

The Growth in Cases with Restricted Activity or Job Transfer

By John Ruser

Occupational injury and illness rates in the US have displayed significant changes over the past quarter century. The rate of total recordable cases has declined since 1992 both before and after Occupational Safety and Health Administration (OSHA) injury and illness recordkeeping changes. In 1992, the Bureau of Labor Statistics (BLS) reported a rate of 8.9 total recordable cases per 100 equivalent full-time workers in U.S. private industry. (Chart 1) By 2001, the rate had fallen to 5.7, a decline of 36 percent. This trend continued under new recordkeeping regulations, with the total recordable case rate dropping from 5.3 in 2002 to 3.6 in 2009—an additional 32 percent decline.

This decline in the overall rate was preceded and then accompanied by a significant shift in the composition of workplace injuries and illnesses between cases with days away from work and those with only restriction of work or job transfer. From 1985 to 2001, the rate of cases with days away from work declined from 3.3 to 1.7, while the rate of cases with only restricted work activity or job transfer rose from 0.3 to 1.1. The downward decline in the rate for cases with days away from work continued from 2002 to 2009, from 1.6 to 1.1, while the rate for cases of job transfer or restricted work declined from 1.2 to 0.8.

This paper examines the compositional shift between cases with days away from work and cases with only job transfer or restriction, to gain insights into the sectors, types of establishments and types of cases that are driving the shift. What emerges is the conclusion that growth in cases with only work restriction or job transfer was a ubiquitous phenomenon from the mid-1980s until the early 2000s. Larger establishments and certain industry sectors including manufacturing, XXX and XXX showed the strongest growth. This growth has now generally leveled off, but this category of recordable workplace injuries and illnesses remains an important component of total recordable cases.

The Survey of Occupational Injuries and Illnesses (SOII)

The BLS Survey of Occupational Injuries and Illnesses (SOII) had its genesis in the Occupational Safety and Health Act of 1970 (the Act). The Act directed the Secretary of Labor to “compile accurate statistics on work injuries and illnesses which shall include all disabling, serious, or significant injuries and illnesses, whether or not involving loss of time from work ...” The law explicitly referenced statistics on injuries and illnesses involving only restriction of work or motion, or transfer to another job, in addition to statistics on cases involving days away from work.

Since 1972, the SOII has collected occupational injury and illness data on an annual basis from a sample of private industry establishments in all States.¹ The data are drawn from injury and illness records that employers maintain according to OSHA guidelines. Sampled establishments are asked to report the total numbers of injuries and illnesses of various types that occurred in the previous year, the total

¹ Until 2008, data were collected from and published for State and local government establishments in roughly half of the States. Since 2008, the SOII has collected State and local government data in all States in order to publish national estimates for State and local government.

numbers of days away from work and of restricted activity or job transfer, and the total number of hours worked by all employers during that year. From these data, the BLS calculates rates of injury and illness by industry and establishment size, expressed as the number of cases per 100 or 10,000 full-time equivalent workers. These data are termed “summary data.”

Up until 1992, BLS also published the total numbers and rates of days away from work and days of restricted activity or job transfer. BLS continues to collect the total numbers of days lost from each establishment, but no longer publishes these data. These estimates have been replaced by estimates of the median days away from work per case for days away from work cases and distributional information on the number of days away from work. Some of the charts and tables that appear later in this report will summarize total days data that are collected but no longer published.

Since 1992, the BLS has also obtained information about the case circumstances and worker characteristics for injury and illness cases with days away from work. The information collected on case circumstances includes the nature of the injury or illness (e.g., sprain), the body part involved, the event (e.g., fall), the source of the injury or illness, and the number of days away from work. The worker characteristic data include age, gender, race/ethnicity and occupation. These case circumstance and worker characteristics data are not collected for cases with only job transfer or work restriction, though BLS has designed a pilot to collect such data for this case category in 6 industries for survey year 2011.

Since 1992, the SOII has also collected, but not published, data on the number of days of restricted work activity or job transfer associated with each case with days away from work. These data do not indicate the case circumstances and worker characteristics for cases with only days of restricted work or job transfer, but they do show when restricted work or job transfer occurs in addition to days away from work. The analysis to follow examines two measures of the use of job transfer or restriction for cases with days away from work—the percentage of cases that had positive job transfer or restriction days and the median days of job transfer or restriction for those cases with positive job transfer or restriction days.² In the interest of brevity, the following will often refer to “median job transfer or restriction days” where what is meant is “median job transfer or restriction days among days-away-from-work cases with positive job transfer or restriction days.”

Recordkeeping guidelines and case definitions

Nomenclature and guidance on the recording of cases has varied over time. Prior to 2002, cases with days away from work and those with only job transfer or work restriction were collectively termed lost workday cases. With OSHA recordkeeping changes in 2002, these cases were renamed cases with days away from work, restricted activity or job transfer (DART). During both time periods, a lost workday or DART case must involve loss of work time after the day of the injury or onset of illness. The loss of work time on the day of injury or illness onset is not considered. In addition, in both periods, a case with days away from work could involve periods of restricted work activity or job transfer.

² Because fewer than 50 percent of days away from work cases report a positive number of DJTR days, the median DJTR days for all days away from work cases is zero. It is for this reason that the medians are calculated for only those days-away cases reporting a positive number of DJTR days.

There are some other differences in the treatment of lost workday/DART cases and their components before and since the 2002 recordkeeping change. Prior to 2002, employers were instructed to record a lost workday case only if a worker couldn't return to all work duties on the following workday. The employer was also instructed to count the number of lost workdays for each case. The focus on workdays rather than calendar days meant, for example, that a lost workday case would not be recorded if an employee typically worked Monday through Friday, was injured on Friday and returned to full work duties on Monday, even if the worker remained injured on Saturday and would not have been able to work.

In contrast, the recordkeeping rules starting with 2002 focus on calendar days. Under these rules, a DART case occurs if an employee is unable to perform all (except non-routine) job duties as a result of the injury or illness on the day or days following the injury or illness onset, regardless of whether or not the employee was scheduled to work on those days. The employer is supposed to count the number of DART calendar days, up to 180. Another important difference from the past is that employers are to record a DART case if a health care professional or the employer him/herself recommends days away, restricted work or job transfer, even if the worker returns to work and performs all job duties.

Guidance for recognizing a case with restricted activity or job transfer differs before and since 2002. Prior to 2002, OSHA's recordkeeping rule did not include a definition of restricted work or job transfer. Instead, the definitions for these terms evolved on the basis of interpretations of BLS Guidelines.³ According to those Guidelines, restricted work activity (RWA) cases were those "where, because of an injury or illness, (1) the employee was assigned to another job on a temporary basis; or (2) the employee worked at a permanent job less than full time; or (3) the employee worked at his or her permanently assigned job but could not perform all the duties connected with it." "All duties" were interpreted by OSHA as including any work activity performed over the course of a year on the job.

In its 2001 Federal Register notice announcing recordkeeping changes, OSHA conceded that "employers had difficulty with the restricted work concept," but not the concept of temporary job transfer. Consequently, in its revised recordkeeping rules, OSHA provided explicit rules and guidance regarding restricted work. Restricted work occurs when, as the result of a work-related injury or illness: (1) An employer keeps the employee from performing one or more of the routine functions of his or her job, or from working the full workday that he or she would otherwise have been scheduled to work; or (2) A physician or other licensed health care professional recommends that the employee not perform one or more of the routine functions of his or her job, or not work the full workday that he or she would otherwise have been scheduled to work. Unlike the previous guidance, for recordkeeping purposes, an employee's routine functions are those work activities that the employee regularly performs at least once per week.

³ This is according to the OSHA Federal Register notice of January 19, 2001 regarding proposed recordkeeping changes. The guidelines cited are "Recordkeeping Guidelines for Occupational Injuries and Illnesses" Bureau of Labor Statistics, September 1986. Until 199X, BLS developed recordkeeping rules. In that year, this responsibility was transferred to OSHA.

It is difficult, a priori, to assess the expected impact of these definitional changes on the number of cases with days away from work and the number of cases with restricted work activity or job transfer. On the one hand, the case counts should increase with the switch to calendar days and with the inclusion of cases for which a health care professional recommends DART days. On the other hand, the new definition of restricted activity limits cases to those involving only the restriction of routine duties, as opposed to all duties. Regarding the number of days away from work and number of restricted work days, those should increase for any given case when calendar days as opposed to workdays are considered. But, employers may cap the number of days counted at 180, which may truncate the number of days for some long duration cases.

Trends in aggregate data

In the early years of the BLS survey, both cases and days of restricted work activity or job transfer (hereinafter termed “restricted work activity”) were infrequent and accounted for a small percentage of all lost workday cases and all lost workdays. From 1978 to 1986, the rate of restricted work activity cases in private industry remained essentially constant at 0.3 cases per 100 full-time equivalent workers. In 1985, restricted activity cases were 8.6 percent of lost workday cases, while restricted activity days (from both cases with only restricted work activity and cases with days away from work) were 9.6 percent of all lost workdays. (Chart 2)

Starting in the mid-1980s the rate of restricted work activity cases began to rise, from 0.3 in 1986 to 1.2 in 1996. That rate then remained essentially constant at 1.1 or 1.2 up until the change in recordkeeping in 2002. Meanwhile, the rate of cases with days away from work declined steadily from 3.5 in 1988 to 1.7 in 2001. Consequently, over the period from the mid-1980s to 2001, restricted activity cases accounted for an increasing percentage of all lost workday cases, reaching nearly 40 percent in 2001. Similarly, restricted work activity days became increasingly important, reaching about 42 percent of all lost workdays in 2001.

In the period after the change in recordkeeping regulations, rates for both cases with days away from work and cases with days of job transfer or restriction (DJTR) tended to decline. The rate of DJTR cases declined from 1.2 in 2002 to 0.8 in 2009, while the rate of cases with days away from work declined from 1.6 to 1.2. But, from 2002 to 2006, cases with days away from work declined faster than DJTR cases, so that the latter rose to account for 44% of DART cases in 2006, before dropping back to 42.1% in 2009. Job transfer or restriction days (not cases) rose as a percentage of DART days for most of the period after the recordkeeping change, peaking at 48.7 percent in 2008, before declining slightly to 48.1 percent in 2009.

Case characteristics data for cases with days away from work show another way that job transfer or restriction became increasingly important in the years prior to 2002. In 1992, 16.8 percent of days away from work cases also had some days of restricted work activity. (Chart 3) That percentage rose to 30.5 in 2001. For days away from work cases with some restricted work activity days, the median days of restricted activity rose from 8 in 1992 to 11 in 2001. (Chart 4) In 2002, changes in recordkeeping were associated with a decline to 26.4 in the percentage of days away from work cases with some restricted

activity days—a figure that has remained relatively constant since that year. Meanwhile, the median restricted activity days (for cases with positive days) rose from 12 in 2002 to 14 in 2009.

Overall, then, cases with restricted work activity or job transfer became increasingly important relative to cases with days away from work over the period from the mid-1980s to 2001. Since 2001, the relationship between cases with job transfer or restriction and cases with days away from work has remained relatively stable, though days of restricted work have continued to increase.

Industry sector

Consistent with aggregate trends, from 1985 and 2001, every major sector of private industry showed a marked increase in the percentage of lost workday cases accounted for by restricted activity cases. Similarly, days of restricted work activity grew markedly as a percentage of lost workdays in every sector over this period. Finally, from 1992 to 2001, every major sector except mining experienced an increase in the percentage of days away from work cases that had some accompanying restricted activity days.

The growing importance of restricted work activity cases and days before 2002 is most apparent for non-durable manufacturing, durable manufacturing, other services industries and both wholesale and retail trade. (Chart 5) By 2001, restricted activity cases made up 57.0 percent of lost workday cases in non-durable manufacturing, up from 12.3 percent in 1985. The comparable percentages for durable manufacturing were 53.6 in 2001 versus 13.9 in 1985. In manufacturing the number of restricted work activity cases has exceeded the number of days away from work cases every year from 1998 to the most recent data for 2009. In contrast, construction had the lowest percentage of lost workday cases accounted for by restricted activity cases, both in 1985 and 2001.

With the exception of mining, the percentage of days away from work cases that had some restricted activity days also grew for all sectors between 1992 and 2001. (Chart 6) In the latter year, the sectors with the highest percentages were the same ones that had the highest percentages of lost workday cases accounted for by restricted activity cases: nondurable manufacturing, durable manufacturing, other services, and wholesale and retail trade.

In 1985, no 2-digit SIC industry had more than one-third **{check}** of its lost workday cases in the form of restricted activity cases. By 2001, restricted activity cases were the majority of lost workday cases in 13 2-digit industries, 12 of which were in manufacturing. At the top of the list were Textile mill products (66.6% of lost workday cases were restricted activity cases), Food and kindred products (63.6%) and Transportation equipment (62.9%).

SOII changed from the Standard Industrial Classification (SIC) system to the North American Industrial Classification System (NAICS) with 2003 data. NAICS is not comparable to SIC even at the major sector level. But, consistent with the earlier data, as of 2009, manufacturing had the highest percentage of DART cases in the form of job transfer or restriction cases (55.5 percent), while retail trade and wholesale trade had the second and third highest percentages (46.1 and 44.4, respectively). (Chart 7)

Unpublished estimates based on establishments' reports of total recordable days away from work and total recordable DJTR days confirm the importance of days of job transfer or restriction (DJTR) as a percentage of DART days in many NAICS sectors. As of 2009, DJTR days were the majority of DART days in four sectors—manufacturing (60.6 percent), retail trade (57.2 percent), health care and social assistance (54.6 percent) and utilities (52.3 percent). Several sectors show much higher percentages for DJTR days than for DJTR cases. This is most notable for education, where DJTR cases constituted 28.1 percent of DART cases, but DJTR days were 45.5 percent of DART days.

Data for 2009 reveal that DJTR cases comprised 50 percent or more of DART cases in 20 3-digit NAICS industries. (Chart 8) Sixteen of these industries were in manufacturing, but there are also 4 large non-manufacturing industries: warehousing and storage (61.1 percent of DART cases were DJTR cases), general merchandise stores (56.1 percent), building material and garden equipment and supply dealers (54.1 percent), and nursing and residential care facilities (52.2 percent).

Establishment size

SOII summary data on cases and days of restricted work or job transfer are available by establishment size (though the data on days were not published after 1991). Even in 1985, larger establishments were more likely to report restricted work activity cases. (Chart 9) Establishments of 1000 or more employees reported that 16.2 percent of lost workday cases involved only restricted activity or job transfer in comparison to 5.5 percent and 5.6 percent for establishments with 1 to 10 and 11 to 49 employees, respectively.

Between 1985 and 2001, restricted activity cases grew as a percentage of lost workday cases in all establishment size classes. The growth is particularly evident in the two groups of largest establishments. In 2001, restricted activity cases accounted for 52.5 and 52.4 percent of lost workday cases in establishments with 250 to 999 employee and 1000 or more employees, respectively, whereas the corresponding percentage was 14.9 percent for establishments with 1 to 10 employees.

Consistent with the pattern for cases, total days of restricted work activity increased as a percentage of lost workdays in all establishment sizes between 1985 and 2001. (Chart 10) However, in smaller establishments, the growth in restricted activity days was stronger than for restricted activity cases. For example, in establishments with 1 to 10 employees, restricted activity cases grew from 5.5 percent to 14.9 percent of lost workday cases between 1985 to 2001, while restricted activity days grew from 7.6 percent to 22.6 percent of lost workdays.

While the percentage of lost workday cases accounted for by restricted activity cases grew for all establishment size classes between 1985 and 2001, this pattern does not hold since 2002. Job transfer or restriction cases continued to grow modestly as a percentage of DART cases in establishments with 11 to 49 employees and 50 to 249 employees. (Chart 11) But, the percentages declined in the two classes of largest establishments, with the most notable decline occurring for establishments with 1000 or more employees.

The post-2001 trends by establishment size show stronger patterns of growth of days of job transfer or restriction as a percentage of DART days than the aforementioned trends in case percentages. The days' percentages grew for all establishment size classes except 1000 or more employees, with particularly notable growth for the three smallest size classes. Further, by 2009, DJTR days account for the majority of DART days in all establishment size classes comprising 50 or more employees.

Consistent with the summary data on restricted activity cases, the largest establishments (those with 250 to 999 workers and 1000 or more workers) reported the highest fractions of days away from work cases with accompanying days of job transfer or restriction throughout the time period from 1992 to 2009. (Chart 13) In addition, the largest establishments reported the highest median days of job transfer or restriction among cases with positive job transfer or restriction days. (Chart 14)

The previously discussed case count data showed strong growth between 1985 and 2001 in all establishment size classes in the fraction of lost workday cases accounted for by restricted activity cases. Consistent with this, the percentage of days away from work cases reporting positive job transfer or restriction days increased for all establishment size classes between 1992 and 2001. Growth was strongest in larger establishments, so that the percentages across establishment size classes tended to diverge through this time period. There was also growth in the median job transfer or restriction days (among those days away from work cases with positive restriction days) during this period.

The change in OSHA recordkeeping in 2002 resulted in declines in the percentage of cases with positive DJTR days in all establishment size classes, though the percentage point declines were most pronounced in smaller establishments. **[Did they tend to have less severe injuries?]** Specifically, there was an 8.2 percentage point decline in establishments with 1 to 10 workers, but only a 1.1 percentage point decline in establishments with 1000 or more employees. Reflecting the switch from workdays to calendar days, median DJTR days increased in all but the smallest establishments. The increases in medians were particularly pronounced in establishments with 250 or more employees.

The previously discussed data suggested relatively flat profiles from 2002 for DJTR cases and days as a percentage of DART cases and days, with some growth in mid-sized establishments, particularly for the percentage of total DART days accounted for by DJTR days. The profiles for the percentage of DAFW cases with positive DJTR days also tend to be relatively flat from 2002 onward, with some slight growth in establishments with 11 to 49 and 50 to 249 workers. The trend is quite different for median DJTR days. Growth in the medians is quite strong in all size classes from 2002 onward, with the exception of the smallest establishments. By 2009, establishments with 250 to 999 workers and 1000 or more workers reported median DJTR days (for DAFW cases with positive DJTR days) of 27 and 28, respectively, up from 21 and 23 in 2002.

Multivariate analysis - sector by size

The preceding data indicates that large establishments and those in certain sectors such as manufacturing and trade reported the highest fraction of restricted activity or job transfer cases. A natural question is whether the high percentage in certain sectors results because those sectors tend to

have large establishments or conversely, whether the establishment size relationship results from the preponderance of certain sectors in the larger size classes. [Stay tuned for this analysis]

Number of days away from work

The SOII case and demographic data indicate that over the entire period since 1992 and with only one notable exception, cases that had more days away from work were more likely to report days of restricted work or job transfer. (Chart 15) Further, without exception, cases with more days away from work also had higher median days of job transfer or restriction (among those DAFW cases with positive DJTR days). (Chart 16) Together, these findings suggest that the use of job transfer or restriction days is positively related to the severity of occupational injuries and illnesses as measured by days away from work.

In 1992, cases with 21 to 30 days away from work had the highest percentage of cases with positive restricted activity days (18.9 percent), followed by cases with 11 to 20 days away from work (18.7 percent). These two categories were second and third in terms of median job transfer or restriction days (15 and 14, respectively). As of 2009, these two categories continued to be associated with the highest percentages of positive days of job transfer or restriction, though their ranking reversed. These categories remained second and third in terms of median DJTR days at 36 and 30 days respectively. At the other end of the days-away distribution, in both 1992 and 2009, cases with 1 or 2 days away from work had the smallest positive job transfer or restriction percentages and the lowest median job transfer or restriction days.

With the exception of cases with 30 or more days away from work, the percentages of cases with positive job transfer or restriction days tended to grow between 1992 and either 2000 or 2001 for all days-away-from-work categories. The change in recordkeeping between 2001 and 2002 resulted in declines in the percentages for all days-away categories, though the declines tended to be larger for cases with fewer days away from work. **[Hypothesis: these were more likely to become restricted activity cases. Does the days away distribution tilt toward longer duration cases?]** Trends in the post-2002 period diverged. Cases with few days away from work showed continued declines in the percentages with positive days of job transfer or restriction, while cases with many days away from work showed growth in the percentages.

The one exception to the patterns described above for the percentage of positive job transfer or restriction days is cases with 30 or more days away from work. In 1992, this category ranked third in the percentage of cases with restricted work activity (at 18.1 percent). The percentages for this category increased more slowly than the other days-away categories over the years following 1992 so that by 1998 this category had the lowest percentage of any days-away category. The time trend for this category then remained relatively flat as compared to the other categories, so that by 2009, this category ranked in the middle of the days-away categories in terms of its percentage of cases with positive days of job transfer or restriction.

There are no exceptions to the trends in median job transfer or restriction days. For those days-away-from-work cases that have positive job transfer or restriction days, the median job transfer or restriction

days has tended to increase both from 1992 to 2001 and 2002 to 2009, while maintaining the relationship of higher median job transfer or restriction days for cases with more days away from work. During the time period that employers were instructed to count workdays associated with restricted work (1992 to 2001), median job transfer or restriction days rose between 36 and 50 percent, depending on days-away-from-work category. The transition from workdays to calendar days with the OSHA recordkeeping change is associated with one-year increases in median DJTR days, particularly in the 11 to 20 and 21 to 30 days away from work categories. The increases in median DJTR days continued between 2002 and 2009, ranging from 17 to 31 percent.

Nature

The case circumstances data also indicate the types of days-away-from-work cases that are most likely to be associated with days of job transfer or restriction. Consistent with data tabulated by the number of days away from work, natures of injury with higher median days away from work had higher percentages of cases with positive days of job transfer or restriction. (Table 1) Thus, carpal tunnel syndrome, dislocations and fractures (with days away from work medians of 21, 30 and 30, respectively) reported high percentages of cases with positive DJTR days in 2009. In contrast, the percentages are much lower for punctures, heat burns, cuts and bruises, which have low median days away from work. Interestingly, sprains and strains has a percentage of cases with positive DJTR days that is higher than for fractures, despite having a much lower median days away from work.

Worker characteristics

Age. The percentage of cases with days away from work that have some accompanying DJTR days increases at first with age, rising from 16.3 percent for 14 and 15 year old workers to 26.6 percent for workers age 45 to 54. The percentages then decline for older workers. (Table 2) Consistent with the increasing percentages, the median number of DART days (days away from work plus days of job transfer or restriction) rises with age up to the 55 to 64 age group and the median DART days increases faster than the median days away from work. This latter pattern indicates longer DJTR days for older workers. Workers age 65 and older are an exception to the increasing pattern. The fraction of DAFW cases with DJTR days, at 20 percent, is lower for these oldest workers than all workers except teenagers, and the median DART days for these workers is one day shorter than for workers age 55 to 64.

Gender. In 2009, women were more likely than men to have some DJTR days accompanying cases with days away from work. (Table 2) This is despite the fact that the median days away from work for men was longer, 9, than for women, 7.

Explanations for observed patterns

What accounts for the rise in restricted work activity cases that was observed especially in the 1990s? Solid empirical evidence is lacking to quantify the responsible factors. However, according to a Rand Corporation report, starting in the 1980s, many employers began to participate more actively in returning employees to work earlier. (Reville et al., 2001) Some observers attribute at least part of this transformation to the influence of changes in the workers' compensation environment. One

development was a rise in employers' workers' compensation costs in the late 1980s and early 1990s. According to data from the BLS Employer Costs for Employee Compensation, private industry employers' costs for workers' compensation rose from 1.5 percent of total compensation costs in 1986 to 2.4 percent in 1994, before dropping back to 1.6 percent in 2001. This purportedly raised employer awareness of injuries and illnesses and strengthened the desire to find ways to reduce workers' compensation costs through greater investments in safety and through "claims management." According to Malooly, rising workers' compensation costs quickly came to the attention of senior managers, which helped motivate them to pay more attention to safety, reducing the "middle range" of accident severity more than simple medical only claims or complex long duration claims. (WCRI, p. 46-7)

Another workers' compensation development in the 1980s and 1990s was that employers moved toward self-insurance, large deductible plans, retrospective ratings, and a variety of other financing mechanisms that made employers' workers' compensation costs more sensitive to their own loss experience. The result was that employers "internalized" the costs of workplace injury as never before, providing stronger incentives to reduce injury and illness costs, in part through early return to work. (Reville et al., 2001)

The Rand report identified three other factors that influenced employers' incentives to institute return to work programs. The importance of skilled labor to employer productivity grew, raising firms' indirect costs of lost work time. Also, labor markets tightened in the 1990s with unemployment rates at 30 year lows, making it more difficult to find replacement workers. Finally, firms recognized a variety of additional benefits that appeared to result from efforts to return their employees to work, including enhanced labor relations and reduced exposure to litigation under laws such as the Americans with Disabilities Act. (Reville et al., 2001)

In addition to the factors mentioned above, a number of states passed laws that implicitly or explicitly affected the mix of workplace injury and illness cases. Many of these laws may have been enacted in reaction to the increase in workers' compensation costs. For instance, some states passed laws that shifted selection of health care provider from the worker to the employer and at the same time instituted managed care in workers' compensation. (Boden and Ruser, 2003) Employers' doctors might recommend different courses of treatment than workers' doctors, including the suggestion that workers are able to perform some job duties while injured. Some states also passed laws that explicitly supported earlier return to work. These either created incentives for employers to bring workers back to work early or penalized workers who refused to return to work. Finally, from the late 1980s into the 1990s, many states deregulated workers' compensation pricing. This enabled workers' compensation insurers to negotiate premiums with individual employers, encouraging pricing innovations that differentiated risks, in turn encouraging firms to invest in workplace safety and to otherwise manage workers' compensation costs. (Barkume and Ruser, 2001) The latter could include reducing workers' compensation costs through earlier return to work of injured workers.

What accounts for the findings that larger establishments are more likely to report DJTR cases and days and that these establishments also displayed stronger DJTR growth? Extending the arguments above regarding the factors responsible for the aggregate time trends, some attributes of larger establishments

make them more likely to report DJTR cases and days. Most importantly, everything else equal, larger establishments can realize greater workers' compensation cost savings from earlier return to work of injured employees. The premiums of larger establishments are more highly experience rated, meaning they respond more to changes in incurred costs. (Ruser, 1985) At any point in time, a larger establishment can benefit more than a smaller establishment in the form of WC premium savings by reducing a worker's time out of work. Over time, if recognition of safety and cost savings grows, larger establishments might display stronger DJTR growth. Larger establishments might also display greater use of DJTR at any point in time, because they can provide a wider range of alternative jobs or tasks than can a small establishment.

The data indicate that cases with more days away from work are more likely to also have DJTR days. Employers seeking to reduce the costs of injuries may be more likely to focus return to work efforts on more costly longer duration cases, particularly if there are fixed costs per case of doing so. In addition, cases with few days away from work may involve relatively quick healing and may not require days of restricted work or job transfer to complete the healing process.

The variation in the use of DJTR across industries likely reflects some of the factors discussed above. Industries that tend to have larger establishments will use DJTR more often, as will those industries that can more easily provide alternative work or job transfer. The mix of the natures of injury and illness and their severity in terms of days away from work will also have a bearing on the use of DJTR across industries.

The variation in the use of DJTR across cases with different natures will reflect the severity of these cases and their concomitant costs. Usage will also reflect the extent to which a particular condition is amenable to restricted work or transfer to another job. Finally, natures of injury and illness with short duration probably require little additional recovery time upon return to work.

According to data on the median days away from work by age, older workers are off work longer as the result of a workplace injury or illness. This partially reflects a different mix of injuries —e.g., fractures increase as a percentage of all cases for older worker—and older workers take longer to recover from a particular injury. Thus, a given injury or illness is more costly to an employer when it occurs to an older worker. This may create stronger incentives for employers to use restricted work or job transfer for older workers and explain the increased use of DJTR with age up to workers age 45 to 54. There may be greater indirect costs of losing the work time of older workers, if these workers possess greater job-specific human capital. But, the oldest workers may be less able to work in a restricted capacity or at another job before full healing. This may explain the decline in use of DJTR for the oldest group of workers.