The Effect of Involuntary Job Displacement on Health Insurance

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Abstract:

Involuntary job loss is a common occurrence in the US labor market, with 5.3 million workers losing long-terms jobs during the 2001 recession and subsequent two years of sluggish recovery (US Department of Labor, 2003). This is likely to have added to the growing number of Americans without health insurance, yet little evidence exists on how involuntary job displacement is causally related to health insurance status. Theory predicts that a firm in distress would attempt to stay afloat by cutting their operational costs, of which labor compensation is one component. After re-employment, formerly displaced workers are expected suffer losses in compensation due to a loss of firm specific human capital. Prior research indicates that workers who are about to be displaced earn less than their non-displaced counterparts due presumably to wage cuts by firms in distress that start prior to the date of separation. Similarly, studies of the wage experience in the new job show persistently lower wages for previously displaced workers. The wage literature also highlights the role of spousal labor supply in protecting these workers' family income. However, there is no empirical evidence on whether non-wage compensation is affected as well. This is an important omission because employment related health insurance is the lowest cost source of coverage for most non-elderly Americans, leaving those who lose employment vulnerable to becoming uninsured.

In this paper, we use panel data to test whether involuntarily displaced workers suffer losses in their health insurance coverage relative to similar workers who are not displaced. Considering the period prior to displacement, we test if differences in health insurance coverage exist, and if so, how far back in time these losses occur. Post displacement, we investigate if previously displaced workers are 'permanently scarred' on their new job in terms of their health insurance coverage. For both prior and post displacement, we test the extent to which other sources of health insurance cushion the effects of displacement on health insurance. We find that workers who are subsequently displaced from jobs are less likely to have own-employer provided health insurance than otherwise similar workers who are not displaced, and that this difference starts up to 18 months prior to displacement. Once re-employed, formerly displaced workers fare worse than other new workers who voluntarily left their previous jobs in terms of finding own-employer health insurance on the new job, although all new workers experience some gains in health insurance over time. Other sources of health insurance play a very important role in protecting the health insurance coverage of these workers in both the pre- and the post-displacement period.

Introduction

The rapid deterioration of economic growth that occurred since 2001 has resulted in massive job cuts and unemployment rates of over six percent.[1] Job displacement is expected to entail losses in the marginal revenue product of labor as it reduces the return to specialized human capital. It is likely to result in lower wages as well as non wage compensation, which on average constituted about a quarter of total compensation in 1997 (Pierce 2001). While we have considerable evidence on the behavior of wages in the period around displacement, we are relatively unaware of how non-wage benefits are affected. This paper estimates the effect of job displacement on health insurance coverage, prior to displacement and after subsequent re-employment. Understanding these dynamics is important not only because of recent and continuing layoffs, but also because job-based health insurance plays a vital role in protecting the workers' families and in limiting the financial risks they face (Levy and Meltzer, 2004). This question is also relevant because of the budgetary strain that unemployed and uninsured individuals place on federal and state governments through their use of public insurance or charity care.[2] Understanding the process by which workers recover from job-loss is important for its own sake too. For example, recent debates in Congress on measures to assist unemployed workers considered health insurance assistance through COBRA subsidies (Kapur and Marquis, 2003), and expansions to programs such as Trade Adjustment Assistance Reform Act of 2002 (TAARA) continue to be considered. While the

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[1] http://www.bls.gov/news.release/empsit.nr0.htm, access date June 28th, 2003. For a table of mass layoffs from August 2002 to July 2006 by month, see http://www.bls.gov/news.release/mmls.t01.htm (August '06)
[2] Cawley and Simon (2005), and Ku and Garrett (2000) show that rising unemployment rate causes more people to rely on public forms of health insurance.

unemployment compensation system replaces a portion of lost earnings, no such system exists to replace fringe benefits lost while unemployed.

The object of this paper is to study the effects of involuntary displacement on workers' health insurance coverage, considering the periods prior to and post displacement.[3] Specifically, before the job loss, are the workers who are about to be displaced less likely to have employer health insurance at the point of displacement compared to their non-displaced counterparts? How far back in time does this trend start, and how does it develop up to the point of displacement? For the period after the displacement, we look at the health insurance coverage of previously displaced new workers compared with new workers who were not displaced. We follow the workers as they accrue time on the new job to test if the differences persist. Throughout, we focus on employer provided health insurance as our outcome, but also test whether any other source of health insurance coverage, especially spousal coverage, plays a role in protecting the workers against uninsurance.

We find that on average, displaced workers are 13 percent less likely to be covered by employer health insurance in their own name than non-displaced workers in the last full month before the job loss event. However, the difference in coverage is evident in a statistically significant manner up to 12 months prior to the actual displacement. This gap between displaced and non-displaced workers increases the closer we get to the date of displacement, but is non-existent in statistically and economically

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[3] In all these analyses, we study actual health insurance receipt, rather than offers from employers. While it would be interesting to look at the two effects separately, the survey data available only contain information on whether workers are actually receiving health insurance. To some degree, this is a preferred outcome to study as it reflects changes in generosity of coverage (e.g. if employers increase worker premium copays, or switch to less generous plans, workers may respond by dropping the coverage) as well as in employers' offer decisions.

meaningful terms 24 months prior to displacement suggesting that these differences

emerge due to the impending displacement. For new workers, we find that those who

were previously displaced are 15 percentage points less likely to have employer health

insurance relative to other new workers who left previous jobs for voluntary reasons.

However, we find that both groups experience a similar increase in coverage with the

duration on the job, and that these two sets of workers are more similar in access to any

coverage than there are in employer health insurance. In fact, formerly displaced workers

are about seven percentage points more likely to have spousal health insurance than other

new workers when on their new job.

Previous Literature

Wage losses and displacement

The literature on wage losses of displaced workers documents that workers begin

suffering wage cuts prior to the termination of the job (Jacobsen, LaLonde and Sullivan

{JLS}1993; de la Rica, 1995; and Ruhm, 1991), and thus focusing only on post-

displacement losses would clearly underestimate the total costs suffered by these

workers. JLS 1993 use administrative earnings records of high-tenure individuals who

leave distressed firms in Pennsylvania and find that wage cuts start occurring up to 3

years before the actual job displacement, with a decline of about 15 percent during those

three years. These losses, which are thought to be attempts by firms to adjust to lower

demand in the product market, are generally correlated with the local labor market

conditions, and the industry of the workers. Although they use rich data linking

employers and employees, a shortcoming of this paper is the focus on one state. Ruhm

(1991) presents evidence from a smaller but nationally representative data set, the Panel

Study of Income Dynamics (PSID), showing that pre-separation losses are on the order of 6 to 10 percent of earnings. De La Rica (1995) uses the Displaced Worker Supplement to the CPS (DWS), which yields a much larger sample of displaced workers than the PSID and is nationally representative unlike the administrative data used by JLS. Using comparison groups from the March Current Population Survey (CPS), she finds that displaced workers earn about 9 percent less at the time of displacement than otherwise similar workers. No studies have looked at whether there is a correspondingly lower probability of receiving health insurance prior to displacement, nor how early this loss starts and what other sources of health insurance they draw upon, a necessary step to better understand the effect of job displacement on health insurance coverage.

The vast literature on the *post*-re-employment experiences of displaced workers has likewise focused on wages. (See Farber, 2003 and 2005, and Fallick, 1996, for recent reviews of this literature.) For example, Carrington and Zaman (1994) consider the heterogeneity in wage loss that workers experience after re-employment and find that some of differences can be explained by the type of inter-industry transition. The wage literature has also looked at how long displaced workers are 'scarred' by their displacement (Ruhm, 1991), finding that wages remain lower for displaced workers compared to non-displaced workers even 2 years into the new job. More recent evidence from Sweden, however, shows that workers almost fully recover about three years after displacement in terms of wages and employment, but that they remain more vulnerable relative to other workers during recessions as much as 13 years after displacement (Eliason and Storrie, 2004). In terms of the role of spousal labor supply, work by Stephens (2002) has found that in the case of worker displacement, the added worker

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hypothesis does appear to be present, and that in the long run about 25 percent of the husband's lost earnings are replaced by the wife's increased labor supply.

Unemployment and Health Insurance

A few recent papers have looked at how unemployment is associated with health insurance coverage, although most have not considered involuntary employment changes separately from all job separations. Gruber and Madrian (1997) and Kapur and Marquis (2003) find that job loss in general is associated with a large drop in health insurance. Both papers find that while COBRA provides coverage that is cheaper than privately bought coverage, it is still unaffordable for most unemployed workers. Gruber and Madrian (1997) assert that COBRA laws increase the probability that a worker has health insurance after unemployment by only 6.7 percent. Berger et al. (1999) find that COBRA eligibility increases the probability of health insurance among the unemployed by 9.5 percent, while eligibility for spousal health insurance raises it by over 30 percent. This suggests that spousal health insurance should serve to cushion losses in health insurance through displacement to a larger extent than COBRA.

In a related paper, Simon (2001) compares the compensation package workers receive at their old and new jobs post displacement to see whether workers face a tradeoff between wages and health insurance. She finds that rather than exhibiting a compensating wage tradeoff of the expected sign, those losing wages also tend to lose health insurance, even after controlling for an extensive set of job quality characteristics and person fixed effects. This suggests that wage loss and health insurance loss are difficult to disentangle empirically because they are both indicators of an ill-fated job search, and that further

information about the quality of the new and old jobs is necessary to detect compensating wage differentials. She also provides some preliminary evidence that the loss of health insurance is not randomly distributed across industries.

Literature at an aggregate level also looks at the effect of the state of the economy, including the local unemployment rate, on workers' likelihood of having health insurance. Cawley and Simon (2005) find that a rise in unemployment reduces health insurance coverage for men (but not for women and children, due to the existence of public insurance programs), and that a recession per se has no statistically detectable effect on health insurance for any group. Holahan and Garrett (2001) find that a one percentage point increase in unemployment is associated with a 1.5 million increase in Medicaid enrollment, and Glied and Jack (2003) find that unemployment rates are more strongly correlated with insurance coverage for well-educated workers.

Hypotheses

Although there is no universally accepted definition of displacement (Fallick, 1996), the phenomenon generally refers to workers who experience a job separation due to no fault of their own but rather a demand shock to their sector/firm. Since workers are paid their marginal revenue product of labor, any negative productivity shock will reduce compensation. Theoretically, an establishment experiencing negative demand shocks may start reducing wages/stop granting raises before eventually cutting jobs in an attempt to survive. Firms may similarly cut benefits by shifting to less generous health insurance coverage, using larger co-pays, or eliminating health benefits altogether. An ideal test of this hypothesis would use data on the generosity of the health benefit plans offered to

workers, information not available in any survey with information on displacement, to the authors' knowledge. However, whether workers actually hold employer health insurance from their employer may capture both the availability and generosity of health benefits. Workers are expected to drop health insurance coverage if its cost rises above their marginal valuation of it as a result of the firm increasing cost sharing (the extreme version of which is to cease offering coverage altogether). To the extent that workers have access to alternative sources of coverage e.g. spousal employer coverage, the switch may occur sooner. We also expect that there will be less of a drop in any health insurance relative to employer health insurance because of the availability of alternative sources depending on individual circumstances, such as spousal employer coverage and individual market coverage.

Firms may not be able to adjust fringe benefit compensation as easily as they adjust wage compensation in response to demand shocks. The institutional arrangements by which health insurance is provided are different from setting wages. For example, Internal Revenue Service non-discrimination rules may prevent a firm from selectively dropping health insurance for some of its workers who would experience layoff relative to other workers, but may find it easier to selectively decrease wages. Firms may also face constraints in being able to switch to less generous coverage only during open enrollment times (although in theory they could stop providing health insurance whenever the firm fails).

In the period post-displacement, we expect that for similar reasons as expressed above, displaced workers' marginal revenue product will be lower and they will receive less in fringe benefits as well as wages. Institutional details are important to keep in mind

here too; firms could require workers to be employed for a certain period prior to receiving benefits (using so-called "waiting periods", which are distinct from periods during which coverage is not provided for pre-existing conditions), thus it is important to compare displaced workers at their new job relative to other new job seekers,[4] and also to expect rapid gains in health insurance past the first few months. It is also important to see whether the trajectory of any health insurance is different from employer health insurance, as the uncertain environment of a job displacement may have caused workers to switch on to spousal health insurance to some extent, and there may continue to be covered by that plan due to inertia even after subsequent employment. Thus, our hypotheses suggest that there could be a causal impact of job loss on pre and post displacement health insurance, by time from displacement and by type of health insurance (any source vs. employer health insurance). In the next section, we describe our empirical strategy in testing these hypotheses.

Methods

Our analysis uses data mainly from the Survey of Income and Program Participation (SIPP). The SIPP has the advantage of being a longitudinal dataset that allows us to follow people over time matching the timing of job transitions to health insurance transitions, a useful feature when looking at the trajectory of health insurance coverage prior to displacement and after re-employment. We compare workers' experience over time as they enter into and out of displacement, and we also compare workers who will be or have been displaced involuntarily with those who are never

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[4] We consider new workers to a job who are transitioning from another job rather than entering the labor market for the first time.

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displaced involuntarily (at least during their time in the SIPP). To extend our analysis of the post-displacement experience of workers, we use data from the Displaced Worker Supplements to the CPS as the sample size in the SIPP does not allow us to examine characteristics of both old and new jobs simultaneously. We also conduct some checks with the CPS data related to pre-displacement health insurance gaps to compare with our SIPP results. The DWS analysis is contained in the Appendix.

Pre Displacement Analysis

We hypothesize that displaced workers will be less likely to receive employer health insurance as firms in distress may have cut benefits in addition to wages prior to displacement. We investigate how far in advance this may have happened, and the extent to which these workers have been protected from uninsurance due to coverage from other sources. We investigate these questions through two regressions estimated with the SIPP; first, we test health insurance differences between non-displaced workers and displaced workers at different points in time before the displacement. Second, we look specifically at how health insurance coverage is changing for displaced workers over time. (Both these regressions can only be estimated in a data set with panel information on displacement and health insurance.)

In our first set of regressions, the sample consists of workers who later are displaced, and the control group consists of non-displaced individuals. This exercise investigates whether it makes a difference whether we look at displaced workers 1, 2, 3, 4, 6, 12, 18 or 24 months prior to the job loss event in terms of comparing their coverage against similar workers who are not displaced.

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The equation representing this first exercise is:

$$[1] \qquad Pr(HI_i) = \Phi(\beta_1 + \beta_2 D_i + \beta_3 X_i + \varepsilon_i)$$

where HI_i is an indicator for health insurance, D_i is an indicator for displacement

of individual i, and X_i includes other explanatory factors such as age, education, race,

etc.[5] The models are estimated as probit models, and marginal effects are calculated

individually for all observations and averaged over the sample. For discrete right hand

side variables, the marginal effect indicates a change in value from 0 to 1. D=1 for people

who will be displaced in their current job, and is zero for those who were never displaced

during the SIPP panel. The equation is first estimated looking at displaced workers'

information one month prior to displacement. Because there is evidence of seam

reporting bias in the SIPP[6], we remove monthly observations that belong to the same

wave as the displacement event. Despite this, we can calculate the health insurance gaps

for months 1-3 prior to displacement as the date of displacement could occur at any time

during a wave. The earliest point we consider is one full month prior to displacement as

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[5] The exact composition of the X vector is: gender; age in years and its square; indicator for being married; indicator for being a married female; indicator for having children; indicators for race being Black, Hispanic, White, or Other; indicators for less than high school completion, just high school, some college, college completion, and more than college; a set of twelve industry and thirteen occupation dummies; monthly state unemployment rate; tenure at the job in years and its square; hours worked and its square; an indicator for working more than 35 hours; dummy variables for working in a small (under 25 workers), medium (25 to 99) or large (100 or more) sized firm; state, year and month indicators. The sample is limited to workers not in the agricultural sector, aged 20-61, who work at least 20 hours a week at the job in question.

[6] This happens when respondents claim that their status during the intervening months was the same as that on the interview date, even if the status change took place sometime in the middle of that period. This is a form of recall problem. If health insurance and job displacement reporting both suffered from similar recall problems, this would allow us to see the true relationship between health insurance and job loss. However, it is possible that workers have more accurate recall about dates of job loss than dates of health insurance change as they are specifically asked for a date only in the case of job change. This could mean that workers will report being uninsured for longer than they have been unemployed, thus observations that are between 2-4 months prior to the interview date (or observations that are not from the wave of displacement) are likely to be more reliable.

workers who are displaced early in a given the month may report not having insurance although they could have been insured until the last day at the job.

We then re-estimate this equation looking at points in time two to 24 months prior to displacement. Since the control group is a much larger set of individuals, we use only a random one percent sub-sample of these observations to simplify the computations. Our hypothesis is that the coefficient on D, β_2, is negative.

The second regression focuses on the trajectory of coverage and how far back in time the displaced workers started losing health insurance.[7] We first look at the linear and quadratic effects of time until displacement, using data just on displaced workers:

$$[2] \qquad Pr(HI_i)=\Phi(\beta_1+\beta_2L1_i+\beta_3L2_i+\beta_4X_i+\varepsilon_i)$$

where X is defined as above, and L1 and L2 are the length of time pre displacement in months and its square, respectively. We also estimate a specification which parameterizes time to displacement in discrete three-month intervals instead of using continuous time:

$$[3] \qquad Pr(HI_i)=\Phi(\beta_1+\beta_2M1_i+\beta_3M2_i+...+\beta_{11}M10_i+\beta_{12}X_i+\varepsilon_i)$$

where M1 represents the observations from the first through third months pre displacement, and so on (e.g. M10 represents the 10th three month interval, months 28-30, prior to displacement). Hence all month indicators are relative to the period at least 31 months prior to displacement (omitted category).

These two sets of regressions are repeated for two different insurance outcomes, own employer health insurance and any health insurance, which includes spousal insurance as well as public insurance. We also conducted two specification checks to study whether results differed substantially if we excluded workers who are laid off from

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[7] Whenever a specification includes more than one observation on the same person, we cluster standard errors at the person level. Sample weights are used in all regressions.

our displaced worker sample, and if we exclude workers reporting 20-34 hours per week from our analysis, rather than simply controlling for hours worked, and when we use a balanced panel of individuals. Both tests showed that the results reported for the main specifications are robust to these changes in specification.

As the prior literature concentrates on how wages develop for workers who will be displaced in the future, we investigate whether this is evident in the SIPP too. We define a sample of displaced workers that is similar in construction to that of Jacobson LaLonde and Sullivan (1993)[8], and then estimate their equation (2), reproduced here:

$$y_{it} = \alpha_i + \gamma_t + x_{it}\beta + \sum_{k>=-m} D_{it}^k \delta_k + \varepsilon_{it},$$

where the α's measure person specific fixed effects, the γ's time-specific fixed effects, and $x_{it}\beta$ are time-varying person characteristics. The D's (and the corresponding δ's) measure the effect of being displaced in k quarters, i.e. a person that is displaced at, say, time 6, will have a $D_{i2}^{-2} = 0$, a $D_{i4}^{-2} = 1$ and a $D_{i8}^2 = 1$. While all displaced workers have one (and only one) dummy variable D that is equal to 1 in any period, the control sample of non-displaced workers will have zeros in all dummy variables.

Figure 1 shows the results for the SIPP sample, where we plot the estimated δ's (the coefficients on the displacement indicators) for the 30 months prior and post displacement. While not all parameters are statistically significantly different from zero, the trend in the data is very similar to JLS, and shows that the SIPP reflects the decline in

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[8] JLS define their displaced sample as those who were subject to mass layoffs. As the SIPP is individual based, not firm based, we have to identify displaced people differently. In this reproduction, we only use those respondents that had to leave their job because the business was sold, the business closed or there were slack work conditions. In addition, their focus is on long-tenured workers (in the firm at least 6 years), which we capture by restricting the sample of displaced to those that are at least 5 years in their firm when displacement occurs.

wages pre displacement as noted by Ruhm 1991 and JLS93 among others.[9] Prior to displacement, the wages of workers who will be displaced decline, and after displacement, there exists a considerable recovery period. This recovery period is the focus of the next section.

Post Displacement Analysis

We now limit the sample to previously displaced workers and to a control group of workers who left their previous jobs for voluntary reasons. We explore whether there are different patterns of health insurance coverage between these two groups as they advance in their new jobs. We investigate this question first by examining differences in means graphically, and then with a probit regression explaining insurance outcomes which controls for other differences between these two sets of workers:

$$[4] \quad Pr(HI_i) = \Phi(\beta_1 + \beta_2 D_i + \beta_3 M_i + \beta_4 M_i * D_i + \beta_5 X_i + \varepsilon_i)$$

where X is defined as before[10], D again indicates being a displaced worker, M indicates the number of months into the job and its square.[11]

We conduct a supplementary analysis that uses data on formerly displaced workers only to look at what determines the health insurance change from old to new jobs. This is done with the CPS displaced worker supplement which contains a much larger sample size than the SIPP and is in the Appendix.

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[9] We should also note some other differences: the JLS sample size is far greater than ours, and they are able to use a balanced panel that covers thirteen years, while the nature of the SIPP restricts us to at most 48 months observed for any person. JLS analyze one state only (Pennsylvania) while the SIPP is a nationwide panel. JLS consider the period of the early 1980s, while we look at the lat 1990s, such that differences in the state of the economy might play a role as well.

[10] The only difference is that instead of tenure on the new job, we use tenure on the old job and its square.

[11] Time is parameterized as number of months and its square to test for non linear effects.

Data

We use the 1996 and 2001 SIPP panels, which span the period 1996 to 2003. We start with a data set containing monthly observations on the displaced workers, and on a subset of the non-displaced workers (those who never report being displaced from a job during the SIPP panel), who are not in the agricultural sector and are aged 20-61. For the analyses of health insurance coverage post re-employment, we focus solely on those individuals new on the job. The SIPP panels interview approximately 46,000 households in 1996 and 37,000 households in 2001 every 4 months over a 4-year period in the 1996 panel and over a 2.5-year period in the 2001 panel. We drop five states that are not separately identified in the SIPP for these years – Maine, North Dakota, South Dakota, Vermont and Wyoming. Respondents are asked reasons for job changes, and monthly information on job and demographic characteristics. A displaced worker is defined as one who lost a job due to the following: the employer became bankrupt or sold the business, there were slack work or business conditions, or the individual was laid off and is not a contingent worker. As it is impossible in the SIPP to discern laid-off worker who were subsequently re-hired by the same firm from those who were not,[12] we repeat all analyses excluding laid-off workers as a robustness check. The sample consists of individuals who work 20 or more hours a week.[13]

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[12] Personal communication with Census Bureau SIPP researchers, May 2005.

[13] We do this so that we do not exclude any workers who may be offered health insurance. Authors' calculations using data from the 1993 Robert Wood Johnson Employer Survey indicate that of all employers offering health insurance in the private sector, roughly a third claim not to have an hours stipulation for the minimum hours required per week to receive health insurance. Among those with hours stipulations, 16 percent use 20 hours as the cutoff, 30 percent use 30 hours as the cutoff, and 28 percent use 40 hours as the cutoff. A report prepared with 1999 Current Population Survey data shows that the offer rate of employer sponsored health insurance, conditional on the employer offering at all, is 63% for workers working 20-34 hrs, while it is 96% for workers working 35+ hours (http://www.communityvoices.org/Uploads/4c2xne45g5ezjq45414wni55_20020826102930.pdf Table 8). Those working 20 to 34 hours constitute only about 12% of our SIPP sample. However, as a robustness

Results

Preliminary Analyses

Table 1a presents statistics comparing individuals four months prior to job loss to those who do not experience a displacement during the SIPP panel. There are 5,158 distinct job displacement events in the SIPP occurring over the years 1996-2004 where we have data on the fourth month pre displacement on the job from which the individual was displaced. Looking 4 months pre displacement gives us a look at health insurance a good distance from displacement time, and also means that seam bias is not a problem. In some specifications, we delete the observations from the same wave as displacement, which negates seam bias and also lets us look at months closer to displacement-in those cases, our sample size is also larger. For computational ease, we take a one percent random sample of the control group universe (those who have never been displaced during the SIPP), which results in 18,677 observations. When we look at displaced workers, their likelihood of reporting health insurance receipt from their employer is about 13 percentage points lower than for non-displaced workers. The rate of any health insurance (which includes spousal and other coverage) shows a gap of 12 percentage points lower. But displaced workers also have different demographic characteristics than non-displaced workers, i.e. they are likely to be younger, less likely to be married, less likely to be female, than non-displaced workers. The industrial and occupational distribution is also different in expected ways (e.g. more likely to be blue collar jobs), and these differences need to be taken into account when comparing the health insurance

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check, we changed the sample to those working 35 hours or more. Results are qualitatively the same. Note that we control for hours worked in all regressions.

coverage of the two groups to see how much of the gap may have resulted from the displacement process.

Table 1b compares previously displaced workers who are new at their job to those who were not displaced and are not necessarily new to a job. (Here we employ a 10% random subsample of the complete SIPP.) The table shows that those who were displaced are 13 percentage points less likely to have any health insurance and 17 percentage points less likely to have own employer health insurance on their new job than all other workers. But part of these differences may be due to the fact that many employers have a waiting period before workers are given health insurance, thus it is important to see whether displaced workers who are new to a job appear different from other workers who are also new to a job.

Figure 2 explores the differences between displaced and non-displaced groups of workers, all of whom are new to a job after having left a previous job. Specifically, we look at how the number of months on the (same) job affects whether workers report having health insurance from their own employer. The figure shows that the difference in health insurance is about 7 percentage points in the first month, and then steadily declines, up to the 20th month, where the lines cross for the first time. This suggests that while initially less likely to have health insurance by their employer, previously displaced workers may be transitioning to employer health insurance faster than workers not formerly displaced. The prevalence of health insurance increases at a decreasing rate for displaced and non- displaced workers alike, as time on the new job accrues.

Since the SIPP panels are relatively short in duration, those whom we see re-employed by the end of the panel may be those whose job search is faster and better than

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others. Data from the Displaced Worker Supplement to the Current Population Survey (in the Appendix) sheds light on those who have been displaced and have been re-employed two years later. There, we find that 18% of all displaced workers transition from a job with employer health insurance to a job without it, 12% transition from a job without health insurance to one with, 16% never received health insurance at either job, while 54% received health insurance at both jobs. There, we use a multinomial logit to investigate the characteristics of those who lose vs. gain vs. keep the same health insurance status. This shows that those who always had health insurance tend to be older, more likely to be female, and more likely to be married, but less likely to be married females (who are more likely to never had employer health insurance in their own names). African Americans and those of Hispanic origin are more likely to have never had employer health insurance, or only had it on the old job, suggesting greater vulnerability in the job transition process for minorities. The unemployment rate exerts an effect in an expected direction, suggesting that an individual is more likely to lose health insurance through displacement in times of high unemployment.

In the SIPP, we are able to look at the health insurance status before and after displacement, unconditional on employment status after displacement, to look at the characteristics of those who health insurance status changes after vs. before displacement. In Table 1c, we show the percentages of individuals that fall into four categories based on having any health insurance four months pre and post displacement. It is surprising that nine percent report having any health insurance 4 month after displacement but not before displacement, but this may be due to the improved economy experienced during

the 1996 panel.[14] We are particularly interested in the characteristics of those who lose
health insurance, and investigate this further in Table 1c. Those who lose health
insurance are more like the group who never had health insurance in socioeconomic
terms than those who always had access to health insurance.

Regression Analyses

Our first table shows the causal impact of displacement on health insurance by
time until displacement. Probit marginal effects and standard errors from the displaced
worker indicator of Equation [1] are shown in Table 2. Each column shows a result from
a different specification; the first column considers the health insurance status of workers
who are displaced, at the last full month of their old job, while the others show the effect
of displacement on health insurance coverage two, three, four, six, twelve, eighteen and
twenty-four months prior to displacement. These results are all for own-employer health
insurance as well as any health insurance. We have dropped observations from the wave
of displacement to avoid seam bias.

The results in the first row show that displaced workers are 13 percentage points
less likely to have employer health insurance in their own name in the last month of their
old job relative to non-displaced workers (who could be in any month of their job). In the
fourth month prior to displacement, this effect is slightly reduced to 9.5%. This shows a
reduction of about four percentage points compared to the raw gap seen in Table 1a.
While the gap in employer health insurance thus is still present in the regression analysis,
the gap in any health insurance is very different. After adjusting for other differences,
displaced workers are only two percentage point less likely to be covered by any health

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[14] These individuals are more likely to be high school drop outs, and could potentially be transitioning to
Medicaid, a possibility we intend to explore in a later draft.

insurance (four months prior to displacement) than non displaced workers, while the raw gap was 12 percentage points. This suggests that displaced workers have other characteristics that make them more likely to have access to other forms of health insurance, but not employer health insurance, relative to other workers.

Looking across the different specifications in Table 2 shows an interesting pattern of results. The further away from time of displacement, the smaller the differences between displaced and non-displaced workers. A year from displacement, these workers are only about 5 percentage points less likely to have health insurance. Two years before displacement, there is practically no difference. As expected, the standard errors also increase as the number of displaced workers for whom we can observe data that far back in time decreases.[15] This helps to shed light on the extent to which unobservable variables are responsible for the gap, relative to the actual experience of a firm being in decline and workers responding to less generous health insurance/impending loss of health insurance, or the firm ceasing to offer health insurance all together. The decline in the gap suggests that most of the difference that evolves from 2 years prior to displacement until the point of displacement is likely due to displacement itself.[16]

The second row of results in Table 2 shows that although workers are less likely to have coverage from their employer as displacement nears, they are finding alternate sources of coverage to a large degree. This means that workers, who are not statistically

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[15] For example, there are 7,639 total observations for which we have data on the last full month of the displaced job, of which only 1,187 are not reporting a displacement in the same wave. Only 6,088 (3,440) observations are left three full months prior to displacement, 4,167 six months prior, 2,160 twelve months prior, 1,249 eighteen months prior and 650 twenty-four months prior to displacement.
[16] As a check, we looked at whether this differed for workers who left jobs due to layoffs vs other reasons as we cannot distinguish between those leaving after a mass vs a smaller layoff. We found, as expected, that workers leaving for layoff reasons experienced much less of a drop in health insurance that the other displacements.

significantly different from non-displaced workers in their probability of being covered by *any* health insurance 18 to 12 months prior to displacement,[17] are only about one to two percentage points more likely to lack any health insurance than non-displaced workers at the time of displacement. It is not possible to discern whether the switch out of own employer health insurance is driven by the firm ceasing to offer coverage, or by the worsening of other features of the health insurance offer from that employer, although anecdotal results suggest that both factors play a role. All sets of regressions in table 2 control for tenure and its square – thus the effect of being displaced should not be influenced by how long the workers, who are to be displaced, have been in their respective jobs. It is also worth noting that those who are unmarried experience drops in any health insurance, while those who are married do not.

The mounting of employer health insurance losses prior to displacement is surprising. Given that COBRA coverage is intended to allow workers to retain coverage even after employment separation, one would expect to see some workers continuing to be covered on employer health insurance even post displacement. Instead we see many no longer receiving employer health insurance (due either to workers dropping coverage, or employers ceasing to offer coverage) even before the job displacement occurs.

Table 3 shows the results of the next set of regressions that explore how health insurance losses evolve (specifications [2] and [3]) using data only on displaced workers. This is a second way of investigating how displacement affects health insurance. We first test the linear and quadratic effects of time until displacement in months (L1 and L2). The marginal effects of both terms are statistically significant, suggesting that the loss of

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[17] This further bolsters the case that differences between displaced and non-displaced workers at the time of displacement are largely due to the process of displacement rather than differences in characteristics not captured in the regression.

health insurance mounts over time at an increasing rate. This is confirmed with the results from equation [3], where we see again that the difference mounts over time. This specification implies that relative to 31-48 months prior to job loss,[18] being 1-3 months prior to job loss involves a loss of employer health insurance of 13 percentage points. Relative to 30-48 months prior to job loss, there is no loss of health insurance when one looks at 16 months or prior to job loss. This implies that losses in health insurance start to mount about 1 ½ years prior to job loss, but not earlier.

As a check on these data, we conduct an exercise with the DWS data in the appendix to investigate the gap in employer health insurance between displaced and non displaced workers. We find a gap of 6 percentage points, which is fairly consistent with the range of estimates found in the SIPP. As the CPS does not pinpoint a month in the pre-displacement period, if one considers the average SIPP estimates for the last year on the job, this estimate is fairly consistent across the two data sets. The Appendix also considers differences in the gap by race, ethnicity and gender etc, and finds it is generally the same regardless of the group considered.

We now turn to the analyses of post displacement health insurance coverage. Table 4 shows estimates from Equation [4]. Notably, we restrict the control group to those who also worked before this job (thus the control group left those jobs for voluntary reasons) as this may represent a more appropriate comparison group than people re-entering the labor market for different reasons or entering the labor market for the first time. In this table, the interaction of months into the job and being a displaced worker

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[18] Recall that we can view points in time that are, at most, 48 months prior to the loss of a job, although sample sizes become smaller as we go further back in time.

shows how the health insurance trajectory of displaced workers differs from other new employees.

The results in Table 4 show that the displaced workers are less likely to have own employer health insurance by about 15 percentage points relative to similar workers who are new to a job, and left their old job voluntarily. The marginal effect on months at the job shows that all workers experience some increase in coverage through their employer as their job progresses, and this increases at a decreasing rate. As shown in the graph, those formerly displaced catch up at a slightly faster pace. The gap in health insurance from any source is much smaller, about 6 percentage points, and reflects the fact that formerly displaced workers are more likely to rely on other sources of coverage including spousal coverage than non-displaced workers. Time on the job increases access to any health insurance coverage as well for everyone.[19]

Summary and Conclusion

In this paper, we investigate how displacement affects the trajectory of health insurance coverage both prior and post displacement. Given the policy importance of insuring workers against fringe benefit losses as well as wage losses that result from job cuts, this paper brings up several interesting possibilities worth studying in the future. We test whether displaced workers start losing health insurance coverage before the date of separation, and how far back this starts, looking both at employer health insurance and insurance from any source. We further study the experience of displaced workers after they have found subsequent employment.

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[19] These results are robust to the exclusion of those who are laid-off and of those who work 20-24 hours.

The analysis yields several interesting results. First, when displaced workers are viewed at the end of the job relative to non-displaced workers, the gap in own employer health insurance is close to 13 percentage points. This difference could be partly due to unobservable differences between the two sets of workers. We next use the longitudinal aspect in the SIPP to identify the causal effect of displacement. We find that displaced workers look remarkably like non-displaced workers in terms of employer health insurance when viewed about 18 to 24 months prior to job loss. This suggests that it is more the actual act of job displacement and the circumstances accompanying such events, rather than unobservable time invariant productivity differences between workers, that explains the gap in own employer health insurance at the time of displacement. While the largest differences are present during the last few months of employment, we find significant effects of displacement up to 15 months prior to displacement. In order to understand the policy consequence of this, we also looked at coverage from any source. If workers were able to find suitable substitutes, then there is less concern about this phenomenon of health insurance loss in firms under stress. The results show that almost all of the drop in own employer health insurance coverage does not result in uninsurance because of reliance on alternative forms of coverage. On the last month at the job, displaced workers are only about one to two percentage points less likely to have health insurance through any source than non-displaced workers.

An unanswered question is whether these health insurance changes before displacement occur because firms in distress cease to offer health insurance, or changing the design of benefits in other ways that influence workers to drop coverage, or whether it results from workers anticipating the job loss and switching to alternative health

insurance in advance of actually needing to switch. Results in this paper suggest that all these things could be happening. This is also consistent with findings in a recent paper (Danzon et al, 2005) who find that biotech and pharmaceutical companies about to be acquired appear to have cut costs in the previous two years. Their interpretation is that firms first cut costs to try to stay afloat and, when that tactic no longer works, they merge/sell. When considering the post displacement period, we find that workers who left an old job voluntarily are much more (about 14 percentage points) likely to have own employer health insurance than workers who were formerly displaced. However, formerly displaced workers are much more likely to have other sources of health insurance (notably spousal health insurance) than voluntary leavers, and the overall gap in health insurance is only about six percentage points. All workers experience gains in insurance with time on the new job, without a differential impact for formerly displaced workers. Focusing just on displaced workers, we find that factors such as marital status and gender are associated with whether one loses or gains health insurance through the displacement process, as well as job characteristics such as hours worked. These results shed light on an area that has not been investigated in prior work. Clearly, workers' displacement has serious consequences for their health insurance coverage. However, it appears that family-based nature of employment related health insurance serves a valuable role in reducing the number of Americans who may otherwise have become uninsured through these experiences.

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Table 1a: Descriptive Statistics (four months prior to displacement)

	Displaced		Non-displaced	
Variable	Mean	St Dev	Mean	St Dev
Health insurance any source	0.772	(0.420)	0.890	(0.313)
Own employer health insurance	0.528	(0.499)	0.661	(0.473)
Monthly wage in yr 2000 $	2266	(2381)	2539	(1907)
Log of above	7.448	(0.802)	7.629	(0.734)
Age in years	37.37	(10.72)	39.33	(10.77)
African American	0.114	(0.318)	0.118	(0.322)
Hispanic	0.146	(0.353)	0.101	(0.301)
White	0.692	(0.462)	0.738	(0.440)
Asian	0.036	(0.187)	0.040	(0.197)
Other race	0.013	(0.112)	0.003	(0.053)
Has not completed HS	0.147	(0.354)	0.084	(0.277)
Only completed HS	0.341	(0.474)	0.341	(0.474)
Has some college	0.319	(0.466)	0.282	(0.450)
College grad	0.145	(0.352)	0.201	(0.400)
More than college	0.048	(0.215)	0.092	(0.289)
Female	0.433	(0.496)	0.494	(0.500)
Married	0.548	(0.498)	0.621	(0.485)
Female*Married	0.228	(0.420)	0.298	(0.457)
Job specific experience in yrs	39.16	(67.84)	73.60	(89.49)
Current hrs/week	40.40	(9.446)	41.16	(8.318)
Works 35 or more hours a week	0.846	(0.361)	0.901	(0.299)
Unemployment rate in the state	5.058	(1.069)	4.900	(1.084)
Number of Observations	5158		18677	

Table 1b: Descriptive Statistics (all observed months on the new job)

	Displaced (all months on the new job)		Non-displaced (all months)	
Variable	Mean	Std. Dev.	Mean	Std. Dev.
Health insurance any coverage	0.753	(0.431)	0.887	(0.316)
Own employer health insurance	0.493	(0.500)	0.665	(0.472)
Works more than 35 hrs	0.841	(0.365)	0.875	(0.331)
Average hrs/week	40.01	(9.312)	40.96	(9.101)
Age	37.62	(10.62)	39.10	(10.77)
African American	0.113	(0.316)	0.115	(0.319)
Hispanic	0.696	(0.460)	0.734	(0.442)
White	0.035	(0.184)	0.039	(0.193)
Asian	0.146	(0.353)	0.104	(0.306)
Other Race	0.010	(0.099)	0.008	(0.087)
Observations	52802		189792	

Table 1c: Characteristics of Displaced Workers by (Any) Health Insurance Transition

Previously Displaced New Workers

Any HI in old Job (4 months pre displacement)	yes	no	*yes*	no
Any HI now (4 months post displacement)	yes	yes	*no*	no
Percent in category (of 2,625 workers who are observed 4 months pre and post)	**65**	**9**	**11**	**16**
Age	38.947	34.251	34.856	34.823
	(10.229)	(9.783)	(9.957)	(9.879)
Married	0.677	0.417	0.374	0.345
	(0.468)	(0.494)	(0.485)	(0.476)
Has Children	0.484	0.432	0.393	0.373
	(0.500)	(0.496)	(0.489)	(0.484)
No High School	0.079	0.241	0.173	0.274
	(0.270)	(0.428)	(0.379)	(0.446)
High School	0.318	0.348	0.367	0.436
	(0.466)	(0.477)	(0.483)	(0.496)
Any College	0.603	0.411	0.460	0.291
	(0.489)	(0.493)	(0.499)	(0.455)
Black	0.095	0.140	0.162	0.169
	(0.294)	(0.348)	(0.369)	(0.375)
White	0.771	0.582	0.618	0.506
	(0.420)	(0.494)	(0.487)	(0.501)
Asian	0.036	0.029	0.039	0.026
	(0.186)	(0.168)	(0.195)	(0.158)
Hispanic	0.084	0.240	0.176	0.287
	(0.278)	(0.428)	(0.382)	(0.453)
Other Races	0.013	0.008	0.005	0.012
	(0.114)	(0.091)	(0.070)	(0.110)
Observations	1692	244	272	417

Notes:

Standard Deviations in parentheses. The sample is created by those we observe four months prior and post displacement. Prior to displacement, the hours of work are at least 20.

Table 2: Effect of Being Displaced on Health Insurance Coverage (Equation 1)

Own employer provided health insurance

	1 month	2 months	3 months	4 months	6 months	12 months	18 months	24 months
Displaced	**-0.1275**	**-0.1050**	**-0.0935**	**-0.0949**	**-0.0757**	**-0.0525**	-0.0210	0.0126
	(0.0315)	(0.0272)	(0.0250)	(0.0235)	(0.0235)	(0.0257)	(0.0284)	(0.0341)
N	13704	14806	15970	17683	16695	14665	13763	13165

Any health insurance

	1 month	2 months	3 months	4 months	6 months	12 months	18 months	24 months
Displaced	**-0.0140**	**-0.0162**	**-0.0186**	**-0.0228**	**-0.0169**	-0.0054	-0.0022	-0.0050
	(0.0068)	(0.0069)	(0.0072)	(0.0076)	(0.0066)	(0.0046)	(0.0040)	(0.0060)
N	13697	14822	15992	17709	16718	14652	13631	12159

Any Health Insurance By Marital Status

	Not Married							
	1 month	2 months	3 months	4 months	6 months	12 months	18 months	24 months
Displaced	**-0.0644**	**-0.0652**	**-0.0734**	**-0.0774**	**-0.0651**	-0.0322	-0.0260	-0.0282
	(0.0265)	(0.0219)	(0.0212)	(0.0202)	(0.0188)	(0.0179)	(0.0194)	(0.0251)
N	4998	5560	6039	6828	6332	5367	4803	4120

	Married							
	1 month	2 months	3 months	4 months	6 months	12 months	18 months	24 months
Displaced	-0.0040	-0.0050	-0.0048	-0.0063	-0.0048	-0.0006	0.0009	0.0009
	(0.0035)	(0.0041)	(0.0033)	(0.0037)	(0.0033)	(0.0032)	(0.0009)	(0.0010)
N	7446	8220	9673	10874	10133	7668	7389	5921

Notes:

Robust standard errors in parentheses. Marginal effects in bold font are significant at the 5% level.

See footnote 5 of the paper for a list of control variables.

We omit all observations of people that report a displacement in the same wave, to reduce the seam-bias effects.
This only affects the last 3 months prior to displacement. The subsamples of married/not married may not add up to
the whole sample because some observations had to be dropped for lack of variation in the explanatory variables.

Table 3: Marginal Effects on Duration until Displacement

	Equation [2]	Equation [3]
Number of months pre displacement (L1)	**0.0078**	
	(0.0019)	
Square of above (L2)	-0.0001	
	(0.0001)	
Months 1-3		**-0.1330**
		(0.0389)
Months 4-6		**-0.1113**
		(0.0366)
Months 7-9		**-0.0898**
		(0.0360)
Months 10-12		**-0.0767**
		(0.0356)
Months 13-15		**-0.0669**
		(0.0350)
Months 16-18		-0.0570
		(0.0342)
Months 19-21		-0.0254
		(0.0327)
Months 22-24		0.0003
		(0.0306)
Months 25-27		-0.0029
		(0.0281)
Months 28-30		-0.0125
		(0.0259)
Observations	79638	79638

Notes:
Robust standard errors in parentheses. Marginal effects in bold font are significant at the 5% level.
We omit all observations of people that report a displacement in the same wave, to reduce seam-bias. See footnote 5 for a list of control variables.

Table 4: Health Insurance Coverage on the New Job – Equation [4]

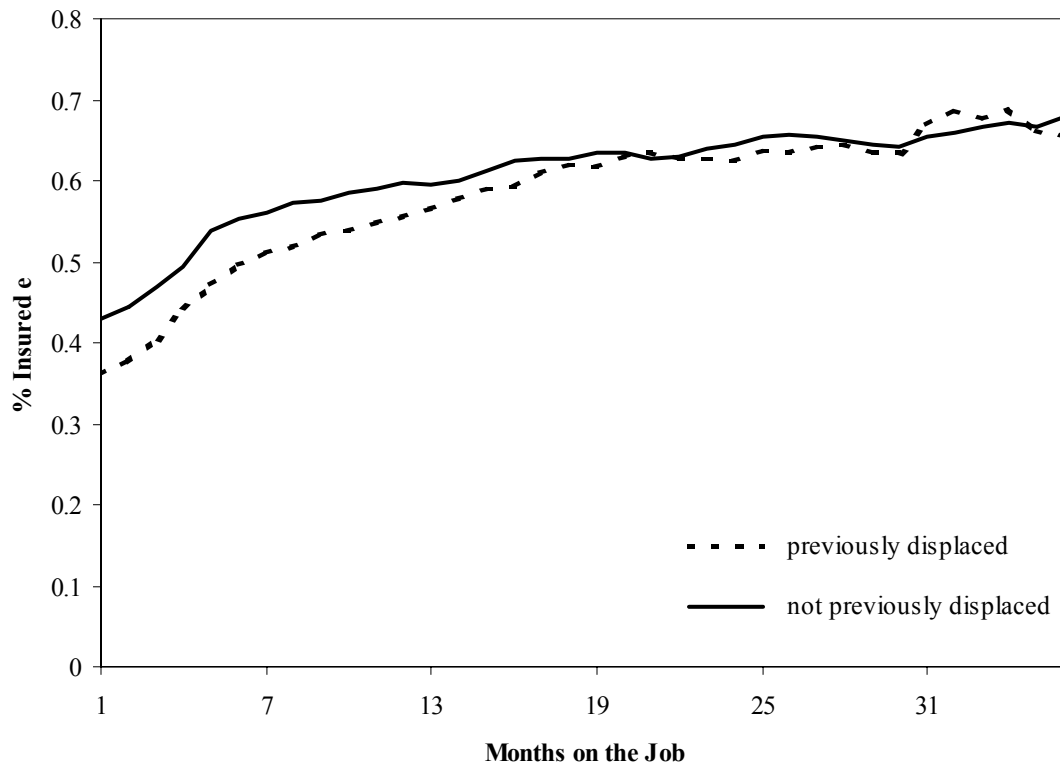|	Employer Health Insurance	Any health insurance	Spousal Health Insurance
Displaced Worker	**-0.1479**	**-0.0632**	**0.0695**
	(0.0166)	**(0.0104)**	**(0.0189)**
Duration of Employment	**0.0132**	**0.0081**	-0.0010
	(0.0023)	**(0.0016)**	(0.0023)
Square of Above	**-0.0002**	**-0.0001**	0.0000
	(0.0001)	**(0.0001)**	(0.0001)
Displaced*Duration	0.0058	0.0014	-0.0008
	(0.0031)	(0.0020)	(0.0031)
Square of Above	0.0001	-0.0001	-0.0001
	(0.0001)	(0.0001)	(0.0001)
Number of Observations	91477	91477	51399

Notes:
Standard errors (in parentheses) are clustered at the person level whenever a regression involves multiple observations from the same person. See footnote 5 for a list of control variables

Figure 1: Wage Loss Around the Time of Displacement

Months Until/From Displacement

Figure 2: Prevalence of Employer Health Insurance Coverage in Own Name

Appendix: Supplementary Analyses Conducted with Displaced Worker Supplements (DWS) to the Current Population Survey (CPS)

As in the De La Rica (1995) wage study, we compare employer health insurance provision of jobs held by displaced workers to jobs held by similar but non-displaced workers from another CPS supplement, after controlling for important observable differences. Using this approach, we judge the extent to which displaced workers may have already suffered cuts in fringe benefits by the time the actual job displacement occurs. This is a useful comparison with the SIPP results above. In summary, we find that the DWS estimate of the gap is about 6 percentage points between displaced and non displaced workers. These results are roughly consistent if we consider the DWS answer as reflecting data about a year prior to job loss.

The DWS survey has been conducted every even year since 1984 and asks all adults in the CPS every other January or February about whether they have experienced a job displacement. Workers answering the DWS survey are asked if they experienced a job loss in the last 5 (in the case of DWS surveys from 1984 to 1992) to 3 (in the case of subsequent DWS surveys) years. If so, they are asked information about the job they lost, as well as their current employment status. We limit our sample to private sector non self employed workers working 35 or more hours a week[20] between the ages of 20 and 61[21] who were displaced from a job in the last 2 years.[22] Since displacement is a difficult concept to define in seasonal jobs such as agriculture, all workers in this industry are excluded.

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[20] This is the only measure of hours worked a week available in all years.
[21] Thus, those eligible for Social Security retirement benefits following displacement are excluded, as are those eligible for Medicare due to age.
[22] This is done to avoid recall bias which was one of the reasons that the survey shifted from a 5 year recall period to a 3 years recall period. We select a more limited period of 2 years for all surveys used.

To estimate the gap in health insurance at the old job for displaced and non displaced workers, we assemble a control group. The control group consists of similar individuals (private sector, non agricultural, non self employed workers aged 20 to 61 working 35 or more hours a week) from the March CPS (MCPS) of that same year who are asked to report information about jobs held the previous year.[23] Furthermore, we have restricted the sample to those who were not displaced from those jobs in that year.[24] By aggregating and standardizing all available years of the DWS, we assemble information on jobs lost during the period 1983 to 2004.[25] The final sample consists of 25,296 displaced workers and 250,114 similar workers who were not displaced.[26] All estimates are weighted to reflect a nationally representative population (using weights that have been standardized within survey-year).

A simple comparison of key characteristics between the displaced (DWS) and non-displaced workers (MCPS) that does not control for other differences shows that non-displaced workers earn on average about $738 per week in 2000 dollars, compared to $629 for displaced workers (see Table CPS1). They are about 6 percentage points less likely to receive health insurance through their employer (61 percent relative to 68 percent). Displaced workers tend to be younger (by almost a year and a half), less likely

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[23] Since the recall involved in the March survey is just one year, we have re-estimated models where the DWS survey responses are also limited to a recall of one, rather than 2 years, and no major differences exist.

[24] To do so, we first limited the sample to individuals who were eligible to have been interviewed in the DWS surveys. This means for example, that in the March 2000 survey, those in their 2nd, 3rd, 4th, 6th, 7th, and 8th months would have been asked the DWS supplement as well. We thus remove those in the March 2000 survey who are in other months as a first step. Second, we exclude individuals from the March survey who said in the DWS that they were displaced from a job in the last several years. About 10 percent of the sample in the DWS who were displaced and should match to the March survey did not match, perhaps due to a house move or a typographical error in the recording of their household identification numbers. In matching individuals across survey months, I follow the procedure outlined in Madrian and Lefgren (1998).

[25] In some analyses, the data from the 2004 surveys are excluded due to irreconcilable differences in industry and occupation coding in the switch from SIC to NAICS.

[26] In any given one year period, only a small fraction of the workforce would experience involuntary job loss, thus one would not expect these two samples to be of the same size.

to be female, less likely to live in a metropolitan statistical area (MSA), less likely to be married and more likely to be White, than non displaced workers. Further comparison of these workers by occupation, industry, education and year are given in Table CPS2. Displaced workers are more likely to have worked in construction and manufacturing of durable goods, less likely to be in finance, insurance and real estate, and in professional and related services than non-displaced workers. The occupations held by displaced workers were less likely to be service, administrative, sales, and more likely to be 'professional specialty'. Displaced workers are less likely to hold advanced educational degrees compared to non displaced workers. This preliminary comparison shows that while the raw gap in wages and benefits is large, the two groups of workers also differ in other ways that could lead to differences in total compensation, including the fringe benefit component. An investigation of whether displaced workers are disadvantaged compared to their peers even before displacement naturally requires an adjustment for the difference in other relevant characteristics. However, as JLS point out, one should not control for too narrowly defined characteristics, such as detailed industry, since non-displaced workers in the same industry are also likely to have suffered losses in compensation to some degree even if they were not displaced, since industry wide factors are likely to be at play. We next turn to estimates from a regression analysis that controls for these differences.

Table CPS1: Sample Descriptive Characteristics
(weighted means and standard deviations)

	MCPS		DWS	
	Mean	**St Dev**	**Mean**	**St Dev**
Fraction with health insurance from own employer (1,0)	0.6721	(0.469)	0.6065	(0.489)
Weekly wage in yr 2000 dollars	737.9	(1066)	628.9	(431.0)
Log of above	6.341	(0.716)	6.258	(0.612)
Age in yrs	36.99	(10.96)	35.69	(10.86)
Fraction who live in an MSA (1,0)	0.6833	(0.465)	0.6756	(0.468)
Race=Hispanic	0.0984	(0.298)	0.1039	(0.305)
Race=Other	0.0458	(0.209)	0.0339	(0.181)
Race=White	0.7461	(0.435)	0.7487	(0.434)
Race=Black non Hispanic	0.1118	(0.315)	0.1135	(0.317)
Female (1,0)	0.4161	(0.493)	0.3803	(0.485)
Married (1,0)	0.6164	(0.486)	0.5693	(0.495)
Never married (1,0)	0.2358	(0.425)	0.2524	(0.434)
Married female (1,0)	0.2304	(0.421)	0.1890	(0.392)

Note: There are 25,296 observations in the DWS sample, and valid wages were recorded for only 22,386 of these. There are 250,114 observations in the MCPS sample, and valid wages were recorded for only 250,050 of these.

Table CPS2: Further Sample Descriptive Statistics

Variable	Fraction in category	
	MCPS	DWS
Industry		
Mining	0.009	0.020
Construction	0.071	0.132
Manuf-Durables	0.151	0.211
Manuf-Non-durables	0.102	0.114
Transportation, comm., and other Pub.util	0.081	0.068
Wholesale trade	0.052	0.053
Retail trade	0.161	0.147
Finance, insurance, and real estate	0.085	0.052
Business and repair services	0.069	0.076
Personal services incl. priv hhlds	0.031	0.034
Entertainment and recreation services	0.013	0.014
Professional and related services	0.175	0.080

Occupation

Executive, administrative, and managerial	0.153	0.128
Professional specialty	0.110	0.071
Technicians & related support	0.038	0.034
Sales	0.122	0.106
Administrative support including clerical	0.148	0.131
Private household service	0.004	0.002
Protective service	0.007	0.008
Service, except protective and household	0.086	0.060
Farming, forestry, and fishing	0.004	0.004
Precision production, craft, and repair	0.142	0.193
Machine operators, assemblers, inspectors	0.092	0.145
Transportation & material moving equipment	0.049	0.054
Handlers, equip. cleaners, helpers, laborers	0.044	0.065
Education		
Less than 11th grade	0.086	0.107
11th grade completion	0.028	0.051
12th grad completion	0.376	0.383
Some college	0.265	0.271
College grad	0.172	0.136
College +	0.074	0.053

Note: For occupation and industry, data from 2004 are not used because the codes in those surveys are different.

CPS Regression Analysis
Estimation of the displacement effect on employer health insurance takes the following

form:

[CPS1] $\Pr(HI_i) = \Phi(\beta_1 + \beta_2 D_i + \beta_3 X_i + \varepsilon_i)$

where HI_i is an indicator for health insurance, D_i is an indicator for displacement

for individual i, and X_i includes other explanatory factors such as age, education, race,

etc. The models are estimated as probits, and marginal effects are calculated individually

for all observations and averaged over the sample. For discrete right hand side variables,

the marginal effect indicates a change in value from 0 to 1.

We start with a specification in which the group of interest is the entire population

of displaced workers, and then investigate whether there are differential effects of

displacement for separate groups. We expect that the marginal effect of D will be

negative. Table CPS3 shows the marginal effect and standard error of the marginal effect

associated with D, and the sample size from estimating [CPS1] on each sample. In the first specification, the X vector includes industry and occupation indicators, thus the regression uses all years of data except 2004 (since industry and occupation codes cannot be matched in that year). In the second specification, the sample is limited to the same years as the first specification, but industry and occupation controls are excluded. In the third specification, 2004 data is also included, but industry and occupation is not included in the X vector. This last specification is then repeated on various subsets of the sample as described in the Table.

Table CPS3: Marginal Effects and Standard Errors from Eqn CPS1, Displaced Worker Variable

	Marginal effect		St. error	N
Without 2004 data and with industry and occupation indicators	-0.083	***	(0.005)	248197
Without 2004 data and without industry & occupation indicators	-0.078	***	(0.005)	248213
With 2004 data, without industry & occupation indicators	-0.073	***	(0.005)	275410
Last specification, separately estimated for:				
Males	-0.090	***	(0.006)	159120
Females	-0.044	***	(0.008)	116290
African American	-0.063	***	(0.015)	25339
White	-0.077	***	(0.005)	215018
Hispanic	-0.066	***	(0.016)	22482
Low educated (high school drop outs)	-0.070	***	(0.012)	31011
Highly educated (college completers)	-0.057	***	(0.012)	46316
For the 1980s	-0.086	***	(0.008)	84370
For the 1990s	-0.080	***	(0.007)	134775
For the 2000s	-0.041	***	(0.010)	56265

Note: *** denotes statistical significance at 1%

This regression controls for the following variables: age in years, age squared, race (Black, White, Hispanic, Other), gender, marital status (married or not), interaction of marital status and gender, residency in MSA, education (high school drop out, high school completed, some college, and college completion or more), state fixed effects, year fixed effects. Some specifications include industry and occupation indicators as indicated. Displaced workers are 8 to 7 percentage points less likely to have employer

provided health insurance at the former job relative to otherwise similar workers who were not displaced.[27] This result is statistically significant at the 1 percent level. Since estimating the model using all years of data without industry and occupation indicators does not change the results to a large degree, I focus on this as the main specification in the results to follow where [CPS1] is estimated on different subgroups of the population.

To investigate the extent to which the disadvantage suffered by displaced workers differs by individual characteristics, we first split our sample by sex. These results show that female displaced workers were less disadvantaged compared to male displaced workers relative to their peers. The racial and ethnic breakdowns, on the other hand, do not point to much difference between Whites, Hispanic and African Americans. Workers with less education who are displaced appear more disadvantaged that their non-displaced peers relative to higher educated workers.

There could obviously be many unobserved differences between the two groups of workers that could help explain the gap, thus the result cannot just be interpreted as the causal effect of displacement. The literature on wages using a similar technique (De La Rica) faces this same issue, but argues that the difference can be interpreted as causal because controlling for observables does not change the gap much, thus unobservables are not expected to play a large role. Here too, it is noteworthy that the difference after regression adjustment is just one percentage point different relative to the uncontrolled difference, but there could still be a large role played by unobservables as well as

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[27] As a check, we also test the difference in wages across the two samples (in unreported regressions, available upon request), since estimates exist from other studies with which to compare. In terms of wages, the displaced workers were paid about 6 percent less than comparable workers who were not displaced after other differences were taken into account. This is close to estimates that studies such as De La Rica (1995), Ruhm (1991) and JLS (1993) have found.

differences across the two CPS supplements here (and in the De LaRica study). This is a possibility that can be investigated using the longitudinal data in the SIPP.

Study of post-displacement period

For this study of post-displacement differences in health insurance, we first compare among workers from the DWS who were all displaced from full-time non-agricultural jobs which they had held for at least a full-year and were re-employed full-time by the time of the survey. This sample differs from that used above because here we collect information on the old job *and* the new job from the DWS workers, and we no longer include any information on non-displaced workers from the March CPS.

The workers in this sample experienced one of four possible health insurance transitions.[28] Some had health insurance provided to them by both old and new employers, some had neither of the employers provide health insurance to them, some lost employer health insurance during the transition, while the remaining workers gained it. There is heterogeneity in the experiences of these workers. Fifty-four percent of them had health insurance on both jobs, 16 percent had it on neither job, 18.3 percent had health insurance only on the old job while 11.7 percent received it only on the new job. The aim of this analysis is to see what factors determine the category to which a worker belongs. We estimate a multinomial regression of the following form:

[CPS2] $\{\Pr(\text{HITRANS}_i)=t\}=e(\beta_t X_i + \varepsilon_{it})/\Sigma \ \{e(\beta_t \ X_i + \varepsilon_{it})\}$

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[28] An important caveat here is that the method for classifying changes in insurance status in the CPS is flawed in the following manner. The DWS question about current health insurance does not distinguish between employer health insurance and non-group insurance. We know from other data sources that a substantial number of those with private insurance (approximately 8 percent in 2002 {U.S. Census Bureau (2003)} hold non-group insurance, and this changes the interpretation of a health insurance transition as it is presented here.

where HITRANSi represents the probability that the worker i experiences transition pattern t, and the set of variables in X represents characteristics that are predicted to explain the outcome. The independence of irrelevant alternatives assumption was supported by a Hausman/McFadden test (we failed to reject null hypothesis of the independence of the irrelevant alternatives at conventional levels of statistically significance).

These predictors of the relative success at the new job include: age, age squared, gender, marital status (married, separated, widowed or divorced, or never married), an indicator for being a married female, race (Hispanic, Black, White and Other), education in categories, presence and number of children, state unemployment rate at the time of the interview, and at time of displacement, whether the worker always worked for the private sector, or whether new job or old job was non private sector, whether the worker received advanced notice, whether the worker moved in order to find a new job, reason for job displacement (plant closings vs. mass layoffs), number of years since displacement, year dummies for time of displacement and time of survey, and state dummies.

The sample contains about 11,000 individuals who were displaced, spanning job losses that occurred between 1981-2004 and subsequent re-employment that occurred by 1984-2004. A comparison of the samples that faced different health insurance transitions showed that those who always had health insurance are predictably somewhat older than other workers. They are also more likely to be married and highly educated compared to others.

Regression Analysis

The Table below reports marginal effects for key variables from running the multinomial logit in [CPS2]. Outcome t=1 refers to those who had no health insurance from the employer in old or new jobs, outcome 2 refers to those who had health insurance only on the old job, outcome 3 refers to those who had health insurance on both jobs, while outcome 4 refers to those who only had health insurance on the new job. The marginal effects show how a change in the explanatory variable changes the probability of observing a certain outcome. For example, the first marginal effect in the first column implies that as age advances by one year, the probability of a person experiencing outcome 1 decreases by one percentage point.

Table CPS4: Multinomial logit marginal effects Eqn [3]

Outcome	No h.i. (1)		Only on old job (2)		Always h.i. (3)		Only on new job (4)	
Age	-0.010	***	0.002		0.018	***	-0.010	***
Age squared	0.000	***	0.000		0.000	***	0.000	***
Female	-0.032	***	-0.057	***	0.086	***	0.002	
Female*married	0.099	***	0.056	***	-0.159	***	0.004	
Married	-0.044	***	-0.028	**	0.075	***	-0.003	
Separated	0.040	**	0.025		-0.069	***	0.004	
Widowed or divorced	-0.003		0.013		-0.009		-0.001	
Hispanic	0.098	***	0.032	**	-0.106	***	-0.024	***
African American	0.058	***	0.083	***	-0.130	***	-0.011	
Other	0.047	**	0.076	***	-0.106	***	-0.018	
Has child	-0.015		0.018		-0.005		0.002	
Number of kids	0.009	**	-0.003		-0.007		0.001	
Unemployment rate currently	-0.003		0.012	**	-0.013	**	0.004	
U/e rate at old job	0.002		0.006		-0.007		-0.001	
Always in private sector	-0.029		-0.002		0.014		0.016	
Moved into the private sector	0.013		-0.029		-0.046		0.062	*
Moved out of the private sector	0.021		0.072	**	-0.122	***	0.029	
Received advanced notice	-0.077	***	0.012	*	0.103	***	-0.038	***
Moved due to job	-0.018	**	0.005		0.007		0.006	
Plant closed down	0.074	***	-0.036	***	-0.077	***	0.038	***
Mass layoff due to lack of work; firm survived[29]	0.067	***	-0.010		-0.085	***	0.029	***
# yrs since job was lost	-0.035	***	-0.041	***	0.062	***	0.014	***

　　　* significant at 10%; ** significant at 5%; *** significant at 1%

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[29] The omitted category is someone who lost a job due to position or shift being abolished.

This shows that those who always had health insurance tend to be older, more likely to be female, and more likely to be married, but less likely to be married females (who are more likely to never had employer health insurance in their own names). African Americans and those of Hispanic origin are more likely to have never had employer health insurance, or only had it on the old job, suggesting greater vulnerability in the job transition process for minorities. The unemployment rate exerts an effect in an expected direction, suggesting that an individual is more likely to lose health insurance through displacement in times of high unemployment.