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Review Article

Contingent Workers: Workers' Compensation Data Analysis Strategies and Limitations

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The growth of the contingent workforce presents many challenges in the occupational safety and health arena. State and federal laws impose obligations and rights on employees and employers, but contingent work raises issues regarding responsibilities to maintain a safe workplace and difficulties in collecting and reporting data on injuries and illnesses. Contingent work may involve uncertainty about the length of employment, control over the labor process, degree of regulatory, or statutory protections, and access to benefits under workers' compensation. The paper highlights differences in regulatory protections and benefits among various types of contingent workers and how these different arrangements affect safety incentives. It discusses challenges caused by contingent work for accurate data reporting in existing injury and illness surveillance and benefit programs, differences between categories of contingent work in their coverage in various data sources, and opportunities for overcoming obstacles to effectively using workers' compensation data. Am. J. Ind. Med. 57:764–775, 2014. © *2014 Wiley Periodicals, Inc.*

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INTRODUCTION

The growth of the contingent workforce, and those working on alternative work arrangement, including independent contractors, temporary leasing, day laborers, and temporary agency employment, has become the subject of a burgeoning literature in public policy. There has been a debate as to how rapidly these work arrangements are growing, the sources of this change, and whether this change represents a fundamental transformation of the relationship between labor and management. The rise of contingent forms of labor contracting (also known as precarious or non-standard work) is one aspect of a larger process of "disarticulation" of organizations where some activities previously done in-house are contracted out and purchased through the market [Williamson, 2002]. Contingent labor allows businesses to react flexibly to changing market conditions while maintaining a valuable long-term relationship with its core workers in whom the company has invested much in training. For the client firms, peripheral labor provides a source of "just-in-time" workers. Pensions, health insurance and other fringe benefits typically are not provided to many workers in the periphery, particularly independent contractors, and the firm only pays for their actual time on the job [Mangum et al., 1985]. Costs of recruitment, screening, and training are shifted to the company supplying the workers, who handle

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the payment of wages, taxes, unemployment, and workers' compensation insurance [Golden and Appelbaum, 1992].

Why should contingent workers and those on alternative work arrangements be a special focus for worker safety and health surveillance, particularly with workers' compensation data? Short tenure at a particular workplace has been linked to an increased risk for injury [Breslin and Smith, 2006]. Some factors that may contribute to this include unfamiliarity with new work practices and surroundings, limited safety training, and disproportionately younger workers in this category. In addition contingent workers may have less ability to refuse hazardous work or demand appropriate protective equipment for fear of dismissal [Mayhew et al., 1997]. Employers may hire temporary workers as a means of shielding permanent workers from risky tasks, and they may invest less time in providing them with appropriate training and protection equipment. Temporary workers hired through an agency have two separate parties who are responsible for their safety, which raises the possibility that neither will take full responsibility to prepare the worker adequately. 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 for this group of workers.

Contingent and temporary workers are currently a policy focus of regulatory and consultation activity at the Occupational Safety and Health Administration (OSHA). In the wake of recent reports of fatalities among temporary and leased workers, OSHA has instituted "a concerted effort using enforcement, outreach and training to assure that temporary workers are protected from workplace hazards" [OSHA, 2013]. The agency directive promotes assessing the presence of temporary workers at inspected facilities, and determination of whether those workers are exposed to violative conditions and have received required training in a language and vocabulary they could understand. Researchers at the National Institute of Occupational Safety and Health have also continued to identify non-standard work arrangements and temporary work as emerging safety and health risk factors [Alterman et al., 2013].

The purpose of this paper is to present an overview of the issues regarding the impact of the growing contingent workforce on workplace safety and health, including effects on workplace injury and illness surveillance, workplace safety and health enforcement and regulation, and the management and structure of workers' compensation insurance policies. The apparent growth of the contingent workforce challenges existing structures of data collection, legal responsibility and liability, and future planning for social safety net programs. The emerging literature on nontraditional employment and the increasing magnitude of temporary, alternative, and subcontracted work is reviewed to describe how adherence to existing institutions and data collection programs may both undercount and misclassify work hazards and outcomes, obfuscating potential paths to understanding the full scope of the problem. The paper does not aim to provide a systematic review of the literature or to provide new empirical evidence regarding contingent work. Rather, as part of a series of papers on the challenges to using workers' compensation data for occupational injury and illness surveillance and eventual prevention-oriented activities, it seeks to identify and highlight how the emerging arrangements must be restructured and adapted to improve future outcomes.

CONTINGENT WORK AND ALTERNATIVE EMPLOYMENT ARRANGEMENTS

The U.S. Bureau of Labor Statistics (BLS) distinguishes between two, separate but related categories of workers that may be in scope of this paper: contingent workers and those on alternative employment relationships. Contingent workers are defined as those who do not have an explicit or implicit contract for long-term employment and who hold jobs that are expected to last only a limited period of time. Persons who do not expect to continue in their jobs for personal reasons, such as retirement or return to school, are not considered to be contingent workers provided that they would have the option to continue in the job.

The BLS identifies four categories of alternative employment arrangements, which may or may not involve contingent work: (1) independent contractors, consultants, and free-lance workers, who may be either self-employed or wage and salary workers; (2) on-call workers who are called to work only as needed; (3) temporary help agency workers who are paid by a temporary help agency, regardless of whether the worker considers the job to be temporary; and (4) workers provided by contract firms, who are working for a contract company, usually work for only one customer, and usually work at the customer's worksite.

The BLS obtains estimates of the number of contingent workers and alternative employment arrangements in periodic supplements to the Current Population Survey (CPS), the most recent of which covered February 2005. The CPS data are collected from households and the estimates that are generated come from the responses to a series of structured questions. The CPS scope includes self-employed workers, as well as wage and salary workers.

According to the February 2005 CPS supplement, contingent workers accounted for 1.8–4.1% of total employment, depending on how expansive was the concept of contingency. These percentages were little changed from February 2001. The supplement also identified that there were 10.3 million independent contractors (7.4% of total employment), of whom 87% were identified as self-

employed in the main CPS survey. The CPS supplement also identified 2.5 million on-call workers (1.8% of total employment), 1.2 million temporary help agency workers (0.9% of total employment) and 813,000 workers provided by contract firms (0.6% of total employment).

Another source of information on employment under some alternative work arrangements is data from establishments. Unlike the CPS, these data include only wage and salary workers and exclude the self-employed. Employment under alternative arrangements is identified according to the industry classification of the employing establishment. In particular, North American Industrial Classification System (NAICS) subsector 561, Administrative and Support Services, includes establishments engaged in activities that support the day-to-day operations of other organizations. Many of the activities performed in this subsector are ongoing routine support functions that all businesses and organizations must do and that they have traditionally done for themselves. Recent trends, however, are to contract or purchase such services from businesses that specialize in such activities and can, therefore, provide the services more efficiently. NAICS subsector 561 includes a wide variety of industries engaged in supporting other organizations, including facilities support services (janitorial, maintenance, trash disposal, guard and security, mail routing, reception, laundry, and related services), temporary help services (establishments primarily engaged in supplying workers to clients businesses for limited periods of time to supplement the workforce of the client) and Professional Employer Organizations (engaged in providing human resources and human resource management services to client businesses).

Employment in Administrative and Support Services has been growing and is projected to continue growing. While 7.044 million workers were employed in this industry in 2010, employment in the industry is projected to grow to 8.454 million in 2020 or 21% over the decade [BLS, 2012]. Further, within this sector, Employment Services (NAICS 5613), which comprises employment placement agencies, temporary help services, and professional employer organizations, is projected to add 631,300 jobs over the decade, at an annual rate of increase of 2.1%. Employment in this industry will reach 3.3 million by 2020, placing this industry among those with the largest projected employment growth from 2010 to 2020.

LITERATURE

The question arises whether the increasing share in the labor force of temporary or flexible-contract workers leads to deterioration in health and safety outcomes. Outside of the United States, evidence from previous research has varied from no difference in health outcomes [Virtanen et al., 2001, 2003; Bardasi and Francesconi, 2004], to significant findings of higher rates and severity of occupational injuries [Saha et al., 2004; Virtanen et al., 2005; Benavides et al., 2006]. Studies have also shown differences in risk between temporary and standard employment to be based more on the industry than on the type of employment arrangement [Saloniemi et al., 2004]. One challenge is the inconsistent classification across countries of what constitutes a contingent worker. In Europe, contingent or flexible employment includes not only agency-mediated temporary work, but also apprenticeships and direct-hire fixed-term contract workers. Flexible employment, under this definition, accounted for about 18% of paid employment in the European Union in 2000, with agency temporary workers accounting for about 2% of employed workers [Paoli and Merllie, 2001].

The impact of alternative work arrangements has been the subject of substantial research in Europe. An editorial summarizing a review of the literature [Benach et al., 2002] stated that "There is overwhelming evidence that unemployment is strongly associated with economic strain, and psychological factors that increase the risk of adverse health outcomes, unfavorable lifestyles, and economic difficulties." They argue that temporary workers share many characteristics of the unemployed. For example, they highlight the work of Gunnar Aronsson indicating that "non-permanent workers have less knowledge about their work environment, feel more constrained by their work status to complain about work hazards, and have more difficulties changing their work conditions" [Aronsson, 1999].

Previous research on the question of whether the rise of temporary or contingent work increases the risk of worker injury has been focused largely on discrepancies in health outcomes rather than on the underlying mechanisms which lead to the differential. Studies have found that temporary workers had higher odds of muscular pain [Benavides et al., 2000]; that in a manufacturing setting, temporary workers had injury rates two to three times higher than permanent workers [Morris, 1999]; and that temporary workers had four to seven times the claim frequency compared to permanent workers [Park and Butler, 2001]. In the 2000 European Survey on Working Conditions, temporary agency workers reported greater exposure to physical hazards and a higher level of work intensity and pace than permanent workers [Paoli and Merllie, 2001]. However, new hires generally might encounter comparable issues.

Most studies have not controlled for differences between temporary and permanent workers in their industrial distribution. Data from the 2005 CPS Supplement show that temporary help agency workers are disproportionately concentrated in the manufacturing and professional and business services industries, with relatively low shares in retail trade, education and health services, and leisure and hospitality [BLS, 2005]. Foley [1998], using a large cohort of Washington State workers' compensation claimants, showed that claim frequency and severity as measured by

time loss were higher for temporary workers than for permanent workers even after controlling for occupation and industry. Furthermore, this study found that the excess risk increases with the underlying hazard level of the industry. There were similar findings when the analysis was restricted to claims resulting in more than 4 lost workdays. Smith et al. [2010] confirmed these results, finding workers' compensation claims rate ratios twofold higher than permanent workers in construction and manufacturing. Neither study, however, controlled for the effect of differences in tenure between permanent and temporary workers. They went on to look at differences in type of injury and found temporary workers had especially high excess injury rates for "struck by" and "caught in" type injuries in construction (IRR 4.93; 95% CI 2.80–8.08) and manufacturing (IRR 4.05; 95% CI 3.25–5.00). In addition, this study found disparities between temporary help workers and standard employment workers in the adjudication of claims, proportion with employer protests, and delays before receipt of time-loss benefits. Finally, since the late 1990s, the temporary help services industry in Washington State has had a known high-risk for upper-extremity musculoskeletal disorders [Silverstein et al., 1998, 2002]. These studies found temporary help services workers assigned to assembly occupations and machine operator jobs had among the highest incidence rates of all industrial groupings for shoulder disorders as well as back disorders.

Even after controlling for occupation or industry, it is important to control for differences between temporary workers and standard employment workers in other variables which may be associated with increased injury. First among these would be job tenure. At this point, we do not know whether tenure would account for a significant amount of the differences between temporary employees and their permanent counterparts. Evidence suggests individuals with shorter job tenure are at higher risk for injury or illness [BLS, 1997; Breslin and Smith, 2006]. Reasons for this association may include unfamiliarity with physical processes and environment, safety procedures, and resources [Mayhew and Quinlan, 2002]. The 1995 CPS Supplement found length of service in a given assignment was much shorter for temporary workers than for permanent workers [BLS, 1996]. Given the much higher percentage of temporary workers who are at the lower range of job tenure, it is important to separate the independent contribution of job tenure to injury rate from that of employment arrangement. A recent study on the impact of temporary status on the probability of work-related sickness absence, which did not control for industry, did not find any association after controlling for job tenure [Tompa et al., 2008]. The authors speculate that the disincentive to take sick leave when one's job tenure is short may be playing a role. Alternatively it may be that tenure is the most important factor in explaining the observed differences. On the other hand, it could be argued that brief tenure and repeated changes in job assignments are features which practically define the term "temporary worker," and as such should not be controlled for in regression analyses. Much the same reasoning applies to the need to control for the age of the worker. The 2005 CPS Supplement found 19% of temporary workers were under the age of 25, and 30% were 25–34 years of age, as opposed to 14% and 22% of permanent workers in these two age groups. As young workers experience higher rates of workplace injury and illness than workers aged 25–44, it will be important to control for this factor [BLS, 2011]. Thus, it is important for future research to attempt to tease out the differential effects of tenure and age in determining health outcomes.

In contrast to studies focusing on health outcomes, relatively few studies have examined directly the antecedent factors leading to the discrepant outcomes between temporary and permanent workers. Among these factors may be: To what extent is this difference the result of temporary workers' relative youth as distinct from their brief job tenure? Are temporary workers given the more hazardous jobs in a given worksite? Do they know what to do if they are exposed to hazards? Do they feel unable to refuse unsafe work? What kind of safety training do temporary workers receive at the worksite compared to permanent workers? Do temporary workers underreport injuries more than permanent workers? Such questions will require supplementing workers' compensation data with other sources of information such as worker and employer surveys or guided interviews.

One study focused on such factors as lack of supervision and training provided to subcontracted employees at a large petrochemical plant which sustained a multiple-fatality explosion in 1989 [Kochan, 1991]. In another study, a sociologist worked as a temporary worker for a year and reported on his experiences, including the assignment of temporary workers to the more hazardous tasks in a given workplace [Parker, 1994]. But these detailed studies of particular incidents and experiences need to be supplemented by a more comprehensive examination which quantifies the relative contribution of the various potential risk factors to the discrepancy that has been observed in health outcomes. For virtually all of these potential exposures it would be interesting to determine whether the experience of temporary workers differs from that of new workers generally.

Based on this overview of the literature, what research questions regarding contingent workers and those on alternative work arrangements can we answer with workers' compensation data? Workers' compensation data can shed additional light on a variety of questions such as the following: Are contingent workers and those on alternative work arrangements at higher risk of workplace injury and illness than are workers in non-contingent and traditional work relationships? What accounts for any higher risk observed? Can the differences be traced to differences in industry, occupation, and worker characteristics, such as gender and age?

COVERAGE UNDER WORKERS' COMPENSATION INSURANCE OF CONTINGENT WORKERS AND THOSE UNDER ALTERNATIVE WORK ARRANGEMENTS

Several points pertain to the workers' compensation coverage and data reporting of contingent and alternative work situations. When an establishment contains both traditional and alternative work employees, available data on the risks of particular workplaces is obfuscated and often incomplete. Many employee rights and employer responsibilities are built on the concept of an employee–employer relationship that may be obfuscated by a contingent worker status. In co-employment situations where there is uncertainty about who should report injuries or how, misclassification errors may lead to ineffective prevention resource targeting. While, in the short run, both employers and workers may perceive benefits of a nontraditional work status, both sides may also sacrifice with such arrangements. Such apparent advantages of reducing benefit insurance costs, avoiding regulatory involvement, and sidestepping training mandates may evaporate when an occupational injury occurs and a responsible party must be identified. And, with respect to injury reporting, there is much confusion when national data collection sources cannot be assured of comparable data from [NELP, 2012] states that handle co-employment situations differently.

The usefulness of workers' compensation data for identifying and addressing workplace safety and health issues of contingent workers and those on alternative work arrangements depends on whether and how these data capture the injuries and illnesses of this group. Two separate issues limit the usefulness of workers' compensation data for OSH surveillance of certain groups of contingent workers: where workers are not covered by workers' compensation, or where they are covered by workers' compensation policies of an entity distinct from where the employees physically work.

Under most states' laws, a person's eligibility for workers' compensation benefits depends upon them being an employee. If a person is self-employed and is found to be an "independent contractor," they are typically not entitled to such benefits and so their injuries would not be captured in WC data. For workers, the lack of "employee status" also may affect their coverage under the Occupational Safety and Health Act and under unemployment insurance, and may also impact their ability to establish eligibility for health insurance, social security benefits, Medicare, pensions, state disability insurance, Family and Medical Leave, and various other programs. For example, GAO [2006] has noted that while health benefits cover 72% of full-time workers, only 9–50% of contingent workers are so covered. With regard to pension benefits, 76% of standard full-time workers reported working for an employer who offered a pension, whereas 17–56% of contingent workers reported working for an employer who offered a pension. Thus, there may be savings in benefit costs to an employer in classifying a worker as an independent contractor as opposed to an employee. These potential savings may create incentives to misclassify wage and salary workers as independent contractors, which DOL and State worker misclassification efforts are designed to address. The National Conference of State Legislatures reported that legislatures in 30 states debated misclassification sanctions and 15 states passed laws in that area in 2011. The National Employment Law Project tracks studies that estimate the costs to workers' compensation and other governmental programs that result from misclassification. In the absence of needing access to safety net benefits, some workers may be convinced that independent contractor status is in their own benefit, especially if gross pay seems higher. This seeming advantage can easily evaporate if there is an injury on the job. On the other hand, employers who successfully establish that a worker was not an employee may also lose the exclusive remedy protections of workers' compensation law, and thereby be subject to tort liability if that worker was injured due to the negligence of the contracting employer.

In contrast to independent contractors, temporary help workers are typically covered by workers' compensation insurance. But, the temporary help agency, as opposed to the client company utilizing the services of the temp workers, provides workers' compensation coverage. Key surveillance information may be lacking in the workers' compensation data about the client company and it may not be possible to track with workers' compensation data the injury and illness experience of workers according to the industry where they work.

Special issues arise in the workers' compensation coverage of employees of Professional Employer Organizations. A Professional Employer Organization (PEO—NAICS code 561330) is a firm that provides a service under which an employer can outsource employee management tasks such as employee benefits, payroll and workers' compensation, recruiting, risk/safety management, and training and development. It does this by hiring a client company's employees, thus becoming their employer of record for tax purposes and insurance purposes. This practice is known as co-employment. As of 2010, there were more than 700 PEOs operating in the United States, covering 2–3 million workers. PEOs operate in all 50 U.S. states [NAPEO, 2013]. PEOs are sometimes referred to as staff leasing entities. Accreditation is currently under a self-regulatory body, the Employer Services Assurance Corporation.

When a PEO obtains WC insurance for its client companies, it does so in one of two ways: a Multiple Coordinated Policy (MCP) or Master Policy, often depending on state insurance regulatory procedures. In a Master Policy arrangement, a single policy is issued in the name of the PEO, which provides coverage for all of the PEO's leased workers

for each client. Each client is typically added to the policy by "endorsement," that is, the policy is amended with names of all employers added. In an MCP arrangement, each client of the PEO has its own policy covering the leased workers. Each client's premium is based on its own class codes, rates, payroll, and rating programs. All policies are assigned to the same insurance carrier whenever possible, and endorsements are used to coordinate coverage between the client and the PEO.

The goal of the MCP model is to keep the experience and reporting of each employer's payroll, premium, and loss information unique to itself. The different models that are in effect differ slightly from state to state. The emphasis is on how the information is tracked and the interaction by the employers to secure the coverage in a particular state. In multiple coordinated policies, data reporting can be more uniform and if an employer were to leave the PEO it is easier to reconstruct its experience rating factors. For injury surveillance and resource allocation purposes, then, the MCP model that allows data attachment to a work location is a more useful source of information. (See further discussion on PEOs and proof of coverage requirements, below.)

RECORDING ON OSHA LOGS AND THE BLS SURVEY OF OCCUPATIONAL INJURIES AND ILLNESSES (SOII)

The disparate definitions of "contingent worker" [Fan et al., 2006] represent one challenge to measuring working conditions for this cohort, but there are structural limitations to existing safety and health surveillance systems that prevent those systems from producing reliable data on this group. The BLS Survey of Occupational Injuries and Illnesses (SOII) and the OSHA recordkeeping logs on which it is based are not equipped to delineate injuries or illnesses incurred by contingent workers from other types of employees, and preliminary studies into employer recordkeeping practices indicate that such employees may be additionally underrepresented in the data for various administrative reasons. Workers' compensation data have the potential to fill this void.

The SOII is the largest occupational health surveillance system in the U.S., with close to 250,000 establishments sampled annually. Information gathered for the SOII comes directly from employers selected to report information from the OSHA 300 and 301 forms, on which the employer is required to keep a log of recordable injuries and illnesses throughout the year.

OSHA-recordable cases include injuries and illnesses that typically require medical treatment beyond first aid, as well as a number of other specific conditions that include loss of consciousness, hearing loss, and sharps injuries. With specific regard to many employees considered part of the contingent workforce, OSHA recordkeeping requirements in 29 CFR Part 1904 state:

> "[Employers] must record on the OSHA 300 Log the recordable injuries and illnesses of all employees on your payroll, whether they are labor, executive, hourly, salary, part-time, seasonal, or migrant workers … [as well as] employees who are not on your payroll if you supervise these employees on a day-to-day basis." [OSHA, Part 1904]

Thus, temporary, leased, and contracted employees are reported in the SOII based typically on where they are working, rather than for the parent firm (leasing agency, e.g.) for which they work. This contrasts with many workers' compensation requirements, which mandate that leased employees be maintained on the parent company's compensation policy. This reporting requirement and lack of other identifying variables for contingent workers makes it impossible for the SOII to disaggregate them and estimate the numbers, rates, and comparative health of these workers. The differences in reporting likely also create confusion, and results in undercounts. The SOII does sample NAICS 56132 (Temporary Help Services) and 56133 (Professional Employer Organizations), but the firms in these industries are recording injuries and illnesses mostly for the executive, managerial, and administrative staff that run these firms rather than the employees they lease. The numbers and rates are predictably small.

Underrepresentation of Contingent Workers in SOII

A number of studies allege that the SOII undercounts occupational injuries and illnesses that it should collect by as much as two-thirds. These studies match SOII sample data to workers' compensation census data for a particular state by narrowing the scope of the latter system to match the SOII, obtaining matching rates, and calculating a capture–recapture estimate from those figures [Rosenman et al., 2006; Boden and Ozonoff, 2008]. A Government Accountability Office report in 2009 also found that both workers and employers have incentives to avoid recording injuries and illnesses on OSHA logs; to whatever degree such incentives suppress reporting to OSHA, the SOII would similarly be affected [U.S. Government Accountability Office, 2009]. There is some evidence to suggest that underreporting for contingent workers may be particularly abundant.

Undercounting and underreporting have numerous definitions and interpretations amongst the various studies, but it is meant here as the failure to record an injury or illness on the OSHA log or SOII forms that meets the definition of recordability. Undercounting can be a mistake or, at its worst, an intentional omission. Underrepresentation differs in that the injuries and illnesses to workers are missed in the SOII due to limits on the scope of the survey rather than errors or omissions. Contingent workers in the SOII are likely both underrepresented and undercounted. A number of contingent

workers, for example, can be designated, legally or illegally, as self-employed (independent) contractors or seasonal workers employed at small agricultural firms. These two groups are excluded from the SOII by statute—they are not part of the sample and are therefore underrepresented.

The BLS has sponsored some research that suggests contingent workers are also undercounted in the SOII. Beginning in 2009, the BLS began funding employer interview studies to better understand the issues and practices of both OSHA and workers' compensation recordkeeping. The BLS pilot-tested an interview instrument among 26 establishments in the Washington, DC metropolitan area, followed by over 50 employer interviews in Kentucky. The Washington SHARP program has interviewed over 100 establishments in the State of Washington. Many questions were open-ended and covered a wide variety of record-keeping and administrative issues, and the interviews typically lasted about an hour. Final results of these studies became available in the fall of 2012, and they were qualitative in nature, so drawing broad-based conclusions from these observations requires caution. Despite this, the preliminary evidence exhibits recordkeeping issues affecting the SOII.

There are also issues about the training of those responsible for collecting and reporting occupational injury and illness data. Generalizing across all three interview studies, about half of all respondents who were responsible for completing the OSHA log at their establishment had 5 or more years of experience in their current position. Depending on the State, between 45% and 73% of the respondents interviewed had formal OSHA recordkeeping training. On the surface, the respondents appear to be experienced at keeping OSHA logs. Another generalization is that more than half of all establishments used temporary workers, including nearly three-quarters of the establishments interviewed in the DC area [Phipps and Moore, 2010], so the practice of using contingent workers is well-represented in the sample chosen for interview.

A majority of the establishments interviewed either did not record temporary help workers on their OSHA logs or did not know if that was the appropriate thing to do. Many in the Washington, DC study "assumed that they were reported on the staffing company log" or whoever provided the workers' compensation insurance [Phipps and Moore, 2010]. Similar to temporary help employees, uncertainties regarding record-keeping requirements for contract employees were also evident in the DC study.

An additional confounding factor that may contribute to underreporting but is not addressed in the employer interviews involves injured contingent employees that may be quickly replaced with other contingent workers at the work site. The injured employee may then return to work after recuperation and be assigned to another work site altogether, completely separated from the original establishment. In this instance, OSHA expects a "good faith recordkeeping determination" by the first establishment that includes reasonable efforts to acquire information about the injured worker.

It appears at first glance that when the rules governing workers' compensation and OSHA recordkeeping intersect and differ, the decisions made by employers may have an adverse effect on OSHA recordkeeping. What remains uncertain is whether workers compensation records are similarly affected by different rules between the systems.

Using Multiple Data Sources to Address Undercounting in SOII

The finding of potential undercounting in SOII based on comparisons with other data systems has led some to argue that the gold standard for producing estimates of the total burden of workplace injuries and illnesses is a multiple data source system. Indeed, BLS has implemented such an approach in collecting workplace fatal injury data. The BLS Census of Fatal Occupational Injuries (CFOI) compiles a count of all fatal work injuries occurring in the U.S. during the calendar year. The CFOI program uses diverse state, federal, and independent data sources to identify, verify, and describe fatal work injuries. The use of multiple data sources assures counts are as complete and accurate as possible. In 2010, there were 4,690 fatal work injuries. 18,774 unique source documents (or four documents per fatality) were reviewed as part of the data collection process that generated this count.

In comparison to the roughly 4,700 workplace fatal injuries counted by CFOI in all sectors of the economy, SOII estimated that in 2010 there were nearly 3.9 million OSHA-recordable nonfatal workplace injuries and illnesses in private industry and State and local government. The vastly greater number of nonfatal injuries and illnesses suggests that it would be quite costly to implement a multiple data source system across all States for all nonfatal occupational injuries and illnesses, and the variations in data systems between States creates practical barriers for a uniform approach nationally. BLS has partnered with three states (California, Massachusetts, and Washington) to conduct multiple data source enumerations of amputations and carpal tunnel syndrome, in order to assess the cost and feasibility of using multiple data sources for enumeration of a limited set of injury and illness cases. Workers' compensation data are one of the sources being used in the investigation. Publication of research results from these studies is forthcoming.

THE POTENTIAL CONTRIBUTIONS OF WORKERS COMPENSATION DATA TO UNDERSTANDING WORKPLACE SAFETY AND CONTINGENT WORKERS

As indicated above there are concerns that the sources of data for the SOII may be ill-suited for capturing the experience

of contingent workers. In part this reflects the range of possible categories: leased workers (PEOs), temporary workers (short-term and longer-term), independent contractors serving as contract workers and consultants, and self-employed workers. For some of these categories there is a sense that the lack of clarity as to who is the actual employer may result in incomplete data records or reporting. Moreover, it seems likely that even if, for example, OSHA records are comprehensive, a survey of establishments may fail to capture a robust picture of the range of contingent employment categories that in total appears to account for only 2–4% of employment spread over numerous industries and occupations, or, if independent contractors are included, as much as 11% of employment.

Contingent Workers and Workers Compensation Data

Workers compensation data may help address some of the data limitations in traditional sources of information on workplace safety. There are a variety of data from the workers' compensation system that might be used, including first and subsequent reports of injury, proof of coverage, and unit statistical reports. The following indicates some of the challenges in coordinating these various data to address issues related to contingent workers and particularly with respect to PEOs.

All states except Texas require employers to provide proof that they have the financial resources deemed necessary to fulfill their obligations under state workers compensation laws. In the case of PEOs, for example, an increasing number of states have explicit regulations related to mandatory reporting of workers compensation insurance coverage for both the PEOs and their client companies. Thus the dual employer relationship should be captured in the Proof of Coverage (POC) data reported and maintained by state workers compensation regulators, typically part of the state labor department.

POC data often provide a way to identify PEOs and their client co-employers; in some states it is also possible to identify the workers compensation insurance policies issued to temporary employment agencies. Data submitted separately by workers compensation insurers to designated statistical agents for rate making purposes (that is, the development of the premiums that insurers charge their policyholders) are intended to provide detailed information on claim rates and the severity of injuries for individual employers. There are three major challenges to using these POC and claims data to track workplace safety for contingent workers. First, the data are not comprehensive; reporting requirements vary among states and not all categories of contingent workers are covered by workers compensation. Second, the two key data sets are part of different regulatory processes—POC is part of employer regulation (typically in a division of the state labor department) while claims data are part of insurance regulation (typically in the insurance division of the department of banking and financial regulation or a separate department of insurance regulation). Third, the statistical agents and rating bureaus that collect and analyze the claims data are largely prohibited by contract from sharing the employer specific data with outside entities.

As noted above, some states require multiple coordinated policies (MCP) and others accept master policies. In some states master policies are acceptable in the voluntary market but MCPs are required in the residual market. Residual markets are state-sponsored insurance programs that provide employers unable to secure coverage in the conventional (also known as the "voluntary market") with an alternative means for insuring their operations, typically through a designated insurance carrier. These alternatives are also known as the "involuntary market," "assigned risk market," or "market of last resort." However, the interest of a state WC Division (usually part of the state labor department) is to be able to confirm that individual employers have workers compensation insurance (unless they are already a qualified self-insured). A master policy lists each client as an additional named insured; this list typically is used to verify that an individual employer is covered by a WC policy; the POC submission would show a single policy, the name of the insurance company, the name of the PEO, and the names of each client employer. In contrast under the multiple coordinated policy approach each client/employer is issued its own, separate policy; the POC submission would again list the insurance company, the client employer, and the PEO. These can also be used to verify that an individual employer is covered by a WC policy. POC administration is relatively straightforward for MCPs—notification of a cancelled policy can be easily linked to the employer. However, POC administration is a greater challenge with master policies—special reporting is required if an employer is dropped from the PEO's insurance policy.

None of this is linked to the reporting of claims. This is part of insurance regulation. Claim experience is reported to a state's designated statistical agent in what are called "unit reports." These typically contain detail on every claim associated with a given WC insurance policy. The units, however, typically do not indicate whether a PEO is involved. This requires linking to the policy data that is generated for POC reporting purposes. Master policies make it difficult if not impossible to link claims experience with specific employers; with MCPs the employer is readily linked to the claim experience. A hybrid is starting to appear—the PEO coordinated policy—as with the MCP a separate policy is issued for each client/employer but the PEO is listed as the primary insured and the client is an additional named insured. This makes tracking of the claims experience of individual clients a little more difficult because it is more difficult in

most systems to link policies based on additional named insureds over time.

To further complicate the issue, in some states, the reporting function actually goes both to the statistical reporting agent for ratemaking purposes, and to the state agency overseeing workers' compensation administration for assistance in tracking and understanding the body of cases and the scope of dispute resolution services. Some states are currently collecting significant information on cases (first reports of injury, subsequent reports or injury, and medical detail data) through a standard process being coordinated through the International Association of Industrial Accidents Boards and Commissions, which may improve the usefulness of these data for the study of contingent workers.

Overcoming the Obstacles to Effectively Using Workers Compensation Data

In the four states with monopolistic workers compensation funds (Washington, Ohio, Wyoming, and North Dakota) it should be reasonably straightforward to overcome the regulatory barriers separating POC and claims data. Indeed, this is already being done in the State of Washington. There the state insurance fund is part of the Department of Labor and Insurance (LNI); SHARP, the research arm of LNI has direct access to the data. Recent research by SHARP on the experience of temporary workers demonstrates how workers' compensation data can be used to estimate claims rates, costs and injury types of temporary workers as compared to those of comparable permanent workers [Foley, 1998; Smith et al., 2010].

Workers' compensation rating bureaus, that is, the entities that develop premiums from claims data, are also interested in understanding the implications of contingent workers for the workers compensation insurance system. Accurate reporting of exposure (i.e., payroll) and claims is essential for the integrity of workers compensation rates. For example, there is concern that during the recent housing bubble some construction firms tried to reduce their workers compensation costs by classifying many of their regular workers as independent contractors. As a result of growing concerns (and complaints of reputable business owners) the Florida legislature made underreporting of payroll a criminal offense [Florida Statutes, 2012]. New York did the same in 2007 [New York State Insurance Fund, 2007].

More generally, state insurance regulators and rating bureaus recognize that components essential to maintaining premium rates that are not "unfairly discriminatory" (i.e., class rates and experience rating) may not be reported appropriately or accurately by employers of contingent workers. The National Council on Compensation Insurance (NCCI), the rating bureau for 35 states accounting for roughly half of the countrywide workers compensation market, has been working since the early 1990s to support state regulators with both POC and claims reporting issues. NCCI recently began an investigation to determine whether it is possible to link the POC data with detailed claims data for the states where it has access to both [NCCI, 2013].

To the extent that it is possible to link POC and claims data (or at least identify claims experience of contingent workers as in the case of SHARP) it may be possible within the contractual limitations on the use of their data for some rating bureaus to conduct analysis tailored to address specific workplace safety issues related to contingent workers.

USING THE APPROPRIATE DATA SOURCE

Given that there are multiple data sets available to track workplace injuries and illnesses, how does one decide which data set to use? The answer to this question depends on the purpose for which the data will be used. In the case where a particular research question is being addressed, the obvious answer is that the various data sets must be assessed to ascertain which is most appropriate to address that question. For example, if a research study were focused on examining medical treatments for a particular condition, then SOII would not be appropriate because it contains no information on medical treatments. Instead, workers' compensation data would be more appropriate.

One of the uses to which workplace injury and illness data have been used is to estimate the total number of cases in various employer populations. The SOII undercount research of Boden and Ozonoff [2008] and Rosenman et al. [2006] suggests that a complete count of injuries and illnesses generally requires the use of multiple data sets. In matching SOII microdata to workers' compensation microdata, these studies generally found that there were cases in SOII that were not in the workers' compensation data and vice versa. While some of these unmatched cases may reflect problems with matching, perhaps arising from data entry errors or simple discrepancies in recording of key match variables, it is also likely that the two systems pick up some different cases. The virtue of using multiple data sets, even beyond SOII and workers' compensation, is that a more complete capture of cases is possible. This, in fact, is the rationale behind the BLS Census of Fatal Occupational Injuries, which relies on a broad set of sources to count workplace fatalities.

After a set of workplace injury and illness data is constructed from multiple sources, it is possible to evaluate the completeness of each contributing source by ascertaining what fraction of all cases were captured by each source. Both Boden and Ozonoff and Rosenman et al. did this in their research to evaluate the completeness of the SOII and the workers' compensation data. Boden and Ozonoff's study showed that the completeness of these data varied widely over the six states that they studied, but they concluded in

general that underreporting of cases is "substantial" in both SOII and workers' compensation and that while using both sources improves coverage, it does this incompletely. The conclusion then is that while there may be a "better" or more complete data set for a particular situation, using multiple data sets improves completeness.

It is important to stress, though, that even when a data set is incomplete, it may be useful for addressing a research question if it provides a reasonable representation of the total and is not biased in composition in ways that might affect the outcome of an evaluation. For example, NCCI's workers' compensation data do not capture experience of self-insureds and may have some underreporting for firms with large deductibles. Nevertheless the data have been effective in estimating the impact of narcotics on claim costs, the persistence of the use of legal narcotics, the differences in costs of matched pairs of claims where the only difference is that one includes treatments related to obesity, the role of increased rates of surgery in driving medical severity increases in the late 1990s and so on. Similarly, SOII estimates can be used by OSHA to identify high risk industries that should be the focus of enforcement activities, provided that there is not differential underreporting across industries. Multiple data set studies such as those of Boden and Rosenman can help to ascertain whether there is differential non-reporting that might result in biased findings.

CONCLUSION

In this paper, we have presented an overview of the issues regarding the impact of the growing contingent workforce on workplace safety and health, including effects on workplace injury and illness surveillance, workplace safety and health enforcement and regulation, and the management and structure of workers' compensation insurance policies.

Contingent workers are defined as those who do not have an explicit or implicit contract for long-term employment and who hold jobs that are expected to last only a limited period of time. Contingent work may involve uncertainty about the length of employment, control over the labor process, degree of regulatory or statutory protections, and access to benefits. Contingent workers typically have less knowledge about the work environment, less authority to voice complaints, and reduced ability to change conditions.

The apparent growth of the contingent workforce challenges existing structures of data collection, legal responsibility and liability, and future planning for social safety net programs. The emerging literature on nontraditional employment and the increasing magnitude of temporary, alternative, and subcontracted work describes how adherence to existing institutions and data collection programs may both undercount and misclassify work hazards and outcomes, obfuscating potential paths to understanding the full scope of the problem. Examples abound where some activities previously done in-house are contracted out and purchased through the market, presenting many challenges in the occupational safety and health arena. This paper has sought to identify and highlight how the emerging arrangements must be restructured and adapted to improve future outcomes.

Contingent and temporary workers and workers on alternative work arrangements are currently a policy focus of regulatory and consultation activity at the Occupational Safety and Health Administration (OSHA), as well as other labor oversight efforts. OSHA has instituted "a concerted effort using enforcement, outreach and training to assure that temporary workers are protected from workplace hazards." Yet, lack of consistent definitions and official ongoing data collection and compilation efforts complicate efforts to understand and address the problems.

While there is concern that contingent workers face greater workplace injury and illness risks, it is important in any empirical work on this issue to control not only for differences in occupation and industry, but also for differences between contingent workers and standard employment workers in other variables which may be associated with increased injury. First among these would be job tenure. Given the much higher percentage of temporary workers who are at the lower range of job tenure, it is important to separate the independent contribution of job tenure to injury rate from that of the employment arrangement.

Additional research is also needed to assess the various factors that might be responsible for the apparent disproportionate injury risk incurred by contingent workers. Research is needed to distinguish the contributions of worker age, unfamiliarity with the job site, lack of safety training, ambiguities with regard to both worker supervision and responsibility for safety, and the assignment of riskier job tasks to contingent workers. Existing injury and illness surveillance systems will generally lack some of the information required to assess the contribution of these factors, suggesting the need to supplement administrative data with specific data, collected either by survey or focus groups, about employers and workers to address this research area. Finally, workers' compensation data and other injury and illness surveillance systems miss certain groups of contingent workers, including independent contractors. To assess the job risk factors for these excluded groups of workers, it may be necessary to supplement the data from insurance and employer sources with information collected by other methods either from workers or from health care providers.

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