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Workers' Compensation Reform and Return to Work

The California Experience

Seth A. Seabury, Robert T. Reville, Stephanie Williamson,
Christopher F. McLaren, Adam H. Gailey, Elizabeth Wilke,
Frank W. Neuhauser

Prepared for the California Commission on Health and Safety
and Workers' Compensation



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Preface

Over the past ten years, the state of California has made significant reforms to its workers' compensation system's approaches for evaluating and compensating permanent disabilities. Injured workers' return to work is generally agreed to be an important goal for both employers and workers. As such, the effectiveness of these measures is an important factor in considering the reforms' impact on injured workers.

This study, conducted on behalf of the California Commission on Health and Safety and Workers' Compensation, provides a comprehensive review of return to work by injured and disabled workers in the California workers' compensation system. We study the factors that influence return to work, evaluate the effectiveness of different mechanisms in improving return to work, and assess the trends in return to work over the past decade. We then use these trends to evaluate the reforms' impact on the employment and financial outcomes of disabled workers.

This monograph deals with topics that should be of keen interest to policymakers and stakeholders who are directly involved with or affected by the California workers' compensation system. More generally, a number of the issues addressed here, such as the importance of return to work in determining the adequacy of disability benefits, are relevant to workers' compensation systems across the country. Ultimately, the findings in our monograph could be relevant to anyone interested in the impact of workers' compensation policies on return-to-work outcomes for injured and disabled workers.

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Summary

Introduction

Workers' compensation permanent partial disability (PPD) benefits provide wage replacement to workers who become permanently disabled as a result of occupational injuries and illnesses. There are a number of ways to measure the effectiveness of a workers' compensation system, but two that are widely accepted as being among the most important are the *adequacy* and the *affordability* of the system (see Thomason, Schmidle, and Burton, 2001; Reville, Seabury, et al., 2005). Generally speaking, *adequacy* reflects the extent to which indemnity benefits compensate an appropriate amount of worker earnings lost from a workplace injury. *Affordability* reflects the extent to which workers' compensation benefits, including the delivery costs, affect the cost to employers. Striking the appropriate balance between the adequacy and affordability of benefits is one of the key policy challenges in workers' compensation.

In California and in many other states, compensation for injured workers with permanent partial disabilities has been the most-expensive portion of the indemnity benefits, and the most-controversial part of the system. A number of studies by RAND for the California Commission on Health and Safety and Workers' Compensation (CHSWC) concluded that California's PPD benefit levels fell short of the generally accepted two-thirds income-replacement level of adequacy (Peterson et al., 1998; Reville, Schoeni, and Martin, 2002; Reville, Polich, et al., 2001). This was despite the fact that the average benefit levels and costs in California were the highest in the country (Reinke and Manley, 2003).

The poor adequacy and poor affordability of the California PPD system were both key factors in the multiple efforts to reform workers' compensation in California in the early 2000s. Unfortunately, the most-obvious solutions to the two problems are somewhat contradictory: Cutting benefits would make the system more affordable but also reduce benefit adequacy. Similarly, increasing benefits would improve adequacy but make the system more expensive. It is possible, however, to improve the adequacy of workers' compensation benefits without necessarily harming affordability. In particular, one important mechanism through which the system could achieve improvements along both dimensions is by improving the frequency or speed of return to work for permanently disabled workers.

Poor return-to-work outcomes for PPD recipients in California was the key factor in explaining why the high benefits in California still resulted in higher uncompensated losses (Boden, Reville, and Biddle, 2005). Improved return to work is typically thought of as having the potential to benefit employers as well, by lowering benefit and other payroll costs.¹ This

¹ Most firms in California insure their workers' compensation benefits, meaning that they do not directly pay for the benefits. Lower benefits could still reduce employer costs, however, by reducing the amount of their insurance premiums.

suggests that, if return to work were sufficiently improved, the system could be made more affordable while still leading to improved outcomes for disabled workers.

The return-to-work rates of disabled workers have become an issue of critical importance in the wake of the recent reform efforts. Senate Bill (SB) 899, enacted in 2004, made sweeping changes to the workers' compensation system, including a massive overhaul of the permanent-disability (PD) rating system. One consequence of the new disability rating system has been a dramatic reduction in benefits for disabled workers. SB 899 also included a number of provisions to improve return to work. If these reforms were effective at bringing workers back to work sooner, then improved outcomes for disabled workers could offset some of the adverse impact of the lower benefits. However, return to work is a complex process that involves many factors, and it is not fully understood exactly what role workers' compensation policy has in promoting improved return-to-work outcomes. Additionally, there were a number of other changes to public policies, in and out of the workers' compensation system, that happened at similar times and potentially confound any analysis of the impact of SB 899.

To assist policymakers in sorting through these different factors, this study provides a systematic analysis of return to work by disabled workers in the California workers' compensation system. To do so, we address the following broad set of research questions:

- How do public policies, both within and outside the workers' compensation system, influence return to work? How have these policies changed in California over the past ten years?
- How have rates of return to work by injured and disabled workers in California changed over the past ten years?
- What has been the impact of reforms to the workers' compensation system on the adequacy of benefits for injured and disabled workers? How, if at all, have changes in benefit adequacy been influenced by changes in return to work?

In order to address these questions, we analyze data from numerous sources using a variety of techniques.

Workers' Compensation Policy and Return to Work

This study reviews the role of public policy in promoting return to work. In the majority of cases, the return-to-work process is probably quite straightforward. There are circumstances, however, in which complications can arise, particularly if the recovery time for an injury is extensive. Perhaps the biggest complicating factor is when there is disagreement between the worker and either the employer or the worker's physician about the necessary recovery period and the extent to which the injury impairs the worker's ability to perform necessary job functions. Many workplace injuries involve factors that can be difficult to diagnose and quantify with current medical technology, leaving room for uncertainty and disagreement about what activities an injured worker can reasonably be expected to perform. In such situations, special measures might be called for to facilitate the injured worker's return to work in a timely but safe fashion.

The other payroll costs include such factors as the retraining and hiring costs of replacement workers.

We classify policy efforts to promote return to work into three broad categories: medical management–based, incentive-based, and accommodation-based approaches. The medical management approaches attempt to improve return to work by improving the quality and timely receipt of medical care or by improving coordination and communication with medical providers. Some reforms that target this involve assigning control of provider choice or directly regulating care through utilization review or treatment guidelines. The incentive-based approaches use financial rewards (or punishments) to influence the behavior of employers or the workers themselves, often by manipulating disability benefits based on return-to-work status. Finally, accommodation-based methods alter the requirements of the job—the schedule, the tasks required, or the physical environment—in order to make it easier for a disabled worker to perform the necessary tasks. Some states have adopted subsidies for employers, giving them incentives to provide accommodations in an effort to improve employment for disabled workers.

Over the past ten years, California has adopted reforms that affect all of these broad policy categories. In 2003, SB 228 made massive changes to medical treatment delivery for workers' compensation cases, including the adoption of utilization review based on treatment guidelines and caps on certain therapies. SB 899 enacted a two-tier PD benefit that requires employers to pay 15 percent higher benefits when they make no offer of return to work and 15 percent lower benefits if they do. It also created a subsidy program for worksite modifications made by small businesses, though this was a small program and never widely used.

There were also changes made outside the workers' compensation system. One important change occurred in 2001 with the passage of Assembly Bill (AB) 2222, which strengthened the protections offered by California's Fair Employment and Housing Act (FEHA). FEHA protects disabled workers against discrimination in the labor market, including the entitlement of the disabled to "reasonable" accommodations by employers. Employers that allegedly fail to make these accommodations could be subject to tort liability, giving them strong incentives to comply with the requirements of the law. Given that the law applies to workers who become disabled as a result of a workplace injury, we might expect FEHA to have an impact on return-to-work outcomes in workers' compensation PD cases. We show that the strengthening provisions of AB 2222 led to a large increase in the number of discrimination claims starting in 2002.

In addition to reviewing the policy changes, we surveyed employers about their perceptions of the importance of workers' compensation in terms of influencing their decisions to make return-to-work offers for disabled workers. Using a small, nonrandom sample of small, insured employers and large, self-insured employers, we find that workers' compensation costs do appear to have an impact on employer decisions. A large majority of both small and large firms report that workers' compensation costs are an important factor in shaping their employer-based return-to-work policies. A much smaller fraction reports that the public policy reforms that have been implemented are an important factor.

Recent Trends in Return to Work

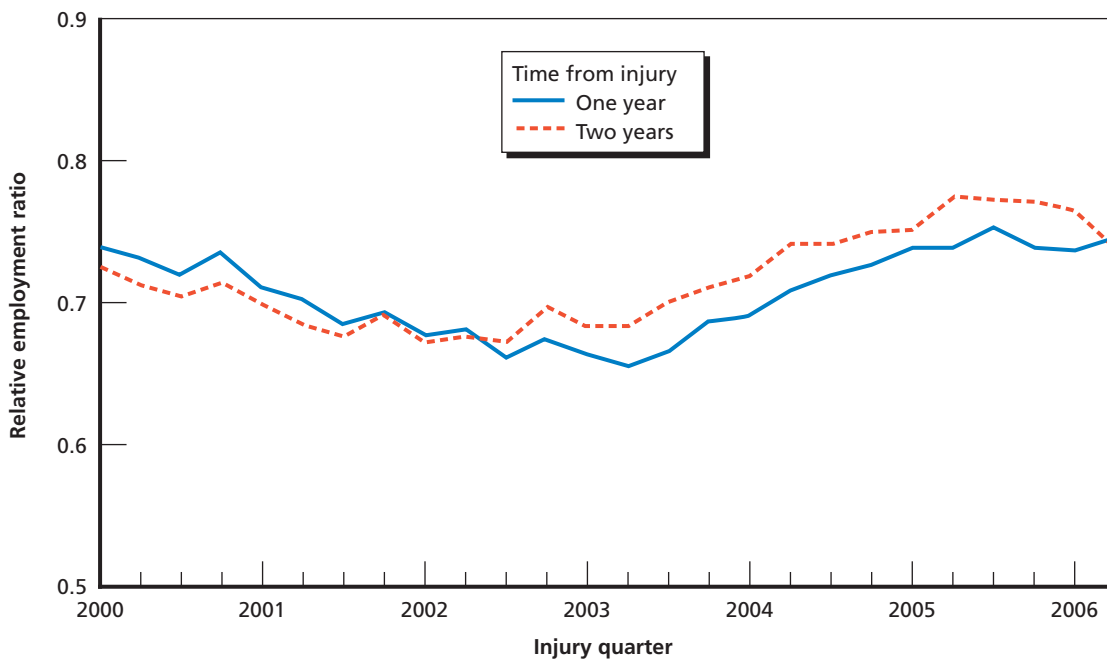
To evaluate the return to work of injured and disabled workers since the reforms, we analyzed data on workers' compensation claims for injured workers from 2000 to 2007 reported to the Workers' Compensation Insurance Rating Bureau (WCIRB) and Disability Evaluation Unit

(DEU). These data were linked to quarterly earning data from the Employment Development Department (EDD). Using methods developed in past RAND studies, we match injured workers to uninjured “control” workers to estimate the change in postinjury outcomes that are attributable to the injury. Matching to the control workers allows us to eliminate trends and other confounding factors that could influence disabled workers’ postinjury employment and earnings.

Figure S.1 reports the *relative employment ratio* of injured workers one and two years after injury, by quarter of injury. The relative employment ratio is defined as the ratio of the average employment of injured workers to that of their matched controls. So, a ratio of 1 means that injured workers are equally likely to be working after an injury, while a ratio of 0.5 means that they are half as likely to be working after an injury. We focus on relative employment at one and two years (four and eight quarters, respectively) after the quarter in which the injury occurs. The figure reports the average value of both one-year and two-year relative employment by quarter in which the injury occurs. The horizontal axis represents the year and quarter in which the workers were injured.

The figure shows a distinct pattern of postinjury employment over this time period. Workers injured in 2000 and 2001 appeared to have generally declining relative employment rates both one and two years after injury. Beginning in mid- to late 2002, however, the trend appeared to reverse, and return to work in the second year postinjury began to improve. Outcomes during the first year after injury began improving in early 2003. Workers injured in 2005 and the beginning of 2006 had higher relative employment on average at both one and two years after injury than workers injured in early 2000. Note that we also see more improvement for injured workers in the second year after the date of injury.

Figure S.1
Relative Employment One and Two Years After Injury, by Quarter of Injury

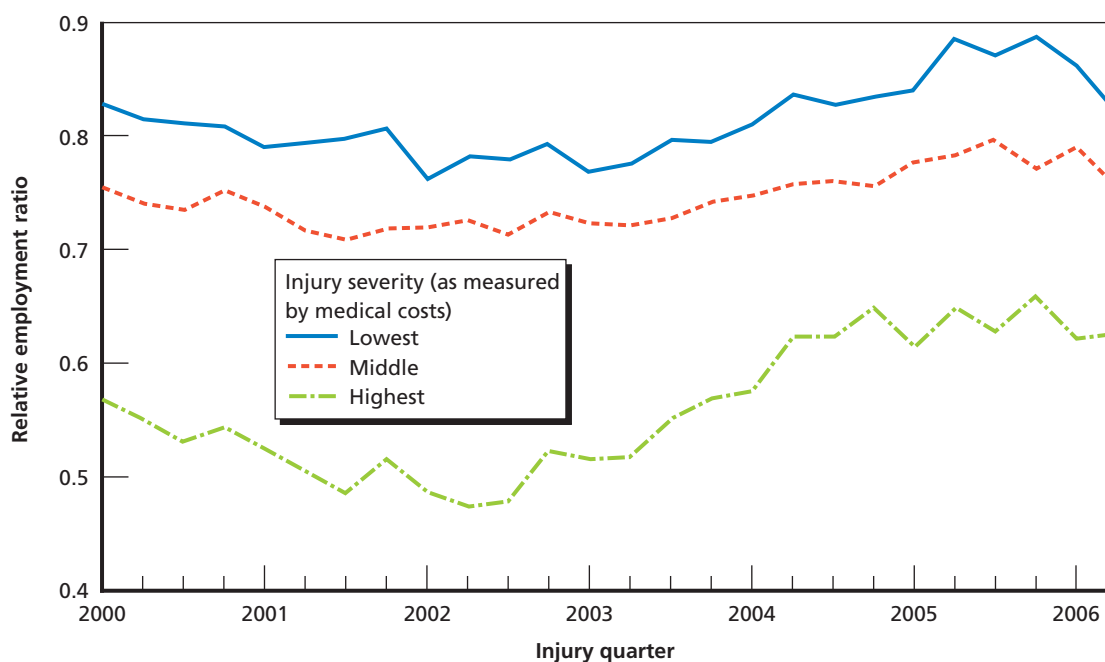


In Figure S.2, we report the trends in relative employment two years after the quarter of injury, by severity category, for workers in the WCIRB sample. Here we measure injury severity based on the distribution of medical costs of injured workers by quarter of injury. That is, workers are put in the lowest, middle, or highest severity category depending on whether they were in the bottom, middle, or top third of the distribution of medical costs for all other workers injured in the same quarter. As in Figure S.1, the horizontal axis represents the year and quarter in which the workers were injured.

The figure indicates that the overall trend in relative employment is most-clearly pronounced for workers with the most-severe injuries. While there appears to be some evidence of an overall decline and improvement in relative employment for workers in the lowest and middle severity categories, both the initial decline and subsequent increase were larger for workers in the highest severity category. Workers in the highest severity category who were injured in the first quarter of 2000 had relative employment of about 0.5 two years later, and this fell to just over 0.4 for workers injured in the third quarter of 2002. But workers injured in 2005 or early 2006 had relative employment close to 0.6 two years after the date of injury. Thus, the data suggest that the most-severely injured workers experienced the biggest gains in return to work over this period. These are the workers who have the worst postinjury outcomes, so this represents a significant improvement in return to work.

While Figure S.2 reports only results for all workers in the WCIRB sample, we verify that the trends are consistent if we use the DEU data (which include insured and self-insured employers) and focus only on permanently disabled workers. We also verify that we see the same trends if we restrict our attention to return to the at-injury employer. Additionally, we compare the results by firm size and find similar trends across small, medium, and large firms.

Figure S.2
Trends in Relative Employment Two Years After Injury, by Injury Severity



The trends post-2005 do appear most pronounced for medium-size firms, which is noteworthy because these were the firms that were most likely to be affected by the tiered benefit.

Given the multitude of reforms that occurred in the early 2000s in California, it is difficult to attribute the trends fully to any particular reform. The fact that the trend appears prior to 2004 indicates that the improvements were not driven by the return-to-work provisions of SB 899 (at least not entirely). The trend appears to be more likely to be influenced by other factors, such as changes to the medical treatment system, the strengthening provisions of FEHA, or simply employers' own efforts to improve return to work (e.g., in an effort to minimize costs).

Trends in Disability Benefits and Replacement Rates

The changes to the disability rating system, particularly the adoption of the American Medical Association *Guides to the Evaluation of Permanent Impairment* (AMA Guides) as the bases for ratings, were intended to make PD claims more-directly related to objective medical evidence.² One implication of this was that there was a general expectation that there would be a number of injured workers who would have received PD benefits under the old rating system that would no longer receive benefits. Figure S.3 compares the share of injuries in the WCIRB sample that involve permanent disability, by injury quarter for 2000–2006.

The figure indicates a steep decline in PD claims from 2000 to 2006, falling to about 80 percent of the 2000 level. Note that the high share is due to the fact that the WCIRB samples only relatively severe cases (expected benefits of \$2,000 or more). The decline is not closely associated with the adoption of the AMA Guides. There is an overall decline in the share of PD awards over the entire period, with the decline steepening somewhat for 2004 injuries. While we might have expected a sharper change, it is worth noting that the use of the new schedule was tied to the date of maximum medical improvement, not the injury date. Thus, it is likely that some injuries that occurred prior to 2004 were also affected by the new schedule.

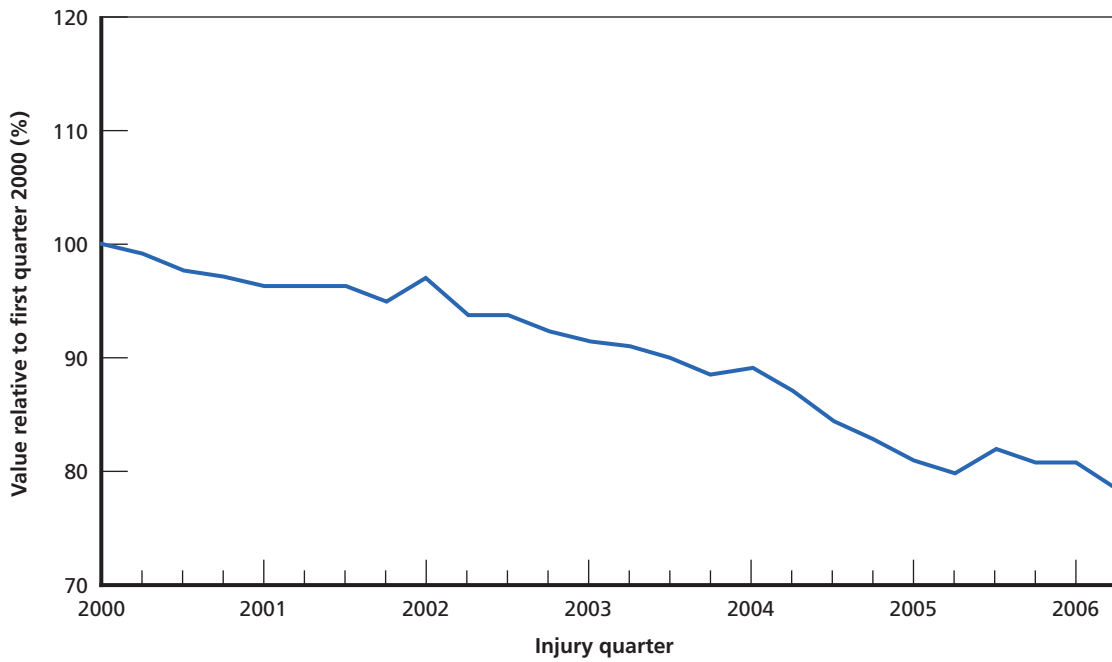
In Figure S.4, we compare the changes in indemnity benefits separately for temporary and permanent disabilities. Because the levels of benefits differ substantially between permanent and temporary claims, we normalize the vertical axis to the percentage value relative to first quarter 2000. That is, the level is 100 percent in first quarter 2000, and each subsequent quarter reflects the percentage value relative to the baseline year (so a 90 in a given quarter indicates a 10-percent decline in benefits from first quarter 2000).

As expected, the two types of injuries display substantially different time series. Temporary benefits rose somewhat from 2000 to 2003 and then dropped back off from 2003 to 2004. Note that this closely mirrors the trend in return to work over this period, and it ultimately leaves benefits mostly unchanged for temporary injuries from 2000 to 2006. For permanent disabilities, however, there was little growth from 2000 to 2003, and benefits were almost identical for injuries in third quarter 2003 as in first quarter 2000. After that, however, benefits for PD cases fall substantially, to about two-thirds of the baseline level by first quarter 2006.³

² California's old rating system was widely believed to be more subjective than the AMA Guides. See Reville, Seabury, et al. (2005) for a discussion.

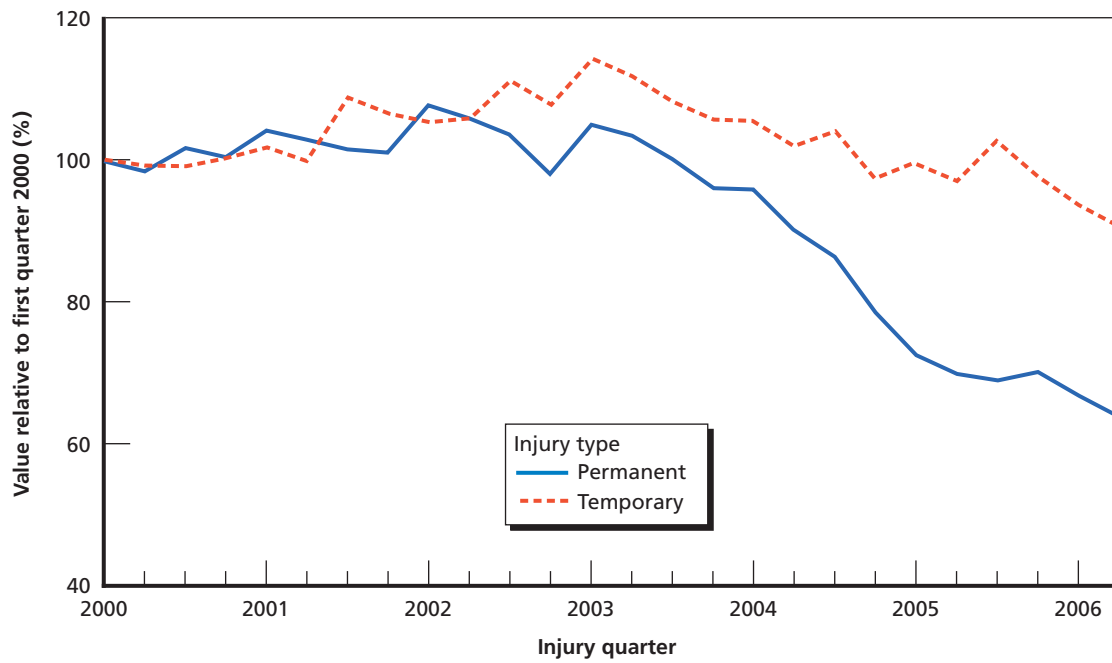
³ It is important to note that the entire decline in benefits cannot be attributed to changes to the PD rating schedule. Vocational rehabilitation benefits represented a significant portion of the total indemnity benefit for permanently disabled

Figure S.3
Change in the Share of Claims Involving Permanent Disability, by Injury Quarter, First Quarter 2000 Baseline



RAND MG1035-S.3

Figure S.4
Change in Incurred Indemnity, by Type of Injury and Injury Quarter, First Quarter 2000 Baseline



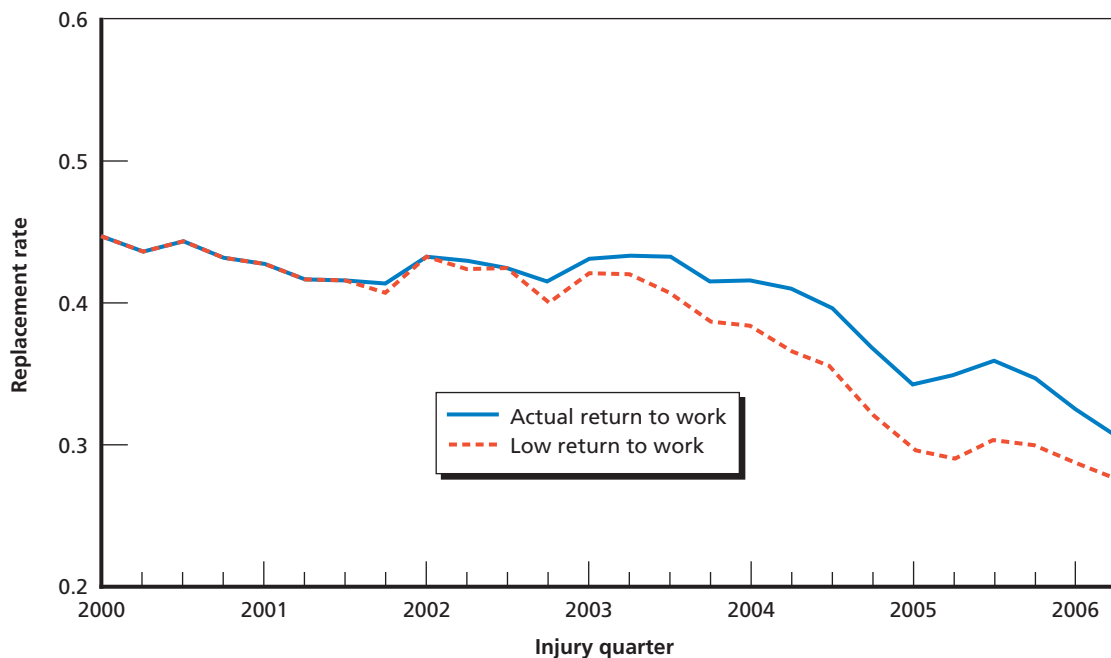
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To truly evaluate the impact that declines in disability benefits had on injured and disabled workers, we need to compare the disability benefits to earning losses. The *replacement rate* of lost income is the fraction of earning loss that is replaced by workers' compensation indemnity benefits. A key limitation of our data, however, is that we have only a restricted window of postinjury earning data with which to estimate losses for the later injuries in our sample. In particular, for injuries in 2006, we have just two years of postinjury losses to examine. In order to evaluate the reforms' impact on income replacement, we use a statistical model to forecast the five-year earning losses to injured workers.

An advantage of our approach is that it allows us to quantify how much of an effect the return-to-work gains had on earning losses and replacement rates. Because we are predicting losses as a function of observed return-to-work rates, we can simulate what the losses would have been had we not observed any improvement in average return-to-work rates. We do this by fixing the two-year employment of individuals at the average rate for the quarter with the worst observed return to work—third quarter 2001—and recalculating the predicted losses and replacement rates while holding return to work fixed at this low level for all subsequent quarters.

Figure S.5 reports the simulated five-year replacement rates of lost income for the full set of injuries in the WCIRB sample. We report the estimated replacement rates using the actual return-to-work rates and the return-to-work rates fixed at the low, 2001 level. The replacement rate was fairly stable over time from first quarter 2000 through third quarter 2004, with the replacement rate ranging from 0.40 to 0.45 in all quarters. After that, replacement rates drop sharply, falling to 0.35 for first quarter 2005 injuries and close to 0.30 for second quarter 2006 injuries.

Figure S.5
Simulated Replacement Rate of Lost Income Five Years After Injury, Full Set of Claims

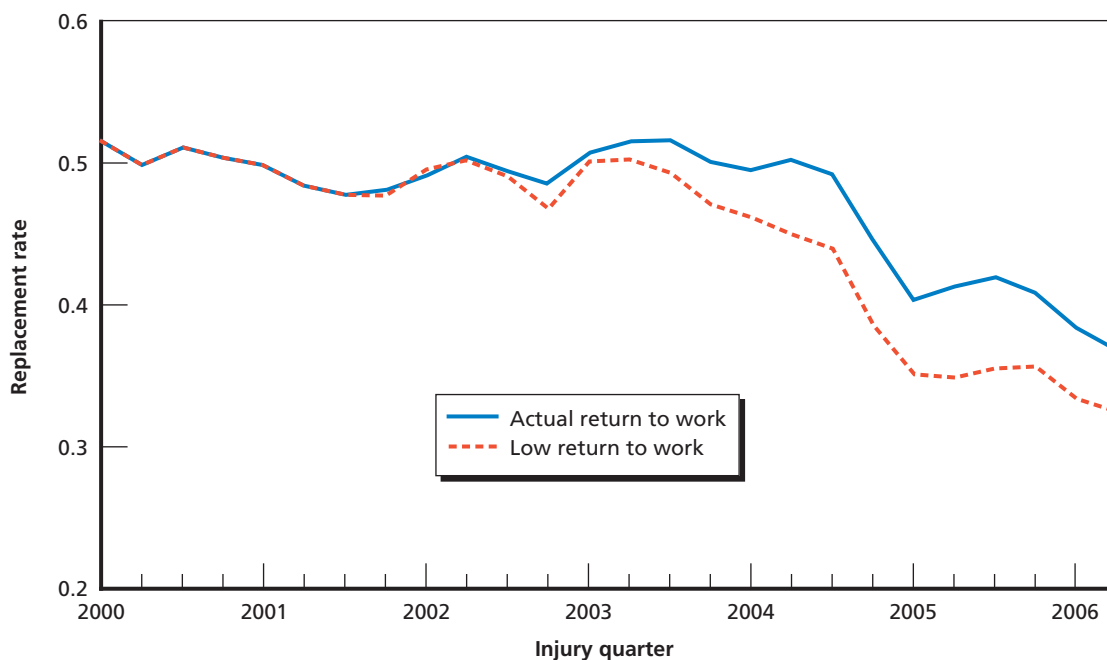


While the decline in income replacement was severe, the figure shows that it would have been even worse had return to work not improved. At the low return-to-work rate, the replacement rate fell to about 0.3 for the first quarter 2005 injuries and dipped below that for injuries in 2006. There is a consistent difference between the two series of about 5 percentage points from 2004 to 2006, suggesting that replacement rates were 20 percent higher than they would have been because of the improvements in return to work.

Figure S.6 reports the trend in simulated five-year replacement rates if we restrict the sample to only PD claims. The figure shows that, as we saw with the full set of claims, the replacement of lost income was very consistent prior to 2005. From first quarter 2000 through second quarter 2004, the replacement rate was very stable at close to 0.5. For injuries in 2005 and later, however, the replacement rate drops sharply to 0.4, and to 0.37 in second quarter 2006. This represents a decline of about 26 percent.

Again, as steep as the decline in income replacement was, the impact would have been even greater absent the improvements to return to work. Holding return to work fixed at the low level, replacement rates fell by as much as 6 percentage points more. On average, the improvements to return to work made the replacement rates about 15 percent higher than they would have been otherwise. In the monograph, we also compare replacement rates by injury severity and find that the biggest declines in replacement rates are experienced by workers with the most-severe injuries. This is not too surprising, given that these are the workers who are most affected by the changes to the PD benefits. But it does suggest that, even though they have the biggest improvements in return to work, the improvements are not enough to offset the declines in benefits.

Figure S.6
Simulated Replacement Rate of Lost Income Five Years After Injury, WCIRB Sample, Permanent-Disability Claims Only



While the adoption of the AMA Guides led to a sharp decline in average disability ratings of permanently disabled workers, there is some question as to what extent this decline will persist over time. It has been argued that PD ratings have been increasing over time due to the application of different standards of interpretation. We used data from the DEU for injuries from 2006 to 2009 to see whether there was an increase in disability ratings over time. In fact, we do find some evidence of an increase, with ratings rising at about 8–10 percent per year from 2007 to 2009. This offset about a third of the decline in the level of PD awards for which workers are eligible, with a decline of 40 percent from 2004 as opposed to the 60 percent that was observed immediately after adoption of the new schedule.

Conclusions

This monograph identifies several important trends in return to work for disabled workers in California over the past decade. Return-to-work outcomes improved considerably for workers injured from 2002 to 2005. Moreover, the biggest gains were experienced by workers with the most-severe injuries. We saw gains in overall employment and in employment for the at-injury employers. These trends were consistent across different data sets and specifications and for workers injured at different-sized firms. The trends also appear statistically significant when we control for other characteristics of individuals and their injuries and for economic conditions. Overall, the improvements in return to work represent a significant gain for disabled workers.

Our results do not pinpoint exactly why return to work improved so much. Our findings indicate that return to work was improving even before the SB 899 reforms were adopted. Workers injured in 2003 and 2004 were not eligible for the tiered benefit, so that is unlikely to be a driving factor behind the observed trend (though there is some evidence that the tiered benefit had an effect on a subset of employers). We also find that return to work improved relative to uninjured controls, so it was not due to other factors, such as improving labor markets. The timing of the trend suggests that changes to FEHA or the adoption of medical treatment guidelines could have had an effect.

The findings suggest that, despite the return-to-work gains observed, the adequacy of benefits has fallen since the adoption of the reforms. Indemnity benefits fell dramatically, and most of the decline was experienced by workers with permanent disabilities. The reforms also appear to have led to a decline in the fraction of workers who receive PD benefits. The decline in indemnity benefits led to a decline in the average replacement rate of lost income. Replacement rates fell about 26 percent, on average. The gains in return to work helped offset some of the declines, but not all. We estimate that, if return to work had stayed at its lowest point, replacement rates would have fallen 15 percent more than they ultimately did. We also found that the declines in replacement rates were experienced most profoundly by the most-severely disabled workers. This suggests that an increase in benefits would be necessary to return replacement rates to their previous levels and maintain the previously established adequacy level. In the monograph, we discuss how benefits could be improved while still maintaining incentives that promote return to work.

Our findings also suggest a need for further monitoring of the system and explorations for other methods to improve return to work. We find some evidence of increasing disability ratings over time, which could offset some of the decline in benefits discussed in this monograph. We also find that more work is needed to understand the trends in return to work, including

further exploration of the role of the medical treatment reforms. Finally, we would encourage a greater exploration of the potential gains from further integration of the occupational and non-occupational systems that affect return to work of disabled workers. In particular, the overlap between the California FEHA and the Americans with Disabilities Act (ADA) appear significant, and more work needs to be done to understand whether the return-to-work principles in these systems could be used to improve outcomes for workers' compensation claimants.

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Abbreviations

AB	assembly bill
ACOEM	American College of Occupational and Environmental Medicine
ADA	Americans with Disabilities Act
ADAAA	ADA Amendments Act
AMA Guides	American Medical Association <i>Guides to the Evaluation of Permanent Impairment</i>
BLS	Bureau of Labor Statistics
CHSWC	California Commission on Health and Safety and Workers' Compensation
CPS	Current Population Survey
CSBA	California Small Business Association
CSIA	California Self-Insurers Association
DEU	Disability Evaluation Unit
DFEH	Department of Fair Employment and Housing
DIR	Department of Industrial Relations
DOI	date of injury
DWC	Division of Workers' Compensation
EAIP	Employer-at-Injury Program
EDD	Employment Development Department
EEOC	U.S. Equal Employment Opportunity Commission
FEC	future earning capacity
FEHA	Fair Employment and Housing Act
GAO	U.S. General Accounting Office
JPA	joint public authority

MMI	maximum medical improvement
MMIC	Multimode Interviewing Capacity
MPN	medical provider network
MTUS	Medical Treatment Utilization Schedule
OMFS	Official Medical Fee Schedule
P&S	permanent and stationary
PD	permanent disability
PDRS	permanent-disability rating schedule
PPD	permanent partial disability
PWP	Preferred Worker Program
SB	senate bill
SIF	second-injury fund
SJDB	supplemental job displacement benefit
SSN	social security number
TTD	total temporary disability
UI	unemployment insurance
USR	unit statistical reporting
USRP	Uniform Statistical Reporting Plan
VRMA	vocational rehabilitation maintenance allowance
WCAB	Workers' Compensation Appeals Board
WCIRB	Workers' Compensation Insurance Rating Bureau

Introduction

Background and Purpose of Study

Workers' compensation in California provides benefits in the form of wage replacement and medical care to those who suffer workplace injuries and illnesses. There are a number of ways to measure the effectiveness of a workers' compensation system, but two that are widely accepted as being among the most important are the *adequacy* and the *affordability* of the system (see Thomason, Schmidle, and Burton, 2001; Reville, Seabury, et al., 2005). Generally speaking, *adequacy* reflects the extent to which indemnity benefits compensate an appropriate amount of worker earnings lost from a workplace injury. *Affordability* reflects the extent to which workers' compensation benefits, including the delivery costs, affect the cost to employers.

In California and in many other states, compensation for injured workers with permanent partial disabilities has been the most-expensive portion of the indemnity benefits, and the most-controversial part of the system. A number of studies by RAND for the California Commission on Health and Safety and Workers' Compensation (CHSWC) concluded that California's permanent partial disability (PPD) benefit levels fell short of the generally accepted two-thirds income-replacement level of adequacy (Peterson et al., 1998; Reville, Schoeni, and Martin, 2002; Reville, Polich, et al., 2001). This was despite the fact that the average benefit levels and costs in California were the highest in the country (Reinke and Manley, 2003).

The poor adequacy and poor affordability of the California PPD system were both key factors in the multiple efforts to reform workers' compensation in California in the early 2000s. Unfortunately, the most-obvious solutions to the two problems are somewhat contradictory: Cutting benefits would make the system more affordable but also reduce benefit adequacy. Similarly, increasing benefits would improve adequacy but make the system more expensive. It is possible, however, to improve the adequacy of workers' compensation benefits without necessarily harming affordability. One important mechanism through which the system could achieve improvements along both dimensions is by improving the return to work of permanently disabled workers.

Prior RAND studies found that earning losses for PPD recipients in California were higher than in other states in large part because a sizable fraction of workers did not return to work after a disabling injury. Return to the at-injury employer after an injury is associated with a substantial reduction in the long-term earning losses from disability.¹ The reduction in

¹ For example, Reville, Seabury, et al. (2005) found that workers who returned to the at-injury employer within two years of an injury had nearly 60 percent lower earning losses five years after an injury.

earning losses leads to an increase in replacement rates, suggesting an improvement in benefit adequacy.

Improved return to work can benefit employers, as well, through a number of mechanisms. These include reducing temporary- and permanent-disability payments,² reducing retraining costs and the lost employer investments in trusted employees, and reducing the potential for an adversarial relationship with the injured workers (which could lead to costly litigation). Together, this suggests that, if return to work were sufficiently improved, the system could be made more affordable while still leading to improved adequacy of benefits.

The notion that improving return to work could make the system more affordable while also improving benefit adequacy motivated many of the reforms to the California workers' compensation system enacted in 2004 by Senate Bill (SB) 899. Some aspects were intended to reduce alleged inefficiencies and waste in the medical treatment and evaluation of permanent disabilities, while others specifically affected the amount and type of compensation awarded to permanent-disability (PD) claimants. One of the latter was the introduction of a two-tier PPD benefit that is tied to return to work: PPD benefits decrease 15 percent when employers make a qualified return-to-work offer and increase 15 percent when they do not.³ In theory, the two-tier benefit structure provides employers with incentives to make special accommodations and to rehire disabled workers when doing so would not have been cost-effective otherwise.

These policies' impact on the level of return to work has critical implications for assessing the overall effect of SB 899 on injured workers, because the reforms led to a significant reduction in PPD benefits paid. Estimates suggest that PD benefits have fallen by 50 percent or more since the adoption of the reforms. While we would expect such a sharp decline to lead to a significant reduction in replacement rates, the full effects on benefit adequacy cannot be known unless we know how much the reforms affected return to work and how much the change in return to work offset the decline in benefits.

Assessing the reforms' impact on benefit adequacy and return to work is challenging because the reforms did not occur in a vacuum. There were a number of direct reforms to the workers' compensation system in California prior to SB 899 that could have influenced return-to-work rates (either positively or negatively). There are also other public policy changes that might influence return to work for workers' compensation claimants occurring at the same time, potentially confounding an analysis of the impact that the workers' compensation reforms have had on return-to-work trends. More generally, return to work after an injury is the outcome of a complex process between employers and injured workers. The incentives embedded in the workers' compensation system and other public policies represent just one element that goes into this process.

To assist policymakers in sorting through these different factors and to understand the reforms' impact on injured workers, this study provides a systematic analysis of return to work by workers' compensation claimants in California. We review the key policies that affect return to work for disabled workers, both within and outside the workers' compensation system, and we examine how employers perceive the importance of workers' compensation reforms in driv-

² Most firms in California insure their workers' compensation benefits, meaning that they do not directly pay for the benefits. However, lower benefits still reduce employer costs by reducing the amount they pay in insurance premiums.

³ The tiered benefit is enacted in California Labor Code §4658. We discuss the specific requirements in detail in Chapters Two and Three.

ing return-to-work decisions. We combine this with an empirical analysis of data on return-to-work rates and disability benefit levels in California over the past ten years.

Research Questions

In order to understand the role of workers' compensation reforms on the return-to-work rates of injured and disabled workers in California, and the implications for the adequacy of disability benefits, we address the following broad set of research questions:

- How do public policies, both within and outside the workers' compensation system, influence return to work? How have these policies changed in California over the past ten years?
- How have return-to-work rates of injured and disabled workers in California changed over the past ten years?
- What effect have reforms to the workers' compensation system had on the adequacy of benefits for injured and disabled workers? How, if at all, have changes in benefit adequacy been influenced by changes in return to work?

Organization of This Monograph

In Chapter Two, we describe some of the challenges to promoting return to work and discuss how public policy can be used to improve outcomes for injured workers and employers. We categorize return-to-work policies based on reforming the delivery of medical care, accommodating disabled workers, and providing incentives to either workers or employers to improve return to work. This analysis highlights the fact that there are multiple factors affecting return to work and describes how the process can be influenced by changes to workers' compensation policy.

In Chapter Three, we discuss the recent reforms to the workers' compensation system in California and how these reforms might affect return to work. We discuss both the theoretical impact on return to work and some of the practical issues with the implementation of the policies that could influence how effective these policies are. In Chapter Four, we provide a similar analysis, except that we discuss the impact of changes to the California Fair Employment and Housing Act (FEHA). FEHA offers protection to workers against discrimination on the basis of disability, among other things. While such improvement is not the express purpose of the law, we describe how the recent changes could improve return to work by workers who were disabled as a result of a workplace injury.

Using public policies to promote return to work will be effective only to the extent that employers recognize and respond to the incentives provided. In practice, it is unclear how responsive employers are, particularly smaller employers that are not experience rated and have less familiarity with the workers' compensation system. In Chapter Five, we provide some suggestive evidence about employer perceptions of the importance of workers' compensation policy in driving decisions on employee return to work.

Chapter Six describes our findings on return-to-work trends by disabled workers who were injured from 2000 to 2006. In this work, we use methods developed by RAND in past

CHSWC studies to examine the economic outcomes of disabled workers after an injury. We compare the average return-to-work rates for injured and disabled workers over time based on the date of injury and across different characteristics, such as the severity of injury.

Chapter Seven extends this analysis to consider the trend in income replacement over this same time period. SB 899 and other reforms made several changes to the level of disability benefits paid to injured workers. As a result, it has been shown that the average level of disability benefits has fallen. In this chapter, to assess benefit adequacy since the reforms, we compare the decline in disability benefit levels with the changes in return to work. Importantly, our method allows us to estimate how much the adequacy of income replacement actually changed and how much it would have changed in the absence of the changes in return to work that we identify in Chapter Six.

In Chapter Eight, we discuss the policy implications of our findings. Appendix A provides some additional technical details of our analysis, and Appendix B reproduces our survey form.

Return to Work as a Public Policy Challenge

At first glance, it seems that the return-to-work process should be relatively straightforward. A worker who is injured receives medical treatment and, if necessary, will remain out of work during recovery. Physicians monitor the injured worker's progress, and, when it is determined that he or she has sufficiently recovered, the worker will return to work. In the event that the worker is permanently disabled and unable to meet the demands of his or her preinjury occupation, the worker will have to search for a new job, either with the original employer or with a new firm altogether. In fact, if work absences have costs for both employers and workers, so that both parties have incentives to facilitate return to work, it is not immediately clear why we would even need policies that promote return to work.

In the majority of cases, the return-to-work process is probably quite straightforward. Most workplace injuries are relatively minor and are resolved with minimal work interruption.¹ However, there are still a significant number of injuries that involve lost workdays, and there are circumstances in which complications can arise, particularly if the recovery time for an injury is extensive. Perhaps the biggest complicating factor is when there is disagreement between the worker and either the employer or the worker's physician about the necessary recovery period and the extent to which the injury impairs the worker's ability to perform necessary job functions. The primary reason these complications arise is that many workplace injuries involve factors that can be difficult to diagnose and quantify with current medical technology, leaving room for uncertainty and disagreement about what activities an injured worker can reasonably be expected to perform. In these and similar situations, public and private policies are needed to facilitate the injured worker's return to work in a timely but safe fashion.

Defining and Measuring Return to Work

In some cases, there is uncertainty about exactly what the term *return to work* actually means. In the simplest case, a worker returns to work when he or she goes back to the preinjury job. However, if a worker suffers permanent residual impairment that affects the set of tasks that he or she can perform, this definition has little practical use. Suppose that a worker has been offered a job at only a fraction of their preinjury wage. Alternatively, suppose the worker goes back to the same job at full pay but for only one week before leaving again. Clearly, some dis-

¹ The Bureau of Labor Statistics (BLS) reports that, in 2007, 1.2 million of the 4 million total reported injuries involved lost workdays. For the lost-workday cases, the median number of days away from work was seven, implying that 15 percent of total reported injuries involve more than seven days of lost work time (Bureau of Labor Statistics, 2008).

inction needs to be made between brief periods of work at significantly lower wages and a sustained return to work with earnings close to the preinjury level.

The California Labor Code defines three levels of return to work: regular, modified, and alternative work. *Regular work* is defined as the usual occupation or position at which the worker was employed at the time of injury, with an equivalent level of compensation. *Modified work* is the same occupation or position but modified in such a way that the employee can fulfill the necessary job functions. To qualify as modified work, the compensation offered must equal 85 percent of the preinjury level. *Alternative work* is a different position or occupation that involves job tasks that the worker can perform and that offers at least 85 percent of the preinjury compensation level.²

While these definitions are used by the California workers' compensation system to define an acceptable return-to-work offer, they do not necessarily apply in other areas of the legal system. Both the Americans with Disabilities Act (ADA) and FEHA require employers to make "reasonable accommodations" for disabled workers, including those who become disabled due to a workplace injury. However, neither act provides employers with specific rules or guidelines about what constitutes "reasonable" for a particular case.

The lack of a single, clear definition of return to work makes it a challenge to measure empirically. Given the available information about injured workers' postinjury employment outcomes, we might measure the date of return to work as that point at which we first see the worker with gainful employment. However, it has been shown that injured workers often experience "spells" in which they enter or exit the labor force (Butler, Johnson, and Baldwin, 1995). This suggests that successful return to work is a process and that, in order to properly evaluate injured-worker outcomes, it is necessary to consider some measure of sustained return to work. For the purpose of determining workers' compensation benefits in California, modified or alternative work must be offered for a minimum period of at least 12 months to qualify as a legitimate offer.³

Focusing on sustained periods of postinjury employment helps address the possibility that disability can lead to an increase in transitions in and out of the labor force. However, in many cases, it can be challenging to determine the underlying causality of labor-force absences. Simply focusing on sustained periods of postinjury employment neglects the fact that, in some cases, injured workers might have exited the labor force for reasons completely unrelated to the work injury. This can lead to other administrative problems, such as how to treat a modified-work offer that is terminated with cause after six months.

Ultimately, there is probably no perfect measure of return to work that encompasses all scenarios. In this monograph, we use several empirically based measures of postinjury employment and indicate the extent to which they are indicative of immediate or sustained return to work.

² These requirements are defined in California Labor Code §4658.1.

³ If a worker accepts a qualified offer and the job does not last for 12 months (say, because the employee is fired), the employer's liability begins anew.

Methods for Improving Return to Work

Given the challenges in defining and measuring return to work, it should come as no surprise that the approaches to improving it vary significantly. In this chapter, we discuss some of the commonly used methods to improve return to work. This is by no means intended to be a comprehensive review of disability management practices. We simply wish to outline a common framework for thinking about the many different interventions that are used to improve employment outcomes for the disabled.

It is useful to separate return-to-work efforts into three broad categories: *medical management based*, *incentive based*, or *accommodation based*. Some policies will inevitably fit into more than one of these categories, but the categories highlight how different policies target different aspects of the return-to-work process. We discuss each in turn.

Medical Management–Based Approaches

It has become widely accepted that physicians play a central role in the return-to-work process. Ultimately, it is a physician's judgment of an injured worker's health and recovery that paves the way for return to work. However, the fact that physicians play a central role in the return-to-work process does not necessarily mean that promoting return to work is one of their priorities. Thus, a number of reform efforts to improve return to work target the health care and medical management provided to injured workers.

Broadly speaking, there are three different ways to try to affect return to work through medical care:

- Reduce the delay until an injured worker receives care.
- Control who provides care to the injured worker.
- Influence the type and nature of care that is provided to the injured worker.

The first of these is largely an issue for traumatic injuries and accidents that require emergency care. If workers routinely faced the risk of such accidents, then one intervention an employer might consider would be to provide some kind of on-site emergency care. This type of effort is less relevant for chronic injuries and illnesses, which are generally of greater concern in terms of unnecessarily long work absences and high costs.⁴ For this reason, a majority of efforts to improve return to work through medical care focus on the latter two approaches.

The second approach focuses on controlling who provides care to the injured worker. Most policies that affect physician selection enhance the employer's ability to influence the injured worker's choice of physician. The physicians providing treatment have considerable say over the length of work-injury absences, the number of restrictions (if any) that the injured workers has if and when he or she returns, and whether the injured worker has any permanent residual impairment. Because of this, the choice of physician can have a profound impact on

⁴ While it is not as relevant for chronic injuries and illnesses as for traumatic injuries, there are still benefits to initiating early care for conditions that are likely to lead to cumulative injuries, such as musculoskeletal disorders. For instance, Zigenfus et al. (2000) found that initiating early physical therapy treatment after the onset of a work-related musculoskeletal disorder improved return-to-work outcomes and reduced total treatment costs.

the outcome for the injured worker. This can be particularly important in workers' compensation, because the treating physicians' opinions are sometimes given special legal weight.⁵

The issue of controlling who provides care to an injured worker is predicated on the idea that some physicians will be better than others in terms of promoting return to work. One reason for this could be familiarity with the system. Workers' compensation claims are relatively infrequent, so most physicians probably have relatively little experience with the system. Such physicians might not fully understand the ramifications of delayed return to work and thus fail to give it appropriate emphasis.

The third strand of medical management–based reforms centers on directly influencing the behavior of physicians. There are two primary ways in which policymakers can intervene to try to influence treatment patterns to improve return to work:

- Impose treatment guidelines.
- Improve communication between physicians, patients, and employers.

Here, we use the term *treatment guidelines* to broadly refer to the imposition of rules or guides that suggest specific patterns of medical care for patients based on their diagnoses. Essentially, treatment guidelines outline best practices for medical treatment for providers. They are often adopted as tools for reducing health care expenditures by curbing what is presumably unnecessary utilization. Treatment guidelines have the potential to improve quality of care by providing physicians with clear information about which treatments are appropriate, which, in turn, helps reduce errors. Getting injured workers better care early on should help improve their outcomes and speed their recovery, allowing them to return to work sooner and to avoid relapse or reinjury.

In practice, it is unclear whether treatment guidelines have the desired effect on return to work. See Nuckols et al. (2005) for a detailed account of the use of treatment guidelines in workers' compensation systems. They note that, in some cases, the medical review process associated with guideline adoption can sometimes delay treatment and return to work. In addition, their review of five existing guidelines found that all of them were “weak” in terms of discussing return to work.

Another way policymakers can intervene to try to influence treatment patterns to improve return to work through medical management–based reforms is by improving communication among physicians, patients, and employers. Communication between treating physicians and injured workers can be a critical factor in promoting return to work. However, evidence suggests that there are communication flaws between the parties. For instance, Christian (2000) surveyed occupational medical physicians and found that most believe that a majority of the time that injured workers remain out of work is not medically necessary. The most-common reason cited for the unnecessary time out of work was physicians' reluctance to force injured employees back to work before they are ready.

The American Medical Association publishes a guide to return-to-work issues that discusses why physicians might be reluctant to push injured workers to return (Talmage and Melhorn, 2005). In many cases, there will not be a clear scientific basis for making the assessment. This can lead to disagreement between the physician and the patient, which can disrupt their

⁵ The treating physician's opinion had been presumed to be correct in workers' compensation cases in California, but this presumption was repealed from the Labor Code in 2003 by SB 228 (Labor Code §4062).

relationship and take time to resolve (time that is often not reimbursable). And such problems are likely only exacerbated when the employer becomes involved, because there can be conflicting interests (and potentially a lack of trust) between the worker and his or her employer.

Improving communication between physicians, injured workers, and their employers could presumably alleviate some of these frictions, but it is not always clear how to improve communication through policy. One option might be to provide clearer guidance to physicians about how to define such things as work capacity and functional status. Often, understanding the physical requirements of the job is necessary to make a return-to-work determination, but these can be difficult to define, or even litigated over. Ultimately, providing physicians with better information and encouraging them to think about return to work and make it a priority in the treatment decisionmaking process are important steps to getting injured workers back to gainful and sustained employment.

Incentive-Based Approaches

Incentive-based approaches attempt to structure incentives, for both workers and employers, in such a way that they improve return to work outcomes. For example, a simple model of firm behavior would posit that an employer will retain a disabled worker if the postinjury level of productivity that the worker adds is greater than the expected cost of employing the worker (including, e.g., wages, benefits). A worker will accept the offer to return to work if the expected benefit is greater than the alternative, either staying out of work or accepting alternative employment. Incentive-based policies that target the employer are designed to raise the net expected benefit of making an offer to employ the disabled worker; similarly, policies that target the employee either raise the expected benefit to the employee of accepting the job or lower the value of the alternative options.

The three primary policy levers that are used to enhance the incentives for workers and employers to improve return to work are

- incorporating a tiered benefit system
- providing direct subsidies or penalties
- utilizing second-injury funds (SIFs).⁶

One of the most-common ways to affect return-to-work incentives is through some form of a tiered system of benefits for temporary or permanent disability. A tiered benefit system offers combinations of higher benefits to workers who do not receive an employment offer and lower benefits to those who do. This benefit schedule imposes a penalty on employers that fail to offer to rehire a disabled worker, by essentially taxing them with higher benefits. By increasing the net benefit to employers of retaining injured workers, the tiered benefit system can, in theory, lead to improvements in return to work. Tiered benefit systems have been implemented in some form or another in such states as Kansas, Kentucky, Louisiana, New Mexico, Oregon, Tennessee, and Wisconsin. And, as we discuss in the next chapter, California adopted a tiered benefit system with the passage of SB 899.⁷

⁶ Another common name for SIFs is *subsequent-injury fund*.

⁷ This information on different state policies regarding return to work was informed by an earlier, unpublished RAND study (Reville, Weinstein, Studdert, and Welch, 2001).

Although, theoretically, the tiered benefit system can lead to improvements in return to work, on the surface, it appears to offer adverse employment incentives for workers. Raising benefits for individuals who are not working postinjury can give them incentives to delay returning to work. This is a common criticism of “wage loss” systems for determining disability benefits.⁸ In practice, the standard approach to overcoming this problem is to tie the benefit to the *offer* of employment. That is, if an employer makes an offer of employment that meets the established criteria, it is typically obligated to pay only the lower benefit tier, regardless of whether the employee accepts the offer. For example, workers injured in New Mexico receive lower benefits if they refuse a return-to-work offer than if they accept the offer.⁹ When structured in this way, a tiered benefit system can actually increase the incentives of workers to return to work (at least conditional on the offer of employment).

One potential obstacle to the effectiveness of a tiered benefit system is the mitigating effect of insurance. An employer that is self-insured covers its workers' compensation costs directly, so it will realize the full gains of paying lower disability benefits. However, when an employer insures its workers' compensation obligations through another means, the channel through which the tiered benefit operates can be muted. For instance, if a firm is experience rated, then paying lower benefits now should lower future expected insurance premiums. But, most insured firms are imperfectly experience rated, so a tiered benefit system's impact on incentives would be proportional to the degree of experience rating.

There are other problems that could arise due to a tiered disability benefit system. One challenge lies in determining what constitutes an acceptable employment offer. The California Labor Code uses the definitions described earlier, but these can be subject to interpretation when they involve the appropriateness of the job activities given the injured worker's disability. If the definitions are subjective enough that they lead to considerable legal dispute, the uncertainty would reduce or eliminate whatever positive gains to return to work we might expect to see in theory.¹⁰

Other policies enhance employers' incentives to hire disabled workers through more-direct subsidies or penalties. For instance, Oregon offers a wage subsidy to employers hiring injured workers through either of two programs: the Employer-at-Injury Program (EAIP) and a Preferred Worker Program (PWP). The EAIP offers up to 50 percent of preinjury wages for 66 days over a 24-month period to an employer offering modified work to its injured workers. For disabled workers who cannot return to their preinjury job, Oregon's PWP offers up to a 50-percent wage subsidy for up to six months. In 1990, New Mexico adopted a policy requiring that an employer “shall offer to rehire” a worker with an injury compensable under workers' compensation if it is “hiring” (§52-1-50.1[A] of the 1990 New Mexico Workers' Compensation Act). Failure to comply can result in a fine, though it is unclear that this provision has been applied very often (Reville, Boden, et al., 2001).

⁸ See Berkowitz and Burton (1987) or Reville, Seabury, et al. (2005) for detailed descriptions of the different systems for defining disability benefits.

⁹ A more-extreme example is found in Michigan, which requires that the employer pay benefits indefinitely as long as a worker experiences some form of wage loss (because the worker is not working or is working or earning less) but allows the employer to terminate benefits for a worker who refuses reasonable work offers. This is not exactly the same as a tiered benefit system, but it does (at least in theory) give employers the incentive to make return-to-work offers to close claims.

¹⁰ Another set of issues arises with defining the appropriate timing of an offer, which we discuss in the next chapter.

Another common approach to enhancing employer incentives to hire disabled workers is through SIFs. SIFs were designed to alleviate a perceived employer reluctance to hire workers previously disabled by workplace injuries, under the assumption that they were more vulnerable to a subsequent injury. SIFs offer partial reimbursement to employers hiring workers with a preexisting condition based off a prior injury. For example, Washington has a PWP that protects employers from paying any injury-related costs or suffering any experience-rating effects for injuries to a designated preferred worker that occur within the first three years after hiring. Historically, SIFs were very common, but a large number have been eliminated in recent years due to a desire to cut costs and a lower perceived need after the introduction of the ADA (Uehlein and Nevils, 2008).

Accommodation-Based Approaches

Broadly speaking, *accommodations* refers to some modification or set of modifications that employers make to the work environment in order to make it easier for disabled workers to function in the workplace. We group these accommodations into four broad categories:

- allowing the injured worker to work reduced hours or follow a modified work schedule
- allowing the worker to transition to a different job in the same firm, either temporarily or permanently
- modifying the required work tasks while keeping the worker in the same job
- making physical modifications to the workstation or changing the equipment used.

It is easy to see how each of these could improve return to work. Providing scheduling modifications reflects the possibility that a disabled worker might be able to work part time but might not be able to work a full number of hours. This point was highlighted by Oi (1991), who argued that disability reduced individuals' ability to work because it "steals time" from them. In particular, Oi argued that the disabled need to spend more time on personal care than the nondisabled, leaving them with less discretionary time to devote to work.

The second two accommodation approaches address the possibility that an individual could still work but not be able to fulfill his or her full set of regular job activities. If an alternative job is available within the firm for which the disabled worker is qualified and that he or she is able to perform, perhaps because it is less physically demanding, then the employer might accommodate the injured worker with a transfer. Such a reassignment could be either temporary or permanent, depending on the injured worker's future prognosis. Alternatively, perhaps the worker can perform most or some of his or her normal tasks, but the disability prevents the worker from performing his or her full range of duties. In this case, the employer might be able to accommodate the disabled worker by reassigning those particular duties elsewhere.

The final category involves accommodating disabled workers through actual modifications to the worksite or equipment. Obvious examples would be the installation of a wheelchair ramp or providing a worker with an ergonomic keyboard or mouse. The range of possible physical modifications is vast, and there is evidence to suggest that the majority are not particularly expensive (JAN, 2010). Nevertheless, in extreme cases, physical modifications clearly have the potential to be among the most-costly accommodations to employers, although, in some cases, they could also be the most effective.

Obviously, these approaches are not mutually exclusive, and any comprehensive plan to improve return to work likely incorporates them in varying degrees. The results of a survey

that RAND conducted as part of a prior study provide some insight as to the relative use and importance of these accommodations (Reville, Weinstein, Studdert, and Welch, 2001). In 2000, RAND surveyed 40 large, private self-insured firms about whether they had return-to-work programs and, if so, what the program's characteristics were. One of the primary goals of the survey was to request information from employers about the methods used to return injured employees to work, how often those methods are used, and the subjective importance of each method in relation to the overall effectiveness of the program (as of the time of the survey, 2000). Table 2.1 summarizes the use of the four transitional work accommodation characteristics described in this section as reported by each employer. Specifically, the table reports the responses to questions about the frequency of use (frequently, quite often, occasionally, rarely, or not at all) of one of the four approaches (modifying work tasks, modifying the workstation or equipment, modifying the schedule, or offering a new job) when a worker experienced an occupational injury.

The modification of work tasks was the approach most commonly used among employers in our sample, with 82 percent of the responding firms reporting that they use this method frequently or quite often. Roughly half of the sample reported providing a modified workstation or modified equipment frequently, or most of the time. Reduced time and work schedule changes were fairly common with 45 percent of the sample reporting use, and 32 percent of the firms reported providing a different job in either the same or a different department as used frequently or quite often.

The rightmost column lists the perceived level of importance, as reported by employers, of each return-to-work method. Employers were given the option to choose whether they believed that a method was extremely important, quite important, moderately important, of limited importance, or of no importance at all. To quantify these answers, we used a scale from 1 to 5, with 5 being extremely important. Not surprisingly, each method's perceived level of importance falls in line with the proportion of firms that reported use of each characteristic as frequent or quite often. More generally, these program features coincide with the standard best practices of disability management; relatively minor accommodations, such as modify-

Table 2.1
Perceived Importance and Frequency of Use of Leading Methods for Transitioning Injured Employees Back to the Workplace

Method	Used Frequently or Quite Often (%)	Used Occasionally (%)	Used Rarely or Not at All (%)	Perceived Importance Level: Scale 1–5, 5 = Very Important
Modified work tasks	82	14	5	4.68
Modified workstation/equipment	50	27	18	4.10
Reduced time/work schedule change	45	27	18	3.86
Different job in same or different department	32	41	23	3.71

NOTE: Table reports the results from a survey (Reville, Weinstein, Studdert, and Welch, 2001) of return to work and disability management practice of 40 large, self-insured firms in California.

ing tasks, are used most frequently, while more-disruptive changes, such as relocating the employee to a different job, are used as a last resort.

As described here, the accommodation-based approaches are primarily actions by private employers. The medical management-based and incentive-based approaches are largely, though not exclusively,¹¹ public interventions that are legislative in nature. That is not to say, however, that public policies have no impact on these accommodations. In fact, employer accommodations might often be provided in response to the incentives provided by some public program.

In Oregon, for example, the EAIP offers reimbursement for retraining costs (e.g., classes for the injured worker) or special equipment not ordinarily provided by the employer. The Oregon PWP provides up to \$25,000 for physical worksite modifications that are necessary to accommodate disabled individuals with preferred-worker status. However, such funds appear to be relatively rare. Texas and California recently adopted similar programs, although on a much smaller monetary scale, that reimbursed up to \$2,500 of worksite modification expenses for small employers. As we discuss in the next chapter, however, the impact of the California policy appears to have been minimal.

In principle, efforts that are designed to promote accommodations can be seen as a special type of the incentive-based approaches discussed earlier. The distinguishing feature for our purposes is that the incentive-based policies we discussed previously are all tied directly to the offer or acceptance of employment. The accommodation-based approaches described here target specific actions that employers can take to assist disabled workers and make it easier for them to perform a job and return to work.

Although, until now, our discussion of accommodation-based approaches has focused on employer activities, it is very common for states to offer some kind of accommodation to workers directly through vocational rehabilitation programs. Vocational rehabilitation programs are designed to provide assistance to workers in finding employment when they are unable to return to their at-injury employer. The range of activities that vocational rehabilitation programs can cover is quite broad and could involve benefits (and the incentives associated with them) and coordination with medical providers. We categorize vocational rehabilitation as accommodation based primarily because it mostly provides direct assistance to workers to help them find new work, rather than focusing exclusively on medical care or incentives.

States vary considerably in their policies on vocational rehabilitation. Some offer support for education or vocational retraining. These can include the direct costs of tuition or other expenses, such as travel costs. Others offer counseling and placement services. California once had an extensive vocational rehabilitation system, but SB 899 replaced it with a more-limited voucher program. One of the more-aggressive state vocational rehabilitation programs appears to be Vermont's, which requires employers to provide job retraining services to injured workers who are unable to perform their preinjury job.

Vocational rehabilitation costs are typically passed along to employers in one form or another. In this sense, they also operate as a more-direct incentive to promote return to work. Vocational rehabilitation services are necessary only for those workers who are unable to return

¹¹ An example of a private medical management policy would be an employer that contracted with a health care provider to give on-site emergency care to injured workers, reducing the time between injury and treatment. This could potentially reduce the severity of the injury, improve recovery time, and speed return to work.

to their previous employment, so the ability to avoid the costs of vocational rehabilitation gives employers additional incentives to rehire disabled workers.

Disability Case Management

In a comprehensive 1996 study, the U.S. General Accounting Office (GAO) identified three essential elements of disability case management:

- Intervene as soon as possible after an actually or potentially disabling event to promote and facilitate return to work.
- Identify and provide necessary return-to-work assistance and manage cases to achieve return-to-work goals.
- Structure cash and medical benefits to encourage people with disabilities to return to work (GAO, 1996).

The third of these refers to the medical management and incentive approaches described earlier, while the second addresses the provision of accommodations. But early intervention is an issue of disability case management. All of these approaches to improving return to work can be effective only if they are directed to the injured workers who are most appropriate for, and in the greatest need of, intervention. Identifying and communicating with these employees early in the process is a key role of disability case management.¹²

The use of disability case management can be affected by these policies, both directly and indirectly. For instance, incentive-based policies focusing on employers that are designed to promote return to work will also give employers the incentives to adopt effective disability management practices. That is, if an employer is incentivized to rehire or retain disabled workers, it will likely do so by adopting a return-to-work program, which, by definition, will involve some form of disability case management. More-passive policies targeting employers might involve providing information about the best approaches to disability management. This could potentially be important to smaller employers, which likely have less experience with workplace injuries and might be less proactive in terms of promoting return to work.

For more detail on the nature of disability management and how it relates to the other policies discussed in this section, such as vocational rehabilitation, see Harder and Scott (2005) or Dyck (2006).

Existing Evidence on the Effectiveness of Policies and Programs to Improve Return to Work

There is considerable scientific work studying the factors that influence the duration of work-injury absences and the likelihood of return to work. One strand of the literature focuses

¹² GAO (1996, p. 40) describes disability case management as

identifying, evaluating, and coordinating the delivery of return-to-work services, including social, health care, and rehabilitation services. The case manager might do such things as help the individual understand or obtain transitional work opportunities or assist in talking with the individual's doctor about treatment and recovery.

on the effectiveness of employer-based return-to-work policies. While it is generally agreed that there is a correlation between the use of return-to-work policies and improved return-to-work outcomes, there is less agreement on the causality of this effect or the programs' general cost-effectiveness.

Evidence on Return-to-Work Programs and Practices

Prior work has shown that modified-work and light-duty assignments have been effective in improving return-to-work outcomes. For example, Baldwin, Johnson, and Butler (1996) found that injured workers assigned to light duty were significantly more likely to experience sustained return to work. Loisel et al. (1997) found that subjects receiving clinical and ergonomic interventions had significantly fewer days away from work. Bernacki et al. (2000) found that an early-intervention return-to-work program reduced lost-workday cases by 55 percent at a large urban medical center.

In more-general reviews of the literature, Krause, Dasinger, and Neuhauser (1998) and Franche et al. (2005) conducted systematic literature reviews that suggest that workplace-based return-to-work interventions can reduce the time to return to work by one-half or even more. Tompa et al. (2008) reviewed studies that examine the economic implications of disability management interventions and find evidence that suggests that they provide financial benefits to employers, in terms of lowering costs.

There has also been a great deal of work designed to identify effective disability management practices. Some common themes that have arisen are consistent with GAO's priorities: the need for early intervention and effective communication between disability case managers and medical providers (see, e.g., Schwartz et al, 1989; Shrey and Lacerte, 1995; Hunt et al. 1996; Lerner, 1998). Franche et al. (2005) found "strong" evidence that injured workers' return-to-work outcomes are improved by contact between a medical provider and workplace. They also found "moderate" evidence in favor of the effectiveness of such policies as early contact between workers and employers and the presence of a return-to-work coordinator.

None of the reviews suggests that there is sufficient information on the causal effects of return-to-work programs to conclude whether they are cost-effective on average. In a recent study, McLaren, Reville and Seabury (2010) match the information from the RAND survey of return-to-work programs to the employment outcomes for workers injured at these firms from 1991 to 1995. With these data, they estimate the number of weeks until an injured worker returns to work, remaining at the job for at least two subsequent quarters, after his or her temporary-disability benefits have been exhausted. They compare employment outcomes for workers injured at the same firm before and after program adoption, allowing them to eliminate the effect of potentially confounding, time-invariant firm characteristics.

Their findings suggest that programs are associated with lower duration of injury-related absences, and there is a noticeable difference in return-to-work rates ten weeks after injury. They find that having a program in place reduces the median duration of a work-injury absence by 3.6 weeks. The effects are more pronounced for workers with more-severe injuries that result in permanent disability—the reduction in the median duration of absence is 12.6 weeks for these workers. The estimated effects are large enough to indicate strong evidence of cost-effectiveness for the employers in their sample.

They note, however, that cost-effectiveness in their sample does not necessarily indicate that the policies are cost-effective for the average employer. Smaller firms with fewer resources and fewer options in terms of providing modified-work opportunities would almost certainly

find it more difficult to adopt an equally effective return-to-work program. An important topic for future work is the effectiveness of different return-to-work practices for small employers.

Evidence on Other Factors Affecting Return to Work

Disability benefits have also been shown to be important factors in determining the duration of work absences (see, e.g., Meyer, Viscusi, and Durbin, 1995; Neuhauser and Raphael, 2004; Galizzi and Boden, 1996; Butler and Worrall, 1985; Johnson and Ondrich, 1990). These studies all find that higher workers' compensation benefit levels are associated with increases in time away from work after an injury. For instance, Meyer, Viscusi, and Durbin (1995) found that a 10-percent increase in benefits increased the duration of injury absences by around 3 percent, while Neuhauser and Raphael (2004) found that the effect could be as much as 8 percent.

Finally, other studies analyzed how different demographic characteristics are associated with return-to-work outcomes. As we might expect, older workers are less likely to return to work and are out of work for longer periods after an injury than younger workers (Cheadle et al., 1994; MacKenzie et al., 1998; Tate, 1992). Workers with more-physically demanding jobs appear to be out for longer periods (Seabury and McLaren, 2010). Workers with higher education and higher wages return faster (MacKenzie et al., 1998; Tate, 1992). Boden and Galizzi (2003, 1999) and Johnson and Ondrich (1990) also show evidence of gender differences, with women taking longer on average to return to work after an injury.

Policy Changes to the California Workers' Compensation System

In this chapter, we describe the recent changes to the workers' compensation system in California. The system has undergone extensive reforms in recent years, so we focus our discussion on the provisions that seem most likely to affect return to work.

Changes to Temporary- and Permanent-Disability Benefits

Workers' compensation in California, as elsewhere, provides medical payments, indemnity (cash) benefits, and vocational rehabilitation to workers injured on the job and to dependents of workers who have died from a workplace injury or illness. It is a no-fault system, so the employer is responsible for compensating the injured worker or dependents for medical costs and lost wages, regardless of who was at fault for the injury or illness. California requires all employers, regardless of size, to have workers' compensation insurance. To obtain coverage, employers might self-insure or purchase workers' compensation from a private insurance carrier or the State Compensation Insurance Fund. California employers wishing to self-insure must obtain certification from the Department of Industrial Relations (DIR), and, to do so, they must be able to demonstrate sufficient financial resources. Another option for employers that are too small to meet the self-insured requirements is to combine efforts with other employers and self-insure as a private group or as a joint public authority (JPA).

Workplace-related injuries or illnesses are classified as temporary or permanent, and benefits in California are equal to two-thirds of the injured worker's gross (pretax) wages at the time of injury, with minimum and maximum rates set by law. A temporary work-related injury or illness is defined as any experience that prevents a worker from doing his or her usual work for more than three days or that causes the worker to be hospitalized overnight.¹ A worker who suffers a temporary work-related injury or disease collects weekly total temporary disability (TTD) benefits. In California, the weekly cap for TTD benefits was fixed at \$490 per week from 1996 to 2002, until it was raised for injuries in 2003 by Assembly Bill (AB) 749 and tied to a cost-of-living adjustment based on the state average weekly wage (the weekly maximum for injuries occurring in 2010 is \$986.69). Prior to April 19, 2004 (the adoption of SB 899), workers received TTD benefits until they reached maximum medical improvement (MMI) or were medically cleared to return to work. After April 19, 2004, however, TTD benefits were capped at 104 weeks except for some exceptions involving more-severe injuries. Workers with

¹ If an injury or illness requires the worker to be out of work for 14 days or longer, the first three days are covered retroactively.

these types of injuries (of which examples include amputations and severe burns) receive TTD benefits for up to 240 weeks (Labor Code §4656[c][2]).

If an injured worker reaches MMI but has not fully recovered from the injury, he or she might be eligible for PPD benefits. In California, when a doctor determines that the injury or illness caused a permanent disability, the physician makes a judgment as to the severity of the injury and fills out a medical report. This report is used to calculate the disability rating, a number from 1 to 100 that measures how severe the disability is. The amount of PPD benefits received by the injured worker is tied directly to the disability rating. The maximum weekly benefit is two-thirds of wages, subject to a weekly cap that is increasing in the disability rating; for example, a worker injured on January 1, 2004, would have been eligible for up to \$200 per week if his or her disability rating were under 70 percent, but he or she would have been eligible for up to \$250 per week if his or her disability rating were 70 or more. Also, the number of weeks for which benefits are available is an increasing function of the disability rating. Finally, workers with a rating of 70 or more are eligible for a small weekly life pension.

Historically, the California approach to compensating permanent disabilities has differed considerably from the approaches used by most states. For a detailed description of the system prior to 2004 and the historical development over time, see Reville, Seabury, et al. (2005). The key feature of California's system that makes it unusual is the application of a rating formula adopted by the administrative director of the Division of Workers' Compensation (DWC) to determine the percentage of disability for each individual injury, as opposed to applying a more-traditional schedule of benefits tied to injury type. The California schedule has also traditionally incorporated factors that are often not considered in other states, such as adjustments for age, occupation, "subjective" factors, and work-capacity guidelines. Historically, the rating system in California has been the center of considerable controversy, including numerous allegations that it is overly subjective and promotes disputes (Berkowitz and Burton, 1987; Reville, Seabury, et al., 2005).

The passage of SB 899 led to substantial changes in the disability rating system (Labor Code §4660 [b][1]). The new rating system bases the foundation of the disability rating on the American Medical Association *Guides to Evaluation of Permanent Impairment* (AMA Guides). The new rating system abandoned the old subjective factors and work capacity guidelines, although it did keep the age and occupation modifiers. Additionally, SB 899 required the administrative director to incorporate empirical data on earning losses for disabled workers to adjust disability ratings, though the statute itself does not specify exactly how that adjustment is to be incorporated.

In practice, the earning loss adjustments are incorporated to the disability ratings through future earning capacity (FEC) adjustments. The FEC adjustments take disabilities and rank them based on the estimates of earning losses reported in Seabury, Reville, and Neuhauser (2004). There are eight categories, ranked 1 through 8, and higher categories receive higher adjustments to their disability ratings. The adjustments range from a 10-percent increase for the first category up to a 40-percent increase for the eighth category.

One of the impacts of AMA Guide adoption was that it made certain injuries more likely to receive a 0 rating. The old rating system allowed disability ratings to be based entirely on a physician's assessment of work restrictions. This meant that very few permanent injuries were given a 0 rating under the old system. This is particularly true of nonspecific muscle or joint pain that has no identifiable organic cause of disability but for which a physician might recommend limiting certain physical activities as part of prophylactic work restrictions. The AMA

Guides, however, do not prescribe a rating based solely on a physician's assessment of work limitations. Thus, any injury that would have been rated solely on the basis of work restrictions would receive a 0 rating under the new system.

Another change in the disability rating system introduced by SB 899 was the introduction of new rules on the apportionment of disability. SB 899 repealed the previous rules on apportionment and added a new requirement:

A physician shall make an apportionment determination by finding what approximate percentage of the permanent disability was caused by the direct result of injury arising out of and occurring in the course of employment and what approximate percentage of the permanent disability was caused by other factors both before and subsequent to the industrial injury, including prior industrial injuries. (Labor Code §4663 [c])

Furthermore, Labor Code §4664 (a) states that “[t]he employer shall only be liable for the percentage of permanent disability directly caused by the injury arising out of and occurring in the course of employment.” Put more simply, the new apportionment rules reduce PD ratings by the fraction of disability that the physician deems to have been not work related.

SB 899 also made direct changes to the formula tying disability ratings to PPD benefits. Specifically, the formula tying the weeks of PPD benefit receipt to ratings was reduced for each rating below 72 and increased for each rating above 72. Thereby, the change increased compensation for a small number of the most-serious injuries and decreased compensation for the less-serious ones.

The net effect of the changes to the PD rating system brought about by SB 899 was a substantial reduction in the size of PD ratings. The adoption of the AMA Guides led to a reduction because the average rating in the AMA Guides is lower than the rating assigned to a similar rating evaluated using the permanent-disability rating schedule (PDRS). Neuhauser (2007) found that the average PD rating in California after AMA Guide adoption was 41.7 percent lower than under the PDRS prior to adoption. Additionally, he found that 9.8 percent of all PD cases included apportionment in 2006, leading to an average reduction in ratings of 40.1 percent in apportioned cases. Overall, the apportioning of permanent disability to causation reduced total PPD benefit payments by almost 6 percent, and the total decline in PD awards that could be attributed to lower disability ratings was more than 50 percent.

In addition to these changes, SB 899 also introduced a two-tier PPD benefit. The provision, commonly referred to as the “bump up, bump down,” specifies that an employee is entitled to a 15-percent increase in his or her disability benefits if he or she is not offered a return to regular, modified, or alternative work, and a 15-percent decrease in benefits if he or she is. The 30-percent swing in disability benefits potentially provides a strong incentive for employers to make a return-to-work offer for injured workers, as described in the previous chapter. To be eligible for the bump down, the employer must make the qualified work offer within 60 days of the injury being declared permanent and stationary (P&S).

While the tiered benefit program provides unambiguous incentives to bring injured workers back to work, there appear to have been some implementation problems that could have limited its effectiveness. One of the chief limitations has to do with the timing. In order to be eligible for the bump down, an employer has to make a qualified offer within 60 days of the P&S date, but an employer (or insurer) might have been paying PPD benefits long before the P&S date was reached. In California, a worker becomes eligible for PPD benefits two weeks

after TTD benefit payments end, even if he or she has not yet reached MMI (Labor Code §4650 [b]). If a worker later settles the value of the PD benefits, these advance payments are deducted from the final settlement amount. The reason this affects the usefulness of the tiered benefit is that PPD advancements are made at a statutory rate before any adjustment (i.e., before the bump up or down is applied). In many cases, even the majority of cases, it can be six months or more between the date on which an injured worker is cleared to return to work (meaning that TTD benefits will cease) and the P&S date. For a worker with a disability rating of 11 (the mean rating in the Disability Evaluation Unit, or DEU, for unrepresented claims in the new schedule), the full PPD award could be paid out before the P&S period is reached. Given the advancement at statutory levels, it is unclear that the bump down is used frequently enough to have a significant impact on return to work.

The legislative and regulatory changes discussed here are not the only changes to California's system that might affect return to work. In 2009, the California Workers' Compensation Appeals Board (WCAB) issued two en banc decisions—the joint decision *Alvarez v. Environmental Recovery Systems* and *Guzman v. Milpitas Unified School District (Alvarez/Guzman)* and *Ogilvie v. City and County of San Francisco (Ogilvie)*—that made a disability rating resulting from application of the AMA Guides and the FEC adjustment potentially rebuttable in court. In *Alvarez/Guzman*, the WCAB held that “the 2005 Schedule is rebutted by showing that an impairment rating based on the AMA Guides would result in a permanent disability award that would be inequitable, disproportionate, and not a fair and accurate measure of the employee's permanent disability” (p. 2). In *Ogilvie*, the WCAB presented a formula for determining whether the guides are rebuttable based on the employee's postinjury wages.

This latter provision seems problematic from the standpoint of promoting return to work. *Ogilvie* states that “the first step ordinarily will be to establish the employee's actual earnings in the three years following his or her injury” (p. 30). The problem with using an injured employee's actual postinjury earnings is that doing so provides the employee with an incentive not to return to work. That is, employees who remain out of work will have larger postinjury earning losses and presumably have a better chance of rebutting the AMA Guides and earning a larger award. This is analogous to the incentive problem that arises with tiered benefit systems and “wage loss” systems described earlier. While more time is probably needed to assess what long-term impact these decisions will have, if any, on return to work, conceptually, we would expect return to work to decline as a result.

The California Return-to-Work Program

The tiered disability benefit was applicable only to those workers who were injured at employers that have at least 50 workers. Workers injured at smaller firms below this threshold received the base-level PPD benefits. In order to promote return to work at small employers, SB 899 created the Return-to-Work Program, which subsidized expenses incurred while accommodating injured workers for employers with fewer than 50 employees. The subsidy amount was \$1,250 for a temporarily disabled worker and \$2,500 for a permanently disabled worker. The accommodations eligible for reimbursement included physical modifications to the worksite, equipment, devices, furniture, tools, or other items necessary to accommodate the work restrictions of the injured worker (SB 899, §139.48).

The subsidy program actually took the place of a more-expansive return-to-work program introduced by AB 749. That program was intended to be available to all private employers and to cover additional expenses, such as wages and insurance premiums. This program was never implemented, however, and it was ultimately repealed in SB 899 and replaced by the small-business reimbursement program.

As with the tiered benefit system, it is questionable whether the Return-to-Work Program had any systematic impact on return to work. The program was implemented by the DWC in 2006, and employers began making applications for reimbursements in 2007. In a 2009 report, CHSWC documents that, from January 2007 through December 2008, the DWC received just 36 applications for reimbursement, 11 of which were ultimately approved. These reimbursements totaled \$8,744, while \$500,000 had been allocated to the program. One of the key reasons for the low participation in the program appears to have been from a lack of awareness (CHSWC, 2009).

Given such low participation rates, it is unreasonable to suspect that the program's existence could have improved return to work. In 2010, the program sunset and is no longer available.

Changes to Vocational Rehabilitation

Workers who were injured prior to 2004 and were unable to return to their previous employment because of their injuries were eligible for vocational rehabilitation. Vocational rehabilitation offered placement and training services and monetary benefits to eligible workers. The placement services involved the development of an individual rehabilitation plan that included counseling, education or training, and direct job placement. Workers who reached MMI, meaning that they were no longer receiving temporary-disability benefits, were eligible for a vocational rehabilitation maintenance allowance (VRMA). The VRMA was paid biweekly for no more than a year and was equal to two-thirds of the weekly wage, capped at \$246 per week. Additionally, participating workers could receive some compensation for costs incurred from the program, including books, tuition, or travel expenses.

A key provision of vocational rehabilitation was that a worker was no longer eligible to participate if the employer made a qualified offer of modified or alternative work. Thus, by providing employers with the opportunity to avoid the costs associated with vocational rehabilitation by rehiring or accommodating their injured workers, the system gave incentives promoting return to work.

California AB 227 repealed the vocational rehabilitation program for workers injured on January 1, 2004, or later, replacing it with the supplemental job displacement benefit (SJDB) (Labor Code §4658.5). Specifically, the new law provided that a worker unable to return to his or her at-injury employer because of his or her disability within 60 days of reaching MMI receive a voucher for educational or training services. The amount of the voucher is tied to the size of the disability rating. The exact amounts are \$4,000 for PD ratings less than 15; \$6,000 for ratings between 15 and 25; \$8,000 for ratings between 26 and 49; and \$10,000 for ratings 50 and higher (Labor Code §4658.5). The voucher can be used only for education, retraining, or "skill enhancement" at state-accredited schools.

In principle, the SJDB could provide similar benefits to those of the vocational rehabilitation system, in the sense of giving additional opportunities to disabled workers unable to

return to their preinjury employment. The program is less intensive than vocational rehabilitation and less costly—the maximum voucher was \$10,000, while vocational rehabilitation costs could reach \$16,000 (or more, prior to reforms introduced in 1993).

Reforms to Medical Treatment

As part of a number of workers' compensation reforms in California that were first introduced in California SB 228 and later in SB 899, several revisions to the Labor Code were adopted that changed the way in which medical treatment was provided after a workplace injury. While these provisions were primarily designed to reduce the cost of medical treatment by lowering reimbursements and restricting access to care, it is possible that they affected return to work.

Some of the changes in SB 228 were intended to reduce medical costs directly by restricting the reimbursement rates that could be charged for different services. Prior to SB 228, the DWC used its own Official Medical Fee Schedule (OMFS), but the new changes tied reimbursements for many services to Medicare. Specifically, reimbursements for inpatient and outpatient hospital care were restricted to 120 percent of the permitted Medicare rate (Labor Code §5307.1). The fees for physician services were not tied directly to Medicare, but a 5-percent cut was required. In addition, reimbursements for pharmaceuticals were set equal to the Medi-Cal reimbursement rate (§5307.1).

In 1996, the WCAB decided in *Minniear v. Mt. San Antonio Community College District* that the opinion of the treating physician was presumptively correct in disputes over medical treatment in workers' compensation cases. This presumption gave substantial control of medical treatment to the injured workers and was thought to lead to a significant increase in costs of medical care in workers' compensation cases (Neuhauser, 2002). SB 228 restricted the presumption of correctness of the treating physician only to cases in which the injured worker predesignated the provider (Labor Code §4062.9). Soon after, the presumption was repealed entirely by SB 899.

Other aspects of SB 228 targeted the utilization of medical care more directly. One way in which the bill attempted to restrain utilization was through the adoption of utilization review based on treatment guidelines. Specifically, the law made the American College of Occupational and Environmental Medicine (ACOEM) Occupational Medical Practice Guidelines presumptively correct until such time as a modified set of guidelines could be adopted (Labor Code §4604.5). On June 15, 2007, the DWC made effective the Medical Treatment Utilization Schedule (MTUS), which is based in part on the ACOEM guidelines.² The presumption of correctness of the treatment guidelines was strengthened by SB 899.

The other key aspect of SB 228 targeting utilization was a cap on the number of visits for chiropractic care and physical therapy. Claimants were limited to 24 visits each for chiropractic care and physical therapy for the life of the claim, unless additional visits were authorized in writing (Labor Code §4604.5 [d]). SB 899 extended the cap to 24 visits for occupational therapy as well. These caps became effective for all injuries occurring on January 1, 2004, or later.

Another significant change that affected the control of medical care was the creation of medical provider networks (MPNs) enacted by SB 899. MPNs are groups of health care providers that are established by insurers or self-insured employers. Injured workers at an employer

² For more information, see DWC (2010).

with (or covered by an insurer with) an approved network must select a physician from the network. The creation of these networks is regulated by the DWC. The networks have to meet certain standards regarding the number and types of physicians included, and the networks cannot be created with the goal of denying or delaying coverage (Labor Code §4616). While the employers cannot design networks with the express goal of reducing utilization, we might still expect utilization to fall if they exclude physicians who provide abnormally high levels of services (as discussed in Chapter Two).

Taken together, these reforms appear to have had a significant impact on the cost of medical care in workers' compensation cases. Estimates on losses as a fraction of total written premium, published by the Workers' Compensation Insurance Rating Bureau (WCIRB), suggest that medical costs for insurers in workers' compensation cases fell approximately 24 percent from 2003 to 2007 (WCIRB, 2010). The reforms had a particularly large impact on the utilization of chiropractic care and physical therapy, with these services declining more than 50 percent (Swedlow, 2005).

The expected impact on these reforms on return to work is ambiguous. As discussed previously (Chapter Two), medical treatment can provide a useful tool in promoting return to work, but it is not necessarily clear that provider networks or treatment guidelines speed return to work. The provider networks could improve return to work if the employers selected physicians who place a particular emphasis on returning workers back to work quickly. If the networks or treatment guidelines increased the overall quality or appropriateness of the medical care provided to injured workers, then it could have a beneficial impact on return to work. If additional care leads to excessively long treatment regimes, during which individuals remained out of work, then utilization review could also benefit return to work. On the other hand, if the guidelines or networks were too strict and denied necessary care that would have improved the health outcomes of injured workers, then they could have had an adverse long-term effect on the employment outcomes of injured workers.

The California Fair Employment and Housing Act

Until now, our discussion has largely focused on how aspects of the workers' compensation system might affect return to work. There are, however, other avenues through which public policy can affect worker and employer behavior. In particular, employment protection laws that prevent employer discrimination against disabled workers could have a potentially significant impact on the employment of permanently disabled workers' compensation claimants. In this chapter, we discuss FEHA and how it might affect employer return-to-work decisions for workers' compensation claimants.

Employment Protection Laws for Disabled Workers in California

The California FEHA provides protection against harassment or discrimination in employment and housing on the basis of disability and numerous other characteristics, including age, gender, race, and religion.¹ In principle, the policy makes employers liable for any harm they cause with employment policies that treat people with protected characteristics unfairly. In practice, the law imposes firing and hiring costs on employers that could affect their behavior toward protected workers.

Under FEHA, employers are required to provide "reasonable" accommodations to disabled employees in order to assist them in the performance of their essential job functions. As part of this requirement, an employer must participate in an "interactive process" with its disabled employee to determine whether reasonable accommodations can be made that would allow the employee to continue working. As we discuss later on, the interactive process is a key element to FEHA's potential impact on return to work for workers disabled due to workplace injury.

FEHA has been revised many times since it was first enacted as the Fair Employment Practices Act in 1959. As the FEHA relates to disability discrimination, these revisions have typically dealt with the definition of a disability and the steps a company must undertake to show that it has not discriminated. In addition to the changing laws, there have been a number of court cases shaping FEHA over time. This section provides a brief overview of the major legislative updates to FEHA's disability discrimination provisions in the past 20 years and significant court cases relating to disability discrimination both at the state and federal levels.

In 1982, the California Supreme Court set a relatively broad definition of disability in *American National Ins. Co. v. Fair Employment & Housing Com.*, saying that, for FEHA pur-

¹ Fair Employment and Housing Act (Title 2, Division 3, Part 2.8).

poses, a disability was a physical impairment that made achievement unusually difficult.² In 1992, California revised FEHA to define a disability to include those impairments that limit an individual's ability to participate in major life activities.³ In particular, under the ADA, a disability is defined as a "substantial limitation" on a major life activity (as opposed to a "limitation" under FEHA).⁴

In 1998, the California state courts decided, in *City of Moorpark v. Superior Court* that workers' compensation law did not preempt FEHA.⁵ Prior to this decision, workers' compensation law preempted FEHA for workplace injuries that resulted in a disability. This decision is important in understanding the relationship between FEHA and workers' compensation law; prior to this case, workers' compensation was the only avenue of redress for on-the-job injuries.

In 2001, California again made large revisions to FEHA through AB 2222.⁶ AB 2222 reaffirmed FEHA's broad definition of disability to include those with a limitation of a major life activity. In *Colmenares v. Braemer Country Club*, the California Supreme Court decided that California's definition of disability was broader than that of the ADA even before AB 2222.⁷ AB 2222 further expanded the definition of disability to include perceived disabilities rather than actual disabilities, and it clarified that mitigating measures (such as medications or devices, such as glasses) are to be excluded from disability determination. AB 2222 also enhanced the employer's responsibilities for having an interactive process with a disabled employee to determine whether reasonable accommodations might be made.⁸

A number of the reforms and reaffirmations found in AB 2222 were a response to U.S. Supreme Court decisions limiting the ADA and the federal definition of disability. The U.S. Supreme Court, in 1999, in *Sutton v. United Air Lines* had ruled that mitigating measures were to be considered in disability determination.⁹ In *Sutton*, the U.S. Supreme Court found that a pilot with a severe myopia was not protected as being disabled because the myopia was corrected with lenses. This decision was reinforced in *Murphy v. UPS*, and *Albertson's, Inc. v. Kirkingburg*, in which the U.S. Supreme Court again found that mitigating measures were to be considered in determining disability.¹⁰ In a further reduction to the ADA, the Supreme Court ruled, in *Bd. of Trs. of the Univ. of Ala. v. Garrett*, that state employees were not subject to the ADA.¹¹ In addition to these cases, in *Toyota Motor Mfg., Ky. v. Williams*, the Court held that, to be considered disabled under the ADA, "an individual must have an impairment that

² 32 Cal. 3d 603 (1982) at 609.

³ Formerly Cal. 12926 (k)(1)(B).

⁴ 42 U.S.C. §12102(2)(A).

⁵ *City of Moorpark v. Superior Court*, 18 Cal. 4th 1143, 1998.

⁶ AB 2222, Chapter 1049, Civil Code §§51, 51.5, 54; Calif. Government Codes 12926, 12940, 12955.3, and 19231.

⁷ 29 Cal. 4th 1019 (2003).

⁸ An attempt to make accommodations was previously required under FEHA, but proving that such an attempt did not occur was more difficult prior to AB 2222's passage.

⁹ 527 U.S. 471 (1999).

¹⁰ 527 U.S. 516 (1999); 527 U.S. 555 (1999).

¹¹ 531 U.S. 356 (2001).

prevents or severely restricts the individual from doing activities that are of central importance to most people's daily lives."¹²

FEHA and the ADA differ in a number of other ways; in particular, FEHA applies to employers with at least five employees, while the ADA applies to those with at least 15. Additionally, there is no cap on damages under FEHA,¹³ while there is a \$300,000 cap on damages under the ADA.¹⁴ Lastly, failure to have an interactive process under FEHA is a separate violation of the law, while it is considered only evidence of a potential violation under the ADA.

Through both legislative and judicial revision, FEHA has undergone a large number of changes since it first provided protection for disabled persons in 1959. In net, these changes have made FEHA generally more protective of disabled persons and reaffirmed and expanded protections provided under the ADA. Most-significant changes for the purposes here were the *Moorpark* decision (which allowed employees protection under workers' compensation law as well as under FEHA) and the reforms brought by AB 2222—in particular, the reaffirmed broad definition of disability and a more-stringent requirement to undertake an interactive process.

The ADA Amendments Act

California was not alone in responding to the Supreme Court's restrictive interpretations of the ADA. The ADA Amendments Act (ADAAA) (Pub. L. 110-325), effective January 1, 2009, made several changes that broadened the scope of the ADA closer to what it was prior to the Supreme Court decisions. Specifically, the ADAAA does the following:

- It rejects the Supreme Court's standard that an individual must be "prevented" or "severely restricted." The law requires the U.S. Equal Employment Opportunity Commission (EEOC) to adopt regulations with a "less stringent" definition of disability.
- It eliminates the consideration of mitigating measures in the determination of disability, with the exception of "ordinary" eyeglasses or corrective lenses.
- It states that an individual qualifies for protection under the act if his or her employer discriminates based on the perception of a disability, regardless of whether the individual is actually disabled. Individuals are not entitled to reasonable accommodations, however, if they are not actually disabled.

The express goal of the ADAAA was to "restore the intent and protections of the [ADA]," and it appears to broaden considerably the number of disabled individuals who will be protected under the law. While we are unaware of any studies quantifying the impact of the ADAAA, the changes are broad enough that we would expect to see an increase in allegations of discrimination under the ADA in the near future.

¹² 534 U.S. 184 (2002).

¹³ Calif. §12965.

¹⁴ 42 U.S.C 1981a(a)(2), (a)(3), (b).

The California FEHA in Context

FEHA extends to Californians a number of protections and provisions not in the ADA. California is not alone in such enhanced provisions. To better understand FEHA, we review a number of states' laws ranging from those that do nearly nothing to extend the ADA to those that have provisions that are similar to or more protective than those in FEHA. To place California in the context of other states' legislation, we undertook a review of the states laws of Oregon, Wisconsin, New Mexico, Washington, New Jersey, Massachusetts, Georgia, Florida, New York, Ohio, Texas, and Pennsylvania. We review these laws across three dimensions: eligibility, access to the courts, and available remedies. Across each of these dimensions, California has either the most- or nearly the most-plaintiff-friendly legislation, providing broader eligibility, enhanced access to the courts, and uncapped potential damages. We did not find any other state that identifies not being involved in an interactive process as a separate violation of the law (all those states we could identify followed the ADA's perspective of lack of participation in an interactive process as substantial evidence).

Our review of these states identified that there is both a wide variety of laws across the states, as well as within states over time (often in response to court cases). California is not the only state to undergo a large number of changes to its antidiscrimination laws. As an example, Washington has recently (2006 and 2007) undergone a number of changes in its disability discrimination laws. There was a court case (*McClarty v. Totem Electric*) that set the definition of disability to be the same as that as the ADA.¹⁵ Previously, in Washington, there had been a relatively broad definition of disability, although it was not specified in the law. In response, the legislature codified a relatively broad definition of disability and made it retroactive to all causes of action initiated before July 6, 2006.

Table 4.1 summarizes the ADA and California provisions, as well as some examples from other states. It looks at dimensions of applicability, including to which firms the laws apply and the definition of disability. It also summarizes our findings as they relate to the available remedies (damages). In addition to providing ADA, California, and other definitions, the table identifies the number of states with protections that are consistent with the ADA's provisions. For example, we found that five of the 14 states reviewed had the same definition of disability as did the ADA. Note that, because our empirical analyses all focus on the period prior to the adoption of the ADAAA, Table 4.1 compares California to the ADA both pre-ADAAA and post-ADAAA.

There are two general areas in which states differ in their definition of disability, and a comparison of California and the ADA provides typical examples. Under FEHA, a disability is anything that limits a major life activity without regard to mitigating measures. Pre-ADAAA, the ADA took mitigating measures, such as glasses or medications, into consideration. Thus, if something no longer limits a major life activity with such a measure, then it is not considered a disability under the ADA, while it would be under FEHA. Furthermore, the ADA requires that a disability substantially limit a major life activity, rather than just limit one. Both laws cover perceived as well as actual disabilities.

A number of the states reviewed, including New Mexico, Massachusetts, Ohio, Oregon, Texas, and Pennsylvania, follow the ADA's definition of disability verbatim or their courts have interpreted them to be identical. Georgia and Florida use the same definition as the ADA but

¹⁵ 157 Wn.2d 214, 137 P.3d 844, 2006.

Table 4.1
Summary of Alternative Disability Discrimination Laws

Law	Eligibility	Disability Definition	Available Remedies
ADA: Pre-ADAAA	Firms with at least 15 employees	Substantially limits a major life activity; strictly interpreted and factoring mitigating measures	Sliding cap on the total damages allowed, with the largest cap at \$300,000
ADA: Post-ADAAA	Firms with at least 15 employees	Substantially limits a major life activity; broadly interpreted and without regard to mitigating measures	Sliding cap on the total damages allowed, with the largest cap at \$300,000
California	Firms with at least 5 employees	Limits a major life activity; without regard to mitigating measures	No cap on damages; allows punitive damages
Other examples	No minimum number of employees or exclusions for private clubs	Recognized by clinical techniques	No punitive damages or \$100,000 cap on award
Number of surveyed states that are aligned with ADA	5/14	6/14	1/10

SOURCES: Authors' classifications based on review of state legislative requirements.

NOTE: *Aligned with ADA for eligibility* includes states that extend ADA protections to state employees.

exclude perceived disabilities (interpretation by the state supreme courts is not yet settled in Florida). A number of other states explicitly refer to employment or work as a protected activity (such as Wisconsin) or require that a disability be recognized by clinical techniques (Illinois).

In addition to the definition of disability, states differ on the types of employers that are covered by their laws. The ADA covers only those employers with 15 employees or more and does not apply to state employees. Most of the state laws extend this definition to state employees, and a number, including California, extend the law to smaller entities. New Jersey, for example, does not have any minimum number of employees for a business to be subject to its disability laws. Ohio, along with New York and Pennsylvania, extends the law to any employer with four or more employees in the state. A number of states make exclusions for particular types of employers, such as social clubs (Massachusetts) and those in agriculture or domestic service (Pennsylvania). Other such exclusions exist in a number of the other states reviewed.

The remedies available to those discriminated against also vary across the states and the ADA. The ADA has a sliding cap on the total damages allowed, with smaller firms facing a lower cap, and the largest firms (those with at least 501 employees) having a cap of \$300,000. Damages under the ADA can be either punitive or compensatory. In California, damages can be both compensatory and punitive, but there is no cap on the limit. Thus, key dimensions across which states differ are whether they allow for punitive damages and whether they have a cap on the damages allowed. A number of states, including Illinois and Georgia, do not allow for punitive damages. Florida, while allowing for punitive damages, has set a cap on them of \$100,000. Texas follows almost exactly the ADA's set of caps on total damages. Nearly all states allow for "reasonable" attorneys' fees to be awarded to a prevailing complainant. As with the definition of disability, there is a wide range in caps and allowable remedies for plaintiffs among the states.

There are also differing levels of access to the state courts and administrative remedies. The ADA requires an administrative review of a claim by the EEOC before access to the federal courts is granted. There is a similar framework in California with the Department of Fair Employment and Housing (DFEH), and the right to sue can be obtained without significant review by the DFEH. We did not identify a state that allowed for immediate access to the courts without some initial administrative review, although there were a number of others in which individuals have access to the courts relatively early in the administrative process, including Washington. Wisconsin and a number of other states provide access to the state courts only as an appeals process to the administrative process.

The states also differ on statutes of limitations. In California, an administrative charge must be made within one year of the alleged discriminatory act. If the plaintiff requests an immediate right to sue, he or she has one year from the date of issuance to file a lawsuit.¹⁶ If the plaintiff proceeds with an administrative hearing and it ends with a right-to-sue notice being issued, the plaintiff has one year from that point of notice to file a lawsuit. With the most-common statute of limitations that we observed, which applies in Pennsylvania, Georgia, Ohio, and Texas, among others, an aggrieved party has 180 days to file a complaint.

Throughout our review of the states, we did not find another state that has the same requirements on interactive processes as FEHA. While the states all have provisions for the interactive process, we did not find any other states in which failing to have an interactive process is in and of itself a violation. On this, and virtually every other dimension reviewed, California provides more protections for a broader set of people than nearly every other state.

The Interactive Process

As discussed earlier, the interactive process is a key requirement of FEHA and, to a lesser extent, the ADA. This section discusses in detail the key features of the interactive process and, through a couple of pedagogical examples, demonstrates how the interactive process might operate.¹⁷

The interactive process is a discussion between a disabled or perceived-to-be-disabled employee and an employer to determine whether a reasonable accommodation can be made to allow the employee to continue to work. The interactive process, once it begins, should start with identifying the essential and nonessential job functions. Once these have been established, the parties must continue to discuss to understand what specific limitations are present and what accommodations might be made. They then must determine the effectiveness of the potential accommodations (and their costs). Finally, when selecting a potential accommodation, the employer should consider the employee's preferred accommodation. It also ought to consider whether other unfilled positions within the firm can be used in lieu or as part of an accommodation. An interactive process need not result in an accommodation or a solution that maintains the disabled employee's employment; an employer is not required to endure an undue hardship to maintain the disabled employee's employment.

¹⁶ While administrative review is not required to sue under FEHA, as a procedural matter, a plaintiff is still required to obtain a right-to-sue letter from DFEH before he or she can bring an action.

¹⁷ Many of the detailed steps of the interactive process described in this section come from DFEH (2002).

To better understand the process, consider the following three employees covered by FEHA. The first employee is a typist who has developed carpal tunnel syndrome. The second employee has asthma, while the third employee has had a back injury on the job but has healed over time. The third employee has been retrained for a different job in the firm, but the employer still perceives the employee as having back pain.

The first step in the process is to trigger the interactive process, which can happen in a couple of ways. First, an employee might request an accommodation for a disability. An example of this might be that the employee with carpal tunnel syndrome discusses his or her pain with his or her supervisor and actually asks for accommodations. Alternatively, an employee might just discuss his or her limitation with a supervisor without directly asking for an accommodation. As an example, the employee with asthma coughs and wheezes every day the lawn is mowed, and the employee tells the supervisor that the problem is limiting his ability to work. In the last example, of perceived back pain, the employer believes that the employee has a disability and might not be able to perform her new job without accommodation. In all of these examples, an interactive process is required, even though, in one of them, the employee is not actually disabled and in only one of them is a specific request for accommodations made.

In the three examples described (carpal tunnel, asthma, and perceived back pain), FEHA requires an interactive process, which begins with identifying the essential job functions. There are a number of criteria that might help define a job function as essential. The first thing considered is whether a position exists solely for the purpose of performing this function. In the example of the employee with carpal tunnel syndrome, the employee is a typist, so the position exists to perform the function of typing. An additional criterion is whether there are many other employees who could perform this function or whether the job function is highly specialized. The employee with perceived back pain might be the only computer programmer in the firm, and the employee must sit at a desk to perform this function. Further, the employer and employee should look at what was in the initial job posting as a guide to identifying essential job functions. For the employee with asthma, the job posting says that the employee must be at the office Monday through Friday from 9:00 a.m. to 5:00 p.m. Thus, being at the office might be an essential function. Using the discussed criteria (does the position exist for this function, are there other employees who can perform this function, is the function specialized, and what was in the initial job posting description), the essential job functions are determined in the interactive process.

So, what might the reasonable accommodations be for the three examples? For the typist with carpal tunnel syndrome, the employer can provide a keyboard-rest tray to reduce the stress on the employee's wrists. If the accommodation fails to work as anticipated, the parties might need a further interactive process to determine additional accommodations. For the employee with asthma, the employer can reschedule lawn mowing for nonbusiness days so that the employee can perform his essential function of being at the office every weekday from 9:00 a.m. to 5:00 p.m. For the employee with perceived back pain, the interactive process will reveal that the employee does not actually have back pain and can perform her essential job functions without any accommodation.

The interactive process as described above has become a relatively fertile ground for the plaintiff's bar.¹⁸ There are a number of features that make FEHA's interactive-process require-

¹⁸ Chapter Four reviews the trends in claims under FEHA alleging refusal to accommodate.

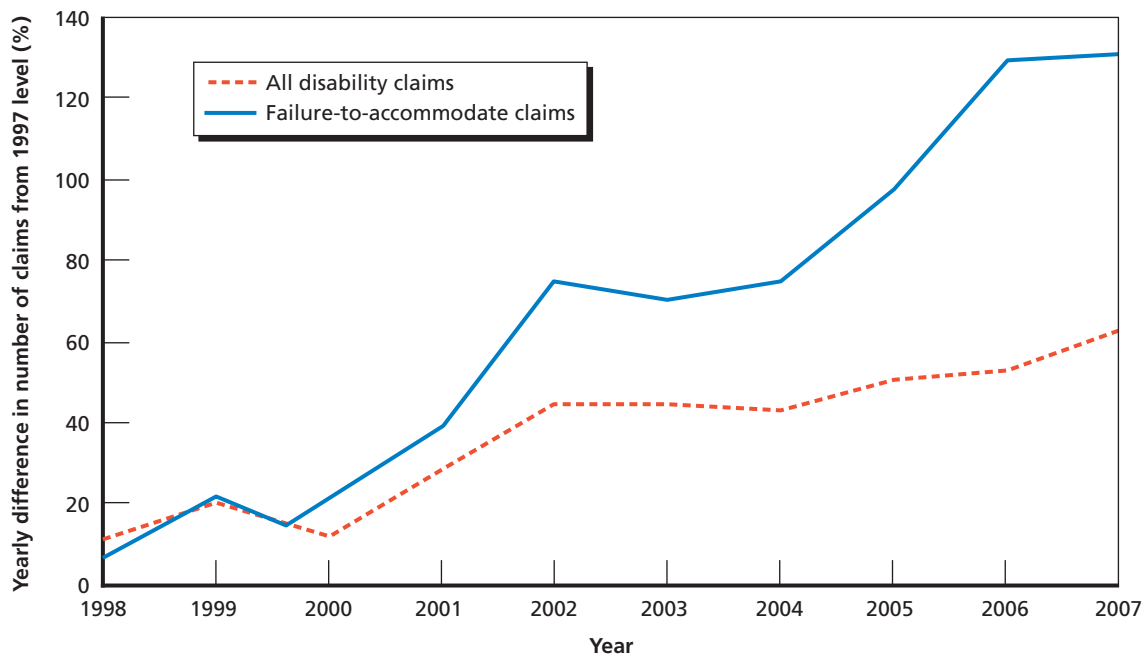
ments favorable to plaintiffs. In particular, there are no magic words necessary to require an interactive process, so a plaintiff need not produce a documented request taking a particular form for an interactive process to be required under FEHA (in particular, consider the above example of an employee with perceived back pain). Further, an employer must enter a good-faith dialogue to determine whether an accommodation can be made in a timely matter. Failure to do so is a civil violation in and of itself under FEHA (unlike under the ADA), so it might be relatively easy to establish a violation. Lastly, there is no cap on damages under FEHA, while there is a \$300,000 cap under the ADA. Thus, a plaintiff might find it more attractive to sue under FEHA than under the ADA.

The Impact of AB 2222 on Disability Discrimination Claims

We argue that the changes brought about by AB 2222 significantly increased disabled workers' ability to make a discrimination claim under FEHA. To confirm the actual impact of the law, we use data on the annual number of disability allegations from DFEH. DFEH is the administrative agency that oversees the implementation of FEHA. In order to make a civil claim under FEHA for harm due to discrimination on the basis of disability, or for any other type of discrimination, a complaint must first be filed with DFEH. The data examined here are on the total number of initial complaints alleging an act of discrimination.

Figure 4.1 illustrates the growth in the number of allegations made under FEHA California claims from 1997 to 2007. The vertical axis represents the percentage difference between the number of claims reported in the current year and in the first year of data (1997). The table

Figure 4.1
Percentage Change in Discrimination Claims in California, by Basis of Claim, 1997–2007



reports the growth in the total number of claims alleging disability discrimination and the growth in the number that specifically allege a failure to accommodate. Because the changes in AB 2222 appear to make it easier to allege that an employer failed to reasonably accommodate a disability, we expect the biggest change in the number of disability claims to come in the form of an allegation of failure to accommodate.

The figure confirms that the amendments to FEHA led to a sharp increase in the number of claims alleging disability discrimination. The number of disability-discrimination claims displays a small amount of growth from 1997 to 2000, but there is a sharp increase in 2001 and then even more in 2002, until the trend levels off. By 2007, the total number of disability discrimination claims in California was approximately 62 percent higher than the number in 1997.

Additionally, the figure illustrates that a majority of the growth in disability discrimination claims after AB 2222 was, indeed, driven by an increase in the number of allegations of refusal to accommodate. The number of complaints of refusal to accommodate jumped from approximately 21 percent greater than the baseline value in 2000 to 39 percent greater in 2001 to 75 percent greater in 2002. In 2007, the number of claims alleging a refusal to accommodate was 131 percent higher than in 1997.

It is interesting to note that the level of refusal-to-accommodate claims remained fairly steady from 2002 to 2004 before rising sharply again in 2005. This latter period of growth coincides with the repeal of the vocational rehabilitation system. A key part of participation in vocational rehabilitation was the contact with the vocational rehabilitation counselor. The creation of the vocational rehabilitation plan seems fairly consistent with many of the requirements of an interactive process. Hence, the absence of a vocational rehabilitation counselor might have helped spur an additional increase in the number of refusal-to-accommodate claims.

An obvious concern is whether the changes in the number of disability discrimination claims we observe were driven by a more-general trend or some other factor unrelated to AB 2222. Gailey and Seabury (2010) compare the trend in the number of disability discrimination claims with the number of other employment discrimination claims under FEHA and find no similar trend in the other forms of discrimination. Similarly, they use data from EEOC on disability discrimination claims made under the ADA and find no national trend similar to the trend in California.

Interactions Between FEHA and the Workers' Compensation System

On the surface, there appear to be a number of potential confounding effects for studying the recent changes to workers' compensation laws. First, PD claims could be a fertile ground for potential violations of FEHA. As discussed earlier, there is no cap on damages under FEHA, and failure to engage in an interactive process is a separate violation. Further, given FEHA's broad definition of disability (including perceived disabilities), a disability determination in a workers' compensation claim might trigger the need for a FEHA interactive process, as the determination indicates that the employer now believes that the employee is disabled. Offering retraining to a new job for an injured or disabled worker might not satisfy FEHA's interactive-process requirement if the essential job duties in the new position require accommodations.

Recent events make these interactions with FEHA more relevant to any analysis of return to work by workers' compensation claimants. In the 1998 *Moorpark* decision, the California Supreme Court ruled that workers' compensation is not the exclusive remedy for work-related disability discrimination claims.¹⁹ Furthermore, as discussed earlier, the repeal of vocational rehabilitation implies that there will no longer be a rehabilitation counselor to initiate a de facto interactive process.

Gailey and Seabury (2010) studied how the interaction between disability discrimination law and workers' compensation rules might affect the postinjury employment of disabled workers' compensation claimants. Conceptually, a more-aggressive disability antidiscrimination policy should make employers more willing to return disabled workers to work, and Gailey and Seabury argue that the effect will be enhanced in workers' compensation.²⁰ Using data from the Current Population Survey (CPS) in California before and after the adoption of AB 2222, they find that the postinjury employment of disabled workers in the workers' compensation system rises relative to that of disabled workers outside of the workers' compensation system.²¹

While the overlap between FEHA and the workers' compensation system might create synergies that help promote return to work, there are a number of ways in which the overlap is inefficient and costly for employers. Workers' compensation is an administrative, rule-based system, and it often imposes very specific requirements about exactly what actions employers are obligated to take and when they should take them. While DFEH does resolve many cases administratively, a number of allegations under FEHA are resolved in the civil justice system. The term "reasonable accommodation" is open to interpretation, and the requirements of the interactive process are generally more vague and individual specific than is the norm in workers' compensation. As a result, there can be tension complying with the requirements of both systems at once.

As an example of where these requirements could overlap, consider the requirement that, for an employer to be eligible to receive the 15-percent bump down on PD benefits, it must make an offer of return to work within 60 days of an injury being declared P&S. Leaving aside the issue of whether the employer would have been alerted of the P&S date, it is possible that these 60 days might pass and an employer would still be engaged with the worker to determine what accommodations, if any, are reasonable. If the employer makes such an offer, and the worker accepts, the employer could face additional liability if the employee is later reinjured and it is deemed that the injury occurred because of a failure to make reasonable accommodations.²²

The point of this example is simply to note that the approaches to promoting return to work in the two systems are quite different and that, in some cases, there could be tension

¹⁹ *City of Moorpark v. Superior Court*, 18 Cal. 4th 1143, 1998.

²⁰ The reason that the effect is stronger in the workers' compensation system is that accommodating a workers' compensation claimant gives the employer the opportunity to lower workers' compensation costs, which offsets some of the accommodation costs.

²¹ Note that this says nothing about changes in the level of return to work, which we study later. Rather, their analysis simply shows that the change in AB 2222 had a differential impact on workers' compensation claimants.

²² A similar situation to this arose in the case *Bagatti v. Dep't of Rehab.* (97 Cal. App. 4th 344, 2002), in which an employee of the California Department of Rehabilitation returned to work after the department refused an accommodation, and the employee was subsequently injured (allegedly due to the failure to accommodate).

between the two. For our purposes, it is important to keep in mind that changes in FEHA could have had an impact on return to work for workers' compensation claimants in California, independently of the changes that were occurring in the workers' compensation system.

Employer Attitudes and Practices About Return to Work Since the Reforms

Much of our discussion of the impacts of the tiered disability benefits, the worksite accommodation subsidy for small businesses, and disability discrimination laws suggest that they provide incentives that promote return to work. On the other hand, we have also discussed some practical challenges in implementing these policies that could mute the impact on return to work. In this chapter, we discuss the results of a survey designed to elicit some information about employer perspectives on the importance of these incentives in driving return-to-work practices.¹

Survey Methods

We compiled a survey instrument asking employers about their return-to-work activities and the perceived importance of workers' compensation. One limitation of our survey is that we did not use a formal sampling design. Rather, we sent the survey forms out to members of the California Self-Insurers Association (CSIA) and the other to the California Small Business Association (CSBA). With this approach, we targeted two distinct populations of employers: small, insured employers, which are least likely to be affected by the reforms (because they are not experience rated), and very large, self-insured employers, which are the most likely to be affected by the reforms.²

An initial email request for participation was sent to each member list that included an introduction describing RAND's purpose as an organization as well as the research team's aims in conducting the survey; an attached letter of support from CHSWC for the survey; instructions to access and a link to the survey web page, hosted by RAND; and a disclosure statement stressing the confidential and voluntary nature of the survey. Emails instructed recipients to forward the instructions and survey access to a manager, member of human resources staff, or a person who had the institutional knowledge to answer questions regarding worker injuries and return-to-work practices.

The survey was hosted online by RAND's Multimode Interviewing Capacity (MMIC) system over a period of several weeks, from September 15, 2009, to November 11, 2009. The

¹ The full survey form is reproduced in Appendix B.

² This is because self-insured employers are perfectly experience rated, in the sense that they bear the full expected cost of their workers' compensation costs. For insured firms, particularly smaller firms, they are only partially experience rated, meaning that their premiums do not fully adjust to reflect their expected costs.

survey consisted of 34 questions, split into five sections covering topics relating to respondent and firm information, current return-to-work practices, disability claims, responses to legislative reforms, and drivers of return-to-work practices.³ Respondents followed an embedded link in the email request to a website hosted by RAND's MMIC unit. To protect respondent privacy, each participant was given a randomly assigned login ID upon entering his or her unique email address, which the participant could use to return to the website and complete the survey if he or she chose to take it in multiple sittings. During this period, three reminder emails were sent to the member lists, requesting that respondents participate in the survey.

The survey resulted in 67 completed questionnaires, 34 of them from the large self-insured employers and 33 from the small businesses. While this represents about a 23-percent response rate for the self-insured employers, it is less than 5 percent for the small businesses. Given the low overall response rates and the lack of a randomized sampling design, it is important to stress that we make no claim that the survey findings are a true reflection of the behavior and attitudes of the "average" California employer. It is quite possible that respondent firms have different attitudes or policies toward return to work. While we feel that the survey findings provide some important context to interpret our discussions of workers' compensation policies and the empirical work that follows, a randomly selected employer from California might provide significantly different answers.

Results

We begin by summarizing some of the characteristics of respondents in our sample. Table 5.1 provides information about the self-reported injury rate, the presence of a return-to-work program, the aggressiveness of return-to-work practices, and the experience with allegations of discrimination on the basis of disability for firms in our sample. The responses are reported for the small (fewer than 100 employees, the cutoff for a small business) and large (100 or more employees) firms in our sample.

The first column reports the fraction of firms that reported having workers' compensation injury rates of 10 percent per year or more. Almost 15 percent of the small firms report an injury rate of at least one in ten, while 24.2 percent of the large firms do. If these reports are accurate, we might be oversampling high-risk firms.

The second column reports the fraction of firms in our sample that have a return-to-work program. Specifically, it reports the fraction of respondents that answered yes to the question, "Does your company have a formal return-to-work program? In other words, does your

Table 5.1
Summary of Respondent Firm Characteristics

Firm Size	Has Injury Rate 10% or Higher	Has Formal Return-to-Work Program	Aggressive Return-to-Work Policies	Experienced Allegations of Disability Discrimination
Small (N = 33)	0.147	0.353	0.265	0.059
Large (N = 34)	0.242	0.970	0.697	0.303

³ The survey form is reprinted in Appendix B.

company have a written set of rules or guidelines that dictate the policies and procedures for transitioning injured workers back to the workplace?” Virtually all of the large firms in our sample have a return-to-work program, while just over 35 percent of the small firms do. Similarly, 69.7 percent of large firms characterize their return-to-work policies as “aggressive,” while 26.5 percent of small firms do.

Finally, the fourth column reports the fraction of respondents with regular experience dealing with claims alleging discrimination against disabled workers. For the purposes of this table, we define “experience” as a firm reporting that it experiences at least one such claim in a typical year. About 30 percent of the large firms in our sample report this kind of experience with disability discrimination claims, while 5.9 percent of the small firms do. This suggests that disability discrimination claims are rare events for the smaller firms in our sample. Approximately 82 percent of the small firms responded that they “never” experience disability discrimination claims in the typical year (just 9 percent of the large firms offered a similar response).

In our survey, we inquired about the use of the same set of accommodation methods discussed in the earlier RAND survey. Specifically, we asked employers to describe how frequently they used the following methods to promote return to work: modified hours or schedule, modified work tasks, modified workstation or equipment, or the offer of a different job. Their responses are reported in Table 5.2, broken down by small and large firms. The table reports the fraction of employers by category that report using the method “frequently” or “always” for injured workers.

From the table, we see that a sizable fraction of employers report using all four methods with regularity. Each method is used frequently by at least half of the firms in the sample. The frequency of use appears higher than that observed in the previous RAND survey, described in Table 2.1 in Chapter Two. This could reflect an increase in the adoption of return-to-work principles over time, though we cannot rule out that it simply reflects differences in the respondent populations. The pattern of use also appears generally consistent with that found in the previous RAND survey. Modifying work tasks is by far the most–commonly used approach. The more-intensive approaches are used much less frequently, with the offer of a new job the least common option.

Table 5.2 also suggests that, as we would expect, each type of accommodation is used much more frequently in the large firms. Large firms have considerably more flexibility and resources than smaller firms, so we expect them to have a greater ability to offer modified work. One possible exception is offering a flexible schedule, which would seem to be a relatively easy option even for small firms. The small firms in the sample provide this type of modification about as often as the large firms do (61.8 percent of small firms report frequent use, compared to 63.6 percent of large firms).

Table 5.2
Use of Different Accommodation Methods, by Firm Size

Firm Size	Accommodation Method Is Used Frequently			
	Modify Hours or Schedule	Modify Work Tasks	Modify Workstation or Equipment	Offer Different Job
Small	0.618	0.618	0.471	0.353
Large	0.636	0.909	0.636	0.667

To obtain some insight into the employers' perceptions about the importance of the workers' compensation system and the reforms for setting return-to-work priorities, we asked respondents to agree or disagree with a number of statements about the importance of each. For example, in order to assess the overall importance of workers' compensation costs in return-to-work decisions, we asked employers to agree or disagree with the following statement: "Reducing the costs associated with workers' compensation claims is an important factor in my company's willingness to bring injured and disabled employees back to work." To assess the importance of the workers' compensation reforms, we asked them to indicate agreement with the statement, "Recent changes to the workers' compensation system have increased my company's willingness to bring injured and disabled employees back to work." To assess the importance of the changes to FEHA, we asked them to indicate agreement with the statement, "Recent changes in the likelihood of a disability discrimination claim have increased my company's willingness to bring injured and disabled employees back to work."

Table 5.3 summarizes the responses. We code employers as agreeing if they marked "strongly agree" or "somewhat agree." The table reports the level of agreement broken down by small and large firms.

The table suggests that respondents strongly agree that reducing workers' compensation costs is an important factor driving return-to-work decisions. Almost all of the large employers, approximately 94 percent, agreed. Even a sizable majority of the smaller employers—70.6 percent—agreed that this was an important factor. The perceived importance of workers' compensation costs for small firms is somewhat surprising, given that smaller employers are less likely to be experience rated. Employers in high risk classes are experience rated at smaller sizes, however, and our respondents might be experience rated at a higher frequency than we would expect from a random sample of small firms. Alternatively, it is entirely possible that employers that are not experience rated perceive themselves to be so and still perceive a link between their actual costs and premiums.

While most employers perceive a strong link between workers' compensation costs and return to work, there is less agreement on the impact of the reforms. About 42.4 percent of large employers agree that the reforms to the workers' compensation system are important, while about 45.5 percent agree that the reforms to the disability discrimination system are important. Just 23.5 percent of small firms agree that the workers' compensation reforms are important. A higher fraction of small employers agree that the disability discrimination reforms are important (38.2 percent), even though these employers tend to have comparatively little experience with disability discrimination claims.

Finally, we also inquired about the potential importance of two particular features of the workers' compensation reforms: the two-tiered disability benefit and the workplace accommo-

Table 5.3
Perceived Importance of Different Factors in Driving Return-to-Work Decisions

Firm Size	Important Factor in Driving Firm's Return-to-Work Decisions		
	Reducing Workers' Compensation Costs	Recent Reforms to Workers' Compensation System	Recent Changes in Disability Discrimination Claims
Small	0.706	0.235	0.382
Large	0.939	0.424	0.455

dation subsidy. With regard to the tiered benefit, we asked, “How important would you say that the two-tier disability benefit is in your company’s determination as to whether or not to make an offer of return to work to an employee who has been permanently disabled by a workplace injury?” With regard to the accommodation subsidy, we asked, “How much would you say that the availability of a subsidy of up to \$2,500 would affect your company’s willingness to provide physical accommodations to the work site in order to return to work an employee who has been permanently disabled by a workplace injury?” Both policies had been described in the survey’s instructions.

Of the large employers, 36.4 percent said that the tiered benefit was at least somewhat important, compared with 25 percent of the small employers. As we might expect, the tiered benefit was more important for larger firms than for smaller ones, though it was not considered particularly important by either group. The accommodation subsidy was perceived as more important. Just 39.4 percent of the large firms responded that a \$2,500 subsidy would be at least somewhat important, while 60.7 percent of the small firms said that it would be somewhat important. This indicates comparatively strong support for an accommodation subsidy program, although, in practice, the program itself was little used.

Summary of Findings

The goal of our survey was to provide some insight into employer perceptions about the importance of different policies in driving return-to-work decisions. The employers in our survey reported being highly motivated to return injured workers back to work. The ability to reduce workers’ compensation costs was clearly identified as a driving factor in return-to-work decisions, suggesting that employers are responsive to financial incentives. There was somewhat less support for the specific provisions in the recent reforms, however, which were perceived to be about as important as the changes to the disability discrimination system.

Our survey analysis had some important limitations. Given our small sample of respondents, we do not believe that this survey necessarily reflects the views of a fully random sample of employers in California. This is particularly true of the small-business portion of our sample. With the extremely small response rate, the results on small businesses should be interpreted with caution, and more work should be done to gauge the awareness and attitudes of small businesses about return-to-work issues. Nevertheless, the survey findings highlight the potential role of incentives in workers’ compensation and other policies as tools to help promote return to work.

Empirical Trends in Return to Work of California Workers' Compensation Claimants

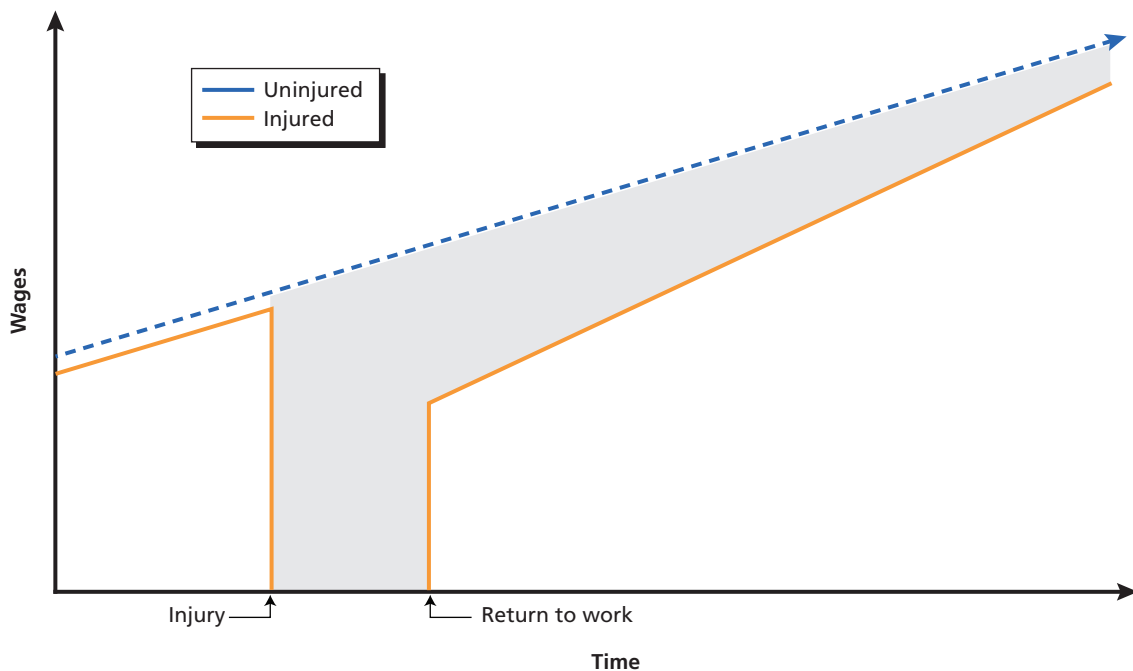
Data and Methods

We measure economic outcomes using the matching methodology used in numerous prior RAND studies for CHSWC, including Peterson et al. (1998); Reville, Boden, et al. (2001); Reville and Schoeni (2001); Reville, Schoeni, and Martin (2002); and Reville, Seabury, et al. (2005).

Measuring Losses from Injury

We describe the empirical challenge to estimating earning losses using Figure 6.1, which illustrates the hypothetical losses from a permanently disabling workplace injury. The dashed line represents the “potential” earnings a worker would have in the absence of an injury. Potential earnings increase over time, representing the increased earnings associated with increasing experience in the labor market or increasing tenure at the employer. The solid line represents

Figure 6.1
Hypothetical Effect on Earnings After a Workplace Injury



RAND MG1035-6.1

the injured worker's actual earnings. At the time of the injury, the worker receives no earnings for some time while recovering from the injury. This is the period during which workers' compensation temporary-disability benefits are received.

At some point, the worker returns to work, perhaps in some modified capacity. In the example in the figure, the worker returns at lower earnings than she had prior to the injury. The worker recovers earnings over time, as the wages converge closer to what they would have been absent the injury. In this example, at the end of the observed period, the worker makes more than she made prior to the injury but not as much as she would have made if she had not been injured.

The shaded area in the figure represents the total lost earnings over the period after the injury. Estimating the size of this area and determining what fraction is replaced by workers' compensation benefits are the goals of this analysis. Whereas wages received while the claimant is injured are readily observable (the solid line in Figure 6.1), the challenge in estimating earning losses lies in estimating the uninjured earnings, which are represented by the dotted line.

This example illustrates the metrics we can use to estimate the economic impact of a disability. The shaded area in Figure 6.1 represents the total earnings lost as a result of the disability. To measure the length of time out of work, we can measure whether the employee has returned at different points after injury, i.e., measuring the point of return to work. Whether we evaluate the impact on the actual dollars earned or the time out of work, both represent adverse outcomes for injured workers.

Linked Administrative Data

Our data in this study are similar to the data used in past studies, (e.g., Peterson et al., 1998; Reville, Seabury, et al., 2005). Workers' compensation claims data are linked to earning data for the claimant based on their social security number (SSN), and this information is combined with earning data to identify the control group. We use data on workers' compensation claimants from two sources: WCIRB and the DEU.

WCIRB is a nonprofit organization that collects data from licensed workers' compensation insurance carriers in California and uses the information to compute recommended premium rates for the California Department of Insurance. The data we use come from the Uniform Statistical Reporting Plan (USRP), which includes information on the date of the injury that led to the claim, the indemnity benefits, defense costs, and medical costs (paid and incurred), as well as detailed information about the nature and severity of the injury that led to the claim. In particular, the WCIRB data include claim-level information on all PD claims and all temporary-disability claims with costs of \$2,000 or more (small temporary claims and medical-only claims are reported as a group).

The first time a claim is valued for unit statistical reporting (USR) is 18 months after the start of the policy year. This 18-month value is reported on the first report submitted to USR. Claims that are still open as of the first report are required to be valued and reported again 12 months later on a second report. This process continues until all claims are closed or for a total of five reports. We received data for injured workers who made claims for workers' compensation temporary disability and permanent partial disability that occurred on policies opened from 1999 through 2005.

Given that the claim data are at the report level with up to five reports per claim, we collapsed the data to a claim-level file for analysis. Due to reporting inconsistencies across report levels, we assigned the accident date that was reported most frequently across reports. The claim identification number changed over time, so we used the accident date, class codes, average weekly wage, the body part injured, the nature of injury and accident, medical paid, total indemnity paid, and report date to assign a consistent claim ID. Additionally, we determined the date the claim closed—reports are submitted after a claim is closed with new information, so the last report level that indicates closure is not necessarily the date on which the claim closed. Further modifications included indentifying and removing records with invalid SSNs, duplicate records, multiple claims on the same date, and invalid accident dates.

We take the information on indemnity and medical benefits from the first report of injury for all cases because this is the only report we have for all injuries in the sample. A limitation of the first report, however, is that claims might vary in maturity based on when the injury occurs in the policy year. That is, the total amount of time after an injury covered by the first report ranges from six to 18 months, depending on whether the injury occurred at the end or the beginning of the policy year, respectively. This suggests that paid amounts will be larger, and incurred values more accurate, for claims that occur earlier in the policy year. Since the relevant date for most of our analyses is the accident quarter, we sometimes mix accidents that occurred in the start and end of the policy year. While we do not make explicit adjustments for this in our main analysis, we do test the impact of the nonstandard reporting lengths of claims in Appendix A and find that they do not alter our results.

Another limitation of the WCIRB data is that they include information only for those workers injured at insured firms. In order to get a more-representative sample, including both insured and self-insured firms, we use data from the DEU. The DEU is a state agency that takes information from medical reports and uses it to produce a disability rating (a number from 1 to 100 indicating the severity of disability). While the DEU includes information only on PD claims, it does include information on both insured and self-insured (including public) employers.

The DEU performs more than 50,000 ratings of permanent disabilities each year. From the DEU, we received transaction data for claims of injuries that occurred between 1999 and 2008. Data were received in four files: old rating (claims rated under the PDRS in effect prior to January 1, 2005), new rating (claims rated under the 2005 PDRS and given a rating larger than 0), unratable (rater indicated that the report was unratable either because it was incomplete or because the worker had not achieved P&S status), and zero ratings (claims rated under the 2005 PDRS for which the rater indicated that there was no ratable impairment).

There is often more than one record per injury because there can be multiple medical reports to rate; therefore, for these cases, we collapsed the records into a single unique record per injury. Given that there was overlap of the SSN and date of injury (DOI) in the four files, we assigned the following rules in selecting which records to use: First, if the injury was in one of the valid files (old or new) and also in one of the invalid files (zero rating or unratable), we used the record in the valid file. Second, if the injury was in both valid files, we selected the record from the old file if the year of injury was prior to 2004 or from the new file if the injury was 2004 or later; and finally, if the injury record was in both invalid files, it was assigned to the old file if the injury was prior to 2004 or to the new file if the injury year was 2004 or later.

We match data from the DEU and WCIRB to earning data from the base-wage file maintained by the California Employment Development Department (EDD). Every quarter,

employers covered by unemployment insurance (UI) in California are required to report the quarterly earnings of every employee to the EDD. These reports are stored in the base-wage file. The industries covered by UI are virtually identical to the industries covered by workers' compensation, so a worker injured at a firm for which he or she can make a workers' compensation claim should also have a record for that quarter in the base-wage file. With roughly 95 percent of employees in California covered by the UI system, the matched DEU-EDD data provide a substantially complete and accurate California quarterly earning history for PD claimants. We collected wages for all workers from the first quarter of 1998 through the second quarter of 2009, giving us up to three years of postinjury data for injuries through the second quarter of 2009.¹

We observed multiple records per individual in the quarterly wage files. Multiple records can be accounted for by name changes due to marriage, variations in how employers submit names (i.e., Jon versus Jonathan), typographical errors, and illegal use of SSNs. To adjust for these issues and capture all the wages for an individual by quarter and over time, we applied the Soundex phonetic filing system to the first and last name and kept records that had only one last name across all employers and kept records that had more than one last name but only one first name (capturing individuals with legitimate name changes). Because of these data limitations, wages were not available for approximately 19 percent of injured workers in both the WCIRB and DEU data.

All dollar values, including wages, indemnity benefits, and other variables, such as medical costs, were converted into 2006 dollars using the Consumer Price Index published by BLS.

Using Matched Uninjured Co-Workers as a Control Group

We estimate uninjured earnings in the postinjury period using the earnings of a matched comparison (control) group. The comparison group is made up of workers similar to the injured workers in the preinjury period but who did not experience a workplace injury during the time period under examination.

For each injured worker, we selected up to five workers employed at the same firm at the time of injury who had earnings close to the injured worker's over the year prior to injury. We define "close" as being within a band equal to the wage of the injured worker plus or minus 15 percent of the log standard deviation of the earnings of all injured workers. The comparison workers were also required to have similar tenure, where tenure is measured using three levels: less than or equal to one year on the job, one to two years, or more than two years. If more than five comparison workers met the matching criteria, we selected the five workers with the lowest absolute value of the difference in wages from the injured workers (ties were decided randomly). We sampled with replacement, meaning that the same comparison workers could be matched to more than one injured worker. If a worker were injured in a later year, however, that worker was not allowed to be a comparison worker.

Here, we describe formally how we use the matched data to estimate earning losses. Let y_t^I represent the injured worker's earnings (where I denotes "injured" and the subscript t

¹ Data are not available in every year for every worker whom we observe at the time of injury. In some cases, injured or comparison workers drop out of the sample and we do not know whether they left the state, stopped working, or became self-employed. This could bias us toward overestimating earning losses if workers' compensation claimants are more likely to leave the state or become self-employed. Reville and Schoeni (2001) explore this issue using the CPS and find no evidence that workers' compensation recipients are significantly more likely than nonrecipients to exit the state or to have a self-employment issue.

denotes “time from the injury”). Let y_t^U represent the comparison worker’s earnings (where U denotes “uninjured”). We estimated y_t^U using the average earnings of the n comparison workers for that individual injured worker, where n is between 1 and 5, depending on the number of available comparable uninjured workers at the injured worker’s employer. For any injured worker, the undiscounted earning loss between the time of injury, which we denoted as $t = 0$, and some future date, T , is shown in Equation 6.1:

$$\text{earning loss} = \sum_{t=0}^T (y_t^U - y_t^I). \quad (6.1)$$

Usually, when we report earning losses, we report the average of the loss in Equation 6.1 across all injured workers.

In some sense, return to work is easy to measure: We simply observe whether an individual is working (and at what point) after an injury occurs. In some cases, however, an injured worker might exit the labor force for reasons totally independent of his or her disability. Simply asking whether a disabled worker is working in the postinjury period ignores the possibility that he or she might not have worked even in the absence of a disability. Thus, to estimate injury’s impact on return to work, it is necessary to compare the likelihood that a disabled worker is working in the postinjury period with the likelihood that uninjured “control” workers are working, because, on average, they should exhibit similar behavior.

We can formally define our return-to-work estimates as follows. Let h_t^I be a variable that equals 1 if earnings are reported by an injured worker in quarter t (i.e., if $y_t^I > 0$), and let h_t^U be a similar indicator for uninjured workers (we focus on quarters because the data we propose to use are quarterly earning data). If a person has earnings reported in that quarter, then we presume that that person is working in that quarter. Furthermore, let $Pr(h_t^I)$ and $Pr(h_t^U)$ denote the probability that injured and uninjured workers report positive earnings in quarter t . In general, we do not observe the probability that an individual works; we simply observe whether he or she works. However, aggregating into the fraction of individuals who work provides us with an estimate of the probability that an individual works. We can thus define return to work in a given quarter as

$$\text{relative employment} = \frac{Pr(h_t^I)}{Pr(h_t^U)}. \quad (6.2)$$

In some cases, we might ask whether an individual returns to the at-injury employer. Return to the at-injury employer can be examined in a similar fashion, with the h_t variables equaling 1 only if the injured worker reports earnings from the at-injury employer.

One limitation of this matching procedure is that it is more difficult to match individuals in smaller firms, so we are unable to estimate losses for many of these workers. Table 6.1 reports the match rate for both the WCIRB and DEU samples. We can see that the match rate for the injured workers who were working at the smallest firms at the time of injury (those employers with ten or fewer employees) is less than 40 percent for both samples. For workers injured at firms with ten to 50 employees, the match rate jumps significantly, to more than 80 percent. All other firm-size categories have match rates exceeding 90 percent. Overall, the

Table 6.1
Average Match Rate, by Size of At-Injury Employer

Number of Employees	WCIRB (%)	DEU (%)
1 to 10	38.4	36.3
11 to 50	81.6	82.8
51 to 100	93.4	94.4
101 to 500	96.0	96.6
501 to 1,000	97.2	98.1
1,001 to 5,000	97.7	98.7
≥5,001	97.7	98.8
Total	89.1	93.1

NOTE: Number of injured workers with match = 537,196 for WCIRB and 329,995 for DEU.

match rate for the WCIRB sample is 89.1 percent, and the match rate for the DEU sample is 93.1 percent.²

Despite the high match rate, we use a weighting scheme to adjust the data for potential bias due to a failure to match. The method, which was used previously in Bhattacharya et al. (2010) and that we describe formally in Appendix A, involves estimating the probability of match failure based on observable characteristics of the data (including firm size) and placing additional weight on observations that are observably less likely to match. Thus, the weighting restores the distribution of firm size and other observable characteristics closer to the true distribution in the population.³

Another limitation of the matching procedure is that it does not consider the *value* that individuals place on earnings and how that might differ in the injured or uninjured state. There are numerous reasons that an additional dollar of income could have a different value for someone who is disabled and out of work. The disabled might have a greater need for time spent on personal care (as suggested by Oi, 1991), which could make them less willing to sacrifice an additional hour for work. This is consistent with evidence by Viscusi and Evans (1990), suggesting that the disabled gain less value from an additional dollar of earnings than the nondisabled do.

The distinction between earnings and the value of earnings is important. If the disabled do have a greater demand for personal care, then an additional dollar of disability benefits (which did not require the disabled to sacrifice time at work) could have more value to a disabled worker than would an additional dollar of earnings. This could affect the relative social value of promoting return to work versus providing higher benefits. It could also mitigate the effectiveness of some of the incentive-based policies described earlier. Unfortunately, identify-

² Note that these match rates are significantly higher than in past RAND studies, in which the match rate was about two-thirds, on average. The reason for this is that we loosened the match criteria slightly from 10 percent of the standard deviation to 15 percent. While this change worsens the quality of the match somewhat, we decided that the increase in match rates was significant enough to warrant the change. Qualitatively, the results of our study are maintained if we use the more-restrictive match criteria.

³ While the subsequent analyses are conducted using these weights, we obtain qualitatively identical findings if we study the unweighted data.

ing the value of earnings is beyond the scope of the current study. Nevertheless, the needs of the disabled and the relative value of disability benefits and earnings merit consideration in future research and policy considerations.

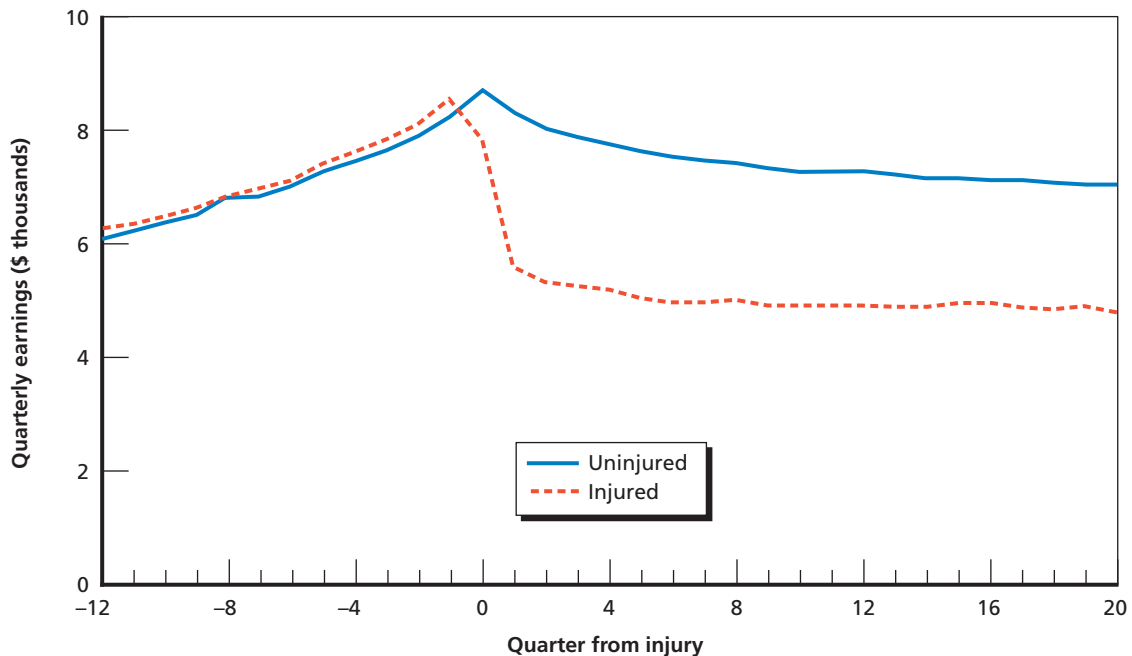
Summary of Estimates of Earning Losses and Return to Work

Figure 6.2 reports the average quarterly earnings of injured workers and their uninjured control workers by quarter from injury using workers in the WCIRB sample. In the figure, quarter 0 represents the quarter of injury. The figure reports the quarterly earnings from 12 quarters prior to injury up to 20 quarters after injury. We say “up to” because not all workers have 20 quarters of postinjury earning data available.

The results in Figure 6.2 suggest that injuries have a significant and persistent impact on earnings. We see that the earnings of the injured and uninjured workers are quite similar in the quarters leading up to injury. Given that only the first four quarters prior to the quarter of injury are used in the matching procedure, the fact that workers prior to quarter -4 still show quite similar earnings suggests that the matching procedure does a good job of allowing us to predict the wages of injured workers. Note also that quarter 0, the quarter of injury, is the only quarter in which we require all injured and control workers to have positive earnings. Because some fraction of workers (even without an injury) have zero earnings in any given quarter, the observed earnings peak in quarter 0.

There is a small difference in earnings between the injured and uninjured workers in the quarter of injury, but the difference becomes markedly more pronounced in quarter 1, the first

Figure 6.2
Average Quarterly Earnings of Injured and Uninjured Comparison Workers, by Quarter from Injury, WCIRB Sample

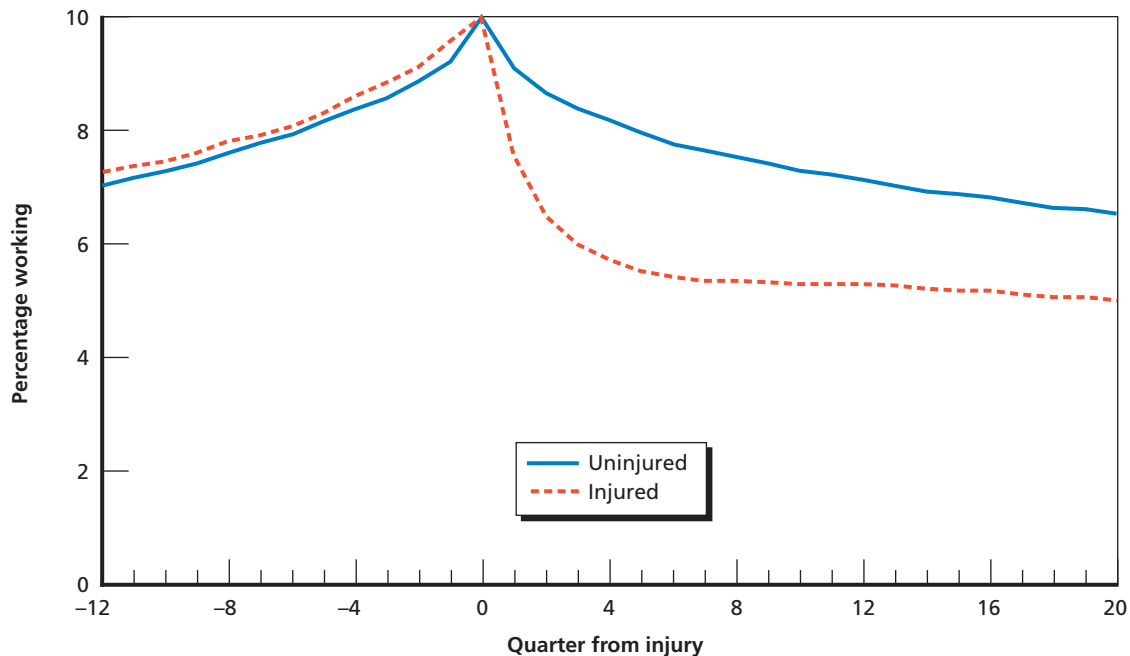


full quarter of injury. Over the first few quarters after the quarter of injury, close to a third of workers are no longer working. Over the longer term, workers display very little recovery in earnings, with losses of approximately 30–33 percent for the entire 20 quarters postinjury.

In Figure 6.3, we report the fraction of injured and uninjured workers who are observed with positive earnings in each quarter before and after injury for the WCIRB data. The figure displays a similar pattern to what we observe with wages. As before, we require all injured and control workers to have positive earnings in the quarter of injury, so the fraction of injured workers in quarter 0 is equal to 1 for both. Workers have a similar propensity to be observed in the labor market prior to injury, even prior to the match period. The likelihood that an injured worker has positive earnings in the quarter drops significantly in the first and second periods after injury. As with wages, we do not observe much recovery by injured workers. On the other hand, we see a sharper decline in the employment rate of uninjured control workers than we observed in their level of wages.⁴ This means that we observe some recovery from injured workers in terms of their relative work, in the sense that the difference between injured and uninjured workers decreases somewhat over time.

Figure 6.4 reports the average quarterly earnings of the injured and matched control workers using the data from the DEU sample. Note that the average quarterly earnings are higher for the workers in the DEU sample, reflecting the inclusion of workers from self-insured

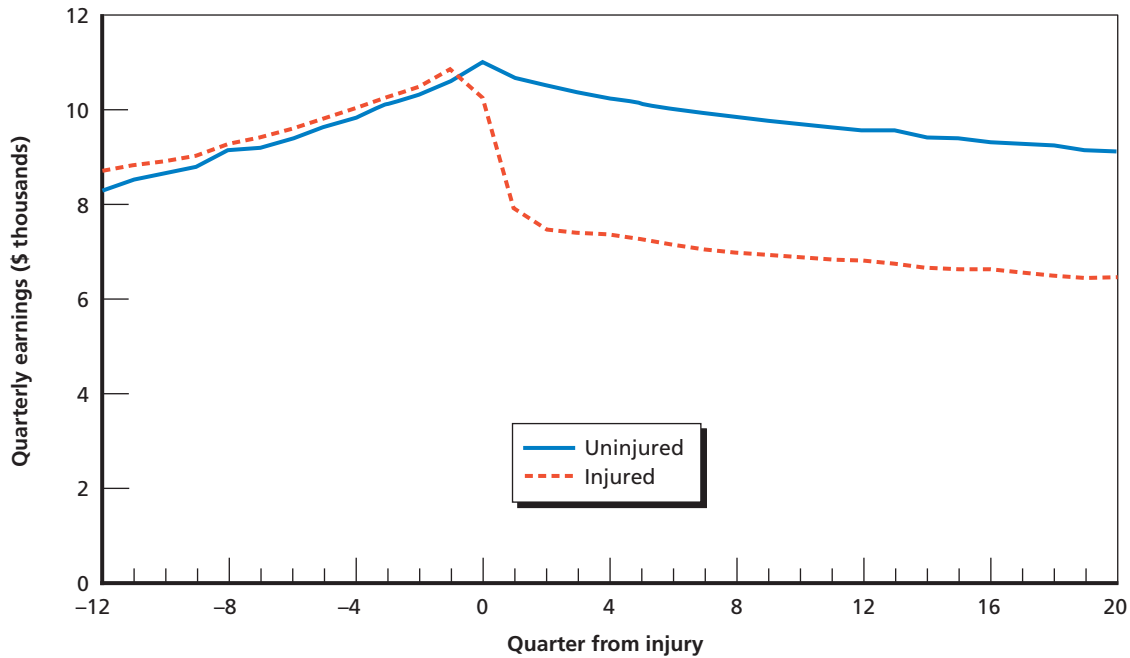
Figure 6.3
Percentage of Injured and Uninjured Comparison Workers Working in the Quarter, by Quarter from Injury, WCIRB Sample



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⁴ This is likely because there are two components of observed earnings, each of which has a different time trend as we look at quarters further from injury. The average earnings of workers in a quarter is proportional to the fraction of them that are working, which the figure tells us is declining over time, and the wages earned conditional on working. On average, the wages conditional on work will be increasing over time.

Figure 6.4
Average Quarterly Earnings of Injured and Uninjured Comparison Workers, by Quarter from Injury, DEU Sample



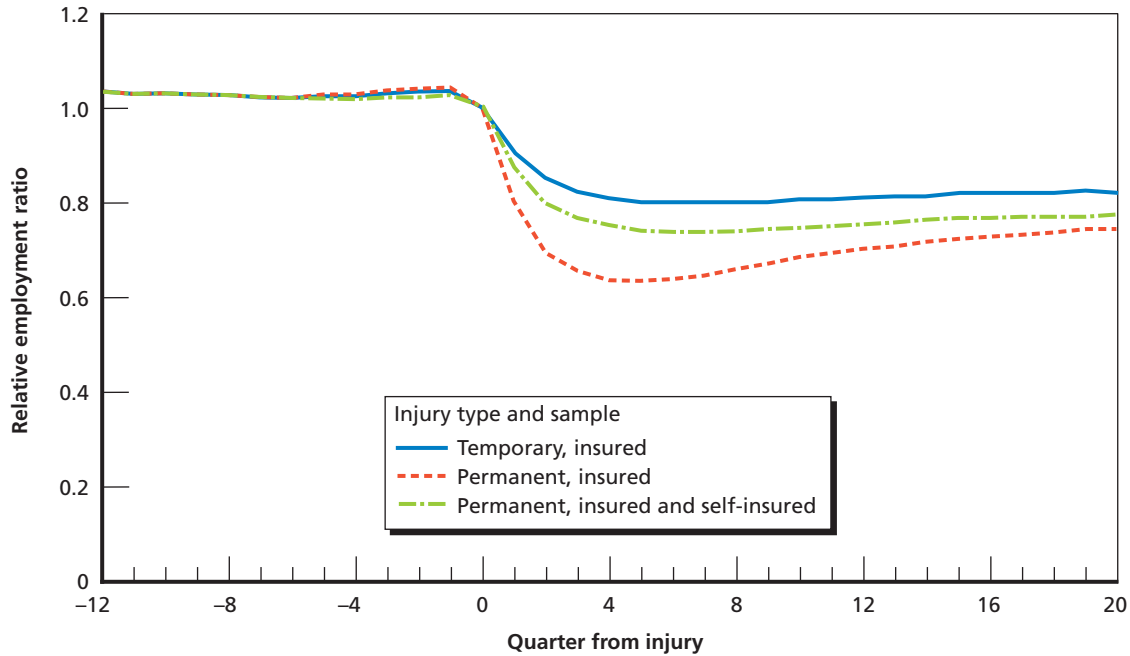
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and public employers, who have higher earnings (Reville, Polich, et al., 2001). Despite the difference in average earnings, however, the overall pattern is quite similar to what we observe in the WCIRB sample. The wages in the preinjury period are very close to what we observe in the postinjury period (though there is a slightly higher difference than in the WCIRB sample). We also see very little recovery by injured workers in the DEU sample, with losses of approximately 30–32 percent in all 20 quarters after the quarter of injury.

Any comparison of the losses in the DEU and WCIRB data is complicated somewhat by the fact that not only do they include information on workers from different samples (insured only for the WCIRB, versus injured and self-insured for the DEU) but they also include information on different types of injuries. Specifically, the DEU includes only PD claims, while the WCIRB data include information on PD claims and high-value temporary-disability claims.

Figure 6.5 compares the relative employment ratios of workers with temporary disabilities from the WCIRB sample, permanent disabilities from the WCIRB sample, and permanent disabilities from the DEU sample. In the figure, all three series display relative earnings of injured and uninjured workers that are extremely similar prior to an injury. In the quarters following an injury, all three series exhibit a significant drop in the relative earnings of injured workers. The largest drop is for the permanently disabled workers at the insured firms (the WCIRB sample), who have nearly 40 percent lower employment in the fourth quarter after injury. The relative employment ratio in the full sample of permanently disabled workers from both insured and self-insured employers (the DEU sample) is consistently 0.73–0.77 from quarters 3 through 20. As one might expect, the relative employment of workers with temporary disabilities is higher than for the permanently disabled workers, consistently above 0.8.

Figure 6.5
Relative Employment Ratios of Injured Workers, by Injury Type and Sample



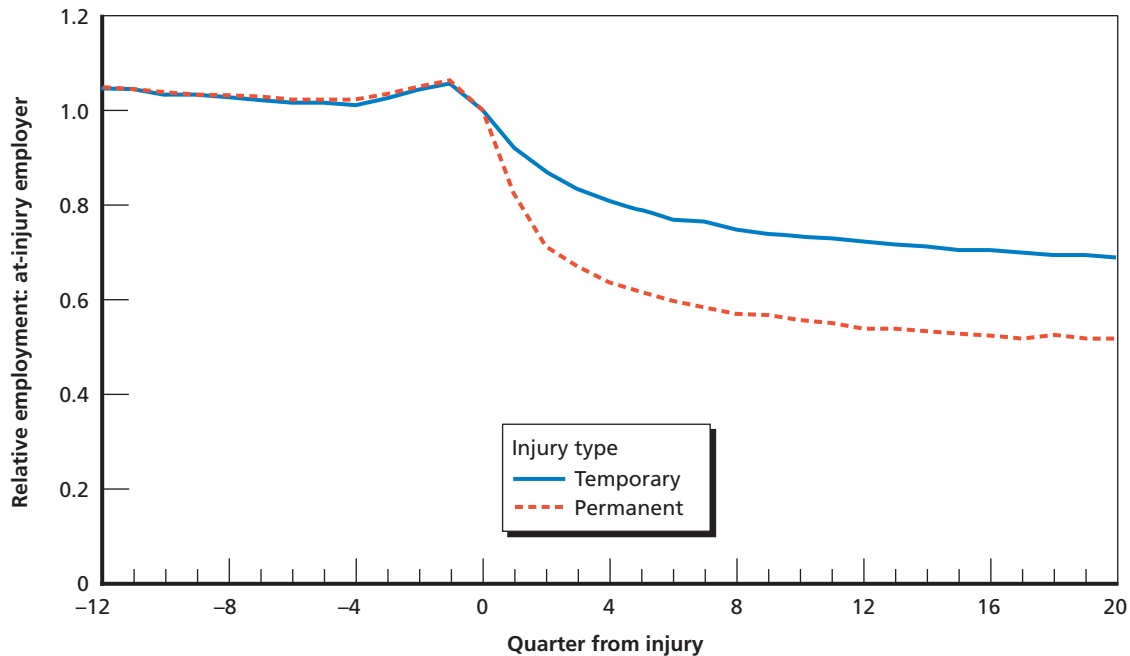
RAND MG1035-6.5

An interesting pattern that we observe in the figure is that the permanently disabled workers at the insured firms have the worst outcomes overall, but they also display the most recovery. That is, the difference between workers at the insured firms compared to the full (DEU) sample or the temporarily disabled workers at insured firms declines significantly over time. By quarter 20, the relative employment for the permanently disabled workers at insured firms is approximately 0.74, compared to 0.77 for the sample of permanently disabled workers at both insured and self-insured firms and 0.82 for the temporarily disabled workers at insured firms.

The previous analysis focused on total earnings and employment of injured and uninjured workers. The EDD data identify quarterly earnings for each employer, however—a fact that allows us to identify whether an individual is working for the at-injury employer in the quarter. Figure 6.6 reports the relative employment for the at-injury employer for workers in the WCIRB sample with temporary or permanent disabilities. Overall, the pattern of employment for the at-injury employer is similar to that of any employment, in the sense that relative employment is very close to 1 prior to injury and declines sharply in the postinjury period. Additionally, continued employment for the at-injury employer is relatively more likely for workers with temporary disabilities than for those with permanent disabilities.

One way in which employment for the at-injury employer differs from overall employment is that there is no observed recovery by injured workers. That is, the relative likelihood of employment at the at-injury employer is strictly declining over time for workers with both temporary and permanent disabilities. Moreover, there is none of the convergence between workers with temporary and permanent disabilities that was observed with overall employment. That

Figure 6.6
Relative Employment for the At-Injury Employer, by Injury Type, WCIRB Sample



RAND MG1035-6.6

is, the difference in relative employment for the at-injury employer between temporary and permanent disabilities remains fairly constant over the 20 quarters after injury.

Return to Work, by Disability Severity

An obvious predictor of poor return-to-work outcomes is the severity of the underlying injury. Workers with more-severe injuries will need more recovery time, be more likely to have residual disability and work restrictions, and likely require more accommodation from their employers. Thus, in our analyses, it is useful to control for injury severity. For permanent disabilities, a natural measure of injury severity to use is the disability rating. This has been shown in past work to be predictive of worse postinjury employment and earnings (Reville, Seabury, et al., 2005).

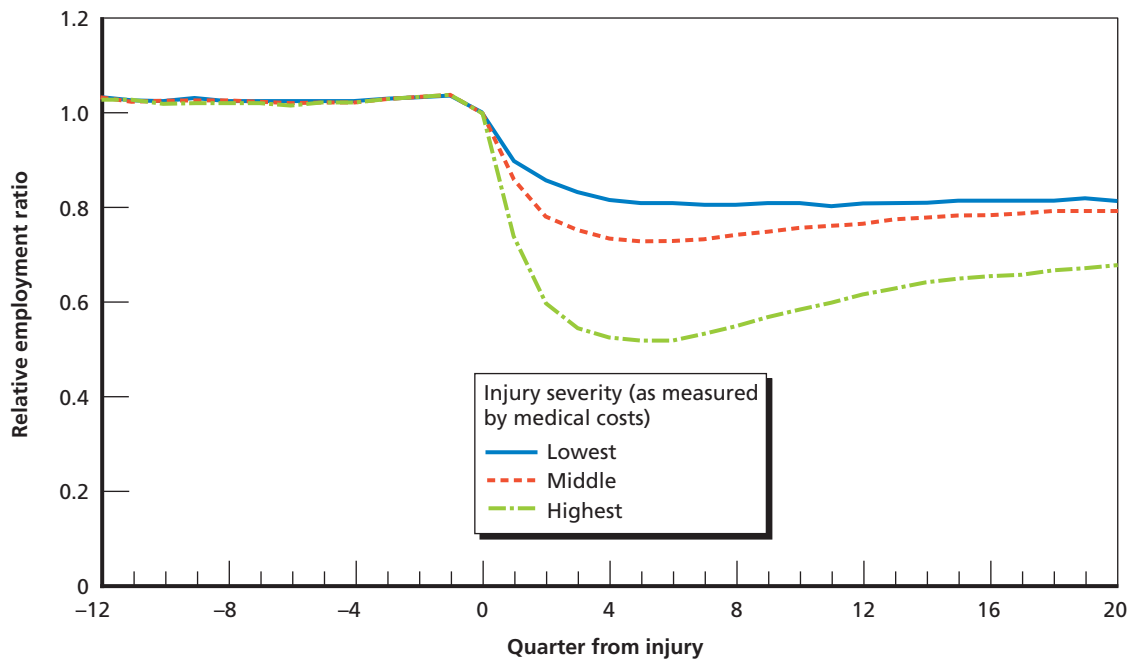
There are some limitations to using the disability rating to measure severity for our purposes, however, particularly when studying trends. Most importantly, the rating changes led to a substantial change in the overall level of ratings, so they do not provide a consistent measure of severity over time. A secondary problem is that the rating is not available for temporary-disability claims. Because of concerns that some workers no longer receive PD benefits with the new rating schedule, we are including information on temporary-disability claimants from the WCIRB for many of our analyses.

We construct two measures of severity that we use in this study—one in the WCIRB sample and a separate one in the DEU sample. In the WCIRB sample, we rank individuals based on their paid medical benefits at the first report of injury. Because the reforms to the

medical system led to changes in paid benefits, we rank individuals based on their medical costs relative to other injured workers' medical costs in the quarter of injury. Specifically, we define a worker's injury as *lowest*, *middle*, or *highest* depending on whether the worker's paid medical benefits are in the bottom, middle, or top third, respectively, of the distribution of medical costs of all workers injured in the quarter. In the DEU sample, we create the same three categories using the disability rating, but we base the ranking on the distribution of ratings within the quarter. That is, we define a worker's injury in the DEU sample as lowest, middle, or highest depending on whether the worker's rating is in the bottom, middle, or top tercile, respectively, of the distribution of ratings of all workers injured in the quarter.⁵

Figure 6.7 reports the relative employment ratios for each of these three severity categories for all injuries, temporary and permanent, in the WCIRB sample (the figure looks nearly identical if we restrict it to permanent disabilities). The figure suggests that the severity measure is generally predictive of adverse employment outcomes. Workers in the least-severe category experience the least reduction in relative employment, though they do still experience a 20-percent reduction five years after injury. Workers in the middle-severity group experience worse outcomes than the lowest group, particularly right after injury, though there is little difference between these groups five years after injury. The most-severe category, those in the top tercile of medical costs of workers injured in the quarter, have much worse outcomes on average, particularly in the first two years after an injury. There is some convergence, but, even five

Figure 6.7
Relative Employment, by Injury Severity, as Measured by Medical Costs, WCIRB Sample



RAND MG1035-6.7

⁵ Creating this ranking means that we drop all workers who were unratable under the old schedule or received a zero ranking in the new schedule.

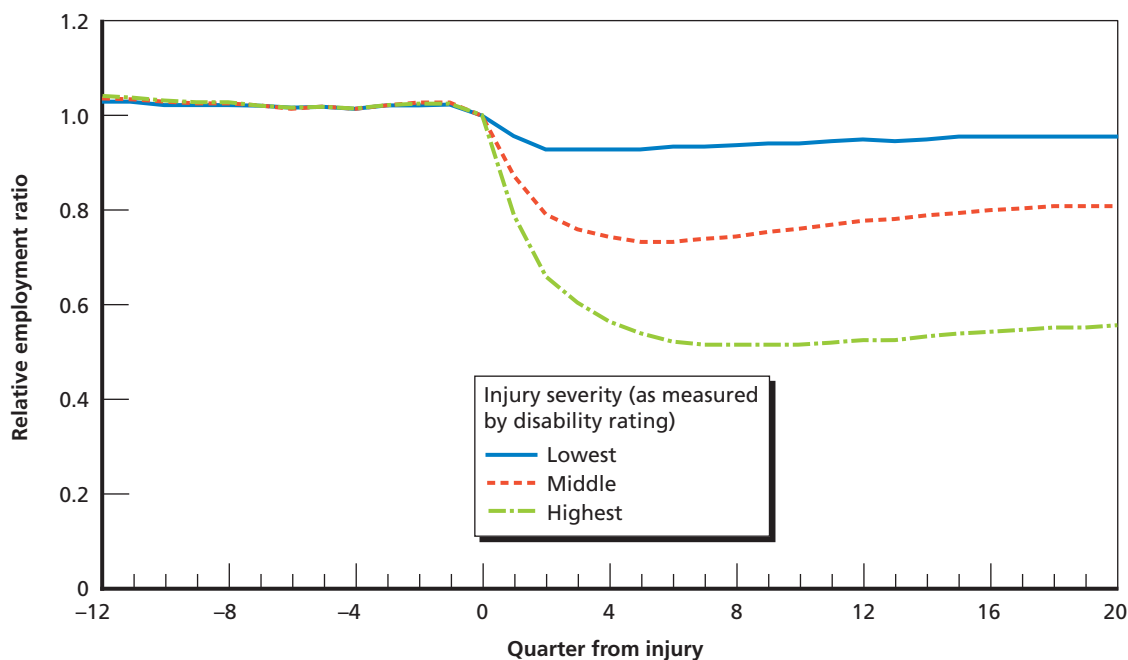
years after an injury, the outcomes of the workers in the severe category are considerably worse than those of workers in either of the other two categories.

In Figure 6.8, we report the relative employment for disabled workers in the DEU using the severity measure based on disability ratings. The rating-based severity measure in the DEU data appears to be quite predictive of employment outcomes. In fact, the differences across categories appear more distinct than in the medical cost–based severity measure. Workers in the lowest severity category have higher relative employment than those in the middle category. Similarly, workers in the highest severity category have noticeably lower employment than workers in the middle category. One noticeable difference between the severity measures is that there is much less convergence between the severity categories than with the medical cost measure. Additionally, workers in the lowest severity category in the DEU sample have much higher employment than workers in the lowest severity category in the WCIRB sample. This suggests that the DEU ratings probably provide a more-precise measure of severity for the less severe injuries.

Trends in Return to Work

Before evaluating trends in return to work, we must first decide on an appropriate measure to use. As we can see from the previous figures, the likelihood that an injured worker is employed will differ at different points in time. That is, relative employment in quarter 1 is not necessarily the same as in quarter 10. Additionally, for injuries that occur in later years of our sample, we have more-limited information on postinjury earnings. For our analysis of trends, we con-

Figure 6.8
Relative Employment, by Injury Severity, as Measured by Disability Rating, DEU Sample



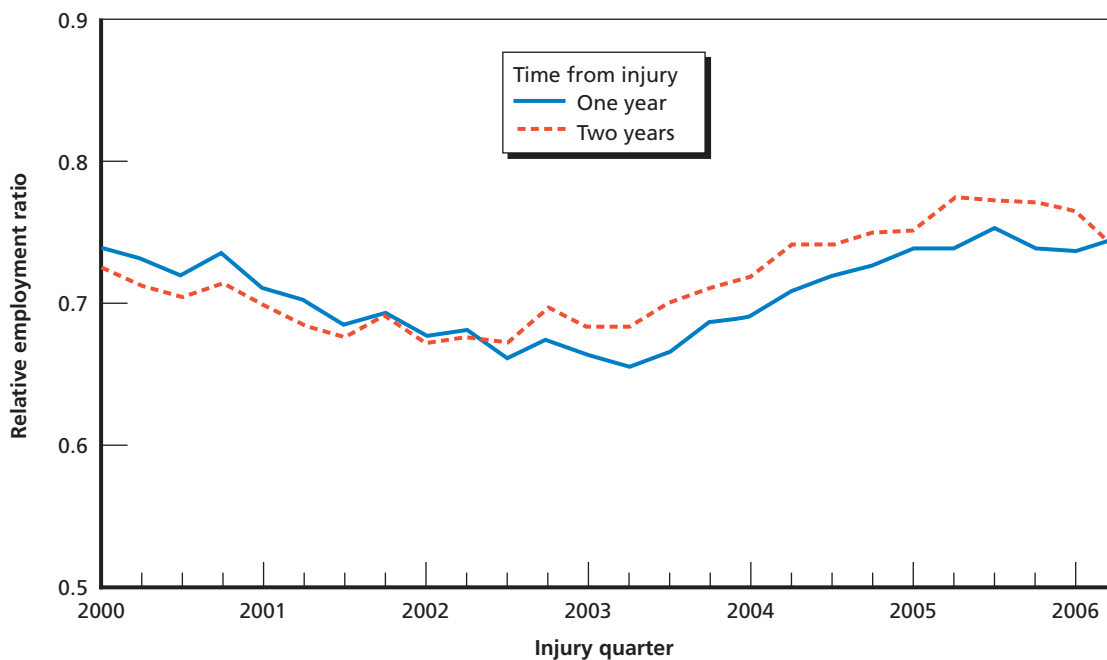
sider relative employment at one and two years after injury. That is, we compare the fraction of injured workers who are working with their uninjured controls in the fourth and eighth quarters after injury and evaluate how this relative value changes over time. One year is an appropriate time period to measure relative employment because we expect interventions and firm activities that target return to work to have an impact in the first year or two. By looking also at the second year, we can observe whether any changes we see in the first year after injury are persistent. We do not have more than two years of postinjury data for the later injuries in our sample, so we cannot observe trends in employment over longer periods.

Figure 6.9 reports the average relative employment ratio one and two years after the quarter of injury for the WCIRB sample. Note that the horizontal axis represents the quarter of injury. So if an injured worker is injured in the first quarter of 2000, the figure reports the relative employment in the second quarter of 2001 and the second quarter of 2002. We base the figure on the quarter of injury because many, though not all, of the reforms target workers based on the date of injury.

The figure shows a distinct pattern of postinjury employment over this time period. Workers injured from 2000 to 2003 appeared to have generally declining relative employment rates both one and two years after injury. Beginning in mid- to late 2002, however, the trend appeared to reverse, and return to work in the second year postinjury began to improve. Outcomes during the first year after injury began improving in early 2003. Workers injured in 2005 and the beginning of 2006 had higher relative employment on average at both one and two years than workers injured in early 2000.

Note that we also see more improvement for injured workers in the second year after the date of injury. Moreover, the one-year outcomes are better for workers injured in the first part

Figure 6.9
Relative Employment One and Two Years After Injury, by Quarter of Injury, WCIRB Sample



of the series, whereas the two-year outcomes are better for workers injured in the latter part of the series. This is consistent with the idea that the gains we see are the result of successful use of return-to-work programs promoting long-term employment.

The previous figure reports employment for any employer, but we are also interested in trends in return to the at-injury employer. Figure 6.10 reports the average relative employment ratios for the at-injury employer in the WCIRB sample one and two years after an injury. Note that the relative employment for the at-injury employer in the second year after the quarter of injury is noticeably lower than in the first year, which corresponds to the declining level of employment for the at-injury employer observed in Figure 6.6. Focusing on the trends over time, the overall pattern seen in Figure 6.10 is similar to that seen in Figure 6.9 in the sense that employment by the at-injury employer was declining for workers injured in the early part of the decade but began to improve in later parts of the decade. The timing of the trends seems similar, though the improvement in the second year appears to begin one or two quarters later.

In Figure 6.11, we report the trends in the relative employment for all employers for the permanently disabled workers in the DEU sample. As with Figures 6.9 and 6.10, the horizontal axis is based on the quarter of injury. The pattern we observe is quite similar to that seen with the WCIRB data. There appears to have been less of an overall decline in relative employment in the DEU sample, but there appears to be a general improvement at about the same point (injuries occurring in mid-2002). For the DEU data, we have information on an additional two quarters of injuries, and we see that the gains persisted for workers injured in 2006. While we do not report it here, we observe a similar trend in the DEU data if we focus on relative employment for the at-injury employer.

Figure 6.10
Relative Employment for the At-Injury Employer One and Two Years After Injury, by Quarter of Injury, WCIRB Sample

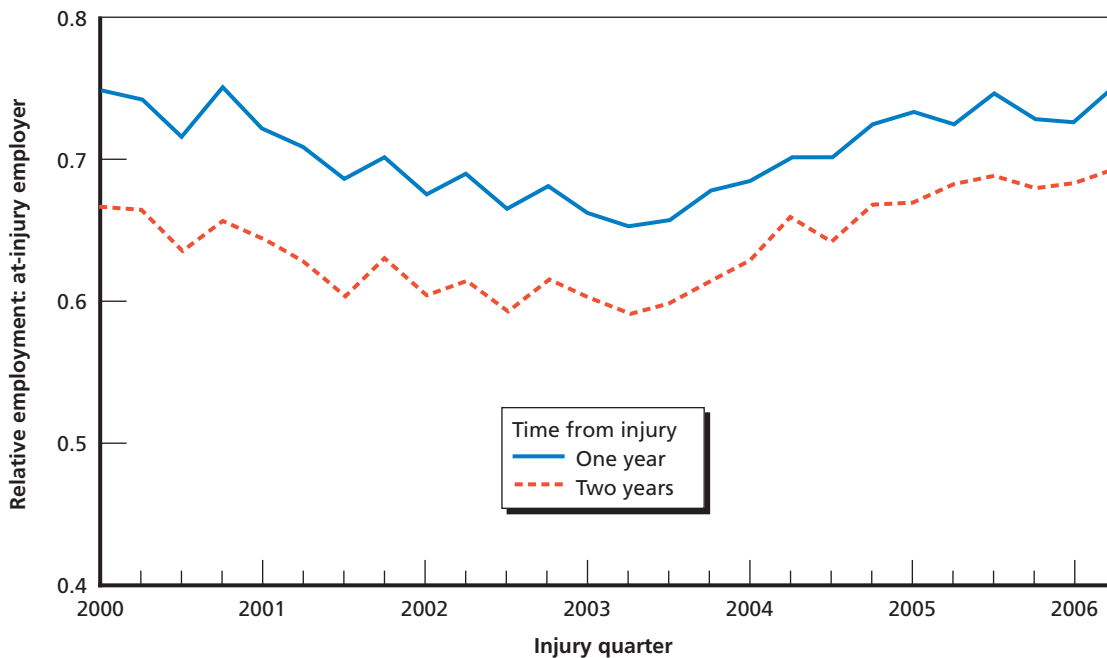


Figure 6.11
Relative Employment One and Two Years After Injury, by Quarter of Injury, DEU Sample



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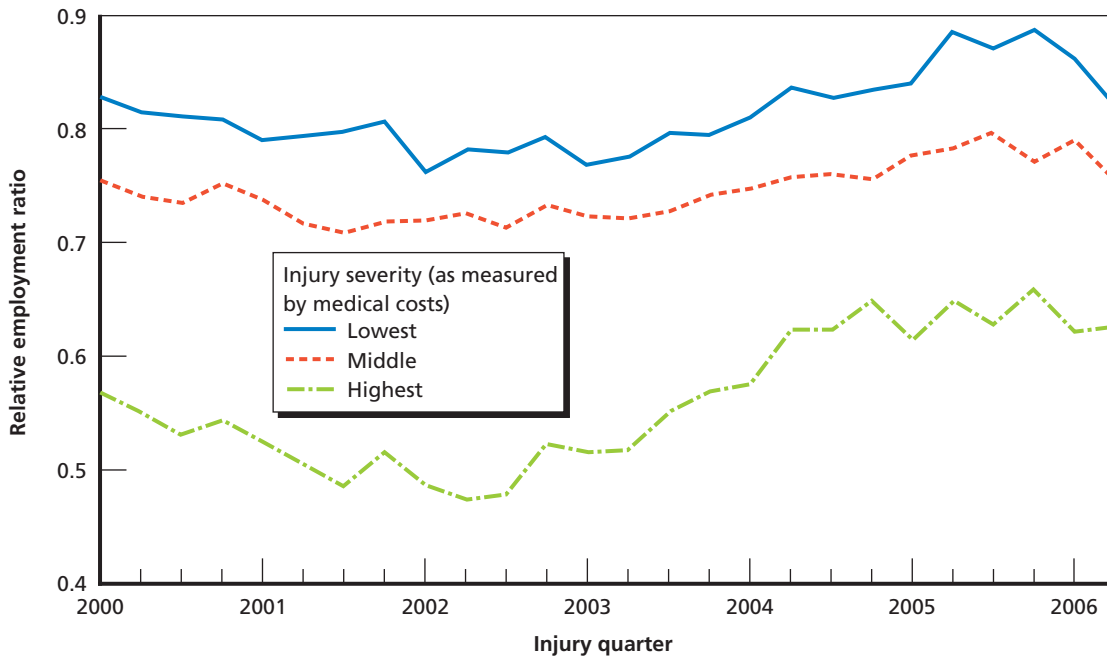
On the surface, these results seem contrary to earlier trends published by the DWC, which used data from the DEU and earnings to study return-to-work trends after the adoption of SB 899 (DWC, 2007). The DWC computed 12-month return-to-work rates for workers injured in 2005 and compared them to workers injured in 2003–2004 and workers injured in 2000–2002. The workers injured in 2000–2002 and 2003–2004 had similar return-to-work rates, both lower than for workers injured in 2005. While this is true, averaging the 2000–2002 data ignores the downward trend observed in 2000–2001, making the two preperiods look more similar.⁶ Breaking the comparison group into smaller time periods, there appears to be some upward movement in return to work prior to 2005.

In Figure 6.12, we report the trends in relative employment two years after the quarter of injury by severity category in the WCIRB sample. Recall that this measure of severity is based on the distribution of medical costs of injured workers by quarter of injury. As before, the horizontal axis represents the year and quarter in which the workers were injured, and here we report only relative employment two years later.

The figure suggests that the overall trend in relative employment is similar for all three groups, but most-clearly pronounced for workers with the most-severe injuries. While there is evidence of an overall decline and improvement in relative employment for workers in the lowest and middle severity categories, both the initial decline and subsequent increase were

⁶ If we look at the 12-month return-to-work rate in our data, it is 0.635 for 2000–2002 injuries, 0.655 for 2003–2004 injuries, and 0.704 for 2005 injuries, very close to the DWC numbers of 0.646, 0.648, and 0.700 (DWC, 2007, Chart 1). The remaining differences are likely due to differences in the sample due to the match procedure, and the restriction the DWC made to look only at injuries rated within 18 months of the date of injury (a restriction we did not make because we had more-recent data).

Figure 6.12
Trends in Relative Employment Two Years After Injury, by Injury Severity, WCIRB Sample



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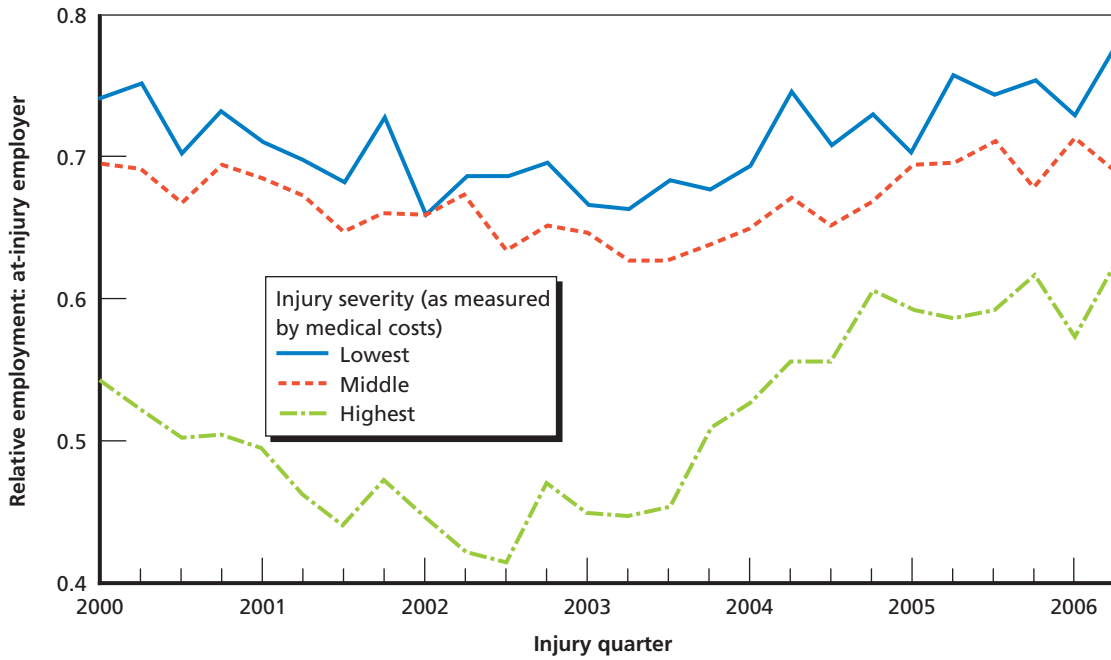
larger for workers in the highest severity category. Workers in the highest severity category who were injured in first quarter 2000 had relative employment of about 0.5 two years later, and this fell to just over 0.4 for workers injured in third quarter 2002. But, workers injured in 2005 or early 2006 had relative employment close to 0.6 two years after the date of injury. Thus, the data suggest that the most-severely injured workers experienced the biggest gains to return to work over this period.

In Figure 6.13, we report the trends in relative employment for the at-injury employer two years after the quarter of injury by severity. The pattern we found for overall employment appears even more pronounced here. Workers in the lowest and middle severity categories experience some decline and subsequent improvement in relative employment with the at-injury employer, so that the overall level is similar at the start and end of the time period. Workers in the highest severity category, however, experience such a sharp increase that their relative employment is only slightly lower than for workers in the lower severity categories. Again, this suggests that the most-severely injured workers experienced the biggest improvements in return to work.

Finally, in Figure 6.14, we report the trends in relative employment by severity category in the DEU sample. The findings are very similar to the trends we observe in the WCIRB sample in Figure 6.12. There is not much of a trend observed for the lowest severity category, which has relative employment ratios two years after injury above 0.9 in virtually every quarter. For the middle and highest severity categories, however, there is a noticeable improvement for injuries in 2002 and later.

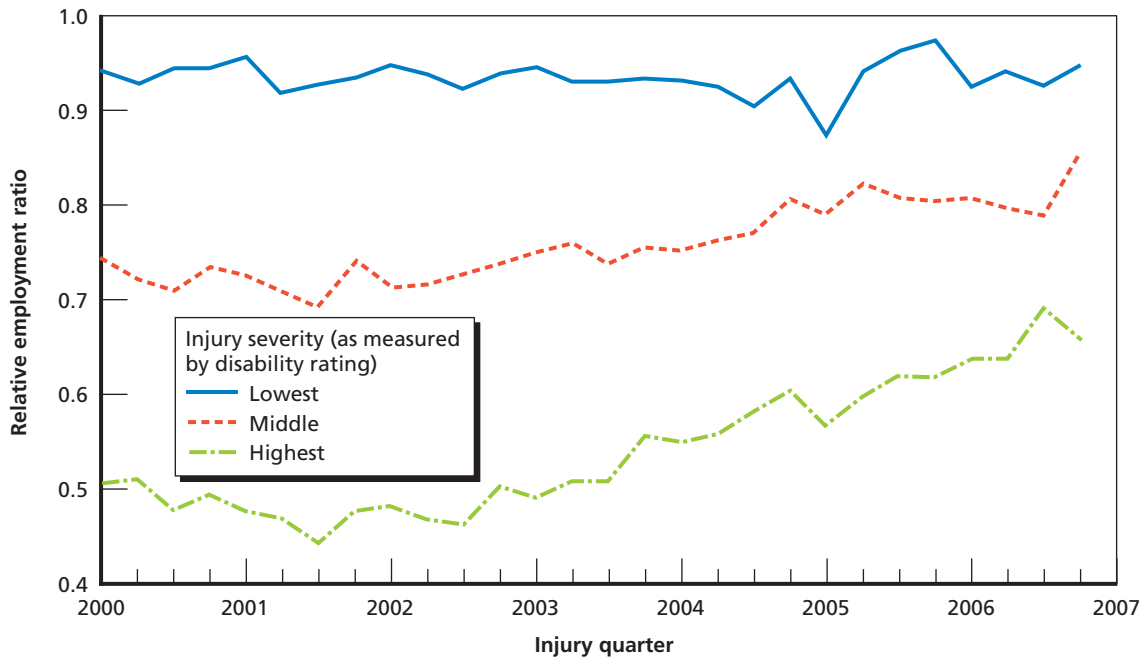
These figures indicate a clear pattern, but they are limited in that they fail to control for a number of potentially important and confounding factors. For instance, they fail to account

Figure 6.13
Trends in Relative Employment for the At-Injury Employer Two Years After Injury, by Injury Severity, WCIRB Sample



RAND MG1035-6.13

Figure 6.14
Trends in Relative Employment Two Years After Injury, by Injury Severity, DEU Sample



RAND MG1035-6.14

for differences across workers in the type of injuries or trends in economic conditions (beyond the return-to-work outcomes of the individual controls). If injured workers are more subject to trends in economic conditions—say, because they are more likely to separate from their jobs—this could influence estimates of return to work and earning losses. They also fail to offer any evidence on the statistical significance of the trends.

To provide a fuller understanding of the timing and changes in return to work, we adopted a statistical model that estimates the time trends conditional on other, observable factors of individuals and their injuries. We estimate a set of multivariate regression models that predict the likelihood that the injured worker has positive earnings two years after the quarter of injury (one year, in some models) as a function of other observable characteristics of individuals. The other covariates include the severity of the injury (as defined before), preinjury wages, two-digit industry, firm size, and controls for the nature and type of injury. To control for local economic conditions, we compute the average wages of uninjured control workers at the firm size–industry level and use that as a control. To control for any other trends in labor-force attachment of control workers (particularly those at the firm level), we include as a control variable the average employment two years after injury of the uninjured controls.⁷

In our statistical model, we estimate the time trend with a series of dummy indicator variables for the quarter of injury. Each variable estimates the difference in employment in that quarter relative to baseline, conditional on the other observable variables. We use injuries in year 2000 as the baseline. Figure 6.15 reports these estimated differences and their 95-percent confidence interval for the WCIRB sample. The difference from the average employment two years after injury from 2000 injuries is reported on the vertical axis. The difference is reported in terms of fraction employed, so a 0.01 difference represents a 1-percentage-point difference in the likelihood that an injured worker is employed relative to the level in 2000, on average. The injury quarter is reported on the horizontal axis. The dashed lines represent the upper and lower bounds of the confidence interval.

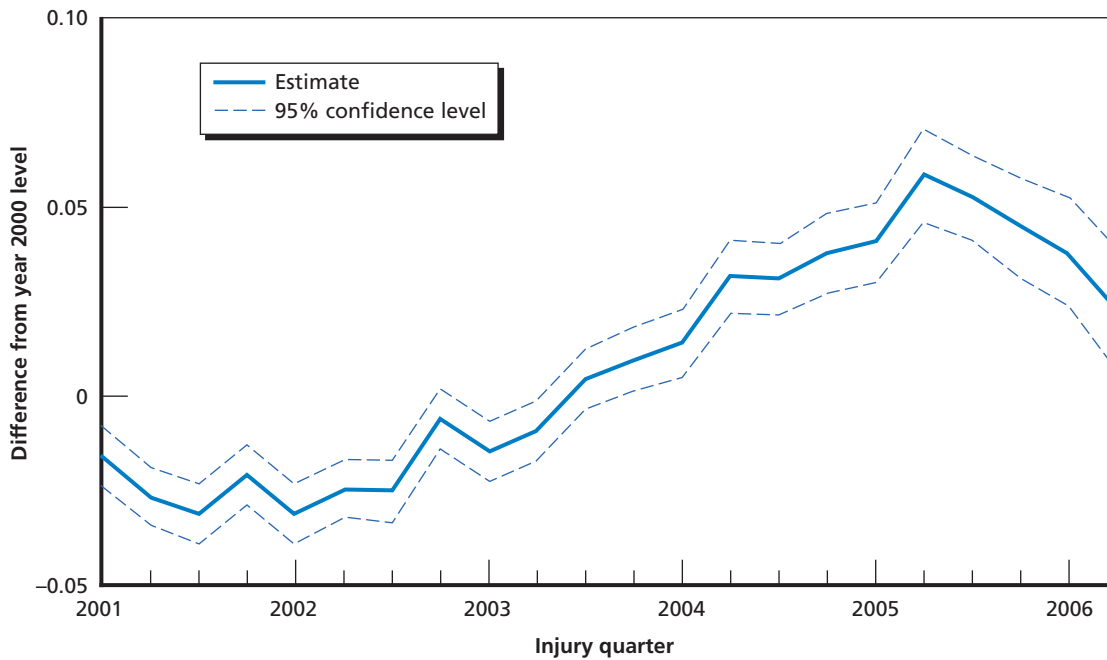
The figure reports a trend that is very similar to the unadjusted trends described before. There is an initial decline in postinjury employment, followed by a sharp increase. Exactly when the sustained increase began is somewhat difficult to say for certain, but the low point occurs for workers injured first quarter 2002. The highest point is for workers injured in second quarter 2005. After that, return to work appears to start a downward trend (which could be due to the 2008 recession). It is also worth noting that the confidence intervals are narrow, indicating that the differences are precisely estimated. This means that, in general, the differences from 2000 are statistically different from zero. And while not every difference is necessarily statistically different from that of the previous year, there is clear evidence of a trend.⁸

We also use the model estimate the trend in postinjury employment for the at-injury employer. In Figure 6.16, we report the difference from baseline (again, 2000 injuries) in at-injury employment two years after injury for the WCIRB sample. The figure is structured identically to the previous figure.

⁷ The employment of controls evaluated at the individual level has a large number of zeros, so the relative employment ratio is volatile and often missing at the individual level. Thus, we use the overall level of employment as the dependent variable and control for the employment of control workers as a dependent variable.

⁸ Note that the confidence interval widens noticeably in later years. This is at least partly attributable to the fact that the sample size declines in later years.

Figure 6.15
Estimated Change in Average Employment Two Years After Injury, by Injury Quarter, 2000 Injuries as Baseline



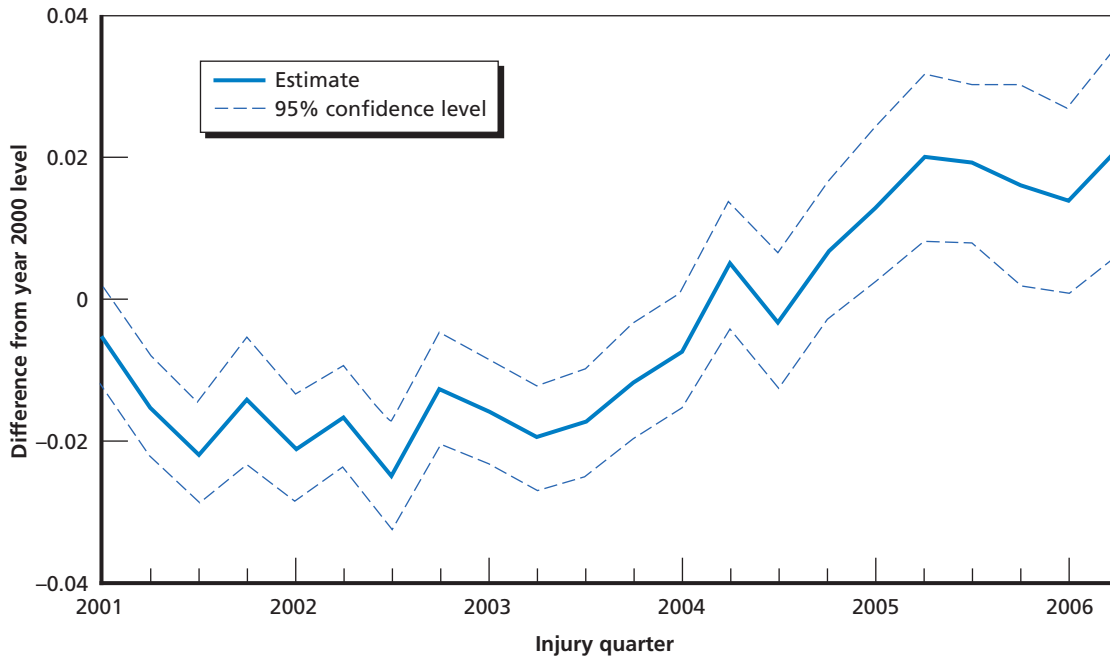
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Again, the figure of estimated differences from the statistical model exhibits a similar overall trend to that observed in the raw data. The estimates suggest that there was a general decline in employment at the at-injury employer and that the decline took longer to fully recover. The lowest point also occurs at a later point—injuries in second quarter 2002—and sustained improvement does not appear to really begin until 2003. As before, the confidence intervals are narrow, and most of the differences are statistically different from zero.

We have explored a number of different robustness checks to validate the findings presented here. In general, we find a consistent trend, regardless of how we sample the data. Specifically, we have verified the following:

- The same pattern in return-to-work outcomes by quarter of injury is observed if we restrict the WCIRB sample to permanent injuries.
- The same pattern in return-to-work outcomes by quarter of injury is observed if we restrict the WCIRB sample to workers whose average weekly wage prior to the injury was such that they were not affected by the changes in the TTD weekly maximum or minimum benefits.
- We do not observe any noticeable trend in relative employment outcomes of injured and control workers *prior* to the date of injury, suggesting that the trend is not somehow driven by unobserved differences in the composition of injured workers over time.

Figure 6.16
Estimated Change in Average Employment for the At-Injury Employer Two Years After Injury, by Injury Quarter, 2000 Injuries as Baseline



RAND MG1035-6.16

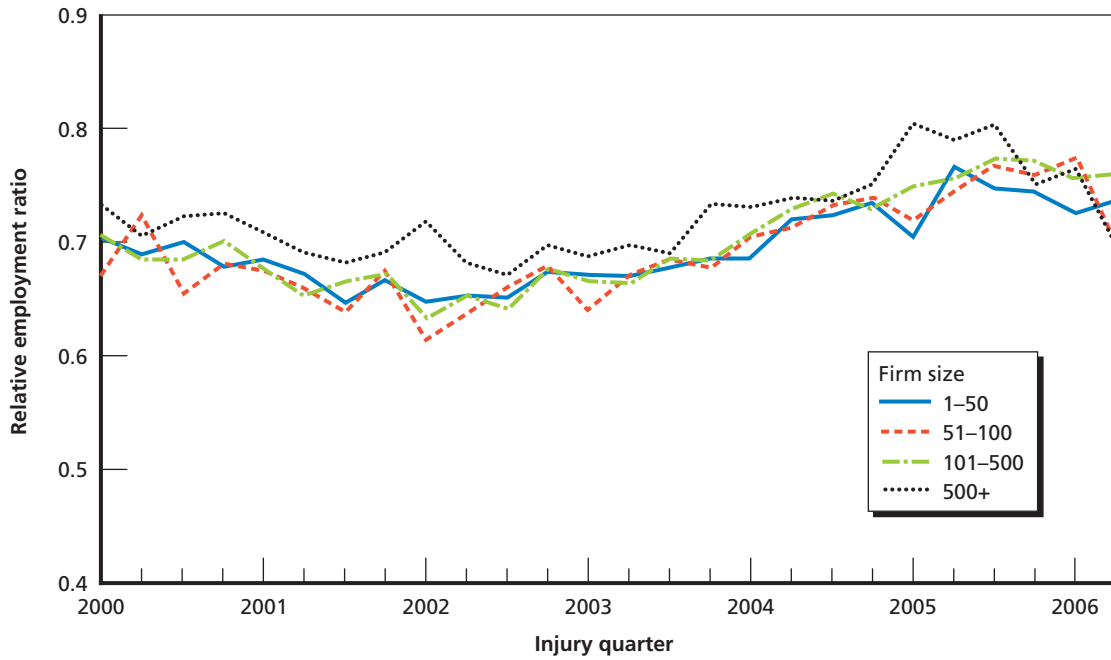
Return-to-Work Trends by Size of the At-Injury Firm

Figure 6.17 reports the average relative employment ratios for workers injured in four different categories of firm size: firms with one to 50 employees, firms with 51–100 employees, firms with 101–500 employees, and firms with 501 or more employees. In general, the figure suggests that the trends in return to work are extremely similar across the different firm-size categories. The relative employment ratios for workers injured in the firms from one to 500 are all extremely similar. The relative employment for workers injured at the larger firms is higher, but there is no clear divergence in terms of trends.

The reforms enacted by SB 899 that were designed to improve return to work had provisions that affected different-sized firms differently. Specifically, the bump-up, bump-down does not apply to workers who were injured while at a firm with fewer than 50 employees. These employees were eligible for the workplace modification subsidy, although, as discussed before, it was barely used and likely had no real impact on return to work. Because of these different provisions, it is worth considering whether the trends in return to work differ at all based on the size of the at-injury employer.

To further check for differences in return-to-work trends by firm size, we applied the statistical analysis described above and formally tested for size-specific trends. The underlying model is the same, comparing employment two years after injury to time indicators for quarter of injury and other coefficients. But we add to the model interactions between the quarter of injury and the categories of firm size used in Figure 6.17. These results are reported in Table 6.2.

Figure 6.17
Trends in Relative Employment Two Years After Injury, by Size of the At-Injury Employer, WCIRB Sample



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Table 6.2
Estimated Differences in the Trend in Return to Work Between Small and Large Firms

Year and Quarter of Injury	(1)	(2)	(3)	(4)
	Difference from Firms with 1-50 Employees:			
	Firms with 1-50 Employees	Firms with 51-100 Employees	Firms with 101-500 Employees	Firms with 500+ Employees
2001, Q1	-0.010 (0.008)	-0.008 (0.014)	-0.006 (0.011)	-0.009 (0.011)
2001, Q2	-0.022 (0.008)**	-0.001 (0.014)	-0.009 (0.011)	-0.004 (0.011)
2001, Q3	-0.041 (0.008)**	0.005 (0.014)	0.017 (0.011)	0.013 (0.011)
2001, Q4	-0.030 (0.009)**	0.019 (0.014)	0.013 (0.011)	0.009 (0.011)
2002, Q1	-0.046 (0.009)**	-0.007 (0.014)	0.009 (0.011)	0.035 (0.011)**
2002, Q2	-0.030 (0.008)**	-0.004 (0.014)	0.008 (0.011)	0.010 (0.010)

Table 6.2—Continued

Year and Quarter of Injury	(1)	(2)	(3)	(4)
	Difference from Year 2000:		Difference from Firms with 1–50 Employees:	
	Firms with 1–50 Employees	Firms with 51–100 Employees	Firms with 101–500 Employees	Firms with 500+ Employees
2002, Q3	–0.032 (0.008)**	0.015 (0.013)	0.003 (0.011)	0.011 (0.012)
2002, Q4	–0.016 (0.009)*	0.018 (0.014)	0.012 (0.011)	0.013 (0.011)
2003, Q1	–0.016 (0.008)*	–0.012 (0.014)	0.004 (0.011)	0.004 (0.011)
2003, Q2	–0.005 (0.008)	0.002 (0.014)	–0.004 (0.011)	–0.011 (0.011)
2003, Q3	–0.002 (0.008)	0.012 (0.014)	0.009 (0.011)	0.007 (0.011)
2003, Q4	0.003 (0.009)	0.002 (0.015)	0.002 (0.012)	0.016 (0.012)
2004, Q1	–0.004 (0.009)	0.029 (0.015)**	0.025 (0.012)**	0.021 (0.013)*
2004, Q2	0.023 (0.009)**	0.006 (0.015)	0.017 (0.012)	0.007 (0.013)
2004, Q3	0.023 (0.009)**	0.019 (0.015)	0.023 (0.012)*	–0.002 (0.013)
2004, Q4	0.036 (0.010)**	0.012 (0.016)	0.000 (0.013)	–0.000 (0.015)
2005, Q1	0.022 (0.010)**	0.018 (0.016)	0.030 (0.014)**	0.026 (0.014)*
2005, Q2	0.054 (0.010)**	–0.001 (0.017)	0.003 (0.014)	0.012 (0.018)
2005, Q3	0.044 (0.010)**	0.013 (0.017)	0.019 (0.014)	0.003 (0.016)
2005, Q4	0.026 (0.011)**	0.021 (0.018)	0.031 (0.015)**	0.028 (0.020)
2006, Q1	0.018 (0.013)	0.036 (0.022)*	0.031 (0.017)*	0.027 (0.021)

Table 6.2—Continued

Year and Quarter of Injury	(1)	(2)	(3)	(4)
	Difference from Year 2000:	Difference from Firms with 1–50 Employees:		
	Firms with 1–50 Employees	Firms with 51–100 Employees	Firms with 101–500 Employees	Firms with 500+ Employees
2006, Q2	0.028	–0.019	0.022	–0.045
	(0.015)*	(0.025)	(0.021)	(0.023)**

NOTE: The table reports the estimated trend in employment two years after injury by year and quarter of injury, relative to the baseline of year 2000 injuries. Column 1 reports the estimated difference from year 2000 injuries for workers injured while working for a firm with 1–50 employees. Columns 2–4 report the difference in differences between the workers injured at firms with 1–50 employees and workers injured at larger firms. Estimates come from a multivariate regression model comparing postinjury employment to time trends and other covariates. A * or ** indicates statistical significance at the 10-percent or 5-percent level, respectively.

In Table 6.2, column 1 reports the estimated effect of the quarter of injury for the smallest category, the 1- to 50-employee employers. Columns 2, 3, and 4 report the difference in the trend for injured workers at the larger firm categories relative to the smallest category. For example, column 2 reports the difference in the time trend in return to work between workers injured at firms with 1–50 employees and workers injured at firms with 51–100 employees. Because the time trend reported in column 1 is itself a difference relative to first quarter 2000, the coefficients by firm size can be thought of as difference-in-differences estimates. If the tiered benefit had a significant impact on return to work, we would expect the larger firms to be associated with a positive difference starting around 2005 (or even as early as 2004, if employers changed behavior in anticipation of the benefit).

Overall, the evidence seems mixed at best. Prior to the 2004 injuries, there is no evidence of differential time trends by firm size. Just one coefficient on the differences is statistically significant, which is less even than we would expect from random chance. For injuries in first quarter 2004, the return to work rate is significantly higher in all three of the larger firm-size categories. Beyond that, however, the firms with 51–100 employees and the firms with 500+ employees show no consistent difference from the smallest firms. It is worth noting, however, that there appears to be some difference for the medium-sized firms with 101–500 employees. Workers injured at these firms consistently display more improvement in return to work than the workers in the firms with one to 50 employees, and the difference is statistically significant for several of the coefficients.

Conceptually, it is reasonable to suspect that the medium-sized firms could be more susceptible to policy changes than either small or large firms. McLaren, Reville, and Seabury (2010) find that large, self-insured employers in California were already using policies that improved return to work even before the reforms were adopted. And while the legislative threshold was at 50 employees, it is possible that firms with fewer than 100 employees are not experience rated frequently enough for the tiered benefit to affect their average behavior. Thus the medium employers might be closer to the margin of adopting a return-to-work program, so they might be more responsive to a change in their expected costs from a tiered benefit. While the overall trends suggest that return to work began to improve before the reforms in SB 899 took effect, the tiered benefit might have had some impact on the behavior of a particular subset of firms.

While not reported here, we have verified that these findings hold across different specifications and robustness checks, including using wage losses instead of relative employment as the outcome, using the DEU sample instead of the WCIRB sample, and focusing on return to the at-injury employer.

Summary of Findings

This chapter has presented a number of findings about the postinjury employment outcomes of injured workers in California and the trends that occurred over the past decade. First, we have shown that occupational injuries continue to have a large and persistent impact on the economic outcomes of injured workers several years after an injury. If anything, the average losses appear larger, on average, than what was observed in past work (Peterson et al., 1998; Reville and Schoeni, 2001). These large losses, on average, masked some noticeable improvement over the past decade, however. What is particularly noteworthy is that the biggest gains came from the most-severely injured and disabled workers.

Looking at these trends, it is natural to ask how much of the improvement was driven by reforms to the workers' compensation system. Such an analysis is complicated by the number of different reforms that were being introduced over this time period. Without identifying a control group of workers' compensation claimants unaffected by the reforms, it is difficult to attribute the trend in return to work to any particular reform.

That is not to say, however, that our analysis is unable to make any assessments of the reforms relate to the observed trends. First, it is clear that much of the gains occurred prior to reforms adopted that were specifically targeting improved return to work. In particular, workers injured in 2003 and 2004 were not eligible for the tiered benefit, so that is unlikely to be a key contributor to the observed gains. If anything, the numbers appear to display a slight worsening (or at least flattening) of the trend for workers injured in 2005. This is not too surprising, given some of the implementation challenges described earlier. That said, however, we do find some evidence that medium-sized firms (employing about 27 percent of the injured workers in our sample) might have responded by improving return to work after the reforms were adopted.

Another implication of the findings is that the vocational rehabilitation system had little, if any, positive impact on employment outcomes for injured workers. Recall that the vocational rehabilitation system California had was replaced by the voucher program for workers injured in 2004 and later. In theory, the vocational rehabilitation program could have improved return to work through a causal effect of the system itself or by providing employers with an inducement to accommodate injured workers. The fact that we see such large gains in employment for injured workers, particularly for the most-severely disabled workers, who were most likely to participate in vocational rehabilitation, around the time that the system was repealed does not necessarily mean that it had no positive effect on return to work.⁹ It is suggestive, however, that any such effects were relatively minor compared to other factors that drive return to work.

So, what policies might have been important in terms of driving the improvements in return to work? One possible candidate is the change in FEHA that made it easier for injured

⁹ There was often a lag associated with vocational rehabilitation, sometimes several years (three or more). Therefore, it is perhaps not surprising that we find that it had little positive effect on relatively early return to work.

workers to file a claim. Gailey and Seabury (2010) find that disabled workers' compensation claimants in California did experience improved employment outcomes relative to other disabled workers beginning in 2002. Another possibility is that reforms to medical treatment led to improved outcomes for injured workers. While most of the medical reforms took effect in 2004, the adoption of the ACOEM guidelines could have taken effect for workers injured in earlier years. If these guidelines improved the quality of care, this could have led to improved outcomes.

Another possibility is that the improvement was driven endogenously by the problems with the system. Workers' compensation costs in California had risen to staggering levels in 2003, which was a driving factor in the reforms. It is possible that these increasing costs motivated employers to adopt return-to-work programs and other measures in an effort to lower workers' compensation costs. This is consistent with the findings of the employer survey described in the previous chapter, with 80 percent of respondents reporting that reducing workers' compensation costs are an important factor driving return-to-work decisions. With workers' compensation costs at record levels, it is natural to suspect that employer awareness of these costs was heightened and that employers would have responded by taking steps to lower them. If this explanation holds, an important question then becomes whether we expect the gains in return to work that we observed over the past decade to persist as workers' compensation costs have fallen and as economic conditions have worsened.

Income Replacement for Injured Workers After the Reforms

Given the large cuts in disability benefits, a key concern is the impact on income replacement for injured workers. We see that return to work has indeed increased in recent years, but it is unclear whether this was enough to offset the large declines in PD benefits, as well as the elimination of vocational rehabilitation and cuts to the duration of temporary disability. There are also questions about the adoption of the AMA Guides and whether their adoption had a significant impact on the likelihood that PD benefits will be awarded.

In this chapter, we discuss how workers' compensation reforms have affected income replacement for disabled workers. We begin with an analysis of the overall changes in indemnity benefits in our data and the impact of changes to the disability rating schedule. We then estimate replacement rates of lost income and evaluate how those have changed over time. Finally, we then study what impact changes in the application of the rating schedule might have on PD benefits going forward.

Trends in Indemnity Benefits

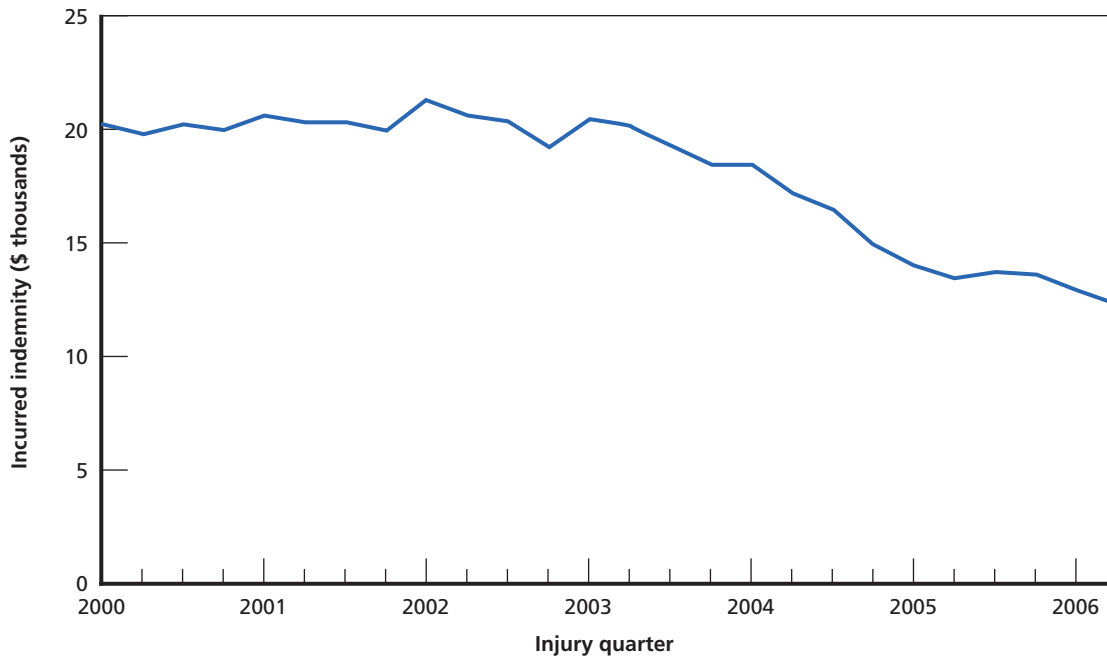
We begin by comparing the average indemnity benefits in the WCIRB sample by year of injury. We use the same sample of claims from the WCIRB that we discussed earlier, including permanent disabilities and more-serious temporary-disability claims at insured firms. Our focus is on the incurred indemnity reported in the WCIRB data, which include the paid amount and the estimated future payments.¹ Because we have information on fewer reports in later years of the sample, we use only the incurred indemnity from the first report of injury.²

Figure 7.1 reports the average incurred indemnity benefits by injury quarter from first quarter 2000 through second quarter 2006. The figure includes the full WCIRB sample, including individuals with permanent and temporary disabilities. The figure shows that average benefits are very stable overall, for injuries occurring from 2000 through 2003, with incurred benefits very close to \$20,000 in all quarters. Then, beginning in second quarter 2003, there is a dramatic decline in the level of benefits. Benefits fall to about \$17,300 in second quarter 2004 and to about \$12,300 in second quarter 2006.

¹ The incurred indemnity value reported to the WCIRB also include defense costs, which we subtract using the reported value of paid defense costs.

² While not reported here, we also examine the trends in paid indemnity benefits from the first report of injury. The overall trends look the same, though we see somewhat smaller declines in later years (which is to be expected because there will be less permanent disability paid in the first report).

Figure 7.1
Average Incurred Indemnity, by Injury Quarter



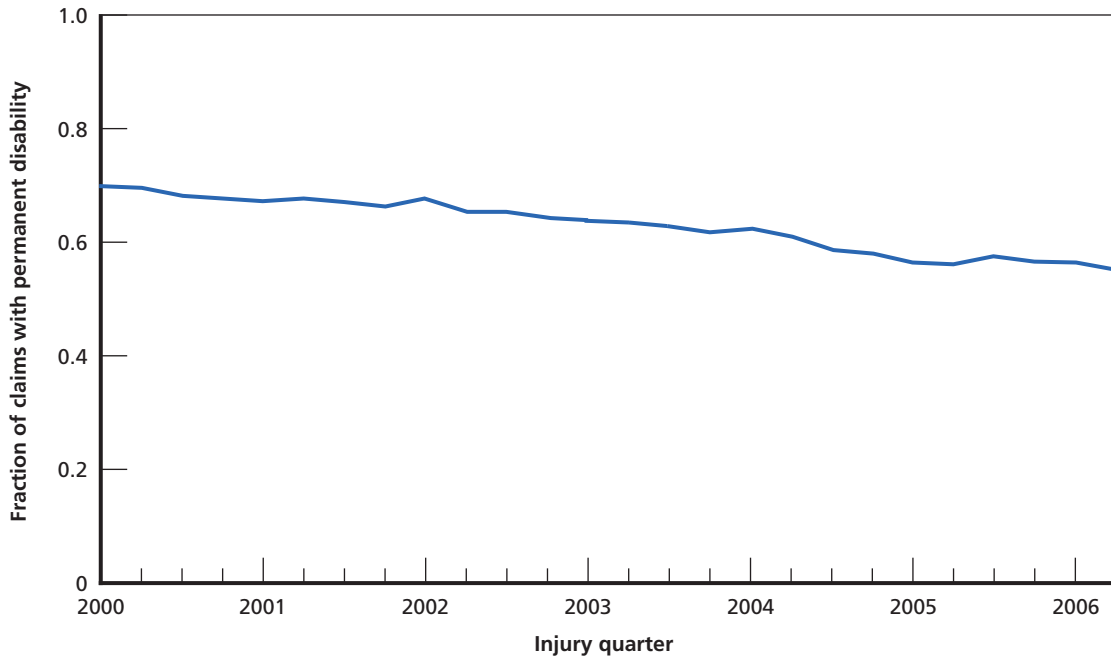
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The adoption of the AMA Guides was intended to make PD claims more-directly related to objective medical evidence. One implication of this was that there was a general expectation that there would be a number of cases that would have received PD benefits under the old rating system that would no longer receive benefits. Figure 7.2 compares the share of injuries in the WCIRB sample that involve permanent disability by injury quarter for 2000–2006.

The figure indicates a steep decline in PD claims from 2000 to 2006, falling to about 80 percent of the 2000 level. Note that the high share is due to the fact that the WCIRB samples only relatively severe cases (expected benefits of \$2,000 or more). The decline is not closely associated with the adoption of the AMA Guides. There is an overall decline in the share of PD awards over the entire period, with the decline steepening somewhat for 2004 injuries. While we might have expected a sharper change, it is worth noting that the use of the new schedule was tied to the date of MMI, not the injury date. Thus, it is likely that injuries prior to 2004 were likely affected by the new schedule. On the other hand, we cannot rule out the possibility that there is a general trend toward fewer PD claims (perhaps because rising TTD weekly benefit maximums force more TTD-only cases over the threshold to be reported in the WCIRB).

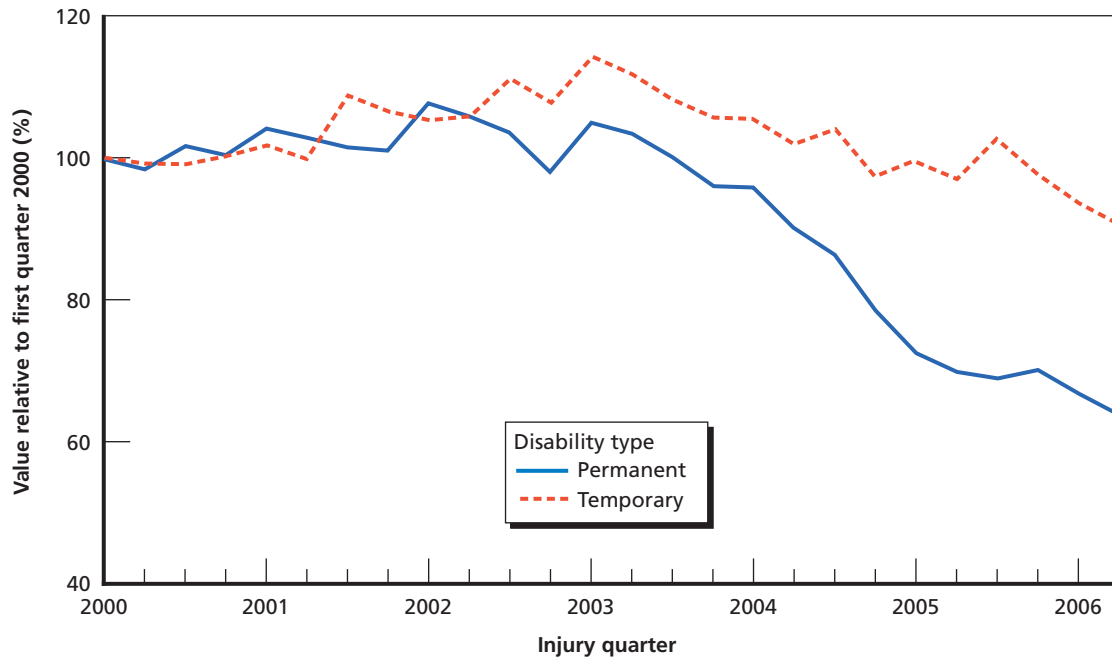
In Figure 7.3, we compare the changes in indemnity benefits separately for temporary and permanent disabilities. We include all incurred benefits for both types of workers and simply define the PD cases as those workers with any permanent disability. Because the levels of benefits differ substantially between permanent and temporary claims, we normalize the vertical axis to the percentage value relative to first quarter 2000. That is, the level is 100 percent in first quarter 2000, and each subsequent quarter reflects the percentage value relative to the baseline year (so a 90 in a given quarter indicates a 10-percent decline in benefits from first quarter 2000).

Figure 7.2
Change in the Share of Claims Involving Permanent Disability, by Injury Quarter, First Quarter 2000 Baseline



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Figure 7.3
Change in Incurred Indemnity, by Type of Injury and Injury Quarter, First Quarter 2000 Baseline



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As expected, the two types of injuries display substantially different time series. Temporary benefits rose somewhat from 2000 to 2003 and then dropped back off from 2003 to 2004. Note that this closely mirrors the trend in return to work over this period, and it ultimately leaves benefits mostly unchanged for temporary injuries from 2000 through 2006. For permanent disabilities, however, there was little growth from 2000 to 2003, and benefits were almost identical for injuries in third quarter 2003 as in first quarter 2000. After that, however, benefits for PD cases fall sharply. Benefits fall to about two-thirds of the baseline level by first quarter 2006.

It is worth noting that the trend for temporary disabilities only could be affected by the nature of the WCIRB data. As mentioned before, the WCIRB requires individual reports for only the relatively severe temporary-only cases (those with expected costs of \$2,000 or more). This means that the trend in benefits reported in Figure 7.3 reflects the trend for only those cases that are severe enough to meet the WCIRB reporting requirement. The likely impact of this reporting requirement is that the trend in indemnity benefits for temporary disability will be biased downward. The actual impact of this on the overall trend is somewhat ambiguous, but it would likely make it harder to detect any observed effect of the cap on TTD weeks introduced by SB 899.³

It is important to note that the entire decline in benefits cannot be attributed to changes to the PD rating schedule. Vocational rehabilitation benefits represented a significant portion of the total indemnity benefit for permanently disabled workers. Table 7.1 reports the average total incurred indemnity benefits for PD claimants, the fraction of PD claimants receiving vocational rehabilitation benefits, and the average dollar value of the vocational rehabilitation benefits, by injury year.

Table 7.1
Average Total and Vocational Rehabilitation Benefits, by Accident Year, WCIRB Sample

Injury Year	Total Indemnity Benefits (\$)	Has Vocational Rehabilitation	Vocational Rehabilitation Benefits (\$): All Cases	Vocational Rehabilitation Benefits (\$): Cases with Vocational Rehab
2000	25,287	0.39	3,405	8,669
2001	25,859	0.40	3,430	8,530
2002	26,215	0.40	3,541	8,752
2003	25,568	0.38	3,140	8,206
2004	22,295	0.20	928	4,615
2005	17,636	0.20	848	4,205
2006	16,378	0.21	842	3,936

NOTE: The table includes only PD claims. Total indemnity refers to total incurred indemnity recorded in the first report of injury. Vocational rehabilitation for injuries in 2004 and later refers to receipt of the SJDB voucher.

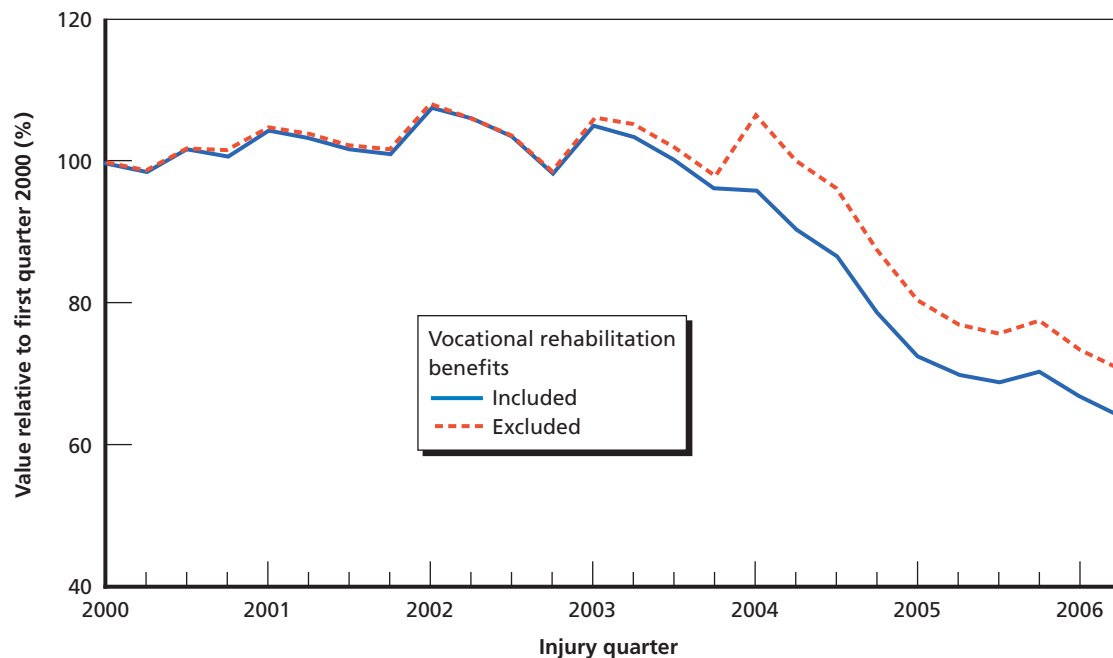
³ On the one hand, the increases in the weekly benefit levels mean that a larger fraction of the relatively minor claims will have costs that exceed the \$2,000 threshold. This could reduce the overall trend in indemnity benefits, but it would also mitigate the impact of the cap on the number of weeks of TTD benefits (because the minor cases are unlikely to be affected by the cap).

The first column reports the average total incurred indemnity benefits by accident year. The table reflects the same declining trend in PD benefits by accident year as that observed in Figure 7.3. The second column reports the fraction of PD claims with vocational rehabilitation benefits. About 40 percent of claims had vocational rehabilitation benefits from 2000 through 2004. Beginning in accident year 2004, there was a steep drop. About 20 percent of claims had vocational rehabilitation benefits for injury year 2004 or later, meaning that the claim involved a payment for an SJDB voucher. The last two columns show the average benefits for disabled workers associated with vocational rehabilitation. Vocational rehabilitation benefits averaged more than \$3,000 per claim prior to 2004, and this dropped to \$900 or less upon the adoption of the SJDB. The final column reports average benefits conditional on receipt of vocational rehabilitation. Average benefits were about \$8,500 per year for claims with vocational rehabilitation, compared with about \$4,000 for the voucher.

In Figure 7.4, we show how the changes to the vocational rehabilitation system affected the overall trend in indemnity benefits for permanently disabled workers. Again, the figure reports the levels in percentage terms relative to the baseline of first quarter 2000. In this figure, the sample is limited to just PD claims. One series reports the sample with vocational rehabilitation benefits included (identical to the benefits for PD claimants reported in Figure 7.3), while the second reports the percentage changes excluding any vocational rehabilitation benefits.

The vocational rehabilitation benefits displayed little trend prior to 2004, so the average benefit levels relative to 2000 are almost identical whether or not the benefits are included. Beginning in first quarter 2004, however, there is a sharp divergence if we exclude the vocational rehabilitation benefits. Excluding vocational rehabilitation, benefits remain at or above

Figure 7.4
Change in Incurred Indemnity for Permanent-Disability Claims with and Without Vocational Rehabilitation Benefits, First Quarter 2000 Baseline



their 2000 levels until about third quarter 2004. After that, benefits decline sharply, though they remain about 10 percent higher than when the benefits are included. This analysis shows that, while there is little evidence that the old vocational rehabilitation system in California did much to improve return to work, it likely did have an impact on income replacement for permanently disabled workers.

Trends in Replacement Rates of Lost Income and the Impact of Return to Work

To truly evaluate the impact that the declines in disability benefits had on injured and disabled workers, we need to compare the disability benefits to earning losses. The *replacement rate* of lost income is the fraction of earning loss that is replaced by workers' compensation indemnity benefits. Estimating the replacement rate is as simple as dividing the average indemnity benefits by the average estimated earning losses. A key limitation of our data, however, is that we have only a restricted window of postinjury earning data with which to estimate losses for the later injuries in our sample. In particular, for injuries in 2006, we have just two years of postinjury losses to examine. This is problematic, because two years is not enough time to fully realize the impact of workers' compensation benefits. Past work has generally preferred to focus on at least five-year, or even ten-year, replacement rates (Peterson et al., 1998; Reville, 1999; Reville, Boden, et al., 2001; Boden, Biddle, and Reville, 2005; Reville, Bhattacharya, and Weinstein, 2001).

In order to evaluate the impact of the reforms on income replacement, we use a statistical model to forecast the five-year earning losses of injured workers. We use multivariate regression, as before, and we model the five-year losses as a function of observable characteristics (particularly preinjury wages, industry, firm size, and injury severity and type) and observed return to work two years after injury. The model is estimated on all claims from first quarter 2000 through second quarter 2003, the claims for which we have five years of postinjury earning information.

Using the model, we predict the five-year losses for all individuals in the sample, including those for whom we do not actually observe five-year losses.⁴ We then estimate replacement rates by dividing the average indemnity benefits by the average predicted earning losses.⁵ In other words, we use information on the relationship between two-year return-to-work rates and five-year losses for workers early in the sample (where we observe both) to predict the five-year losses in the later part of the sample (where we observe only two-year return to work). Using the simulated losses, we are able to evaluate trends in the simulated five-year replacement rate.

Another limitation of the data is the lack of breakdown in the WCIRB between permanent- and temporary-disability benefits. Thus, we focus the analysis on a general replacement rate that incorporates all benefits, rather than identifying changes in the replacement of

⁴ One of the most-important underlying assumptions of our analysis is that the relationship between five-year losses conditional on employment two years after an injury is stationary over time.

⁵ Workers' compensation benefits are tax free, but we report only pretax benefits in our analysis. There were not significant changes in tax rates affecting workers in our sample during this time period, however, so focusing on pretax rates does not affect our analysis of trends over time.

lost income due to specific types of benefits. As we saw from the previous analysis, however, the large change in PD awards and the repeal of vocational rehabilitation contribute most of the overall decline in benefits.

Table 7.2 reports the mean observed and estimated earning losses for the full sample and for PD claims. The average values of the losses are reported, as well as the absolute difference and percentage difference. The mean values are quite close, differing by just \$65 for the full sample and \$27 for the PD sample, differences of just 0.13 and 0.05 percent, respectively. While a good fit in sample does not guarantee a good fit out of sample, the small differences between the actual and predicted values offer some reassurance that we can accurately forecast earning losses with our approach.

From the previous chapter, we know that return to work differed considerably over the study period. The improvements in return to work would have reduced the earning losses for injured workers, offsetting some of the decline in disability benefits. An advantage of our approach is that it allows us to quantify how much of an effect the gains in return to work had on earning losses and replacement rates. Because we are predicting losses as a function of observed return-to-work rates, we can simulate what the losses would have been had we not observed any improvement in average return-to-work rates. We do this by fixing the two-year employment of individuals at the average rate for the quarter with the worst observed return to work, third quarter 2001, and recalculating the predicted losses and replacement rates holding return to work fixed at this low level for all subsequent quarters.

Figure 7.5 reports the simulated five-year earning losses, by injury quarter, for the full set of claims in the WCIRB sample. Separate series are reported using the predicted values evaluated at the actual, observed return-to-work levels and held constant at the low level observed in third quarter 2001. The trend in earning losses simulated using the actual return-to-work rates follows the pattern we would expect given the observed trends in return to work. Earning losses were rising in the early 2000s as return to work fell, and, as return to work improved, we began to observe significantly lower earning losses (a decline from around \$50,000 down to about \$40,000). If we keep return-to-work rates fixed at a low level, however, the earning losses remain fairly stable over time.

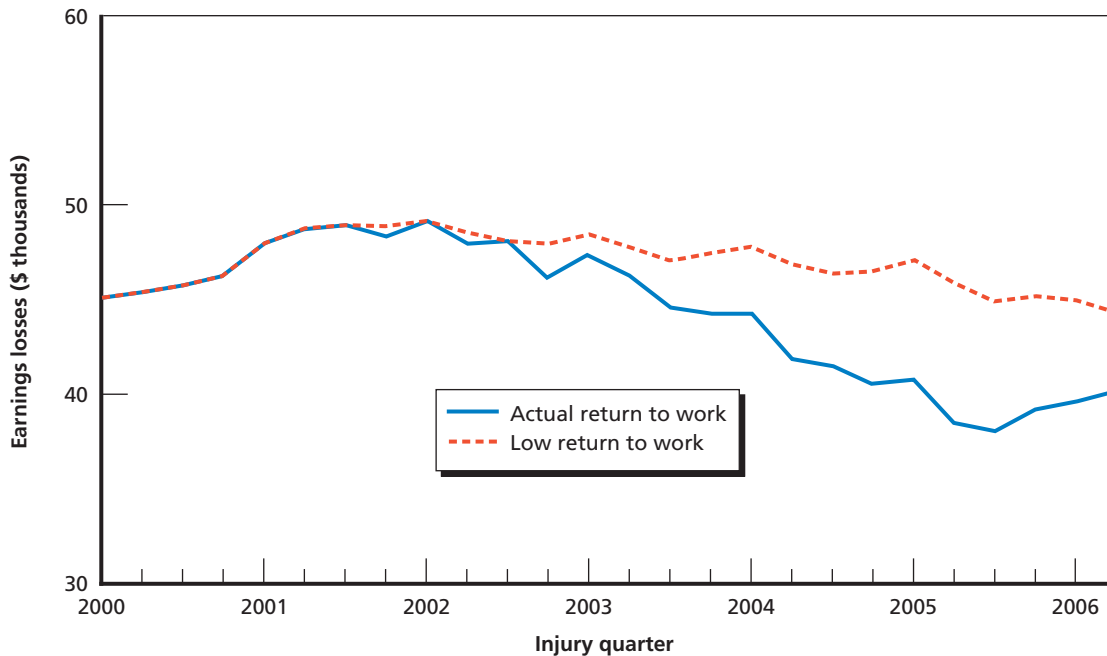
Figure 7.6 reports the simulated five-year replacement rates of lost income for the full set of injuries in the WCIRB sample. As before, we report the estimated replacement rates using the actual return-to-work rates and the return-to-work rates fixed at the low, 2001 level. The replacement rate was fairly stable over time from first quarter 2000 through third quarter 2004, with the replacement rate ranging from 0.40 to 0.45 in all quarters. After that, replace-

Table 7.2
Comparing Observed and Predicted Five-Year Earning Losses

Change	All Claims (\$)	PD Claims (\$)
Observed 5-year earning losses	47,728	52,563
Predicted 5-year earning losses	47,663	52,536
Difference	-65 (-0.13%)	-27 (-0.05%)

NOTE: Predicted earnings losses are based on a multivariate regression model relating observed losses at five years after injury to observed employment two years after injury and other characteristics. Regression includes all claims from the WCIRB sample from 2000 through second quarter 2003. Separate regressions are run for the full set of injured workers and for the injured workers with PD claims.

Figure 7.5
Simulated Five-Year Earning Losses, by Injury Quarter, WCIRB Sample, Full Set of Claims



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ment rates drop sharply, falling to 0.35 for first quarter 2005 injuries and close to 0.30 for second quarter 2006 injuries.

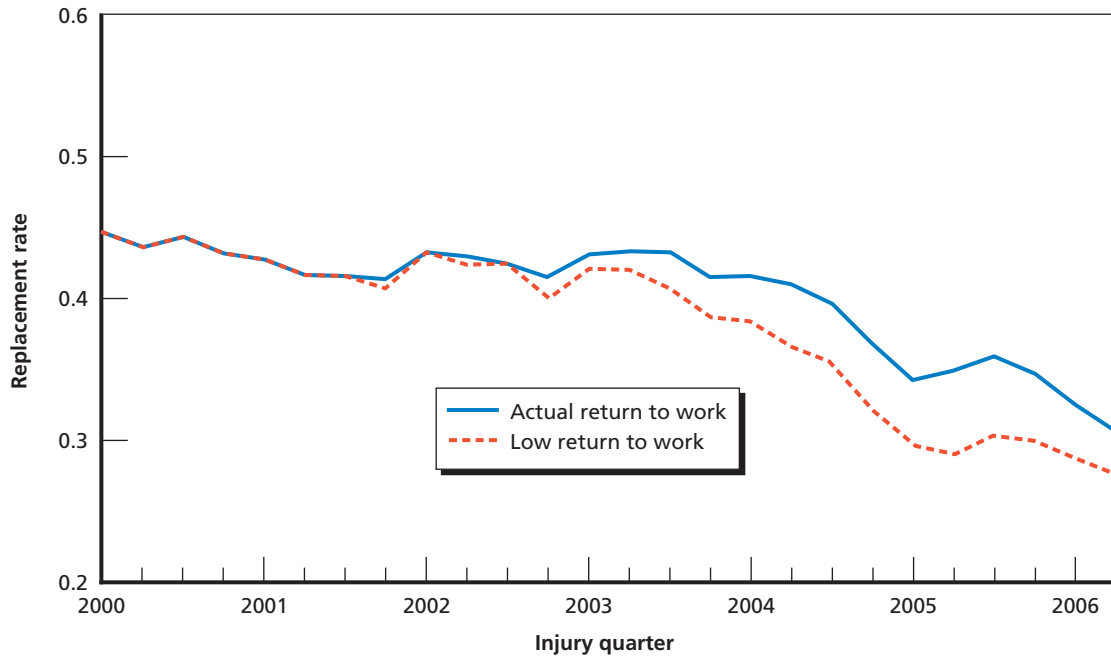
Although the decline in income replacement was severe, Figure 7.6 shows that it would have been even worse had return to work not improved. At the low return-to-work rate, the replacement rate fell to about 0.3 for first quarter 2005 injuries and dipped below that for injuries in 2006. There is a consistent difference between the two series of about 5 percentage points from 2004 to 2006, suggesting that replacement rates were 20 percent higher than they would have been because of the improvements in return to work.

From the trends in indemnity benefits discussed above, we know that the decline was more pronounced for the PD claims. Figure 7.7 reports the trend in simulated five-year replacement rates if we restrict the sample to only PD claims. The figure shows that, as we saw with the full set of claims, the replacement of lost income was very consistent prior to 2005. From first quarter 2000 through second quarter 2004, the replacement rate was very stable, at close to 0.5. For injuries in 2005 and later, however, the replacement rate drops sharply to 0.4, and to 0.37 in second quarter 2006. This represents a decline of about 26 percent.

Again, as steep as the decline in income replacement was, the impact would have been even greater absent the improvements in return to work. Holding return to work fixed at the low level, replacement rates fell by as much as 6 percentage points more. On average, the improvements to return to work made the replacement rates about 15 percent higher than they would have been otherwise.

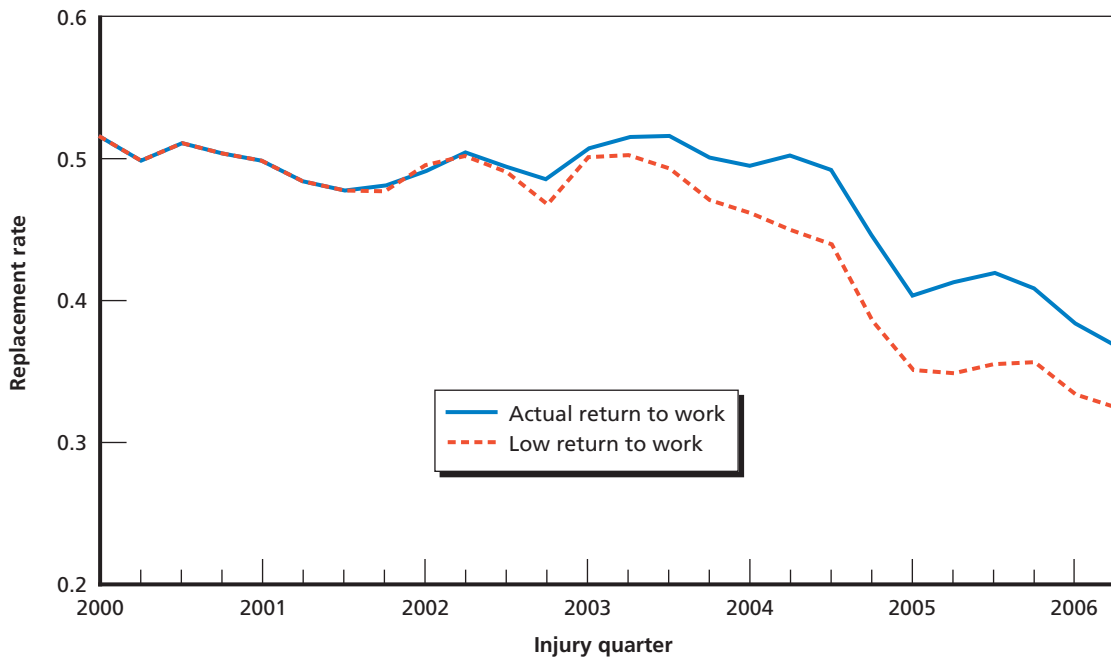
This drop in replacement rates is a matter of considerable policy concern. The replacement rates of lost income in California had already been considered to have questionable adequacy based on past empirical work (Peterson et al., 1998; Boden, Reville, and Biddle, 2005; Reville

Figure 7.6
Simulated Replacement Rate of Lost Income Five Years After Injury, WCIRB Sample, Full Set of Claims



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Figure 7.7
Simulated Replacement Rate of Lost Income Five Years After Injury, WCIRB Sample, Permanent-Disability Claims Only



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and Schoeni, 2001). With the further declines observed here, it is highly questionable that the postreform benefit levels would meet traditional standards of benefit adequacy. They certainly fall short of the two-thirds standard that has generally been used for temporary-disability benefits (Berkowitz and Burton, 1987).

Past work has shown that the replacement rates of lost income for workers' compensation claims vary across injury severity, with more-severe injuries having higher replacement rates (see, e.g., Peterson et al., 1998; Reville and Schoeni, 2001). This is due to the nature of the benefit schedule, which offers higher benefits the more severe an injury is. We examine how individuals with different levels of injury severity were affected by the reforms.

We group individuals into the three severity categories discussed in the previous chapter, based on whether the injured worker was in the bottom, middle, or top tercile of medical costs in the quarter of injury, and compare the replacement rates. These findings are reported in Table 7.3. Replacement rates are reported by year of injury, using the actual return-to-work rates and holding the return-to-work rates fixed at the level from third quarter 2001. The bottom row reports the difference in replacement rates from 2000 injuries to 2006 injuries.

The table shows that, as we found in past RAND studies, the replacement rates of lost income are, indeed, increasing with disability severity. Workers in the low severity category who were injured in 2000 have replacement rates of 15 percent, and these fell to 12 percent for workers injured in 2006. The decline was only slightly higher, to 11 percent, if we kept return to work fixed at the low rate for these workers. Replacement rates were more than double this for workers in the middle severity category, equal to 38 percent for workers injured in 2000 and falling to 27 percent for workers injured in 2006. The improvements in return to work had a somewhat larger effect, offsetting about 3 percentage points of the decline. For the workers with the most-severe injuries, benefits replaced just over two-thirds of losses for injuries in 2000. This fell to 47 percent for year 2006 injuries. The improvements in return to work did

Table 7.3
Simulated Five-Year Replacement Rates, by Injury Year and Severity

Injury Year	Low Severity (%)		Middle Severity (%)		High Severity (%)	
	Actual RTW	Low RTW	Actual RTW	Low RTW	Actual RTW	Low RTW
2000	15	15	38	38	68	68
2001	13	13	37	37	64	64
2002	12	12	38	37	65	65
2003	13	13	40	38	64	61
2004	14	13	36	33	59	51
2005	14	12	31	27	50	43
2006	12	11	27	24	47	41
Difference: 2006–2000	–3	–4	–11	–14	–21	–27

NOTE: The table reports the simulated replacement rates five years after injury. Replacement rates are simulated using the observed return-to-work rates and a fixed, low value of return to work from third quarter 2001. Low, middle, and high severity categories are defined based on the distribution of medical costs in the quarter of injury, with higher medical costs indicating a more-severe injury.

have the biggest effect for these injuries, offsetting 6 percentage points of the decline, but they still experienced significant declines in income replacement.

Have Disability Ratings Been Increasing Since the Implementation of the New Schedule?

While the adoption of the AMA Guides led a sharp decline in average disability ratings for permanently disabled workers, there is some question about the extent to which this decline will persist over time. It has been argued that PD ratings have been gradually increasing over time without any change in the underlying severity of the impairments. Our understanding of the general argument is that it states that both doctors and the professionals that rate the doctors' report apply standards that gradually evolve over time. In principle, evolving interpretations could result in either an upward or downward trend in ratings and benefits, but most observers have argued that the result is an upward movement as interpretations of the guides become more liberal in favor of injured workers. If PD ratings are increasing significantly over time, then we would expect to see some of the declines in disability benefits be erased in the future.

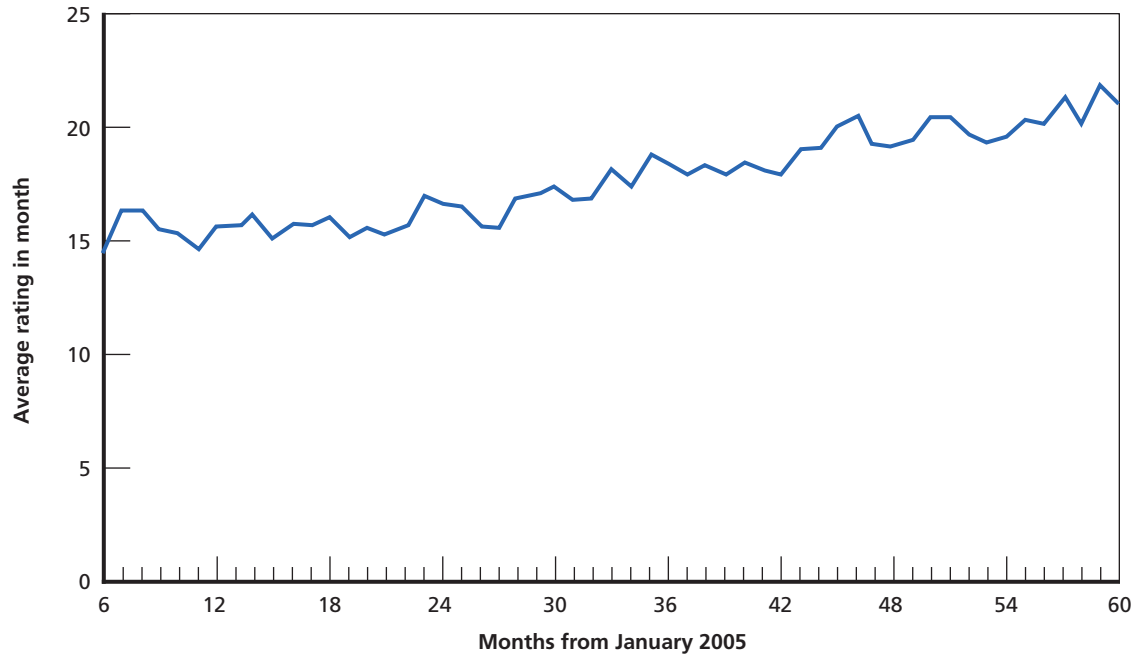
Here, we examine the extent to which average ratings have shown an upward trend under the new rating schedule. We use a more-recent version of the DEU file (not linked to earning data) that included 124,994 ratings under the Guides-based schedule, all performed after January 1, 2005, and prior to December 31, 2009. Ratings on cases in which the worker was unrepresented (referred to as summary ratings) accounted for 35.3 percent of the ratings; the remainder were for represented workers (referred to as consult ratings). Consult ratings, on average, receive much higher ratings than unrepresented cases. Because of this difference, we initially split the file and study these two groups separately in part of our analysis.

The AMA Guides–based schedule was implemented for all claims in which the first medical evaluation for permanent disability was performed on or after January 1, 2005. We might expect that the maturity of cases and other characteristics, such as the underlying severity and the fraction of cases represented by an attorney, to be similar before and after the introduction of the schedule. The introduction of the schedule was known and anticipated, however, and there was some discretion on the part of the parties about under which schedule a rating would be performed. To avoid any possible bias due to nonrandom selection into being rated under one system or the other, we discard the first six months' worth of ratings that were performed using the AMA Guides. With the data from June 2005 on, we compute the average rating by month in which the rating was done, regardless of the date of injury.

Figure 7.8 reports the average trend in all ratings, both summary and consult, by month, from June 2005 through December 2009. The average rating was fairly constant through 2005 and 2006, at roughly 15.5. In 2007, however, there appears to be an upward trend, with the average rating climbing to 17.1. The upward trend continues, with the average rating rising to 18.8 in 2008 and 20.2 in 2009. This means that there was about an 8- to 10-percent increase per year in the average rating in the three years from 2007 to 2009. This still represents a significant decline from the average rating of 31.6 we observed in the DEU ratings from the old rating schedule from 2000 through 2005.⁶

⁶ While we do not report statistical significance for these differences, because of the large sample sizes, the differences we present here are all highly significant ($p < 0.01$).

Figure 7.8
Trends in DEU Disability Ratings, by Month

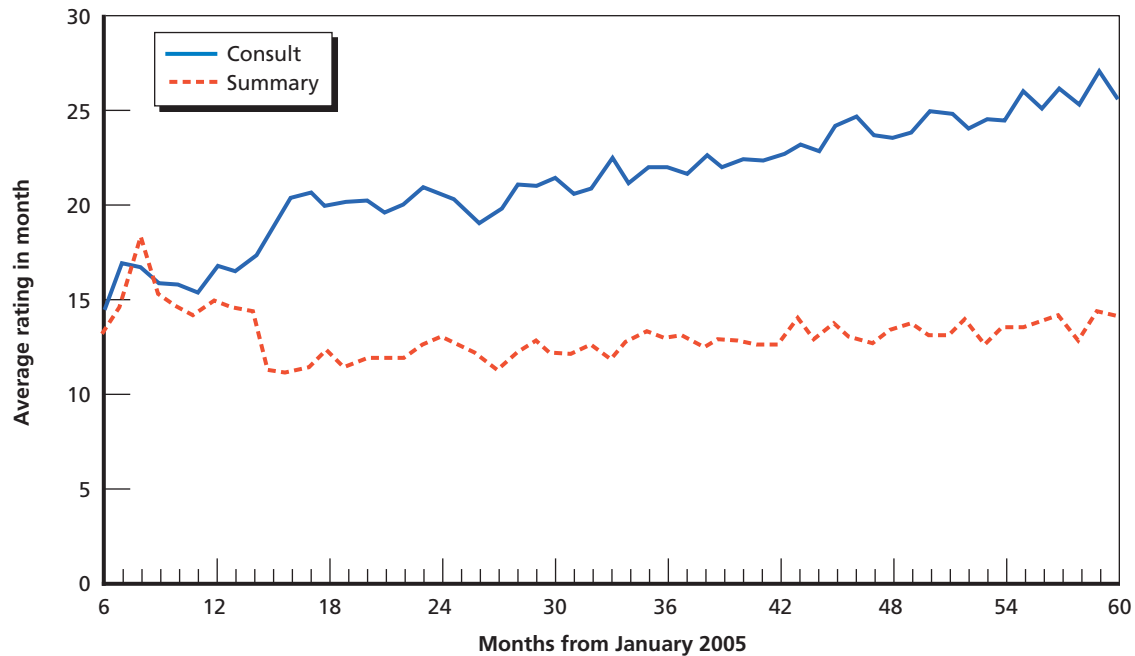


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As mentioned above, consult ratings tend to be significantly larger than summary ratings, on average. The likely reason for this is that more-severe cases involve larger dollar amounts and are more likely to involve an attorney. Here, we consider whether the trend in ratings is more pronounced in either summary or consult ratings. In the old rating system, there was evidence that “physician shopping” on the part of the applicants and defense led to consult ratings that were more favorable to a party than a summary rating (Reville, Seabury, et al., 2005; Seabury, Reville, and Neuhauser, 2006). Given this, we might expect the trend to be more pronounced in consult ratings. The reforms included provisions to reduce parties’ ability to shop for physicians, however, so it is unclear whether we would expect the trend to be more or less pronounced.

The comparison of trends between summary and consult ratings is presented in Figure 7.9. The figure suggests a clear disparity, with consult ratings rising much more rapidly than summary ratings. The first few months show little difference between summary and consult ratings, perhaps reflecting some uncertainty about the schedule by both parties and fewer systematic differences in the claims likely to involve a dispute (i.e., if the parties were uncertain as to which cases would involve higher ratings, the sample of represented cases could be more random than it is when they have experience with the system). But, starting in about April 2006, there is a clear distinction with the consult ratings involving more-severe cases and the summary cases involving less-severe cases. From that point, both types of ratings increase, but the trend is more pronounced for consult ratings. Summary ratings grow about 20 percent from month 15 to the end of the sample, compared with about 40 percent for the consult ratings.

Figure 7.9
Trends in DEU Disability Ratings, by Summary and Consult



RAND MG1035-7.9

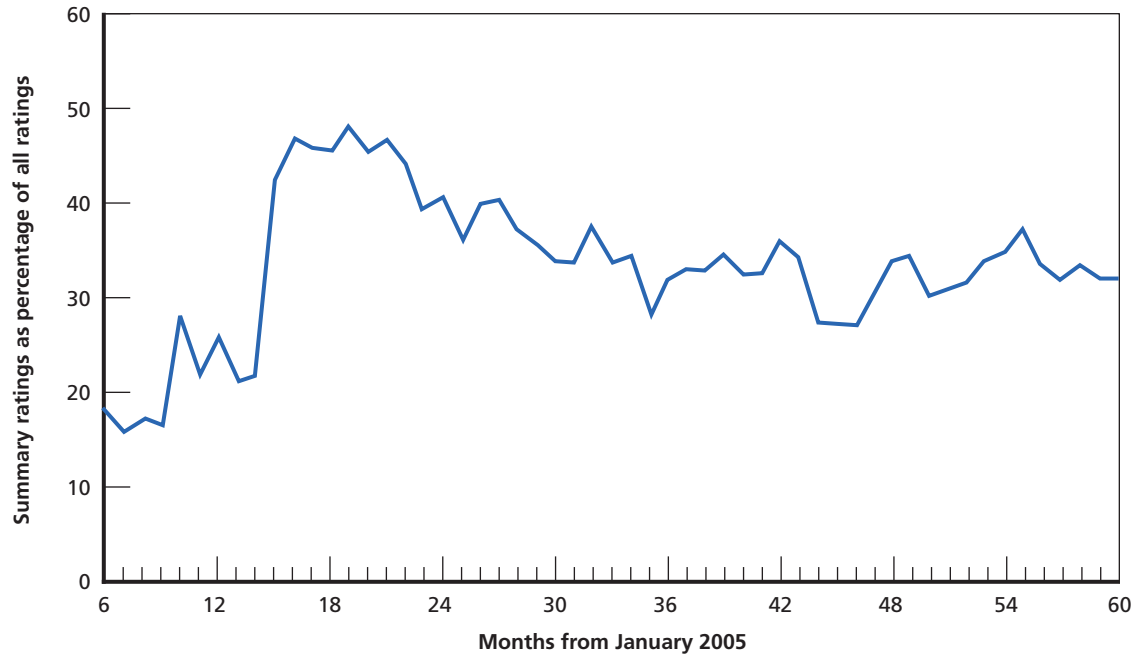
As we have discussed, the new schedule dramatically reduced the average rating received by injured workers. This could have led to a decline in the fraction of cases represented by attorneys, because, with lower benefits, it might not have been worthwhile for injured workers to dispute their case. If there was a decline in representation, and if the marginal cases that were no longer receiving attorney representation involved lower ratings, then we might overestimate the difference in the trend between the two types of ratings.

Figure 7.10 reports the distribution of attorney representation in cases, as indicated by the presence of a summary rating. The figure indicates a significant change in the fraction of cases rated during a period of time that involve attorney representation. Initially, a high fraction of cases (almost 80 percent) involved an attorney. This could be that the disruption in the system caused more workers to get attorneys, though other explanations could be possible as well. About 15 months after the new schedule was introduced (corresponding to the sharp difference between summary and consult ratings in Figure 7.9), a much smaller fraction of cases were represented. Over time, this has trended down and might have stabilized at around two-thirds of cases being represented.

From the figure, it is unclear how much of the different trend between summary and consult ratings can be explained by differences in attorney representation. While the level of representation dropped sharply from months 18 to 36, it appeared fairly stable over the last two years of our sample. And during this time period, the difference between consult and summary ratings continued to grow. Ultimately, more work needs to be done to determine whether the system still promotes the kind of subjective evaluations found in the old California system.

While we do not have the data on actual disability benefits for the injured workers in this sample, we can impute the implications of the trend in rating for the level of PD awards.

Figure 7.10
Share of DEU Ratings That Are Summary Ratings, by Month of Rating



RAND MG1035-7.10

In Table 7.4, we report the level of disability benefits for which workers are eligible based on their disability rating.⁷ Workers injured in 2004 and rated under the old system were eligible for \$38,511 in PD benefits, on average. This dropped to \$15,271 for the 2005 injuries, a 60-percent decline. As the rating trend we observed in Figure 7.8 began, we see benefits rise to \$18,366 for 2007 injuries and \$23,084 for 2009 injuries. This represents a 40-percent decline from 2004. This suggests that the upward trend in the disability rating offset about one-third of the initial decrease that occurred after the adoption of the new rating schedule.

Summary of Findings

In this chapter, we examined the impact that the reforms to California's workers' compensation system had on the income replacement provided to injured workers. Our findings indicate that the impact on income replacement was striking. Indemnity benefits fell dramatically, and most of the decline was experienced by workers with permanent disabilities. Part of this was due to the changes to the disability rating schedule, and part was due to the repeal of the vocational rehabilitation system. The reforms also appear to have led to a decline in the fraction of workers who receive PD benefits.

⁷ The rules tying the disability rating to the levels of benefits change over time, but we use the rules in place as of the date of injury. Because the DEU data on average wages are inconsistently reported, and because the maximum rate is low enough to apply to the majority of workers, we used the maximum weekly rate to calculate the final award. The sample includes ratings only for injuries in 2004 done under the old schedule and in 2005 and later that were done under the new schedule.

Table 7.4
Impact of Trend in Disability Ratings on the Average Permanent-Disability Awards

Rating Year	Number of Ratings	Average Rating	Mean Dollars
2004	107,299	32.31	38,511
2005	4,048	15.65	15,271
2006	24,313	16.39	16,284
2007	33,246	17.92	18,366
2008	33,161	19.57	20,731
2009	31,669	21.20	23,084

The decline in indemnity benefits led to a decline in the average replacement rate of lost income. Replacement rates fell about 26 percent on average. The gains in return to work helped offset some of the declines, but not all. We estimate that, if return to work had stayed at its lowest point, replacement rates would have fallen 15 percent more than they ultimately did.

We also found that the declines in replacement rates were experienced most profoundly by the most–severely disabled workers. This is despite the fact that, as we saw in the previous chapter, the most–severely disabled workers experienced the biggest gains in return to work. It is also noteworthy that replacement rates for these workers fell the most even though SB 899 specifically raised benefits for workers with more-severe disabilities and lowered them for workers with less-severe disabilities (as measured by the disability rating system). Given the changes to the rating system, however, very few individuals are so severely disabled as to qualify for the higher disability benefits. Additionally, the most-severely disabled were more likely to have qualified for vocational rehabilitation benefits.

We also studied whether we observed a significant increase in disability ratings over time. In fact, we do find some evidence of this, with ratings rising at about 8 to 10 percent per year from 2007 through 2009. This offset about a third of the decline in the level of PD awards for which workers are eligible, with a decline of 40 percent from 2004 as opposed to the 60 percent that was observed immediately after adoption of the new schedule.

Given the declines in benefits and replacement rates, we might view the upward trend in PD ratings as a positive. If the postreform level of benefits were deemed inadequate, and no other action was taken, then this might be true. If policymakers are going to respond and there is some effort to raise replacement rates to their prereform levels, however, then monitoring the level of ratings is important to help calibrate benefits to the chosen target levels.

Conclusions and Policy Recommendations

This study has examined return to work by injured and disabled workers in the California workers' compensation system and how it has responded to recent reforms. We found that return to work has improved, though the extent to which the gains were driven by the reforms is unclear. Our survey findings suggest that employers are keenly aware of return-to-work issues and have taken steps to improve return to work. Their answers suggest that workers' compensation costs play a key role in determining their return-to-work decisions.

Workers' Compensation Policy as a Tool for Improving Return to Work

We reviewed the role of workers' compensation policy, and public policy more generally, as a mechanism for improving return to work for disabled workers. The fundamental challenge with return to work is identifying a match between the job-related tasks that an injured or disabled worker can be reasonably expected to accomplish and the needs and requirements of employers. We identify three key areas in which workers' compensation policy can influence return to work: by reforming medical care, by influencing the incentives of workers and employers, and through the use or promotion of accommodations for workers. With the medical reforms and the introduction of the tiered benefit, California reformed the first two in the workers' compensation system during our study period. In principle, they changed the third through the small-business workplace modification subsidy, but, due to a lack of awareness of the program among small businesses, this program probably had minimal impact.

We also examined recent changes to FEHA in California, which could have an impact on how employers accommodate disabled workers in workers' compensation cases. Similar to the federal ADA, FEHA requires employers to offer reasonable accommodations to disabled workers or potentially be subject to tort liability. Since, unlike workers' compensation benefits, tort liability includes noneconomic damages and might also include punitive damages, employers have significant incentives to take steps to avoid suits, including through additional accommodations. Changes to FEHA in 2000 led to an increase in the number of claims alleging a refusal to accommodate a disabled worker. Since occupationally disabled workers are covered under the law, the changes are likely to increase incentives for return to work in workers' compensation cases.

To assess employer perceptions of the role of workers' compensation policy in return-to-work decisions, we surveyed a small sample of California employers. Both small insured employers and large self-insured employers agreed that workers' compensation costs generally are a key driver in return-to-work decisions. The perceived importance of the reforms was less

pronounced. About 40 percent of employers identified the reforms as an important factor in return-to-work decisions. About the same fraction recognized FEHA as an important factor. These survey findings confirm that policies both in and outside the workers' compensation system are potentially important tools for influencing return to work.

Trends in Return to Work in California

Our empirical work identified some important trends in return-to-work outcomes for disabled workers in California over the past decade. Return-to-work outcomes improved considerably for injuries that occurred from 2002 through 2005. Moreover, the biggest gains were experienced by workers with the most-severe injuries. We saw gains in overall employment and in employment for the at-injury employers. These trends were consistent across different data sets, specifications, and for workers injured at different-sized firms. The trends also appear statistically significant when we control for other characteristics of individuals and their injuries and for economic conditions. Overall, the improvements in return to work represent a significant gain for disabled workers.

Pinpointing exactly why return to work improved so much is a challenge. Our findings indicate that return to work was improving even before SB 899 reforms were adopted. Workers injured in 2003 and 2004 were not eligible for the tiered benefit, rendering it unlikely to be a driving factor behind the observed trend. At the same time, we find some evidence that workers injured while employed at medium-sized firms, who were probably most likely to respond to the incentives of the tiered benefit, experienced improvements in return to work after the reforms relative to workers injured at small or large firms. This suggests that, while other factors might have spurred improvement in return to work overall, the tiered benefit likely spurred improved return to work for at least some injured workers.

Our findings also cast doubt on the effectiveness of the old vocational rehabilitation system in California in terms of improving employment outcomes for injured workers. Our results suggest that the biggest gains in employment for injured workers came from workers who were most likely to participate in the vocational rehabilitation system. This does not necessarily mean that the system had no positive effect on return to work, but it suggests that any such effects (relative to any effects of the voucher system that replaced it) were comparatively minor.

There are other possible factors that could have driven the trends we observed. Changes to FEHA could have had an effect, as past work has suggested that return to work for disabled workers' compensation claimants improved relative to that of other disabled workers starting in 2002 (Gailey and Seabury, 2010). The timing of the trend also appears to line up well with the adoption of medical treatment guidelines, which could have spurred improved return to work if return were being delayed by unnecessary medical treatment. However, further work is needed to understand the impact that medical treatment guidelines and utilization review have on return to work and employment.

It is also possible that the high workers' compensation costs in California in the early 2000s motivated employers to adopt return-to-work programs and other measures to help contain costs. If this last explanation were an important factor, it suggests that the gains might not be fully sustained as workers' compensation costs fall and employers change their behav-

ior. This suggests a need for continued monitoring of employment outcomes for injured and disabled workers in California.

Implications for Benefit Adequacy

Our findings have several direct implications about the reforms' impact on the adequacy of benefits. Numerous RAND studies questioned the adequacy of California's disability benefits, a fact that helped motivate benefit increases that were introduced by AB 749. The recent changes to the rating schedule and the repeal of vocational rehabilitation appear to have more than offset any gains, however, and the level of benefits has fallen sharply. This suggests that an increase in benefits is necessary to return replacement rates to their previous levels, or improve them.

Our results do not indicate, however, exactly how much the benefits should increase. There are two challenges to identifying the appropriate level of benefits. The first is that it is not entirely clear exactly what would be the appropriate standard of benefit adequacy. Two-thirds income replacement is commonly used as the benchmark for temporary-disability benefits, based on the 1972 *Report of the National Commission on State Workmen's Compensation Laws*. The National Commission did not, however, specifically advocate two-thirds as the adequacy standard for PD benefits. In California, the base statutory replacement rate for temporary- and permanent-disability benefits is two-thirds, but the actual replacement rate will vary (either up or down) because of the weekly benefit caps and the tax-free nature of the benefits. Regardless of what the appropriate level of adequacy is from a conceptual standpoint, unless SB 899 was specifically intended to lower the adequacy of benefits, then a natural starting point would be to raise benefits to restore replacement rates to their prereform levels.

Even once a target replacement rate is identified, the second challenge comes in identifying how to set benefits to consistently reach this target. As we document in this monograph, the actual replacement rate for lost income can vary significantly over time in response to individuals' postinjury employment. For instance, if California were to restore average disability benefits to their prereform levels, and return-to-work rates remained high, this would lead to replacement rates that exceeded the prereform levels. Some might argue that this would be socially acceptable or even desirable, but, if the goal is to balance the trade-off between benefit adequacy and cost to employers, then it would be useful to have a mechanism that rewards employers for improved return to work.

In the past, RAND authors have recommended that disability benefits be tied directly to empirical estimates of average earning losses as a means to accomplish this. Consider the following example, taken from Reville, Seabury, et al. (2005). Suppose that empirical data suggest that an injury resulting in a permanent loss of range of motion in the shoulder causes an individual to lose on average 10 percent of earnings over the ten years after the injury. One way to attain a given replacement rate R would be to pay the disabled worker $R \times 10\% \times \text{preinjury wage} \times 520 \text{ weeks}$. Applying a cost-of-living adjustment to the preinjury wage, this would guarantee a replacement rate of R for ten years after injury for a worker who would have experienced stable real wages.

California does have a mechanism for earning loss estimates to affect benefits, through the FEC adjustments implemented after SB 899. These adjustments are based in part on the relative values of earning losses across different types of injuries, and adjust different types of

injuries upward depending on their relative values. The FEC adjustment levels are not tied directly to earning loss estimates, however, and it is unclear how they would adjust in response to a change in return to work. If return to work changed and average losses changed but the relationship across types of injuries remained constant, it is not clear how the FEC adjustments would differ (if at all). One way to tie the FEC more directly to earning losses would be to have some form of global adjustment factor tied to all injuries that was based on earning loss estimates. The advantage of a system that ties benefits directly to empirical estimates of losses is that it is straightforward and transparent and adjusts automatically to the economic conditions that disabled workers face. Such a system relies critically on careful and accurate monitoring of earning losses.¹

An alternative mechanism for adjusting benefits in response to the outcomes of injured and disabled workers is the tiered benefit. While, in the monograph, we discussed the tiered benefit largely in terms of its incentive effects for workers and employers, it potentially plays an important role in promoting equity of disability benefits. Workers who return to work receive less in disability benefits than those who do not. Thus, if return to work were to improve generally, this should lead to a decline in average disability benefits. Similarly, if return to work were to worsen, average benefits would increase.

In our study, it became clear that there are issues that could prevent the tiered benefit from operating effectively in this manner, and California should consider measures to make the benefit operate more effectively. One possible improvement would be to advance PD benefits at the bump-down level. One reason the bump down has not been effective is that advance payments made before the P&S date are made at the original benefit level and might exceed the bump-down level by the time P&S status is reached. Making advance payments at the bump-down level and paying higher benefits if no offer is made after the P&S date would alleviate this issue. A related step would be to drop the advancement of PD benefits entirely for workers while they have returned to modified or alternative work. This would have the added benefit of further encouraging employers to promote early return to work. Other potential improvements include cleaning up uncertainty over the provisions, such as how to address the issue of an employee who is fired before a year has passed.

In principle, the *Alvarez/Guzman* and *Ogilvie* decisions could also incorporate the employment outcomes of injured and disabled workers into benefit determinations. But the focus on the actual postinjury losses of injured workers creates work disincentives for disabled workers. In the systems described in this monograph based on earning losses, benefits are adjusted based on the average losses of disabled workers, so they do not provide adverse incentives to any particular worker. Similarly, the tiered benefit is tied directly to the offer of return to work, so it actually increases workers' employment incentives. Thus, at least from the perspective of promoting return to work, these decisions seem like an inefficient, even potentially harmful, means of tying disability benefits to employment outcomes.

Further Efforts to Improve Return to Work

While California clearly made strides in terms of return-to-work gains, there still seem areas in which the state could improve. The general lack of use and impact of the workplace modifi-

¹ It is worth noting that SB 899 does require the updating of the empirical data on a regular (five-year) basis.

cation subsidy program is discouraging, but it still seems like more could be done to improve return to work at smaller employers. Most of the return-to-work programs discussed in this monograph are likely to be geared toward larger employers, which have more flexibility to modify staff and reallocate workers. More research needs to be done to understand what kinds of programs would be most effective for smaller businesses. For example, do self-insurance pools of smaller employers do a better job of promoting return to work than insured small employers on their own? Would a premium discount for an approved return-to-work program help improve return to work? Would these programs be cost-effective for small employers?

There are also important issues that should be monitored going forward. We find evidence of a general trend toward increasing disability ratings over time, and it is particularly prominent in cases with attorney representation. If the medical legal system is introducing uncertainty or subjectivity into the rating process, this could be another factor that promotes disputes and worsen outcomes for injured workers and their employers.

Finally, we feel that another implication of our work is the need to further explore the potential gains to the integration of occupational and nonoccupational disability compensation. FEHA in California clearly has a strong incentive effect on employers that affects their return-to-work decisions for occupational and nonoccupational disabilities. There is clear overlap between the two systems, and it seems that more could be done to help facilitate a better coordination between the two. This is not a specific policy recommendation so much as a suggestion for further research. CHSWC research has made great strides in demonstrating the potential cost savings of integrating medical care in the workers' compensation system with group health (Neuhauser, Sum, et al., 2005). The potential for similar gains exists from an integration of workers' compensation benefits with nonoccupational programs from the state's disability program. While much work needs to be done to understand the potential implications and challenges of this, overall and with respect to the impact on return to work, it is an area that merits further consideration.

Correcting for Match Failure

We can correct for any potential bias due to match failure using a simple propensity score method (described in Little and Rubin, 1987, and used in past studies, such as Bhattacharya et al., 2010). We can model the probability that an injured worker matches to an uninjured control worker as a function of the other observable characteristics of the injured worker and the firm for which he or she works as

$$\Pr[\text{match}_i = 1] = X_{it}\beta + \lambda_t + \varepsilon_{it}, \quad (\text{A.1})$$

where X is a vector of individual characteristics for worker i injured in time t , λ is a fixed time effect, and ε is a random error term. This relationship is estimated with a probit model, and we estimate predicted values of the probability of match, p . These predicted values, \hat{p} , also called the propensity score, are used to generate weights

$$w = \frac{1}{\hat{p}}.$$

Individuals who are less likely to match—say, because they are in smaller firms—receive greater weight in the analysis, making the overall sample appear closer to the true population.¹ The key assumption in this analysis is that the failure to match is due to selection on *observable* factors; if selection is based on unobservable factors, our results might prove biased even with the sampling weights.

Examining the Impact of Reporting Effects

Much of our analysis is conducted using first reports of quarterly data from the WCIRB. The advantage of the first reports is that we have them for all observations in the sample. The disadvantage, however, is that first reports of injury cover claims that are more or less mature depending on when the injury falls in the policy year. That is, first reports occur 18 months after the start of the policy year, meaning that the total amount of time after an injury cov-

¹ Little and Rubin (1987) argue that using the actual predicted value as the weight might introduce variability into the estimates. They suggest partitioning the data into groups of the predicted values, so we group the data into quintiles and use the quintile average of the inverse of the estimated propensity score as the weight (see Reville, Polich, et al., 2001; Bhattacharya et al., 2010).

ered by the first report ranges from six to 18 months. This is potentially problematic, because a report at 18 months is likely to be more accurate in terms of predicting disability severity (i.e., permanent or temporary) and predicting incurred losses than a less mature one.

To verify that differences in reporting do not significantly affect our results, we estimate the trend in return to work using only injuries in the first quarter for which the injury year equals the policy year (note that, in some cases, the accident year will be after the policy year, because the policy year is 12 months after the date of purchase). These injuries will all have reports that occur 15–18 months prior to the first report of injury date. In Table A.1, we report the average one-year and two-year relative employment ratio for these injuries by accident year.

The table indicates that the trends are extremely similar when we restrict the data to claims with uniform reporting periods. That is, the relative employment ratios for injuries fall steadily for 2000 through 2003. There is noticeable recovery in 2004 and 2005, however. Similar analyses for injuries with matching accident and policy years in the second, third, or fourth quarters yield similar results, with the trend in return to work initially declining and then increasing. This is not surprising, given that the DEU data are not subject to this reporting problem and they also exhibit similar trends.

Multivariate Statistical Analysis: Return-to-Work Trends

To verify the importance of the time trends we discuss, we employ a statistical model that estimates these trends while controlling for other observable factors that could affect earning losses. We estimate a multivariate regression model that relates the likelihood that the injured worker has positive earnings in the eighth quarter after injury as a function of other characteristics of individuals. This model is comparable to the model used on the DEU data in Seabury and McLaren (2010).

Specifically, we estimate the linear probability model:

$$rtw_i = \alpha_0 + X_i\beta + \lambda_t quarter_t + \varepsilon_i.$$

In this model, *rtw* is a dummy variable that equals 1 if the individual is working in quarter 8 after injury and 0 otherwise; *X* is a vector of characteristics of the injured worker; and

Table A.1
Trend in Relative Employment Ratio for Claims with a Standardized Reporting Period

Year	1 Year After Injury (%)	2 Years After Injury (%)
2000	74.2	71.7
2001	69.9	68.0
2002	67.4	68.2
2003	66.6	68.9
2004	69.5	70.9
2005	74.4	73.4

NOTE: The table includes only first-quarter injuries in the WCIRB sample in which the accident year equals the policy year, meaning that 15–18 months have passed for all claims as of the date of first report of injury.

quarter is the quarter of injury. The key parameter estimate for this model is λ , the dummy for quarter of injury. The sign and significance of these coefficients allow us to determine whether the quarter of injury is significantly associated with return to work independent of other factors. We estimate the time trend dummies relative to year 2000 injuries.

The characteristics of workers included in the model depend in part on which sample is used (for example, there are some variables, such as age, that are available in the DEU sample but not the WCIRB data). In the report, we focus more on the WCIRB data. These models include the severity of the injury (as measured by the medical costs relative to other workers injured in the same quarter), preinjury wages, the average fraction of uninjured control workers who are working, the nature of the injury (e.g., back injury, chronic pain, or stress injury) and firm characteristics, such as size and industry. In the DEU data, we use the severity measure based on the distribution of ratings in the quarter, as well as occupation dummies and the DEU-based type of injury descriptions.

From these models, we take the parameter estimate. The parameter estimate for this model is λ , and we use the estimated standard error to construct 95-percent confidence intervals.

Multivariate Statistical Analysis: Forecasting Earning Losses

To estimate replacement rates over a five-year period for the later years in our sample (when we have less than five years of losses), we use a regression model that estimates cumulative earning losses as a function of return to work and other observable factors. We estimate the regression model:

$$WL_i = \alpha_0 + \theta rtw_i + X_i\beta + \lambda_i quarter_i + \varepsilon_i.$$

In this model, WL represents the five-year cumulative earning losses of disabled workers (as defined in the text); rtw is a dummy variable indicating whether the worker was employed two years after an injury (as above); X is a vector of characteristics of the injured worker; and $quarter$ is the quarter of injury. We use the same other observable factors that are available in the WCIRB data that we use in the regression model described in the previous section.

We estimate this regression model for all injuries through 2003, where we have five years of postinjury data. We then use the predicted values of this regression both in and out of sample, so that we have predicted five-year losses for all injured workers in our sample. When we predict losses for the fixed, low value of return to work, we simply replace rtw with the average value for workers injured in third quarter 2001 and predict the losses at this baseline level.

Employer Survey Form

Here we provide the survey form used to elicit information on return-to-work practices and perceptions for employers in California.

Introduction to Survey

This survey is designed to collect information about practices used by your company to keep employees at work or return employees to work after a workplace injury. Results from our study will be used to help policymakers and employers identify the techniques that are most effective.

Please read through the following background material, which defines many of the terms to which we refer in the survey.

Return-to-Work Programs

“Return-to-work practices” are defined broadly to mean any measure, strategy, policy, incentive structure, outreach effort, or other active step that aims to accelerate, or improve the chances of, an employee’s return to or retention in the workplace after a work-related injury or illness. We are interested in the following:

- all periods of absence due to work-related injury or illness
- temporary, permanent partial, and permanent total disability
- strategies used to shorten postinjury absences
- strategies designed to ensure that postinjury absences are avoided.

A *“return-to-work program”* is the set of return-to-work practices (one or more) used by an employer.

In keeping with the above definitions, you should think expansively about the full range of your company’s return-to-work practices. Imagine a state of affairs in which employees who suffer a workplace injury are *left completely to their own devices* with respect to the following:

1. *whether* they take time off work because of the injury
2. if they do take time off, *when*, if at all, they return to work.

Now consider what your company does or uses to alter that state of affairs. This is what we refer to as your company’s return-to-work program.

Disability Discrimination Claims

In California, there are two primary policies that offer protection to disabled workers against employment discrimination: the federal Americans with Disabilities Act (ADA) and the California Fair Employment and Housing Act (FEHA). While there are differences between the two, disabled workers might allege discrimination and pursue legal action under either in search of monetary damages and other forms of compensation.

A “**disability discrimination claim**” is defined here as an official notification by an employee that he or she has, is planning to, or is considering taking legal action against your company alleging that he or she was discriminated against on the basis of a disability. To meet this definition, the employee need not have actually retained legal counsel, but there should be some reasonable belief that he or she might do so.

We are interested in whether and how changes to disability discrimination policies have influenced or affected your company's return-to-work (RTW) practices. In particular, we are interested in how your company's efforts to promote return to work (as described above) are influenced or motivated by the desire to either avoid or mitigate disability discrimination claims.

Workers' Compensation Reforms

In 2004, Senate Bill (SB) 899 was adopted in California, which introduced a number of changes to the workers' compensation system. While there were many changes introduced by this reform effort, there are three that are of particular interest for this study.

A “**two-tier disability benefit**” is one that provides lower benefits to disabled employees who return to work for some period of time. SB 899 introduced a two-tier disability benefit for permanently disabled employees, one that provides 15 percent higher benefits for employees whose employer at the time of injury makes no formal offer of return to work (subject to criteria defined by the state) and 15 percent lower benefits for employees with a formal offer of return to work. The two-tier benefit, which is sometimes referred to as the “bump-up, bump-down,” is applicable only to those who are disabled by an injury while working for an employer with at least 50 employees.

A “**job modification subsidy**” is a benefit that is designed to reimburse employers with fewer than 50 employees for expenses to accommodate injured employees. This benefit is \$1,500 for a temporarily disabled employee and \$2,500 for a permanently disabled employee.

A “**return-to-work voucher**” is the supplemental job displacement benefit (SJDB). The SJDB is a voucher that can be used by disabled employees to purchase job retraining and education.

Please read through each question carefully and select **one** response for each question. Space is provided at the end of the survey if you would like to add any information or thoughts after completing the survey. The survey should take approximately 20 minutes to complete. We are very grateful for your time and cooperation.

A. Respondent Information

Here we'd like for you to tell us a little about your company. Please note that any information provided here is strictly confidential and that none of this information can or will be used to identify your company.

A1. What title or job description would you say best defines your role at your company?

A2. What was the year in which you first started at this position?

A3. Which category best describes the industry your company is in?

- Retail or consumer services
- Insurance, business, or financial services
- Agriculture
- Medical services
- Legal services
- Real estate services
- Wholesale or retail trade
- Shipping or transportation
- Construction
- Manufacturing
- Other (Describe:)

A4. Approximately how many full-time workers (or full-time equivalent positions) are employed by your company? If your company has multiple worksites, please estimate the total number of workers at all sites.

- Less than ten people
- Ten to 50 people
- 50 to 100 people
- 100 to 500 people
- 500 to 1,000 people
- More than 1,000 people
- Don't know

A5. In a typical year, approximately how often do workers in your company experience work-related injuries or illnesses for which medical care might be needed?

- More than two out of every ten workers per year
- About two out of every ten workers per year
- About one out of every ten workers per year
- Less than one out of every ten workers per year each year
- Almost never
- Don't know

B. Description of Return-to-Work Practices

B1. Does your company have a formal return-to-work program? In other words, does your company have a written set of rules or guidelines that dictate the policies and procedures for transitioning injured workers back to the workplace?

- Yes
- No
- Don't know

B2. Does your company's approach toward injured or disabled workers for returning to work differ according to whether their injury or illness was work related?

- Yes, our practices differ for work-related and non-work-related injuries
- No, our practices are the same whether or not someone was injured at work

B3. How would you characterize your company's return-to-work practices for work-related injuries and illnesses?

- **Intensive.** We take active steps to bring each injured worker back to work as soon as possible.
- **Moderate.** We actively promote return to work, but not for every employee.
- **Minimal.** We allow each injured worker to return at his or her own pace.

B4. How would you characterize your company's return-to-work practices relative to how they were five years ago?

- They are the same as they were five years ago.
- They are more aggressive than they were five years ago.
- They are less aggressive than they were five years ago.
- Don't know
- Not applicable because my company is less than five years old

B5. What was the year in which your company first adopted these return-to-work practices?

_____ (actual year)

– OR –

If you do not know the actual year of adoption, approximately how long do you think that your company's return-to-work practices have been in place in their current form?

- Less than one year
- About one to five years
- About five to ten years
- More than ten years
- Don't know

B6. Please indicate whether and how frequently the following methods are used by your company to help transition injured workers back to work.

Flexible hours or modified work schedule:

Never Occasionally Frequently Always

Modify the tasks required of the injured worker:

Never Occasionally Frequently Always

Modify the workspace environment or the type of equipment used to accommodate the injured worker:

Never Occasionally Frequently Always

Temporarily assign the injured worker a different job:

Never Occasionally Frequently Always

Other methods of accommodation:

Never Occasionally Frequently Always

B7. When your company learns that a worker has suffered a work-related illness or injury and is out of work, how often does someone from your company contact the worker to discuss the worker's transition back to work?

- Always
- Frequently
- Occasionally
- Never
- It depends on whether or not it is a good employee.

B8. Is there a person at your company who is specifically tasked with making contact with an employee after an injury to initiate the process of return to work? Specifically, is there a person at your company whose assigned job duties include initiating the return-to-work process?

- Yes, there is a person (or people) who is specifically tasked with initiating the return-to-work process with injured employees.
- No, there is not a person who is designated to initiate the return-to-work process formally, but there is one (or more) person who usually does it.
- No, we do not have a person who is charged with initiating the return-to-work process once an employee has been injured.

B9. When your company learns that a worker has suffered a work-related illness or injury, about how long is it before someone from your company contacts the worker to discuss his or her transition back to work?

- Contact is made immediately.
- We give the worker a few days.
- We give the worker a few weeks.
- We never contact the worker.

B10. Which of the following responses would you say best characterizes your company's preferred response to a work-related injury or illness?

- Get the injured worker back to his or her old job as soon as possible.
- Wait until he or she is fully recovered.
- Hire a temporary replacement for the injured worker.
- Let the injured worker go, and hire a permanent replacement.

B11. Please complete the following sentence: Of the employees at my company who are injured, about _____ percent of them return to work; of those who return to work, _____ percent return to their original position before their injury.

C. Return-to-Work Practices and Disability Discrimination Claims

C1. Approximately how many claims alleging discrimination against a disabled worker does your company face in a typical year?

- Several per year
- Approximately one every year
- One every few years
- Rarely happens
- Never happens
- Don't know

[If you answered "Never" to C1, skip ahead to question C3]

C2. Approximately how often do these claims involve workers who became disabled due to a workplace injury or illness?

- Most of the time
- About half of the time
- Rarely
- Never
- Don't know

C3. Is there someone in your company responsible for initiating an interactive process to discuss possible accommodations once your company learns that a worker is or might be disabled?

- Yes
- No
- Don't know

C4. If yes, about how often would such a person contact a worker who suffered a work-related injury or illness?

- Always
- Frequently
- Occasionally
- Never
- It depends on how severe the injury is.
- It depends on whether or not he or she is a good employee.

C5. How important would you say that avoiding disability discrimination claims is for determining the aggressiveness of your company's return-to-work practices?

- Very important
- Somewhat important
- Mostly unimportant
- Not at all important
- Don't know

C6. How has your company's perception about the importance of avoiding disability discrimination claims by workers experiencing a workplace injury changed over the past five years?

- It is perceived as equally important as it was five years ago.
- It is perceived as more important than it was five years ago.
- It is perceived as less important than it was five years ago.
- Don't know
- Not applicable because my company is less than five years old

D. Response to Workers' Compensation Reforms

D1. How important would you say that the changes implemented by SB 899 have been in determining your company's return-to-work practices?

- Very important
- Somewhat important
- Mostly unimportant
- Not at all important
- Don't know

D2. How important would you say that the two-tier disability benefit is in your company's determination as to whether or not to make an offer of return to work to an employee who has been permanently disabled by a workplace injury?

- Very important
- Somewhat important
- Mostly unimportant
- Not at all important
- Don't know

D3. How would you say that the presence of the two-tier disability benefit affects your company's willingness to provide alternative or modified forms of work to an employee who has been permanently disabled by a workplace injury?

- Significantly more willing
- Slightly more willing
- Willingness is unchanged
- Don't know

D4. How much would you say that the availability of a subsidy of up to \$2,500 would affect your company's willingness to provide physical accommodations to the work site in order to return an employee to work who has been permanently disabled by a workplace injury?

- Significantly more willing
- Slightly more willing
- Willingness is unchanged
- Don't know

D5. About how often does an injured worker from your company receive a return-to-work voucher?

- Always
- Frequently
- Occasionally
- Never
- Don't know

D6. How much would you say that the availability of a return-to-work voucher increases the likelihood that an injured worker will return to work at your company?

- Significantly more likely
- Slightly more likely
- Likelihood is unchanged
- Don't know

E. Drivers of Return to Work

E1. Please indicate how strongly you agree with the following statement: “Reducing the costs associated with workers’ compensation claims is an important factor in my company’s willingness to bring injured and disabled employees back to work.”

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

E2. Please indicate how strongly you agree with the following statement: “Recent changes to the workers’ compensation system have increased my company’s willingness to bring injured and disabled employees back to work.”

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

E3. Please indicate how strongly you agree with the following statement: “Recent changes in the likelihood of a disability discrimination claim have increased my company’s willingness to bring injured and disabled employees back to work.”

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

Thank you for taking the time to participate in this survey. *If you have any additional comments you would like to share with us, please feel free to add them below.*

Comments:

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