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The New Employment Contract and Worker Health in the United States
(Previously Titled: Nonstandard Work and Health: Who is at Risk and Who Benefits?)

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Introduction

Historically there have been three arenas of policy debate in the United States relevant to the health effects of employment for workers and their families. First, the *physical environment* of the workplace and its health impact has been a major arena of policy debate. The pathways from the physical environment to health include exposure to chemical and biological hazards leading to disease, as well as physical risks to safety. Second, the *demanding nature of work activities* themselves has also been the topic of policy debate. The pathway from work activity to health most often implicates work stressors involving too little task control and high levels of demand, and the biological consequences of stress in response to work demands. Most recently, the *contractual nature of jobs*, their insecurity and their lack of benefits, has become a third major arena of policy debate. Here the pathway to ill health involves the stressful anticipation of involuntary job loss, the stresses associated with economic hardship following job loss, and the health-compromising conditions associated with managing part time nonstandard jobs that lack predictability, adequate benefits, and adequate income.

The debate on conditions of work and health is complex and has involved many different stakeholders. The various stakeholders have included organized labor, business organizations, legislators, and advocates for particular macroeconomic policies aimed at controlling inflation or economic growth. Furthermore, the employment policies that emerge from these debates are not the simple result of a single piece of legislation. Instead, they often involve long-running debates involving Congress, the courts, regulatory agencies, and unions. Workplace policies adopted by

employers in the absence of any regulatory or protective legislation can also influence worker health. Below we briefly consider policy influences on the safety of the physical work environment and on demanding work activities before turning to a consideration of the policies that have led to a changed employment contract, increased job insecurity and nonstandard work arrangements.

The policy debate on workplace safety, demanding work activities and health

The policy debate on the *physical environment* of the workplace and its health impact has revolved around the Occupational Safety and Health Administration (www.osha.gov), created by Congress through the Occupational Safety and Health Act signed by President Nixon in 1970. OSHA is responsible to receive complaints about work dangers, inspect industries, maintain records to assure employer compliance and render fines on employers for violations of workplace safety and health regulations. Among the policies established by OSHA are standards for workplace safety and health, training of workplace inspectors, creation of state OSHA programs, and exposure standards for cotton dust, lead, blood pathogens, asbestos, and vinyl chloride. There is evidence that these policies have improved worker health and safety. Fleming (2001) reports that even though the workforce has greatly expanded since 1971, occupational fatalities have been decreasing. However, these successes have not been won easily or without considerable partisan policy debate.

The protection of the physical health of American workers by OSHA regulation and standards has been the subject of sharply partisan debate with shifts in policies swinging from one administration to the next. In its early stages OSHA focused on physical safety, retrofitting industrial machines for safety despite objections to the costs involved. Later the Carter administration expanded the OSHA focus to exposure to toxic chemicals and biohazards. A watershed change in policy occurred under the Reagan and Bush administrations with the initiation of the Voluntary Protection Program that put regulation substantially in the hands of industry. The Clinton administration advocated “stakeholder satisfaction” aimed at compromise,

but with the Republican congressional majority of 1994, legislation moved to support employer interests with the Small Business Regulatory Enforcement Fairness Act of 1996 and the Congressional Review Act. The current George W. Bush administration has moved decisively to institute policies that shift mandatory guidelines to voluntary status and to increase budgetary support for earlier voluntary programs. The General Accounting Office (2004) has issued a report indicating that these programs are likely to reduce OSHA's enforcement budget and are of questionable effectiveness in regulating business practices.

Turning to the regulatory history around *work activities themselves*, there is a substantial body of evidence that their timing, speed, demands, and the way they structure relationships with coworkers can be stressful and threaten health through a number of biological, behavioral and psychosocial pathways. For example, shift work can disrupt circadian rhythms and produce psychosomatic complaints (Frese and Zapf 1986). Lack of variety, complexity or stimulation, demands for speed, and long hours all can produce stress and health problems (Kahn and Byosiore 1992; Karasek and Theorell 1990; Price and Kompier In press; Semmer 2003). In addition, ambiguous or conflicting work roles create stress and anxiety (Kahn 1981). Jobs with high levels of demand and low control are particularly likely to produce chronic stress and health problems (Karasek and Theorell 1990). The biological pathways by which stressful work conditions can "get under the skin" (Taylor and Repetti 1997) are increasingly well understood. Work that is low in control can produce catecholamine/cortisol imbalances (Frankenhaeuser 1991). Anger, anxiety and depression can produce cardiac illness through the chronic stimulation of the sympathetic-adrenal- medullar system and the hypothalamic-pituitary-adrenocortical axis (Taylor and Repetti 1997). It has also been shown that high blood pressure in stressful work situations can be reduced by supervisor social support (House 1981; House and Kahn 1985), suggesting that it may be possible to buffer the negative effects of these conditions.

Despite the large volume of research on the links between work demands, stress and health, only limited policy debate and regulation of work activities have resulted. However, one

important exception has been the debate on ergonomics standards. Although work conditions leading to musculoskeletal injuries such as carpal tunnel syndrome associated with repetitive motion and back injuries account for one third of serious work injuries, they have received little regulation and have been the subject of intense partisan policy debate. After extensive study, in 2000 OSHA issued an ergonomics standard to protect workers. The OSHA standard was promptly repealed on March 29, 2001 by Congress and the repeal was one of the first pieces of legislation signed by President Bush in his first term in office (Uchitelle 2006).

Furthermore, new health risks for American workers are now beginning to appear that are not covered by existing safeguards, and the policy debate that has shaped the *employment contract* of American workers and its influence on health is least well understood. In what follows we begin by tracing the changes in legislation and business practices that have reshaped the employment contract of American workers in the last forty years. We then examine the working conditions that the new employment contract imposes on workers, focusing as examples on the health effects of involuntary job loss, job insecurity and the increased prevalence of part time nonstandard work. Using data from a representative sample of Americans we examine the impacts of several forms of nonstandard work on worker health. We then consider the broader implications of the new employment contract for the health of American workers and their families.

A changed employment contract for American workers

The last four decades have seen a dramatic series of changes in the nature of work (Cooper 1998; Price in press) that has shaped the employment contract for American workers. Improvements in the technology to support work promised to ease the burden of jobs, but may at the same time have reduced job security (Rifkin 1995). A new wave of union management struggles in the 1970s and 1980s resulted in lower levels of union membership (Murphy et al. in press; Tausig et al. 2004) and in reduced benefits for American workers. The “enterprise culture” of the 1980s encouraged strong movement for deregulation of American business and

privatization of government services. Economic downturns in the 1980s and 1990s produced a wave of downsizing in the manufacturing sector (Baumol, Blinder and Wolff 2003) and at the turn of the century the influence of globalization on the American workplace has produced the “off shoring” of American jobs. Finally, women have entered the American workforce in rapidly increasing numbers (Tausig et al. 2004) and families have had to deal with the conflicting and stressful demands of combining family and household responsibilities and work (Geurts and Demerouti 2003; Hochschild 1997). The new employment contract and its consequences for health have not been shaped by a single legislative act or executive order over the last four decades. Instead, a complex political process has influenced industrial policy (Shapiro 2005). Legislation has been written jointly by labor and management, and has combined with adjustment of macroeconomic policy. Other private interests such as the insurance industry, concerned with pension and health plans, have also become involved in shaping legislation affecting workers and their families. Together, policy developments over the last four decades help to explain the emergence of the new employment contract.

Faced with rising unemployment rates in 1975, Congress eventually enacted the Full Employment and Balanced Growth Act of 1978, popularly known as the Humphrey-Hawkins Act. The legislation directed the Federal Reserve Board to reduce the unemployment rate to 4% by 1983, but over time, many of the crucial provisions were stripped from the original bill (Uchitelle 2006). In the same period, the Federal Reserve reduced raised interest rates to combat inflation and reduced the availability of new jobs. This was also a period of deregulation in number of industries where jobs had previously been relatively secure. The Airline Deregulation Act of 1978 was followed by deregulation in banking, telephones, trucking and utilities, all of which created layoffs and increased job insecurity.

Business strategy also began to change in the 1970s and 1980s in ways that transformed secure jobs into layoffs. Mergers and acquisitions as well as leveraged buyouts all produced layoffs as firms consolidated their assets. International Trade agreements enacted by Congress but

resisted by labor, such as the North American Free Trade Agreement (NAFTA), meant that factories in the United States closed and jobs moved to Mexico where they could be performed at much lower cost (Uchitelle 2006). In a detailed economic analysis, Baumol, Blinder & Wolff (2003) find evidence that downsizing has resulted in increased profits for American industry through reduced wages per unit of productivity. Ironically, though, they note that even though downsizing appears to have been used as a strategy for holding down wage increases, it was not rewarded by increased stock values.

Accompanying a decline in union membership over this same period (Tausig et al. 2004), there has been a decline in bargaining power to protect worker health. In the past, unions helped in a number of ways (Mischel and Walters 2004) including formulating legislation to protect workers, informing members of their rights with regard to government programs, enforcing the standards of the Occupational Safety and Health Act, and helping members in disputes with employers (Weil 2003). Unions also helped workers receive benefits due them from workers compensation and encouraged compliance with the Fair Labor Standards Act to provide a minimum wage for hourly wage earners (Trejo 1991). The nature of collective bargaining has changed dramatically in the last few decades as foreign and domestic nonunion competition has risen rapidly in many industries, increasing employer demands for concessions and compelling unions to give up demands for wage increases and benefits. In addition strikes, once a powerful union tool for improving working conditions, benefits and pay, have become a tactic of last resort (Tochan, Katz and McKersie 1986).

These policy developments have changed the nature of the employment contract (Cooper 1998; Rousseau 1995), the nature of jobs themselves, and the ways they may influence worker health. Rousseau (1995) observes that employer-employee relations have changed from long term, more informal, and relationally-oriented to shorter term, contract-based arrangements. Standard jobs that promised the exchange of regular pay and benefits for full time work are being replaced by lower-paying part time or other nonstandard jobs with fewer or no benefits, fewer

health and safety protections, and less job security (Kalleberg 2000). In response to increased competitive pressures, employers have adopted a number of practices to restructure standard positions into part time and contingent jobs (Houseman 1999). This “just in time” workforce strategy is an important contributor to the working conditions that nonstandard workers now face. The new employment contract is an important feature of American working life, with important implications for the health and well being of workers and their families.

As a result of these shifts in the landscape of work in the United States, individuals’ perceptions of job insecurity have persisted into a period of relatively low official unemployment and even spread to a wider proportion of the workforce (Elman and O’Rand 2002; Schmidt 2000). Involuntary job loss is still a threat to many workers (Hammermesh 1989; Keltzer 1998), and employment contracts that don’t offer benefits or stability are increasingly commonplace (Kalleberg, Reskin and Hudson 2000). We turn now to a review of the empirical evidence for negative relationships between health and unemployment, job insecurity, and nonstandard work, as well as discussing key mechanisms that may explain these relationships.

Unemployment and Health

Numerous studies over time and across societies have demonstrated that unemployment is a serious stressor with negative implications for health, including poorer mental health, such as increased depressive symptoms (Dooley, Catalano and Wilson 1994), reduced self-reported well-being (Laheima 1989), self-reported physical illness (Kessler, House and Turner 1987), and mortality from suicide (Platt 1984). In some studies, unemployment is associated with increased use of tobacco and alcohol (Montgomery et al. 1998), that could impact physical health in the long term. Stronger evidence that unemployment causes health decline can be drawn from factory closure studies (e.g., Kasl, Gore and Cobb 1975). When an entire organization closes it is unlikely that specific characteristics of a particular worker are responsible for her job loss, making it clearer that the job loss caused health to decline. Plant closure studies have found an increased risk of mental distress or increased physician consultations, illness episodes and hospital referrals

and attendance (Hamilton et al. 1990; Keefe et al. 2002). Studies of longitudinal population-based samples, sampling individuals experiencing a variety of reasons for job loss, have shown that job loss is linked to a greater number of reported medical conditions, higher rates of medical services use, and pension disability use (Ferrie et al. 1998a; Westin 1990), as well as poorer physical functioning (Gallo et al. 2000) and self-reported physical illness (Turner 1995). Such studies have also shown that job loss is associated with worsening of psychological symptoms such as depression, somatization, and anxiety (Burgard, Brand and House 2006b; Gallo et al. 2000; Turner 1995). Finally, involuntary job loss is associated with declines in the well being of families, increasing child abuse and marital conflict (Catalano et al. 1993a; Catalano et al. 1993b; Price 1992; Price, Choi and Vinokur 2002).

An involuntary job loss may be a precipitating factor and an acute blow for a worker, but can give rise to a more chronic stress process associated with the ongoing difficulties of unemployment or reemployment, often in a job of inferior quality compared to the one that was lost (House 1987; Pearlin et al. 1981). Even job displacements, job losses that occur through no fault of the worker, typically entail a substantial period of non-employment and a major loss of income and increased financial strain, with lasting effects on long-term earning potential (Farber 2003; Hammermesh 1989; Jacobson, LaLonde and Sullivan 1993). Losing a job may also have consequences for both health-related and non-wage economic benefits derived from employment, such as health insurance coverage, pension and other benefits (Brand forthcoming). This substantial economic strain accompanying job loss is associated with increases in depression (Kessler, Turner and House 1987; Price, Choi and Vinokur 2002) and produces a variety of secondary stressors (Price et al. 1998). Finally, an involuntary job loss could also entail the loss of psychosocial assets including diminished goals and meaning in life, social support, sense of control, and time structure (Jahoda 1982; Pearlin et al. 1981). Furthermore, being unemployed is a stigmatized condition in American society, creating a sense of anxiety, insecurity, and shame (Newman 1988).

Job Insecurity and Health

While massive layoffs are less frequent now than several decades ago, the potent threat of economic and social turmoil associated with unemployment affects a wide range of contemporary workers. Changes in the implicit contract between employers and employees mean that many workers fear job loss, and some studies have suggested that prolonged exposure to the threat of job loss might be even more harmful than the experience of unemployment itself (Aronsson 1999; Heaney, Israel and House 1994). A central proposition of stress research is that anticipation of a stressful event represents an equally important, or even greater, source of anxiety than the actual event itself (Lazarus and Folkman 1984). Workers who feel that their job is insecure are under stress because of the psychological strain associated with being in a powerless position, anticipation of the problems of job loss, and ambiguity about what the future holds and what responses would be most appropriate (Heaney, Israel and House 1994). Furthermore, the effect of negative events is mediated by a person's perception of the predictability and control of such stimuli (Dohrenwend and Dohrenwend 1974), and perceived job insecurity is a condition defined by feelings of inability to control one's employment stability. Workers who experience prolonged and intense levels of job insecurity may experience negative health consequences because the stress response releases hormones that affect many organ systems (Gazzanizga and Heatherton 2003). The effects of constant stressors and intense stressful events also accumulate to impair the function of the immune system, increasing the likelihood and severity of illness (McEwen 2002).

There has been only limited empirical study of perceived job insecurity, but what exists provides suggestive evidence for negative health consequences. Several studies have shown that job insecurity negatively affects mental health and well-being (Burgard, Brand and House 2006a; De Witte 1999; Ferrie et al. 1998b). Fewer studies have examined physical health differences, but these studies suggest negative associations with overall self-rated health or morbidity (Burgard, Brand and House 2006a; Ferrie et al. 1995; Pelfrene et al. 2003), physical symptoms (Ferrie et al. 1998b; Heaney, Israel and House 1994), and cardiovascular risk factors (Ferrie et al. 2001;

Siegrist et al. 1988). Consensus on the negative health effects of job insecurity has not been reached, particularly for physical health outcomes (Kasl, Gore and Cobb 1975; Mattiasson et al. 1990), and many of the existing studies have been conducted in Western Europe, limiting the applicability of their results to the United States context. Nonetheless, existing evidence suggests that contemporary threats to job security could have significant negative implications for the well-being of American workers.

Nonstandard work and health

In the past several decades, in response to the economic and policy changes we have described, firms have increasingly pursued more flexibility in their employment relationships, separating employees into a core group with standard, continuous and secure jobs, and a peripheral group employed in involuntary and at-will “nonstandard” jobs (Tilly 1996). A commonly-used definition of standard work characterizes it as full-time, typically on a fixed schedule, with the expectation of continued employment, and at the employer’s place of business under the employer’s direction (Kalleberg 2000). Nonstandard work then encompasses alternate employment relationships that vary on these bases, including on-call work and day labor, temporary-help agency employment, employment with contract companies, independent contracting, other self-employment, and part-time employment in otherwise “conventional” jobs (Kalleberg, Reskin and Hudson 2000). By one measure, these categories taken together made up almost 30% of the U.S. workforce in 1995 (U.S. Bureau of Labor Statistics 1997).

Nonstandard employment arrangements were common until World War Two, declined in the growth years of the 1950s through the mid-1970s, then reemerged in the late 1970s and appear to have been growing in importance since then (Blank 1998; Polivka and Nardone 1989). Two explanations have been forwarded for the recent increase in nonstandard work. The first highlights employers’ use of these kinds of arrangements in response to the requirements of lean production in a globalizing economy, where nonstandard workers can be easily hired and cut in response to demand. An alternate explanation is that employers are accommodating worker

preferences as the labor force becomes increasingly female and workers juggle other, often caretaking, responsibilities. Both sides of the argument offer some evidence; on the one hand, high proportions of temporary help agency employees would prefer a standard contract, and are thus involuntary nonstandard workers (Kalleberg et al. 1997). Coupled with the relatively high growth in this form of nonstandard work, the evidence suggests that employers' preferences are responsible for the increase in temporary agency work, not worker preferences (Goldman and Appelbaum 1992; Kalleberg, Reskin and Hudson 2000). Furthermore, in some studies businesses have cited the cost savings of not providing benefits as a reason for using nonstandard workers (Houseman 2001), indicating that nonstandard work could be good for employers but bad for employees.

On the other hand, studies have shown that two types of nonstandard workers, self-employed people and independent contractors, are less likely to have fringe benefits but earn more than workers in standard jobs and on average, prefer their arrangements to a standard job (Kalleberg et al. 1997; Polivka 1996). Preferences for nonstandard work contracts may be also higher among young families, people nearing or past the legal retirement age (Christensen 1990; Wenger and Appelbaum 2004), and people with disabilities (Schur 2003), and these populations may be healthier under such arrangements (Isaksson and Bellagh 2002). Nonetheless, there is considerable debate about how much individual choice nonstandard workers, and women in particular, exercise in accepting nonstandard work contracts, and how much they are channeled into these forms of work due to the constraints of a stratified labor force (Walsh 1999).

It is clear that there is considerable heterogeneity in the characteristics of nonstandard jobs and their incumbents; one study finds that while there are high- and low-wage jobs available to contract workers and the self-employed, temporary-help agency employment, on-call/day labor, and part-time work tend to be associated with worse characteristics both in terms of working conditions and available benefits than are standard full-time jobs (Kalleberg, Reskin and Hudson 2000). Furthermore, nonstandard work is concentrated among women (Amott and

Matthaei 1991), and within the nonstandard work arena, women are particularly likely to be in part-time jobs (Kalleberg et al. 1997; Nollen 1996), while minority women and those of low economic standing are overrepresented in the poorest nonstandard work arrangements (Nollen 1996). The diversity of nonstandard work arrangements and their uneven distribution across the working population suggest that the health-related consequences of nonstandard working arrangements are likely to be complex.

Despite the fact that nonstandard work accounts for an increasing fraction of the occupational opportunities in this country, we know relatively little about the potential consequences for health and existing evidence is equivocal. In some studies, nonstandard employees reported greater psychological distress and to a lesser extent, poorer physical health than standard employees (Benach et al. 2004; Dooley and Prause 2004; Friedland and Price 2003; Virtanen et al. 2005a). Nonstandard workers have also shown a higher risk of mortality than permanent employees, but lower risk than the unemployed, while those who moved from a temporary to permanent position had the lowest risk of mortality, even controlling for socioeconomic differences (Kivimaki et al. 2003). Nonstandard employees are at risk of deterioration in occupational health and safety in terms of injury rates, disease risk, and hazard exposures (Quinlan, Mayhew and Bohle 2001), even controlling for worker's personal characteristics, family status, occupation and industry (Kalleberg, Reskin and Hudson 2000). Nonetheless, there are important health variations across different types of nonstandard workers between, for example, on-call or substitute workers versus those on temporary but full time contracts that otherwise resemble permanent jobs (Virtanen et al. 2003b; Virtanen et al. 2005b). Other studies find that individuals in nonstandard contracts are as physically healthy or healthier than their peers who work under standard arrangements (Bardasi and Francesconi 2004; Virtanen et al. 2003a; Virtanen et al. 2002), though they may report greater job dissatisfaction, fatigue, backache and muscular pains (Benavides et al. 2000). Part-time work has even appeared to be

protective for women in some studies (Bardasi and Francesconi 2004; Nylen, Voss and Floderus 2001).

The lack of clear consensus on the health effects of nonstandard work could result from the variety of circumstances under which people accept and perform nonstandard work. First, various forms of selection may influence the empirical results, aside from the impact of working arrangements themselves. Nonstandard workers, as well as those who experience job insecurity or unemployment, may have poorer subsequent health because they differ on set of baseline characteristics and resources than predict health independently of working conditions (Benach et al. 2002; Benach et al. 2000). For example, women, racial/ethnic minority group members, and people of low socioeconomic position have traditionally been more likely to work under nonstandard arrangements (Hipple 2001), and these groups often report poorer health than white men and people of higher social status. In addition, people in poorer health to begin with may be more likely to be hired for a nonstandard position than a standard job (Schur 2003), and their subsequent health outcomes will be poorer at least in part because of earlier health deficits. By contrast, some nonstandard workers are younger people combining work with school or other responsibilities, and are resilient because of their age

Second, some people are compelled to take nonstandard or insecure jobs for lack of other opportunities, due to deficiencies in the qualifications employers demand, such as education or relevant skills; for these individuals we would expect the negative health consequences of nonstandard work to be greatest. Workers with few options on the labor market may be compelled to take nonstandard jobs characterized by irregular hours, split shifts, and necessitating rapid rearrangement of family life schedules (Zeytinogku et al. 2004). Some workers may also be compelled to combine two or more nonstandard jobs to increase earnings. Third, the lack of available benefits can play a role in health outcomes; nonstandard workers and their families have far lower rates of health insurance coverage than workers with standard jobs (Distler, Fisher and Gordon 2005). Lack of health insurance can be risky when neglect of acute health problems can

lead to chronic complications (Panel on Musculoskeletal Disorders and the Workplace 2001). Finally, and in contrast to workers who would prefer standard work but are unable to obtain it, some workers may prefer nonstandard arrangements and suffer few health consequences. For example, some nonstandard workers may have access to protective resources, such as a partner with higher earnings and benefits, which could buffer the potential resource deficits associated with nonstandard jobs.

Nonstandard working arrangements and health: an Empirical Examination

We present a brief description and analysis using a nationally-representative sample of American men and women to illustrate relationships between nonstandard work and health. We use the Americans' Changing Lives (ACL) study, a nationally-representative cohort initiated in 1986 with follow-up interviews conducted in 1989, 1994 and 2001/2 (for more, see House, Lantz and Herd 2005). With this sample we observe workers in different nonstandard employment arrangements over long periods of follow-up, we can distinguish workers who report that they prefer part-time employment from those who would rather work full-time, and we have information on several health outcomes as well as health "shocks" that occur between survey waves. These features of the data make our study unique, as careful assessment of the potential influence of health selection and stated preferences for nonstandard work typically are not included in existing studies.

We focus on employment type, distinguishing respondents doing standard work (35 or more hours per week) from those doing nonstandard work, categorized as (a) voluntary part time workers, who prefer to (and do) work less than 35 hours per week, (b) involuntary part time workers, who work part time but would prefer to work more hours, and (c) respondents who report that they are self employed (regardless of number of hours worked per week).¹ At baseline in the ACL study, about 63% of working women hold a standard job, while about 16% are voluntary part time workers, 7% are involuntarily working part time, and about 13% are self employed. Among working men, about three-quarters are working in standard jobs and another

18% are self employed, while only 3% are voluntary part time workers, and just over 3% are involuntarily working part time. This gender difference reflects the much longer history and social acceptability of female part time employment.² Basic characteristics of these workers are presented in Table 1, separately by sex and by the type of employment reported by the respondent at baseline. Notably, voluntary part time and self employed workers are older than others, while black men and women are less likely than non-blacks to be self employed. For women, the amount of childcare is higher among part time workers, while among men, part time and self employed workers report less childcare than those in standard work. Among women, average schooling is lowest among the involuntary part time workers and highest among standard workers. Men voluntarily working part time have the lowest average educational attainment in this sample, with self employed men reporting the most education. Regardless of sex, involuntary part time workers report the lowest annual household incomes. Many women work in service industries, with the highest fraction among voluntary part time workers, and voluntary part time male workers are also most likely to work in a service industry, while men in standard employment arrangements are least likely to do so. Job dissatisfaction is highest among involuntary part time women and lowest among the self employed, while there is no significant difference among groups of male workers.

Baseline health differences are also a potentially important source of differences in the kind of employment individuals obtain, as well as in health over follow up. For each self-reported measure used here, higher scores reflect worse health.³ While average self-rated overall health does not vary across employment types among women in 1986, men voluntarily or involuntarily working part time have significantly worse self-rated health than others. For both women and men, involuntary part time and standard workers showed more depressive symptoms than voluntary part time and self employed workers in 1986. There are no significant differences in baseline body mass index (BMI) across employment types for men or women, but all groups fall into the “overweight” category, or just below it. Finally, Table 1 shows the proportion of

respondents who reported in 1989 that they had experienced a negative health shock or an involuntary job loss since 1986.⁴ There are no significant differences in the frequency of health shocks across employment types for this period, but involuntary job losses in the previous three years were significantly more common for men involuntarily working part time in 1989.

For estimation of multivariate models we create a “stacked” data set with up to three person-spell observations per respondent. Breaking the information into multiple observations per individual allows us to take advantage of all the information on work and health that is available, even if a respondent leaves the sample at some point over follow-up. The first potential person-spell, for example, contains information about background characteristics and health in 1986 and employment type and health in 1989, as well as health shocks that occur in the interim. The second and third person-spells include the equivalent information for the 1989–1994 and 1994–2001/2 periods. Using this analytic sample of person-spells, we first estimate multinomial logistic regression models predicting employment type as a function of earlier sociodemographic, work and health characteristics. We then estimate OLS regression models of self rated overall health, depressive symptoms, and body mass index as a function of earlier employment status and health. Models are estimated using Stata 9.0SE, adjusted for the multiple observations per individual.⁵ All models also include an indicator (not shown) for the number of years in the person-spell under observation.

We estimated multinomial logistic regression models predicting employment type in a given survey wave as a function of all of the characteristics from Table 1, measured at the prior survey wave. The results from these models supported the findings shown in Table 1, so we do not show these results, and discuss only key findings. In particular, we do not find any significant effects of baseline health or health shocks over follow-up on subsequent employment type in models controlling for all predictors, though in simpler models, poorer baseline health increased the likelihood of working part time at follow-up. Also, having lost a job involuntarily in the past three years is associated with a significantly greater likelihood of involuntary part time work at

follow-up among men. Taken together, the descriptive and multivariate evidence suggests that there are important differences in the characteristics of individuals who enter standard and nonstandard employment. Self employed workers appear to be similar to standard workers in terms of their resources and well-being, while involuntary part time workers are considerably worse off. Voluntary part time work is a relatively common choice for women, and is associated with higher baseline household incomes and greater satisfaction at work than among standard workers, though voluntary part time workers are older than standard workers and more likely to be married. Among men, voluntary part time work appears to be the domain of those nearing retirement, men in worse overall health at baseline because of their age, but reporting higher job satisfaction and lower depressive symptoms than standard workers.

We now turn to models that estimate the impact of employment type on subsequent health. Table 2 shows selected results from OLS regression models of overall self-rated health, depressive symptoms, and BMI, separately for women and men. Model 1 includes only age and employment type as predictors, while Model 2 adds indicators of race, marital status, childcare hours, education and household income, Model 3 adds characteristics of the job and employment status at the time health was measured, and Model 4 adds indicators of baseline health and health shocks. Here we focus on the impact of nonstandard employment type, and changes in the estimates over this set of models. We find that self employed women have significantly better self-rated health than standard workers, while men who voluntarily work part time have significantly worse self-rated health than their counterparts in standard employment arrangements. Controls for sociodemographic characteristics and particularly for baseline health and health events over follow up in Model 4 considerably weaken the health advantage of self employed women, though it is still significant, while these factors explain a substantial fraction of remaining differences across male employment groups. Turning to depressive symptoms, we find that women voluntarily working part time have significantly lower depressive symptoms than standard workers. Among men, involuntary part time workers report more depressive symptoms

than standard workers, though the difference is only marginally statistically significant because there are only a handful of such workers. Differences in sociodemographic characteristics account for much of the disadvantage of involuntary part time men, while level of depression at the baseline of the person-spell and health shocks over follow-up account for a meaningful proportion of the advantage of voluntary part time women. Finally, we find a significant association between body mass index and nonstandard work for women; those voluntarily working part time and the self employed have significantly lower body mass index measures than standard workers. With adjustments for sociodemographic characteristics in Model 2, the differences are reduced and self employed women no longer significantly differ from standard workers. Among voluntary part time women a large fraction of the advantage is explained by baseline BMI and health shocks over follow-up, but they still show substantively and significantly lesser increase in body mass index over follow-up than standard workers.

We also tested a series of interactions (not shown) to further explore potential differences within categories of nonstandard workers. Most importantly, we found that the lower depressive symptoms shown by voluntary part-time women were restricted to those who reported childcare responsibilities; the greater the number of annual childcare hours, the more strongly part-time work was associated with better mental health. In addition, the interaction models revealed that women with childcare responsibilities had better self-rated health if they worked part time voluntarily rather than working a standard job, an effect obscured in the full model. These findings highlight the variation in circumstances that produce health-enhancing or health-damaging conditions, and suggest the importance of family conditions as the context for women in nonstandard work.

Overall, our brief analysis has shown that nonstandard work arrangements can have effects on subsequent health, even when we take into account the differences across groups of workers at baseline. Self-employed women report better self-rated health than standard workers in our full models. It is also important to consider an individual's stated preference for work

hours; here, we find that women working fewer than 35 hours per week have lower depressive symptoms and lower body mass indexes than standard workers, but only if they prefer to work part time. Relatively few men work in part-time arrangements and the differences we observe in their subsequent health are fully explained by their baseline social and health disadvantages. This analysis also supports other work suggesting that there are important differences even within groups of nonstandard workers (Virtanen et al. 2005b); for example, we found that the health advantages observed for women voluntarily working part time were restricted largely to those with childcare responsibilities.

Finally, we explored some potential explanatory mechanisms for relationships between nonstandard work and subsequent health in models not shown here. One often-cited mechanism is the perceived job insecurity faced by many nonstandard workers; we found that self-reports of job insecurity were associated with subsequent health but did not explain the impact of nonstandard work. We also examined detailed job titles of workers in different types of employment to see whether there were large differences in the work done by voluntary part time and self employed women that set them apart from standard workers. In general, it does not appear that standard workers or voluntary part time workers have clearly superior jobs in terms of prestige or working conditions. However, self employed women were more distinctive, with large fractions working as managers or administrators, private child care workers, hairdressers and dressmakers. These job titles suggest a considerable amount of control over working conditions and possible ownership of a business. Considerable further work remains to explain different health outcomes across categories of employment type among American workers.

Conclusion

Shifts in national policy over the last forty years have shaped worker safety, work activities, and the contractual agreements between employers and workers. Some of these shifts have influenced the health of workers and their families in new and unexpected ways. This is not the consequence of a single piece of legislation. Instead, it is the result of a series of policy

initiatives aimed at deregulation of industries, the systematic shift in the power in union-management relations, and policy shifts in the approach to government regulation of worker health and safety. In particular, the contract between employers and workers governing the nature and benefits of jobs themselves has shifted. Long term, full time secure jobs with health and retirement benefits are being replaced by nonstandard work arrangements that lack the security, benefits, and pay of regular jobs.

The health consequences of these policy changes for workers and their families are just beginning to be documented by systematic research. Hard won progress in workplace physical safety and hazard exposure is less certain under new, voluntary employer-based initiatives. Stressful and demanding work activities that may threaten worker health have resisted policy regulation, despite extensive research evidence of health risks. A notable example is research reported by the Institute of Medicine on the need for ergonomic standards to prevent musculoskeletal injuries. OSHA proposed standards to protect workers that were promptly repealed by Congress in 2001. Economic and policy changes over the last four decades have also altered the employment contract. Increased international competition, the rise of mergers and acquisitions, new trade agreements and the deregulation of industries have combined to produce a wave of firm downsizing and plant closings with resulting increases in involuntary job loss and increasing job insecurity. The research evidence is now quite strong that involuntary job loss increases the risk of illness episodes, visits to physicians, depression, somatic symptoms, and anxiety as well as increased risk of child abuse and marital conflict. In this new world of uncertain jobs, even the perception of insecurity has its own health risks. The available research indicates that job insecurity is associated with increased psychological distress; feelings of helplessness, poorer self rated health or morbidity, and reports of physical symptoms.

Finally, as we have noted, over the last four decades the employment contract between worker and employer has changed. Standard, secure jobs with benefits are being replaced by nonstandard jobs. Our empirical investigation of nonstandard work has produced results that

illustrate the complexity of the relationship between new employment contracts and worker health. While many nonstandard employment contracts involve “bad” working conditions, existing research has shown that some nonstandard workers have relatively “good” jobs that they prefer and that involve high wages, control over working conditions, or the flexibility to combine work and other activities, such as self-employed or voluntary part-time workers (Tilly 1996). These workers are not likely to suffer major health consequences, a potential explanation for some past findings of better health for nonstandard workers than their standard counterparts arrangements (Bardasi and Francesconi 2004; Nylen, Voss and Floderus 2001; Virtanen et al. 2003a; Virtanen et al. 2002). In addition, nonstandard jobs may enable many disabled people to work who otherwise would be unable to do so (Schur 2003). In this study, we find that self-employed women show better overall self-rated health and voluntary part-time workers show more favorable changes in depressive symptoms and body mass index than those with standard working arrangements. Importantly, these findings for positive health associated with voluntary part time work are restricted to women with childcare responsibilities.

However, other less fortunate nonstandard workers are trapped in low-paying, tenuous employment without fringe benefits like health insurance or pension coverage, and would prefer standard work. Our findings on these nonstandard workers contribute to the existing empirical evidence for greater psychological distress, poorer physical health, and increased risk of mortality found in other studies (Benach et al. 2004; Dooley and Prause 2004; Friedland and Price 2003; Kivimaki et al. 2003; Virtanen et al. 2005a). The descriptive analysis revealed that involuntary part time men and women were clearly disadvantaged in terms of health and socioeconomic position at baseline, and there was some suggestion of poorer self rated health and greater depressive symptoms at follow up. Furthermore, these suggestive differences were reduced with controls for baseline characteristics, indicating that socially-disadvantaged individuals were more likely to end up involuntarily in nonstandard employment contracts. It should be noted that the present investigation and others on this topic are substantially limited by serious data constraints.

In our sample there were only a small number of involuntary part time workers and we were unable to identify other forms of nonstandard employment, such as temporary help agency employment, so our ability to detect negative consequences from such “bad” jobs was limited. In general, existing data sources either provide excellent information on the health and socioeconomic characteristics of respondents, or the requisite details about their type of employment contract to create a detailed picture of standard and nonstandard jobs, but seldom both. More attention to both of these elements in longitudinal data collection is essential as nonstandard work contracts become more common. Taken together, however, findings from this and other analyses illustrate that a one-size-fits-all policy approach to new employment contracts is unlikely to successfully alleviate some potential negative health consequences.

The new world of job loss, unemployment, job insecurity and nonstandard work is one with fewer benefits and protections for workers, and the health risks of these policy changes are only now becoming evident. Laid off workers in many states must have held full time work for a specified period of time and must have sufficient past earnings, in addition to being engaged in seeking full time work, to obtain unemployment insurance. Half of the states in the U.S. currently deny unemployment insurance to part time, full year workers earning the minimum wage (Economic Policy Institute 2004). Irregular and part time work also disadvantages workers in terms of eligibility for pensions, and in training needed to obtain secure jobs in the future. Those who frequently change jobs will have greater difficulty qualifying for retirement plans created by employers. Opportunities for training are also curtailed by nonstandard work arrangements, and as technological changes continue to place greater demands on worker skills, training to upgrade skills becomes even more essential to secure high quality jobs (Houseman 1999).

Finally, having a job that carries health insurance as a benefit is one of the most important protections for the health of American workers. Uninsured workers are much less likely to seek needed health care, often turning treatable acute conditions into chronic health conditions. Access to employer provided health insurance is declining for both workers with standard and

nonstandard working arrangements (Distler, Fisher and Gordon 2005), but nonstandard workers already face a serious coverage disadvantage. In 2001, 74% of standard workers had health insurance through their jobs but only 21% of nonstandard workers had such coverage. Furthermore, families are also affected, with spouses and children of nonstandard workers covered at only one third of the rate of families of workers with standard employment (Distler, Fisher and Gordon 2005). Unemployed workers most often have lost their health insurance along with their jobs. There is now evidence that people who are only intermittently insured are more likely to have a major decline in health (Baker et al. 2001). Limited access to health insurance coverage, unemployment insurance, necessary on-the-job training and adequate retirement planning are all major threats to workers as the American employment contract continues to transform. Four decades of change in the associated workplace policies in the United States are already showing their influence on the health and vulnerability of workers and their families. We expect to see even more health impacts as the evidence continues to accumulate.

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Table 1. Means or Percentages for Independent Variables by Employment Type in 1986, ACL Men and Women.

	Women					Men				
	Standard	Voluntary Part Time	Involuntary Part Time	Self Employed	P- value for diff.	Standard	Voluntary Part Time	Involuntary Part Time	Self Employed	P- value for diff.
Age in 1986	39.7 (10.4)	45.7 (12.9)	40.4 (12.4)	45.3 (14.8)	<.001	39.2 (10.6)	59.3 (13.4)	38.7 (15.2)	45.4 (13.0)	<.001
% Black	14.2	7.28	16.4	5.36	<.001	11.0	23.0	10.1	5.62	<.001
% Married 1986	60.7	78.9	67.3	75.4	<.001	76.6	73.0	49.5	79.0	0.005
Annual childcare hours 1986 (in 100s)	8.17 (9.33)	10.4 (10.4)	10.2 (10.2)	7.67 (10.0)	0.005	6.08 (7.48)	0.403 (1.61)	3.29 (6.05)	3.83 (6.54)	<.001
Years of education	13.3 (2.38)	12.9 (2.15)	12.5 (2.49)	12.8 (2.44)	0.001	13.1 (3.00)	12.1 (4.15)	12.6 (2.95)	13.4 (2.87)	0.004
Total annual household income 1986 (in 2005 dollars)	58,367 (37,014)	71,002 (44,865)	43,346 (31,407)	78,185 (60,055)	<.001	68,015 (40,674)	31,118 (23,246)	27,192 (19,333)	74,915 (55,816)	<.001
% Blue collar job 1986	27.5	27.2	41.5	41.1	0.005	51.7	54.0	71.5	35.5	<.001
% Manufacturing industry 1986	18.3	2.87	3.77	4.11	<.001	33.9	0.00	13.0	8.01	<.001
% Service industry 1986	40.5	70.2	47.7	49.1	<.001	18.4	53.7	27.2	37.4	<.001
Dissatisfaction with work 1986 (1=low, 5=high)	2.23 (1.01)	1.93 (0.836)	2.49 (1.15)	1.83 (0.820)	<.001	2.13 (0.911)	1.86 (0.907)	2.42 (0.710)	2.02 (0.963)	0.233
Self-rated Health 1986	2.05 (0.914)	2.01 (0.877)	2.20 (0.834)	2.01 (0.859)	0.442	1.96 (0.872)	2.58 (1.08)	2.21 (1.23)	2.00 (0.937)	<.001

(Table continued below.)

Table 1, continued. Means or Percentages for Independent Variables by Employment Type in 1986, ACL Men and Women.

	Women					Men				
	Standard	Voluntary Part Time	Involuntary Part Time	Self Employed	p- value for diff.	Standard	Voluntary Part Time	Involuntary Part Time	Self Employed	p- value for diff.
Depressive Symptoms Score 1986	0.087 (1.06)	-0.171 (0.940)	0.137 (0.867)	-0.109 (1.07)	0.002	-0.153 (0.879)	-0.197 (0.854)	-0.162 (0.734)	-0.235 (0.857)	0.026
Body Mass Index 1986	24.6 (4.60)	24.6 (4.83)	25.7 (5.68)	24.8 (4.44)	0.678	26.0 (4.06)	28.2 (5.23)	26.1 (3.80)	26.8 (3.96)	0.360
% with Health Shock 1986-1989	20.1	21.1	27.7	23.9	0.578	19.3	28.9	30.5	15.1	0.429
% with Involuntary job loss 1986-1989	6.26	5.53	7.63	4.02	0.260	10.1	3.73	31.3	6.93	0.013
N	609	160	72	130		673	29	31	161	

Notes: Standard errors associated with variable means presented in parentheses. Figures based on weighted data, except for column totals. Kruskal-Wallis or Chi-Square tests for difference between categories of employment type were conducted separately for men and women with significance levels at the * $p < .05$, ** $p < .01$, *** $p < .001$ levels and are presented in the final column for each sex.

Table 2. Selected Unstandardized Coefficients from OLS Regression Models of Health predicted by Employment Type (Standard Employment omitted, other predictors not shown).

	Women				Men			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
<i>Overall Self-Rated Health</i>								
Voluntary Part Time	-0.096 (0.069)	-0.074 (0.070)	-0.093 (0.072)	-0.021 (0.054)	0.283* (0.131)	0.250† (0.130)	0.260† (0.135)	0.189 (0.136)
Involuntary Part Time	0.170 (0.126)	0.058 (0.126)	0.034 (0.128)	0.034 (0.095)	0.139 (0.172)	0.140 (0.155)	0.131 (0.158)	0.092 (0.147)
Self Employed	-0.248** (0.088)	-0.214* (0.088)	-0.211* (0.092)	-0.127* (0.061)	-0.092 (0.076)	-0.065 (0.075)	-0.035 (0.074)	-0.034 (0.049)
<i>Depressive Symptoms</i>								
Voluntary Part Time	-0.214** (0.066)	-0.208** (0.067)	-0.211** (0.068)	-0.128* (0.057)	0.041 (0.129)	-0.062 (0.132)	-0.049 (0.121)	-0.010 (0.101)
Involuntary Part Time	0.223 (0.150)	0.090 (0.149)	0.071 (0.154)	0.034 (0.136)	0.286† (0.166)	0.142 (0.160)	0.107 (0.151)	0.117 (0.109)
Self Employed	-0.084 (0.098)	-0.061 (0.094)	-0.042 (0.095)	0.026 (0.073)	-0.063 (0.070)	-0.030 (0.068)	0.003 (0.068)	0.019 (0.052)
<i>Body Mass Index</i>								
Voluntary Part Time	-1.36** (0.467)	-1.14* (0.483)	-1.18* (0.490)	-0.498** (0.147)	-0.713 (0.694)	-0.837 (0.732)	-0.833 (0.755)	0.087 (0.298)
Involuntary Part Time	0.023 (0.860)	-0.383 (0.836)	-0.416 (0.842)	-0.144 (0.317)	-0.129 (0.869)	0.016 (0.861)	0.079 (0.877)	-0.684 (0.445)
Self Employed	-1.05* (0.491)	-0.779 (0.506)	-0.796 (0.529)	-0.281 (0.197)	0.239 (0.473)	0.331 (0.469)	0.350 (0.475)	-0.133 (0.122)

Note: Coefficients obtained from OLS linear regression models, with standard errors of estimates in parentheses, and significance levels denoted by † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$. Models control for all predictors in Table 1 except involuntary job loss, and include indicators for the number of years in the person-spell and employment status at follow up. Models are adjusted for repeated observations on the same individual.

Endnotes

¹ An analysis using Current Population Survey data has shown that classifying workers as “involuntary part time” on the basis of their reported hours and reasons for not working at least 35 hours per week does reflect “involuntary” part time work (Stratton 1996). In the present analysis an employment type indicator was created for each survey wave using answers to questions about the number of hours the individual was currently working, whether she would prefer to work more hours, and the sector of employment (private, public, or self employed).

² We would prefer to include a more diverse array of nonstandard work types, some of which would include larger groups of men, but focus here on the key categories distinguishable in these data and on women, who dominate nonstandard work arrangements (Virtanen et al. 2005b). We consider self employment as well as the part time employment categories for men in our analysis, but the small numbers in part-time work reduces our ability to ascertain statistically significant differences from standard workers.

³ Respondents were asked to rate their overall health at the time of the survey with the typical five category item for self-rated health, with values ranging from excellent (1) to poor (5). Depressive symptoms are measured using an eleven-item subset of the commonly-used Epidemiological Studies Depression Scale or CES-D (Radloff 1977), with responses to each item scored on a four-item Likert scale, standardized scores of all present items averaged and the score then standardized (with all standardization based on the mean and standard deviation of the total 1986 ACL sample), with a final range from -1.2 (least) to 4.7 (most depressed). Body mass index is calculated based on the respondent’s self-report of his or her height and weight.

⁴ The definition of a “serious” or “life-threatening” life event was left to the respondent, so there may be some variation in the objective severity of the event; however, in the present analysis we assume that any self-reported serious or life-threatening event could potentially impact an individual’s employment type or subsequent health.

⁵ We tested for potential effects of selection out of the analytic sample due to survey non-response or death by estimating a series of multinomial logistic regression models of health outcomes that included alternate categories for survey non-response and death. We found that employment type was not a statistically significant predictor of non-response or death when we included the covariates in the OLS models of health presented here.