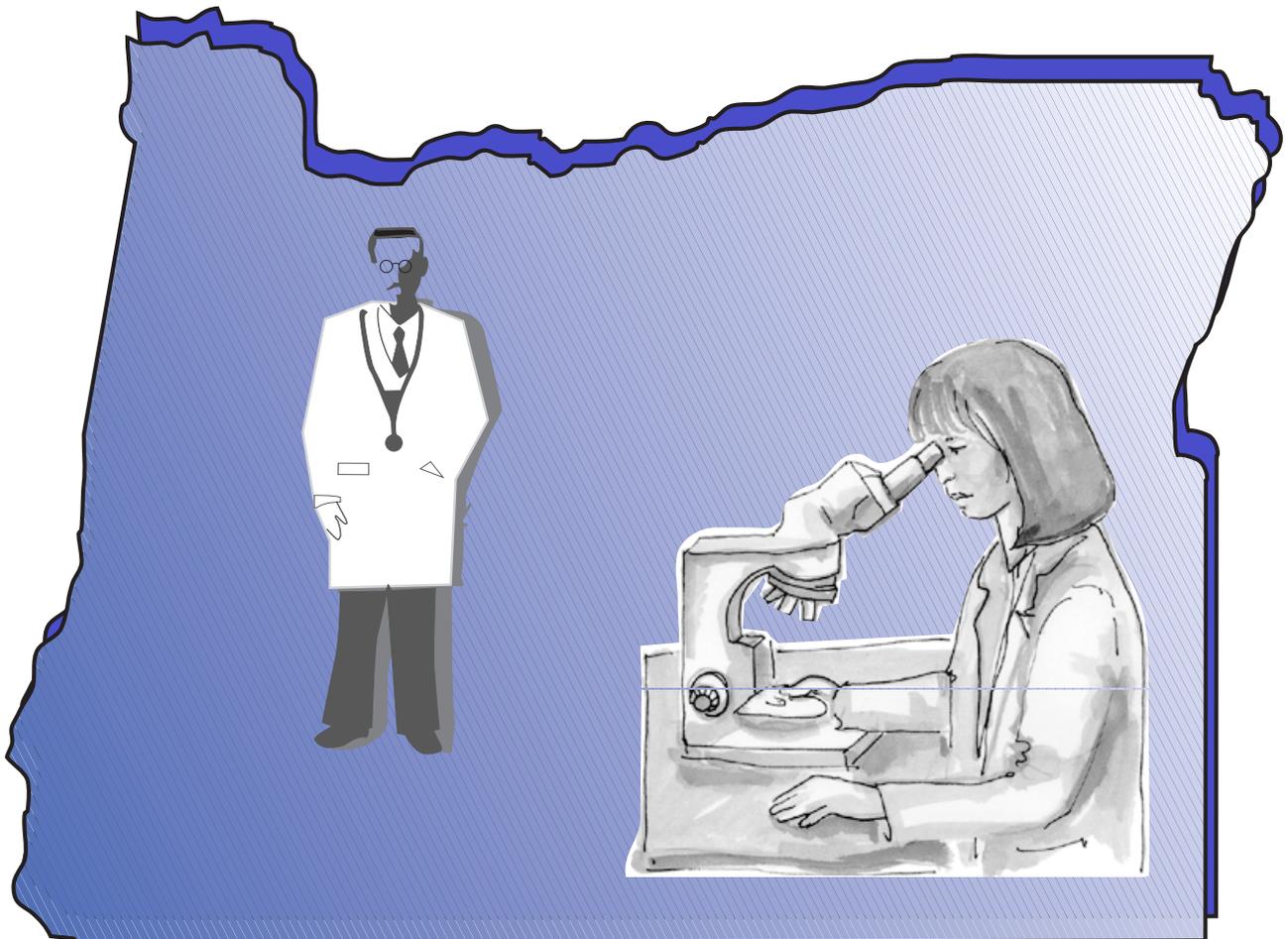


# Managed Care in the Oregon Workers' Compensation System



Research & Analysis Section  
Oregon Department of Consumer  
& Business Services



April 1999

# Managed Care in the Oregon Workers' Compensation System

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Thousands of Oregonians provided information on their experiences with the workers’ compensation system and their recovery from their injuries.

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## Introduction

During the 1980s, Oregon's workers' compensation costs consistently ranked among the highest in the nation. Medical treatment of injured workers was a major portion of workers' compensation costs, and the evidence suggested that medical costs per worker were increasing at a faster rate than overall medical inflation. The National Council on Compensation Insurance reported that in 1984 Oregon ranked higher than any other state in total cost of medical benefits per 100,000 workers. Oregon's workers' compensation system had some mechanisms to control rising medical costs, but the innovative cost control processes and service delivery mechanisms used in the general health industry had not been allowed.

In December 1989, Governor Neil Goldschmidt invited representatives from business and labor to join him in "negotiating a strategy to control the costs of workers' compensation in Oregon." This committee became known as "The Mahonia Hall Group" as they met in the governor's mansion. Governor Goldschmidt wanted this management/labor group to view the Oregon workers' compensation system as an agreement between employers and employees for their benefit. He was concerned that special interest groups had too much influence over the system, and he believed that if the costs of the workers' compensation program were to be lowered, business and labor had to work together. The governor charged the group with returning the control of the program to employers and workers. The fruit of the Mahonia Hall Group's efforts was the passage on May 7, 1990, of Senate Bills 1197 and 1198 during a special session of the Oregon legislature.

SB 1197 reformed many aspects of the workers' compensation system. It included the

first authorization for managed care organizations (MCOs) to provide medical care to injured workers. Generally, managed care organizations seek to reduce unnecessary care through the use of gatekeepers. MCOs perform utilization review, bill review, and case management. They also create incentive programs for providers. The Mahonia Hall Group believed that competitive market forces generated by MCOs would improve the workers' compensation system and bring medical costs under control. MCOs would improve the quality of medical services for injured workers; enable injured workers to return to work more rapidly; involve health care providers in occupational health and safety efforts; provide for rapid, fair, and impartial resolution of disputes; and reduce the impact of medical, disability, and timeloss costs on the system.

In Oregon, MCOs are similar to health maintenance organizations in their use of preferred provider panels and utilization review services, but they are generally not certified as health care service contractors under the Oregon Insurance Code. MCOs cannot be formed, owned, or operated by insurers or by employers other than health care providers or medical service providers. There are two general types of MCOs. Hospital-based MCOs are owned by or associated with hospitals; medical provider-based MCOs are formed by groups of medical service providers. MCOs contract with workers' compensation insurers to provide services to employers within specified geographical service areas. The employer's place of business must be within the MCO's authorized geographical service area. All workers at any specific employer's location are governed by the same MCOs. When an insurer has contracted with multiple MCOs to cover the same employer locations, work-

ers have the choice at the time of injury to select the MCO that will manage their care.

After they are injured, covered workers may be enrolled in managed care by their insurers. The insurers send the injured workers notification that they must seek subsequent treatment within an MCO. In 1995, SB 369 included one significant change to the managed care process. Originally, workers covered by MCO contracts retained their right to choose their physician at the time of injury until the insurer accepted the claim. At the time of claim acceptance, the insurer could direct the worker to select a physician from the MCO panel. Under SB 369, the insurer may require an injured worker to receive medical treatment in the MCO prior to claim acceptance. If the insurer denies the claim, however, the insurer must pay the costs of the services until the worker receives notice of the denial or until three days after the denial letter is mailed.

This report has two major parts. The first part provides a description of MCO activity in Oregon since the passage of SB 1197. It describes the certification process, the services provided by MCOs, MCO panels, financial arrangements, and the growth of MCO coverage during the 1990s. The second part of the report presents the results of a study conducted by the department of workers whose claims closed during the last four months of 1997. The study includes a comparison of the costs of workers covered and not covered by MCOs and the results of a satisfaction survey administered to a sample of these workers. More information about legislative changes and the effects on the workers' compensation system since 1987 can be found in the department's publication *Monitoring the Key Components of Legislative Reform*, Fourth Edition, January 1999.

## Highlights of Part 1: MCOs in Oregon

Managed care organizations (MCOs) were authorized by a special session of the Oregon legislature on May 7, 1990. The first three MCOs were certified on December 26, 1990.

As of December 31, 1998, sixteen entities had been certified as MCOs. Of these, nine were active.

Medical doctors accounted for 72 percent of the panel members during the last quarter of fiscal year 1998.

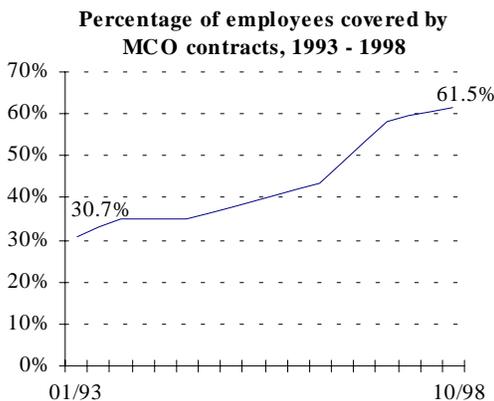
During the last quarter of fiscal year 1998, 69 percent of all providers on MCO panels had attending physician status.

At the end of fiscal year 1998, MCOs were authorized to operate in 13 of the state's 15 geographical service areas.

A total of 85 MCO contracts with insurers or insurer groups were in effect on June 30, 1998.

As of October 1998, MCOs covered 65 percent of the employers and 61 percent of the workers insured by Oregon's workers' compensation law.

In 1998, SAIF enrolled over 75 percent of its claimants with accepted disabling claims in MCOs. Private insurers and self-insured employers enrolled less than 25 percent.



## Highlights of Part 2: Study of managed care

The department conducted a study of the claims of workers injured since July 1, 1995, whose claims were closed during the last four months of 1997. Forty-eight percent of these workers were covered by MCO contracts. Of those who were covered, 77 percent were enrolled in MCOs.

Eighty-nine percent of the workers insured by SAIF were covered by MCO contracts, 26 percent of the workers insured by private insurers were covered, and 39 percent of the workers working for self-insured employers were covered.

Most of the enrolled claimants were enrolled at the time of claim acceptance. Because of this, only 37 percent of the enrolled workers incurred at least 50 percent of their medical costs while enrolled.

The average claims cost for not covered workers was \$8,662; the average claims cost for covered workers was \$8,269.

Statistical models that included variables to account for injury type, injury severity, age, wage, geographic location, and insurer type showed that covered workers had medical costs that were 12.4 percent lower than not covered workers, timeloss costs that were 9.9 percent lower, and permanent partial disability costs that were 17.5 percent lower. When these variables were taken into account, covered workers had a total claims cost that was 12.9 percent lower than not covered workers.

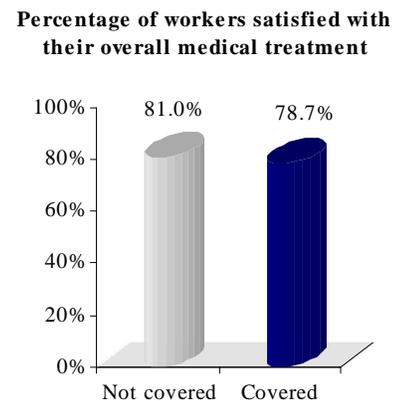
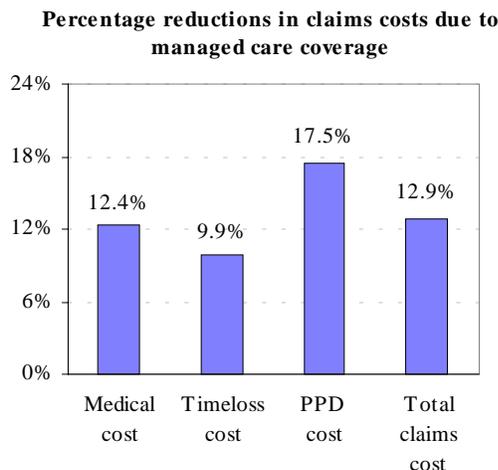
These statistical models also showed the impact of managed care coverage was a 6.3 percent reduction in the number of medical services and a 10.7 percent reduction in the cost of the three most expensive surgical procedures.

Lower timeloss costs were attributable both to reduced frequency and a shorter duration of timeloss.

The majority of injured workers, regardless of whether they were covered, reported that they were satisfied overall with medical treatment, access to treatment, and, to a lesser degree, their return-to-work experience. In addition, most respondents indicated that their health status was about the same as it was before they were injured.

Covered workers were significantly less satisfied with the overall ease of obtaining care and the number of doctors they had to choose from than were not covered workers. Covered workers reported the same functional outcomes and return-to-work patterns as those not covered. However, covered workers were significantly more likely to report better outcomes in the areas of emotional condition and level of physical pain than were not covered workers.

Workers who hired attorneys were more likely to have higher claim costs and be more dissatisfied with their medical treatment, access to care, return-to-work experience, and current health status.



## Part I. MCOs in the Oregon workers' compensation system

### MCO certification

SB 1197, passed during the 1990 special session of the legislature, authorized any health care provider or group of medical service providers to make written application to the director of the Department of Consumer and Business Services (department) to become certified to provide managed care services to injured workers. Oregon law prohibits an organization that is formed, owned, or operated by an insurer or employer other than a health care provider to become certified to provide managed care. This requirement ensures distance between medical providers and insurers, thereby striking a balance between quality and cost-effective medical care. Permanent rules governing the formation, operation, and regulation of managed care organizations became effective on December 26, 1990; the first three MCOs were certified on that date (see Figure 1 and Table 1).

The certification process is designed to ensure that MCOs meet minimum requirements. Certification is granted indefinitely, so the complete process is required just once for any applicant. The Workers' Compensation Division (WCD) Compliance Section certifies the MCOs (see Figure 2). The director may suspend or revoke the certification of an MCO.

The certification process begins with the department's receipt of an organization's Notice of Intent to Form (see Oregon Revised Statutes, ORS 656.260 and Oregon Administrative Rules, OAR 436-015). The notice includes the identity of the individuals participating in the formation of the managed care organization, the date the completed application will be submitted to the department, and a synopsis of the information that will be shared in the discussions preceding the certification application. The notice is designed to protect the parties from antitrust violations. The final application for certification must be submitted within 120 days of the Notice of Intent to Form.

MCO applicants then submit a proposed plan of operation. The plan describes how

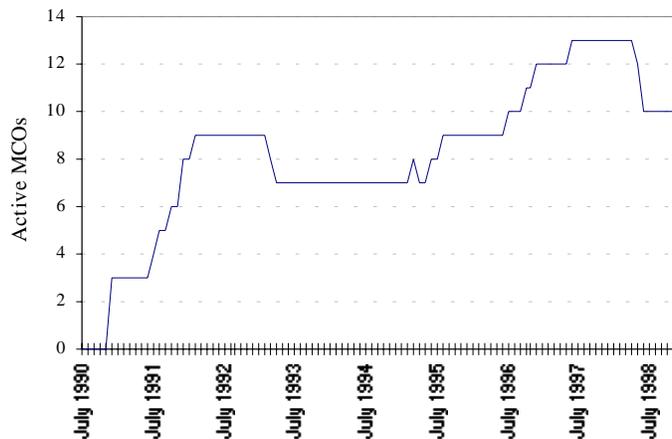
the MCO will meet the access, coverage, and other requirements set forth in the OAR. The plan also describes how the MCO will obtain, develop, and update treatment standards, and provide utilization review, peer review, and dispute resolution services. The plan must include proof of the MCO's financial ability to ensure continuing service. The final application for certification includes the names and addresses of the

effective date of the certification and its initial authorized GSAs. Changes to the certified application must be filed with the director within 30 days of the change. If, for example, the MCO changes the categories of providers who may be attending physicians or expands into other GSAs, the certified application must be amended.

The three MCOs certified on December 26, 1990, were Managed Healthcare Northwest, Inc., Providence MCO, and Health Masters of Oregon, Inc. (the names used in the report are the MCOs' current names). The first two were hospital-based organizations; the third was a medical service provider-based company. The department certified six more MCOs in fiscal year 1992. Health Future, L.L.C., provided claims-processing services to a group of health care providers.

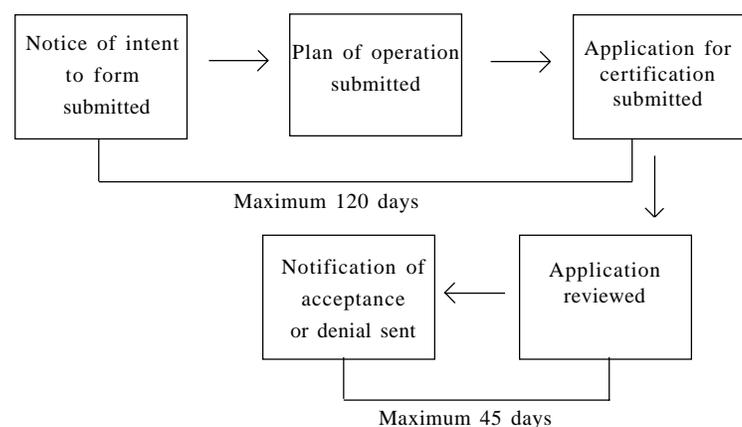
Oregon Health Systems, Inc., and Kaiser Foundation Health Plan were medical service provider-based companies. COMP, Inc., was a hospital-based MCO. The last two, CorCare and Affordable Medical Networks, were companies that provided medical management services to insurers and self-insured employers. By March 1992, there were nine certified MCOs.

**Figure 1. MCO certification history, 1990 - 1998**



medical providers contracting with the MCO and which providers have attending physician status. The application also identifies the geographical service areas (GSAs) in which the MCO proposes to operate. The MCO's corporation status, by-laws, and directors are also provided. Once the certification requirements have been met, the director notifies the applicant of the ef-

**Figure 2. MCO certification process and time frames**



**Table 1. MCOs certified in Oregon, 1990 - 1998**

Name	Certification number	Certified date	Decertified/ inactive date	Other business name
Managed Healthcare Northwest, Inc.	900102	12/26/90		CareMark Corp
Providence MCO	900103	12/26/90		Providence Health Systems
Health Masters of Oregon, Inc.	900201	12/26/90	6/22/98	
Health Future, L.L.C.	910104	7/8/91	5/11/98	
Oregon Health Systems, Inc.	910205	8/14/91		
Kaiser Foundation Health Plan	910206	10/30/91		Kaiser-on-the-job
COMP, Inc.	910107	12/3/91	4/1/95	Woodland Park
CorCare	910208	12/27/91	3/15/93	Corvel Corp.
Affordable Medical Networks	920209	2/24/92	4/1/93	Healthcare Compare
OHSU WorkComp	950101	3/30/95		
Complete Quality Care, Inc.	950202	6/16/95		
SureCare Plus	950203	8/16/95	12/31/98	
COMCO	960201	7/17/96		Central Oregon IPA
Mid-Valley IPA	960202	10/24/96	6/22/98	
ODS Health Plan MCO	960203	12/16/96		
First Health Group Corp.	970201	6/3/97		

After the first two years of the program, two MCOs became decertified in mid-1993. CorCare decertified because injured workers were not required to treat under the auspices of the MCO until claim acceptance, and their low volume of business was not cost-effective. Affordable Medical Networks was unable to obtain contracts with insurers and decertified. In 1995, COMP, Inc., became voluntarily inactive because the insurers with which it had contracts did not require employers to include their employees under the MCO.

In a second wave of certifications, the department certified seven new MCOs between March 1995 and June 1997. OHSU WorkComp is a hospital-based MCO associated with the Oregon Health Sciences University. The other six are medical service provider-based MCOs.

Four MCOs became inactive in 1998. Health Masters of Oregon, Inc., and Health Future, L.L.C., were formed in the early 1990's, but neither signed many contracts. After getting its initial certification, Health Masters did not actively attempt to contract with insurers. Health Future has remained in business as a third party claims administration company. Mid-Valley IPA became inactive in June 1998. It chose not to pursue contracts in workers' compensation but remains active in the commercial indemnity market. SureCare Plus became inactive at

the end of 1998. As of December 31, 1998, there were nine active MCOs.

### **MCO services**

MCOs must offer certain services and processes, although they may delegate some of these functions to insurers. Each MCO must offer a panel of providers that satisfies the access and coverage requirements (see MCO panel size and composition, page 5), a quality assurance program for monitoring the medical care provided by the panel, a program to promote early return-to-work for injured workers, and a workplace safety and health consultation program. In addition, MCOs have responded to market demands by providing additional services not required by their MCO certification. These services include medical bill auditing, counseling and education about the workers' compensation system, drug screening, pre-employment physicals, Americans with Disabilities Act compliance support, and employee assistance programs.

MCOs use credentialing criteria in their selection of provider panel members. These criteria include the verification of license and board certification, freedom from restrictions with the Board of Medical Examiners, active status at a participating hospital, malpractice insurance coverage, and a reasonable malpractice lawsuit history. Providers agree

by contract to treat patients under the terms and conditions of the MCO. As part of that contract, providers may be required to participate in educational activities promoted by the MCO. To encourage the continuity of care, MCOs must allow physicians who are not members of the MCO to provide medical services to an enrolled worker if the physician qualifies as a primary care physician. Physicians qualify under these circumstances if the physician is a general practitioner, family practitioner, or internal medicine specialist; if the physician has a documented history of treating the worker and maintains the worker's medical records; and if the physician agrees to the MCO's terms and conditions and agrees to refer the worker to the MCO for specialized treatments.

MCO quality assurance programs are designed to ensure quality care and prevent inappropriate treatment. These programs include monitoring individual provider treatment patterns and the precertification and review of treatment. Quality assurance activities include the preauthorization of elective admissions and outpatient surgeries, case management, utilization review, peer review, and provider profile analysis. To augment these activities, MCOs must have a medical recordkeeping system, a dispute resolution process, and utilization and treatment guidelines and protocols.

MCOs use peer review committees to monitor panel members. Peer review committees validate the criteria for assessing the quality of care and see that variations from standards are documented. They also ensure that corrective actions are appropriate and implemented in a timely fashion. Physician profiles are also used; these compare a physician's pattern of treatment with established norms.

MCOs provide utilization review. This process is used to assess, improve, and review treatment decisions. The review involves case-by-case assessment of the frequency, duration, level, and appropriateness of medical care and services, based on established treatment guidelines. Some MCOs have developed their own utilization and treatment guidelines; others have adopted existing guidelines. Utilization review may be the prospective, concurrent, or retrospective review of medical treatment, or it may involve intensive case management. The most common process consists of the preauthorization of hospital inpatient admissions, surgery, invasive diagnostics, durable medical equipment purchase or rental, special treatment (such as pain centers), and other costly treatments or equipment. MCOs often use second surgical consultations for decisions about surgical requests. MCOs also frequently use concurrent reviews of treatment; this is usually employed when there is a serious injury with the potential for extensive timeloss or permanent disability. This review often involves contacting the provider to discuss the case and to obtain information about the worker's medical condition, physical limitations, and work status. The MCO reviewer may also discuss referrals to specialists and review the progress of the treatment plan. Finally, MCOs may perform medical case management services for their clients, although insurers generally retain this function as part of their claims management.

Several MCOs have extensive early return-to-work programs. Insurer contracts sometimes require that MCO medical providers call employers within 24 hours of the injured worker's initial visit. MCOs may conduct on-site job visits by physicians and nurse case managers. They may also use

disability prevention consultations and worker recovery plans to identify work restrictions and job modifications. The MCO medical tracking system provides insurers with information from medical providers on return-to-work issues. Other MCOs provide insurers with utilization reports that measure specific indicators such as modified work days and timeloss.

MCOs also provide employers with accident prevention consultation services. MCOs are required to report to insurers instances of the need for loss control services or cases involving serious physical harm or lack of diligence on the part of an employer.

MCOs are required to have dispute resolution processes. They use these processes for settling or deciding appeals of surgical denials, contract violations, and patient complaints. MCOs consider other administrative complaints (including worker-initiated issues) in their dispute resolution processes; in many cases, however, these complaints involve claims management issues for the insurer to resolve. The time for resolution of a dispute shall not exceed 60 days from the day of receipt of the dispute by the MCO until issuance of the MCO's final decision.

The department also handles some managed care disputes. These disputes come to the department because the MCO has elected to defer the review of certain issues to the department or because the MCO's decision was appealed to the department. The department has agreements with selected MCOs to handle certain disputes. The department received 134 disputes involving MCOs in fiscal year 1998 (see Table 2).

**Table 2. Disputes involving MCOs at the department, fiscal year 1998**

	Number	Percent
Medical services	63	47.0%
Treatment	57	42.5%
Palliative care	9	6.7%
Fees/unpaid bills	5	3.7%
Total	134	100%

Notes: Medical service disputes are disputes about the services to which workers are entitled. Treatment disputes are disputes about treatments received.

## MCO panel size and composition

MCOs must have a panel of medical service providers of sufficient size and diversity to ensure quality care. The department monitors MCO compliance in this area through two criteria: access to care and medical provider coverage.

Access is defined as adequate if there is at least one attending physician within the MCO for every 1,000 workers covered by the plan in any GSA in which the MCO operates. One MCO initially empaneled over 1,200 providers; another started with just 25 providers, not all with attending physician status from the MCO.

Coverage is defined as adequate if workers have a choice of at least three medical service providers within each of eight required service categories. To be authorized in a GSA, the MCO must have a panel in that GSA that includes at least three providers in each of these eight categories: acupuncturist, chiropractor, dentist, medical doctor, naturopath, optometrist, osteopath, and podiatrist. This requirement must be met unless the MCO shows that an area lacks the minimum number of providers of a given category or that too few providers are willing to participate on the panel. Any expansion must be approved by the director.

Table 3 summarizes the composition of MCO panels as of June 1998. It shows the distribution by provider types and the percentages of providers who had attending physician status. MCOs have had the most difficulty contracting with naturopaths, acupuncturists, and dentists.

The MCOs differ in the extent to which they give medical providers attending physician status. A majority of the MCOs give most of their medical doctors, chiropractors, and osteopaths attending physician status. One MCO gives all providers in the eight required provider types attending physician status; another limits attending physician status to medical doctors.

**Table 3. MCO provider panels, June 1998**

	Provider types															Total	% attending physicians
	Required provider types								Other provider types								
	AC	CH	DE	MD	NA	OP	OS	PO	NP	OT	PA	PT	RA	OM			
Managed Healthcare NW, Inc.	7	58	1	1,031	2	24	96	29	2	13	1	132	67	101	1,564	80.2%	
Providence MCO	4	77	14	685	4	0	0	14	0	0	2	2	0	124	926	84.4%	
Oregon Health Systems, Inc.	5	55	12	857	6	17	47	18	11	32	18	266	5	101	1,450	66.8%	
Kaiser Foundation Health Plan	3	79	84	447	2	40	5	7	40	13	53	77	16	41	907	96.9%	
OHSU WorkComp	3	5	4	571	3	90	2	5	29	0	2	24	0	29	767	66.8%	
Complete Quality Care, Inc.	2	9	1	179	1	6	2	6	0	5	0	94	5	5	315	N/A	
SureCare Plus	0	135	1	506	0	17	21	8	31	5	12	25	0	35	796	63.6%	
COMCO	2	11	1	100	1	2	10	5	10	4	8	24	0	2	180	71.8%	
ODS Health Plan MCO	16	72	13	3,691	6	74	122	46	117	32	30	142	133	47	4,541	54.8%	
First Health Group Corp.	5	140	3	1,465	22	26	47	23	0	1	0	42	92	0	1,866	92.8%	
Sum	47	641	134	9,532	47	296	352	161	240	105	126	828	318	485	13,312	69.1%	
% of total	0.4%	4.8%	1.0%	71.6%	0.4%	2.2%	2.6%	1.2%	1.8%	0.8%	0.9%	6.2%	2.4%	3.6%	100%		

Required provider types: AC Acupuncturist CH Chiropractor DE Dentist MD Medical doctor NA Naturopath OP Optometrist OS Osteopath PO Podiatrist Other provider types: NP Reg. nurse practitioner OT Occupational therapist PA Physician's assistant PT Physical therapist RA Radiologist OM Other medical

Notes: Providers may be on more than one panel. "Other medical" includes miscellaneous provider types.

Data are reported through WCD Bulletin 247.

### MCO financial arrangements

MCOs have financial arrangements with two groups: the health care providers they enlist to serve on their panels and the insurers with which they have contracts to provide managed care services. In Oregon, there are a variety of provisions within these arrangements.

The contracts between an MCO and its providers usually include the duties of the providers, the MCO's rules and procedures, the MCO's dispute resolution process, termination and suspension from the panel, and financial remuneration. The financial arrangements usually involve at least one of the following compensation mechanisms: membership fees, participation fees, or fee-for-service discounts. MCO membership fees are annual fees charged to panel members. They are flat fees for all providers on a tiered- or sliding-fee scale that depends on the provider type or anticipated volume of services. Participation fees are paid by providers to MCOs. These fees are percentages of the medical service dollars paid to the providers for treating enrolled workers. Discounted fee-for-service arrangements consist of discounts taken by the MCO on medical services provided to workers. Discounted fee-for-service arrangements may or may not be a revenue source to the MCO, depending on whether the MCO passes all of the discount on to insurers. In some contracts, a portion of the discount is retained

in a risk pool that is rebated to the medical providers, depending on whether performance goals are met by the providers.

Financial arrangements between MCOs and insurers generally fall into three categories: fixed fee agreements, volume-based fee arrangements, or performance-based fee agreements. A fixed fee arrangement usually involves an agreement to provide a basic package of MCO services for a negotiated fee that covers a specified time frame, regardless of the number of injured workers enrolled in the MCO by the insurer. Volume-based fee agreements are flat fees per covered employee, enrolled claim, or type of claim or service. Performance-based fee arrangements are fees tied to timeliness or medical cost experience or fees based on the sharing of any claim loss reduction below a target or fee schedule.

### MCO geographical service areas and growth

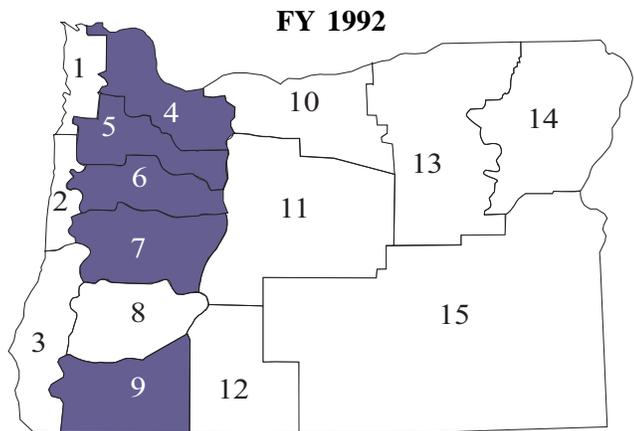
When the first MCOs were certified, geographical service areas (GSAs) had not been established. Initially, each MCO proposed a service area, and the director approved it based on the composition of the MCO's panel. In May 1992, the department issued WCD Bulletin 248, which divided the state into 15 geographical service areas. The factors used in establishing these GSAs included normal patterns of travel for medical services, geological terrain, major roads

and highways, population density, and political subdivisions. Each GSA is defined by a list of postal ZIP codes.

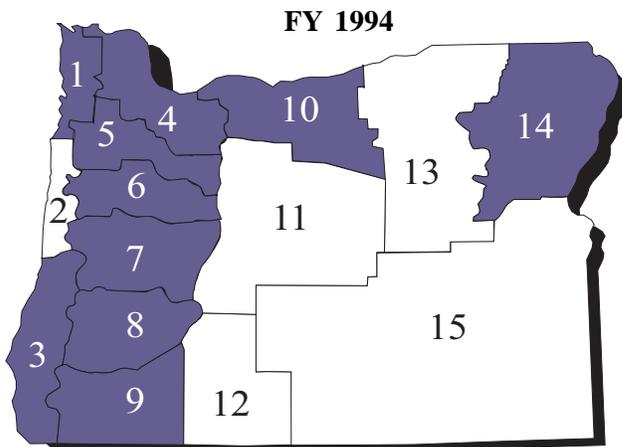
The director designates the geographical service areas in which an MCO is authorized to operate based on the size and composition of the MCO provider panel and the locations of the providers. If an MCO wishes to expand into other GSAs, it must provide evidence that it has an adequate provider panel in the area and obtain approval from the director. Figure 3 shows the approved GSAs for each certified MCO for fiscal years 1992 through 1998, illustrating the growth of coverage over time (see Appendix B).

In fiscal year 1992, nine MCOs were authorized to provide service in five GSAs in the Willamette Valley and southern Oregon. Seven of the nine MCOs were authorized to operate in the Portland metropolitan area. By late fiscal year 1994, two of the Portland-area MCOs had become decertified. Four of the seven remaining MCOs had expanded, so MCOs were authorized to operate in 10 of the 15 GSAs. Late in fiscal year 1996, the nine active MCOs were authorized in 11 GSAs; Oregon Health Systems was authorized in eight GSAs. By the end of fiscal year 1998, the 10 active MCOs were authorized to operate in 13 of the 15 GSAs. Only the central Oregon coast and Southeast Oregon lacked MCOs. Oregon Health Systems was authorized in 11 GSAs, and ODS Health Plan was authorized in 8 GSAs.

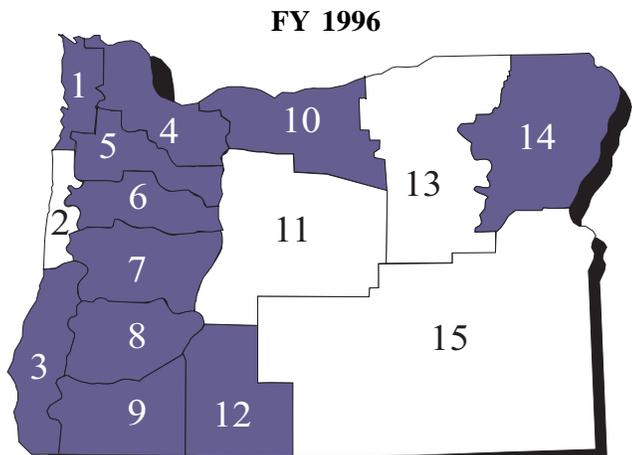
**Figure 3. MCOs by geographic service area, fiscal years 1992 - 1998**



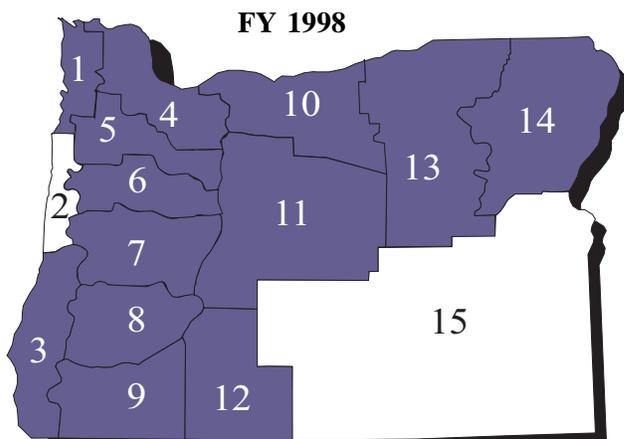
Managed Healthcare NW, Inc.	4,7
Providence MCO	4,5,7,9
Health Masters of Oregon, Inc.	9
Health Future, L.L.C.	6,9
Oregon Health Systems, Inc.	4,9
Kaiser Foundation Health Plan	4,5
COMP, Inc.	4
CorCare	4
Affordable Medical Networks	4,7



Managed Healthcare NW, Inc.	1,4,5,7,10
Providence MCO	1,4,5,7,9
Health Masters of Oregon, Inc.	9
Health Future, L.L.C	3,6,7,9
Oregon Health Systems, Inc.	4,5,6,8,9,14
Kaiser Foundation Health Plan	4,5
COMP, Inc.	4



Managed Healthcare NW, Inc.	1,4,5,10
Providence MCO	1,4,5,7,9
Health Masters of Oregon, Inc.	9
Health Future, L.L.C	3,6,7,9,12
Oregon Health Systems, Inc.	4,5,6,7,8,9,12,14
Kaiser Foundation Health Plan	4,5
OHSU WorkComp	4
Complete Quality Care, Inc.	4
SureCare Plus	8



Managed Healthcare NW, Inc.	1,4,5,10
Providence MCO	1,4,5,6,7,9
Oregon Health Systems, Inc.	3,4,5,6,7,8,9,10,11,12,14
Kaiser Foundation Health Plan	4,5
OHSU WorkComp	4
Complete Quality Care, Inc.	4,5,7,9
SureCare Plus	7,8
COMCO	11
ODS Health Plan MCO	1,4,5,6,7,9,10,13
First Health Group Corp.	4,7,10,13

Table 4 shows the number of MCO contracts with insurers in effect at each fiscal year end. The figures are the number of contracts between MCOs and insurer groups. As can be seen, only four MCOs have had more than two contracts. The MCOs certified in the first years that did not obtain many contracts have become decertified or inactive. The MCOs certified in the second

wave of certifications have not negotiated many contracts (see Appendix C).

Table 5 displays the number of employers and employees covered by MCO contracts at several points in time. As of October 1998, 65 percent of employers with workers' compensation insurance policies were subject to MCO coverage.

Table 6 shows the number of claimants with accepted disabling claims in calendar year 1998 who were enrolled in MCOs. SAIF enrolled over 75 percent of its claimants, while private insurers and self-insured employers enrolled less than 25 percent of their claimants.

**Table 4. MCO contracts with insurers at fiscal year end, fiscal years 1991 - 1998**

MCO	Fiscal years							
	1991	1992	1993	1994	1995	1996	1997	1998
Managed Healthcare NW, Inc.	0	6	5	7	10	7	7	7
Providence MCO	6	20	22	25	28	30	36	41
Health Masters of Oregon, Inc.	0	0	0	0	0	0	0	-
Health Future, L.L.C.	-	2	2	2	2	2	1	-
Oregon Health Systems, Inc.	-	4	9	12	11	11	10	11
Kaiser Foundation Health Plan COMP, Inc.	-	5	12	15	18	22	23	19
CorCare	-	1	1	1	-	-	-	-
Affordable Medical Networks	-	0	-	-	-	-	-	-
OHSU WorkComp	-	-	-	-	0	0	1	2
Complete Quality Care, Inc.	-	-	-	-	0	0	0	1
SureCare Plus	-	-	-	-	-	1	1	1
COMCO	-	-	-	-	-	-	1	1
Mid-Valley IPA	-	-	-	-	-	-	0	-
ODS Health Plan MCO	-	-	-	-	-	-	0	1
First Health Group Corp.	-	-	-	-	-	-	0	1
Total	6	38	51	62	69	73	80	85
Insurer type								
SAIF	0	3	3	4	5	6	6	7
Private insurers	3	13	18	21	23	26	30	32
Self-insured employers	3	22	30	37	41	41	44	46

Notes: The counts are for contracts between MCOs and insurer groups. A "-" indicates that the MCO was not certified and active on the date.

**Table 5. Oregon employers and employees covered by MCO contracts, 1993 - 1998**

Date	Employers		Employees	
	Number	Percent	Number	Percent
January 1993	26,211	38.3%	393,900	30.7%
November 1993	28,320	40.0%	462,500	35.1%
December 1994	33,083	44.8%	484,000	35.1%
October 1996	40,128	51.8%	648,500	43.6%
October 1997	47,200	59.3%	902,900	58.3%
October 1998	52,608	64.7%	971,200	61.5%
Insurer type, October 1998				
SAIF	35,229	98.2%	448,700	97.4%
Private insurers	16,920	38.9%	418,300	49.5%
Self-insured employers	459	24.6%	104,200	38.2%

Note: The percentages are for employers and employees covered by Oregon's workers' compensation law.

**Table 6. MCO enrollment by insurer type, CY 1998 accepted disabling claims**

MCO	SAIF	Private insurers	Self-insured employers	Total
Managed Healthcare Northwest, Inc.	2,225	0	174	2,399
Providence MCO	979	1,709	658	3,346
Oregon Health Systems, Inc.	2,084	79	51	2,214
Kaiser Foundation Health Plan	354	110	305	769
OHSU WorkComp	0	54	0	54
Complete Quality Care, Inc.	0	67	0	67
SureCare Plus	27	0	0	27
COMCO	465	0	0	465
ODS Health Plan MCO	18	0	0	18
First Health Group Corp.	0	1,298	0	1,298
Total	6,152	3,317	1,188	10,657
% of accepted disabling claims	76.6%	24.3%	23.2%	39.8%

## Part II: Study of managed care costs and worker satisfaction

### Study purpose

The use of managed care in workers' compensation has grown throughout the United States since the early 1990s. According to the recent Workers' Compensation Research Institute (WCRI) report *Managed Care and Medical Cost Containment in Workers' Compensation*, 26 jurisdictions have some form of regulated or mandated managed care. The impetus behind the growth of managed care has been its potential for slowing increases in health care costs. In the workers' compensation system, managed care not only affects medical costs, it also may affect timeloss duration, return to work, and the extent of permanent disability. Concerns about managed care involve the loss of access to medical providers, the reduced choice of doctors, and the possibility of inferior care due to an emphasis on cost controls.

The WCRI report notes that few new managed care programs have been implemented recently. Instead, jurisdictions are trying to evaluate the effectiveness of their current programs. It is difficult to evaluate the effects of managed care on injured workers. Time must pass to assess accurately the impact managed care has had on the more severe injuries. Research is also hampered by the difficulty in identifying comparable groups of claimants. This was a problem in the present study. In Oregon, insurers have 90 days from the date of an employer's knowledge of an injury to accept or deny a claim. Most workers treated under managed care are not enrolled until the time of claim acceptance. As a result, most of the enrolled workers in this study received the most costly portion of their care prior to their enrollment.

The purpose of the present study was to evaluate the effectiveness of managed care in the treatment of injured workers. There have been few similar studies (see Appendix D). This study was similar to a 1995 department study. The first goal of the present study was to compare the claims costs of injured workers treated through managed care with other injured workers. These claims costs consist of medical costs, timeloss costs, and permanent disability benefits. The second goal was to measure

the effects of managed care as viewed by injured workers. These effects include worker satisfaction with medical treatment, access to care, return to work, and social, physical, and emotional outcomes.

The effects of managed care described in this study are probably due not only to the medical practices in managed care but to the larger managed care environment. The insurers and employers that contract with MCOs may take a more aggressive stance toward cost control than do other insurers and employers. Employers that focus on workers' compensation costs may reduce not only the frequency of claims, but also their severity. Their actions may influence whether or not a claim becomes disabling, putting it within the scope of the current study. Claims management practices of insurers with managed care contracts may also include more aggressive return-to-work programs. These practices may affect claims costs.

### Study design

The claims in this study were accepted disabling claims for workers whose claims closed during the last four months of 1997. In Oregon, "disabling" claims are those claims for injuries in which workers lose more than three days from work, qualifying them for timeloss payments, or in which they suffer permanent disability or death. The department does not require insurers to provide claims data on most nondisabling (medical-only) claims, so they are not a part of the study. Permanent total disability claims, fatality claims, and the claims with injury dates prior to July 1995 were excluded. After removing these claims, the study group consisted of 9,409 disabling claims (see Appendix F for the complete study methodology).

Six groups were identified for the study (see Table 7 and Appendix A). The "covered" group consists of the workers covered by an MCO contract between the insurer and an MCO. The "not covered" group consists of the workers not covered by such a contract. All claimants in the study were in one of these two groups. The covered workers were divided into two categories. The "en-

rolled" group consists of the workers who were formally enrolled in an MCO. These workers received notification from their insurers directing them to the MCO provider panels for continued medical care. Most covered claimants were enrolled at the time of claim acceptance. Covered workers who were not enrolled fall into the "covered, not enrolled" group. Finally, enrolled workers were divided into two groups. Those in the "above threshold" group were the workers for whom medical services provided on or after the enrollment date generated at least 50 percent of the total medical cost for the claim. Only 37 percent of the enrolled workers fell into this group. The other enrolled claimants were classified as the "below threshold" group. This split was created to identify those workers who had the largest portion of their treatment under a certified MCO, those workers for whom managed care should have had the greatest effect.

Tables 8 and 9 show the distribution of the claimants by insurer type. Thirty-one percent of the workers were insured by the SAIF Corporation, but because SAIF covers and enrolls most of its injured workers, 57 percent of the covered workers and 67 percent of the enrolled workers were insured by SAIF. Private insurers were the least likely to have covered workers and to enroll covered claimants.

The data in this study are claims cost data and the results of a survey of injured workers. The medical costs were from medical payment data provided according to WCD Bulletin 220. The bulletin requires insurers and self-insured employers with at least 100 accepted disabling claims to submit payment data quarterly. These data were summed for each claim to provide the medical costs. Since not all insurers are required to report medical payment data, a subset of 7,294 claims with medical data was used for the analysis. The timeloss and permanent disability award data were supplied by insurers at claim closure or from the department's closures and are part of the administrative data base. Awards made by the end of 1997 were included in the study. Later appeals of closures and litigation affected the awards of some claims; these later changes were excluded.

The injured worker medical treatment satisfaction survey was developed to assess workers' satisfaction with the medical care they received after their injuries. The survey was designed to assess the satisfaction of injured workers in four areas: medical treatment, access to care, return-to-work experience, and functional outcomes of care (see Appendix H for the survey and Appendix I for the responses). The survey was mailed to a sample of 6,305 injured workers. Follow-up letters and surveys were sent to workers who did not respond to the first mailing. A telephone follow-up was then conducted of the nonrespondents. In the end, 3,219 useable surveys were collected. The adjusted response rate was 54 percent, slightly below the target response rate of 55 percent (see Table 10).

The descriptive statistics in the demographic and cost tables do not account for differences among the study groups. To account for differences in worker demographics, claims characteristics, employer and insurer characteristics, and injury severity and to measure the impact of managed care, statistical analyses were done (see

**Table 7. Managed care study groups**

	Total	Not		Covered		Enrolled	
		covered	Covered	Not enrolled	Enrolled	Below threshold	Above threshold
Number	9,409	4,925	4,484	1,044	3,440	2,153	1,287
Percentage	100%	52.3%	47.7%	11.1%	36.6%	22.9%	13.7%
Number with medical data	7,294	3,390	3,904	840	3,064	1,931	1,133
Percentage	100%	46.5%	53.5%	11.5%	42.0%	26.5%	15.5%
Number of survey respondents	3,219	1,246	1,973	406	1,567	939	628
Percentage	100%	38.7%	61.3%	12.6%	48.7%	29.2%	19.5%

page 16). The objective in creating a model of managed care effectiveness was to develop measures of claims costs and worker satisfaction that permit the comparison of managed care to non-managed care, when all other factors are equal. It was particularly important to adjust cost estimates for the comparison groups for differences with respect to severity of injury.

The statistical models showed that when all other variables were accounted for, the impact of managed care coverage was a 12.9 percent reduction in claims cost. This reduction is about \$1,090 for the average claim.

This reduction is the measured impact of managed care coverage. One of the original intents of the study design was to compare the enrolled and above threshold study groups to the not covered study group. Because most workers are not enrolled in managed care until the acceptance of the claim, the enrolled study group and the above threshold study group have significantly more severe injuries. It was impossible to resolve this adverse selection problem completely, so the most valid comparisons are between the covered and not covered study groups (see Appendix J for a fuller discussion).

**Table 8. Distribution of claimants by insurer type**

	Total	Not		Covered		Enrolled	
		covered	Covered	Not enrolled	Enrolled	Below threshold	Above threshold
SAIF	30.9%	3.5%	27.4%	2.7%	24.7%	15.7%	8.9%
Private insurers	50.8%	37.6%	13.2%	6.2%	7.0%	4.8%	2.2%
Self-insured	18.3%	11.3%	7.1%	2.2%	4.9%	2.3%	2.6%
Total	100%	52.3%	47.7%	11.1%	36.6%	22.9%	13.7%

**Table 9. Coverage and enrollment by insurer type**

	% of covered		% of enrolled
	% of workers covered	workers enrolled	workers above threshold
SAIF	88.7%	90.0%	36.2%
Private insurers	25.9%	53.1%	31.5%
Self-insured	38.5%	69.3%	52.2%
Total	47.7%	76.7%	37.4%

**Table 10. Injured workers survey responses**

Workers surveyed	6,305
Deliverable questionnaires	5,966
Questionnaires returned	3,243
Useable questionnaires	3,219
Response rate	54.0%

## Results and findings

The following sections discuss the study's findings. The findings are grouped into three sections. The first section includes demographics and descriptive claims costs. These claims costs include medical, timeloss, and PPD costs. Medical costs are reported by provider type. For those workers who were enrolled, medical costs before and after enrollment are shown. The second section summarizes the results of the

statistical analyses that were done to calculate the effect of managed care coverage on claims costs. These methods were used to account for the demographic and other differences between the covered and not covered workers. In addition to results showing the effects on medical, timeloss, and PPD costs, the effects on timeloss days and on the number of medical services provided are included.

The final section shows the results of the survey of injured workers. Results are provided that show the respondents' satisfaction with medical treatment, access to care, and return to work experience. Workers' physical and emotional recovery are also discussed.

## Demographics and descriptive claims costs

### Claims and demographic characteristics

The study sample was examined by claims and demographic characteristics (see Appendix E). The demographic characteristics included age, gender, education, tenure with employer, wage, and occupation. Survey respondents provided marital status and race data. The department uses the 1992 Bureau of Labor Statistics' Occupational Injury and Illness Classification System (OIICS) for describing the nature of workers' injuries, the injured body parts, and the events that caused these injuries. Employer information included industry, geographic region, claims rate, and average number of employees. Litigation, award, reconsideration, and Claim Disposition Agreements (CDA) data and the use of vocational assistance and return-to-work programs were also examined.

The differences among insurers' books of business and managed care contracts caused differences in coverage among industries, employer size, and geographical regions. SAIF covers nearly all state government workers, so they were more likely to be covered and to be enrolled. SAIF also insures many small employers, so workers

for small employers were also more likely to be covered and enrolled. In contrast, workers in the manufacturing, retail, and services sectors and in local government were less likely to be covered. Urban workers and employees of companies with high claims rates were more likely to be covered.

Industry differences lead to differences in coverage for certain occupations. Mechanics, transport operators, and loggers were more likely to be covered; workers in service occupations were less likely to be covered. These industry and occupation differences lead to different coverage and enrollment rates for men and women. Women comprised 32 percent of the total sample (see Table 11). Female claimants were 51 percent of the workers in the retail and services sectors and local government. They were 65 percent of the workers in service occupations. As a result, 30 percent of the covered employees were women, compared to 33 percent of the not covered employees. There were few differences between the covered and not covered study groups in workers' age, race, marital status, level of education, types of injury, wage, or

tenure with their employer. There were no differences between the two groups in reconsideration and litigation rates, types of awards, and the percentage getting a CDA.

There were no differences between the covered and not covered study groups in eligibility for vocational assistance or participation in the Preferred Worker program. There was, however, a significant difference among the groups for participation in the Employer-at-Injury program (EAIP). This is a program that offers a package of financial incentives to employers who return injured workers to other-than-full duties that are within the limitations of the injury (see Table 12). The incentives include wage subsidies, worksite modifications, and equipment purchases. Self-insured employers are the most likely to use the EAIP.

The demographic data show that the enrolled workers in the above threshold group were more severely injured than other workers. They were more likely to have PPD awards, to have had reconsiderations and litigation, and more likely to have used vocational assistance or return-to-work programs.

**Table 11. Gender**

	Total	Not covered		Covered		Enrolled	
		covered	Covered	Not enrolled	Enrolled	Below threshold	Above threshold
Women	31.7%	33.4%	29.9%	33.7%	28.7%	27.1%	31.3%
Men	68.3%	66.6%	70.1%	66.3%	71.3%	72.9%	68.7%
Total	100%	100%	100%	100%	100%	100%	100%

## MCO enrollment prior to claim acceptance

By SB 369, the 1995 legislature changed the law to permit an insurer to require an injured worker to receive medical treatment in the MCO prior to claim acceptance. The purpose of this change was to allow insurers to move workers more quickly into managed care. If the insurer denies the claim, however, the insurer must pay the costs of the treatment until the worker receives notice of the denial or until three days after the denial letter is mailed. In this study, the median time between injury and acceptance was 46 days. Just 15 percent of the enrolled claimants were enrolled prior to claim acceptance (see Table 13). Self-insured employers were most likely to enroll workers prior to acceptance. Because of this delay, most enrolled claimants received ser-

vices both outside and inside MCOs. In the study, 63 percent of the enrollees incurred less than half of their medical costs after their enrollment; 27 percent of the enrollees had no medical services after their enrollment.

### Claims costs

Costs for the study claims totaled nearly \$80 million (see Table 14). Medical costs were nearly \$35 million, 44 percent of the total. Timeloss payments accounted for 31 percent of the total; permanent disability awards comprised the other 25 percent. As shown in Table 15, the average cost of claims in the study was \$8,474. The covered claims cost less, on average, than the not covered claims. Enrolled claims had a higher aver-

age cost than claims that were covered, but not enrolled. The least costly group of claims were those in the below threshold study group. The most costly group of claims were those in the above threshold group. The reason for the sharp difference is enrolled workers with more severe injuries were more likely to have medical costs over a longer period of time. This increases the likelihood that they would be in the above threshold group.

The average costs of claims with and without litigation or reconsideration of the closure are shown in Table 16. Appealed claims tend to have much higher costs. Study claims with litigation or reconsideration orders had an average cost of \$18,074, compared to \$5,961 for claims without litigation or reconsideration.

**Table 12. Employer-at-Injury Program**

	Total	Not covered		Covered		Enrolled	
		covered	Covered	Not enrolled	Enrolled	Below threshold	Above threshold
No	83.0%	84.4%	81.4%	83.2%	80.9%	83.9%	75.8%
Yes	17.0%	15.6%	18.6%	16.8%	19.1%	16.1%	24.2%
Total	100%	100%	100%	100%	100%	100%	100%

The Employer-at-Injury program is available to workers who have an open claim, who have not been released to regular work, and who can return to a job that is part of the employer's return-to-work program. Assistance includes a wage subsidy, worksite modification, and obtained employment purchases.

**Table 13. Percentage of enrolled claimants by claim acceptance date**

	Enrollment occurred:			Total
	Before acceptance	At acceptance	After acceptance	
SAIF	4.5%	89.9%	5.6%	100%
Private insurers	25.1%	55.3%	19.6%	100%
Self-insured	52.7%	42.6%	4.7%	100%
All	15.4%	76.3%	8.2%	100%

Notes: For this table, "at acceptance" is defined as the MCO enrollment date occurring within three days of the acceptance date. This definition is used to account for paper-work processing. Claims for which the department does not have original acceptance dates are excluded from the table.

**Table 14. Claims costs**

	Total	Not covered		Covered		Enrolled	
		covered	Covered	Not enrolled	Enrolled	Below threshold	Above threshold
Claims	9,402	4,919	4,483	1,042	3,440	2,153	1,287
Percent	100%	52.3%	47.7%	11.1%	36.6%	22.9%	13.7%
Medical cost	\$34,912,037	\$18,717,152	\$16,194,885	\$3,231,785	\$12,963,100	\$5,578,350	\$7,384,751
Percent	100%	53.6%	46.4%	9.3%	37.1%	16.0%	21.2%
TTD cost	\$24,881,123	\$13,271,926	\$11,609,197	\$2,807,088	\$8,802,109	\$3,402,173	\$5,399,935
Percent	100%	53.3%	46.7%	11.3%	35.4%	13.7%	21.7%
PPD cost	\$19,881,695	\$10,618,334	\$9,263,361	\$1,908,889	\$7,354,473	\$3,120,168	\$4,234,305
Percent	100%	53.4%	46.6%	9.6%	37.0%	15.7%	21.3%
Total cost	\$79,674,855	\$42,607,412	\$37,067,443	\$7,947,761	\$29,119,682	\$12,100,691	\$17,018,991
Percent	100%	53.5%	46.5%	10.0%	36.5%	15.2%	21.4%

Notes: Table excludes claims with missing cost data. TTD indicates timeloss, both temporary total and temporary partial disability. Due to rounding, numbers may not sum to totals, and percentages may not sum to 100 percent.

**Table 15. Average claims costs**

Average cost	Total	Not covered		Covered		Enrolled	
		covered	Covered	Not enrolled	Enrolled	Below threshold	Above threshold
Medical cost	\$3,713	\$3,805	\$3,613	\$3,100	\$3,768	\$2,591	\$5,737
TTD cost	\$2,646	\$2,698	\$2,590	\$2,693	\$2,558	\$1,580	\$4,195
PPD cost	\$2,115	\$2,159	\$2,066	\$1,831	\$2,138	\$1,449	\$3,289
Total cost	\$8,474	\$8,662	\$8,269	\$7,624	\$8,464	\$5,620	\$13,221

Notes: Table excludes claims with missing cost data. TTD and PPD averages include claims with \$0 TTD or \$0 PPD.

**Table 16. Average claims costs, litigated and non-litigated claims**

	Total	Not covered		Covered		Enrolled	
		covered	Covered	Not enrolled	Enrolled	Below threshold	Above threshold
Litigated	\$18,074	\$18,247	\$17,888	\$15,967	\$18,428	\$16,670	\$19,658
Non-litigated	\$5,961	\$6,190	\$5,708	\$5,563	\$5,753	\$3,810	\$9,961

Note: In this table, "litigated" means the claims were appealed for reconsideration of the claim closure or appealed to the Hearings Division for other issues such as claim denial or partial denial.

## Medical treatment comparisons

Insurers report medical services for 18 specific provider types. These 18 types have been aggregated into seven summary provider types in Tables 17 and 18 and Figure 4. These figures show reported medical payment data by provider type and study group. These medical payment distributions do not provide the complete picture of workers' compensation medical treatment, since fatalities, long-term disabilities, and medical-only claims are excluded. Nevertheless, for the claims in the study frame, insurers made nearly \$35 million in medical payments. Hospitals accounted for the largest share of medical payments, 36 percent. Managed care status had little impact on the proportion of hospital expenses, which ranged from 35 percent for enrolled claims to 37 percent for not covered claims. The enrolled group had a higher proportion of payments for the MD/DO category and a lower proportion for the "other medical" category than the two other groups, especially the not covered group. The enrolled group devoted a lower proportion to therapy and a higher proportion to laboratory, pharmacy, and supplies than the two other groups. These differences were not due primarily to differences in managed care. Rather, they were probably due to reporting differences. SAIF, which enrolls most of its injured workers, uses provider type codes that fall into the "other medical" category less often than do other insurers.

Table 18 shows the average medical expenditures per claim for the seven aggregated provider types. These averages exclude the claims without expenditures for the provider types.

For enrolled claims, 44 percent of the medical expenditures were incurred prior to enrollment (see Table 19). Hospital inpatient and outpatient care accounted for the largest share of medical services prior to enrollment, while medical doctors and osteopaths were second highest. Five of the seven provider groups delivered greater amounts of care after enrollment. Only alternative providers and radiologists provided the bulk of their services prior to enrollment.

Medical doctors and osteopaths accounted for the largest share of medical services after enrollment. Payments for therapy and laboratory, pharmacy, and medical supplies were much higher after enrollment than before enrollment.

The distribution of medical expenditures by study group is summarized in Figure 5. It shows that while 46 percent of the medical expenditures were spent on covered workers, only 21 percent of the medical expenditures were spent on enrolled workers treated by MCOs.

Figure 4. Medical expenditures by provider type

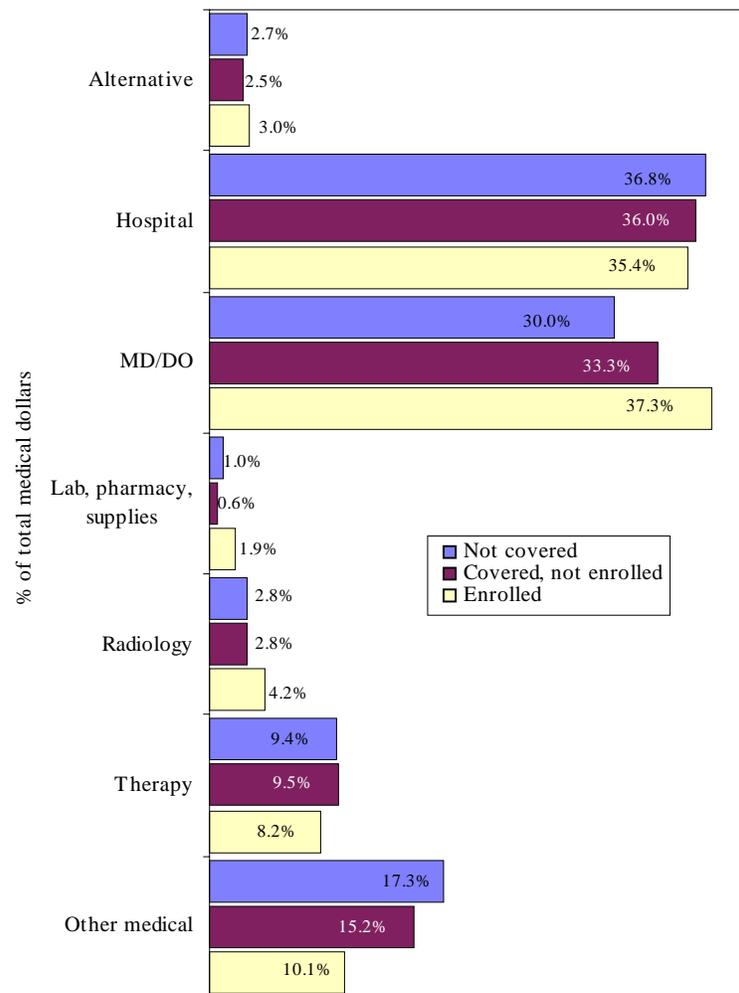
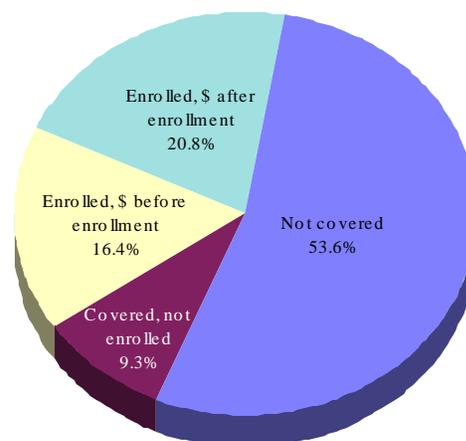


Figure 5. Distribution of medical payments by study groups, including pre- and post-enrollment



**Table 17. Medical expenditures by provider type**

	Total	Not covered	Covered	Covered		Enrolled	
				Not enrolled	Enrolled	Below threshold	Above threshold
Alternative Percent	\$977,534 2.8%	\$511,909 2.7%	\$465,625 2.9%	\$81,517 2.5%	\$384,108 3.0%	\$191,707 3.4%	\$192,401 2.6%
Hospital Percent	\$12,632,972 36.2%	\$6,878,564 36.8%	\$5,754,407 35.5%	\$1,163,961 36.0%	\$4,590,446 35.4%	\$2,186,826 39.2%	\$2,403,620 32.5%
MD/DO Percent	\$11,515,993 33.0%	\$5,609,113 30.0%	\$5,906,880 36.5%	\$1,075,038 33.3%	\$4,831,842 37.3%	\$1,964,618 35.2%	\$2,867,224 38.8%
Lab, pharmacy, supplies Percent	\$457,968 1.3%	\$193,004 1.0%	\$264,963 1.6%	\$20,765 0.6%	\$244,198 1.9%	\$81,208 1.5%	\$162,990 2.2%
Radiology Percent	\$1,160,829 3.3%	\$529,518 2.8%	\$631,311 3.9%	\$91,636 2.8%	\$539,675 4.2%	\$212,137 3.8%	\$327,538 4.4%
Therapy Percent	\$3,129,193 9.0%	\$1,752,814 9.4%	\$1,376,379 8.5%	\$307,689 9.5%	\$1,068,690 8.2%	\$351,926 6.3%	\$716,764 9.7%
Other medical Percent	\$5,037,548 14.4%	\$3,242,230 17.3%	\$1,795,318 11.1%	\$491,179 15.2%	\$1,304,139 10.1%	\$589,927 10.6%	\$714,213 9.7%
All Percent	\$34,912,037 100%	\$18,717,152 100%	\$16,194,885 100%	\$3,231,785 100%	\$12,963,100 100%	\$5,578,350 100%	\$7,384,751 100%

Notes: Due to rounding, dollars may not sum to totals and percentages may not sum to 100 percent.

“Alternative” consists of chiropractors and naturopaths.

“Hospital” includes inpatient, outpatient, and outpatient surgery providers.

“MD/DO” consists of medical doctors and osteopaths.

“Therapy” includes physical and occupational therapists.

“Other” includes registered nurse practitioners, physician assistants, podiatrists, dentists, optometrists, and other medical providers.

**Table 18. Average medical expenditures by provider type**

	Total	Not covered	Covered	Covered		Enrolled	
				Not enrolled	Enrolled	Below threshold	Above threshold
Alternative	\$872	\$909	\$835	\$704	\$869	\$762	\$1,010
Hospital	\$1,948	\$2,019	\$1,869	\$1,723	\$1,910	\$1,567	\$2,387
MD/DO	\$1,502	\$1,474	\$1,531	\$1,389	\$1,566	\$1,037	\$2,408
Lab, pharmacy, supplies	\$289	\$234	\$347	\$174	\$379	\$292	\$445
Radiology	\$321	\$298	\$343	\$270	\$359	\$260	\$477
Therapy	\$1,190	\$1,245	\$1,127	\$1,134	\$1,125	\$856	\$1,331
Other medical	\$1,076	\$1,132	\$988	\$977	\$992	\$921	\$1,059

Note: Expenditure averages include only the claims with payments for the provider types.

**Table 19. Medical expenditures before and after enrollment by provider type, enrolled claims**

	Managed care enrolled claims					
	Care prior to enrollment		Care after enrollment		Total medical care	
	Dollars	Percent	Dollars	Percent	Dollars	Percent
Alternative	\$218,373	3.8%	\$165,735	2.3%	\$384,108	3.0%
Hospital	\$2,248,178	39.4%	\$2,342,268	32.3%	\$4,590,446	35.4%
MD/DO	\$2,030,614	35.6%	\$2,801,228	38.6%	\$4,831,842	37.3%
Lab, pharm, supplies	\$52,707	0.9%	\$191,492	2.6%	\$244,198	1.9%
Radiology	\$280,318	4.9%	\$259,358	3.6%	\$539,675	4.2%
Therapy	\$326,350	5.7%	\$742,340	10.2%	\$1,068,690	8.2%
Other medical	\$553,982	9.7%	\$750,157	10.3%	\$1,304,139	10.1%
All	\$5,710,522	100%	\$7,252,578	100%	\$12,963,100	100%

Note: Due to rounding, dollars may not sum to totals and percentages may not sum to 100 percent.

## Impact of managed care on claims costs

### Statistical analyses

Statistical models were used to compare claims costs between the covered and not covered study groups. These analyses were done to control for differences between the two study groups, including differences in worker demographics, claims characteristics, employer and insurer differences, and injury type and severity. Nature of injury, body part, and injury event categories were used to control for differences in injury characteristics (see Appendix E for a description of the categories). All models were constructed using natural logarithms to account for the underlying characteristics of the cost data, such as non-normality and non-constant variance.

The models also used injury severity indices created specifically for this study. These indices were created using ICD-9 (International Classification of Diseases, 9th Revision) codes. These codes are included on the medical payment data. They indicate the nature of the injury and the body part injured, such as “lumbar sprain.”

To create the indices, nearly 139,000 claims with dates of injury ranging from 1991 to 1997 and having the same characteristics as those in the study frame were matched to the medical payment data. For each claim, the single ICD-9 that had the highest medical cost was identified and assigned to that claim. Then for each claim, the medical, timeloss, and PPD data were determined by methods similar to those used to assign component costs to the study claims. The medical, timeloss, and PPD data were converted to natural logarithms, and averages were computed for each ICD-9 code. The result of the process was a severity index containing nearly 3,000 ICD-9 codes present in Oregon’s workers’ compensation system.

For each ICD-9 code, there were four separate measures of severity: medical cost, timeloss days, permanent partial disability percent, and total claims cost.

As noted earlier, one of the original intents of the study design was to compare the workers who received most of their treatment through MCOs to the workers not covered by managed care. It was hoped that the severity indices described above, plus the nature, part, and event codes would be sufficient to account for differences in injury severity among these groups. Because most workers are not enrolled in managed care until the acceptance of the claim, the enrolled workers have more severe injuries. This makes cost and outcome comparisons misleading. It was impossible to resolve this adverse selection problem completely, despite these other variables, so the results of these comparisons are not presented in the body of this report. They can be found in Appendix J.

Regression models were created for each of the cost components. The results of the three models are summarized in Table 20 and Figure 6. For each model, the table shows the variable parameter estimates in the model, followed in parentheses by the probability that the parameter estimate is zero. Positive parameter estimates mean that a positive change in the value of the variable is related to an increase in costs. The letters “N/A” indicate the variable was not used in one of the three models. Other variables, including gender, days worked per week, employer’s claims rate, and early enrollment, were tested but not included in any of the models. The last row of the table shows the “R-squared” of each of the models. This shows the variability in the costs that is accounted for by the model.

### Medical costs

For the medical model, the significant variables were a variable indicating a SAIF claim; worker’s age; 13 nature, part, and event variables to describe the injury; the medical cost severity index variable; and the managed care coverage variable. The SAIF variable was needed because SAIF, unlike many other insurers, regularly includes optional data in its medical payment reporting. This results in significantly higher reported medical costs for SAIF claims. The parameter for the age variable indicates that medical costs increase as workers age. The medical severity index variable indicates that for each percentage increase in the medical cost severity index, medical costs of the claims in the study increased by 0.89 percent.

The parameter estimate of the coverage variable indicates that the impact of managed care coverage is a 12.4 percent reduction in medical costs. For the average claim, this is a reduction of \$460. The R-squared value indicates that this model explained 39 percent of the variability in the medical costs of the study’s claims.

Lower medical costs may be attributable both to utilization controls and to reduced payments for services. All other things being equal, utilization control is evident if fewer services are provided per claim. A statistical model was used to estimate the impact of managed care on the number of medical services provided. The number of services for each claim was determined from medical payment data; the average number of medical services for the study claims was 39. The model showed the impact of managed care coverage was a 6.3 percent reduction in the number of medical services (see Appendix G).

**Table 20. Claims component cost models  
Parameter estimates (with p values)**

Variable	Medical model	TTD model	PPD model	Variable description
Intercept	0.736 (0.0001)	-0.274 (0.2950)	-0.863 (0.0001)	Intercept
SAIF	0.174 (0.0001)	N/A	N/A	SAIF Corp claim
Urban	N/A	N/A	-0.311 (0.0018)	I-5 corridor GSAs
Log wage	N/A	0.601 (0.0001)	N/A	Natural log weekly wage
Age	0.010 (0.0001)	0.005 (0.0170)	0.036 (0.0001)	Claimant age
Nature1	N/A	N/A	1.132 (0.0001)	Injury to bones, nerves
Nature2	-0.244 (0.0001)	N/A	N/A	Sprains, strains
Nature3	N/A	N/A	0.612 (0.0003)	Open wounds
Nature4	N/A	N/A	0.452 (0.0027)	Multiple injuries
Nature5	-0.312 (0.0001)	N/A	N/A	Other traumatic injuries
Part1	-0.203 (0.0001)	-0.260 (0.0003)	-0.206 (0.0264)	Back, spine, spinal cord
Part2	-0.233 (0.0001)	-0.220 (0.0084)	N/A	Trunk, except back
Part3	-0.255 (0.0001)	-0.738 (0.0001)	0.697 (0.0001)	Fingers, fingernails
Part4	-0.175 (0.0004)	-0.173 (0.0267)	N/A	Other upper extremities
Part5	-0.188 (0.0004)	-0.313 (0.0002)	N/A	Legs
Part6	-0.321 (0.0001)	-0.199 (0.0285)	-0.270 (0.0497)	Other lower extremities
Event1	0.113 (0.0629)	N/A	N/A	Contact with objects
Event2	0.346 (0.0001)	0.203 (0.0136)	0.411 (0.0042)	Fall to lower level
Event3	0.153 (0.0227)	N/A	N/A	Fall to same level
Event4	0.124 (0.0338)	N/A	N/A	Bodily reaction, overexertion
Event5	0.513 (0.0001)	0.210 (0.0538)	0.551 (0.0027)	Transportation accident
Logmed severity	0.894 (0.0001)	N/A	N/A	Medical severity index
Logtttd severity	N/A	1.129 (0.0001)	N/A	TTD severity index
Logppd severity	N/A	N/A	2.639 (0.0001)	PPD severity index
Coverage	-0.124 (0.0001)	-0.099 (0.0245)	-0.175 (0.0240)	Managed care coverage
R-squared	.3865	.2179	.3378	

Note: N/A indicates the variable was not used in the model. See Appendix G for more detail.

The frequency and average cost of selected medical services are shown in Table 21. The first two sections of the table cover office visits. The number of office visits (new and established) reported per covered claim was 5.4, only one percent lower than the 5.5 per not covered claim. The average cost for all office visits for covered claims was \$53, four percent lower than the not covered claim average of \$55. A statistical analysis found no significant difference between covered and not covered claims on the total cost of office visits .

The differences between the study groups were in the types of office visits. The covered study group reported 0.8 new patient office visits per study claim, 11 percent higher than the 0.7 visits per not covered claim. This is not unexpected, since covered claimants may be required to change attending physician, resulting in the higher incidence of new patient office visits. Office visits for new patients covered by managed care cost more, averaging \$86 compared to \$84 for not covered patients. The average visit length was nearly identical for the two study groups, 29.1 minutes for covered versus 29.0 minutes for not covered patients.

Office visits for established patients covered by managed care tended to cost less than not covered office visits, averaging \$48 compared to \$50 for not covered patients. The average visit length was also slightly shorter for covered established patients, 15.0 minutes compared to 15.4 minutes for not covered patients. Utilization was 3 percent lower for the covered study group, which had an average of 4.6 established patient office visits per claim, compared to 4.7 visits per not covered claim.

The frequency and cost of the three most common physical therapy services are included in Table 21. Average payments for covered therapeutic exercises were nine percent lower than not covered therapeutic exercises, payments for ultrasound were ten percent lower, and payments for hot or cold packs were 17 percent lower. A more detailed examination of the physical therapy medical data was difficult, due to a change in the department's medical fee schedule during the study time frame.

**Table 21. Number of services and average payment for selected services**

			Not covered			Covered		
CPT code	Length of office visit		Number	Visits per 100 claims	Average payment	Number	Visits per 100 claims	Average payment
Office visits for new patients	99201	10 minutes	237	4.8	\$41	210	4.7	\$39
	99202	20 minutes	1,128	22.9	\$62	1,125	25.1	\$63
	99203	30 minutes	1,485	30.2	\$87	1,529	34.1	\$89
	99204	45 minutes	496	10.1	\$122	553	12.3	\$127
	99205	60 minutes	165	3.4	\$157	135	3.0	\$155
	Total		3,511	71.3	\$84	3,552	79.2	\$86

CPT code	Length of office visit		Number	Visits per 100 claims	Average payment	Number	Visits per 100 claims	Average payment
Office visits for established patients	99211	5 minutes	1,216	24.7	\$16	1,251	27.9	\$15
	99212	10 minutes	5,690	115.5	\$35	5,375	119.9	\$34
	99213	15 minutes	12,427	252.3	\$50	10,761	240.0	\$49
	99214	25 minutes	3,384	68.7	\$76	2,909	64.9	\$75
	99215	40 minutes	646	13.1	\$119	379	8.5	\$112
	Total		23,363	474.4	\$50	20,675	461.1	\$48

CPT code	Therapy description		Number	Services per 100 claims	Average payment	Number	Services per 100 claims	Average payment
Three most common therapy services	97010	Hot or cold packs	7,268	147.6	\$18	6,680	149.0	\$15
	97035	Ultrasound	7,186	145.9	\$20	7,174	160.0	\$18
	97110	Therapeutic exercises	18,322	372.0	\$46	16,135	359.8	\$42
	Total		32,776	665.5	\$34	29,989	668.8	\$30

CPT code	Surgery description		Number	Surgeries per 100 claims	Average payment	Number	Surgeries per 100 claims	Average payment
Three most costly surgical procedures	29881	Knee arthroscopy	209	4.2	\$1,573	198	4.4	\$1,430
	63030	Low back disk	132	2.7	\$2,401	96	2.1	\$2,503
	64721	Carpal tunnel	266	5.4	\$836	198	4.4	\$797
	Total		607	12.3	\$1,430	492	11.0	\$1,385

Note: CPT = physicians' current procedural terminology

The three most costly surgical procedures in the study were knee arthroscopy, low back disk surgery, and carpal tunnel surgery. Medical payments for these surgeries comprised 26 percent of payments reported for all surgical procedures. The number of these surgeries totaled 492 for the covered study group and 607 for the not covered study group. The covered surgeries had an average payment of \$1,385 compared to \$1,430 for surgeries not covered by managed care. There were 11 of these surgeries per 100 covered claims compared to more than 12 surgeries per 100 not covered claims.

A statistical analysis was done to estimate the impact of managed care on the total cost of these three surgical procedures. Payments for the surgeries were summed for each claim, including claims with no pay-

ments. The model yielded a parameter estimate showing the impact of managed care coverage was a 10.7 percent reduction in cost for the top three surgical procedures (see Appendix G).

### Timeloss

Eight variables describing the injury and the timeloss days severity index variable were included in the timeloss model. The model also included the claimant wage because wages are used in the calculation of timeloss payments. Since the timeloss costs were from claims closure data that all insurers are required to report, a separate variable for SAIF was unnecessary.

Of the three cost components, timeloss exhibited the smallest difference between

covered and not covered claims. The estimated impact on timeloss costs of managed care coverage was a 9.9 percent reduction in timeloss costs. This is a reduction of approximately \$260 for the average claim. The model was also the weakest in its explanatory power; the R-squared indicates that the model explains 22 percent of the variability in timeloss costs.

Another model was developed to estimate the number of days for which timeloss was paid (see Appendix G). For this model, the claimant's weekly wage was replaced with the number of days worked per week. The new regression model showed that the impact of managed care coverage was a 6.5 percent reduction in timeloss days.

**Table 22. Timeloss and PPD characteristics**

	Total	Not covered	Covered	Covered		Enrolled	
				Not enrolled	Enrolled	Below threshold	Above threshold
TTD dollars	\$2,777	\$2,820	\$2,729	\$2,844	\$2,694	\$1,652	\$4,467
% with TTD dollars	95.2%	95.6%	94.9%	94.6%	95.0%	95.6%	93.9%
TTD days	54.1	55.2	52.8	51.3	53.3	33.4	87.0
% with TTD days	95.0%	95.3%	94.6%	94.1%	94.8%	95.4%	93.8%
Days from injury to closure	208.2	217.5	198.0	204.3	196.0	148.8	277.1
% with a closure	96.2%	96.2%	96.3%	96.3%	96.3%	97.2%	94.6%
PPD dollars	\$6,507	\$6,438	\$6,588	\$6,363	\$6,649	\$6,950	\$6,444
% with PPD	32.5%	33.5%	31.4%	28.7%	32.1%	20.8%	51.0%

Notes: All claims with CDAs are assumed to have timeloss and PPD. Dollars and days are averages per claim. These averages exclude those claims with 0 dollars or days.

Lower timeloss costs may be attributable both to reduced frequency and shorter duration of timeloss. As shown in Table 22, nearly 95 percent of covered workers received time loss payments, compared to nearly 96 percent of not covered workers. Covered workers with timeloss payments averaged less than 53 days lost, compared to 55 days for not covered workers. They also had shorter periods between the date of injury and claim closure, 198 days compared to 218 days for not covered workers.

**Permanent partial disability**

PPD costs are the smallest of the three cost components, averaging 25 percent of total cost for the study claims. For most claims, the PPD cost is zero.

In addition to the nature, part, event, severity, and age variables, the PPD cost model in-

cluded a geographic variable. This variable separates the six GSA's along the I-5 corridor (GSAs 4 - 9 on the maps in Figure 3) from the rest of the state. The parameter estimate indicates that the average PPD awards were 31.1 percent less in these areas than in the rest of the state. This region contains most of Oregon's population. It is not known whether this difference is due to differences in the type of work done, the availability of work, or to differences in medical care.

Of the three cost components, PPD costs showed the largest difference between covered and not covered claims. The model estimates that the impact of managed care coverage was a 17.5 percent reduction in PPD awards. For the average claim, this is a \$370 reduction.

Covered workers with PPD payments averaged three percent higher payments than did

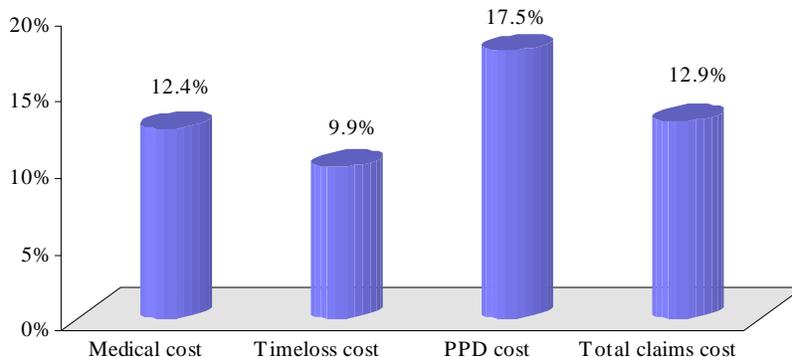
not covered workers. A smaller percentage of covered workers, however, received PPD benefits (see Table 22).

**Total claims costs**

When the reductions due to managed care for the three models are summed, the impact of managed care coverage is a 12.9 percent reduction in total claims costs (see Figure 6). This is a reduction of \$1,090 for the average claim included in the study.

Another method of estimating the impact of coverage on total claims cost used a regression model of total cost (see Appendix G). This total cost model indicated that the impact of coverage was a 12.7 percent reduction in total claims costs. This is very close to the 12.9 percent reduction derived from the summed cost components.

**Figure 6. Percentage reductions in claims costs due to managed care coverage**



# Injured worker satisfaction survey

## Medical treatment satisfaction

The majority of injured workers, across study groups, were satisfied or very satisfied with their overall medical treatment (see Figure 7). Most were also satisfied with the quality of their care (85 percent). In addition, most workers reported satisfaction with specific aspects of their treatment, such as the appropriateness of treatment (82 percent) and the explanation of treatment (84 percent). Slightly fewer indicated they were satisfied with the amount of personal control they had over medical decisions (75 percent). Unlike the department's 1995 study, the current study revealed no significant differences between covered and not covered workers on their satisfaction with various aspects of the quality of medical treatment. (The complete results are presented in Appendix I.)

## Access to medical care

Most injured workers indicated they were satisfied or very satisfied with the overall ease of obtaining medical care (81 percent), the number of doctors to choose from (76 percent), and the length of time between their injury and first treatment (83 percent). An even greater proportion of respondents reported being satisfied with specific aspects of access to care, such as the distance traveled to appointments (88 percent) and the ease of setting up appointments (90 percent). However, when compared to not covered workers, significantly more covered workers were dissatisfied with the overall ease of obtaining care and the number of doctors to choose from (see Figure 8). This difference was consistent with the results of the department's earlier study.

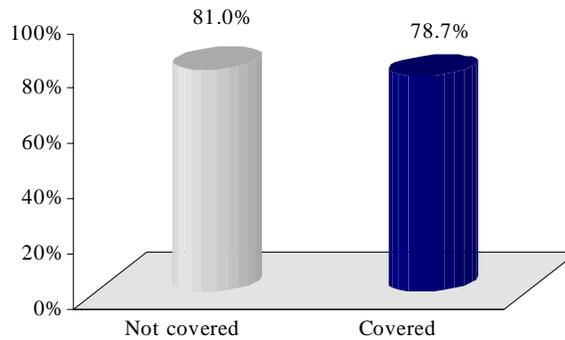
Most workers, regardless of their coverage, reported that they could choose their own doctor (71 percent). As expected, more not covered workers were able to see the doctor of their choice (75 percent) than covered workers (67 percent). When asked to indicate the main reason why they did not see the doctor of their choice, 66 percent responded that they were "directed to see another doctor," and 18 percent replied that their doctor of choice was either "unavailable" (9 percent), "unwilling" (3 percent), or "located too far away" (6 percent).

Nearly one-third of the respondents reported that they were unable to see the doctor of their choice throughout their treatment. The percentage of workers required to change doctors differed little among study groups (see Figure 9).

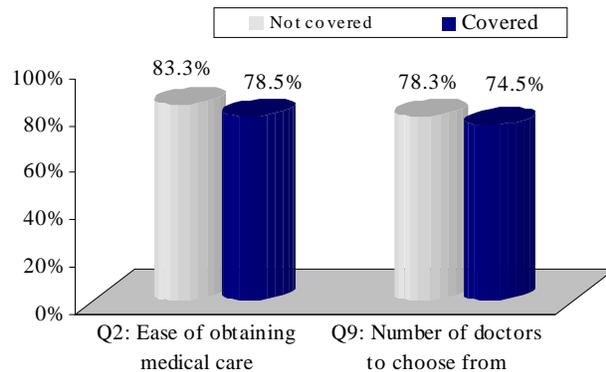
Injured workers were then asked to rate their satisfaction with the care they received after they were required to change doctors. Of the 31 percent who were required to change doctors, one-third were dissatisfied with the care they received after the change.

Regardless of their study group, the workers who were required to change doctors were twice as likely to be dissatisfied with their medical treatment, access to care, and return-to-work experience as the workers not required to change. However, the mean satisfaction of enrolled workers with their care after changing doctors (2.71) was lower than that of workers who were covered but not enrolled (2.79), and significantly lower than that of not covered workers (2.85).

**Figure 7. Percentage of workers satisfied with overall medical treatment**

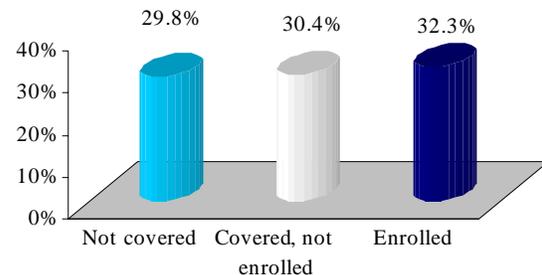


**Figure 8. Percentage of workers satisfied with access to medical care**



Enrolled workers were only slightly more likely to be required to change. The fact that over two-thirds of enrolled workers were not required to change doctors is indicative of the size of the MCO provider panels. In addition, an enrolled worker may not need to change doctors if their attending physician agrees to abide by MCO protocols. Workers in the not covered and covered, not enrolled study groups changed doctors for reasons other than enrollment. They may have responded that they were required to change doctors because they didn't like their doctor, wanted to get a second opinion, or had seen a specialist.

**Figure 9. Percentage of workers required to change doctors**



## Return to work

Of the workers who reported being paid for lost days from work (87 percent), 92 percent indicated that they were currently working or had worked for some period since their injury. After missing an average of 10 weeks of work, 84 percent of respondents who returned to work after injury worked for the same employer, 60 percent returned to the same type of work as before, and 70 percent returned to the same wages as before. In fact, covered workers had a significantly higher average score (2.80) than not covered workers (2.73) on their rating of wages after their return to work.

Most respondents were satisfied with their return-to-work experience (see Figure 10). Nearly half reported that their job duties were somewhat restricted (47 percent), with 41 percent of workers indicating that when they first returned to work, physical pain resulting from their job injury interfered with their duties “most” or “all” of the time. Workers rated their job satisfaction at the time of injury very favorably, with 89 percent of workers reporting it as “satisfied” or “very satisfied.”

## Functional outcomes

Workers were asked to rate their overall current health on a 5-point scale from “very

poor” to “very good.” Sixty-seven percent of injured workers rated their overall current health as “good” or “very good.” When asked how their current physical health compared to their health before injury, injured workers reported their condition was “about the same” or “better” than before their injury in terms of physical health (69 percent), emotional condition (76 percent), and overall health (78 percent). However, the level of physical pain was generally rated as worse by 43 percent of the respondents. Fifty-four percent of the respondents felt their injury interfered with their social relationships with their family and friends at least some of the time. Although a majority of respondents believed that their injury was moderately or very severe (75 percent), most of them reported also that they were recovering “well” or “very well” (67 percent).

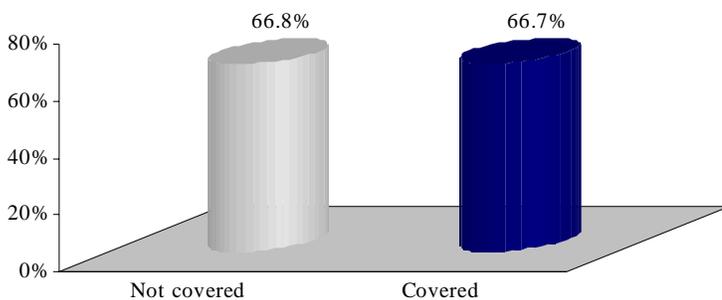
Covered workers gave significantly more favorable ratings of their current emotional condition and level of physical pain than not covered workers (see Figure 11). While most workers rated their current emotional condition about the same or better than before their injuries, 23 percent of the covered workers rated their emotional condition as better, compared to 19 percent of the not covered workers. The mean score for covered workers (3.06) was significantly higher than for not covered workers (2.98). Twenty-

eight percent of the covered workers rated their level of physical pain better, compared to 24 percent of not covered workers. The mean level of physical pain reported by covered workers (2.88) was significantly better than that reported by not covered workers (2.76).

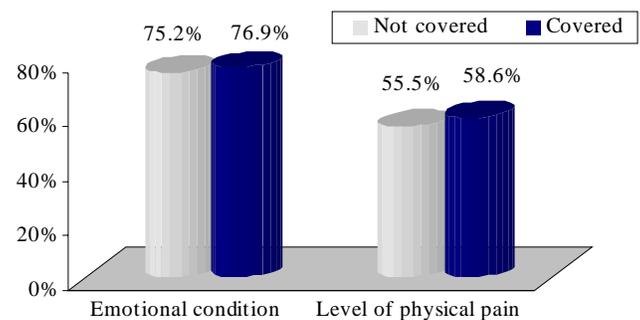
## MCO awareness

In an effort to determine their awareness of managed care, injured workers were asked if they received medical care for their work injury or illness through a Managed Care Organization. Only 24 percent of the enrolled respondents reported that they received medical care from an MCO; 55 percent did not know, and 20 percent responded that they had not been treated in an MCO. The medical data did not show any medical treatment after enrollment for 24 percent of the enrolled workers, so many of these responses may have been accurate. However, the fact that over half of the respondents in all study groups did not know whether or not they had been treated in MCOs indicates a great deal of uncertainty.

**Figure 10. Percentage of workers satisfied with their return-to-work experience**



**Figure 11. Percentage of workers rating current functioning about the same or better than before injury**



## Attorney representation

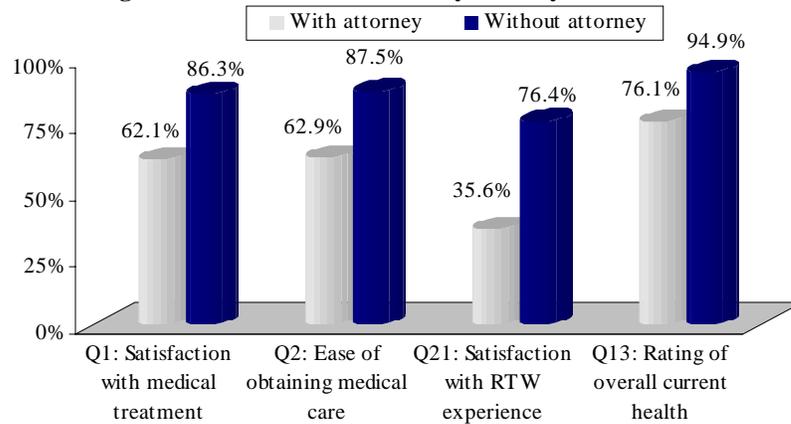
Twenty-six percent of the respondents said that they had hired attorneys to represent them. There were highly significant differences in the level of satisfaction and functioning between workers who hired attorneys and those who did not (see Figure 12). Workers who hired lawyers were nearly three times as likely to be dissatisfied with their medical treatment, access to care, and return-to-work experience as those who did not. In addition, workers who hired lawyers were almost five times as likely to rate their current health status as “poor” as workers who did not hire lawyers.

## Worker comments

Workers were given the option to provide additional information relevant to their treatment (Question 26). There were 1,859 comments from 1,502 workers; these comments were coded into positive, negative, and neutral categories to describe the following areas: insurer, employer, medical provider, workers’ compensation system, managed care study, general satisfaction, and general dissatisfaction. Respondents’ requests for help were also noted and routed to appropriate personnel for resolution. Workers commented most often about medical providers (n=462) and insurers (n=433)

and, to a lesser extent, employers (n=228) and the workers’ compensation system (n=197). Seventy-seven percent of the comments were negative, 17 percent were positive, and 6 percent were neutral. The highest percentage of negative comments were about insurers (27 percent), general comments of dissatisfaction (27 percent), and medical providers (21 percent). The highest percentage of positive comments were made about medical providers (41 percent) and general comments of satisfaction (29 percent).

**Figure 12. Worker satisfaction by attorney involvement**



Note: Percentages for question 13 represent workers who rated current health as “fair,” “good,” or “very good.”

## Appendices

- A. Glossary
- B. Certified Managed Care Organizations (MCOs)
- C. Current and past MCO contracts with insurers and self-insurers
- D. Summary of related research
- E. Claims and demographic characteristics
- F. Study methodology
- G. Statistical models for claims costs and components
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# Glossary

**Accepted disabling claim:** A disabling workers' compensation claim that has been accepted as compensable by an insurer. In Oregon, disabling claims are those claims for injuries or diseases in which workers lose more than three calendar days away from work, qualifying them for timeloss payments, or in which they are a hospital inpatient or suffer permanent disability or death. Accepted disabling claims with injuries prior to July 1995, permanent total disability claims, and fatality claims are excluded from this study.

**Attending physician:** A doctor or physician who is primarily responsible for the treatment of a workers' compensable injury. This person must be a licensed medical doctor, doctor of osteopathy, oral and maxillofacial surgeon, or chiropractor. By statute, chiropractors may be attending physicians for only a 30-day period from the date of first visit on the initial claim or for 12 visits, whichever occurs first. Attending physicians must make first reports of injury and periodic follow-up reports to insurers. They must advise the insurers of the anticipated date a worker is expected to be released to return to work and the date the worker is released. They also authorize the payment of timeloss benefits and make findings of impairment for PPD benefits at the time of claim closure. An MCO may designate any medical service provider or category of providers as attending physicians.

**Claim closure:** The process of stopping the payment of timeloss benefits and the determination of impairment for PPD benefits. A claim is closed when a worker's medical condition has become stationary; when the accepted injury is no longer the major contributing cause of the workers' condition; or when the worker fails to seek medical treatment for a period of 30 days or fails to attend a closing examination, without the approval of the attending physician.

**Claim disposition agreement (CDA):** An agreement between a worker and the workers' compensation insurer disposing of any or all matters regarding a claim, excluding medical services, which are retained for life. CDAs must be approved by the department's Workers' Compensation Board.

**Department:** The Oregon Department of Consumer and Business Services. This agency includes a number of divisions which protect and serve workers and consumers while promoting a positive business climate in the state. The two involved in this study are the Workers' Compensation Division and the Information Management Division.

**Geographical Service Area (GSA):** One of the 15 geographic regions into which Oregon has been divided. Each GSA is defined by a list of postal ZIP codes. The department created these GSAs in May 1992 when it issued WCD Bulletin 248. The factors used in establishing these GSAs included normal patterns of travel for medical services as identified by data from the Oregon Department of Human Resources Office of Health Policy; geological terrain; major highways, roads, and travel routes; population density; and political subdivisions. The director designates the geographical service areas in which each MCO is authorized to operate.

**Insurer:** The SAIF Corporation, a private insurance company authorized under ORS chapter 731 to provide workers' compensation insurance in the state, or an employer or employer group that meets the qualifications of a self-insured employer. Throughout this report, the term "insurer" includes self-insured employers.

**Managed care:** The care of an injured or ill worker that is provided through a contract between an insurer and a managed care organization. Workers enrolled in a managed care organization are restricted to panel members in their choice of health care providers. However, Oregon Administrative Rules (OAR 436-015-0070) allow MCOs to authorize primary care physicians who are not panel members to provide medical services under certain circumstances.

**Managed Care Organization (MCO):** An organization formed to provide medical services to injured workers that has been certified by the Oregon Department of Consumer & Business Services Workers' Compensation Division. There are two general types of MCOs. Hospital-based MCOs are owned by or associated with hospitals. Medical provider-based MCOs are MCOs formed by groups of medical service providers. MCOs cannot be formed, owned, or operated by an insurer or by an employer other than a health care provider or medical service provider.

**MCO contract:** A contract between an MCO and an insurer for the provision of managed care services. In this study, the workers in the covered study group are those people who work for employers whose workers' compensation insurers have contracts with MCOs. For reporting purposes, this study counts contracts as the number of contracts between MCOs and insurer groups.

**OIICS:** The U.S. Bureau of Labor Statistics' Occupational Injury and Illness Classification System. The claims characteristics coding system is used to classify the event that caused the injury or disease, the nature of the injury or disease, the body part injured, and the source of the injury. The description of the injuries are reported on the 801 form (Oregon First Report of Injury or Disease); data may be supplemented by insurer and medical reports or Oregon OSHA reports.

**Palliative care:** Medical services that reduce or moderate temporarily the intensity of an otherwise stable medical condition. Palliative care does not include medical services rendered to diagnose, heal, or permanently alleviate or eliminate a medical condition.

**Panel:** The medical providers under contract with an MCO to provide treatment to injured workers.

**Permanent partial disability (PPD):** The permanent loss of use or function of a body part due to a compensable injury or illness.

**Reconsideration:** An administrative dispute resolution process that is the first level of appeal of a claim closure. Workers may appeal an insurer's closure; workers and insurers may appeal a department closure. Reconsideration orders may be appealed by either party to the department's Workers' Compensation Board.

**Study groups:** For the cost analyses and worker survey, the claimants were split into the following groups:

**Covered:** The worker was covered by a contract between the insurer and an MCO. The worker's employer was located within the GSAs of the MCO, and the employer elected or was required to participate in managed care. Covered workers are divided into two categories:

**Enrolled:** The worker received notification from the insurer that he/she was required to seek treatment within the MCO, and any subsequent treatment was provided by the MCO panel. The claimant must be notified of enrollment for each claim. Most claimants were not enrolled immediately after injury; most were enrolled at the time of claim acceptance. Most enrolled workers, therefore, received medical treatment before their enrollment; some did not receive any treatment while enrolled. As a result, the medical dollars for the claim can be split into those generated before enrollment and after enrollment. These dollars before and after enrollment were used to divide enrolled workers into two categories:

**Above threshold:** Medical services provided on or after enrollment generated at least 50 percent of the total medical dollars for the claim (50 percent was chosen as the threshold). Therefore, the majority of the medical dollars were for services provided after enrollment and by an MCO.

**Below threshold:** Medical services provided on or after the enrollment date generated less than 50 percent of the total medical dollars for the claim. Therefore, a minority of the medical dollars were for services provided after the MCO enrollment date.

**Covered, not enrolled:** The worker was covered by an MCO contract but not enrolled by the insurer. All covered workers are either enrolled or not enrolled.

**Not covered:** The worker's employer was not covered by an MCO contract. There may have been a contract between the insurer and an MCO, but if so, the employer elected not to participate or was located outside the MCO's authorized GSAs. All workers are either covered or not covered.

**Timeloss (TTD):** Payments made for the loss of wages while the worker is unable to return to work. In this report, timeloss refers to both temporary total and temporary partial disability. In Oregon, timeloss payments are a function of the claimant's wages and the statewide average weekly wage. No payments are made for the first three calendar days after the worker leaves work or loses wages unless the worker is totally disabled after the injury and the total disability continues for a period of 14 consecutive days, or the worker is admitted as an inpatient to a hospital within 14 days of the first onset of total disability.

**WCD Bulletin 220:** Workers' Compensation Division Bulletin describing the medical data reporting requirements for workers' compensation insurers in accordance with the provisions of OAR 436-009-0030(8). Insurers that had at least 100 accepted disabling claims in a previous calendar year are required to provide data. Data are reported quarterly. Insurers are required to report information on all payments made during the quarter for medical services that are covered by the department's fee schedules. Covered services include anesthesiology, surgery, radiology, pathology and laboratory, medicine, physical medicine, evaluation and management, Oregon-specific codes, and hospital services. Some insurers voluntarily submit data for all medical services.

**WCD Bulletin 247:** Workers' Compensation Division Bulletin describing the quarterly reporting requirements for certified MCOs in accordance with the provisions of OAR 436-015-0040(3). Each MCO provides information on each member of its panel.

## Appendix B

### Certified Managed Care Organizations (MCOs)

#### Active MCOs

##### COMCO

Central Oregon IPA  
Karen Triplett MN, ANP  
2650 Courtney Drive  
Bend, OR 97701  
TEL (541) 389-6162  
FAX (541) 382-6898  
E-mail: ktriplett@coihs.com  
Certification # 960201  
Effective July 17, 1996

##### Complete Quality Care, Inc.

Carole S. Hehn, R.N., MCO Coordinator  
123 NE 3rd Avenue, Suite 215  
Portland, OR 97232  
TEL (503) 231-9919  
FAX (503) 231-9927  
E-mail: caroleh@cqcmco.com  
Certification # 950202  
Effective June 16, 1995

##### First Health Group Corp.

Marilyn Patton, MCO Liaison  
565 Union Street NE, Suite 205  
Salem, OR 97301-2460  
TEL (503) 391-1981  
FAX (503) 391-1979  
E-mail: MAPatton@fhsc.com  
Certification # 970201  
Effective June 3, 1997

##### Kaiser Foundation Health Plan

Kaiser-on-the-job  
Tracy Runge, Administrator  
2701 NW Vaughn, Suite 150  
Portland, OR 97210-5398  
TEL (503) 721-3940  
FAX (503) 721-3949  
E-mail: rungetr@kpnwoa.mts.kpnw.org  
Certification # 910206  
Effective October 30, 1991

##### Managed Healthcare Northwest, Inc.

CareMark Comp  
Pamela Chritton-Aronson, Director  
2701 NW Vaughn, Suite 710  
Portland, OR 97210  
TEL 1-800-648-6356  
FAX (503) 224-3255  
E-mail: PJC@lhs.org  
Certification # 900102  
Effective December 26, 1990

#### Approved Geographical Service Areas

11-Bend

4-Portland Metro  
5-Salem  
7-Eugene  
9-Jackson/Josephine

1-North Coast  
4-Portland Metro  
6-Linn-Benton  
7-Eugene  
9-Jackson/Josephine  
10-The Dalles  
13-Pendleton

4-Portland  
5-Salem

1-North Coast  
4-Portland Metro  
5-Salem  
10-The Dalles

**Active MCOs****ODS Health Plan MCO**

Brent Rufener, Director, Provider Relations  
315 SW 5th Avenue  
Portland, OR 97204  
TEL (503) 228-6554  
FAX (503) 243-3964  
E-mail: rufenerb@odshp.com  
Certification # 960203  
Effective December 16, 1996

**OHSU WorkComp**

(Oregon Health Sciences University)  
CeCe Connors, Business Manager  
3181 SW Sam Jackson Park Rd.  
Mail Code OP20C  
Portland, OR 97201  
TEL (503) 494-8786  
FAX (503) 494-4457  
E-mail: connorsc@ohsu.edu  
Certification # 950101  
Effective March 30, 1995

**Oregon Health Systems, Inc.**

Ramona St. George, President  
PO Box 23606  
11515 SW Durham Road, Suite E-3  
Tigard, OR 97281  
TEL (503) 639-6080  
FAX (503) 639-8521  
E-mail: rstgeorg@ohs-inc.com  
Certification # 910205  
Effective August 14, 1991

**Providence MCO**

Karen McNamee, R.N.  
PO Box 4347  
Portland, OR 97208-4347  
TEL (503) 574-7640/800-947-4707  
FAX (503) 574-8625/800-426-6381  
E-mail: mcnameek@providence.org  
Certification # 900103  
Effective December 26, 1990

**Approved Geographical Service Areas**

1-North Coast  
2-Central Coast  
4-Portland Metro  
5-Salem  
6-Linn-Benton  
7-Eugene  
8-Roseburg  
9-Jackson/Josephine  
10-The Dalles  
13-Pendleton

4-Portland Metro

3-Coos Bay  
4-Portland Metro  
5-Salem  
6-Linn/Benton  
7-Eugene  
8-Roseburg  
9-Jackson/Josephine  
10-The Dalles  
11-Bend  
12-Klamath Falls  
13-Pendleton  
14-LaGrande

1-North Coast  
4-Portland Metro  
5-Salem  
6-Linn/Benton  
7-Eugene  
9-Jackson/Josephine

**MCOs Voluntarily Decertified**

CorCare (Corvel Corporation)  
Certification # 910208  
Effective December 27, 1991  
(Voluntary Termination Effective March 15, 1993)

Affordable Medical Networks  
(Healthcare Compare)  
Certification # 920209  
Effective February 24, 1992  
(Voluntary Decertification Effective April 1, 1993)

**Inactive MCOs**

COMP, Inc. (Woodland Park)  
Certification # 910107  
Effective December 3, 1991  
(Voluntary Inactive Status Effective April 1, 1995)

Health Future, L.L.C.  
Certification # 910104  
Effective July 8, 1991  
(Voluntary Inactive Status Effective May 11, 1998)

Health Masters of Oregon, Inc.  
Certification # 900201  
Effective December 26, 1990  
(Voluntary inactive Status Effective June 22, 1998)

Mid-Valley IPA  
Certification # 960202  
Effective October 24, 1996  
(Voluntary Inactive Status Effective June 22, 1998)

SureCare Plus  
Certification # 950203  
Effective August 16, 1995  
(Voluntary Inactive Status Effective December 31, 1998)

Note: Data are as of February 4, 1999

Appendix C

**Oregon Department of Consumer & Business Services  
Workers' Compensation Division  
Current & Past MCO Contracts with Insurers**

Group Name	Group #	Insurer #	Insurer	MCO	Effective Date	Cancel Date	MCO GSA(s)
		0017	Agricomp Insurance Company (dba Paula Insurance Company)	Providence	02/01/1995		1,4,5,6,7,9
		0102	American Risk Funding Insurance Company (dba Hoffman Construction Co. & Subsidiaries	Providence	09/01/1994		1,4,5,6,7,9
Teledyne Group	215	0110 0112 0113 0114	Argonaut Insurance Company Argonaut Southwest Ins Company Argonaut Midwest Insurance Company Argonaut Northwest Ins Company	OHS Providence	05/01/1993 08/01/1993	3,4,5,6,7,8,9,10,11,12,13,14	1,4,5,6,7,9
		0530	Business Insurance Company	CareMark Kaiser Providence	07/01/1996 07/01/1995 10/01/1997		1,4,5,10 4,5 1,4,5,6,7,9
CIGNA Group	901	0011 0012 0022 0027 0130 0131 0152 0445 0460 0700	CIGNA Fire Underwriter Insurance Company CIGNA Property & Casualty Insurance Company Alaska Pacific Assurance Company CIGNA Insurance Company Bankers Standard Fire/Marine Bankers Standard Insurance Company Century Indemnity Company Indemnity Insurance Company of North America Insurance Company of North America Pacific Employers Insurance Company	Providence	04/01/1992		1,4,5,6,7,9
CNA Insurance Group	218	0035 0142 0160 0180 0190 0260 0280 0341 0500 0600 0619 0863 0875 0945	American Casualty Company of Reading, PA Boston Old Colony Insurance Company Commercial Insurance of Newark, NJ Continental Casualty Company Continental Insurance Company Fidelity & Casualty Company of NY Firemens Insurance Company of Newark, NJ Glens Falls Insurance Company Kansas City Fire/Marine Insurance National Fire Insurance Company of Hartford Niagara Fire Insurance Company Transcontinental Insurance Company Transportation Insurance Company Valley Forge Insurance Company	OHS	05/01/1994	3,4,5,6,7,8,9,10,11,12,13,14	
Country Companies	50	0192 0193	Country Casualty Insurance Company Country Mutual Insurance Company	Providence	02/01/1992		1,4,5,6,7,9
Employers Insurance of Wausau	63	0240 0611 0612 0613 0951 0952	Employers Insurance of Wausau Nationwide Property & Casualty Insurance Company Nationwide Mutual Fire Insurance Nationwide Mutual Insurance Wausau Business Insurance Company Wausau Underwriters Insurance Company	Providence Kaiser	02/15/1992 08/02/1994	01/01/1999	1,4,5,6,7,9 4,5
Farmers Insurance Group	69	0250 0254 0572 0900	Farmers Insurance Exchange Farmers Insurance Company of OR Mid-Century Insurance Company Truck Insurance Exchange	Providence	10/01/1994		1,4,5,6,7,9
Firemans Fund Group	76	0032 0060 0120 0270 0272 0606	American Automobile Insurance Company American Insurance Company Associated Indemnity Corporation Firemans Fund Insurance Company Firemans Fund Insurance Company of Wisconsin National Surety Corporation	Providence	10/01/1991		1,4,5,6,7,9
		0295	Fremont Indemnity Company (Fremont Compensation Insurance Group)	Providence	01/01/1997		1,4,5,6,7,9

Appendix C

Group Name	Group #	Insurer #	Insurer	MCO	Effective Date	Cancel Date	MCO GSA(s)
		0925	Grocers Insurance Company (was United Employer Insurance Company)	Providence Kaiser	03/01/1991 01/01/1993		1,4,5,6,7,9 4,5
Crum & Forster	52	0450 0452	Industrial Indemnity Company Industrial Indemnity Company of the Northwest	Providence	12/18/1990		1,4,5,6,7,9
Liberty Mutual Companies	111	0277 0514 0515 0516 0520	The First Liberty Insurance Corporation Liberty Insurance Corporation Liberty Mutual Fire Insurance Company Liberty Northwest Insurance Corporation Liberty Mutual Insurance Company	First Health Group	08/15/1997		1,4,6,7,9,10,13
		0516	Liberty Northwest Insurance Corporation	CareMark CareMark (for Simpson) Paper & Timber) COMP, Inc. Health Future, L.L.C. Kaiser OHS OHSU Providence	10/01/1991 10/01/1991 02/01/1996 06/02/1992 04/26/1992 04/01/1992 09/15/1992 04/01/1997 06/01/1991	01/15/1996 10/31/1996 04/01/1995 05/11/1998	1,4,5,10 1,4,5,10 4 3,6,7,9,12 4,5 3,4,5,6,7,8,9,10,11,12,13,14 4 1,4,5,6,7,9
		0515	Liberty Mutual Fire Insurance Company (for UPS)	Complete Quality Care	07/07/1997		4,5,7,9
Orion Group, Inc.	926	0168 0217 0267 0825	The Connecticut Indemnity Company Employee Benefits Insurance Company Fire & Casualty Insurance Company of CT Security Insurance Company of Hartford	Providence Kaiser	04/01/1992 01/01/1993		1,4,5,6,7,9 4,5
		0770	Reliance National Insurance (on behalf of Cascade Auto Glass)	Providence	10/01/1996		1,4,5,6,7,9
Reliance Group Inc	159	0750 0770 0771	Reliance National Indemnity Co (on behalf of ARAMARK) Reliance Insurance Company (on behalf of ARAMARK) Reliance National Ins Co (on behalf of ARAMARK)	Providence	02/01/1998		1,4,5,6,7,9
		0771	Reliance National Insurance (on behalf of Rhone-Poulenc, Inc.)	Providence	09/01/1996	01/01/1997	1,4,5,6,7,9
Safeco Insurance Group	163	0283 0330 0795 0796	First National Insurance Comp of America General Insurance Company of America Safeco Insurance Company of America Safeco Insurance Company of Illinois	Kaiser Providence	06/01/1993 10/01/1991		4,5 1,4,5,6,7,9
		0001	SAIF Corporation	CareMark COMCO Providence Kaiser OHS OHSU Health Future, L.L.C. SureCare Plus ODS Complete Quality Care	07/01/1991 10/01/1996 12/20/1991 07/01/1993 08/01/1994 07/15/1996 03/31/1992 06/20/1996 07/01/1997 08/31/1998	06/30/1997 08/31/1996 12/31/1998	1,4,5,10 11 1,4,5,6,7,9 4,5 3,4,5,6,7,8,9,10,11,12,13,14 4 3,6,7,9,12 7,8 1,2,4,5,6,7,8,9,10,13 4,5,7,9
		0810	St Paul Fire & Marine Ins Co (on behalf of US Bancorp)	Providence	02/01/1999		1,4,5,6,7,9
		0855	Tokio Marine & Fire Insurance Company, Ltd.	Kaiser Providence	11/18/1996 05/01/1996	10/16/1997	4,5 1,4,5,6,7,9
Travelers Casualty & Surety	948	0009 0010 0013 0014 0015	The Travelers Casualty & Surety Company of America The Travelers Casualty & Surety Company The Travelers Casualty & Surety Company of IL Travelers Casualty Company of CT Travelers Commercial Insurance Company				

# Appendix C

Group Name	Group #	Insurer #	Insurer	MCO	Effective Date	Cancel Date	MCO GSA(s)
		0128	Automobile Insurance Company of Hartford				
		0154	Charter Oak Fire Insurance				
		0252	Farmington Casualty Company				
		0618	Nippon Fire/Marine Insurance Company Limited				
		0740	Phoenix Insurance Company				
		0830	Standard Fire Insurance Company				
		0880	Travelers Indemnity Company				
		0881	Travelers Indemnity Company of America				
		0882	Travelers Indemnity Company of IL				
		0890	Travelers Insurance Company				
				Providence	02/01/1994		1,4,5,6,7,9
U.S. Fidelity & Gauranty Group	196	0261	Fidelity & Gauranty Insurance Company				
		0262	Fidelity/Guaranty Insurance Underwriter				
		0930	United States Fidelity & Guaranty Company				
				Providence	08/01/1995	02/01/1999	1,4,5,6,7,9

**Oregon Department of Consumer & Business Services  
Workers' Compensation Division  
Current & Past MCO Contracts with Self-Insurers**

Insurer #	Self-insurer	MCO	Effective Date	Cancel Date	MCO GSA(s)
1020	ABM Industries Incorporated (American Building Maintenance)	Kaiser	08/01/1992		4,5
1633	Adventist Health System (Portland Adventist Medical Center)	CareMark	08/01/1991		1,4,5,10
1810	Beaverton School District	Providence	02/01/1992		1,4,5,6,7,9
1090	Boise Cascade - LaGrande/Elgin/Joseph	OHS	03/01/1994		3,4,5,6,7,8,9,10,11,12,13,14
1090	Boise Cascade - St. Helens	OHS	09/01/1992	04/01/1996	3,4,5,6,7,8,9,10,11,12,13,14
1095	Borden Inc (formerly Holsom/Ventura Foods)	Providence	10/01/1991	04/01/1997	1,4,5,6,7,9
1100	Boyd Coffee Company	Kaiser	02/01/1996		4,5
1181	Coca-Cola Enterprises, Inc. (BCI Coca-Cola Bottling Company of Los Angeles)	Providence	01/01/1998		1,4,5,6,7,9
1113	Canron Fabrication Corporation (Canron Construction Corp.)	Kaiser	08/01/1993	07/01/1997	4,5
1077	City of Beaverton	Kaiser	12/31/1997		4,5
		OHSU	01/14/1998		4
1111	CIS Workers Compensation Group	OHS	11/01/1998		3,4,5,6,7,8,9,10,11,12,13,14
1635	City of Portland	Kaiser	10/01/1994		4,5
		CareMark	08/01/1991	07/31/1992	1,4,5,10
		CareMark	10/01/1994		1,4,5,10
1170	Clackamas County Risk Management	Kaiser	08/01/1995	01/01/1997	4,5
1201	Crystal Springs Packing Company, Incorporated	OHS	10/30/1991	08/01/1996	3,4,5,6,7,8,9,10,11,12,13,14
1207	Dayton Hudson Corporation	Providence	05/01/1997		1,4,5,6,7,9
1260	ESCO Corporation	Kaiser	03/01/1992		4,5
		Caremark	10/01/1994	07/06/1995	1,4,5,10
1269	Evangelical Lutheran Good Samaritan Society	Providence	05/01/1997		1,4,5,6,7,9
1285	Fleetwood Travel Trailers of Oregon, Incorporated	OHS	12/23/1998		3,4,5,6,7,8,9,10,11,12,13,14
1311	Fred Meyer, Incorporated	Providence	04/01/1992		1,4,5,6,7,9
		Kaiser	04/01/1992		4,5
1312	Freightliner Corporation	CareMark	04/15/1995		1,4,5,10
1337	Gold Dust West, Inc.	Providence	10/15/1998		1,4,5,6,7,9
1614	Hannifin Corp. (Atlas Cylinder Division)	CareMark	09/11/1993	03/31/1995	1,4,5,10
1374	Hillhaven Corp (Vencor, Inc.)	Providence	08/15/1993	03/20/1995	1,4,5,6,7,9
1397	Jackson County	OHS	12/01/1993		3,4,5,6,7,8,9,10,11,12,13,14
1398	James River Corporation	CareMark	02/01/1995	06/30/1996	1,4,5,10
		Kaiser	04/01/1995	01/01/1998	4,5
		Providence	08/01/1997		1,4,5,6,7,9

Appendix C

Insurer #	Self-insurer	MCO	Effective Date	Cancel Date	MCO GSA(s)
1405	Jeld-Wen (Windmill Inns of America)	OHS	11/25/1992	12/31/1994	3,4,5,6,7,8,9,10,11,12,13,14
1420	Kaiser Foundation Health Plan & Hospital	Kaiser	09/01/1994		4,5
1422	Kelly Services, Incorporated	OHS	04/01/1998		3,4,5,6,7,8,9,10,11,12,13,14
1511	Legacy Health System	CareMark	10/01/1991		1,4,5,10
1486	Marriott Corporation (School Food Service Division)	Kaiser	01/01/1996	01/01/1997	4,5
1500	May Department Stores	CareMark	11/01/1991	10/31/1992	1,4,5,10
		Providence	11/01/1992		1,4,5,6,7,9
1509	Medite Corporation	OHS	12/10/1991	07/01/1995	3,4,5,6,7,8,9,10,11,12,13,14
1530	Multnomah County	Kaiser	08/01/1997		4,5
		Providence	08/01/1997		1,4,5,6,7,9
1540	Nabisco Brands, Inc./Oregon Sales & Warehouse Division	OHS	04/01/1993		3,4,5,6,7,8,9,10,11,12,13,14
1540	Nabisco Brands, Inc./Biscuit Division	OHS	11/20/1991		3,4,5,6,7,8,9,10,11,12,13,14
1540	Nabisco Brands, Inc./Portland Distribution Center	OHS	01/14/1992		3,4,5,6,7,8,9,10,11,12,13,14
1547	NIKE	Providence	01/01/1997		1,4,5,6,7,9
1550	Nordstrom, Inc.	Kaiser	08/01/1996	01/01/1998	4,5
		Providence	02/01/1993		1,4,5,6,7,9
1732	Norpac Foods, Inc.	Kaiser	08/01/1992		4,5
1732	Norpac Foods, Inc. (Stone Mill Foods)	Kaiser	02/01/1993	01/01/1997	4,5
1581	Owens-Illinois (Owens-Brockway)	Providence	05/01/1994		1,4,5,6,7,9
		Kaiser	05/01/1994	01/01/1995	4,5
1440	KMart until 4/94 ( 1 contract under name of Payless Corporation)				
1749	Thrifty Payless (from 4/94)	Providence	09/01/1992		1,4,5,6,7,9
1642	Precision Castparts Corp.	Caremark	10/15/1993	05/31/1996	1,4,5,10
1786	Pictsweet (United Foods, Inc.)	Providence	05/01/1997		1,4,5,6,7,9
		Kaiser	05/13/1997	01/01/1998	4,5
1722	Providence Health Systems (Sisters of Providence in Oregon)	Providence	04/01/1995		1,4,5,6,7,9
1667	Ryder System, Inc. (Commercial Carriers, Inc.)	CareMark	08/01/1992	03/03/1999	1,4,5,10
1669	Sabroso Company	OHS	07/18/1995		3,4,5,6,7,8,9,10,11,12,13,14
1483	Salem/Keizer School District (Marion County School District #24J)	Kaiser	02/26/1997	12/31/1998	4,5
		OHS	07/01/1998		3,4,5,6,7,8,9,10,11,12,13,14
1663	Safeway, Inc. (Safeway Stores)	Kaiser	01/01/1992		4,5
		Providence	01/01/1992		1,4,5,6,7,9
1726	Special Districts Association of Oregon	OHS	01/01/1996		3,4,5,6,7,8,9,10,11,12,13,14
1729	Stanley Hydraulic Tools, Inc. (The Stanley Works)	Providence	03/01/1997		1,4,5,6,7,9

Insurer #	Self-insurer	MCO	Effective Date	Cancel Date	MCO GSA(s)
1745	Tektronix, Inc.	Kaiser	01/01/1993		4,5
1755	Tri-County Metropolitan Transportation (TriMet)	Providence	03/01/1991		1,4,5,6,7,9
1768	U.S. Bancorp	Providence	08/01/1991	04/01/1994	1,4,5,6,7,9
1605	US West Communications, Inc.	Providence	10/01/1990		1,4,5,6,7,9
1787	United States Bakery	Providence	11/01/1991		1,4,5,6,7,9
1801	Vermont American Corp. (Credo Tool Company)	Kaiser	05/01/1992	01/01/1998	4,5
1809	Washington County	Providence	07/01/1991	05/01/1993	1,4,5,6,7,9
1846	Willamette View, Inc.	Providence	04/01/1991		1,4,5,6,7,9

Note: Data are as of February 4, 1999.

### Summary of related research

This study is similar to a 1995 department study. The methodology used in the 1995 study was more limited than in the present study. It was a cross-sectional study, in contrast to this longitudinal, closed claims study. The 1995 study did find that hospital services represented a significantly smaller proportion of the medical payments of covered workers. It also found that, although the majority of workers were satisfied with their medical treatment, a significantly greater portion of those treated through managed care were dissatisfied with their care.

Studies have been conducted on the impact of workers' compensation managed care programs in Florida and Washington. A Milliman & Robertson, Inc., report of the Florida managed care pilot programs found evidence of the potential for managed care to control workers' compensation claims costs. The study evaluated two pilot programs. In the first program, more than 17,000 state government employees in southern Florida were split into two groups. One group received managed care, while the control group received medical care under the traditional fee-for-service arrangement. Average claim costs in the managed care group were 54 percent less than the control group. The lower costs were attributed to lower payments, a less costly mix of services, lower utilization of hospital services, lower incidence of indemnity claims, and lower utilization and less costly use of physician services.

The second Florida program involved 7,500

privately employed workers whose medical care was obtained through a preferred provider organization. This group was compared to two control groups. The results showed that the average claim costs for the managed care group were 23 percent below those of the control groups. The reduction was attributed to fewer hospital services and a lower incidence of indemnity claims.

The workers in the Florida programs were surveyed to determine their perceptions of their medical care. The response rates were over 20 percent. The results found that participants in managed care were satisfied with the treatment they received and overall quality of care, but they were less likely to be satisfied than those not participating in managed care.

The report's authors noted some limitations on the lessons that could be learned from the Florida programs. First, because the managed care programs studied were pilot projects, there may have been incentives to produce substantial cost savings, savings that may not be normal for other programs or over longer periods. Second, the programs covered small, fairly homogeneous groups. Third, the evaluation did not capture all payments on long-duration claims. The Florida study differed from Oregon's study in that most of the claims were medical-only claims, claims excluded from Oregon's study.

Washington's Workers' Compensation Managed Care Pilot also demonstrated significant cost savings among program

participants. Washington is a monopolistic state-fund state, so the state acts as the only workers' compensation insurer, other than self-insured employers. This study compared the employees of 120 firms participating in a managed care pilot program to the employees of 392 firms selected in a matched control-group design. The managed care organizations that handled the claims from the participating employers were paid capitation payments rather than fee-for-service payments. Because of this, the managed care plans submitted "shadow bills" to the state; these were used for the medical bill data for the managed care patients in the study.

The study's results showed that total medical costs averaged 27 percent less for participants in the managed care pilot project. The use of shadow bills may have led to a small overstatement (1 - 3 percent) of the savings. Timeloss was less for the participants, but the differences were not significant. There were no differences in permanent disability awards.

In the Washington study, injured workers were surveyed by telephone six weeks after their injuries. Those with compensable claims (at least four lost work days) were surveyed again after six months. Response rates were about 50 percent for the first survey and 60 percent for the second survey. The results of the second survey showed no significant differences in most of the functional and medical outcomes. The managed care participants were, however, less satisfied with their access to care.

## Claims and demographic characteristics

The claims in the study were examined by claims and demographic characteristics. The demographic characteristics included gender, age, education, occupation, weekly wage, and tenure. Survey respondents provided marital status and race data. Employer information included industry, geographic service area, claims rate, and average number of employees. Litigation, awards, reconsideration, claim disposition agreements and the use of vocational assistance and return-to-work programs were also examined.

The injuries were coded according to the Occupational Injury and Illness Classifica-

tion System (OIICS), which the department uses for describing the nature of workers' injuries, the injured body parts, and the events that caused the injuries. The following categories were used in comparisons of the study groups and as variables in the claims cost analysis.

The tables below show the distributions of these claims and demographic variables for the study groups. The distributions are from weighted data, using the benchmark factors to represent the overall population (see appendix F).

The tables also include p values for statisti-

cal proportional differences tests between pairs of study groups. (The p value indicates the probability the difference between the two percentages is zero. A p value less than or equal to 0.05 is considered significant.) The first column of p values is for the differences between the distributions of the not covered and covered groups. The second column of p values is for the differences between the covered, not enrolled and enrolled groups; the third column of p values is for the differences between the below- and above-threshold groups.

### Nature, body part, and event categories

<u>Category</u>	<u>Code(s)</u>	<u>Description</u>
Nature1	01	Traumatic injuries to bones, nerves, spinal cord
Nature2	02	Sprains, strains, and tears
Nature3	03	Open wounds
Nature4	08	Multiple injuries
Nature5	Other 0	Other traumatic injuries
Nature6	Other	All diseases, other disorders, and nonclassified injuries
Part1	23	Back, including the spine, spinal cord
Part2	Other 2	Trunk, except the back
Part3	34	Fingers, fingernails
Part4	Other 3	Other upper extremities
Part5	41	Legs
Part6	Other 4	Other lower extremities
Part7	Other	All other body parts, including nonclassified parts
Event1	0	Contact with objects and equipment
Event2	10-12	Fall or jump to lower level
Event3	13-19	Fall to same level
Event4	2	Bodily reaction, overexertion
Event5	4	Transportation accident
Event6	Other	All other events, including nonclassified events

## Claimant characteristics

### Gender

	Total	Not			Covered			Enrolled		
		covered	Covered	P value	Not enrolled	Enrolled	P value	Below threshold	Above threshold	P value
Women	31.7%	33.4%	29.9%	0.001	33.7%	28.7%	0.008	27.1%	31.3%	0.022
Men	68.3%	66.6%	70.1%	0.001	66.3%	71.3%	0.008	72.9%	68.7%	0.022
Total	100%	100%	100%		100%	100%		100%	100%	

### Age

	Total	Not			Covered			Enrolled		
		covered	Covered	P value	Not enrolled	Enrolled	P value	Below threshold	Above threshold	P value
Under 18	1.3%	1.3%	1.3%	0.872	0.7%	1.5%	0.026	1.9%	0.7%	0.006
18-25	17.0%	18.2%	15.7%	0.004	14.9%	15.9%	0.487	18.6%	11.5%	0.000
26-35	27.3%	27.2%	27.4%	0.882	26.3%	27.7%	0.439	30.1%	23.7%	0.000
36-45	28.7%	28.6%	28.7%	0.981	26.1%	29.4%	0.063	26.4%	34.6%	0.000
46-65	24.7%	23.6%	25.9%	0.024	30.8%	24.4%	0.001	21.9%	28.8%	0.000
66 & older	1.0%	1.0%	1.1%	0.666	1.2%	1.0%	0.625	1.2%	0.8%	0.338
Total	100%	100%	100%		100%	100%		100%	100%	

The table excludes claims with missing age data.

### Marital status

	Total	Not			Covered			Enrolled		
		covered	Covered	P value	Not enrolled	Enrolled	P value	Below threshold	Above threshold	P value
Married	64.8%	65.5%	64.1%	0.412	66.5%	63.4%	0.281	62.5%	64.8%	0.433
Separated	20.3%	20.8%	19.8%	0.489	20.4%	19.6%	0.748	17.9%	22.5%	0.063
Single	14.8%	13.7%	16.1%	0.060	13.1%	17.0%	0.065	19.6%	12.7%	0.002
Total	100%	100%	100%		100%	100%		100%	100%	

The Married category includes married and unmarried couples.

The Separated category includes separated, divorced, and widowed workers.

The Single category includes workers who have never been married.

### Race

	Total	Not			Covered			Enrolled		
		covered	Covered	P value	Not enrolled	Enrolled	P value	Below threshold	Above threshold	P value
White	86.6%	87.7%	85.4%	0.056	83.1%	86.0%	0.200	86.1%	86.0%	0.978
Hispanic	5.2%	5.0%	5.5%	0.527	4.5%	5.8%	0.302	5.3%	6.7%	0.338
Other	8.2%	7.3%	9.1%	0.063	12.4%	8.2%	0.029	8.7%	7.3%	0.412
Total	100%	100%	100%		100%	100%		100%	100%	

The Hispanic category includes Hispanics of all races.

## Education

	Total	Not			Covered			Enrolled		
		covered	Covered	P value	Not enrolled	Enrolled	P value	Below threshold	Above threshold	P value
Less than HS grad	13.5%	13.7%	13.3%	0.653	11.0%	13.9%	0.055	13.8%	14.2%	0.816
HS grad	55.9%	56.8%	54.9%	0.160	51.8%	55.8%	0.090	56.4%	54.9%	0.521
Some college	22.4%	21.9%	23.0%	0.343	28.6%	21.4%	0.001	21.2%	21.8%	0.781
College grad	8.1%	7.5%	8.8%	0.097	8.6%	8.8%	0.887	8.6%	9.1%	0.664
Total	100%	100%	100%		100%	100%		100%	100%	

Education data are not available for 26 percent of the claims. The table excludes these claims.

## Occupation

	Total	Not			Covered			Enrolled		
		covered	Covered	P value	Not enrolled	Enrolled	P value	Below threshold	Above threshold	P value
Professional, managerial	4.9%	4.5%	5.3%	0.141	4.6%	5.5%	0.335	4.8%	6.6%	0.053
Administrative support	5.9%	6.0%	5.9%	0.908	6.0%	5.9%	0.921	4.9%	7.6%	0.007
Sales occupations	6.1%	6.3%	5.9%	0.438	6.0%	5.9%	0.853	5.5%	6.5%	0.295
Service occupations	16.7%	18.9%	14.2%	0.000	14.8%	14.0%	0.552	15.0%	12.3%	0.045
Farm labor, managers	3.8%	3.5%	4.1%	0.198	2.2%	4.7%	0.000	4.9%	4.3%	0.521
Foresters, loggers, fishers	2.7%	2.3%	3.2%	0.014	4.3%	2.9%	0.083	3.4%	2.1%	0.043
Mechanics, repairers	5.5%	4.8%	6.3%	0.006	6.0%	6.4%	0.716	6.2%	6.7%	0.605
Construction trades	8.1%	7.8%	8.5%	0.231	3.4%	10.1%	0.000	10.9%	8.8%	0.080
Precision production	3.4%	3.6%	3.1%	0.288	2.5%	3.3%	0.178	2.9%	4.1%	0.120
Operators, exc. transport	11.8%	12.4%	11.1%	0.109	11.1%	11.1%	0.993	9.2%	14.5%	0.000
Transport operators	11.2%	10.2%	12.5%	0.002	19.3%	10.4%	0.000	10.9%	9.5%	0.268
Laborers, exc. farm	19.9%	19.9%	19.9%	0.959	19.8%	20.0%	0.900	21.6%	17.1%	0.004
Total	100%	100%	100%		100%	100%		100%	100%	

The table excludes claims with missing occupation data.

## Weekly wage

	Total	Not			Covered			Enrolled		
		covered	Covered	P value	Not enrolled	Enrolled	P value	Below threshold	Above threshold	P value
Less than \$200	10.2%	11.7%	8.5%	0.000	8.6%	8.5%	0.889	9.8%	6.2%	0.001
\$200 - 299	18.7%	18.8%	18.6%	0.795	17.8%	18.8%	0.547	20.0%	16.6%	0.028
\$300 - 399	19.7%	20.2%	19.1%	0.263	18.3%	19.4%	0.523	18.5%	20.9%	0.134
\$400 - 499	16.6%	17.4%	15.8%	0.077	13.8%	16.4%	0.070	16.3%	16.7%	0.810
\$500 - 599	12.6%	11.6%	13.6%	0.009	12.4%	14.0%	0.258	14.2%	13.6%	0.623
\$600 - 699	8.9%	8.2%	9.7%	0.026	8.6%	10.0%	0.210	8.3%	13.0%	0.000
\$700 - 799	5.9%	5.0%	6.9%	0.001	10.1%	5.9%	0.000	6.0%	5.8%	0.845
\$800 - 899	3.2%	3.0%	3.5%	0.208	4.4%	3.2%	0.144	3.0%	3.7%	0.345
\$900 - 999	2.1%	2.2%	1.9%	0.278	2.8%	1.6%	0.062	1.6%	1.6%	0.989
\$1000 +	2.2%	2.0%	2.4%	0.328	3.0%	2.2%	0.227	2.3%	2.1%	0.700
Total	100%	100%	100%		100%	100%		100%	100%	

The table excludes claims with missing wages.

## Tenure with employer

	Total	Not			Covered			Enrolled		
		covered	Covered	P value	Not enrolled	Enrolled	P value	Below threshold	Above threshold	P value
First year	43.4%	44.5%	42.3%	0.092	38.9%	43.3%	0.040	47.2%	36.6%	0.000
2-3 years	22.7%	23.3%	22.1%	0.239	22.5%	21.9%	0.771	22.1%	21.7%	0.832
4-10 years	20.8%	19.5%	22.2%	0.009	23.5%	21.8%	0.384	20.3%	24.6%	0.022
10 + years	13.1%	12.7%	13.4%	0.430	15.2%	12.9%	0.143	10.5%	17.1%	0.000
Total	100%	100%	100%		100%	100%		100%	100%	

Tenure data are not available for 19 percent of the claims. The table excludes these claims.

## Appendix E

### Injury description

#### Nature of injury

	Total	Not covered			Covered			Enrolled		
		covered	Covered	P value	Not enrolled	Enrolled	P value	Below threshold	Above threshold	P value
1- Injuries to bones, nerves	12.3%	12.1%	12.6%	0.521	10.8%	13.1%	0.071	11.7%	15.5%	0.006
2- Sprains, strains, tears	42.9%	42.9%	42.9%	0.992	46.8%	41.8%	0.012	41.6%	42.1%	0.790
3- Open wounds	7.9%	8.4%	7.4%	0.128	6.8%	7.6%	0.439	10.1%	3.4%	0.000
4- Multiple injuries	7.3%	6.8%	7.8%	0.091	6.1%	8.4%	0.020	8.4%	8.4%	0.947
5- Other injuries	15.6%	16.3%	14.9%	0.082	14.8%	14.9%	0.950	17.5%	10.4%	0.000
6- Diseases, unknown	13.9%	13.5%	14.4%	0.268	14.7%	14.3%	0.756	10.8%	20.1%	0.000
Total	100%	100%	100%		100%	100%		100%	100%	

#### Body part

	Total	Not covered			Covered			Enrolled		
		covered	Covered	P value	Not enrolled	Enrolled	P value	Below threshold	Above threshold	P value
1- Back	24.7%	24.4%	25.0%	0.540	26.0%	24.7%	0.485	26.7%	21.4%	0.002
2- Trunk, except back	12.4%	12.3%	12.4%	0.933	13.4%	12.1%	0.336	10.7%	14.4%	0.006
3- Fingers	8.5%	8.8%	8.2%	0.378	8.0%	8.3%	0.753	9.9%	5.7%	0.000
4- Upper extremities, other	16.5%	16.8%	16.1%	0.410	15.2%	16.4%	0.411	14.7%	19.2%	0.003
5- Legs	11.8%	12.3%	11.2%	0.154	10.2%	11.5%	0.294	9.6%	14.7%	0.000
6- Lower extremities, other	9.1%	8.9%	9.3%	0.619	9.2%	9.3%	0.883	10.9%	6.8%	0.000
7- Other, unknown parts	17.0%	16.4%	17.7%	0.127	18.1%	17.6%	0.759	17.5%	17.8%	0.810
Total	100%	100%	100%		100%	100%		100%	100%	

#### Injury event

	Total	Not covered			Covered			Enrolled		
		covered	Covered	P value	Not enrolled	Enrolled	P value	Below threshold	Above threshold	P value
1- Contact with objects	22.3%	23.4%	21.0%	0.017	19.9%	21.4%	0.337	25.6%	14.4%	0.000
2- Fall to lower level	7.9%	8.2%	7.5%	0.264	7.0%	7.7%	0.494	6.9%	9.0%	0.067
3- Fall on same level	10.2%	10.7%	9.6%	0.124	9.8%	9.5%	0.810	9.8%	9.0%	0.477
4- Bodily reaction, overexertion	47.6%	47.4%	47.8%	0.744	49.0%	47.4%	0.417	42.9%	54.8%	0.000
5- Transportation accident	4.6%	4.0%	5.3%	0.008	4.2%	5.6%	0.093	5.7%	5.4%	0.695
6- Other, unknown events	7.5%	6.4%	8.8%	0.000	10.1%	8.4%	0.144	9.0%	7.4%	0.154
Total	100%	100%	100%		100%	100%		100%	100%	

## Employer characteristics

### Industry

	Total	Not covered			Covered			Enrolled		
		covered	Covered	P value	Not enrolled	Enrolled	P value	Below threshold	Above threshold	P value
Agriculture, forestry, fishing	4.2%	3.9%	4.5%	0.245	3.1%	4.8%	0.013	4.8%	4.8%	0.954
Mining	0.4%	0.4%	0.4%	0.930	0.1%	0.4%	0.040	0.4%	0.6%	0.461
Construction	10.7%	10.4%	11.1%	0.286	5.7%	12.5%	0.000	12.4%	12.7%	0.801
Manufacturing	19.6%	22.1%	17.2%	0.000	21.1%	16.2%	0.002	13.8%	21.8%	0.000
Transportation, public utilities	10.2%	10.3%	10.1%	0.679	22.2%	7.0%	0.000	6.7%	7.7%	0.321
Wholesale	4.6%	4.3%	4.8%	0.236	6.2%	4.5%	0.069	3.9%	5.8%	0.027
Retail	17.8%	21.6%	14.4%	0.000	14.6%	14.3%	0.837	13.0%	17.3%	0.002
Finance, insurance, real estate	1.1%	1.1%	1.1%	0.793	1.0%	1.1%	0.921	1.0%	1.3%	0.498
Services	16.0%	17.6%	14.6%	0.000	18.4%	13.6%	0.001	12.2%	16.8%	0.001
Local government	6.4%	8.2%	4.7%	0.000	6.6%	4.2%	0.010	3.1%	6.7%	0.000
State government	9.0%	0.2%	17.3%	0.000	1.0%	21.4%	0.000	28.8%	4.6%	0.000
Total	100%	100%	100%		100%	100%		100%	100%	

### Geographic service area

	Total	Not covered			Covered			Enrolled		
		covered	Covered	P value	Not enrolled	Enrolled	P value	Below threshold	Above threshold	P value
NW coast	1.5%	1.0%	2.0%	0.001	4.5%	1.3%	0.000	1.5%	0.9%	0.123
Central coast	1.9%	3.4%	0.3%	0.000	0.0%	0.4%	0.002	0.3%	0.4%	0.791
SW coast	2.5%	4.7%	0.1%	0.000	0.1%	0.2%	0.843	0.0%	0.3%	0.144
Portland metro	49.8%	45.3%	54.6%	0.000	61.8%	52.5%	0.000	50.1%	56.4%	0.002
N. Willamette valley	10.7%	8.3%	13.4%	0.000	14.5%	13.1%	0.322	12.9%	13.4%	0.721
C. Willamette valley	4.3%	4.2%	4.3%	0.861	1.9%	5.0%	0.000	5.8%	3.7%	0.011
S. Willamette valley	8.8%	8.1%	9.7%	0.018	6.5%	10.6%	0.000	10.1%	11.4%	0.303
Roseburg	2.8%	3.6%	1.9%	0.000	1.5%	2.0%	0.273	2.6%	1.1%	0.002
Grants Pass	5.5%	4.2%	7.0%	0.000	7.1%	7.0%	0.927	8.0%	5.4%	0.009
The Dalles	1.9%	2.7%	1.1%	0.000	0.7%	1.3%	0.130	1.4%	1.0%	0.403
Bend	4.0%	4.7%	3.3%	0.002	0.0%	4.3%	0.000	4.6%	3.8%	0.325
Klamath Falls	1.2%	1.3%	1.1%	0.374	0.6%	1.3%	0.052	1.4%	1.0%	0.261
Heppner	2.6%	4.8%	0.2%	0.000	0.0%	0.2%	0.011	0.3%	0.1%	0.127
NE Oregon	1.1%	1.4%	0.8%	0.017	0.8%	0.8%	0.914	0.7%	1.0%	0.514
SE Oregon	1.3%	2.4%	0.1%	0.000	0.0%	0.1%	0.073	0.1%	0.2%	0.662
Total	100%	100%	100%		100%	100%		100%	100%	

The table excludes claims with missing GSA data.

### Claims rate

	Total	Not covered			Covered			Enrolled		
		covered	Covered	P value	Not enrolled	Enrolled	P value	Below threshold	Above threshold	P value
0 - 2	17.2%	17.9%	16.6%	0.143	15.9%	16.8%	0.563	16.2%	17.7%	0.340
2.1 - 4	26.6%	31.6%	21.1%	0.000	21.0%	21.2%	0.897	19.1%	24.6%	0.001
4.1 - 6	23.3%	23.3%	23.2%	0.882	18.0%	24.8%	0.000	25.9%	22.9%	0.072
6.1 - 8	10.4%	8.7%	12.3%	0.000	13.9%	11.8%	0.130	11.0%	13.1%	0.125
8.1 - 10	6.1%	4.5%	7.9%	0.000	5.3%	8.7%	0.000	9.2%	7.9%	0.247
10.1 +	16.3%	14.0%	19.0%	0.000	26.0%	16.8%	0.000	18.5%	13.9%	0.002
Total	100%	100%	100%		100%	100%		100%	100%	

The claims rate is the number of accepted disabling claims per 100 workers per year.

### Average number of employees

	Total	Not covered			Covered			Enrolled		
		covered	Covered	P value	Not enrolled	Enrolled	P value	Below threshold	Above threshold	P value
1 - 10	12.5%	9.9%	15.4%	0.000	9.6%	17.2%	0.000	19.3%	13.7%	0.000
11 - 50	23.2%	22.0%	24.4%	0.018	15.5%	27.1%	0.000	29.1%	23.7%	0.002
51 - 100	10.8%	11.8%	9.7%	0.004	9.2%	9.8%	0.580	9.6%	10.3%	0.557
101 - 200	10.8%	10.7%	10.9%	0.712	9.4%	11.4%	0.085	11.0%	12.1%	0.376
201 - 500	12.2%	12.9%	11.4%	0.053	15.6%	10.2%	0.000	10.2%	10.1%	0.966
501 - 1000	6.6%	7.6%	5.5%	0.000	8.6%	4.6%	0.000	4.4%	5.1%	0.425
1001 +	23.9%	25.2%	22.6%	0.010	32.1%	19.7%	0.000	16.5%	25.0%	0.000
Total	100%	100%	100%		100%	100%		100%	100%	

## Litigation and return-to-work

### Award

	Total	Not covered			Covered			Enrolled		
		covered	Covered	P value	Not enrolled	Enrolled	P value	Below threshold	Above threshold	P value
Unknown	4.4%	4.4%	4.5%	0.787	3.9%	4.7%	0.335	3.9%	5.9%	0.026
TTD	67.1%	66.3%	68.0%	0.125	70.5%	67.3%	0.080	78.2%	49.0%	0.000
PPD	28.4%	29.3%	27.5%	0.085	25.6%	28.1%	0.163	17.9%	45.1%	0.000
Total	100%	100%	100%		100%	100%		100%	100%	

This field indicates the highest level of award.

### Reconsideration of closure

	Total	Not covered			Covered			Enrolled		
		covered	Covered	P value	Not enrolled	Enrolled	P value	Below threshold	Above threshold	P Value
No	84.2%	83.9%	84.6%	0.407	86.2%	84.1%	0.126	89.8%	74.5%	0.000
Yes	15.8%	16.1%	15.4%	0.407	13.8%	15.9%	0.126	10.2%	25.5%	0.000
Total	100%	100%	100%		100%	100%		100%	100%	

The reconsideration process is the first level of appeal of a claims closure. Reconsiderations consider the appropriateness of closures, timeloss, and PPD awards.

### Litigation

	Total	Not covered			Covered			Enrolled		
		covered	Covered	P value	Not enrolled	Enrolled	P value	Below threshold	Above threshold	P value
No	84.9%	85.4%	84.3%	0.191	84.4%	84.3%	0.987	89.8%	75.1%	0.000
Yes	15.1%	14.6%	15.7%	0.191	15.6%	15.7%	0.987	10.2%	24.9%	0.000
Total	100%	100%	100%		100%	100%		100%	100%	

“Yes” indicates appeals to the Hearings Division. Most appeals of these claims would have been appeals of original claim denials, partial denials, or appeals of reconsideration orders. Data are current as of December 1998. Future appeals will change these figures to a small degree.

### Claims Disposition Agreements

	Total	Not covered			Covered			Enrolled		
		covered	Covered	P value	Not enrolled	Enrolled	P value	Below threshold	Above threshold	P value
No	93.4%	93.3%	93.5%	0.636	94.7%	93.2%	0.085	95.4%	89.4%	0.000
Yes	6.6%	6.7%	6.5%	0.636	5.3%	6.8%	0.085	4.6%	10.6%	0.000
Total	100%	100%	100%		100%	100%		100%	100%	

### Employer-at-Injury Program

	Total	Not Covered			Covered			Enrolled		
		covered	Covered	P value	Not enrolled	Enrolled	P value	Below threshold	Above threshold	P value
No	83.0%	84.4%	81.4%	0.001	83.2%	80.9%	0.128	83.9%	75.8%	0.000
Yes	17.0%	15.6%	18.6%	0.001	16.8%	19.1%	0.128	16.1%	24.2%	0.000
Total	100%	100%	100%		100%	100%		100%	100%	

The Employer-at-Injury Program is available to workers who have an open claim, who have not been released to regular work, and who can return to a job that is part of the employer's early-return-to-work program. Assistance includes a wage subsidy, worksite modification, and obtained employment purchases. Self-insured employers are the most likely to use the EAIP.

### Vocational assistance

	Total	Not Covered			Covered			Enrolled		
		covered	Covered	P value	Not enrolled	Enrolled	P value	Below threshold	Above threshold	P value
No	97.4%	97.5%	97.2%	0.487	97.9%	97.0%	0.156	98.4%	94.7%	0.000
Yes	2.6%	2.5%	2.8%	0.487	2.1%	3.0%	0.156	1.6%	5.3%	0.000
Total	100%	100%	100%		100%	100%		100%	100%	

"Yes" indicates the worker used vocational assistance benefits. A worker is eligible for vocational assistance if the worker is not able to return to the previous employment or to any other available and suitable employment with the employer at injury, and the worker has a substantial handicap to employment. Data are current as of 3 months after claim closure.

### Preferred Worker Program

	Total	Not Covered			Covered			Enrolled		
		covered	Covered	P value	Not enrolled	Enrolled	P value	Below threshold	Above threshold	P value
No	98.8%	99.0%	98.6%	0.151	98.8%	98.5%	0.515	98.9%	97.9%	0.069
Yes	1.2%	1.0%	1.4%	0.151	1.2%	1.5%	0.515	1.1%	2.1%	0.069
Total	100%	100%	100%		100%	100%		100%	100%	

"Yes" indicates the workers used Preferred Worker benefits. Workers receive a Preferred Worker card at claim closure when they have a permanent partial disability, they have not refused suitable employment with their employer at injury, and they have not returned to work. An employer hiring a Preferred Worker may be eligible to receive a wage subsidy, worksite modification, obtained employment purchases, and an exemption from workers' compensation premiums for the Preferred Worker for three years. Data are current as of 3 months after claims closure.

## Appendix F

### Study methodology

#### Sample development

The claims in this study were accepted disabling claims for workers whose claims closed during the last four months of 1997. In Oregon, “disabling” claims are those claims for injuries in which workers lose more than three days from work, qualifying them for timeloss payments, or in which they suffer permanent disability or death. The department does not require insurers to provide basic claims data on most nondisabling (medical-only) claims, so they were not a part of the study. Permanent total disability claims and fatality claims were also excluded. Also, 932 claims with injury dates prior to July 1995 were excluded. They were excluded because of the incompleteness of the medical data, legislative changes, and the possible adverse effects of a small number of extremely costly claims on the analysis. Because of their longer duration, the costs of these claims were higher, averaging over \$40,000, compared to \$8,474 for claims in the study. The study frame interval of four months (September - December) was chosen based on sampling considerations.

The first two source files for the study sample were the determination order (DO) extract and the Claims Disposition Agreement (CDA) extract. The DO extract contains closure data from department and insurer closures; the CDA extract contains data on compromise and release dates and amounts. In Figure F-1, Tapes 6 and 10 represent the selected claims. After duplicates were removed, the remaining 9,429 claim file numbers were matched to the department’s master claims file (the megatape in Figure F-1) to obtain data on each claim.

Geographical Service Areas (GSAs) were assigned to each claim based primarily on the employer’s county and zip code from the Employer Data System (EDS). The claims lacking EDS matches were assigned a GSA based on the employer’s county and city from the master claims file. A final review was used to assign GSAs manually to the remaining claims.

#### Cost data

Timeloss dollars and days were taken from the DO extract. Permanent partial disability

costs were taken from the award extract, an extract that provides data on awards at any level (closure, litigation, etc.). The CDA settlement amounts were partitioned into timeloss costs (54.1 percent of the settlement) and PPD awards (29.3 percent); this split was based on historical information regarding the component cost distribution of settlements. (The remaining 16.6 percent of the CDA settlement was assumed to go to attorney fees and vocational rehabilitation programs. In Oregon, future medical benefits cannot be released in CDAs.) CDA timeloss dollars and the employee’s weekly wage were used to calculate timeloss days. As a result of this methodology, any claimant with a CDA after claim closure could have timeloss costs and PPD awards from both the closure and the CDA.

After reviewing the data, 20 claims were eliminated from the file. Some of these claims were nondisabling and some had large settlements, which suggested that they were permanent total disability claims. The remaining 9,409 claims represent the study frame (Tape A).

The medical cost data came from WCD Bulletin 220 medical payment data. WCD Bulletin 220 describes the medical data reporting requirements for workers’ compensation insurers in accordance with the provisions of OAR 436-009-0030(8). Insurers with at least 100 accepted disabling claims in a previous calendar year are required to provide data. Data are reported quarterly. Insurers are required to report information on all payments made during the quarter for medical services covered by the department’s fee schedules. Covered services include anesthesiology, surgery, radiology, pathology and laboratory, medicine, physical medicine, evaluation and management, Oregon-specific codes, and hospital services. Some insurers, such as SAIF, voluntarily submit data for all medical services. As a result of this complete reporting, SAIF’s claims appear to have above-average medical costs.

Of the 9,409 claims on Tape A, 7,294 claims matched the medical data (Tape B). Most of SAIF’s claims matched. A lesser percentage of claims from private insurers matched, while about half of the claims from self-in-

sured employers matched. To account for this bias, six benchmark factors (BMFs) were calculated (see Table F-1). For each of the six groups, the BMFs were computed by dividing the number of claims on Tape A by the number on Tape B. These BMFs were used throughout the analyses so the results would represent all of the claims in the study frame.

The medical payment data were summed to generate the total reported medical cost for each claim. Also for each claim, the pay-

**Table F-1. Benchmark factors**

	Not covered	Covered
SAIF	1.035	1.035
Private insurers	1.315	1.277
Self-insured	2.772	1.509

ments were summed by the ICD-9 codes on the payment records. The ICD-9 code (International Classification of Diseases, 9th Revision) provides a succinct description of the injury or illness being treated. The ICD-9 code with the highest cost was assigned to the claim. These ICD-9s were used to control for severity differences between groups (see Appendix J).

The medical payment data were also summed by service date. The percentage of the medical payments made prior to MCO enrollment was calculated for each worker.

During 1998, two additional quarters of medical data (quarters are based on payment dates) became available. For services performed prior to the end of 1997, additional medical data was accumulated with Tape C to create Tape F, a file of all medical records matching claims in the study. The ICD-9 code and total medical payments were recalculated for each claim.

#### Study groups

The claimants were stratified into six study groups. The “covered” group consists of the workers covered by an MCO contract between the insurer and an MCO. The “not covered” group consists of the workers not covered by such a contract. All claimants in the study were in one of these two groups.

FIGURE F-1  
SAMPLE DEVELOPMENT

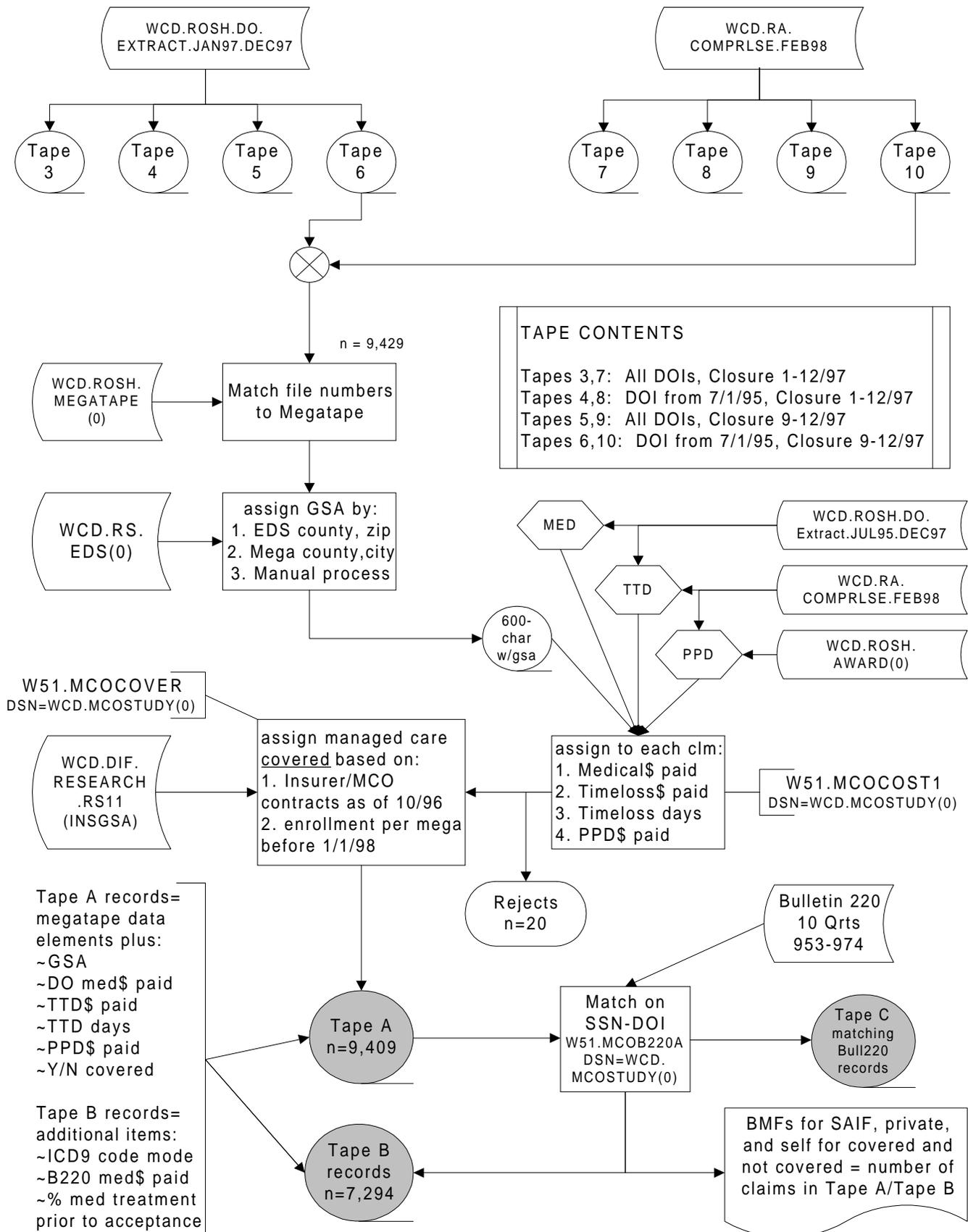


FIGURE F-2  
ENROLLMENT AND MEDICAL  
DATA COLLECTION

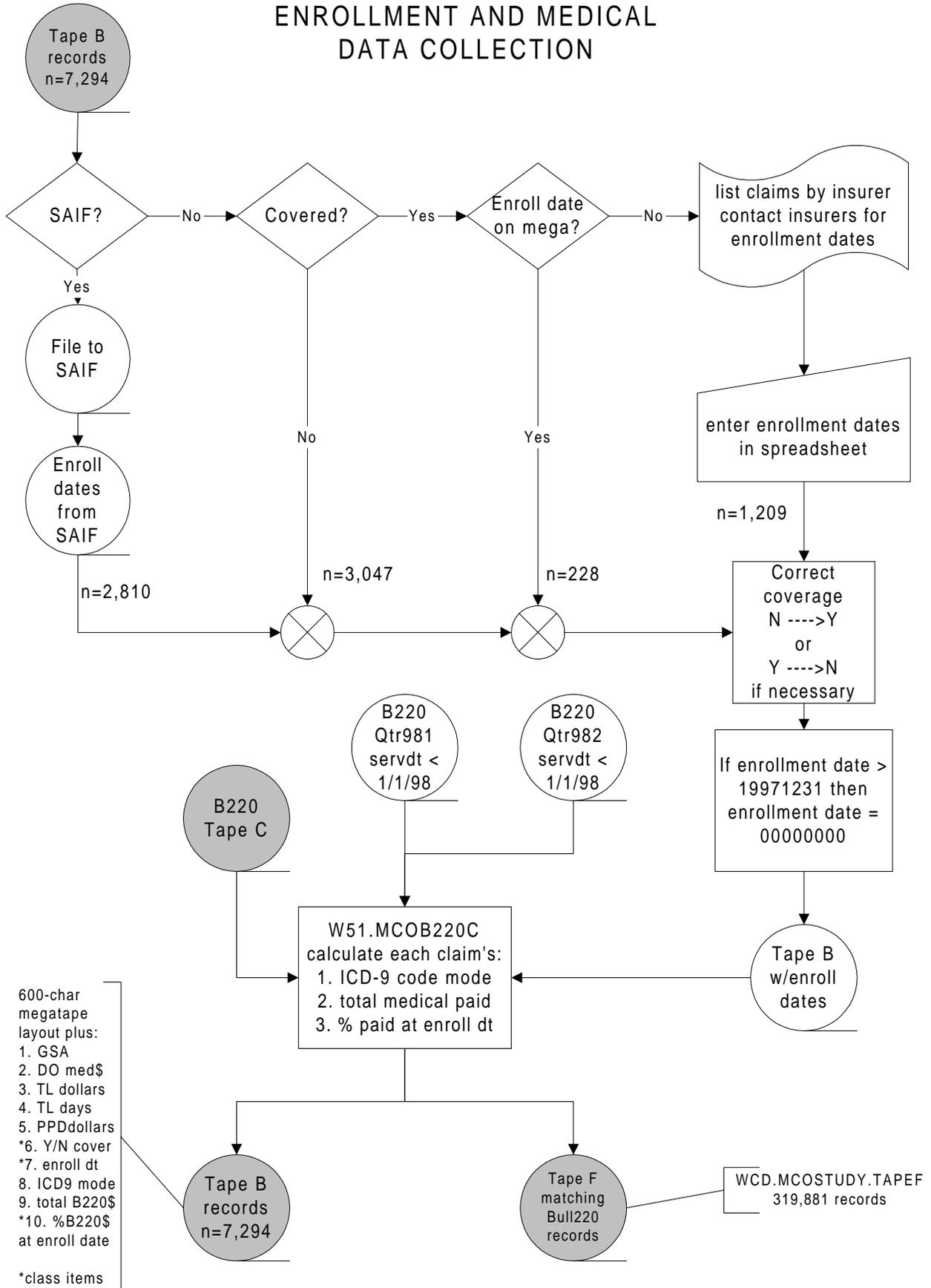
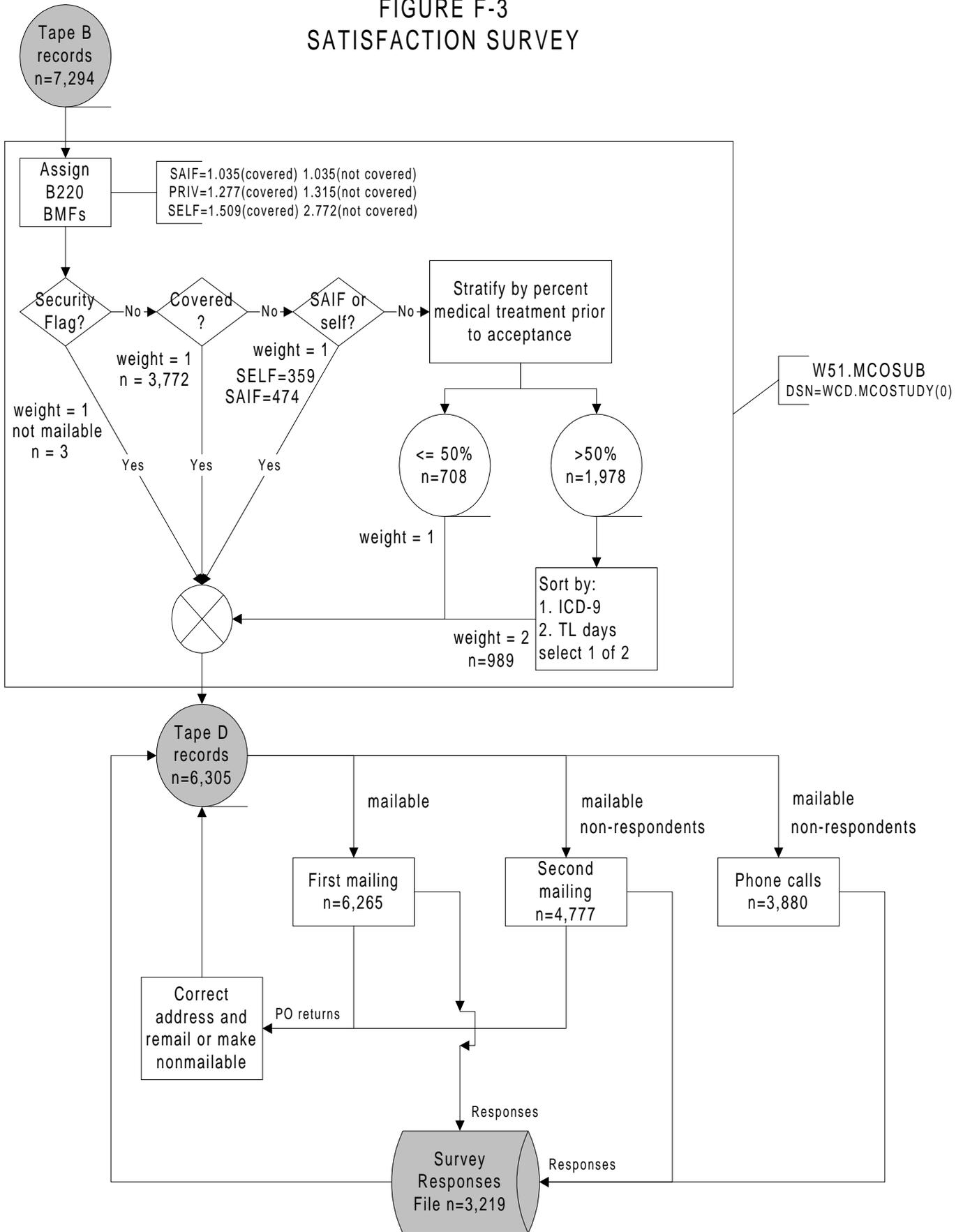


FIGURE F-3  
SATISFACTION SURVEY



## Appendix F

Coverage was determined primarily by MCO contracts with insurers in place as of October 1996, a midpoint of the time frame of the study. Any claim with an enrollment date was also considered covered, since enrollment is not possible without coverage.

The covered workers were divided into two categories. The “enrolled” group consists of the workers who were formally enrolled in an MCO. This means the workers received notification from their insurers directing them to the MCO provider panels for continued medical care. Most covered claimants were enrolled at the time of claim acceptance. Covered workers who were not enrolled fall into the “covered, not enrolled” group.

To determine if and when enrollment occurred, insurers were contacted and asked to provide enrollment dates. SAIF transmitted enrollment data electronically (see Figure F-2). For the other insurers, the department prepared lists of the claims covered by a managed care contract for which enrollment dates were not recorded on the master claims file. The insurers used these lists to supply the department with enrollment dates. If it was learned during collection of enrollment dates that the coverage flag was incorrect, it was corrected. If the enrollment date was after 1997, it was set to “not enrolled.”

Finally, enrolled workers were divided into two groups. Those in the “above threshold” group are the workers for whom medical payments for services provided after the

enrollment date generated at least 50 percent of the total medical cost. Only 37 percent of the enrolled workers fell into this group. The other enrolled claimants are in the “below threshold” group. This split was made because one of the original goals of the study was to compare the above threshold study group to the not covered study group.

### Satisfaction survey

The injured worker medical treatment satisfaction survey was developed to assess workers’ satisfaction with the medical care they received after their injuries. The survey was designed to assess the satisfaction of injured workers in four areas: medical treatment, access to care, return-to-work experience, and functional outcomes of care (see Appendix H for the survey and Appendix I for the responses). The 7,294 claims were more than enough for the desired study confidence levels, so a subsample of the claimants was chosen. Claims were eligible for subsampling if the claimants were in the not covered study group, were insured by private insurers, and incurred most of their medical treatment costs prior to insurer acceptance of the claim. The 1,978 claims meeting these conditions were sorted by ICD-9 diagnosis code and timeloss days. Every second claim was then selected for the survey and assigned a subsampling weight of 2. This methodology reduced the number of surveyed workers to 6,305.

The survey was mailed to the sample of in-

jured workers, along with instructions and a postage-paid envelope for its return. Some claimants had more than one injury in the survey frame (Tape D). These people were sent just one survey form, for the claim with the latter date of injury; the earlier claims were marked “Not Mailable” for the data collection phase of the survey and treated as nonresponses. Follow-up letters and surveys were sent to workers who did not respond to the first mailing. A telephone follow-up was then conducted as a third attempt to increase response to the survey. In the end, 3,219 useable surveys were collected. The adjusted response rate was 54 percent, just below the target response rate of 55 percent.

Because of the use of benchmark factors and subsampling, the surveyed workers were partitioned into 13 groups (see Table F-2). To account for nonresponse in each of these 13 groups, nonresponse adjustment factors (NRAFs) were calculated. For each group, the NRAF was the number of claimants surveyed divided by the number of responses. Therefore, in analyses, the survey responses weighted by the NRAFs are representative of the entire group of surveyed workers. Also, the survey responses weighted by the product of the three weights (BMFs, subsample weights, and NRAFs) are representative of the entire study frame. For statistical analyses, the survey responses were weighted by the product of the three weights and fraction (3219/9409). These weighted responses are presented in Appendix I.

**Table F-2. Survey responses and adjustment factors**

	Total	Not covered	Covered, not enrolled	Enrolled, below thres.	Enrolled, above thres
<u>SAIF</u>					
Number of survey responses	1,448	170	126	699	453
Number of NRAF-weighted responses	2,810	317	249	1,432	812
Number of product-weighted responses	2,908	328	258	1,482	840
NRAF		1.865	1.976	2.049	1.792
Subweight		1.000	1.000	1.000	1.000
B220 BMF		1.035	1.035	1.035	1.035
<u>Self-insured employers</u>					
Number of survey responses	455	211	66	85	93
Number of NRAF-weighted responses	822	382	135	146	159
Number of product-weighted responses	1,723	1,059	204	220	240
NRAF		1.810	2.045	1.718	1.710
Subweight		1.000	1.000	1.000	1.000
B220 BMF		2.772	1.509	1.509	1.509
<u>Private insurers (certainty)</u>					
Number of survey responses	826	375	214	155	82
Number of NRAF-weighted responses	1,684	713	456	353	162
Number of product-weighted responses	2,177	937	582	451	207
NRAF		1.901	2.131	2.277	1.976
Subweight		1.000	1.000	1.000	1.000
B220 BMF		1.315	1.277	1.277	1.277
<u>Private insurers (subsample)</u>					
Number of survey responses	490	490			
Number of NRAF-weighted responses	989	989			
Number of product-weighted responses	2,601	2,601			
NRAF		2.018			
Subweight		2.000			
B220 BMF		1.315			

Survey responses = 3,219  
 NRAF weighted responses=6,305  
 Product (subwt\*nraf\*b220bmf) weighted responses=9,409

Notes: Benchmark factors were assigned to each record based on the percentage of SAIF, private insurer, and self-insurer claims in the study that matched to Bulletin 220 medical data. A subsampling methodology was used to reduce the number of claims in the satisfaction survey. Nonresponse adjustment factors (NRAFs) were used to adjust for nonresponse to the survey.

## Statistical models for claims costs and components

The table below lists the variables used in the regression models discussed in this study. The following tables show the results from each model.

**Table G-1. Variables used in the regression analyses**

<u>Variable</u>	<u>Mnemonic</u>	<u>Description</u>
<u>Dependent variables</u>		
1. Log medical	LMED	Log of the medical costs
2. Log service	LSERV	Log of the number of medical services
3. Log payments	LOGPAY	Log of the paid amounts for 3 surgery services
4. Log TTD	LTTD	Log of the timeloss payments
5. Log TTD days	LDAYS	Log of the timeloss days
6. Log PPD	LPPD	Log of the PPD payments
7. Log cost	LCOST	Log of the total claims cost
<u>Demographic variables</u>		
Intercept	INTERCEP	Intercept
SAIF	SAIF	SAIF Corporation claim
Urban	URBAN	I-5 corridor GSAs
Log wage	LWAGE	Log of the weekly wage
Log work	LWORK	Log of the work days
Age	AGE	Claimant age
<u>OIICS code variables</u>		
Nature1	NATURE1	Injury to bones, nerves
Nature2	NATURE2	Sprains, strains
Nature3	NATURE3	Open wounds
Nature4	NATURE4	Multiple injuries
Nature5	NATURE5	Other traumatic injuries
Part1	PART1	Back, spine, spinal cord
Part2	PART2	Trunk, except back
Part3	PART3	Fingers, fingernails
Part4	PART4	Upper extremities, except fingers
Part5	PART5	Legs
Part6	PART6	Feet, ankles
Event1	EVENT1	Contact with objects
Event2	EVENT2	Fall to a lower level
Event3	EVENT3	Fall to the same level
Event4	EVENT4	Bodily reaction, overexertion
Event5	EVENT5	Transportation accident
<u>ICD-9 severity variables</u>		
Log med severity	MEDSEV	Medical severity index
Log TTD severity	TTDSEV	TTD severity index
Log PPD severity	PPDSEV	PPD severity index
Log cost severity	TOTALSEV	Total cost severity index
<u>Managed care coverage variables</u>		
Coverage	COV	Covered by managed care
Not enrolled	COVNOTEN	Covered, not enrolled study group
Enrolled	COVEN	Covered, enrolled study group
Below threshold	COVENBE	Covered, enrolled, below threshold study group
Above threshold	COVENAB	Covered, enrolled, above threshold study group

## 1. LOG MEDICAL COST MODEL

Dependent Variable: LMED

### Analysis of Variance

Source	DF	Squares	Sum of Square	Mean F Value	Prob>F
Model	17	7740.71706	455.33630	267.284	0.0001
Error	7214	12289.52941	1.70357		
C Total	7231	20030.24646			

Root MSE	1.30521	R-square	0.3865
Dep Mean	7.29157	Adj R-sq	0.3850
C.V.	17.90024		

### Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob >  T	Variance Inflation
INTERCEP	1	0.736431	0.13955345	5.277	0.0001	0.00000000
SAIF	1	0.174127	0.03531948	4.930	0.0001	1.45958213
AGE	1	0.010034	0.00117138	8.566	0.0001	1.04685257
NATURE2	1	-0.243585	0.03632898	-6.705	0.0001	1.77129180
NATURE5	1	-0.312337	0.04254702	-7.341	0.0001	1.30901821
PART1	1	-0.203283	0.04703161	-4.322	0.0001	2.25842197
PART2	1	-0.233022	0.05236426	-4.450	0.0001	1.62874294
PART3	1	-0.254653	0.06417772	-3.968	0.0001	1.74550368
PART4	1	-0.174540	0.04926500	-3.543	0.0004	1.83168235
PART5	1	-0.188364	0.05267413	-3.576	0.0004	1.58061594
PART6	1	-0.321305	0.05722335	-5.615	0.0001	1.48625559
EVENT1	1	0.112589	0.06052826	1.860	0.0629	3.47687008
EVENT2	1	0.345596	0.07112828	4.859	0.0001	2.02827222
EVENT3	1	0.153006	0.06716003	2.278	0.0227	2.26090346
EVENT4	1	0.124296	0.05854977	2.123	0.0338	4.68375133
EVENT5	1	0.512916	0.08222285	6.238	0.0001	1.62603028
MEDSEV	1	0.894097	0.01658017	53.926	0.0001	1.22044744
COV	1	-0.124033	0.03254299	-3.811	0.0001	1.44638271

**2. LOG MEDICAL TREATMENT MODEL**

Dependent Variable: LSERV

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	18	2448.61846	136.03436	101.869	0.0001
Error	7217	9637.48651	1.33539		
C Total	7235	12086.10498			

Root MSE	1.15559	R-square	0.2026
Dep Mean	3.07092	Adj R-sq	0.2006
C.V.	37.63006		

**Parameter Estimates**

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob >  T	Variance Inflation
INTERCEP	1	-0.552256	0.11882272	-4.648	0.0001	0.00000000
SAIF	1	0.255938	0.03126914	8.185	0.0001	1.45990027
AGE	1	0.007811	0.00103691	7.533	0.0001	1.04779076
NATURE1	1	0.245661	0.04192605	5.859	0.0001	1.32767296
NATURE2	1	0.200303	0.03203230	6.253	0.0001	1.75814597
NATURE4	1	0.228183	0.05077927	4.494	0.0001	1.21579482
PART1	1	-0.152984	0.04207938	-3.636	0.0003	2.30684531
PART2	1	-0.401210	0.04665479	-8.600	0.0001	1.65118340
PART3	1	-0.315541	0.05642332	-5.592	0.0001	1.72380459
PART4	1	-0.126462	0.04397873	-2.876	0.0040	1.86367166
PART5	1	-0.453430	0.04729107	-9.588	0.0001	1.62548721
PART6	1	-0.445506	0.05157470	-8.638	0.0001	1.54029391
EVENT1	1	0.182064	0.05381796	3.383	0.0007	3.51212080
EVENT2	1	0.326533	0.06378622	5.119	0.0001	2.08101017
EVENT3	1	0.223206	0.05992829	3.725	0.0002	2.29673805
EVENT4	1	0.174299	0.05160722	3.377	0.0007	4.64539588
EVENT5	1	0.518933	0.07327740	7.082	0.0001	1.64759581
MEDSEV	1	0.446680	0.01467603	30.436	0.0001	1.22179473
COV	1	-0.063199	0.02880355	-2.194	0.0283	1.44645991

### 3. LOG TOP-3 SURGERY COST MODEL

Dependent Variable: LOGPAY

#### Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	17	10627.46936	625.14526	151.800	0.0001
Error	7218	29725.25524	4.11821		
C Total	7235	40352.72460			

Root MSE	2.02934	R-square	0.2634
Dep Mean	0.63290	Adj R-sq	0.2616
C.V.	320.64108		

#### Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob >  T	Variance Inflation
INTERCEP	1	-5.176036	0.21967280	-23.562	0.0001	0.00000000
AGE	1	0.006195	0.00182339	3.397	0.0007	1.05062330
NATURE2	1	-0.620582	0.06071331	-10.222	0.0001	2.04807083
NATURE3	1	-0.500035	0.10410630	-4.803	0.0001	1.76822262
NATURE4	1	-0.301787	0.09392933	-3.213	0.0013	1.34892636
NATURE5	1	-0.406638	0.07280775	-5.585	0.0001	1.58704391
PART1	1	0.484902	0.07317398	6.627	0.0001	2.26199483
PART2	1	-0.389295	0.08193875	-4.751	0.0001	1.65150522
PART3	1	0.330111	0.10618337	3.109	0.0019	1.97962135
PART4	1	0.835535	0.07795124	10.719	0.0001	1.89857852
PART5	1	1.574280	0.08229036	19.131	0.0001	1.59595853
PART6	1	0.403550	0.08945944	4.511	0.0001	1.50272989
EVENT1	1	-0.289430	0.08267133	-3.501	0.0005	2.68734393
EVENT2	1	-0.175825	0.09845612	-1.786	0.0742	1.60769720
EVENT3	1	-0.195927	0.09164188	-2.138	0.0326	1.74154199
EVENT4	1	0.295539	0.07619021	3.879	0.0001	3.28320904
MEDSEV	1	0.774685	0.02595764	29.844	0.0001	1.23939504
COV	1	-0.107334	0.04219992	-2.543	0.0110	1.00678356

### 4. LOG TIMELOSS COST MODEL

Dependent Variable: LTTD

#### Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	12	8530.20333	710.85028	162.575	0.0001
Error	7003	30620.27880	4.37245		
C Total	7015	39150.48214			

Root MSE	2.09104	R-square	0.2179
Dep Mean	6.40744	Adj R-sq	0.2165
C.V.	32.63459		

#### Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob >  T	Variance Inflation
INTERCEP	1	-0.273589	0.26123704	-1.047	0.2950	0.00000000
LWAGE	1	0.600715	0.04250637	14.132	0.0001	1.08847209
AGE	1	0.004700	0.00196809	2.388	0.0170	1.11058206
PART1	1	-0.259783	0.07118647	-3.649	0.0003	1.97610737
PART2	1	-0.219695	0.08329614	-2.638	0.0084	1.56666299
PART3	1	-0.738034	0.09740387	-7.577	0.0001	1.48075905
PART4	1	-0.173325	0.07820743	-2.216	0.0267	1.73145443
PART5	1	-0.313215	0.08526514	-3.673	0.0002	1.54723665
PART6	1	-0.199405	0.09104229	-2.190	0.0285	1.44343621
EVENT2	1	0.202806	0.08212276	2.470	0.0136	1.03770530
EVENT5	1	0.209546	0.10862712	1.929	0.0538	1.08116004
TTDSEV	1	1.129292	0.03224616	35.021	0.0001	1.12194086
COV	1	-0.099241	0.04411843	-2.249	0.0245	1.00566577

## 5. LOG TIMELOSS DAYS MODEL

Dependent Variable: LDAYS

### Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	12	5078.25196	423.18766	174.952	0.0001
Error	7224	17473.97774	2.41888		
C Total	7236	22552.22970			

Root MSE	1.55527	R-square	0.2252
Dep Mean	2.86532	Adj R-sq	0.2239
C.V.	54.27926		

### Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob >  T	Variance Inflation
INTERCEP	1	-0.535286	0.22984364	-2.329	0.0199	0.00000000
LWORK	1	0.431143	0.12154535	3.547	0.0004	1.01242970
AGE	1	0.002950	0.00139047	2.122	0.0339	1.04018770
PART1	1	-0.200474	0.05230121	-3.833	0.0001	1.96750827
PART2	1	-0.161656	0.06113889	-2.644	0.0082	1.56545149
PART3	1	-0.392431	0.07075782	-5.546	0.0001	1.49664347
PART4	1	-0.097629	0.05714703	-1.708	0.0876	1.73730738
PART5	1	-0.262763	0.06224829	-4.221	0.0001	1.55482448
PART6	1	-0.246190	0.06706348	-3.671	0.0002	1.43781017
EVENT2	1	0.227142	0.06064457	3.745	0.0002	1.03849077
EVENT5	1	0.148451	0.07983868	1.859	0.0630	1.07977515
TTDSEV	1	0.958623	0.02362622	40.575	0.0001	1.12626885
COV	1	-0.065256	0.03234916	-2.017	0.0437	1.00737065

## 6. LOG PPD COST MODEL

Dependent Variable: LPPD

### Analysis of Variance

Source	DF	Squares	Sum of Square	Mean F Value	Prob>F
Model	12	48761.53663	4063.46139	307.090	0.0001
Error	7224	95589.20940	13.23217		
C Total	7236	144350.74604			

RootMSE	3.63761	R-square	0.3378
Dep Mean	2.68489	Adj R-sq	0.3367
C.V.	135.48417		

### Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob >  T	Variance Inflation
INTERCEP	1	-0.863029	0.16189728	-5.331	0.0001	0.00000000
URBAN	1	-0.310518	0.09940133	-3.124	0.0018	1.06014126
AGE	1	0.036351	0.00324917	11.188	0.0001	1.03828385
NATURE1	1	1.132284	0.12413199	9.122	0.0001	1.17455996
NATURE3	1	0.611542	0.16982952	3.601	0.0003	1.46450888
NATURE4	1	0.452459	0.15066460	3.003	0.0027	1.08016624
PART1	1	-0.205545	0.09258645	-2.220	0.0264	1.12712155
PART3	1	0.696711	0.16310765	4.271	0.0001	1.45378769
PART6	1	-0.270223	0.13768589	-1.963	0.0497	1.10787595
EVENT2	1	0.411030	0.14337407	2.867	0.0042	1.06106737
EVENT5	1	0.550568	0.18312280	3.007	0.0027	1.03842311
PPDSEV	1	2.639201	0.05374607	49.105	0.0001	1.14631408
COV	1	-0.175290	0.07761756	-2.258	0.0240	1.06014685

## 7. LOG TOTAL COST MODEL

Dependent Variable: LCOST

### Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	16	8982.15011	561.38438	321.807	0.0001
Error	6994	12200.85427	1.74447		
C Total	7010	21183.00438			

Root MSE	1.32079	R-square	0.4240
Dep Mean	8.01356	Adj R-sq	0.4227
C.V.	16.48187		

### Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob >  T	Variance Inflation
INTERCEP	1	-1.645539	0.20903374	-7.872	0.0001	0.00000000
SAIF	1	0.101085	0.03636547	2.780	0.0055	1.46087457
LWAGE	1	0.290656	0.02693404	10.791	0.0001	1.09491583
AGE	1	0.012648	0.00124556	10.155	0.0001	1.11348449
NATURE1	1	0.117470	0.05047937	2.327	0.0200	1.42307170
NATURE2	1	-0.265713	0.03941012	-6.742	0.0001	1.97765587
NATURE5	1	-0.317441	0.04592062	-6.913	0.0001	1.44968775
PART1	1	-0.237616	0.04712841	-5.042	0.0001	2.17026411
PART2	1	-0.248121	0.05272048	-4.706	0.0001	1.57128772
PART3	1	-0.198165	0.06276850	-3.157	0.0016	1.53872733
PART4	1	-0.200769	0.05022689	-3.997	0.0001	1.78839024
PART5	1	-0.226478	0.05467053	-4.143	0.0001	1.59415389
PART6	1	-0.367666	0.05891749	-6.240	0.0001	1.51502906
EVENT2	1	0.209145	0.05230346	3.999	0.0001	1.05495637
EVENT5	1	0.357445	0.06867325	5.205	0.0001	1.08300489
TOTALSEV	1	0.937639	0.01697074	55.250	0.0001	1.20632480
COV	1	-0.126985	0.03349091	-3.792	0.0002	1.45133315

**Oregon Department of Consumer and Business Services  
Workers' Compensation Division**

**Injured Worker Medical Treatment Satisfaction Survey**

The Department of Consumer and Business Services (DCBS), the state's largest regulatory and consumer-protection agency, is conducting a survey of workers injured on the job to determine how satisfied they are with their medical care and the outcomes of that care. Results will be reported to legislators and other interested parties in an effort to improve care for people with on-the-job injuries.

You have been selected to participate in this study along with other injured workers in Oregon. The survey will only take 5-10 minutes to complete, so we'd appreciate it if you could take a moment now while you are thinking about it.

You were recently treated for an on-the-job injury or illness. Please answer the survey questions with respect to your workers' compensation claim that occurred in <DOI2> (<FILENR>). Claim numbers will be used as a way to follow-up on unreturned surveys. Your responses will be kept **strictly confidential** and will not affect any claim for workers' compensation benefits. The results will be reported only in summary form and not as individual responses.

Thank you for your valuable time and effort in completing this survey. If you have any questions, please call (503) 378-8254. Please return the survey in the enclosed stamped, addressed envelope by **May 13, 1998**.

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**Again, please answer all of the questions with respect to your injury/illness that occurred in <DOI2>.**

Please check [] one box for each question:

1. Please rate how you felt overall about the medical treatment you received for your work injury/illness:  
4-  Very satisfied      3-  Satisfied      2-  Dissatisfied      1-  Very dissatisfied
  
2. Please rate how you felt overall about the ease of obtaining medical care for your work injury/illness:  
4-  Very satisfied      3-  Satisfied      2-  Dissatisfied      1-  Very dissatisfied
  
3. When treated for your work injury/illness, were you able to see the doctor of your choice throughout your treatment?  
1-  YES      2-  NO\*
  
- a. **\*IF NO:** Please indicate the main reason why you did not see the doctor of your choice:  
1-  doctor of choice was unavailable      3-  doctor of choice was located too far away  
2-  doctor of choice was unwilling to see me      4-  I was directed to see another doctor  
5-  other (please specify): \_\_\_\_\_
  
4. Were you required to change doctors at any time during your treatment?  
1-  YES\*      2-  NO
  
- a. **\*IF YES:** Please rate how you felt about the care you received after you changed doctors.  
4-  Very satisfied      3-  Satisfied      2-  Dissatisfied      1-  Very dissatisfied

**→Please continue→**

Regarding the overall treatment you received for your work injury/illness, please rate how you felt about each of the following:

	Very Satisfied	Satisfied	Dissatisfied	Very Dissatisfied
5. Quality of the health care you received	4- <input type="checkbox"/>	3- <input type="checkbox"/>	2- <input type="checkbox"/>	1- <input type="checkbox"/>
6. Appropriateness of the treatment (tests, procedures, etc.) you received	4- <input type="checkbox"/>	3- <input type="checkbox"/>	2- <input type="checkbox"/>	1- <input type="checkbox"/>
7. Explanation of treatment (tests, drugs, procedures, etc.)	4- <input type="checkbox"/>	3- <input type="checkbox"/>	2- <input type="checkbox"/>	1- <input type="checkbox"/>
8. Amount of personal control you had over medical decisions	4- <input type="checkbox"/>	3- <input type="checkbox"/>	2- <input type="checkbox"/>	1- <input type="checkbox"/>
9. Number of doctors that you had to choose from	4- <input type="checkbox"/>	3- <input type="checkbox"/>	2- <input type="checkbox"/>	1- <input type="checkbox"/>
10. Length of time between your injury/illness and your first treatment	4- <input type="checkbox"/>	3- <input type="checkbox"/>	2- <input type="checkbox"/>	1- <input type="checkbox"/>
11. Distance you traveled to your appointment(s)	4- <input type="checkbox"/>	3- <input type="checkbox"/>	2- <input type="checkbox"/>	1- <input type="checkbox"/>
12. Ease of setting up an appointment	4- <input type="checkbox"/>	3- <input type="checkbox"/>	2- <input type="checkbox"/>	1- <input type="checkbox"/>

13. How would you rate your overall current health?  
 5- Very good      4- Good      3- Fair      2- Poor      1- Very poor

14. Compared to before your injury/illness, how would you rate your current . . .

	Much Better	Somewhat Better	About the Same	Somewhat Worse	Much Worse
a. Physical health	5- <input type="checkbox"/>	4- <input type="checkbox"/>	3- <input type="checkbox"/>	2- <input type="checkbox"/>	1- <input type="checkbox"/>
b. Emotional condition	5- <input type="checkbox"/>	4- <input type="checkbox"/>	3- <input type="checkbox"/>	2- <input type="checkbox"/>	1- <input type="checkbox"/>
c. Level of physical pain	5- <input type="checkbox"/>	4- <input type="checkbox"/>	3- <input type="checkbox"/>	2- <input type="checkbox"/>	1- <input type="checkbox"/>
d. Overall health	5- <input type="checkbox"/>	4- <input type="checkbox"/>	3- <input type="checkbox"/>	2- <input type="checkbox"/>	1- <input type="checkbox"/>

15. How well are you recovering from your work injury/illness?  
 4- Very well      3- Well      2- Not well      1- Not well at all

16. How severe do you feel your work injury/illness was:  
 1- Not severe at all      2- Slightly severe      3- Moderately severe      4- Very severe

17. To what extent has your injury/illness interfered with your social relationships with your family and friends?  
 1- None of the time      2- A little of the time      3- Some of the time      4- Most of the time      5- All of the time

18. Did you receive medical care for your work injury/illness through a Managed Care Organization (MCO)?  
 1- YES      2- NO      3- DON'T KNOW

→Please continue→

## Appendix H

19. Were you paid for any days lost from work as a result of your injury/illness?

1- YES    2- NO

**IF YES:** please continue with the next question below.

**IF NO:** please skip to question 22 on the next page.

20. a. Have you been employed at any time since your injury/illness?

1- YES -- I am currently working

2- YES -- I have worked since my injury/illness, but I am not currently working

3- NO -- I have not been able to return to work at all

**IF YES:** please continue with the next set of questions below.

**IF NO:** please skip to question 22 on the next page.

**Please answer questions b. - g. with respect to when you were first able to return to work:**

b. Approximately how long were you off work as a result of your work injury/illness?

\*      months                       weeks                   less than 1 week

\*responses were entered as weeks. Less than 1 week = 0.5.

c. Did you work for the same employer as before your injury/illness?

1- YES    2- NO

d. Did you do the same, similar, or different type of work as before your injury/illness?

1- Same                  2- Similar                  3- Different

e. How did your wages compare to your wages before your injury/illness?

5- Much higher                  4- Somewhat higher                  3- The same                  2- Somewhat lower                  1- Much lower

f. To what degree were your job duties restricted due to your injury/illness?

1- Not restricted at all                  2- Somewhat restricted                  3- Very restricted

g. During an average work day, how much of the time did physical pain resulting from your injury/illness interfere with your job duties?

1- None of the time                  2- A little of the time                  3- Some of the time                  4- Most of the time                  5- All of the time

21. Please rate your overall experience with returning to work, or trying to return to work, after your injury/illness.

4-  Very satisfied                  3- Satisfied                  2- Dissatisfied                  1- Very dissatisfied



## Injured worker survey responses

	Total		Not covered				Covered				Enrolled			
			Below threshold		Above threshold		Not enrolled		Enrolled		Below threshold		Above threshold	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
<b>Q1: Overall medical treatment received</b>														
Very satisfied	889	28%	462	28%	427	28%	88	25%	340	29%	226	31%	113	26%
Satisfied	1659	52%	891	53%	768	51%	203	57%	565	49%	366	50%	199	46%
Dissatisfied	426	13%	218	13%	208	14%	47	13%	161	14%	80	11%	81	19%
Very dissatisfied	<u>214</u>	<u>7%</u>	<u>100</u>	<u>6%</u>	<u>115</u>	<u>8%</u>	<u>18</u>	<u>5%</u>	<u>97</u>	<u>8%</u>	<u>56</u>	<u>8%</u>	<u>41</u>	<u>9%</u>
	3189	100%	1670	100%	1518	100%	355	100%	1163	100%	729	100%	434	100%
Missing	31		15		16		2		14		8		7	
Mean	3.01		3.03		2.99		3.02		2.99		3.05		2.89	
Std. Dev.	0.83		0.93		0.75		0.71		0.76		0.76		0.76	
t					1.12		0.22		1.23		-0.49		<b>2.91</b>	
p value					0.261		0.823		0.219		0.627		<b>0.004</b>	
<b>Q2: Overall ease of obtaining medical care</b>														
Very satisfied	861	27%	463	28%	398	26%	87	24%	311	27%	222	31%	89	21%
Satisfied	1718	54%	926	56%	792	52%	203	57%	589	51%	376	52%	213	49%
Dissatisfied	395	12%	189	11%	205	14%	45	13%	161	14%	81	11%	79	18%
Very dissatisfied	<u>210</u>	<u>7%</u>	<u>89</u>	<u>5%</u>	<u>121</u>	<u>8%</u>	<u>20</u>	<u>6%</u>	<u>100</u>	<u>9%</u>	<u>48</u>	<u>7%</u>	<u>53</u>	<u>12%</u>
	3184	100%	1668	100%	1516	100%	355	100%	1161	100%	727	100%	434	100%
Missing	35		17		18		2		16		10		6	
Mean	3.01		3.06		2.97		3.00		2.96		3.06		2.78	
Std. Dev.	0.81		0.90		0.75		0.73		0.75		0.73		0.76	
t					<b>3.03</b>		1.04		<b>3.12</b>		-0.13		<b>5.87</b>	
p value					<b>0.002</b>		0.300		<b>0.002</b>		0.895		<b>0.000</b>	
<b>Q3: Able to see doctor of choice?</b>														
Yes	2250	71%	1245	75%	1005	67%	253	72%	752	65%	489	68%	263	61%
No	<u>920</u>	<u>29%</u>	<u>415</u>	<u>25%</u>	<u>505</u>	<u>33%</u>	<u>100</u>	<u>28%</u>	<u>406</u>	<u>35%</u>	<u>235</u>	<u>32%</u>	<u>171</u>	<u>39%</u>
	3170	100%	1660	100%	1510	100%	352	100%	1158	100%	724	100%	434	100%
Missing	49		25		24		5		19		12		7	
<b>Q3a: What is main reason why you did not see your doctor of choice</b>														
Doctor of choice was unavailable	85	9%	39	10%	45	9%	5	5%	40	10%	27	12%	14	8%
Doctor of choice was unwilling to see me	27	3%	10	2%	17	3%	3	3%	14	3%	8	4%	6	3%
Doctor of choice was located too far away	51	6%	37	9%	14	3%	5	5%	9	2%	8	3%	1	1%
I was directed to see another doctor	602	66%	249	61%	352	70%	72	72%	280	70%	145	63%	135	80%
Other	<u>145</u>	<u>16%</u>	<u>71</u>	<u>17%</u>	<u>74</u>	<u>15%</u>	<u>16</u>	<u>16%</u>	<u>58</u>	<u>14%</u>	<u>44</u>	<u>19%</u>	<u>13</u>	<u>8%</u>
	909	100%	407	100%	502	100%	100	100%	402	100%	232	100%	169	100%
Missing	2311		1278		1032		257		776		504		271	
<b>Q4: Were you required to change doctors?</b>														
Yes	983	31%	498	30%	485	32%	108	30%	377	32%	206	28%	171	39%
No	<u>2210</u>	<u>69%</u>	<u>1174</u>	<u>70%</u>	<u>1036</u>	<u>68%</u>	<u>247</u>	<u>70%</u>	<u>789</u>	<u>68%</u>	<u>523</u>	<u>72%</u>	<u>265</u>	<u>61%</u>
	3193	100%	1672	100%	1521	100%	355	100%	1165	100%	729	100%	436	100%
Missing	27		13		13		2		12		7		4	
<b>Q4a: Care after changing doctors</b>														
Very satisfied	232	24%	117	24%	115	25%	24	22%	92	25%	58	29%	34	21%
Satisfied	410	43%	231	47%	179	38%	48	46%	131	36%	74	37%	57	35%
Dissatisfied	194	20%	91	19%	102	22%	22	21%	80	22%	32	16%	48	30%
Very dissatisfied	<u>119</u>	<u>12%</u>	<u>50</u>	<u>10%</u>	<u>69</u>	<u>15%</u>	<u>12</u>	<u>11%</u>	<u>58</u>	<u>16%</u>	<u>34</u>	<u>17%</u>	<u>24</u>	<u>15%</u>
	955	100%	489	100%	466	100%	105	100%	361	100%	198	100%	163	100%
Missing	2264		1196		1068		252		816		539		277	
Mean	2.79		2.85		2.73		2.79		2.71		2.79		2.62	
Std. Dev.	0.93		1.02		0.87		0.85		0.88		0.93		0.81	
t					1.93		0.54		<b>2.05</b>		0.73		<b>2.61</b>	
p value					0.053		0.591		<b>0.040</b>		0.468		<b>0.009</b>	
Notes: t and p values are listed only for managed care groups because they have been compared to the not covered group. Significant comparisons (p<=0.05) are highlighted in bold print. The numbers and percentages are rounded.														

## Injured worker survey responses

							Covered				Enrolled			
	Total		Not covered		Covered		Not enrolled		Enrolled		Below threshold		Above threshold	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
<b>Q5: Quality of health care received</b>														
Very satisfied	962	30%	497	30%	465	31%	95	27%	370	32%	241	33%	129	30%
Satisfied	1732	55%	928	56%	805	53%	211	59%	594	51%	377	52%	217	50%
Dissatisfied	353	11%	176	11%	177	12%	35	10%	142	12%	73	10%	69	16%
Very dissatisfied	<u>111</u>	<u>4%</u>	<u>47</u>	<u>3%</u>	<u>63</u>	<u>4%</u>	<u>13</u>	<u>4%</u>	<u>50</u>	<u>4%</u>	<u>32</u>	<u>4%</u>	<u>18</u>	<u>4%</u>
	3158	100%	1648	100%	1510	100%	354	100%	1156	100%	724	100%	432	100%
Missing	61		37		24		3		21		13		8	
Mean	3.12		3.14		3.11		3.10		3.11		3.14		3.06	
Std. Dev.	0.74		0.83		0.67		0.67		0.67		0.68		0.66	
t					1.13		0.90		0.92		-0.16		1.89	
p value					0.258		0.369		0.360		0.874		0.058	
<b>Q6: Appropriateness of treatment</b>														
Very satisfied	861	27%	443	27%	418	28%	94	27%	324	28%	209	29%	115	27%
Satisfied	1715	54%	913	55%	802	53%	199	57%	603	53%	391	54%	212	49%
Dissatisfied	427	14%	229	14%	198	13%	46	13%	152	13%	82	11%	71	16%
Very dissatisfied	<u>152</u>	<u>5%</u>	<u>70</u>	<u>4%</u>	<u>82</u>	<u>5%</u>	<u>14</u>	<u>4%</u>	<u>68</u>	<u>6%</u>	<u>36</u>	<u>5%</u>	<u>32</u>	<u>8%</u>
	3156	100%	1655	100%	1500	100%	352	100%	1148	100%	718	100%	430	100%
Missing	64		30		34		5		29		19		10	
Mean	3.04		3.04		3.04		3.06		3.03		3.08		2.95	
Std. Dev.	0.78		0.88		0.70		0.70		0.70		0.69		0.72	
t					0.26		-0.24		0.43		-0.89		<b>1.97</b>	
p value					0.797		0.809		0.670		0.372		<b>-0.049</b>	
<b>Q7: Explanation of treatment</b>														
Very satisfied	904	29%	458	28%	446	30%	104	29%	341	30%	223	31%	118	27%
Satisfied	1739	55%	917	56%	822	55%	196	55%	626	55%	391	54%	236	55%
Dissatisfied	383	12%	213	13%	170	11%	42	12%	128	11%	72	10%	56	13%
Very dissatisfied	<u>127</u>	<u>4%</u>	<u>64</u>	<u>4%</u>	<u>64</u>	<u>4%</u>	<u>12</u>	<u>3%</u>	<u>51</u>	<u>4%</u>	<u>31</u>	<u>4%</u>	<u>20</u>	<u>5%</u>
	3153	100%	1651	100%	1502	100%	355	100%	1148	100%	717	100%	431	100%
Missing	66		34		32		3		30		20		10	
Mean	3.08		3.07		3.10		3.11		3.10		3.12		3.05	
Std. Dev.	0.75		0.87		0.67		0.69		0.66		0.67		0.64	
t					-0.99		-0.72		-0.82		-1.43		0.45	
p value					0.324		0.472		0.411		0.152		0.650	
<b>Q8: Amount of personal control over medical decisions</b>														
Very satisfied	784	25%	417	25%	366	24%	83	24%	283	25%	186	26%	97	22%
Satisfied	1565	50%	821	50%	744	50%	182	52%	562	49%	371	52%	190	44%
Dissatisfied	532	17%	281	17%	251	17%	52	15%	199	17%	104	15%	94	22%
Very dissatisfied	<u>263</u>	<u>8%</u>	<u>126</u>	<u>8%</u>	<u>137</u>	<u>9%</u>	<u>32</u>	<u>9%</u>	<u>105</u>	<u>9%</u>	<u>56</u>	<u>8%</u>	<u>49</u>	<u>11%</u>
	3143	100%	1645	100%	1497	100%	349	100%	1148	100%	718	100%	431	100%
Missing	77		40		37		8		29		19		10	
Mean	2.91		2.93		2.89		2.91		2.89		2.96		2.78	
Std. Dev.	0.86		0.99		0.77		0.81		0.76		0.75		0.77	
t					1.12		0.37		1.16		-0.66		<b>2.97</b>	
p value					0.263		0.711		0.248		0.506		<b>0.003</b>	
<b>Q9: Number of doctors to choose from</b>														
Very satisfied	667	22%	370	23%	297	20%	69	21%	228	20%	151	21%	76	18%
Satisfied	1685	55%	888	55%	797	54%	192	57%	605	54%	405	57%	200	48%
Dissatisfied	470	15%	224	14%	245	17%	51	15%	194	17%	102	14%	92	22%
Very dissatisfied	<u>253</u>	<u>8%</u>	<u>124</u>	<u>8%</u>	<u>129</u>	<u>9%</u>	<u>26</u>	<u>8%</u>	<u>103</u>	<u>9%</u>	<u>51</u>	<u>7%</u>	<u>53</u>	<u>12%</u>
	3075	100%	1607	100%	1468	100%	338	100%	1131	100%	710	100%	421	100%
Missing	144		79		66		19		46		27		19	
Mean	2.90		2.94		2.86		2.90		2.85		2.93		2.71	
Std. Dev.	0.83		0.96		0.74		0.76		0.73		0.71		0.76	
t					<b>2.47</b>		0.61		<b>2.64</b>		0.25		<b>4.43</b>	
p value					<b>0.014</b>		0.541		<b>0.008</b>		0.804		<b>0.000</b>	

## Injured worker survey responses

	Total		Not covered				Covered				Enrolled			
			Not covered		Covered		Not enrolled		Enrolled		Below threshold		Above threshold	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
<b>Q10: Length of time between injury and first treatment</b>														
Very satisfied	870	28%	448	27%	422	28%	98	28%	324	28%	225	31%	99	23%
Satisfied	1746	55%	942	57%	805	54%	189	54%	616	54%	395	55%	221	52%
Dissatisfied	347	11%	179	11%	168	11%	46	13%	122	11%	61	9%	61	14%
Very dissatisfied	<u>190</u>	<u>6%</u>	<u>87</u>	<u>5%</u>	<u>102</u>	<u>7%</u>	<u>19</u>	<u>5%</u>	<u>83</u>	<u>7%</u>	<u>36</u>	<u>5%</u>	<u>47</u>	<u>11%</u>
	3153	100%	1656	100%	1497	100%	353	100%	1144	100%	717	100%	427	100%
Missing	66		29		37		5		33		19		13	
Mean	3.05		3.06		3.03		3.04		3.03		3.13		2.87	
Std. Dev.	0.79		0.89		0.72		0.74		0.71		0.68		0.75	
t					0.79		0.31		0.80		-1.90		<b>3.98</b>	
p value					0.428		0.756		0.426		0.057		<b>0.000</b>	
<b>Q11: Distance traveled to appointments</b>														
Very satisfied	745	24%	375	23%	370	25%	85	24%	284	25%	190	27%	95	22%
Satisfied	2001	64%	1052	64%	949	63%	229	65%	719	63%	444	62%	275	64%
Dissatisfied	292	9%	167	10%	124	8%	29	8%	95	8%	51	7%	44	10%
Very dissatisfied	<u>101</u>	<u>3%</u>	<u>46</u>	<u>3%</u>	<u>55</u>	<u>4%</u>	<u>8</u>	<u>2%</u>	<u>47</u>	<u>4%</u>	<u>31</u>	<u>4%</u>	<u>16</u>	<u>4%</u>
	3139	100%	1641	100%	1498	100%	352	100%	1146	100%	716	100%	430	100%
Missing	81		44		36		5		31		20		10	
Mean	3.08		3.07		3.09		3.12		3.08		3.11		3.04	
Std. Dev.	0.67		0.77		0.60		0.60		0.61		0.62		0.57	
t					-0.80		-1.02		-0.46		-1.12		0.70	
p value					0.422		0.307		0.649		0.262		0.483	
<b>Q12: Ease of setting up an appointment</b>														
Very satisfied	910	29%	464	28%	446	30%	95	27%	351	30%	230	32%	121	28%
Satisfied	1924	61%	1025	62%	899	60%	225	64%	675	59%	427	59%	248	57%
Dissatisfied	222	7%	113	7%	109	7%	25	7%	84	7%	38	5%	45	10%
Very dissatisfied	<u>101</u>	<u>3%</u>	<u>52</u>	<u>3%</u>	<u>49</u>	<u>3%</u>	<u>7</u>	<u>2%</u>	<u>42</u>	<u>4%</u>	<u>25</u>	<u>3%</u>	<u>17</u>	<u>4%</u>
	3158	100%	1654	100%	1504	100%	352	100%	1152	100%	721	100%	431	100%
Missing	62		31		31		5		25		16		9	
Mean	3.15		3.15		3.16		3.16		3.16		3.20		3.10	
Std. Dev.	0.68		0.78		0.61		0.59		0.61		0.61		0.61	
t					-0.40		-0.22		-0.37		-1.47		1.32	
p value					0.691		0.828		0.714		0.142		0.188	
<b>Q13: Overall current health</b>														
Very good	693	22%	357	22%	336	23%	83	24%	253	22%	183	26%	69	16%
Good	1405	45%	753	46%	652	44%	151	44%	502	44%	325	45%	177	42%
Fair	724	23%	383	23%	341	23%	79	23%	263	23%	143	20%	119	28%
Poor	257	8%	128	8%	129	9%	26	8%	103	9%	56	8%	47	11%
Very Poor	<u>54</u>	<u>2%</u>	<u>24</u>	<u>1%</u>	<u>30</u>	<u>2%</u>	<u>6</u>	<u>2%</u>	<u>23</u>	<u>2%</u>	<u>11</u>	<u>2%</u>	<u>13</u>	<u>3%</u>
	3133	100%	1646	100%	1488	100%	345	100%	1143	100%	717	100%	425	100%
Missing	86		40		46		12		34		19		15	
Mean	3.77		3.78		3.76		3.81		3.75		3.86		3.57	
Std. Dev.	0.94		1.07		0.85		0.89		0.84		0.83		0.83	
t					0.59		-0.41		0.90		-1.58		<b>3.79</b>	
p value					0.558		0.683		0.367		0.114		<b>0.000</b>	
<i>Compared to before your injury, rate your current . . .</i>														
<b>Q14a: Physical health</b>														
Much better	362	11%	182	11%	180	12%	37	11%	143	12%	92	13%	51	12%
Somewhat better	422	13%	210	13%	212	14%	53	15%	159	14%	94	13%	65	15%
About the same	1385	44%	748	45%	637	42%	144	41%	493	43%	345	48%	148	34%
Somewhat worse	740	23%	383	23%	357	24%	94	27%	263	23%	142	20%	121	28%
Much worse	<u>248</u>	<u>8%</u>	<u>128</u>	<u>8%</u>	<u>120</u>	<u>8%</u>	<u>25</u>	<u>7%</u>	<u>95</u>	<u>8%</u>	<u>46</u>	<u>6%</u>	<u>50</u>	<u>11%</u>
	3158	100%	1651	100%	1506	100%	354	100%	1152	100%	718	100%	434	100%
Missing	62		34		28		3		25		18		6	
Mean	2.97		2.96		2.98		2.96		2.99		3.06		2.88	
Std. Dev.	1.07		1.23		0.96		0.99		0.95		0.93		0.97	
t					-0.60		0.07		-0.75		<b>-2.01</b>		1.33	
p value					0.549		0.948		0.453		<b>0.044</b>		0.183	

## Injured worker survey responses

	Total		Not covered				Covered				Enrolled			
			Not covered		Covered		Not enrolled		Enrolled		Below threshold		Above threshold	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
<i>Compared to before your injury, rate your current . . .</i>														
Q14b: Emotional Condition														
Much better	364	12%	173	10%	191	13%	37	11%	153	13%	100	14%	54	12%
Somewhat better	301	10%	145	9%	155	10%	41	12%	115	10%	69	10%	45	11%
About the same	1734	55%	924	56%	809	54%	195	55%	614	53%	407	57%	207	48%
Somewhat worse	538	17%	289	18%	248	17%	58	17%	190	17%	107	15%	84	19%
Much worse	219	7%	120	7%	99	7%	21	6%	78	7%	37	5%	41	10%
	3155	100%	1652	100%	1503	100%	352	100%	1151	100%	720	100%	431	100%
Missing	64		33		31		5		26		17		9	
Mean	3.02		2.98		3.06		3.05		3.06		3.12		2.97	
Std. Dev.	1.00		1.15		0.90		0.91		0.90		0.88		0.91	
t					<b>-2.26</b>		-1.06		<b>-2.18</b>		<b>-3.03</b>		0.13	
p value					<b>0.024</b>		0.291		<b>0.030</b>		<b>0.002</b>		0.894	
<i>Compared to before your injury, rate your current . . .</i>														
Q14c: Level of physical pain														
Much better	393	13%	178	11%	215	14%	47	13%	168	15%	109	15%	58	14%
Somewhat better	429	14%	223	14%	206	14%	48	14%	158	14%	100	14%	58	13%
About the same	970	31%	513	31%	457	31%	109	31%	348	30%	247	35%	101	24%
Somewhat worse	906	29%	483	29%	422	28%	109	31%	314	27%	182	25%	131	30%
Much worse	446	14%	249	15%	197	13%	39	11%	158	14%	77	11%	82	19%
	3145	100%	1647	100%	1498	100%	352	100%	1146	100%	715	100%	431	100%
Missing	74		38		36		5		31		22		9	
Mean	2.81		2.76		2.88		2.88		2.88		2.98		2.72	
Std. Dev.	1.21		1.38		1.08		1.11		1.07		1.06		1.08	
t					<b>-2.78</b>		-1.54		<b>-2.56</b>		<b>-3.80</b>		0.47	
p value					<b>0.005</b>		0.123		<b>0.010</b>		<b>0.000</b>		0.640	
<i>Compared to before your injury, rate your current . . .</i>														
Q14d: Overall health														
Much better	351	11%	173	10%	178	12%	41	12%	137	12%	93	13%	44	10%
Somewhat better	387	12%	198	12%	189	13%	47	13%	142	12%	87	12%	55	13%
About the same	1713	54%	909	55%	804	54%	186	53%	617	54%	407	57%	211	49%
Somewhat worse	548	17%	288	17%	260	17%	72	20%	188	17%	101	14%	87	20%
Much worse	149	5%	84	5%	65	4%	7	2%	57	5%	27	4%	30	7%
	3148	100%	1652	100%	1496	100%	354	100%	1142	100%	715	100%	427	100%
Missing	71		33		38		3		35		21		14	
Mean	3.08		3.05		3.10		3.12		3.10		3.17		2.99	
Std. Dev.	0.96		1.11		0.85		0.87		0.85		0.85		0.85	
t					-1.43		-1.08		-1.18		<b>-2.41</b>		1.13	
p value					0.152		0.281		0.239		<b>0.016</b>		0.260	
Q15: How well are you recovering?														
Very well	725	23%	377	23%	348	23%	78	22%	271	24%	201	28%	70	17%
Well	1358	44%	702	43%	656	44%	160	46%	496	44%	322	45%	174	41%
Not well	777	25%	415	25%	362	24%	87	25%	276	24%	141	20%	135	32%
Not well at all	259	8%	141	9%	118	8%	25	7%	93	8%	50	7%	43	10%
	3119	100%	1635	100%	1484	100%	350	100%	1134	100%	713	100%	422	100%
Missing	100		50		50		7		43		24		19	
Mean	2.82		2.80		2.83		2.83		2.83		2.94		2.64	
Std. Dev.	0.88		1.04		0.77		0.80		0.77		0.77		0.73	
t					-0.83		-0.43		-0.77		<b>-3.25</b>		<b>3.02</b>	
p value					0.407		0.665		0.439		<b>0.001</b>		<b>0.002</b>	

## Injured worker survey responses

	Total		Not covered				Covered				Enrolled			
			Not covered		Covered		Not enrolled		Enrolled		Below threshold		Above threshold	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
<b>Q16: How severe was your injury?</b>														
Not severe at all	113	4%	60	4%	53	4%	13	4%	40	4%	34	5%	6	1%
Slightly severe	669	21%	365	22%	304	20%	68	19%	236	21%	168	23%	68	16%
Moderately severe	1478	47%	781	47%	697	47%	171	49%	527	46%	328	46%	199	46%
Very severe	891	28%	448	27%	444	30%	100	28%	344	30%	188	26%	156	36%
	3151	100%	1653	100%	1498	100%	352	100%	1146	100%	719	100%	428	100%
Missing	68		32		36		5		31		18		13	
Mean	3.00		2.98		3.02		3.02		3.02		2.93		3.18	
Std. Dev.	0.80		0.93		0.71		0.74		0.70		0.73		0.62	
t					-1.51		-0.73		-1.44		1.17		<b>-4.24</b>	
p value					0.132		0.463		0.151		0.244		<b>0.000</b>	
<b>Q17: Extent injury has interfered with social relationships</b>														
None of the time	863	27%	450	27%	413	27%	94	27%	319	28%	240	33%	79	18%
A little of the time	586	18%	303	18%	283	19%	72	20%	211	18%	141	19%	70	16%
Some of the time	1017	32%	529	32%	487	32%	112	32%	375	32%	219	30%	156	36%
Most of the time	488	15%	270	16%	217	14%	42	12%	175	15%	93	13%	82	19%
All of the time	<u>226</u>	<u>7%</u>	<u>112</u>	<u>7%</u>	<u>113</u>	<u>7%</u>	<u>35</u>	<u>10%</u>	<u>79</u>	<u>7%</u>	<u>32</u>	<u>4%</u>	<u>47</u>	<u>11%</u>
	3179	100%	1665	100%	1514	100%	355	100%	1159	100%	725	100%	434	100%
Missing	40		20		20		2		18		12		6	
Mean	2.57		2.58		2.56		2.58		2.55		2.36		2.88	
Std. Dev.	1.23		1.43		1.09		1.19		1.06		1.05		1.03	
t					0.31		-0.07		0.41		<b>3.63</b>		<b>-4.16</b>	
p value					0.754		0.947		0.682		<b>0.000</b>		<b>0.000</b>	
<b>Q18: Treated in a managed care organization?</b>														
Yes	567	18%	217	13%	350	23%	70	20%	280	24%	158	22%	122	28%
No	759	24%	443	27%	317	21%	82	23%	235	20%	143	20%	92	21%
I don't know	<u>1822</u>	<u>58%</u>	<u>987</u>	<u>60%</u>	<u>834</u>	<u>56%</u>	<u>199</u>	<u>57%</u>	<u>635</u>	<u>55%</u>	<u>419</u>	<u>58%</u>	<u>216</u>	<u>50%</u>
	3148	100%	1647	100%	1501	100%	351	100%	1150	100%	720	100%	430	100%
Missing	71		38		33		6		27		17		11	
<b>Q19: Paid for any lost days from work?</b>														
Yes	2714	87%	1436	87%	1278	87%	300	87%	978	87%	602	86%	376	89%
No	<u>404</u>	<u>13%</u>	<u>211</u>	<u>13%</u>	<u>193</u>	<u>13%</u>	<u>47</u>	<u>13%</u>	<u>146</u>	<u>13%</u>	<u>98</u>	<u>14%</u>	<u>48</u>	<u>11%</u>
	3118	100%	1647	100%	1471	100%	347	100%	1124	100%	700	100%	425	100%
Missing	101		38		63		10		53		37		16	
<i>When you first returned to work after injury . . .</i>														
<b>Q20a: Have you been employed since injury?</b>														
Yes—I am currently working	2045	76%	1,060	75%	985	77%	235	79%	750	77%	480	80%	271	73%
Yes—I have worked since my injury/illness, but I am not currently working	442	16%	240	17%	202	16%	40	13%	162	17%	91	15%	70	19%
No—I have not been able to return to work at all	<u>203</u>	<u>8%</u>	<u>118</u>	<u>8%</u>	<u>84</u>	<u>7%</u>	<u>23</u>	<u>8%</u>	<u>61</u>	<u>6%</u>	<u>30</u>	<u>5%</u>	<u>31</u>	<u>8%</u>
	2690	100%	1419	100%	1271	100%	298	100%	973	100%	601	100%	372	100%
Missing	529		267		263		59		204		136		68	
<b>Q20b: Approximately how long were you off work? (mean=number of weeks)</b>														
number of responses	2351		1223		1127		260		868		546		322	
Missing	869		462		407		97		309		191		119	
Mean (number of weeks)	10.47		10.76		10.14		10.72		9.97		6.87		15.24	
Std. Dev. (number of weeks)	17.66		21.64		14.68		15.03		14.59		10.61		18.30	
t					0.81		0.03		0.94		<b>4.00</b>		<b>-3.40</b>	
p value					0.420		0.974		0.348		<b>0.000</b>		<b>0.001</b>	

## Injured worker survey responses

	Total		Not covered				Covered				Enrolled			
			Not covered		Covered		Not enrolled		Enrolled		Below threshold		Above threshold	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
<b>Q20c: Work for same employer?</b>														
Yes	2103	84%	1092	84%	1010	85%	229	83%	781	85%	498	87%	283	82%
<b>No</b>	<u>395</u>	<u>16%</u>	<u>213</u>	<u>16%</u>	<u>182</u>	<u>15%</u>	<u>46</u>	<u>17%</u>	<u>136</u>	<u>15%</u>	<u>76</u>	<u>13%</u>	<u>60</u>	<u>18%</u>
	2498	100%	1306	100%	1192	100%	275	100%	918	100%	574	100%	344	100%
Missing	721		380		342		82		260		163		97	
<b>Q20d: Return to same work as before?</b>														
Same	1475	60%	767	59%	708	60%	155	57%	553	61%	367	64%	186	56%
Similar	381	15%	204	16%	176	15%	43	16%	133	15%	81	14%	52	16%
Different	<u>611</u>	<u>25%</u>	<u>323</u>	<u>25%</u>	<u>289</u>	<u>25%</u>	<u>73</u>	<u>27%</u>	<u>215</u>	<u>24%</u>	<u>121</u>	<u>21%</u>	<u>94</u>	<u>28%</u>
	2467	100%	1294	100%	1173	100%	272	100%	902	100%	570	100%	331	100%
Missing	752		391		361		85		276		167		109	
Mean	1.65		1.66		1.64		1.70		1.63		1.57		1.72	
Std. Dev.	0.85		0.99		0.75		0.81		0.73		0.73		0.74	
t					0.41		-0.66		0.82		1.92		-1.13	
p value					0.682		0.509		0.412		0.055		0.257	
<b>Q20e: Return to same wages as before?</b>														
Much higher	25	1%	9	1%	16	1%	2	1%	14	1%	10	2%	4	1%
Somewhat higher	168	7%	88	7%	80	7%	17	6%	64	7%	42	7%	22	6%
The same	1728	70%	887	69%	841	71%	187	69%	654	72%	419	73%	235	70%
Somewhat lower	300	12%	164	13%	136	11%	36	13%	99	11%	59	10%	40	12%
Much lower	<u>251</u>	<u>10%</u>	<u>142</u>	<u>11%</u>	<u>109</u>	<u>9%</u>	<u>29</u>	<u>11%</u>	<u>79</u>	<u>9%</u>	<u>42</u>	<u>7%</u>	<u>37</u>	<u>11%</u>
	2471	100%	1289	100%	1182	100%	272	100%	910	100%	572	100%	338	100%
Missing	748		396		352		85		267		165		102	
Mean	2.76		2.73		2.80		2.73		2.82		2.86		2.75	
Std. Dev.	0.76		0.90		0.66		0.72		0.65		0.64		0.65	
t					<b>-1.96</b>		0.05		<b>-2.37</b>		<b>-2.98</b>		-0.23	
p value					<b>0.050</b>		0.959		<b>0.018</b>		<b>0.003</b>		0.815	
<b>Q20f: Were your job duties restricted?</b>														
Not restricted at all	589	24%	308	24%	281	24%	62	23%	219	24%	157	28%	62	18%
Somewhat restricted	1166	47%	608	47%	558	47%	127	46%	431	47%	271	48%	160	47%
Very restricted	<u>716</u>	<u>29%</u>	<u>371</u>	<u>29%</u>	<u>344</u>	<u>29%</u>	<u>84</u>	<u>31%</u>	<u>260</u>	<u>29%</u>	<u>141</u>	<u>25%</u>	<u>119</u>	<u>35%</u>
	2471	100%	1287	100%	1184	100%	272	100%	911	100%	570	100%	341	100%
Missing	748		398		350		85		266		167		99	
Mean	2.05		2.05		2.05		2.08		2.05		1.97		2.17	
Std. Dev.	0.73		0.85		0.64		0.68		0.63		0.64		0.59	
t					-0.13		-0.57		0.13		1.94		<b>-2.41</b>	
p value					0.895		0.566		0.900		0.052		<b>0.016</b>	
<b>Q20g: Amount of time physical pain interfered with job duties</b>														
None of the time	214	9%	117	9%	97	8%	20	7%	77	9%	61	11%	16	5%
A little of the time	464	19%	242	19%	222	19%	54	20%	168	19%	127	22%	41	12%
Some of the time	776	31%	405	31%	371	32%	95	35%	277	31%	168	30%	109	32%
Most of the time	694	28%	361	28%	333	28%	67	25%	265	29%	149	26%	117	35%
All of the time	<u>323</u>	<u>13%</u>	<u>171</u>	<u>13%</u>	<u>152</u>	<u>13%</u>	<u>34</u>	<u>13%</u>	<u>118</u>	<u>13%</u>	<u>64</u>	<u>11%</u>	<u>54</u>	<u>16%</u>
	2471	100%	1296	100%	1176	100%	270	100%	905	100%	568	100%	337	100%
Missing	748		389		359		87		272		168		104	
Mean	3.18		3.18		3.19		3.16		3.20		3.05		3.45	
Std. Dev.	1.15		1.34		1.00		1.04		0.99		1.03		0.88	
t					-0.26		0.23		-0.42		<b>1.99</b>		<b>-3.52</b>	
p value					0.796		0.818		0.673		<b>0.046</b>		<b>0.000</b>	

## Injured worker survey responses

	Total		Not covered				Covered				Enrolled			
			Not covered		Covered		Not enrolled		Enrolled		Below threshold		Above threshold	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
<b>Q21: Overall experience with returning to work</b>														
Very satisfied	353	14%	187	15%	165	14%	38	14%	127	14%	91	16%	36	11%
Satisfied	1280	52%	663	52%	617	53%	139	51%	479	53%	321	57%	158	47%
Dissatisfied	516	21%	254	20%	262	22%	65	24%	197	22%	107	19%	90	27%
Very dissatisfied	298	12%	170	13%	128	11%	29	11%	99	11%	45	8%	54	16%
	2446	100%	1274	100%	1173	100%	271	100%	902	100%	564	100%	338	100%
Missing	773		412		361		86		275		173		102	
Mean	2.69		2.68		2.70		2.68		2.70		2.81		2.52	
Std. Dev.	0.87		1.03		0.74		0.79		0.73		0.71		0.74	
t					-0.47		-0.02		-0.56		<b>-2.74</b>		<b>2.66</b>	
p value					0.636		0.987		0.578		<b>0.006</b>		<b>0.008</b>	
<b>Q22: Rate your job satisfaction at the time of injury</b>														
Very satisfied	1140	36%	572	35%	568	38%	125	35%	443	38%	280	39%	163	38%
Satisfied	1674	53%	898	54%	776	51%	189	54%	586	51%	361	50%	225	52%
Dissatisfied	226	7%	114	7%	112	7%	26	7%	86	7%	57	8%	29	7%
Very dissatisfied	123	4%	71	4%	52	3%	13	4%	39	3%	22	3%	17	4%
	3163	100%	1656	100%	1508	100%	353	100%	1154	100%	721	100%	433	100%
Missing	56		29		27		4		23		16		7	
Mean	3.21		3.19		3.23		3.21		3.24		3.25		3.23	
Std. Dev.	0.74		0.86		0.64		0.68		0.63		0.65		0.62	
t					-1.56		-0.32		-1.66		-1.58		-0.92	
p value					0.120		0.750		0.097		0.114		0.356	
<b>Q23: Has an attorney represented you on behalf of your claim?</b>														
Yes	832	26%	438	26%	394	26%	96	27%	298	26%	141	19%	156	36%
No	2358	74%	1232	74%	1126	74%	259	73%	867	74%	588	81%	279	64%
	3190	100%	1670	100%	1520	100%	355	100%	1165	100%	729	100%	436	100%
Missing	29		15		14		2		12		8		5	
<b>24. Marital status:</b>														
Married	1918	61%												
Separated	75	2%												
Divorced	519	17%												
Widowed	45	1%												
Unmarried couple	120	4%												
Never married	466	15%												
	3143	100%												
Missing	76													
<b>25. Race/ethnic background:</b>														
American Indian or Alaska Native											85	3%		
Asian											45	1%		
Black or African American											45	1%		
Hispanic or Latino											163	5%		
Native Hawaiian or Other Pacific Islander											14	0%		
White, not Hispanic or Latino											2699	87%		
Other											67	2%		
											3116	100%		
Missing											103			
<b>26. Please provide any other information you feel is relevant to treatment of your injury/illness</b>														
	Positive		Negative		Neutral		Total							
Comment category	n	%	n	%	n	%	n	%						
Insurer	41	9%	379	88%	13	3%	433	100%						
Employer	29	13%	181	79%	18	8%	228	100%						
Medical provider	126	27%	305	66%	31	7%	462	100%						
Workers' compensation system	18	9%	161	82%	18	9%	197	100%						
Managed care study	4	12%	21	62%	9	26%	34	100%						
General satisfaction	89	100%	-	-	-	-	89	100%						
General dissatisfaction	-	-	381	100%	-	-	381	100%						
Requests for help	-	-	-	-	35	100%	35	100%						
Total	307	17%	1428	77%	124	7%	1859	100%						
Notes: Comments were assigned positive, negative, and neutral codes in the categories above. 1,502 respondents made 1,859 comments.														
Note: Adjustment factors described in Appendix F were applied to all survey responses except question 26.														

## Controlling for differences between study groups: claims

Severity control is an important consideration when comparing the claims costs of two or more groups of claimants. According to a review of research done by the Texas Research and Oversight Council on Workers' Compensation, ICD-9 (International Classification of Diseases, 9th Revision) codes are the tool most often used to control for differences in severity. Other methods use employer characteristics, claim characteristics, worker demographics, claim duration, or the type of medical care. Each method has its drawbacks. Claim duration and medical care are influenced by managed care, and they lack the prerequisite independence of good control variables. Worker demographics and employer characteristics are important variables that can be used in addition to ICD-9 severity control.

Various methods are used to obtain severity control from ICD-9 codes. Samples are frequently selected based on ICD-9 code. Samples can also be weighted to control the mix of ICD-9 codes. In the study of Florida's managed care pilot programs, ICD-9 codes were divided into 19 categories. The claims were weighted so that the distribution of ICD-9 categories in the participant group matched the distribution in the control group.

In the multivariate analysis portion of this study, severity differences between study groups were controlled through the use of three sets of variables. The OIICS codes, which describe the nature of the injury, the injured body part, and the injury event were used to control for differences in types of injury among the study groups. Nature, part, and event codes were available for each claim in the study frame. The codes were grouped into six or seven categories (see Appendix E). In the regression models, these categories were used as indicator variables. Those variables that had significant parameter estimates in the model were retained.

The regression models also included variables to account for demographic differences. These variables consisted of

variables for insurer type, urban areas, age, weekly wage, and the number of days worked.

The third method for controlling for severity differences between study groups was the development of severity indices based on ICD-9 codes. Separate indices were created to explain medical, timeloss, PPD, and total claims costs. Separate measures of severity for each of the cost components were needed to account for differences in types of injuries. For example, some ICD-9 codes have high timeloss or PPD costs and relatively low medical costs.

The severity indices were constructed using ICD-9 codes from the medical payment data base. Claims with dates of injury from 1991 to 1997 were selected from the claims data base applying the criteria used for the study frame: accepted disabling closed claims, excluding fatalities and permanent total disabilities. The claims were matched to the medical payment data, and each matching claim was assigned the ICD-9 code that corresponded to the greatest cost of the medical services provided to the claimant. The resulting claims file contained nearly 139,000 claims.

For each claim, the medical, timeloss, and PPD data were determined by processes similar to those used to assign component costs to the study claims (see Appendix F). Medical costs were obtained from medical payment data. Timeloss and PPD data were taken from data on claim closures, CDA settlements, and awards. The medical, timeloss, PPD, and total cost data were converted to natural logarithms, and averages were computed for each ICD-9 code. The result was a severity index containing nearly 3,000 ICD-9 codes present in the Oregon workers' compensation system. For each ICD-9 code, four separate measures of severity, on a natural log scale, were computed: medical cost, timeloss days, percent of permanent partial disability, and total cost. The first three measures were used in the cost comparison between the covered and not

covered study groups shown in Table 20.

The ICD-9 severity index was developed to enable cost comparisons between study groups. The intent was to compare a control group (the not covered study group) to managed care groups (the enrolled and above threshold study groups). Differences in severity, however, are attributable both to severity differences among ICD-9 codes and to severity differences within single ICD-9 codes. Severity control based on ICD-9 codes only addresses the former. This limitation makes some comparisons invalid. Specifically, comparisons are invalid when placement in the study groups is influenced by the claim severity, creating selection bias. The decision to enroll a claimant in an MCO is influenced by claim severity, particularly when enrollment does not occur until the time of claim acceptance. This tends to place the more severe claims within an ICD-9 code in the enrolled group. Consequently, the ICD-9 severity control does not permit valid cost comparisons between enrolled and not covered study groups. Likewise, the more severe claims within an ICD-9 code are also more likely to require extended medical care, thus receiving a large portion of their medical care after enrollment. Therefore, the costs of the above threshold study group cannot be compared to the not covered group.

This limitation restricts the use of ICD-9 severity control to situations that are free of selection bias. Roughly half of the Oregon work force is covered by managed care. Coverage stems from contracts between insurers and MCOs. Most insurers with MCO contracts require all employers to participate as a condition of obtaining workers' compensation coverage. As a result, all employees whose workers' compensation coverage is provided by an insurer with a managed care contract and who work in a geographical area served by the MCO are covered by managed care. Coverage decisions are made by insurers and employers prior to injury, eliminating selection bias with respect to injury severity.

## Appendix J

The effects of the assignment bias can be seen in Tables J-1 and J-2. Table J-1 shows the result from a regression model that attempts to measure the impact of managed care enrollment, not just coverage, on total claims cost. The model attempts to compare the enrolled study group, the covered, not enrolled study group, and the not covered study group.

The results indicate that claims in the covered, not enrolled study group cost 14.5

percent less than claims in the not covered study group. Claims in the enrolled study group cost 11.7 percent less than claims in the not covered group. If these results were valid, they would imply that the best policy would be to cover claimants by MCO contracts but not enroll them in managed care. The more reasonable interpretation is that the other severity control variables, the ICD-9 severity measure and the nature, part, and event categories, do not compensate for

selection bias that is involved in the managed care enrollment process.

A regression model was also used to compare total costs for four groups: the covered, not enrolled study group, the below threshold group, the above threshold group, and the not covered group (see Table J-2). The results confirm the inadequacy of the severity control variables to compensate for the selection bias.

**Table J-1. Attempted 3-group total cost comparison managed care claims compared to not covered claims**

<u>Claim category</u>	<u>Cost relative to not covered</u>
Not covered	n/a
Covered, not enrolled	-14.5 percent
Covered, enrolled	-11.7 percent

Dependent Variable: LCOST

### Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	17	8982.66165	528.39186	302.864	0.0001
Error	6993	12200.34274	1.74465		
C Total	7010	21183.00438			

Root MSE	1.32085	R-square	0.4241
Dep Mean	8.01356	Adj R-sq	0.4227
C.V.	16.48271		

### Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob >  T	Variance Inflation
INTERCEP	1	-1.647544	0.20907711	-7.880	0.0001	0.00000000
SAIF	1	0.094348	0.03843657	2.455	0.0141	1.63184889
LWAGE	1	0.290834	0.02693739	10.797	0.0001	1.09507771
AGE	1	0.012667	0.00124609	10.165	0.0001	1.11431773
NATURE1	1	0.117261	0.05048339	2.323	0.0202	1.42315460
NATURE2	1	-0.265535	0.03941350	-6.737	0.0001	1.97779460
NATURE5	1	-0.317253	0.04592425	-6.908	0.0001	1.44977072
PART1	1	-0.237800	0.04713202	-5.045	0.0001	2.17037757
PART2	1	-0.248134	0.05272315	-4.706	0.0001	1.57128805
PART3	1	-0.198116	0.06277174	-3.156	0.0016	1.53873058
PART4	1	-0.200924	0.05023023	-4.000	0.0001	1.78844771
PART5	1	-0.226530	0.05467338	-4.143	0.0001	1.59415881
PART6	1	-0.367538	0.05892095	-6.238	0.0001	1.51505364
EVENT2	1	0.209263	0.05230656	4.001	0.0001	1.05497450
EVENT5	1	0.356963	0.06868248	5.197	0.0001	1.08318644
TOTALSEV	1	0.937723	0.01697230	55.250	0.0001	1.20642433
COVNOTEN	1	-0.144711	0.04683388	-3.090	0.0020	1.10739074
COVEN	1	-0.117282	0.03798519	-3.088	0.0020	1.73955531

**Table J-2. Attempted 4-group total cost comparisons, managed care claims compared to not covered claims**

<u>Claim category</u>	<u>Cost relative to not covered</u>
Not covered	n/a
Covered, not enrolled	-14.6 percent
Covered, enrolled, below threshold	-44.3 percent
Covered, enrolled, above threshold	+40.1 percent

Dependent Variable: LCOST

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	18	9513.72926	528.54051	316.691	0.0001
Error	6992	11669.27512	1.66895		
C Total	7010	21183.00438			

Root MSE	1.29188	R-square	0.4491
Dep Mean	8.01356	Adj R-sq	0.4477
C.V.	16.12113		

**Parameter Estimates**

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob >  T	Variance Inflation
INTERCEP	1	-1.219177	0.20589584	-5.921	0.0001	0.00000000
SAIF	1	0.119792	0.03762045	3.184	0.0015	1.63419814
LWAGE	1	0.286254	0.02634773	10.864	0.0001	1.09518168
AGE	1	0.011708	0.00121994	9.597	0.0001	1.11648442
NATURE1	1	0.128749	0.04938016	2.607	0.0091	1.42339668
NATURE2	1	-0.272966	0.03855115	-7.081	0.0001	1.97802558
NATURE5	1	-0.298633	0.04492896	-6.647	0.0001	1.45055370
PART1	1	-0.221015	0.04610771	-4.793	0.0001	2.17128190
PART2	1	-0.259997	0.05157087	-5.042	0.0001	1.57154940
PART3	1	-0.177897	0.06140520	-2.897	0.0038	1.53925504
PART4	1	-0.214891	0.04913459	-4.374	0.0001	1.78890200
PART5	1	-0.242269	0.05348131	-4.530	0.0001	1.59459279
PART6	1	-0.358926	0.05763044	-6.228	0.0001	1.51515997
EVENT2	1	0.199167	0.05116226	3.893	0.0001	1.05510361
EVENT5	1	0.361161	0.06717623	5.376	0.0001	1.08319973
TOTALSEV	1	0.893289	0.01678583	53.217	0.0001	1.23358928
COVNOTEN	1	-0.146484	0.04580661	-3.198	0.0014	1.10739595
COVENBE	1	-0.443382	0.04140601	-10.708	0.0001	1.65295293
COVENAB	1	0.400902	0.04716043	8.501	0.0001	1.41869101

## Controlling for differences between study groups: injured worker survey

Workers' attitudes toward their care were correlated with the severity of their injuries, as reported on question 16 (see Table K-1). These correlations are not high, but with the large number of responses, they are significantly different from zero. It appeared desirable, therefore, to adjust the means of the survey questions to account for differences in the reported severity among the study groups. Several methods were tried. The most promising method was a regression model similar to that used in the cost analysis. The response to question 16 was

added to the variables in the cost models, and regression models were constructed using stepwise regression to find the difference between covered and not covered study groups.

An example of this method is shown in Table K-2. The table shows the results of the analysis performed on responses to Question 2, which asked about the ease of obtaining medical treatment. The results show that the mean satisfaction with the ease of obtaining medical care is 0.08 lower

for covered workers than for not covered workers. This compares to an unadjusted difference of 0.09. The results of this methodology narrowed slightly the differences in mean responses between the covered and not covered study groups. They did not, however, change any of the significant differences. Because of this and because the methodology might itself raise questions, it was decided not to adjust the survey responses for differences in severity.

**Table K-1. Correlations between Question 16, self-reported injury severity, and other survey questions**

Selected questionnaire items	r	p value	n
Q1: Overall medical treatment received	-0.152	0.000	3,116
Q2: Overall ease of obtaining medical care	-0.151	0.000	3,113
Q4a: Satisfaction with care after changing doctors	-0.041	0.204	965
<i>Regarding your overall treatment, rate the following:</i>			
Q5: Quality of health care you received	-0.103	0.000	3,108
Q6: Appropriateness of treatment	-0.108	0.000	3,101
Q7: Explanation of treatment	-0.098	0.000	3,099
Q8: Personal control over medical decisions	-0.125	0.000	3,090
Q9: Number of doctors to choose from	-0.079	0.000	3,026
Q10: Length of time between injury and first treatment	-0.148	0.000	3,095
Q11: Distance traveled to appointment(s)	-0.110	0.000	3,087
Q12: Ease of setting up an appointment	-0.076	0.000	3,105
Q13: Overall current health	-0.231	0.000	3,082
<i>Compared to before your injury, rate your current . . .</i>			
Q14a: Physical health	-0.123	0.000	3,108
Q14b: Emotional condition	-0.117	0.000	3,104
Q14c: Level of physical pain	-0.123	0.000	3,092
Q14d: Overall health	-0.113	0.000	3,092
Q15: How well are you recovering from your injury?	-0.269	0.000	3,068
Q17: Extent injury interfered with social relationships	0.408	0.000	3,127
Q20b: Approximate time off work due to injury	0.263	0.000	2,307
Q20d: Same, similar or different work than before?	0.158	0.000	2,415
Q20e: How did wages compare to before injury?	-0.094	0.000	2,423
Q20f: What degree were your job duties restricted?	0.220	0.000	2,425
Q20g: Time physical pain interfered with job duties	0.303	0.000	2,425
Q21: Satisfaction with return-to-work experience	-0.221	0.000	2,420

**TABLE K-2.**  
**SURVEY RESPONSE STEPWISE REGRESSION ANALYSIS**

Dependent Variable: Q2

**Analysis of Variance**

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	10	270.63060	27.06306	14.816	0.0001
Error	2976	5435.83201	1.82656		
C Total	2986	5706.46261			

Root MSE	1.35150	R-square	0.0474
Dep Mean	3.01780	Adj R-sq	0.0442
C.V.	44.78434		

**Parameter Estimates**

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob >  T	Variance Inflation
INTERCEP	1	3.358801	0.20080608	16.727	0.0001	0.00000000
URBAN	1	-0.074950	0.03678584	-2.037	0.0417	1.05983893
AGE	1	0.004790	0.00124405	3.851	0.0001	1.04179771
NATURE1	1	0.070696	0.04396875	1.608	0.1080	1.11686302
PART4	1	0.080135	0.03915543	2.047	0.0408	1.03082559
PART6	1	0.202104	0.05437566	3.717	0.0002	1.10083865
MEDSEV	1	0.069633	0.03851321	1.808	0.0707	5.99049740
TTDSEV	1	-0.216138	0.04227031	-5.113	0.0001	4.51585573
PPDSEV	1	0.079543	0.03243784	2.452	0.0143	3.09133786
COVER	1	-0.080929	0.02977169	-2.718	0.0066	1.06004010
Q16	1	-0.142669	0.01895121	-7.528	0.0001	1.10464693

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