Health Consequences of the 'Great Recession' on the Employed

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Abstract

While the negative consequences of unemployment on the unemployed have been well studied, the potential spillover effects for those who remain employed after layoffs are less well understood. The recent economic downturn created an opportunity to explore individual-level perceptions of work stress, health care utilization, and new onsets of health conditions for survivors of mass layoffs in the context of a large multi-site, fully-insured aluminum company, Alcoa. We use the company's human resources data, workers' responses to four work stress instruments in a company-wide survey, and linked health claims data to explore these spillover effects across 29 plants. Preliminary results indicate that there were increased perceptions of work stress for remaining salaried workers. Likewise, we found decreased utilization in terms of the number of visits. However, we found limited evidence for new mental and physical health conditions using claims data.

Background:

The health consequences of macroeconomic conditions, particularly labor market conditions, have been an area of active research. Several studies have examined the consequences of recessions on population health (Miller, Page, Stevens, & Filipski, 2009; Ruhm, 2000, 2007) and on the unemployed in particular (Dooley, Catalano, & Wilson, 1994). However, fewer studies investigate potential negative consequences or spillover effects of recessions for those who remain employed. Obvious examples of these spillovers include increased perception of job insecurity or increased workloads. In addition, the spillover effects may be particularly salient when the unemployment rates are generally high.

Given the high unemployment rates of the current recession, these spillover or indirect effects are particularly interesting because sheer magnitude of people indirectly affected in this recession is likely to be quite large. In fact, according to the RAND Corporation American Life Panel Survey, 70% of household claim to have been affected by the current recession (Hurd & Rohwedder, 2010).[1] Clearly, many who claim to be affected are only *indirectly* affected. In addition, the survey show that workers consistently overestimated their probability of losing their job in the upcoming year, suggesting persistent anxiety about job security. Together these observations suggest that even employed individuals experienced increased uncertainty and anxiety. These "perceived" psychological stresses might impact physiological health either directly or indirectly through behavioral factors.

In this study we explore the perceived stress and health outcomes for survivors of mass layoffs, a population indirectly affected by the recession. In particular, we examine the relationship between the threat of job insecurity (as measured by the extent of layoffs within one's workplace and employment type) on individual-level perceptions of work stress, health care utilization, and new incidents of chronic health conditions in the context of a large multi-site, fully-insured aluminum company, Alcoa.

Study Details:

Starting in 2008 the global economic crisis had a profound impact on the aluminum industry. Demand for products in construction, aerospace, automotive and other sectors collapsed, sinking the product price by more than 60%. As a consequence, Alcoa was forced to cut production broadly, with layoffs and accelerated retirements at every level of the organization. However, not all worksites experienced similar levels of layoffs. Some worksites let go of as much as 40% of workers while others let go of only 5% -- a similar turnover to that in normal times. We use the variation in the severity of layoff as a measure of job insecurity (or threat of job insecurity) and evaluate subsequent outcomes on the remaining workforce.

[1] This survey was conducted in late 2008 and in early 2009. The results indicate that 70 percent of respondents felt they had been affected "a little" or "a lot" by the events related to the economic crisis.

We first examine perceptions of work stress. Since 2006 the company has conducted an annual survey of work organization. The survey is given over a 20-day period, and employees are encouraged to respond. The survey has had a response rates exceeded 70% in almost all locations and includes four instruments that deal specifically with work stress. Descriptive analyses of these questions suggest that relative to 2006 Alcoa employees report higher work stress 2008, 2009 & 2010. Figure 1 shows that within groups work stress was higher in 2008-2010 compared to 2006 for three of these questions and that the differences are larger than would be predicted by a linear trend.[2] We investigate these further and look to see if plants with higher layoffs report higher work stress. Unfortunately, these data are collected anonymously and cannot be linked at the individual-level, which precludes us from doing individual-level longitudinal analyses. However, the survey firm did collect some demographic variables allowing us to control for gender, race, hourly/salary status, and tenure. We examine responses from the September 2009 and September 2010 surveys to evaluate the impact of plant-level job insecurity on perceptions of work stress.

Next we examine whether our measure of job insecurity relates to either health care utilization or the new onset of health conditions for a stably employed cohort with health insurance going back to 2003. We construct a cohort of employees who were actively working at 25 US plants between January 1, 2003 and who were still active as of December 31, 2009. For this cohort of employees, we also examine the health care utilization patterns and new onsets of conditions for their children.

With regard to health care utilization, the effects of job insecurity on workers who survive layoffs are somewhat ambiguous. While income insecurity and time value may decrease utilization, the employer subsidy of health insurance may incentivize workers to increase utilization. For example, even when a worker continues to be insured and his/her income is unchanged, the loss of job of a spouse or overall uncertainty about future income can make the modest costs associated with co-payments seem more discretionary. Thus, individuals may choose to defer or delay optional care at a time when the household budget is at risk of decreasing. In addition, even if household income is unchanged, the implicit costs of taking time off to see a doctor increases as job insecurity increases. Yet at the same time, job insecurity may make health services more "valuable" because the employer subsides it when one is still employed. Thus, fear of losing a job may make an individual more likely to seek care for himself or his dependants. This may be a particularly important consideration for those who expect to have high medical expenditures. The overall effect is theoretically ambiguous. This ambiguity further motivated us to examine health utilization for the cohort's children, because we expect that parents are less likely to delay or defer health care services for their children even when they are uncertain about their income prospects. [3]

For health itself, as opposed to utilization, job insecurity is likely to have a negative impact. Job insecurity may cause increased stress and/or alter health related behaviors

[2] Unfortunately, plant –level identifiers are currently not available for the 2007 data.

[3] Implicitly, we expect that the income elasticity with respect to health care expenditures to be higher (more inelastic) for employees' children than themselves.

that may in turn lead to physiological or psychological conditions. In addition, negative coping behaviors, such as drinking or smoking,[4] may also have negative health consequences for those on the margin. While some literature suggests that during economic downturns the value of time changes and causes better health behaviors and outcomes, the presumed mechanism works through decreased work hours which are then devoted to "leisure" or "health promoting activities" (Ruhm, 2005). In the context of this study that pathway is unlikely because we are studying individuals who remain working. In particular, the union contract that governs layoffs for some hourly workers require the company to layoff worker if their hours are decreased beyond a predetermined threshold.[5] Thus while hours worked may decrease, especially for the hourly workforce, the change is unlikely to be dramatic.

In addition to looking at the chronic conditions of our cohort, we also examine health conditions for the cohort's dependant children. Recent studies suggest that parental stress can increased their children's susceptibility to health conditions, such as asthma (Shankardass, McConnell, Jerrett, Milam, Richardson, & Berhane, 2009). With a parallel model in mind, we explore whether parental job insecurity was associated with new onset of Asthma or ADHD. In addition we examine whether parental job insecurity was associated injury events.

Data Sources:

This study relies on the extraordinarily rich administrative data sources including personnel data, detailed health claims data, and work satisfaction survey. Each dataset is detailed below.

Personnel Data

The personnel data set has detailed records for each employee with records for each job change starting in 1985. This data set includes basic demographic variables (sex, race, age), employee type/job category (hourly or salary), plant information (location and union status), employment status (active or retired), date of entry or leave, and disability leave and date of re-entry. For the 29 fully functional US plants with >100 employees in 2008, we use these data to create a variable based on the proportion of the workforces that was laid off between 2008- 2009.[6] We create this variable separately for hourly and salary workers. Worksites with 20-40% reductions in each worksite group are considered to have high layoffs. Using this definition, six plants had high layoffs for both hourly and salary workers, while 3 plants had high layoffs for only hourly workers (Table 1). We also use the personnel file for the cohort definition (detailed below) and to link demographic and job variables to the health data.

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[4] According to a CDC MMWR report, smoking rates increased for the first time in 15 years in 2008.("Cigarette Smoking Among Adults and Trends in Smoking Cessation --- United States, 2008," 2009)

[5] However, it could still be that certain harmful environmental exposures (or even work related exposures) are reduced because of a general reduction in economic activity. Chay & Greenstone find this to be the case for infant mortality, but results may not hold for adult health.

[6] We characterize 29 plants as having either high layoffs or not, but we cannot link all these plant level data to the outcome variables in the other dataset. In the analysis we use either 25 or 26 plants depending on the outcome.

Health Claims Data

As a self-insured firm, Alcoa contracts with a single firm to manage its claims data. With the exception of a small number of workers who select an HMO, all claims are managed within this database. We obtained these claim files for all but 4 of the 29 plants above, because only an HMO was offered at these plants. These data provide both a master list of eligible individuals and linkable detailed claims records for each inpatient/outpatient medical encounter and for prescriptions filled. The claims data also provide both diagnostic codes and Current Procedural Terminology (CPT) codes. We use these details to count the number of outpatient face-to-face visits, total outpatient expenditures, identify new cases of CHD, hypertension, diabetes, depression and asthma in 2009 (See Appendix A for details). We also identify any injuries or new cases of ADHD or Asthma in the employees' children (See Appendix B for details).

In addition to the data themselves, we use a third-party algorithm to create a *health-risk stratification* scores for each individual. This algorithm is based on a chronic disease model and inputs CPT codes, diagnostic codes, number of eligible months, and overall outpatient health expenditures derived from the claims data and outputs a continuous risk score. A score of one indicates that the individual is predicted to have the median health expenditure in the following year. Each unit increase indicates a fold increase over the median. For example, a score of 3 indicates that the individual will spend three fold over the median the following year. We use the 2008 lagged risk score and then categorized them into four groups as a summary measure to control for underlying health. The four groups were those with scores ranging from 0-1 (the omitted category-generally health individuals with predicted less than the median), 1-2 (those who are predicted spend at or somewhat more than the median), 2-3 (those who are predicted to spend at least twice the median), and 3-4 (those who are predicted to spend at least three times the median).[7] Individual with risk scores greater than 4 were dropped from the analyses because they are likely to be quite unhealthy.

Work-Stress Survey

A third-party vendor annually conducts a 32-item work organization survey for Alcoa. We examine the responses to four stress related items in detail for the September 2009 and 2010 surveys (See Table 2). The responses are de-identifed and can only be linked back to plant where the employee worked. For the 29 plants described above, 26 plants had linkable individual-level data. The response rate for these 26 plants was approximately 74% in 2009 (and higher in 2010). For each question, responses were dichotomized and those who report the maximum value on the Likert scale are considered to have work stress. In addition, if an employee responded to have the maximum value for any one of the 4 items they were classified as having some work stress in separate analysis.

[7] The scores we categorized into three groups for the children. Again the omitted group is the healthiest children 0-1 (individuals with predicted expenditures less than the median), 1-2 (those who are predicted spend at or somewhat more than the median), and 2-4 (those who are predicted to spend at least twice the median).

Cohort Definition

Employee Cohort

In order to ensure that we study a relatively healthy group of workers, we select a stably employed cohort with history of health insurance going back to 2003 to verify new onset of disease. Our sample includes 11,180 workers who were actively employed at 25 US plants between January 1, 2003 and who were still active as of December 31, 2009.[8]

In order to have a measure of previous health status, we select only members of the cohort that were insured in the previous year and have a health risk score value. This exclusion makes us lose 325 observations. We also choose to exclude another 257 individuals because their health risk score indicates that they already have significant health problems (those with risk scores greater than 4),.[9] Our final cohort sample size is 10,587 workers. By selecting on workers with at least 7 years of tenure at Alcoa, the cohort is slightly older than the general Alcoa workforces. However, despite their older ages, the cohort is selected to be relatively health (still working, not terminated during the recession, not high previous year risk score).

Cohort's Children

We also examine the health outcomes of the children of the cohort described above. There were 9,556 eligible children. We drop 608 of the children from the analyses because they were not insured in the previous year. We also drop 59 children because they have very high health risk scores in 2008. Finally, we exclude any dependant over 25 years old. [10]

Methods:

Hierarchical regressions were employed to assess the association of being in a high layoff group and perceived work stress, healthcare utilization, and new disease diagnoses. The specific models change to reflect the distributional properties of the outcome of interest (i.e. binary outcomes use logistic models, count data use Poisson models, and time to event outcomes use survival models).

Work Stress

For the work stress analyses our control variables are limited to those collected by the survey firm and plant level characteristics. Our model examines the association of reporting work stress and the being in a high layoff group for each of the work stress questions and for reporting an extreme value in any of the 4 questions:

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[8] Only 16,929 workers were active on December 31, 2009 in the 25 plants of interest. Four of the initial 29 plants were dropped because they have HMOs and do not generally report health claims.

[9] For the employee cohort the risk scores vary from 1-40 in the data, and the distribution is very skewed if we keep the entire sample (skewness 11.5; kurtosis 225). Dropping 257 observations of those with risk scores > 4 helps reduced the skew dramatically (skewness 1.58, kurtosis= 5.44), but not fully.

[10] In the difference-in-difference specifications the number of observations vary.

$$\text{Work Stress}_{p,g,i} = F(\alpha+\beta1(\text{High}_{p,g})+ \beta2((\text{Employee Type}_i)+ \beta3((\text{Employee Type}_i)*\text{High}_{p,g}) +\beta4(\mathbf{X}_i)+\varepsilon_{pgi})$$

Here **X** is a vector of individual level covariates including gender, race, tenure, and working at a union plant.[11] The error term, ε_{pgi}, is modeled using with random-effects at the plant level to account for the interdependence of the error terms.

Health Utilization

For healthcare utilization we examine three outcomes 1) if a person had any face-to-face visit, 2) the number of visits given that they had at least one visit, and 3) total expenditures. We use hierarchical logistic models for the dichotomous outcome of any visits, linear hierarchical models for total expenditures, and Poisson models for the number of visits. For all three outcomes we are able to control for the previous years health risk score, which serves as a surrogate of underlying health.

$$\text{Health Utilization}_{p,g,i} = F(\alpha+\beta1(\text{High}_{p,g})+ \beta2(\mathbf{X}_i)+ \beta3(\text{Lagged Health Score}_{i,\,2008})+ \varepsilon_{pgi})$$

Again **X** is a vector of individual level covariates including gender, race, tenure, employee type and working at a union plant. The health expenditure model also controls for having any face to face visits in 2009.The error term, ε_{pgi}, is modeled using with random-effects at the plant level to account for the interdependence of the error terms.

To account for baseline differences in the high layoff groups, we also examine the above relationships with a difference-in-difference specification. Here we pool three years of data (2007-2009) and examine if during the recession (2008-2009) individuals in high layoff groups had a differential health utilization behavior. These models also allows us to also include an individual-level random-effects to account for unobserved individual-level correlation expected among outcomes from the same worker.

$$\text{Health Utilization}_{p,g,i,\,t} = F(\alpha+\beta1(\text{High}_{p,g})+ \beta2(\text{Post}_t)+ \beta3((\text{High}_{p,g})*(\text{Post}_t))+ \beta4(\mathbf{X}_i)+ \beta2(\text{Lagged Health Score}_{i,\,2006})+ \varepsilon_{pgit})$$

Health Outcomes

For health condition outcomes, we explore whether working at a high layoff plant was associated with a new onset of a new chronic condition. In this cohort analysis, we examine new onset of conditions in 2009 while excluding prevalent cases. To ensure that we are only considering new cases in 2009, we use six years of run in data (2003-2008).

$$\text{New Diagnosis in 2009}_{p,g,i} = F(\alpha+\beta1(\text{High}_{pg})+ \beta2(\mathbf{X}_i)+ \beta3(\text{Lagged Health Score}_{i,\,2008})+ \beta4(\text{Visits}_i)+ \varepsilon_{pgi})$$

[11] Note we cannot control for age in these analyses. Here tenure becomes a proxy for age because age and tenure are highly correlated in the sample.

Again to consider baseline differences between the high layoff group and the other groups, we also examine new diagnoses with 'time to onset' as the outcome of interest. This allows us to emulate the difference-in-difference set-up that we used for health utilization. We model time to new onset using Cox proportional hazard survival models where we use 2 years of wash out data (2003-2004) to ensure that we are only considering new cases and include new onsets from 2005-2009.

$$h(t) = h(t_0) \exp(\boldsymbol{\beta Z})$$

$$\mathbf{BZ}_{g,p,i,t} = F(\alpha+\beta 1(High_{p,g})+ \beta 2(Post_t)+ \beta 3((High_{p,g})*(Post_t))+ \beta 4(\mathbf{X}_i)+ \beta 2(\text{Lagged Health Score}_{i,\,2004})+ \varepsilon_{pgit})$$

The baseline hazard, $h(t_0)$ is a function of age and the **BZ** is a vector of regression coefficients we estimated using partial maximum likelihood procedures. We also account for plant-level correlations with a plant level shared frailty term in the model.
These initial analyses only use the year in which a diagnosis was made and there is both right and left censoring; right censoring because only new onsets after 2005 are considered and left censoring at 2009.

Results:

Work Stress Results

Table 3 provides descriptive statistics for the work stress questions as well as the characteristics for the sample that answered the survey in 2009 and 2010. The overall demographic characteristics are comparable to the entire Alcoa workforces; predominately white male hourly workers who have been working at Alcoa for at least 10 years. A large proportion of these workers, 30%, work in plants that had high layoffs and ~35% of them work at plants with union contracts for the hourly workers. For the stress outcome measures, ~30% of this sample report high work stress for at least one of the four questions. However, for each individual work stress items, only 8.4-19.4% of the sample report work stress. The first items, "I find my work stressful" had the second highest rate of strong agreement and captures the construct of interest most directly.

Table 4 reports the results from preliminary regression analyses. Panel A presents the results for the September-October 2009 survey and Panel B present the results for the September-October 2010 survey. These estimates suggest that working in a plant with high layoffs was generally a predictor of lower work stress. The lower work stress for hourly workers in high layoff plants was found consistently across questions and years. In contrast to hourly workers, salaried workers report higher work stress overall and salaried workers at high layoff plants report even higher work stress, especially in 2010. This result may reflect genuine increases in work demands for the remaining salaried workers who may have higher workloads after their colleagues have been terminated. In general, the results for these analyses, especially with regard to hourly workers, are likely to be an

underestimate because those who are really stressed or dissatisfied may be more likely to disengage and not participate in the survey.

Health Utilization Results

Next we examine patterns in health care utilization. For these outcomes, we have the ability to control for previous years health risk score, a composite score of health in 2008. Table 5 presents the summary statistics for both the employee cohort and their children. The cohort is predominantly made up of white male hourly workers who are about 50 years old. This cohort is very similar with to the general Alcoa workforces except that it was selected on tenure and hence is slightly older. About 77% of the cohort had at least one face-to-face visit, the average number of face-to-face visits was about 3.5, and average expenditures were about $1500. However, the health utilization in cohort has a positive skew with the median number of visit is 2 while the median expenditures is $580. Because of the skew in the distribution of health in general, we do not divide the health scores in even quartiles. Instead, we use 1 unit cut offs. About 62% of the cohort had a risk score of less than 1, 27% had scores ranging from 1-2, 8% had scores ranging from 2-3, and about 3% had scores ranging from 3-4. Individuals with risk scores higher than 4 were dropped from the sample.

The third and fourth columns in Table 5 present the characteristics of the cohort's children. The children were even distributed between girls and boys (as expected) and were 13 years old on average. About 77% of the cohort's children had at least one face-to-face visit in 2009, the average number of face-to-face visits was 2.9 visits, and average expenditures were about $690. Again, children's health utilization exhibited a positive skew, so that the median number of visit was 2 and median expenditures were $350. Using the same cutoff for risk scores as for the adults, 96% of the children fall into the relatively health category with risk score between 0-1, 3% had risk scores ranging between 1-2, 1% had scores ranging from 2-3, and only 0.2% had risk scores ranging from 3-4. Since there are so few children in the highest risk group, the two highest risk groups are collapsed in the analyses presented below.[12]

Table 6A presents the association between surviving a layoff in the high layoff group and whether an individual had any patient initiated face-to-face outpatient encounters in 2009, the total amount of outpatient medical expenditures, and total number of outpatient visits.[13] Column 1, 3, & 5 are for the parents, and column 2, 4, & 6 are for the cohort's children. We focus on the whether those in the high layoff group had different utilization patterns for themselves or their children controlling for basic demographics and lagged health. We find that individuals in the high layoff group has a 5% decrease in the expected number of visits to the doctor in 2009 and this estimate was marginally significant. In terms of lagged risk scores, we also confirm that for cohort members,

[12] The risk scores categories are likely to have different meaning for adults and children, so future analyses will alter these cutoffs for the children.

[13] We focus on outpatient because there is some discretion on the part of the patient to initiate the visit. Inpatient visits are less likely to be discretionary.

higher risk score groups monotonically corresponds to increases likelihood of any visit, increases medical expenditures and increased risk of number of visits.[14]

For the children of the cohort members, overall utilization and number of visits were not different in the mass layoff group, however there was slightly higher medical expenditures on kids if parent were a part of this group. The estimate is about 100$ or a 30% of the median expenditure. This results holds even with controls for having any visit in 2009. Again patterns of lagged risk score suggest that we are indeed capturing underlying health.

Accounting for baseline differences across groups, we examine at whether utilization was different in the high layoff plants in 2008/2009 compared to 2007. We set up a simple differnce-in-difference model as describe above and found that only the results with regard to number of visits hold. In Table 6B, we find that individuals in the high layoff group in 2008 & 2009 have an additional 4% decrease in the number of doctor visits relative to 2007 and this estimate was statistically significant.

Chronic Condition Results

We now turn to our final set of outcomes, new health conditions. Table 7 describes what proportion of the cohort who was diagnosed with each specific condition in 2009. Only those individuals who were not previously diagnosed with the conditions were considered at risk. In 2009 5% of the cohort was diagnosis with hypertension, 2% was diagnosis with diabetes, about 0.7% was diagnosis with depression and coronary heart disease, and about 0.6% was diagnosis with asthma. These rates are largely consistent with national values for this older age group (cite). For the cohort's children about 2% were diagnosed with ADHD, and 3% with Asthma. Also, about 2% of the children had at least one injury in 2009. [15] Again, these rates are in line with national estimates.

We now estimates whether those who survive layoff in a high layoff group had a higher likelihood of being diagnoses with a new condition in 2009. In these regressions we control for both the lagged health risk score and the number of face-to-face visits in 2009. Table 8A shows the results for the cross-sectional model. The results in Table 8A suggest that there was an increase in new onsets of hypertension and diabetes in plants with high layoffs. The results also consistently show that the number of face-to-face visits was related to diagnosis for all of the conditions and in fact, the magnitude was consistent, odds ratio of 1.1, for all the conditions.

In Table 8B, we present the results of the survival aalyses. The survival models do not find a statistically significant higher hazard for new onset of hypertension or diabetes in the high layoff plants in 2008/2009, suggesting baseline differences in diagnosis patterns across the groups.

[14] These results provide prima facie evidence that risk scores are indeed meaningful and capturing construct of interest even if crudely.

[15] All kids are at risk of an injury because previous injury does not preclude a new injury.

We repeat the analysis above for the children of the cohort to examine whether children of those who survive layoff in a high layoff group had a higher likelihood of being diagnoses with a new condition in 2009 in Table 9.The results no effect on the children of the cohort. This is also the case when we use the survival analysis models (not shown). The survival models for the cohort children are also a select sample because only children who were covered for several years can be included in the analysis and this selects for specific age groups.

Figure 2 summarizes the estimated odds ratios and the 95% CI for the association of being in the high layoff group and all the health condition outcomes using the logistic model with clustered standard error. The figure does not show a strong pattern in either direction above and beyond the results for each individual condition.

Sensitivity Analyses

To ensure the robustness of the results, we conducted several sensitivity analyses. First the results were robust to less specific definitions for each of the conditions. In particular, we required that the associated claim have a face-to-face encounter for an outpatient claim to be counted as a case. However, if we drop this requirement, our results were largely the same. Second, we also changed the definition of our exposure variable to vary only at the plant level because we can imagine that salary workers at plants with high hourly worker layoff were affect regardless of their employment category. This too did not affect our results. Third, we examine if the association in diabetes and hypertension was mediated by work stress. Since we cannot link the work stress data to particular individuals, we check to see if salary works at high layoff plants were the group that had higher number of new cases. We find that not to be the case. Even when we restrict the sample to be the same set of plants as in the work stress analysis, we still do not find that salary workers in high layoff plants had higher new cases of hypertension or diabetes. These analyses suggest that work stress does not mediate the health condition results, which countered our initial expectation.

Discussion:

The results reported here suggest that survivors of layoff experience some spillovers. Indeed, results from the 2010 work organization survey suggest that remaining salaried workers experience more work stress. We also found evidence of a behavioral change where those in high layoff groups were slightly less likely to initiate a visit to the doctor despite being continually employed. We also find some evidence of higher disease incidents. These associations appear to be limited to the workers themselves and there are no further spillovers to the cohort's children.

Yet, interpretations of these preliminary results require caution and further analysis. While we find some evidence of increased stress in high layoff groups for salaried workers, we need to be careful of the interpretation. According to BLS data, productivity grew by 6% in 2010 for the manufacturing sector as a whole[16], yet we can imagine that in

[16] The growth in productivity was the highest in 2010, higher than all the previous years of the recession.

certain hourly jobs (assembly line, pot rooms, etc) there is little room for speed up and increased productivity gains, whereas there is more slack for other job in the salaried part of the workforce. Thus, the increase in work stress may be concentrated in the salaried part of the workforce largely because of increased workloads, but not due to job insecurity *itself*.

With regard to the health outcome variables, we are skeptical of a direct impact of the recession on new incidents of chronic conditions. While we found some evidence that those in the high layoff group were more likely to be diagnosed with new cases of hypertension and diabetes, these results were not robust. In our cross-sectional analysis we are careful to control for the number of visits and previous health to try to mitigate the problem that those who are otherwise unhealthier or who visit the doctor more are also more likely to get a new diagnosis for common health conditions. Despite our attempt to control for these behavior factors, the observed associations may be due to baseline differences in health across plants than to an actual increase in incidents in this population. For example, those who fear layoffs (in high layoff groups) may be more likely to ask doctors to check for common conditions such as hypertension or diabetes.

We also want to be cautious about our interpretation of the main independent variable. While previous studies have used area level unemployment rates to capture general labor market conditions, our measure captures a more "localized" measure of unemployment—within ones plant and work group. Indeed, the plants with high layoffs were in areas (states and counties) with generally high unemployment rates (Figure 3). However, in future analyses we will also explore alternate measures of unemployment risk, hopefully clarifying our interpretations.

All in all, we found limited evidence of an overall health impact. However, as noted above our sample was selected to ensure that we are capturing new onsets of disease, but in doing so, we also select on health. Implicitly we also selected healthy workers because of duration or employment and because they have lower overall health risk scores. This would make it even more unlikely for us to find any health effect. In addition, we imagine that cumulative stress related to the length of recession grew in 2010 causing more physiological manifestation of these stressed. Future analyses will attempt to look whether those in the high layoff group with prevalent health conditions saw an aggravation of their condition, and we will also look at new health outcomes in 2010 (as the data becomes available).

BLS report, Table C. http://www.bls.gov/news.release/prod2.nr0.htm.

Appendix A: Adult Disease Case Definitions

Face-to-face outpatient encounter definition:

We use procedure codes to classify a claim as having a face-to-face visit component. Any claim with a CPT code of 99201-99205 (existing patient face-to-face visit), 99211-99215 (new patient face-to-face visit), 99381-99387 (existing patient preventative care), 99391-99397 (new patient preventative care), 99241-99245 (office/outpatient consultation), or 99281-99285 (outpatient emergency visit) was considered a face-to-face outpatient encounter. All together face-to-face encounters form 20% of all the CPT codes and were associated with 33% of the claims.

Coronary heart disease (CHD) case definition:

We use one or more inpatient claim with International Classification of Diseases, Ninth Revision (ICD9) diagnosis codes of 410-414 or 428 or two or more outpatient claims with the same ICD9 codes in 2009. Only outpatient claims with a face-to-face encounter were considered. A five-year run-in period (2003-2008) was used to find prevalent cases, so that 519 members of the cohort are excluded from the analysis because they were previously diagnosed with CHD (using the same criteria) in the previous five years.

Hypertension case definition:

We use one or more inpatient claim with ICD9 diagnosis codes of 401-404 or two or more outpatient claims with the same ICD9 codes in 2009. Only outpatient claims with a face-to-face encounter were considered. A five-year run-in period (2003-2008) was used to find prevalent cases, so that 3319 members of the cohort are excluded from the analysis because they were previously diagnosed with hypertension (using the same criteria) in the previous five years.

Diabetes case definition:

Patients were identified as having diabetes if they had at least two diagnoses of DM on separate dates in medical claims or through use of glucose-lowering therapy identified from pharmacy claims. We use one or more inpatient claim with ICD9 diagnosis codes of 250, 357, 362, or 366 or two or more outpatient claims with the same ICD9 codes in 2009. We explicitly exclude case of gestational diabetes 648, 790. In addition, we include cases with only one outpatient diagnosis if it was accompanied by one or more prescription filled for Sulfonylreas[17], Meglitinides[18], Thiazolidinediones[19], alpha-glucosidase inhibitors[20], and DPP-4 inhibitors[21]. We explicitly exclude the diabetes drug

[17] Acetohexamide, Chlorpropamide, Tolbutamide, Tolazamide, Glipizide, Glyburide, Gliquidone, Glyclopyramide, Glimepiride
[18] Nateglinide, Repaglinide, Mitiglinide
[19] Rosiglitazone Maleate, Pioglitazone Hydrochloride
[20] Acarbose, Miglitol, Voglibose
[21] Saxagliptin Phosphate, Sitagliptin Phosphate, Vildagliptin Phosphate

metformin because it may be prescribed for other uses. Only outpatient claims with a face-to-face encounter were considered. A five-year run-in period (2003-2008) was used to find prevalent cases, so that 1210 members of the cohort are excluded from the analysis because they were previously diagnosed with diabetes (using the same criteria) in the previous five years.

Major depression case definition:

We use one or more inpatient claim with ICD9 diagnosis codes of 296, 309, or 311 or two or more outpatient claims with the same ICD9 codes in 2009. In addition, we include cases with only one outpatient diagnosis if it was accompanied by one or more prescription filled for selective serotonin reuptake inhibitors[22] or serotonin–norepinephrine reuptake inhibitors[23]. Only outpatient claims with a face-to-face encounter were considered. A five-year run-in period (2003-2008) was used to find prevalent cases, so that 842 members of the cohort are excluded from the analysis because they were previously diagnosed with depression (using the same criteria) in the previous five years

Asthma case definition:

We use one or more inpatient claim with ICD9 diagnosis code of 493 or two or more outpatient claims with the same ICD9 codes in 2009. In addition, we include cases with only one outpatient diagnosis if it was accompanied by one or more prescription filled for inhaled Corticoids[24], mixed inhaled Corticoids[25], or beta2-antagonists[26]. Only outpatient claims with a face-to-face encounter were considered. A five-year run-in period (2003-2008) was used to find prevalent cases, so that 675 members of the cohort are excluded from the analysis because they were previously diagnosed with Asthma (using the same criteria) in the previous five years

[22] Product generic names Fluoxetine Hydrochloride, Citalopram Hydrobromide, Escitalopram Oxalate, Fluvoxamine Maleate, Paroxetine Hydrochloride, Sertraline Hydrochloride
[23] Product generic names Duloxetine Hydrochloride, Venlafaxine Hydrochloride,Desvenlafaxine Succinate
[24] Product brand names include QVAR, PULMICORT FLEXHALER, PULMICORT RESPULES, ALVESCO, AEROBID, AEROBID-M, FLOVENT, AZMACORT, ASMANEX TWISTHALER
[25] Product names include SYMBICORT, ADVAIR
[26] Product generic names Albuterol, Levalbuterol Hydrochloride, Levalbuterol Tartrate, Terbutaline Sulfate, Pirbuterol Acetate, Metaproterenol Sulfate, Salmeterol Xinafoate, Formoterol Fumarate

Appendix B: Kids Disease Case Definitions

Face-to-face outpatient encounter definition:

We use procedure codes to classify a claim as having a face-to-face visit component. Any claim with a Current Procedural Terminology (CPT) designations for the following categories 99201-99205 (existing patient face-to-face visit), 99211-99215 (new patient face-to-face visit), 99381-99387 (existing patient preventative care), 99391-99397 (new patient preventative care), 99241-99245 (office/outpatient consultation), or 99281-99285 (outpatient emergency visit) were considered face-to-face outpatient encounters. All together face-to-face encounters form 20% of all the CPT codes and were associated with 33% of the claims.

Injury Case Classification:

We use outpatient files to classify any injury in 2009 if diagnosis code had an ICD 9 of 950-959 for external self-injury. Only outpatient claims with a face–to-face encounter were considered and all children were at risk for an injury.

Asthma case definition:

We use one or more outpatient claim with ICD9 diagnosis code of 493. Only outpatient claims with a face-to-face encounter were considered. A five-year run-in period (2003-2008) was used to find prevalent cases, so that 1029 members of the cohort are excluded from the analysis because they were previously diagnosed with Asthma (using the same criteria) in the previous five years.

Attention Deficit or Hyperactivity Disorder (ADHD) case definition:

We use one or more outpatient claim with ICD9 diagnosis code of 314 or one or more filled prescription for any Amphetamine Salt Combination, Methylphenidate Hydrochloride, Modafinil, or Atamoxetine Hydrochloride. Only outpatient claims with a face-to-face encounter were considered. A five-year run-in period (2003-2008) was used to find prevalent cases, so that 643 members of the cohort are excluded from the analysis because they were previously diagnosed with ADHD (using the same criteria) in the previous five years.

Table 1: Headcount change patterns at plants with high layoffs between 2008 and 2009.

	Union	State	Overall	Salary	Hourly
Plant 1	1	TN	26.74%	25.29%	27.17%
Plant 2	0	NJ	37.48%	**-7.77%**	43.10%
Plant 3	0	CA	25.29%	20.34%	25.98%
Plant 4	0	VA	33.46%	**0.99%**	40.50%
Plant 5	0	TN	38.54%	16.39%	40.85%
Plant 6 &	1	NY	36.16%	19.59%	40.88%
Plant 7*	0	CA	31.02%	19.75%	33.01%
Plant 8	0	MI	22.95%	21.13%	25.49%
Plant 9* &	0	CA	35.55%	**-1.89%**	38.66%

Note: Names of specific plants have been removed for privacy. Twenty-nine plants were examined to create the main independent variable. Depending on the availability of the outcome of interest, either 26 or 25 plants were included in the final analysis. For the work stress outcomes (&) and health outcomes (*) two of the 9 plants above could not be mapped to the outcome data. For three plants only hourly workers were in the high layoff group, these are bolded above. Plant 9 is excluded in all the analyses, but it is included in this table for complete description for the independent variable.

Table 2: Work Stress Survey Instruments

Item	Question originally on a 5-point Likert scale. Dichotomized in analysis.
29	I find my work stressful.
30	I find that I am worn out at the end of the day.
31	I am able to manage my work responsibilities in a way that allows me to maintain a satisfactory balance between work and home. (Reverse Scale)
32	I find that work issues frequently remain on my mind after hours.

Table 3: Summary Stats for work stress sample

Variable	2009		2010	
Stress Outcomes	Mean	SD	Mean	SD
Work stressful	0.183	0.387	0.155	0.362
Worn out	0.204	0.403	0.188	0.391
Don't have balance between work and home	0.084	0.278	0.113	0.317
Work remains on my mind	0.133	0.339	0.142	0.349
Any report of work stress	0.311	0.463	0.292	0.455
Individual-Level Characteristics				
White	0.719	0.449	0.727	0.445
Male	0.794	0.404	0.790	0.407
Salary	0.290	0.454	0.246	0.431
Tenure				
<1 yr	0.012	0.108	0.030	0.170
1-2 yrs	0.086	0.280	0.042	0.200
2-5 yrs	0.170	0.376	0.181	0.385
6-10 yrs	0.149	0.356	0.167	0.373
10-20 yrs	0.247	0.431	0.250	0.433
>20 yrs	0.336	0.473	0.331	0.471
Plant Characteristics				
Work at High Layoff Plant	0.297	0.457	0.304	0.460
Work at Union Plant	0.359	0.480	0.399	0.490

Note: All variables are dichotomous.

Table 4: Random-Effects Logistic Regression Estimates for the Association of the Threat of Job Insecurity and Perceptions of Work Stress. Odds ratios presented and standard errors in brackets

	Any Report of Work Stress	Work Stressful	Worn out	Don't have balance between work and home	Work remains on my mind
Panel A			September-October 2009 Survey		
High Layoffs	0.719***	0.800*	0.704***	0.654**	0.946
	[0.0813]	[0.100]	[0.0921]	[0.131]	[0.119]
Salary	1.123**	1.391***	0.993	0.602***	2.434***
	[0.0570]	[0.0816]	[0.0576]	[0.0535]	[0.155]
High Layoffs X Salary	1.163	1.065	1.06	1.771***	0.952
	[0.120]	[0.129]	[0.127]	[0.334]	[0.125]
N	13370	13415	13405	13402	13405
Panel B			September-October 2010 Survey		
High Layoffs	0.526***	0.773*	0.539***	0.235***	0.702**
	[0.0684]	[0.110]	[0.0760]	[0.0543]	[0.101]
Salary	0.996	1.291***	0.921	0.430***	2.339***
	[0.0516]	[0.0807]	[0.0552]	[0.0364]	[0.142]
High Layoffs X Salary	1.624***	1.381***	1.577***	3.625***	1.177
	[0.166]	[0.170]	[0.188]	[0.613]	[0.142]
N	14967	14981	14984	14966	14980

Regressions include controls for gender, race (white/non-white), tenure, plant size, and plant union status.

*** p<0.01, **p<0.05, *p<0.1

Table 5: Summary Stats for Cohort and Health Utilization

	Parents (Cohort)		Cohort's Children	
	Mean	SD	Mean	SD
Health Utilization				
Any Visit in 2009	77.51%	41.75%	76.81%	42.21%
Medical Expenses in 2009	1475	3087	689	1342
Number of visits in 2009	3.57	4.08	2.90	3.30
Work and Demographic Characteristics				
High Layoff Group	26.65%	44.21%	21.80%	41.29%
Hourly	70.99%	45.38%	64.95%	47.72%
White	83.20%	37.39%	81.59%	38.76%
Age	49.86	7.70	13.83	5.52
Female	17.97%	38.39%	49.83%	50.00%
Union	47.50%	49.94%	50.32%	50.00%
Tenure	20.24	9.49	16.45	7.95
Lagged Health Risk Score (2008)*				
Risk Score 0-1	0.619	0.486	0.956	0.205
Risk Score 1-2	0.276	0.447	0.034	0.182
Risk Score 2-3	0.078	0.269	0.008	0.087
Risk Score 3-4	0.027	0.164	0.002	0.046
N	10587		8883	

Risk score groups 2-3 & 3-4 are collapsed for children in the analyses.
* In the difference-in-difference specifications either 2006 or 2004 health risk scores are use as the lagged health risk score.

Table 6A: Random-Effects Regression Estimates for the Association of the Work Insecurity and Healthcare Utilization in 2009

	Any Visit in 2009 Odds Ratios [95% CI]		Medical Expenses 2009 Raw Dollar Amounts [SD]		Num of Face-to-face or preventative visits && IRR [95% CI]	
	Parents	Kids	Parents	Kids	Parents	Kids
High Layoff Group	**1.033**	**1.018**	**-56.81**	**103.8****	**0.947***	**0.967**
	[0.811 - 1.314]	**[0.805 - 1.287]**	**[128.7]**	**[52.03]**	**[0.890 - 1.008]**	**[0.891 - 1.048]**
Lagged Health Risk Score (2008) Omitted group RS 0-1						
RS 1-2	6.494*** [5.551 - 7.596]	3.161*** [2.172 - 4.601]	877.5*** [82.65]	1,108*** [183.7]	1.565*** [1.528 - 1.604]	1.882*** [1.791 - 1.977]
RS 2-3^	16.96*** [11.13 - 25.83]	2.557*** [1.304 - 5.015]	1,829*** [125.3]	2,546*** [717.1]	2.135*** [2.068 - 2.204]	1.938*** [1.778 - 2.112]
RS 3-4	17.29*** [8.524 - 35.05]		2,492*** [262.3]		2.492*** [2.385 - 2.605]	
Any Visit in 2009			1,258*** [60.90]	756.1*** [21.75]		
Model	RE XT Logistic	RE XT Logistic	RE Linear Regression	RE Linear Regression	RE XT Poisson	RE XT Poisson
Observations	10587	8861	10587	8861	8206	6806
Clusters	25	25	25	25	25	25

Regressions include controls for age, gender, race (white/non-white), tenure, employee type, and plant union status.
&& CPT codes for face-to-face visits described in appendix.
^ Note that the last two risk groups were collapsed for the cohorts' children.

*** p<0.01, **p<0.05, *p<0.1

Table 6B: Difference-in-Difference analysis of health utilization

	Any visit (2007-2009)		Medical Expenses (2007-2009)		Number of face to face visits (2007-2009)	
	Odds Ratios		Raw Dollar Amounts		IRR	
	Parents	Kids	Parents	Kids	Parents	Kids
Post(2008/2009 vs. 2007)	1.157***	0.863***	227.6***	43.57***	1.110***	0.991
	[1.062 - 1.261]	[0.786 - 0.947]	[144.4 - 310.8]	[14.69 - 72.45]	[1.093 - 1.127]	[0.973 - 1.010]
High Layoff Group	1.301***	1.113	23.33	3.196	1.113***	1.065**
	[1.096 - 1.544]	[0.915 - 1.352]	[-234.8 - 281.5]	[-91.54 - 97.93]	[1.067 - 1.160]	[1.011 - 1.123]
High Layoff Group* Post	**0.95**	**0.968**	**66.74**	**8.888**	**0.963*****	**0.998**
	[0.799 - 1.130]	**[0.796 - 1.176]**	**[-55.10 - 188.6]**	**[-37.20 - 54.98]**	**[0.936 - 0.991]**	**[0.961 - 1.036]**
Lagged Health Risk Score (2006)						
RS 1-2	6.344***	4.858***	587.3***	899.0***	1.865***	2.184***
	[5.470 - 7.358]	[3.091 - 7.634]	[466.1 - 708.5]	[573.3 - 1,225]	[1.794 - 1.938]	[1.939 - 2.459]
RS 2-3	12.64***	9.645***	1,216***	1,762***	2.438***	2.579***
	[9.575 - 16.69]	[4.067 - 22.88]	[816.5 - 1,616]	[1,117 - 2,408]	[2.296 - 2.590]	[2.139 - 3.109]
RS 3-4	15.84***		2,482***		2.866***	
	[9.601 - 26.13]		[1,226 - 3,738]		[2.593 - 3.168]	
Any Visit in 2009			1,152***	668.6***		
			[1,045 - 1,259]	[628.1 - 709.1]		
Model	XT Poisson	XT Poisson	RE Linear Reg	RE Linear Reg	XT Logit	XT Logit
Individual Random Effects	YES	YES	YES	YES	YES	YES
Clusters	9929	7709	9929	7709	9929	7709
Observation	29779	23127	29779	23127	29779	23127

Regressions include controls for age, gender, race (white/non-white), tenure, employee type, and plant union status.

*** p<0.01, **p<0.05, *p<0.1

Table 7: Proportion of cohort without prior diagnoses for condition who were diagnosed in 2009

Proportion new onset of those at risk in 2009	Mean	SD	N
Adults			
CHD	0.007	0.085	10068
Hypertension	0.049	0.216	7268
Diabetes	0.021	0.142	9377
Depression	0.007	0.083	9745
Asthma	0.006	0.076	9912
Kids			
ADHD	0.023	0.150	8218
Asthma	0.029	0.169	7832
Injury	0.018	0.132	8861

Table 8A: Logistic Regression Estimates for the Association of the Threat of Job Insecurity and new onset of health condition in 2009. Odds ratios presented and standard errors in brackets.

	CHD		Hypertension		Diabetes		Depression		Asthma	
High Layoff	0.777	0.777	1.472**	1.455**	1.387**	1.353	1.039	1.039	0.963	0.963
	[0.180]	[0.230]	[0.233]	[0.266]	[0.201]	[0.258]	[0.281]	[0.294]	[0.280]	[0.305]
Lagged Health Risk Score (2008)										
Omitted group RS 0-1										
RS 1-2	1.909***	1.909**	1.192	1.187	1.374*	1.382*	1.419	1.419	1.57	1.57
	[0.428]	[0.580]	[0.146]	[0.159]	[0.264]	[0.241]	[0.347]	[0.429]	[0.590]	[0.510]
RS 2-3	1.645	1.645	0.78	0.781	1.355	1.36	0.967	0.967	1.016	1.016
	[0.635]	[0.668]	[0.243]	[0.187]	[0.349]	[0.351]	[0.480]	[0.494]	[0.508]	[0.527]
RS 3-4	1.861	1.861	0.985	0.984	1.012	1.021	2.450**	2.450*	2.753**	2.753*
	[0.964]	[1.014]	[0.348]	[0.336]	[0.478]	[0.427]	[0.926]	[1.251]	[1.171]	[1.433]
Number of face-to-face visits	1.136***	1.136***	1.133***	1.135***	1.093***	1.094***	1.110***	1.110***	1.116***	1.116***
	[0.0163]	[0.0175]	[0.0176]	[0.0129]	[0.0125]	[0.0136]	[0.0153]	[0.0187]	[0.0162]	[0.0192]
Observations	10068	10068	7268	7268	9377	9377	9745	9745	9912	9912
Number of loc	25	25	25	25	25	25	25	25	25	25
Model	Logit, Clustered SE	RE Logit	Logit, Clustered SE	RE Logit	Logit, Clustered SE	RE Logit	Logit, Clustered SE	RE Logit	Logit, Clustered SE	RE Logit

Regressions include controls for age, gender, race (white/non-white), tenure, employee type, and plant union status.
*** p<0.01, **p<0.05, *p<0.1

Table 8B: Cox Proportional Hazard Estimates for the Association of the Threat of Job Insecurity and new onset of health condition in 2008/2009. Hazard Ratios and 95% CIs presented.

	CHD	Hypertension	Depression	Asthma
Post (2008/2009 vs. 2005-2007)	0.86	1.119	0.933	0.76
	[0.506 - 1.461]	[0.846 - 1.481]	[0.618 - 1.409]	[0.393 - 1.473]
High Layoff Group	0.507***	0.674***	0.461***	0.520***
	[0.353 - 0.729]	[0.572 - 0.794]	[0.321 - 0.663]	[0.358 - 0.755]
High Layoff Group* Post	1.269	0.971	1.311	2.206**
	[0.610 - 2.642]	[0.711 - 1.326]	[0.665 - 2.585]	[1.047 - 4.647]
Lagged Health Risk Score (2004)				
RS 1-2	1.101	0.731***	0.813	0.924
	[0.777 - 1.560]	[0.615 - 0.869]	[0.566 - 1.170]	[0.631 - 1.353]
RS 2-3	0.697	0.642***	0.400**	0.961
	[0.380 - 1.280]	[0.468 - 0.880]	[0.179 - 0.896]	[0.524 - 1.763]
RS 3-4	0.343	0.349***	1.178	0.222
	[0.0835 - 1.411]	[0.179 - 0.679]	[0.506 - 2.742]	[0.0306 - 1.618]
Number of Visit &	1.136***	1.107***	1.123***	1.132***
	[1.118 - 1.154]	[1.097 - 1.118]	[1.101 - 1.144]	[1.110 - 1.155]
Model	COX PH, t=Age	COX PH, t=Age	COX PH, t=Age	COX PH, t=Age
Location Level Frailty	YES	YES	YES	YES
Clusters	25	25	25	25
Observation	33448	31290	33268	33380

Regressions include controls for gender, race (white/non-white), tenure, employee type, number of visits, and plant union status.
& Number of visits vary by year

*** p<0.01, **p<0.05, *p<0.1

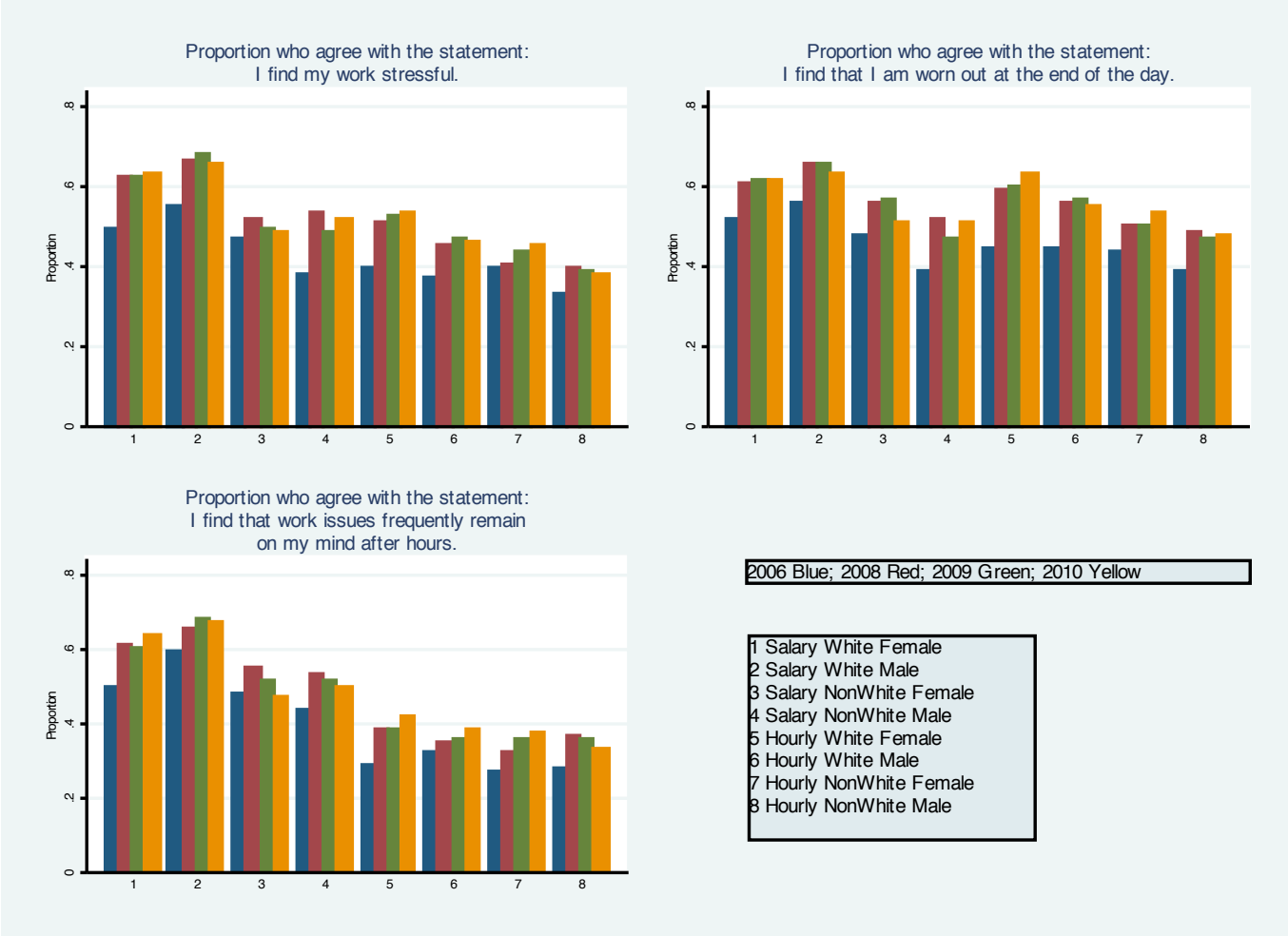
Table 9: Logistic Regression Estimates for the Association of the Threat of Job Insecurity and new onset of health condition in 2009 for cohort's children. Odds ratios presented and CI in brackets.

	ADHD	Asthma	Injury
High Layoff	**0.873**	**0.742**	**1.275**
	[0.548 - 1.392]	**[0.501 - 1.098]**	**[0.807 - 2.014]**
Lagged Health Risk Score (2008) Omitted group RS 0-1			
RS 1-2	2.019**	0.745	0.684
	[1.105 - 3.688]	[0.353 - 1.571]	[0.278 - 1.680]
RS 2-4	1.23	0.877	1.682
	[0.362 - 4.177]	[0.267 - 2.875]	[0.597 - 4.739]
Number of Face to Face visits	1.113***	1.169***	1.151***
	[1.081 - 1.146]	[1.134 - 1.206]	[1.117 - 1.186]
Model	RE Logit	RE Logit	RE Logit
Clusters	8218	7832	8861
Observations	25	25	25

All regressions include controls for child age, gender, race (white/non-white) as well as parent tenure, employee type, and plant union status.

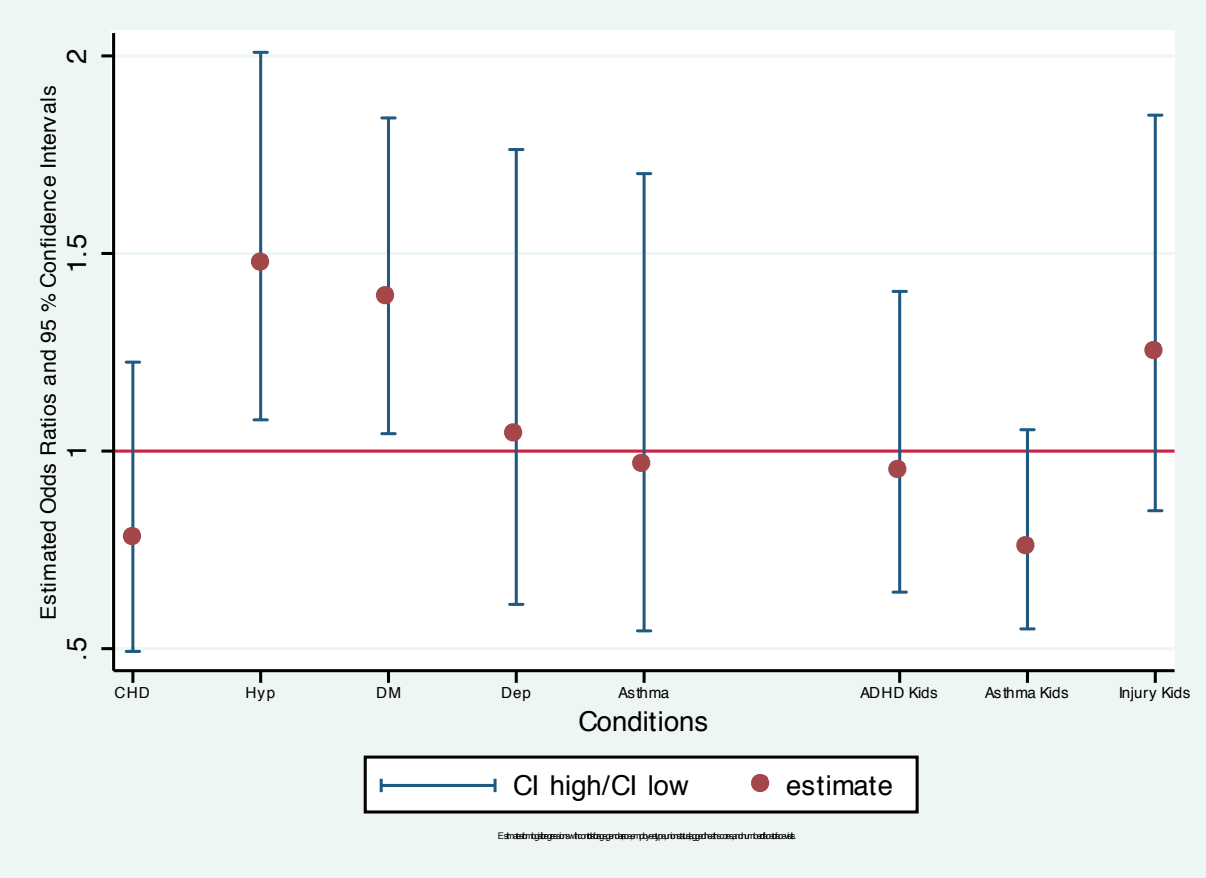
*** p<0.01, **p<0.05, *p<0.1

Figure 1: Trends in responses to work stress by demographic group.



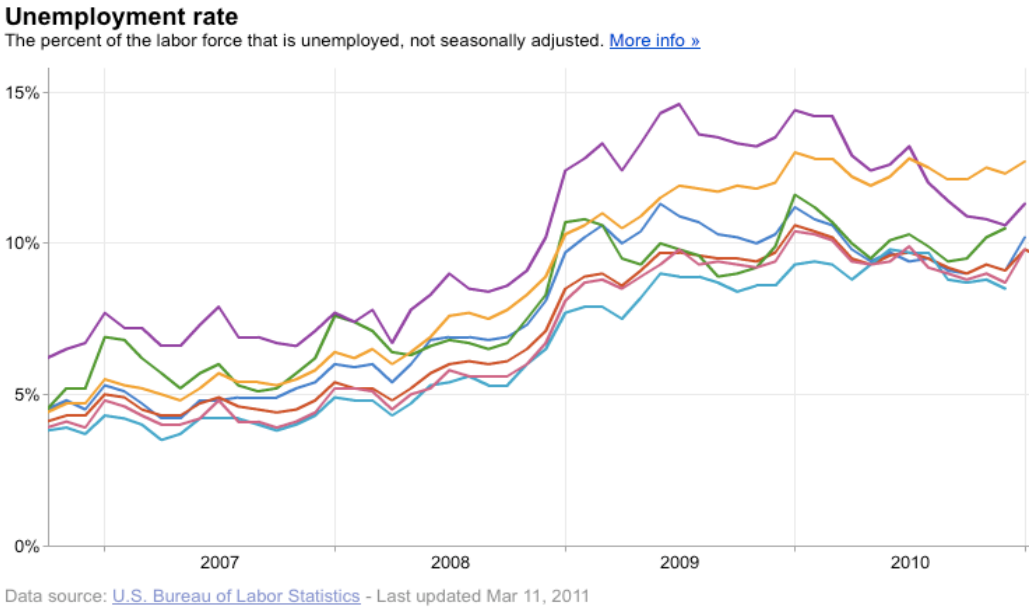
Same 26 plants as used in the analysis. Balance question not shown because question was worded differently in 2006.

Figure 2: Summary of main results from cross-sectional analysis. Odds ratio and 95% CIs.



Odds ratios from logistic regression on High Layoff Group and new onset in 2009 from Table 8A and Table 9. Controls included for age, gender, race (white/non-white), tenure, employee type, plant union status, lagged health scores and number of face-to-face visits. Standard errors are clustered at plant level.

Figure 3: Unemployment rate by location of plants with high layoffs.



Michigan, California, New York County, Tennessee, New Jersey, ALL US, Virginia County

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