Sinking with the Ship: How Does Involuntary Job Displacement Affect Health Insurance?

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Abstract:

Numerous job cuts during the 2001 recession and the subsequent sluggish recovery have no doubt 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. Prior research indicates that workers who are about to be displaced earn less than their non displaced counterparts, and that wage losses associated with displacement actually start prior to the date of separation. In this paper, I use panel and cross sectional data to test whether workers about to be displaced differ in their health insurance coverage from their employer relative to similar workers who are not displaced, and if so, how far back in time these health insurance losses occur. I also test the extent to which other sources of health insurance cushion the effects of displacement on health insurance. I 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 two years prior to displacement. Other sources of health insurance play an important role in protecting the health insurance coverage of these workers, even in the pre-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.[2] Job displacement often entails the loss of wages as well as non wage compensation, which on average constituted about a quarter of total compensation in 1997 (Pierce 2001). The main policy concern addressed by this paper is the connection between job displacement and health insurance coverage, at the time of displacement as well as the period leading up to it. 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 health of the worker's 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.[3] 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 unemployment compensation system replaces a portion of lost earnings, no such system exists to replace fringe benefits lost while unemployed.

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[2] http://www.bls.gov/news.release/empsit.nr0.htm, access date June 28th, 2003. For a table of mass layoffs from April 2001 to May 2003 by month, see http://www.bls.gov/news.release/mmls.t01.htm

[3] 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.

The object of this research is to study the dynamics of health insurance changes for those suffering involuntary job loss, before actual job separation.[4] Specifically, before job loss: are displaced workers less likely to have employer health insurance at the point of displacement compared to similar workers who are not subsequently displaced, and how far back in time does this trend start? What role does other sources of health insurance play in protecting the workers in such situations against uninsurance?

Relevance of previous literature to current study:

Wage losses prior to 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). 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 actual job displacement, and that they have declined about 15 percent during those three years. These losses are generally explained by 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 (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

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[4] In all these analyses, I study actual health insurance receipt, rather than offers from employers. While it would be interesting to look at the two effects separately, 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 employer's offer decisions.

administrative data used by JLS, together with comparison groups from the March Current Population Survey (CPS), and finds that displaced workers earn about 9 percent less at the time of displacement than otherwise similar workers. An implication of the finding from the earnings literature is that those studies only taking into consideration the post-displacement losses of workers clearly underestimate the total costs suffered by these workers. No studies have looked at whether there is a correspondingly lower probability that a worker receives 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 understanding job displacement.

In this paper, I first I use a method along the lines of the JLS and Ruhm studies to investigate whether health insurance losses appear to start before displacement by employing Survey of Income and Program Participation (SIPP) data to see how the health insurance characteristics of lost jobs changed over time as date of displacement drew closer, and how the workers about to be displaced compare to workers who are not subsequently displaced. Second, I apply the method used in De la Rica to this question. Using information on a treatment group of individuals who were displaced from the CPS DWS, I compare their receipt of health insurance to similar workers who were not displaced from another CPS supplement (in the case of health insurance, the March CPS).

Unemployment and health insurance:

A few recent papers have documented the fraction of workers who become uninsured when they experience a change in employment status, although most have not considered involuntary employment changes separately from all job separations. Gruber and Madrian (1997) and Kapur and Marquis (2003) find that employment separation 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 for unemployed workers, it is still unaffordable for most workers. In Gruber and Madrian (1997), 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 as a subsidy to the job search process to a larger extent than COBRA, and that this may also serve a valuable purpose in the pre-displacement era, should there be negative effects on the workers own employer health insurance during that period.

In a related paper, Simon (2001) compares the compensation package workers earn at their old and new jobs post displacement to see whether workers undertake 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. That paper also provides some preliminary evidence that the loss of health insurance is non-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, using state level CPS data.

Theoretical motivation:

An establishment which is failing may start cutting its wages before eventually cutting jobs in an attempt to stay afloat. Firms may similarly cut benefits by shifting to less generous coverage, using larger copays, or eliminating that benefit 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 author's 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 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).

Empirical Strategy

I estimate the effect of displacement on health insurance using the panel and cross sectional data (SIPP and the CPS). Each has its own advantages and disadvantages, although the SIPP longitudinal data enables the testing of more hypotheses related to the evolution of health insurance during the displacement process.

SIPP Method:

Using the SIPP, I look at the trajectories of health insurance at jobs lost compared to ongoing jobs. The SIPP panels follow individuals over a 2.5 year to 4 year time frame, interviewing them once every four months to collect monthly data for months since the last interview. This data set is unique among panel data sets because it contains information about both displacement and health insurance sources and allows us to test a range of hypotheses. In addition to seeing how displaced workers differ from non-displaced workers at the point of exit from the job, we can also investigate how the gap in health insurance between displaced and non displaced workers evolves prior to job loss. 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; one in which we test health insurance differences between non displaced workers and displaced workers at different points before displacement, and in the other we look specifically at how health insurance has changed 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, there is one observation per displaced worker showing information at the old job, compared to jobs held by a control group of non-displaced individuals.[5] This exercise investigates whether it makes a difference whether

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[5] These are individuals who did not experience a job displacement at any point during their SIPP panels.

we look at displaced workers 1, 3, 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.[6]

The equation representing the first exercise is:

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

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. D=1 for people who were displaced, and is zero for those who were never displaced during the SIPP panel. The equation is first estimated looking at displaced workers information one full month prior to displacement. We take this as the starting point as workers who are displaced early in the month may report not having insurance although they could have been insured on 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 10% subsample of these observations to simplify the computations.

In the second regression, I use data on all available monthly observations from displaced workers on their job prior to displacement to see how far back in time the displaced workers started losing health insurance.[7] I first look at the linear and quadratic

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[6] The X vector now contains the following variables: gender, age in years, its square, indicator for being married, indicator for being a married female, indicator for having children, indicators for race being Black, Hispanic, or White (with 'Other' being the omitted category), indicators for less than high school completion, just high school, some college, college completion, and more than college, a set of industry (12) and occupation (13) dummies, monthly state unemployment rate, tenure at the job in years and its square, hours worked, its square, and an indicator for working greater than 35 hours, dummy variables for working in a small (under 25 workers), or 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.

[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.

effects of time until displacement, using data just on displaced workers. L1 and L2 are
the length of time pre displacement in months and its square.

[2] $\Pr(HI_i) = \Phi(\beta_1 + \beta_2 L1_i + \beta_3 L2_i + \beta_4 X_i + \varepsilon_i)$

We also estimate a specification which parameterizes time to displacement in discrete 3
month intervals instead of a linear and quadratic term.

[3] $\Pr(HI_i) = \Phi(\beta_1 + \beta_2 D1_i + \beta_3 D2_i + .. + \beta_{11} D10_i + \beta_4 X_i + \varepsilon_i)$

where D1 represents the observations from the first through third month pre
displacement, and so on (e.g. D10 represents the 10th three month interval, months 28-30,
prior to displacement).

These two sets of regressions are repeated for different insurance outcomes. The
first set is estimated for own employer HI and any health insurance, while the second is
estimated for own employer health insurance and spousal HI (limited to married
workers). We also conducted two specification checks to study whether results differed
substantially if we excluded workers who are laid off from our displaced worker sample,
and if we exclude workers with 20-34 hours per week from our analysis, rather than using
right hand side variables to control for hours worked. Both tests showed that the results
reported for the main specifications are robust to these changes in specification.

SIPP Data:

I use the 1996 and 2001 SIPP panels, which span the period 1996 to 2003. I 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. 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

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the 2001 panel. We drop four 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: employer became bankrupt or sold the business, there was slack work or business conditions, or the individual was laid off, and is not a contingent worker. As it is impossible to discern laid-off worker who were subsequently re-hired by the same firm from those who were not,[8] 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.[9]

SIPP Preliminary Analysis:

Table SIPP1 presents statistics comparing individuals in the last full month of the job from which they are about to be displaced to those who do not experience a displacement during the SIPP panel. There are 7,639 distinct job displacement events in the SIPP occurring over the years 1996-2004 in which we have data on the last month on the job from which the individual was displaced. For computational ease, we take a 10 percent random sample of the control group universe (those who have never been displaced during the SIPP) which results in 191,507 observations. When we look at

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[8] Personal communication with Census Bureau SIPP researchers, May 2005.
[9] We do this so that we don't exclude any workers who may be offered health insurance. Author 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 show 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 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.

displaced workers during the last full month of the job from which they are about to be

displaced, their likelihood of reporting health insurance receipt from their employer is

about 27 percentage points lower than non displaced workers. The rate of any health

insurance (which includes spousal and other coverage) shows a smaller gap, but is still

about 20 percentage points lower. But displaced workers also have different demographic

characteristics than non displaced workers, i.e. 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, and these differences need to

be taken into account when comparing the health insurance coverage of the two groups to

see how much of the gap may have resulted from the displacement process.

Table SIPP1: Descriptive Statistics Comparing Displaced and Non Displaced workers [10]

Variable	Displaced		Non-displaced	
	Mean	**St Dev**	**Mean**	**St Dev**
Health insurance any source	0.694	(0.461)	0.893	(0.309)
Own employer health insurance	0.409	(0.492)	0.673	(0.469)
Monthly wage in yr 2000 $	1998	(2165)	2668	(2598)
Log of above	7.325	(0.876)	7.630	(0.783)
Age in years	36.61	(10.85)	39.15	(10.75)
African American	0.119	(0.324)	0.117	(0.321)
Hispanic	0.144	(0.351)	0.100	(0.301)
White	0.687	(0.464)	0.737	(0.440)
Asian	0.034	(0.182)	0.039	(0.193)
Other race	0.015	(0.121)	0.008	(0.087)
Has not completed HS	0.159	(0.366)	0.089	(0.285)
Just completed HS	0.346	(0.476)	0.309	(0.462)
Has some college	0.321	(0.467)	0.321	(0.467)
College grad	0.134	(0.340)	0.192	(0.394)
More than college	0.040	(0.196)	0.089	(0.285)
Female	0.420	(0.494)	0.471	(0.499)
Married	0.510	(0.500)	0.616	(0.486)
Female*Married	0.202	(0.401)	0.279	(0.449)
Job specific experience in yrs	10.47	(15.03)	16.91	(24.58)
Current hrs/week	39.95	(9.535)	41.05	(8.813)
Works 35 or more hours a week	0.833	(0.373)	0.884	(0.321)
Unemployment rate in the state	5.067	(1.074)	4.903	(1.107)

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[10] Displaced workers are considered in their last month on the job.

SIPP Regression Analysis

Probit marginal effects and standard errors from the displaced worker indicator of Eqn [1] estimated on SIPP data are shown in Table SIPP2a. 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 month of their old job, while the others show the effect of health insurance 3, 6, 12, 18 and 24 months prior to displacement. These results are all for own-employer health insurance as well as any health insurance.

Table SIPP2a: Eqn [1] Probit Marginal Effects of Displaced Worker Variable by Months Pre Jobloss

	1 month	3 months	6 months	12 months	18months	24 months
	Own employer provided health insurance					
Displaced worker	**-0.218**	**-0.131**	**-0.046**	**-0.051**	-0.018	0.003
	(0.010)	(0.010)	(0.006)	(0.014)	(.016)	(0.021)
	Any health insurance					
Displaced worker	**-.077**	**-.052**	**-.034**	**-.017**	-.003	0.001
	(.005)	(.005)	(.005)	(.006)	(.006)	(0.008)
Observations	199094	197563	195642	193635	1927244	192125
Robust standard errors in parentheses. Marginal effects in bold font are significant at the 1% level.						

The results show that displaced workers are almost 22 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). Since the raw gap was 27 percentage points, observable differences in characteristics included in the regression are responsible for on fifth of the raw gap. Looking across the different specifications 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.[11] This helps shed light on the extent to which unobservables 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 til the point of displacement is likely due to displacement itself.

The second row of results in Table SIPP 2a 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 significantly different from non displaced workers in their probability of being covered by any health insurance 18 to 24 months prior to displacement,[12] are only about 8 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 in Table SIPP3 (discussed later) suggest that both factors play a role. 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

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[11] For example, there are 7,639 observations (obs) for which we have data on the last full month of the displaced job, but 6,088 obs 3 full months prior to displacement, 4,167 obs 6 months prior to displacement, 2,160 obs 12 months prior, and 650 obs 24 months prior to displacement.

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

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 SIPP2b: Eqn [2] and Eqn [3] Probit marginal effects and standard errors. Own employer health insurance			
	Eqn (2)		Eqn (3)
Number of months pre displacement (L1)	0.011	***	
	(0.001)		
Square of above (L2)	-0.000	***	
	(0.000)		
Months1-3			-0.209 ***
			(0.026)
Months 4-6			-0.122 ***
			(0.026)
Months 7-9			-0.093 ***
			(0.025)
Months 10-12			-0.079 ***
			(0.025)
Months 13-15			-0.072 ***
			(0.025)
Months 16-18			-0.063 ***
			(0.024)
Months 19-21			-0.037
			(0.023)
Months 22-24			-0.016
			(0.022)
Months 25-27			-0.017
			(0.020)
Months 28-30			-0.021
			(0.018)
Observations	7989683 645		798961 02957

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

Table SIPP2b 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 health insurance mounts over time at an increasing rate. In [3], we see again that

the difference mounts over time. This specification implies that relative to 30-48 months

prior to job loss,[13] being 1-3 months prior to job loss involves a loss of employer health

insurance of 21 percentage points. Relative to 30-48 months prior to job loss, there is no

loss of health insurance when one looks at 19 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.

Table SIPP3: Reasons for Non-coverage from Own Employer, by Phase of Displacement (Calculated as percentage of those who do not have own employer health insurance)

	1 month pre-jobloss	At new job;1 month into it	At new job; 4 months into it
Employer did not offer health insurance to any workers	50%	47%	52%
Employer offered to some, but worker uncovered	50%	53%	48%
Of those offered and uncovered, the reason is:			
- ineligible	54%	59%	46%
- eligible & denied	1%	0.3%	1.5%
- elected not to be covered	25%	24%	35%
- other	19%	16%	18%
Number with no own employer insurance	548	757	515
Number with no own employer insurance and offered health insurance	274	404	274

Note: Sample is limited to displaced workers who are in the current phase during the time that the Topical Module is asked, SIPP 1996 and 2001 panels.

Table SIPP3 provides some evidence for why individuals remain uninsured, even

though an employer offers health insurance. As this question is only asked in one wave of

each SIPP panel, this analysis remains descriptive due to the small sample sizes.

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[13] 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.

However, it is interesting to see that of individuals who are not covered by employer health insurance in their own name, one month prior to displacement, half of them work in companies that do not offer health insurance to their employees at all. This division remains even after the displaced worker finds a new job. Of those in firms that offer HI, about half are not eligible for health insurance, but between 25 and 35 percent choose not to be covered.[14]

The contribution of CPS to this question

While the SIPP is the best data set for investigating how health insurance losses build over time for displaced workers, prior work on wage loss from displacement has used the CPS Displaced Worker supplements together with the March CPS data in a way that allows some analysis of this question. The advantage of using the CPS is that it contains data from the 1980s as well as more recent data. Another advantage of the CPS is its large sample size and the ability to conduct separate analysis for different demographic groups. The disadvantage of the CPS is the inability to track the same individual over a long and detailed time period, as in the SIPP.

CPS Method:

As in the De La Rica (1995) wage study, I 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, I judge the extent to which displaced workers may have already suffered cuts in fringe benefits by the time the actual job displacement occurs, and how those differences compare between the 1980s and the 1990s, and between

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[14] Having spousal health insurance is one of the reasons many of these workers refused coverage.

different demographic groups. As far as possible, the CPS sample is selected in a manner similar to the SIPP sample.

CPS Data:

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.[15] 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. I limit my sample to non-self employed workers working 20 or more hours a week between the ages of 20 and 61[16] who were displaced from a job in the last 2 years.[17] Since displacement is a difficult concept to define in seasonal jobs such as agriculture, all workers in this industry are excluded.

The control group consists of similar individuals (non agricultural, non self employed workers aged 20 to 61 working 20 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.[18] Furthermore, I have restricted the sample to those who were not displaced from those jobs in that year.[19] By aggregating and standardizing all available

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[15] Displaced workers are those whose plan or company closed or moved, or those whose company is still operational, but the worker lost the job due to slack or insufficient work, or because their position or shift was abolished. This definition is as close as possible to the definition used in the SIPP, even though each survey uses its own particular way of wording the question.

[16] Thus, those eligible for Medicare following displacement are excluded.

[17] 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. I select a more limited period of 2 years for all surveys used.

[18] Since the recall involved in the March survey is just one year, I 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.

[19] To do so, I 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. I thus remove those in the March 2000 survey who are in other months as a first step. Second, I 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

years of the DWS, I assemble information on jobs lost during the period 1983 to 2004.[20]

The final sample consists of 29701 displaced workers and 366,618similar workers who

were not displaced.[21] All estimates are weighted to reflect a nationally representative

population (using weights that have been standardized within survey-year).

CPS Preliminary Analysis

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 $673 per week in 2000 dollars, compared to

$584 for displaced workers (see Table CPS1). They are about 8 percentage points less

likely to receive health insurance through their employer (55 percent relative to 63

percent). Displaced workers tend to be younger (by almost a year), less likely 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

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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).
[20] 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.
[21] 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.

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. I 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)	0.627	(0.48)	0.55	(0.489)
Weekly wage in yr 2000 dollars	672.7	(946)	583.7	(431.0)
Log of above	6.20	(0.790)	6.13	(0.612)
Age in yrs	36.89	(10.96)	35.69	(10.86)
Fraction who live in an MSA (1,0)	0.670	(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)	0.750	(0.434)
Race=Black non Hispanic	0.1118	(0.315)	0.1155	(0.317)
Female (1,0)	0.471	(0.493)	0.420	(0.490)
Married (1,0)	0.5964	(0.486)	0.5693	(0.495)
Never married (1,0)	0.2658	(0.425)	0.2524	(0.434)
Married female (1,0)	0.2604	(0.421)	0.1890	(0.392)
Works 35 or more hours	0.866	(0.340)	0.881	(0.320)

Note: There are 29701observations in the DWS sample, and valid wages were recorded for only 26238 of these. There are 366618 observations in the MCPS sample, and valid wages were recorded for only 366519 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:

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

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 explained below. 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.

I 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 [1] 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 1, Displaced Worker Variable

	Marginal effect		St. error	N
Without 2004 data and with industry and occupation indicators	-0.103	***	(0.005)	331952
Without 2004 data and without industry & occupation indicators	-0.106	***	(0.005)	331967
With 2004 data, without industry & occupation indicators	-0.102	***	(0.005)	368279
Last specification, separately estimated for:				
Males	-0.111	***	(0.006)	192681
Females	-0.086	***	(0.013)	175598
African American	-0.095	***	(0.014)	36239
White	-0.106	***	(0.005)	287292
Hispanic	-0.085	***	(0.015)	27722
Low educated (high school drop outs)	-0.084	***	(0.012)	37118
Highly educated (college completers)	-0.094	***	(0.011)	65668
For the 1980s	-0.108	***	(0.008)	113490
For the 1990s	-0.112	***	(0.007)	180436
For the 2000s	-0.078	***	(0.010)	74353

Note: *** denotes statistical significance at 1%

This regression controls for the following variables: age in years, age squared, whether works 35 or more hours, 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.[22] Some specifications include industry and occupation indicators as indicated. Displaced workers are about 10 percentage points less likely to have employer provided health insurance at the former job relative to otherwise similar workers who were not displaced.[23,24] This result is statistically significant at the 1 percent level. Since estimating the model using all years

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[22] Note that the March CPS does not contain job specific experience, and thus this is not included in the regressions, as it is in the SIPP.

[23] As a check, I 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.

[24] Also note that when the sample is restricted to workers with 35 or more hours a week (rather than just controlling for working hours in the regression) the estimates are about one percentage point larger in absolute terms.

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 [1] is estimated on different subgroups of the population.

To investigate the extent to which the disadvantage suffered by displaced workers differs by individual characteristics, I first split my sample by sex. These results show that female displaced workers were less disadvantaged compared to male displaced workers relative to their peers, but this difference in marginal effects is not statistically significantly different from zero. The racial and ethnic breakdowns also 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, but this too is not a statistically significant difference. The only statistically significant difference in coefficients is over the time periods, showing that the loss associated with displacements occurring in the years 2000 and up is smaller by about three percentage points compared with the 1990s and 1980s losses.

There could obviously be many unobserved differences between the displaced and non displaced groups of workers that could help explain the gap that is statistically significant in all cases in the Table above, thus the result cannot be immediately interpreted as the causal effect of displacement. However, the differences seen here are comparable to those in the SIPP (at the point 3 to 6 months prior to displacement) where the nature of the data allows us to be more confident that the differences seen at the time of displacement are not due to unobservable differences. Since the CPS question is not precise in time frame, asking workers whether they had health insurance on the job maybe closer to asking if they had health insurance at any point during the several

months, rather than asking them if they had health insurance during the last month on the job. Thus, the estimates from the two surveys could be viewed as fairly close to each other. The literature on wages using a similar technique (De La Rica) faces this same issue of assigning causality, 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 raw difference, but there could still be a large role played by unobservables as well as differences across the two CPS supplements here (and in the De LaRica study).

Discussion

The SIPP and CPS results overall indicate that workers who are about to be displaced are less likely to have own employer health insurance than similar workers who are not displaced. When we consider health insurance during the last month of the job, the difference between displaced and non displaced workers is large- upto 22 percentage points for coverage from ones own employer, and 8 percentage points for coverage from anywhere. However, the difference between these workers doesn't not exist in statistical and economic terms 18 to 24 months prior to the job loss event. The CPS results show a difference of about 10 percentage points in own employed health insurance. This result is roughly consistent with the SIPP results if one interprets the health insurance on the job question to reflect whether the job provided health insurance at least until a few months before displacement, rather than right at the exit point from the job. The SIPP results are preferred for several reasons, including the fact that the CPS analysis crosses two different supplements and in not precise in timing or sources of health insurance like the SIPP. However, the advantage of the CPS is the ability to conduct sub-group analysis due

to sample size and availability of data pre 1996. In this regard, the CPS results show that the gap between displaced and non displaced workers is fairly consistent across groups defined by gender, race and ethnicity, education, and time periods, although there is some evidence that the losses in the 1980s and 1990s are higher than during the 2000s.

Conclusion

In this paper, I investigate how displacement affects the trajectory of health insurance. 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 worthy of study in the future. I test whether displaced workers start losing health insurance coverage before the date of separation, and how far back this starts. I also investigate the role of alternative sources of health insurance in protecting workers against uninsurance, and whether differences exist by various subgroups.

This analysis yields several interesting results. First, when displaced workers are viewed on the last month of their job relative to non displaced workers, the gap in own employer health insurance is close to 27 percentage points. This difference could be partly due to unobservable differences between the two sets of workers, but this difference is still large (22 percentage points) after controlling for a rich set of observable characteristics. I next turn to the longitudinal data in the SIPP to identify the causal effect of displacement. There, I 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 most of the difference occurs during the last

few months, the last year on the job is also quite important. 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 most 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 8 percentage points less likely to have health insurance through any source than non displaced workers.

An unanswered question is whether these health insurance changes from 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. Anecdotal 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 who are about to be acquired appear to have cut costs in the prior 2 years. Their interpretation is that firms first cut costs to try to stay afloat and, when that tactic no longer works, they merge/sell.

The policy importance of these results also depends on the workers subsequent experience after job loss, {citation to the companion paper}. Clearly, worker displacement has serious consequences for 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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