Labour Economics 41 (2016) 194–203

Contents lists available at ScienceDirect

Labour Economics

journal homepage: www.elsevier.com/locate/labeco

The effect of job loss on health: Evidence from biomarkers☆

Pierre-Carl Michaud[a,c,*], Eileen M. Crimmins[b], Michael D. Hurd[c,d]

[a]HEC Montréal, Canada
[b]University of Southern California, United States
[c]RAND Corporation, United States
[d]NBER, United States

HIGHLIGHTS

- We estimate the effect of job loss on physiological dysregulation using biomarkers from the Health and Retirement Study.
- Estimates suggest strong effects of layoffs on biomarkers, in particular for glycosylated hemoglobin (HbA1c).
- A layoff could increase annual mortality rates 10.3%, consistent with other evidence of the effect of layoffs on mortality.

ARTICLE INFO

Article history:
Received 30 August 2015
Received in revised form 17 May 2016
Accepted 18 May 2016
Available online 21 May 2016

JEL classification:
I14
J10
J14

Keywords:
Job loss
Health
SES-health gradient
Biomarkers

ABSTRACT

We estimate the effect of job loss on objective measures of physiological dysregulation using biomarker measures collected by the Health and Retirement Study in 2006 and 2008 and longitudinal self-reports of work status. We distinguish between group or individual layoffs, and business closures. Workers who are laid off from their job have lower health as measured by biomarker, whereas workers laid off in the context of a business closure do not. Estimates matching respondents wave-by-wave on self-reported health conditions and subjective job loss expectations prior to job loss, suggest strong effects of layoffs on biomarkers, in particular for glycosylated hemoglobin (HbA1c). A layoff could increase annual mortality rates by 10.3%, consistent with other evidence of the effect of group layoffs on mortality.

1. Introduction

The positive relationship between socio-economic status and health (the SES-health gradient) becomes stronger over the working years (Smith, 1999) possibly because of shocks to health or SES: health shocks may lead to prolonged absence from the labor force, as well as reduced earnings and wealth. Similarly job loss may lead to worse health because of physiological stress and financial strain. Further, job loss could make it hard to access health care because of the loss of employer-provided health insurance. Thus economic and health instabilities may be powerful drivers of the strengthening of the SES-health gradient over the working years.

Job loss is typically associated with significant financial consequences (Moen, 1983), which can result in stress (Voydanoff, 1984). Several studies have found that job loss is followed by poorer health outcomes (Montgomery et al., 1999). Studies in countries with generous unemployment insurance tend to find smaller effects on health (Black et al., 2012) lending support to a causative effect of unemployment on health. Rege et al. (2009) find strong effects of plant downsizing on disability pension utilization in Norway.

☆ This research was supported by the National Institute on Aging, under grant R01AG040176. We thank David Boisclair, Nancy Campbell, Francois Laliberte-Auger and Clifford Grammich for their excellent research assistance. We thank Fabian Lange, Italo Guttierez and seminar participants at McGill University and 2015 SOLE meetings in Montreal. Errors are our own.

* Corresponding author at: Université du Québec à Montréal Département des sciences économiques, R-5805 Case postale 8888, Succ. Centre-Ville Montréal, (Québec) CANADA H3C 3P8.
E-mail address: pcmichaud@gmail.com (Pierce-Carl Michaud).

http://dx.doi.org/10.1016/j.labeco.2016.05.014
0927-5371/

There are two concerns with inferring causality about the relationship between health and job loss from this evidence. First, omitted unobserved variables which are related to job loss and health (confounders) may bias causal inference. An example would be SES and health earlier in life. Second, health status itself may lead to job loss, leading to so-called reverse causality. For example, employers may lay off sicker workers since health is correlated with higher absenteeism and lower productivity. For this reason, some studies have focused on the long-term effects of job displacement on mortality and a range of other health-related outcomes using more exogenous sources of job loss such as business closures or group layoffs.

Sullivan and von Wachter (2009) find that, 20 years after job displacement, displaced workers in Pennsylvania faced a 10–15% increase in mortality rates compared with other workers. Studies in Europe have also found effects on mortality. For instance, Eliason and Storrie (2009) found important effects in Sweden, in particular for males, while Browning and Heinesen (2012) find effects in Denmark for many causes of mortality including circulatory disease. Using survey data in the U.S., Strully (2009) used particular plant closures in manufacturing. Estimating from three waves of the Panel Study of Income Dynamics, she finds statistically significant effects of involuntary job loss (mostly business closure) on self-reported health and health conditions; however, the estimations include few health controls, leaving open the possibility that health declines led to job loss (reverse causality). Schroder (2013) found mixed negative long-term effects of layoffs and business closure on self-reported health outcomes at older ages for a number of European countries, with the largest effects occurring for females. But, using self-reported health measures such as being diagnosed by a doctor may underestimate the health effects of job loss because of an accompanying loss of health insurance may reduce the likelihood of being diagnosed. Some studies find no effect of job loss on health, in particular when looking at short-run effects of job displacement due to business closure on self-reported health (Salm, 2009) and hospital visits (Browning et al., 2006). Short-run effects, however, may not be evident in increased self-reported doctor diagnoses or hospital visits which would result from a longer build-up of poor health.

Long-run effects of job loss on health may become evident if better markers of health are used for detection. Theories based on biological processes suggest a link from economic instability to stress and health (McEwen and Stellar, 1993). These postulate that experiencing frequent or prolonged episodes of stress can lead to wear and tear on the body, disrupting regulatory systems and ultimately worsening health. These theories emphasize that the allostatic load or physiological dysregulation associated with stressful events leads to worse health outcomes in the long term. Several studies provide evidence of the mediating role of physiological dysregulation between stresses associated with low socioeconomic status, poor work conditions including job demands, and future mortality (Seeman et al., 1997, 2008). While there are multiple approaches to measuring physiological dysregulation, one common method is to use the count of biomarker values that fall within ranges indicative of clinical risk.

In this paper, we investigate the relationship between job loss and physiological dysregulation, an objective measure of health. To do so, we exploit the rich longitudinal content of the Health and Retirement Study (HRS), along with biomarker and anthropometric measures collected in 2006 and 2008. Because of the longitudinal design, we are able to distinguish between layoffs and business closures. The distinction is potentially interesting because the psychological effects of a layoff, which singles out individual employees or a group of employees, may be stronger than when an entire firm closes for reasons which are perhaps outside the control of workers (or the firm). We follow individuals for periods ranging from 2 to 14 years, allowing us to assess medium-term effects on a wide range of objective health biomarkers. Because we have access to a rich set of controls, including ex ante subjective expectations of job loss, we are able to assess the potential risk of bias associated with left-out variables. To guard against health inducing job loss (reverse causality), we use a matching estimator which matches, for each wave, displaced workers with non-displaced workers, based on an extensive set of covariates, including a number of pre-job-loss health measures. The aim is to compare health outcomes subsequent to job loss between workers whose health was similar prior to job loss. The matching estimator then pools these matches over waves, controlling extensively for baseline differences across respondents. This is akin to a very flexible difference-in-difference estimator.

In Section 2, we present the data and the construction of the variables used. In Section 3, we present the methods used. In Section 4, we present our results. We offer conclusions and note limitations in Section 5.

2. Data

2.1. Biomarkers and anthropometrics in the HRS

The HRS is a biennial panel survey of U.S. adults at least 50 years of age. The HRS was launched in 1992,with an initial cohort whose individuals were approximately 51–61. In 1998 a new cohort, whose members were approximately 51–56, were added. Since then, every six years a new cohort aged 51–56 was added. In 2006, the HRS began collecting blood spots, saliva, and anthropometric measures as part of enhanced face-to-face interviews. Half the respondents were randomly selected for the enhanced interviews in 2006, and the remaining half were asked to participate in 2008. Three of the biomarkers require people to allow blood pressure to be taken and five are blood-based measures that were collected using dried blood spots. In 2006 about 9% of respondents did not consent to having the physical measurements taken, including blood pressure; about 17% did not participate in the blood spot collection. Altogether, HRS files have biomarkers for 13,064 respondents. Details on the protocols for collection and assay of the biomarker data are in the documentation on the HRS website (Crimmins et al., 2013).[1]

We use data from two cohorts in the HRS. First, we use the HRS cohort (born 1931–1941) with respondents who were 51 to 61 years old at first interview in 1992 and 65 to 77 years old in the year when their biomarkers were assessed (2006 or 2008). The second cohort of respondents (born 1942–1947) entered the HRS in 1998 at the age of 51–56 and were 59 to 66 years old in 2006 or 2008. In these two cohorts, 3724 respondents have complete biomarker information, are not missing information on important covariates for regression analysis, and were between 59 and 77 years of age in 2006–2008. Because exposure to job loss requires respondents to be working at baseline, regression analysis below is performed on the sample of respondents who were working at the first wave in which they were observed ($n = 2572$). Another set of analyses is done using wave by wave matching techniques. The sample for this analysis is somewhat larger because we select respondents who are working at a given wave ($n = 3580$). For these respondents, we can observe 8 to 16

[1] The blood collection was not designated for individual markers, and the respondents did not know what markers would be assayed and could not choose not to have some assays. The response rate to the invitation for the blood spot procedure was 83% (Sakshaug et al., 2010). Selection into the sample based on health has the potential to bias the results because those whose health was most affected by unemployment would not be in our analyses. However Sakshaug et al. (2010) found little relationship between willingness to particulate and health or health conditions: "There were no statistically significant associations between consent and self-reported health status, BMI, Medicare status, pain limitations, or ever having had high blood pressure, cancer, lung disease, heart condition, stroke, or arthritis." Diabetes was significantly different among those who participated and those who did not; but it increased the likelihood of consenting. We conclude that with respect to the our objectives the assumption of missingness at random is consistent with the available data analyses.