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The Effects of Health Shocks on Employment and Health Insurance: The Role of Employer-Provided Health Insurance

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ABSTRACT

We study how men's dependence on their own employer for health insurance affects labor supply responses and loss of health insurance coverage when faced with a serious health shock. Men with employment-contingent health insurance (ECHI) are more likely to remain working following some kinds of adverse health shocks, and are more likely to lose insurance. With the passage of health care reform, the tendency of men with ECHI as opposed to other sources of insurance to remain employed following a health shock may be diminished, along with the likelihood of losing health insurance.

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1. Introduction

The merits and shortcomings of the U.S. system of health insurance, which is primarily employer-based for citizens under age 65, have been debated almost since its widespread adoption during and following World War II. There has been a resurgence of this debate with the passage of the Patient Affordability and Accountable Care Act (ACA). Employer-based health insurance has often been criticized for constraining employment decisions or creating "job lock" (Cooper and Monheit, 1993; Gruber and Madrian, 1994; Kapur, 1997; Adams, 2004; Stroupe et al., 2000).

A goal of the ACA is to provide continuous health insurance coverage when an individual is diagnosed with a serious disease that raises future costs of health care. Although the Consolidated Omnibus Budget Reconciliation Act (COBRA) allows employees to continue their employer-based health insurance coverage after they stop working, former employees pay the full cost of group coverage for a policy that is usually limited to 18 months – making COBRA a prohibitively expensive option for many and only a temporary measure even for those who can afford the full cost of coverage. Our research in this paper informs the debate about what we see as two central issues regarding employer-based health insurance: whether such insurance "locks" people who experience a health shock into remaining at work; and whether it puts people at risk for insurance loss upon the onset of illness or a new diagnosis of a serious disease, because these health shocks pose challenges to continued employment.

An unpublished study using Medical Expenditure Panel Survey (MEPS) data reports that nearly one in five individuals reporting fair or poor health lost coverage over a two-year period (Montz and Seshamani). A qualitative study jointly conducted by the Kaiser Family Foundation and the American Cancer Society reported 20 case studies of cancer patients who faced financial

difficulty as a result of gaps in the health insurance system (Schwartz et al., 2009). One of the themes that emerged was "people who depend on their employer for health insurance may not be protected from catastrophically high health care costs if they become too sick to work (p. 1)."[1]

Using primary data collected from a sample of Detroit women with breast cancer, we found that women with insurance through their employer ("employment-contingent health insurance," or ECHI) are significantly more likely to remain employed relative to women whose insurance is not provided by their employer, and that ECHI reduces the negative impact of cancer on weekly hours worked (Bradley et al., 2006). As part of this research, we developed a theoretical framework showing that the incentive ECHI creates to remain employed following a health shock should be stronger for men because they have fewer options for switching to their spouse's policy. Consistent with this prediction, Tunceli et al. (2009) report the tendency to remain employed after getting cancer if one has ECHI is strongest for men.

While our past research has focused on women, in this paper we focus on men. The effects of ECHI on men's behavior is particularly interesting because men are much more likely to get their health insurance through their employer than are women, simply because far more married women than married men get their health insurance through their spouse's employer. To study how dependence on one's employer for health insurance influences responses to health shocks, we exploit what we think is the most compelling quasi-experiment available, comparing the responses to health shocks of those who depend on their own employer for health insurance – who have "employment-contingent health insurance" (ECHI) – with the experiences of those who obtain their health insurance through their spouse's employer. Men with ECHI are very similar to men who depend on their wives for health insurance, implying that differences in how

[1] This claim is also reiterated in the popular press. See, for example, "Chronic Illness: Link to Economy, Rising Risk," *Los Angeles Times*, January 31, 2011.

these two groups of men respond to health shocks may provide a good quasi-experiment to estimate the effects of dependence on one's employer for health insurance.[2]

2. Empirical Approach

We use data from the Health and Retirement Study (HRS) on employed married men with health insurance either through their own employer or their spouse's employer. In the HRS, we observe employment and health insurance status at interviews two years apart, and whether a health shock occurred in the intervening period between the interviews.

The first outcome of interest is remaining employed following a health shock, and the second outcome of interest is loss of health insurance following a health shock. The outcomes are modeled as functions of health shocks (HS), source of health insurance prior to the shock (ECHI or spouse's employer), control variables, and unobserved influences (ε). We estimate the probability of employment (E) using

$$\Pr (E_{i2} = 1 | E_{i1} = 1, INS_{i1} = 1, HS_{i1} = 0, ECHI_{i1}, HS_{i12}, X_i), \quad (1)$$

where the 'i ' subscript denotes individuals, and the '1', '2', or '12' subscripts denote the first interview (period 1), second interview (period 2), or the intervening period.

The condition $E_{i1} = 1$ implies that the respondent was employed at period 1, the condition $INS_{i1} = 1$ implies that he had insurance in period 1, and the condition $HS_{i1} = 0$ implies that he was healthy as of period 1, reflecting our sample selection rules. The control variables in X include individual characteristics, spouse characteristics, and job characteristics, and are explained below.

This equation is estimated as a linear probability model. In addition to entering each of the variables linearly, we include interactions between HS and ECHI, using

[2] The similarity may reflect the fact that men whose jobs provide health insurance are more likely to be highly-skilled men with higher incomes, while men who rely on their spouses for health insurance may also be relatively high-earning men, reflecting assortative mating in marriage markets.

$$E_{i2} = \alpha + \beta_1 HS_{i12} \cdot ECHI_{i1} + \beta_2 HS_{i12} \cdot (1 - ECHI_{i1}) + \beta_3 ECHI_{i1} + X_i\gamma + \varepsilon_{i2}. \quad (2)$$

β_1 captures the effect of a health shock on employment for those with ECHI initially, and β_2 captures the effect of a health shock on employment for those without ECHI initially. The difference ($\beta_1 - \beta_2$) is then the difference-in-difference estimate, identifying how the effect of a health shock on employment transitions is influenced by ECHI.[3]

We estimate the same type of model to study insurance loss, for which the corresponding linear probability model is

$$INS_{i2} = \alpha' + \beta'_1 HS_{i12} \cdot ECHI_{i1} + \beta'_2 HS_{i12} \cdot (1 - ECHI_{i1}) + \beta'_3 ECHI_{i1} + X_i\gamma' + \varepsilon'_{i2}. \quad (3)$$

In equation (3), the difference-in-difference estimator ($\beta'_1 - \beta'_2$) identifies how ECHI influences the effect of a health shock on the loss of insurance.

In all estimations, we control for individual characteristics, job characteristics, and spouse characteristics. Individual characteristics include age, education (high school or less, some college, college degree or higher), race (white or other), and household income. Job characteristics include indicators for whether the job involves a lot of physical activity or stress.[4] We also control for part-time employment, employment in the public sector, and firm size. Since having dependents on the respondent's health insurance plan might increase the necessity of maintaining that insurance, we include a dummy indicating that one or more dependents is insured through the respondent's ECHI.

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[3] β_3 captures differences in employment transitions between those with and without ECHI, and *without* a health shock, to account for unmeasured differences between workers with ECHI and insurance through the spouse's employer (non-ECHI) that are correlated with remaining employed. Equation (2) is a re-parameterization of the more standard difference-in-difference specification

$$E_{i2} = \alpha + \gamma_1 HS_{i12} + \gamma_2 ECHI_{i1} + \gamma_3 HS_{i12} \cdot ECHI_{i1} + X_i\delta + \varepsilon_{i2},$$

where γ_3 is the conventional difference-in-differences estimator. The formulation in equation (2) yields direct estimates of the effects of health shocks for the two groups. The models are equivalent, with the same differentials or effects captured in different combinations of the coefficients.

[4] We dichotomize this into all/almost all of the time, most of the time, or some of the time versus none or almost none of the time.

Finally, we add variables to the model capturing the employment situations of spouses at the first interview. We include dummy variables for spouses not working, working part-time, or retired, which are related to the dependency of the household on the respondent's employment, and we include a control for the spouse's self-reported health status. There are also controls for whether the spouse is older than 65 and if the spouse is insured by the respondent's health insurance plan, both of which address the need to maintain health insurance for the spouse.

The key hypothesis underlying our analysis of employment responses to health shocks and how these responses differ for those with ECHI is that those who experience health shocks *and* depend on their job for health insurance may be constrained to keep working. We therefore also focus, in some of our analyses, on a narrower definition of health shocks – in particular, health shocks entailing a new diagnosis *only*, without either hospitalization or a self-reported decline in health. Our goal in this analysis is to try to isolate health shocks that do not entail an increase in morbidity that could directly affect a person's ability to remain employed, but which *do* entail increased future health care costs and hence the value of health insurance; doing so provides a cleaner test of the hypothesis that the need to maintain health insurance locks people into employment. In contrast, increases in morbidity may directly reduce the likelihood of employment independently of the incentive effects of ECHI. This approach is based on the conjecture that increases in morbidity that affect employment directly are *most* likely to trigger large self-reported declines in health (or hospitalizations), whereas those with new diagnoses but *without* a large self-reported decline in health (or hospitalization) seem most likely to have received mainly a "health-cost" shock.

A second implication, however, is that if health insurance depends on continued employment, then those with ECHI may be at greater risk of losing insurance when they

experience a health shock that increases current morbidities, because such health shocks interfere with work. Thus, we also report analyses focusing on those with *only* an increase in morbidity (a self-reported decline in health), hypothesizing that these kinds of shocks are more likely to result in loss of health insurance.

3. Data

We use the HRS surveys from 1996 through 2008. We first selected all observations for which the respondent was interviewed in at least two consecutive HRS waves with non-missing data for the employment, insurance, health, demographic, and other variables we use. We excluded the 1992 and 1994 waves because it is impossible to distinguish current versus former employer as the source of health insurance in those waves.[5] We then narrowed the age range to 64 years or younger at the time of the second interview, to avoid respondents eligible for Medicare.[6] In addition, we selected the subset of these observations in which the respondent was married, employed, and had employment-based health insurance (from their employer or union or their spouse's employer or union[7]) in the first interview of the pair. Respondents insured by a former employer, any government plan (e.g., Medicare, Medicaid, military insurance), a privately-purchased policy, or who were uninsured at the time of the first interview, were excluded.

We restricted the sample, to the most practicable extent possible, to healthy men. We selected pairs of observations in which, at the first observation in the pair, the respondent had not

[5] As insurance through a former employer is unlikely to depend on current employment, including respondents with former employer insurance in the ECHI sample might be expected to weaken evidence of job lock or insurance loss for those with ECHI incorrectly coded.

[6] Most HRS respondents are near the upper end of this age range, although occasionally spouses of the target population are much younger.

[7] As union membership is commonly tied to employment with a particular firm, it seems reasonable to assume that losing or changing jobs affects union-provided as well as employer-provided insurance. For this reason, we chose to treat union insurance as ECHI. However, the union-insured workers make up less than 2% of the sample, and excluding them does not meaningfully change the results.

previously been diagnosed with lung disease, cancer, stroke, diabetes, angina, or congestive heart failure. We also excluded observations on individuals who had been hospitalized more than once or for more than one night in the past two years, or who described their health status as poor or fair in the past two years. An examination of this initially healthy sample helps to isolate the effects of a new health event rather than an exacerbation of a chronic condition.

We define three types of adverse health events, henceforth referred to as health shocks. Given that self-reported health status is recorded as excellent, very good, good, fair, or poor, we define a health self-report decline (SRD) as a shift from "excellent," "very good," or "good" health status in the first interview to "fair" or "poor" health status in the second. The second shock we use is a new diagnosis of cancer, lung disease, angina, congestive heart failure, or stroke, reported at the second interview. Our third health shock measure is hospitalization on at least two occasions or for at least two nights between the first and second interview. In addition, we look separately at health shocks consisting of only new diagnoses or only self-reported health declines in the same period, for reasons discussed earlier.

We define the ECHI group as those with primary health insurance from the current employer or union as of the first interview. Our "non-ECHI" comparison group includes those with insurance through their spouse's employer or union.[8]

The sample selection procedures described thus far leave us, in many cases, with multiple possible pairs of observation on each respondent. For those respondents who ultimately report a health shock, we select the pair of observations bracketing this adverse health event, because the incidence of health shocks in the sample is low. For those respondents who never report a health shock, we randomly select one pair of observations.

[8] As a short-hand, we refer to these two types of insurance as coming through the employer or the spouse's employer.

Table 1 reports how the sample selection rules led to our analysis samples. We start with 39,896 consecutive-wave pairs of interviews on 10,258 men. When we restrict the sample to those who are under age 65 at the second interview, and married and employed with health insurance through their own employer or their spouse's employer as of the first interview, we are left with 2,160 observations. After limiting the sample to men who initially reported good or better health, who had no prior diagnosis of any of the listed diseases, and who had not reported a hospitalization of more than one night or more than one hospitalization in the prior two years, we have 1,709 observations. Excluding respondents with missing data on the variables required for our analysis, we arrive at the final sample of individuals, consisting of 1,582 men of which 1,379 had ECHI at the first interview, while 203 were covered by their spouse's employer.

Table 1 also reports the number of men who experienced health shocks by insurance source. The most common health shock is hospitalization, which affected 209 men with ECHI and 36 men with spouse insurance. A new diagnosis of the diseases listed above was reported by 103 men with ECHI and 22 men with other insurance. There were 171 men with ECHI and 25 men with spouse employer insurance who had a self-reported health decline.

Table 2 provides information on the relationships between alternative possible health shock measures, including the individual diseases that make up new diagnoses. Rates of hospitalization and self-reported decline (SRD) vary greatly by diagnosis. About 11% of respondents who are not diagnosed with lung disease, cancer, stroke, angina, or congestive heart failure self-report a decline in health status, with the rate more than doubling for those with a new diagnosis of one type or another. There is a much larger difference in hospitalization rates between respondents with and without a new diagnosis. Cancer and especially strokes have the highest rates of hospitalization and SRD. These differences match our expectations concerning

the different diseases; some diagnoses have little immediate impact on contemporaneous morbidity or quality of life, while strokes are immediately debilitating or life-threatening, and cancer encompasses many different diseases that often require disruptive treatments such as surgery, chemotherapy, and radiation where the adverse affects accumulate over time.

4. Results

4.1. Descriptive statistics

Table 3 reports descriptive statistics by health shock and insurance source. Among men with ECHI at the first interview, 82% are employed at the second interview, the same percentage as for men with insurance through the spouse's employer. Most men with ECHI retain their health insurance through this source (76%) as of the second interview, and a few become uninsured (3%). About a quarter (24%) of men with insurance through the spouse's employer at the first interview gain ECHI by the second interview and only 2% become uninsured. Most men with ECHI cover their spouse (65%) and many also cover other dependents (38%).[9] Men with ECHI, rather than insurance through their spouse, are, at the first interview, less likely to be employed part-time ($p < .01$), and more likely to work for larger employers ($p < .01$) and in stressful jobs ($p < .01$). Men with ECHI are more likely to have spouses who do not work, who work part-time, who are retired, and who are in poor health ($p < .01$ in all cases). In general, though, men with ECHI and with insurance through their spouse are similar on many dimensions.

Relative to healthy men, the univariate comparisons suggest that health shocks involving either hospitalization or self-reported declines reduce employment ($p < .01$). Men who have some kinds of health shocks are more likely to have physical jobs as of the first interview ($p <$

[9] The small share of spouses covered by ECHI (6%) when the respondent is in the non-ECHI group could reflect either both people in the couple having employer insurance and for some reason each being on the other employer's plan, or reporting error.

.05). Men with lung disease or hospitalizations are more likely to have older spouses ($p < .01$). Spouses of men with some types of health shocks are less likely to work part-time ($p < .05$ or .01) and, in the case of self-reported declines, more likely to be in poor health ($p < .01$). Respondents who experienced self-reported health declines were more likely to be nonwhite ($p < .05$) and had lower incomes and education levels (both with $p < .01$).

4.2. Employment transitions

Table 4 reports difference-in-difference estimates of the effects of specific disease-related health shocks on remaining employed for those with ECHI versus insurance from a spouse's employer. The first-difference estimates indicate that men with ECHI who are newly diagnosed with cancer are as likely to be employed at the second interview as are otherwise similar healthy men. In contrast, for men with insurance through a spouse, those with a cancer diagnosis are more likely to be employed at the second interview (10.3 percentage points higher), although the difference is not statistically significant. Thus, the difference-in-difference estimate is negative, indicating that among men newly diagnosed with cancer, those with ECHI are 10.8 percentage points less likely to remain at work. However, this estimate is not significant. In contrast, the estimates for those newly diagnosed with lung disease indicate the opposite – those with ECHI are relatively *more* likely to remain employed after these health shocks. For this diagnosis, the point estimate of the effect of the health shock is negative and relatively large for those with insurance through the spouse (non-ECHI). The difference-in-difference estimate is positive, meaning that men who have ECHI and are newly diagnosed with lung disease are more likely to be employed than men with insurance through their spouse's employer. Despite the estimated differential being very large (28.7 percentage points), it is not statistically significant.

Statistically significant results are difficult to obtain given the small numbers of observations with these disease-specific shocks (e.g., only 35 for lung disease for men). On the other hand, note that the signs of the difference-in-difference estimates of the effects of ECHI on employment responses to health shocks differ for cancer and lung disease health shocks, indicating that the true effects may be centered on zero.

Broader definitions of health shocks are reported in columns (3)-(4). In these estimations, we find fairly consistent evidence that those with health shocks – whether they have ECHI or insurance through their spouse's employer – are less likely to remain employed, as expected. Moreover, for those with ECHI, the evidence of declines in employment is statistically significant for hospitalizations. Nonetheless, the magnitudes of the simple-difference estimates of the effects of health shocks on the two insurance groups are similar, and as a result we do not find statistically significant difference-in-difference estimates indicating that those with health shocks are more likely to remain employed if they have ECHI. These latter estimates are often near zero, and alternate in sign, again suggesting that the true effect may be near zero.

Next, we turn to analysis where we focus on health shocks entailing a new diagnosis *only*, without either hospitalization or a self-reported decline in health. As reported in column (5), we find evidence consistent with the hypothesis that ECHI locks those with health shocks into employment. For those with a new diagnosis *only*, the estimated employment effect for those with ECHI is positive and significant (a 19.8 percentage point differential, $p < .01$). This evidence is consistent with the conjecture that new diagnoses in the absence of hospitalization pose less of a barrier for those with ECHI to keep working. In the absence of a health shock, 18% of older men routinely leave employment over a two-year period (Table 3). However,

among those with a new diagnosis only and ECHI, the health shock does not affect employment. The net result, as reflected in the difference-in-difference estimates, is that men with an adverse health shock that raises the value of health insurance are more likely to remain employed if they had ECHI prior to the shock. The difference-in-difference estimate for men is large and positive – 30 percentage points – and statistically significant ($p < .05$).

4.3. Insurance

Table 5 explores the extent to which employed men with different initial sources of health insurance remain insured following a health shock. We focus first on columns (1)-(5), which present results for the health shock measures that do not exclude other types of shocks. For both hospitalizations and self-reported declines in health, the difference-in-differences estimates indicate that those with health shocks who have ECHI are more likely to lose (less likely to retain) their health insurance ($p < .05$ for hospitalization, and $p < .01$ for self-reported health declines). Note that the difference-in-difference estimates are to some extent driven by the positive simple-difference estimates for those with insurance through the spouse, which are generally statistically significant. These positive simple-difference estimates imply that, among those with insurance through the spouse, those with health shocks are more likely to remain insured. Because the insurance comes through the spouse, the health shock itself poses no barrier to remaining insured. On the other hand, given the health shock, it is not surprising that these couples take steps to retain the health insurance through the spouse's employer.

When we look at new diagnoses in isolation, which should capture those with shocks that increase the value of health insurance but do not increase morbidity, we find no evidence that health shocks lead to insurance loss. This is not surprising given the absence of an increase in morbidity, coupled with the increased future value of health insurance that boosts the relative

employment of those with ECHI and this kind of health shock. However, when we isolate those who have a self-reported health decline *only*, we find that those with ECHI are significantly more likely to lose health insurance.[10]

We estimated the same specifications on similarly-constructed samples for women. Sample sizes were small and the estimated coefficients inconsistent. We did not find evidence, for any health shock, of greater exit from employment or insurance loss for those who had ECHI. Nonetheless, the greater incentive to remain employed following a health shock that raises costs of future health care should be stronger for men, because they (and their family members) are more reliant on their own employment for insurance. The greater risk of insurance loss for men with ECHI could also be related to the nature of health shocks for men, or the nature of the work they do and what this implies for the barriers posed by poor health.

5. Discussion and Conclusions

This study informs policies regarding employment-based health insurance along two dimensions – labor supply and continuity of health insurance. Men with employer-provided health insurance appear to experience a form of job lock – or "employment lock" – following a health shock because of the incentives ECHI creates. In addition, those with ECHI are more likely to lose health insurance following some types of health shocks.

Prior published papers on health shocks, employment, and source of insurance find related evidence for men and women with cancer (Bradley et al., 2006; Tunceli et al., 2009), whereas in this paper we do not find such evidence for cancer-related health shocks. The variation in results should not be viewed as surprising. The samples are small and the studies use different definitions of health shocks, choices of control groups, and study periods.

[10] Because COBRA is available to those who experience a health shock, our evidence on responses to health shocks with regard to either remaining employed to retain insurance, or insurance loss, should be biased toward the null hypothesis of no differential effect of health shocks for those with ECHI.

Unfortunately, there is not a readily-available secondary dataset where the incidence of illness in working-age people is sufficiently high to definitively study the influence of ECHI on labor supply following a health shock in large, representative samples. Therefore, the only feasible research strategy is likely the continued assembling of pieces of evidence from disparate data sources, in an effort to see if they tell a consistent and cohesive story.

An important contribution this paper adds is the finding that differences in labor supply responses are driven by specific types of health shocks that are likely associated with higher health care costs in the future but not with immediate increases in morbidity that might pose barriers to continued employment. We have interpreted this evidence as reflecting behavioral responses to health shocks that do relatively more to increase expected future health care costs and relatively less to introduce contemporaneous health problems. Nonetheless, our results suggest caution; the incentive ECHI creates to continue working following a health shock is not always manifested and additional research is needed before definitive conclusions can be made.

Three limitations are noteworthy. First, we study a sample of married, employed, and initially-insured individuals. Given the socioeconomic characteristics of married versus single older adults, and given that marriage often implies the availability of multiple sources of insurance, the HRS participants we study are probably less vulnerable to loss of employment and loss of insurance than the population at large (in the corresponding age groups). Nonetheless, the strength of using this sample is that it provides a quasi-experimental design that allows us to isolate the effects of the source of health insurance more convincingly than if we compared the experiences of married, employed, adults with ECHI to those who were not married or were either uninsured or on public insurance. Moreover, most people in the age range we study are married.

Second, the HRS is confined to older individuals and our findings may not be applicable to those who are younger, although we view this as a minor drawback for studying the influence of health shocks, which are much more prevalent among older workers. Finally, qualitative data that can explain why individuals remain or quit working in response to health shocks, or why they lost their health insurance, is absent from the HRS.

Health care reform is intended, in part, to provide near-universal health insurance coverage. Our study indicates, for some specifications of health shocks, and using a nationwide sample, that ECHI encourages continued employment of men following a health shock. Access to alternative sources of health insurance provided through the ACA may reduce this employment lock after a health shock.[11] On the one hand, an enhanced ability to continue health insurance coverage without working could deliver health benefits, if men who would otherwise be constrained to keep working are instead better able to take the time to recover and to receive appropriate health care. On the other hand, this is a potential cost of less reliance on employment for health insurance; like any policy that provides resources to those not working, there are potential work disincentives.

[11] Research by Coile (2004) can be viewed as an indirect test of this hypothesis – albeit one that very well might not generalize to the effects of the ACA. Coile also uses HRS data, analyzing health, health insurance, and labor supply by including access to one's own or a spouse's employer-provided health insurance and retiree health benefits, and interactions of retiree health benefits with health shocks, as independent variables in an equation predicting labor supply response following a health shock. She did not find statistically significant evidence that those with retiree health insurance who experienced a health shock were more likely to reduce their labor supply. (Her model did not include interactions between health shocks and employer-provided health insurance.)

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Table 1. Men under age 65, Health and Retirement Study, 1996 – 2008

Sample inclusion criteria	Observations
Consecutive-wave observations[a]	39,896
Individuals	10,258
Aged 18 to 64 years at 2nd interview[b]	5,253
Married at 1st interview	4,354
Employed[c] at 1st interview	2,770
Respondent ECHI or insurance through spouse employer (non-ECHI)[d] at 1st interview	2,160
No fair or poor health or hospitalization for more than 1 night or more than 2 occasions in the two years prior to first interview, and no previous diagnosis of cancer, lung disease, angina, or congestive heart failure	1,709
No non-valid missing data for required variables	1,582
Men with ECHI at 1st interview	1,379
New diagnosis of an included[e] disease	103
Hospitalized[f] between 1st and 2nd interview	209
Decline in health self-report[g] between 1st and 2nd interview	171
Men with insurance through spouse employer (non-ECHI) at 1st interview	203
New diagnosis of an included[e] disease	22
Hospitalized[f] between 1st and 2nd interview	36
Decline in health self-report[g] between 1st and 2nd interview	25

[a] An observation is defined as two consecutive interviews with the same individual.
[b] '1st interview' and '2nd interview' refer to the pair of interviews that make up an observation.
[c] Working for pay with positive earnings.
[d] ECHI or insurance through the spouse's employer includes current employer or union-based health insurance. It excludes privately-purchased or former employer-based insurance in addition to Medicare, Medicaid, and other government-provided health insurance. "ECHI" refers to insurance from the respondent's employer or union.
[e] Included diseases are cancer, lung disease, angina, congestive heart failure, and stroke.
[f] Hospitalized for at least 2 nights or on 2 occasions since the 1st interview.
[g] Health decline defined as a drop from excellent, very good, or good at the 1st interview to fair or poor at the 2nd interview.

Table 2. Probability of health shock by disease

New diagnosis	N	% Hospitalized	% Decline in self-report	% Neither	% Both
None[a]	1,457	13%	11%	78%	2%
Any diagnosis[b]	125	46%	26%	43%	14%
Cancer	72	53%	26%	38%	17%
Congestive heart failure	2	0	0	100%	0
Stroke	11	73%	36%	18%	27%
Lung disease	35	29%	20%	57%	6%
Angina	9	33%	33%	44%	11%

[a] Did not report diagnosis of cancer, stroke, angina, congestive heart failure, or lung disease, during the relevant period.
[b] Reported diagnosis of cancer, stroke, angina, congestive heart failure, or lung disease, during the relevant period.

Table 3. Sample characteristics [a]

	Insurance source		Health shock				
	Spouse employer (non-ECHI)	ECHI	Healthy	Cancer	Lung	Hosp[b]	SRD[c]
N	203	1,379	1,140	72	35	245	196
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Employed at 2nd interview	82%	82%	84%	85%	80%	76%***	75%***
Health insurance at 2nd interview		***					
Uninsured	2%	3%	3%	0	3%	3%	6%
ECHI	24%	76%	70%	71%	63%	66%	67%
Spouse	64%	4%	11%	14%	11%	13%	13%
Government	1%	2%	2%	4%	3%	2%	3%
Privately purchased	0%	2%	2%	1%	0	2%	3%
Other	9%	12%	12%	10%	20%	14%	10%
ECHI covers spouse	6%	65%***	58%	50%	57%	57%	59%
ECHI covers other	1%	38%***	34%	28%	34%	32%	30%
Age							
Age under 40	0	1%	1%	0	0	0	0
Age 40-59	70%	67%	67%	61%	60%	68%	72%
Age 60-63	30%	32%	32%	39%	40%	32%	28%
Nonwhite	9%	9%	8%	14%	6%	11%	14%**
Education							***
High school or less	61%	60%	57%	61%	68%	61%	77%
Some college	5%	5%	6%	4%	6%	4%	4%
College degree	34%	35%	37%	35%	26%	35%	19%
Annual income		**					***
Under $20k	1%	1%	1%	1%	0	1%	1%
$20k-$75k	37%	47%	44%	36%	60%	47%	60%
Over $75k	62%	52%	55%	63%	40%	52%	39%
Physical job	33%	35%	34%	31%	51%**	31%	42%**
Stressful job	54%	64%***	62%	64%	54%	63%	64%
Public sector job	4%	5%	5%	3%	3%	4%	4%
Part-time job	14%	4%***	5%	3%	9%	5%	6%
Employer size		***					
Under 25 employees	32%	13%	16%	14%	17%	16%	15%
25-99	17%	10%	11%	7%	6%	9%	13%
100 or more	51%	77%	73%	79%	77%	75%	72%
Spouse							
Employed	96%	60%***	65%	65%	60%	64%	60%
Part-time work	10%	20%***	21%	11%**	14%	11%***	12%***
Retired	2%	14%***	12%	15%	11%	16%*	11%
Poor health	7%	15%***	13%	7%	14%	16%	20%***
Over 65	2%	4%	3%	4%	14%***	7%***	4%

Notes: ECHI=employment contingent health insurance.
Significance: * p<.1 ** p<.05 *** p<.01 (columns (2) vs. (1) and columns (4)-(7) vs. (3)).
[a] Except where specified, all characteristics refer to the 1st interview.
[b] Hospitalized for at least two nights or on two separate occasions between 1st and 2nd interviews.
[c] Decline in self-report of health from good or better to fair or poor.

Table 4. Probability remain employed,[a] first differences and difference-in-difference[b] from linear probability models, initially-employed married men under age 65 with employer-provided health insurance

	Cancer	Lung disease	Hospitalized	New diagnosis	New diagnosis only
	(1)	(2)	(3)	(4)	(5)
ECHI	-0.005	0.048	-0.084*	-0.015	0.198***
	(0.085)	(0.098)	(0.049)	(0.064)	(0.059)
Non-ECHI	0.103	-0.239	-0.050	-0.034	-0.098
	(0.081)	(0.216)	(0.084)	(0.098)	(0.144)
Diff-in-diff	-0.108	0.287	-0.034	0.019	0.296**
	(0.093)	(0.223)	(0.076)	(0.093)	(0.145)
N	1,212	1,175	1,385	1,265	1,192
Treated	72	35	245	125	52

Notes: ECHI=employment contingent health insurance; non-ECHI=health insurance through spouse's employer.

Significance: * p<.1 ** p<.05 *** p<.01.

[a] "Employed" is defined as working for pay.

[b] First difference is (health shock employment – healthy employment) for the specified group (ECHI or non-ECHI). Diff-in-diff is the difference between these effects.

[c] Controls for first interview age under 40 or 40-59, nonwhite, some college, college degree or more, income under $20k, income more than $75k, physical job, stressful job, physical job×health shock, stressful job×health shock, firm size (25-100 or >100 employees), part-time work (fewer than 35 hours), spouse not working, spouse part time, spouse retired, spouse had bad health (fair/poor versus excellent/very good/good), spouse over 65, spouse covered by respondent's employer-based insurance, dependents covered by respondent's employer-based insurance, and year dummies.

Table 5. Probability remaining insured, first differences and difference-in-difference[a] from linear probability models, initially-employed married men under age 65 with employer-provided health insurance

	Cancer	Lung disease	Hospitalized	New diagnosis	Self-report decline	New diagnosis only	Self-reported decline only
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
ECHI	0.027**	0.033	-0.004	0.033**	0.026	0.033	0.027
	(0.013)	(0.024)	(0.024)	(0.014)	(0.022)	(0.022)	(0.025)
Non-ECHI	0.048	0.064**	0.042*	0.051**	0.098***	0.039	0.102***
	(0.030)	(0.028)	(0.024)	(0.026)	(0.028)	(0.030)	(0.034)
Diff-in-diff	-0.021	-0.032	-0.046**	-0.018	-0.072***	-0.006	-0.074**
	(0.030)	(0.023)	(0.022)	(0.022)	(0.026)	(0.018)	(0.032)
N	1,212	1,175	1,385	1,265	1,336	1,192	1,270
Treated	72	35	245	125	196	52	130

Notes: ECHI=employment contingent health insurance; non-ECHI=health insurance through spouse's employer.
Significance: * p<.1 ** p<.05 *** p<.01.
[a] First difference is (health shock insured status – healthy insured status) for the specified group (ECHI or non-ECHI). Diff-in-diff is the difference between these effects.