

CONTINGENT WORK & OCCUPATIONAL A Review on the Health Effects of Work Arrangements

By Garry L. Mullins Jr.

SINCE THE TRANSCENDENCE FROM HUNTER-GATHERER to agrarian societies, humans have maintained a hierarchical arrangement between those willing to compensate and those willing to perform work. Looking beyond the antiquated modes of production (e.g., slavery, feudalism), capitalism and its socialized variants have given rise to varying balances of employer/employee relationships. Motivated by stability and flexibility harmonization, employers today will often balance those relationships through their use of internal and external hiring practices (Kalleberg, Reynolds & Marsden, 2003). External hiring practices, or externalization, refers to “an organization’s use of workers who are not its regular, full-time employees”; internal hiring practices, or internalization, refers to “regular full-time employment” (Kalleberg, et al., pp. 525-526).

A plethora of terms can and have been used to describe the employment arrangements that both externalization and internalization produce. For the sake of fluidity, this review recognizes two specific terms as the parent descriptors of types of employment. The term *core workers* is defined as those with traditional ties to their employer and treated as though they have a stake in the company (Belous, 1990). The other term, which is the focus of this review, is *contingent workers*, defined by Bureau of Labor Statistics (BLS, 2005) as “those who do not have an implicit or explicit contract for ongoing employment.” Also, to be noted, the term *precarious worker* is used interchangeably with *contingent worker*. More often, however, *precarious worker*

is a term used to define a contingent worker who is more vulnerable to job insecurities such as having no enduring contract and lacking control over future income opportunities (Landsbergis, Grzywacz & LaMontagne, 2014).

The research accompanying this review was conducted to investigate the possibility of worker arrangement, whether via externalization or internalization (contingent workers or core workers), influencing occupational health. A contextual analysis must first be developed to understand the complexities of contingent worker arrangement versus the traditional core worker arrangement and how it has come to flourish in society. A literature review provides real-world examples to be analyzed against a backdrop of relevance determined through legalities, workplace culture and economic influences. Solutions are suggested on the basis of data surveillance and culture change.

Historical Context

The rise in contingent work arrangements is not a new phenomenon, as it existed ubiquitously throughout the 19th and early 20th centuries (Quinlan, Mayhew & Bohle, 2001). Contingent work and precarious employment, historically, were common until use began to decline in developed countries, probably because of political and societal influence (Benach & Muntaner, 2007). Some examples include legislation like the New Deal and the growth of organized labor in the 1930s that influenced the use of the more permanent core worker (King, 2014). Industrial advancements such as mass production also may have influenced the shift from precariousness to more solidified employment arrangements (Quinlan, et al., 2001).

It was not until the 1970s that the U.S. began to see a significant decline in permanent employment and a shift back to more precarious forms of employment. King (2014) attributes the backshift to deindustrialization, outsourcing, new technologies, deregulation and union decline. It may also be important to consider macroeconomic changes such as the oil shock in the 1970s and its influence on markets and global price competition (Kalleberg, 2009). It is no coincidence that temporary employment increased 11% from 1972 to 1986 (Abraham, 1990).

KEY TAKEAWAYS

- Employers today often balance employer/employee relationships through the use of internal and external hiring practices. Research sought to investigate the possibility of worker arrangement influencing occupational health.
- A contextual analysis explores the complexities of contingent worker arrangement versus the traditional core worker arrangement and how it has come to flourish in society.
- A literature review provides real-world examples to be analyzed against a backdrop of relevance determined through legalities, workplace culture and economic influences.
- Solutions are suggested on the basis of data surveillance and culture change.

WORKERS HEALTH

Effects of Nontraditional



Further, some analyses claim the 1990s produced neoliberal politics that created an ideal environment for the added expansion of precarious employment (Quinlan, et al., 2001). The 2008 Great Recession is a more recent example of a cause for labor market reforms that affected employment conditions and population health because lower wages were being paid, working conditions were worsened and flexible employment was on the rise (Benach, Vives, Amable, et al., 2014).

Today, flexible employment is appealing to employers. Companies seek out flexibility to keep up with changing market influences and, consequently, hire individuals who are willing or forced by circumstance to tie their careers to economic variables and business strategies (Belous, 1990). In many industries, contingent workers are used to offset some of these market variables (Dey, Houseman & Polivka, 2010; Kochan, Smith, Wells, et al., 1994).

Inadequacies of Surveillance Systems

Occupational health, in general, is a difficult area to attain comprehensive data as datasets are often fragmentary. Efforts have been made to increase data accuracy and availability through additions to traditional surveillance systems. Some efforts include those made by National Center for Health Statistics (NCHS), Behavioral Risk Factor Surveillance System (BRFSS) and clinicians to begin including occupational information in surveys and records (Laney & Storey, 2014). Unfortunately, these efforts, although they add to the field of study, have not created exhaustive data sources.

The U.S. does not have a comprehensive national surveillance system for occupational injuries and illnesses. It relies on systems such as state workers' compensation data (which include mostly acute occupational injury and illness data based on claims by employees in the event that they are unable to work for any period), BLS's annual survey (which includes occupational injury and illness data from private industry based on information retrieved from OSHA 300 logs) and physician reports (which include state-required data reporting on common occupational illnesses such as pneumoconiosis and musculoskeletal disorders).

Although these surveillance systems are vast, they have shown underestimations to be as high as several hundred percent (Azaroff, Levenstein & Wegman, 2002). About contingent workers, Foley, Ruser, Shor, et al. (2014), state, "Various occupational injury and illness data systems, including workers' compensation and those built on OSHA recording, may capture these workers differently, creating ambiguities interpreting data and compounding difficulties with occupational safety and health surveillance and epidemiological studies."

Misclassification is a key influencer of the fragmentary nature of occupational health data pertaining to contingent workers. Employee rights are normally based on the idea of a predefined employee/employer relationship, and often that relationship can become obscure when the employee is a contingent worker, thus resulting in confusion about incident reporting (Foley, Ruse, Shor, et al., 2014). The employer that is legally required to report injury and illness on a certain employee may not be obvious in a nontraditional work arrangement. Misclassification happens because of a failure to develop global consistency concerning definitions. For example, in Europe contingent employment includes apprenticeships and direct-hire fixed-term contractor workers, whereas in other places it does not (Foley, et al., 2014).

Review of Literature

The goal of this review is to show a relationship between employment arrangements and occupational health of workers, where contingency of employment has a negative and perhaps causal relationship with worker health. To be included in this review, a study must have met the criteria of containing a peer-reviewed results and analysis discussion on the relationship between occupational health and employment arrangements.

Based on the criteria, the researcher narrowed down 43 articles out of 154 selected for review. Ten of the articles were primary studies that showed a difference between the health exposures of contingent workers versus core workers in the same workplace. The accompanying literature reviews included must have provided conclusive interpretation of data; those not included contained analyses that were essentially redundant to earlier reviews. Search terms included *occupational health and contingent work*; *occupational health and precarious work*; *worker arrangements*; *occupational health and gig economy*; and *contingent workers*. Although many occupational factors can influence a worker's health (e.g., industry and location specifics), trends across industry capacitate the author to claim an overall negative relationship between the use of contingent workers and occupational health. The remainder of this section is dedicated to displaying that relationship.

Primary Study Results (Contingent vs. Core)

In 1986, an explosion occurred at a petrochemical plant in Pasadena, TX. The explosion involved an outside contracting firm and sparked debate over the growing use of contract workers (Kochan, et al., 1994). In response, OSHA conducted a study in 1989 of the use of contract workers in the petrochemical industry through a national survey of 600 direct-hire and 600 contract employees (Kochan, et al.). It found that contract employees accounted for 32% of the average work hours, and were less educated, less experienced and received less overall safety and health training than did core employees (Kochan, et al.).

U.S. Department of Labor (DOL) administered a nationally representative stratified random survey to farm workers. The results showed that contingent workers had lower access to health insurance and workers' compensation benefits than did core workers (Asfaw, 2014).

Representing each group equally, Sweden's Labor Market Survey conducted a study on short-term and permanent employees. The study found that contingent workers would self-report on the lack of work environment knowledge more than core workers (Aronsson, 1999). It also found that, more often, contingent workers would report experiencing discouragement from creating dialogue with supervision as well as a lack of essential training (Aronsson, 1999).

Results of interviews of 40 individuals in the hospitality industry suggest that contingent employees experience work-related stress more often than core employees (Madden, Kidder, Eddleston, et al., 2017). Similarly, a job satisfaction study by Wilkin (2013) took the meta-analytic results from 72 primary studies and found that job satisfaction among contingent workers was slightly lower than that of core workers. Wilkin (2013) explains that the reason for the small but significant difference is that in many of the 72 studies contingent workers were viewed as a homogenous group instead of considering that some types of contingent workers (e.g., contractors) may experience more job satisfaction than other types of workers (e.g., temporary agency workers).

TABLE 1
SUMMARY OF PRIMARY STUDY RESULTS

Has more or less	Contingent workers	Core workers
Job knowledge	Less	More
Access to health benefits	Less	More
Work-related stress	More	Less
Requests sick leave	Less	More
Job satisfaction	Minimal difference	Minimal difference
Good overall health	Less	More

A work-life conflict and health study was undertaken at two five-star hotels through interviews of 26 core workers and 13 contingent workers (Bohle, Quinlan, Kennedy, et al., 2004). The study found that contingent workers complained more about health and were more likely to have irregular working hours (Bohle, et al., 2004). Health-related concerns related to work-life conflict of contingent workers included sleep disturbance, fatigue, lack of exercise and bad diet (Bohle, et al., 2004). The main difference between the permanent core workers and the temporary contingent workers was not that one group worked more hours than the other, but rather that the core workers had some control over their time off to seek rest or care (Bohle, et al., 2004).

A similar study into workers' compensation claims in Victoria, Australia, found that temporary agency workers experienced more acute health risks than direct-hire core employees (Underhill & Quinlan, 2011). It was suggested that a fear of job loss kept the temporary agency workers from reporting incidents and requesting time off to recover from sickness; 7% of temporary agency workers versus 1% of direct-hire workers claimed to be afraid to take sick leave (Underhill & Quinlan, 2011).

The EU Statistics on Income and Living Conditions (EU-SILC) Survey by the Italian Institute of Statistics gathered random samples of private homes from all European countries (Pirani & Salivini, 2015). Individuals in various employment arrangements were studied between 2007 and 2012 and followed up annually to inquire about their general overall health (Pirani & Salivini, 2015). The study found that temporary employment negatively impacted an individual's health when that employment arrangement was prolonged over time. When a temporary worker had the promise of permanent work within 1 year there were no negative effects to health noted (Pirani & Salivini, 2015).

The results of these primary studies are summarized in Table 1 to show the relative trend in occupational health exposures between contingent and core workers.

Psychological Implications

Desire for flexibility will have the employer argue that contracting out creates more job opportunities; however, it can be rebutted that this type of employment has severely reduced job security (Dey, et al., 2010). Logically, it can be inferred that a work arrangement that is laden with those insecurities should have the potential to create apprehension among those workers. Throughout the literature, this hypothesis is raised either blatantly or subtly and each time it is proven. Workers in insecure

employment self-report morbidity at a higher rate than those in more secure positions (Benach & Muntaner, 2007).

The actual existence of job insecurity is irrelevant, as perceived job insecurity may be equally influential upon the psyche of workers. Harley (1999) defines perceived job insecurity as "a perceptual phenomenon resulting from a process of cognitive appraisal of the uncertainty existing from the organization and the employee." There is a significant correlation between health and perceived job insecurity. Both contingent and core workers experience job insecurity and suffer from the same effects, thus making the individual the volatile variable (Benach, et al., 2014). Understanding this, contingent workers also report worse working conditions and less job continuity; that can cause unstable employment perceptions, which also act as a chronic stressor leading to ill mental health and other health inequalities (Benach, et al., 2014; Benach & Muntaner, 2007).

The precariousness of contingent work is also a psychosocial detriment that has been known to affect worker health (Benach, et al., 2014). Low reciprocity between employers and contingent workers exists through a lack of trust, and this might lead to ill-health. This lack of trust breeds an environment in which work hazards go unreported, training requests are not made, and personal injuries are not known (Facey & Eakin, 2010). In many cases, workers who report health concerns are at risk for retaliation from supervisors (Azaroff, et al., 2002). In a study reported by Aronsson (1999), an environmental incident occurred, and workers were poisoned because precarious contract workers, suffering from toxic exposure, did not report the hazard for fear of losing their jobs.

This same fear can lead to such phenomena as presenteeism. Presenteeism is a concept that workers will come to work while sick. Sometimes temporary workers are recorded in data sets as having better health, but that is merely a sign of the "healthy worker effect," whereby most temporary workers lack paid sick leave and therefore are more inclined to work while sick (Landsbergis, et al., 2014). In short, presenteeism is indirectly encouraged through a fear of consequences coupled with the financial implications of having no paid sick leave. Hidden costs of presenteeism include long-term health of the worker, sick workers infecting others and productivity slowed by sick workers (McNamara, 2006). McNamara (2006) notes that the Employers Health Coalition of Tampa, FL, analyzed 17 diseases and estimated that lost productivity from presenteeism was 7.5 times greater than productivity loss from absenteeism.

Work-related stress affects all workers and has been known to be a major precursor to chronic health issues. A worker can become stressed for many reasons and many of those reasons inherently exist within nontraditional work arrangements. A literature review of 27 studies on temporary employment and health found higher psychological distress among temporary employees than among core employees (Virtanen, Kivimaki, Joensuu, et al., 2004).

McNamara (2006) suggests that workers who are employed casually may face stress because of the enduring need to adapt to new work processes and gain supervisor approval. Adapting to peers becomes a task as well, especially for those contingent workers who work alongside core workers. These workers risk social exclusion, which has been known to lead to increased reports of psychological, psychosomatic and musculoskeletal health complaints (Facey & Eakin, 2010). This form of discrimination was noted in the 4th Korean Working Conditions Survey of 50,000 workers by the Korea Occupational Safety and Health

Agency. This study found that workers who experienced discrimination in the workplace reported more health issues, and that contingent workers were up to 1.83 times more likely to experience workplace discrimination (Kang, Song, Koh, et al., 2017).

In addition to a feeling of separation, contingent workers may experience time pressure and fear of job loss as stressors (Vahle-Hinz, 2016). These factors contribute to the stress of contingent workers. However, Vahle-Hinz's results only partially support this claim. Regardless, the results showed that uncertainty about the work environment and time pressure constraints were significant enough stressors to at least consider when analyzing nontraditional work arrangements (Vahle-Hinz, 2016). These employment stressors that lead to feelings of chronic job insecurity have a dose-response relationship with physical and mental health, and an increased risk of psychiatric morbidity (Landsbergis, et al., 2014).

Limitations of Literature

As a disclaimer, note that much of the literature about the consequences of using contingent workers is underdeveloped and relies on mostly nonrandom samples of data (Pedulla, 2013). Statistical analysis of the currently available data would be unavailing because of the variations in collection methods that may or may not compensate for possible confounding factors such as industry- or locale-specific health influencers. Considering these hindrances, note also that the literature is growing, and evidence is beginning to show that work arrangement may have a significant influence on worker health (Howard, 2017).

Discussion on Relevance & Importance

Results of the literature review appear to suggest that at least some causal relation exists between employment arrangements and occupational health. These results inspire questions concerning industries' incentives to employ contingent workers. Incentive is found in risk assessment. As noted, the use of contingent workers is often viewed as an economically fueled endeavor because of the flexibility that accompanies such arrangements.

However, in response to that claim, McNamara (2006) argues that it may not be as monetarily sound as one might think:

It is argued that when the adverse effects of casual employment are taken into account, the apparent advantages do not outweigh the costs, which include increased insecurity, intensification of work and longer working hours (Schaufeli, 2004; Lewchuk, De Wolff, Kind & Polanyi, 2003). . . . [The] adverse outcomes are costly for organizations. Employers in industries characterized by a particularly high rate of casual workers should be encouraged to take the added risks of casual employment into account and take additional measures when designing OHS management systems.

Exploring progressive opportunities will become more essential as industries and governments become aware of the negative effects precarious employment can have on occupational health and how that affects the bottom line. Three areas to be explored in this discussion include 1) the legal responsibility of all parties involved; 2) how the presence of contingent workers

may affect the attitudes and behaviors of currently employed core workers; and 3) the potential growth and acceptance of contingent work in today's market.

Legal Responsibility/Implications

Sometimes ambiguities can exist in nontraditional work arrangements between employer and employee. Determining a contingent worker's legal employer may not be straightforward.

There are risks associated with misclassification of employment, legislative and governmental considerations, and the existence of hybrid co-employment situations.

When hiring contingent workers, the classification of employee versus independent contractor becomes problematic. Employees are sometimes entitled to more benefits than independent contractors and, in the event of a misclassification during an injury or illness, an independent contractor may be able to claim benefits as an employee (Koen, Mitchell & Crow, 2010). Further, insurance companies may not feel that they are liable to pay for medical care because the independent contractor was never covered, thus leaving the employer with a large financial burden (Koen, et al., 2010).

Legislative acts highlight the issue of employee classification and associated rights. The Fair Labor Standards Act

(FLSA), as interpreted by the U.S. Supreme Court, states that there is no single test to define what arrangement constitutes an employee status or independent contractor. Also, according to FLSA, the fact that an employee lacks a permanent relationship with his/her employer does not mean that the employee is an independent contractor (U.S. DOL, 2014).

According to the Affordable Care Act (ACA) and Internal Revenue Service interpretation, an individual is considered a common law employee if the employer controls how the individual performs his/her work (Marathas & Myers, 2014). Classifying individuals as independent contractors may sometimes be necessary, but the risk of misclassifying could lead to "pay-or-play" penalties under ACA (Marathas & Myers, 2014). The purpose of understanding how misclassification may affect employers in areas dealing with ACA or FLSA is significant because it sets a legal precedent for how other situations (e.g., those related to occupational health) may be handled.

Historically, uncertainties have existed about employer roles and responsibilities as they pertain to contingent workers. There is the concept of a professional employer organization (PEO), in which the PEO hires another company's employees so that it does not assume the risk of management of employee benefits, workers' compensation, safety and health management, and training, but rather remains the employer for tax and insurance purposes (Foley, et al., 2014). This concept is known as co-employment. In Louisiana, for example, the PEO may be referred to as a statutory employer, which is no longer responsible for its contracted employees' workers' compensation obligations.

However, to achieve this status it must be explicitly spelled out in the contract (Labor and Workers' Compensation Act, 2006). In *Blanks v. Entergy Gulf States Louisiana LLC* (2016), a contract construction worker who was injured on an Entergy jobsite

The growth of the gig economy, by nature of its definition, will give rise to even more forms of precarious and contingent work. Workers who accept gigs are some of the most precarious type of workers, with possible health implications that have not been fully explored yet.

claimed that he should be able to recover losses from Entergy itself, in addition to those recovered from his direct employer (Boutwell, 2016). A lower court ruled in the contract worker's favor; however, an appeals court determined that the merits of the case were not sufficient to deny Entergy of its statutory employer status (Boutwell, 2016). In a similar case in California, the National Labor Relations Board (NLRB, 2015) issued a decision between Browning-Ferris Industries (BFI) and Leadpoint. Leadpoint supplied employees to work for BFI and NLRB decided that both organizations would serve as joint employers.

In addition, from a federal standpoint, OSHA (2014) recognizes contingent workers extensively in its Temporary Worker Initiative wherein it intends to "highlight employers' responsibilities to ensure [that] these workers are protected from workplace hazards." Recommended practices cover the following:

- Evaluate the host employer's work site.
- Train agency staff to recognize safety and health hazards.
- Ensure that the employer meets or exceeds the other employers' standards.
- Assign OSH responsibilities and define the scope of work in the contract.
- Track injuries and illnesses.
- Conduct safety and health training and new project orientation.
- Maintain an injury and illness prevention program.
- Maintain contact with workers.

It is becoming increasingly critical that employers fully understand employee classification as well as the employer's role to that employee to avoid certain liability risks. The growing use of contingent workers will undoubtedly increase that liability potential with future court rulings and legislation.

Workplace Attitude & Culture

The risks to employers are not always as monetarily direct as legal classification, but rather more subtle and chronic in nature. At most places of employment, positive workplace attitude and culture are declared as an encompassing organizational goal. However, when it comes to employers planning to use contingent workers, it may be wise for the employers to acknowledge the possible effects that the introduction of that type of employment may have on current core employees.

Research has shown that human resources managers were initially wrong in their assumptions about contingent worker and core worker relations (Jannifer, 2005). Core workers can feel cheated because of the use of contingent workers and that can affect their work (Jannifer, 2005). Employers use contingent workers under the premise that contingent employment offers the flexibility to changing market conditions, which allows them more time and resources to spend on developing valuable and long-term relationships with core employees (Foley, et al., 2014). However, this is the employer's rationale, not that of the workers. The core workers' point of view should be considered because they may not view the addition of contingent workers to their work environment as valuable to the company or to their own career objectives.

Pedulla's (2013) empirical analysis found that the use of contingent workers was negatively related to core employees' pride in company and organizational trust toward managers. In the noted case study about a petrochemical explosion involving contract workers, it was found that core workers and contingent workers both reported tension, conflict and communication breakdowns between the two groups (Kochan, et al., 1994). Ad-

ditionally, the mere presence of contingent workers could upset working conditions by increasing demands for core workers as the full-time workforce is reduced (Aronsson, Gustafsson & Daliner, 2000).

Growth of the Gig Economy

The gig economy is a colloquial term used to label a sector of the growing freelance workforce, in which workers take on "gigs," or small contracts, as opposed to long-term employment. The growth of the gig economy, by nature of its definition, will give rise to even more forms of precarious and contingent work. Workers who accept gigs are among the most precarious types of workers, with possible health implications that have not been fully explored yet. For example, because of the lack of regulatory framework for hazard prevention in gig working relationships, an at-home worker providing gig services might work in an ergonomically poor workstation and risk all the health issues associated with that (Tran & Sokas, 2017). As an added disadvantage, that same worker would not have access to health insurance or workers' compensation (Tran & Sokas, 2017).

In the current political climate, there are emerging efforts to address some of these health issues and their relation to independent gig workers. An appropriate example can be seen in the Freelancers Union, which addresses this issue of stability while simultaneously allowing contingent workers to keep their flexibility (King, 2014). It engages in mutual aid of its members and advocates for policy changes in labor and employment laws to meet the needs of independent contractors and other contingent workers (King, 2014). The fact that there are sizable responses such as the Freelancers Union is indicative of the growing acceptance of contingent work as a viable and abiding form of employment arrangement.

Future Needs

Data Surveillance

If employment arrangements are accepted as determining factors in occupational health, then intervention is warranted. Surveillance data are the fundamental basis on which all health interventions hinge. These data are used to "estimate the magnitude of specific problems, determine the distribution of illness, portray the natural history of a disease, generate hypotheses, stimulate research, evaluate control measures, monitor changes and facilitate planning" (IOM, 2011). The lack of sufficient surveillance data in the literature, however, suggests the need for progressive and innovative measures to develop a clearer understanding of the relationship between employment arrangements and occupational health.

Surveillance programs must be modernized to more effectively recognize contingent work and its related factors. Benach, Vives, Tarafa, et al. (2016), suggest a need for more precise definitions, detailed understanding of how contingent work affects worker health, development of a complex systems approach to employment conditions, and understanding that contingent workers' health may be affected by more than just their employment arrangement at certain sample times. Recognizing that there is no homogeneity among contingent workers is essential in achieving future research needs and providing safe workplaces (Howard, 2017). Then, adding that concept to a more developed surveillance program can increase monitoring effectiveness. NIOSH (2013) complements this assertion with the updated version of its surveillance strategic goals that denotes nontraditional work arrangements (specifically those of

contingent, temporary and contract workers) as an important area where surveillance needs to be expanded.

Data surveillance can be expanded through regulation that supports new reporting requirements by employers. Regulating agencies such as OSHA can require employers to report all OSH incidents while including both leading and lagging indicators. Legal requirements can also be set for clinical physicians to include employment arrangement in medical records. Lastly, all public health surveys could be required to include employment arrangement as a parameter. However, these requirements should not compel the creation of binary response choices for the sake of compliance. Merely asking whether a worker's employment arrangement is contingent or definite may not be enough to develop a holistic understanding. Compounding factors such as industry specifics, work location and physical nature of the actual job should be considered for inclusion in reporting requirements. Imposing requirements that will augment comprehensive data sets can strengthen the case for intervention and prevention.

Data can affect culture: History has shown that all progressive advancements in health intervention and prevention started from newly accepted data that sparked a cultural change in what was deemed acceptable. A good example is Truth Initiative (2019), which seeks to achieve "a culture where all youth and young adults reject tobacco." Decades of data supporting the relationship between smoking and cancer is what helped build public awareness. Initially, little data supported the cancerous nature of tobacco smoke, and in 1965 it was estimated that 42.4% of American adults smoked tobacco (CDC, 2016). As new compounding studies influenced a cultural shift, the U.S. saw a steady decline in adult smokers, down to 16.8% in 2014 (CDC, 2016). The same concept can and should be applied to the seemingly inscrutable initiative to marry contingent work arrangements with poor occupational health. The development of supportive data and vacating the reliance on fragmented data sets are key to facilitating change.

Changing the Culture

Aside from developing strong surveillance systems, a more direct preventive measure of the health effects of contingent employment may lie within workplace cultures and how contingent workers are treated. If policy and economics show unwavering support for contingent work arrangements, then local (e.g., municipality, workplace) programs should be initiated to influence people's acceptance of contingent workers. Many of the occupational health issues that arise from contingent employment are related (directly or indirectly) to how employers, coworkers and society view the differences between the economic, social and legal connotations of traditional and nontraditional work arrangements. An example of addressing this concept can be seen in a study of the petrochemical industry, in which a processing plant ignored its lawyers' advice and managed its contract workers in the same manner as its core employees (Kochan, et al., 1994). After implementation, the plant saw a decline in safety and health incidents among contract workers. Although this is a step in the right direction, Kochan, et al. (1994), explain that this is only a small step toward fixing a much larger systemic problem that needs the attention of management, labor and government.

It would require an immense consensus among leaders of industry and government to develop an understanding culture within their own organizations to make any appreciable change at the macro level. Regardless, efforts in the form of setting ex-

amples must come from top leaders to facilitate long-standing change. Whitehurst (2019) says:

If you want your culture to change, you need to reconfigure how you and your people work together in radically new ways. You must change the way you enable and empower people so they can effectively operate in this new environment.

The will to pursue cultural change concerning the acceptance of contingent workers can come from data that support both regulatory compliance and economic incentives. However, a deeper impression can be made on leaders through relentless campaigns that develop an empathic understanding of this marginalized sector of the workforce.

Because of the recent success of businesses operating in the gig economy, the media has been giving the impression that contingent work is soon to become the predominant employment arrangement in the U.S. (Casselmann, 2018). It can be inferred that this is not the case by looking at the results of the 2017 BLS Contingent Worker Supplement, which show that contingent workers make up only 3.8% of total employment. The numbers from the 2017 report were significantly lower than the numbers reported in the previous study conducted in 2005. This is by no means indicative of a dwindling population of contingent workers, but perhaps an illustration of how incomplete data sets can skew results. The 2017 study included four new questions not in the 2005 study. These new questions could have removed individuals from BLS's definition of contingent worker and placed them under the alternative employment arrangement category. This also is not a sign that the contingent workforce is growing either.

Whether contingent workers are rising to be the majority is irrelevant. What matters is that in 2017 there were 5.9 million contingent workers and 15.5 million in other alternative employment arrangements (BLS, 2018). Understanding that this is a definable class of workers may be the first step to implementing change that can fuel acceptance and inclusion, and, in turn, improve occupational health conditions for contingent workers. **PSJ**

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