood Pressure	17 Kidney Stones/ Kidney Trouble	18 Learning Disability	19 Lung or Respiratory Trouble	20 Mental or Emotional Conditions
0.054	0.052	0.23	0.17	0.21	0.016	0.077	0.046	0.1	0.17	0.64
0.03	0.2	0.26	0.33	0.24	0.021	0.12	0.076	0.3	0.29	1.05
0.1	0.45	0.25	0.3	0.53	0.032	0.42	0.12	0.16	0.46	0.95
0.086	0.44	0.33	0.44	0.57	0.13	0.53	0.39	0.05	0.37	1.47
0.19	0.76	0.27	0.46	1.13	0.24	0.75	0.35	0.1	0.63	1.67
0.19	1.19	0.22	0.32	1.34	0.24	1.04	0.27	0.09	0.62	1.44
0.13	1.35	0.22	0.5	1.72	0.32	1.32	0.37	0.074	0.81	1.57
0.21	1.61	0.17	0.4	2.31	0.19	1.31	0.28	0.1	1.1	0.84
0.15	1.08	0.1	0.11	2.09	0.14	0.78	0.12	0.036	0.86	0.36
0.023	0.5	0	0.035	0.87	0.052	0.45	0.09	0.0089	0.57	0.071
0.138	0.928	0.212	0.346	1.309	0.174	0.827	0.251	0.096	0.666	1.126
87	580	143	228	803	88	515	146	73	431	740

21 Intellectual Disability	22 Missing Limbs/ Foot/ Hand/ Finger	23 Multiple Sclerosis	24 Paralysis of Any Kind	25 Stiff/ Deformed/ Foot/ Hand/ Finger	26 Stomach Trouble	27 Stroke	28 Thyroid Trouble or Goiter	29 Tumor, Cyst or Growth	30 Other
0.074	0.028	0.041	0.11	0.1	0.052	0.03	0.058	0.048	1.12
0.056	0	0.14	0.098	0.1	0.2	0.057	0.065	0.039	1.84
0.049	0	0.19	0.12	0.25	0.21	0.15	0.09	0.091	2.38
0.053	0.093	0.24	0.13	0.19	0.25	0.16	0.12	0.099	2.68
0.098	0.11	0.31	0.13	0.29	0.33	0.28	0.093	0.2	3.64
0.04	0.059	0.14	0.17	0.31	0.33	0.5	0.17	0.097	3.18
0.064	0.15	0.23	0.25	0.43	0.4	0.54	0.18	0.18	3.87
0.044	0.077	0.067	0.16	0.44	0.44	0.52	0.28	0.065	3.32
0.059	0.05	0.07	0.092	0.15	0.21	0.64	0.13	0.089	2.57
0.021	0.019	0	0.012	0.054	0.12	0.36	0.059	0.015	1.04
0.057	0.073	0.161	0.144	0.276	0.296	0.378	0.145	0.108	2.913
41	44	94	94	154	190	232	90	63	1781

Note: All statistics are weighted except the sample numbers, proportions are shown in percentage (%), observations=6935, population size=18101994

Table 1-6 Weighted Descriptive Statistics by 30 Health Conditions, SIPP 2004 Wave 2

	1	2	3	4	5	6
	Alcoholor Drug problem or Disorder	AIDS or AIDS Related Condition	Arthritis or Rheumatism	Back or Spine Problems	Blindness or Vision Problems	Broken Bone/ Fracture
Mean Age	44.73	44.40	53.75	49.43	49.04	47.66
Onset Age (proportions, %)						
<16	0.006	0.0014	0.044	0.095	0.061	0.013
16–20	0.0049	0.0019	0.014	0.055	0.0029	0.015
21–25	0.0039	0.0022	0.023	0.11	0.012	0.029
26–30	0.0075	0.0012	0.04	0.14	0.019	0.024
31–35	0.011	0.0062	0.055	0.2	0.0088	0.024
36–40	0.0055	0.014	0.1	0.25	0.022	0.028
41–45	0.0067	0.0054	0.092	0.27	0.019	0.037
46–50	0.0051	0.0025	0.15	0.29	0.032	0.033
51–55	0.0036	0.00061	0.17	0.23	0.03	0.031
56–60	0.0013	0	0.11	0.17	0.03	0.017
61–67	0.0008	0	0.055	0.08	0.0086	0.015
Gender (proportions, %)						
Male	0.039	0.022	0.27	0.91	0.13	0.14
Female	0.017	0.013	0.59	0.97	0.11	0.13
Race (proportions, %)						
White alone	0.038	0.029	0.67	1.5	0.18	0.2
Black alone	0.017	0.0059	0.13	0.25	0.044	0.05
Asian alone	0	0	0.015	0.031	0.0033	0.0018
Residual	0.0018	0.00052	0.046	0.1	0.019	0.013
Origin (proportions, %)						
Spanish, Hispanic or Latino	0.0015	0.013	0.083	0.2	0.02	0.018
Non-Spanish, Hispanic or Latino	0.055	0.022	0.77	1.69	0.23	0.25
Education (proportions, %)						
Less than high school	0.016	0.0084	0.17	0.36	0.059	0.052
High schoolgraduate	0.018	0.011	0.27	0.59	0.083	0.077
Some college	0.018	0.0089	0.31	0.75	0.078	0.12
Bachelor's degree	0.0044	0.0056	0.067	0.13	0.019	0.013
Master or higher degree	0.00079	0.0012	0.031	0.056	0.0048	0.0088
Marital Status (proportions, %)						
Married, spouse present	0.011	0.0046	0.41	0.94	0.094	0.12
Married, spouse absent	0.00043	0	0.012	0.03	0.00094	0.0064
Widowed	0.00046	0.0018	0.082	0.12	0.014	0.011
Divorced	0.014	0.004	0.18	0.42	0.052	0.071
Separated	0.0059	0.0021	0.044	0.079	0.0064	0.018
Never married	0.024	0.023	0.12	0.3	0.078	0.045
Number of Children (proportions, %)						
Not in universe	0.039	0.022	0.27	0.91	0.13	0.14
None	0.005	0.0019	0.1	0.19	0.034	0.022
One	0.0051	0.0027	0.087	0.15	0.018	0.02
Two	0.0042	0.0016	0.15	0.25	0.023	0.03
Three or more	0.0024	0.00656	0.254	0.379	0.0404	0.0552
Sample Number (N)	73	32	1004	2080	290	309

Note: All statistics are weighted except the sample numbers, proportions are shown in percentage (%)

7	8	9	10	11	12	13	14	15
Cancer	Carpal Tunnel Syndrome	Cerebral Palsy	Deafness or Serious Trouble Hearing	Diabetes	Epilepsy or Seizures	Head or Spinal Cord Injury	Heart Trouble	Hernia
52.69	48.06	31.61	45.77	53.30	40.73	45.71	53.93	50.20
0.0074	0.0022	0.052	0.05	0.046	0.059	0.025	0.045	0.00087
0.0055	0.0018	0.0013	0.0034	0.0032	0.015	0.011	0.013	0.00099
0.0078	0.0054	0.0016	0.0019	0.013	0.016	0.021	0.015	0.0013
0.015	0.016	0.0014	0.0066	0.028	0.016	0.019	0.033	0.002
0.018	0.021	0.00055	0.0054	0.028	0.021	0.028	0.036	0.0079
0.028	0.029	0.00054	0.012	0.048	0.017	0.029	0.071	0.015
0.023	0.022	0	0.012	0.075	0.014	0.02	0.084	0.015
0.032	0.037	0	0.008	0.085	0.014	0.031	0.11	0.02
0.062	0.029	0.0015	0.013	0.1	0.011	0.025	0.15	0.012
0.042	0.0036	0	0.0097	0.068	0.0065	0.0068	0.13	0.009
0.023	0.0028	0	0.0015	0.031	0	0.0022	0.055	0.0033
0.11	0.052	0.026	0.062	0.24	0.085	0.12	0.42	0.051
0.16	0.12	0.033	0.061	0.29	0.1	0.097	0.32	0.036
0.22	0.13	0.037	0.1	0.38	0.13	0.17	0.57	0.069
0.034	0.028	0.014	0.016	0.11	0.042	0.024	0.13	0.013
0.0014	0.00073	0.0012	0.00086	0.0059	0.0023	0.0022	0.0072	0
0.01	0.0077	0.006	0.0054	0.03	0.012	0.018	0.028	0.0048
0.025	0.019	0.007	0.0091	0.076	0.021	0.023	0.061	0.023
0.24	0.15	0.052	0.11	0.45	0.17	0.19	0.67	0.063
0.042	0.028	0.027	0.023	0.14	0.053	0.046	0.18	0.02
0.085	0.052	0.018	0.044	0.17	0.059	0.082	0.24	0.029
0.089	0.074	0.01	0.043	0.17	0.062	0.076	0.23	0.033
0.033	0.013	0.0022	0.011	0.031	0.013	0.0088	0.057	0.0033
0.015	0.0043	0.0014	0.0015	0.0092	0.00081	0.0048	0.026	0.001
0.14	0.098	0.0034	0.057	0.25	0.051	0.079	0.37	0.046
0.0019	0.00043	0	0.0018	0.0067	0.00078	0.0049	0.0091	0.00042
0.029	0.01	0	0.0044	0.048	0.0056	0.0085	0.055	0.0021
0.054	0.028	0.007	0.021	0.11	0.038	0.048	0.16	0.02
0.012	0.0097	0.00069	0.0015	0.025	0.0064	0.0076	0.039	0.0075
0.031	0.024	0.048	0.037	0.091	0.087	0.069	0.099	0.011
0.11	0.052	0.026	0.062	0.24	0.085	0.12	0.42	0.051
0.022	0.015	0.028	0.011	0.052	0.037	0.022	0.048	0.0019
0.031	0.015	0.0011	0.014	0.03	0.019	0.012	0.048	0.0055
0.043	0.041	0.0024	0.021	0.069	0.02	0.031	0.073	0.0078
0.0591	0.0473	0.0015	0.0142	0.136	0.0277	0.0315	0.151	0.0203
282	184	65	134	628	208	256	857	90

16	17	18	19	20	21	22	23
High Blood Pressure	Kidney Stones/ Kidney Trouble	Learning Disability	Lung or Respiratory Trouble	Mental or Emotional Conditions	Intellectual Disability	Missing Limbs/ Foot/Hand/ Finger	Multiple Sclerosis
53.63	48.54	34.34	50.82	43.53	36.51	48.67	48.40
0.028	0.0089	0.14	0.043	0.18	0.17	0.01	0.0007
0.0048	0.0029	0.0063	0.011	0.04	0.0047	0.0017	0.0025
0.0078	0.0048	0.019	0.018	0.066	0.0035	0	0.0087
0.026	0.0077	0.01	0.029	0.06	0.0031	0	0.012
0.034	0.024	0.0031	0.024	0.092	0.0033	0.0059	0.015
0.047	0.022	0.0063	0.04	0.1	0.0062	0.0072	0.02
0.065	0.017	0.0056	0.039	0.091	0.0025	0.0037	0.0087
0.083	0.023	0.0046	0.051	0.098	0.004	0.0096	0.014
0.083	0.018	0.0063	0.069	0.052	0.0028	0.0048	0.0042
0.049	0.0076	0.0023	0.054	0.023	0.0037	0.0032	0.0044
0.028	0.0057	0.00056	0.036	0.0045	0.0013	0.0012	0
0.19	0.058	0.12	0.18	0.35	0.11	0.035	0.015
0.27	0.084	0.085	0.23	0.46	0.097	0.012	0.075
0.32	0.1	0.14	0.34	0.62	0.16	0.032	0.073
0.11	0.033	0.043	0.053	0.13	0.04	0.011	0.013
0.012	0.0035	0.0061	0.0051	0.018	0.0032	0	0
0.02	0.0057	0.014	0.019	0.049	0.0051	0.0039	0.0047
0.055	0.016	0.016	0.021	0.08	0.024	0.0022	0.0048
0.4	0.13	0.19	0.39	0.73	0.18	0.045	0.085
0.13	0.038	0.095	0.11	0.18	0.086	0.011	0.0091
0.15	0.051	0.063	0.13	0.28	0.096	0.019	0.018
0.14	0.044	0.036	0.13	0.26	0.016	0.013	0.039
0.03	0.0087	0.0067	0.027	0.063	0.0044	0.0032	0.013
0.0069	0.00073	0.0017	0.011	0.026	0.0013	0.00073	0.01
0.19	0.074	0.035	0.18	0.22	0.016	0.012	0.048
0.0048	0.00044	0.00035	0.0071	0.013	0.0012	0.0015	0.0027
0.053	0.0087	0.005	0.048	0.036	0.0021	0.0023	0.0024
0.11	0.025	0.017	0.092	0.19	0.0075	0.011	0.018
0.029	0.0045	0.0021	0.017	0.045	0.0052	0.0036	0.0075
0.067	0.031	0.14	0.072	0.31	0.17	0.017	0.011
0.19	0.058	0.12	0.18	0.35	0.11	0.035	0.015
0.031	0.016	0.056	0.038	0.13	0.078	0.0034	0.015
0.04	0.016	0.009	0.031	0.068	0.01	0.0012	0.013
0.065	0.026	0.0075	0.063	0.1	0.002	0.0019	0.032
0.13	0.0257	0.01206	0.099	0.159	0.00682	0.00566	0.0158
548	158	226	480	942	236	54	95

24 Paralysis of Any Kind	25 Stiff/ Deformed/ Foot/Hand/ Finger	26 Stomach Trouble	27 Stroke	28 Thyroid Trouble or Goiter	29 Tumor, Cyst or Growth	30 Other	Total (with or without health conditions)
48.45	47.90	49.69	54.74	52.07	45.79	46.62	36.08
0.019	0.034	0.014	0.0064	0.0046	0.0045	0.25	1.09
0.007	0.0066	0.0032	0.0019	0.0036	0.003	0.07	0.24
0.0062	0.0065	0.012	0.0036	0.0041	0.0024	0.12	0.4
0.0076	0.016	0.013	0.0095	0.0056	0.0057	0.15	0.52
0.0083	0.012	0.016	0.01	0.0075	0.0062	0.17	0.63
0.008	0.018	0.021	0.017	0.0059	0.013	0.23	0.84
0.01	0.019	0.021	0.031	0.011	0.0061	0.2	0.81
0.015	0.027	0.025	0.034	0.011	0.012	0.24	0.94
0.01	0.028	0.028	0.033	0.017	0.0041	0.21	0.91
0.0058	0.0095	0.013	0.04	0.0079	0.0056	0.16	0.67
0.00078	0.0034	0.0076	0.023	0.0037	0.00095	0.066	0.31
0.055	0.092	0.072	0.1	0.015	0.021	0.79	48.88
0.043	0.088	0.1	0.11	0.067	0.042	1.07	51.12
0.078	0.13	0.13	0.14	0.058	0.047	1.44	80.56
0.011	0.039	0.025	0.05	0.014	0.012	0.28	12.54
0.0017	0.0034	0.0034	0.0069	0.0014	0	0.04	3.42
0.0075	0.01	0.011	0.0087	0.0083	0.0039	0.11	3.48
0.011	0.012	0.025	0.021	0.0073	0.012	0.17	14.14
0.088	0.17	0.15	0.19	0.075	0.051	1.69	85.86
0.018	0.037	0.036	0.06	0.014	0.014	0.32	13.61
0.038	0.055	0.062	0.069	0.025	0.02	0.58	21.62
0.029	0.07	0.062	0.066	0.032	0.02	0.76	25.85
0.0077	0.016	0.011	0.009	0.0071	0.0048	0.15	11.78
0.0056	0.0015	0.0019	0.005	0.0042	0.0038	0.062	6.09
0.04	0.085	0.073	0.09	0.039	0.027	0.86	41.12
0.0012	0	0.0019	0.0023	0.0031	0.0023	0.023	0.93
0.0066	0.0094	0.0099	0.024	0.0084	0.0014	0.082	4.88
0.025	0.03	0.047	0.05	0.014	0.013	0.34	7.98
0.002	0.01	0.0098	0.012	0.0016	0.0043	0.077	1.61
0.024	0.045	0.031	0.03	0.017	0.015	0.49	43.48
0.055	0.092	0.072	0.1	0.015	0.021	0.79	59.17
0.011	0.013	0.017	0.012	0.011	0.015	0.28	12.12
0.0058	0.0097	0.015	0.017	0.013	0.0049	0.19	6.48
0.012	0.026	0.033	0.033	0.013	0.0063	0.27	10.56
0.0143	0.0384	0.0367	0.045	0.0301	0.0161	0.328	11.69
113	191	207	239	96	67	2052	103828

Table 1-7 Weighted Descriptive Statistics by 30 Health Conditions for Men, SIPP 2004 Wave 2

	1	2	3	4	5	6
	Alcoholor Drug problem or Disorder	AIDS or AIDS Related Condition	Arthritis or Rheumatism	Back or Spine Problems	Blindness or Vision Problems	Broken Bone/ Fracture
Mean Age	47.49	44.98	52.40	48.94	48.74	45.69
Onset Age (proportions, %)						
<16	0.0031	0	0.045	0.11	0.073	0.012
16–20	0.0067	0.0038	0.0078	0.059	0.0026	0.017
21–25	0.005	0.0045	0.021	0.11	0.013	0.042
26–30	0.012	0.0025	0.029	0.16	0.019	0.038
31–35	0.016	0.0064	0.046	0.22	0.0079	0.024
36–40	0.0098	0.016	0.058	0.27	0.025	0.031
41–45	0.011	0.008	0.042	0.24	0.015	0.044
46–50	0.0094	0.0051	0.088	0.27	0.03	0.025
51–55	0.0034	0	0.098	0.2	0.028	0.027
56–60	0.0026	0	0.077	0.16	0.041	0.016
61–67	0.0016	0	0.037	0.075	0.011	0.0098
Race (proportions, %)						
White alone	0.053	0.038	0.44	1.52	0.19	0.22
Black alone	0.024	0.0081	0.069	0.24	0.039	0.055
Asian alone	0	0	0.0089	0.021	0.0068	0
Residual	0.0027	0	0.028	0.089	0.026	0.013
Origin (proportions, %)						
Spanish, Hispanic or Latino	0.003	0.012	0.05	0.21	0.019	0.022
Non-Spanish, Hispanic or Latino	0.077	0.034	0.5	1.66	0.25	0.26
Education (proportions, %)						
Less than high school	0.025	0.0016	0.11	0.38	0.062	0.055
High schoolgraduate	0.026	0.017	0.18	0.61	0.093	0.082
Some college	0.022	0.018	0.19	0.71	0.083	0.12
Bachelor's degree	0.0058	0.0062	0.046	0.11	0.018	0.018
Master or higher degree	0.0016	0.0025	0.02	0.051	0.0099	0.0064
Marital Status (proportions, %)						
Married, spouse present	0.022	0.0081	0.29	1.03	0.1	0.12
Married, spouse absent	0	0	0.014	0.032	0.0019	0.0078
Widowed	0	0.0016	0.02	0.046	0.005	0.0014
Divorced	0.015	0.0049	0.11	0.4	0.049	0.079
Separated	0.012	0	0.029	0.058	0.0074	0.018
Never married	0.032	0.031	0.09	0.31	0.098	0.064
Sample Number (N)	53	22	308	981	148	160

Note: All statistics are weighted except the sample numbers, proportions are shown in percentage (%)

7	8	9	10	11	12	13	14	15
Cancer	Carpal Tunnel Syndrome	Cerebral Palsy	Deafness or Serious Trouble Hearing	Diabetes	Epilepsy or Seizures	Head or Spinal Cord Injury	Heart Trouble	Hernia
51.75	47.40	31.88	45.46	53.05	40.64	45.83	54.50	49.25
0.011	0	0.049	0.053	0.05	0.059	0.04	0.047	0.0018
0.0062	0	0	0.0012	0.0027	0.0084	0.0061	0.014	0.002
0.0076	0	0.0034	0.0015	0.0095	0.02	0.022	0.013	0.0027
0.0087	0.018	0	0.0024	0.028	0.023	0.027	0.037	0.0025
0.017	0.014	0	0.0015	0.027	0.011	0.022	0.034	0.0052
0.02	0.021	0.0011	0.017	0.034	0.014	0.042	0.071	0.017
0.019	0.014	0	0.017	0.057	0.011	0.024	0.09	0.012
0.026	0.027	0	0.013	0.085	0.013	0.03	0.12	0.029
0.054	0.0087	0	0.0085	0.093	0.012	0.021	0.16	0.015
0.034	0.0048	0	0.011	0.073	0.0039	0.0085	0.19	0.011
0.019	0.0012	0	0.0024	0.028	0	0.0044	0.077	0.0059
0.18	0.09	0.03	0.098	0.36	0.13	0.2	0.68	0.082
0.031	0.017	0.017	0.023	0.097	0.032	0.027	0.13	0.016
0.0029	0	0	0.0018	0.0037	0	0.00059	0.015	0
0.0096	0	0.0066	0.005	0.022	0.0089	0.018	0.03	0.0059
0.015	0.018	0.0048	0.0084	0.06	0.015	0.023	0.076	0.025
0.21	0.089	0.049	0.12	0.43	0.16	0.22	0.78	0.079
0.039	0.02	0.024	0.033	0.12	0.045	0.056	0.22	0.014
0.072	0.037	0.018	0.036	0.17	0.062	0.098	0.27	0.037
0.068	0.041	0.0098	0.043	0.15	0.06	0.075	0.26	0.047
0.028	0.0039	0.0013	0.014	0.036	0.0069	0.0076	0.065	0.0049
0.015	0.0053	0	0.0022	0.015	0.00081	0.0084	0.036	0.0021
0.11	0.07	0.0022	0.05	0.25	0.051	0.087	0.49	0.061
0.0018	0	0	0.0023	0.0064	0	0.007	0.01	0.00086
0.013	0.0013	0	0.0058	0.016	0.0031	0.004	0.026	0
0.049	0.012	0.0045	0.021	0.095	0.034	0.048	0.17	0.019
0.012	0.0069	0.0014	0	0.016	0.0012	0.0046	0.033	0.0064
0.036	0.017	0.045	0.049	0.1	0.085	0.096	0.13	0.018
112	49	32	65	273	93	144	466	47

16	17	18	19	20	21	22	23
High Blood Pressure	Kidney Stones/ Kidney Trouble	Learning Disability	Lung or Respiratory Trouble	Mental or Emotional Conditions	Intellectual Disability	Missing Limbs/ Foot/Hand/ Finger	Multiple Sclerosis
53.37	46.77	34.63	49.08	42.75	36.55	48.05	52.13
0.026	0.0092	0.16	0.054	0.22	0.18	0.011	0
0.0039	0.0059	0.0056	0.016	0.031	0.0064	0.0035	0.0013
0.0066	0.0067	0.021	0.016	0.058	0.0039	0	0.003
0.028	0.0033	0.013	0.035	0.053	0.0046	0	0.0031
0.02	0.02	0.0039	0.022	0.08	0.0029	0.0097	0.0029
0.038	0.0083	0.0098	0.016	0.081	0.0012	0.0093	0.0076
0.045	0.015	0.0066	0.04	0.049	0.004	0.0069	0.0016
0.073	0.023	0.0081	0.043	0.073	0.0076	0.016	0.0054
0.073	0.016	0.01	0.054	0.05	0.0049	0.0061	0
0.043	0.0044	0.00071	0.05	0.023	0.0037	0.0065	0.0051
0.029	0.0071	0.0011	0.028	0.0045	0	0.0013	0
0.28	0.083	0.17	0.32	0.55	0.16	0.057	0.024
0.084	0.029	0.051	0.033	0.11	0.052	0.011	0.0048
0.0072	0.00091	0.0067	0.0057	0.019	0.0045	0	0
0.01	0.0075	0.017	0.017	0.043	0.0048	0.0037	0.00098
0.057	0.011	0.023	0.026	0.061	0.027	0.00086	0
0.33	0.11	0.22	0.35	0.66	0.19	0.07	0.03
0.11	0.032	0.13	0.098	0.16	0.092	0.019	0
0.13	0.052	0.067	0.13	0.27	0.1	0.027	0.0042
0.11	0.028	0.037	0.11	0.21	0.017	0.019	0.016
0.029	0.0063	0.0074	0.022	0.055	0.005	0.0041	0.0024
0.011	0.0015	0.0034	0.016	0.028	0.0026	0.0015	0.0078
0.17	0.058	0.037	0.17	0.17	0.012	0.018	0.016
0.0019	0	0.00071	0.0058	0.0036	0.0024	0.0031	0.0017
0.029	0.0028	0.0046	0.019	0.015	0.00072	0.0013	0
0.097	0.022	0.017	0.075	0.14	0.0046	0.019	0.0059
0.013	0.0045	0.00095	0.013	0.024	0.0046	0.0051	0
0.072	0.032	0.18	0.087	0.37	0.2	0.025	0.0065
207	64	130	201	388	120	37	15

24 Paralysis of Any Kind	25 Stiff/ Deformed/ Foot/Hand/ Finger	26 Stomach Trouble	27 Stroke	28 Thyroid Trouble or Goiter	29 Tumor, Cyst or Growth	30 Other	Total (with or without health conditions)
49.12	46.27	49.43	55.09	45.38	44.58	46.62	34.99
0.025	0.038	0.016	0.0048	0.0031	0.0013	0.29	1.24
0.0093	0.0067	0.0023	0.001	0.0028	0.0015	0.06	0.22
0.0041	0.009	0.012	0.0066	0.0027	0.0043	0.083	0.41
0.01	0.011	0.016	0.0082	0.0043	0.0029	0.11	0.52
0.011	0.02	0.013	0.0034	0.0035	0.0045	0.16	0.58
0.013	0.022	0.0068	0.017	0.0025	0.013	0.18	0.78
0.01	0.022	0.024	0.032	0.0051	0.006	0.15	0.71
0.015	0.022	0.021	0.036	0.0016	0.0041	0.18	0.81
0.011	0.027	0.019	0.041	0.0026	0.00087	0.18	0.84
0.0036	0.0045	0.0054	0.038	0.0027	0.0041	0.16	0.68
0	0.0069	0.012	0.021	0	0	0.075	0.31
0.086	0.14	0.11	0.14	0.022	0.035	1.28	81.23
0.015	0.04	0.022	0.058	0.0016	0.0065	0.22	11.9
0.0024	0.00077	0.003	0.0028	0.002	0	0.028	3.35
0.0087	0.0074	0.011	0.0094	0.0049	0.0013	0.094	3.52
0.0076	0.011	0.019	0.019	0.0023	0.0089	0.15	14.82
0.11	0.18	0.13	0.19	0.029	0.034	1.47	85.18
0.021	0.037	0.03	0.064	0.0031	0.0056	0.3	13.88
0.047	0.054	0.048	0.06	0.0072	0.021	0.55	21.22
0.027	0.071	0.056	0.071	0.0087	0.011	0.61	24.7
0.0071	0.022	0.0094	0.007	0.0076	0.0024	0.12	11.65
0.01	0.0032	0.0038	0.0064	0.0042	0.0032	0.053	6.52
0.047	0.075	0.06	0.096	0.017	0.017	0.78	42.06
0.0025	0	0.004	0.0011	0	0	0.017	1.07
0.0082	0.0048	0.00093	0.0064	0	0	0.041	1.99
0.026	0.036	0.032	0.061	0	0.013	0.26	7.22
0.0029	0.012	0.012	0.0099	0.0014	0	0.047	1.31
0.025	0.059	0.038	0.035	0.013	0.012	0.49	46.36
68	91	82	111	18	22	836	49951

Table 1-8 Weighted Descriptive Statistics by 30 Health Conditions for Women, SIPP 2004 Wave 2

	1	2	3	4	5	6
	Alcoholor Drug problem or Disorder	AIDS or AIDS Related Condition	Arthritis or Rheumatism	Back or Spine Problems	Blindness or Vision Problems	Broken Bone/ Fracture
Mean Age	38.22	43.38	54.37	49.88	49.39	49.84
Onset Age (proportions, %)						
<16	0.0088	0.0027	0.042	0.079	0.049	0.014
16–20	0.0032	0	0.02	0.051	0.0033	0.013
21–25	0.0029	0	0.025	0.12	0.011	0.017
26–30	0.0028	0	0.051	0.11	0.018	0.012
31–35	0.0061	0.006	0.064	0.19	0.0096	0.024
36–40	0.0015	0.012	0.14	0.24	0.019	0.024
41–45	0.0027	0.0029	0.14	0.29	0.023	0.031
46–50	0.00098	0	0.21	0.31	0.033	0.042
51–55	0.0037	0.0012	0.25	0.25	0.033	0.034
56–60	0	0	0.14	0.17	0.019	0.017
61–67	0	0	0.072	0.085	0.0066	0.02
Race (proportions, %)						
White alone	0.023	0.02	0.88	1.48	0.16	0.18
Black alone	0.009	0.0038	0.18	0.25	0.05	0.047
Asian alone	0	0	0.02	0.041	0	0.0035
Residual	0.001	0.001	0.064	0.12	0.012	0.014
Origin (proportions, %)						
Spanish, Hispanic or Latino	0	0.014	0.11	0.18	0.02	0.014
Non-Spanish, Hispanic or Latino	0.033	0.011	1.03	1.71	0.2	0.23
Education (proportions, %)						
Less than high school	0.007	0.015	0.23	0.33	0.056	0.049
High schoolgraduate	0.0096	0.005	0.35	0.57	0.073	0.073
Some college	0.013	0	0.43	0.79	0.074	0.11
Bachelor's degree	0.003	0.005	0.087	0.14	0.021	0.0074
Master or higher degree	0	0	0.041	0.06	0	0.011
Marital Status (proportions, %)						
Married, spouse present	0.001	0.0012	0.53	0.85	0.083	0.12
Married, spouse absent	0.00085	0	0.01	0.028	0	0.005
Widowed	0.0009	0.0019	0.14	0.18	0.023	0.02
Divorced	0.012	0.0031	0.25	0.44	0.054	0.064
Separated	0.0006	0.0041	0.058	0.1	0.0053	0.018
Never married	0.017	0.015	0.15	0.29	0.058	0.026
Number of Children (proportions, %)						
None	0.0099	0.0037	0.2	0.36	0.066	0.043
One	0.01	0.0052	0.17	0.3	0.034	0.038
Two	0.0081	0.0031	0.28	0.5	0.045	0.059
Three or more	0.0047	0.0129	0.489	0.723	0.0784	0.107
Sample Number (N)	20	10	696	1099	142	149

Note: All statistics are weighted except the sample numbers, proportions are shown in percentage (%)

7	8	9	10	11	12	13	14	15
Cancer	Carpal Tunnel Syndrome	Cerebral Palsy	Deafness or Serious Trouble Hearing	Diabetes	Epilepsy or Seizures	Head or Spinal Cord Injury	Heart Trouble	Hernia
53.34	48.36	31.40	46.09	53.50	40.80	45.58	53.18	51.56
0.0035	0.0044	0.055	0.047	0.042	0.059	0.01	0.042	0
0.0049	0.0036	0.0025	0.0054	0.0037	0.02	0.015	0.012	0
0.008	0.01	0	0.0022	0.016	0.013	0.02	0.017	0
0.02	0.015	0.0027	0.01	0.029	0.0096	0.011	0.029	0.0016
0.019	0.027	0.0011	0.0091	0.029	0.031	0.033	0.038	0.011
0.036	0.038	0	0.008	0.061	0.02	0.016	0.07	0.012
0.027	0.03	0	0.0068	0.092	0.016	0.017	0.079	0.017
0.037	0.047	0	0.0031	0.084	0.016	0.032	0.095	0.011
0.071	0.049	0.0029	0.018	0.11	0.0098	0.03	0.13	0.0083
0.05	0.0025	0	0.0086	0.063	0.0091	0.0051	0.078	0.0074
0.028	0.0043	0	0.00057	0.035	0	0	0.034	0.00078
0.26	0.18	0.045	0.1	0.39	0.13	0.15	0.47	0.056
0.037	0.038	0.012	0.0093	0.12	0.052	0.022	0.13	0.0099
0	0.0014	0.0024	0	0.008	0.0046	0.0037	0	0
0.011	0.015	0.0054	0.0058	0.039	0.015	0.018	0.026	0.0038
0.035	0.02	0.0092	0.0098	0.091	0.027	0.024	0.046	0.022
0.27	0.21	0.055	0.11	0.47	0.18	0.17	0.58	0.048
0.044	0.036	0.029	0.014	0.16	0.06	0.036	0.15	0.027
0.098	0.066	0.018	0.052	0.18	0.058	0.066	0.21	0.021
0.11	0.11	0.011	0.044	0.19	0.064	0.076	0.2	0.02
0.036	0.021	0.003	0.0086	0.026	0.02	0.0099	0.049	0.0018
0.015	0.0034	0.0028	0.00077	0.0034	0.00081	0.0013	0.017	0
0.16	0.12	0.0045	0.063	0.24	0.05	0.072	0.26	0.031
0.002	0.00085	0	0.0015	0.0069	0.0015	0.0028	0.008	0
0.044	0.019	0	0.0031	0.077	0.0079	0.013	0.082	0.0042
0.058	0.043	0.0094	0.021	0.12	0.042	0.048	0.15	0.021
0.012	0.012	0	0.0029	0.033	0.011	0.011	0.045	0.0085
0.026	0.032	0.05	0.027	0.081	0.09	0.043	0.07	0.0045
0.043	0.03	0.054	0.022	0.1	0.073	0.043	0.093	0.0038
0.061	0.029	0.0022	0.028	0.059	0.037	0.024	0.093	0.011
0.085	0.08	0.0046	0.041	0.14	0.039	0.06	0.14	0.015
0.115	0.092	0.0029	0.0277	0.269	0.0547	0.0617	0.294	0.0402
170	135	33	69	355	115	112	391	43

16	17	18	19	20	21	22	23
High Blood Pressure	Kidney Stones/ Kidney Trouble	Learning Disability	Lung or Respiratory Trouble	Mental or Emotional Conditions	Intellectual Disability	Missing Limbs/ Foot/Hand/ Finger	Multiple Sclerosis
53.81	49.76	33.94	52.20	44.14	36.45	50.41	47.67
0.03	0.0086	0.12	0.033	0.14	0.16	0.0087	0.0014
0.0057	0	0.007	0.0056	0.048	0.003	0	0.0037
0.009	0.003	0.016	0.02	0.073	0.0032	0	0.014
0.025	0.012	0.0071	0.023	0.066	0.0017	0	0.02
0.047	0.028	0.0023	0.025	0.1	0.0037	0.0022	0.026
0.055	0.036	0.003	0.063	0.13	0.011	0.0051	0.031
0.085	0.02	0.0047	0.038	0.13	0.0011	0.00063	0.016
0.092	0.023	0.0013	0.058	0.12	0.00069	0.003	0.023
0.092	0.019	0.0023	0.083	0.055	0.00082	0.0036	0.0083
0.055	0.011	0.0038	0.058	0.022	0.0038	0	0.0038
0.027	0.0043	0	0.044	0.0044	0.0026	0.001	0
0.35	0.12	0.11	0.35	0.68	0.16	0.0093	0.12
0.13	0.037	0.035	0.072	0.14	0.027	0.011	0.02
0.016	0.006	0.0055	0.0045	0.016	0.0019	0	0
0.029	0.004	0.011	0.021	0.055	0.0054	0.0041	0.0082
0.053	0.022	0.0095	0.017	0.097	0.021	0.0034	0.0093
0.47	0.14	0.16	0.43	0.8	0.17	0.021	0.14
0.16	0.044	0.065	0.13	0.2	0.082	0.0034	0.018
0.16	0.051	0.059	0.12	0.28	0.089	0.012	0.031
0.17	0.059	0.036	0.16	0.32	0.016	0.0065	0.062
0.031	0.011	0.0061	0.032	0.07	0.0038	0.0023	0.023
0.0034	0	0	0.0062	0.023	0	0	0.013
0.22	0.088	0.032	0.18	0.26	0.019	0.0064	0.079
0.0076	0.00086	0	0.0083	0.021	0	0	0.0037
0.077	0.014	0.0053	0.075	0.057	0.0034	0.0033	0.0046
0.11	0.027	0.016	0.11	0.24	0.01	0.0031	0.03
0.045	0.0044	0.0031	0.021	0.065	0.0057	0.0021	0.015
0.062	0.029	0.11	0.058	0.25	0.15	0.0094	0.015
0.062	0.032	0.11	0.074	0.25	0.15	0.0067	0.029
0.079	0.032	0.018	0.061	0.13	0.02	0.0024	0.026
0.13	0.05	0.015	0.12	0.2	0.004	0.0038	0.062
0.251	0.0501	0.0235	0.192	0.316	0.0133	0.0113	0.0308
341	94	96	279	554	116	17	80

24 Paralysis of Any Kind	25 Stiff/ Deformed/ Foot/Hand/ Finger	26 Stomach Trouble	27 Stroke	28 Thyroid Trouble or Goiter	29 Tumor, Cyst or Growth	30 Other	Total (with or without health conditions)
47.60	49.61	49.87	54.40	53.57	46.41	46.62	37.12
0.013	0.03	0.013	0.008	0.006	0.0074	0.22	0.94
0.0049	0.0064	0.0042	0.0028	0.0044	0.0045	0.08	0.25
0.0082	0.0042	0.012	0.00069	0.0053	0.00064	0.15	0.4
0.0051	0.021	0.011	0.011	0.0069	0.0085	0.18	0.52
0.006	0.0047	0.019	0.016	0.011	0.0079	0.18	0.68
0.0032	0.015	0.034	0.018	0.0091	0.012	0.27	0.9
0.01	0.017	0.018	0.03	0.016	0.0061	0.25	0.91
0.016	0.031	0.028	0.032	0.021	0.019	0.3	1.07
0.009	0.028	0.036	0.025	0.032	0.0071	0.24	0.99
0.0078	0.014	0.02	0.042	0.013	0.007	0.17	0.67
0.0015	0	0.0039	0.024	0.0073	0.0019	0.056	0.31
0.071	0.11	0.16	0.15	0.093	0.058	1.59	79.92
0.0065	0.038	0.027	0.042	0.027	0.018	0.33	13.15
0.0011	0.0059	0.0037	0.011	0.00082	0	0.051	3.48
0.0063	0.013	0.011	0.0081	0.012	0.0064	0.12	3.45
0.014	0.013	0.03	0.024	0.012	0.015	0.19	13.49
0.071	0.16	0.17	0.19	0.12	0.067	1.9	86.51
0.015	0.037	0.043	0.056	0.025	0.022	0.34	13.35
0.029	0.055	0.075	0.078	0.042	0.02	0.61	22
0.031	0.069	0.067	0.061	0.054	0.028	0.9	26.94
0.0082	0.0096	0.013	0.011	0.0067	0.0072	0.18	11.9
0.0012	0	0	0.0036	0.0042	0.0043	0.071	5.68
0.033	0.094	0.086	0.084	0.06	0.036	0.93	40.22
0	0	0	0.0035	0.006	0.0046	0.03	0.81
0.005	0.014	0.018	0.042	0.017	0.0027	0.12	7.64
0.023	0.024	0.062	0.04	0.027	0.012	0.42	8.72
0.0013	0.0086	0.0076	0.014	0.0018	0.0084	0.11	1.9
0.022	0.031	0.025	0.026	0.02	0.019	0.49	40.72
0.021	0.025	0.033	0.023	0.022	0.028	0.55	23.7
0.011	0.019	0.03	0.034	0.024	0.0097	0.38	12.67
0.024	0.051	0.064	0.065	0.026	0.012	0.52	20.66
0.028	0.0756	0.0717	0.088	0.0587	0.0315	0.635	22.84
45	100	125	128	78	45	1216	53877

Table 1-9 Logistic Regression Models (estimated odds ratios) of Any Health Conditions for Men and Women, 2004 SIPP

	Men			Women			
	Model1	Model2	Model3	Model1	Model2	Model3	Model4
Age	1.014***	1.015***	1.024***	1.011***	1.011***	1.014***	1.014***
	(0.000862)	(0.000891)	(0.00122)	(0.000688)	(0.000716)	(0.00115)	(0.00118)
Fixed Characteristics							
Race (ref=White)							
Black		1.757***	1.442***		1.582***	1.389***	1.375***
		(0.0987)	(0.0823)		(0.0788)	(0.0714)	(0.0720)
Asian		0.476***	0.585***		0.605***	0.713***	0.712***
		(0.0750)	(0.0937)		(0.0735)	(0.0882)	(0.0881)
Residual		1.881***	1.711***		2.028***	1.839***	1.826***
		(0.170)	(0.158)		(0.160)	(0.146)	(0.145)
Origin (ref=non-Hispanic)							
Hispanic		0.828**	0.689***		0.922	0.770***	0.760***
		(0.0646)	(0.0553)		(0.0667)	(0.0573)	(0.0568)
Time-varying Characteristics							
Education (ref=Less than high school)							
High school graduate			0.836***			0.815***	0.823***
			(0.0483)			(0.0444)	(0.0452)
Some college			0.687***			0.773***	0.783***
			(0.0391)			(0.0404)	(0.0411)
Bachelor degree			0.296***			0.367***	0.374***
			(0.0256)			(0.0292)	(0.0298)
Master or higher degree			0.237***			0.278***	0.285***
			(0.0266)			(0.0314)	(0.0321)
MaritalStatus (ref=Married)							
Widowed			0.532***			0.601***	0.600***
			(0.0758)			(0.0479)	(0.0478)
Divorced			2.297***			2.225***	2.220***
			(0.126)			(0.104)	(0.104)
Never married			1.638***			1.092	1.103
			(0.0994)			(0.0629)	(0.0741)
Number of children (ref=No child)							
One child							1.045
							(0.0706)
Two children							0.950
							(0.0621)
Three or more children							1.090
							(0.0695)
N	38033	38033	38033	42543	42543	42543	42543

Note: Exponentiated coefficients; Standard errors in parentheses. ** p<0.05, *** p<0.01

Table 1-10 Logistic Regression Models (estimated odds ratios) of 30 Specific Health Conditions for Men, 2004 SIPP

	1	2	3	4	5	6	7	8
	Alcoholor Drug problem or Disorder	AIDS or AIDS Related Condition	Arthritis or Rheumatism	Back or Spine Problems	Blindness or Vision Problems	Broken Bone/ Fracture	Cancer	Carpal Tunnel Syndrome
Age	1.034***	1.047***	1.029***	1.015***	1.036***	1.008	1.023***	1.008
Fixed Characteristics								
Race (ref.=White)								
Black	2.359**	1.459	1.107	1.139	1.195	1.573**	1.266	1.492
Asian	—	—	0.633	0.429**	1.022	—	0.469	—
Residual	1.248	—	1.855**	1.615***	3.767***	1.484	1.637	—
Origin (ref.=non-Hispanic)								
Hispanic	0.253	3.112	0.705	0.783	0.512	0.545	0.544	1.255
Time-varying Characteristics								
Education (ref.=Less than high school)								
High schoolgraduate	0.566	9.043**	0.841	0.820	0.881	0.749	0.936	1.027
Some college	0.436**	10.19**	0.737	0.801**	0.676	0.971	0.761	0.977
Bachelor degree	0.280**	7.776	0.394***	0.271***	0.327***	0.338***	0.716	0.202
Master or higher degree	0.138	6.215	0.264***	0.203***	0.307**	0.209***	0.617	0.460
MaritalStatus (ref.=Married)								
Widowed	—	1.847	0.697	0.569**	0.423	0.179	1.377	0.284
Divorced	5.261***	3.116	2.227***	1.998***	2.578***	3.457***	2.631***	1.171
Never married	4.162**	18.41***	0.891	0.609***	3.245***	0.935	0.908	0.428
N	35709	35374	38033	38033	38033	36755	38033	35374

Note: Exponentiated coefficients. ** p<0.05, *** p<0.01

9	10	11	12	13	14	15	16	17	18	19
Cerebral Palsy	Deafness or Serious Trouble Hearing	Diabetes	Epilepsy or Seizures	Head or SpinalCord Injury	Heart Trouble	Hernia	High Blood Pressure	Kidney Stones/ Kidney Trouble	Learning Disability	Lung or Respiratory Trouble
1.018	1.019**	1.038***	1.012	1.025***	1.037***	1.025***	1.034***	1.015**	1.019***	1.018***
2.392**	1.430	2.005***	1.273	0.757	1.424**	1.757	2.176***	2.221**	1.368	0.637
—	0.480	0.330	—	0.0865**	0.673	—	0.908	0.336	0.972	0.517
4.333**	1.309	1.842**	1.516	2.230	1.349	1.995	1.093	2.469	2.084**	1.436
0.473	0.424	1.078	0.499	0.574	0.678	2.683**	1.334	0.618	0.441**	0.409***
0.604	0.659	0.816	0.887	1.032	0.624***	1.765	0.685	0.901	0.391***	0.678
0.309**	0.670	0.650**	0.756	0.679	0.527***	2.012	0.516***	0.417**	0.194***	0.467***
0.108**	0.486	0.357***	0.206***	0.153***	0.281***	0.506	0.333***	0.216**	0.0903***	0.203***
—	0.138**	0.237***	0.0469***	0.301**	0.235***	0.359	0.190***	0.0876**	0.0889***	0.249***
—	1.324	0.542	0.805	0.444	0.438***	—	1.492	0.555	1.167	1.264
10.31**	1.840	2.002***	2.990***	2.592***	1.962***	1.863	2.966***	1.868	2.100	2.328***
34.82***	2.143	1.295	3.164***	2.888***	0.871	0.759	1.218	1.008	8.721***	1.118
32908	38033	38033	36755	38033	38033	35709	38033	38033	38033	38033

20	21	22	23	24	25	26	27	28	29	30
Mentalor Emotional Conditions	Intellectual Disability	Missing Limbs/Foot/ Hand/ Finger	Multiple Sclerosis	Paralysis of Any Kind	Stiff/ Deformed/ Foot/Hand/ Finger	Stomach Trouble	Stroke	Thyroid Trouble or Goiter	Tumor, Cyst or Growth	Other
1.024***	1.039***	1.031***	1.033***	1.016	1.018***	1.031***	1.043***	1.025	1.010	1.018***
1.101	1.314	0.935	1.607	1.179	1.793**	1.362	2.805***	0.540	1.330	1.152
0.973	0.750	—	—	0.769	0.157	0.947	0.690	1.796	—	0.630
1.937***	0.638	1.637	1.259	3.021**	1.372	2.757**	1.953	6.682**	1.050	1.977***
0.547**	0.604	0.0675***	—	0.480	0.417	1.057	0.771	0.628	1.845	0.669**
1.072	0.848	0.717	—	1.218	0.802	0.926	0.499**	1.558	2.442	1.058
0.720**	0.130***	0.432	4.702	0.588	0.923	0.944	0.527**	1.532	1.173	1.013
0.442***	0.0826***	0.216	1.586	0.354	0.661	0.366	0.125***	2.822	0.620	0.413***
0.435***	0.0987***	0.137	8.354**	0.861	0.169**	0.247	0.177***	2.772	1.525	0.324***
0.961	0.351	0.526	—	2.221	0.817	0.148	0.468	—	—	0.671
4.657***	2.998	5.230***	1.786	2.733***	2.845***	3.309***	3.291***	0.466	3.609**	1.788***
5.896***	46.51***	3.634**	1.707	1.149	1.808	1.834	1.210	2.704	1.444	1.470***
38033	38033	36755	32082	38033	38033	38033	38033	36968	35709	38033

Table 1-11 Logistic Regression Models (estimated odds ratios) of 30 Specific Health Conditions for Women, 2004 SIPP

	1	2	3	4	5	6	7	8
	Alcoholor Drug problem or Disorder	AIDS or AIDS Related Condition	Arthritis or Rheumatism	Back or Spine Problems	Blindness or Vision Problems	Broken Bone/ Fracture	Cancer	Carpal Tunnel Syndrome
Age	0.996	1.011	1.030***	1.013***	1.021***	1.007	1.019***	1.004
Fixed Characteristics								
Race (ref.=White)								
Black	1.153	0.991	1.342**	1.031	1.751**	1.501	1.056	1.335
Asian	—	—	0.663	0.789	—	0.523	—	0.219
Residual	0.810	0.923	2.076***	2.116***	1.934	1.823	1.271	2.187**
Origin (ref.=non-Hispanic)								
Hispanic	—	5.873**	0.855	0.756	0.674	0.386**	1.065	0.649
Time-varying Characteristics								
Education (ref.=Less than high school)								
High schoolgraduate	0.829	0.347	0.766**	0.880	0.728	0.668	1.079	0.888
Some college	0.770	—	0.827	0.995	0.592**	0.769	1.065	1.140
Bachelor degree	0.568	1.672	0.433***	0.449***	0.428**	0.134***	0.910	0.595
Master or higher degree	—	—	0.371***	0.361***	—	0.388**	0.715	0.194**
MaritalStatus (ref.=Married)								
Widowed	2.405	6.640	0.593***	0.719**	0.711	0.562	0.871	0.640
Divorced	24.04***	27.25***	1.964***	2.242***	2.317***	2.227***	1.518	1.534
Never married	22.19***	74.41***	0.954	0.871	1.318	0.403	0.501	0.795
Number of children (ref.=No child)								
One child	3.805	7.769	1.084	1.132	0.784	0.974	1.571	1.446
Two children	2.789	5.269	1.033	1.092	0.629	0.867	1.192	2.439**
Three or more children	1.413	14.00**	1.302	1.294**	0.771	1.254	1.268	2.386**
N	34719	24354	42543	42543	38404	42543	41111	42543

9	10	11	12	13	14	15	16	17	18	19
Cerebral Palsy	Deafness or Serious Trouble Hearing	Diabetes	Epilepsy or Seizures	Head or Spinal Cord Injury	Heart Trouble	Hernia	High Blood Pressure	Kidney Stones/ Kidney Trouble	Learning Disability	Lung or Respiratory Trouble
1.014	1.009	1.026***	1.006	1.003	1.017**	1.014	1.020***	1.019***	1.004	1.010**
1.296	0.481	2.187***	1.876**	0.818	1.720***	1.222	2.223***	2.213**	1.339	1.100
1.493	—	0.665	0.962	0.772	—	—	1.353	1.424	1.146	0.317**
2.516	1.400	2.663***	2.535**	2.988***	1.453	1.568	2.151***	0.916	1.894	1.444
1.085	0.563	1.417	1.014	0.895	0.531**	2.237	0.766	1.087	0.352	0.212***
0.639	1.716	0.628***	0.661	1.046	0.657***	0.458	0.534***	0.559	0.819	0.425***
0.254***	1.141	0.601***	0.557**	0.932	0.522***	0.371**	0.464***	0.542	0.349***	0.446***
0.145	0.525	0.216***	0.469	0.311**	0.354***	0.103***	0.239***	0.236**	0.124***	0.234***
0.267	0.0936**	0.0531***	0.0397***	0.0814**	0.225***	—	0.0489***	—	—	0.0868***
—	0.187**	0.713	0.567	0.755	0.778	0.380	0.816	0.437	0.554	1.194
7.363**	1.403	2.015***	3.429***	2.873***	2.438***	3.333***	2.293***	1.140	2.026	2.385***
6.578***	1.463	0.792	3.124***	1.330	0.658	0.538	0.787	0.674	2.834**	0.702
0.119***	2.460	0.675	1.302	0.981	1.180	3.041	1.592	1.342	0.479	1.125
0.204**	2.197	0.926	1.027	1.541	1.062	2.652	1.543	1.227	0.289***	1.330
0.0899**	1.300	1.171	1.120	1.277	1.573**	4.268**	2.040***	0.846	0.359**	1.507
38276	41111	42543	42543	42543	41111	38404	42543	39642	39642	42543

20	21	22	23	24	25	26	27	28	29	30
Mental or Emotional Conditions	Intellectual Disability	Missing Limbs/Foot/ Hand/ Finger	Multiple Sclerosis	Paralysis of Any Kind	Stiff/ Deformed/ Foot/Hand/ Finger	Stomach Trouble	Stroke	Thyroid Trouble or Goiter	Tumor, Cyst or Growth	Other
1.000	1.029***	1.034**	1.009	1.017	1.013**	1.011	1.019***	1.028***	1.016	1.012***
1.066	0.773	7.241***	1.209	0.507	1.971**	1.102	1.799**	1.881	2.247	1.221**
0.680	0.343	—	—	0.477	1.404	0.744	2.209	0.258	—	0.856
1.819***	0.727	12.42***	1.952	2.181	2.897***	1.840	1.502	3.536***	2.838	1.997***
0.742	0.690	1.946	0.548	1.267	0.550	1.174	0.975	0.816	1.615	0.734**
0.848	0.946	2.833	0.683	1.143	0.739	0.894	0.729	0.898	0.547	0.966
0.728**	0.119***	1.312	1.021	0.977	0.779	0.637	0.507**	1.017	0.613	1.131
0.427***	0.0541***	1.597	0.909	0.675	0.273**	0.325**	0.234***	0.336	0.393	0.539***
0.290***	—	—	0.964	0.196	—	—	0.149***	0.391	0.447	0.411***
0.900	0.302	1.093	0.258**	0.501	0.440	0.738	1.269	0.580	0.205	0.455***
4.061***	2.775**	2.178	1.972**	2.781**	1.131	2.899***	2.132***	1.326	1.554	1.919***
1.724***	7.247***	3.600	0.387	2.222	0.993	0.704	1.008	0.918	0.579	1.131
1.026	0.414**	0.585	1.022	1.035	1.246	1.073	1.897	1.402	0.431	1.110
1.041	0.0631***	0.697	1.388	1.404	2.017	1.402	2.250	0.851	0.323	0.921
1.347	0.137***	1.391	0.622	1.287	2.338**	1.140	1.988	1.393	0.605	0.947
42543	39642	38404	41111	42543	39642	39642	42543	42543	41111	42543

Table 1-12 Logistic Regression Models (estimated odds ratios) of Cancer

	Men			Women			
	Model1	Model2	Model3	Model1	Model2	Model3	Model4
Age	1.027***	1.027***	1.023***	1.024***	1.024***	1.020***	1.019***
	(0.00414)	(0.00431)	(0.00438)	(0.00241)	(0.00254)	(0.00520)	(0.00554)
Fixed Characteristics							
Race (ref=White)							
Black		1.431	1.266		1.044	1.083	1.056
		(0.431)	(0.378)		(0.269)	(0.283)	(0.280)
Asian		0.409	0.469		—	—	—
		(0.412)	(0.475)		—	—	—
Residual		1.712	1.637		1.319	1.280	1.271
		(0.845)	(0.820)		(0.515)	(0.500)	(0.494)
Origin (ref=non-Hispanic)							
Hispanic		0.585	0.544		1.129	1.086	1.065
		(0.274)	(0.256)		(0.404)	(0.409)	(0.405)
Time-varying Characteristics							
Education (ref=Less than high school)							
High school graduate			0.936			1.089	1.079
			(0.307)			(0.307)	(0.302)
Some college			0.761			1.071	1.065
			(0.249)			(0.281)	(0.284)
Bachelor degree			0.716			0.903	0.910
			(0.282)			(0.322)	(0.328)
Master or higher degree			0.617			0.704	0.715
			(0.334)			(0.344)	(0.355)
MaritalStatus (ref=Married)							
Widowed			1.377			0.873	0.871
			(0.742)			(0.297)	(0.299)
Divorced			2.631***			1.529	1.518
			(0.650)			(0.362)	(0.352)
Never married			0.908			0.440**	0.501
			(0.290)			(0.155)	(0.194)
Number of children (ref=No child)							
One child							1.571
							(0.553)
Two children							1.192
							(0.402)
Three or more children							1.268
							(0.435)
N	38033	38033	38033	42543	41111	41111	41111

Note: Exponentiated coefficients; Standard errors in parentheses. ** p<0.05, *** p<0.01

Table 1-13 Logistic Regression Models (estimated odds ratios) of Carpal Tunnel Syndrome

	Men			Women			
	Model1	Model2	Model3	Model1	Model2	Model3	Model4
Age	1.014**	1.015***	1.008	1.010***	1.011***	1.008	1.004
	(0.00552)	(0.00413)	(0.0103)	(0.00241)	(0.00280)	(0.00553)	(0.00589)
Fixed Characteristics							
Race (ref=White)							
Black		1.561	1.492		1.445	1.441	1.335
		(0.684)	(0.646)		(0.381)	(0.372)	(0.345)
Asian		—	—		0.188	0.217	0.219
		—	—		(0.189)	(0.218)	(0.221)
Residual		—	—		2.448***	2.268**	2.187**
		—	—		(0.820)	(0.755)	(0.728)
Origin (ref=non-Hispanic)							
Hispanic		1.476	1.255		0.769	0.690	0.649
		(0.905)	(0.782)		(0.290)	(0.251)	(0.235)
Time-varying Characteristics							
Education (ref=Less than high school)							
High school graduate			1.027			0.891	0.888
			(0.633)			(0.260)	(0.261)
Some college			0.977			1.127	1.140
			(0.486)			(0.309)	(0.315)
Bachelor degree			0.202			0.549	0.595
			(0.178)			(0.228)	(0.249)
Master or higher degree			0.460			0.173**	0.194**
			(0.345)			(0.143)	(0.161)
MaritalStatus (ref=Married)							
Widowed			0.284			0.591	0.640
			(0.300)			(0.263)	(0.284)
Divorced			1.171			1.484	1.534
			(0.474)			(0.347)	(0.359)
Never married			0.428			0.513	0.795
			(0.340)			(0.189)	(0.312)
Number of children (ref=No child)							
One child							1.446
							(0.666)
Two children							2.439**
							(0.948)
Three or more children							2.386**
							(0.947)
N	38033	35374	35374	42543	42543	42543	42543

Note: Exponentiated coefficients; Standard errors in parentheses. ** p<0.05, *** p<0.01

Table 1-14 Logistic Regression Models (estimated odds ratios) of Deafness or Serious Trouble Hearing

	Men			Women			
	Model1	Model2	Model3	Model1	Model2	Model3	Model4
Age	1.008	1.007	1.019**	1.004	1.002	1.008	1.009
	(0.00611)	(0.00648)	(0.00760)	(0.00475)	(0.00512)	(0.00645)	(0.00719)
Fixed Characteristics							
Race (ref=White)							
Black		1.740	1.430		0.561	0.524	0.481
		(0.683)	(0.540)		(0.252)	(0.242)	(0.225)
Asian		0.409	0.480		—	—	—
		(0.417)	(0.493)		—	—	—
Residual		1.457	1.309		1.510	1.420	1.400
		(0.978)	(0.884)		(0.758)	(0.715)	(0.699)
Origin (ref=non-Hispanic)							
Hispanic		0.498	0.424		0.618	0.576	0.563
		(0.278)	(0.230)		(0.366)	(0.349)	(0.348)
Time-varying Characteristics							
Education (ref=Less than high school)							
High school graduate			0.659			1.898	1.716
			(0.254)			(0.872)	(0.767)
Some college			0.670			1.256	1.141
			(0.229)			(0.610)	(0.539)
Bachelor degree			0.486			0.562	0.525
			(0.278)			(0.358)	(0.329)
Master or higher degree			0.138**			0.101**	0.0936**
			(0.110)			(0.109)	(0.101)
MaritalStatus (ref=Married)							
Widowed			1.324			0.182**	0.187**
			(0.748)			(0.124)	(0.128)
Divorced			1.840			1.394	1.403
			(0.737)			(0.499)	(0.508)
Never married			2.143			1.038	1.463
			(0.877)			(0.409)	(0.730)
Number of children (ref=No child)							
One child							2.460
							(1.184)
Two children							2.197
							(1.159)
Three or more children							1.300
							(0.718)
N	38033	38033	38033	42543	41111	41111	41111

Note: Exponentiated coefficients; Standard errors in parentheses. ** p<0.05, *** p<0.01

Table 1-15 Logistic Regression Models (estimated odds ratios) of Paralysis

	Men			Women			
	Model1	Model2	Model3	Model1	Model2	Model3	Model4
Age	1.019***	1.019***	1.016	1.008	1.009	1.018	1.017
	(0.00483)	(0.00450)	(0.00833)	(0.00639)	(0.00654)	(0.0105)	(0.0110)
Fixed Characteristics							
Race (ref=White)							
Black		1.406	1.179		0.641	0.524	0.507
		(0.474)	(0.391)		(0.344)	(0.282)	(0.286)
Asian		0.659	0.769		0.391	0.475	0.477
		(0.668)	(0.791)		(0.398)	(0.486)	(0.488)
Residual		3.084**	3.021**		2.487	2.212	2.181
		(1.649)	(1.598)		(1.469)	(1.310)	(1.285)
Origin (ref=non-Hispanic)							
Hispanic		0.545	0.480		1.416	1.291	1.267
		(0.482)	(0.441)		(0.756)	(0.726)	(0.701)
Time-varying Characteristics							
Education (ref=Less than high school)							
High school graduate			1.218			1.145	1.143
			(0.509)			(0.554)	(0.559)
Some college			0.588			0.974	0.977
			(0.238)			(0.479)	(0.490)
Bachelor degree			0.354			0.657	0.675
			(0.241)			(0.462)	(0.494)
Master or higher degree			0.861			0.189	0.196
			(0.486)			(0.206)	(0.217)
MaritalStatus (ref=Married)							
Widowed			2.221			0.487	0.501
			(1.749)			(0.356)	(0.364)
Divorced			2.733***			2.728**	2.781**
			(1.053)			(1.116)	(1.129)
Never married			1.149			1.891	2.222
			(0.480)			(0.944)	(1.289)
Number of children (ref=No child)							
One child							1.035
							(0.677)
Two children							1.404
							(0.821)
Three or more children							1.287
							(0.747)
N	38033	38033	38033	42543	42543	42543	42543

Note: Exponentiated coefficients; Standard errors in parentheses. ** p<0.05, *** p<0.01

Table 1-16 Logistic Regression Models (estimated odds ratios) of Thyroid Trouble

	Men			Women			
	Model1	Model2	Model3	Model1	Model2	Model3	Model4
Age	1.008	1.008	1.025	1.025***	1.027***	1.029***	1.028***
	(0.00959)	(0.00812)	(0.0161)	(0.00356)	(0.00399)	(0.00581)	(0.00601)
Fixed Characteristics							
Race (ref=White)							
Black		0.520	0.540		2.100**	1.966**	1.881
		(0.540)	(0.580)		(0.715)	(0.639)	(0.629)
Asian		2.048	1.796		0.226	0.260	0.258
		(2.115)	(1.870)		(0.229)	(0.264)	(0.263)
Residual		6.217**	6.682**		3.969***	3.649***	3.536***
		(4.558)	(5.155)		(1.634)	(1.486)	(1.448)
Origin (ref=non-Hispanic)							
Hispanic		0.520	0.628		0.979	0.855	0.816
		(0.538)	(0.593)		(0.467)	(0.391)	(0.367)
Time-varying Characteristics							
Education (ref=Less than high school)							
High school graduate			1.558			0.873	0.898
			(1.420)			(0.329)	(0.336)
Some college			1.532			0.980	1.017
			(1.280)			(0.354)	(0.367)
Bachelor degree			2.822			0.315	0.336
			(2.464)			(0.191)	(0.204)
Master or higher degree			2.772			0.361	0.391
			(2.753)			(0.238)	(0.261)
MaritalStatus (ref=Married)							
Widowed			—			0.582	0.580
			—			(0.275)	(0.272)
Divorced			0.466			1.343	1.326
			(0.494)			(0.417)	(0.412)
Never married			2.704			0.857	0.918
			(2.261)			(0.345)	(0.535)
Number of children (ref=No child)							
One child							1.402
							(0.833)
Two children							0.851
							(0.518)
Three or more children							1.393
							(0.817)
N	38033	38033	36968	42543	42543	42543	42543

Note: Exponentiated coefficients; Standard errors in parentheses. ** p<0.05, *** p<0.01

Table 1-17 Logistic Regression Models (estimated odds ratios) of Tumor Cyst or Growth

	Men			Women			
	Model1	Model2	Model3	Model1	Model2	Model3	Model4
Age	1.005	1.008	1.010	1.005	1.009	1.014	1.016
	(0.0101)	(0.0120)	(0.0134)	(0.00616)	(0.00652)	(0.0114)	(0.0109)
Fixed Characteristics							
Race (ref=White)							
Black		1.561	1.330		2.270**	2.124	2.247
		(0.975)	(0.814)		(0.918)	(0.982)	(1.036)
Asian		—	—		—	—	—
		—	—		—	—	—
Residual		1.060	1.050		3.043	2.820	2.838
		(1.111)	(1.091)		(1.731)	(1.609)	(1.629)
Origin (ref=non-Hispanic)							
Hispanic		1.800	1.845		1.931	1.566	1.615
		(1.462)	(1.545)		(1.014)	(0.769)	(0.808)
Time-varying Characteristics							
Education (ref=Less than high school)							
High school graduate			2.442			0.512	0.547
			(1.744)			(0.234)	(0.253)
Some college			1.173			0.578	0.613
			(0.874)			(0.244)	(0.263)
Bachelor degree			0.620			0.393	0.393
			(0.716)			(0.267)	(0.264)
Master or higher degree			1.525			0.455	0.447
			(1.437)			(0.312)	(0.322)
MaritalStatus (ref=Married)							
Widowed			—			0.218	0.205
			—			(0.193)	(0.181)
Divorced			3.609**			1.594	1.554
			(2.179)			(0.691)	(0.686)
Never married			1.444			0.882	0.579
			(1.092)			(0.535)	(0.459)
Number of children (ref=No child)							
One child							0.431
							(0.280)
Two children							0.323
							(0.210)
Three or more children							0.605
							(0.393)
N	38033	36755	35709	42543	41111	41111	41111

Note: Exponentiated coefficients; Standard errors in parentheses. ** p<0.05, *** p<0.01

Chapter 2

2.1 Introduction

In the Chapter 1, I examined the demographic correlates of the evolution of work limiting health conditions in the United States using retrospective histories contained in the 2004 *Survey of Income and Program Participation* (SIPP). I used logistic regressions to examine the relationship of common demographic factors to health conditions. I found that most demographic covariates are highly related to the probability of experiencing both any work limiting health condition and also the vast majority of specific health conditions in the 2004 SIPP. However, I did find that there are six specific types of work limitations that are not related to demographic factors other than age: cancer, carpal tunnel syndrome, deafness or serious trouble hearing, paralysis, thyroid trouble and tumor cyst or growth. In particular, they would be seen as arriving unexpectedly among married people when controlling for age and one or two additional covariates. I regarded these six work limiting health conditions as exogenous conditional on age and the other demographic controls, particularly for males.

This finding leads me to think about the probable diverse reactions when people experience exogenous shocks in life versus events that they may more directly control (endogenous) in life and the corresponding effects on their marital status. As is agreed in the literature, the onset of health conditions is regarded as a shock to marital stability (Charles & Stephens, 2004; Negrusa & Negrusa, 2014). The onset of exogenous health problems cannot be anticipated by family members or the partners at the time of marriage since people do not

know whether the health problem will occur, its timing or type, the severity, duration and so on. To some extent, the same can be said of even endogenously determined health outcomes that might occur through poor habits. However, the reason for the health problem may impact responses.

When the onset of a work limiting health condition does occur to married persons or their spouses, they would be expected to reevaluate the relative gains and losses from remaining in the marriage. According to Becker's theory, people would choose to stay in the marriage if they can gain more than from dissolution while people would leave the relationship if they are better off getting divorced.

In this chapter, I consider the role of all work limiting health conditions on divorce behavior but I distinguish between less predictable (exogenous) versus more predictable (endogenous) shocks. In the analysis, the onsets of six specific work limiting health conditions that are largely exogenous conditional on age are grouped together as exogenous shocks. In contrast, the onset of any other work limiting health conditions is seen as an endogenous shock since those conditions are significantly related to most common demographic factors. Some of those demographic factors related to Socio-Economic Status (SES), such as education, have been shown to be related to behaviors (such as dietary choice) that are predictive of health outcomes.

I use the topical module on work disability history from Wave 2 of 2004 SIPP which provides retrospective information on marital history, educational attainment, fertility and the timing of onset of health problems, as well as static measures of race and origin in the analysis. The analysis sample includes men and women that are ages of 15 to 64 years, are in

their first marriage and have not had any work limitations prior to their first marriage. I separately examine the effects of work limiting health conditions on divorce behavior for men and women in order to better reveal disparities by gender. I also examine the responses by race and ethnicity among men and women to further explore patterns of differential response. The analysis makes use of linear probability models as its primary estimation method.

The chapter proceeds with a literature review followed by a description of the data used in the analysis. The methods and estimation models are then briefly outlined. Next, I present the estimates of linear probability models of work limiting health and divorce behavior. A summary of the results concludes the analysis.

2.2 Literature Review

Becker (1991) provided pioneering theory related to marriage and divorce decisions. This theory argues that people stay married when they have the greatest overall welfare from being in the relationship; while people would like to leave a marriage when the gain from marriage decreases to the point where getting divorced leads to greater overall welfare.

Health plays a crucial role in affecting or determining the gains from marriage. A large prior literature has examined the relationship between relationship status and health. Generally, being married is associated with better health while divorce is often linked to poor health. Compared to the unmarried, married persons have lower mortality rates (Hu & Goldman, 1990; Umberson, 1992; Goldman et al., 1995; Lillard & Waite, 1995; Dupre & Beck & Meadows, 2009; Shor et al., 2012), lower prevalence of cardiovascular disease

(Zhang & Hayward, 2006), less chronic disease conditions, functioning problems and disabilities (Pienta & Hayward & Jenkins, 2000; Hughes & Waite, 2009), lower odds of reporting either ADL or IADL disability (Liu & Zhang, 2012), better self-assessed physical health (Williams & Umberson, 2004; Hughes & Waite, 2009). On the contrary, divorced people are more likely to experience adverse health outcomes (Hughes & Waite, 2009; Liu 2012).

It is widely accepted that two processes are responsible for observed health differences between the married and divorced: a social selection mechanism and a social causation mechanism (marriage protection effects). According to the social selection hypothesis, health influences one's marital status -- mentally and physically healthy people are more likely to be selected into marriage while unhealthy people tend to be selected out of marriage. The selection process may cause health differences by marital status in several ways, according to Joung et al. (1998). Firstly, unhealthy people might be less attractive to be chosen for marriage or might be more likely to be divorced. Second, "persons generally tend to marry partners with resembling traits such as physical attractiveness," (pp. 426) which is referred to as "assertive mating" (pp. 426). Thirdly, unhealthy partners tend to have more stressful marital relationships and thus are more likely to experience dissolution (Joung et al., 1998). Further, reductions in income (resulted from diminished work efforts or increased medical expenses) and diminished time spent together in shared activities (Blekesaune & Barrett, 2005) also help to explain the selection mechanism. As a result, married persons who reported health conditions are more likely to become divorced during follow-up than persons without health conditions (Joung et al, 1998) and people who become physically limited are

less likely to be married (Caputo & Simon, 2013). The onset of health conditions can be viewed as a marital shock that destabilizes marriage, reduces the gains from marriage and increases the divorce risk according to Becker's family economics theory.

While the selection mechanism has often been referenced in the literature relating health to divorce, few studies have attempted to directly distinguish between the influences of divorce on subsequent health as opposed to the selection mechanism. However, two recent examples (Couch, Tamborini and Reznik 2015; Couch Tamborini and Reznik 2016) of this approach show that in some circumstances the selection mechanism is important in driving average associations between marital status and health and also that patterns are differentiated by gender. For men (Couch, Tamborini and Reznik 2015) once the selection of more healthy individuals is controlled for in the analysis, divorce on average is not found to be related to subsequent work limiting health conditions. However, for women (Couch, Tamborini and Reznik 2016), similarly controlling for selection into marriage does not substantially diminish the relationship between divorce and subsequent work limiting health conditions. Here, I take a similar analytic approach in examining the relationship between the onset of health problems and subsequent divorce.

In contrast, the protective effects of marriage on health are generally associated with healthier behaviors and lifestyles (Sherbourne & Hays, 1990; Umberson, 1992); a greater sense of responsibility and belonging which reduces the probability of risk-taking (Hibbard & Pope, 1993); the access to more economic resources and social support via his or her spouse (Becker, 1991; Waldron & Hughes & Brooks, 1996); and greater happiness and less depression (Kurdek, 1991). On the other hand, the experience of marital disruption (divorce

or widow) damages health (Hughes & Waite, 2009); divorce is a stressful event leading to declines in health, particularly among those for whom the event is unexpected or undesired (Blekesaune & Barrett, 2005); the divorce followed by single parenthood undermines the long-term self-assessed physical health of rural mothers in Iowa (Wickrama et al., 2006); marital separation or divorce is associated with an increased risk of serious accidents (Lagarde et al., 2004). The health penalty is usually explained by the loss of social, psychological and economic resources (Liu & Umberson, 2008); increased alcohol consumption, the onset of depression and the use of psychoactive drugs (Lagarde et al., 2004). Moreover, significant age and birth cohort differences exist in the health penalty of the transition to divorce—the penalty "is stronger at younger than older adulthood especially in the more recent birth cohort "(Liu, 2012, pp. 1107).

The prior literature establishes that both the selection and causation mechanisms are important in examining relationships between relationship status and health. Here, the analysis focuses on the temporal evolution of the onset of different types of health problems and their impact on subsequent divorce behavior. Similar to the work of Couch, Tamborini and Reznik (2015 and 2016), I remove individuals from the analytic samples who had health problems prior to their marriage to reduce one potential source of selection. I also use linear probability models with fixed-effects to control for time invariant heterogeneity. A unique aspect of the analysis is to analyze the impact of an arguably exogenous set of conditions on subsequent divorce behavior. By these methods, I attempt to avoid bias due to reverse causality between health conditions and initial relationship status (Negrusa & Negrusa, 2014).

Longitudinal data are required to examine whether social selection mechanisms drive observed health differences between marital status groups (Joung et al., 1998). Several longitudinal studies have provided evidence that the social selection hypothesis is at least partially responsible for explaining the relationship between health and marital status. Mastekaasa (1992) focused on the never married people (Norway, in the 20-39 age range) and found that among never married men having a disease reduces the probability of marriage while this does not hold for never married women. Mastekaasa (pp. 910) concluded that "selection processes may play an important part in producing the observed association between marital status and psychological well-being." The study by Waldron, Hughes and Brooks (1996) found that unemployed women who are 25-34 years at baseline with better health have a higher probability of getting married and a lower probability of experiencing divorce during the first follow-up interval and there is no significant result for employed women. Lillard and Panis (1996) alternatively reported conflicting evidence of adverse selection into marriage – that men with poor health have an incentive to marry and that the less healthy men are more likely to (re)marry -- (re)marry earlier and remain married longer. Waldron & Weiss & Hughes (1997) found that married women with more physical impairments or overall health problems are more likely to get separated or divorced in the first follow-up interval. Joung et al. (1998) demonstrated that "only divorce among married persons was associated with health status . . ." (pp. 425). Teachman (2010) used discrete-time event history models to examine the relationship between work-related health limitations and divorce using 25 years of data from the *1979 National Longitudinal Study of Youth* (NLSY-79) and pointed out that work limitations among husbands are linked to an increased risk of

divorce and this relationship is moderated by education and race. Teachman distinguished the limitations on kind of work and amount of work that can be done but not based the study on specific health problems. Negrusa et al. (2014) found that post-deployment symptoms of PTSD and of other mental health conditions elevate the divorce risk among married active-duty U.S. Army soldiers. Blekesaune & Barrett (2005, pp. 259) indicated that "the selection of the less healthy into the divorced status is more important than health problems that result from marital dissolution itself."

Thus, evidence from the existing literature suggests that the effects of poor health on marital stability differ for men and women, usually with greater effects for husbands. This can be explained by different social roles and observed characteristics of men and women. Kurdek (1991), for example, studied the relations between reported well-being and divorce history and found that men report less depression and better health than women. Commonly, men earn more than women and make large contributions of resources to support the family. Inability to work related to poor health would create more financial stress for the family due to their lower average incomes. Thus, the reduction of the ability of a husband to work would be expected to be a more important driver of divorce for women than men, particularly if the health problems were predictable.

Secondly, "there is evidence to suggest that the economic conditions surrounding marriage are more important for Blacks than for Whites" (Teachman, 2010, pp. 921), thus the relationship between marital stability and health might be different among different racial and ethnic groups.

In this chapter, I examine work limiting health conditions as the primary outcome of

interest. This outcome has been examined in some prior research. Work limitations specifically can influence marriage in several ways (Teachman, 2010). First, work limitations may affect people's employment status or wage rate, which reduces family income and increases financial stress. However, Charles (2004) found using PSID data that although disability (having any physical or nervous condition that limits the type of work or amount of work) and job displacement exhibit similar long-run economic consequences, divorce risks do not change after a spouse's disability but do increase after a spouse's job displacement. Additionally, poor health may reduce family cohesiveness since couples may not be able to perform joint household duties or participate in family activities together. Work limitations may also lead to a lack of self-confidence or self-esteem and result in increased stress or depression for the unhealthy partner, and this may harm family relationships.

In this chapter, I am going to examine whether the onset of health conditions affects divorce risks. The onset and evolution of health conditions are expected to predict divorce behavior later in life (Joung et al., 1998). Thus, I expect that married people with health conditions are more likely to get divorced than those who are in good health. I also expect that divorce behavior will be different for people with work limiting health conditions that arrive exogenously as opposed to those conditions that are more predictable. Based on previously documented differences in divorce behavior, I also expect to observe differences in the response of individuals to the onset of health problems across different racial and ethnic groups.

2.3 Data

I select men and women who are in their first marriage and have not previously reported any health problem before their first marriages in the Topical Module from Wave 2 of 2004 SIPP for use in this study. The screen for prior health problems is intended to reduce bias due to selection processes associated with marriage and health. Additionally, the SIPP contains information on fertility for women ages 15 to 64. Given this data availability limitation, to make all tables comparable, I confine the age range for men and women in the sample to 15 to 64 years old.

Those who meet these criteria are divided into three groups: a comparison group of married individuals who never report the onset of a work related health limitation and two alternative groups that experience work related health limits. Comparison group includes individuals who never report a health problem by the end of this topical module (year 2004) and may or may not later divorce. The first group of married individuals report the onset of "exogenous" work-limiting health events after the beginning of their first marriage is referred to as treatment group 1. As mentioned earlier, the six exogenous health problems that I found in the previous chapter to be unrelated to any demographic factor among married individuals except for age include cancer, carpal tunnel syndrome, deafness or serious trouble hearing, paralysis, thyroid trouble and tumor cyst or growth. Treatment group 2 includes individuals who report onset of any work-limiting health events after the beginning of their first marriage whether it is among these six conditions or not.

Among the 103,828 individuals contained in the topical module, 45,545 persons meet

the criteria I describe above: being 15-64 years old, in their first marriage, and reporting no health conditions before the first marriage. Furthermore, there are 40,662 individuals in the comparison group; 536 in treatment group 1; and 4,883 in treatment group 2.

Using the retrospective reports in the SIPP that are dated by year, I create a panel of observations for each individual from the year they were born to 2004. This allows me to track individuals' lives over time and observe changes such as the onset of a health limitation, educational attainment, marital status, and change in number of children. After reforming the data in this panel form, there are 2,063,540 observations in total. 1,808,001 observations are in the comparison group, 28,149 are in the treatment group 1 and 255,539 are in the treatment group 2.

Descriptive statistics are shown in Table 2-1 (for all people), Table 2-2 (for men) and Table 2-3 (for women) for all individuals, the comparison group, treatment group 1 and treatment group 2 respectively. All descriptive statistics are weighted based on person weights provided in SIPP[1]. Some variables do not vary along time, such as gender, race and origin; while some variables are time-varying such as age, education, marital status and number of children. For time-varying variables, I care about not only the current values, but also the previous values and their changes. In the descriptive tables, information from two periods of time is shown, T1 and T2. T1 refers to the current survey year (2004) and T2 represents one year before the onset of a work limitation. Since all people in the comparison group stay healthy through the end of the survey, T2 measures are only available for people in treatment group 1 and treatment group 2.

[1] Weighted descriptive statistics are provided in Appendix II, and are used in the following analysis. For comparison, I also do the descriptive statistics without weights that are not shown in the paper. There is no big difference between weighted statistics and unweighted ones.

As is shown in Table 2-1, the proportion of men and women are close to each other for all individuals (47.35% versus 52.65%) and for the comparison group (47.7% versus 52.3%). However, the difference is huge for treatment group 1 (38.19% versus 61.81%), meaning that there are many more women than men who report onset of exogenous health conditions after the beginning of their first marriages and the difference is slightly greater for treatment group 2 (44.16% versus 55.84%). which indicates that more women than men report the onset of a work related health limitation after their first marriage. Whites and those who are not Hispanic, Spanish or Latino make up the greatest proportion of individuals in the data set. Distributions of race and origin across the four data groupings (comparison, etc.) appear similar.

The current mean ages in 2004 are about 44 for all individuals, 43 for the comparison group, and about 51 for the two treatment groups; in other words, people with health conditions are relatively older than those without health conditions. More interestingly, when it's one year before the onset of a work limitation (T1), the mean ages are about 43 for two treatment groups, which means that people usually begin to have work limitation around 44 years old. The proportions of bachelor's, master's or higher degree are higher for comparison group (19% and 10.4% respectively), but much lower for treatment group 1 (10.02% and 4.43%) and for treatment group 2 (7.89% and 3.65%); in other words, people with higher educational achievement tend to experience fewer work limitations.

The proportions of divorced people are much higher for treatment group 1 (20.18%) and treatment group 2 (24.33%), compared to the comparison group (13.89%); which accords with the popular belief that divorce is linked to poor health. What is even more notable is that

for treatment group 1, the proportion in T2 (21.63%) is greater than the proportion in T1 (20.18%); namely, the proportion of people who get divorced decreases from the time before the onset of health conditions. On the contrary, for treatment group 2, the proportion of people who get divorced increases from 23.55% (in T2, one year before the onset of a health condition) to 24.33% (in T1, current survey year 2004) since the beginning of the work limitation.

The average number of children is roughly the same for treatment group 1 (1.44 in T1) and treatment group 2 (1.30 in T1), and is relatively smaller for the comparison group (1.04 in T1). People with work limitations tend to have a great number of children, as is seen from the apparently larger proportions of four or more children for treatment groups in 2004. 7.04% of people in treatment group 1 and 6.37% in treatment group 2 have four children while only 3.8% of people in comparison group have four children; 2.65% and 2.48% of people in two treatment groups have five children while the proportion is only 1.12% for comparison group; 2.68% and 2.67% of people in two treatment groups have six children compared to the 0.94% for the comparison group.

Table 2-2 shows the weighted descriptive statistics for men and Table 2-3 is for women. Since number of children is based on the question “how many children have you ever given birth to” for women, this part is omitted in Table 2-2 for men. Still, no matter for men or women, the categories of White and non-Hispanics, Spanish and Latino make up the largest proportions of the sample. Comparing Tables 2-2 and Table 2-3, I find that the mean ages are approximately one year younger for women than for men for any one of the four categories; the proportions of high educational achievement (Bachelor’, master’s and higher degree) are

lower for women and most women seem to have some college; and the divorce proportions are higher for women than for men for all four groups.

2.4 Methods

I have a large panel data set that traces time-varying characteristics and experiences of individuals over time. For those in a marriage, I am interested in isolating the effect of the onset of health limitations on the probability of divorce. I screen the data as has already been described who report health limitations prior to marriage. I also make use of panel estimation methods that allow for constant unobserved differences across people to further control for the possibility of selection bias.

2.4.1 Linear Probability Models

In the main regression model, divorce for individual i at age t, $Div_{i,t}$ ($Div_{i,t} = 0 \ or \ 1$), is a function of (1) a series of time dummies indicating the onset and evolution of work limiting health conditions from the year when work limitation begins to the 28th year since the onset of work limitation , $Year_{i,t,k}$, where k is from 0 to 28; (2) a series of indicator variables for educational achievement at age t, $Edu_{i,t,l}$, where l is from 1 to 4 representing four educational levels; (3) a series of indicator variable for number of children in age t, $Chld_{i,t,m}$, where m is from 1 to 6 representing possible number of children; (4) a series of indicator variables for age groups in age t, $Age_{i,t,n}$, where n is from 1 to 9 representing 10-year-interval age groups to control for age but avoid collinearity issues at the same time; (5) the unobserved time-invariant individual fixed effect, α_i; and (6) the error

term, $\varepsilon_{i,t}$:

$$Div_{i,t} = \sum_{k=0}^{28} \gamma_k Year_{i,t,k} + \sum_{l=1}^{4} \delta_l Edu_{i,t,l} + \sum_{m=1}^{6} \theta_m Chld_{i,t,m} + \sum_{n=1}^{9} \tau_n Age_{i,t,n} + \alpha_i + \varepsilon_{i,t} \quad \text{Eq. (1)}$$

The primary coefficients of interest in Eq. (1) are γ_k (k=0, 1, … , 28), which estimate the differential impact on divorce of experiencing the onset of health conditions relative to staying healthy at different points in time. In addition, Eq. (1) enables me to estimate the relationship between educational achievement and number of children on the divorce probability. Since six work-limiting health conditions are regarded as exogenous among married individuals conditional on age, it is necessary to control for age in Eq. (1). Instead of directly controlling for age, I create categorical variables for 10-year age intervals to avoid collinearity between age and time. Finally, I include individual fixed-effects in the regression models.

The model is applied to men and women using the set of exogenous (treatment 1) health conditions as well as all reported health limitations (treatment 2). All models are estimated using STATA. Detailed descriptions of variables and the analytical approach are provided next.

2.4.2 Measures

Dependent Variables

To capture a person's marital status, the divorce dummy is created as the dependent variable. SIPP collects following information for individuals: number of times married in life time, first marriage outcome (widowed or divorced), second marriage outcome (widowed or

divorced), year of first marriage, year of first separation, year of second marriage, year of second separation, last year for marriage, year of only/last separation. Separation is considered as the beginning of divorce in the analysis. I then find out all years when the person separates and subsequently divorces based on the information above. The divorce dummy is coded as 1 only in the years when the person stays divorced. For example, if the person got divorced in 1990, but remarried in 1996, and got the second divorce in 2000; then divorce=1 for years 1990 to 1995, divorce=0 from 1996 to 1999, and divorce=1 from 2000 and thereafter.

Independent Variables

Independent variables are created to capture the onset and evolution of health conditions. SIPP provides information on the year when the person's work limitation began. Based on it, time dummies from y0 to y28 are created to represent years when the work limitation began (y0=1), the first year after the beginning of the limitation (y1=1), the second year after the onset of the work limitation (y2=1), etc.. Since in the topical module the earliest year when a person's work limitation began is 1976 and the survey year is 2004, time dummies are created through y28 (2004-1976=28). Those dummies indicate time since the onset of a person's work limitation or health condition, which helps me temporally sequence the timing of divorce among a group of married persons who had not reported prior work related health limitations.

Control Variables

Education dummies are created to measure the change in a person's educational achievement over time. "edu1" is the dummy for high school completion, edu1=1 for years

when individuals have finished high school but have not had a higher degree completed. “edu2” is the dummy for some college completion (including some college, certificate and associate degree) and edu2=1 for years when individuals have finished some college but have not had higher level education completed. ”edu3” is the dummy for college completion and edu3=1 for years when individuals finished college but had no higher degree achieved. “edu4” is the dummy for advanced degree completion (including master, professional school and doctorate degree) and edu4=1 for years when individuals have an advanced degree.

The SIPP asks females age 15-64 when they had their first and last child. SIPP also asks females age 15 years old and older the number of children they have ever given birth to and the total number of children varies from 0 to 6. Based on this fertility history, I know the years when women had their first and last child and I can also estimate the dates when they had their second, third, fourth, and fifth child making use of linear interpolation. For example, the year when they had the second child, if that was not the last child they had, would be $[\text{the year of first child} + \left(\frac{\text{year of last child} - \text{year of first child}}{\text{total number of children} - 1}\right)]$. If the calculated year is not an integer, it is rounded to the nearest whole number. In this way, I estimate the years when women gave birth to each one of their children. Then child dummies are created as follows: chl1=1 for years during which the female had only one child; chl2=1 for years during when the female had two children; chl3=1 for years during which the female had three children; chl4=1 for years during which the female had four children; chl5=1 for years during which the female had five children; chl6=1 for years in which the female had only six children.

Age group dummies are also created. agegrp1=1 if the person is in age 0 (year of birth) to 9; agegrp2=1 if the person is 10 to 19 years old; agegrp3=1 if the person is 20 to 29;

agegrp4=1 if the person is 30 to 39; agegrp5=1 if the person is 40 to 49; agegrp6=1 if the person is 50 to 59; agegrp7=1 if the person is 60 to 69; agegrp8=1 if the person is 70 to 79; agegrp9=1 if the person is 80 to 84 (84 is the maximum age in the data set).

2.4.3 Analytical Approach

Since gender differences exist in divorce behavior, the baseline models are linear probability models examining the relationship between divorce and the onset of work related health limitations for men and women respectively, as shown in Table 2-4 and Table 2-5[2]. In each table, there are two parts: treatment 1 and treatment 2. Treatment 1 is aimed to figuring out the divorce behavior of individuals who have exogenous health conditions; while treatment 2 is aimed to studying the divorce behavior of individuals with any health condition. Taking Table 2-4 as an example, in treatment 1, I include individuals (men and women) in comparison group (who never report a health problem by the end of the topical module) and men in treatment group 1 (who report exogenous health problem after the beginning of first marriage) to run the regressions; and the coefficients would be the difference between men who have the exogenous health problems and people (regardless of their gender) who stay healthy. In treatment 2 of Table 2-4, I include individuals (men and women) in comparison group and men in treatment group 2 to conduct estimations; and the coefficients would be the difference between men who have any health condition and people (men and women) who stay healthy. For either treatment 1 part or treatment 2 part in Table 2-4 and Table 2-5, there are five models. All five models use divorce dummy “divorce” as dependent variable, and

[2] Person weights in SIPP are included in the linear probability models. Results with weights are provided in Appendix II from Table 2-4 to Table 2-9, and they are used in the following analysis. Results without weights are not shown.

time dummies “y0” through “y28” as independent variables. The difference among those models is the control variables. Model (1) includes no control dummies; Model (2) includes education dummies “edu1” “edu2” “edu3” “edu4”; Model (3) includes child dummies “chl1” ”chl2” ”chl3” ”chl4” ”chl5” ”chl6”; Model (4) includes education dummies “edu1” “edu2” “edu3” “edu4” as well as child dummies “chl1” ”chl2” ”chl3” ”chl4” ”chl5” ”chl6”; Model (5) includes education dummies “edu1” “edu2” “edu3” “edu4”, child dummies “chl1” ”chl2” ”chl3” ”chl4” ”chl5” ”chl6” as well as age group dummies “agegrp1” ”agegrp2” ”agegrp3” ”agegrp4” ”agegrp5” ”agegrp6” “agegrp7” “agegrp8” “agegrp9”. In Table 2-5, I show similar regression models for women.

Furthermore, I extend the baseline models to take race and origin into consideration, as is shown in Table 2-6, Table 2-7, Table 2-8 and Table 2-9 respectively. To keep tables simple and straight-forward, only Model (5) from baseline models are taken in the following regressions, in other words, all control dummies, such as education dummies, child dummies, and age group dummies are included in models in Table 2-6, Table 2-7, Table 2-8 and Table 2-9. Still, treatment 1 is to find the effects of exogenous health conditions on people’s divorce behavior; and treatment 2 is to find the effects of any health conditions on divorce risk.

In Table 2-6, for either treatment 1 or treatment 2 parts, there are four models and they are for White men, Black men, Asian men and Residual men respectively. For instance, in the model “(1) White” under treatment 1, I include the individuals (men and women) in comparison group and White men in treatment group 1 to run the regressions; and the coefficients would be the difference between White men who have the exogenous health problems and people (regardless of their gender and race) who stay healthy. The format of

Table 2-7 is the same as that of Table 2-6; the only difference is that Table 2-7 is for White women, Black women, Asian women and Residual women.

In Table 2-8, under either treatment 1 or treatment 2, there are two models—one for Hispanic, Spanish or Latino men, the other one for non-Hispanic, Spanish or Latino men. Taking model "(1) Hispanic" under treatment 1 as an example, I include all individuals in comparison group and Hispanic, Spanish or Latino men in treatment group 1 to conduct estimations; and the coefficients represent the difference between Hispanic, Spanish or Latino men who have exogenous health conditions and people (regardless of their gender and origin) who stay healthy. Table 2-9 uses the same format; and it's for Hispanic, Spanish or Latino women and non-Hispanic, Spanish or Latino women.

2.5 Results

Table 2-4 contains estimates of linear probability models for the effect of the onset of exogenous (treatment 1) and other (treatment 2) health problems on the probability of divorce. Across the groups of 5 columns, additional covariates shown on the left hand side of the table are added to the estimations. In column (1) for the exogenous conditions, results indicate that when no controls are added that there is a gross association between the onset of a health limitation and the probability a person is observed divorced. As educational indicators are added in column (2) the association appears to be diminished between the onset of a health related work limitation and subsequent divorce. When the number of children is added in column (3), this does not appear to have much effect on the established relationship between health limits and subsequent divorce. The fourth column adds both the educational dummies

as well as those for children, and again, relative to having no controls, this appears to reduce the impact of the onset of work related health limitations on subsequent divorce. In column (5), once age dummies are added, there appears to be no relationship between the onset of the exogenous health related work limitations and the subsequent likelihood of being divorced relative to those who remain married.

For the other health conditions (treatment 2), a different pattern is observed. For these conditions that have been observed in other studies to be associated with demographic covariates associated with choice such as education, the onset of health limitations is associated with the subsequent probability of divorce even after controlling for available covariates. The increase in the probability of being observed divorced ranges from approximately 6 to 10 percentage points in the 28 follow-up years in the synthetic panel. Thus, health conditions that arrive more unexpectedly do not appear to be associated with subsequent divorce whereas those that appear to be more easily anticipated do appear to be associated with subsequent divorce.

Table 2-5 contains a comparable analysis for women. In the first column of the table for women who experience the same six health conditions found to be exogenous for men conditional on age, there appears to be a gross relationship between the onset of a work related health limitation and divorce for many years thereafter. However, when any of the available covariates are introduced such as educational attainment (column 2), number of children (column 3), or both (column 4), the association becomes statistically insignificant. When all covariates plus the individual's age groups are included in column (5), there is no statistically significant association between the onset of health limitations and subsequent

divorce.

For the other health conditions that are found to be more predictable in their arrival (treatment 2), the onset of health limitations is significantly associated with the subsequent probability of divorce across all five columns of estimates. In column (5) with all covariates included, the increased probability of divorce ranges from 4 to 12 percent with the magnitude increasing over time. Again, for women on average, health conditions that arrive more unexpectedly do not appear to be associated with being observed divorced. Those that are more predictable appear to be associated with elevated risks of subsequent divorce that increase over time.

To explore potential sources that drive these patterns, I first consider the role that race and ethnicity may play by dividing the sample by those categories and re-estimating the linear probability models for Whites, Blacks, Asians, and Others[3] while including all covariates. For the group of exogenously arriving health limitations, I find that for Whites there is no association with subsequent divorce but that there is a very large impact on the probability of being observed divorced among Blacks in the first decade following onset. Although the parameter estimates are not statistically significant beyond the sixth year, they decline over time.

For the health conditions that arrive more predictably, their onsets are related to the subsequent probability of being observed divorced for Whites and Blacks. However, the magnitude of the parameter estimates is much larger among Blacks.

Table 2-7 similarly considers the relationship between the onset of health limitations and

[3] For Asians and Others, there does not appear to be a clear impact of the onset of a health limit on the subsequent probability of being observed divorce. Thus, regression results for Asians and Others are not shown in Table 6 and 7.

the probability of subsequently being observed divorced for White and Black women in the sample. In the first panel of estimates for the exogenously arriving health limitations, for Black women, there does not appear to be any association between the onset of a work related health limitation and the subsequent probability of being observed divorced. For White women, there appears to be a subsequent reduction in their likelihood of being observed divorced many years after the event relative to all women who did not experience a work related health limitation.

For the second group of estimations related to the health limits that arrive more predictably, the subsequent probability of being observed divorced increases relative to women who do not experience the onset of a health limitation. For White women, this association is no longer statistically significant 12 years after onset. For Black women, the association is statistically significant throughout the 28-year follow-up period in the synthetic panel. The magnitude of the parameter estimate is also much larger for Black women (column 2) compared to White women (column 1).

Table 2-8 contains estimates of linear probability models in which those men who experience the onset of a health limitation are selected based on being either Hispanic or non-Hispanic while the comparison group is left as all who do not experience onset of a health limitation. For those conditions that arrive more unpredictably (column 1), this appears to reduce the likelihood of being observed divorced among Hispanics but there is no statistically significant relationship for Non-Hispanics.

For the conditions that arrive more predictably (treatment 2), the onset of the health limitation is significantly related to an increased probability of being observed divorced for

non-Hispanics. The relationship is not as clear for Hispanics.

Table 2-9 contains similar estimates for women conditioning on Hispanic ethnicity. Among non-Hispanic women, the onset of a health limitation does appear to be statistically significantly associated with divorce when the conditions are among the set seen to arrive largely exogenously (treatment 1). However, among Hispanic women, there appears to be an initially increased probability of being observed divorced that then becomes negative later.

For the health conditions that are more predictable (treatment 2), the onset of health limitations appears to be strongly associated with the subsequent probability of being observed divorced over most of the 28-years of the panel. The strength of this relationship is much stronger among Hispanic women.

2.6 Discussion and Conclusions

This chapter makes use of retrospective data contained in the 2004 SIPP to examine the relationship between the onset of health limitations and subsequent divorce among men and women. The analysis divides health limitations into two groups, those that are found to be largely exogenous when conditioning on age and marriage and others.

Among the health conditions that are seen as arriving largely exogenously, on average for both men and women, there is no statistically significant association with the subsequent probability of being observed divorced. In contrast, for those conditions that are highly related to observable factors and that can be thought of as more predictable, divorce is also highly related to the onset of these conditions in a sample that consists of married individuals who had not reported prior health problems.

To better understand differences across groups that might be important in driving these relationships, I examined groups of Black, White, Hispanic, and Non-Hispanic men and women in comparison to those who did not experience the onset of a health limitation. For the conditions that arrive less predictably, among men no relationship is observed between the onset and subsequent odds of being divorced for non-Hispanics and Whites. However, Black males appear to have highly increased odds of being observed divorced shortly after the onset of the health limit whereas Hispanic males have a reduced chance of subsequently being observed divorced. Thus, the absence of an average effect masks some sub-group heterogeneity.

For the health conditions that arrive more predictably for males, the probabilities of subsequently being observed divorced are significantly higher for all groups examined. These increased odds are particularly pronounced among Blacks and Hispanics.

Among women, for the set of health conditions that arrive less predictably, there is no statistically increased probability for any group of subsequently being observed divorced. For the set of conditions that arrive more predictably, women of all groups experience a higher probability of subsequently being observed divorced. Again, those increased probabilities are most elevated among Hispanic and Black women.

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2.8 Appendix II

Table 2-1 Weighted Descriptive Statistics among Different Groups

	All Individuals	Comparison Group	Treatment Group 1		Treatment Group 2	
	T1	T1	T1	T2	T1	T2
Time-invariant variables						
Gender						
Male	47.35	47.7	38.19		44.16	
Female	52.65	52.3	61.81		55.84	
Race						
White	83.81	84.19	81.89		80.35	
Black	9.41	9.02	13.1		13	
Asian	3.88	4.1	0.64		1.85	
Residual	2.91	2.7	4.36		4.79	
Origin						
Hispanic, Spanish or Latino	13.18	13.58	12.67		9.5	
non-Hispanic, Spanish or Latino	86.82	86.42	87.33		90.5	
Time-varying variables						
Age	44.07 (0.07)	43.28 (0.08)	51.29 (0.46)	43.93 (0.48)	51.27 (0.15)	43.32 (0.17)
Education						
High School Graduate	26.43	25.89	32.4	37.37	31.3	34.3
Some College	35.84	35.41	37.07	28.79	39.69	32.68
Bachelor's Degree	17.91	19	10.02	8.75	7.89	7.42
Master or Higher Degree	9.73	10.4	4.43	3.8	3.65	3.17
Marital Status						
Divorced	14.92	13.89	20.18	21.63	24.33	23.55
Number of Children	1.06 (0.01)	1.04 (0.01)	1.44 (0.08)	1.37 (0.08)	1.30 (0.02)	1.25 (0.02)
One	9.96	10	9.7	10.66	9.53	10.28
Two	18.37	18.54	20.72	19.95	16.85	16.24
Three	10.16	10.06	11.61	10.64	11.09	10.76
Four	4.06	3.8	7.04	6.53	6.37	5.97
Five	1.25	1.12	2.65	2.72	2.48	2.41
Six	1.11	0.94	2.68	2.5	2.67	2.34
Number of Individuals	45545	40662	536		4883	
Number of Observations	2063540	1808001	28149		255539	

Note: Numbers above are Mean (SE) or Percent

T1: year 2004; T2: one year before onset of work limitation

Table 2-2 Weighted Descriptive Statistics among Different Groups for Men

	All Individuals	Comparison Group	Treatment Group 1		Treatment Group 2	
	T1	T1	T1	T2	T1	T2
Time-invariant variables						
Race						
White	84.5	84.86	80.92		80.96	
Black	9.08	8.68	14.14		13.06	
Asian	3.61	3.82	0.76		1.61	
Residual	2.81	2.65	4.18		4.37	
Origin						
Hispanic, Spanish or Latino	13.49	13.95	11.53		8.93	
non-Hispanic, Spanish or Latino	86.51	86.05	88.47		91.07	
Time-varying variables						
Age	44.38 (0.08)	43.63 (0.09)	51.83 (0.83)	44.19 (0.81)	51.82 (0.22)	43.72 (0.25)
Education						
High School Graduate	26.33	25.82	32.16	35.82	31.31	34.29
Some College	34.49	34.19	32.1	25.87	37.46	30.55
Bachelor's Degree	17.87	18.89	10.89	9.7	7.79	6.99
Master or Higher Degree	10.69	11.34	6.17	5.37	4.26	3.91
Marital Status						
Divorced	13.99	13.08	19.92	21.56	23.03	22.34
Number of Individuals	21170	19076	199		2094	
Number of Observations	965665	855024	10681		110641	

Note: Numbers above are Mean (SE) or Percent

T1: year 2004; T2: one year before onset of work limitation

Table 2-3 Descriptive Statistics among Different Groups for Women

	All Individuals	Comparison Group	Treatment Group 1		Treatment Group 2	
	T1	T1	T1	T2	T1	T2
Time-invariant variables						
Race						
White	83.19	83.57	82.5		79.87	
Black	9.71	9.33	12.46		12.96	
Asian	4.11	4.35	0.57		2.05	
Residual	2.99	2.74	4.47		5.13	
Origin						
Hispanic, Spanish or Latino	12.9	13.25	13.37		9.96	
non-Hispanic, Spanish or Latino	87.1	86.75	86.63		90.04	
Time-varying variables						
Age	43.79 (0.08)	42.96 (0.08)	50.95 (0.55)	43.76 (0.6)	50.83 (0.19)	43.01 (0.21)
Education						
High School Graduate	26.51	25.95	32.55	38.32	31.29	34.31
Some College	37.04	36.53	40.13	30.6	41.45	34.36
Bachelor's Degree	17.94	19.11	9.47	8.17	7.97	7.75
Master or Higher Degree	8.87	9.54	3.36	2.83	3.17	2.59
Marital Status						
Divorced	15.76	14.64	20.34	21.67	25.36	24.52
Number of Children	2.02 (0.01)	1.98 (0.01)	2.32 (0.09)	2.22 (0.09)	2.34 (0.03)	2.24 (0.03)
One	18.91	19.12	15.69	17.25	17.06	18.41
Two	34.89	35.44	33.52	32.27	30.18	29.08
Three	19.3	19.23	18.79	17.22	19.86	19.27
Four	7.71	7.27	11.38	10.56	11.41	10.68
Five	2.37	2.13	4.29	4.4	4.44	4.31
Six	2.12	1.8	4.34	4.05	4.78	4.19
Number of Individuals	24375	21586	337		2789	
Number of Observations	1097875	952977	17468		144898	

Note: Numbers above are Mean (SE) or Percent

T1: year 2004; T2: one year before onset of work limitation

Table 2-4 Linear Probability Models of Divorce & Onset of Limit: Men

	Treatment1					Treatment2				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
	divorce	divorce	divorce	divorce	divorce	divorce	divorce	divorce	divorce	divorce
y0	0.126***	0.0847***	0.126***	0.0933***	0.0466	0.141***	0.0997***	0.141***	0.108***	0.0593***
y1	0.125***	0.0842***	0.125***	0.0927***	0.0433	0.146***	0.104***	0.146***	0.112***	0.0619***
y2	0.127***	0.0860***	0.127***	0.0945***	0.0436	0.151***	0.109***	0.151***	0.117***	0.0642***
y3	0.133***	0.0919**	0.133***	0.100***	0.0491	0.154***	0.111***	0.154***	0.119***	0.0660***
y4	0.117***	0.0719**	0.117***	0.0813**	0.0324	0.158***	0.114***	0.158***	0.122***	0.0671***
y5	0.108***	0.0610	0.108***	0.0708*	0.0230	0.156***	0.110***	0.156***	0.119***	0.0631***
y6	0.125***	0.0775*	0.125***	0.0872**	0.0378	0.170***	0.124***	0.170***	0.133***	0.0753***
y7	0.0991**	0.0533	0.0991**	0.0629	0.00765	0.170***	0.123***	0.170***	0.132***	0.0719***
y8	0.109**	0.0634	0.109**	0.0729	0.0159	0.161***	0.113***	0.161***	0.122***	0.0623***
y9	0.162***	0.114**	0.162***	0.124**	0.0655	0.160***	0.112***	0.160***	0.121***	0.0601***
y10	0.129**	0.0790	0.129**	0.0894*	0.0318	0.167***	0.118***	0.167***	0.127***	0.0652***
y11	0.129**	0.0764	0.129**	0.0874	0.0260	0.169***	0.117***	0.169***	0.127***	0.0628***
y12	0.183**	0.131*	0.183**	0.142**	0.0776	0.171***	0.119***	0.171***	0.129***	0.0631***
y13	0.190**	0.135*	0.190**	0.147*	0.0809	0.166***	0.112***	0.166***	0.122***	0.0556**
y14	0.211**	0.157*	0.211**	0.168**	0.102	0.175***	0.121***	0.175***	0.131***	0.0645***
y15	0.171**	0.117	0.171**	0.128	0.0568	0.190***	0.134***	0.190***	0.144***	0.0754***
y16	0.178**	0.124	0.178**	0.135	0.0639	0.196***	0.138***	0.196***	0.149***	0.0793***
y17	0.191**	0.137	0.191**	0.148*	0.0761	0.215***	0.158***	0.215***	0.168***	0.0967***
y18	0.0771	0.0225	0.0771	0.0338	-0.0359	0.195***	0.139***	0.195***	0.149***	0.0776**
y19	0.0771	0.0225	0.0771	0.0338	-0.0363	0.201***	0.144***	0.201***	0.154***	0.0823***
y20	0.0839	0.0283	0.0839	0.0397	-0.0315	0.197***	0.141***	0.197***	0.151***	0.0789**
y21	0.0894	0.0363	0.0894	0.0474	-0.0247	0.201***	0.145***	0.201***	0.155***	0.0845**
y22	0.0946	0.0384	0.0946	0.0501	-0.0199	0.205***	0.149***	0.205***	0.159***	0.0891**
y23	0.0946	0.0325	0.0946	0.0455	-0.0203	0.210***	0.153***	0.210***	0.164***	0.0943**
y24	0.106	0.0467	0.106	0.0589	-0.00944	0.214***	0.156***	0.214***	0.167***	0.0993***
y25	0.149	0.0891	0.149	0.102	0.0335	0.212***	0.153***	0.212***	0.164***	0.0971**
y26	0.127	0.0674	0.127	0.0797	0.0108	0.211***	0.153***	0.211***	0.164***	0.0974**
y27	0.136	0.0784	0.136	0.0905	0.0245	0.198***	0.140***	0.198***	0.151***	0.0862*
y28	0.0857	0.0280	0.0857	0.0400	-0.0233	0.194***	0.134***	0.194***	0.145***	0.0835*
edu1		0.0841***		0.0652***	0.00557***		0.0864***		0.0688***	0.00529***
edu2		0.141***		0.113***	0.0143***		0.143***		0.117***	0.0128***
edu3		0.0976***		0.0752***	-0.0257***		0.0985***		0.0772***	-0.0287***
edu4		0.120***		0.0947***	-0.0310***		0.122***		0.0978***	-0.0336***
ch1			0.114***	0.0604***	0.0359***			0.114***	0.0584***	0.0333***
ch2			0.124***	0.0643***	0.0131***			0.124***	0.0621***	0.00928***
ch3			0.145***	0.0846***	0.0181***			0.145***	0.0824***	0.0137***
ch4			0.153***	0.0956***	0.0141*			0.153***	0.0934***	0.00920
ch5			0.163***	0.108***	0.0179			0.163***	0.106***	0.0127
ch6			0.156***	0.107***	0.00173			0.156***	0.105***	-0.00354
agegrp1					-0.136***					-0.135***
agegrp2					-0.135***					-0.134***
agegrp3					-0.0706***					-0.0664***
agegrp4					-0.00180					0.00558
agegrp5					0.0162***					0.0241***
agegrp6					0.00605					0.0119***
agegrp7					—					—
agegrp8					—					—
agegrp9					—					—
_cons	0.0650***	0.0100***	0.0383***	0.00710***	0.136***	0.0662***	0.0109***	0.0408***	0.00820***	0.135***
N	1818581	1818581	1818581	1818581	1818581	1918541	1918541	1918541	1918541	1918541
R-sq	0.240	0.279	0.267	0.286	0.303	0.244	0.282	0.268	0.288	0.306

Note: * p<0.10, ** p<0.05, *** p<0.01

Table 2-5 Linear Probability Models of Divorce & Onset of Limit: Women

	Treatment1					Treatment2				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
	divorce	divorce	divorce	divorce	divorce	divorce	divorce	divorce	divorce	divorce
y0	0.101***	0.0574***	0.0395**	0.0311	0.0142	0.135***	0.0889***	0.0712***	0.0606***	0.0438***
y1	0.111***	0.0671***	0.0474*	0.0396	0.0215	0.143***	0.0966***	0.0778***	0.0676***	0.0501***
y2	0.114***	0.0670**	0.0495*	0.0396	0.0216	0.149***	0.101***	0.0816***	0.0709***	0.0533***
y3	0.0963***	0.0494*	0.0302	0.0210	0.00285	0.145***	0.0965***	0.0772***	0.0663***	0.0484***
y4	0.0957***	0.0490	0.0289	0.0201	0.000141	0.152***	0.103***	0.0825***	0.0717***	0.0528***
y5	0.103***	0.0547	0.0347	0.0250	0.00536	0.155***	0.105***	0.0845***	0.0736***	0.0541***
y6	0.106***	0.0542	0.0363	0.0244	0.00510	0.157***	0.108***	0.0853***	0.0750***	0.0540***
y7	0.0683**	0.0174	-0.00107	-0.0126	-0.0338	0.153***	0.103***	0.0802***	0.0698***	0.0482***
y8	0.0883***	0.0360	0.0185	0.00599	-0.0133	0.158***	0.108***	0.0843***	0.0741***	0.0517***
y9	0.0816**	0.0290	0.0109	-0.00172	-0.0238	0.162***	0.112***	0.0870***	0.0771***	0.0532***
y10	0.0849**	0.0295	0.0133	-0.00130	-0.0221	0.171***	0.119***	0.0954***	0.0847***	0.0611***
y11	0.0576	0.00113	-0.0143	-0.0295	-0.0543	0.174***	0.122***	0.0968***	0.0866***	0.0604***
y12	0.0744*	0.0193	0.00113	-0.0124	-0.0397	0.171***	0.119***	0.0931***	0.0829***	0.0558***
y13	0.105**	0.0487	0.0317	0.0167	-0.00999	0.173***	0.121***	0.0941***	0.0845***	0.0576***
y14	0.0810*	0.0204	0.00566	-0.0113	-0.0371	0.174***	0.121***	0.0946***	0.0842***	0.0579***
y15	0.102**	0.0404	0.0280	0.00936	-0.0207	0.189***	0.135***	0.108***	0.0980***	0.0697***
y16	0.0953*	0.0375	0.0220	0.00617	-0.0284	0.200***	0.147***	0.119***	0.110***	0.0797***
y17	0.0953*	0.0286	0.0220	-0.000645	-0.0252	0.218***	0.164***	0.136***	0.126***	0.0970***
y18	0.0941	0.0302	0.0191	-0.00117	-0.0301	0.216***	0.161***	0.133***	0.122***	0.0943***
y19	0.0381	-0.0254	-0.0361	-0.0561	-0.0865**	0.230***	0.174***	0.146***	0.135***	0.106***
y20	0.0443	-0.0195	-0.0352	-0.0534	-0.0828**	0.224***	0.168***	0.139***	0.128***	0.0991***
y21	0.0681	0.00752	-0.00658	-0.0238	-0.0540	0.223***	0.166***	0.136***	0.125***	0.0960**
y22	0.0753	0.0156	-0.00175	-0.0175	-0.0450	0.220***	0.165***	0.133***	0.123***	0.0939**
y23	0.0512	-0.0100	-0.0266	-0.0433	-0.0722*	0.226***	0.170***	0.137***	0.128***	0.0982**
y24	0.0512	-0.0135	-0.0266	-0.0463	-0.0695	0.233***	0.177***	0.143***	0.133***	0.107**
y25	0.0574	-0.0158	-0.0277	-0.0504	-0.0659	0.218***	0.160***	0.127***	0.117**	0.0924**
y26	0.0574	-0.0158	-0.0277	-0.0504	-0.0659	0.230***	0.174***	0.138***	0.129**	0.104**
y27	0.0574	-0.0158	-0.0277	-0.0504	-0.0633	0.228***	0.173***	0.136**	0.129**	0.105*
y28	0.0574	-0.0158	-0.0277	-0.0504	-0.0633	0.243***	0.186***	0.151***	0.142**	0.121**
edu1		0.0840***		0.0645***	0.00494***		0.0878***		0.0650***	0.00354**
edu2		0.142***		0.113***	0.0144***		0.145***		0.112***	0.0126***
edu3		0.0975***		0.0744***	-0.0261***		0.100***		0.0743***	-0.0289***
edu4		0.120***		0.0942***	-0.0306***		0.121***		0.0923***	-0.0346***
ch1			0.114***	0.0610***	0.0363***			0.118***	0.0661***	0.0391***
ch2			0.125***	0.0658***	0.0147***			0.132***	0.0734***	0.0200***
ch3			0.146***	0.0864***	0.0201***			0.151***	0.0921***	0.0235***
ch4			0.157***	0.0993***	0.0184**			0.166***	0.110***	0.0273***
ch5			0.162***	0.107***	0.0178			0.170***	0.117***	0.0262**
ch6			0.159***	0.111***	0.00629			0.163***	0.116***	0.0109
agegrp1					-0.134***					-0.132***
agegrp2					-0.133***					-0.130***
agegrp3					-0.0681***					-0.0618***
agegrp4					0.0000883					0.00670
agegrp5					0.0174***					0.0233***
agegrp6					0.00764					0.0113**
agegrp7					—					—
agegrp8					—					—
agegrp9					—					—
_cons	0.0651***	0.0102***	0.0378***	0.00707***	0.134***	0.0677***	0.0116***	0.0373***	0.00760***	0.131***
N	1825368	1825368	1825368	1825368	1825368	1952798	1952798	1952798	1952798	1952798
R-sq	0.240	0.280	0.268	0.287	0.303	0.248	0.287	0.278	0.295	0.311

Note: * p<0.10, ** p<0.05, *** p<0.01

Table 2-6 Linear Probability Models of Divorce & Onset of Limit: Men by Races

	Treatment1		Treatment2	
	(1) White	(2) Black	(1) White	(2) Black
	divorce	divorce	divorce	divorce
y0	0.0312	0.121*	0.0557**	0.105**
y1	0.0204	0.149*	0.0572**	0.0985**
y2	0.0134	0.214**	0.0570**	0.140**
y3	0.0164	0.250**	0.0604**	0.145**
y4	-0.00588	0.242**	0.0610**	0.152**
y5	-0.0197	0.253**	0.0566**	0.159**
y6	-0.00970	0.272**	0.0669**	0.172**
y7	-0.0298	0.187	0.0682**	0.128**
y8	-0.0126	0.142	0.0534**	0.137**
y9	0.0468	0.155	0.0459**	0.143**
y10	0.0336	0.0663	0.0555**	0.143**
y11	0.0290	0.0611	0.0503**	0.159**
y12	0.0467	0.295	0.0475**	0.197**
y13	0.0462	0.297	0.0454*	0.155**
y14	0.0813	0.271	0.0589**	0.179**
y15	0.0714	0.0472	0.0700**	0.173**
y16	0.0814	0.0472	0.0771**	0.154*
y17	0.0862	0.0902	0.0894**	0.190**
y18	-0.0529	0.0902	0.0686**	0.166*
y19	-0.0534	0.0902	0.0703**	0.190**
y20	-0.0482	0.0902	0.0733**	0.138
y21	-0.0417	0.0978	0.0909**	0.0730
y22	-0.0372	0.0994	0.0988**	0.0638
y23	-0.0378	0.0994	0.104**	0.0648
y24	-0.0233	0.0994	0.111**	0.0662
y25	0.0405	0.0994	0.104**	0.0840
y26	0.0418	-0.0499	0.109**	0.0417
y27	0.0702	-0.0499	0.0946*	0.0444
y28	0.0000888	-0.0499	0.0885*	0.0184
edu1	0.00561***	0.00537***	0.00563***	0.00496***
edu2	0.0144***	0.0144***	0.0136***	0.0135***
edu3	-0.0255***	-0.0255***	-0.0275***	-0.0265***
edu4	-0.0307***	-0.0307***	-0.0319***	-0.0319***
ch1	0.0360***	0.0362***	0.0341***	0.0356***
ch2	0.0133***	0.0135***	0.0106***	0.0124***
ch3	0.0183***	0.0185***	0.0152***	0.0172***
ch4	0.0144**	0.0146**	0.0110	0.0131*
ch5	0.0182	0.0184	0.0146	0.0168
ch6	0.00204	0.00230	-0.00153	0.000503
agegrp1	-0.136***	-0.135***	-0.134***	-0.136***
agegrp2	-0.135***	-0.134***	-0.133***	-0.135***
agegrp3	-0.0704***	-0.0699***	-0.0665***	-0.0701***
agegrp4	-0.00173	-0.00122	0.00420	-0.000275
agegrp5	0.0162***	0.0166***	0.0223***	0.0181***
agegrp6	0.00614	0.00655	0.0112**	0.00705
agegrp7	—	—	—	—
agegrp8	—	—	—	—
agegrp9	—	—	—	—
_cons	0.135***	0.135***	0.134***	0.136***
N	1816463	1809599	1896364	1822676
R-sq	0.302	0.302	0.305	0.304

Note: * p<0.10, ** p<0.05, *** p<0.01

Table 2-7 Linear Probability Models of Divorce & Onset of Limit: Women by Races

	Treatment1		Treatment2	
	(1) White	(2) Black	(1) White	(2) Black
	divorce	divorce	divorce	divorce
y0	0.00846	0.0644	0.0318**	0.117***
y1	0.0277	0.0296	0.0353**	0.139***
y2	0.0220	0.00587	0.0359**	0.158***
y3	0.00576	-0.0469	0.0297**	0.154***
y4	0.00460	-0.0113	0.0357**	0.160***
y5	0.00963	-0.0462	0.0363**	0.157***
y6	0.0126	-0.0444	0.0372**	0.169***
y7	-0.0281	-0.0386	0.0312**	0.174***
y8	-0.0104	0.0203	0.0274*	0.231***
y9	-0.0399	0.141	0.0321**	0.214***
y10	-0.0351	0.137	0.0426**	0.228***
y11	-0.0864**	0.219	0.0319*	0.277***
y12	-0.0747*	0.221	0.0263	0.269***
y13	-0.0522	0.221	0.0291	0.266***
y14	-0.0844**	0.207	0.0232	0.304***
y15	-0.0846***	0.209	0.0398	0.327***
y16	-0.0809**	0.194	0.0348	0.406***
y17	-0.0768**	0.194	0.0560**	0.401***
y18	-0.0920***	0.194	0.0416	0.402***
y19	-0.0926**	-0.0362	0.0557	0.368***
y20	-0.0857**	-0.0385	0.0539	0.374***
y21	-0.0692*	0.0664	0.0651	0.320***
y22	-0.0660	0.0664	0.0619	0.327***
y23	-0.104***	0.0664	0.0595	0.358***
y24	-0.101***	0.0690	0.0656	0.379***
y25	-0.104***	0.130	0.0549	0.361**
y26	-0.104***	0.130	0.0634	0.344**
y27	-0.101***	0.130	0.0676	0.318*
y28	-0.101***	0.130	0.0719	0.414***
edu1	0.00504***	0.00538***	0.00401**	0.00507***
edu2	0.0141***	0.0149***	0.0126***	0.0142***
edu3	-0.0259***	-0.0255***	-0.0276***	-0.0265***
edu4	-0.0305***	-0.0304***	-0.0332***	-0.0316***
ch1	0.0364***	0.0362***	0.0383***	0.0370***
ch2	0.0144***	0.0137***	0.0181***	0.0154***
ch3	0.0201***	0.0188***	0.0209***	0.0208***
ch4	0.0183**	0.0149**	0.0223***	0.0209***
ch5	0.0171	0.0197	0.0185	0.0271**
ch6	0.00219	0.00652	-0.000122	0.0129
agegrp1	-0.134***	-0.134***	-0.133***	-0.133***
agegrp2	-0.133***	-0.134***	-0.132***	-0.132***
agegrp3	-0.0686***	-0.0692***	-0.0646***	-0.0670***
agegrp4	-0.000383	-0.000731	0.00394	0.00152
agegrp5	0.0171***	0.0169***	0.0207***	0.0192***
agegrp6	0.00744	0.00694	0.00915**	0.00869*
agegrp7	—	—	—	—
agegrp8	—	—	—	—
agegrp9	—	—	—	—
_cons	0.134***	0.134***	0.133***	0.133***
N	1821860	1810198	1919400	1828896
R-sq	0.303	0.303	0.307	0.307

Note: * p<0.10, ** p<0.05, *** p<0.01

Table 2-8 Linear Probability Models of Divorce & Onset of Limit: Men by Origins

	Treatment1		Treatment2	
	(1) Hispanic	(2) Non-Hispanic	(1) Hispanic	(2) Non-Hispanic
	divorce	divorce	divorce	divorce
y0	0.0269	0.0494	0.0159	0.0636***
y1	0.0733	0.0404	0.0190	0.0657***
y2	0.169	0.0336	0.0351	0.0666***
y3	0.243*	0.0351	0.0762*	0.0651***
y4	0.243*	0.0149	0.0608	0.0677***
y5	0.130	0.0148	0.0881*	0.0609***
y6	0.0638	0.0358	0.134**	0.0700***
y7	-0.0966***	0.0156	0.146**	0.0650***
y8	-0.106***	0.0236	0.115*	0.0575***
y9	-0.106***	0.0781	0.0761	0.0587***
y10	-0.106***	0.0430	0.0596	0.0656***
y11	-0.141***	0.0348	0.0447	0.0642***
y12	-0.141***	0.0917	0.0667	0.0628***
y13	-0.141***	0.0974	0.0418	0.0566**
y14	0.248	0.0930	0.0674	0.0642***
y15	0.248	0.0424	0.101	0.0734***
y16	0.248	0.0496	0.116	0.0765***
y17	0.237	0.0627	0.135	0.0937***
y18	-0.106***	-0.0291	0.185	0.0690**
y19	-0.106***	-0.0295	0.204	0.0727**
y20	-0.106***	-0.0237	0.204	0.0682**
y21	-0.0812**	-0.0206	0.220	0.0724**
y22	-0.0812**	-0.0148	0.221	0.0759**
y23	-0.0812**	-0.0152	0.270	0.0782**
y24	-0.0812**	-0.00300	0.276*	0.0819**
y25	-0.0812**	0.0452	0.350**	0.0734*
y26	-0.0812**	0.0207	0.432*	0.0738*
y27	-0.0714*	0.0363	0.435**	0.0603
y28	-0.0714*	-0.0171	0.435**	0.0540
edu1	0.00541***	0.00554***	0.00583***	0.00483***
edu2	0.0144***	0.0144***	0.0154***	0.0118***
edu3	-0.0255***	-0.0256***	-0.0248***	-0.0294***
edu4	-0.0306***	-0.0308***	-0.0297***	-0.0343***
ch11	0.0363***	0.0360***	0.0365***	0.0332***
ch12	0.0135***	0.0132***	0.0139***	0.00901***
ch13	0.0186***	0.0183***	0.0191***	0.0133***
ch14	0.0147**	0.0143*	0.0153**	0.00877
ch15	0.0184	0.0181	0.0191	0.0123
ch16	0.00230	0.00200	0.00316	-0.00415
agegrp1	-0.135***	-0.136***	-0.133***	-0.136***
agegrp2	-0.134***	-0.135***	-0.133***	-0.135***
agegrp3	-0.0699***	-0.0703***	-0.0691***	-0.0669***
agegrp4	-0.00125	-0.00150	-0.000733	0.00532
agegrp5	0.0167***	0.0164***	0.0168***	0.0240***
agegrp6	0.00683	0.00607	0.00687	0.0118**
agegrp7	—	—	—	—
agegrp8	—	—	—	—
agegrp9	—	—	—	—
_cons	0.135***	0.135***	0.133***	0.136***
N	1808563	1817918	1814269	1912172
R-sq	0.302	0.303	0.302	0.306

Note: * p<0.10, ** p<0.05, *** p<0.01. (non-) Hispanic is short for (non-) Hispanic, Spanish or Latino.

Table 2-9 Linear Probability Models of Divorce & Onset of Limit: Women by Origins

	Treatment1		Treatment2	
	(1) Hispanic	(2) Non-Hispanic	(1) Hispanic	(2) Non-Hispanic
	divorce	divorce	divorce	divorce
y0	0.105	0.000447	0.138***	0.0344***
y1	0.201**	-0.00735	0.156***	0.0396***
y2	0.203*	-0.00990	0.149***	0.0438***
y3	0.241**	-0.0400*	0.167***	0.0369***
y4	0.245*	-0.0461**	0.174***	0.0406***
y5	0.290**	-0.0506**	0.189***	0.0406***
y6	0.247*	-0.0441*	0.199***	0.0391***
y7	0.0358	-0.0457*	0.135***	0.0396***
y8	0.0128	-0.0177	0.150***	0.0423***
y9	-0.0373	-0.0224	0.177***	0.0408***
y10	-0.0147	-0.0244	0.195***	0.0468***
y11	-0.129***	-0.0429	0.123*	0.0545***
y12	-0.129***	-0.0225	0.114*	0.0501***
y13	-0.126***	0.0232	0.118*	0.0512***
y14	-0.153***	-0.00844	0.163**	0.0458**
y15	-0.0503***	-0.0183	0.231***	0.0530**
y16	-0.0503***	-0.0261	0.225***	0.0626**
y17	-0.0542***	-0.0219	0.199**	0.0857***
y18	-0.0567***	-0.0318	0.259***	0.0759***
y19	-0.0567***	-0.0906**	0.307***	0.0795**
y20	-0.0567***	-0.0867**	0.216*	0.0868**
y21	-0.0567***	-0.0564	0.217*	0.0833**
y22	-0.0567***	-0.0467	0.217*	0.0801*
y23	—	-0.0759*	0.231*	0.0826*
y24	—	-0.0731*	0.233*	0.0920**
y25	—	-0.0695	0.180	0.0830*
y26	—	-0.0695	0.213	0.0914*
y27	—	-0.0671	0.215	0.0899
y28	—	-0.0671	0.215	0.108*
edu1	0.00537***	0.00495***	0.00544***	0.00361**
edu2	0.0146***	0.0143***	0.0147***	0.0127***
edu3	-0.0255***	-0.0260***	-0.0254***	-0.0288***
edu4	-0.0305***	-0.0306***	-0.0309***	-0.0340***
ch1	0.0365***	0.0361***	0.0369***	0.0385***
ch2	0.0139***	0.0145***	0.0142***	0.0195***
ch3	0.0191***	0.0197***	0.0200***	0.0223***
ch4	0.0173**	0.0157**	0.0171**	0.0251***
ch5	0.0181	0.0182	0.0234*	0.0219*
ch6	0.00176	0.00693	-0.00374	0.0146
agegrp1	-0.134***	-0.134***	-0.134***	-0.133***
agegrp2	-0.134***	-0.133***	-0.133***	-0.131***
agegrp3	-0.0693***	-0.0686***	-0.0690***	-0.0628***
agegrp4	-0.000891	-0.000303	-0.000210	0.00544
agegrp5	0.0167***	0.0171***	0.0176***	0.0219***
agegrp6	0.00701	0.00712	0.00753	0.0101**
agegrp7	—	—	—	—
agegrp8	—	—	—	—
agegrp9	—	—	—	—
_cons	0.134***	0.134***	0.134***	0.132***
N	1809337	1823931	1817641	1943057
R-sq	0.303	0.303	0.305	0.310

Note: * p<0.10, ** p<0.05, *** p<0.01. (non-) Hispanic is short for (non-) Hispanic, Spanish or Latino.

Chapter 3

3.1 Introduction

In the analysis contained in Chapter 1 and Chapter 2, I divided the reported health conditions in the 2004 *Survey of Income and Program Participation* (SIPP) into a group that appears to arrive randomly conditional on age versus those that appear to be more predictable. The six work limiting health conditions that appear to arrive largely exogenously given available covariates are cancer, carpal tunnel syndrome, deafness or serious trouble hearing, paralysis, thyroid trouble, and tumor cyst or growth. I then studied how the onset of work limiting health conditions affected divorce across those groups. Using information contained in retrospective histories available in the SIPP, particularly from the topical module on "work disability history" from wave 2, I constructed a panel over the individuals' lives. Using a panel linear probability model with fixed effects, I found that for men and women the onset of health problems that are unpredictable generally does not increase the likelihood of divorce while divorce behavior is closely related to the onset or evolution of a broader, arguably endogenous set of health conditions. I also found that the patterns of response vary by race and origin.

Beyond social behaviors such as divorce, there are also likely diverse effects of those health conditions on labor force participation, labor earnings, and employment status. In the literature, health is seen as an important characteristic associated with productivity in the labor market and thus gains great attention from health economists. Health status plays a

crucial role in determining the kind and amount of work a person can do at a job, and thus the earnings the person can earn from the job. According to Jean Mitchell (1990, pp. 928), "Poor health is associated with reduced hours of work, lower wage rates, early retirement and disability transfer programs."

In this chapter, I consider the role of all work limiting health conditions on earnings and employment but I distinguish between less predictable (exogenous) versus more predictable (endogenous) shocks. The onsets of six specific work limiting health conditions-- cancer, carpal tunnel syndrome, deafness or serious trouble hearing, paralysis, thyroid trouble, and tumor cyst or growth are grouped together as exogenous shocks. In contrast, the onsets of any other work limiting health conditions are seen as endogenous shocks because they are closely related to some demographic characteristics. The basis of these groupings is explained in Chapter 1 of this dissertation.

I use all waves of the core data and topical modules on work disability history from Wave 2 of the 2004 SIPP. The core data provides information on each respondent's earned income, employment status, work limitation, marital status, educational level, as well as static measures of gender, birth date, race and origin. The topical module provides retrospective information on the timing of onset of specific work limiting health problems. The analysis sample includes men and women who are observed employed in the panel at least once with no prior health conditions. I examine the effects of any as well as exogenous work limiting health conditions on earned income and employment status separately. I also examine the effects of the onset of any health condition on earned income and employment status across different demographic groups to further explore patterns of differential response by gender,

race and origin. The primary estimation method is difference-in-difference regression models with person and year fixed-effects.

The chapter proceeds with a literature review followed by a description of the data used. The methods and estimation models are then briefly outlined. Next, I present the estimates of difference-in-difference models of work limiting health conditions and earnings, and of work limiting health conditions and employment. Results of several robustness checks are also provided. A summary of the results concludes the analysis.

3.2 Literature Review

Becker (1964) conducted pioneering work relating health to labor market outcomes. He was responsible for seminal developments in human capital theory, in which he argued that the rationale for investing in health capital is similar to the rationale for investments in human capital through schooling and training. Health can be seen as a kind of capital that produces a payout of healthy time and a lower mortality risk in return for investments. Then Grossman (1972) took a major step forward to develop a model of the demand for "good health" based on the pioneering work of Becker. It is now a popular belief that poor health leads to reduced earnings due to a loss of human capital or a limit on the accumulation of human capital (both cognitive and non-cognitive) (Charles, 2003; Campolieti and Krashinsky, 2006; Haas et al., 2011)

Health status plays a crucial role in determining the kind and amount of work a person can do at a job, and thus the earnings the person can earn from the job and the decision to join the disability transfer programs. A number of papers have taken this perspective and made

use of either cross-sectional or longitudinal data to examine the relationship between the poor health in general and labor force participation. Stern (1989) used two measures of disability—symptoms from the 1978 *Survey of Disability and Work* (SDW) and diseases from the 1979 cohort of the *Health Interview Survey* (HIS79) to study the effects of disability on labor force participation. He found that although the two measures of disability are not perfect substitutes they all explain a significant portion of variation in labor force participation. Baldwin, Zeager and Flacco (1994) examined the differences in wage losses from impairments using the 1984 *Survey of Income and Program Participation*. They found that "impairments limiting mobility and strength are relatively more disabling for males than for females, while the opposite is true for impairments affecting sensory capacities and appearance. (pp. 883)" Lerner et al. (2003) designed a self-administered survey conducted in a firm to study the relationship of work limitation to productivity and provided evidence of a negative relationship between the two. Charles (2003) used data from the *Panel Study of Income Dynamics* (PSID) to study the dynamic effects of disability on earnings and found that disabled men experience sharp drops in earnings prior to the onset of a limitation and a rapid recover after onset; however there are significant long-term losses in annual earnings of about 12% per year. Campolieti and Krashinsky (2006) focused on the relationship between disabled male workers and earnings and found that wage losses are larger and more persistent for workers who did not return to work with their time-of-accident employer than for those who returned using data from the *Survey of Ontario Workers with Permanent Impairments (1989-90)*. Breslin et al. (2007) used data from the *Survey of Labor and Income Dynamics* (SLID) to study earnings losses for young workers in the year following a work disability

absence and they found that young workers with work disability have significant lower earnings compared to the controls in the following year. Nich Drydakis (2010) examined the labor market outcomes for individuals who self-report health conditions and found evidence of a penalty for the implied productivity limitation as well as wage discrimination. Using the self-reported health measure contained in the *Health and Retirement Study's Earnings Benefit File*, Haas, Glymour and Berkman (2011) found that people with poor childhood health have substantially decreased earnings over the work career in the labor market.

Rather than studying poor health in general, some researchers focus on specific health conditions. For example, Mitchell and Anderson (1989) addressed the effects of poor mental health on the labor force participation of older workers using data from the E*pidemiologic Catchment Area* (ECA) program and they found that poor mental health has a great impact on an individual's labor force participation status while economic and demographic characteristics are not important determinants. Mitchell (1990) used the 1978 *Survey of Disability and Work* to explore the effect of the onset of a chronic disease – arthritis – on work behavior over the life cycle and concluded that workers with arthritis lose a significant portion of their working career (as much as 13 years) due to poor health. Famulari (1992) addressed the effects of epilepsy of different severity on labor market performance and concluded that the seizure severity has a significant negative effect on the probability of employment, particularly for men and there is also a negative impact on hourly wages. Crook and Moldofsky (1994) examined the probability of recovery and return to work from a work related injury—musculoskeletal pain impairment -- and they found that men are more likely to return to work while women are more likely to remain at work once they return; older

workers are less likely to return and they have a higher probability of recurrence. Johnson, Baldwin and Butler (1998) compared labor force participation for people with back pain to those with other accidental injuries and concluded that they are much less likely to return to work or remain employed. Bultmann et al. (2007) studied the return-to-work trajectories in injured workers with musculoskeletal disorders and found that a sustained first return back to work does not refer to a complete recovery from musculoskeletal disorders and the rate of recurrence of work absence is high six months post-injury.

In this chapter, thirty different health conditions that lead to work limitation in the 2004 *Survey of Income and Program Participation* are considered. The work limiting health conditions are divided into two groups; those that arrive largely unexpectedly in life and those that are more endogenous depending on the demographic factors. Unlike most of the previous literature, I use panel data and difference-in-differences methods with fixed-effects.

The prior literature also addresses gender, race and education differences in the relationship between disabilities and employment. According to the study of Loprest, Rupp and Sandell (1995) on older men and women using the *Health and Retirement Survey*, men and single women experience larger negative effects of disabilities on labor force participation than married women. Bound, Schoenbaum and Waidmann (1995) used data from the *Health and Retirement Survey* (HRS) to examine race and education differences in disability and labor force participation and found that (pp. S227) "race and education differences in the health status of middle-aged men can explain a substantial fraction of black/white differences in labor force attachment and essentially all of the gap between men with different levels of education." Charles (2003) found that people who are "older at onset,

nonwhite, more chronically disabled, and less educated" (pp. 618) experience larger losses from disability and smaller recovery. Here, I also examine the effects of the onset of work limiting health conditions on earnings and employment among different demographic groups looking at effects by gender, race and origin.

3.3 Data

I combine all twelve waves of the core data of the 2004 SIPP and then merge on the core data and topical module on "work disability history" from wave 2. I thus have a panel data containing monthly observations for individuals from October 2003 to December 2007. However, since topical module of wave 2 contains retrospective information up to December of 2004, I only have information on exact onset dates of the 30 specific health conditions until December 2004 as the data in the retrospective module is collected at that time.

I notice that the 2004 SIPP data are not longitudinally edited and discrepancies exist in some cases for birth date, gender, race, origin, educational level, and marital status from wave to wave. For example, the same person is a child in one wave and an adult in the other; or the same person is a female in one wave but a male in the other. To address these inconsistencies in the analysis, after receiving advice from the Census Bureau, I choose the last respondent-reported value for birth year/month, gender, race and origin and pull backwards to assign that value to them across the whole panel. There are some other types of inconsistencies, such as transitions into never married from married or divorced or widowed status, or transitions into a lower level of educational status from a higher one. I address such issues in a similar way. Nineteen people are dropped because of severe discrepancies.

I select men and women who are observed employed at some point in time within the panel and have no health conditions prior to that time. They may later experience the onset of work limiting health conditions or just stay healthy through the whole panel. In the topical module of wave 2, respondents are asked whether they have a work limitation, when their work limitation began and which specific health condition caused their work limitation before December 2004. If it's after 2004 or the person is not included in the topical module in wave 2, I have no information about the onset of the health limitation.

However, in addition to the information contained in the retrospective module, in each wave of the core data, respondents are asked whether they had a work-limiting physical or mental condition. Based on the answers to this question, I can tell whether a person has the onset of any work limiting health conditions after 2004, which tremendously increases the sample size of people who experience the onset of health conditions after their employment in the panel. Combining the information on work limiting health conditions contained in the topical module and the core survey, I can tell whether a person experiences any health conditions by the end of year 2007 and I can tell the onset date of the health conditions. But what I cannot tell is which specific health condition it is after 2004; in other words, the timing of onset of specific work-limiting health conditions cannot be determined after the year 2004. Thus, the timing of the onset of all work health limits can be determined throughout the SIPP panel while the onset of specific groups of conditions can only be observed through 2004.

Those who meet the criteria of being in the sample, i.e. being initially at work and without prior health limits, are divided into three groups: a control group of individuals who never report the onset of a work related health limitation through the panel and two

alternative groups that experience work related health limits after their employment in the panel. The first group of employed individuals who report the onset of "exogenous" work limiting health conditions after they are employed in the panel is referred to as treatment group 1. As mentioned earlier, the six exogenous health problems that I found in the previous chapter that arrive largely unexpectedly include cancer, carpal tunnel syndrome, deafness or serious trouble hearing, paralysis, thyroid trouble, and tumor cyst or growth. Treatment group 2 includes individuals who report the onset of any work limiting health events after they are employed whether it is among these six conditions or not.

Among the 131,583 individuals contained in the panel, 70,069 persons meet the criteria I describe above: once employed in the panel and without prior health conditions before that time. Furthermore, there are 64,480 individuals in the control group; 42 in treatment group 1; and 5,589 in treatment group 2. Since I have a panel that contains observations of individuals from October 2003 to December 2007, there are 3,808,528 observations in total. 2,075,909 observations meet the above criteria, among which there are 1,884,340 observations in the control group, 1,308 observations are available for treatment group 1 and 191,569 total observations in treatment group 2.

Descriptive statistics are shown in Table 3-1 (for all people), Table 3-2 (for men) and Table 3-3 (for women) for all individuals, the control group, treatment group 1 and treatment group 2 respectively. All descriptive statistics are weighted based on the person weights provided in the SIPP. Some measures are not time-varying, such as gender, race and origin; while some variables are such as age, educational level, marital status, earnings and employment status. In the descriptive tables, information from three periods of time T1, T2

and T3 is shown. T1 refers to the first month that a person is employed in the panel; T2 represents the first time that a person experiences a work limiting health condition; and T3 refers to the last month that a person stays in the panel (last observation of each person). Since all people in the control group stay healthy through the end of the survey, T2 measures are only available for people in treatment group 1 and treatment group 2.

As is shown in Table 3-1, the proportion of men and women are close to each other for the control group (52.52% versus 47.48% in T1, 52.78% versus 47.22% in T3) and the treatment group 2 (49.92% versus 50.08% in T1, 50.62% versus 49.38% in T2, 50.27% versus 49.73% in T3). However, the difference is large for treatment group 1 (41.92% versus 58.08% in T1, 43.78% versus 56.22% in T2, and 39.33% versus 60.67% in T3), meaning that there are many more women than men who report onset of exogenous health conditions after they are employed. Whites and non-Hispanic, Spanish or Latino make up the greatest proportion of individuals. Distributions of race and origin across the control group, treatment group 1 and treatment group 2 are quite similar, although there seem to be slightly more blacks in the two treatment groups compared to the control group.

The mean ages in T1 are 36.29 for control group, 45.55 for treatment group 1 and 41.77 for treatment group 2; while in T3 the mean ages are 39.08 for control group, 46.97 for treatment group 1 and 44.43 for treatment group 2. In other words, people who later experience health conditions are relatively older than those who always stay healthy. Moreover, from the mean ages in T2, I can tell that people usually begin to have exogenous health conditions around 46 years old and experience any health conditions around 43 years old.

The proportions of bachelor's (16.47% in T1 and 18.59% in T3), master's or higher degree (8.12% in T1 and 9.32% in T3) are higher for control group; however, the proportions are much lower for treatment group 1 (12.52% in T1 and 15.16% in T3 for bachelor's; 2.44% in T1 and 0.91% in T3 for master's or higher degree) and treatment group 2 (10.36% in T1 and 11.18% in T3 for bachelor's; 5.06% in T1 and 5.62% in T3 for master's or higher degree). Those results are consistent with results from Chapter 2 that show that people with higher educational achievement tend to experience fewer work limitations.

The proportions of divorced people are much higher for treatment group 1 (22.99% in T1 and 21.38% in T3) and treatment group 2 (18.42% in T1 and 19.90% in T3) compared to the control group (11.04% in T1 and 11.85% in T3); which accords with the popular belief that divorce is linked to poor health.

The mean values of earnings are higher for the control group ($2,693 in T1 and $2,892 in T2), compared to the average in treatment group 1 ($2,660 in T1 and $2,101 in T2) and treatment group 2 ($2,315 in T1 and $1,763 in T2). More interestingly, for the control group, the earned income increases from T1 to T2; however, the earned income decreases for two treatment groups after the onset of health conditions. It accords with the general belief that earned income is negatively affected by poor health.

The proportions of employed people are all 100% in T1 for all three groups based on the selection criteria of the data set. However, the proportions of employed people drop more for treatment group 1 (73.55% in T3), more severely for treatment group 2 (66.64% in T3), compared to the control group (86.73% in T3). People are more likely to leave jobs after the onset of health conditions.

Table 3-2 shows the weighted descriptive statistics for men and Table 3-3 for women. Still, for both men and women, whites and non-Hispanic, Spanish and Latino people make up the largest proportions of the sample. Comparing Tables 3-2 and 3-3, I find that the mean ages for men and women in the control group and treatment group 2 are approximately the same. However, the mean ages for men in treatment group 1 (42.33 in T1, 42.33 in T2, and 42.67 in T3) are much younger than those for women in treatment group 1 (47.87 in T1, 48.48 in T2, and 49.75 in T3). In other words, women tend to experience the onset of the health conditions I term exogenous at an older age. The proportions of the groups with high educational achievement, such as some college, bachelor's, master's and higher degrees, are higher for women, and most women seem to have some college while most men seem to have high school diplomas (treatment group 1) or some college (control group and treatment group 2). The divorce proportions are much higher for women than for men for both the control group and two treatment groups. Mean earnings are much higher for men than for women for control group and treatment group 2 while there is a more dramatic drop in earnings for men than for women after they experience an exogenous work limitation (treatment group 1). The proportions of employed people in T2 or T3 are lower for women than for men in most cases across the three groups.

3.4 Methods

With the panel data, I can trace experiences and changes in individuals' lives over time. For this sample whose members are all observed initially employed, I am interested in isolating the effect of the onset of work limiting health conditions on earnings and

employment status. I exclude people who are never employed or people who experience health conditions prior to their employment in the panel to focus more specifically on the topic of the analysis. I make use of panel estimation methods that allow for constant unobserved differences across people to further control for the possibility of selection bias.

3.4.1 Difference-in-Difference

The typical difference-in-difference regression model that we estimate is:

$$\text{Outcome}_{it} = \beta_1 + \beta_2 \text{Treatment}_i + \beta_3 \text{Post}_t + \beta_4 (\text{Treatment} \times \text{Post})_{it} + \varepsilon_{i,t}$$

where the categorical variable Treatment=1 if the observation is in the treatment group, and the categorical variable Post=1 if it's the post treatment period. The coefficient β_4 is the difference-in-difference estimate that shows the difference in the outcome before and after the occurrence of treatment between control and treatment groups.

However, in this analysis, since the onset date of health conditions varies for each individual, I don't have a unitary post treatment period. As a result, I create a "Postsick" dummy variable which is equal to 1 for periods starting from the onset of health conditions for sick people. I then control for the time and person fixed effects.

In the main regression models, earnings of individual i at time t, $Earnings_{i,t}$, or the employment status of individual i at time t, $Employment_{i,t}$, is a function of (1) a dummy variable "Postsick" that indicates the periods starting from the onset of health conditions; (2) a vector of year dummies from year 2003 to year 2007 that shows the year fixed effect[4]; (3) the unobserved time-invariant person fixed-effect, σ_i; (4) a series of indicator variables for

[4] Instead of year fixed effects, I also try year-month fixed effects using year-month dummies. By either way, I have the similar regression results.

age groups at age t, $Age_{i,t,n}$, where n is from 1 to 8 representing 10-year-interval age groups to control for age but avoid collinearity issues at the same time; (5) a series of indicator variables for educational achievement at time t, $Edu_{i,t,l}$ where l is from 1 to 5 representing five educational levels (less than high school, high school graduates, some college, bachelor's, master's or higher degree); (6) a series of indicator variables for marital status at time t, $Marriage_{i,t,m}$, where m is from 1 to 4 representing four kinds of marital status (married, widowed, divorced, never married); and (7) the error term, $\varepsilon_{i,t}$:

$$\begin{aligned}&\mathrm{Earnings}_{i,t}\\&= \alpha + \beta\mathrm{Postsick}_t + \sum_{k=1}^{5}\gamma_k\mathrm{Year}_{t,k} + \sigma_i + \sum_{n=1}^{8}\delta_n\mathrm{Age}_{i,t,n} + \sum_{l=1}^{5}\theta_l\mathrm{Edu}_{i,t,l}\\&+ \sum_{m=1}^{4}\varphi_m\mathrm{Marriage}_{i,t,m}\\&+ \varepsilon_{i,t}\end{aligned} \qquad \text{Eq. (1)}$$

$$\begin{aligned}&\mathrm{Employment}_{i,t}\\&= \alpha + \beta\mathrm{Postsick}_t + \sum_{k=1}^{5}\gamma_k\mathrm{Year}_{t,k} + \sigma_i + \sum_{n=1}^{8}\delta_n\mathrm{Age}_{i,t,n}\\&+ \sum_{l=1}^{5}\theta_l\mathrm{Edu}_{i,t,l} + \sum_{m=1}^{4}\varphi_m\mathrm{Marriage}_{i,t,m}\\&+ \varepsilon_{i,t}\end{aligned} \qquad \text{Eq. (2)}$$

The primary coefficient of interest in Eq. (1) and Eq. (2) is the β, which is the difference-in-difference estimate that shows the change in earnings and employment status before and after the onset of health conditions between the treatment group and the control group. In addition, Eq. (1) and Eq. (2) enable me to estimate the relationship between

educational achievement and marital status on earnings and employment. I execute regression models with and without age group dummies, educational level dummies and marital status dummies, and I have similar difference-in-difference estimates for "Postsick".

The models are applied to men and women using the set of treatment group 1 (exogenous health conditions) and control group; as well as treatment group 2 (all reported health limitations) and control group. All models are estimated using STATA. Detailed descriptions of variables and analytical approach are provided next.

3.4.2 Measures

Dependent Variables

To capture a person's earnings and employment status, the earned income dummy and employment dummy are created as the dependent variables. SIPP collects information on many measures of income and earnings. For the purpose of the analysis, I use the total person's earned income for the reference month. The dependent variable "Earnings" is thus the monthly total earned income for the individual. SIPP also collects information on employment status each month. In the analysis, all of the following scenarios are considered employed during the reference month: (1) with a job entire month, worked all weeks; (2) with a job all month, absent from work without pay 1+ weeks, absence not due to layoff; (3) with a job all month, absent from work without pay 1+ weeks, absence due to layoff; (4) with a job at least 1 but not all weeks, no time on layoff and no time looking for work; (5) with a job at least 1 but not all weeks, some weeks on layoff or looking for work. The dependent variable "employment" equals one if the person is employed for the reference month and is zero

otherwise.

Independent Variables

The independent variable "Postsick" is created to capture the periods starting from the onset of health conditions for sick people. As mentioned earlier, combining the information contained in the core data and topical module, I can learn the onset year/month for a person by the end of year 2007. "Postsick" equals one if it is the month on or after the onset of health conditions and equals zero otherwise.

Control Variables

A series of year dummies are created to include in the estimations in order to capture year fixed-effects[5]. The reference period of 2004 SIPP covers from October 2003 to December 2007. Thus five year dummies are created: dyear1 for year 2003; dyear2 for year 2004; dyear3 for year 2005, dyear4 for year 2006; and dyear5 for year 2007.

Age group dummies are created. agegp1=1 if the person is 11 (11 is the minimum age in the data set) to 20 years old; agegp2=1 if the person is 21 to 30; agegp3=1 if the person is 31 to 40; agegp4=1 if the person is 41 to 50; agegp5=1 if the person is 51 to 60; agegp6=1 if the person is 61 to 70; agegp7=1 if the person is 71 to 80; agegp8=1 if the person is 81 to 90.

Education dummies are created to measure the change in a person's educational achievement over time. The SIPP collects information on individuals' highest degree received or grade completed each month. Five categories are created. The dummy "lesshighschl" represents less than high school level of education; "highschl" represents the high school graduates; "somecollege" represents some college but no degree or associate college

[5] As mentioned earlier, instead of using year fixed effects, I also try the year-month fixed effects. From October 2003 to December 2007, 51 year-month dummy variables are created. I have similar regression results using either year fixed-effects or the year-month fixed-effects.

degree; ”bachelor” is one if the person achieves the bachelor’s degree; ”master” is one if the person achieves master’s degree, professional school degree or doctorate degree.

Marital status dummies are created to measure the change in a person’s marital status over time. The SIPP core data contains information on individuals’ marital status each month. Four categorical variables are created to measure the influence of marital status on labor market behavior after the onset of work limiting health conditions. “married” is one for the months when the person is married with the spouse present or absent; ”widowed” is one for the months when the person is widowed; ”divorced” is one for the months when the person is divorced or separated; and ”nevermarried” is one for the months when the person is never married.

3.4.3 Analytical Approach

The baseline models are difference-in-difference regression models with year fixed-effects and person fixed-effects for earnings and employment, as shown in Tables 3-4 and 3-5. In each table, there are two parts: any health conditions and exogenous health conditions. Taking Table 3-4 as an example, the column “any health condition” examines the changes in earnings for employed individuals before and after the onset of any work limiting health conditions compared to individuals who never experience health conditions. I include individuals in the control group (those who never experience health conditions) and individuals in treatment group 2 (those who experience any health conditions after they are employed in the panel) in the sample to run the regressions; and the coefficient for “Postsick” would be the difference-in-difference estimate that shows the difference in earnings between

healthy and sick people after the onset of health conditions. For the column labeled "exogenous health condition", I include individuals in the control group and individuals in treatment group 1 to conduct the estimations; and the coefficients reported for "Postsick" capture the difference in employment status between continuously healthy people and others after the onset of exogenous health conditions. For either "any health condition" or "exogenous health condition" in Table 3-4 and Table 3-5, there are two models: one excludes control variables for age, educational levels and marital status and the other one includes control variables.

Furthermore, I extend the baseline models to take gender, race and origin into consideration, as shown in Tables 3-6 to 3-19. Since there are only 42 individuals who later experience exogenous health conditions, I don't have enough observations to precisely measure responsiveness to the onset of exogenous health conditions if I further divide the sample into different demographic groups. Thus, in Tables 3-6 to 3-19, I only consider the effects of the onset of any health conditions on earnings and employment among different demographic groups. To conduct these estimates, I include sample members with specific demographic characteristics in the control and treatment groups. Still, there are two models under each category in each table: one without and the other one with the control variables. Taking Table 3-6 as an example, I examine the difference in earnings for men and women separately before and after the onset of any health conditions compared to the men and women who always stay healthy. Thus, in column "Men", I include men from the control group and men in treatment group 2 in the estimation sample; while I include women who are always healthy in the control group and women in treatment group 2 in the estimation sample

used to obtain estimates shown in the column “Women”. The coefficient “Postsick” is the estimate of interest.

These tables are all formatted identically: Table 3-6 and Table 3-7 are based on gender for earnings and employment respectively; Table 3-8 and Table 3-9 are based on four races (Whites, Blacks, Asians, and residual); Table 3-10 and Table 3-11 are based on two origins (Hispanic, Spanish, or Latino versus non-Hispanic, Spanish or Latino); Table 3-12 and Table 3-13 are for men by races; Table 3-14 and Table 3-15 are for women by races; Table 3-16 and Table 3-17 are for men by origins; and Table 3-18 and Table 3-19 are for women by origins.

3.5 Results

Table 3-4 contains estimates of difference-in-difference models with person and year fixed-effects of the impact of the onset of both exogenous and the set of any health problems on earnings. At the 95% confidence level, people who later experience onset of any health condition tend to have lower earned income compared to the people who stay healthy. If there is no control variables added, the difference is about $540 less while if the control variables are added, the difference is approximately $519 less. People who later experience the onset of the exogenous set of health conditions seem to have an even lower earned income compared to the people who stay healthy. Without the control variables, the difference is about $860 less while the difference is $857 with the control variables. In other words, the onset of exogenous health conditions leads to a greater decrease in earned income.

Table 3-5 contains estimates of difference-in-difference models with person and year fixed-effects of the onset of health problems on employment status. As is shown in the table,

compared to those who are healthy the proportion of people who are employed after the onset of any health condition decreases by approximately 17.7% without control variables and 16.9% with control variables. So, the results are fairly robust to the inclusion of these covariates. The decrease in the proportion of employed people is even larger after people experience one of the exogenous health conditions (26.3% without control variables and 25.3% with control variables). Considering the results shown in Table 3-5 and those in Table 3-4 together, I can tell that the onset of exogenous health conditions—the health conditions that arrive largely unexpectedly in lives tend to have a more severe negative influence on earned income and employment status.

Tables 3-6 to 3-19 show the estimates of difference-in-difference models with person and year fixed-effects of the onset of any work limiting health conditions on the earned income and employment status among different demographic groups. Table 3-6 shows that after the onset of any of the work related health limitations, men with health problems have around $557 to $586 lower earned income compared to healthy men, while women with health conditions have $478 to $494 lower earned income compared to healthy women. In other words, the onset of health conditions tends to have a smaller impact on earnings of women compared to men. Table 3-7 shows that after the onset of any health problem, the proportion of men employed decreases by 16.6% or 15.9% while the decrease in the proportions is greater for women (18.7% or 17.9%). In other words, the onset of work limiting health problems tends to have a greater impact on employment of women.

Table 3-8 shows the impact of the onset of any health condition on earnings across the four races. The decrease in earnings after the onset of any health conditions is about $514 or

$493 for Whites; $652 or $624 for Blacks and $678 or $660 for Asians. Thus, compared to Whites, earnings for Blacks are more negatively influenced by the onset of health conditions. Similarly, I find in Table 3-9 that compared to the Whites, employment for Blacks is also more negatively affected by the onset of any work limiting health problems.

Based on Table 3-10 and Table 3-11, I find that the onset of any work limiting health condition has slightly more negative effects on earnings for Hispanic, Spanish or Latino; and there are more negative effects on employment for Hispanic, Spanish or Latino members of the sample as well.

Table 3-12 and Table 3-13 show that the onset of any work limiting health condition has a greater effect on earnings and employment for Black than for White men. Table 3-14 and Table 3-15 show that the onset of any work limiting health conditions has a greater negative influence on both earnings and employment for Black women than for White men. Table 3-16 and Table 3-17 show that the onset of any work limiting health problem has just slightly more negative impact on earnings and employment for non-Hispanic Spanish or Latino men than for Hispanic, Spanish or Latino men. Table 3-18 and Table 3-19 show that the onset of any work limiting health condition has a slightly more negative impact on both earnings and employment for Hispanic, Spanish or Latino women than for non-Hispanic, Spanish or Latino women; which is contrary to the above conclusion for men from Table 3-16 and Table 3-17.

3.6 Robustness Checks

One issue with the difference-in-difference model is that there is the equal trends

condition that the outcomes across the treatment group and control group are supposed to trend similarly before the occurrence of the treat event (onset of illness). In order to examine the validity of the difference-in-difference results, I conduct three kinds of robustness checks: (1) to include only the treated in the baseline difference-in-difference regression models; (2) to add pre-period time dummies to examine the trend before the onset of illness; (3) to add a linear individual time trend in the baseline regression models.

Table 3-20 and Table 3-21 are robustness check results that only include treatment groups. Table 3-22 and Table 3-23 are robustness check results that include one pre-period time dummy "postsick_1" that indicates one year before the onset of health conditions. Table 3-24 and Table 3-25 are robustness check results that include three pre-period time dummies "postsick_1", "postsick_2" and "postsick_3". "postsick_1" indicates one year before the onset of health conditions; "postsick_2" indicates two years before the onset of work limitation; and "postsick_3" indicates three years before the onset of health problems. Table 3-26 is the robustness check results that include the linear individual time trend.

Individuals experience the onset of health conditions at different times. In the treatment group, when some people begin to have work limitations, the others are still healthy. Thus, if only the treated are included, the regression results show the difference in earnings and employment for sick people before and after the onset of health conditions compared to people who have not yet experienced a work limitation. As shown in Table 3-20, after the onset of any work limiting health condition the earned income decreases by around $396: it decreases even more after the onset of exogenous health conditions. Table 3-21 indicates that the proportion of the employed decreases by 12.9% after the onset of any health conditions;

while it decreases by 17.9% (with educational level and marital status control variables added) after the onset of exogenous health conditions. In other words, the onset of exogenous health conditions has a greater adverse impact on the earnings and employment; which accords to the conclusions I draw from baseline models.

In Table 3-22 and Table 3-23, "postsick_1" is one for the years that is one year before the onset year of health conditions; and both treatment group and control group are included. To prove the validity of the baseline difference-in-difference models, the treated cannot have decreases in earnings or proportions of the employed before the sickness compared to the healthy people. Table 3-22 and Table 3-23 show that the coefficients of "Postsick" are very similar to those of baseline models in Table 3-4 and Table 3-5, which means that the earned income and proportions of the employed decrease after the sickness and the decrease is greater after the onset of exogenous health conditions. I also notice that the coefficients of "postsick_1" in both tables are statistically insignificant and are very close to zero; so I cannot say that the earned income and proportions of the employed have already decreased before the sickness. In other words, the decrease is caused by the treatment, that is, the onset of health conditions.

I also try to include three pre-time period lags in the baseline models with both the treatment and control groups included in the estimation samples, as shown in Table 3-24 and Table 3-25. When all pre-time period lags are included, it appears that earnings and proportions of the employed are increasing before the sickness, as indicated by the positive coefficients of "postsick_1", "postsick_2", and "postsick_3" in both tables when considering the sample of all health conditions. However, notably, when the exogenous health conditions

are considered, the “postsick_1” variables are statistically insignificant. Still, I have approximately similar results for “Postsick” in those two tables compared to the baseline results in Table 3-4 and Table 3-5.

In addition, I perform a robustness check by including linear individual time trends. Since there are over 70,000 individuals in the data set, STATA cannot create the necessary variables. Thus I include only the treatment group (5589 individuals) for the third kind of robustness checks with linear individual time trend. I create individual fixed-effects and a linear variable for each year, and interact each individual fixed-effect with a linear time trend. Then the linear individual time trends are added in the baseline regression models as a control. Table 3-26 shows the results of earnings and employment for individuals with any health conditions. There are 5589 linear individual time dummies from “year_id1” to “year_id5589” and only six of them are shown in the table. As shown in Table 3-26, there is a statistically significant drop in earned income as well as a lower probability of employment after the onset of any health condition. These estimates are similar in magnitude to those found in the core estimates of the analysis

Results from many of the robustness checks indicate that the model used in conducting the core estimates in the chapter are valid. Even where the event history parameters are at times statistically significant prior to the onset of a health limitation, the estimates are nonetheless similar to those in the core estimates of the chapter. On balance, I conclude that the models are well specified and that the estimates provided in the chapter are fairly robust to a range of alternative specifications.

3.7 Discussion and Conclusions

The research presented here considers the role of all work limiting health conditions on employed people's earnings and employment but I distinguish between less predictable (exogenous) versus more predictable (endogenous) shocks. I examine the influence of any work limiting health condition as well as six health conditions that appear to arrive largely exogenously -- cancer, carpal tunnel syndrome, deafness or serious trouble hearing, paralysis, thyroid trouble and tumor cyst or growth – on subsequent earnings and employment using data from the 2004 *Survey of Income and Program Participation* (SIPP).

Using information contained in all waves of the core data and the topical module on "work disability history", I create a panel data that includes monthly records of respondents from October 2003 to December 2007. The primary estimation method is a difference-in-difference regression model with person and year fixed-effects; where the earned income and dummy variable for employment status are used as dependent variables respectively. From the baseline regression models, I find that people who later experience the onset of any work limiting health condition tend to have lower earned income and the probability of being employed compared to the people who stay healthy and the adverse impact is larger for people with exogenous health conditions.

To better understand differences across demographic groups that might be important in driving these relationships, I examine groups based on gender, race and origin. Considering the limited observations of people with exogenous health conditions, I only examine the effects of any work limiting health conditions across those groups. I find that the impact of

any work limiting health conditions is consistently observed among different demographic groups but in different amounts. For example, work limiting health conditions tend to have a smaller impact on earnings of women but a greater impact on employment compared to men. Compared to Whites, earned income and employment for Blacks are also more negatively affected by the onset of any work limiting health problems. The onset of any health conditions has more negative effects on earnings and employment for Hispanic, Spanish or Latino members of the sample.

To further examine the validity of the difference-in-difference regression results, I conduct three kinds of robustness checks: (1) including only the treated in the baseline difference-in-difference regression models; (2) adding pre-period time dummies to examine the trend before the onset of illness; and (3) adding a linear individual time trend in the baseline regression models. Based on the results from three kinds of robustness checks, I believe that the baseline difference-in-difference results are valid.

3.8 References

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3.9 Appendix III

Table 3-1 Weighted Descriptive Statistics among Different Groups

	All Individuals		Control Group		Treatment Group 1			Treatment Group 2		
	T1	T3	T1	T3	T1	T2	T3	T1	T2	T3
Time-invariant Variables										
Gender										
Male	52.33	52.57	52.52	52.78	41.92	43.78	39.33	49.92	50.62	50.27
Female	47.67	47.43	47.48	47.22	58.08	56.22	60.67	50.08	49.38	49.73
Race										
White	81.84	81.05	82.12	81.42	77.15	78.27	79.47	78.41	77.29	77.10
Black	11.45	11.98	11.17	11.66	19.88	18.32	15.69	14.87	15.45	15.41
Asian	3.64	3.70	3.68	3.72	2.97	3.41	4.84	3.11	3.39	3.46
Residual	3.07	3.27	3.03	3.20	0	0	0	3.61	3.87	4.03
Origin										
Hispanic, Spanish, or Latino	13.69	14.10	13.83	14.25	12.75	14.79	13.42	11.89	12.26	12.40
non-Hispanic, Spanish, or Latino	86.31	85.90	86.17	85.75	87.25	85.21	86.58	88.11	87.74	87.60
Time-varying Variables										
Age	36.70 (0.06)	39.53 (0.05)	36.29 (0.06)	39.08 (0.06)	45.55 (1.68)	45.79 (1.73)	46.97 (1.53)	41.77 (0.19)	43.11 (0.19)	44.43 (0.19)
Education										
Less than High School	17.02	11.08	16.98	10.98	12.38	11.75	5.37	17.52	13.85	12.18
High School Graduate	25.90	26.43	25.57	26.01	39.85	41.39	46.45	29.90	31.44	30.95
Some College	33.14	35.49	32.82	35.07	32.81	33.22	32.10	37.16	38.54	40.06
Bachelor's Degree	16.01	17.97	16.47	18.59	12.52	12.28	15.16	10.36	10.74	11.18
Master's or Higher Degree	7.89	9.01	8.12	9.32	2.44	1.36	0.91	5.06	5.43	5.62
Marital Status										
Married	48.86	52.67	48.79	52.82	62.43	67.03	62.91	49.70	50.59	51.00
Widowed	1.70	1.97	1.64	1.87	5.66	5.92	6.33	2.44	2.65	2.99
Divorced	11.60	12.52	11.04	11.85	22.99	18.57	21.38	18.42	18.72	19.90
Never Married	37.85	32.84	38.53	33.46	8.91	8.49	9.38	29.44	28.04	26.10
Person's Earned Income	2,664 (14)	2,797 (15)	2,693 (14)	2,892 (15)	2,660 (261)	1,904 (284)	2,101 (313)	2,315 (39)	1,823 (37)	1,763 (37)
Employment	100	85.04	100	86.73	100	93.55	73.55	100	75.08	66.64
Number of Individuals	70,069	70,069	64,480	64,480	42	42	42	5,589	5,586	5,589
Number of Observations	2,075,909		1,884,340		1308			191,569		

Note: Numbers above are Mean(SE) or Percentage

The individuals included in the table are those who are employed at some point in time, have no health conditions prior to their employment, and may later have health problems

T1: the first time that a person is employed in the panel

T2: the first time that a person experiences work limitation (onset of health conditions)

T3: the last time that a person stays in the panel (last observation of each person)

Table 3-2 Weighted Descriptive Statistics among Different Groups for Men

	All Individuals		Control Group		Treatment Group 1			Treatment Group 2		
	T1	T3	T1	T3	T1	T2	T3	T1	T2	T3
Time-invariant Variables										
Race										
White	83.19	82.36	83.42	82.70	75.42	75.66	74.13	80.25	79.25	78.42
Black	10.25	10.72	10.05	10.45	17.50	16.55	13.55	12.84	13.31	13.79
Asian	3.57	3.67	3.59	3.66	7.08	7.80	12.31	3.39	3.62	3.83
Residual	2.99	3.25	2.95	3.19	0	0	0	3.52	3.82	3.96
Origin										
Hispanic, Spanish, or Latino	14.99	15.73	15.15	15.90	30.41	33.77	34.12	12.94	13.27	13.80
non-Hispanic, Spanish, or Latino	85.01	84.27	84.85	84.10	69.59	66.23	65.88	87.06	86.73	86.20
Time-varying Variables										
Age	36.70 (0.08)	39.54 (0.08)	36.27 (0.08)	39.07 (0.08)	42.33 (2.77)	42.33 (2.95)	42.67 (2.58)	42.26 (0.27)	43.70 (0.27)	44.96 (0.27)
Education										
Less than High School	18.29	12.30	18.26	12.27	16.65	15.69	10.37	18.71	14.72	12.62
High School Graduate	27.19	27.81	26.87	27.39	61.64	62.55	71.09	31.28	32.35	32.54
Some College	31.22	33.70	30.89	33.26	10.87	11.23	11.07	35.50	37.67	38.72
Bachelor's Degree	15.27	17.14	15.71	17.70	10.83	10.53	7.47	9.56	10.02	10.78
Master's or Higher Degree	8.00	9.02	8.23	9.34	0	0	0	4.95	5.25	5.33
Marital Status										
Married	49.78	53.90	49.54	53.92	77.59	77.56	79.81	52.89	53.73	53.70
Widowed	0.77	0.91	0.75	0.87	3.97	4.88	3.17	0.98	1.09	1.37
Divorced	10.06	10.88	9.66	10.38	14.33	13.44	12.02	15.22	15.52	16.59
Never Married	39.39	34.31	40.05	34.83	4.11	4.12	5.01	30.91	29.66	28.35
Person's Earned Income	3,209 (23)	3,394 (24)	3,246 (24)	3,507 (26)	2,276 (333)	1,370 (372)	1,480 (381)	2,731 (69)	2,149 (66)	2,099 (64)
Employment	100	87.78	100	89.34	100	95.88	70.53	100	75.84	70.02
Number of Individuals	35,901	35,901	33,199	33,199	16	16	16	2,702	2,700	2,702
Number of Observations	1,045,308		953,571		423			91,737		

Note: Numbers above are Mean(SE) or Percentage

The individuals included in the table are those who are employed at some point in time, have no health conditions prior to their employment, and may later have health problems

T1: the first time that a person is employed in the panel

T2: the first time that a person experiences work limitation (onset of health conditions)

T3: the last time that a person stays in the panel (last observation of each person)

Table 3-3 Weighted Descriptive Statistics among Different Groups for Women

	All Individuals		Control Group		Treatment Group 1			Treatment Group 2		
	T1	T3	T1	T3	T1	T2	T3	T1	T2	T3
Time-invariant Variables										
Race										
White	80.35	79.61	80.68	79.98	78.39	80.30	82.92	76.58	75.28	75.77
Black	12.77	13.37	12.41	13.02	21.61	19.70	17.08	16.90	17.64	17.04
Asian	3.71	3.73	3.79	3.79	0	0	0	2.82	3.16	3.10
Residual	3.16	3.29	3.12	3.22	0	0	0	3.70	3.92	4.10
Origin										
Hispanic, Spanish, or Latino	12.26	12.28	12.38	12.41	0	0	0	10.84	11.24	10.98
non-Hispanic, Spanish, or Latino	87.74	87.72	87.62	87.59	100	100	100	89.16	88.76	89.02
Time-varying Variables										
Age	36.69 (0.08)	39.51 (0.08)	36.30 (0.08)	39.09 (0.08)	47.87 (2.03)	48.48 (2.00)	49.75 (1.73)	41.29 (0.25)	42.50 (0.25)	43.89 (0.25)
Education										
Less than High School	15.63	9.72	15.57	9.53	9.29	8.68	2.13	16.33	12.97	11.74
High School Graduate	24.48	24.90	24.14	24.47	24.12	24.91	30.49	28.52	30.51	29.34
Some College	35.25	37.47	34.94	37.09	48.64	50.35	45.74	38.82	39.44	41.42
Bachelor's Degree	16.83	18.89	17.32	19.60	13.74	13.64	20.14	11.15	11.47	11.59
Master's or Higher Degree	7.78	9.00	8.01	9.30	4.21	2.42	1.50	5.18	5.62	5.91
Marital Status										
Married	47.84	51.30	47.96	51.60	51.48	58.82	51.96	46.51	47.38	48.28
Widowed	2.72	3.13	2.62	2.99	6.89	6.73	8.38	3.89	4.24	4.63
Divorced	13.28	14.35	12.57	13.49	29.24	22.56	27.45	21.62	22.01	23.25
Never Married	36.16	31.21	36.86	31.93	12.38	11.89	12.21	27.98	26.37	23.84
Person's Earned Income	2,066 (13)	2,136 (14)	2,080 (14)	2,205 (15)	2,936 (370)	2,320 (394)	2,503 (438)	1,900 (37)	1,489 (34)	1,423 (39)
Employment	100	82.00	100	83.82	100	91.73	75.51	100	74.30	63.22
Number of Individuals	34,168	34,168	31,281	31,281	26	26	26	2,887	2,886	2,887
Number of Observations	1,030,601		930,769		885			99,832		

Note: Numbers above are Mean(SE) or Percentage

The individuals included in the table are those who are employed at some point in time, have no health conditions prior to their employment, and may later have health problems

T1: the first time that a person is employed in the panel

T2: the first time that a person experiences work limitation (onset of health conditions)

T3: the last time that a person stays in the panel (last observation of each person)

Table 3-4 Difference-in-Difference with Person and Year Fixed-effects: Earnings & Onset of Health Conditions

	Earnings			
	Any Health Condition		Exogenous Health Condition	
postsick	-540.4***	-518.6***	-860.2***	-857.1***
dyear1	-321.5***	-262.8***	-336.8***	-278.8***
dyear2	-281.6***	-235.3***	-295.5***	-249.5***
dyear3	-187.9***	-158.0***	-197.0***	-166.8***
dyear4	-65.24***	-51.44***	-70.34***	-56.25***
dyear5	—	—	—	—
agegp1		727.6***		784.1***
agegp2		909.0***		944.7***
agegp3		1109.4***		1134.7***
agegp4		1204.7***		1233.7***
agegp5		1203.3***		1229.4***
agegp6		594.2***		592.0***
agegp7		480.1***		488.4***
agegp8		—		—
lesshighschl		96.23***		73.01***
highschl		297.7***		272.5***
somecollege		306.8***		274.3***
bachelor		1117.4***		1093.0***
master		1808.3***		1807.1***
married		187.8***		197.4***
widowed		-70.48		-62.52
divorced		189.5***		171.0**
nevermarried		—		—
_cons	2901.4***	1181.7***	2957.3***	1222.8***
N	2075890	2075890	1885629	1885629
R-sq	0.719	0.720	0.724	0.724

Note: * p<0.10, **p<0.05, ***p<0.01

Table 3-5 Difference-in-Difference with Person and Year Fixed-effects: Employment & Onset of Health Condition

	Employment			
	Any Health Condition		Exogenous Health Condition	
postsick	-0.177***	-0.169***	-0.263***	-0.253***
dyear1	-0.0513***	-0.0292***	-0.0562***	-0.0336***
dyear2	-0.0288***	-0.0119***	-0.0340***	-0.0167***
dyear3	-0.0181***	-0.00799***	-0.0221***	-0.0116***
dyear4	-0.00615***	-0.00200	-0.00896***	-0.00463***
dyear5	—	—	—	—
agegp1		0.345***		0.350***
agegp2		0.400***		0.401***
agegp3		0.398***		0.394***
agegp4		0.399***		0.392***
agegp5		0.385***		0.378***
agegp6		0.290***		0.287***
agegp7		0.175***		0.178***
agegp8		—		—
lesshighschl		0.386***		0.379***
highschl		0.538***		0.538***
somecollege		0.555***		0.550***
bachelor		0.648***		0.644***
master		0.716***		0.720***
married		-0.00911		-0.0101
widowed		-0.0601***		-0.0570**
divorced		0.00268		0.00201
nevermarried		—		—
_cons	0.862***	-0.0755*	0.864***	-0.0689
N	2075890	2075890	1885629	1885629
R-sq	0.546	0.553	0.549	0.557

Note: * p<0.10, **p<0.05, ***p<0.01

Table 3-6 Difference-in-Difference with Person and Year Fixed-effects: Earnings & Onset of Any Health Condition by Gender

	Earnings			
	Men		Women	
postsick	-586.1***	-557.1***	-494.0***	-478.1***
dyear1	-357.2***	-293.3***	-284.1***	-229.8***
dyear2	-321.6***	-272.2***	-239.6***	-195.9***
dyear3	-215.8***	-184.6***	-158.7***	-130.0***
dyear4	-80.20***	-65.43***	-49.59***	-36.40***
dyear5	—	—	—	—
agegp1		1088.0***		340.0
agegp2		1320.6***		474.2**
agegp3		1589.3***		592.2***
agegp4		1721.6***		647.7***
agegp5		1692.3***		675.7***
agegp6		860.3***		300.2*
agegp7		639.6***		317.2***
agegp8		.		.
lesshighschl		84.56***		109.5***
highschl		323.2***		270.0***
somecollege		301.9***		308.3***
bachelor		1256.4***		1007.5***
master		2186.4***		1541.3***
married		287.5***		85.99
widowed		-346.1		50.06
divorced		196.2		180.1***
nevermarried		—		—
_cons	3550.7***	1277.5***	2207.7***	1058.4***
N	1045297	1045297	1030593	1030593
R-sq	0.717	0.718	0.690	0.691

Note: * p<0.10, **p<0.05, ***p<0.01

Table 3-7 Difference-in-Difference with Person and Year Fixed-effects: Employment & Onset of Any Health Condition by Gender

	Employment			
	Men		Women	
postsick	-0.166***	-0.159***	-0.187***	-0.179***
dyear1	-0.0584***	-0.0340***	-0.0437***	-0.0236***
dyear2	-0.0319***	-0.0131***	-0.0255***	-0.0104***
dyear3	-0.0200***	-0.00864***	-0.0161***	-0.00723**
dyear4	-0.00899***	-0.00414*	-0.00316	0.000301
dyear5	—	—	—	—
agegp1		0.290***		0.408***
agegp2		0.361***		0.448***
agegp3		0.362***		0.441***
agegp4		0.362***		0.444***
agegp5		0.351***		0.426***
agegp6		0.257***		0.332***
agegp7		0.180***		0.170***
agegp8		—		—
lesshighschl		0.373***		0.399***
highschl		0.532***		0.545***
somecollege		0.526***		0.583***
bachelor		0.641***		0.662***
master		0.716***		0.725***
married		0.0291***		-0.0479***
widowed		-0.0626**		-0.0717**
divorced		0.0202*		-0.0162
nevermarried		—		—
_cons	0.892***	-0.0163	0.831***	-0.148**
N	1045297	1045297	1030593	1030593
R-sq	0.543	0.552	0.543	0.550

Note: * p<0.10, **p<0.05, ***p<0.01

Table 3-8 Difference-in-Difference with Person and Year Fixed-effects: Earnings & Onset of Any Health Condition by Race

	Earnings							
	White		Black		Asian		Residual	
postsick	-514.4***	-492.9***	-652.4***	-624.4***	-677.8***	-656.9***	-486.5***	-466.8***
dyear1	-317.9***	-262.5***	-234.2***	-166.7**	-551.8***	-446.9***	-470.5***	-392.4***
dyear2	-280.3***	-236.8***	-220.4***	-167.8***	-467.5***	-386.6**	-319.0***	-255.0***
dyear3	-191.8***	-164.0***	-133.5***	-98.05**	-350.7***	-296.3**	-97.76	-56.80
dyear4	-65.80***	-52.92***	-47.79	-31.14	-119.2	-94.23	-47.96	-25.79
dyear5	—	—	—	—	—	—	—	—
agegp1		774.8***		-249.3		2813.5*		1344.1
agegp2		964.2***		-23.32		2780.1*		1412.8
agegp3		1105.4***		275.1		3423.8**		1885.0
agegp4		1210.6***		294.7		3595.9**		1881.2
agegp5		1260.9***		117.4		3378.3**		1249.6
agegp6		633.1***		-240.7		2379.1*		833.2
agegp7		485.6***		364.5		560.0***		923.6***
agegp8		—		—		—		—
lesshighschl		89.56***		144.2**		94.93		122.3*
highschl		283.3***		406.4***		136.9		419.3***
somecollege		290.7***		446.5***		51.78		484.8***
bachelor		1110.8***		1005.3***		1308.9***		1399.9***
master		1809.0***		1574.9***		3283.3***		1356.7***
married		195.9***		-15.47		448.7		280.4
widowed		-72.50		-304.7		362.4		691.8
divorced		168.2**		45.26		835.1		805.8
nevermarried		—		—		—		—
_cons	2979.1***	1231.4***	2244.1***	1586.6**	3728.0***	-941.2	2342.1***	-8.795
N	1697280	1697280	233611	233611	70048	70048	74951	74951
R-sq	0.720	0.720	0.644	0.645	0.738	0.739	0.764	0.765

Note: * p<0.10, **p<0.05, ***p<0.01

Table 3-9 Difference-in-Difference with Person and Year Fixed-effects: Employment & Onset of Any Health Condition by Race

	Employment							
	White		Black		Asian		Residual	
postsick	-0.167***	-0.160***	-0.226***	-0.218***	-0.202***	-0.199***	-0.167***	-0.161***
dyear1	-0.0475***	-0.0251***	-0.0586***	-0.0387***	-0.0856***	-0.0700***	-0.0839***	-0.0542***
dyear2	-0.0269***	-0.00978***	-0.0281***	-0.0133*	-0.0464***	-0.0342**	-0.0584***	-0.0357**
dyear3	-0.0171***	-0.00690***	-0.0155**	-0.00626	-0.0380***	-0.0304**	-0.0304**	-0.0169
dyear4	-0.00567***	-0.00151	-0.00270	0.00128	-0.00778	-0.00521	-0.0281**	-0.0219*
dyear5	—	—	—	—	—	—	—	—
agegp1		0.311***		0.524***		0.839***		0.509***
agegp2		0.360***		0.628***		0.885***		0.540***
agegp3		0.361***		0.615***		0.895***		0.477***
agegp4		0.365***		0.615***		0.870***		0.438***
agegp5		0.353***		0.582***		0.846***		0.439***
agegp6		0.260***		0.504***		0.668***		0.344***
agegp7		0.158***		0.295**		0.501***		0.0174**
agegp8		—		—		—		—
lesshighschl		0.398***		0.261***		0.334***		0.411***
highschl		0.551***		0.401***		0.469***		0.598***
somecollege		0.564***		0.424***		0.567***		0.611***
bachelor		0.655***		0.499***		0.766***		0.717***
master		0.723***		0.524***		1.050***		0.716***
married		-0.00791		-0.0223		-0.0307		0.0395
widowed		-0.0473**		-0.144***		-0.0489		-0.0357
divorced		0.00339		-0.0119		-0.0136		0.0685
nevermarried		—		—		—		—
_cons	0.867***	-0.0466	0.833***	-0.163	0.862***	-0.665***	0.843***	-0.250*
N	1697280	1697280	233611	233611	70048	70048	74951	74951
R-sq	0.547	0.555	0.547	0.552	0.549	0.556	0.509	0.519

Note: * p<0.10, **p<0.05, ***p<0.01

Table 3-10 Difference-in-Difference with Person and Year Fixed-effects: Earnings & Onset of Any Health Condition by Origin

	Earnings			
	Hispanic, Spanish or Latino		non-Hispanic, Spanish or Latino	
postsick	-541.7***	-530.8***	-539.6***	-515.7***
dyear1	-405.6***	-344.5***	-308.4***	-250.2***
dyear2	-327.3***	-277.5***	-274.1***	-228.7***
dyear3	-214.4***	-180.8***	-183.4***	-154.4***
dyear4	-62.24**	-46.00	-65.48***	-52.46***
dyear5	—	—	—	—
agegp1		988.8*		677.7***
agegp2		1131.5**		865.6***
agegp3		1217.8**		1091.7***
agegp4		1195.3**		1209.4***
agegp5		1577.5***		1173.5***
agegp6		1156.8***		553.0***
agegp7		584.5**		472.2***
agegp8		—		—
lesshighschl		45.69		103.6***
highschl		171.6**		321.2***
somecollege		301.7***		312.0***
bachelor		852.2***		1151.9***
master		1163.1***		1882.5***
married		153.0**		196.0***
widowed		230.2		-88.66
divorced		70.21		211.6***
nevermarried		—		—
_cons	2050.1***	512.0	3035.2***	1272.8***
N	210512	210512	1865378	1865378
R-sq	0.666	0.666	0.719	0.720

Note: * p<0.10, **p<0.05, ***p<0.01

Table 3-11 Difference-in-Difference with Person and Year Fixed-effects: Employment & Onset of Any Health Condition by Origin

	Employment			
	Hispanic, Spanish or Latino		non-Hispanic, Spanish or Latino	
postsick	-0.208***	-0.204***	-0.172***	-0.164***
dyear1	-0.0856***	-0.0618***	-0.0459***	-0.0241***
dyear2	-0.0558***	-0.0365***	-0.0244***	-0.00796***
dyear3	-0.0277***	-0.0158**	-0.0164***	-0.00664***
dyear4	-0.00305	0.00206	-0.00653***	-0.00259
dyear5	—	—	—	—
agegp1		0.613**		0.334***
agegp2		0.666**		0.389***
agegp3		0.669**		0.384***
agegp4		0.663**		0.387***
agegp5		0.642**		0.374***
agegp6		0.566**		0.279***
agegp7		0.444*		0.167***
agegp8		—		—
lesshighschl		0.296***		0.399***
highschl		0.444***		0.552***
somecollege		0.468***		0.569***
bachelor		0.430***		0.677***
master		0.399***		0.758***
married		-0.00239		-0.0111
widowed		0.00108		-0.0660***
divorced		0.00320		0.00145
nevermarried		—		—
_cons	0.844***	-0.212	0.865***	-0.0868**
N	210512	210512	1865378	1865378
R-sq	0.537	0.542	0.548	0.555

Note: * p<0.10, **p<0.05, ***p<0.01

Table 3-12 Difference-in-Difference with Person and Year Fixed-effects: Earnings & Onset of Any Health Condition for Men by Races

	Earnings							
	White Men		Black Men		Asian Men		Residual Men	
postsick	-580.3***	-551.0***	-632.5***	-600.1***	-505.3*	-479.2*	-551.4***	-537.8***
dyear1	-370.7***	-311.7***	-116.5	-39.29	-475.7*	-358.5	-629.4***	-533.2***
dyear2	-335.9***	-290.6***	-147.7**	-86.88	-417.1*	-326.2	-377.0**	-304.4**
dyear3	-237.5***	-208.8***	-42.91	-3.623	-333.2	-274.0	-54.07	-10.49
dyear4	-90.00***	-75.91***	-9.936	6.216	-107.8	-81.54	-7.221	15.93
dyear5	—	—	—	—	—	—	—	—
agegp1		1077.5***		371.4		4287.0*		508.5
agegp2		1325.4***		615.4		4335.7*		581.0
agegp3		1565.4***		621.3		4807.0**		1686.0
agegp4		1701.7***		782.1		4981.7**		1496.3
agegp5		1725.9***		502.1		4939.4**		609.2
agegp6		885.6***		145.3		3069.4		-150.6
agegp7		635.6***		839.4*		527.1**		—
agegp8		—		—		—		—
lesshighschl		66.04**		265.4**		34.21		64.06
highschl		278.8***		670.1***		182.6		498.8***
somecollege		256.8***		730.4***		-5.898		456.5
bachelor		1276.8***		1093.3***		1330.1**		902.6**
master		2092.5***		2608.6***		4421.8*		291.4
married		258.1***		109.2		1001.1**		386.3
widowed		-438.2		-255.8		1160.9**		806.4
divorced		101.0		259.0		1715.9*		1151.1
nevermarried		—		—		—		—
_cons	3665.9***	1451.6***	2474.4***	983.3	4584.8***	-2265.3	2781.1***	1050.7
N	873230	873230	99810	99810	35562	35562	36695	36695
R-sq	0.715	0.716	0.641	0.642	0.738	0.740	0.769	0.770

Note: * p<0.10, **p<0.05, ***p<0.01

Table 3-13 Difference-in-Difference with Person and Year Fixed-effects: Employment & Onset of Any Health Condition for Men by Races

	Employment							
	White Men		Black Men		Asian Men		Residual Men	
postsick	-0.156***	-0.149***	-0.224***	-0.213***	-0.166***	-0.167***	-0.183***	-0.177***
dyear1	-0.0544***	-0.0300***	-0.0684***	-0.0421***	-0.0734***	-0.0593***	-0.116***	-0.0884***
dyear2	-0.0302***	-0.0113***	-0.0320***	-0.0122	-0.0345**	-0.0240	-0.0724***	-0.0522***
dyear3	-0.0198***	-0.00826***	-0.0100	0.00165	-0.0321**	-0.0272*	-0.0441**	-0.0327*
dyear4	-0.00900***	-0.00408*	0.00411	0.00894	-0.00814	-0.00619	-0.0497***	-0.0441***
dyear5	—	—	—	—	—	—	—	—
agegp1		0.247***		0.540***		0.910***		0.460***
agegp2		0.314***		0.648***		0.996***		0.494***
agegp3		0.314***		0.659***		1.000***		0.461***
agegp4		0.319***		0.664***		0.964***		0.369***
agegp5		0.311***		0.622***		0.914***		0.405***
agegp6		0.219***		0.545***		0.738***		0.294***
agegp7		0.153***		0.437***		0.496***		—
agegp8		—		—		—		—
lesshighschl		0.385***		0.257***		0.239***		0.389***
highschl		0.534***		0.455***		0.492***		0.588***
somecollege		0.527***		0.430***		0.633***		0.542***
bachelor		0.651***		0.495***		0.699***		0.633***
master		0.721***		0.544***		0.920***		0.765***
married		0.0328***		-0.0131		0.0515**		0.0314
widowed		-0.0451		-0.247**		-0.00309		0.0337
divorced		0.0193		0.0131		0.00954		0.0475
nevermarried		—		—		—		—
_cons	0.897***	0.0263	0.841***	-0.218	0.907***	-0.747***	0.879***	-0.120
N	873230	873230	99810	99810	35562	35562	36695	36695
R-sq	0.543	0.552	0.551	0.557	0.518	0.531	0.523	0.533

Note: * p<0.10, **p<0.05, ***p<0.01

Table 3-14 Difference-in-Difference with Person and Year Fixed-effects: Earnings & Onset of Any Health Condition for Women by Races

	Earnings							
	White Women		Black Women		Asian Women		Residual Women	
postsick	-444.5***	-430.4***	-672.1***	-640.6***	-871.3***	-883.0***	-417.9***	-402.2***
dyear1	-260.5***	-207.6***	-331.0***	-274.4***	-633.2***	-550.8***	-304.3***	-243.9***
dyear2	-220.1***	-177.5***	-279.9***	-236.7***	-519.4***	-456.8***	-258.5***	-203.5***
dyear3	-142.3***	-114.8***	-208.3***	-178.8**	-369.3***	-333.6***	-142.4**	-104.1
dyear4	-39.68***	-27.29*	-78.52	-64.23	-132.0	-109.9	-89.97*	-72.43
dyear5	—	—	—	—	—	—	—	—
agegp1		433.5**		-548.3		—		1141.4**
agegp2		566.3***		-339.2		-130.4		1185.5***
agegp3		588.5***		174.1		896.2		1022.4***
agegp4		660.1***		71.69		1059.6		1192.6***
agegp5		738.5***		-37.93		712.3		869.4***
agegp6		346.5**		-409.8		736.2		904.6***
agegp7		325.6***		109.5		251.9		819.9***
agegp8		—		—		—		—
lesshighschl		117.2***		46.12		57.01		194.2*
highschl		287.2***		186.2*		-14.55		392.6**
somecollege		324.2***		211.8*		-47.38		585.9***
bachelbr		979.2***		879.8***		1140.1**		1741.4***
master		1592.4***		882.9***		2061.1***		2074.7***
married		138.5**		-121.8		-344.1		-40.04
widowed		147.0		-426.8**		-519.0*		405.6
divorced		241.2***		-126.9		-222.6		226.6
nevermarried		—		—		—		—
_cons	2219.3***	964.9***	2050.4***	1893.8*	2811.3***	1761.6***	1884.5***	68.70
N	824050	824050	133801	133801	34486	34486	38256	38256
R-sq	0.696	0.697	0.640	0.641	0.698	0.700	0.711	0.714

Note: * p<0.10, **p<0.05, ***p<0.01

Table 3-15 Difference-in-Difference with Person and Year Fixed-effects: Employment & Onset of Any Health Condition for Women by Races

	Employment							
	White Women		Black Women		Asian Women		Residual Women	
postsick	-0.178***	-0.170***	-0.227***	-0.219***	-0.243***	-0.229***	-0.151***	-0.144***
dyear1	-0.0399***	-0.0194***	-0.0506***	-0.0359***	-0.0984***	-0.0813***	-0.0502**	-0.0194
dyear2	-0.0234***	-0.00794*	-0.0248**	-0.0141	-0.0587***	-0.0442**	-0.0439*	-0.0183
dyear3	-0.0143***	-0.00533	-0.0200**	-0.0133	-0.0442**	-0.0342*	-0.0165	-0.000828
dyear4	-0.00203	0.00136	-0.00824	-0.00546	-0.00756	-0.00386	-0.00582	0.00110
dyear5	—	—	—	—	—	—	—	—
agegp1		0.384***		0.569***		—		0.656**
agegp2		0.415***		0.669***		-0.00436		0.686***
agegp3		0.416***		0.638***		0.0260		0.592**
agegp4		0.420***		0.634***		0.0147		0.600**
agegp5		0.404***		0.607***		0.0148		0.559**
agegp6		0.310***		0.531***		-0.166		0.475**
agegp7		0.164**		0.224		-0.191		0.0159
agegp8		—		—		—		—
lesshighschl		0.412***		0.270***		0.376***		0.436***
highschl		0.570***		0.361***		0.407***		0.619***
somecollege		0.602***		0.422***		0.486***		0.670***
bachelbr		0.666***		0.506***		0.759***		0.791***
master		0.733***		0.518***		1.099***		0.718***
married		-0.0477***		-0.0297		-0.145***		0.0521
widowed		-0.0585*		-0.121**		-0.169		-0.0934
divorced		-0.0129		-0.0293		-0.0947		0.0924
nevermarried		—		—		—		—
_cons	0.834***	-0.136*	0.827***	-0.183	0.814***	0.267	0.807***	-0.479*
N	824050	824050	133801	133801	34486	34486	38256	38256
R-sq	0.545	0.552	0.544	0.548	0.555	0.563	0.496	0.506

Note: * p<0.10, **p<0.05, ***p<0.01

Table 3-16 Difference-in-Difference with Person and Year Fixed-effects: Earnings & Onset of Any Health Condition for Men by Origins

	Earnings			
	Hispanic, Spanish or Latino Men		non-Hispanic, Spanish or Latino Men	
postsick	-559.1***	-543.2***	-589.6***	-556.9***
dyear1	-454.4***	-397.5***	-340.7***	-275.7***
dyear2	-364.6***	-317.8***	-314.0***	-264.2***
dyear3	-237.1***	-203.9***	-211.8***	-181.3***
dyear4	-82.83**	-65.95	-79.54***	-65.78***
dyear5	—	—	—	—
agegp1		772.6		989.9**
agegp2		931.6		1236.6***
agegp3		1025.1		1553.2***
agegp4		1066.1*		1706.5***
agegp5		1283.5**		1655.6***
agegp6		543.4		819.6***
agegp7		-181.1***		642.6***
agegp8		—		—
lesshighschl		-37.12		103.9***
highschl		107.2		368.0***
somecollege		298.4**		312.8***
bachelor		658.6**		1336.1***
master		994.9		2319.8***
married		265.7**		296.8***
widowed		291.9		-397.0
divorced		-39.01		236.3*
nevermarried		—		—
_cons	2405.5***	1109.5*	3750.8***	1417.3***
N	113385	113385	931912	931912
R-sq	0.687	0.688	0.715	0.716

Note: * p<0.10, **p<0.05, ***p<0.01

Table 3-17 Difference-in-Difference with Person and Year Fixed-effects: Employment & Onset of Any Health Condition for Men by Origins

	Employment			
	Hispanic, Spanish or Latino Men		non-Hispanic, Spanish or Latino Men	
postsick	-0.160***	-0.157***	-0.166***	-0.159***
dyear1	-0.0989***	-0.0733***	-0.0515***	-0.0274***
dyear2	-0.0594***	-0.0387***	-0.0271***	-0.00869***
dyear3	-0.0317**	-0.0188**	-0.0178***	-0.00684**
dyear4	-0.00586	-0.0000151	-0.00942***	-0.00487**
dyear5	—	—	—	—
agegp1		0.266**		0.279***
agegp2		0.346***		0.347***
agegp3		0.352***		0.345***
agegp4		0.347***		0.346***
agegp5		0.331***		0.336***
agegp6		0.210**		0.246***
agegp7		0.0305***		0.179***
agegp8		—		—
lesshighschl		0.269***		0.390***
highschl		0.406***		0.553***
somecollege		0.407***		0.548***
bachelor		0.390***		0.679***
master		0.395***		0.763***
married		0.0518*		0.0239**
widowed		0.0361		-0.0741**
divorced		0.00664		0.0198*
nevermarried		—		—
_cons	0.896***	0.175	0.891***	-0.0360
N	113385	113385	931912	931912
R-sq	0.523	0.529	0.547	0.556

Note: * p<0.10, **p<0.05, ***p<0.01

Table 3-18 Difference-in-Difference with Person and Year Fixed-effects: Earnings & Onset of Any Health Condition for Women by Origins

	Earnings			
	Hispanic, Spanish or Latino Women		non-Hispanic, Spanish or Latino Women	
postsick	-520.3***	-520.0***	-490.1***	-472.8***
dyear1	-344.6***	-280.0***	-275.5***	-222.9***
dyear2	-281.3***	-228.4***	-233.4***	-191.5***
dyear3	-186.8***	-152.0***	-154.4***	-126.9***
dyear4	-36.72	-21.58	-51.16***	-38.62***
dyear5	—	—	—	—
agegp1		509.6		331.2
agegp2		630.1		466.9**
agegp3		691.9		594.5***
agegp4		578.1		676.9***
agegp5		1147.9***		656.5***
agegp6		1084.2***		260.7
agegp7		807.5***		295.0***
agegp8		—		—
lesshighschl		144.9**		104.3***
highschl		243.0**		273.7***
somecollege		317.8***		306.5***
bachelor		1046.4***		1005.3***
master		1325.8***		1564.2***
married		30.56		96.06
widowed		248.4		42.17
divorced		152.7		187.7**
nevermarried		—		—
_cons	1589.8***	513.7	2293.6***	1110.8***
N	97127	97127	933466	933466
R-sq	0.585	0.586	0.694	0.695

Note: * p<0.10, **p<0.05, ***p<0.01

Table 3-19 Difference-in-Difference with Person and Year Fixed-effects: Employment & Onset of Any Health Condition for Women by Origins

	Employment			
	Hispanic, Spanish or Latino Women		non-Hispanic, Spanish or Latino Women	
postsick	-0.264***	-0.259***	-0.178***	-0.169***
dyear1	-0.0688***	-0.0467***	-0.0401***	-0.0203***
dyear2	-0.0513***	-0.0338**	-0.0217***	-0.00696*
dyear3	-0.0227*	-0.0122	-0.0150***	-0.00635*
dyear4	0.000518	0.00462	-0.00356	-0.000229
dyear5	—	—	—	—
agegp1		0.637**		0.395***
agegp2		0.658**		0.438***
agegp3		0.651**		0.430***
agegp4		0.644**		0.435***
agegp5		0.618**		0.419***
agegp6		0.595**		0.320***
agegp7		0.575**		0.153**
agegp8		—		—
lesshighschl		0.327***		0.409***
highschl		0.491***		0.550***
somecollege		0.539***		0.589***
bachelor		0.489***		0.681***
master		0.432***		0.759***
married		-0.0645**		-0.0458***
widowed		-0.0177		-0.0740**
divorced		-0.0102		-0.0172
nevermarried		—		—
_cons	0.778***	-0.289	0.839***	-0.149**
N	97127	97127	933466	933466
R-sq	0.530	0.536	0.544	0.551

Note: * p<0.10, **p<0.05, ***p<0.01

Table 3-20 Difference-in-Difference with Person and Year Fixed-effects: Earnings & Onset of Any Health Condition (robustness checks that include only treatment groups)

	Earnings			
	Any Health Condition		Exogenous Health Condition	
postsick	-391.2***	-396.3***	-612.2***	-624.6***
dyear1	-21.14	10.81	154.9	226.1
dyear2	-23.68	-2.169	183.8	197.8
dyear3	-41.19	-28.52	11.35	25.19
dyear4	3.360	8.697	68.18	119.1
dyear5	—	—	—	—
agegp1		-77.47		—
agegp2		355.6		-1749.0**
agegp3		663.2**		-1172.2*
agegp4		698.8**		-1264.5**
agegp5		727.1**		-613.7**
agegp6		281.1		—
agegp7		—		—
agegp8		—		—
lesshighschl		1062.6***		937.3***
highschl		1242.5***		—
somecollege		1354.9***		1222.9***
bachelor		1912.4***		—
master		1907.8***		—
married		38.33		-198.0
widowed		-188.1		-1922.1***
divorced		229.5		-682.0**
nevermarried		—		—
_cons	2205.3***	218.0	2663.3***	3565.2***
N	191569	191569	1308	1308
R-sq	0.613	0.614	0.757	0.767

Note: * p<0.10, **p<0.05, ***p<0.01

Table 3-21 Difference-in-Difference with Person and Year Fixed-effects: Employment & Onset of Any Health Condition (robustness checks that include only treatment groups)

	Employment			
	Any Health Condition		Exogenous Health Condition	
postsick	-0.128***	-0.129***	-0.185***	-0.179***
dyear1	0.0446***	0.0509***	0.00718	0.0377
dyear2	0.0607***	0.0646***	0.0327	0.0467
dyear3	0.0382***	0.0398***	-0.124	-0.111
dyear4	0.0265***	0.0268***	-0.0190	0.00435
dyear5	—	—	—	—
agegp1		0.138		—
agegp2		0.225**		-0.408
agegp3		0.284***		-0.340
agegp4		0.310***		-0.379*
agegp5		0.299***		-0.0936
agegp6		0.201**		—
agegp7		—		—
agegp8		—		—
lesshighschl		0.665***		0.390***
highschl		0.710***		—
somecollege		0.782***		0.695***
bachelor		0.836***		—
master		0.683***		—
married		-0.00772		-0.274***
widowed		-0.0776		-0.414***
divorced		0.00323		-0.257***
nevermarried		—		—
_cons	0.804***	-0.201	0.983***	1.221***
N	191569	191569	1308	1308
R-sq	0.510	0.513	0.578	0.597

Note: * p<0.10, **p<0.05, ***p<0.01

Table 3-22 Difference-in-Difference with Person and Year Fixed-effects: Earnings & Onset of Any Health Condition (robustness checks that include one pre-period time dummy)

	Earnings			
	Any Health Condition		Exogenous Health Condition	
postsick	-547.7***	-526.4***	-861.3***	-860.6***
postsick_1	-16.02	-17.07	-3.864	-12.22
dyear1	-321.6***	-262.9***	-336.8***	-278.8***
dyear2	-281.6***	-235.3***	-295.5***	-249.5***
dyear3	-187.9***	-158.0***	-197.0***	-166.8***
dyear4	-65.17***	-51.36***	-70.34***	-56.25***
dyear5	—	—	—	—
agegp1		727.4***		784.1***
agegp2		908.8***		944.7***
agegp3		1109.3***		1134.7***
agegp4		1204.6***		1233.7***
agegp5		1203.2***		1229.4***
agegp6		594.2***		592.0***
agegp7		480.1***		488.4***
agegp8		—		—
lesshighschl		96.27***		73.01***
highschl		297.8***		272.5***
somecollege		306.9***		274.3***
bachebr		1117.6***		1093.0***
master		1808.5***		1807.1***
married		187.8***		197.4***
widowed		-70.57		-62.51
divorced		189.5***		171.0**
nevermarried		—		—
_cons	2902.0***	1182.4***	2957.3***	1222.8***
N	2075890	2075890	1885629	1885629
R-sq	0.719	0.720	0.724	0.724

Note: * p<0.10, **p<0.05, ***p<0.01

Table 3-23 Difference-in-Difference with Person and Year Fixed-effects: Employment & Onset of Any Health Condition (robustness checks that include one pre-period time dummy)

	Employment			
	Any Health Condition		Exogenous Health Condition	
postsick	-0.176***	-0.169***	-0.268***	-0.260***
postsick_1	0.00191	0.000959	-0.0174	-0.0257
dyear1	-0.0512***	-0.0292***	-0.0562***	-0.0336***
dyear2	-0.0288***	-0.0119***	-0.0340***	-0.0167***
dyear3	-0.0181***	-0.00799***	-0.0221***	-0.0116***
dyear4	-0.00616***	-0.00200	-0.00896***	-0.00463***
dyear5	—	—	—	—
agegp1		0.345***		0.350***
agegp2		0.400***		0.401***
agegp3		0.398***		0.394***
agegp4		0.399***		0.392***
agegp5		0.385***		0.378***
agegp6		0.290***		0.287***
agegp7		0.175***		0.178***
agegp8		—		—
lesshighschl		0.386***		0.379***
highschl		0.538***		0.538***
somecollege		0.555***		0.550***
bachebr		0.648***		0.644***
master		0.716***		0.720***
married		-0.00911		-0.0101
widowed		-0.0601***		-0.0570**
divorced		0.00268		0.00201
nevermarried		—		—
_cons	0.862***	-0.0756*	0.864***	-0.0689
N	2075890	2075890	1885629	1885629
R-sq	0.546	0.553	0.549	0.557

Note: * p<0.10, **p<0.05, ***p<0.01

Table 3-24 Difference-in-Difference with Person and Year Fixed-effects: Earnings & Onset of Any Health Condition (robustness checks that include three pre-period time dummies)

	Earnings			
	Any Health Condition		Exogenous Health Condition	
postsick	-430.4***	-417.6***	-861.3***	-860.6***
postsick_1	123.7***	112.6***	-3.864	-12.22
postsick_2	314.8***	293.1***	—	—
postsick_3	317.3**	291.4**	—	—
dyear1	-333.1***	-274.0***	-336.8***	-278.8***
dyear2	-287.5***	-241.1***	-295.5***	-249.5***
dyear3	-190.3***	-160.6***	-197.0***	-166.8***
dyear4	-66.02***	-52.27***	-70.34***	-56.25***
dyear5	—	—	—	—
agegp1		738.4***		784.1***
agegp2		918.1***		944.7***
agegp3		1117.4***		1134.7***
agegp4		1211.2***		1233.7***
agegp5		1209.8***		1229.4***
agegp6		602.8***		592.0***
agegp7		483.9***		488.4***
agegp8		—		—
lesshighschl		93.92***		73.01***
highschl		295.7***		272.5***
somecollege		303.8***		274.3***
bachelor		1112.2***		1093.0***
master		1800.3***		1807.1***
married		187.1***		197.4***
widowed		-70.37		-62.51
divorced		189.6***		171.0**
nevermarried		—		—
_cons	2893.2***	1170.4***	2957.3***	1222.8***
N	2075890	2075890	1885629	1885629
R-sq	0.719	0.720	0.724	0.724

Note: * p<0.10, **p<0.05, ***p<0.01

Table 3-25 Difference-in-Difference with Person and Year Fixed-effects: Employment & Onset of Any Health Condition (robustness checks that include three pre-period time dummies)

	Employment			
	Any Health Condition		Exogenous Health Condition	
postsick	-0.162***	-0.156***	-0.268***	-0.260***
postsick_1	0.0191***	0.0161***	-0.0174	-0.0257
postsick_2	0.0382***	0.0337***	—	—
postsick_3	0.0411***	0.0361**	—	—
dyear1	-0.0527***	-0.0305***	-0.0562***	-0.0336***
dyear2	-0.0295***	-0.0126***	-0.0340***	-0.0167***
dyear3	-0.0184***	-0.00828***	-0.0221***	-0.0116***
dyear4	-0.00626***	-0.00211	-0.00896***	-0.00463***
dyear5	—	—	—	—
agegp1		0.346***		0.350***
agegp2		0.401***		0.401***
agegp3		0.399***		0.394***
agegp4		0.400***		0.392***
agegp5		0.385***		0.378***
agegp6		0.291***		0.287***
agegp7		0.176***		0.178***
agegp8		—		—
lesshighschl		0.385***		0.379***
highschl		0.538***		0.538***
somecollege		0.555***		0.550***
bachelor		0.648***		0.644***
master		0.715***		0.720***
married		-0.00919		-0.0101
widowed		-0.0601***		-0.0570**
divorced		0.00268		0.00201
nevermarried		—		—
_cons	0.861***	-0.0770*	0.864***	-0.0689
N	2075890	2075890	1885629	1885629
R-sq	0.546	0.553	0.549	0.557

Note: * p<0.10, **p<0.05, ***p<0.01

Table 3-26 Difference-in-Difference with Person and Year Fixed-effects: Earnings, Employment & Onset of Any Health Condition (robustness checks that include linear individual time trend)

	Any Health Conditions			
	Earnings		Employment	
postsick	-410.1***	-413.4***	-0.134***	-0.134***
year_id1	272.5***	274.7***	0.0331***	0.0340***
year_id2	-1705.9***	-1703.1***	-0.397***	-0.395***
year_id3	152.1***	154.2***	0.0602***	0.0610***
.....				
year_id5587	-516.5***	-514.3***	-0.181***	-0.180***
year_id5588	-242.4***	-216.8***	-0.0111*	0.00429
year_id5589	50.83	-12.00	0.0343***	0.0358**
dyear1	-55.23	-52.80	-0.0832***	-0.0796***
dyear2	-61.56	-58.77	-0.0325*	-0.0302*
dyear3	-50.49	-49.25	-0.0183*	-0.0174*
dyear4	—	—	—	—
dyear5	—	—	—	—
agegp1		-197.8		0.0698
agegp2		-27.69		0.0630
agegp3		68.10		0.0966
agegp4		30.36		0.100
agegp5		92.92		0.0986
agegp6		-17.72		0.0723
agegp7		—		—
agegp8		—		—
lesshighschl		776.7*		0.484***
highschl		985.3**		0.477***
somecollege		938.0*		0.536***
bachebr		1163.9**		0.530***
master		1549.8**		0.429***
married		42.13		-0.0504
widowed		-190.6		-0.0411
divorced		198.7		-0.00207
nevermarried		—		—
_cons	20956.1	30297.5	64.22***	62.47***
N	191569	191569	191569	191569
R2	0.701	0.701	0.655	0.655

Note: * p<0.10, **p<0.05, ***p<0.01