In principle, workers’ compensation systems should exclude “ineligible” claims and provide benefits to “eligible” claims. However, for many reasons, barriers put in place to exclude “ineligible” claims will likely screen out some arguably compensable work-related injuries as well.

Since the early 1990s, workers’ compensation claim frequency has shown a steady decline. This tracks a decline in injuries reported by the Bureau of Labor Statistics. However, available evidence suggests that the number of reported workers’ compensation claims greatly underestimates the actual number of workplace injuries eligible for benefits.

At least some of the decline in reported injury rates and workers’ compensation claims appears to be attributable to restrictions on benefit eligibility and increased barriers to claims approval that have been adopted in many states since 1990. If injured workers do not receive benefits, workers’ compensation systems are not living up to their promise of providing injured workers with income replacement and coverage of medical costs.

### INTRODUCTION
The frequency of paid workers’ compensation claims is generally viewed as an important indicator of the frequency of occupational injury and illness. We rely on this information to inform us about the effectiveness of safety programs, about where prevention activities are most needed, and about which firms are likely to have good safety programs.

But studies have consistently shown that people with work-related injuries and illnesses often do not receive workers’ compensation benefits. If the proportion of workers with occupationally-caused injuries who receive workers’ compensation benefits is low or declining, then existing data on injury frequency or trends may be suspect. Moreover, if injured workers do not receive benefits, workers’ compensation systems are not living up to their promise of providing injured workers with income replacement and coverage of medical costs.

Since the early 1990s, workers’ compensation claim frequency has shown a steady decline (Figure 1). Among insured firms, average indemnity claim frequency declined by over 50 percent between 1990 and 2004. (Data used in Burton and Blum, 2007). This tracks the decline in injuries reported annually by the U.S. Bureau of Labor Statistics (BLS). Together, these trends suggest substantial progress in workplace safety. On the other hand, studies showing low takeup of benefits raise questions not only about whether workers’ compensation claim frequency accurately reflects underlying injury rates, but also whether the rate of decline in claim frequency reflects the actual rate of decline in injury rates.

In this paper, we raise concerns regarding the increasing barriers to compensation in workers’ compensation systems and the effect of these barriers on the receipt of benefits and the validity and reliability of injury data. First, we describe briefly the issues of eligibility and takeup in workers’ compensation systems. We then discuss data regarding takeup of workers’ compensation and the decline in workers’ compensation claims since 1990. We review some of the system changes that have limited eligibility and created barriers to receipt of benefits. Finally, we discuss the implications of these findings.

### FROM INJURY TO BENEFITS

#### ELIGIBILITY AND TAKEUP
Work-related injuries and illnesses do not automatically become paid claims in workers’ compensation systems. First, not all work-related injuries are eligible for workers’ compensation benefits. For example, temporary disability benefits
Figure 1  Workers’ Compensation Indemnity Frequency Rates, 1990–2006

Key: FTE: full-time employee.

are only available when lost time exceeds the waiting period. The self-employed are generally not covered. Neither are employees of nonsubscribing firms in Texas. Specific rules within state statutes may result in the exclusion of some work-related health conditions. These include, for example, statutes of limitations that bar long latency diseases or specific exclusions for certain conditions. These and other factors limit the number of injuries eligible for compensation.

Second, not all workers with arguably eligible injuries will receive benefits. The rate at which eligible people receive benefits from an insurance, social insurance, or welfare system is generally referred to as the takeup rate.

Several essential steps are necessary for workers’ compensation benefits to be paid for a work-related injury: the injured worker must report the injury; the worker or employer must initiate a claim; a medical provider must certify the work-relatedness of the injury or illness; the insurer must review the claim, find that it meets the requirements for benefits, and pay benefits to the worker; if payment is not made voluntarily, an adjudicator must determine that the claimant has submitted sufficient evidence for the claim to be paid. At each step on this path, decisions are made that can break the chain. Azaroff et al. (2002) describe the large number of “filters” between injury and benefit in detail.

Many factors stand in the way of benefit takeup. Workers and their physicians may not know that the health condition is work-related, or a physician may be reluctant to provide the necessary documentation. While in traumatic injury cases work-relatedness is relatively clear, this may be less true when the condition is an occupational disease, such as lung disease, cancer, dermatitis, and noise-induced hearing loss, or in cases involving common chronic musculoskeletal disorders. Alternatively, the worker may not know about the availability of workers’ compensation benefits. Although state statutes may require communication of workers’ compensation rules about benefit eligibility, many workers remain ignorant of their rights in this system, particularly uneducated or young workers, immigrants, and those who work in marginal jobs.

Even among those who know of their right to receive benefits, some will fear that filing will trigger retaliation by employers, who may lay them off, place them in undesirable jobs or shifts, eliminate pay raises, and so on. Further, the negative experiences of co-workers who have filed for benefits may discourage potential applicants from filing. These negative experiences may include mistrust from claims personnel and physicians, discomfort with lawyers, and intimidation within the claims process. Workers may also be deterred from filing claims by the stigma attached to being a workers’ compensation claimant, a stigma tied to publicized cases of workers’ compensation claimant fraud. This reluctance may be fed by employer programs that create disincentives for filing, such as group safety incentives for “injury-free” periods. The economics of the system may not justify the costs of filing, either because expected benefits may be too low or because the availability of alternative benefits (including both health insurance and alternative salary continuation programs) may make filing for workers’ compensation benefits less attractive.

THE IMPACT OF SYSTEM DESIGN

There is a tendency to oversimplify the process of claims filing by dividing claims into two clearly defined groups, eligible (or worthy) claims and ineligible claims; this tendency assumes that a bright line can be drawn between the two. In this view, systems must be designed to exclude “ineligible” claims, which may be characterized as “fraud” or “abuse” of a system that should only provide benefits to “eligible” claimants. In the economics literature, the incentive for filing of ineligible claims is associated with the phrase “claims reporting moral hazard” (Butler and Worrall, 1991). For those who see the system in this way,
disincentives to filing and limitations on eligibility are often characterized as ways to exclude “ineligible” claims—and therefore both reduce system costs and reduce excess takeup.

The issues may be considerably more complex than this view would suggest. Barriers may discourage or exclude both clearly work-related injuries and injuries that fall in a gray area of potential claims, where eligibility is not entirely clear or where people of good will would disagree about whether a claim should be eligible. That is, these barriers may have several effects. They may screen out inappropriate or non-work-related injuries and impairments; they may define as ineligible both difficult-to-determine and clearly work-related conditions; they may discourage workers from filing claims for conditions that are both work-related and eligible; or they may decrease the rate of approval of arguably eligible claims, through the creation of evidentiary or procedural barriers.

Although excluding inappropriate claims is a reasonable goal, paying benefits for health conditions arising out of work is a primary function of workers’ compensation, one that should not be ignored when rules are changed. For specific policies, then, evaluation should take into account the impact on both those with work-related injuries and those who were not injured at work. If barriers are constructed that exclude claims for work-related health conditions, then the validity and reliability of workers’ compensation injury rate data is problematic. And, needless to say, the system falls short of the goal of compensating injured workers.

**EVIDENCE ABOUT WORKERS’ COMPENSATION TAKEUP**

Beginning in the 1980s, studies have consistently shown that a substantial number of workplace injuries are not compensated by workers’ compensation programs. Fine et al. (1986) conducted a study of reporting of upper extremity cumulative trauma disorders at three large automobile manufacturing plants, two of which had recently designed improved cumulative-trauma surveillance systems within their occupational medicine departments. They compared four data sources: the Occupational Safety and Health Administration (OSHA) injury logs, workers’ compensation cases, records of medical absences longer than three days, and plant medical records. For acute traumatic injuries, OSHA injury logs and medical absence records generated similar incidence rates, workers’ compensation rates were substantially lower, and rates derived from plant medical records were four times as high as from injury logs. For cumulative trauma disorders, medical absence and plant medical records produced incidence rates nearly 10 times as high as workers’ compensation and nearly 100 times as high as injury logs. The increasing recognition of cumulative trauma disorders in the past two decades has undoubtedly improved reporting. However, the size of the disparity, even given that it has probably declined substantially, remains disquieting.

A study of the automobile manufacturing industry in 1986–1989 compared incidence rates for musculoskeletal disorders using the OSHA log, workers’ compensation, sickness and accident insurance, self-reported symptoms, medical treatment, and lost time (Silverstein et al., 1997). They found a great deal of variation from plant to plant and by calendar year in the relationship between incidence rates calculated from the OSHA logs and from workers’ compensation data. Indeed, in some cases, the OSHA incidence rate was much lower than the workers’ compensation rate, and in other cases, it was considerably higher.

Several more recent studies have focused on the filing of workers’ compensation claims. Biddle et al. (1998) compared legally required physician reports of occupational diseases with workers’ compensation claims in Michigan. The Michigan definition of occupational disease (as distinguished from occupational injury) includes many musculoskeletal disorders and, indeed, over 36 percent of reported diseases were for sprains, strains, or carpal tunnel syndrome. Biddle et al. found that less than half (and perhaps as little as 10 percent) of workers with known or suspected occupational diseases had filed workers’ compensation claims. In a recent follow-up study focusing on musculoskeletal disorders, Biddle and Roberts (2003) concluded that, among those who missed more than 7 days from work (making them eligible for workers’ compensation income benefits), fewer than 60 percent filed for these benefits. Many who did not file used other programs, like sick leave. Similarly, Morse, Dillon, Warren, Levenstein, and Warren (1998) conducted a random-digit-dial survey in Connecticut to determine the period prevalence of work-related upper extremity musculoskeletal disorders. They also asked respondents whether they had filed for workers’ compensation. Of cases in which a medical provider had identified the condition as work-related, only 21 percent of respondents said that they had filed for workers’ compensation benefits.

Several recent studies that cover all workplace injuries find that many do not result in workers’ compensation claims. A study by Lakdawalla and Reville (2007) based on the National Longitudinal Survey of Youth indicated that

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1 Between 1982 and 1992, BLS reported an increase in reported cumulative trauma disorders from 22,600 to 332,100 cases (Panel on Musculoskeletal Disorders and the Workplace, 2001, p. 37). This increase may have been largely a consequence of more complete reporting.

These studies generally suffer from one or more limitations. Several are limited to a specific subgroup that may not be representative of the full range of injuries, and it is not always clear that the injuries reported involve the medical costs and/or lost time necessary to meet compensability requirements. Two more recent studies covered the full range of injuries and limit themselves to injuries with lost time exceeding the waiting period. Rosenman et al. (2006) compared the BLS survey and workers’ compensation data sets kept by the State of Michigan. They found that 66 percent of injuries with more than 7 days off work did not result in payment of workers’ compensation benefits. In the most recent study, Boden and Ozonoff (2008) examined injuries with lost time greater than the waiting period in six states: Minnesota, New Mexico, Oregon, Washington, West Virginia, and Wisconsin. Under very conservative assumptions, four of the six states provided benefits to fewer than 80 percent of injured workers. Under less conservative assumptions, these four states provided benefits to fewer than 65 percent of injured workers.

THE DECLINE IN WORKERS’ COMPENSATION CLAIM FREQUENCY AND REPORTED INJURY RATES

From 1990 through 2004, workers’ compensation indemnity claim rates declined from 2.71 to 1.21 indemnity claims per 100 workers (Burton and Blum, 2007).² Claim frequency fell in all but one year in this period, and fell most rapidly in 1990–1998.

Data from the BLS annual Survey of Occupational Injuries and Illnesses (SOII) follows the same trend. BLS reportable injuries, even those meeting the waiting period threshold, are not necessarily eligible for workers’ compensation benefits. However, we would expect a strong relationship between workers’ compensation indemnity claims and injuries in the SOII with lost time greater than the waiting period for the following reasons. Reporting to both systems is strongly influenced by employers. Employers report injuries to the SOII and also strongly influence the filing and payment of workers’ compensation claims. In some workplaces, the same individual may be responsible for filling out the BLS survey and for handling workers’ compensation claims. Even if this is not the case, an employer may believe that a workplace injury that is not a compensable workers’ compensation claim should not be reported to the BLS. Moreover, unless an injured worker reports an injury to a supervisor, it will very rarely enter either system (Azaroff et al., 2002).

And BLS days away from work injury rates are, in fact, highly correlated with workers’ compensation claim rates. For 1990–2004, the Pearson correlation coefficient of these two rates for the U.S. is 0.97 (Figure 2). Correlations are similar for individual states.

These parallel declines suggest that there have been substantial improvements in workplace safety during the last two decades. However, studies indicating that only a fraction of people injured at work receive workers’ compensation benefits raise at least two questions: is the decline in reported injuries (and claims) an artifact, at least in part, of declines in reported—but not actual—injuries? And, if so, is some of the decline in claim rates due to a decline in eligibility or takeup?

A number of researchers have attempted to explain the decline in reported injuries. Conway and Svenson (1998) examined several possible explanations for the decline that occurred from 1992–1996. To see whether the cause was a parallel decline in employment in hazardous manufacturing industries, they gathered information on employment in 20 of the 36 highest-hazard manufacturing industries. (Employment in the other 16 was not available.) Contrary to expectation, they found that employment in these industries had increased during this period. They also found that there was not a reduction in the number of production workers in hazardous manufacturing industries due to automation; in fact, production workers grew as a proportion of employment in these industries. A change in the mix of jobs therefore also failed to provide an explanation for the decline.

Declining injury rates might also be the result of OSHA regulation. Some studies have shown substantial impacts of OSHA regulation on reported injury rates (Scholz and Gray, 1990; Gray and Scholz, 1993). However, a more recent

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² John Burton and Florence Blum have graciously shared with us the frequency data that they have collected, cleaned, and organized over the years from the NCCI and state rating bureaus and used in this article, among others.
study (Gray and Mendeloff, 2005) showed a decline in the impact on reported lost-workday injuries of OSHA inspections with penalties, falling almost to zero in the 1992–1998 period. This suggests very little if any of the decline in injury rates since 1990 is attributable to OSHA inspections.3

A study by Shuford and Wolf (2006) suggested that some of the decline in injury rates reported to the BLS is caused by a shrinking proportion of young, inexperienced workers in the labor force. Their research suggested that each 1 percent decline in the proportion of workers aged 16–24 leads to about a ½ percent decline in the manufacturing incidence rate.

Another reasonable hypothesis is that the decline in reported injuries and claims is the result of improved employer safety practices and greater demand for safety by workers. It certainly does seem likely that a decline in workers’ compensation claims should be a reflection of better safety practices. But there have been no studies designed specifically to investigate whether better safety practices have caused the decline in reported injuries or workers’ compensation claim frequency.

Given that workers’ compensation claims data and BLS injury reports trend together, the lack of an adequate explanation for declining reported rates brings us back to the concern that at least a portion of the decline may be caused by a reduction over time in the proportion of workplace injuries receiving workers’ compensation benefits. Two recent studies that use other sources of longitudinal data raise questions about the validity of reported decline in injuries and workers’ compensation claims.

The first of these is the National Electronic Injury Surveillance System occupational supplement (NEISS-Work). This system collects data from a national probability sample of hospital emergency departments. NEISS-Work data have been reported for 1996, 1998, 2003, and 2004. During that period, when workers’ compensation indemnity claim rates fell by 25 percent, emergency room workplace injury rates remained relatively constant (Figure 3).4 The 25 percent decline in claim rates could be consistent with a constant rate of workplace injuries treated in emergency rooms only if the proportion of workers’ compensation claims treated in emergency rooms increased by 33 percent. In NCCI data for 1996–2003, among workers aged 20–34, the proportion of claims involving emergency room visits went from 40.0 to 44.6 percent, an increase of 11 percent. Among workers aged 45–64, this number remained virtually constant, starting at 35.4 percent and ending at 35.5 percent. Although these data do not include injured workers aged 35–44, the data suggest that an increase of 33 percent during this period is highly unlikely.5

Another recent study (Friedman and Forst, 2007) examined workplace injuries identified through the Illinois trauma registry. The Illinois trauma registry records traumatic injuries at all the state’s Level I and Level II trauma centers. These comprise the most serious traumatic injuries, so they are a small subset of all injuries. Data were collected for 1995–2003. During this period, workers’ compensation indemnity claim rates fell 28 percent, while workplace injury rates recorded in the trauma registry fell by 2 percent (Figure 4).

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3 Conway and Svenson (1998) asserted that OSHA voluntary programs, compliance assistance, and consultation reduced injury rates, but supplied no evidence.

4 A workplace injury is defined by the NEISS-Work as an injury that occurred while the patient was working for pay or other compensation, working on a farm, or volunteering for an organized group. Thus, it would include the self-employed, who would not be covered by workers’ compensation. The trauma registry definition is similar. The NEISS-Work data would not capture injuries not treated in emergency rooms, while the trauma registry does not capture minor injuries.

5 Martin Wolf of NCCI kindly shared some information from data he used in an NCCI Research Brief (2007).
Although neither emergency room nor trauma registry data is directly comparable to available data on workers’ compensation claims, one might expect that overall safety improvements would affect the injury rates similarly. That this is not the case raises a question about whether changes in claim rates have accurately reflected underlying changes in injury rates.

**WORKERS’ COMPENSATION REFORMS SINCE 1990**

At least some of the decline in reported injury rates and workers’ compensation claims may be attributable to restrictions on benefit eligibility and increased barriers to claims approval that have been adopted in many states since 1990. Rapidly rising employer costs led to significant changes in state legislation designed to reduce costs. Burton and Spieler (2001) described the changes between 1989 and 1997, when over half of the state legislatures passed major amendments to workers’ compensation laws. They noted that states had amended their statutes to limit eligibility for compensation when the injury was not the sole or major cause of the disabling condition; to heighten procedural and evidentiary requirements for claimants; to limit compensability of particular common conditions, particularly cumulative trauma (repetitive stress) disorders and psychological injuries; to restrict the availability of permanent total disability in serious claims; to expand fraud prosecutions; and to reduce the amount paid in approved claims, particularly through reductions in payment for permanent partial disability (PPD) benefits and setoffs for benefits received from other sources. Each of these amendments was intended to exclude claims that legislators, supported by business associations, felt were not appropriate for compensation, with the intention of reducing costs in the system. Burton and Spieler noted that the effect of these amendments would be to reduce the number of claims that were filed, the number of filed claims that would be approved, and the amount paid on claims that were deemed eligible.

In the years following 1997, claims frequency continued to decline, although at a slower pace, and the rate of introduction of new restrictive statutory amendments appears to have slowed as well. In fact, a number of states expanded benefits, at least at the margin.

Some of the patterns noted by Burton and Spieler continued, however. For example:

- Quite a few states strengthened provisions addressing “fraud” since 1997. These provisions have dual consequences: while discouraging real fraud, they also are likely to have the effect of discouraging some workers with eligible claims from filing for benefits.
Acknowledging the limitations on compensability of injuries that had previously been enacted, in 2001 Oregon specifically endorsed the right of injured workers to pursue civil negligence actions for a work-related injury that has been determined to be not compensable because the worker failed to establish that a work-related incident was the major contributing cause of the injury (Whittington, 2002).

In 2003, West Virginia dismantled its previously generous program, eliminating its liberal construction rule, reducing benefits for temporary and permanent partial disability, and establishing a high bar for eligibility for permanent total disability (Whittington, 2004).

Amendments to the Florida law in 2003 included an exclusion for mental and nervous injuries not resulting from physical injury; a new provision requiring that work be more than 50 percent responsible for an injury for it to be considered compensable, as demonstrated by medical evidence only; and requiring clear and convincing evidence to support causation and sufficiency of exposure for occupational diseases and repetitive exposures as well as for mental and nervous conditions resulting from physical injuries. These amendments also substantially reduced claimant’s attorney fees, thus reducing injured workers’ access to attorneys (Whittington, 2004).

Statutory changes in California in 2004 included significant reductions in the availability of PPD benefits by reducing benefits to account for apportionment of the cause of disability between work and non-work causes; by replacing the existing PPD guidelines with the AMA Guides to the Evaluation of Permanent Impairment (producing lower ratings and therefore lower benefits); and by reducing PPD benefit levels for cases involving ratings lower than 15 percent (the majority of such cases). The 2004 changes also reduced the time that temporary disability benefits could be collected to two years.

Missouri enacted comprehensive changes in 2005 that restricted the availability of benefits and eliminated the premise of liberality in the review of claims; set a short (30 day) time limit for report of an injury (with the burden of proof shifting toward claim denial after this deadline); changed the definition of work-relatedness to require that work be the prevailing rather than a substantial factor in the cause of the disability in cases of both injury and disease; and specifically excluded from compensability conditions that are the result of gradual deterioration or progressive degeneration of the body caused by aging or by normal activities of day-to-day living.

Changes to Oklahoma’s workers’ compensation law in 2005 reduced the maximum duration of temporary total disability benefits from 300 weeks to 8 weeks. For surgical cases, injured workers could receive an additional 16 weeks of benefits.

In 2007, South Carolina set higher standards of proof for workers’ compensation cases involving repetitive trauma, back injuries, and stress.

Amendments to the New York workers’ compensation law in 2007 increased weekly benefits but established new limits on the number of weeks that benefits would be paid for permanent partial disability.

These changes in eligibility and benefits have generally resulted in reductions in overall costs to a state’s employers and insurers. The cost reductions are a reflection of a decrease in the number of compensable claims and the cost of each claim under the changed provisions.

THE IMPACT OF WORKERS’ COMPENSATION REFORMS ON CLAIM ELIGIBILITY AND TAKEUP

Boden and Ruser (2003) tested the hypothesis that the restrictive workers’ compensation reforms of the 1990s affected claim rates. Because workers’ compensation claim data are not detailed enough to account for important factors that might affect claim rates, they used data from the SOII for 1987–1997.

In addition to injury rates, the variables they used in their analysis included a measure of benefit levels, average wages, the state unemployment rate, year, state, two-digit Standard Industrial Classification (SIC) code, and four establishment size classes. As noted above, although workers’ compensation and BLS data are technically independent of each other, they predictably tend to move together. Boden and Ruser (2003) developed estimates of workplace injury rates, controlling for employer size, national trends, state-specific differences in average injury rates over time, differences in industry mix, unemployment rates, wage levels, and benefit levels. They also measured the impact of reforms that rule out or restrict compensability of cases with medical conditions not solely caused by workplace risks or that require objective medical evidence of injury. These two system changes appear to have caused 7.0 to 9.4 percent of the decline in days-away-from-work cases from 1989 through 1997.

Looking just at the states that changed their laws, the impact was even higher. For example, in states that passed objective evidence laws, these laws accounted for 23.7 percent of the
Figure 5  Annual Change in Indemnity Claim Frequency, California, 1999–2006


The barriers to compensation that have been erected by legislative and policy changes in many states are likely to have contributed to the declining rates of claims-filing for compensation for occupationally-caused injuries. This has multiple effects. Of course, costs of workers’ compensation in the aggregate are reduced. Some inappropriate claims are no longer being filed. But at the same time, we have erected barriers to compensation to people who are injured at work, who lose earnings and incur medical costs. Some of these may have become ineligible because of legislative changes. These barriers may also have the effect of decreasing takeup even for those workers with injuries that remain eligible for compensation under the new rules, as can be seen by the California experience.

Available evidence suggests that the number of reported workers’ compensation claims greatly underestimates the actual number of workplace injuries. Moreover, some of the reduction in claim frequency since 1990 is attributable to increased underreporting. Further study is needed to determine the extent to which workers’ compensation claims have declined as a result of systematic declines in reporting related to changes to state systems.
REFERENCES


