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Early-Return-to-Work Programs: An Exploratory Study of the Effects of Program Policies and Practices on Organizational Outcomes

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Title: Early-Return-to-Work Programs: An Exploratory
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     Early-return-to-work (ERTW) programs for injured
workers are a relatively new development. While it is
widely believed that such programs are the primary means of
controlling workers' compensation costs after an injury has

occurred, little research has been done on how these programs accomplish that end. This thesis is an exploratory examination of the factors involved in ERTW programs and the relationship between components of ERTW programs for injured workers and organizational outcomes, specifically the cost of medical care and wage reimbursement associated with workers' compensation claims.

To examine the above relationship, 202 organizations in Portland, Oregon were surveyed by telephone about their policies and practices pertinent to injured workers. Outcome data on each organization was then obtained from the State of Oregon Bureau of Labor and Industries.

Exploratory factor analysis revealed five factors from the survey data - a non-ERTW approach, organizations' perceptions of ERTW, extent of ERTW, communication about the ERTW program, and written formalization for dealing with injured employees. This solution accounted for 47.22% of the total variance. Confirmatory factor analysis on a holdout sample revealed that the initial structure was quite stable, but added an additional factor - that of using regular wage for light duty positions. However, follow-up analyses, using covariance structural modeling suggested two additional factors, each of which had only one variable loading on it. They were an early-return-to-work (ERTW) factor and a regular wage factor. Confirmatory factor analysis fit indices for that model were as follows: X^2 (122) = 245.55 (p. = 0.000), Goodness of Fit Index =

0.808, Adjusted Goodness of Fit Index = 0.731, and Root
Mean Square Residual = 0.166).

When data from the state of Oregon Bureau of Labor and
Industries was added, two additional factors were found.
The first was identified as the people statistics factor,
which involved variables dealing with the number of
currently open claims, the number of non-disabling claims
for the year, and the number of reopened claims. The second
factor was identified as the dollars cost factor. The
variables that loaded on it were the median cost of medical
claims and the median cost of wage reimbursement.

Regression analyses were conducted to examine
ability to predict the change in median medical and wage
reimbursement costs from 1985 to 1990. Results
suggested that all of the variables together had a
significant ability to predict the change in median
medical costs (R^2 = 0.296, p. = 0.003) and that the
variables related to the extent of the ERTW program
factor, organizations' perceptions of ERTW factor, and
regular wage factor was offered were able to predict a
significant amount of variance in the change in median
medical costs.

All of the variables together also had a significant
ability to predict the change in median wage
reimbursement costs over time (R^2 = 0.243, p. = 0.032).
However, none of the groups of variables associated with the
factors was able to significantly predict the change in

median wage reimbursement costs over time.

Also examined were organizations' preferences in programs and policies for both those organizations with the best performance (in terms of both medical and wage reimbursement workers' compensation costs) over time and organizations with the worst performance over time (again, in terms of both medical and wage reimbursement workers' compensation costs).

EARLY-RETURN-TO-WORK PROGRAMS: AN EXPLORATORY STUDY OF

THE EFFECTS OF PROGRAM POLICIES AND PRACTICES

ON ORGANIZATIONAL OUTCOMES

by

LORRIE L. RIAT

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TO THE OFFICE OF GRADUATE STUDIES:

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DEDICATION

This thesis is dedicated to Steven W. Riat who has been incredibly patient and supportive throughout the insanity of graduate school as well as to my parents, Carol and Dennis Larson, who have always encouraged and supported my efforts to obtain an education.

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INTRODUCTION

Early-return-to-work (ERTW) programs are recognized as the primary means of controlling workers' compensation costs once an injury has occurred. Such programs have been shown to be beneficial to all parties involved - the worker, the employer, and the insurer. However, because these programs are relatively new, no research has been done to examine the relationships of the different components of ERTW programs on organizational outcomes such as average medical costs and average cost of wage reimbursement per claim. This thesis uses exploratory and confirmatory factor analysis and regression analyses to explore these questions.

BACKGROUND

Workers' compensation legislation was created on a state-by-state basis between the years 1911 and 1949 to provide income, medical care, and rehabilitation assistance without regard to fault to workers who are injured in the course of performing their jobs. While the need for such programs is obvious, the form which they should take is difficult to determine.

After 50 - 80 years of existence, there is little doubt current systems are experiencing very serious problems nationwide. Richard Fein, acting president of the National

Council of Compensation Insurance, has stated that the current workers' compensation system will either be replaced by an improved system or will fall into ruin (Brown, 1990). William Bolton, CEO of an independent insurance brokerage in California, believes that in many states, the workers' compensation system is so ineffective it's actually detrimental to workers. James Ellenberger, assistant director of Occupational Safety, Health, and Social Security for the AFL-CIO takes a slightly more conservative position. He expresses the opinion that unless substantial improvements occur shortly, at the very least, a Federal law mandating minimum standards may be necessary (Sheridan, 1990).

Employers have begun to recognize that controlling the cost of their workers' compensation claims is vital to the financial health of their organizations. In addition, there is now greater recognition that losing a trained, skilled employee, even temporarily, creates organizational costs such as those incurred in training a replacement, lost productivity, and decreased morale of other employees.

Employees who are injured on the job face a number of obstacles in using workers' compensation. Financial compensation for disabling injuries is largely unstan-dardized, often has not kept pace with the rising cost of living, and in too many cases, is obtained only after long legal battles. Rehabilitation services are not always available who could benefit from them and often come too

long after onset of disability to provide optimum outcomes.
Obtaining benefits is usually dependent on an ability to
make one's way through a bureaucratic maze. In short, the
systems are inadequate and difficult to use.

THE WORKERS' COMPENSATION SYSTEM

Workers' Compensation legislation was designed to
provide medical care, rehabilitation, and income assistance
to workers who have been injured on the job or stricken with
an occupationally related disease. Most systems are based
on two types of claims - temporary disability and permanent
disability. Benefits for temporarily disabling injury
claims provide a weekly income based on the amount of wages
earned on the job, as well as medical care and, where
appropriate, rehabilitation assistance. In these cases, it
is expected that the employee will recover and return to
work. Benefits for a permanently disabling injury usually
include medical care and some form of monetary settlement.
In cases where the injury is considered to have caused
permanent total disability, the injured worker is not ever
expected to return to work, but benefits may be provided for
life or for some pre-determined shorter period of time
(based on the type of injury) and depending on the specific
legislation. Injured employees may also be classified as
having a partial permanent disability. In these instances,
the individual is expected to be left with some permanent
loss of functioning, but is still expected to be able to

work (although not necessarily in his/her previous position). Again, income assistance, medical care, and (sometimes) rehabilitation are provided. In the case of a job-related fatality, limited assistance with burial costs is generally provided and dependents of the deceased receive some form of financial support or settlement.

National statistics support the idea that serious problems exist within the workers' compensation systems. For example, in 1989 the combined ratio of payout to premium was 120.1%, meaning that for every premium dollar collected, workers compensation insurers paid $1.20 in benefits and associated costs. Each year, 569,000 new cases enter the workers' compensation system. Nearly half of those injured workers will never return to work and another 10% will take 3 years to go back to work (Engle Beam, 1987). These statistics suggest that the demands on the system will continue to grow.

Oregon is no exception. The state is burdened with a workers' compensation system which has resulted in some of the highest costs in the country (in 1988, Oregon employers paid the eighth highest workers' compensation premiums in the nation, according to the Oregon Department of Insurance and Finance) while doing an ever-poorer job of helping injured workers return to work (Mapes, 1990) and is now experiencing "universal criticism" (Mapes, 1990, p. B1). Herbert Aschkenasy, board chairman of SAIF Corp., calls Oregon's workers' compensation system "scandalous" (Mapes,

p. A24) and adds that "It's not only expensive, it's not even effective." (Mapes, 1990, p. A24). Workers in this state have the highest rate of total claims in the country - over 15 per 100 workers (Mapes, 1990). Recent statistics indicate that the number of permanent, partial disability cases is increasing (these make up a large portion of the most expensive cases). A record percentage of workers are saying that their injuries have left them permanently damaged, and the average amount of time off the job has increased from just 10 years ago (Mapes, 1990). For example, in 1988, there were 43,660 claims closed with an average of 87 lost days per case and an average total cost of $8,371.00 per claim (statistics from Oregon Department of Insurance and Finance). A comparison of Oregon's Workers' Compensation System with that of Wisconsin's (which has been called "the envy of other states" by Sen. Jerome Van Sistine, chair of the Wisconsin Legislature's Committee on Labor, Business Insurance, Veterans and Military Affairs, according to Mapes [1990, p. B4]) gives a clearer picture of what can be accomplished. In 1988, Oregon's system covered 1,099,900 workers, had 153,137 claims and paid out $578.4 million (Oregon Department of Insurance and Finance, 1990). On the other hand, in the same year, Wisconsin's system covered 2,121,104 workers, had 76,917 claims and paid out $209 million (State of Wisconsin, 1990 as cited by Mapes, 1990). Because of the severe problems being experienced by the Oregon workers' compensation system, Ex-Governor Neil

Goldshmidt convened a committee of labor and business, hoping that without representatives of the legal, medical, and insurance communities, some agreement on reforms could finally be reached.

The effects of an ineffective workers' compensation system are felt by everyone involved - insurers, employers, injured workers, and their families.

THE INSURERS

Insurers obviously cannot survive indefinitely when they are experiencing combined ratios at or above 100%. If this trend continues, the number of firms who are willing and able to offer workers' compensation insurance will decline drastically. Some firms may choose to withdraw from the workers' compensation market and concentrate on other markets while others that focus soley on offering workers' compensation insurance may cease to exist altogether.

THE WORKER

Injured employees also suffer when they are unable to return to work quickly. Many experience financial difficulty due to loss of income, but other consequences may be even more harmful. In our society, adults are defined in large part by the work they do. When injured employees lose their working identity and are forced to replace it with some form of a "disabled person" identity, they are likely to experience emotional stress. Kelvin

(1981) suggests that the loss of the work role that is quite frequently an integral part of peoples' values, self-image and life-structure, can be a threat to psychological health. Furthermore, the label "disabled person" carries with it a very low status in this society. Hood and Downs (1985) state that returning disabled persons to activity can increase both self-esteem and prestige and help to mitigate the adverse impact of any lasting disability.

Besides the injured worker, the family is also likely to suffer as a result of prolonged homebound recuperation periods (or permanent inability to work). The stress involved in such a major change in lifestyle will likely affect each member of the family system in some way. For example, Verslyus (1980) states that even very stable families may experience distress as a result of disability-related unemployment.

There is also some possibility that an injured employee may develop some form of "disability dependence". Hood and Downs (1985) state that the processes for determining eligibility for disability benefits tends to support dependence on the system. Walker (1989) reported a small but consistent number of cases, which he called "perpetual patients", who are off work for significantly longer periods of time than others with similar injuries. He attributed the cause to psychological problems. Taylor (1989), on the basis of his review of research involving return to work after back surgery, concluded that among the primary

determinants for return in these cases is the "renewal of
psychological determination to become productive" (p. 85).
He discusses a deconditioning syndrome which results from a
tendency for back-injured workers to be overly cautious
about protecting their backs. Hanson-Mayer (1984) suggests
that psychological factors which contribute to "worker's
disability syndrome" are best dealt with early in the
recovery process. In a sample of 200 English workers'
compensation claimants, Cornes, Bochel, and Aitken (1986)
report that there was some suspicion of psychological
reasons for failure to return to work in 13% of their
sample.

THE EMPLOYER

Employers also absorb some of the high cost of the
workers' compensation system. Due to skyrocketing costs,
workers' compensation insurance has recently become a major
part of the cost of doing business. Because an
organization's yearly premiums are computed in part on the
basis of past claims costs, every dollar paid out because of
an injury to one of their employees will cost them money in
the future. By 1987, national workers' compensation costs
had soared to $120 billion (Lucas, 1987), including both
those costs paid by companies, and those paid by the
government. Premiums have been climbing steadily.
According to the U.S. Social Security Administration,
premiums have risen from a total of 22.2 billion dollars in

1980 to a total of 34.1 billion dollars in 1986. Despite skyrocketing increases in premiums, workers' compensation insurers have been experiencing losses (Brown, 1990). Because of this trend, insurers have been ever more cautious about what companies they choose to insure. Mapes (1990) reported that SAIF was attempting to turn around their financial situation in part by dropping many of the small businesses that they previously insured and that many of those businesses can not afford to obtain workers' compensation coverage elsewhere. This means that the availability and cost of workers' compensation insurance is in some cases making the difference between an ongoing business and a business that no longer exists.

The current workers' compensation system creates other problems for employers. When an employee who has the capacity to return to their previous position does not do so, the cost of hiring and training a replacement may run into thousands of dollars. Another less recognized consequence of unnecessarily losing an employee to an injury comes in the form of a likely blow to other employees' morale if they perceive that the organization does not care about its individual employees. One approach to these situations involves modifying the position to accommodate the employee's physical limitations. Another partial solution is to put disabled employees in other positions within the company, where they can put knowledge learned in their previous position to use. This is likely to result in

some cost saving to the employer, as well as to provide an employment solution to a partially disabled person who would likely have difficulty obtaining a new job.

RETURN-TO-WORK

There are a number of reasons for the distressed state of workers' compensation systems. Engle Beam (1987) provides a useful discussion of this topic. She reports that the system often discourages disabled workers from returning to work. (Livneh [1982] concurs with this statement, reporting that disabled workers who could return to work are often prevented or delayed from doing so.) The percentage of injured workers who will eventually go back to work is not particularly high. Of the 569,000 workers who incur some form of disability each year due to a physical injury while working, almost half will never return to work. Another 10 percent of those workers will not return to work for three years. In addition, the current workers' compensation system frequently requires disabled workers to prove that they are unable to work, whether they wish to be employed or not. Employers' attitudes toward disabled employees have not generally been helpful. Employees who sense that their employer will not be pleased to have them back when they are unable to perform their previous duties fully are less likely to return to work. These factors work together to encourage the development of a dependency orientation in the worker. Hanson-Mayer (1984) calls this

"workers' disability syndrome", and reports that this psychological state may become the primary obstacle preventing the worker from returning to work. Once that orientation has developed, the likelihood that an employee will return to work is decreased substantially.

Research by the state of Oregon supports the importance of returning to work as soon as possible after the occurrence of an injury. Findings indicate that after six months off work, an employee has only a 50% chance of returning to work while after one year off work, chances of returning to work drop to less than 10% (Oregon Department of Insurance and Finance, 1989). In their review of the return-to-work literature, Hood and Downs (1985) state that evidence indicates that establishing return to work objectives as early as possible in injured workers' recovery processes helps more workers return to work sooner and more often to their previous jobs.

EARLY-RETURN-TO-WORK (ERTW) PROGRAMS

As organizations have watched the cost of their worker's compensation insurance rise dramatically, and as insurers have begun experiencing serious losses, both parties have begun to search for ways to control these costs. Two methods have been identified. First, companies can work to prevent injuries before they occur through safety/risk management programs. Second, once an injury has occurred, a company can take a proactive approach to keeping

the cost of that specific injury low through ERTW programs.
SAIF (1990) reports that an average of $3500 is saved after
an employee is placed in an ERTW program. The best strategy
for an organization involves implementing both types.
However, ERTW programs and their effects on organizational
outcomes will be the topic of this research project.

ERTW programs involve the use of several strategies to
cut the cost of current injuries (and in the long run, to
lower the cost of worker's compensation premiums). These
are as follows:

1) Stay in contact with injured workers as they
recover to let them know that the company cares about their
progress and wants them back (some care needs to be taken
not to use an adversarial approach)

2) Identify or create light duty jobs so that injured
workers can, with their doctors' approval, return to work in
jobs that fit their current physical capabilities, rather
than waiting until the injured employee is 100% recovered
(which may take much longer, and in the case of permanently
disabling injuries, will never occur)

3) Analyze and record the specific physical demands of
each job in the organization. This information helps the
treating physician make decision about readiness for light
duty work and about when the employee's physical capacity
tolerances will allow them to return to their previous jobs

4) Provide monetary incentives for an injured employee
to return to work early. This strategy suggests that the

injured employee should be able to earn more than their
workers'compensation payments by working at least part time.

　　5)　In addition, it is believed that such programs
also help to reduce fraudulent claims because the pay-off
for "faking" an injury is removed - the would-be vacationer
is still required to work.

　　Case studies strongly suggest that these programs are
an effective way to decrease workers'compensation costs.
For example, Burlington Northern developed an aggressive
ERTW program and reported being able to cut the number of
employees who were unable to return to work due to
disability in half over a 21 month period (Lucas, 1987).
Alcoa created a program which involved bringing injured
employees back to work at the point that they are able to do
some job at some level. They report saving more than 20
percent of their expected 1983 workers compensation
premiums (Wardrop, 1984). One unidentified Oregon company
experienced dramatic benefits after instituting an ERTW
program and other loss prevention measures. During the
previous two-year period, they had experienced 35 claims
which generated over 2,400 days of lost time and had a total
claims cost of over $330,000. A year later, they had only
one time loss claim with a total cost of $5,000 (SAIF,
1990). Consolidated Freightways also reported significant
improvements in both the number of time loss injuries and in
the frequency of injuries after beginning their ERTW
program. In 1986, their Illinois plant had 120 injuries, 66

of which resulted in lost time. In 1987, with program implemented, they had just over 70 injuries with only 44 resulting in lost time. And by August of 1988, they had experienced approximately 50 injuries with just 21 cases resulting in time loss.

Other researchers have examined the benefits of ERTW for the involved employees. (See Hood and Downs, 1985 for a comprehensive review of this literature.) They concluded that early intervention strategies not only reduce the cost of disabilities but also have the ability to reduce both the physical and psychosocial suffering of the injured worker. SAIF has found that injured workers who return to work via an ERTW program actually recover from their injuries more quickly (SAIF, 6/90). This finding is likely due to the fact that modified work serves as a "work hardening" process which, when well conceived, may provide excellent therapy for the injury. This data suggests that ERTW programs are a win-win solution for dealing with on the job injuries.

RESEARCH STRUCTURE AND GOALS

Because the concept of ERTW is quite new, little research has been done on it, either in terms of the underlying factors involved or in terms of the effects of various organizational policies and practices on organizational outcomes (i.e. number of open claims, number of non-disabling claims, number of reopened claims, and

average medical and wage replacement cost of claims). This research examined the underlying structure of ERTW and the effect of variation in ERTW programs' policies and practices on those organizational outcomes. To accomplish this, organizations in the Portland Metropolitan area were contacted by phone and surveyed regarding their policies and practices on returning injured employees to work and the Oregon Bureau of Labor and Industries provided outcome data for the surveyed organizations.

The goals of this study were as follows:

1) Create a preliminary model describing the structure of ERTW programs (based on corollary data)

2) Discover which components of ERTW programs make for effective programs by examining the ability of the presence or absence of the various components to predict a decrease in organizational outcome variables over time (when adjusted for inflation)

3) Examine differences in the components of ERTW programs between organizations with the best performance in controlling workers' compensation medical and wage reimbursement costs over time.

METHOD

SUBJECTS

Subjects were 202 organizations from Washington,
Multnomah, and Yamhill counties, generally with at least 50
employees (although there were a few exceptions to this).
No attempt was made to draw a representative sample from
across the range of industries, but instead, the
emphasis was on surveying organizations whose employees
experience injuries with at least some regularity. The
only industry which was nearly eliminated based on this
criteria was that of Finance, Insurance, and Real
Estate. This approach was chosen as the research focus
required injury data. Twenty-nine of the organizations
were also surveyed previously during the pre-testing
phase of the questionnaire.

MATERIALS

A list of companies in the Oregon Tri-County area with
over 50 employees was obtained from the Oregon Bureau of
Labor and Industries. The listing contained information on
employer name, address, identification number, and
approximate number of employees, broken down by type of
industry. This list was used to choose those organizations

who dealt with workers' compensation that at least occasionally answered their phone (rather than leaving it forwarded to voice-mail continuously), they had some history of on-the-job injuries, and they were willing to participate in the survey.

In addition, a brief list of companies (approximately 12) with ERTW programs was obtained from SAIF Corp. It was used to contact a number of companies who are known to have in place ERTW programs. A few of those companies had slightly fewer than 50 employees.

The return to work survey used in the study asks 19 questions about the organization's policies and practices regarding workers who have been injured on the job as well as 3 questions about organizational characteristics (see Appendix A). An additional question was included to try to assess the rate of injury. However, that data was not analyzed as a large number of organizations were reluctant to discuss those figures and it was believed that most of those who were willing to discuss them were not able to provide accurate data.

The questionnaire was pre-tested on 50 organizations. Modifications were made based on the results of the pretest and an interview with a ERTW expert at SAIF Corporation. The current version of the questionnaire was modified to to include:

1) a question about the proportion of employees who's jobs are covered by light duty alternatives when they have

been injured,

2) a 1 to 5 scale assessment of the organization's dedication to the use of ERTW and/or modified or light duty work,

3) a question regarding whether the employees sign a form stating that they understand and accept the ERTW policy and the responsibilities it gives them,

4) a question assessing the amount of training organizational members have had in the use of ERTW procedures.

Response results were excellent and showed the survey to be easily comprehensible to the respondents. Fewer than 10 organizations declined to participate.

Data on dependent variables was obtained from the State of Oregon Department of Labor and Industries for 1990 and 1985. Information on the following variables was used:

1) number of non-disabling injuries
2) median medical cost for closed claims
3) median wage reimbursement cost for closed claims
4) number of open claims
5) number of reopened claims

The median was used as an indicator of organizational outcomes because the data do not produce a normal distribution, but are subject to extreme outliers, which is to be expected when some of the financial settlements are determined by the outcome of court cases and when settlements for injury types which do not have a pre-determined settlement amount can vary widely from case to case. One drawback of these outcome variables is that

each of those that involves looking at the "number of..." has a confound with organizational size.

Attempts to obtain information on the average number of days lost per injury, on the number of disabling claims, and on the medical and wage reimbursement costs of disabling claims from the organizations themselves resulted in data of questionnable reliability/validity. For that reason, no analyses were done on that data.

PROCEDURE

Organizations were surveyed by telephone. Respondents held a wide variety of positions within their respective organizations - these positions included risk analysis, safety specialist, occupational health nurse, office manager, organizational manager, early-return-to-work specialist, and the person who dealt with the workers' compensation paperwork. Dependent variable data from the Oregon Bureau of Labor and Industries was obtained on each of the companies who participated in the survey. The two sets of data were then combined for analysis. The set of 202 cases was randomly divided into two separate files, one to be used for the exploratory analysis, and one to be used for the confirmatory analysis. This was done by assigning all of the even-numbered cases to one file and all of the odd-numbered cases to another file.

RESULTS

DESCRIPTIVE STATISTICS

Descriptive statistics that characterize the sample of 202 organizations are presented below:

1) The mean number of employees in the organizations surveyed was 879.33 with a standard deviation of 1,662.6. This variable was not normally distributed; the maximum number of employees was 10,000 and the minimum was 20. The median number of employees in the surveyed organizations was 247.5.

2) Twenty-four percent of the organizations reported being self-insured, 26 percent reported that their workers' compensation insurer was Liberty, and 17 percent reported SAIF as their workers compensation insurer. Two percent of survey respondents did not know who the organization's workers' compensation insurer was. The remaining 31 percent of respondents reported being insured by a wide variety of insurance companies.

3) Forty-seven percent of the organizations reported having at least some union members. Of those reporting some union membership, the mean percentage of union employees was 75.2% and the standard deviation was 27.6.

Descriptive statistics for the questions in the survey

are presented in Table I. Simple correlations between the survey variables are presented in Table II (these were used only for descriptive purposed, not for interpretation). Both of these tables are based on an N of 172. These data are from the organizations for which matching variables from the Oregon records were available.

Descriptive statistics on the data obtained from the State of Oregon Bureau of Labor and Industries (for 1990) are as follows:

1) Number of reopened cases had a mean of 0.42 and a standard deviation of 0.99. The minimum number of reopened cases was 0 and the maximum was 6. There was very little variance in this variable - over 75% of the organizations had no reopened cases.

2) Number of non-disabling claims for 1990 had a mean of 8.38 and a standard deviation of 15.74. The minimum number of non-disabling claims was 0 and the maximum was 125.

3) Number of open claims had a mean of 2.22 and a standard deviation of 4.90. The minimum number of open claims was 0 and the maximum was 47.

4) Median cost of medical claims had a mean of $2,014.12 and a standard deviation of $3,199.61. The minimum was $0 and the maximum was $25,897.

5) Median cost of wage reimbursement payments had a mean of $1,301.69 and a standard deviation of $2,872.97. The minimum was $13 and the maximum was $32,292.

The simple correlations between the survey questions and the outcome variables (from the State of Oregon, Bureau of Labor and Industries) are given in Table III. Three of the survey questions had significant (positive) correlations with the number of open claims organizations had. They were whether the organization had a written return-to-work policy, whether they tell their new employees about their ERTW program, and the amount of training people in the organization had on ERTW programs. The number of non-disabling claims had significant (positive) correlations with four survey questions. Those variables were whether the organization had a written return-to-work policy, the amount of training people in the organization had obtained on ERTW programs, the percentage of injuries in which ERTW is used, and the level of dedication to the ERTW program. The number of reopened claims had three survey variables that were significantly related - whether the organization had a written return-to-work program was positively correlated with it as was the amount of ERTW training. These correlations were not in the expected direction. However, offering regular wage to employees on light duty was negatively correlated with reopen claims.

EXPLORATORY FACTOR ANALYSIS

To begin, the 202 cases were divided into two groups by putting all cases with even identification numbers in one file and all cases with odd identification numbers in

another file. All exploratory work was done on one set.
Then the second set of data was used to confirm the final
models found in the exploratory analyses.

Because no strong hypotheses about which variables were
related existed, an exploratory factor analysis was done on
the data from the survey to look for underlying common
factors. Table II presents the simple correlations between
the survey questions. Eigenvalues from principal components
factor analysis along with the eigenvalues greater than one
rule-of-thumb suggested keeping eight factors. The scree
plot was inconclusive, suggesting either three, four or five
factors. Research by Tucker, Koopman, and Lynn (1969) using
Monte Carlo simulation suggests that the scree plot
information yields consistently better results than the
eigenvalues greater than one rule. Based on those research
findings and on the inconclusive results of the scree plot
on the number of factors to retain, three different
principal axis factor analyses with Harris Kaiser rotations
were done, retaining three, four, and five factors. These
were then examined for interpretability to determine which
solution should be retained, as suggested by Hakstian,
Rogers, and Catell (1982). The five-factor solution
provided the most meaningful interpretation (Table IV
presents the rotated factor pattern). The five-factor
solution accounted for 47.22 percent of the total variance.
Table V gives the proportion of common variance and the
proportion of total variance explained by each factor.

The variables that loaded on Factor one involved the amount of training members of the organization had received on ERTW programs, whether or not the organization paid its light duty employees their regular wage, whether or not the organization regularly contacted the medical care provider to discuss the prognossis, and whether or not the organization worked with the injured employee to help them return to work. After examining the make-up of all of the other factors, this factor was interpreted as the non-ERTW approach to dealing with injured workers. This approach appears to be more less positively proactive than the ERTW approach. Factor one is characterized by companies that train their employees in light duty programs, do not offer regular wage, call the medical provider, and work with the injured employee to get him/her back to work. Also important are the variables that do not load on this factor. Percent of cases in which light duty is used, written descriptions of physical load for various positions, level of dedication to ERTW, having the employee call the organization while off work, and telling current employees about their ERTW are all examples of variables with near zero loadings. These are all action components of an ERTW program, whereas the variables that do load on this factor are passive components which do not by themselves constitute an ERTW program.

Factor two characterizes organizations that have an ERTW program in which the employee's supervisor is involved

in the decision-making process and who make the employees'
supervisor responsible for assuring that the employee does
not exceed the physical limitations prescribed by the
physician. This factor was interpreted as organizations'
perceptions of ERTW programs. When organizations say they
have an ERTW program, they also frequently report involving
supervisors in decision making and making them responsible
for assuring that the injured employee does not exceed the
physician's prescribed physical limitations. Other
variables that had loadings above 0.35 on this factor were
the amount of training people in the organization had
received on ERTW, whether the organization used regular
wage, and the extent to which the organization had written
descriptions of the physical demands of each position.
However, each of these variables loaded more highly on some
other factor. This suggests that while these three
variables play some role in organizations' perceptions of
ERTW programs, these variables are more strongly associated
with some other factor.

Organizations that score high on factor three did not
prefer to wait until the employee was completely recovered
before returning them to work, use light duty, and tend to
use light duty in a high percentage of injury cases, require
the injured employee to call them regularly while off work,
and tend to have a high level of dedication to the ERTW
program. (Level of dedication to the ERTW program was
assessed by the survey respondent on a scale of 1 to 5,

where 5 indicated "extremely dedicated".) This factor was interpreted as the extent of implementation of the ERTW program. It accounted for more variance than any other factor.

Factor four is characterized by organizations who tell their new employees about the existence of their ERTW program, who make current employees aware of their program before they experience an on-the-job injury, who require their employees to sign a form stating that they agree to abide by the ERTW program, and who had positive relationships with the medical providers caring for their injured employees. This factor was interpreted as organizational communication regarding ERTW.

Factor five involved organizations with written policies for returning their injured employees to work, with written ERTW programs, and with detailed written descriptions of the physical demands of their positions. This factor was interpreted as the written formalization for dealing with injured workers, which can exist whether or not an organization has chosen an ERTW approach.

Inter-factor correlations were high (see Table VI), ranging from 0.28 to 0.66. This confirms that the decision to use a rotation that allows the factors to be highly correlated was appropriate. Further examination of the inter-factor correlations supports the interpretations of the factors. The strongest relationship between factors involves the organizations' perception of ERTW programs

(Factor 2) and the extent of ERTW program (Factor 3). There is also a strong relationship between communication of the ERTW program (Factor 4) and the extent of written formalization of programs (Factor 5). The relationships between the extent of ERTW program (Factor 3) and communication (Factor 4) and the extent of written formalization (Factor 5) are moderate, as would be expected (because the breakdown of the factors suggests that an organization can have an extensive ERTW program, but still have relatively low levels of communication and written formaliztion for it and because organizations who do not use the ERTW approach can still choose to have written formalization of their program). The relationship between non-ERTW approach (Factor 1) and the extent of program (Factor 3) is only moderate, suggesting that these two factors may represent alternative ways of dealing with injured employees, where Factor 1 is made up of those organizations who do not embrace the ERTW approach (who use ERTW rather superficially) and Factor 3 is made up of those organizations who do embrace the ERTW approach. The moderate relationship likely arises from those that are ambivalent about the approach and those who are in the process of moving from one paradigm to the other (based on information obtained during the survey process, it seems that an ERTW program is not something an organization either has or does not have, but instead is something that evolves over time).

CONFIRMATORY FACTOR ANALYSIS PROCESS/INDICES

To further examine the underlying (latent) variables
from the ERTW survey, additional work was done using
confirmatory factor analysis. This process involves an
examination of how well the hypothesized relationships
between the latent and measured variables fit the data. To
do this, the model is tested by examining the measures of
fit. Then non-significant paths are deleted and significant
paths not formerly in the model are added (within
theoretical constraints).

There are two types of measures of fit which are used
to examine how well the data fit the model in covariance
structure modeling. The "overall" measures of fit give the
researcher an idea of how well the entire model fits the
data. They are described below, along with the commonly
accepted level, although the acceptable levels can change
somewhat from discipline to discipline (Bollen, 1989):

1) X - a test of the null hypothesis that the model
fits the data. It is desirable to minimize X as part of
the fitting process. However, because it is extremely
sensitive to sample size, it is highly likely that this
measure of fit will tell the researcher to reject the null
hypothesis. One rough indicator can be obtained by dividing
the chi-square statistic by the degrees of freedom.   A
ratio of three to one or less is desirable.

2) Goodness of Fit Index (GFI) - examines the

difference between the predicted and observed data matrices. It varies between 0 and 1, with fit improving as a value of 1 is approached. Values above .85 are acceptable fit of the data to the model. This indicator of fit cannot be compared from one model to another because it is affected by the degrees of freedom (which vary from one model to another).

3) Adjusted Goodness of Fit Index (AGFI) - The AGFI is adjusted for the degrees of freedom in the model. Again, it varies from 0 to 1, where a higher number indicates better fit. Values above .80 are considered good fit of the model to the data. This indicator can be used to compare results across models.

4) Root Mean Square Residual (RMSR) - The RMSR is the average difference of the observed data matrix and the corresponding predicted matrix. It can easily be interpreted in terms of correlation matrices, where it is the average residual between the predicted and observed correlations. In this case, RMSR varies from 0 to 1, and residuals of less than 0.10 are considered acceptable.

The second type of fit measures are detailed measures of fit which allow the researcher to examine the fit of a specific part of the model to the data. They are as follows:

1) Modification Indices - These indices describe how much the fit of the model would improved by adding a directional or correlational path in the model. The size is interpreted according to the size of the overall chi square

statistic - if that path were added, the chi square would drop by the amount of the modification index).

2) t-values - One t-value is computed for each "free parameter" (or path) specified in the model. These test the null hypothesis that the free parameter is not significantly different from zero. T-values greater than two signify a significant path in the model.

CONFIRMATORY FACTOR ANALYSIS WITHOUT STATE VARIABLES

Since the initial goal of the study was to develop a structural model of ERTW components and their effectiveness, when the confirmatory factor analysis was conducted, two additional factors were created. The first five factors were those revealed in the exploratory factor analysis. However, survey respondents' responses to the question about whether the organization had an ERTW program was pulled from Factor two to create a sixth single-indicator Factor. It was believed that this variable should be predictive of the organizations' policies and practices relating to injured workers, rather than a component of the program. Regular wage was pulled from Factor one to create the seventh single-indicator Factor. It was expected that this financial variable may relate differently to the dollar outcome variables than the rest of Factor 1.

The LISREL statistical package was used to do the confirmatory factor analysis. The analysis of the seven factor model (with just the data from the survey variables)

confirmed on the hold-out sample. Measures of fit were as follows:

1) X (122) = 245.55 , p. = 0.000.
2) Goodness of Fit Index = 0.808
3) Adjusted Goodness of Fit = 0.731
4) Root Mean Square Residual = 0.166
5) Maximum Modification Index = 32.89
6) Several t-values were not significant.

The t-value for the loading of relationship with doctors on the communication factor was 1.882. This is not surprising, as data on this variable was available for only a few organizations. The t-value for the relationship between the light duty variable and the extent of implementation of ERTW factor was 1.386 and the t-value for the relationship between the variable which involved having the off-work employee call the company and the extent of implementation factor was 1.048. The measures of fit are just short of what is generally considered acceptable fit of the model to the data. Examination of the modification indices did not suggest any logical modifications for the model.

CONFIRMATORY FACTOR ANALYSIS WITH STATE VARIABLES

Using the initial sample, a second confirmatory factor analysis was conducted for a nine factor model. It included the seven previous factors plus two factors dealing with the outcome measures from the state data. A dollars factor with median medical costs and median wage reimbursememt costs as indicators was hypothesized for the first outcome. The

second outcome factor was hypothesized as a people statistics factor with the variables relating to the number of reopened workers' compensation cases, the number of non-disabling claims, and the number of open cases, as indicators.

The fit indices for the nine-factor measurement model on the original sample were as follows:

    1) X (227) = 273.79 (p = 0.018)
    2) Goodness of fit index = 0.833
    3) Adjusted goodness of fit index is 0.779
    4) Root mean square residual is 0.081

The largest modification index was 9.69 and all t-values were significant. While the overall fit of the model is not quite as good as desired, the detailed measures of fit do not suggest any changes that could be made to substantially improve the fit of the model (that is, all variables are loading highly on their respective factors). These indices may be elevated because the first five factors were identified using this sample.

This nine-factor model was then confirmed on the holdout sample to examine stability. The results were as follows:

    1) X (227) = 333.7 (p. = 0.000)
    2) Goodness of Fit Index = 0.804
    3) Adjusted Goodness of Fit Index = 0.740
    4) Root Mean Square Residual = 0.098
    5) The largest modification index was 22.78.
    6) All t-values were significant except that for

the relationship between the relationship with doctors variable and the communication factor. Again, this is not surprising because of the small amount of data available

for this variable.

An attempt was also made to find a structural model (which would identify the relationships between the constructs) to fit the data. However, because it did not work out well (quite possibly for reasons discussed later in the paper), those efforts are not detailed herein.

MULTIPLE REGRESSION

One of the major questions associated with ERTW programs is whether such programs actually reduce organizations' workers'compensation costs over time. To begin to answer this question, regression analysis was done on 176 organizations for which both 1985 and 1990 data was available. The goal of this analysis was to examine the extent to which the variation in organizations' programs and policies can predict:

1) A decrease in median medical costs per injury between 1985 and 1990 (when adjusted for inflation) and

2) A decrease in median wage reimbursement payments between 1985 and 1990 (when adjusted for inflation).

Therefore, the regression equations were designed to try to predict the following:

1990$ - 1985$ + cumulative inflation adjustments. To estimate the inflation adjustment, the following sources were used:

1) To estimate the rate of inflation in medical
costs, the annual percent of change in total medical care
services from the Consumer Price Index (1992) was used.
Their data was taken from U.S. Bureau of Labor Statistics,
1991 and unpublished data. The resulting cumulative
adjustment for the five year period between 1985 and 1990
was 43.28 percent.

2) To estimate the rate of inflation in wages two
sources were used. For the years of 1985 to 1989, the U.S.
Department of Labor, Bureau of Labor and Statistics (1991)
was consulted. This source breaks down the percent change
in average annual pay by state, so data for the state of
Oregon was used. The resulting cumulative inflation for the
four year period was 13.9 percent. Because this source did
not yet have data available for 1990, another source had to
be used to estimate the inflationary change in wages for
that year. The U.S. Department of Commerce, Economics and
Statistics Administration, Bureau of Economic Analysis
(1991) was consulted. This source did not offer precisely
equivalent data. What it did offer was a graph depicting
the percent change in private sector wages for 1989-1990.
The graph depicts approximately a 4.4 percent change for
that time period. Combining this figure with that cited
previously brings the total adjustment for wages for the
five year period to 18.3 percent.

Descriptive statistics for the newly created variables
were as follows:

1) Change in median medical costs (adjusted for inflation) had a mean increase of $1,454.75 and a standard deviation of $3,346.63. The minimum adjusted change in median medical costs from 1985 to 1990 was a decrease of $11,196 and the maximum was an increase of $25,578.

2) Change in median wage reimbursement costs (adjusted for inflation) had a mean increase of $388.41 and a standard deviation of $3,486.50. The minimum change in the adjusted median medical costs from 1985 to 1990 was a decrease of $21,135 and the maximum was an increase of $31,317.

3) The correlation between these above two variables was 0.734 (p. = 0.0001).

The simple correlations between the survey questions and the change in median medical costs and the change in median wage reimbursement costs are reported in Table VII. Only three variables were significantly related to change in median wage reimbursement costs over time. These correlations suggest that organizations with ERTW programs lowered their wage reimbursement costs, organizations that preferred to wait until the injured employee was fully recovered before returning him/her to work had higher wage reimbursement costs and that higher levels of dedication to ERTW resulted in lower wage reimbursement costs.

Six variables were significantly related to change in the median medical costs of workers' compensation claims (see Table VII). These included the three variables that were significantly related to wage reimbursement costs -

whether the organization had an ERTW program, whether the organization preferred to wait until the injured employee was fully recovered to return them to work, and the level of dedication to the ERTW program which were related to medical costs in the same manner they were related to wage reimbursement costs. In addition, increasing supervisory involvement in ERTW decision for their supervisees, making the injured employee's supervisor responsible for assuring that s/he does not exceed the physicians prescribed limitations, and using an injured employees' regular wage when they are working in a light-duty position were all strategies which were associated with lower medical costs. (All three of these variables had negative correlations with the change in median medical costs).

The results of the regression to predict the change in workers' compensation medical costs revealed that all of the program variables together could significantly predict a substantial amount of the variance - R = 0.296, p. = 0.003 and adjusted R = 0.172. (See Table VIII for information on each variable). Three of the variables had regression coefficients which were significant, meaning that their unique contribution to predicting the outcome was significant. Those variables were whether or not the organization used regular wage for employees on light duty (p. = 0.008), extent to which the physical load of positions was written in detail (p. = 0.036) and the level of dedication the survey respondent perceived others in the

organization to have to the light duty program (p. = 0.009).
All three were related to a better change medical costs over
time.

Also examined were the ability of the variables
comprising each factor to predict the change in medical
costs over time (adjusted for inflation). Seperate analyses
(as opposed to hierarchical) were done, as the researcher
was interested in the individual ability of each factor to
account for the variance in change over time. Significant
results were obtained for the following factors:

1) Extent of program (R = 0.089, p. = 0.018) in
which the percent of cases in which light duty is used and
the level of dedication to ERTW both had significant
regression coefficients

2) Whether or not regular wage is offered (R =
0.033, p. = 0.027) which has regular wage while on light
duty as its single indicator

3) Organizations' perceptions of ERTW (R = 0.047, p.
= 0.026) in which neither variable (level of supervisor's
involvement in decision-making and making someone
responsible for assuring that the injured employee does not
exceed the doctor's prescribed physical limitations) was in
itself significant, but the overall factor is. Apparently,
neither variable contributes enough unique ability to
predict change significantly, but their joint effect was .
See Table IX for detailed results of these regression
analyses.

The results of the regression to try to predict change
in workers' compensation wage reimbursement costs revealed
that all of the program variables together could
significantly predict a portion of the variance in that
variable - R = 0.243, p. = 032 and adjusted R = -
0.110. See Table X for information on 39 each of the
variables. The variables that contributed significantly
to the model were wether or not the organization had a
written return-to-work policy (p. = 049) and whether or
not regular wage was given to employees on light duty
(p. = 0.003). Having a written policy and using regular
wage were both related to better performance on change
in wage reimbursement costs over time. None of the
factors could significantly predict the change in wage
reimbursement costs from 1985 to 1990. The only
variable that had a t-value of significance involved the
extent to which the organization had written
descriptions of the physical load demands in their
various positions.

A COMPARISON OF HIGH VERSUS LOW PERFORMING ORGANIZATIONS (IN TERMS OF WORKERS' COMPENSATION COSTS)

To further examine those features of return-to-work
programs and policies that affect workers' compensation
costs, the organizations that fell into the top and bottom
quartiles for medical costs and for wage reimbursement costs
were separated out for comparison of the features of their

programs.

The range of the 41 organizations with the worst performance on the change in median wage reimbursement costs (median 1990 wage reimbursement costs - median 1985 wage reimbursement costs + cumulative inflation adjustment) was from an increase of $25,567.67 to $1,627.97. Of the 41 organizations with the best performance on the change in median wage reimbursement costs, the range was from an increase of $330 to a decrease of $11,195.60. Based on the binomial test (which examines a single groups' tendency to do one thing over another, not the differences between the best and worst performing groups) at the 0.05 level of significance, a comparison of the components of ERTW programs for the firms in the upper quartile and the same comparison for firms in the lower quartiles revealed some interesting differences between them (see Table XII):

1) While both the best and worst performing organizations were significantly more likely to report that they had an ERTW program than they were to report that they did not have such a program, organizations with the best performance records on the change in median wage reimbursement costs were also significantly more likely to report that they used light duty in 75-100% of the eligible cases of injury and that their organization was "extremely dedicated" to the use of ERTW. No trend was found for the worst performers.

2) Poor performers on the change in median wage

reimbursement costs were significantly less likely to have a written ERTW program than they were to not have a written program. They were also somewhat less likely to tell new employees about their ERTW program (significant at the 0.10 level of probability). The best performers did not show significant trends in any direction on either of these variables.

3) Both the best and the worst performers had significant tendencies to usually or always involve the injured employee's supervisor in decisionmaking about ERTW and to have someone (almost always the supervisor) be responsible for making sure that the injured employee did not exceed his/her doctor's prescribed physical limitations.

4) Organizations with the best performance on the change in median wage reimbursement costs were significantly more likely to use the employees regular wage for light/modified duty than to use some other (lower) wage. Organizations with the worst performance did not exhibit a significant trend in either direction. In addition, there were a number of variables on which there were significant trends in the same direction for both the best and the worst performing organizations. This includes the following: both types of organizations were more likely to report having an ERTW program than they were to report not having one and to prefer to bring the injured employee back before they are fully recovered, both types of organizations were more likely to involve the supervisors than to not involve

them, and both types were likely to make the supervisors responsible for assuring that the injured employee on light duty followed the doctor's prescribed physical limitations. Both the best and worst performing organizations were more likely to have the employee call them while out on injury than to not require such communication, were more likely to call the doctors than to not call them, and were more likely to work with the injured worker than to not work with them.

None of the chi-square tests for differences between the best and worst performing organizations were significant at the 0.01 level (none even made significance at the 0.05 level). This finding is consistent with the failure of any of the regressions to be able to predict this variable. It is not surprising that the chi-square tests are not significant. It is not necessarily expected that the best and worst performers do opposite things. It may be that the best performers are consistent while the worst performers are variable or that the best performers are flexible while the worst performers are more rigid.

Of the 41 organizations with the worst performance on the change in median medical costs (median 1990 medical costs - median 1985 medical costs + cumulative inflation adjustment), the scores ranged from an increase of $31,317.32 to $789.70. Of the 41 organizations with the best performance on the change in median medical costs, the scores ranged from an increase of $161.56 to a decrease of $12,1135.50. Based on the binomial test at the 0.05 level

of significance (again, this test examines a single groups tendency to choose one approach over another, not the difference between the best and worst performing organizations' approaches), a comparison of the components of ERTW programs for the firms in the upper and the same comparison for the firms in the lower quartiles revealed some interesting differences between them (see Table XIII):

1)   While both the best and worst performing organizations were significantly more likely to report that they had an ERTW program than they were to report that they did not have such a program, organizations with the best performance records on the change in median wage reimbursement costs were also significantly more likely to report that they used light duty in 50% or more of the eligible cases of injury while those organizations in the worst performing group did not show this trend. The best performing organizations were also significantly more likely to report that their organizations had a dedication level to ERTW of 4 or 5 (where 5 = "extremely dedicated), whereas the worst performing organizations showed this tendency only at the 0.10 level of significance.

2)   Poor performers on the change in median medical costs variable were somewhat more likely to not tell new employees about their ERTW programs (significant at the 0.10 level of probability) than they were to tell them. Good performers did not have a significant trend in either direction on this variable.

3) Both the best and the worst performers had significant tendencies to usually or always involve the injured employee's supervisory in decision-making about ERTW and to have someone (almost always the supervisor) be responsible for making sure that the injured employee did not exceed his/her doctor's prescribed physical limitations.

4) Organizations with the best performance on the change in median wage reimbursement costs were significantly more likely to use the employees regular wage for light/modified duty than to use some other (lower) wage. Organizations with the worst performance did not exhibit a significant trend in either direction. Again, there were a number of variables for which both the best and worst performing organizations had significant trends in the same direction. As with the best and worst performers on the wage reimbursement variable, like trends included being more likely to have an ERTW program than to not have one, a preference for bringing injured employees back to work before they are fully recovered, a preference for involving supervisors in decision making, and for making supervisors responsible for assuring that the injured employee does not exceed the doctors' prescribed physical limitations. As is the case with the wage reimbusement variable, like trends were also shown for asking the injured employee to call the organization while off work, working with the injured worker more often than not, preferring to call the doctors, and preferring to work with the injured worker. None of the

chi-square tests for differences between the best and worst performing organizations were significant at the 0.01 level. Only organizations' reports of their relationships with doctors was significant at the 0.05 level, with the best performing organizations reporting both more incidences of good and bad relationships with doctors. This suggests that the best performing organizations are more aware of their relationships with the medical community and of the importance of those relationships.

Interestingly, while there were 41 organizations in each quartile, only 19 of those were in the best-performing quartile for change in median medical costs and median wage reimbursement costs and only 21 were in the bottom quartile for change in median medical costs and median wage reimbursement costs. This finding suggests that there may be separate steps that can be taken to improve organizational performance on these two cost factors for workers' compensation, although the comparison findings discussed previously did not show great differences between the change in wage reimbursement costs and the change in medical costs.

TABLE I

DESCRIPTIVE STATISTICS FOR THE SURVEY QUESTIONS

Variable	Response	Frequency	Percentage
Written Policy			
	Yes	99	57.6
	No	73	42.4
ERTW			
	Yes	82	48.0
	No	89	52.0
Tell New Empl.			
	Yes	62	36.7
	No	107	63.3
Tell Current E.			
	All	51	29.8
	Most	23	13.5
	Some	26	15.2
	After Injury	50	29.2
	No	21	12.3
Sign Form			
	Yes	25	14.7
	No	145	85.3
Supervisor Involved			
	Always	97	57.7
	Usually	23	13.7
	Sometimes	15	8.9
	Never	33	19.6
Not Exceed			
	Yes	138	81.2
	No	32	18.8
Training			
	Extensive	40	24.4
	Moderate	60	36.6
	A Little	15	9.1
	None	49	29.2
Relations w/ Doctors			
	Contributes to Success	11	6.6
	Not Commented on	152	91.0
	Hinders Success	4	2.4

TABLE I

DESCRIPTIVE STATISTICS FOR THE SURVEY QUESTIONS
(Continued)

Variable	Response	Frequency	Percentage
Prefer to Wait			
	Yes	19	11.1
	In Some Cases	12	7.0
	No	140	81.9
Light Duty			
	Yes	160	93.6
	No	11	6.4
Percent Light Duty			
	0%	11	6.7
	Under 25%	23	14.0
	25% to 49%	4	2.4
	50% to 75%	17	10.4
	76% to 100%	109	66.5
Regular Wage			
	Yes	136	86.6
	No	21	13.4
Empl. Call Company			
	Yes	123	72.4
	No	47	27.6
Company Call Dr.			
	Yes	123	72.4
	No	47	27.6
Work w/ Worker			
	Yes	146	85.9
	No	24	14.1
Physical Load			
	None	51	29.8
	Some	32	18.7
	Most	9	5.3
	All	79	46.2

TABLE I

DESCRIPTIVE STATISTICS FOR THE SURVEY QUESTIONS
(Continued)

Variable	Response	Frequency	Percentage
Dedication			
	0	14	8.2
	1	2	1.2
	2	3	1.8
	3	16	9.4
	4	29	17.0
	5	107	62.6
(where 5 = extremely dedicated)			

TABLE II

SIMPLE CORRELATIONS BETWEEN SURVEY QUESTIONS

	ERTW	Writprog	Tellnew
Written Policy	0.255*	0.487*	0.408*
ERTW	1.000	0.359*	0.287*
Written Program	0.359*	1.000	0.252*
Tell New Empl.	0.287*	0.252*	1.000
Tell Current E.	0.570*	0.327*	0.450*
Sign Form	0.156*	0.269*	0.345*
Super. Involve.	0.659*	0.281*	0.267*
Not Exceed	0.780*	0.375*	0.340*
Training	0.516*	0.371*	0.416*
Doctor Relation.	0.054	0.027	0.190*
Prefer to Wait	-0.567*	-0.289*	-0.214*
Lt. Duty	0.468*	0.113	0.090
Percent Lt. Duty	0.705*	0.239	0.197*
Regular Wage	0.064	-0.084	-0.037
Emp. Call Company	0.208*	0.301*	0.076
Company Call Dr.	0.020	0.199*	0.091
Work w/ Worker	0.304*	0.127	0.217*
Physical Load	0.108	0.243*	0.192*
Dedication	0.784*	0.345*	0.223*

	Tellcurr	Signform	Super Involved
Written Policy	0.410*	0.255*	0.227*
ERTW	0.570*	0.156*	0.659*
Written Program	0.327*	0.269*	0.281*
Tell New Empl.	0.450*	0.345	0.267
Tell Current E.	1.000	0.352*	0.293*
Sign Form	0.352*	1.000	0.080
Super. Involve.	0.293*	0.080	1.000
Not Exceed	0.398*	0.159*	0.593*
Training	0.446*	0.200*	0.441*
Doctor Relation.	0.194*	0.008	0.076
Prefer to Wait	-0.323*	-0.111	-0.381*
Lt. Duty	0.226*	0.101	0.334
Percent Lt. Duty	0.454*	0.153*	0.419*
Regular Wage	0.021	-0.039	0.105
Emp. Call Company	0.150*	0.069	0.057
Company Call Dr.	0.107	0.066	0.073
Work w/ Worker	0.186*	0.045	0.215*
Physical Load	0.158*	0.105	0.053
Dedication	0.499*	0.117	0.457*

TABLE II

SIMPLE CORRELATIONS BETWEEN SURVEY QUESTIONS
(Continued)

	Not Exceed	Training	Dr. Relations
Written Policy	0.263*	0.297*	0.082
ERTW	0.780*	0.516*	0.054
Written Program	0.375*	0.371*	0.027
Tell New Empl.	0.340*	0.416*	0.190*
Tell Current E.	0.398*	0.446*	0.194*
Sign Form	0.159*	0.200*	0.008
Super. Involve.	0.593*	0.441*	0.080
Not Exceed	1.000	0.386*	0.068
Training	0.386*	1.000	0.091
Doctor Relation	0.068	0.091	1.000
Prefer to Wait	-0.477*	-0.338*	-0.095
Lt. Duty	0.374*	0.251*	0.017
% Lt. Duty	0.487*	0.439*	0.074
Regular Wage	0.073	-0.097	0.121
Emp. Call Company	0.152*	0.047	-0.002
Company Call Dr.	0.118	0.278*	0.123
Work w/ Worker	0.299*	0.301	0.049
Physical Load	0.103	0.124	0.063
Dedication	0.656*	0.419*	0.069

	Prefer To Wait	Lt. Duty	%Lt. Duty	Reg. Wage	Emp. Call Co.
Written Policy	-0.126	0.001	0.189*	-0.026	0.090
ERTW	-0.567*	0.468*	0.705*	0.064	0.208*
Written Program	-0.289*	0.113	0.239*	-0.083	0.301*
Tell New Empl.	-0.214*	0.090	0.197*	-0.037	0.076
Tell Current E.	-0.323*	0.226*	0.454*	0.021	0.150*
Sign Form	-0.111	0.001	0.153*	-0.039	0.070
Super. Involve.	-0.381*	0.334*	0.419*	0.105	0.057
Not Exceed	-0.477*	0.374*	0.487*	0.073*	0.152*
Training	-0.338*	0.251*	0.439*	-0.097	0.047
Doctor Relation	-0.095	0.017	0.074	0.121	-0.002
Prefer to Wait	1.000	-0.204*	-0.532*	0.034	-0.162*
Lt. Duty	-0.204*	1.000	0.281*	0.018	0.266*
% Lt. Duty	-0.531*	0.281*	1.000	0.071	0.189*
Regular Wage	0.034	0.018	0.071	1.000	-0.056
Emp. Call Co.	-0.162*	0.266*	0.189*	-0.056	1.000
Company Call Dr.	-0.146	0.193*	0.236*	-0.008	0.115
Work w/ Worker	-0.035	0.279*	0.174*	0.036	0.079
Physical Load	-0.057	0.256*	0.051	-0.147	0.169*
Dedication	-0.595*	0.499*	0.726*	0.027	0.230*

TABLE II

SIMPLE CORRELATIONS BETWEEN SURVEY QUESTIONS
(Continued)

	Co. Call Dr.	Work w/ Worker	Physical Load	Dedica- tion
Written Policy	0.020	0.172*	0.324*	0.190*
ERTW	0.200*	0.304*	0.108	0.784*
Written Program	0.091	0.127	0.243*	0.345*
Tell New Empl.	0.181*	0.217*	0.192*	0.223*
Tell Current E.	0.107	0.186*	0.158*	0.500*
Sign Form	0.066	0.045	0.105	0.117
Super. Involve.	0.073	0.215*	0.053	0.457*
Not Exceed	0.118*	0.299*	0.103	0.656*
Training	0.278*	0.301*	0.124	0.419*
Doctor Relation.	0.124	0.049	0.063	0.068
Prefer to Wait	-0.145	-0.035	-0.057	-0.595*
Lt. Duty	0.193*	0.279*	0.256*	0.499*
Percent Lt. Duty	0.236*	0.174*	0.051	0.726*
Regular Wage	-0.008	0.036	-0.147	0.027
Emp. Call Company	0.115	0.079	0.169*	0.230*
Company Call Dr.	1.000	0.296*	0.170*	0.243*
Work w/ Worker	0.300*	1.000	0.263*	0.292*
Physical Load	0.170*	0.263*	1.000	0.128
Dedication	0.243*	0.292*	0.128	1.000

Note: * - r is significant at the 0.05 level.
       ** - organizations w/o ERTW were not asked about
       their level of dedication to ERTW program.

TABLE III

SIMPLE CORRELATIONS BETWEEN THE SURVEY QUESTIONS
AND THE ORGANIZATIONAL OUTCOME VARIABLES

Survey Question	Open Claims	Non-Disabling Claims	Reopen Claims
Written Policy	0.179*	0.205*	0.118
ERTW	0.091	0.117	0.098
Written Program	0.115	0.101	0.151*
Tell New Empl.	0.152*	0.104	0.121
Tell Current E.	0.042	0.046	-0.065
Sign Form	-0.092	-0.080	-0.104
Super. Involve.	0.097	0.062	0.052
Not Exceed	0.105	0.100	0.077
Training	0.165*	0.177*	0.191*
Dr. Relations	0.054	0.033	0.022
Prefer to Wait	-0.086	-0.121	-0.129
Lt. Duty	0.050	0.052	0.083
% Lt. Duty	0.136	0.179*	0.087
Regular Wage	-0.095	-0.059	-0.178*
Call Company	-0.076	-0.067	0.006
Company Call	0.097	0.131	0.085
Work w/ Worker	0.108	0.084	0.112
Physical Load	0.138	0.139	0.072
Dedication	0.113	0.148*	0.056

Note: * - r is significant at the 0.05 level.

TABLE IV

ROTATED FACTOR PATTERN FOR FIVE-FACTOR SOLUTION

Variable	Non-ERTW Approach	Orgs' Perception of ERTW	Extent of Imple- mentation	Com- munica- tion
Written Policy	-0.131	0.138	-0.163	0.095
ERTW	-0.080	0.644*	0.347	0.072
Written Program	0.133	-0.022	0.067	-0.123
Tell New Empl.	0.088	0.045	-0.084	0.768*
Tell Current E.	-0.004	0.055	0.204	0.485*
Sign Form	-0.082	-0.281	0.100	0.498*
Super. Involve.	0.156	0.867*	-0.131	-0.100
Not Exceed	-0.157	0.674*	0.220	0.046
Training	0.539*	0.363	-0.215	0.092
Doctor Relation.	0.023	-0.143	0.033	0.474*
Prefer to Wait	-0.032	-0.122	-0.571*	-0.041
Lt. Duty	0.105	-0.145	0.781*	-0.089
Percent Lt. Duty	0.017	0.183	0.684*	-0.057
Regular Wage	-0.393*	0.358	-0.040	0.195
Emp. Call Company	-0.029	-0.247	0.494*	-0.226
Company Call Dr.	0.579*	-0.164	0.205	0.119
Work w/ Worker	0.419*	0.197	-0.033	-0.037
Physical Load	0.048	0.403	0.216	0.009
Dedication	-0.048	0.055	0.927*	0.078

NOTE: * - These variables were considered to load on that factor for the purposes of interpretation.

TABLE IV

ROTATED FACTOR PATTERN FOR FIVE-FACTOR SOLUTION
(Continued)

Variables	Extent of Communication
Written Policy	0.749*
ERTW	0.053
Written Program	0.685*
Tell New Employ.	-0.053
Tell Current E.	0.199
Sign Form	0.260
Super. Involve.	0.054
Not Exceed	0.045
Training	0.257
Doctor Relation.	-0.191
Prefer to Wait	-0.041
Lt. Duty	-0.094
Percent Lt. Duty	0.039
Regular Wage	-0.236
Call Company	0.174
Company Call	-0.257
Work w/ Worker	-0.125
Physical Load	0.414*
Dedication	-0.073

NOTE: * - These variables were considered to load on that factor for the purposes of interpretation, with the exception of ERTW, which was made into its own factor.

TABLE V

STATISTICS FOR ROTATED FACTOR PATTERN FOR
FIVE-FACTOR SOLUTION

	F1	F2	F3	F4	F5
Eigenvalues	5.601	1.516	0.946	0.733	0.639

Variance Accounted for:

Common

	0.241	0.464	0.491	0.310	0.324

(variance explained by each ignoring
others/final communality estimate)

Total	0.114	0.219	0.232	0.146	0.153

(variance explained by each ignoring other/#
variables)

TABLE VI

INTER-FACTOR CORRELATIONS FOR THE ROTATED SOLUTION

	F1	F2	F3	F4	F5
F1	1.00				
F2	0.35	1.00			
F3	0.46	0.67	1.00		
F4	0.35	0.43	0.37	1.00	
F5	0.28	0.45	0.39	0.55	1.00

TABLE VII

SIMPLE CORRELATIONS BETWEEN THE SURVEY QUESTIONS
AND THE CHANGE IN MEDICAL COSTS AND THE CHANGE
IN WAGE REIMBURSEMENT COSTS

Survey Questions	Change in Medical $	Change in Wage Reimbursement $
Written Policy	-0.042	-0.010
ERTW	-0.225*	-0.209*
Written Program	-0.010	-0.069
Tell New Empl.	-0.055	-0.071
Tell Current E.	-0.042	-0.095
Sign Form	-0.043	-0.025
Super. Involved	-0.175*	-0.135
Not Exceed	-0.206*	-0.148
Training	-0.096	-0.096
Doctor Relation.	-0.026	-0.013
Prefer to Wait	0.249*	0.189*
Lt. Duty	-0.002	-0.005
Percent Lt. Duty	-0.030	-0.003
Regular Wage	-0.181*	-0.138
Call Company	0.016	0.041
Company Call	0.053	0.015
Work w/ Worker	0.014	0.025
Physical Load	0.143	0.096
Dedication	-0.252*	-0.221*

Note: * - r is significant at the 0.05 level.

TABLE VIII

RESULTS OF REGRESSION TO PREDICT CHANGE IN MEDICAL COSTS
FROM 1985 TO 1990, USING ALL PROGRAM COMPONENTS

Variable	Parameter Estimate	T-value	Prob. > |T|
Intercept	4224.46	2.647	0.009
Writ. Pol.	57.74	-0.089	0.929
Program Writ.	-224.19	-0.350	0.727
Tell New Emp.	-79.86	-0.134	0.894
Tell Current E.	131.58	0.587	0.558
Sign Form	-673.79	-0.923	0.358
Supervis. Inv.	-320.17	-1.177	0.242
Not Exceed Phys	-253.00	-0.277	0.782
Training	160.83	0.566	0.573
Rel. w/ Doctors	127.55	-0.166	0.868
Prefer to Wait	986.47	1.915	0.058
Light Duty	-159.08	-0.169	0.866
% Lt. Duty	398.64	1.295	0.198
Regular Wage	-2099.54	-2.723	0.008*
Call Company	551.50	0.896	0.387
Company Call	86.32	0.117	0.907
Work w/ Worker	1187.78	1.504	0.136
Physical Load	471.55	2.120	0.036*
Dedication	-952.80	-2.661	0.009*

Notes: R = 0.296, Adj. R = 0.172. F (18, 102) =
2.387, p. = 0.003.   * - Parameter estimate is
significant at the 0.05 level.

TABLE IX

RESULTS OF REGRESSION TO PREDICT CHANGE IN MEDICAL COSTS
FROM 1985 TO 1990, USING THE VARIABLES
THAT MAKE UP EACH FACTOR

Factor	Parameter Estimate	T-value	Prob. > $|T|$
Factor - Extent of Program			
Intercept	1276.01	1.271	0.206
Prefer to Wait	731.99	1.624	0.106
Light Duty	1148.65	1.450	0.149
% Light Duty	647.44	2.434	0.016*
Dedication	-799.23	-2.728	0.007*
Call Company	116.95	0.209	0.835

R = 0.089, Adj. R = 0.057. F (5, 145) = 2.828, p. = 0.018.

Factor - Regular Wage			
Intercept	3011.01	4.235	0.001
Regular Wage	-1710.29	-2.230	0.027*

R = 0.033, Adj. R = 0.026. F (1, 147) = 4.971, p. = 0.027

Factor - Organizations' Perceptions of ERTW			
Intercept	2950.67	4.811	0.001
Super. Inv.	-228.41	-0.864	0.389
Not Exceed	-1331.30	-1.652	0.101

R = 0.047, Adj. R = 0.035. F (2, 155) = 3.857, p. = 0.026.

TABLE IX

RESULTS OF REGRESSION TO PREDICT CHANGE IN MEDICAL COSTS
FROM 1985 TO 1990, USING THE VARIABLES
THAT MAKE UP EACH FACTOR
(Continued)

Factor	Parameter Estimate	T-value	Prob. > |T|

Factor - Extent of Written Program

Intercept	1087.71	2.268	0.025
Written Pol.	-162.26	-0.258	0.797
Written Prog.	-867.12	-1.430	0.155
Physical Load	469.88	2.311	0.221

R = 0.043, Adj. R = 0.024. $F (3, 156) = 2.320$, p. = 0.078.

Factor - Communication

Intercept	1662.78	3.308	0.001
Tell Curr. Emp.	-47.74	-0.218	0.828
Sign Form	-210.96	-0.246	0.806
Relation. w/Docs	-127.30	-0.135	0.893
Tell New Emp.	-380.03	-0.584	0.560

R = 0.006, Adj. R = -0.021. $F (4, 148) = 0.236$, p. = 0.918.

Factor - Non-ERTW Approach

Intercept	1224.57	1.579	0.1166
Training	-372.57	-0.1434	0.154
Company Call	636.57	0.877	0.382
Work w/ Worker	397.70	0.512	0.609

R = 0.017, Adj. R = -0.003. $F (3, 148) = 0.853$, p. = 0.467.

TABLE X

RESULTS OF REGRESSION TO PREDICT CHANGE IN WAGE
REIMBURSEMENT COSTS FROM 1985 TO 1990,
USING ALL PROGRAM COMPONENTS

Variable	Parameter	T-value	Prob. > $|T|$
Intercept	2456.65	2.176	0.032
Written Pol.	915.29	1.996	0.049*
Written Prog.	-158.29	-0.349	0.728
Tell New Empl.	-209.42	-0.495	0.622
Tell Current E.	-72.96	-0.460	0.646
Sign Form	-384.41	-0.744	0.459
Super. Involve.	-105.13	-0.546	0.586
Not Exceed Phys	196.79	0.3-5	0.761
Training	156.05	0.776	0.440
Rel. w/ Doctors	43.50	0.080	0.936
Prefer to Wait	-117.97	-0.324	0.746
Light Duty	-179.65	-0.270	0.788
% Light Duty	-114.84	-0.568	0.599
Regular Wage	-1693.75	-3.105	0.003*
Call Company	404.06	0.900	0.370
Company Call	202.74	0.388	0.699
Work w/ Worker	537.07	0.961	0.339
Physical Load	243.67	1.549	0.125
Dedication	-418.88	-1.654	0.101

Notes: R = 0.243, Adj. R = 0.110. $F_{(18, 102)}$ = 1.820. p. = 0.032. * - Parameter estimate is significant at 0.05 level.

TABLE XI

RESULTS OF REGRESSION TO PREDICT CHANGE IN WAGE
REIMBURSEMENT COSTS FROM 1985 TO 1990, USING
THE VARIABLES THAT MAKE UP EACH FACTOR

Factor	Parameter Estimate	T-value	Prob. $> |T|$

Factor - Regular Wage

Intercept	1591.78	2.334	0.021
Regular Wage	-1245.83	-1.693	0.093

$R = 0.019$, Adj. $R = 0.013$. $F (1, 147) = 2.867$, p. $= 0.093$.

Factor - Extent of Program

Intercept	388.14	0.435	0.664
Prefer to Wait	198.54	0.496	0.621
Light Duty	540.45	0.767	0.444
% Light Duty	370.79	1.568	0.119
Call Company	174.30	0.350	0.727
Dedication	-495.67	-1.903	0.059

$R = 0.033$, Adj. $R = 0.001$. $F (5, 145) = 0.994$, p. $= 0.424$.

Factor - Organizations' Perceptions of ERTW

Intercept	1576.11	2.404	0.017
Super. Involve.	-217.32	-0.769	0.443
Not Exceed	-933.09	-1.083	0.281

$R = 0.026$, Adj. $R = 0.013$. $F (2, 155) = 2.052$, p. $= 0.132$.

TABLE XI

RESULTS OF REGRESSION TO PREDICT CHANGE IN WAGE
REIMBURSEMENT COSTS FROM 1985 TO 1990, USING
THE VARIABLES THAT MAKE UP EACH FACTOR
(Continued)

Factor	Parameter Estimate	T-value	Prob. > $|T|$
Factor - Extent of Written Program			
Intercept	167.29	0.326	0.745
Written Pol.	18.48	0.027	0.978
Written Prog.	-694.97	-1.069	0.287
Physical Load	310.10	1.423	0.157

$R = 0.018$, Adj. $R = -0.001$. $F (3, 156) = 0.973$, $p. = 0.407$.

Factor	Parameter Estimate	T-value	Prob. > $|T|$
Factor - Communication			
Intercept	979.94	1.847	0.067
Tell New Emp.	-377.91	-0.551	0.583
Tell Current E.	-235.39	-1.019	0.310
Sign Form	225.30	0.249	0.804
Rel. w/ Doctors	79.83	0.080	0.936

$R = 0.014$, Adj. $R = -0.013$. $F (4, 148) = 0.529$, $p. = 0.715$.

Factor	Parameter Estimate	T-value	Prob. > $|T|$
Factor - Non-ERTW Approach			
Intercept	324.37	0.399	0.691
Training	-387.07	-1.421	0.158
Company Call	282.70	0.371	0.711
Work w/ Worker	532.82	0.655	0.514

$R = 0.014$, Adj. $R = -0.006$. $F (3, 148) = 0.716$, $p. = 0.544$.

TABLE XII

A COMPARISON OF HIGH VERSUS LOW PERFORMING ORGANIZATIONS ON WAGE REIMBURSEMENT COSTS

Variable	High Performers	Low Performers
Written Policy		
Yes	49%	56%
No	51%	44%
ERTW		
Yes	90%*	76%*
No	10%	44%
Written Program		
Yes	46%	32%*
No	54%	68%
Tell New Employees		
Yes	45%	37%*
No	55%	63%
Tell Current Employees		
Before Injury	71%*	49%
After Injury	29%	51%
Sign Form		
Yes	17%*	8%*
No	83%	92%
Supervisor Involved		
Sometimes/Never	71%*	69%*
Usually/Always	29%	31%
Not Exceed Drs. Orders		
Yes	78%*	70%*
No	22%	30%

TABLE XII

A COMPARISON OF HIGH VERSUS LOW PERFORMING
ORGANIZATIONS ON WAGE REIMBURSEMENT COSTS
(Continued)

Variable	High Performers	Low Performers
Training		
Moderate/Extensive	69%*	51%
A Little/None	31%	49%
Relationships w/ Drs.		
Positive	15%*	5%*
No Comment	83%	95%
Negative	2%	0%
Prefer to Wait		
At Least Sometimes	22%*	30%*
No	78%	70%
Use Light Duty		
Yes	95%*	90%*
No	5%	10%
% Cases Lt. Duty Used		
76 - 100%	70%*	45%
75% or less	25%	42%
0%	5%	13%
Use Regular Wage		
Yes	89%*	71%
No	11%	29%
Empl. Must Call Co.		
Yes	73%*	74%*
No	27%	26%
Co. Calls Dr.		
Yes	78%*	71%*
No	22%	29%
Work w/ Injured Worker		
Yes	88%*	80%*
No	12%	20%
Physical Load Written		
Most/All	49%	63%*
Some/None	51%	37%

TABLE XII

A COMPARISON OF HIGH VERSUS LOW PERFORMING
ORGANIZATIONS ON WAGE REIMBURSEMENT COSTS
(Continued)

Variable	High Performers	Low Performers
Level of Dedication		
5, 4	83%*	63%*
3, 2, 1	10%	8%
No Program	7%	17%

Note - * = significant trend at the 0.05 level.

TABLE XIII

A COMPARISON OF HIGH VERSUS LOW PERFORMING
ORGANIZATIONS ON MEDICAL COSTS

Variable	High Performers	Low Performers
Written Policy		
Yes	56%	61%
No	44%	39%
ERTW		
Yes	90%*	85%*
No	10%	15%
Written Program		
Yes	59%	45%
No	41%	55%
Tell New Employees		
Yes	39%	39%
No	61%	61%
Tell Current Employees		
Before Injury	66%	70%*
After Injury	34%	30%
Sign Form		
Yes	15%*	12%*
No	85%	88%
Supervisor Involved		
Sometimes/Never	32%*	28%*
Usually/Always	68%	72%
Not Exceed Drs. Orders		
Yes	83%*	75%*
No	17%	25%

TABLE XIII

A COMPARISON OF HIGH VERSUS LOW PERFORMING
ORGANIZATIONS ON MEDICAL COSTS
(Continued)

Variable	High Performers	Low Performers
Training		
Moderate/Extensive	59%	60%
A Little/None	41%	40%
Relationships w/ Drs.		
Positive	10%*	3%*
No Comment	80%	97%
Negative	10%	0%
Prefer to Wait		
At Least Sometimes	17%*	22%*
No	83%	78%
Use Light Duty		
Yes	98%*	93%*
No	2%	7%
% Cases Lt. Duty Used		
76 - 100%	61%	63%
75% or less	36%	30%
0%	3%	7%
Use Regular Wage		
Yes	92%*	81%*
No	8%	19%
Empl. Must Call Co.		
Yes	76%*	75%*
No	24%	25%
Co. Calls Dr.		
Yes	78%*	75%*
No	22%	25%
Work w/ Injured Worker		
Yes	88%*	85%*
No	12%	15%
Physical Load Written		
Most/All	39%	58%
Some/None	61%	42%

TABLE XIII

A COMPARISON OF HIGH VERSUS LOW PERFORMING
ORGANIZATIONS ON MEDICAL COSTS
(Continued)

Variable	High Performers	Low Performers
Level of Dedication		
5, 4	77%*	81%*
3, 2, 1	18%	7%
No Program	5%	12%

Note - * = significant trend at the 0.05 level.

DISCUSSION

Because of the exploratory nature of this
research project, the following findings must be viewed
as tentative. However, the lack of previous research in
this area also means that the findings discussed here
can provide a much needed source of direction for
further research on ERTW programs.

DESCRIPTIVE FINDINGS

The survey revealed that of those firms with over 50
employees in the Portland Metropolitan area (which were
selected because they had at least a reasonable likelihood
of having some on-the-job injuries), almost half reported
having an ERTW program, and nearly all reported using light
duty at least some of the time. Of those organizations who
sometimes use light duty for injured employees, well over
two thirds use it for 76% to 100% of eligible injuries. In
addition, 79% of respondents rated their organization's
level of dedication to their ERTW program as a 4 or 5 on a
scale of 1 to 5, where 5 was "extremely dedicated". These
findings strongly suggest that ERTW programs have become a
widely accepted way of doing business.

However, a substantial portion of the organizations
surveyed (18%), reported that they would prefer to wait

until the injured employee was completely recovered before returning that person to work in at least some cases. Not all of these organizations explained their reasons for this preference, but for those who did, it frequently involved fear of reinjury, fear of liability, or not having productive positions to put the injured employee in. Additionally, 21% of the organizations use light duty or modified work for less than 25% of the eligible cases. Further, 14% reported that they do not work with the injured employee to help get them back to work. Almost one third of the organizations reported that no one had any training on ERTW programs. The above findings suggest that there is still a good-sized minority of organizations who are not using ERTW programs very much, and would likely benefit from education about the advantages of such programs.

The survey also revealed some information about how ERTW programs are being designed in the organizations that have chosen to embrace them. Two of the most popular features involve working with the injured employees to help them return to work and assigning the supervisors the responsibility to assure that the injured employees do not exceed their doctor's prescribed limitations in physical activity. Having the employee contact the company regularly while off work was also a frequent feature, although some respondents reported that while it was a requirement, it was not regularly enforced. An equally popular approach involved having someone contact the medical provider to

ascertain the status of the injured employee and in some cases to encourage the doctor to consider light duty or modified work as an option. One ERTW option which seems to be greatly under-utilized is that of having the employees sign a form stating that they understand and accept the ERTW program. Only a small minority of the organizations with ERTW programs use this strategy, despite the fact that it is highly recommended by SAIF, and has the ability to carry legal power and can help the organization to control fraudulent claims. Another somewhat under utilized approach involves analysis and written documentation of the physical load demands of various positions in an organization. Almost one-third of the survey respondents reported that their organization did not use this tactic. The major benefit is that it can help the attending physician to understand the demands of a position and accurately assess the injured employee's readiness for it. This applies whether light duty is used or not. A few firms reported using videotape technology to give the physician a complete understanding of exactly what a light or modified duty position would involve. Those who reported using this approach felt that it was extremely effective.

EXPLORATORY FACTOR ANALYSIS FINDINGS

The outcome of the factor analysis provided some of the most interesting results. Factor analysis of data collected in the survey resulted in a five factor solution. Factor

one involved organizations that took a non-ERTW approach to
dealing with injured employees. The activities which loaded
on this factor were 1) working with the injured employee to
get them back to work, 2) calling the medical provider to
determine when the injured employee would be able to return
to work, 3) lowering the employees wage if they did light
duty or modified work, and 4) obtaining training about ERTW.
(However, the regular wage variable did not load on this
factor in the confirmatory factor analysis, but instead
broke out into a single-indicator factor). Because none of
these activities involve active ERTW, this factor was
interpreted as an approach to dealing with injured workers
that largely does not include ERTW. While training on ERTW
may seem to be an active approach (and may assist an
organization in an organizations' attempts to implement an
ERTW program), it is not evidence of any active commitment
to the ERTW approach.

Factor two involved organizations' perceptions of ERTW
programs. The activities that loaded highly on this factor
involved 1) reporting that the organization has an ERTW
program, 2) involving the injured employees supervisor in
ERTW decisions, and 3) making the supervisor responsible for
assuring that the doctors' prescribed physical limitations
were adhered to by the injured employee. Several other
variables also had high loadings on this factor, but had
higher loadings on another factor. These activities likely
play a role in organizations' perceptions of ERTW programs,

but are more highly associated with other things. Those activities were obtaining training about ERTW, offering regular wage to injured employees who are working in light duty or modified work positions, and creating written descriptions of the physical demands of their various positions.

Factor three involved the extent of organizations ERTW programs. The activities which loaded highly on this factor were 1) using light duty and 2) with a tendency to use it in as many cases of injury as possible, and 3) having the employee call the organization to keep in contact during the time they were unable to work due to their injury. In addition, these organizations had two attitudes in common - 4) they strongly prefer to bring the injured employee back to work even before s/he is 100% recovered (with medical approval and supervision), and 5) they express a high level of dedication to using ERTW. All of these activities and attitudes demonstrate an active use of and commitment to ERTW.

Factor four involved organizations' level of communication about their ERTW program. The activities which loaded highly on this factor involved 1) telling new employees about the program, 2) informing current employees about the program before an injury took place, 3) asking employees to sign a form stating that they understand the ERTW program and agree to abide by it, and 4) having good relationships with the treating physicians. While it is

possible to have a strong ERTW program without these factors, the existence of them is believed to make the program more usable.

Factor five involved the written formalization of an organizations programs and policies for dealing with an injured employee. The activities which loaded highly on it involved 1) having a written policy for dealing with injured employees, 2) having a written ERTW program, and 3) having written descriptions of the physical demands of the various positions in the organization. An additional factor analysis which included outcome data from the State of Oregon Bureau of Labor and Industries revealed that their outcome variables could be understood in terms of two underlying factors. The first one involved the people statistics. Variables which loaded highly on it were the number of currently open cases, the number of non-disabling cases for the year, and the number of reopened cases for the year. The other factor involved the dollars outcomes - the costs of medical treatment for the injury and the cost of wage reimbursement.

CONFIRMATORY FACTOR ANALYSIS FINDINGS

Confirmatory factor analysis of the above results (without data from the State of Oregon Bureau of Labor and Industries) on a separate hold-out sample revealed that these factor structures were reasonably stable. These findings suggest that the results could be used as a

starting point in future research, providing a model for understanding the factors that make up ERTW programs.

Confirmatory factor analysis was also done for the nine factor model. Two additional single-indicator factors were hypothesized - they involved the ERTW program variable and the regular wage variable. The data from the State of Oregon Bureau of Labor and Industries was also used. Two factors, the first involving people statistics regarding workers' compensation and the second involving dollars outcomes of workers' compensation claims. The findings of this analysis were quite stable, indicating that the nine-factor model may provide future researchers with an strong base from which to move forward. This model not only provides an outline of the factors that make up ERTW programs, but also offers an understanding of the factors that make up organizational outcomes. However, it does not offer an understanding of where outcome variables such as average days lost per claim and number and costs of disabling claims may fit with other outcome variables.

Future work in the structural modeling arena should include the identified factors. However, more variation is needed to give the ERTW program and policy variables stronger predictive power. It may also be useful to move to a nonparametric approach to modeling the effect of ERTW programs and policies on organizational workers' compensation outcomes. In addition, future researchers should strive to obtain data on the average number of days

lost per injury and on the number of permanently disabling claims. The inclusion of these variables will give a model the opportunity to examine a larger universe of outcomes and may be the variables for which ERTW programs have the greatest effect.

REGRESSION FINDINGS

The results of the regression analysis suggest that the components of the programs which this survey examined do have a moderate ability to predict change in workers' compensation medical costs over a five-year period. The variables that contributed significantly to the model were using regular wage for employees on light duty, having written descriptions of the physical demands of the various job positions, and having a high level of dedication to the ERTW program. Each of these variables was associated with better performance on the change in medical costs over time. This analysis sheds some light on one of the most serious critisisms of ERTW - the concern that the use of ERTW may cause reinjury to the injured worker. Because the analysis does not reveal any relationship between using ERTW and increased medical costs, it does not support these concerns. In fact, the relationship between ERTW and decreasing medical costs suggest that ERTW may be healthier for the injured employee than staying home during recovery.

All of the variables together also had a significant ability to predict the change in wage reimbursement costs

over time. The variables that contributed significantly to the model were having a written return-to-work policy and using regular wage for employees on light duty. Both of these variables were associated with better performance on the change in medical costs over time.

The survey variables that had significant, simple correlations with the change in medical costs and wage reimbursement costs over the five year period from 1985 to 1990 also give some indication about to which components of ERTW programs might be especially important. Several variables were significantly related to change in medical costs over time. Those respondents who reported that their organizations preferred to wait until the injured employee was fully recovered to return them to work had significantly higher medical costs, which may result because most or all of the physical improvement needed for the worker to reach full performance level occurred under direct medical supervision, not through work hardening done while doing doctor-approved light duty or modified work. Althernatively, these findings may be a result of the psychological benefits of staying active in the workforce. Those organizations who used ERTW and paid regular wage to employees while they were on light duty, those who were more dedicated to their ERTW programs, and those who involved the supervisor in decision making had lower medical costs than those who did not do the above things. Only two variables had significant, simple correlations with the change in

median wage reimbursement costs. Organizations who prefer to wait until the injured employee is fully recovered before returning them to work have higher wage reimbursement costs and organizations with higher levels of deciation to their ERTW programs have lower wage reimbusement costs.

FINDINGS ON THE COMPARISON OF HIGH VERSUS
LOW PERFORMING ORGANIZATIONS

Surprisingly, while there were major differences in the variables that affected medical and wage reimbursement costs in previous analyses, the results of this analysis were very similar for these two variables. These similarities occurred despite the fact that only approximately 50% of the companies that were top performers on change in median medical costs were also top performers for change in median wage reimbursement costs. In addition, the same amount of overlap - approximately 50% - was found between those companies who were poor performers for change in median medical costs and those who were poor performers on change in median wage reimbursement costs.

The comparison suggested that the simple existence of an ERTW program did not increase an organizations chances of being a high performer. In addition, high and low performing organizations did not differ in their use of two very popular features - supervisory involvement in decision making about the injured worker and giving the supervisor responsibility for assuring that the injured worker not

exceed the doctors' prescribed physical limitations.
However, high performers on both variables used light duty
more often and were more dedicated to their ERTW program.
High-performing organizations also preferred to pay regular
wage when employees were on light duty rather than applying
some other wage to light duty hours. Poor-performing
organizations tended to prefer not to tell their new
employees about their ERTW program and those who showed the
worst performance on change in wage reimbursement costs
tended to prefer not to put their ERTW programs in writing.
Overall, high performing organizations appear to have a
higher level of commitment to their ERTW programs.

LIMITATIONS OF THIS STUDY

There are a number of limitations of this study. First,
it is based on correlations, not on any form of experimental
intervention, which means that no causal conclusions can be
reached based on the results. Second, the inability to
obtain data on the state of organizations' programs and
policies five years ago means that we are simply operating
on the assumption that their programs and policies have
improved (from the point of view of ERTW) during that time.
Third, the inability to obtain data from the State of Oregon
on the average number of days lost per claim for each
organization and on the number of permanently disabling
injuries and their associated costs drastically limits the
ability to draw conclusions on the effectiveness of

organizations policies and practices. Finally, this study may lack statistical power. There were few organizations that were using all components of ERTW programs or who had truly complete programs in effect. These are the organizations for which the greatest change in costs should be found. A larger sample size with stratified sampling based on program completeness would improve the power of the study.

PROBLEMS WITH THE SURVEY INSTRUMENT

In assessing the percentage of injuries in which ERTW was used by an organization, we created four categories instead of using the actual estimated percentage. This was done in case some survey respondents had difficulty estimating this number and would be more able to estimate it in terms of broad ranges. However, it is possible that this method of treating the data seriously undermined the predictive strength of this variable. It also drastically decreased the scale variation, which forces a larger amount of error into the model when attempting to predict variation in variables (such as the medical and wage reimbursement costs) with much larger scales. In addition, the wording of this question "What proportion of the employees have light duty or modified work available?" - needs to be refined. The idea behind it was to assess the proportion of cases in which light duty was used in comparison to the proportion of cases in which it could have been used. The wording used

frequently required some explanation and the question was generally answered in terms of the percentage of injuries in which ERTW was used. Changing the scales might also help normalize the distribution of responses.

The scale for assessing the level of dedication to the organization's ERTW program also needs to be improved. It might be worthwhile to ask separate questions about the level of dedication among top managers and the level of dedication among supervisors. It would also be useful to broaden the scale, either by expanding it to at least a 1 to 10 scale and providing specified anchors for each point, or by using an estimate of the percentage of each group that is dedicated to the program. Alternatively, the percentage of people with no, low, medium, high, and very high levels of dedication could be assessed.

Another question which could be made more specific is that assessing the level of training on ERTW programs. There are at least three distinct groups of people who are of interest here. They are top managers, supervisors, and those people who administer the workers' compensation program. The level of training each group has had should be assessed separately to examine the separate effects of training at different organizational levels on the outcome variables. In addition, the effectiveness of different sources of training could be assessed, as training can come from insurers, medical care providers, the State of Oregon, rehabilitation facilities, and so on.

Because the possible importance of the organizations'
relationships with the treating physicians was not
anticipated, no question specifically addressed that topic.
Instead, it was an issue that was raised by a number of
organizations in a general question on whether there was
anything else that they felt was important. If we had
assessed each organization's relationship with the treating
physicians, we would have obtained a better indication of
the importance of this variable. A four or five point scale
should be created for this variable, with a response
category for those organizations who have no relationship
with the treating physicians and a response category for
those organizations whose relationships with the treating
physicians vary widely. While it is not possible to be
certain of the importance or meaning of this variable,
preliminary indications suggest that poor (and sometimes
adversarial) relationships tend to occur when the care
providers are not educated about the concept and benefits of
ERTW while good relationships tend to occur when the care
providers are very familiar with the physical demands of the
positions in the organizations and the way in which the
organization treats the injured employee.

Yet another survey issue which came up during this
research is that those organizations which say that they do
not have an ERTW program may still use light duty or
modified work for at least some portion of their injured
workers. This means that to have or not have an ERTW

program does not completely distinguish between users and non-users of the major mechanism of ERTW programs. However, it is not known what meaningful differences exist between the two approaches.

One variable of ERTW programs which was not included in the survey was that of whether the organization used only modified positions or was willing to "make up" positions to be able to provide light duty. For those organizations who do not have many ERTW modified positions, the acceptance of "make-work" may be an important factor in their ability to use ERTW as often as is optimal. Another variable which might provide interesting data is whether the organization has any difficulty getting injured employees to return to their regular jobs. Several organizations mentioned experiencing this problem, and it could potentially affect their wage reimbursement costs.

RECOMMENDATIONS FOR FURTHER RESEARCH

Further research should include using the average number of days lost per injury as an outcome variable. This is vital, as it is the variable which is most likely to be directly affected by ERTW programs. It will likely serve as a medicating variable between the percent of cases in which light duty is used and the median wage reimbusement costs. A second concern with the outcome variables used in this study was the confound between size of organization and the "number of..." variables. This concern could be addressed

by partialling out organizational size. It will also be important for future research to examine permanently disabling injuries since this category of injuries often results in either large settlements or long-term payments. On the questionnaire side of the research, any future modeling efforts should not be done with such limited scales - the process of gathering information on the programs and policies relating to injured workers must incorporate scales with the largest possible (meaningful) variance. It may also be necessary to move to a nonparametric approach to deal more effectively with the non-normal variable distributions, although larger, more accurate scales and larger sample sizes may normalize the distributions somewhat. Additional modifications to the questionnaire that may prove fruitful involve examining the accuracy of organizations' perceptions of their level of dedication to their ERTW programs in relation to their actual level of sophistication. General observations from the telephone surveys suggest that those organizations with poor programs tend to over-rate their organizations level of dedication, while organizations with good programs tend to be quite realistic about their level of dedication. Examining the level of dedication to various components of the ERTW program may be a useful approach to examining this question. In addition, an index of organizations' sophistication level in using ERTW would need to be created. Unfortunately, the exploratory research accomplished in this study does not yet

provide sufficient knowledge to enable a reasonable index to be created.

The ideal research method for studying the effect of ERTW programs would utilize a longitudinal design with data collected on the organizations' policies and practices at more than one point in time. Changes in programs and policies over time could then be related to changes in the outcomes experienced by the organizations.

Finally, becuase the variables examined were only able to account for a moderate amount of variance in the change in either medical or wage reimbusement costs over time, it will be important to examine other variables which may affect these outcomes. There are several variables which may prove to offer some explanatory power. One of these is the effect of the employee who may serve as a mediating variable between the organization's culture and outcome variables or as a separate variable in itself. Another variable that should be examined is the organization'safety program which may affect not only the number of injuries, but also the severity of those injuries.

The prevalence of the role of regular wage in all of the analyises suggest a need to better understand what affects this variable and what may be affected by it. It is possible that the decision regarding regular wage may be an indicator of a cluster of things involving managerial approach.

RECOMMENDATIONS FOR ORGANIZATIONS

The following recommendations are based on the findings discussed above. However, because the research is exploratory, they should only be used as guidelines, not hard and fast rules. There were several variables that appear to be particularly important in terms of organizational outcomes based on both the regression analysis and the binomial analysis. They are using regular wage for employees who are injured but are doing light duty or modified work, using ERTW in as large a percentage of cases as possible (with doctors' approval), and increasing the level of dedication to the ERTW program. The apparent effect of using regular wage, as opposed to some lower wage for light duty hours worked may be due to motivational effects - that is, an employee who is still experiencing some level of pain and disability may work harder to overcome those things when s/he has the opportunity to maintain their usual standard of living. The importance of the percentage of cases in which light duty is used is not surprising. An ERTW program will likely have a cumulative effect based on the number of cases in which it is applied. It may also have a positive effect on employees morale if they see it being used regularly. In addition, consistent use of ERTW is likely to work as a deterrent to those few employees who might otherwise file fraudulent claims. The importance of the level of dedication variable suggests that

those persons interviewed in the survey - the people who knew the most about how the organization dealt with injured workers were handled in an organization - understand their organizations' level of dedication with some level of accuracy. This conclusion was reached during the phone interviews when the researcher noted that respondents from organizations with sophisticated ERTW programs tended to make estimates of dedication consistent with her own informal estimate, while respondents from organizations with unsophisticated ERTW programs tended to rate their organizations much higher than her informal rating. It may therefore be useful to involve those people in any planning on how to increase the level of dedication within the organization.

In addition, no component was found to be harmful to the organizational outcomes studied, which suggests that adding any component should not produce adverse effects on organizational outcomes.

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APPENDIX

SURVEY QUESTIONNAIRE

Return To Work Policy Questionnaire

Hi. My name is Lorrie Riat. I'm doing a survey under
the direction of Dr. Nancy Perrin at Portland State
University. We're interested in looking at different
types of return to work programs for injured workers.
Could you answer a few questions for us?

Company Name_____

Number of employees_____ W/C Insurer_____

Official Job Title_____ Is Co. Unionized_____

Number of Lost Time Injuries in Last Year_____

Average Time Lost Due to Injury_____

1. Do you presently have a written return-to-work
policy?

    Yes   No

2. Do you presently have an early-return-to-work
program?

    Yes   No   (IF NO, GO TO 11)

For those WITH early return to work programs:

3. Do you have a written procedure describing who takes
what steps and when in the process of getting an
injured employee back to work?

    Yes   No

4. Is there a mechanism within your company for
informing people when they're hired about your early-
return-to-work program?

    Yes   No

5. Is there a mechanism within your company for
informing current employees about your early-return-to-
work program?

    All are Informed
    Most are Informed
    Only Some are Aware
    Usually Find Out After an Injury

6. Are your employees required to sign a form indicating that they understand and accept your early-return-to-work policy?

     Yes   No

7. Are line supervisors involved in early-return-to-work decisions for employees they supervise?

     Always   Usually   Sometimes   Never

8. Is there someone who makes sure that an employee on modified work does not exceed the physical limitations set by their doctor?

     Yes   No

9. Has anyone in your organization received any training, either formal or informal, on early-return-to work-programs?

     Extensive   Moderate   A little   None

10. Are there any other components of your early-return-to-work program that you feel either contribute to or hinder the success of the program?   Yes   No   (If yes, describe)

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11. Does the organization prefer to wait until the injured employee is fully recovered before returning them to work?

     Yes   Sometimes   No

12. Does the organization provide light duty or modified work for the injured worker?

     Yes   No   (If NO, GO TO 15)

13. In what percentage of the cases of injury (excluding minor injuries) is light duty or modified work used?

     A.   Under 25%
     B.   25% to 49%
     C.   50% to 75%
     D.   76% to 100%

14. If an employee is on light duty, do they collect their regular status wage?

Yes   No

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15. When an employee is out of work due to an injury, are they required to contact the company at regular intervals?

Yes   No

16. Is there an individual in your company who contacts medical providers to discuss when an injured employee can return to work?

Yes   No

17. Is there an individual in your company who works with the injured employee to get them back on the job?

Yes   No

18. Do you have detailed job analyses of worker physical load for each of your job categories?

Yes   No

If YES, what is the occupational title of the person who did that work?_____

IF company has early return to work program OR lightduty/modified work:

19. Overall, how dedicated do you feel your company is to using early-return-to-work on a scale of 1 to 5, where 5 is extremely dedicated.

1   2   3   4   5

Thank you for taking the time to answer this survey.