CONTROLLING THE COST OF WORKERS' COMPENSATION IN CONSTRUCTION: MAKING THE PIECES FIT

by

Lisa Decker

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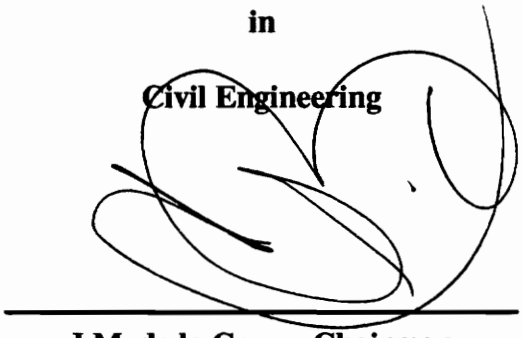
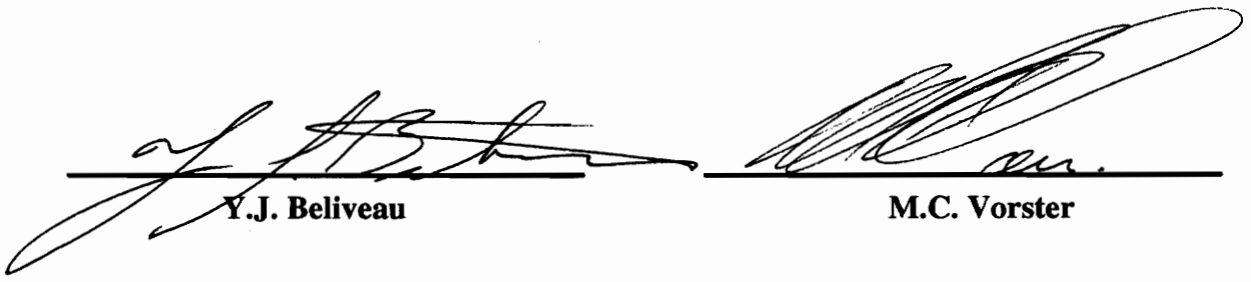


J.M. de la Garza, Chairman



Y.J. Beliveau **M.C. Vorster**

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Department of Civil Engineering

Division of Construction Engineering and Management

(ABSTRACT)

The costs related to workers compensation in the construction industry are rising every year, with no end in sight. Construction professionals can no longer afford to wait for others to solve the problem through new legislation or rate control. Controlling workers' compensation costs is a puzzle that can be solved by contractors if they have all of the "pieces" and a guide. This thesis supplies the "pieces" by educating the reader on the terminology, intricacies, and problems of the workers' compensation system. It also serves as the guide to solving the puzzle by discussing management techniques that are currently being used to control workers' compensation costs, and their effectiveness.

Costs are not the only concern of construction professionals as they turn their attention to workers' compensation. It is mandatory that every company that is eligible have an Experience Modification Rating (EMR) that is applied to its premiums to adjust for its actual insurance performance. The EMR has gained a new function, however.

Owners are using the EMR as a prequalifier in bidding, suggesting that the EMR is an accurate predictor of a contractor's safety performance. This assertion is not entirely true. This thesis addresses the inadequacy of the EMR as an indicator of safety performance and suggests alternative measures of a contractor's safety.

The management techniques cited, and the assertions made with regard to the EMR, in this thesis are based on the opinions of the forty-two (42) contractors and over one thousand six hundred (1600) construction workers who participated in a study conducted by the Construction Industry Institute's (CII) Workers Compensation Task Force. The findings of this thesis were made a part of the task force's CII Source Document.

Acknowledgment

I would like to thank Dr. Jesus de la Garza for his guidance and open door to all of my questions and concerns. His support of my efforts by allowing me to meet with the CII Workers' Compensation Task Force helped me to keep my research in line with the latest concerns of industry experts and practitioners.

I have heard it said that with every new thing that is learned, a person gets a new wrinkle in their brain. If this is the case, I walked out of *every* class given by the Construction Engineering and Management division with a host of new wrinkles! Thank you Dr. Michael Vorster, Dr. Yvan Beliveau, and Dr. Cliff Schexnayder for sharing your incredible knowledge and experience with me.

I have not only learned from my professors, but from my friends as well. Thank you for welcoming me into your lives and for being a part of mine. I wish you all the success this world can bring to you.

Finally, to my family. Mom, Dad, Joyce, and Keith, I can't put into words the strength and energy your love and support have given to me. You have held me high on your shoulders during my successes and carried me in your arms during my failures. Danny, the newest member of my family and my best friend, thank you for being with me every step of the way through this journey. This is just the beginning of what I can do with you by my side.

Participating Companies

I would like to extend a special word of thanks to the many companies, construction workers, and experts who took the time to participate in this CII study and answer my questions. These include:

ABB CE Services Inc.*
American Air Company, Inc.
American Bridge Company, Inc.
Barnard Construction Company, Inc.
Baugh Enterprises
Baymar Construction Company
Bechtel Corporation*
Brown & Root Braun
Bryant Electric Company
Century Contractors, Inc.
Chattanooga Boiler & Tank Company
Cianbro Corporation
Eastern Omni Constructors
Fluor Daniel Inc.*
Fru-Con Construction Corp.*
Great Barrier Insulation Company
Gulf Electric Company, Inc. of Mobile
Horizon Steel Erectors
Hydro Group, Inc.
International Brotherhood of Boilermakers
J.A. Jones Construction
J.H. Kelly
James N. Gray Construction Co.
Kemper National Insurance Co.
Korte Construction Company
Lionberger Construction Company
McAbee Construction
Morgan Corporation
National Council on Compensation Insurance (NCCI)
Nello L. Teer Company
Oscar J. Boldt Construction Company
Owen Steel Company
Page Construction, Inc.
Peters Contracting, Inc.
Reliable Mechanical, Inc.
Rust International Corporation*
SK Construction
S&B Engineers and Constructors*
St. Paul Fire and Marine Insurance Co.
Swank Enterprises
Texaco, Inc.*
The Industrial Company, SE, Inc.
The Ralph M. Parsons Company
Thomas O'Conner & Company
Total Services, Inc.
Traylor Brothers
United Coatings Company
W.C. English, Inc.

* CII Workers' Compensation Task Force Member Companies

CII Workers' Compensation Insurance Task Force Members

John J. Schembri, Chairman	Fru-Con Construction Corporation
Ronald W. Cross	Rust Construction Services
H. Keith Dean	ABB Combustion Engineering Services, Inc.
Douglas Dutcher PE	Texaco, Inc.
Jesus M. de la Garza, Ph.D.	Virginia Polytechnic Institute and State University
David L. Gossman	Fluor Daniel
Donn E. Hancher, Ph.D.	University of Kentucky
Frank E. Robertson	S & B Engineers and Constructors
Kathy Spurling	Bechtel Corporation

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Chapter One

An Introduction and Overview

1.1 Introduction

The costs associated with workers' compensation in construction have sky-rocketed in recent decades to become, in 1993, the fastest growing labor cost in the United States ("AGC Forum...", 1993). Contractors cannot afford to sit idly by and wait for others to solve the problem for them through legislation, or other means. The costs can be controlled by contractors. Just as in solving a puzzle, one simply needs all of the pieces and a guide.

Chapters Two and Three of this thesis supply the workers' compensation manager and construction professional with the necessary understanding of the workers' compensation system and the problems that exist within this system today, as they apply to the construction industry. Armed with all of "the pieces of the puzzle," the reader will then find a guide to solving the puzzle in Chapter Four, through a discussion of various techniques being currently used by industry professionals, and their success. This guide

describes techniques that can be used before an accident occurs, at the time of an accident, during recovery, and after the employee returns to work.

Costs are not the only workers' compensation-related problem plaguing today's construction professionals, however. The Experience Modification Rating (EMR), assigned to each company to adjust its workers' compensation premiums to reflect its actual insurance performance, is being used by owners as a bidder-selection criteria. The EMR is being used as an indicator of a contractor's safety performance. While the EMR is an adequate measure to fulfill the purpose for which it was intended, Chapter Five of this thesis will address the reasons behind the belief, by contractors and some insurance industry professionals, that the EMR is not an accurate measure of a contractor's safety performance. Chapter Six will then offer some alternative measures of safety performance that have been suggested by construction industry professionals.

This chapter will discuss the purpose, objective, and limitations of this thesis, as well as the methods used to gather the opinions of construction industry professionals. Chapter One also addresses the role this thesis plays in the research being performed by the Construction Industry Institute's (CII's) Workers' Compensation Insurance Task Force.

1.2. Purpose

To study workers' compensation practices in the construction industry and the workers' knowledge of the workers' compensation system to identify better practices of management and safety performance evaluation.

1.3 Objectives

- Identify key elements of effective workers' compensation management from a database of contractors' input.

- Examine the level of knowledge held by construction workers about the workers compensation system and the policies put forth by their employer through the use of a database of workers' responses.

- Examine validity of use of the EMR as an indicator of contractor safety performance through the use of the contractors' database, and identify more effective measures.

1.4 Limitations

- Results were determined only from current "best practices" of those contractors who responded to the questionnaires and were entered into the database. Data from forty-two (42) contractors (both CII and non-CII members) were analyzed.

- Construction Workers and their superiors willfully and truthfully answered questions about their current understanding of the workers' compensation system.

- The knowledge level of construction workers was determined only from the responses of about 1600 workers questionnaires.

- Although the CII Workers Compensation Task Force distributed questionnaires to four separate industry groups (contractors, workers, insurance professionals, and owners), only those responses from the contractors and workers were evaluated for this thesis.

1.5 The Role of This Thesis in the Research of CII

The questionnaires that were used to gather the industry professionals' opinions that are used in this thesis were developed by the CII Workers' Compensation Insurance Task Force (WCITF). The WCITF created four questionnaires; one each for contractors, owners, insurance professionals, and workers. The work for this thesis began only a few weeks before the final versions of the questionnaires were established. Therefore, there was only the opportunity to take part in the end of the revision process. Only responses to the contractors and workers questionnaires were used in this thesis.

The WCITF is currently writing a Source Document to share the results of its research with the construction industry. In completing its task, the WCITF is utilizing the data gathered and analyzed by this thesis, which it funded. The WCITF is also including the information gathered by Dr. Donn Hancher, at the University of Kentucky, through the examination of the insurance professionals and owners questionnaires. In addition, the industry experts that comprise the WCITF are offering their many years of experience and knowledge in aiding other industry members to understand the workers' compensation system as a whole.

This thesis was written independently of the WCITF and the University of Kentucky. All data and conclusions contained herein, unless otherwise referenced, are the outcome of efforts performed at Virginia Tech.

1.6 Formation of Questionnaires

The process of creating the four questionnaires for the CII study began with several WCITF brainstorming sessions. The first few of these meetings were used to establish a list of issues of importance to controlling workers' compensation costs and using the EMR as a measure of contractor safety performance. From this list, questions

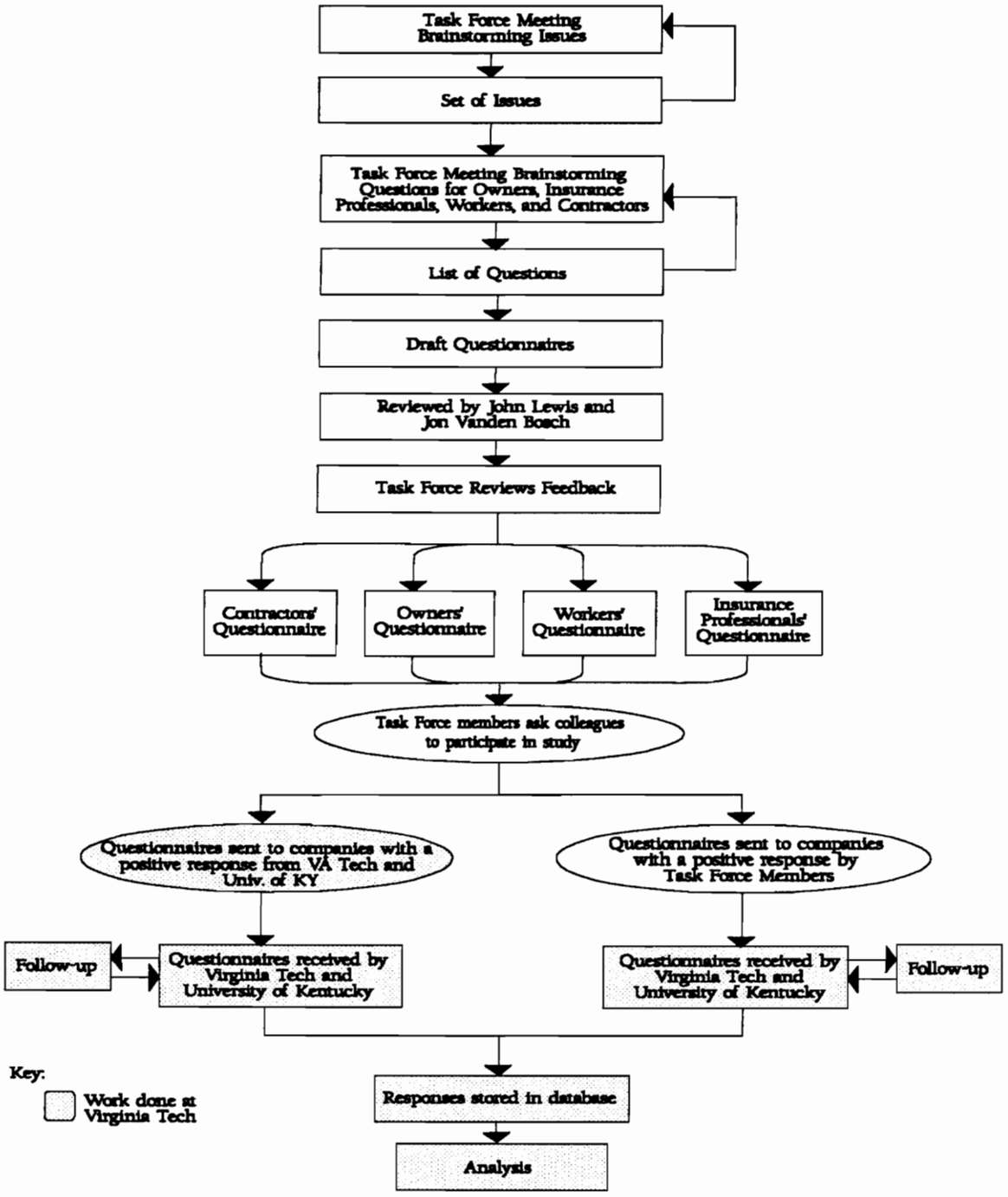

Figure 1.1 - Flowchart of Data Gathering Process

evolved to be used in the questionnaires. More brainstorming was needed to completely formulate the questions and to establish a format for the surveys.

As shown in the flowchart in Figure 1.1, formulation of the questionnaires then went to the next step, namely review. Jon Vanden Bosch of CII, and John Lewis, a well-known workers' compensation consultant, critiqued the questionnaires and returned them with several comments. After the WCITF revised the questionnaires to reflect the changes suggested by Mr. Vanden Bosch and Mr. Lewis, they were submitted to CII for final approval. Copies of the final version of the contractors and workers questionnaires can be found in Appendix A.

Cover letters explaining the purpose of the study and acknowledging participation were attached to their respective questionnaires. At a later date, in recognition of the need for confidentiality in regard to many of the responses contained within the questionnaires, a last paragraph was added. The paragraph describes the task force's guarantee that all responses will be aggregated for analysis, and that no single company will be associated with their specific data. The final version of the letters are contained within Appendix A.

1.7 Data Collection Process

To ensure true and accurate responses, the task force developed two methods of data collection, which are described in the following sections. One method is applied to contractors, insurance professionals, and owners. A different method is used to survey construction workers.

1.7.1 Contractors, Insurance Professionals, and Owners

Once the questionnaires received final approval from CII, the WCITF members began to contact colleagues within the industry (both CII and non-CII members) to ask for participation in the study through completion of a questionnaire. In selecting construction

firms to participate in the CII study, the WCITF attempted to achieve geographic diversity as well as variety in company size. It was the goal of the WCITF to target those firms with success in workers compensation cost control. By choosing such companies, the WCITF believe they have received feedback regarding the most effective claims management techniques, or "best practices" in use in the construction industry.

If a firm agreed to participate in the CII study, a questionnaire was forwarded to them. Questionnaires were sent to insurance professionals and owners by the University of Kentucky, and to contractors by Virginia Tech.

Shortly after this process began, the procedure changed such that the individual task force members distributed the questionnaires to their colleagues, accompanied by a personalized letter developed by the task force. In a few cases, task force members completed questionnaires with regard to their own companies as well.

Regardless of the distribution procedure, the insurance professionals and owners returned their questionnaires to the University of Kentucky, and the contractors returned theirs to Virginia Tech. Upon receipt of the questionnaires, the researchers reviewed the responses. If any questions were left unanswered, or inconsistencies appeared, a telephone and/or fax follow-up was made.

A list of those companies who had agreed to take part in the study, and been sent a questionnaire, was kept at all times. This list also detailed the status of the questionnaire with regard to completeness. If a company took an inappropriately long time to respond, a telephone follow-up was made to assist the company by answering questions and addressing comments.

1.7.2 Workers

For the purpose of this study, workers are defined as those contractors' employees who work on the job site. The chart of responses to Question 1a of the workers survey report shows the distribution of the occupations of workers who responded to the CII study. The workers survey report is contained within Appendix C. The job sites at which the questionnaires were distributed were chosen by the WCITF. There were no criteria established for worker selection. However, both union and non-union responses were sought.

The most important aspect of gathering data from the workers was gaining their confidence that the responses would not be used against them. The task force wanted the workers to feel comfortable in giving truthful answers to the questions. For this reason, task force members created a distinct procedure for the distribution of the questionnaires.

First, the task force members contacted the business unit managers within their companies, explained the purpose of the study, and asked permission to survey his or her projects. The project managers, or the equivalent were then contacted and asked to have the person responsible for safety on the site explain the CII study to the workers at their safety or tool box meetings.

The workers, both union and non-union, were assured at these meetings that their responses would only be seen by their superintendent and the researchers at Virginia Tech. The questionnaires were then distributed by the site superintendents, completed by the workers, collected by the superintendents, and returned to Virginia Tech. A few workers mailed their responses directly to Virginia Tech. Workers questionnaires were not subject to follow-up procedures.

Due to the anonymity of the workers and the large number of union hall workers in the study, direct correlations cannot be made between the responses of the contractors and workers. The data will therefore be used only to illustrate the opinions of the respondents with regard to workers' compensation in the construction industry.

1.8 Data storage and Analysis

Microsoft Foxpro for Windows version 2.5, distributed by the Microsoft Corporation was used to store all information from the questionnaires, and generate the graphs and tables used in analysis of the data, and in this thesis. The workers questionnaires were analyzed statistically using the chi-square independence test with the aid of SAS version 6.07 for VM/CMS on an IBM model 3090, distributed by the SAS Institute.

1.9 Classification of Contractors and Employees from Survey Results

To aid in evaluation of the responses to the surveys, the contractors and workers were classified into categories. This section describes the need for such classification, and defines the categories used in this thesis.

In this section, survey results will be cross-referenced with the following notation: (Q2a, C). This is interpreted as "question 2a of the contractor survey report." The "C" stands for the contractor survey report. A "PA" in its place denotes the portrayal analysis of the qualitative responses to the contractor surveys. These reports are contained within Appendix B. A "W" denotes the workers survey report which can be found in Appendix C.

1.9.1 The Need for Classification

To examine various aspects of workers' compensation in the construction industry, this thesis separates respondent contractors into two categories. The contractors are

classified as either small or large, according to the dollar amount of new contracts they received in 1991.

This separation into two categories is made for two reasons. First, it allows readers to identify their company size with the results and conclusions outlined in this thesis. Secondly, comparison of the two classifications points to important discrepancies that support the theory that the EMR is not an accurate measure of a company's safety performance.

The construction workers are classified in two ways. First, they are divided into groups according to how much experience they have in their current occupation. This distinction is determined using responses to Question 1a of the workers survey. Classification in this manner shows the workers' compensation-related knowledge levels of the workers who participated in this survey as they gain more job experience.

Secondly, the workers are categorized as to how long they have been on their current job site. The information used for this classification resulted from Question 2a of the workers survey. This classification is used to supply the reader with demographic information about the respondents and their job site experience.

In Chapters Three and Four, some of the problems of the workers' compensation system, and the management techniques used to solve them, are examined as they relate to the workers survey responses. This thesis often refers to those workers who have "less" experience, as opposed to those with "more" experience. Section 1.9.3 describes these classifications, and quantifies the proportion of workers survey respondents with the "less" and "more" experience.

1.9.2 Contractors

Of the sixty-one (61) surveys that were distributed to contractors, forty-two (42) were completed and sent to Virginia Tech. This is a return rate of sixty-nine percent (69%).

For the purpose of this study, the forty-two (42) respondent contractors are divided into two groups, large and small, according to the dollar amount of new contracts that each company received in 1991. As shown in Figure 1.2, sixty-nine percent (69%) of the contractors received less than $100 million in new contracts in 1991 (Q1e, C) and are therefore considered to be "small" contractors. The remaining thirty-one percent (31%) of the contractors received more than $100 million in new contracts in 1991 and are named "large" contractors.

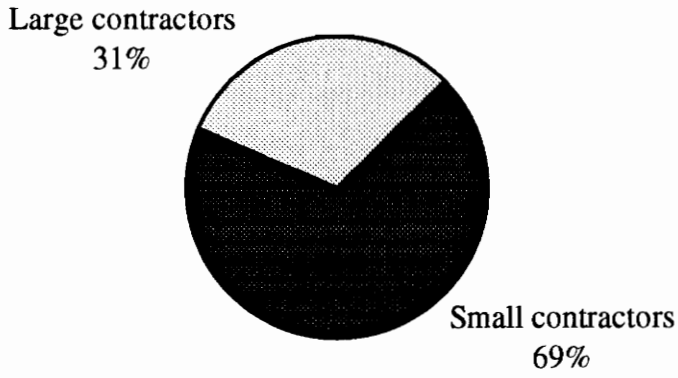

Figure 1.2 - Classification of respondent contractors as "large" or "small."

1.9.3 Construction Workers

The analysis of the construction worker survey is made from the responses of over one thousand six hundred (1,600) workers from thirty-eight (38) states, including both union and non-union workers. The actual number of questionnaires distributed was not recorded. Therefore, a rate of return cannot be computed. These workers are not

necessarily employees of the contractors that responded to the contractors survey. A geographical distribution of workers can be found in Appendix C.

For the purpose of evaluating the responses to the construction workers survey, the workers are classified in two ways. First, workers are classified according to how much experience they have in their present occupation. A worker with five years or less experience is classified as "less experienced," and a worker with more than five years experience is classified as "more experienced." Figure 1.3 shows that in this study, twenty-six percent (26%) of the workers are "less experienced" and the remaining seventy-four percent (74%) are "more experienced" (Q1b,W).

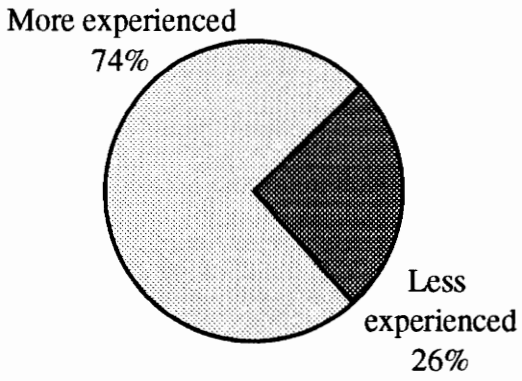

Figure 1.3 - Breakdown of workers in this CII study according to experience

Secondly, workers are placed into categories with regard to how long they have been on their particular jobsite. This is known as being classified by "time on site." A person who has been on site one year or less is classified as having the "least" time on site. Someone with two through four years on site is said to have "mid-level" time on site. The workers with "substantial" time on site have been on site five years or more.

As can be seen in Figure 1.4, seventy-five percent (75%) of the workers in this CII study have the "least" time on site, twelve percent (12%) have "mid-level" time on site, and thirteen percent (13%) have "substantial" time on site (Q2a, W).

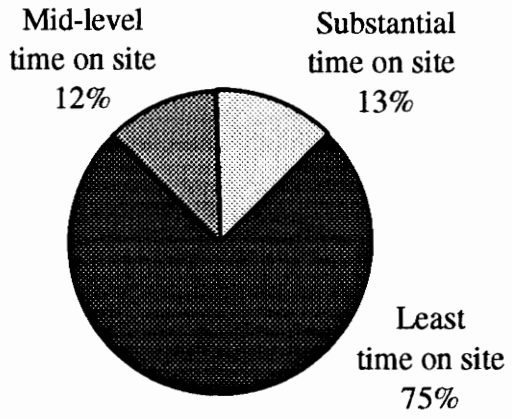

Figure 1.4 - Breakdown of construction workers in this CII study by their time on site.

When a comparison is made among the "experience" categories or among the "time on site" categories to determine if the response to a survey question was affected by either of these two factors, a chi-square independence test is utilized to establish statistical significance. Please see Appendix C for the test results used in making this determination. They are placed with each question.

Figure 1.4 shows the breakdown of the workers' time on site that one would expect from the construction industry as a whole. Although this thesis examines the survey responses of a small portion of America's total construction workforce (just over 1600), Figure 1.4 shows that a good representation has been obtained.

1.10 Summary

Workers' compensation costs have become the fastest growing labor cost in the United States. Contractors can take control of their future and solve the puzzle of

controlling these costs by simply having all of the "pieces" and a guide. They can also attempt to counteract the effects of owners using their EMR's as indicators of safety performance if they understand the components of the EMR and the factors that affect it. This thesis:

- supplies the contractor with the pieces of the puzzle.
- serves as a guide to solving the puzzle.
- educates the contractor as to the components of the EMR and the factors that affect it.
- suggests alternative measures of a contractor's safety performance.

To complete these goals, a database of the responses to a workers' compensation questionnaire was generated from forty-two (42) contractors and over one thousand six hundred (1600) workers. The workers, however, are not necessarily employees of the contractors in the study. The questionnaires used to obtain the database were developed by CII's Workers Compensation Task Force, but all data gathering and analyzing was performed by researchers at Virginia Tech. The contractors and workers are divided into classifications to aid in discussion and understanding.

Chapter Two

The Pieces of the Workers' Compensation Puzzle

2.1 Introduction

To solve any puzzle, one needs all of the pieces. In the case of workers' compensation cost control, one needs to have a complete knowledge of the terminology, intricacies, and people involved in the workers' compensation system. Chapter Two explains the pieces of the workers' compensation puzzle to give the reader a solid background from which to proceed through the remainder of this thesis. All of the pieces discussed in this chapter will be fitted together in Chapter Four where this thesis presents techniques to control the costs of workers' compensation.

2.2 General Terms

This section includes a description of workers' compensation as a concept, safety, the difference in state workers' compensation laws, and the theory of claims management.

2.2.1 Workers Compensation

According to Newman (1990), the concept of workers' compensation came out of the dramatic rise in work-related accidents as a result of the Industrial Revolution. At that time, lawmakers began to see that since technological advancements benefit all of society, the country as a whole should pay for the costs of these advancements, including the cost of the related accidents.

With this idea in mind, each state adopted its own workers' compensation legislation which made the employers pay for industrial accidents without regard to fault. This way, the costs could be passed to consumers through increased product prices. Through these means, all of society would share in the costs of work-related injuries. In return for workers' compensation, the employees gave up their right to sue their employers for lost wages or medical costs.

2.2.2 State Workers' Compensation Laws

Each of the fifty United States passed their own workers' compensation laws. These separate laws are still in existence today. For this reason, it is very important that the reader checks with local statutes before implementing any of the cost control measures suggested in this thesis. What may be legal and common practice in one state may be illegal in another.

The Business Roundtable identified the primary objectives that underlie all states' workers' compensation laws. They are (BRT, p3, 1991):

- "Provide sure, prompt and reasonable income and medical benefits to work-accident victims, or income benefits to their dependents, regardless of fault;"
- "provide a single remedy and reduce court delays, costs, and workloads arising out of personal-injury litigation;"

- "relieve the public and private charities of financial drains incident to uncompensated industrial accidents;"
- "eliminate payment of fees to lawyers and witnesses as well as time-consuming trials and appeals;"
- "encourage maximum employer interest in safety and rehabilitation through an appropriate experience-rating mechanism; and"
- "promote frank study of causes of accidents (rather than concealment of fault), reducing preventable accidents and human suffering."

An excellent reference to states' laws with regard to workers' compensation is the annual *Analysis of Workers' Compensation Laws*, prepared and published by the U.S. Chamber of Commerce. A supplement to each edition is also available to provide an update concerning the latest pertinent legislation.

2.2.3 Claims Management

Lawrence D. Sukay wrote in 1993 (p50) that "at least 85 percent of all (workers' compensation) problems can be corrected only by changing systems (which are largely determined by management), whereas less than 15 percent are under a worker's control." Last set of parentheses his. Instead of blaming individuals for accidents and high workers' compensation cost, management must look in the mirror.

Claims management is a philosophy of moving from mere compliance to collaboration (Walker, 1994). It entails the involvement of companies, whether internally, or through their insurance carriers, in every aspect of their workers' compensation system. They may audit the calculation of their Experience Modification Rating, their insurance premiums and loss reports, and the medical bills that result from injuries. They also take an active role in preventing high costs through many cost control techniques.

2.2.4 Safety

Twenty-one percent of all accidents that occur in America take place on the job (DeCarlo, 1993). The Construction Industry Institute's Zero Accident Task Force (1993) studied construction safety in America in 1992 and found it to be deficient in many areas. They identified five safety techniques that have had the greatest impact on attaining a goal of zero accidents. These are:

- Pre-project/Pre-task Planning
- Safety Orientation/Training
- Safety Incentives
- Alcohol and Substance Abuse Programs
- Accident and Near Miss Investigation

The techniques listed above should be implemented as well as others to reduce accidents, and therefore the need for workers' compensation claims.

However, accidents are not the only source of workers' compensation claims in today's workplace. The injury trend in the United States has changed a great deal since the creation of accident-preventing safety programs. Many of today's injuries are non-traumatic in nature, with no specific cause (Sukay, 1993). Examples of a non-traumatic injury are a soft-tissue injury, such as a back, shoulder, or neck strain; and mental stress.

Because the Zero Accident Task Force addressed so well the safety problems that currently exist in construction, this thesis focuses on identifying key elements of workers' compensation management.

2.3 The People

This section describes the parties involved in the workers' compensation system, and the role they have in reducing costs.

2.3.1 Owners

Owners of constructed facilities have an active role in controlling workers' compensation costs by purchasing an "owner-controlled insurance plan" (OCIP), or they can take a passive role. Either way, they serve to benefit from lower workers' compensation costs by receiving lower bids on their projects. These lower bids are made possible through a reduction in the contractor's overhead cost of supplying workers' compensation insurance for its workers.

The Business Roundtable wrote in 1991, that owners also benefit from contractors' cost control efforts through increased quality (BRT, 1991).

2.3.2 Contractors

Workers' compensation costs will continue to spiral unless contractors dedicate themselves to fighting back, from the top level management to the laborers on sites (DeCarlo, 1993). Controlling workers' compensation costs will allow for greater profit margins, and increased competitiveness. When discussing workers' compensation insurance, the contractor is also referred to as the "insured."

2.3.3 Subcontractors

Subcontractors play a major role in a general contractor controlling its workers' compensation costs. Chapter Four addresses the importance of the subcontractor to the general contractor's accident investigation success.

2.3.4 Insurance professionals

Insurance professionals can assist the contractor in gaining control of workers' compensation costs through services such as claims administration, training, site inspection, audits, program reviews, lab analysis for hazardous materials, and fraud investigation.

The insurance professionals must be committed to helping the contractor control workers' compensation costs. This commitment shows through the quality of services the carrier offers to the contractor. According to Sturges (p43, 1992), there are five professional abilities one should expect from an insurance carrier with regard to quality:

- "Tailoring the programs to your company's needs."
- "Competitive pricing."
- "Strong provider/vendor relationships."
- "Accuracy."
- "Exacting and flexible record keeping."

2.3.5 Attorneys

A 1994 closed claim study conducted by the National Council on Compensation Insurance (NCCI) found a "stunning" amount of attorney involvement in workers' compensation claims. Workers' compensation laws were established in part to eliminate attorney involvement and the fault-based system. In recent decades, however, the laws have fallen short of achieving this goal. Attorneys, and their cost-driving effects on the workers' compensation system will be addressed in Chapter Three.

2.3.6 Construction worker

A program can be made more successful with employee "buy-in." That is, having the workers accept the responsibility for making the programs work. The cost control

methods in this thesis will benefit the employees in a tangible way through bonuses and high-quality physician care. However, the cost control techniques also carry with them many intangible effects that encourage the workers to "own" the techniques themselves. These intangibles include a safe workplace, job security as a result of a profitable company, and fulfillment of affiliation needs through team and group programs.

2.3.7 Medical Care Providers

The medical community must play an active role in controlling the costs of workers' compensation. The ultimate goal of workers' compensation-related medical treatment is to make the injured employee well again, and able to perform his or her job safely, without excessive and unnecessary costs or lost work time. The cost control techniques discussed in this thesis present ways the contractors and medical care providers can work together to accomplish this goal.

2.4 OSHA and incident types

This section details the many types of incidents that may occur on a job site, and the regulatory body that addresses these incidents.

2.4.1 Occupational Health and Safety Administration (OSHA)

The Occupational Health and Safety Administration (OSHA) is a regulatory agency that is concerned with safe working conditions and accident record-keeping. They routinely inspect construction sites for compliance with its regulations. Non-compliance is punishable by fines and, in some rare cases of employee fatality, criminal penalties (Usmen, 1994). OSHA was established through the Occupational Safety and Health Act, passed on April 28, 1971.

Because of its concern for safety, OSHA also offers several preventive aids to contractors. These include (Strunk, 1993):

- outreach materials, i.e. fact sheets, booklets, news releases, and videos.
- free, confidential consultation services, separate from regulation enforcement division.
- Voluntary Protection Program that exempts safety-strong companies from OSHA's programmed inspections.

2.4.2 OSHA Recordable Incident

OSHA requires that injuries of a certain pre-determined severity be recorded on its OSHA 200 form to be submitted to the regulatory body on a yearly basis. Usmen (pIV-9, 1994) defines a recordable incident as:

> every occupational death, occupational illness, and occupational injury involving loss of consciousness, restriction of work or motion, transfer to another job, or medical treatment (which does not include first aid)

2.4.3 OSHA Lost-time Incident

An OSHA lost-time incident is any OSHA recordable incident that requires the injured worker to lose a work day.

2.4.4 OSHA Incident Rates

Both recordable and lost-time incident rates are developed for contractors by OSHA. An incident rate is the frequency of the incident type per 200,000 work hours. 200,000 work hours represents one-hundred employees working forty hours a week for fifty weeks a year. The recordable incident rate is calculated in the following manner:

$$RIR = \frac{NOR}{WH} * 200{,}000$$

where:

RIR = Recordable Incident Rate.
NOR = Number of Recordables that occurred in a given year.
WH = Total number of work hours performed that same year.

To calculate the lost-time incident rate, the number of recordables that occurred in a given year would be replaced in the equation with the number of lost time cases that occurred that year.

2.4.5 First-aid Incident

A first aid incident is not recordable by OSHA regulations, yet consists of minor medical attention. This attention may be administered on-site by a paramedic, or at a medical care facility.

2.4.6 Near-miss Incident

A near-miss incident is defined as any occurrence that had a high probability of resulting in an injury, if just one factor involved in the incident was different. Take for example, a steel beam being dropped during erection procedures. If one factor had changed, such as if a worker was directly under the beam instead of ten feet away, it is very likely that the worker would have been injured.

2.5 Insurance terms

There are a multitude of insurance terms that are used every day with relation to construction. However, this section will address only those terms that will be used in this thesis, and pertain to workers' compensation.

2.5.1 Monopolistic state funds

Currently, Nevada, North Dakota, Ohio, Washington, West Virginia, and Wyoming are the only six states with monopolistic state workers' compensation funds. When working insides these states' boundaries, the contractor can only buy insurance from the state fund ("Speak...", 1994).

2.5.2 Subrogate

Subrogation is the term used to describe the act of passing the cost of an injury onto a third party that is responsible for the injury. Once this occurs, the loss should be removed from a contractor's record (Priz, 1993). Take for example, a situation where an employee is involved in an automotive accident with a third party. If it is determined that the accident occurred at no fault of the employee, the employer's insurance company can attempt to be reimbursed for the costs of the accident by the insurer of the third party. This is an attempt to *subrogate* the costs of the accident to the third party's insurance carrier.

2.5.3 Indemnity

Indemnity is payment to an injured worker as replacement for lost wages due to an injury. In many states, indemnity payments are not taxable, and equal approximately two-thirds of an employee's actual wage (U.S. Chamber of Commerce, 1993).

2.5.4 Workers' Compensation Claim

A workers' compensation claim is filed by an injured worker, with his or her employer's insurance carrier, in an attempt to recover the medical and lost wage costs associated with a work-related injury.

2.5.5 Self-insurance

Blinn (p13, 1993) provides a complete definition of self-insurance when he writes,

In general, a qualified self-insurer has been approved by one or more states to be financially responsible for its workers' compensation losses. In effect, the organization now replaces an insurer as the regulated entity in that state. The application process, which varies by state, reviews many financial and non-financial criteria.

2.5.6 Self-insurance Group

A self-insurance group fulfills all requirements to be self-insured that were mentioned in the previous section. The difference is that instead of the insured being a single company, it is made up of a group of independent companies.

2.5.7 Owner-Controlled Insurance Plan

An owner-controlled insurance plan (OCIP) allows an owner to purchase insurance for all contractors and major subcontractors on its site. This concept is explained more fully in Chapter Five.

2.5.8 Retro Plan

A retro plan is an insurance plan that provides for the insurance carrier to re-evaluate a contractor's rates at the end of the policy year, and make the appropriate adjustments ("Speak...", 1994).

2.6 The Experience Modification Rating (EMR)

This section defines terms that apply to a contractor's Experience Modification Rating (EMR). The discussion is this section is brief because all of these terms (except NCCI) are defined in Chapter Five, using an example. This section is included in Chapter Two to give the reader the necessary base from which to understand the calculation of a workers' compensation premium.

2.6.1 National Council on Compensation Insurance (NCCI)

Peter Burton, Senior Vice President, Northern Region, of NCCI defines his organization as (Roanoke, 1994):

> the nation's largest information company serving the voluntary marketplace. The corporation provides database products, software, publications, and consultation services to state funds, self-insureds, independent bureaus, agents, regulatory authorities, legislatures and more than 700 insurance companies.

NCCI's services include (Roanoke, 1994):

- data collection.
- research analysis/actuarial research and social and economic research.
- law evaluation.
- experience rating and promulgation and distribution.
- classification inspection.
- customized data reports.
- software.

2.6.2 Expected Loss

Expected loss is the amount of workers' compensation loss that an insurance carrier "expects" a contractor to experience in a given time period, usually as year. The total expected loss is calculated by the insurance carrier based on payroll units per work classification. The expected loss per payroll unit of a given work classification is multiplied by the number of payroll units in that same classification to determine expected loss according to the following equation:

$$E_{Ti} = E_{Ci} * pu_i$$

where:

E_{Ti} = Total expected loss for a single classification

E_{Ci} = Expected loss per payroll unit in that classification

pu_i = payroll units worked in given classification

The total expected loss for a contractor is the sum of total expected losses for each classification of work it performs:

$$E_T = E_{T1} + E_{T2} + E_{T3} + ... + E_{Ti}$$

where:

E_T = Total expected loss for the contractor

E_{Ti} = Total expected loss for the i^{th} classification

2.6.3 Actual Incurred Losses

Actual incurred losses are a company's workers' compensation losses, both paid and in reserve, in a given period, usually a year. ("Speak...", 1994).

2.6.4 Loss Reserves

Loss reserves are resources that are set aside by an insurance company to pay any future costs incurred from a work-related injury. These reserves are considered to be a part of a contractor's actual losses for the time period in which the accident occurred.

2.6.5 Definition of the EMR

Because base workers' compensation manual rates are set by individual states to reflect the *average* costs for coverage of the *average* company, modification had to be made to the premiums of firms that fall below or above average. This modification comes in the form of an Experience Modification Rating (EMR).

A company's EMR is not determined by its insurance carrier. Instead, the EMR of each individual company is developed by an independent agency, most commonly NCCI. "In its simplest form, the EMR is the ratio of (a firm's) actual losses to expected losses over a moving three year period (BRT, p8, 1991)." The EMR is a multiplier of states' manual workers' compensation rates that creates premiums that more accurately reflect the insurance risk of each company.

2.7 Workers' Compensation Premium

This section defines the components of the workers' compensation premium calculation, and then provides an explanation and diagram of the actual calculation.

2.7.1 Manual Rates

A manual rate is what a state workers' compensation bureau believes it costs to insure the average employer working within a particular job classification. Each state develops its own manual rates for every job classification. These rates are developed using actual insurance losses that are reported to the state by its licensed insurance carriers. The use of the manual rate in workers' compensation insurance premium calculation is discussed in Section 2.7.4.

A manual rate is typically expressed in the form of cost per $100 of payroll. For this reason, some industry professionals refer to manual rates as a percent of payroll. For example, if the manual rate to insure a carpenter is $11.00 per $100 of payroll, it is equal

to 11 percent of the carpenters' payroll. Hence, unadjusted workers' compensation rates are 11% of payroll.

2.7.2 Rate Classification

There are approximately 600 rate classifications ("Speak...", 1994) in use by every state. Every employee of each company that purchases workers' compensation insurance from a carrier is categorized into a classification according to the type of work he or she performs. A worker who does different jobs can have his workers' compensation prorated according to time spent on each function ("Large...", 1992). These classifications help insurance carriers to predict the expected losses of an insured.

In most states, however, insurance classifications are actually identified within a company by a ratings bureau, namely NCCI, and not by that company's insurance carrier (Priz, 1993). Because NCCI cannot audit a company's classifications yearly, some contractors employing twenty people or more are likely to overpay for workers' compensation insurance as a result of the accidental misclassification of their workers ("Large...", 1992).

2.7.3 Payroll Unit

A payroll unit is a $100 block of payroll within a single classification.

2.7.4 Calculation of the Workers' Compensation Premium

As shown in Figure 2.1, creation of workers' compensation premiums is a never-ending process. The workers' compensation insurance premiums for each project that a contractor has within a year are determined by multiplying the manual rates of the state where a project will be completed, times the payroll units per occupation category times the company's EMR for that year.

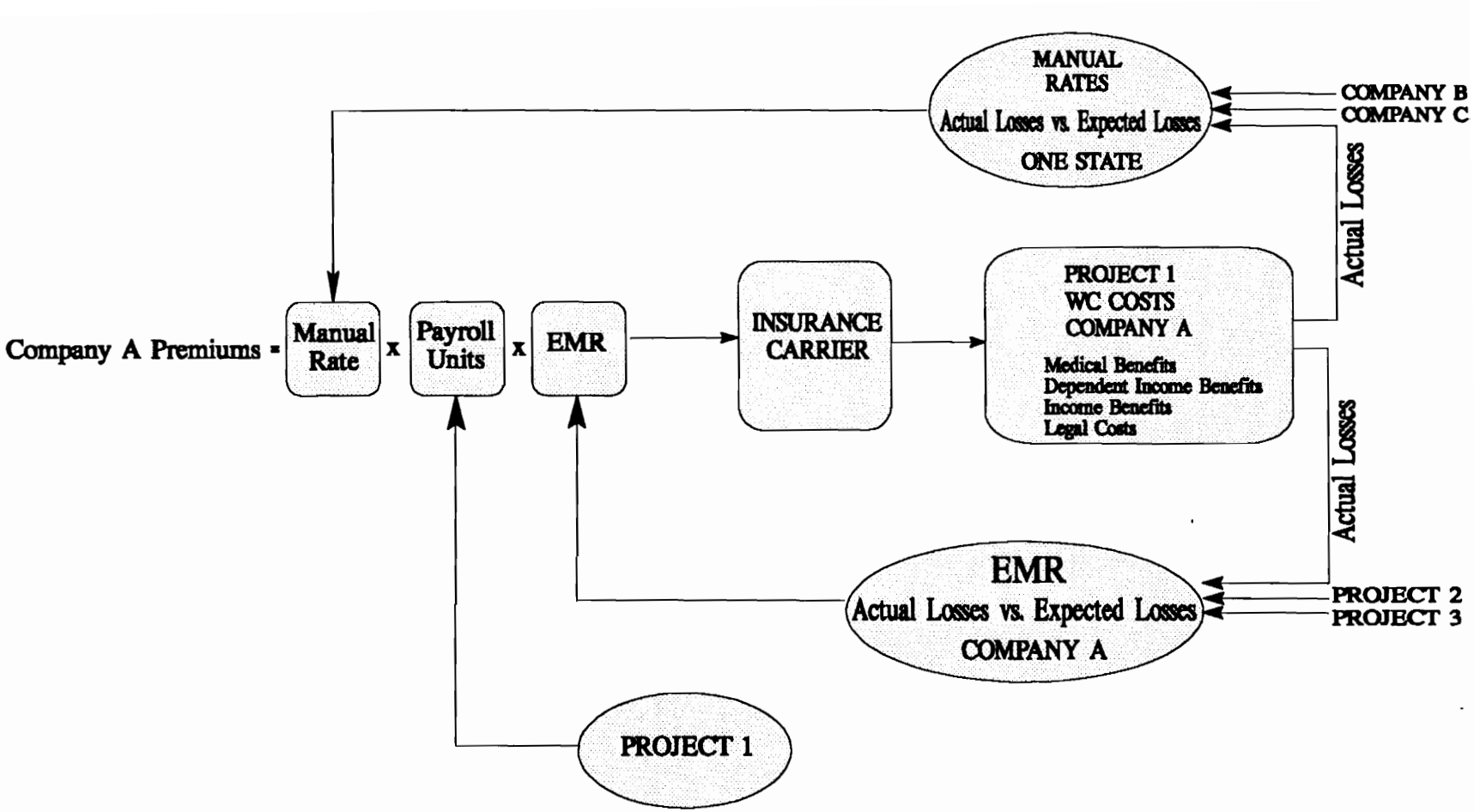

Figure 2.1 - Cycle of Insurance Premiums

In return for paying premiums to the insurance carrier, the carrier will provide medical benefits, dependent income benefits, indemnity benefits, and legal costs. Once a claim is experienced, the actual losses are computed for that claim. The actual losses for every claim within a particular state are reported to that state's rate-making body. From these numbers, the rate-making body determines the next year's manual rates.

The actual losses of the claims from one company are also reported to NCCI. NCCI compares the actual losses to the company's expected losses for the last three completed policy years. From this comparison, NCCI develops a company's EMR.

2.8 Summary

Chapter Two supplies the pieces that the workers' compensation manager needs to solve the puzzle of controlling costs. Many of the terms will be expanded upon throughout other chapters. This chapter however, has supplied some working definitions through which the reader will be able to understand the concepts presented within the remainder of this thesis.

Chapter Three

Missing Puzzle Pieces and Other Problems Facing Workers' Compensation Managers

3.1 Introduction

The costs associated with workers' compensation in the construction industry continue to plague the bottom lines of even the most successful companies. So much so, that the Construction Industry Institute (CII) deemed it worthwhile to create a task force to examine the very subject of controlling the costs of workers' compensation.

Increases in medical and indemnity costs, as well as the ever-present litigiousness and fraud associated with today's workers' compensation system give construction professionals many avenues to take in an attempt to control costs. This chapter will detail the major problems that are being experienced by construction's workers' compensation managers. Chapter Four presents the many ways a contractor can fight these problems and solve the puzzle of controlling workers' compensation costs.

In this chapter, survey results will be cross-referenced with the following notation: (Q2a,C). This is interpreted as "question 2a of the contractor survey report." The "C" stands for the contractor survey report. A "W" in its place denotes the workers survey report. The contractor survey report is contained within Appendix B. The workers survey report can be found in Appendix C.

3.2 Increasing Medical and Indemnity Costs

Workers' compensation is a concern of the construction industry's top management because of its increasingly detrimental effects on the bottom line. In addressing the Associated General Contractors of America, Gary L. Countryman, of Liberty Mutual, said, "Today it is not uncommon for workers' compensation costs in the construction industry to be in the range of 10 to 20 percent of payroll; and in certain types of construction it's much higher" ("AGC Forum...", p27, 1993).

The Construction Industry Institute's Zero Accident Task Force estimated that workplace injury cost construction consumers over $9 billion in 1991 (CII, 1993), and the National Safety Council reported that in 1989, the cost of on-the-job accidents to all industries was $420 per week per worker (DeCarlo, 1993).

Costs are not only high, but they are continuing to increase at alarming rates. The Workers Compensation Research Institute reported in 1993 that workers compensation was, at that time, the fastest growing labor cost in the United States ("AGC Forum...", 1993).

The National Council on Compensation Insurance (NCCI) also reported on the spiraling costs of workers' compensation. In their *1993 Issues Report*, NCCI stated that indemnity costs, for all industries, have increased at an average of eleven percent (11%)

per year since 1981, while the workers' average weekly wage has only increased at a rate of four percent (4%) per year (NCCI(a), 1993). Figure 3.1 is taken from this report.

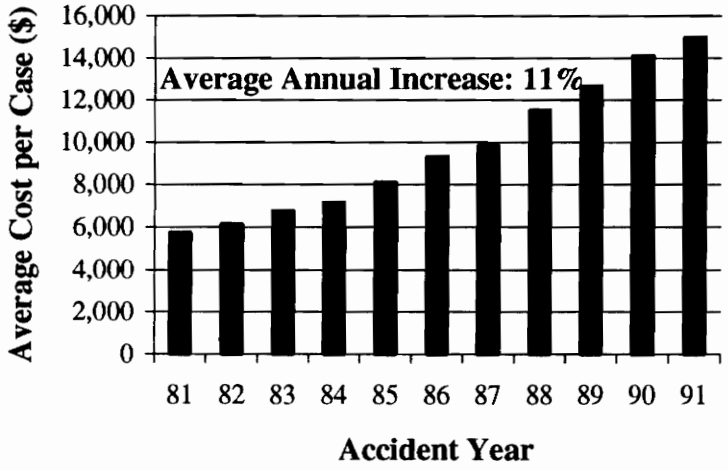

Figure 3.1 - Increase in average cost of indemnity per workers' compensation claim. Taken from NCCI's *1993 Issues Report*, p28.

NCCI found that the costs of the medical portion of workers' compensation claims is also rising at a rapid rate. Medical costs associated with workers' compensation claims in all industries increased at an average rate of fourteen percent (14%) per year from 1981 to 1991, compared to the much smaller eight percent (8%) per year general rate of medical inflation (as measured by the medical care Consumer Price Index) (NCCI(a), 1993). Figure 3.2 illustrates this increase, as shown in NCCI's *1993 Issues Report.*

When medical and indemnity costs are combined, the results are staggering. The average total cost (medical plus indemnity) for each injury that involved indemnity in 1991 was $22,795. This is double the average claim cost in 1985 for those injuries involving lost time (Thompson, 1993). The bottom line of workers' compensation insurance is that costs are sky-rocketing. The Zero Accident Task Force wrote that "some (construction)

companies are finding that the workers' compensation premium alone exceeds their profit margin by 100 to 300 percent" (CII, pv, 1993).

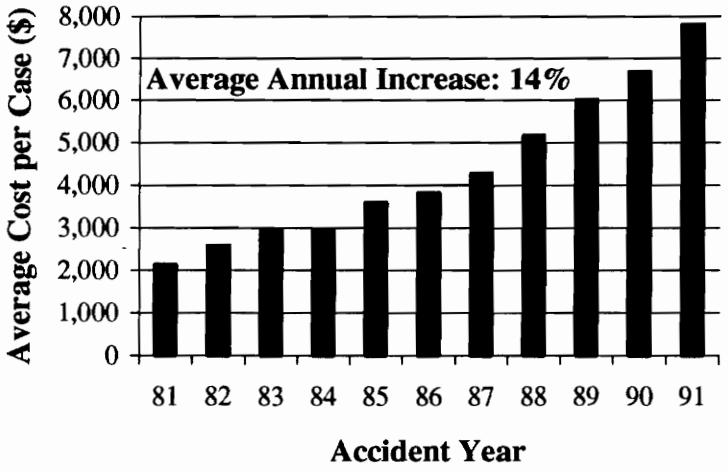

Figure 3.2 - Increase in average medical cost per workers' compensation claim. Taken from NCCI's *1993 Issues Report*, p29.

3.3 Workers' Compensation Fraud

High costs are only aggravated by those individuals and companies that abuse the workers' compensation system. Janet R. Douglas, of William M. Mercer, Inc., says that "10% of the (workers' compensation) claims are fraudulent...However, these 10% can generate more than 50% of the employer's workers' compensation costs." Costs are high because, "the worker will make repeated physician visits and undergo diagnostic tests to substantiate his or her claim, thus driving up medical expenses" ("Readers...", p9, 1992).

There are at least three possible types of workers' compensation fraud. Larry Tarr, Commissioner of Virginia's Workers' Compensation Commission identifies the following forms of fraud that he has witnessed (Roanoke, 1994):

- Benefits fraud - done by workers.
- Premium avoidance fraud - i.e. misclassification, done by employers.
- Misrepresenting payroll and geographical location of project - done by employers.

Benefits fraud may take many forms. It may be a worker claiming that an over-the-weekend football injury occurred Monday morning, on the job. Or, perhaps it's simply exaggerating the severity of an injury to be classified with a higher degree of disability.

Fraud committed by an employer misclassifying his or her employees for manual rate determination can often backfire. If an employer misclassifies a worker to avoid paying comparatively higher insurance premiums in the present, a bad accident in the future will appear to be "unexpected." As discussed in Chapter 5, a company's Experience Modification Rating (EMR) is a ratio of actual workers' compensation losses to those that are "expected" for the workers' classifications. By decreasing the "expected" losses by misclassification into a less risky, and therefore less expensive category, a company is taking the chance of severely increasing its EMR. An increased EMR has the potential to increase premiums for many years to come.

Misrepresenting payroll and/or geographic location of project is another attempt to reduce premium costs in the short-run. As discussed in the previous paragraph, the resulting less than adequate "expected losses" can backfire in the long-run.

Of the contractors in this CII study, eighty-eight (88%) have claims review policies in place to stop fraudulent claims (Q25a, C). Of the workers surveyed, fifty percent (50%) believe that fraud is a problem in the construction industry (Q12, W). It can be seen in Figure 3.3 that experience had little effect on the workers' responses to this

question. Of those workers with less experience, forty-six percent (46%) think that fraud is a problem in their industry, and fifty-one percent (51%) of the more experienced workers believe the same. Only twenty-six percent (26%) of the workers in the study believe fraud is *not* a problem (Q12, W).

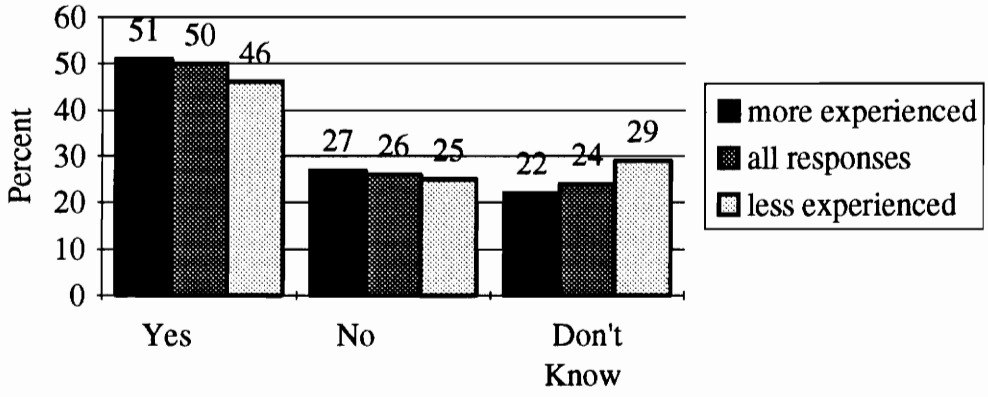

Figure 3.3 - Workers' response when asked if fraud is a problem in the construction industry.

3.4 Litigation

In 1994, The National Council on Compensation Insurance (NCCI) completed a study titled, "Claims costs: An Interstate Comparison," in which the organization examined 7,000 closed workers' compensation claims in Arkansas, Georgia, Kentucky, Missouri, New Hampshire, North Carolina, South Carolina, Tennessee, Virginia, and Wisconsin. The study found that attorney involvement is usually associated with high claims costs, but this didn't necessarily render the individual injured worker additional benefits (Calise(b), 1994).

A by-product of litigation that increases costs is the additional indemnity a worker receives while the decision is pending. In seventy-one percent (71%) of the claims

reviewed by NCCI, the worker received a release from his or her doctor to return to work. However, only about twenty-seven percent (27%) of these cases were documented as having returned to work while their claim was open (Calise(b), 1994).

In addition to excess indemnity costs, litigation also results in sometimes enormous legal bills. NCCI found that seventy-six percent (76%) of the cases studied had attorney involvement, and that attorney fees now average thirteen percent (13%) of total indemnity costs and twenty-seven percent (27%) of lump sum awards (Calise(b), 1994). Another study found that the legal profession has become recipient of approximately twenty percent (20%) of the money spent on workers' compensation (Walker, 1994).

According to Towers Perrin (1993), claimants hire lawyers for the following reasons:

- to challenge compensibility decisions.
- challenge degree of disability or impairment.
- obtain settlements.
- "shop" for favorable jurisdictions.

In fact, a survey sponsored by the Insurance Research Council, of 2,000 adults working in various industries, found that twenty-three percent (23%) of the respondents said they would hire a lawyer even though they know that benefits are paid regardless of fault (Calise(c), 1991).

3.5 Summary

The costs associated with workers' compensation are staggering. Contributing to these costs are:

- increasing medical and indemnity costs.
- litigation.
- fraud.

Contractors are not helpless in gaining control over these problems. Chapter Four will discuss measures that can be taken to solve the puzzle of controlling workers' compensation costs.

Chapter Four

Solving the Puzzle: Techniques for Managing Workers' Compensation Costs

4.1 Introduction

As discussed in Chapter 1, workers' compensation management practices are of vital importance to contractors if they desire to reduce the costs of their workers' compensation insurance. This chapter discusses several techniques used by the participants in this CII study. Each section contains a discussion of a different technique, including insights gleaned from this study, as well as recent publications and seminars.

Results of the CII study will be referenced in this chapter with the following notation: (Q2a,C). This is interpreted as "question 2a of the contractor survey." The "C" stands for the contractor survey report. A "PA" in its place denotes the analysis of the qualitative responses to the contractor surveys. A "W" denotes the workers survey

report. Both of the contractor survey reports are contained within Appendix B. The workers survey report can be found in Appendix C.

Of the forty-two (42) contractors that participated in this CII study, eighty-three percent (83%) said that they have a formal workers' compensation management program (Q14a, C).

4.2 Safety Incentive Programs

Safety is the primary means to reduce workers' compensation costs. A safety incentive program can be implemented long before costly accidents occur. Regardless of the details of the program, safety incentive programs work, in general, because they reduce injuries by making workers aware of the importance of safety to their company (Perry, 1994).

Formal financial awards are one of the many ways a company's management can demonstrate that safety must be taken seriously by its workers. In a survey conducted by the Compensation and Benefits Review, of its readers, 22% reported having a financial awards system in place. An additional 18% say they are in the process of considering such a program ("Readers...",1992).

Towers Perrin, in a survey conducted in 1993 of 1,050 companies in various industries across the country, found that 85% of their respondents utilize some type of safety initiatives. Initiatives include formal financial rewards as well as a multitude of other enticements. Eighty-five percent of those companies found such initiatives to be effective (Towers Perrin, 1993).

Figure 4.1 shows that of the contractors that responded to the CII survey, safety incentive programs are used by seventy-nine percent (79%) to help manage the costs of workers compensation (Q15a, C).

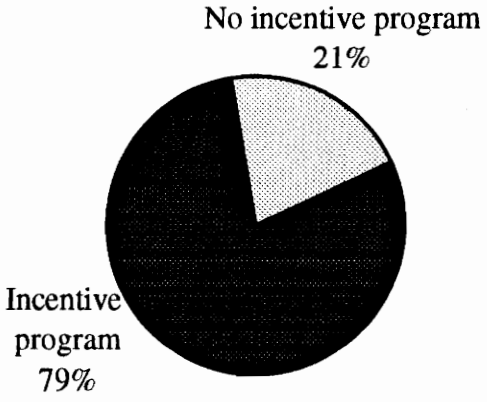

Figure 4.1 - Contractor use of safety incentive programs

The programs can be different for superintendents and workers. Edwin Freeman of Alexander & Alexander says that "tying a supervisor's paycheck to injuries that occur on his watch is probably the best way of letting him know that senior management is concerned about safety" (Fefer, p134, 1994). Levitt and Parker (1976) found that out of the twenty-three contractors that participated in their study, the best safety records were held by those companies that evaluated their superintendents in terms of job site safety. Some superintendent programs used by the contractors in the CII study include (Q15b, PA):

- monetary awards for reaching a benchmark number of supervised work-hours per year without a recordable incident.
- quarterly bonuses based on the number of supervised work-hours without a lost time injury.
- financial awards for the safest projects in reference to incidence rates
- yearly safety bonuses.

The workers' programs include awards for (Q15b, PA):

- individual safety suggestions.
- individual safety performance.
- being a member of a team where no one on the team experiences an injury.
- working on a jobsite that obtains an OSHA recordable rate or lost time rate below a preset level.
- working on a jobsite that has low equipment and property damage.
- helping the company reach an EMR goal.

The awards for successful safety performance are creative and diverse. They should not be too extravagant, or workers will not report their injuries for fear of being harassed by their fellow workers (Will, 1990). The awards given by contractors that responded to the CII survey include (Q15b, PA):

- monetary awards at predetermined periods during a year, such as monthly, quarterly, annually, or at the end of special projects.
- "safety coins" or "safety bucks" that can be accumulated and redeemed for prizes in a company catalogue.
- the privilege of playing "safety lotto" once a month. The monthly winner receives the majority of the cash prize and his or her supervisor gets a part.
- safety luncheons or barbecues at different times throughout a year.

Whatever the award, it must be something that the employees want, i.e. a day off or tickets to a sports event. The best way to know what they want is to simply ask them.

The actual duties of implementing and promoting a safety incentive program may be delegated to a safety director, or workers' compensation staff, but the commitment of upper management must be present for the program to succeed (Kemper, 1993). Of the contractors that responded to the CII survey, twenty-four percent (24%) make their top officers, the president or vice president, responsible for workers' compensation (Q14b, C). This 24% plus the remaining 76% are broken down in Figure 4.2.

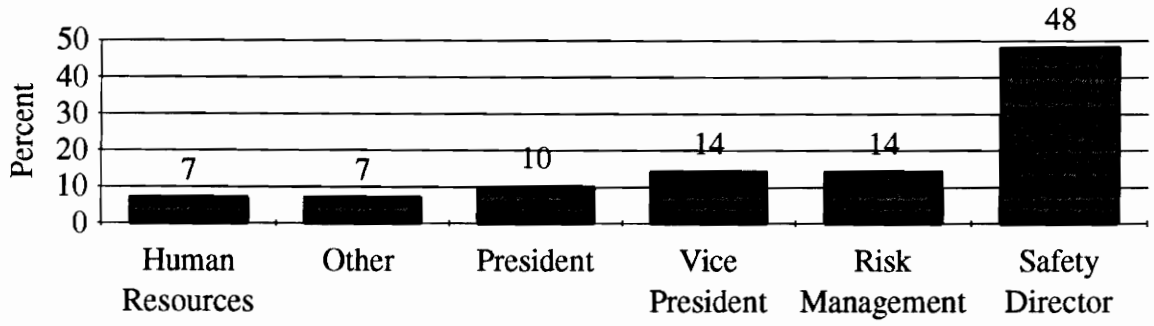

Figure 4.2 - Responsibility for contractors' workers' compensation management

Regardless of the type of safety incentive program, it is vital that it be advertised. Safety incentive programs will save money in the long run if they are communicated as often as possible, both formally and informally (Rosman, 1993). Seventy percent (70%) of the contractors in the CII study that have a safety incentive program experienced reduced workers' compensation costs (Q15a,C; Q15c,C).

4.3 Employee Education

Most workers don't understand workers compensation. "This can lead to potential litigation because people who don't understand go to attorneys," says George Dion, a workers' compensation claims official at Kemper National (Roberts, p20, 1994). Gary L. Countryman of Liberty Mutual Insurance agrees, and contends that explaining all of the workers' rights and benefits to them, and what they can expect from the system,

may "allay many fears if an injury occurs, and will more than likely cause the worker to turn to (the company) rather than to an attorney for advice and support" ("AGC Forum...", p28, 1993).

Dion recommends that every new hire go through an educational process that explains their employer's workers compensation coverage. He also warns those managers, who feel that their employees will abuse the system if they are educated about it, that, "they will use (the system) anyway" (Roberts, p20, 1994).

The 1993 study of workers' compensation claims management techniques conducted by Towers Perrin, showed that 60% of companies across various industries communicate workers compensation benefits to their employees. This is successful in reducing costs for 66% of them (Towers Perrin, 1993). Figure 4.3 indicates that the CII study showed that ninety percent (90%) of the contractors that responded to the survey educate their workers with regard to workers' compensation (Q28a, C).

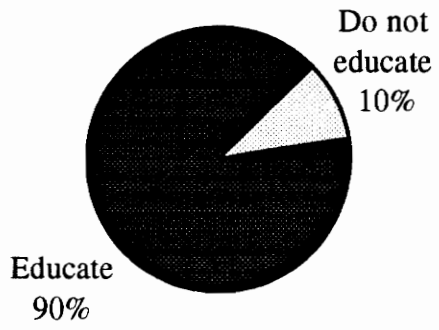

Figure 4.3 - Contractors' education of workers with regard to workers' compensation

Employees should be educated about the reason behind the rules that they are obligated to follow. As mentioned below in Section 4.5, "Relationship with Employees," a good relationship with workers is vital to the success of a workers' compensation cost control program. Employees who are expected to obey rules and regulations that they

don't understand may actually become hostile (Kemper, 1993), reducing the chance of success of cost-savings programs.

The cost of workers compensation should also be explained to the workers. Many employees probably have no idea that accident costs, and related workers' compensation costs, could force a company out of business and them out of work (Burrous, 1993). Even premium costs should be explained as to how they affect the company's bottom line. It is important for workers to realize that accident costs hurt the company, and therefore hurt them (Perry, 1994).

4.3.1 Education practices of survey respondents

Supervisors and workers of all experience levels and backgrounds should be educated. It can never be assumed that experienced employees have learned everything necessary to understand workers compensation. Furthermore, each new generation of workers may have learned different things than the previous generation (Metzgar, 1994).

Education is somewhat different for the supervisors of the companies that participated in the CII study, and their workers. Supervisors are able to (Q28b, PA):

- discuss specific cases at periodic meetings.
- meet yearly to discuss problems and solutions with regard to their company's workers' compensation situation.
- analyze overhead costs and trends, and understand what drives the costs of insurance.

The safety and workers' compensation performance of each supervisor is compared to the performances of the other supervisors within the company.

The supervisors must also learn how to teach their workers what they have learned (Metzgar, 1994). The educational approach to the workers of the CII study contractor participants gets more to the bottom line of the company, and how workers' compensation affects them. Through education, the worker learns (Q15b, PA):

- how the state of the company's workers' compensation and safety health affects the workers' paychecks and jobs, and the company's ability to win bids.
- their rights and responsibilities under their state's workers' compensation laws.
- the benefits to which they are entitled if they should become injured or ill as a result of a work-related incident.
- specific reporting and claims filing procedures if an incident does occur.
- what benefits and pitfalls of the system may be seen by the injured or ill worker.

The contractors that responded to the CII questionnaire educate their workers by taking the following steps (Q28c, PA):

- teaching workers that their employer must pay 100% of the cost of workers' compensation.
- communicating the effect of workers' compensation claims by equating the dollars spent on claims to what amount of sales a contractor needs to complete to make enough money to pay the claims.
- stressing the penalties involved with fraudulent claims and the effect they have on the company, and therefore each and every employee.

An alternative education technique, used by some of the contractors in the CII study is to get the workers involved in other facets of workers' compensation experience such as accident prevention, safety, accident investigation, injury management, good

communication between the worker and the home office or insurance carrier, and the value of early return-to-work programs (Q15b, PA). After all, workers are the best resource for identifying obstacles to performing their work safely. They probably also have very good ideas of how to remove these obstacles (Kemper, 1993).

There are many ways in which a company can share workers' compensation information with their work force. Information dissemination is accomplished by the CII survey participants through periodic meetings (i.e. weekly), using (Q28c, PA):

- video tapes
- printed material such as newsletters and posters
- lectures, presentations, and seminars
- discussions

Meetings can be conducted by the contractor, or by an outside party. Forty percent (40%) of the contractors in this CII study utilize the safety training expertise of their insurance carriers (Q27, C). Regardless of how they are taught, the workers must have the assistance of their supervisor on a daily basis to understand the importance of safe work practices and safety rules (Kemper, 1993).

4.3.2 Knowledge level of employees

A 1991 survey of 2,000 adults, who work in various industries, was conducted by the New York-based Roper Organization, on behalf of the Insurance Research Council. This survey showed that only fifty-one percent (51%) of those polled knew that they would be paid for a work-related injury, regardless of fault. Only forty-two percent (42%) of the respondents to this same survey said that their employers have explained or given them materials on workers' compensation insurance. (Calise (c), 1991).

Figure 4.4 shows that of the workers in the CII study, only thirty-nine percent (39%) of the less experienced and fifty percent (50%) of the more experienced workers are aware that their employer pays the bill for workers' compensation (Q6, W). (Please see Chapter 1, section 1.9.3, for the definition of "more" and "less" experienced workers as it pertains to this thesis.)

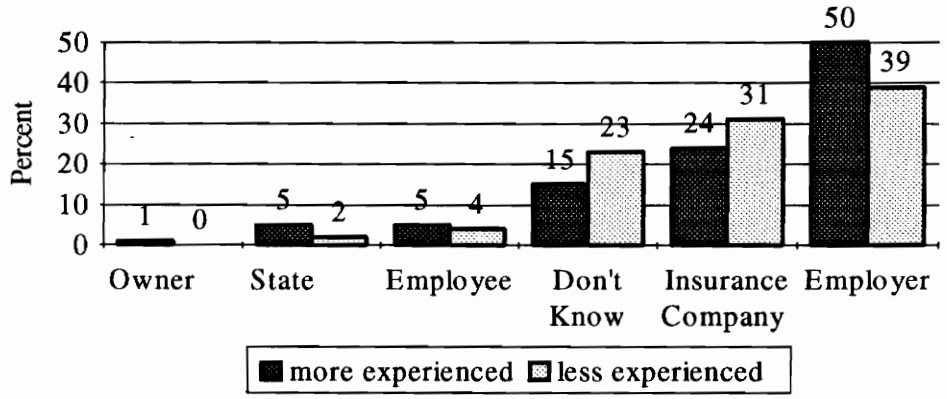

Figure 4.4 - Workers' opinion of who pays the bill for workers' compensation

Figure 4.5 shows that fifty-one percent (51%) of the less experienced workers and seventy percent (70%) of the more experienced workers believe that the cost of workers' compensation affects their company's ability to get work (Q7, W).

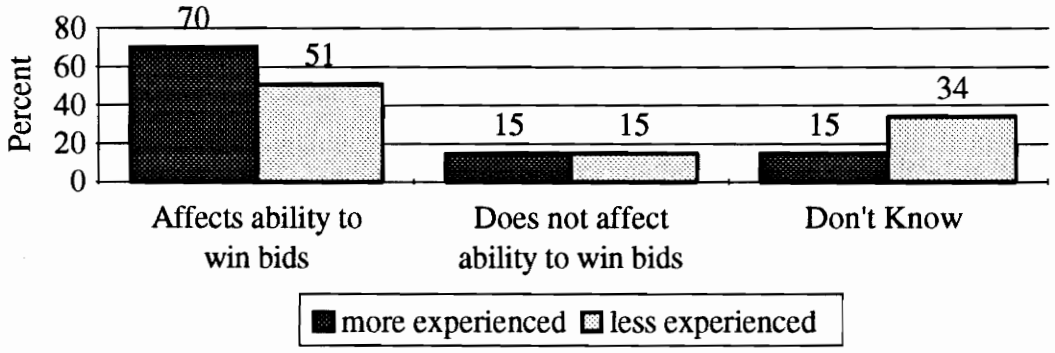

Figure 4.5 - Workers' opinions of whether high workers' compensation costs affect their employers' ability to win bids.

Fifty-six percent (56%) of all workers that participated in this study believe they have been informed of their workers' compensation rights, obligations, and responsibilities. Figure 4.6 represents the responses of all workers because a worker's time on site had no effect, statistically, on the way this question was answered (Q4, W).

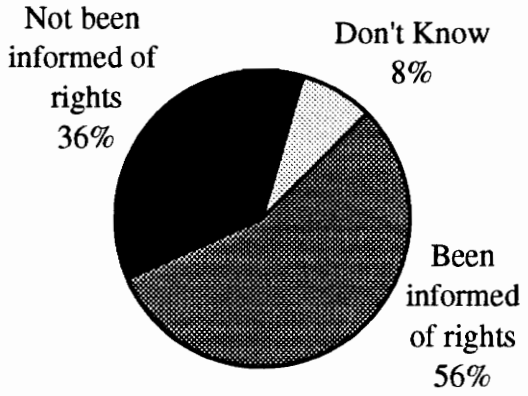

Figure 4.6 - Proportion of workers who have been informed of their workers' compensation rights, obligations, and responsibilities

Sixty percent (60%) of the workers believe they understand their workers' compensation benefits (Q5, W). Again, Figure 4.7 represents all workers because time on site had no effect on how the workers answered this question.

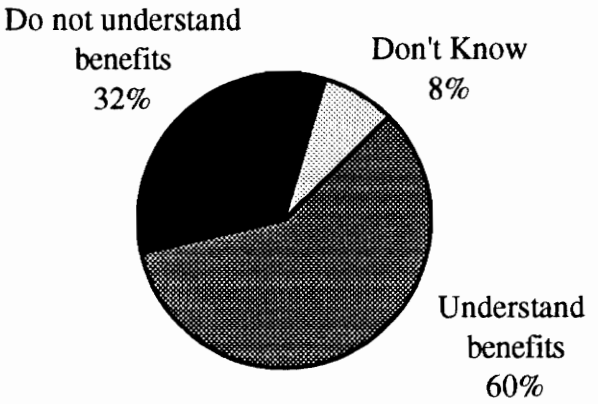

Figure 4.7 - Workers' understanding of their benefits

4.4 Incident Reporting, Investigating and Information Feedback Procedures

If, despite good safety incentive programs and employee education, an injury still occurs, the contractor should complete and submit a "First Report of Injury" form to its insurance carrier within twenty-four hours. With the introduction of facsimile machines, this has become a very simple task. Furthermore, many insurance companies have established toll-free injury "hotlines" so that injuries can be at least verbally reported within the first few hours of occurrence.

Filing of the First Report of Injury, or making the phone call to the insurance company, is an acknowledgment that an injury has taken place, not that the contractor accepts responsibility. Responsibility will be determined later upon investigation of the accident by a carrier's representative (Gans, 1990).

Three studies, by separate insurance companies, have revealed the dramatic cost savings of early reporting. A recent ITT Hartford Insurance Group study of 200,000 claims involving lost work time showed that injuries reported to the insurer within the first ten days of occurrence were forty-seven percent (47%) less costly than those reported more than thirty-one days after the occurrence (Thompson, 1993).

Liberty Mutual Insurance stresses that early reporting to their company can reduce the costs associated with workers' compensation claims by twenty percent (20%) (Liberty Mutual, 1993).

Kemper National Insurance studied 71,249 closed lost-time claims from 1992. They, too, determined that as the time period between injury occurrence and reporting grows, so does the average cost per claim. If the injury was reported to the carrier within the first ten days, the average cost of the claim was $10,172. If the claim was reported eleven to twenty days after the incident, the average cost per claim increased 21%. A

period of twenty-one to thirty days yielded a 33% increase, and more than thirty days resulted in an increase of 55% (Sullivan, 1994). This steady increase can be seen in Figure 4.8.

Kemper also found that 22% of the cases that were reported within the first ten days of occurrence resulted in costly litigation. While this percentage may seem high, it is important to note that the percentage rose to 47% when thirty days or more passed before reporting (Roberts, 1994). Figure 4.8 shows the rise in percent of claims litigated. The points that lie between 11 and 30 days are interpolated.

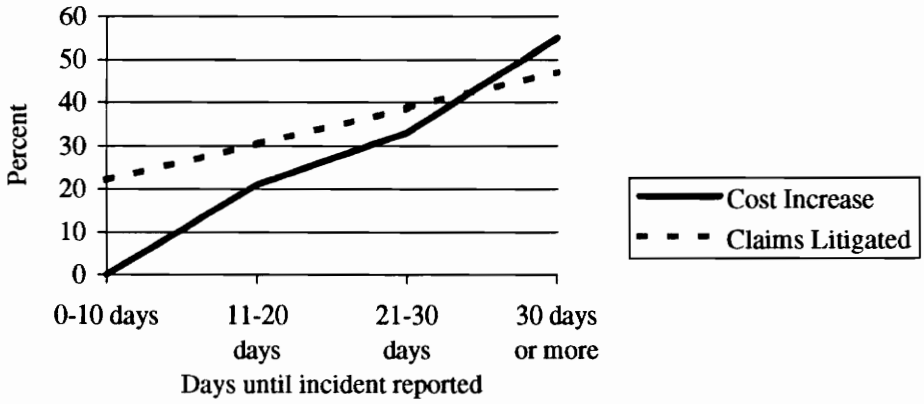

Figure 4.8 - Increase in costs and percent of claims litigated with respect to time of reporting incident (Kemper National Insurance)

Reporting an accident early not only saves money, but also allows for better claims handling. The following are just some reasons for filing a report early (Roberts, 1993):

- Carrier can coordinate a care plan with the medical providers.
- Attempts to run up unnecessary charges can be deterred.
- More intensive or specialized treatments to reduce indemnity and disability costs can be suggested.
- The injured person's mind can be eased by the company or carrier explaining the claims process and benefits.

- Investigations can be performed while memories are fresh to prevent accidents from happening again.

John F. Riley, director of corporate risk management at the Dun & Bradstreet Corp. says that early intervention is a key to controlling workers comp costs. It "puts the claim into able hands, shows the injured worker that his or her case is being handled and, most importantly, keeps personal injury attorneys out of the loop" (Schrachner, p23, 1994).

Every company in the CII study responded that they have official reporting procedures when a lost-time incident occurs, ninety-five percent (95%) of the companies have procedures of this nature for recordable-only cases, while eighty-three percent (83%) have them for first-aid cases. Only sixty-two percent (62%) have official reporting procedures for near misses (Q7a, C). These percentages are represented in Figure 4.9. Accident reports are circulated to top management in ninety-eight percent (98%) of the responding companies (Q7b, C).

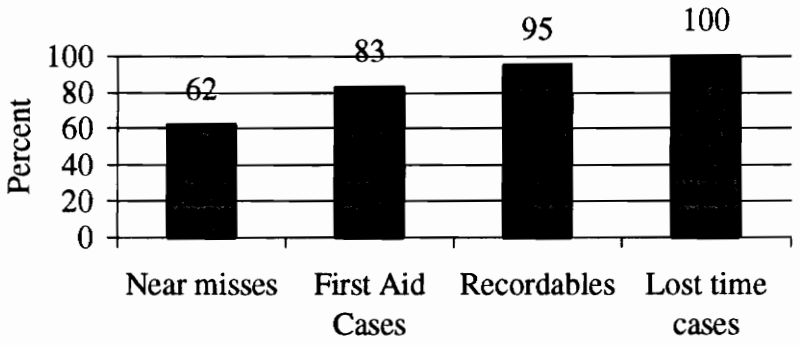

Figure 4.9 - Percent of contractors that have official reporting procedures for each type of incident

In addition to timely completion and submission of the First Report of Injury, an investigation of the incident should be conducted. When investigating an accident, the

contractor should keep a positive attitude while identifying witnesses, and surveying the accident scene (Gans, 1990). The worker should be made to understand that the contractor does not resent the accident. Perception of resentment can lengthen the employee's recovery time and drive up costs (Perry, 1994).

It is best to create a team to conduct the investigation. A team approach, including supervisors, employees, and a safety professional will more likely lead to the identification of underlying causal factors and failures in the system (Diekemper, 1993). This CII study has found that a team is only developed to review accidents in fifty percent (50%) of the firms (Q7e, C). Only thirty-six percent (36%) of the firms in the CII study involve their subcontractors in their teams (Q7g, C). Furthermore, a team is developed to investigate near misses in just thirty-three percent (33%) of the companies (Q7f, C).

Eighty-nine percent (89%) of the workers who participated in this CII study are aware of whether or not their company investigates accidents (Q3a, W). There is statistical evidence in this study that suggests that there are fewer new hires (86%) that know of their employer's accident investigation policies, in comparison with workers who have had mid-level and substantial amount of time on site (96% and 95%, respectively). Please refer to Chapter One, Section 1.9.3, for the definition of "mid-level" and "substantial" time on site.

Once investigations are complete, whether by an individual or a team, the sharing of these findings with others was questioned in the CII survey. Fifty-two percent (52%) of the contractors who took part in the survey communicate accident investigation findings to their subcontractors (Q7i, C), yet eighty-three percent (83%) of the contractors responded that they require their subcontractors to report to them on accident review findings for the subcontractor's employees (Q8, C).

Communication of findings is good between management and their own employees. In fact, eighty-eight percent (88%) of the contractors that participated in the CII study share accident information with their employees (Q7h, C).

The final step of the investigation is to integrate the information gathered and the lessons learned from the incident into preventive strategies to eliminate or minimize the risks of future mishaps of a similar nature. Investigations should be followed by a review to determine the effectiveness and identify any improvements that can be made (Usman, 1994).

4.5 The Workers' Compensation Staff

To perform many of the tasks mentioned in the previous sections, companies have created workers' compensation staffs. These staffs enable a company to report an injury as soon as the accident occurs. This is extremely important because early intervention can cut a company's workers' compensation claims costs by at least ten percent (10%) (Roberts, 1994).

Workers' compensation staffs are also able to explain the workers' compensation claims process to the injured worker, meet with doctors, follow-up with injured employees during rehabilitation, get the worker back on the job quickly, and give the employee the general feeling that their employer cares about them. The value of an early return to work will be discussed in section 4.7 below.

Managing workers' injuries is a full-time commitment. A workers' compensation staff member has the opportunity to fulfill this commitment. It has been observed that the average period of recovery from an industrial injury is significantly longer than that for the population as a whole (Colledge and Johnson, 1992). A staff member should follow-up with injured workers, at least weekly (Warnes, 1992), to make sure they are receiving benefits, to keep them updated on workplace activities, and to let them know that they are

population as a whole (Colledge and Johnson, 1992). A staff member should follow-up with injured workers, at least weekly (Warnes, 1992), to make sure they are receiving benefits, to keep them updated on workplace activities, and to let them know that they are missed and needed at work (Fefer, 1994). This will encourage them to come back earlier than they would if they feel the company has forgotten about them.

As can be seen in Figure 4.10, ninety-one percent (91%) of the contractors that participated in this CII study follow-up with an injured worker (Q17c, C). The frequency of follow-ups is shown in Figure 4.11. Sixty-four percent (64%) of these contractors follow-up weekly (Q17b, C). This is in addition to the claims-handling efforts of the insurance companies.

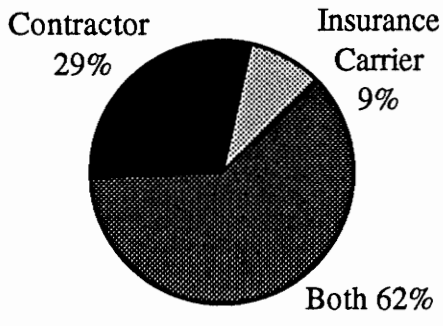

Figure 4.10 - Party who follows up with an injured worker

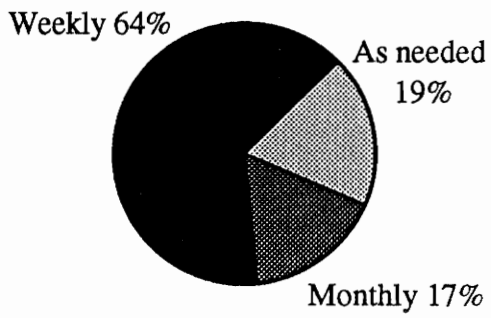

Figure 4.11 - Frequency of follow-ups

A workers' compensation staff can facilitate effective communication between the injured workers and the company. This is very important because lawsuits often develop as a result of miscommunication between these two parties (Colledge and Johnson, 1992). Towers Perrin found that establishing a workers' compensation help staff has been 81% effective in reducing litigation costs among the participants in its study (Towers Perrin, 1993).

you deal with (the worker) after the injury can have a PRONOUNCED effect on that employee's subsequent attitude, morale, and recovery" (Warnes, p15, 1992).

Two surveys by the Upjohn Institute, one in 1988 and another in 1993, found that companies with a low amount of claims employ a humanistic approach to business and can be described as having a "people-oriented work environment characterized by open communication, positive work relationships, and high employee morale" (Thompson, p4, 1993).

Employing a nurse as part of the workers' compensation staff allows him or her to be the patient's advocate with doctors, to inform the company about the condition of the injured worker, and to aid the company in placing the worker on light duty (Fletcher, (c), 1994). NCCI conducted a survey of patients within a group health system and found that workers' compensation patients received more medical services than other patients with similar ailments in the group (Fefer, 1994). A nurse can aid in communication between the medical provider and the company to ensure adequate, not excessive, care and the use of efficient procedures.

The experience of the people who make up the workers' compensation staffs of the construction companies in this CII study varies a great deal. The experience of the staff members consists of (Q14d, PA):

- project or field office management.
- construction industry exposure.
- risk management.
- safety and workers' compensation claims administration.
- civil/construction accounting.
- payroll.

The education requirement varies as much as the experience. Among the educational backgrounds found in some of the workers' compensation staffs in the CII study are (Q14d, PA):

- college degrees, such as Industrial Safety or nursing.
- certification as a Registered Nurse or a Licensed Vocational Nurse.
- self-education.
- in the case of a self-insured company, registration as a self-insurance administrator.

The participating construction companies take many different approaches in evaluating their workers' compensation staff. Some evaluations are based on statistics such as (Q14e, PA):

- incident rates.
- lost workday rates.
- number of accidents and claims settled.
- the Experience Modification Rating.
- cost per injury or illness.
- cycle time for closure of claims.
- response time to questions from field personnel.

These statistics are then compared to those of other companies within the industry, or to preset goals.

Other, more qualitative methods, are also used by contractors to evaluate their workers compensation staffs. These include (Q14e, PA):

- an examination of the level of communication achieved by the staff.
- the type of accidents that are occurring within the company.
- monthly or annual review of claims status and individual appraisals.
- feedback from claimants and operating units.
- the success against objectives and goals of each individual member of the staff.

4.6 Relationship with Employees

The success or failure of many management techniques depends on a company's relationship with its employees. One of the major advantages of creating a workers' compensation staff is that the staff can continually build a positive relationship with the workers. In speaking about workers' compensation cost savings, Allan Hunt, assistant executive director of the Upjohn Institute, said, "Knowing your employees by first name and showing that you care sometimes has more impact on the bottom line than all the engineering...design you can do" (Thompson, p7, 1993).

The relationship must be built through action, and not words alone. When an accident occurs, any problems an employee encounters in receiving benefits can taint the whole relationship the company has spent years building with its workers. If injured workers are shown care and compassion, other employees will realize that they can expect that kind of treatment as well (Will, 1990). The company must show that it is on the employer's side.

When asked how the workers in the CII study thought their employer would react if they filed a workers' compensation claim, nineteen percent (19%) of the workers

surveyed indicated that their employer would react positively. Thirty percent (30%) feel that it would be a negative situation, and forty-seven percent (47%) do not know how their employer would react (Q8, W).

With more experience, the number of workers who don't know how their employer would react to the filing of a workers' compensation claim decreases. Fifty-three percent (53%) of the workers with the least experience don't know how their employer would react, while only forty-five percent (45%) of the more experienced workers are not able to predict their employer's reaction (Q8, W).

The percentage of workers who feel their employer's reaction to a workers' compensation claim would be negative increases from twenty-four percent (24%) for those with less experience, to thirty-two percent (32%) for those with more experience (Q8, W).

In contrast with the previous differences in responses relative to experience, the percentage of workers who feel the reaction would be positive decreases only marginally from twenty percent (20%) for less experienced workers to nineteen percent (19%) for the more experienced workers (Q8, W). The responses and their differences can be seen in Figure 4.12.

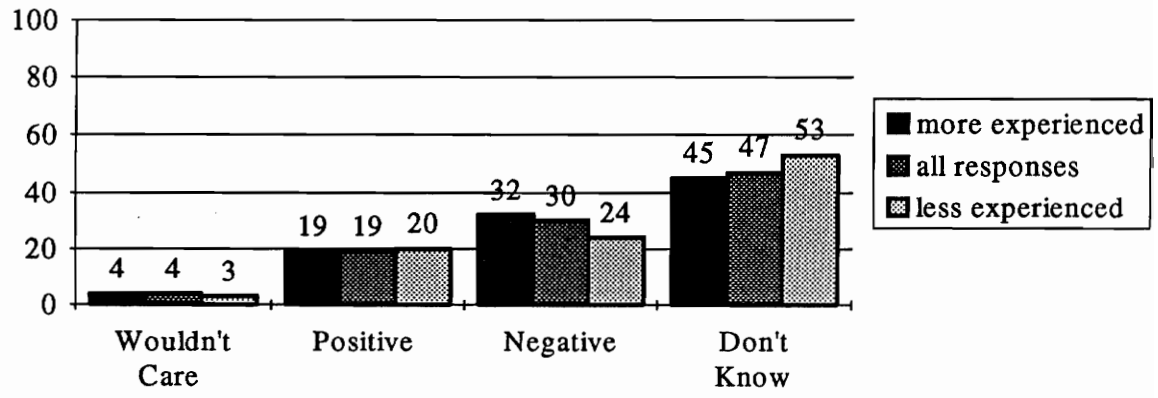

Figure 4.12 - Workers' opinions of their employer's reaction to a workers' compensation claim

4.7 Early Return-to-Work and Light Duty Programs

Norman Peterson, a workers compensation consultant in Ashland, Oregon recently noted that "between 60 and 65 percent of all injury costs represent indemnity to the employees for work-time loss, not medical bills" (Perry, pg12, 1994). As shown in Figure 4.13, the contractors that participated in this CII study indicated that indemnity accounted for an average of 20% of their workers' compensation costs (Q18, C). The costs of indemnity continue to rise. Since 1981, average indemnity costs per claim have increased 11% annually (NCCI (a), 1993).

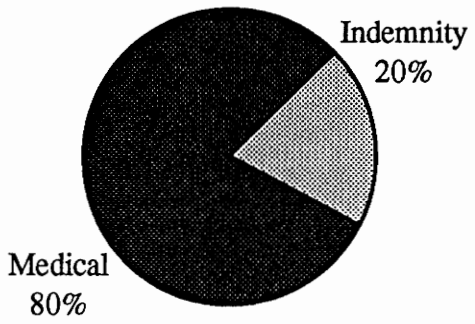

Figure 4.13 - Average breakdown of contractors' workers' compensation costs

Early return-to-work programs encourage the worker to come back to work, therefore reducing the amount of indemnity the worker's company must pay. In recent years, return-to-work programs have reduced indemnity costs by twenty to forty percent (Wallace, 1992). Light duty programs are designed to provide fulfilling and safe jobs to injured workers until they recover to the point where they can resume the positions they held before their accident.

4.7.1 The benefits of early return-to-work

Return-to-work programs not only save an employer from immediate costs, but they increase the chances of a worker becoming a productive employee of the company once again. If an injured worker is allowed to stay away from work for more than six months there is only a fifty percent chance of that person ever returning to work. After one year, the chance is less than ten percent (Wallace, 1992).

Light duty gives the company the ability to complete tasks that would otherwise require overtime or might not get done (Wallace, 1992). Other benefits for the company include a reduction in employee turnover, the mitigation of insurance costs, enhancement of the company's image, and increased worker morale (Gans, 1990).

Workers are productive because they are able to hone their skills at work on a daily basis. When they are kept away from work, they become "out of practice," and the longer they are gone, the longer it takes them to get back up to pre-injury performance levels. Charles A. Warnes, an expert in the area of workers' compensation, calls this the "rust factor" (Warnes, 1992). A quicker return to work means a more productive worker faster.

These programs are a win-win situation for the company and the employees. The employees feel a sense of job security, and that their contributions are still valued, even if they are not yet fully recovered (Warnes, 1992).

Light duty has even been shown to help workers to recover more quickly from their injuries. A recent study has shown that if an injured person is on light duty, full recovery is achieved 38% sooner than if they stay at home (Burrous, 1993). Dr. Sue M. Perkins, co-director of occupational health services at St. Vincent Medical Center in Toledo, Ohio said that "musculoskeletal injuries, which make up the largest percentage of workplace injuries, tend to heal faster if the person remains mobile and active...Because of the loss of physical conditioning, extensive medical leave may actually increase the re-injury risk when employees return to work" (Wallace, p43, 1992).

4.7.2 Creating a program

The premise of light duty programs is to get a worker back to work *before* they are fully recovered. This requires a great deal of care and preparation on the part of the employer.

One of the most important aspects of a light duty program is physician involvement. Afterall, the physician must allow the employee to come back to work before he or she can begin light duty. The doctors must constantly be kept informed and given complete job descriptions.

Some companies invite the physicians on site to witness operations first-hand, and to observe the tasks their patients will perform (Schachner, 1994). If the doctors cannot come to the site, some companies photograph and videotape tasks to help the doctors in deciding whether or not a particular job is suitable for an injured worker (Wallace, 1992).

Another vital part of any return-to-work program is worker support. It is important that they know that the motives behind their employer's early return-to-work program are not purely financial. It should be stressed that the company cares about them, and wants them back at work so that they don't have to replace them with somebody else (Wallace, 1992).

Injured workers should have a return-to-work team to prepare the proper work tasks for them, and to support them once they come back to work. For small companies, this team could contain a supervisor, internal claims administrator, a representative from management, and a representative from labor. A large company may include these members, plus representatives from human resources and engineering on their team (Campbell, 1994).

Stephen W. Campbell of ITT Hartford Insurance Group has written eight steps to a successful return-to-work program. These steps include the components of a successful program listed above, and a few others that are addressed in other sections of this thesis (Campbell, 1994):

1. Enlist employee buy-in for the program.
2. Identify the best medical care providers in the area before a worker is injured.
3. Create an accurate job description.
4. Conduct a task assessment.
5. Report accidents promptly to the insurance claim handler.
6. Immediately determine the employee's capabilities and restrictions, and evaluate the accident to determine if the job needs to be re-engineered.
7. Keep everyone informed.
8. Encourage the reintegration of the injured employee into the workplace.

4.7.3 Current use of return-to-work and light duty programs

The 1993 Towers Perrin survey, mentioned above, found that 78% of the companies from various industries have implemented a return-to-work program (Towers Perrin, 1993). According to the CII study, ninety percent (90%) of the contractors who responded say they have a light duty or early return-to-work program (Q13, C).

Seventy-two percent (72%) of the workers surveyed through this CII study know if their company has a light duty or early return-to-work program (Q9, W). Analysis of the data showed evidence that workers who have been on the job site the least amount of time have the lowest knowledge level of light duty and return-to-work programs (69%), when compared to those who have been on the site a mid-level or substantial amount of time (85% and 81%, respectively).

4.8 Panel of Physicians

Some companies work with physicians, long before an accident occurs, to establish a set of tasks that are approved for light duty. They are able to do this because they have preselected these doctors to make up their "panel of physicians". A panel is chosen to provide prompt, high quality, and appropriate treatment of all injuries that occur on the construction site, and to aid in return-to-work efforts.

While it is a company's prerogative to select physicians that they feel would work best in their workers' compensation cost control efforts, fewer than half the states allow the company to specify whom employees *must* see for occupational care (Fefer, 1994). Of the contractors that responded to this study, eighty-three percent (83%) preselect a panel of physicians or a medical facility for their projects when allowed (Q32, C).

The average medical cost per workers' compensation claim has increased at an average rate of 14% per year since 1981, compared to 8% per year for the general rate of

medical inflation (NCCI (a), 1993). One way to control costs is to negotiate favorable rates with panel members. Panel physicians may provide good rates if the company agrees to send all employee pre-placement screenings to them (Will, 1990).

According to Towers Perrin, 46% of the companies, representing various industries, have established discounts with their selected providers. This is a 51% increase from the number of respondents that indicated they had these discounts in 1991. Establishing discount rates has been effective for 80% of the companies in the Towers Perrin study (Towers Perrin, 1993).

4.8.1 Selecting a Panel of Physicians

Panels can be made up of individual physicians, physical therapists, occupational therapists, and vocational rehabilitation specialists. An occupational injury clinic can also qualify as a member of a panel (Roanoke, 1994). St. Paul Fire and Marine Insurance Company lists the following as advantages of selecting an industrial treatment clinic (Gans, 1990):

- 24-hour emergency care.
- Physicians and personnel who specialize in industrial injuries and illnesses.
- Comprehensive treatment that is oriented toward the work place.
- Open communication channels.

If individuals will be chosen to form the panel, it is important to remember that many medical providers have little experience treating occupational injuries (Sullivan, 1994). A company should work with their insurance carrier to identify physicians that fit the criteria necessary to be part of a successful panel (Campbell, 1994).

Dr. Darrell F. Powledge of the Lewis Gale Occupational Health Clinic in Roanoke, Virginia recommends the following physician selection criteria (Roanoke, 1994):

- willingness to communicate.
- experience.
- qualifications.
- personal references.
- the "Three A's: Availability, Affability, Ability."

Additional criteria include:

- willingness to work with the company and the insurer to control costs, and to determine treatment, length of disability, and work readiness (Campbell, 1994).
- success at returning injured employees to work.
- sensitivity to any "psychosocial issues that may affect the employee's motivation to return to work" (Colledge and Johnson, 1992).

4.8.2 Employee use of the panel

It was mentioned above that only half of the states allow an employer to require an employee to seek care from a pre-selected panel physician. In the states that allow this practice, it is often difficult to enforce the employer's right. Larry Tarr, commissioner of Virginia's Workers' Compensation Commission, stresses the importance that a company make sure the workers know who is on the panel. To do this, he suggests that each employee be given a written list of panel members, and then be required to sign a statement that they received the list. The list should be supplied to them again at the time of an accident (Roanoke, 1994).

Even if a company is not in a geographic region that permits mandatory use of preselected panels, it is often to the benefit of its employees to utilize the panel's services.

A recent study conducted by Lunch, Ryan, & Associates and the Boylston Group found that workers hurt on the job have more trouble getting quality medical care than people injured from non-work-related accidents (Oshins, 1991). If the panel is chosen correctly, the workers should be able to get the best local care for occupational illnesses available.

Some proven ways that have been suggested by the contractors who participated in this CII study to entice employees to use selected medical facilities or physicians, even when they don't have to, are as follows (Q33, PA):

- Make selected physicians readily available to the workers by posting their telephone numbers or providing transportation to their offices.
- Inform the worker that there is less "red tape" in going to a preselected physician.
- Give a monetary incentive in that an injured worker's regular work time will be compensated while visiting an approved physician.

Overall, sixty-six percent (66%) of the workers who took part in this CII study know if they can choose their own doctor if they are injured (Q10, W). Statistically, a workers' time on site has an effect on this knowledge. The percentage of workers who know whether or not they can chose a doctor if injured increases from sixty-tree percent (63%) for those workers with the least amount of time on site, to seventy-five percent (75%) for those workers who have been on site a substantial amount of time.

4.9 Patterns of Occurrence

A contractor can observe the accidents that result in workers' compensation claims to identify patterns of occurrence. These patterns can assist the contractor in creating and maintaining a successful workers' compensation management program.

For example, data gathered by the Michigan Department of Labor regarding 6,853 construction industry cases reported in 1990 showed that "a larger number of cases occurred over the summer months as compared to other seasons, and Monday was the worst day of the week in terms of accident occurrence. The 25 to 34 years age group of the construction workers appeared to be the most susceptible to accidents" (Mumtaz, pI-8, 1994).

Patterns concerning the amount of training or experience a worker has before experiencing an injury can indicate a need for education within the first few days of work on a construction site. The U. S. Department of Labor recorded that 26% of claims for all industries occur in the first ninety days of employment (O'Neill, 1994). In addressing the U.S. House of Representatives Subcommittee on Health and Safety, Dr. Knut Ringen, Executive Director of the Laborers Health and Safety Fund of North America said that 12% of all serious injuries in the construction industry occur in the first day on a job site, and 55% occur during the first month (Dickie, 1991).

A contractor can track the time of occurrence of workers' compensation claims, with relation to project completion. Of those contractors in this CII study that keep track, eighty-eight percent (88%) found that in 1991, they experienced claims for injuries that occurred on projects *after* the projects' completion dates. Claims filed after project completion made up from less than one percent (<1%) to between fifteen and twenty percent (15-20%) of total company workers' compensation claims (Q30b, C). Please see Figure 4.14 for a break-down of percentages.

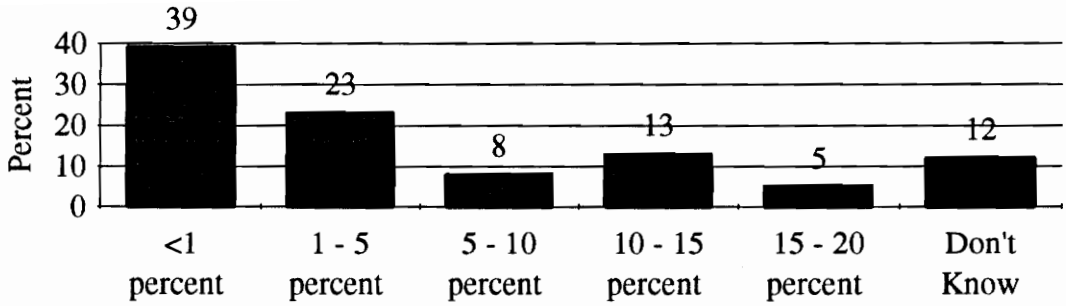

Figure 4.14 - Distribution of the contractors' percent of total claims that are filed with relation to a project, after that project's completion

Only 17% of the contractors that participated in this study keep a record of how many claims occur during overtime as compared to straight time (Q31a, C). In 1991, the proportion of claims that originated from overtime injuries to straight time injuries ranged from "all straight time injuries" to one overtime injury for every two straight time injuries (Q31b, C).

4.10 Cost Responsibility Allocation

"The main differentiator between companies that are successful in controlling workers' compensation costs and those that are not is...management accountability. Management accountability occurs when companies bring safety management and accountability for insurance costs into their mainstream management process," writes the president and senior vice president of Argonaut Insurance Company (Crall and LaShier, p47, 1992). Samelson and Levitt (1982, p621) write that, "when project management is held accountable for accidents along with productivity and schedules, companies have excellent safety records."

Failure to assign accountability can result in the failure of many of the management techniques discussed up to this point. Accident investigations may be done poorly, safety

may be ignored, and return-to-work programs may fail as a result of a lack of support for the injured worker (Kemper, 1993). Without management accountability, the advice and recommendations of safety and workers' compensation staffs may never get implemented (Crall and LaShier, 1992).

A study conducted by Sumner Associates in 1989 through 1992 examined the workers' compensation losses of twenty companies with more than $500,000 of unmodified premiums per year. Ten of the companies worked with their insurance company to implement accountability procedures, and saved a total of $2 million in losses over two years. The remaining ten companies, who had not established accountability, increased their losses by a total of $5 million. The change in losses for both groups are shown in Figure 4.15. The straight lines in the figure are achieved be interpolation. Virtually all but the accountability practices were the same among all of the companies in the study (Crall and LaShier, 1992).

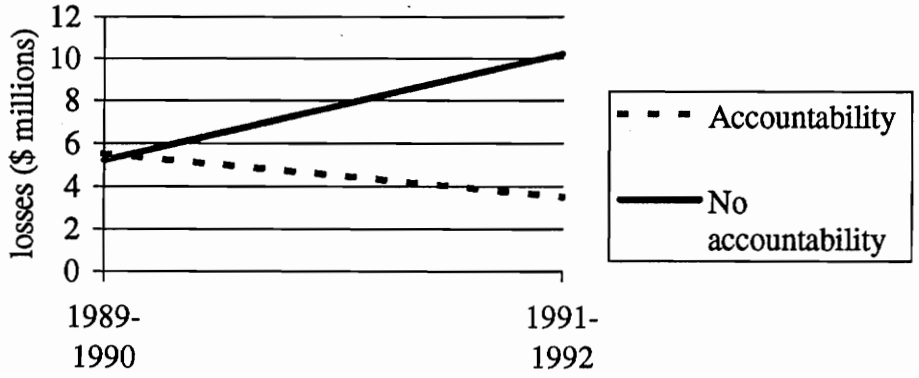

Figure 4.15 - Losses over two years for companies with workers' compensation accountability procedures and those without (Crall and LaShier, 1992)

Accountability in the construction industry can be established by making higher level managers responsible for obtaining the safety and workers' compensation goals of

the company, such as a reduction in incidence rates. On site, superintendents share in accountability by performing duties such as safety training (Kemper, 1993).

Accountability can be enforced by allocating the actual costs of workers' compensation. Fifty percent (50%) of the contractors that responded to the CII survey said that they have a cost allocation system in place (Q36a, C). Some of the methods used are (Q36b, PA):

- Distribute costs directly to any profit center in a company.
- Allocate costs to specific project personnel for individual accountability.
- Make workers' compensation performance part of the project manager's performance record.
- Track costs by operating unit to determine profit and loss.

4.11 Self-insurance

Some large contractors try to control the cost of workers' compensation by being their own insurance carrier. This is called being "self-insured." Self-insurance, as of 1994, is legal in forty-seven states (Perry, 1994). The exceptions are North Dakota, Texas, and Wisconsin (Labode, 1991). It is almost always a cost saver for businesses paying more than $500,000 in annual premiums, and in some states, for companies that experience premiums of $100,000 or more (Perry, 1994).

A survey conducted by National Underwriter found that "(f)our of 10 major contractors (that participated in the survey) indicated that they self-insure important risks, while less than one-fourth of mid-sized firms do so...smaller firms simply can't afford to start up a self-insurance program" (Calise (a), p35, 1993) (please note that the firm size used in this statement does not correspond to those established by this CII study).

To help alleviate the start-up costs, some small companies have banded together to form a self-insurance group where each contractor is responsible for helping all others with paying workers' compensation claims and costs of self-insurance. As of 1994, self-insurance groups were legal in twenty-eight states (Perry, 1994).

Self-insurance requires a substantial time and effort commitment on the part of the contractor, but for some companies, it's well worth it. This aggressive method of insurance allows the contractor to reduce costs by eliminating the portion of a standard premium that is used for non-claim expenses, such as commissions, insurance company charges, profit, premium taxes, state taxes, and residual loads. An umbrella policy is still purchased by many self-insured companies, however, to protect itself against catastrophic losses (Permison, 1994).

In addition to reducing the cost of insurance, self-insurance programs allow for more direct control of claims management. Those companies that are self-insured can obtain the resources that insurance companies have to conduct independent investigations by hiring third party administrators (Blinn, 1993).

Thirty-one percent (31%) of the contractors that responded to this CII study indicated that they are self-insured to some level (Q2a, C). To measure the success of being self-insured, the self-insured contractors who responded to the survey (Q2c, PA):

- compare the fixed premiums or retro policy costs to actual losses and money spent on self-insurance.
- evaluate the reduction in taxes and state fees.
- evaluate the effects self-insurance has on claims management, such as better claims and loss control.

- compute incidence rates and the total cost spent on insurance. These are then compared to the figures used to compute standard premiums.

4.12 Relationships with the Insurance Carrier

Eighty-six percent (86%) of the contractors that responded to the CII survey indicated that their relationship or lack thereof with their insurance carrier affected their workers' compensation costs (Q23a, C).

The contractors in this CII study have found the following results from the formation of a good relationship and opening lines of communication with their insurance carrier (Q23b, PA):

- reduction in EMR.
- receipt of more aggressive and active claims handling.
- negotiation of good terms and pricing.
- easy access to services such as engineering reports, loss reports, and testing labs.
- better control of the handling of their claims and the assurance that the insurance company's services are being performed properly.

4.13 Management Techniques with Insurance Carrier Involvement

Once a relationship is established with an insurance carrier, there are many steps a contractor can take to reduce or control workers' compensation costs. Figure 4.16 summarizes the contractors' rate of utilization of some the cost control services offered by their insurance carriers (Q27, C).

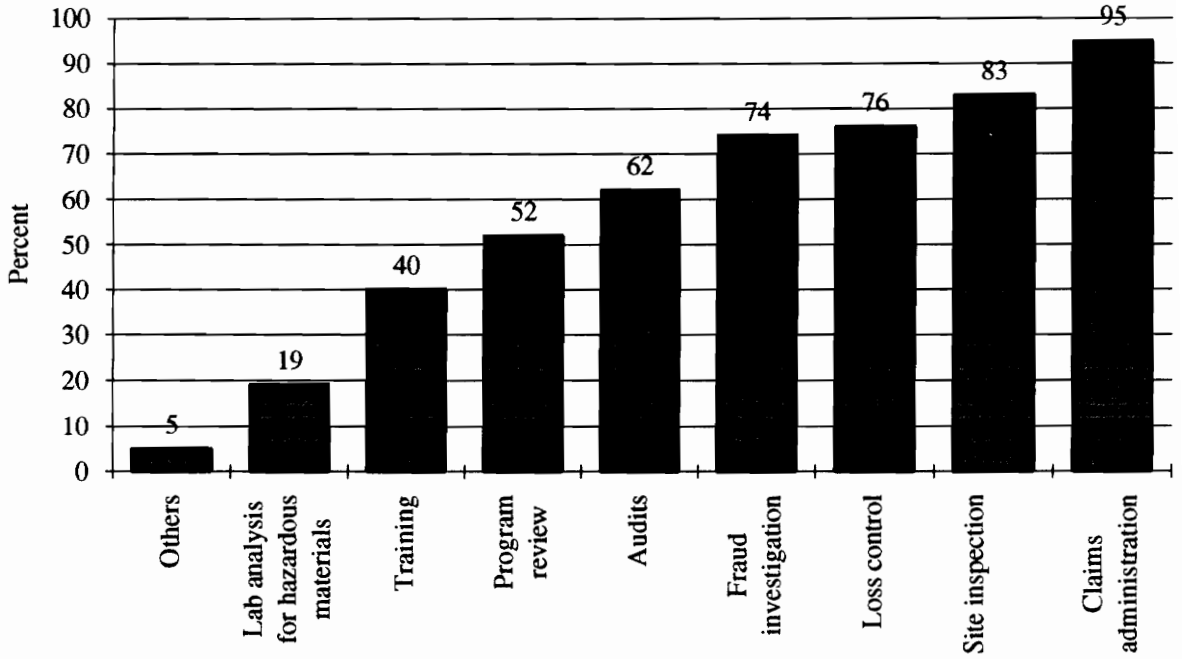

Figure 4.16 - Contractors' rate of utilization of carrier-provided cost control services

4.13.1 Premium and Claims Auditing

Edward J. Priz, president of Advanced Insurance Management, wrote in 1993, "approximately half of the buyers of workers' compensation could reduce their premiums substantially by looking closely at how their premiums are calculated and then seeing that mistakes are corrected" (Priz, p32, 1993).

Auditing premium calculations allows contractors to ensure that their workers are correctly classified, to evaluate loss reserves and closure of claims, validate mathematical calculations, check for clerical errors, and ensure that overtime payroll has been used correctly (Permison, 1994). For a further explanation of the importance of these inquiries, see Chapter 5.

Contractors can also audit the medical bills that result from workers' injuries. In reviewing medical bills, contractors can ensure that the bills accurately reflect the treatment that patients have received. They can also scrutinize the quality, or lack thereof, of treatment their workers are receiving (Christine, 1993). Medical bill reviews supply a means for identifying candidates for a company's panel of physicians. Because of the special knowledge needed to identify high quality of treatments and physicians, the medical bills should be reviewed by a member of the company with a medical background (Oshins, 1991).

A survey conducted by the Compensation & Benefits Review in 1992 showed that more than 45% of their 177 readers that responded to the survey have implemented procedures to review hospital and medical bills ("Readers...", 1992).

Sixty-eight percent (68%) of the companies in the Towers Perrin study audit medical bills as they come in. Of these companies, eighty-eight percent (88%) found this an effective way to reduce costs (Towers Perrin, 1993).

Eighty-three percent (83%) of contractors in the CII study audit their workers' compensation claims (Q25b, C). These audits can include aspects of both premium and medical bill auditing, as well as evaluating the aggressiveness of a carrier with respect to closing claims quickly.

4.13.2 Site inspections

Of the contractors participating in the CII study, eighty-three percent (83%) invite their insurance carrier in for site inspections (Q27, C), and sixty-two percent (62%) of the contractors say that these site inspections occur at least four times a year (Q5, C). The actual frequency of inspections is shown in Figure 4.17.

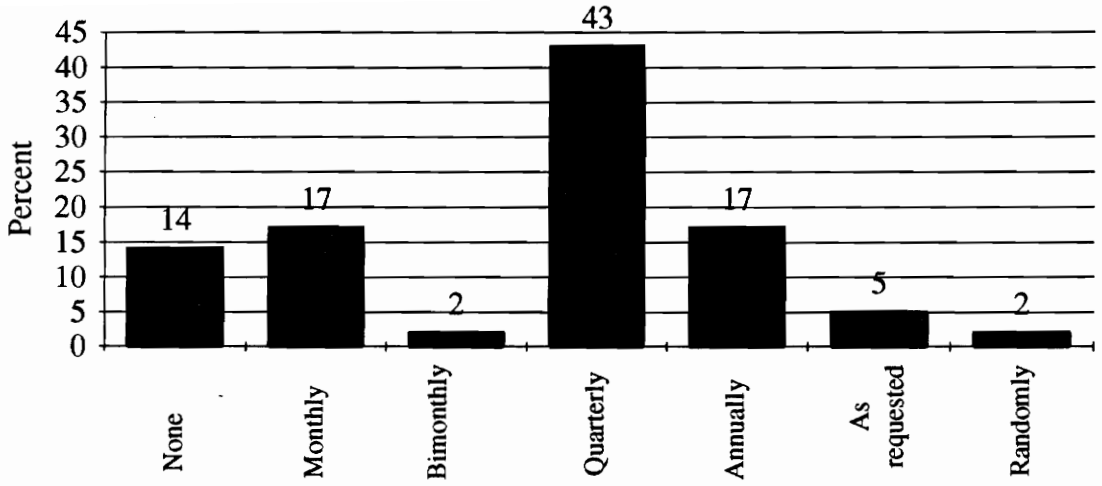

Figure 4.17 - Frequency of insurance carrier site inspections

4.14 Summary

The workers' compensation cost control techniques discussed in this chapter are only some of the many available to contractors today. This chapter is limited to those techniques that were addressed by the CII questionnaires. They include:

- Safety Incentive Programs.
- Employee Education.
- Incident Reporting, Investigating, and Information Feedback.
- The Workers' Compensation Staff.
- Relationship with Employees.
- Early Return-to-Work and Light Duty Programs.
- Panel of Physicians.
- Patterns of Occurrence.
- Cost Responsibility Allocation.
- Self-insurance.
- Relationship with Insurance Carrier.

- Premium and Claims Auditing.
- Site Inspections.

For a more extensive discussion of workers' compensation cost control measures in the construction industry, please refer to the CII Source Document written by the Dr. Jesus M. de la Garza and Dr. Donn E. Hancher, under the guidance of the Worker' Compensation Task Force.

For practices that can be applied to all industries, a manual written by Robert J. Will, titled Special Report: How to Control Work Comp Costs, published in 1990 by his company, Rate Consultants, Inc., Minneapolis, Minnesota is a good resource.

Chapter Five

The Use of the Experience Modification Rating (EMR) as a Safety Indicator

5.1 Introduction

This chapter will first define the term, "Experience Modification Rating." Once defined, the reader will be taken, step by step, through a sample calculation of the EMR. After this foundation is laid, this chapter will address the factors, other than safety performance, that can affect a company's EMR. Finally, the use of the EMR as a safety indicator will be examined, including data, comments, and opinions obtained from contractors through this CII study.

In this chapter, survey results will be cross-referenced with the following notation: (Q2a, C). This is interpreted as "question 2a of the contractor survey report." The "C" stands for the contractor survey report. A "PA" in its place denotes the portrayal analysis

of the qualitative responses to the contractor surveys. These reports are contained within Appendix B.

5.2 What is the Experience Modification Rating (EMR)?

As discussed in Chapter 2, a company's workers compensation premiums are calculated by multiplying manual rates by payroll units and that company's Experience Modification Rating (EMR). The EMR is calculated using the past insurance experience of the individual policy holder to forecast future workers' compensation loss performance (BRT, 1991).

The EMR is essentially the ratio of a company's actual workers' compensation losses to those loses they were expected to experience, according to their classification. The EMR takes into consideration the three completed policy years prior to the year for which the EMR is being calculated to be used as a basis for premium (BRT, 1991). For example, the premiums to be charged for the 1995 policy year are calculated in 1994. Therefore, the completed policy years of 1991, 1992, and 1993 are used to create the EMR.

A company's EMR is what distinguishes it from other insureds in its same classification (NCCI (e), 1990). Theoretically, a company within a given classification that has the average workers' compensation loss experience for that classification, should have an EMR of 1.00. Companies with better-than-average experience should have an EMR of less than 1.00, therefore receiving a credit in their workers' compensation premium payments. Companies that perform worse than the average should have an EMR greater than 1.00, creating a debit to their workers' compensation premiums.

The word *should* is used in describing the theory of the EMR because, as will be seen in section 5.3, the theory does not always hold true.

A company's size and payroll also have an effect on their EMR. If a company is very large and has extremely low losses, it can have an EMR as low as 0.20. A smaller company with relatively similar losses can have an EMR as low as 0.80. Both large and small companies could feasibly have such poor performance that they earn an EMR of as high as 3.00 (CII, 1993). However, a few states with monopolistic workers' compensation programs set lower and upper limits for the EMR. The limits vary as the amount of premium a company pays increases (Nelson, 1995; Rondeau, 1995).

Often, the cost of an accident is a result of several outside factors, over which the insured has little control. These costs are far less predictable than the actual occurrence of an accident. Therefore, the EMR is designed to place more emphasis on the frequency of accidents than on the severity of the individual accidents (NCCI(b), 1992).

Not every company has an EMR. Eligibility varies from state to state, but most thresholds for qualifying require a yearly workers' compensation premium payment of at least $3,000 (Priz, 1993). Once a company becomes eligible for experience rating, a rate service organization will publish an EMR for that company, to be used by all insurance companies in calculating their workers' compensation premiums (NCCI(b), 1992). In the next section, the different rate service organizations and methods of rate calculation will be discussed.

5.3 Methods of Calculating the EMR

There are at least twenty-five different ways of calculating a company's EMR. Thirty-one states currently accept an interstate EMR, calculated by the National Council on Compensation Insurance (NCCI), using their single method. Within these states, a contractor may purchase insurance from any insurance company (CII, 1993). The

insurance company will use the interstate EMR to calculate the contractor's workers' compensation premiums.

Thirteen states require a company to have an EMR that has been calculated by that state. A contractor can choose to purchase workers' compensation insurance from the state, or from an insurance company licensed to do business in that state. The premium is calculated in a particular state using the EMR determined by that state (CII, 1993).

Six states are called "monopolistic" because they are the sole supplier of workers' compensation insurance for businesses that operate within its boundaries. Each of these six states calculates its own EMRs. The individual EMRs are used to compute the premiums that are charged by the state (CII, 1993).

There are at least five additional methods that are used to calculate a company's EMR, depending on particular circumstances. These methods will be discussed in section 5.5. Table 5.1 summarizes the number of methods available for calculating an EMR.

Table 5.1 - Number of different methods used to calculate an EMR (CII, p21, 1993)

Interstate (NCCI method)	31 states	1 method
Intrastate	13 states	13 methods
Monopolistic	6 states	6 methods
Insured		3 methods
New Company		1 method
Subsidiary		1 method
Total		**25 methods**

For the purpose of this discussion and example, the NCCI method will be used because it is the most common.

5.4 Sample EMR Calculation and Discussion

This section will introduce each variable that is contained within the EMR formula. Further, this section will incorporate each variable into the calculation of the fictitious LDL Construction Company's EMR. Some of the terms in this section have already been addressed in a general manner in Chapter Two. This section will elaborate on that discussion, to provide more detail and illustration. Many of the numbers in this example have been modified from NCCI's publication, *ABC's of Revised Experience Rating* (1992).

5.4.1 Loss Experience of LDL Construction Company

Each claim that is filed by an employee of LDL Construction Co. is summarized by the insurance company on a unit statistical report. The unit statistical report also contains the payroll information for LDL Construction Co. Insurance carriers are required to file a unit report with NCCI for each policy they issue (NCCI(b), 1992).

To simplify this example, it will be assumed that the work performed by LDL Construction Co. falls into a single classification, #1234. If more than one classification of work were performed by LDL Construction Co., the payroll would be broken down into its respective classifications.

Table 5.2 - LDL Construction Co. payroll information

Year	Classification	Total Payroll
1991	1234	$2,000,000
1992	1234	$2,500,000
1993	1234	$3,000,000

Table 5.3 - Loss experience of LDL Construction Co.

Year	Losses	Note
1991	$10,000	Total of all losses less than $2,000
	$3,050	
	$9,575	
	$15,000	
1992	$13,000	Total of all losses less than $2,000
	$12,125	
	$3,000	
1993	$4,500	Total of all losses less than $2,000
	$35,000	
	$6,750	
	$2,400	

5.4.2 Primary and Excess Losses

When using the NCCI method, every loss is divided into primary and excess portions. The first $5,000 of any loss experience is called the "primary" loss. Any costs above the primary are called "excess". To place the emphasis of the EMR on frequency as opposed to severity of accidents, excess losses are given much less weight in calculation of a company's EMR than primary losses.

For example, if Contractor A had fifteen accidents that each cost $3,000, it would have an actual loss of $45,000. All $45,000 would be considered to be primary loss. Contractor B may experience one accident that creates a loss of $45,000. Of this cost, only $5,000 is primary. Although the actual loss experiences of both contractors are equal, there is a large difference in the amount of primary loss incurred. Therefore, by placing emphasis on the primary portion of losses, Contractor A would be considered much more of a risk than Contractor B.

Many states have upper limits with regard to how much total workers' compensation loss per claim is allowed to become part of the EMR calculation. These

limits are called "State Accident Limits" (Everett and Parker, 1995). Because workers' compensation laws change very rapidly, it is difficult to pinpoint the exact number of states with State Accident Limits without spending a great deal of time and money in an NCCI review (Nelson, 1995). Any losses that are greater than the State Accident Limit are considered to be "non-ratable" and are not used in EMR calculation (NCCI(b), 1992).

Assume that the State Accident Limit for LDL Construction Company is $20,000.

Table 5.4 - Primary and Excess Losses of LDL Construction Company

Year	Losses	Primary Losses	Ratable Excess Losses	Non-ratable Excess Losses
1991	$10,000*	$10,000		
	$3,050	$3,050		
	$9,575	$5,000	$4,575	
	$15,000	$5,000	$10,000	
1992	$13,000*	$13,000		
	$12,125	$5,000	$7,125	
	$3,000	$3,000		
1993	$4,500*	$4,500		
	$35,000	$5,000	$15,000	$15,000
	$6,750	$5,000	$1,750	
	$2,400	$2,400		
Totals	$114,400	$60,950	$38,450	$15,000

* Total of all losses less than $2,000

5.4.3 Weighting and Ballast Values

As mentioned above, the EMR calculation places much more emphasis on the frequency of accidents than the severity. To reduce the effect the ratable excess losses have on a company's EMR, a weighting factor, "W" is applied to them (NCCI(b), 1992). The "W" value is a percentage, ranging from 0% to 100%, that is expressed as a decimal between zero and one hundred. When multiplied by the "W" factor, the ratable excess losses become the "weighted ratable excess losses."

The "W" values vary by size of company, so that a larger company's EMR is influenced more by its actual experience. NCCI determines a company's "W" value by examining its payroll records in its unit statistical report. Typically, there is a more accurate statistical base that can be obtained from the larger employer's losses, because they are more numerous than a smaller company's (NCCI(b), 1992). The "W" factor is low for small companies, and closer to 1.00 for large companies (NCCI(b), 1992).

A "Stabilizing Value" is used in the EMR equation. The Stabilizing Value (SV) is the ratable expected excess losses multiplied by (1-W), plus a ballast value (NCCI(b), 1992). Refer to Equation 5.1 below. The ballast value is obtained from a table by NCCI, based on payroll, and is used to minimize fluctuations in the EMR (BRT, 1991).

$$SV = E_e * (1-W) + B \qquad \textbf{Equation 5.1}$$

where:

SV	=	Stabilizing Value
E_e	=	Expected excess losses
W	=	Weighting factor
B	=	Ballast value

NCCI determines a company's expected primary and excess losses based on the classification of work the company performs. The expected losses are essentially the average loss experienced by other employers within the company's same classification and state. NCCI also determines their weighting and ballast values (NCCI(b), 1992). Based on the payroll record found in Table 5.2, NCCI could calculate the following values to be used in computing LDL Construction Company's EMR:

Expected Primary Losses, P_e:	$80,000
Expected Ratable Excess Losses, E_e:	$60,000
Weighting Factor, W:	0.30
Ballast Value, B:	25,000

Because NCCI's procedures for calculating the above numbers is complex, and involves much of their own historical data, these numbers have been modified from those given in an example in NCCI's *ABC's of Revised Experience Rating* (1992).

The Stabilizing Value (SV) for LDL Construction Company can be computed as follows:

$$SV = \$60{,}000 * (1\text{-}0.30) + 25{,}000 = 67{,}000$$

5.4.4 LDL Construction Company's EMR

The equation NCCI uses to calculate a company's EMR is as follows (NCCI(b), 1992):

$$EMR = \frac{SV + P_a + (W * E_a)}{SV + P_e + (W * E_e)} \qquad \textbf{Equation 5.2}$$

where:

SV	=	Stabilizing Value
W	=	Weighting factor
P_a	=	Actual primary losses
E_a	=	Actual excess losses
P_e	=	Expected primary losses
E_e	=	Expected excess losses

The EMR for LDL Construction Company is calculated to be:

$$EMR = \frac{67{,}000 + 60{,}950 + (0.30 * 38{,}450)}{67{,}000 + 80{,}000 + (0.30 * 60{,}000)} = \frac{139{,}485}{165{,}000} = 0.85$$

LDL Construction Company has faired better than the average contractor who has performed work in classification #1234 over the three years used in the EMR calculation. Based on its EMR, LDL Construction Company will only have to pay 85% of the average

workers' compensation premium for its classification. In other words, the company receives a 15% credit to their worker's compensation premium.

5.5 Factors that affect the EMR

The Business Roundtable, in 1991, wrote that "due to weighting and ballast factors...it is possible for the safety performance of a large contractor with a 0.6 EMR to actually be worse than that of a small contractor with a 0.9 EMR" (BRT, p11, 1991). After working through the previous example, one can see the justification behind this statement.

In Samelson and Levitt's 1982 paper, they suggest the use of the EMR as a measure of contractor safety. They state that the EMR is a good measure because it is objective and "cannot be altered or misrepresented" (p620). Through this CII study, we have learned that there are ways in which the EMR *can* be manipulated. Various regulations that apply to the EMR allow the contractors to distort it to serve their purposes. These regulations are discussed below.

5.5.1 New Ownership and Management

When a new company is formed, or a company changes ownership, the EMR for that company immediately takes on the average for its classification, 1.00. This occurs except in the case where another company buys the company in question. Under these circumstances, the subsidiary takes on the EMR of the parent (NCCI(e), 1990).

A high risk company with a worse-than-average EMR, for example 1.5, can immediately begin seeing a decrease in workers' compensation premiums if they are bought by individuals, or a company with a better EMR. If the parent company, in this case, has an EMR of 0.75, the subsidiary could essentially halve their workers' compensation premiums. However, if the subsidiary has an exceptionally good EMR, a

parent company with a worse EMR could actually create an increase in the subsidiary's workers' compensation insurance premiums (CII, p21, 1993).

5.5.2 Joint ventures

The EMR of a joint venture is the arithmetic average of the EMRs of the companies that have created the joint venture. This EMR is applied until the joint venture gains enough experience to be eligible for its own EMR. (NCCI(e), 1990)

Imagine that two companies have created a joint venture to build a shopping mall. Contractor A has an EMR of 0.62 and will be providing construction management services as well as 15% of the labor for the project. Contractor B has an EMR of 1.3 and will supply the remaining 85% of the construction labor. The EMR of the joint venture will be:

$$(0.62 + 1.3)/2 = 0.96 = \text{EMR of joint venture}$$

5.5.3 Survey Participants Responses

The contractors that took part in the CII study have been exposed to many factors that can affect a company's EMR. The factors they have seen include (Q20, PA):

- non-work injuries.
- money spent on workers' compensation that is not injury-related.
- profit of the insurance company.
- the performance of other subsidiaries within the same parent company.
- company / employee relationships.
- the difference between working in a high-benefit or low-benefit state.
- the situation of the labor market.

5.6 The use of the EMR as an indicator of safety performance

The Experience Modification Rating (EMR) is adequately designed to complete the purpose for which it is intended, setting insurance premiums, but it may not be a true picture of a contractor's safety performance. Everett and Thompson state in their 1995 paper (p69) that, "comparing employers' safety performance on the basis of EMR alone is simply not valid."

The Zero Accident Task Force of CII cited in their Special Publication 32-2 (1993) the recent trend of owners to use the EMRs of their bidders to gauge safety performance. The owners sometimes set threshold limits for a bidder's EMR. Any bidder that has an EMR higher than the limit is not considered for the project. The Zero Accident Task Force cautions that "one uninformed in the intricacies of EMR determination can easily exclude a safer contractor using such a screening process" (CII, p6, 1993).

The following sections will discuss many of the concerns expressed by the contractors in the CII study that indicate the EMR is not a true indicator of a contractor's safety performance.

5.6.1 Responsiveness to change

If an owner uses a contractor's EMR to predict the safety performance of that contractor on an upcoming project, the owner is neglecting up to two years of the contractor's most recent experience. As was discussed above, the EMR that is used by a contractor in 1995 was calculated using data from 1991, 1992, and 1993.

An owner that uses the EMR to judge a contractor's current safety performance ignores changes in daily business operations and philosophies with regard to safety that have occurred over the past two years. While the EMR may supply good historical data,

it does not reflect current safety practices, changes, or the trends in the safety of a company over the past two years (Q20, PA).

The EMR is not very responsive to change. Recent changes in a company's safety, recent hiring of a large number of new employees, change in its workload, or change in its type of work performed are not a part of that company's current EMR (Q20, PA).

5.6.2 The basis of payroll

The actual losses used to calculate a company's EMR depend on payroll because a large portion of actual loss is in the form of wage replacement. Therefore, two companies can experience the exact same accident and employee recovery period, but have very different actual losses due to wage differences. This is especially apparent when comparing open- and closed-shop companies.

In addition, the expected losses, weighting factor, and ballast value that are part of the EMR equation are based on payroll. NCCI determines the size of a company by how much payroll it distributes. Therefore, a difference in wage rates between two companies, all other things the same, can create a substantial difference in the factors used to calculate the EMRs for those companies.

NCCI's use of payroll as a basis for computing a company's EMR is acceptable, because the insurance companies it serves are primarily interested in how much an accident is going to cost. If wages are higher in one company than another, the cost of indemnity associated with an accident are going to be higher. However, using a basis of payroll for the EMR does not accurately measure the actual exposure to danger, and can be greatly affected by companies paying different wages (Q20, PA).

5.6.3 Subsidiaries

Section 5.5.1 addressed the regulations that NCCI applies to subsidiaries when assigning an EMR. The contractors in the CII study believe that this is an area of concern in competing for bids (Q20, PA). The EMR that is assigned to the subsidiary takes into account the workers' compensation losses of the parent company as well as every other subsidiary owned by that parent.

For example, imagine that Contractor A is a subsidiary of ABC Company and, accordingly, uses its EMR of 0.80. If Contractor A were to calculate its own EMR, it would be 1.2. A competitor, Contractor X, is a stand alone company with an EMR of 0.93. When comparing Company A and Company X for a project, an owner may falsely assume that Company A is the safer of the two.

According to the respondents of this CII study, one in four companies classified themselves as subsidiaries (Q19a, C), and only 10% of the contractors that are subsidiaries develop their own EMR internally (Q19b, C). Therefore, in prequalifying these contractors by EMR, many owners are accepting or rejecting subsidiary companies on the basis of an EMR that reflects something other than the performance of that one company.

5.6.4 Wrap-up insurance

Wrap-up insurance is used by either an owner or general contractor to achieve lower workers' compensation insurance costs and adequate insurance on their sites. An owner or general contractor may have the ability to obtain better workers' compensation insurance rates from a carrier, than the contractors that work for them. If this is the case, the owner or general contractor will take advantage of these low rates and supply workers' compensation coverage for the contractors (Montgomery, 1990). This way, the owner or general contractor pays for the workers' compensation insurance coverage of their contractors directly, instead of through the overhead portion of a bid. When an

owner provides the wrap-up insurance, it is usually called an "Owner Controlled Insurance Program" (OCIP).

Although the owner or general contractor is purchasing the workers' compensation insurance coverage, there is a separate policy for each contractor or subcontractor. Each individual contractor's EMR is applied to its policy and is factored into the total insurance premium the owner or general contractor must pay. Even though the premiums are adjusted by each contractor's EMR, the difference in base rates could create a substantial savings for the owner or general contractor (Montgomery, 1990).

Safety performance on projects where an owner or general contractor uses wrap-up insurance may not be reported to an individual subcontractor's insurance carrier. Therefore, it will not be a part of the unit statistical report, and may not affect the calculation of that contractor's EMR. If a contractor works on a number of projects under wrap-up insurance, a significant portion of its safety performance may not be reflected by its EMR (Q20, PA).

5.6.5 Many injuries never affect the EMR

In addition to those injuries that occur under wrap-up insurance, many others never make it into the EMR calculation. Figure 5.1 shows the many ways the costs of an injury can be intercepted before reaching the EMR calculation. Please notice that costs of only half of the injuries, eighteen out of thirty-six, were used to calculate this company's EMR. The fictitious numbers are for example only and do not reflect the findings of the study.

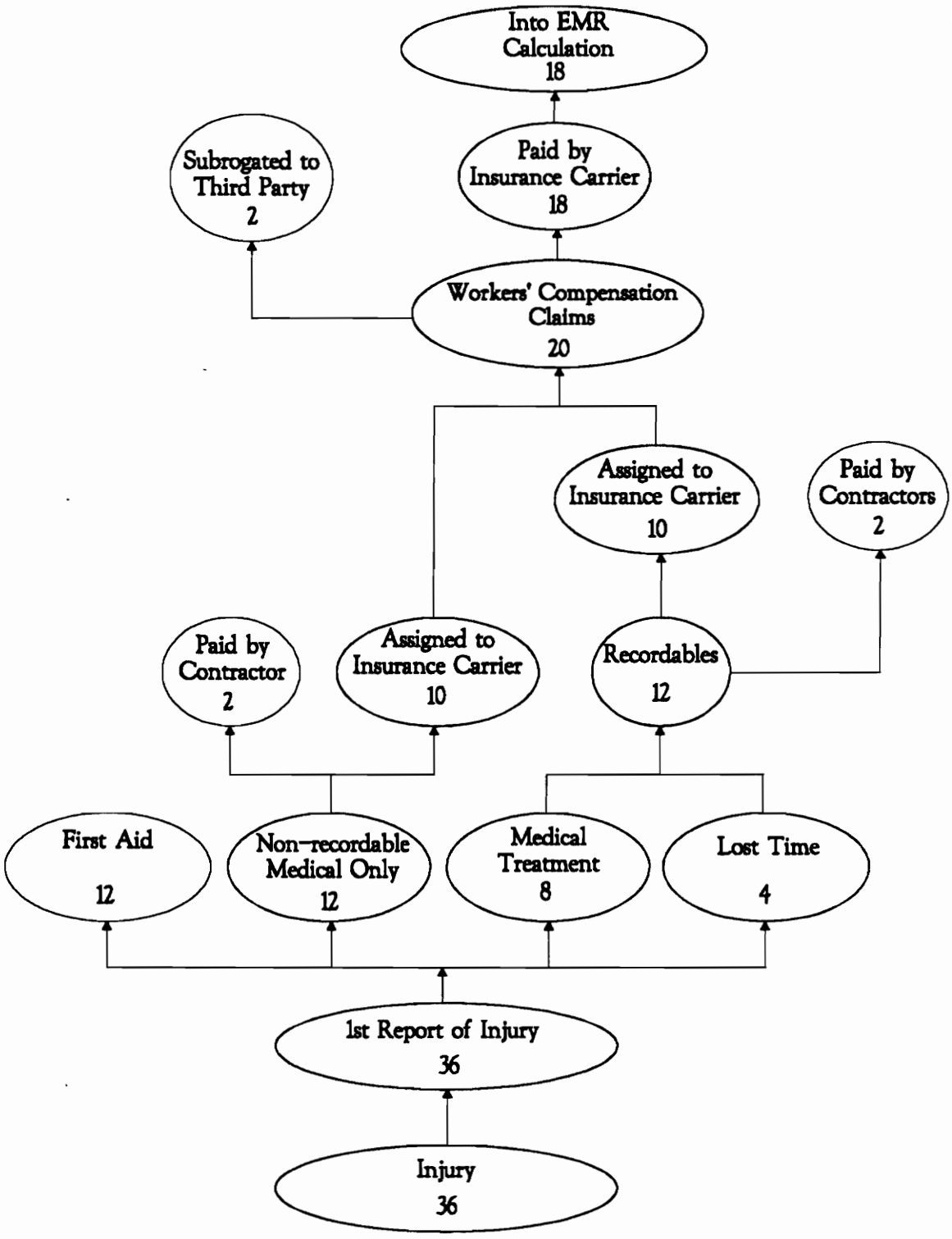

Figure 5.1 - The path of injury costs

Once an injury occurs, the contractor files a "First Report of Injury" with its insurance company. Many contractors then opt to pay first-aid, and less expensive medical-only and recordable injury costs themselves, in an attempt to minimize their "actual losses."

Those costs that are not paid by the contractor then become the subject of workers' compensation claims filed with the insurance company. In situations where a third party, not the contractor's operations, caused the injury, the insurance carrier will attempt to subrogate the injury costs to the third party. If the insurance company is successful, the subrogated costs will be removed from the contractor's loss record (Priz, 1993).

Those costs associated with injuries that are not paid by the contractor or subrogated to a third party are made a part of the contractor's loss record, and are paid by the insurance carrier. These are the costs that go into the EMR calculation.

A contractor can successfully lower its EMR by paying the costs associated with first aid cases, and less expensive medical-only and recordable injuries. Therefore, the EMR may be lowered while the actual number of injuries stays the same, or even increases.

5.7 The relation of survey participants' EMRs with their safety performance

The contractors' responses to the CII survey allowed the determination of four average incident rates for all participants. The rates calculated include the average Experience Modification Ratio (EMR), average OSHA Recordable Incident rate, average OSHA Lost Time incident rate, and average Workers' Compensation Claim Incident (WCCI) rate.

The WCCI rate was developed by the task force, and is similar to the OSHA recordable and lost time incident rates in that it is based on 200,000 workhours. The WCCI rate represents the number of workers' compensation claims made for a given company in a single year, per two hundred thousand (200,000) construction work-hours performed in that year.

Each of the four average rates mentioned above were calculated for those companies considered by this study to be "small" companies. Average rates for "large" companies were then computed. All average rates are listed in Table 5.5.

Consistently, all of the average rates, including the average EMRs, in a given year are higher for small companies than those average rates for large companies. All accident rates decreased from 1990 to 1991, and from 1991 to 1992. In Table 5.5, the average EMRs follow the same pattern as the average incident rates.

However, when the companies are divided into groups characterized by factors other than size, the pattern of the average EMRs varies from the patterns of incident occurrence. The task force divided the contractors in the CII study into two different groups: those that keep accident records and summaries according to project, and those that do not. The average OSHA recordable incident rates, lost time incident rates, and EMRs for each of the two groups is listed in Table 5.6.

Table 5.5 - Average incident rates for the contractors in the CII study, categorized by company size

		Year			Reference
		1990	1991	1992	
EMR	All companies	0.93	0.90	0.89	Q4, C
	Small companies	0.96	0.93	0.93	
	Large companies	0.86	0.84	0.81	
OSHA Recordable Incident Rate	All companies	12.84	10.74	8.47	Q6, C
	Small companies	14.75	12.32	9.91	
	Large companies	8.67	7.15	5.06	
OSHA Lost Time Incident Rate	All companies	4.91	3.59	3.27	Q6, C
	Small companies	5.07	3.97	3.57	
	Large companies	4.55	2.74	2.60	
WC Claim Incident Rate	All companies	16.78	13.30	12.74	Q12, C
	Small companies	22.90	19.70	17.66	
	Large companies	16.00	12.31	11.92	

Table 5.6 - Average incident rates for the contractors in the CII study, categorized by accident record-keeping practices

	Company record-keeping type	Year			Reference
		1990	1991	1992	
OSHA Recordable Incident Rate	Keeps records by project	10.41	8.77	6.64	Q9, C
	Does not keep records by project	24.60	20.60	16.30	
OSHA Lost Time Incident Rate	Keeps records by project	4.53	3.01	3.00	Q9, C
	Does not keep records by project	6.74	6.53	4.67	
EMR	Keeps records by project	0.92	0.88	0.9	Q9, C
	Does not keep records by project	0.98	0.98	0.87	

For those companies that keep records of accidents by project, the average OSHA recordable incident rate decreased by 16% from 1990 to 1991, and then by an additional 24% from 1991 to 1992. The average EMR for these same companies, however, decreased by 4% from 1990 to 1991 and actually *increased* by 2% from 1991 to 1992.

In 1991, those companies that do not keep accident records by project had an average recordable incident rate two and a half times higher than those companies that do not keep these records. However, the average EMRs of the two categories of companies were relatively the same, 0.98 and 0.88 respectively, with a difference of only 0.1.

In the next year, 1992, the companies without accident records kept by project also had an average recordable incident rate two and a half times higher than those companies with these records. This year, though, the difference in EMRs for the two groups was 0.03. While this number is still very small compared to the difference in average OSHA recordable rates, it shows a fluctuation in average EMR from the year before where there is no fluctuation in the average OSHA recordable rate.

Although the companies that do not keep records of accidents had two and a half times the average recordable incident rate of those companies that keep records of accidents by project in 1992, their average EMR was actually *less* than that of the other group.

From 1991 to 1992, the relative proportion of recordable incident rates for those companies with accident records by project, to those without, remained the same. The difference in average EMRs for these years fell from 0.10 to 0.03. The EMRs did not accurately depict the safety performance of the contractors these two years in that the EMRs showed a variance when there was none. The average EMR also wrongly

suggested that the companies without safety records by project were more safe than those with these records.

With regard to record-keeping, the task force divided the companies into another set of two different groups: those that keep records of accident costs by project, and those that do not. The average OSHA recordable incident rates, lost time incident rates, and EMRs for each of the two groups is listed in Table 5.7.

Table 5.7 - Average incident rates for the contractors in the CII study, categorized by cost record-keeping practices

	Company record-keeping type	Year			Reference
		1990	1991	1992	
OSHA Recordable Incident Rate	Keeps records of costs by project	11.96	9.93	7.81	Q10, C
	Does not keep records of costs by project	15.37	13.16	10.23	
OSHA Lost Time Incident Rate	Keeps records of costs by project	4.51	3.18	2.94	Q10, C
	Does not keep records of costs by project	6.07	4.83	4.26	
EMR	Keeps records of costs by project	0.94	0.91	0.88	Q10, C
	Does not keep records of costs by project	0.89	0.89	0.93	

The average OSHA recordable and lost time incident rates decrease for both groups each year. However, the companies that do not keep records of costs by project saw a rise in their average EMR of 5% in 1992.

In 1991 and 1992, the companies that do not keep records of accident costs by project had a 31% and 32% higher average OSHA recordable incident rate, respectively, than those companies that keep these records. In 1991, however, the average EMR of the companies without cost records by project was *less* than the average EMR of the companies with the cost records. In these two years that showed relatively no change in the proportion of the OSHA recordable incident rates of the companies with the cost records by project to those without, the difference in average EMRs doubled.

The average OSHA recordable and lost time incidence rates are consistently lower for companies that keep records of costs by project, when compared to those companies that do not keep these records. However, the average EMRs for these companies do not follow the same pattern. In 1992, the average EMR for those companies that keep records of costs by project is *higher* than the average EMR of those companies that do not keep these records.

5.8 CII study findings in relation to the findings of Levitt and Parker (1976)

In 1976, Levitt and Parker performed a study examining the difference in accident rates for those contractors that keep records of accidents by project to those that do not. The findings of this CII study are very similar to Levitt and Parker's findings in some ways. They, too, saw that the accident rates for contractors that keep records of accidents by project were substantially lower than those of the companies that do not keep these records.

However, Levitt and Parker qualify their results by stating that keeping such records can only be effective if top management is aware of the existence of the records. The records produce results only if top management uses them in evaluating superintendents and foremen. In essence, they found that success is gained through measurement and implementation. If something, i.e. safety, is important to a contractor,

the contractor will measure the employees' performance in this area, and make them aware of this measurement. In addition, measurement aids in control. By controlling the safety performance of employees, a contractors can improve that performance.

In Levitt and Parker's study, they use the EMR as a measure of safety. This chapter has established that the EMR is not an adequate measure of safety. In contrast to the findings of this CII study, Levitt and Parker found that the average EMRs for the contractors within the two categories of record-keeping did indeed reflect fluctuations in accident frequency. As is shown above, this is not the case in the CII study. In a later work, Levitt (with Samelson, 1982) concedes that the EMR should not be used as a sole indicator of safety. Rather, it should be supplemented with other measures.

5.9 Summary

The calculation of a company's EMR is an intricate procedure that is subject to many factors other than that company's safety performance. These factors include:

- the method of EMR calculation.
- company size and payroll.
- weighting and ballast values.
- new ownership and management.
- joint ventures.
- wage variance.
- subsidiaries.
- wrap-up insurance.
- injuries that are not included in EMR calculation.

When contractors are separated into groups that keep records of accidents by projects and those that do not, there is a substantial difference in the average OSHA

incidence rates for the two groups. The average OSHA recordable incidence rates for those companies that do not keep the records by project are two and a half times the average OSHA recordable incidence rates. However, the EMRs of the two groups do not reflect these differences. This finding is significant for two reasons. First, it supports Levitt and Parker's claim that keeping accident records by project and measuring safety are effective in reducing accidents. Secondly, it demonstrates that the EMR is not an accurate measure of a contractor's safety performance.

An owner should complement the EMR with other measures to get a true picture of a contractor's safety performance. A discussion of some alternative measures of safety are discussed in Chapter 6.

Chapter Six

Alternative Measures of Contractor Safety Performance

6.1 Introduction

Chapter Five discussed the use of the Experience Modification Rating (EMR) as an indicator of contractor safety performance. The opinions of the contractors that took part in the CII study were addressed as they pertained to this use of an EMR. This chapter will present the alternative measures that the contractors in the CII study feel should be used to measure and predict their safety performance.

This thesis could not find valid points in every contractor suggestion. While many of the suggestions are interesting to examine within a contractor's organization, they are simply points about which an owner would not be concerned. Samelson and Levitt, researchers in the field of contractor safety, proposed the following criteria for measurements of a contractor's safety. The measurement must be (Samelson and Levitt, 1982):

- "Predictive of safe projects performance."
- "Equally applicable to different construction firms."
- "Objective."

The valid contractors' suggestions of measures of safety performance are discussed in the following sections. These suggestions plus the remainder can be found listed in the portrayal analysis in Appendix B.

To further aid in the discussion of adequate safety measures, this chapter offers a listing of the methods the respondents to the CII study use to identify safe subcontractors for their projects.

In this chapter, survey results will be cross-referenced with the following notation: (Q2a, PA). This is interpreted as "question 2a of the portrayal analysis of qualitative responses to the contractor surveys." This report is contained within Appendix B.

6.2 Alternative statistics

As a supplement to the EMR, the contractors in the CII study request that owners use other statistics to gauge the contractor's safety performance. The suggested statistics offer a more complete picture of a contractor's safety.

The EMR's basis of payroll does not truly represent a contractor's actual time of exposure to risks because different contractors may have different wage scales. An owner should evaluate and compare the number of accidents a contractor experiences in a given time period, in relation to the actual number of hours they worked in that same time period (Q21, PA). This comparison can also be expanded to include first aid cases and near misses.

Another concern involved in using the EMR as an indicator of safety performance is that it does not reflect the most recent changes and improvements in a contractor's ability to perform work safely. The EMR is calculated from a rolling three year time period that ends one to two years prior to the date the EMR would be used by an owner as a safety measure. A more accurate picture can be obtained through OSHA statistics (Q21, PA). OSHA incidence and lost time rates measure, on a common baseline of 200,000 workhours, the amount of accidents contractors experience. Incidence rates are calculated for each year at its close. To achieve even a more recent picture, an owner can evaluate the contractor's history of OSHA citations up to the day of the bid (Q21, PA).

Additionally, owners could create their own statistics by which they evaluate potential contractors, such as a measure of safety according to frequency and severity of accidents with respect to work-hours performed in the applicable NCCI classification (Q21, PA). This would bring to light the classifications with the most incidents. When examine a large contractor, there may be many job classifications within the company that will never be used on the interested owner's project. The owner could ask the contractor for an average incident rate only for those classifications that will have an impact on the owner's project.

Samelson and Levitt (1982) suggest the EMR as a safety measure. However, they also state that because the EMR is calculated from data that is not current and predictive of recent safety trends, the EMR should be supplemented by other measures. These measures include OSHA incidence rates and the contractor's implementation of programs that create management accountability.

6.3 The personal approach

When using statistics, the owner must be very aware of how the statistics can be manipulated. Even though OSHA incidence rates are an effective measure of current

safety performance, they can be affected by how each contractor interprets OSHA laws as to which type of incidents qualify as recordable (Samelson and Levitt, 1982). In addition to using statistics to predict a contractor's safety performance, the contractors in the CII study suggest that owners take a more personal approach.

If an owner visits a work site, he or she can evaluate the "safety climate" and the quality, competency, and workmanship of the people on site independently, and not just the company as a whole. Also, owners could hold periodic reviews with selected contractors to ensure that the contractor complies with industry standards (Q21, PA).

The facts and figures on paper regarding workers' compensation experience can be explained by an owner examining the workers' compensation claims on a case by case basis to see what peculiarities may have affected the numbers (Q21, PA).

6.4 Submittals

If an owner dislikes or doesn't want to make time for one-on-one, personal contact with perspective contractors, the CII study participants suggest an owner ask for submittals that can create more of a clear picture of the contractors' safety performance.

An owner can look for the existence of cost control and safety-promoting programs by requesting written proof. This could be in the form of a copy of the contractor's written safety plan, training programs, and return-to-work program (Q21, PA).

The contractor's commitment to safety can be measured through submittals of a listing of expenditures on safety equipment, and a written statement of a contractor's commitment.

6.5 Methods contractors use to predict safety performance

When asked what methods the contractors use to prequalify subcontractors who work on *their* projects, they responded, again, in many different ways (Q22, PA). Some methods are similar to those suggested for owners, such as jobsite analysis and evaluating company statistics like accident frequency rate, lost time incident rate, recordable incident rate, and number of OSHA citations.

The personal approach recommended for owners is practiced by the contractors. They evaluate the content of subcontractors' safety and training programs, orientations, health programs, and drug and alcohol programs to determine the effort the subcontractors puts into creating a safe workplace (Q22, PA).

Trends in safety are watched to achieve a predictor through the most recent picture of the subcontractor's safety performance. The trends and programs are investigated through interviews, requesting references, and visiting the subcontractors' current job sites to determine the performance, professionalism, and quality of the people (Q22, PA).

If a subcontractors is chosen to work on a project, their performance is placed in the contractor's database, to be used in selecting subcontractors for the next project (Q22, PA). Through this technique, the contractor can rely on its own experiences with the subcontractor, and not simply on a number such as the EMR that is created for the insurance industry.

Some of the contractors that participated in this study also ask for submittals verifying the perspective subcontractors' ability to perform the work safely. For a measure of effort that a subcontractor puts into having safe projects, the contractors look

at subcontractor's professional qualifications, safety meeting minutes, personal protective equipment (PPE) programs, and Hazcom programs. The contractors also explore the confidence other organizations have in the subcontractor by requesting bond rates, Certificates of Insurance, and evidence of the subcontractors' financial status (Q22, PA).

6.6 Summary

The contractors in this CII study have suggested measures, alternative to the EMR, that an owner can utilize to predict the safety performance of a contractor. Such measures can be purely qualitative and observed on a personal basis, or they can take the form of submittals or statistics. The contractors in this CII study take advantage of each of these different types of measures when qualifying subcontractors for their projects.

Chapter Seven

Conclusions and Further Areas of Study

7.1 Conclusions

The costs associated with workers' compensation in the construction industry are an additional strain to already low profit margins. It does not appear that these costs are ready to subside. High workers' compensation costs reduce a firm's competitive advantage in bidding, and thus creates the insurmountable cost of losing bids (BRT, 1991). To stay competitive in today's marketplace, construction professionals must assume the responsibility for these costs by implementing workers' compensation cost control techniques.

A company's worse-than-average Experience Modification Rating (EMR) may also cost it the opportunity to bid on projects. When owners use the EMR as a lone measure of a contractor's safety performance, they may be needlessly discounting contractors that are actually more safe than their competitors. Construction professionals must be aware of this practice, and understand why it is inadequate.

The contractors that participated in this CII study have acknowledged that the EMR is inappropriate for judging a contractor's safety performance, and they have offered suggestions of alternative measures. In addition, they have shared, through the questionnaires, the many cost control techniques that are currently in use in the construction industry. They have revealed the level to which these techniques have been successful in their organizations.

This thesis has supplied the contractor with the "pieces" and the guide needed to solve the puzzle of controlling workers' compensation costs. The reader has been able to identify his or her company's size, worker experience levels, and workers' compensation practices through the data gathered from the CII survey. By using this data, the reader observed which cost control techniques have been successful in the construction industry, and the level of workers' compensation knowledge held by the workers in the study.

This thesis addresses how the findings of this CII study relate to the study conducted by Levitt and Parker in 1976. Levitt and Parker found that contractors can reduce the number of accidents they experience by keeping records of accidents by project. This thesis supports Levitt and Parker's finding with regard to accident record-keeping. The average OSHA recordable incident rates for those contractors in the CII study that do not keep records of accidents by project are two and a half times the average OSHA recordable incidence rates of those contractors that do, for the years 1991 and 1992.

The following sections address the conclusions of this thesis as they pertain to the objectives stated in Chapter One.

7.1.1 Key Elements of Effective Workers' Compensation Management

The contractors that participated in this CII study have recommended several methods that are effective for them in controlling the costs of workers' compensation. These include:

Safety Incentive Programs: These programs focus the employees' attention onto safety by rewarding them for performing their jobs without accidents. The programs can be different for workers and superintendents. A variety of rewards were suggested by the contractors in the CII study. Whatever form a program takes, it is vital that the program be advertised to be successful.

Employee Education: Education of employees can help the contractor avoid costly and time-consuming litigation. The lessons should address particular safety issues; workers' compensation rights, obligations and benefits; claim-filing procedures; and the affects high workers' compensation costs have on the contractor's bottom line, and therefore the workers' jobs. Just over half of the workers that participated in this CII study are aware of their workers' compensation rights, obligations, and benefits.

Incident Reporting, Investigating, and Information Feedback: Early incident reporting can dramatically reduce the costs associated with injuries, and the chance of litigation. A team approach to investigating accidents is more effective in determining causation. Just over one third of the contractors in this CII study invite subcontractors to take part in investigation. Information gathered from accident investigations can be used to prevent the accidents from occurring again.

The Workers' Compensation Staff: An in-house workers' compensation staff can help the contractor make a quick response to incidents. They can also keep in touch with injured employees to get them back to work as quickly as possible.

Relationship With Employees: A good relationship with employees can also assist in getting them back to work quickly after an accident. It also reduces the chance of litigation. If a positive relationship is developed with employees, they will come to the contractor with workers' compensation questions as opposed to hiring a lawyer. Approximately half of the workers in this CII study don't know how their employer would react if they filed a workers' compensation claim.

Early Return-to-Work and Light Duty Programs: To reduce the indemnity portion of a workers' compensation claim, it is important to get injured employees back to work. Light duty and early return-to-work programs allow employees to begin producing again, however not in the same position they held before their accident. Modified positions are held by injured workers until they are ready to move back into their pre-injury positions.

Panel of Physicians: Contractors can select a panel of physicians to treat their injured workers. In the event of an injury, a worker must visit a member of the panel. This insures that quality doctors care for the employees, and that the doctors are aware of the needs and light duty opportunities of the contractors. This practice, however, is restricted in some states.

Examining Patterns of Occurrence: By recognizing when accidents occur, steps can be taken to avoid the accidents in the future. For example, a contractor can compare the number of accidents that occur in straight time versus overtime.

Accountability: Accountability can be achieved by allocating the costs of workers' compensation to individual projects, or to operating units. If project managers are not held accountable for injury-related expenditures, they may ignore attempts to control such costs.

Self-insurance: Instead of purchasing insurance from a carrier, some contractors are choosing to insure themselves. This alleviates the contractors from the burden of paying costs that are not accident-related, such as insurance carrier profit, state fees, commissions, and residual loads.

Relationship with Insurance Carriers: Eighty-six percent of the contractors in this CII study believe that their relationship, or lack thereof, with their insurance carrier affects their workers' compensation costs. A good relationship has resulted in aggressive claims handling, good terms and pricing, easy access to services, and better control of the handling of their claims.

Premium and Claims Auditing: Contractors can audit premium calculations and claims records to check for clerical errors, excessive reserves, and open claims that should be closed. Through auditing, they can also keep track of how aggressively the insurance carrier is pursuing the closure of open claims.

Site Inspections by Insurance Carrier: Many insurance carriers offer site inspections to identify areas that may present dangers to employees. This is also a good opportunity to develop a positive relationship with the insurance carrier.

7.1.2 Inaccuracy of the EMR as a Measure of Contractor Safety Performance

The contractors in the CII study offered many of their opinions as to why the EMR is inadequate to measure safety performance. These opinions have been examined and found to be very valid points. The EMR should not be used alone as a safety indicator because:

- There are at least twenty-five different methods used to calculate the EMR.

- Weighting and ballast values are used in the EMR's calculation to reduce fluctuations. The weighting and ballast values depend on the size of a company's payroll.
- If a company is purchased by an entity that does not have an EMR, the EMR of the purchased company becomes 1.00.
- If a company is purchased by an entity that already has an EMR, the EMR of the subsidiary is discarded. The subsidiary assumes the EMR of the parent company.
- The EMR of a joint venture is the arithmetic mean of the EMRs of the participating companies. The EMR is not prorated according to the amount of work performed by each company.
- The EMR is not responsive to change. Calculation of the EMR for a given year uses data from the previous three closed policy years. For example, the EMR used in 1994 is calculated with data from 1990, 1991, and 1992.
- The EMR is based on payroll. If two companies have the same number of employees, in the same job classifications, and experience the same losses, their EMRs will be different if their wage scales are different.
- When an owner or general contractor purchases wrap-up insurance for their project, none of the losses experienced by subcontractors go into the calculation of the subcontractors' EMRs.
- Many injuries are not included in EMR calculation. Injury costs that are paid by the contractor, as opposed to those paid by the insurance carrier, do not enter the EMR calculation. Neither do the costs of injuries that have been successfully subrogated to third parties by the carrier. Furthermore, first-aid injuries are not included in the EMR.

7.1.3 More Effective Measures of Contractor Safety

Many effective measures of a contractor's safety performance exist, and are in use. The contractors in this CII study offer the following suggestions of measures that can be used as alternatives to the EMR. Included with the alternatives is an explanation of the benefits of using each measure.

OSHA Recordable and Lost Time Incident Rates: These rates reflect data that are much more current than those used to calculate the EMR. The incident rates are calculated yearly, so the owner can get a picture of the contractor's yearly fluctuation in safety performance. Also, recent changes in the type of work performed by the contractor, or recent implementation of safety programs will be portrayed in the incident rates.

Workers' Compensation Claim Incident Rate: This rate was developed by the CII Workers' Compensation Insurance Task Force to encompass all injuries that result in a worker's compensation claim. There is a discrepancy among contractors as to exactly which injuries are considered to be recordable according to OSHA regulations. This may slant the accuracy of the OSHA incident rates in measuring contractor safety. By including all injuries that result in claims, the discrepancy in interpretation of OSHA regulations is made a moot point.

Personal Approach: Owners can take the personal approach in evaluating the safety of contractors by observing the "safety climate" on contractors' work sites, reviewing contractors' safety performance on a periodic basis, and examining contractors' workers' compensation claims on a case-by-case basis. This technique allows the owner to observe the contractors' actual safety performance first hand, in an attempt to form its own judgments concerning contractor safety.

Submittals: If an owner does not have the time, or dislikes, one-on-one evaluation of a contractor's safety performance, he or she can ask for submittals. Such submittals include written safety, training, and return-to-work programs; listings of expenditures on safety equipment; and a written statement of a contractors' commitment to safety. A statement of a contractor's commitment to zero accident principles shows that the contractor has mechanisms in place to prevent accidents. All of these submittals can show an owner the amount of effort that is put forth in an attempt to have safe projects and job sites.

7.2 Further Areas of Study

While this thesis is a complete discussion of the data that is present in the CII study, there are further areas of study that may be examined to expand on the findings of this thesis.

7.2.1 Contractor Safety Certification

Further exploration into alternative safety measures is warranted. The attraction of using the EMR in an attempt to predict the safety performance of a contractor may be its simplicity. The owner can use a single, tangible indicator to prequalify contractors on the basis of safety.

Along with the many alternative measures that have been proposed in this thesis, an owner may desire a method equally simple to using the EMR. A single indicator could be developed, using the quantitative and qualitative alternatives suggested in this thesis.

This indicator could take the form of a safety certification. Like an ISO 9000 for construction safety, a set of criteria for performing work safely could be developed, and then applied to the construction industry. Those contractors that meet the criteria will be certified as "safe contractors." Those that do not meet the criteria will be given instruction as to how to improve their safety performance to become certified. With a

safety certification process in place, owners will only have to simply ask to see the contractors' certifications of safety before allowing them to bid on projects.

The criteria used in certification must be current and reliable. OSHA statistics for the most recent three years could be averaged to minimize the affects of a single bad or exceptionally good year of safety performance. The company must have written safety, training, and return-to-work programs, as well as written procedures for managing claims to control costs. The use of such programs in daily operations should be documented. Through criteria such as these, an owner would be confident in the contractors' ability to perform work safely and to control costs in the event of an accident.

To keep certification current, a contractor should be reviewed bi-yearly. In the event of excessive OSHA violations, incidents, or a lack of adherence to the contractor's written programs, the contractor is placed on one year probation. After that year, another review would determine whether the contractor achieves good standing again, or loses its certification.

In addition to simply being certified, there could be levels of achievement in the certification requirements. If a contractor simply meets the minimum requirements for certification, they would be certified as a "level one" contractor. As the contractor strives for and achieves even better safety performance, they would graduate to "level two". If an owner is faced with a choosing from a field of contractors in which each one is certified, the owner may then use certification levels to make their decision. This provides an incentive for contractors to concentrate on improving their safety performance even after certification is obtained.

A second option of a single safety measure is to convert the qualitative aspects of measuring contractor safety into a numeric measure using a common scale. This numeric

measure can then be combined with other quantitative measures to calculate a single, numeric, safety measure.

7.2.2 Scientifically Proving the Effectiveness of Cost Control Methods

This thesis is based on the opinions and current "best practices" of the forty-two (42) contractors and over one thousand six hundred (1600) construction workers who took part in this CII study. However, these practices have not been scientifically tested in the field.

Further research could explore the success, along several baselines, of the cost control methods described in this thesis. They could then be ranked according to such criteria as expense to implement, cost-saving effectiveness, time elapsed until a positive result is experienced, and attractiveness to workers. These rankings could then stand on their own, or be combined to create an overall effectiveness ranking.

7.2.3 Contractor-Worker Correlations

No correlations could be made in this thesis between contractors' workers' compensation cost control methods and their workers' opinions of these methods. Because of the anonymity of the workers, the method of data collection, and the number of questionnaires completed in union halls, there was no way to tell the company for whom a respondent employee worked.

It would be interesting to investigate the comparison of the number of contractors that feel they have an adequate training program to the actual knowledge level of their workers. A study of this nature could also compare safety incentive and return-to-work programs to identify those that are the most successful in achieving employee support.

7.3 Summary

Through a database of contractors' and workers' responses to CII workers' compensation questionnaires, the current problems facing workers' compensation managers have been revealed. This thesis presents these problems, and details the measures, as suggested by the survey respondents, that a contractor can implement to control the increasing workers' compensation costs.

Furthermore, the contractors in the CII study indicated that owners are using EMR's to prequalify contractors for the bidding of a project. The EMR is being inaccurately used as an indicator of a contractor's safety performance. This thesis discusses what the survey respondents identify as faults in the EMR as a measure to predict a contractor's ability or desire to work safely. The alternative measures of safety suggested by the contractors are outlined in this thesis.

As an extension to this thesis, research could be conducted to:

- develop a single indicator of contractor safety in the form of contractor safety certification.
- scientifically prove the effectiveness of the cost control measures.
- explore contractor - worker correlations.

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Appendix A

Sample Workers Questionnaire

Sample Contractors Questionnaire

(Date)

Dear Construction Worker:

On behalf of the Construction Industry Institute (CII), I would like to take the opportunity to thank you for agreeing to participate in the CII-sponsored Workers' Compensation study by completing the attached questionnaire.

Due to the confidential nature of many of the responses, our data analysis and reporting procedures are as follows:

1) We will consolidate data from all questionnaires received to determine insightful patterns.

2) Our report will not associate specific data and information to a specific source.

3) We will exercise confidentiality on all data received.

Should you have any questions or concerns, do not hesitate to call me at (703) 231-5789, or my assistant, Lisa Decker, at the same phone number. Please return the completed questionnaire to me at the address shown above. Again, thank you for your participation.

Sincerely,

Jesus M. De La Garza, Ph.D.
Assistant Professor of Civil Engineering

JMDLG/lmd

Enclosures

Questionnaire for Construction Workers

CII Workers' Compensation Insurance Task Force

1. **What is your job?**

_____

_____

_____

How long have you been doing this type of work?

_____

2. **How long have you been on this job site?**

_____

In which state is the job located?

_____

3. **Does your company investigate accidents?**

_____Yes
_____No
_____Don't Know

Does your company investigate near misses?

_____Yes
_____No
_____Don't Know

4. **Has your employer informed you of your WC rights, obligations, and responsibilities?**

_____Yes
_____No
_____Don't Know

5. **Do you understand what your WC benefits are?**

_____Yes
_____No
_____Don't Know

6. **Do you know who pays the bill for WC?**

_____Employer
_____Employee
_____Insurance Company
_____State
_____Owner
_____Union
_____Other_____
_____Don't Know

7. **Do you think that high WC costs affect your employer's ability to get work?**

_____Yes
_____No
_____Don't Know

8. **How would your employer react if you filed a WC claim?**

_____Positive
_____Wouldn't Care
_____Negative
_____Don't Know

9. **Does your employer have a light duty or early return-to-work program for injured employees?**

_____Yes
_____No
_____Don't Know

10. **If you were injured on the job, could you choose your own doctor?**

_____Yes
_____No
_____Don't Know

11. **How do you feel about the quality of benefits provided by the WC system?**

_____Excellent
_____Satisfactory
_____Adequate
_____Poor
_____No opinion

12. **Do you think WC fraud is a problem in the construction industry?**

_____Yes
_____No
_____Don't Know

PLEASE RETURN TO:
Dr. J.M. De La Garza
Virginia Tech
Department of Civil Engineering
200 Patton Hall
Blacksburg, VA 24061-0105

IF QUESTIONS, PLEAE CALL:
(703) 231-5789

(Date)

Dear Constructor:

On behalf of the Construction Industry Institute (CII), I would like to take the opportunity to thank you for agreeing to participate in the CII-sponsored Workers' Compensation study by completing the attached questionnaire.

Due to the confidential nature of many of the responses, our data analysis and reporting procedures are as follows:

1) We will consolidate data from all questionnaires received to determine insightful patterns.

2) Our report will not associate specific data and information to a specific source.

3) We will exercise confidentiality on all data received.

Should you have any questions or concerns, do not hesitate to call me at (703) 231-5789, or my assistant, Lisa Decker, at the same phone number. Please return the completed questionnaire to me at the address shown above. Again, thank you for your participation.

Sincerely,

Jesus M. De La Garza, Ph.D.
Associate Professor of Civil Engineering

JMDLG/lmd

Enclosures

Questionnaire for Contractors

CII Workers Compensation Insurance Task Force

Company Name _____

Address _____

_____

_____

Contact Name _____ Position/Title: _____

Telephone Number _____ Fax: _____

1. **Please provide information that best describes your firm's type of work:**

Commercial	____%
Industrial	____%
Heavy Construction	____%
Specialty	____%
Maintenance/Retrafit	____%
Other	____%
Total	100%

Open Shop	____%
Close Shop	____%
Merit Shop	____%
Total	100%

Engineering	____%
Construction	____%
Construction Management	____%
Engineering/Construction	____%
Other _____	____%
Total	100%

Lump Sum	____%
Cost Plus	____%
Guaranteed Maximum Price	____%
Other _____	____%
Total	100%

Amount of new contracts in 1991? (In millions of dollars)

_____ > 10,000
_____ 2,000 - 10,000
_____ 500 - 2,000
_____ 250 - 500
_____ 100 - 250
_____ < 100

What percentage of craft workers have been with your firm for more than one year? _____%

2. **Are you self-insured?**

If so, what level? _____% No_____

How do you implement the concept of self-insurance?

_____ Your firm participates in a self-insurance WC group.
_____ Your firm manages all WC paper work and payments in-house.
_____ Your company employes a captive insurance company together with a front-in carrier.
_____ Other _____

How do you measure the benefits of self-insurance?

_____
_____
_____
_____

3. **How much of your volume of work is covered by owner-provided or owner controlled insurance?**

Value of Construction: _____%

4. **List your firm's Workers' Compensation Experience Modification Rate for the years indicated.**

1992	EMR = _____	Don't Know____
1991	EMR = _____	Don't Know____
1990	EMR = _____	Don't Know____

5. **Does your insurance carrier inspect your projects?**

_____No _____Monthly _____Quarterly _____Annually

6. **What are the OSHA incident rates for the years indicated.**

1992	Recordables_____	Lost Time_____	Don't Know_____
1991	Recordables_____	Lost Time_____	Don't Know_____
1990	Recordables_____	Lost Time_____	Don't Know_____

7. **Do you have formal company investigation and reporting procedures for accidents involving your employees? If so, are they reported to the Home Office (HO) and/or the Project Manager(PM)?**

Near Misses	_____Yes	_____No	_____HO	___PM
First Aid Cases	_____Yes	_____No	_____HO	___PM
Recordables	_____Yes	_____No	_____HO	___PM
Lost Time Cases	_____Yes	_____No	_____HO	___PM

Are the accident reports circulated to top company management?

_____Yes _____No

What is the title of the highest level person in your company that would receive accident reports?

Title_____

Who is responsible for reviewing accident investigation reports?

Line management	_____Yes	_____No
Top site management	_____Yes	_____No
Safety department	_____Yes	_____No

Is a project accident review team established to review accidents and near-misses?

_____Yes _____No

Do subcontractors you hire participate in the project accident review team?

_____Yes _____No

Are the accident findings communicated to employees and other subcontractors you hired?

_____Yes _____No

8. **Do you require subcontractors to conduct investigations and report results to you on accidents involving their employees?**

_____Yes _____No

9. **In what format are accident records and accident summaries kept?**

	None	Monthly	Quarterly	Yearly
Accident Summary for entire company	_____	_____	_____	_____
Accidents totaled by projects	_____	_____	_____	_____
Accidents totaled by superintendent	_____	_____	_____	_____
Accidents totaled by foreman	_____	_____	_____	_____
Accidents totaled by project manager	_____	_____	_____	_____

10. **Do you keep records on the costs of each accident? How often are these costs reported?**

	None	Monthly	Quarterly	Yearly
Total costs	_____	_____	_____	_____
Total costs by project	_____	_____	_____	_____
Subtotal costs by superintendent	_____	_____	_____	_____
Subtotal costs by foreman	_____	_____	_____	_____
Subtotal costs by project manager	_____	_____	_____	_____

11. **Do you track Workers' Compensation Claims?**

_____Yes _____No

Indicate how you track/report them.

	None	Monthly	Quarterly	Yearly
By department	_____	_____	_____	_____
By project	_____	_____	_____	_____
By supervisor	_____	_____	_____	_____
By employee	_____	_____	_____	_____

12. **Provide the following statistics for each of the following years.**

	1992	1991	1990
Number of annual work-hours worked	____	____	____
Number of WC claims	____	____	____
WC total incurred losses(TIL)	____	____	____
WC premiums (PR)	____	____	____
WC loss ratio (TIL/PR)	____	____	____
Others _____	____	____	____
_____	____	____	____

13. **Does your company have a light duty policy and/or early return-to-work program for injured employees?**

_____Yes _____No

14. **Do you have a formal WC management program?**

_____Yes _____No

Who in your firm has the responsibility for WC?

Title_____

How many individuals are part of your WC staff?

Number of individuals:_____

What professional background is required for your WC staff?

_____

_____

_____

What criteria do you use to evaluate their performance?

_____
_____
_____

15. **Do you have incentive programs in-place to reduce the cost of WCI on projects? If so, describe them.**

____Yes ____No

_____
_____
_____
_____
_____

What is the impact of such incentive programs on WC costs?

____% Increase ____% Decrease ____% No-Change

What percentage of your owners support such incentive programs?

_____%

16. **What percentage of indemnity (lost time) claimants returned to work in 1991?**

_____%

17. **How frequently does the company follow up with a worker who has been injured?**

_____Weekly _____Monthly _____Never

Who follows up?

_____Contractor _____Insurance Carrier

18. **What percent of injuries on your projects is of medical nature and what percent is of indemnity nature?**

Medical	_____%
Indemnity (lost time)	_____%
Total	100%

19. **Are you a stand-alone contractor or are you a subsidiary of a large corporation?**

_____Stand alone
_____Subsidiary

If you are a subsidiary, do you develop your own EMR internally?

_____Yes _____No

What percentage of total corporate payroll do you represent?

_____%

20. **What is your opinion on the EMR as a measure of your safety and WC performance?**

_____
_____
_____
_____

21. **What other measures would you suggest owners use to evaluate the safety and WC performance of contractors?**

_____
_____
_____
_____

22. **Beyond EMR, what methods are you using to qualify your subcontractors?**

_____
_____
_____
_____

23. **Has your relationship, or lack thereof, with your insurance carrier affected your WC cost?**

_____Yes How: _____
_____
_____

_____No

24. **Is there an upper limit on the value of a WC claim that the insurance carrier can pay without consulting with your firm?**

_____Yes Upper limit on WC claim $_____

_____No

25. **Do you have a claims review policy in-place to stop non-legitimate WC claims?**

_____Yes _____No

Do you conduct claim audits?

_____Yes _____No

26. **Do you review the qualifications for claim adjusters?**

_____Yes _____No

27. **What services do you utilize from the insurance carrier?**

_____Loss control
_____Claims administration
_____Training
_____Site Inspection
_____Audits
_____Program Review
_____Lab analysis for hazardous materials
_____Others _____
_____
_____

28. **Do you educate your workforce about WC?**

_____Yes _____No

If so, what does the education consist of?

_____
_____
_____

If so, how do you educate them?

_____
_____
_____

29. **What percentage of WC claims were contested in 1991?**

Contested Claims: _____%

Of these, what percentage were successful?

Successful Claims: _____%

30. **After a project's completion, do you track new WC claims that are filed with regard to that project?**

_____Yes _____No

If yes, what percentage of WC claims were generated in 1991 with regard to a project after that project's completion?

_____%

List any State where this percentage is abnormally high.

_____

31. **Do you keep a record of which claims happen during straight time and overtime?**

_____Yes _____No

If yes, what is the ratio of WC claims originated during straight time and overtime in 1991?

_____ No. of WC claims in straight time
_____ No. of WC claims in overtime
_____ Ratio

32. **Do you pre-select physicians and/or medical facilities for your projects when allowed?**

_____Yes _____No

33. **What incentives do you have in-place to entice your employees to use your selected medical facilities and/or physicians?**

_____
_____
_____
_____

34. **Have you considered group health practices, like HMOs, to reduce WC costs?**

_____Yes _____No

If yes, has it reduced the WC costs?

_____Yes _____No

35. **Do you have employee pre-placement practices in-place to control WC risk?**

_____Yes _____No

36. **Do you implement WC cost allocation practices in your company to assign WC costs to the responsible parties?**

_____Yes _____No

If so, explain.

_____
_____
_____
_____
_____
_____

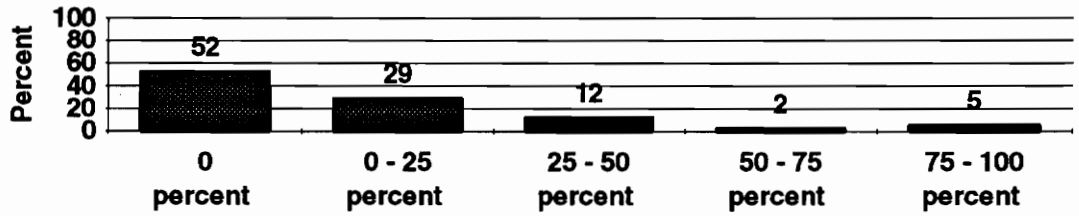
Appendix B

Contractors Survey Reports

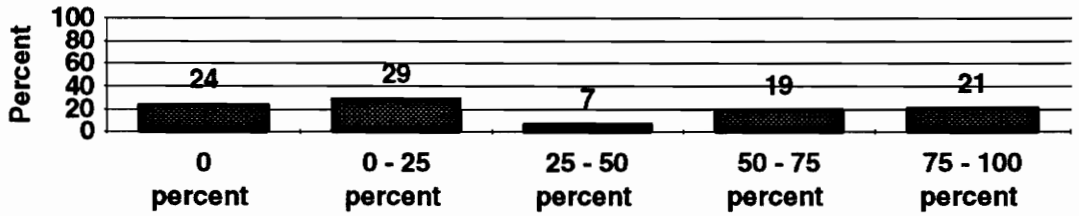
Contractors Questionnaires
42 Responses

1a. Please provide information that best describes your firm's type of work.

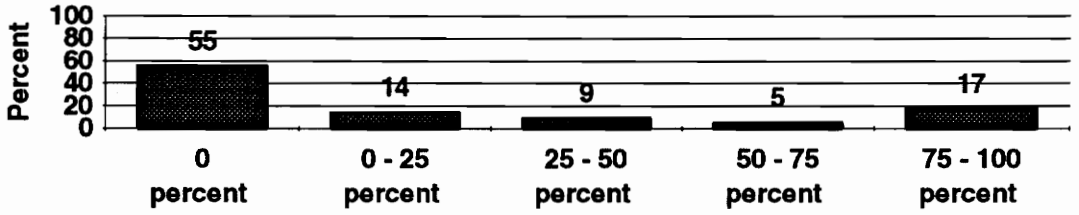
Commercial:



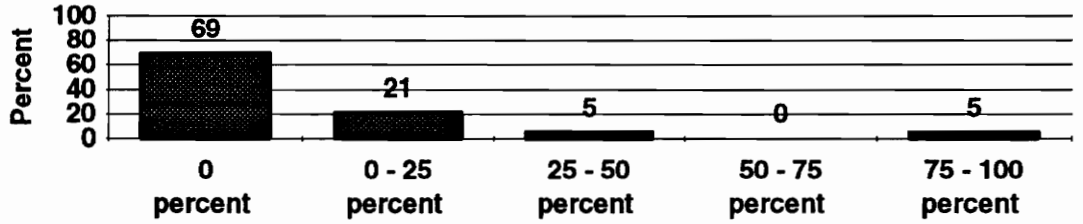
Industrial:



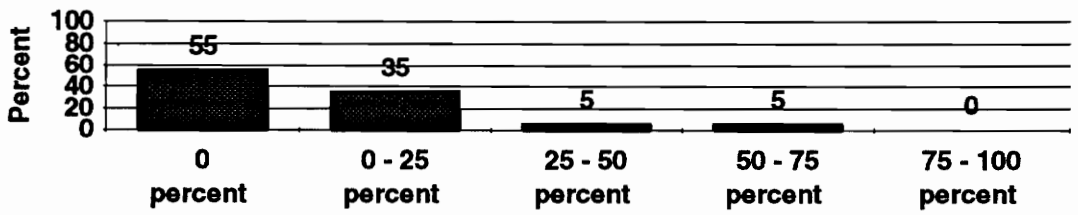
Heavy Construction:



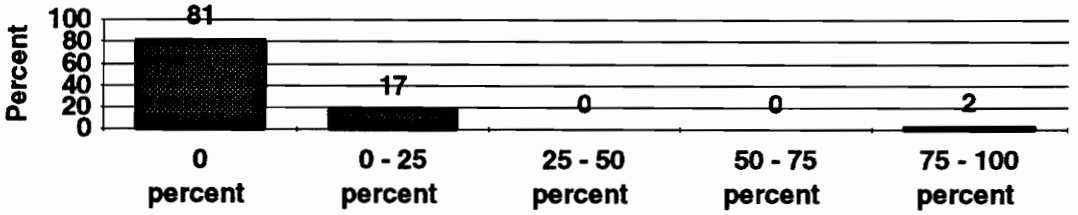
Specialty Work:



Maintenance / Retrofit:

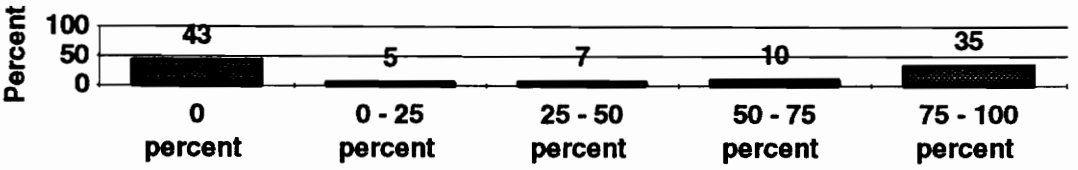


Other Work:

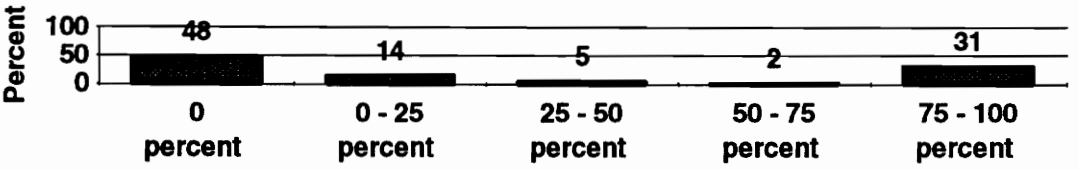


1b. Please provide information that best describes your firm's workforce.

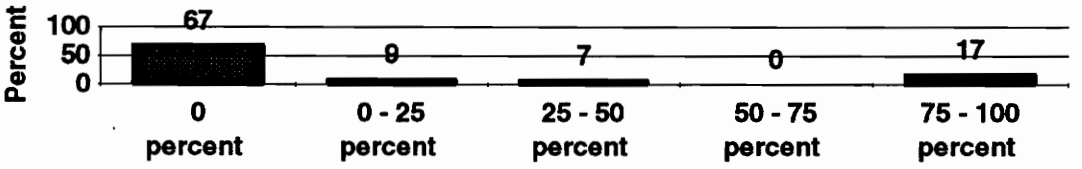
Open-shop:



Closed-shop:

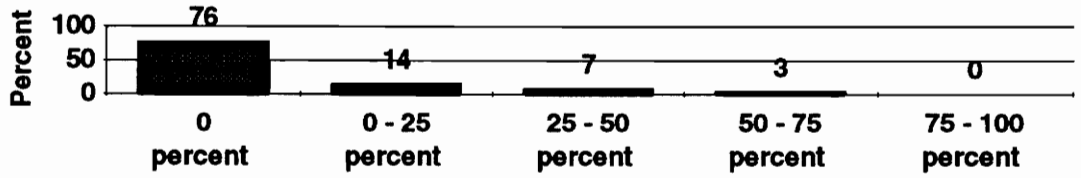


Merit-shop:

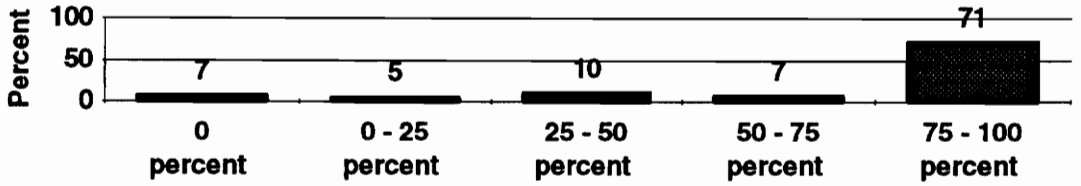


1c. Please provide information that best describes you company's services.

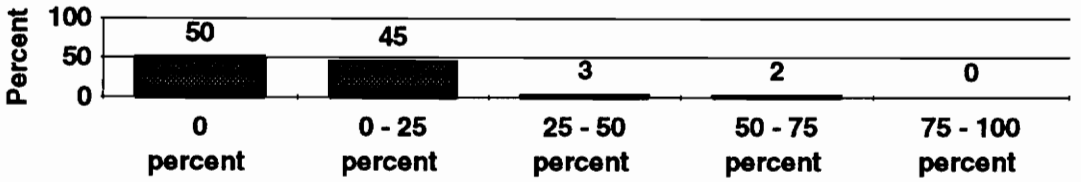
Engineering Work:



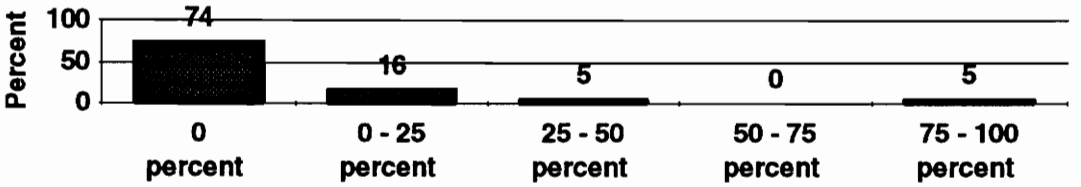
Construction Work:



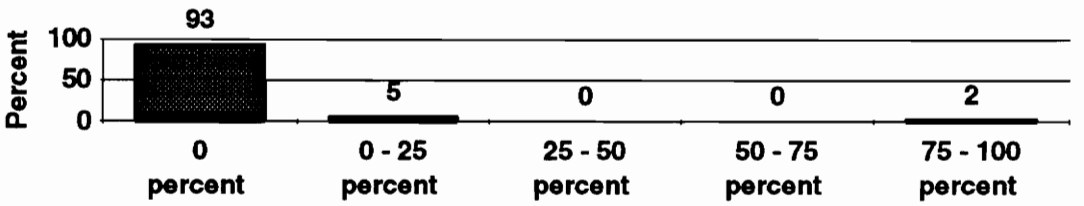
Construction Management:



Engineering / Construction:

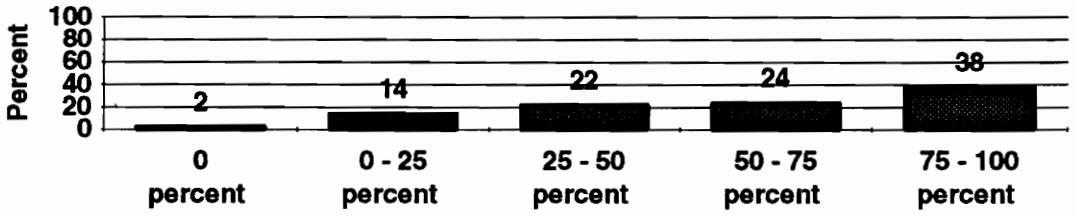


Other Work:

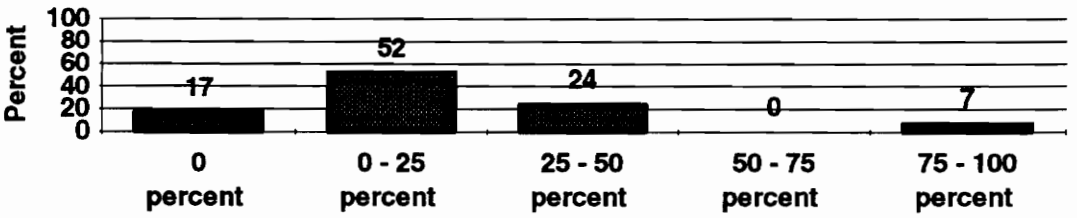


1d. Please provide information that best describes your company's contracts.

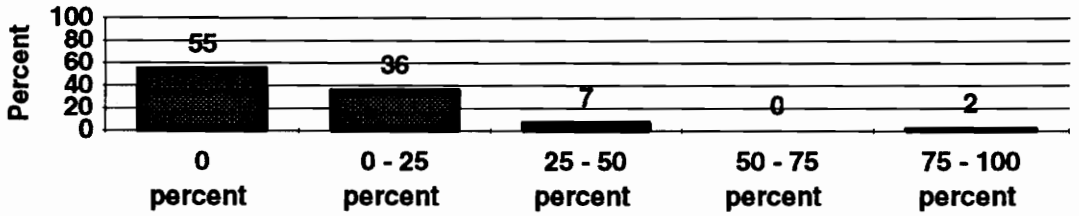
Lump sum:



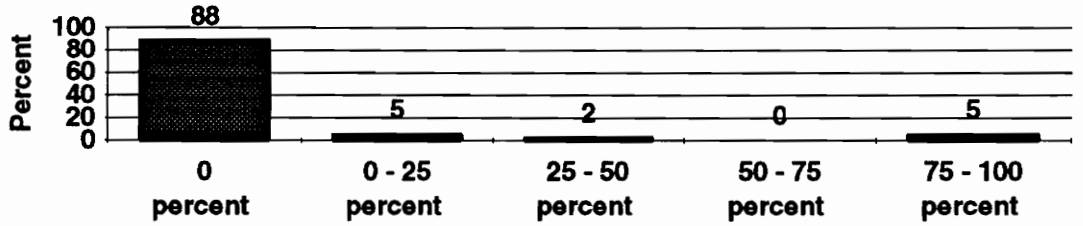
Cost plus:



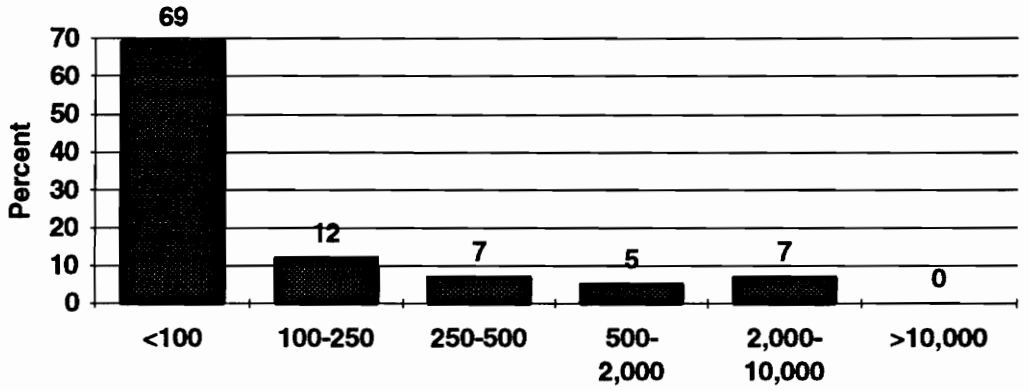
Guaranteed maximum price:

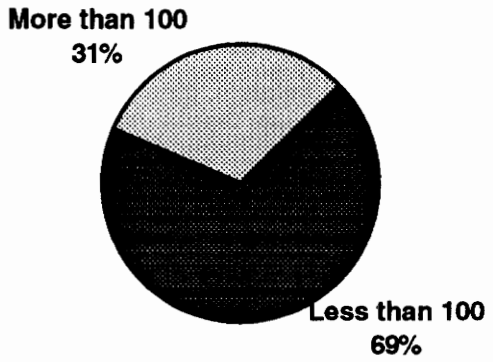


Other:

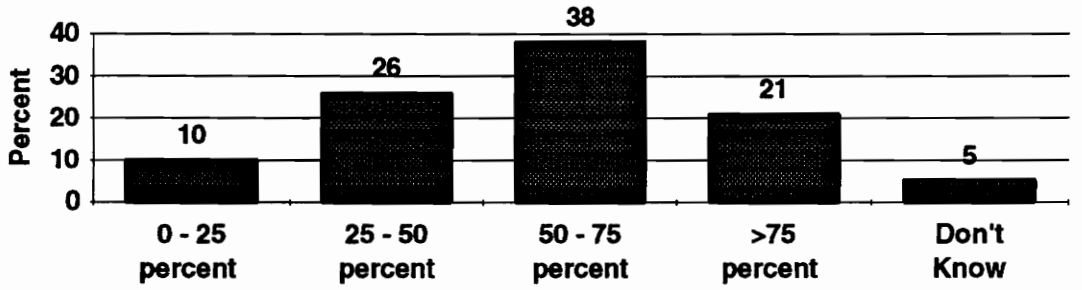


1e. What amount of new contracts did your company receive in 1991? (Millions of dollars)

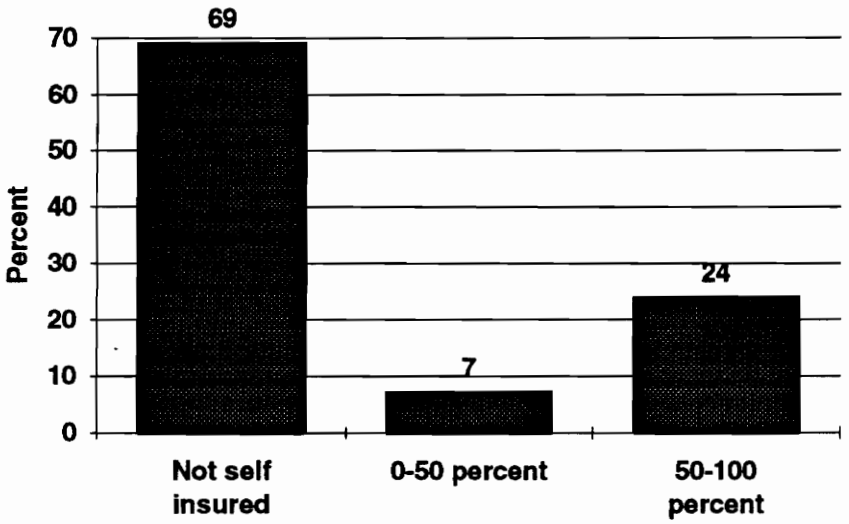




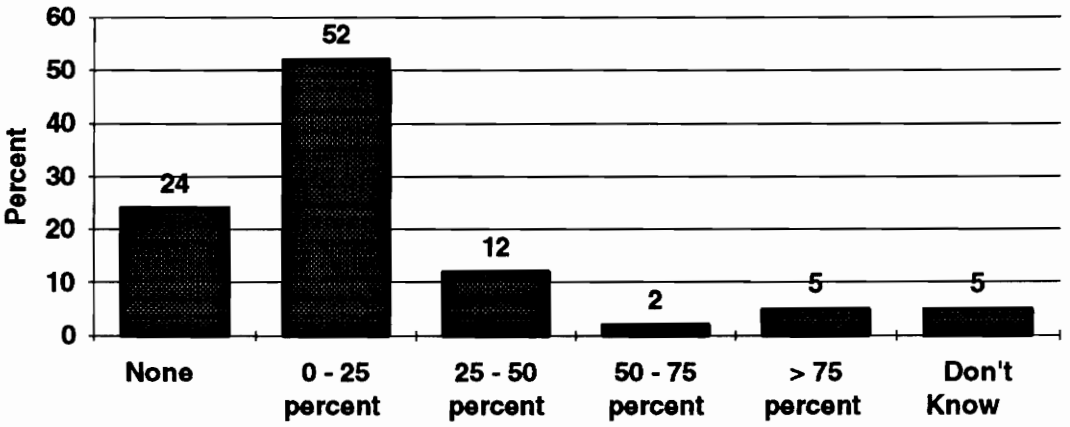
1f. What percentage of craft workers have been with your firm for more than one year?



2a. Are you self-insured? If so, to what level?

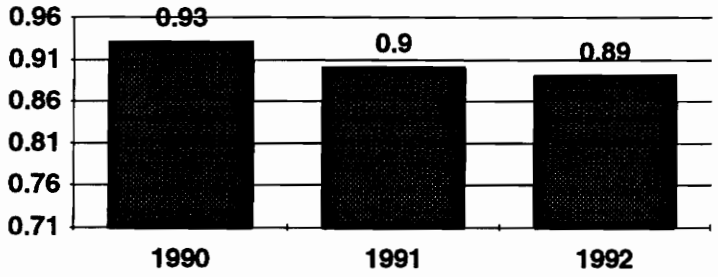


3. How much of your volume of work is covered by owner-provided or owner-controlled insurance?

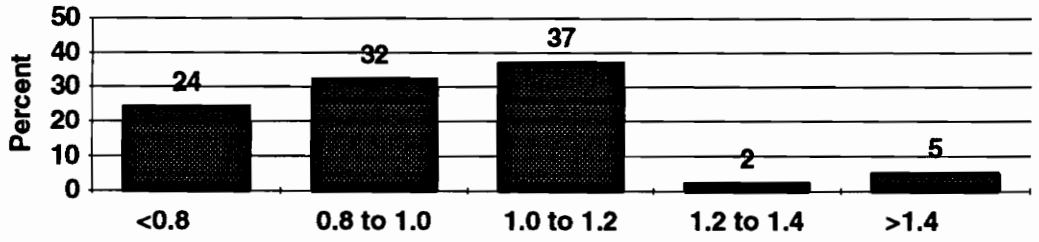


4. Experience Modification Rates for all companies:

Average:



1990:



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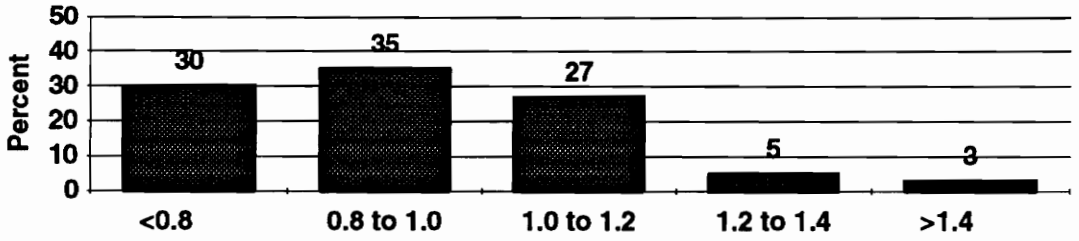

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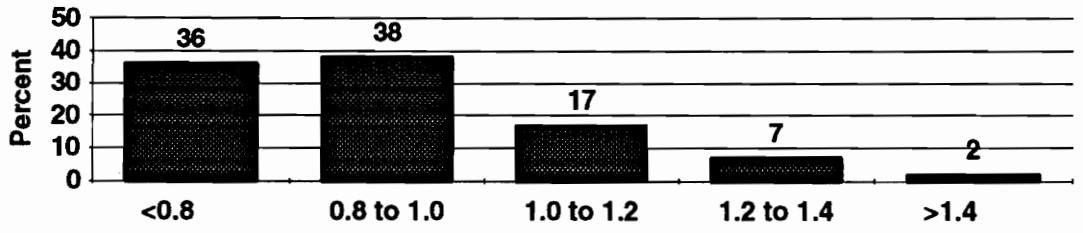
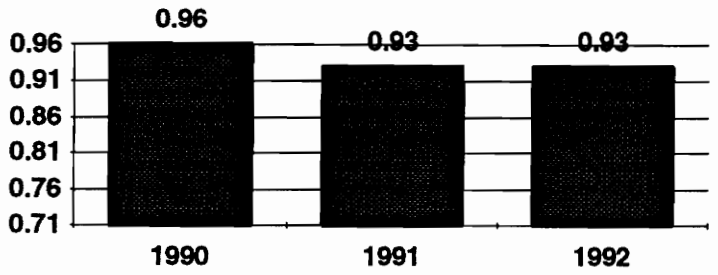


4. Experience Modification Rates for companies with less than $100 million in new contracts in 1991:

Average:



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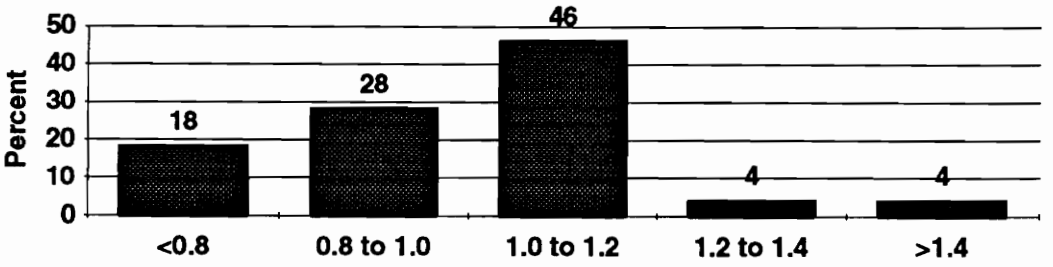

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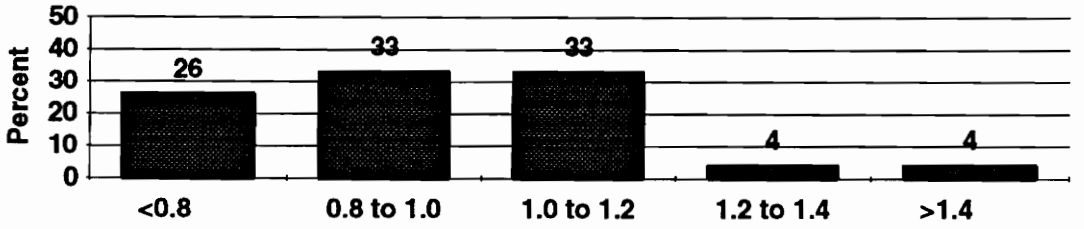

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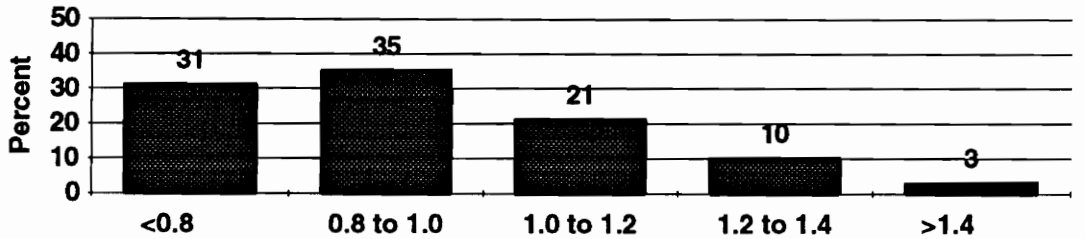
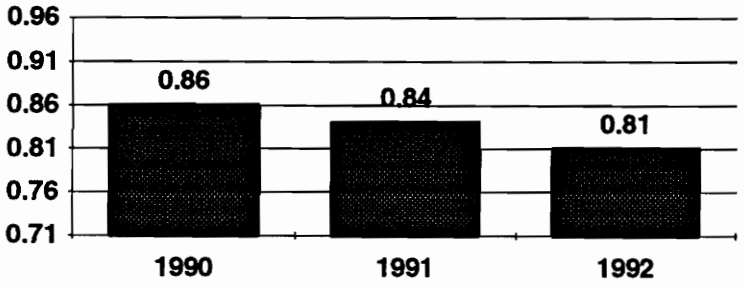
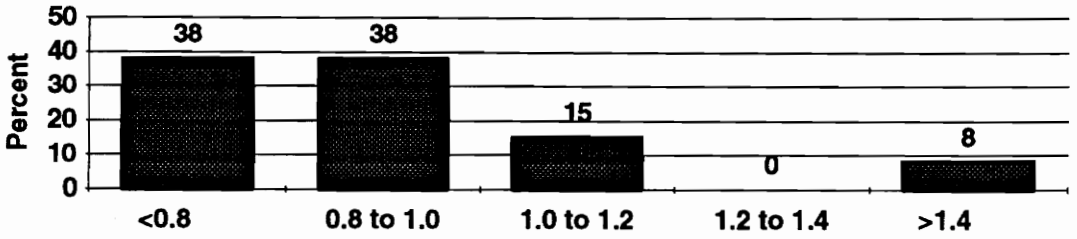


4. Experience Modification Rates for companies with more than $100 million in new contracts in 1991:

Average:



1990:



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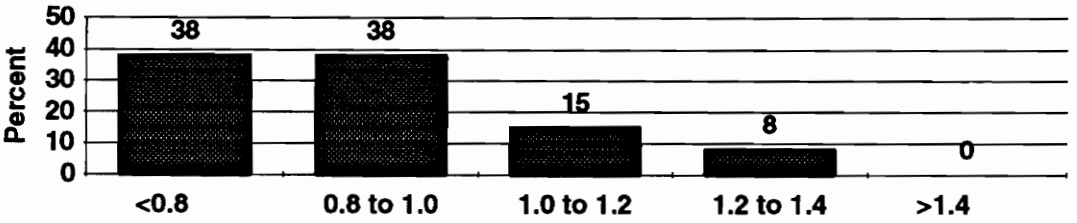

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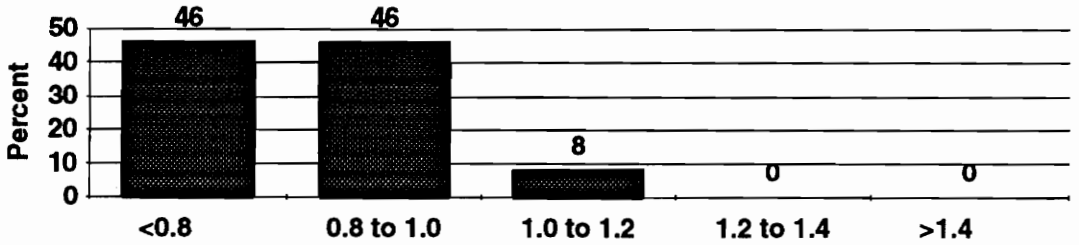
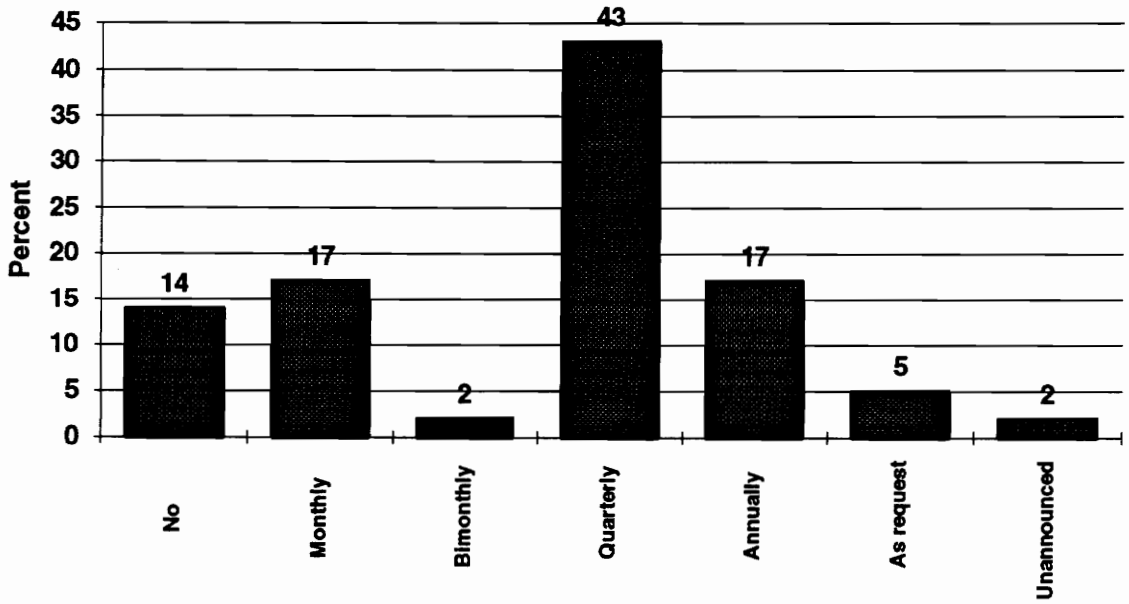
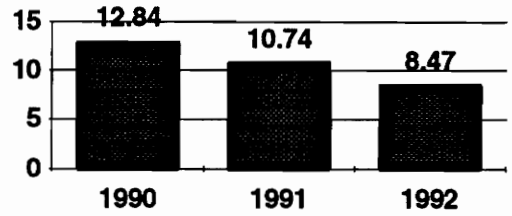


5. Does your insurance carrier inspect your projects?

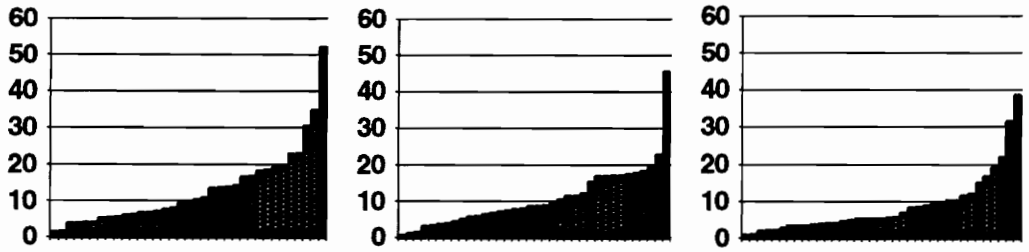


6. OSHA recordable incidence rates for all companies:

Average:

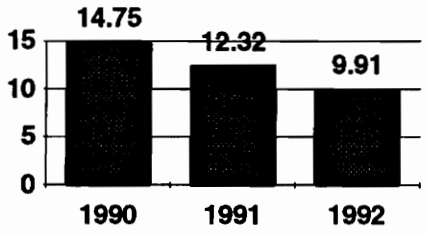


1990: **1991:** **1992:**



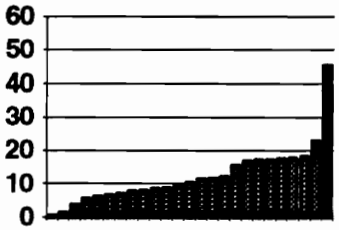
6. OSHA recordable incidence rates for companies with less than $100 million in new contracts in 1991:

Average:



1990:

1991:



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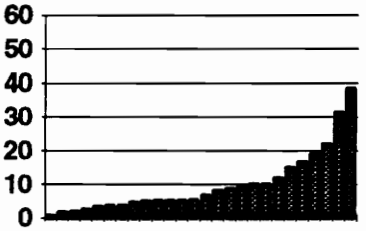
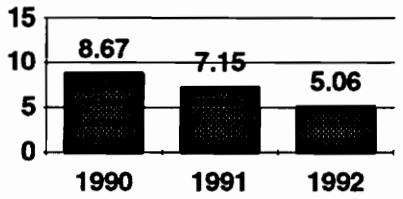


6. OSHA recordable incidence rates for companies with more than $100 million in new contracts in 1991:

Average:



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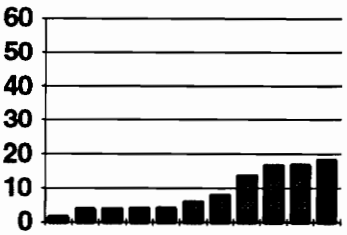

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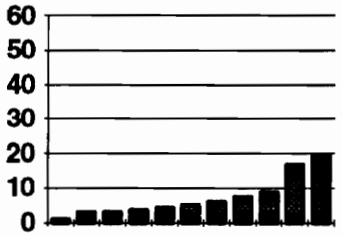

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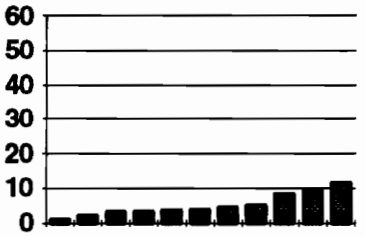
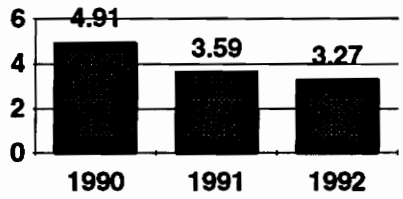


6. OSHA lost time incidence rates for all companies:

Average:



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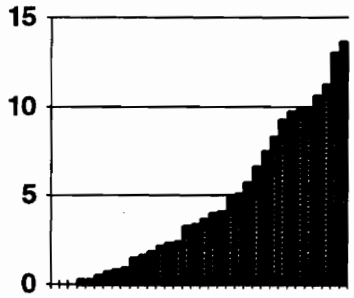

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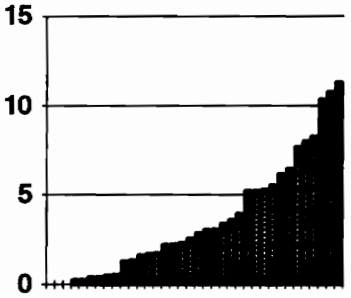

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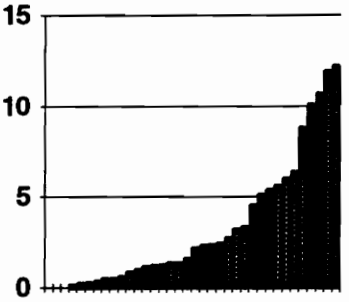
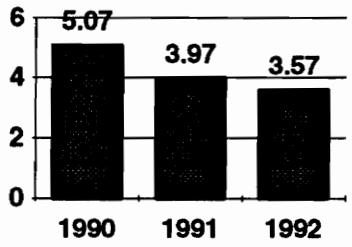


6. OSHA lost time incidence rates for companies with less than $100 million in new contracts in 1991:

Average:



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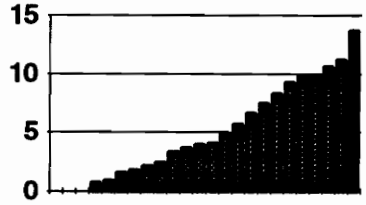

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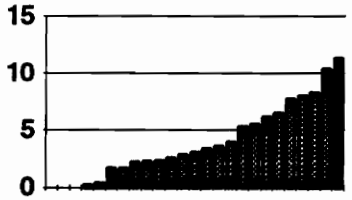

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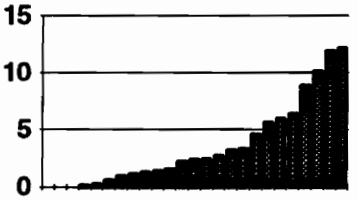
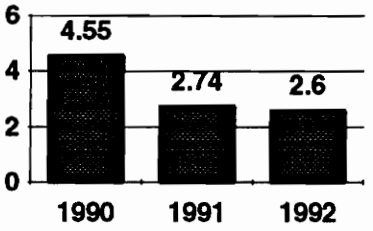


6. OSHA lost time rates for companies with more than $100 million in new contracts in 1991:

Average:



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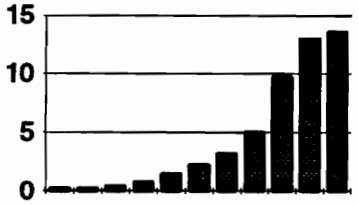

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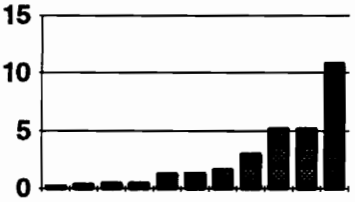

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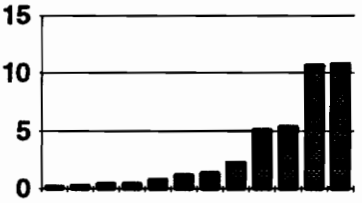
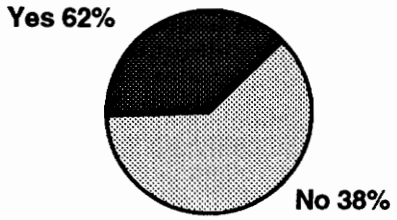
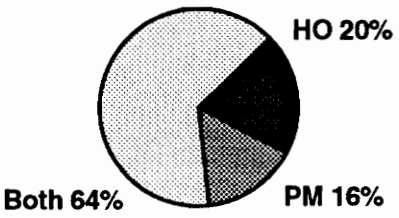


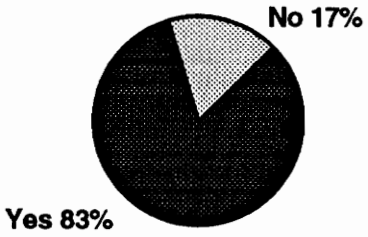
7a. Do you have formal investigation and reporting procedures for accidents involving your employees? If so, are they reported to Home Office (HO) and/or Project Manager (PM)?

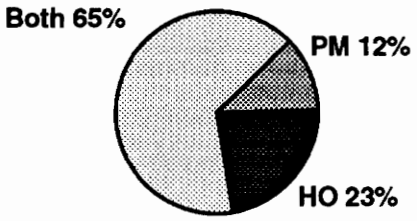
Near Misses:



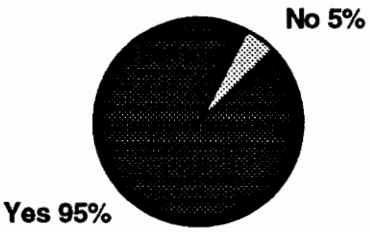


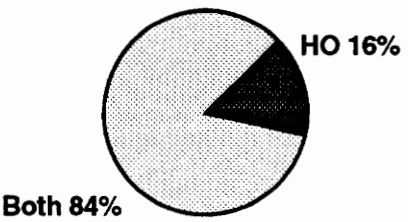
First Aid Cases:





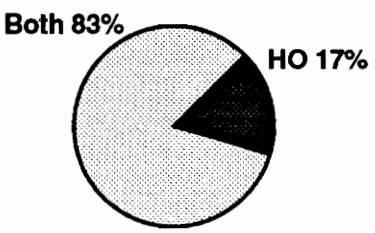
Recordables:



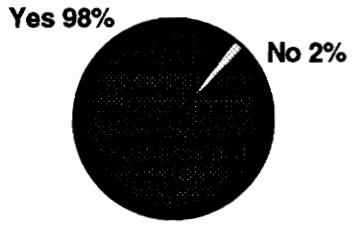


Lost time cases:

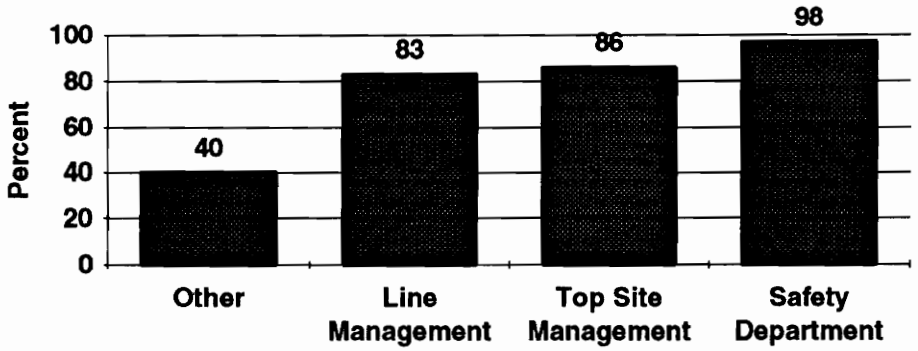
Yes 100%



7b. Are accident reports circulated to top company management?

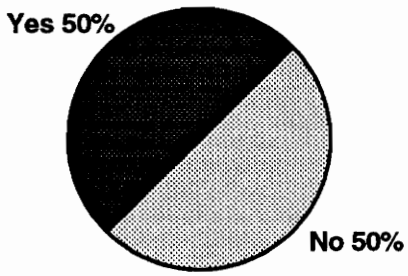


7d. Who is responsible for reviewing accident investigation reports?

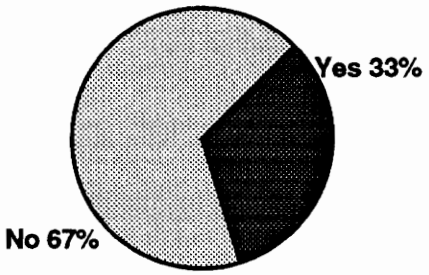


7e&f. Is a project accident review team established to review:

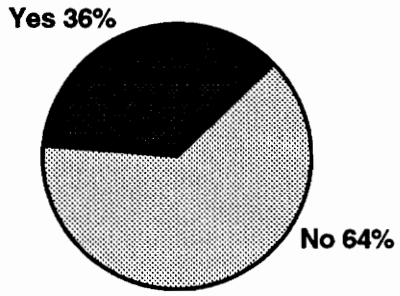
Accidents:



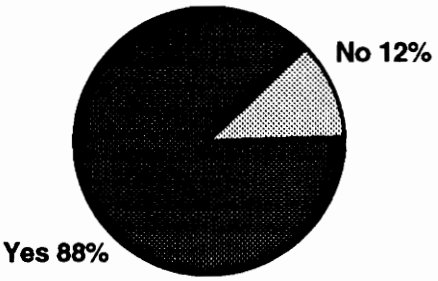
Near Misses:



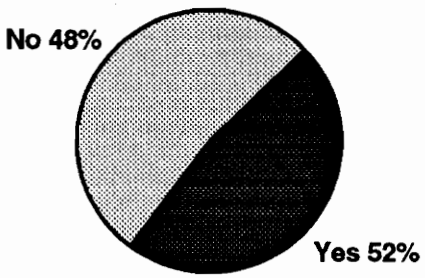
7g. Do subcontractors you hire participate in the project review team?



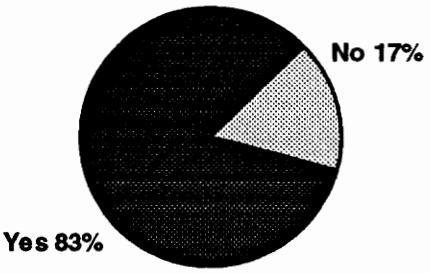
7h. Are accident findings communicated to employees?



7i. Are the accident findings communicated to other subcontractors you hired?

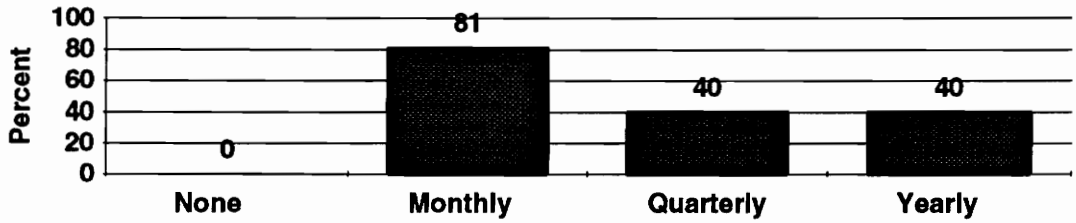


8. Do you require subcontractors to conduct investigations and report results to you on accidents involving their employees?

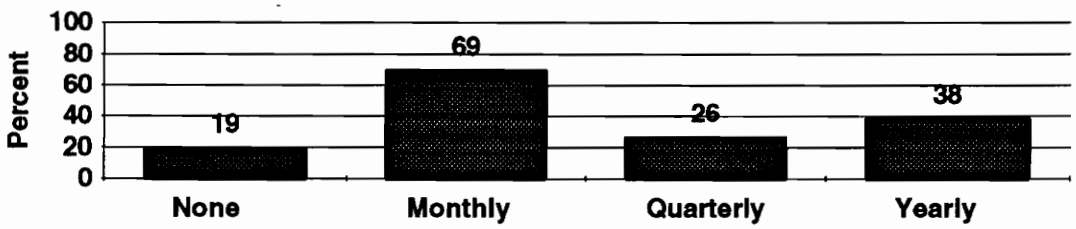


9. In what format are accident records and accident summaries kept?

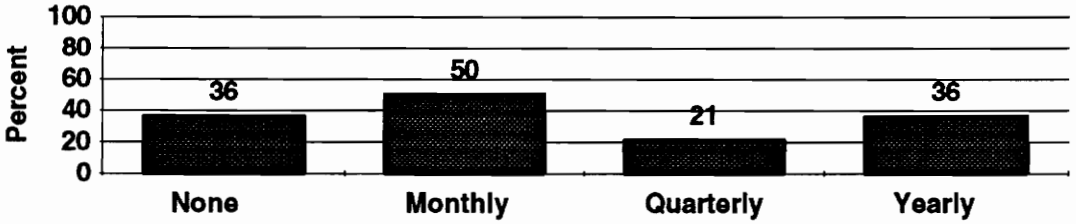
For entire company:



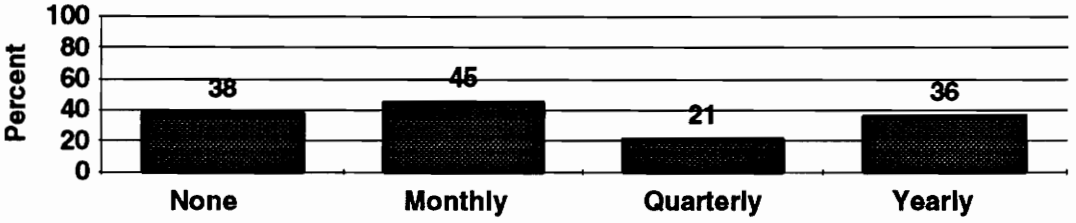
Totaled by projects:



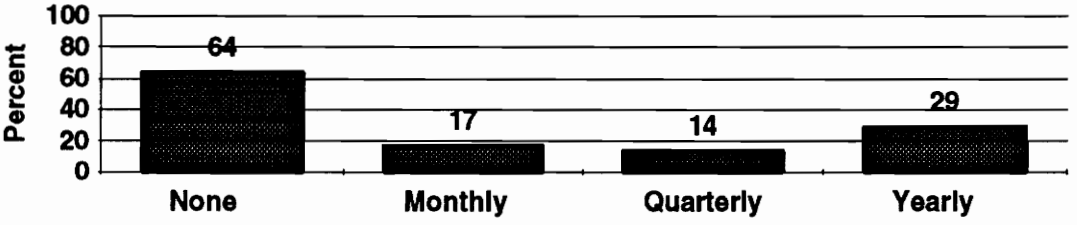
Totaled by project manager:



Totaled by superintendent:



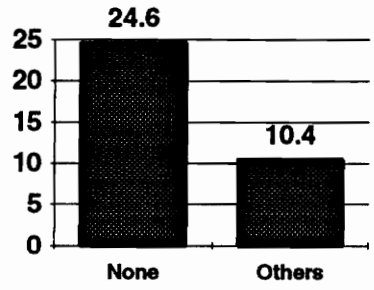
Totaled by foreman:



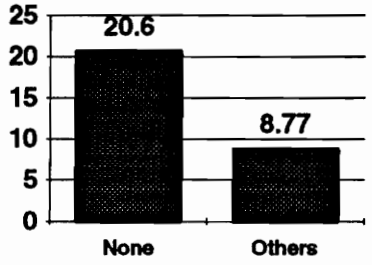
Expansion on Question 9:

What is the average OSHA recordable incidence rate for those companies that answered "None" to keeping accident records and summaries by project compared to all others?

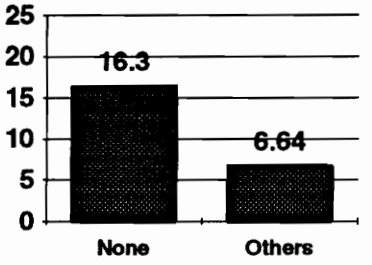
1990:



1991:

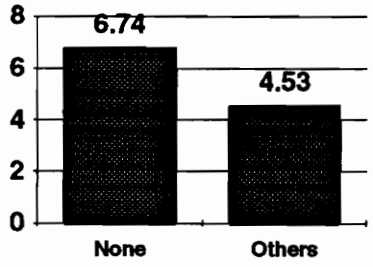


1992:

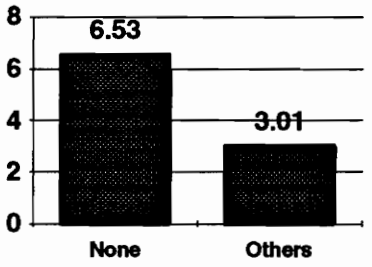


What is the average OSHA lost time incidence rate for those companies that answered "None" to keeping accident records and summaries by project compared to all others?

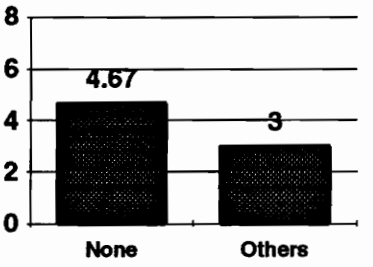
1990:



1991:

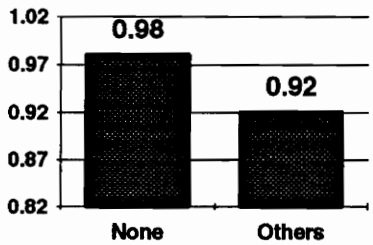


1992:

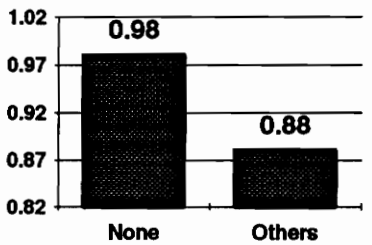


What is the average EMR for those companies that answered "None" to keeping accident records and summaries by project compared to all others?

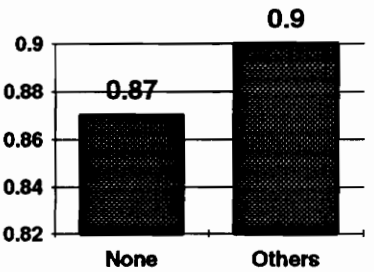
1990:



1991:

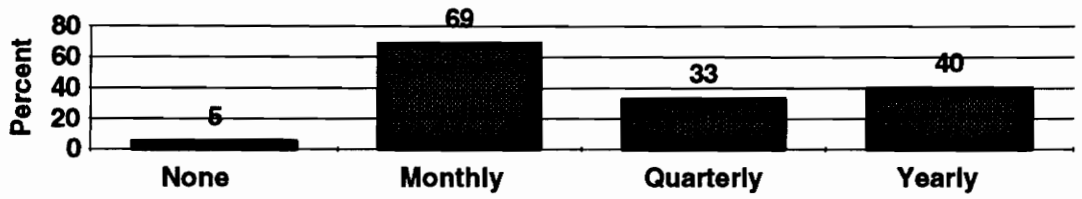


1992:

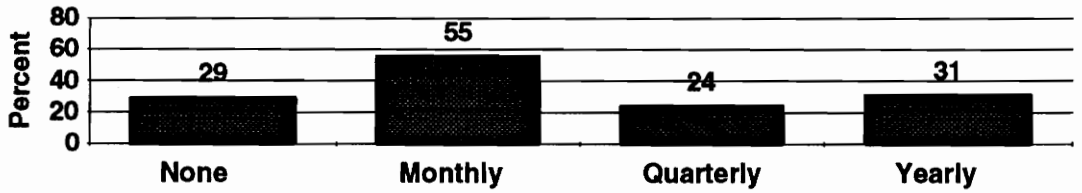


10. Do you keep records on the costs of each accident? How often are these costs reported?

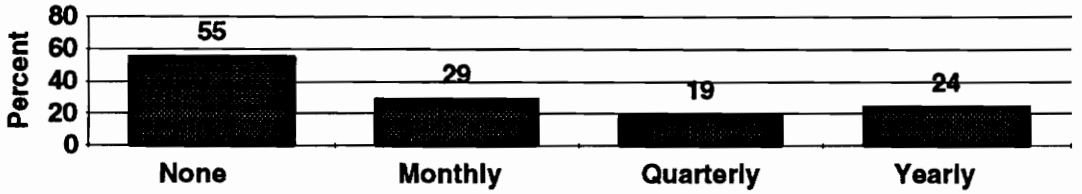
Total costs:



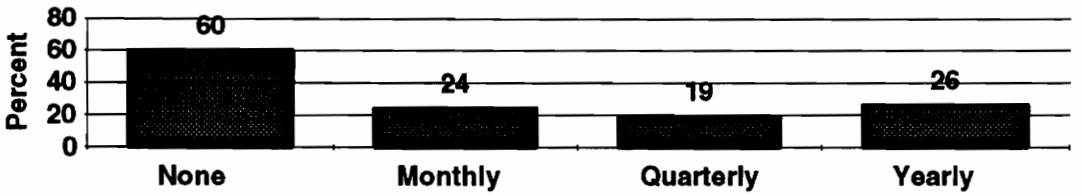
Total costs by project:



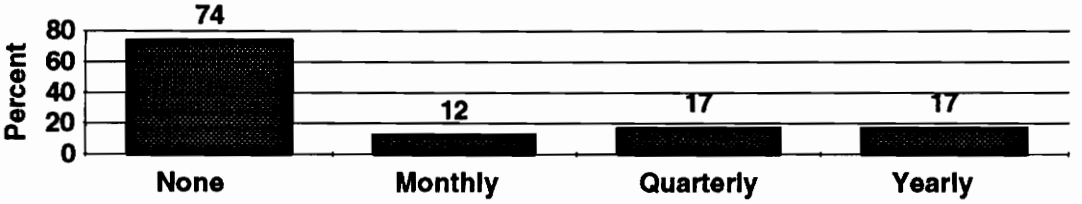
Subtotal costs by project manager:



Subtotal costs by superintendent:



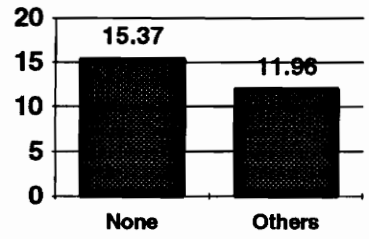
Subtotal costs by foreman:



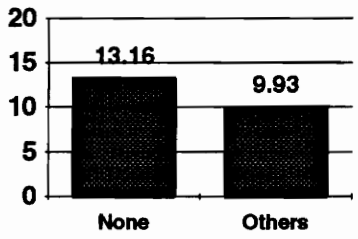
Expansion on Question 10:

What is the average OSHA recordable incidence rate for those companies that answered "None" to keeping records of the costs of accidents by project compared to all others?

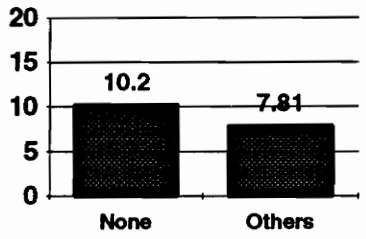
1990:



1991:

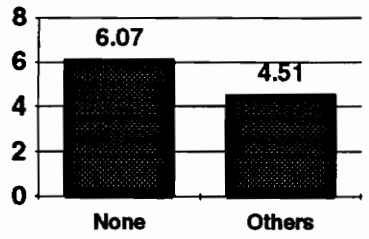


1992:

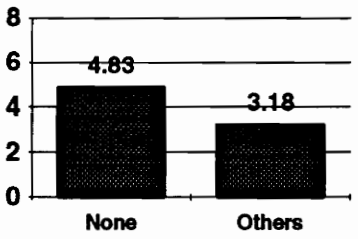


What is the average OSHA lost time incidence rate for those companies that answered "None" to keeping records of the costs of accidents by project compared to all others?

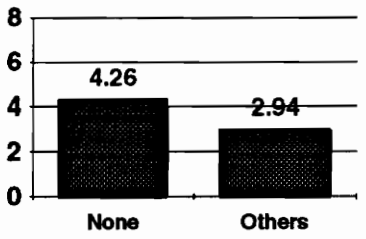
1990:



1991:

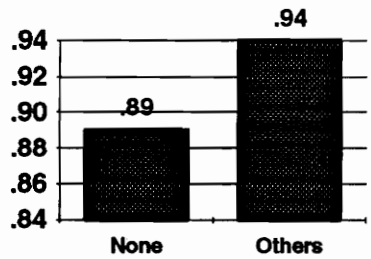


1992:

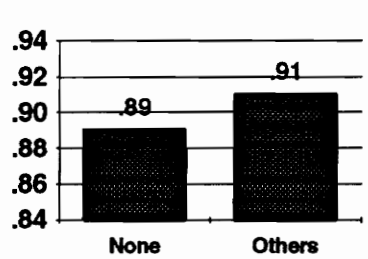


What is the average EMR for those companies that answered "None" to keeping records of the costs of accidents by project compared to all others?

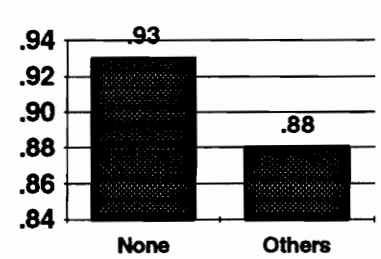
1990:



1991:



1992:

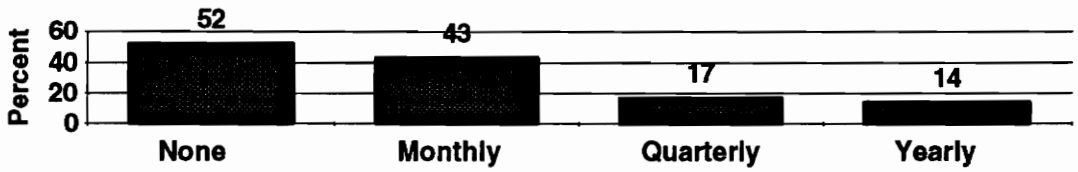


11a. Do you track Workers' Compensation claims?

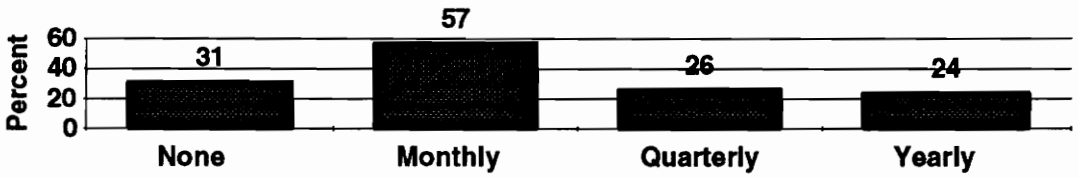
Yes 100%

11b. Indicate how you track / report them.

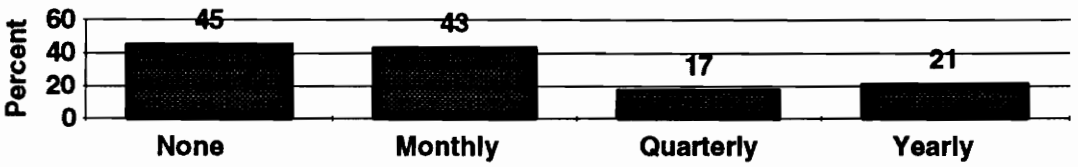
By department:



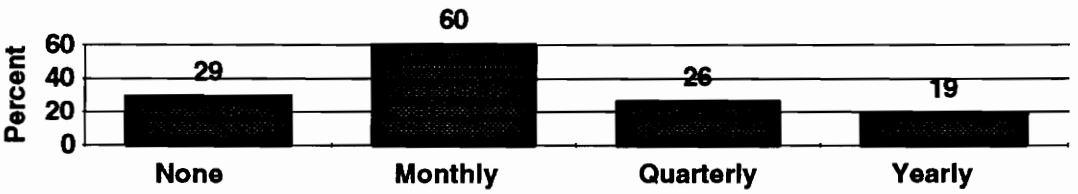
By project:



By supervisor:

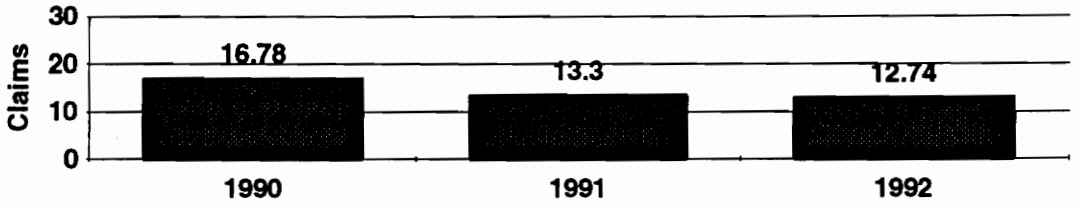


By employee:

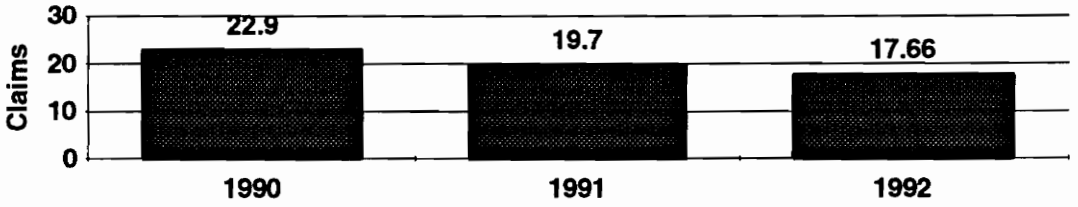


12. Average number of claims per 200,000 hours worked:

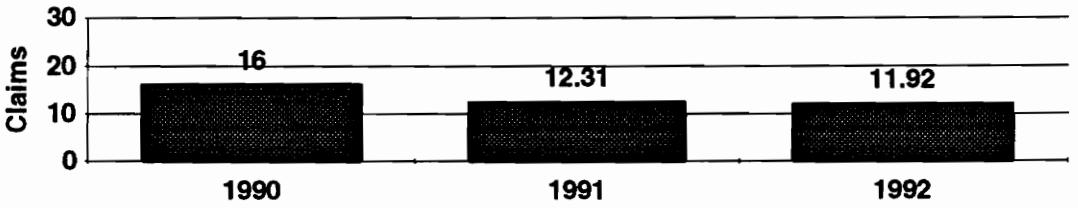
All companies:



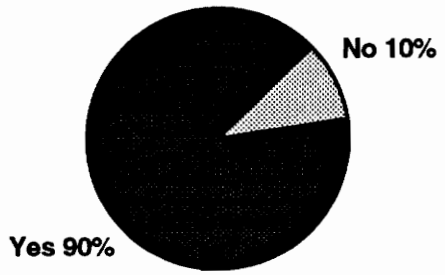
Companies with less than $100 million in new contracts in 1991:



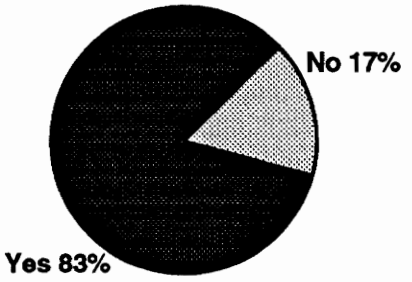
Companies with more than $100 million in new contracts in 1991:



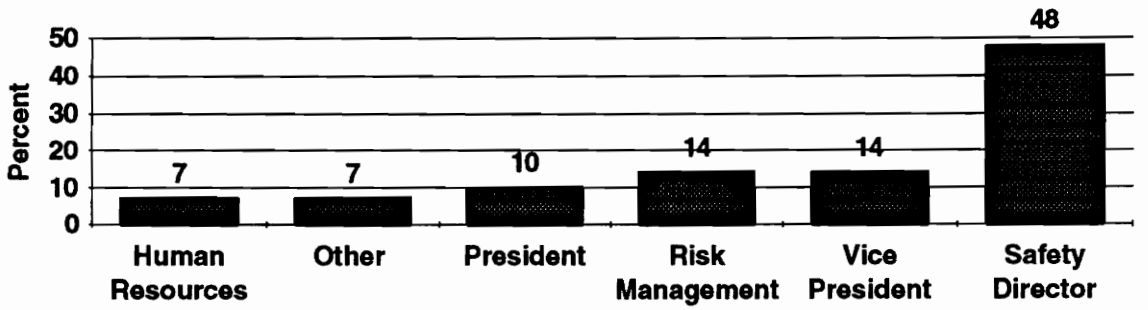
13. Does your company have a light duty policy and/or early return-to-work program for injured employees?



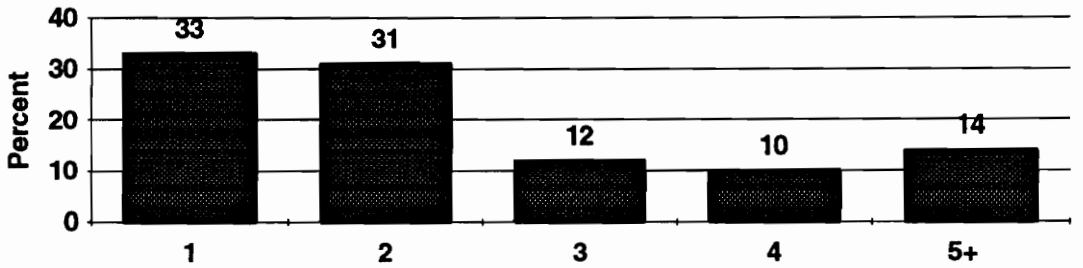
14a. Do you have a formal WC management program?



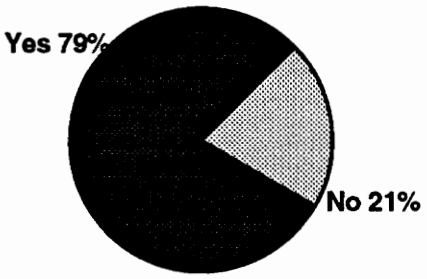
14b. Who in your firm has the responsibility for WC?



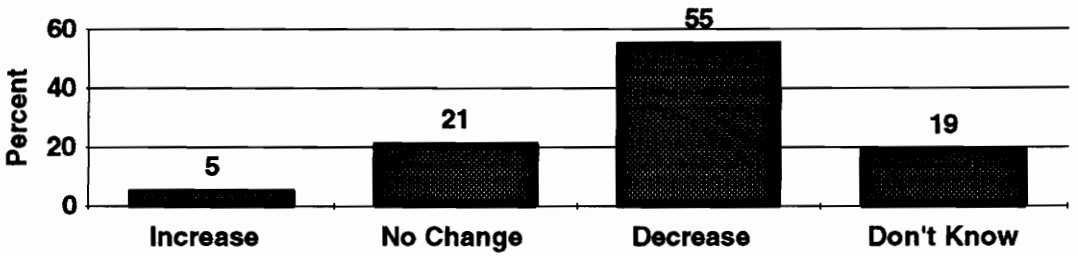
14c. How many individuals are part of your WC staff?



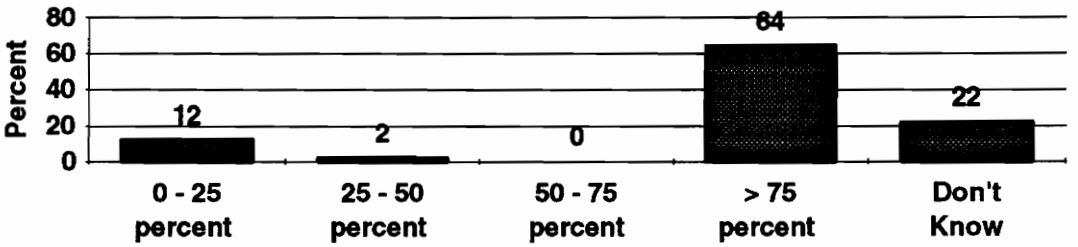
15a. Do you have incentive programs in place to reduce the cost of WC insurance on projects?



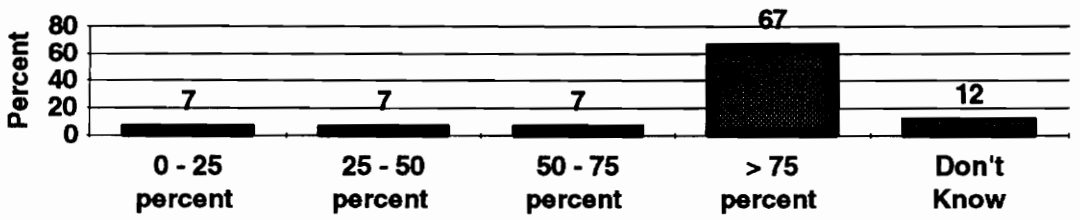
15c. What is the impact of such incentive programs on WC costs?



15d. What percentage of your owners support such incentive programs?



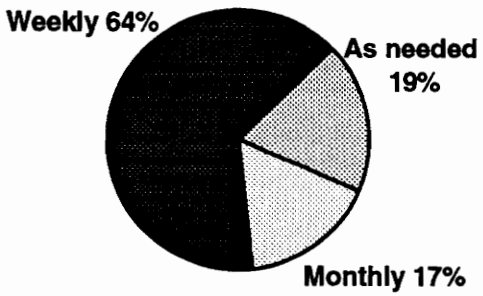
16. What percentage if indemnity (lost time) claimants returned to work in 1991?



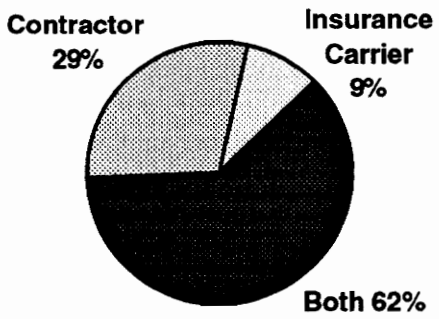
17a. Does anyone follow-up with a worker who has been injured?

Yes 100%

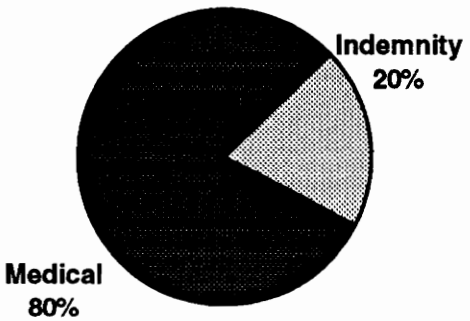
17b. If so, how often?



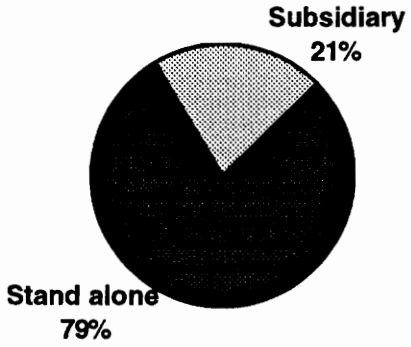
17c. Who follows up?



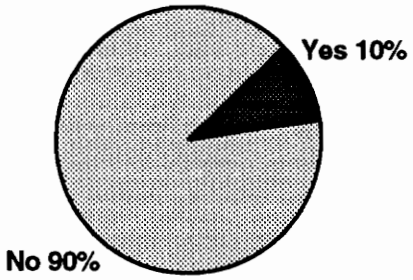
18. What percent of injuries on your projects is of a medical nature and what percent of an indemnity nature? (Average response)



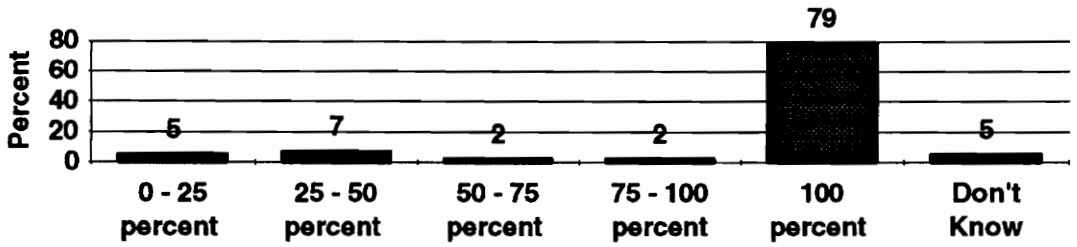
19a. Are you a stand-alone contractor or are you a subsidiary of a large corporation?



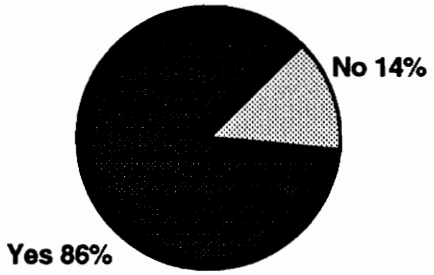
19b. If you are a subsidiary, do you develop your own EMR internally?



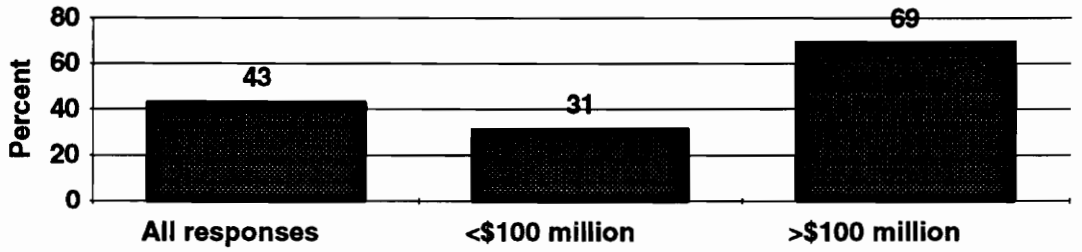
19c. What percentage of total corporate payroll do you represent?



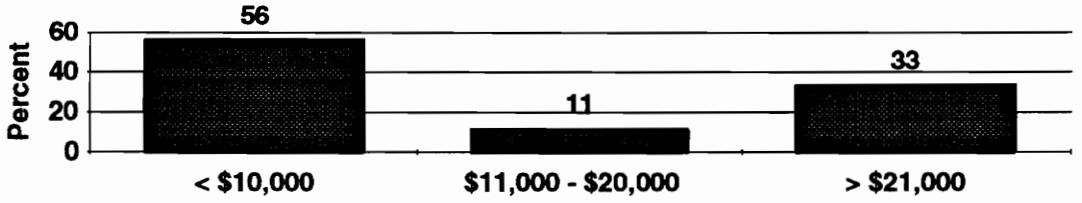
23a. Has your relationship, or lack thereof, with your insurance carrier affected your WC costs?



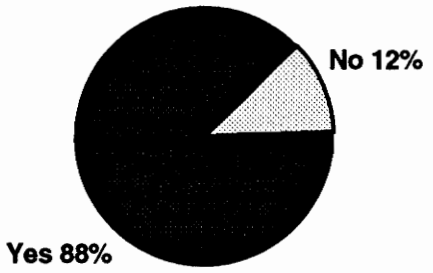
24a. Percent of each category of companies that has an upper limit on the value of a WC claim that the insurance carrier can pay without consulting that company:



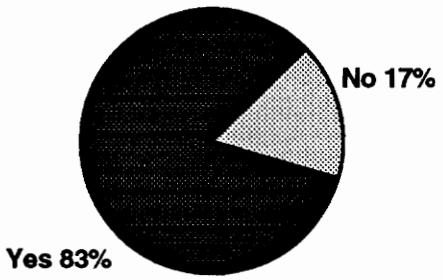
24b. Upper limit on WC claim:



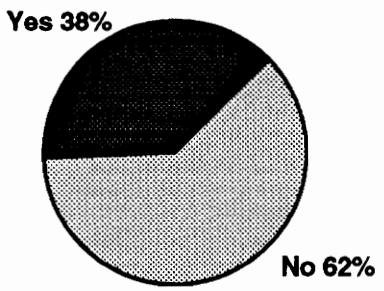
25a. Do you have a claims review policy in place to stop illegitimate WC claims?



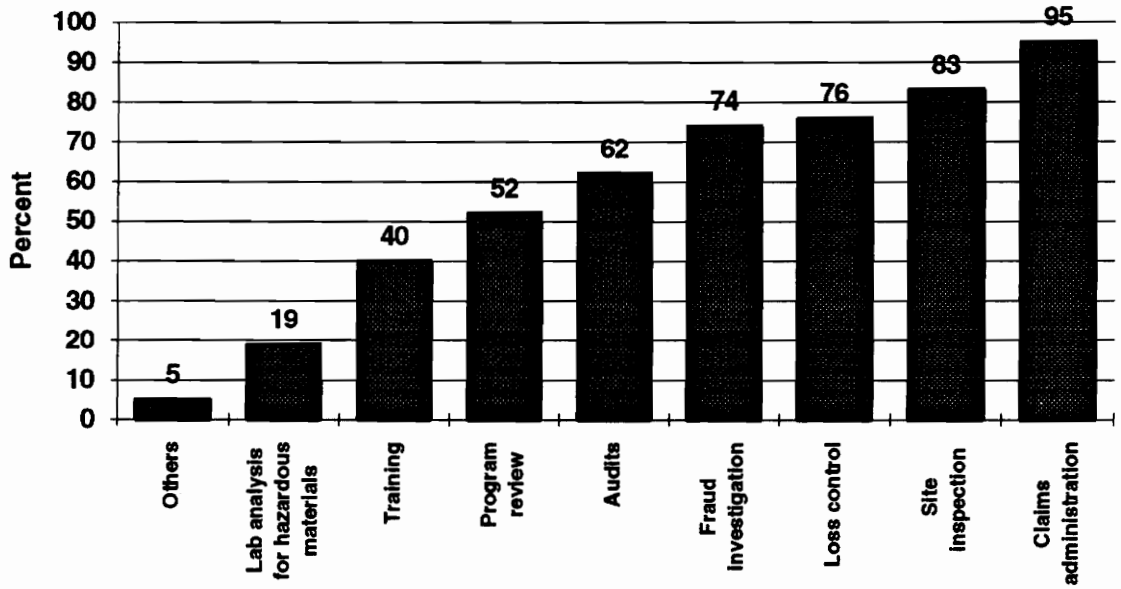
25b. Do you conduct claims audits?



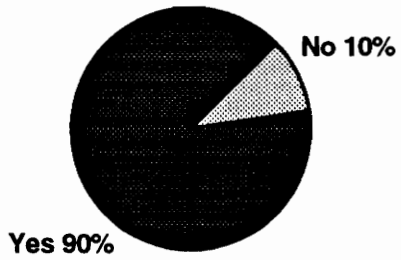
26. Do you review the qualifications for claims adjuster?



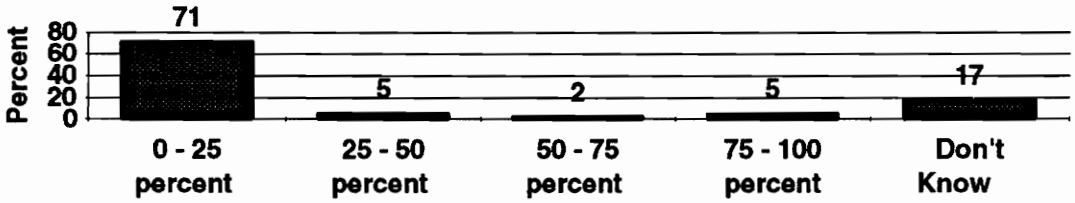
27. What services do you utilize from the insurance carrier?



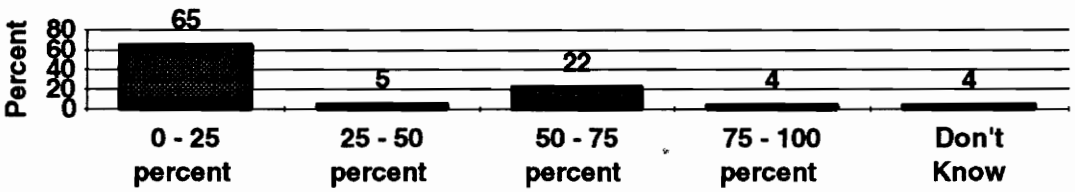
28a. Do you educate your work force about WC?



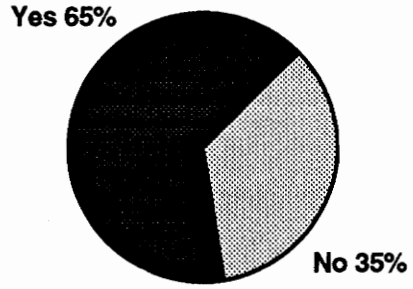
29a. What percentage of WC claims were contested in 1991?



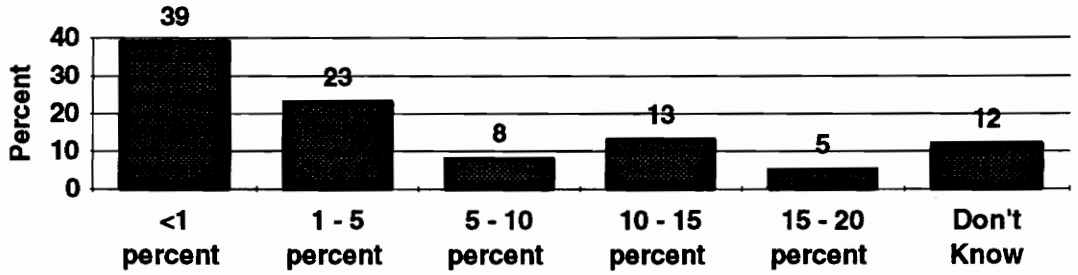
29b. Of these, what percentage were successful?



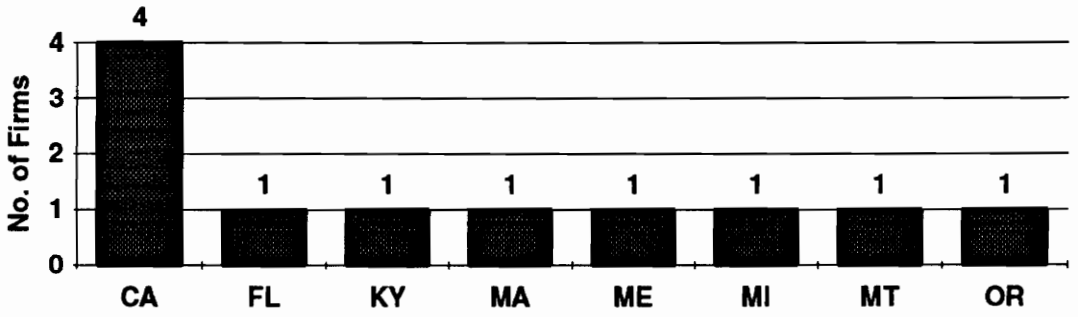
30a. After a project's completion, do you track new WC claims that are filed with regard to that project?



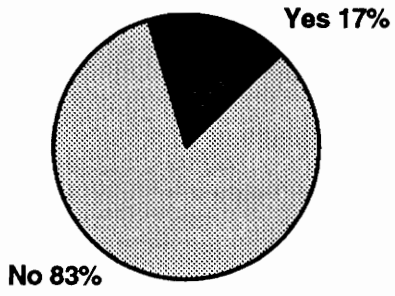
30b. If yes, what percentage of WC claims were generated in 1991 with regard to a project after that project's completion?



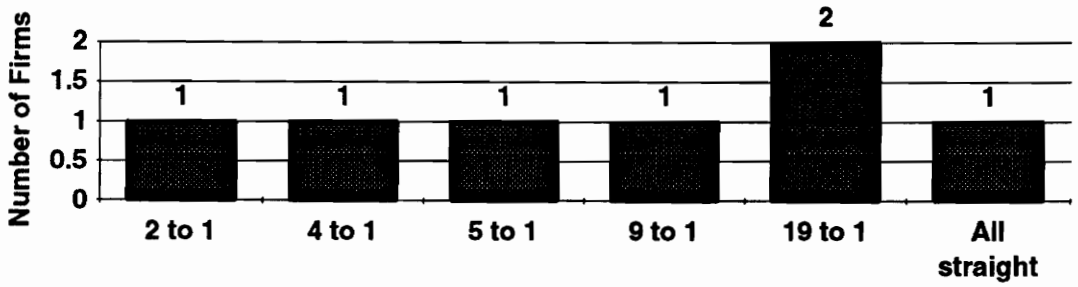
30c. List any state where this percentage is abnormally high.



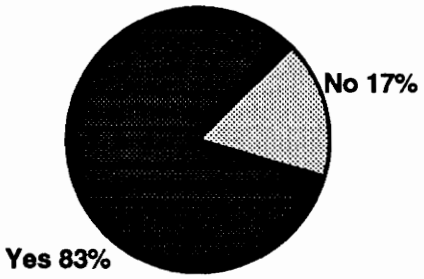
31a. Do you keep a record of which claims happen during straight time and overtime?



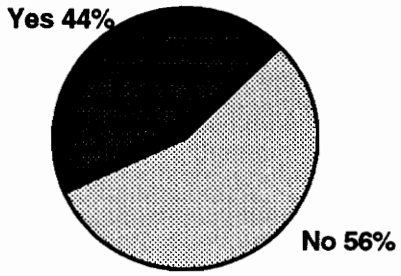
31b. If yes, what is the ratio of WC claims in 1991 originated during straight time to those generated in overtime?



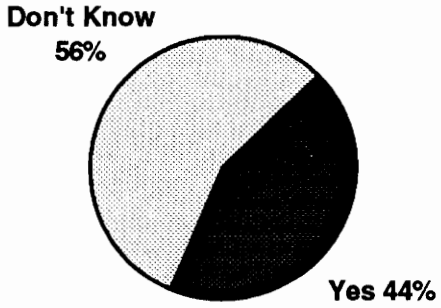
32. Do you pre-select physicians and/or medical facilities for your projects when allowed?



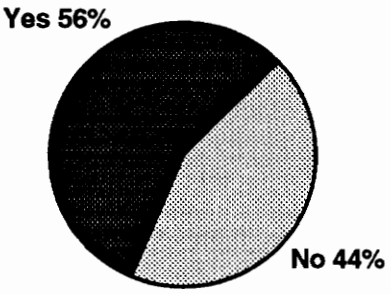
34a. Have you considered group health practices, like HMO's to reduce WC costs?



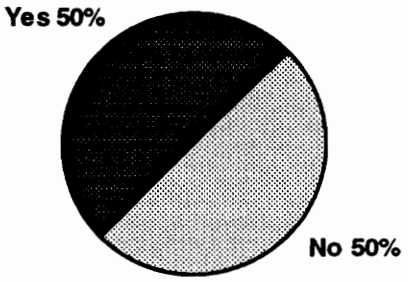
34b. If yes, has it reduced the WC costs?



35. Do you have employee pre-placement practices in place to control WC risk?



36a. Do you implement WC cost allocation practices in your company to assign WC costs to the responsible parties?



2c. How do you measure the benefits of self-insurance?

- Compare fixed premiums or retro policy costs to actual losses and money spent on self insurance.
- Achieving better control over claims management and losses.
- Reduction in taxes and state fees.
- Compute incidence rates and total cost spent on insurance. Compare these to the figures used to compute standard premiums.
- Constant monitoring of number, cost, severity.

14d. What professional background is required for your WC staff?

- Experience:
  -Project manager / Field office manager.
  -Workers compensation claims administration.
  -Construction knowledge.
  -Safety.
  -Management.
  -Risk Management.
  -Civil/Construction accounting / payroll.
  -Complete knowledge of company.
- Education:
  -College degree(s).
  -Certified self (insurance) administrator.
  -Registered Nurse / Licensed Vocational Nurse.
  -Self-taught.
  -Adjuster's license.
  -B.S. degree in Industrial Safety, nursing, or related field plus 4-7 years related experience or 10 years of WC performance.
- Varies with job.
- None.

14e. What criteria do you use to evaluate their performance?

- Incidence rates, cost per hour and lost work day incidence rate.
- Level of communication.
- Improvement or lack thereof in accident rate and cost.
- Type of accidents.
- Monthly or Annual review of claims status and individual appraisals.
- Feedback from claimants and operating units.
- Number of accidents and claims settled as well as other WC statistics, including EMR.
- How these statistics compare with those in other companies within the industry.
- Measure improvements in costs over specified time periods.
- Success against objectives and goals of each individual member of the staff.
- Reduction in accidents.
- Cost per injury / illness rate.
- Cycle time for closure of claims and response time to questions from field personnel.

15b. Describe safety incentive programs that are in place to reduce WC costs.

- Awards for safety suggestions.
- At specified safety milestones, give monetary awards or gifts to individuals
  -Monthly, quarterly, or annually.
  -Predetermined number of safe work-hours.
  -At the end of special projects.
- Individuals accumulate "Safety Bucks" or "Safety Coins" until they chose to cash them in for an item in a prize catalogue provided by the company.
- Safety Lotto: Reaching safety milestones allows a worker to play. One drawing per month gives the winner $500 and his supervisor $100.

- Supervisor programs:
  -Benchmark number of supervised man-hours without a recordable incident within a year is given a monetary award.
  -Quarterly bonus based on number of supervised man-hours worked without lost time injuries.
  -Financial awards for superintendents with safest projects in reference to incidence rate, work-hours.
  -If each member of a supervisor's team is accident-free for a predetermined amount of time, the supervisor gets a bonus.
  -Yearly safety bonuses.

- Team programs:
  -Break down a job into teams of ten. A team without injury receives a safety award at a predetermined milestone.

- Luncheons / Barbecues - monthly, semi-annually, or annually.

- Give an hourly safety incentive that accumulate over time. ¼ from individual safety and ¾ from jobsite reaching its goal. A jobsite goal could be:
  -Obtaining an OSHA recordable rate or lost time rate below a preset level.
  -Having low equipment / property damage.
- Company has an EMR goal. Money saved is divided between company and workers.
- Divide site personnel into teams of ten people. Each team with no lost time claims at the end of a project gets a monetary award.

20. What is your opinion of the EMR as a measure of your safety and WC performance?

- It provides good historical data, but is not reflective of current safety practices, or trends of the past two years. A change in safety performance is not apparent for 1-2 years after it takes place.

- Does not reflect the effort to change safety performance, only the results.

- EMR should be based on man-hours worked, not payroll.

- Other factors contribute to EMR besides safety, such as:
  -non-work injuries.
  -entire money spent on WC.
  -other subsidiaries of the same company.
  -profit by insurance association.
  -whether a state is high benefit or not.
  -labor market.

-company/employee relationships.
-games are played by some.

- Need to supplement EMR with other things, such as:
  -total recordables, including lost time rates.
  -written programs.
  -training.
  -attitude toward safety.
  -frequency / severity statistics compared to payroll / risks.
  -knowledge of which NCCI job classifications went into making the EMR - Administrative or Boilermakers?
  -type of work a company performs.

- EMR is not a good indicator if company has recently:
  -hired a large number of new employees.
  -changed its work load.
  -changed its type of work performed.

- Does not give credit on wrap-up jobs.

- Is a good management tool for goal-setting and trend watching among subsidiaries.

- The EMR practice of averaging over three years is beneficial. A company may "get lucky" one year regarding safety, or have very bad luck another, but a three year average shows the true picture of a company's WC performance. On the other hand, if a company is very safe, but has one bad accident, three years is a long time for the EMR to be tainted.

- Reasonably fair.

- Poor. This was not the intent of the statistic.

- Most accurate measurement of past performance.

- Many claims that are compensible under WC law are not the result of a work-related injury, an inadequate safety program, or poor work site safety.

- EMR is a multipurpose tool to see a company's recent history of claims and to indicate the need for training, extensive audits, disciplinary actions for employees/foremen and the performance of a company's safety program in order to set new goals for the company both in short and long term.

21. What other measures would you suggest owners use to evaluate the safety and WC performance of contractors

- Pre-qualification of subs - periodic review with contractors for compliance to industry standards.
- Written safety programs and training programs, safety climate, expenditures on safety equipment, commitment to safety, safety professionals' resumes.
- Visit work sites and "get to know" perspective contractors.
- Evaluate workers and supervisors independently, not the company.
- Look at a company's WC claims on a case by case basis.
- Accidents that occur on bid jobs compared to time and material.
- Accidents that occur during shutdown/turnover procedures.
- Accidents that with employees of different levels of training.
- Incidence rates for both lost time and recordable injuries in conjunction with amount of risk. Compare these to industry averages. Rates may be divided into categories (i.e. fatal, lost time, medical, first aid, near miss).
- Develop safety measurements according to man-hours worked by NCCI classification by frequency and severity.
- Develop benchmarks for each of these rates and only accept bids from contractors below these levels.
- Look at each company's trends and return-to-work programs.
- Cost as a percentage of payroll.
- Evaluate training vs. incident in training areas.
- History of OSHA citations.
- Look at quality, competency, and workmanship of people on site

22. Beyond EMR, what methods are you using to qualify your subcontractors for a job?

- Overall performance, professionalism, quality of people.
- Commitment to safety.
- Professional qualifications, safety meeting minutes, PPE programs, Hazcom program.
- Experience with sub, interviews, and references.
- Accident frequency rate, lost time rate, recordable rate, number of safety violations per project.
- Develop a threshold level for each of the above rates.
- Bond rates, condition of equipment, Certificates of Insurance.
- Formal safety and training programs, orientations, health programs, drug and alcohol programs.
- Contractor's financial status.
- Inspection and jobsite analysis.
- Current safety trends.
- Compliance with federal laws and regulations

23b. How has your relationship, or lack thereof, with your insurance carrier affected your WC costs?

- Has helped to reduce EMR.
- Positive relationship yields more active and aggressive claims handling.
- Negative relationship leads to less effective and efficient claims handling.
- Lack of communication can create problems.

- Reviews help to establish a relationship and point to areas where an insurance company can offer services to control and reduce costs, such as:
  -materials for safety training.
  -loss control measures.

- Reviews and good communication give a contractor better control of the handling of their claims and assurance that the insurance company services are being performed properly.

- A long term relationship can allow a contractor to receive services he otherwise would not get.

- A good relationship allows for negotiating of good terms and pricing.

- Good relationship with carrier allows for easy access to services such as engineering reports, loss reports, testing labs, etc.

- Separate carriers in each state makes any relationship difficult to build.

- Working with carrier ensures adequate care for employees and quality and efficiency of claims handling.

- Attention to our WC and job inspections has led to stronger relationships with carrier in the areas of loss prevention.

- Our carrier is an integral part of our safety committee.

- Close relations and good communications have proven to be an invaluable tool regarding fraud, accident investigation, developing new policies, thus reducing lost time, damaged equipment, and premiums.

28b. What does the education of your work force consist of?

- Supervisors:
  -Discussion of specific cases at periodic meetings.
  -Overhead cost awareness and trend analysis.
  -What drives the cost of insurance.
  -Performance of each supervisor compared to others within the company.
  -Annual meetings to discuss problems and solutions.

- Employees:
  -How WC costs affect bidding success, wages, their jobs, business in general.
  -Accident reporting procedures, employees' rights and benefits, and the WC laws.
  -How system works and what pitfalls can be seen by workers.

-The effect fraud has on everyone and the penalties involved.
-Value of early return-to-work.
-Accident prevention, safety, accident investigation, and injury management.
-Compare dollars spent on claims to what amount of sales is needed to make it up.
-Employer pays 100% of the cost of WC.
-Updates on accidents - type and severity.
-Pre-placement training on WC laws and claim filing.
-The need to control costs and accidents if we are to remain in business.
-Legal issues, i.e. claim filing procedures.
-Specific state's statutes.
-Good claims processing and communicating to Home Office or Insurance Carrier.

28c. How do you educate your work force about WC?

- Meetings
  -Weekly toolbox, periodic jobsite, supervisors', semi-annually.
- Video tapes and printed material.
- Newsletter.
- One-on-one when needed.
- Telephone conversations and written correspondence.
- During orientation.
- Posters.
- Lectures, presentations, seminars.
- Discussion with workers to make them a part of the solution.
- Company lets insurance carrier train.

33. What incentives do you have in place to entice your employees to use your selected medical facilities and/or physicians?

- On-site supervisory staff "suggests" which physician to go to.
- Use a managed care organization.
- Post only those phone numbers of physicians who are approved by the company.

- Provide transportation only to approved physicians.
- If approved physician is visited, supplemental WC payments will be paid to the worker, or his time will be compensated.
- Few are allowed under labor codes.
- Less "red tape" of selected physicians are visited.
- Established treatment provided reduced rates.
- They must use selected medical facilities / physicians or the claim is denied.
- Varies with location, state.
- Choose quality doctors for workers to select from.

36b. How do you implement WC cost allocation practices in your company to assign WC costs to the responsible parties?

- Allocated directly to each project.
- Allocated directly to each project where project manager, superintendent, and foreman are held accountable.
- A percent of projected payroll is taken from project as a deposit. Unused funds are returned after claim completion. Project debt is carried over to next project.
- Each operating unit is given a record of their WC costs, but is not charged.
- Each project is given an "expected loss allowance." Actual costs vs. expected costs are compared for each project and is made part of the supervisor's record.
- Ratio is computed of incurred cost of injury for each project to total costs.
- Allocated directly to each unit.
- Track costs by division to determine net profit / loss.
- Allocated by region which is then broken down by district. Each is responsible for own WC costs.
- Each project / project manager is charged dollar for dollar of WC costs.

- Allocate costs to profit center.
- Direct-hire projects are required for their own WC costs.
- Information is supplied to the general supervisor on a monthly basis.

Appendix C

Construction Workers Survey Report

Distribution of Construction Workers

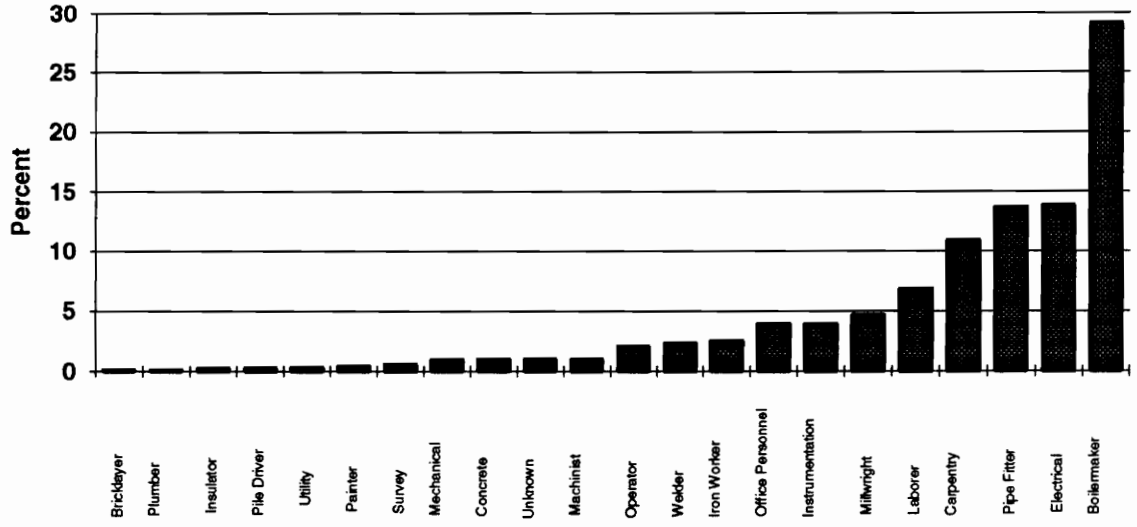
Summary of Histograms

Question	Is question affected by:		
	Experience?	Time on Site?	Other*?
1a. What is your job?	N/A	N/A	N/A
1b. How long have you been doing this type of work?	N/A	N/A	N/A
2a. How long have you been on this job site?	N/A	N/A	N/A
2b. In which state is the job located?	N/A	N/A	N/A
3a. Does your company investigate accidents?	No	Yes	N/A
3b. Does your company investigate near misses?	N/A	N/A	N/A
4. Has your employer informed you of your WC rights, obligations, and responsibilities?	Yes	No	N/A
5. Do you understand what your WC benefits are?	No	No	N/A
6. Do you know who pays the bill for WC?	Yes	N/A	N/A
7. Do you think that high WC costs affect your employer's ability to get work?	Yes	N/A	N/A
8. How would your employer react if you filed a WC claim?	Yes	N/A	N/A
9. Does your employer have a light duty or early return-to-work program for injured employees?	N/A	Yes	Yes
10. If you were injured on the job, could you choose your own doctor?	Yes	Yes	N/A
11. How do you feel about the quality of benefits provided by the WC system?	Yes	N/A	N/A
12. Do you think WC fraud is a problem in the construction industry?	Yes	N/A	Yes

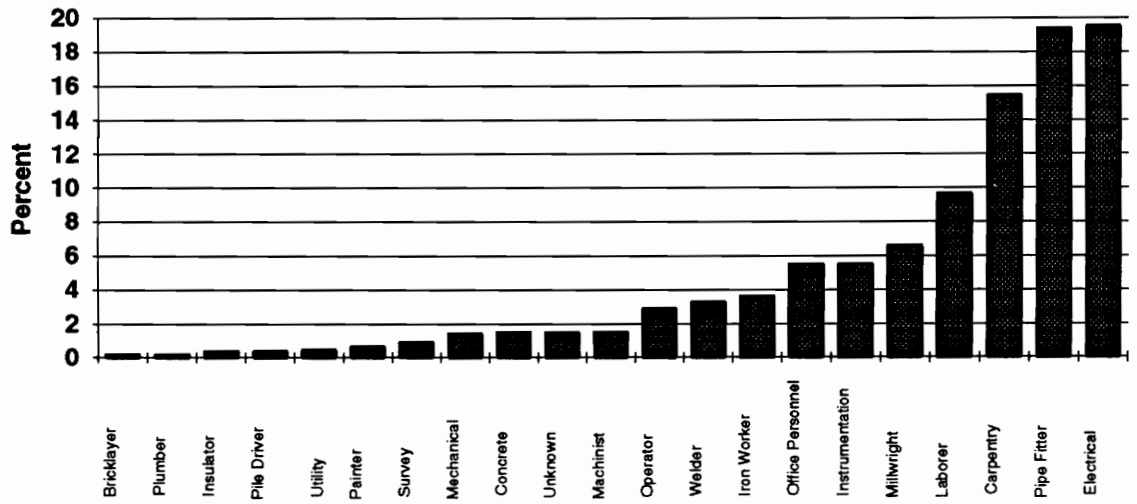
*Other for Question 9: Boilermakers vs. All but Boilermakers
Other for Question 12: California vs. All but California

Construction Workers Questionnaire
1614 Questionnaires Received

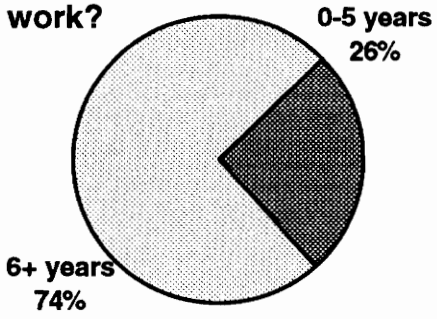
1a. What is your job?



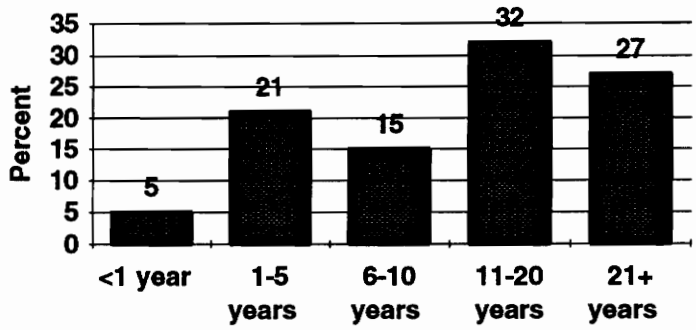
1a. What is your job? (Except Boilermakers) 1143 Responses:



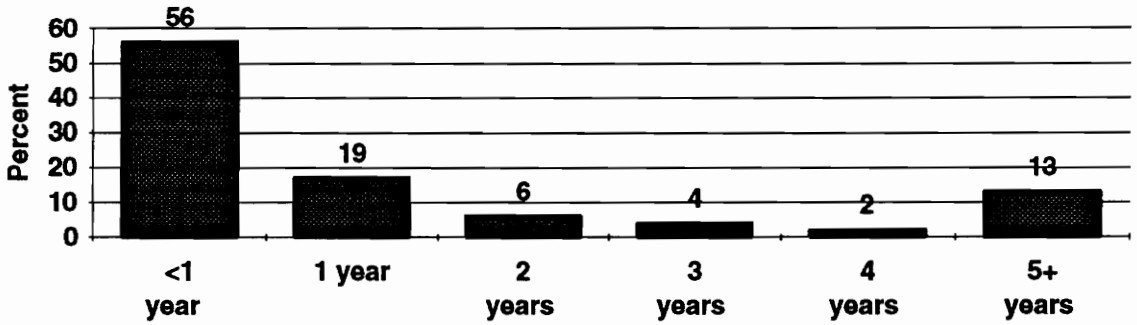
1b. How long have you been doing this type of work?



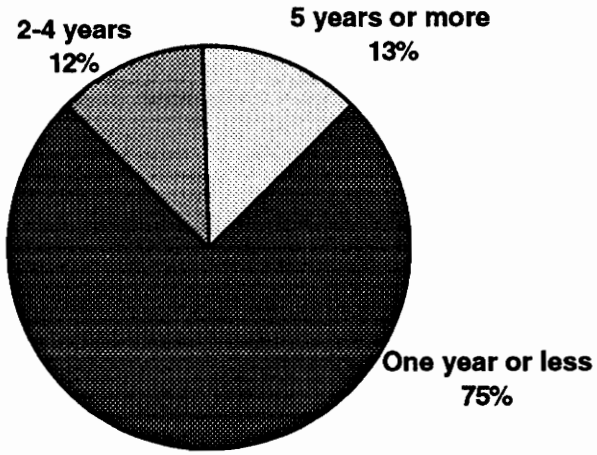
1b. How long have you been doing this type of work?



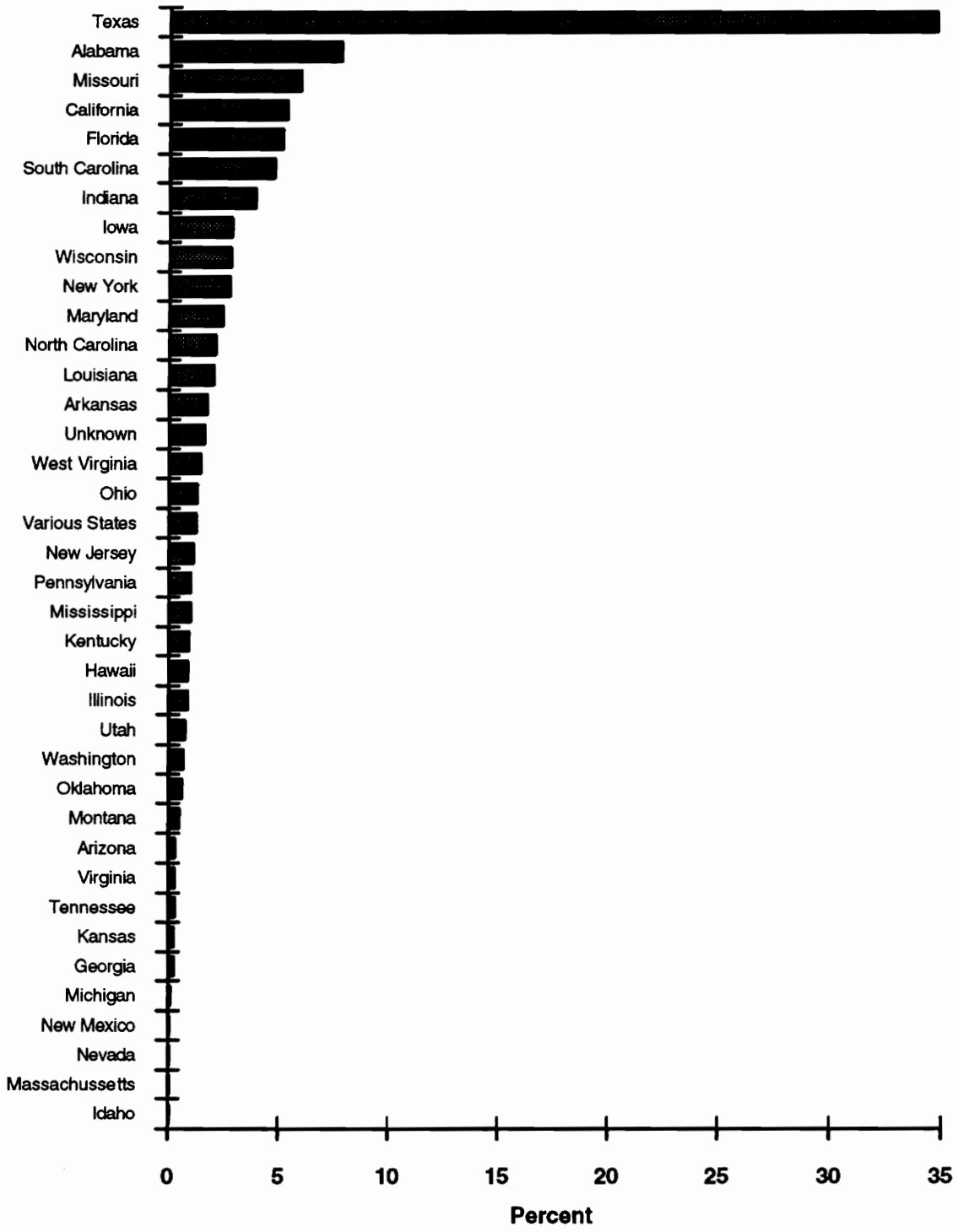
2a. How long have you been on this job site?



2a. How long have you been on this job site?



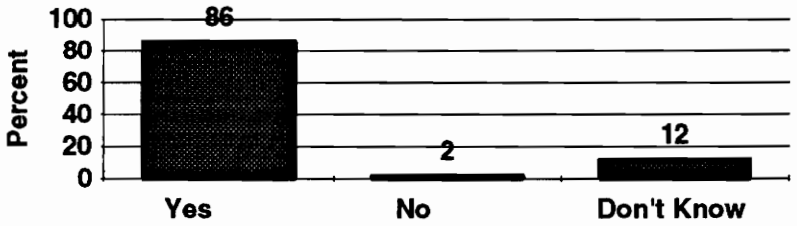
2b. In which state is the job located?



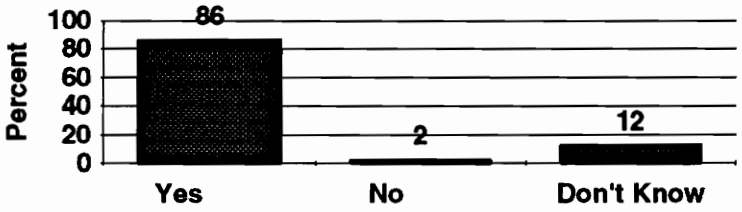
3a. Does your company investigate accidents? (Analysis by experience)

All responses (1606 responses)[1]:

5 years or less experience (411 responses):



6 years or more experience (1195 responses):



Experience played no role in how a craft worker answered this question. Statistical chi-square analysis shows a p-value of 0.560 which is greater than 0.05.

[1]There were eight people who did not answer the question regarding their experience. They were not included in this analysis. There were 101 people who did not answer the question concerning time on site and were therefore not included in that analysis. Thus the two analyses for this question will have different percentages for the "All responses" graphs.

Independence test for Question 3a by experience
23:40 Sunday, October 2, 1994

TABLE OF EXP BY YNDK

EXP	YNDK			
Frequency Expected Deviation Cell Chi-Square Percent Row Pct Col Pct	Y	N	DK	Total
LT5Y	355 352.14 2.8605 0.0232 22.10 86.37 25.80	6 8.7011 -2.701 0.8385 0.37 1.46 17.65	50 50.159 -0.159 0.0005 3.11 12.17 25.51	411 25.59
MT6Y	1021 1023.9 -2.861 0.008 63.57 85.44 74.20	28 25.299 2.7011 0.2884 1.74 2.34 82.35	146 145.84 0.1594 0.0002 9.09 12.22 74.49	1195 74.41
Total	1376 85.68	34 2.12	196 12.20	1606 100.00

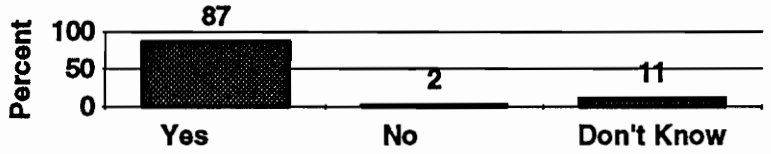
STATISTICS FOR TABLE OF EXP BY YNDK

Statistic	DF	Value	Prob
Chi-Square	2	1.159	0.560

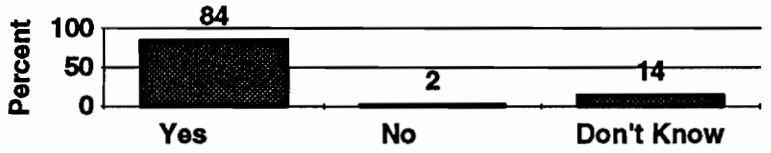
Sample Size = 1606

3a. Does your company investigate accidents? (Analysis by time on site)

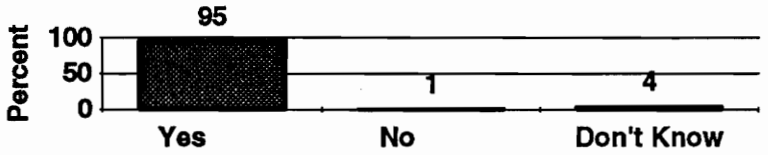
All responses (1513)[2]:



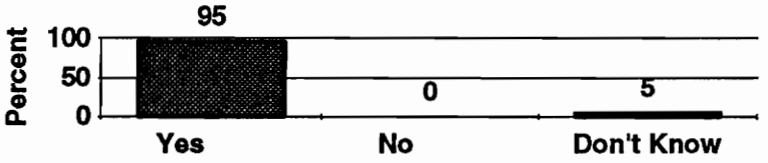
On site 1 year or less (1126 responses):



On site 2 to 4 years (188 responses):



On site 5 years or more (199 responses):



The experience of a worker had an effect on how this question was answered. The statistical chi-square analysis found a p-value less than 0.05.

[2]There were 101 people who did not answer the question regarding their time on site. They were not included in this analysis. There were eight people who did not answer the question concerning their experience and were therefore not included in that analysis. Thus the two analyses for this question will have different percentages for the "All responses" graphs.

Independence test for Question 3a by time on site
12:30 Saturday, September 24, 1994

TABLE OF TOS BY YNDK

TOS	YNDK			
Frequency Expected Deviation Cell Chi-Square Percent Row Pct Col Pct	Y	N	DK	Total
1YOL	946 977.16 -31.16 0.9934 62.52 84.01 72.05	23 18.605 4.3946 1.038 1.52 2.04 92.00	157 130.24 26.762 5.4992 10.38 13.94 89.71	1126 74.42
2TO4Y	178 163.15 14.851 1.3519 11.76 94.68 13.56	2 3.1064 -1.106 0.3941 0.13 1.06 8.00	8 21.745 -13.74 8.6881 0.53 4.26 4.57	188 12.43
5YOM	189 172.69 16.305 1.5395 12.49 94.97 14.39	0 3.2882 -3.288 3.2882 0.00 0.00 0.00	10 23.017 -13.02 7.3618 0.66 5.03 5.71	199 13.15
Total	1313 86.78	25 1.65	175 11.57	1513 100.00

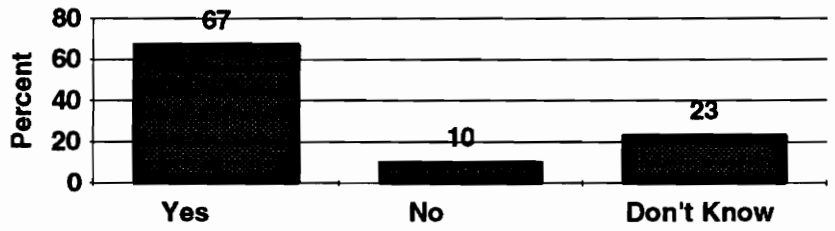
STATISTICS FOR TABLE OF TOS BY YNDK

Statistic	DF	Value	Prob
Chi-Square	4	30.154	0.000

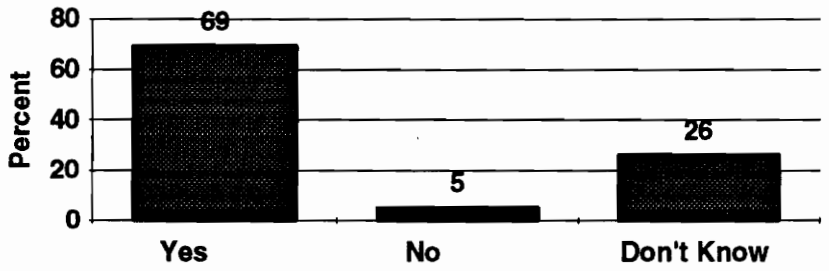
Sample Size = 1513

3b. Does your company investigate near misses?

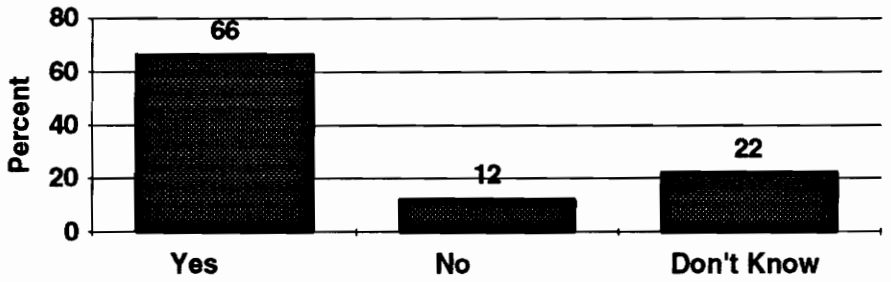
All responses (1606 responses):



5 years or less experience (411 responses):

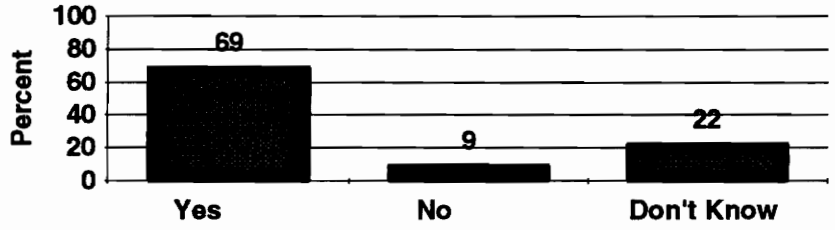


6 years or more experience (1195 responses):

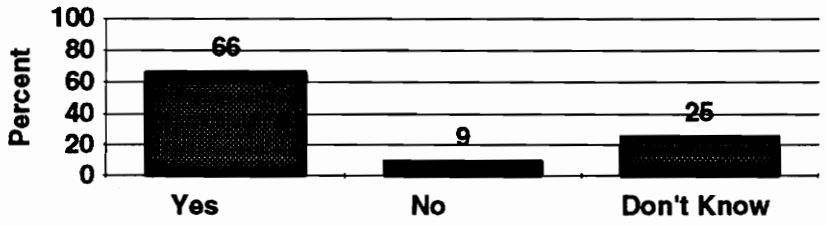


3b. Does your company investigate near misses?

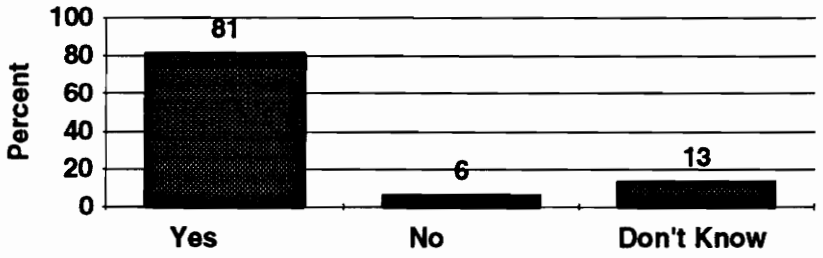
All responses (1513 responses):



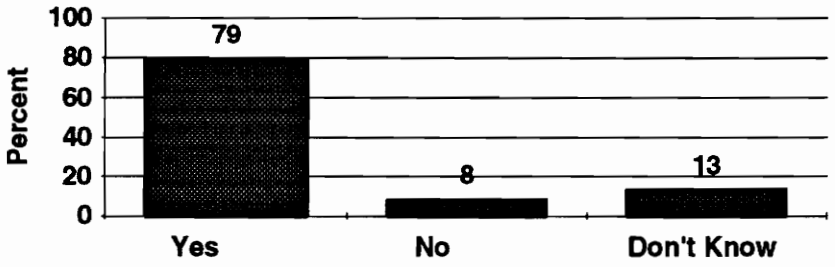
On site 1 year or less (1126 responses):



On site 2 to 4 years (188 responses):

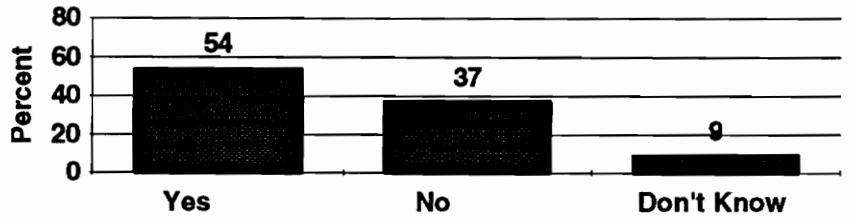


On site 5 years or more (199 responses):

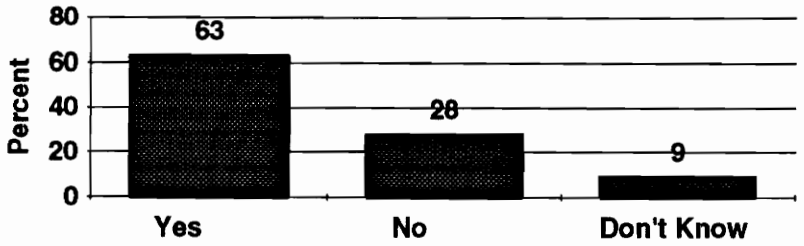


4. Has your employer informed you of your WC rights, obligations, and responsibilites? (Analysis by experience)

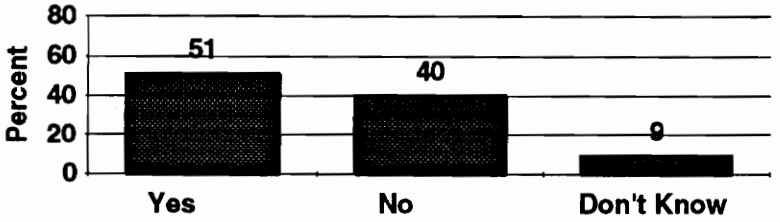
All responses (1606)[3]:



5 years or less experience (411responses):



6 years or more experience (1195 responses):



Experience had an effect on the way this question was answered. Statistical chi-square analysis shows a p-value less than 0.05

[3]There were eight people who did not answer the question regarding their experience. They were not included in this analysis. There were 101 people who did not answer the question concerning time on site and were therefore not included in that analysis. Thus the two analyses for this question will have different percentages for the "All responses" graphs.

Independence test for Question 4 by experience
12:30 Saturday, September 24, 1994

TABLE OF EXP BY YNDK

EXP	YNDK			
Frequency Expected Deviation Cell Chi-Square Percent Row Pct Col Pct	Y	N	DK	Total
LT5Y	259 222.13 36.866 6.1182 16.13 63.02 29.84	115 151.76 -36.76 8.9032 7.16 27.98 19.39	37 37.108 -0.108 0.0003 2.30 9.00 25.52	411 25.59
MT6Y	609 645.87 -36.87 2.1043 37.92 50.96 70.16	478 441.24 36.758 3.0621 29.76 40.00 80.61	108 107.89 0.1077 0.0001 6.72 9.04 74.48	1195 74.41
Total	868 54.05	593 36.92	145 9.03	1606 100.00

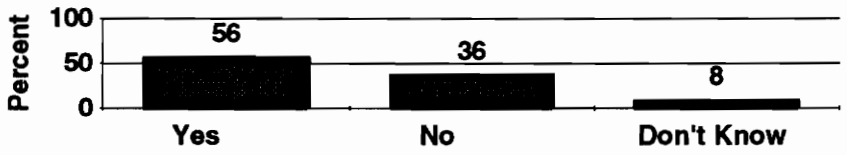
STATISTICS FOR TABLE OF EXP BY YNDK

Statistic	DF	Value	Prob
Chi-Square	2	20.188	0.000

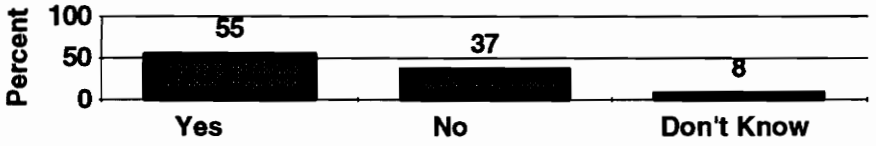
Sample Size = 1606

4. Has your employer informed you of your WC rights, obligations, and responsibilites? (Analysis by time on site)

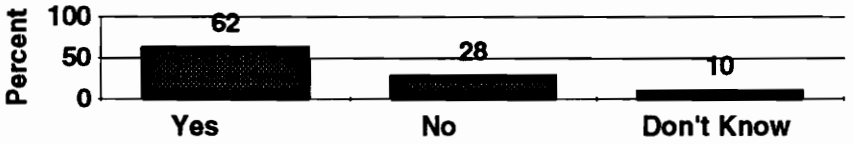
All responses (1513)[4]:



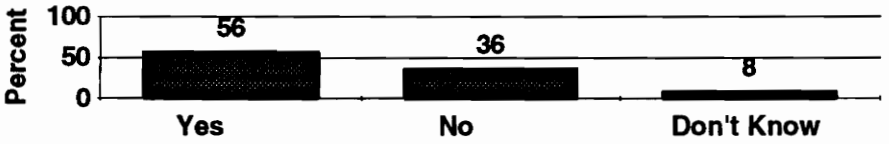
On site 1 year or less (1126 responses):



On site 2 to 4 years (188 responses):



On site 5 years or more (199 responses):



A worker's time on a particular job site had no effect on the way this question was answered. The statistical chi-square analysis shows a p-value of 0.222 which is greater than 0.05

[4]There were 101 people who did not answer the question regarding their time on site. They were not included in this analysis. There were eight people who did not answer the question concerning their experience and were therefore not included in that analysis. Thus the two analyses for this question will have different percentages for the "All responses" graphs.

Independence test for Question 4 by time on site
12:30 Saturday, September 24, 1994

TABLE OF TOS BY YNDK

TOS	YNDK			
Frequency Expected Deviation Cell Chi-Square Percent Row Pct Col Pct	Y	N	DK	Total
1YOL	619 629.61 -10.61 0.1787 40.91 54.97 73.17	417 403.37 13.635 0.4609 27.56 37.03 76.94	90 93.027 -3.027 0.0985 5.95 7.99 72.00	1126 74.42
2TO4Y	116 105.12 10.879 1.1259 7.67 61.70 13.71	53 67.347 -14.35 3.0564 3.50 28.19 9.78	19 15.532 3.4679 0.7743 1.26 10.11 15.20	188 12.43
5YOM	111 111.27 -0.272 0.0007 7.34 55.78 13.12	72 71.288 0.7125 0.0071 4.76 36.18 13.28	16 16.441 -0.441 0.0118 1.06 8.04 12.80	199 13.15
Total	846 55.92	542 35.82	125 8.26	1513 100.00

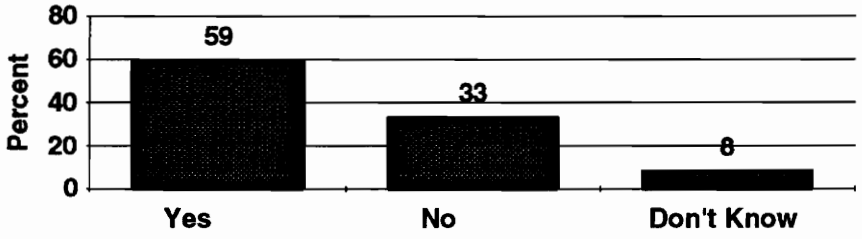
STATISTICS FOR TABLE OF TOS BY YNDK

Statistic	DF	Value	Prob
Chi-Square	4	5.714	0.222

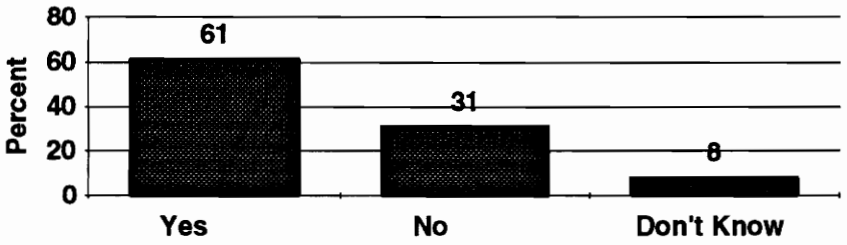
Sample Size = 1513

5. Do you understand what your WC benefits are? (Analysis by experience)

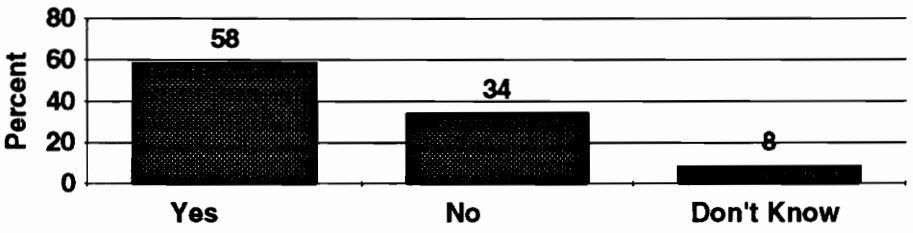
All responses (1606)[5]:



5 years or less experience (411 responses):



6 years or more experience (1195 responses):



Experience had no effect on how this question was answered. The statistical chi-square analysis shows a p-value of 0.506 which is much greater than 0.05

[5]There were eight people who did not answer the question regarding their experience. They were not included in this analysis. There were 101 people who did not answer the question concerning time on site and were therefore not included in that analysis. Thus the two analyses for this question will have different percentages for the "All responses" graphs.

Independence test for Question 5 by experience
12:30 Saturday, September 24, 1994

TABLE OF EXP BY YNDK

EXP	YNDK			
Frequency Expected Deviation Cell Chi-Square Percent Row Pct Col Pct	Y	N	DK	Total
LT5Y	251 241.58 9.4159 0.367 15.63 61.07 26.59	127 136.4 -9.403 0.6482 7.91 30.90 23.83	33 33.013 -0.013 518E-8 2.05 8.03 25.58	411 25.59
MT6Y	693 702.42 -9.416 0.1262 43.15 57.99 73.41	406 396.6 9.4029 0.2229 25.28 33.97 76.17	96 95.987 0.0131 178E-8 5.98 8.03 74.42	1195 74.41
Total	944 58.78	533 33.19	129 8.03	1606 100.00

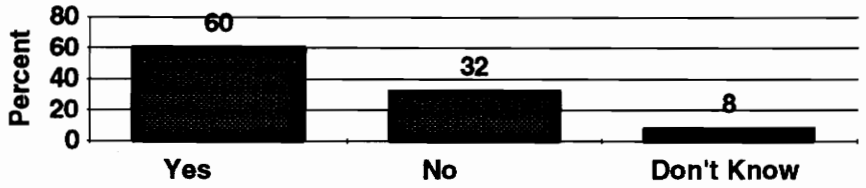
STATISTICS FOR TABLE OF EXP BY YNDK

Statistic	DF	Value	Prob
Chi-Square	2	1.364	0.506

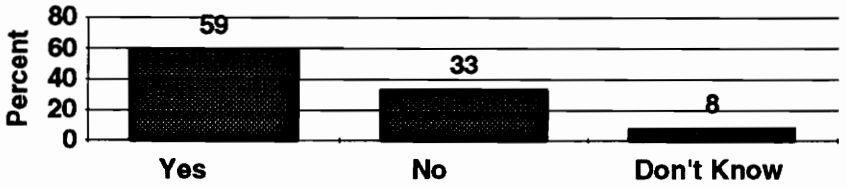
Sample Size = 1606

5. Do you understand what your WC benefits are? (Analysis by time on site)

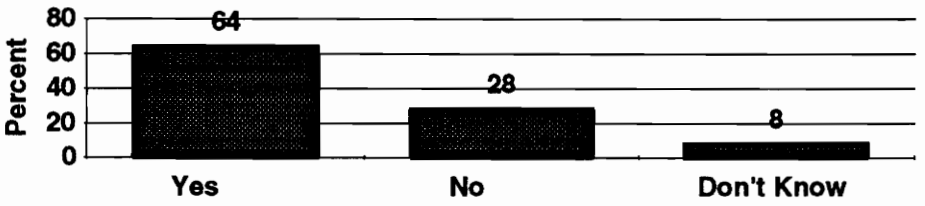
All responses (1513)[6]:



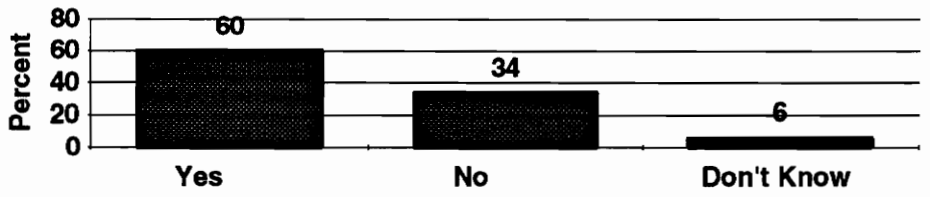
On site 1 year or less (1126 responses):



On site 2 to 4 years (188 responses):



On site 5 years or more (199 responses):



A worker's time on a particular site had no effect on the way this question was answered. The statistical chi-square analysis shows a p-value of 0.586 which is greater than 0.05

[6]There were 101 people who did not answer the question regarding their time on site. They were not included in this analysis. There were eight people who did not answer the question concerning their experience and were therefore not included in that analysis. Thus the two analyses for this question will have different percentages for the "All responses" graphs.

Independence test for Question 5 by time on site
12:30 Saturday, September 24, 1994

TABLE OF TOS BY YNDK

TOS	YNDK			
Frequency Expected Deviation Cell Chi-Square Percent Row Pct Col Pct	Y	N	DK	Total
1YOL	664 672.03 -8.028 0.0959 43.89 58.97 73.53	372 366.9 5.1011 0.0709 24.59 33.04 75.46	90 87.073 2.9266 0.0984 5.95 7.99 76.92	1126 74.42
2TO4Y	120 112.2 7.7964 0.5417 7.93 63.83 13.29	53 61.258 -8.258 1.1133 3.50 28.19 10.75	15 14.538 0.462 0.0147 0.99 7.98 12.82	188 12.43
5YOM	119 118.77 0.2313 0.0005 7.87 59.80 13.18	68 64.843 3.1573 0.1537 4.49 34.17 13.79	12 15.389 -3.389 0.7462 0.79 6.03 10.26	199 13.15
Total	903 59.68	493 32.58	117 7.73	1513 100.00

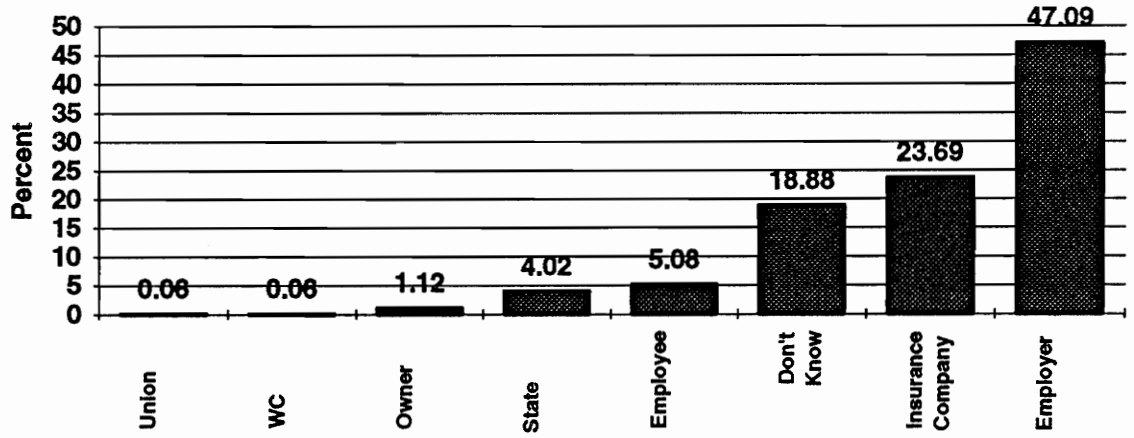
STATISTICS FOR TABLE OF TOS BY YNDK

Statistic	DF	Value	Prob
Chi-Square	4	2.835	0.586

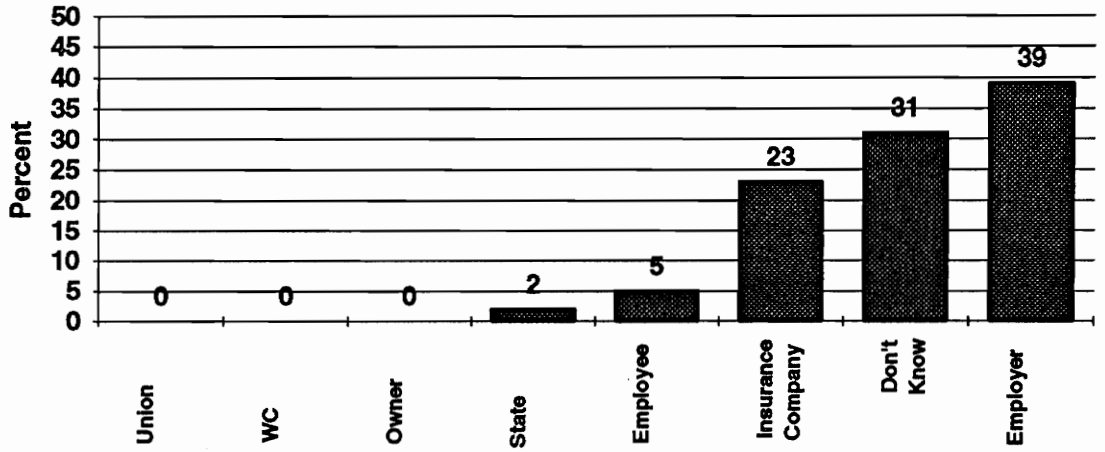
Sample Size = 1513

6. Do you know who pays the bill for WC? (Analysis by experience)

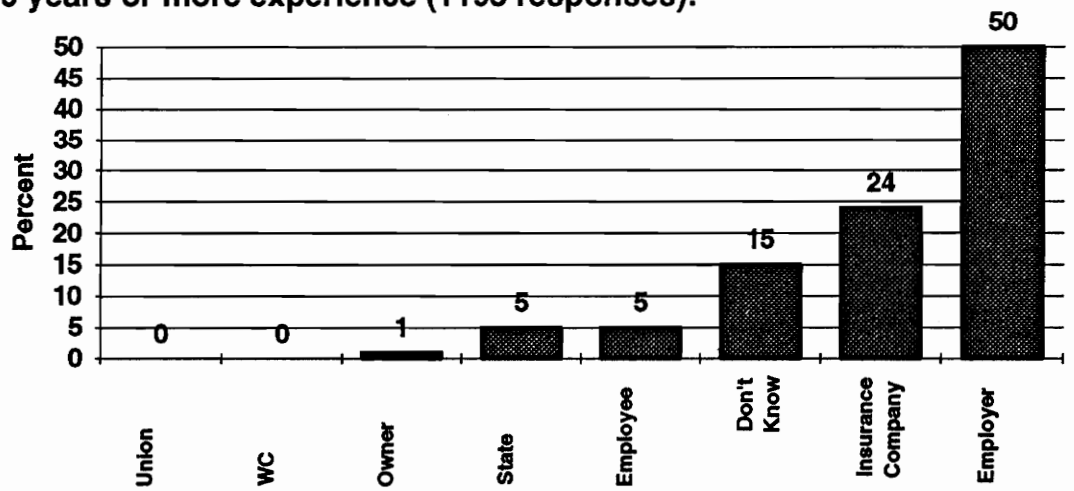
All responses (1606):



5 years or less experience (411 responses):



6 years or more experience (1195 responses):



Experience had an effect on how this question was answered. The statistical chi-square analysis shows a p-value less that 0.05

Independence test for Question 6 by experience
12:31 Saturday, September 24, 1994

TABLE OF EXP BY WHO

EXP WHO

Frequency Expected Deviation Cell Chi-Square Percent Row Pct Col Pct	STATE	EMPLE	INSCOMP	DK	EMPLR	OWNER	Total
LT5Y	9	18	95	128	161	0	411
	17.658	19.961	97.76	78.566	193.98	3.071	
	-8.658	-1.961	-2.76	49.434	-32.98	-3.071	
	4.2453	0.1927	0.0779	31.104	5.6084	3.071	
	0.56	1.12	5.92	7.97	10.02	0.00	25.59
	2.19	4.38	23.11	31.14	39.17	0.00	
	13.04	23.08	24.87	41.69	21.24	0.00	
MT6Y	60	60	287	179	597	12	1195
	51.342	58.039	284.24	228.43	564.02	8.929	
	8.6582	1.9614	2.7597	-49.43	32.984	3.071	
	1.4601	0.0663	0.0268	10.698	1.9289	1.0562	
	3.74	3.74	17.87	11.15	37.17	0.75	74.41
	5.02	5.02	24.02	14.98	49.96	1.00	
	86.96	76.92	75.13	58.31	78.76	100.00	
Total	69	78	382	307	758	12	1606
	4.30	4.86	23.79	19.12	47.20	0.75	100.00

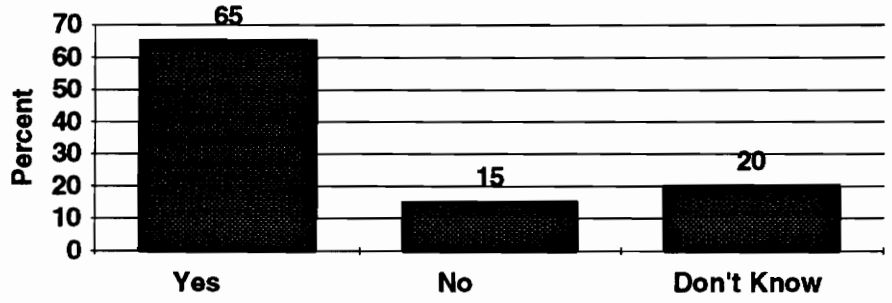
STATISTICS FOR TABLE OF EXP BY WHO

Statistic	DF	Value	Prob
Chi-Square	5	59.535	0.000

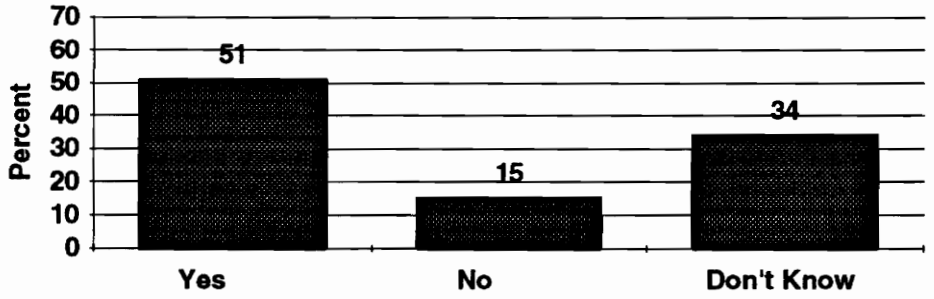
Sample Size = 1606

7. Do you think that high WC costs affect your employer's ability to get work? (Analysis by experience)

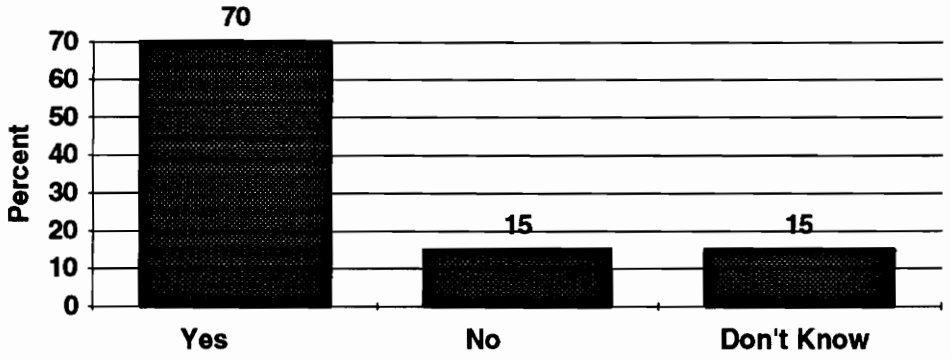
All responses (1606):



5 years or less experience (411 responses):



6 years or more experience (1195 responses):



Experience had an effect on the answers to this question. The statistical chi-square analysis shows a p-value less than 0.05

Independence test for Question 7 by experience
12:31 Saturday, September 24, 1994

TABLE OF EXP BY YNDK

EXP / YNDK	Y	N	DK	Total
LT5Y	209	62	140	411
Expected	267.69	61.676	81.637	
Deviation	-58.69	0.3244	58.363	
Cell Chi-Square	12.867	0.0017	41.724	
Percent	13.01	3.86	8.72	25.59
Row Pct	50.85	15.09	34.06	
Col Pct	19.98	25.73	43.89	
MT6Y	837	179	179	1195
	778.31	179.32	237.36	
	58.687	-0.324	-58.36	
	4.4252	0.0006	14.35	
	52.12	11.15	11.15	74.41
	70.04	14.98	14.98	
	80.02	74.27	56.11	
Total	1046	241	319	1606
	65.13	15.01	19.86	100.00

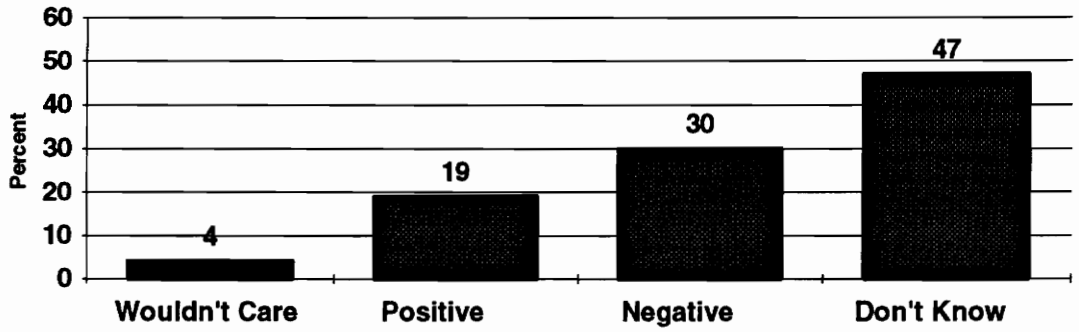
STATISTICS FOR TABLE OF EXP BY YNDK

Statistic	DF	Value	Prob
Chi-Square	2	73.369	0.000

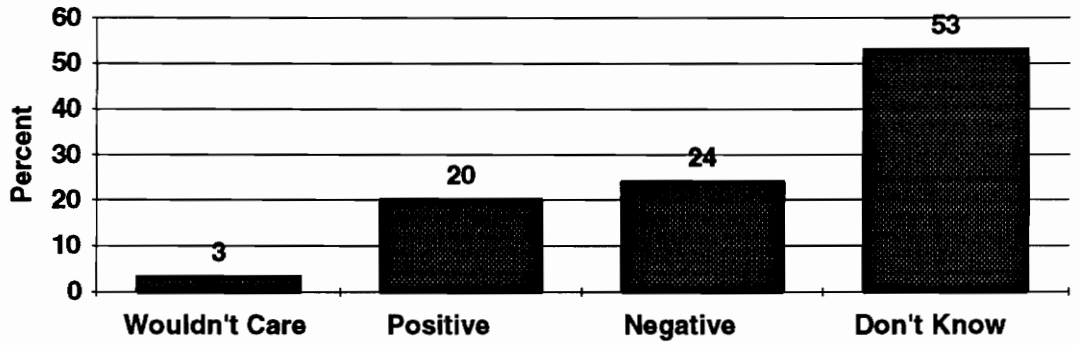
Sample Size = 1606

8. How would your employer react if you filed a WC claim? (Analysis by experience)

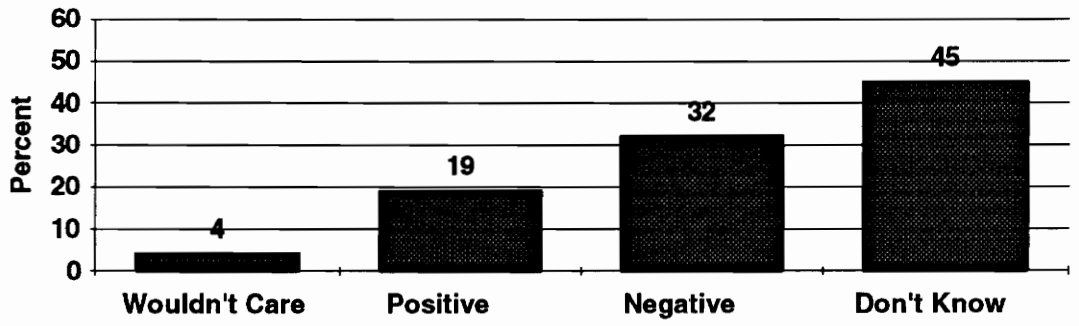
All responses (1606):



5 years or less experience (411 responses):



6 years or more experience (1195 responses):



Experience had an effect on the answers to this question. The statistical chi-square analysis shows a p-value of 0.009 which is less than 0.05

Independence test for Question 8 by experience
12:31 Saturday, September 24, 1994

TABLE OF EXP BY HOW

EXP / HOW	WLDNT	POS	NEG	DK	Total
LT5Y	12	82	99	218	411
Expected	15.355	79.078	123.1	193.47	
Deviation	-3.355	2.9222	-24.1	24.528	
Cell Chi-Square	0.733	0.108	4.7165	3.1096	
Percent	0.75	5.11	6.16	13.57	25.59
Row Pct	2.92	19.95	24.09	53.04	
Col Pct	20.00	26.54	20.58	28.84	
MT6Y	48	227	382	538	1195
	44.645	229.92	357.9	562.53	
	3.3549	-2.922	24.095	-24.53	
	0.2521	0.0371	1.6222	1.0695	
	2.99	14.13	23.79	33.50	74.41
	4.02	19.00	31.97	45.02	
	80.00	73.46	79.42	71.16	
Total	60	309	481	756	1606
	3.74	19.24	29.95	47.07	100.00

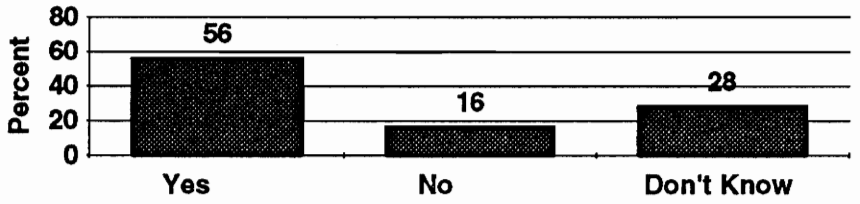
STATISTICS FOR TABLE OF EXP BY HOW

Statistic	DF	Value	Prob
Chi-Square	3	11.648	0.009

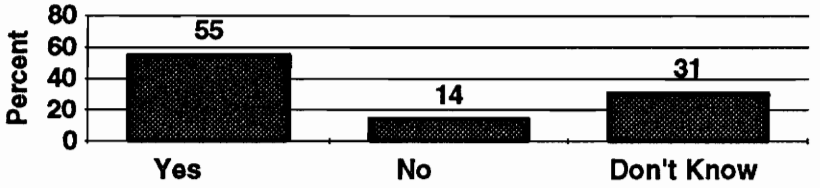
Sample Size = 1606

9. Does your employer have a light duty or early return-to-work program for injured employees? (Analysis by time on site)

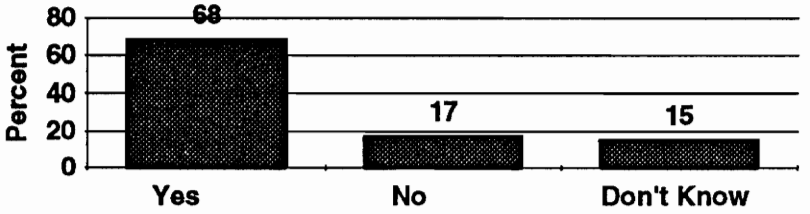
All responses (1513)[7]:



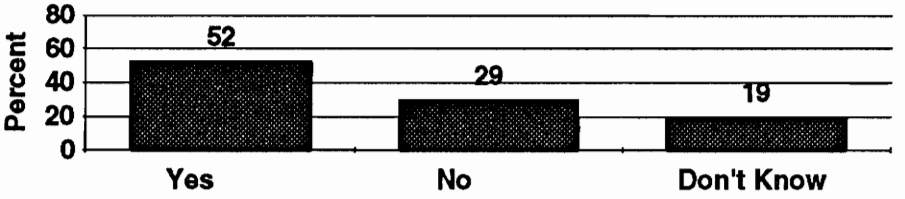
On site 1 year or less (1126 responses):



On site 2 to 4 years (188 responses):



On site 5 years or more (199 responses):



A worker's time on a particular site had an effect on how this question was answered. The statistical chi-square analysis shows a p-value less than 0.05

[7]There were 101 people who did not answer the question regarding their time on site. They were not included in this analysis. All people answered the question concerning job and were therefore all included in that analysis. Thus the two analyses for this question will have different percentages for the "All responses" graphs.

Independence test for Question 9 by time on site
12:31 Saturday, September 24, 1994

TABLE OF TOS BY YNDK

TOS	YNDK			
Frequency Expected Deviation Cell Chi-Square Percent Row Pct Col Pct	Y	N	DK	Total
1YOL	619 633.33 -14.33 0.3242 40.91 54.97 72.74	158 183.82 -25.82 3.6272 10.44 14.03 63.97	349 308.85 40.15 5.2194 23.07 30.99 84.10	1126 74.42
2TO4Y	128 105.74 22.258 4.6851 8.46 68.09 15.04	32 30.691 1.3087 0.0558 2.12 17.02 12.96	28 51.566 -23.57 10.77 1.85 14.89 6.75	188 12.43
5YOM	104 111.93 -7.929 0.5617 6.87 52.26 12.22	57 32.487 24.513 18.496 3.77 28.64 23.08	38 54.584 -16.58 5.0384 2.51 19.10 9.16	199 13.15
Total	851 56.25	247 16.33	415 27.43	1513 100.00

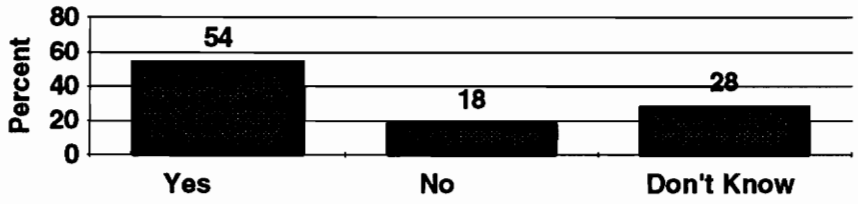
STATISTICS FOR TABLE OF TOS BY YNDK

Statistic	DF	Value	Prob
Chi-Square	4	48.778	0.000

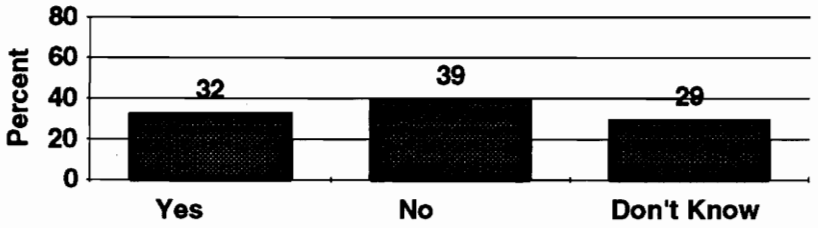
Sample Size = 1513

9. Does your employer have a light duty or early return-to-work program for injured employees? (Analysis by job)

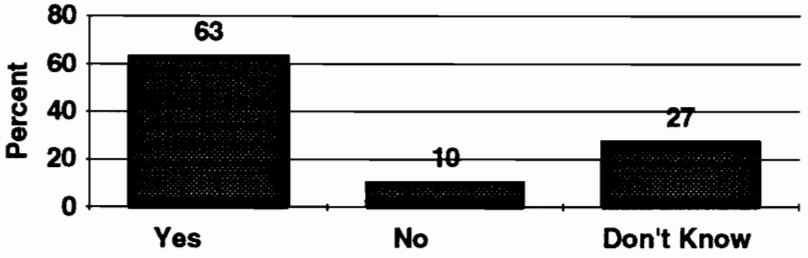
All responses (1614)[8]:



Just Boilermakers (471 responses):



All jobs but Boilermakers (1143 responses):



Being a Boilermaker or not had an effect on the way this question was answered. The statistical chi-square analysis shows a p-value less than 0.05

[8]All people answered the question concerning job and were therefore all included in this analysis. There were 101 people who did not answer the question regarding their time on site. They were not included in that analysis. Thus the two analyses for this question will have different percentages for the "All responses" graphs.

Independence test for Question 9 by job
20:53 Monday, October 3, 1994

TABLE OF JOB BY YNDK

JOB	YNDK			
Frequency Expected Deviation Cell Chi-Square Percent Row Pct Col Pct	Y	N	DK	Total
BM	153	183	135	471
	255.34	85.212	130.44	
	-102.3	97.788	4.5558	
	41.02	112.22	0.1591	
	9.48	11.34	8.36	29.18
	32.48	38.85	28.66	
	17.49	62.67	30.20	
XBM	722	109	312	1143
	619.66	206.79	316.56	
	102.34	-97.79	-4.556	
	16.903	46.243	0.0656	
	44.73	6.75	19.33	70.82
	63.17	9.54	27.30	
	82.51	37.33	69.80	
Total	875	292	447	1614
	54.21	18.09	27.70	100.00

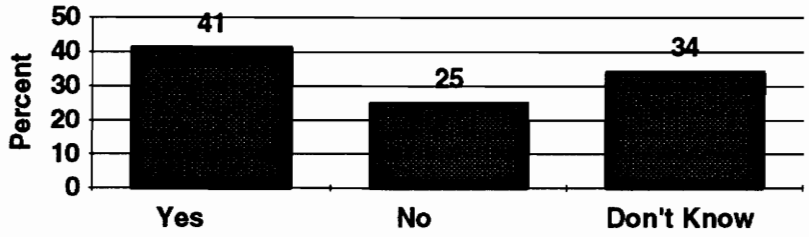
STATISTICS FOR TABLE OF JOB BY YNDK

Statistic	DF	Value	Prob
Chi-Square	2	216.612	0.000

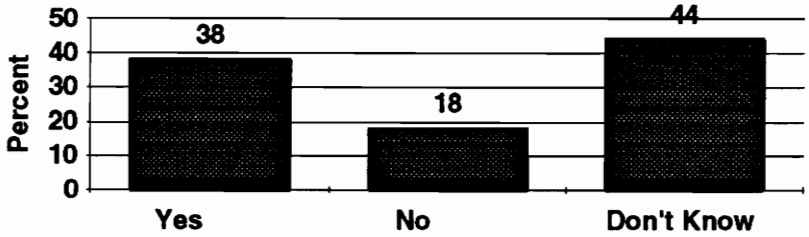
Sample Size = 1614

10. If you were injured on the job, could you choose your own doctor? (Analysis by experience)

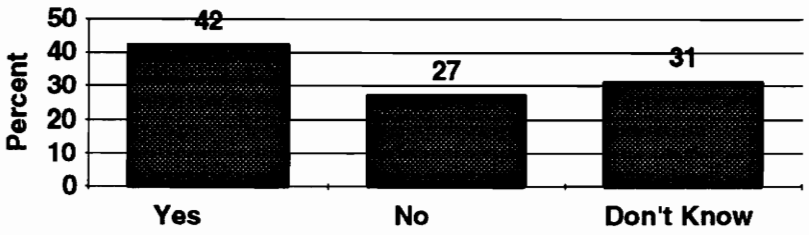
All responses (1606)[9]:



5 years or less experience (411 responses):



6 years or more experience (1195 responses):



Experience had an effect on the answers to this question. The statistical chi-square analysis shows a p-value less than 0.05

[9]There were eight people who did not answer the question regarding their experience. They were not included in this analysis. There were 101 people who did not answer the question concerning time on site and were therefore not included in that analysis. Thus the two analyses for this question will have different percentages for the "All responses" graphs.

Independence test for Question 10 by experience
12:31 Saturday, September 24, 1994

TABLE OF EXP BY YNDK

EXP	YNDK			
Frequency Expected Deviation Cell Chi-Square Percent Row Pct Col Pct	Y	N	DK	Total
LT5Y	156 168.39 -12.39 0.912 9.71 37.96 23.71	74 101.6 -27.6 7.4969 4.61 18.00 18.64	181 141.01 39.991 11.341 11.27 44.04 32.85	411 25.59
MT6Y	502 489.61 12.392 0.3137 31.26 42.01 76.29	323 295.4 27.598 2.5784 20.11 27.03 81.36	370 409.99 -39.99 3.9007 23.04 30.96 67.15	1195 74.41
Total	658 40.97	397 24.72	551 34.31	1606 100.00

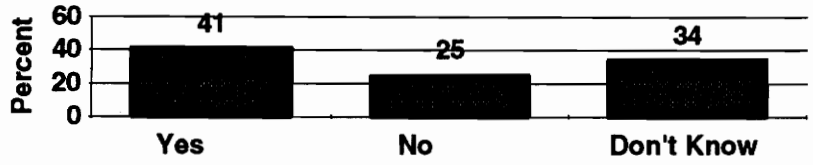
STATISTICS FOR TABLE OF EXP BY YNDK

Statistic	DF	Value	Prob
Chi-Square	2	26.543	0.000

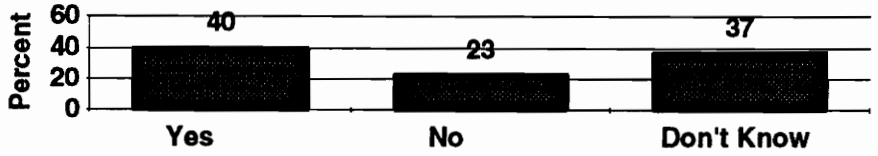
Sample Size = 1606

10. If you were injured on the job, could you choose your own doctor? (Analysis by time on site)

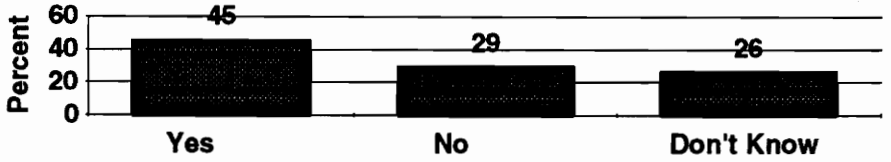
All responses (1513)[10]:



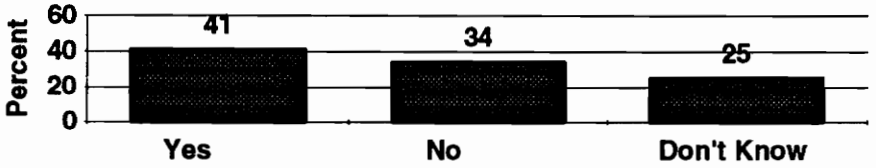
On site 1 year or less (1126 responses):



On site 2 to 4 years (188 responses):



On site 5 years or more (199 responses):



A worker's time on a particular site had an effect on the answers to this question. The statistical chi-square analysis shows a p-value less than 0.05

[10]There were 101 people who did not answer the question regarding their time on site. They were not included in this analysis. There were eight people who did not answer the question concerning experience and were therefore not included in that analysis. Thus the two analyses for this question will have different percentages for the "All responses" graphs.

Independence test for Question 10 by time on site
12:31 Saturday, September 24, 1994

TABLE OF TOS BY YNDK

TOS	YNDK			
Frequency Expected Deviation Cell Chi-Square Percent Row Pct Col Pct	Y	N	DK	Total
1YOL	450 457.69 -7.693 0.1293 29.74 39.96 73.17	259 284.29 -25.29 2.2499 17.12 23.00 67.80	417 384.02 32.984 2.8331 27.56 37.03 80.81	1126 74.42
2TO4Y	84 76.418 7.5823 0.7523 5.55 44.68 13.66	55 47.466 7.534 1.1958 3.64 29.26 14.40	49 64.116 -15.12 3.5639 3.24 26.06 9.50	188 12.43
5YOM	81 80.889 0.111 0.0002 5.35 40.70 13.17	68 50.243 17.757 6.2755 4.49 34.17 17.80	50 67.868 -17.87 4.7041 3.30 25.13 9.69	199 13.15
Total	615 40.65	382 25.25	516 34.10	1513 100.00

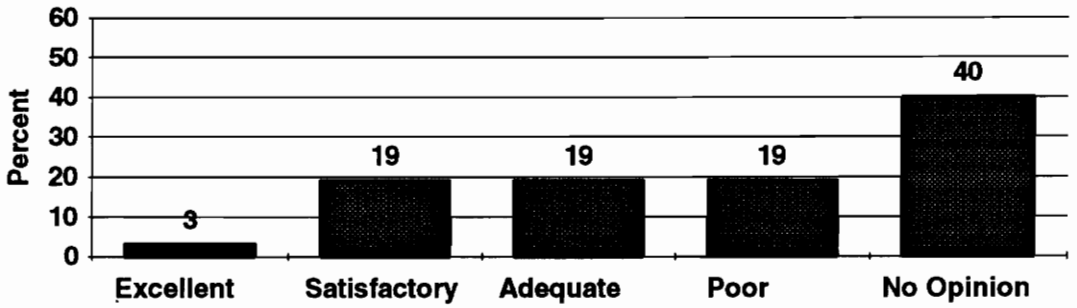
STATISTICS FOR TABLE OF TOS BY YNDK

Statistic	DF	Value	Prob
Chi-Square	4	21.704	0.000

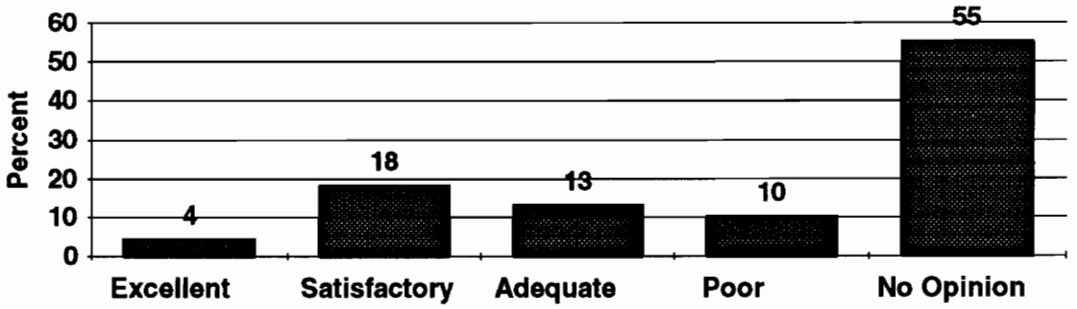
Sample Size = 1513

11. How do you feel about the quality of benefits provided by the WC system? (Analysis by experience)

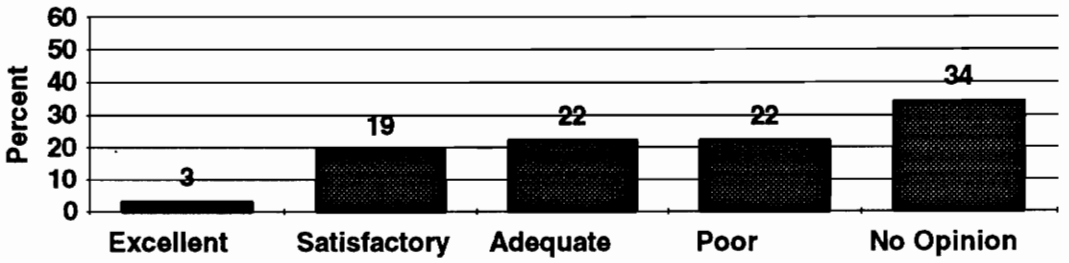
All responses:



5 years or less experience (411 responses):



6 years or more experience (1195 responses):



Experience had an effect on the answers to this question. The statistical chi-square analysis shows a p-value less than 0.05

Independence test for Question 11 by experience
12:31 Saturday, September 24, 1994

TABLE OF EXP BY QUAL

EXP / QUAL	EXCEL	POOR	ADEQ	SATIS	NOOP	Total
LT5Y	17	41	53	74	226	411
Expected	13.564	77.798	80.869	77.031	161.74	
Deviation	3.4365	-36.8	-27.87	-3.031	64.262	
Cell Chi-Square	0.8707	17.405	9.6043	0.1192	25.532	
Percent	1.06	2.55	3.30	4.61	14.07	25.59
Row Pct	4.14	9.98	12.90	18.00	54.99	
Col Pct	32.08	13.49	16.77	24.58	35.76	
MT6Y	36	263	263	227	406	1195
	39.436	226.2	235.13	223.97	470.26	
	-3.436	36.798	27.869	3.0305	-64.26	
	0.2995	5.9863	3.3032	0.041	8.7814	
	2.24	16.38	16.38	14.13	25.28	74.41
	3.01	22.01	22.01	19.00	33.97	
	67.92	86.51	83.23	75.42	64.24	
Total	53	304	316	301	632	1606
	3.30	18.93	19.68	18.74	39.35	100.00

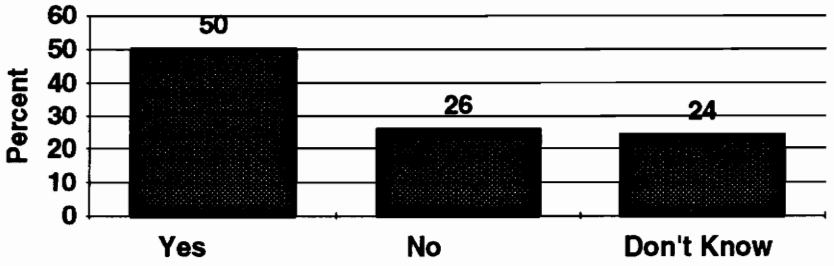
STATISTICS FOR TABLE OF EXP BY QUAL

Statistic	DF	Value	Prob
Chi-Square	4	71.943	0.000

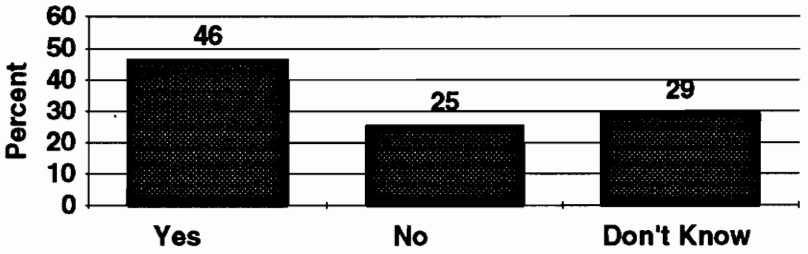
Sample Size = 1606

12. Do you think WC fraud is a problem in the construction industry? (Analysis by experience)

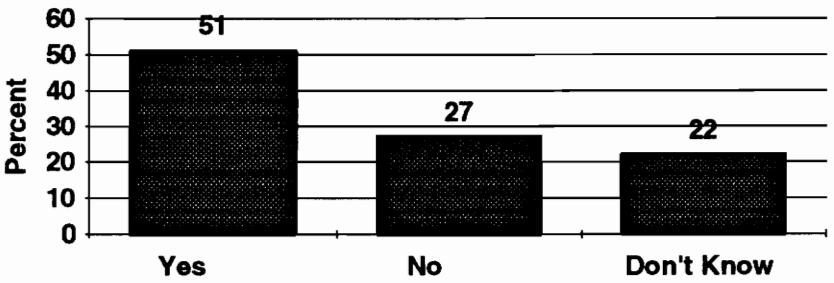
All responses (1606)[11]:



5 years or less experience (411 responses):



6 years or more experience (1195 responses):



Experience had an effect on the answers to this question. The statistical chi-square analysis shows a p-value of 0.017

[11]There were eight people who did not answer the question regarding their experience. They were not included in this analysis. There were 26 people who did not answer the question regarding the location of the job site. They were not included in that analysis. Thus, the percentages shown in the "All responses" graphs for these analyses may not be the same.

Independence test for Question 12 by experience
12:31 Saturday, September 24, 1994

TABLE OF EXP BY YNDK

EXP	YNDK			
Frequency Expected Deviation Cell Chi-Square Percent Row Pct Col Pct	Y	N	DK	Total
LT5Y	189	103	119	411
	204.22	109.02	97.76	
	-15.22	-6.02	21.24	
	1.1344	0.3324	4.6149	
	11.77	6.41	7.41	25.59
	45.99	25.06	28.95	
	23.68	24.18	31.15	
MT6Y	609	323	263	1195
	593.78	316.98	284.24	
	15.22	6.0199	-21.24	
	0.3901	0.1143	1.5872	
	37.92	20.11	16.38	74.41
	50.96	27.03	22.01	
	76.32	75.82	68.85	
Total	798	426	382	1606
	49.69	26.53	23.79	100.00

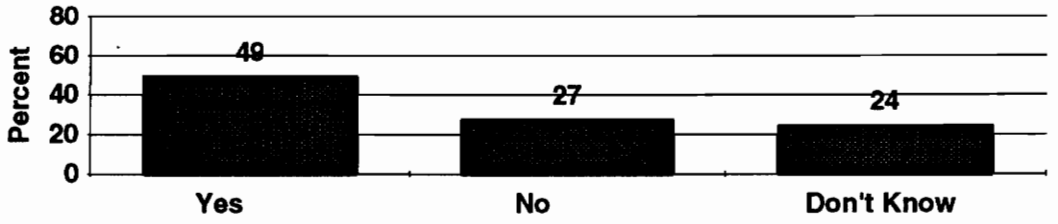
STATISTICS FOR TABLE OF EXP BY YNDK

Statistic	DF	Value	Prob
Chi-Square	2	8.173	0.017

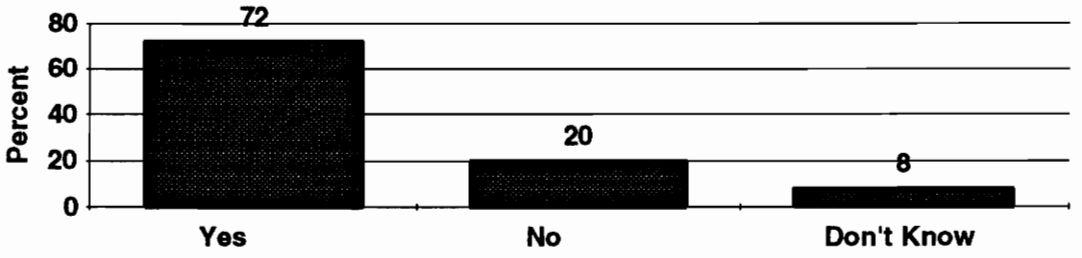
Sample Size = 1606

12. Do you think WC fraud is a problem in the construction industry?

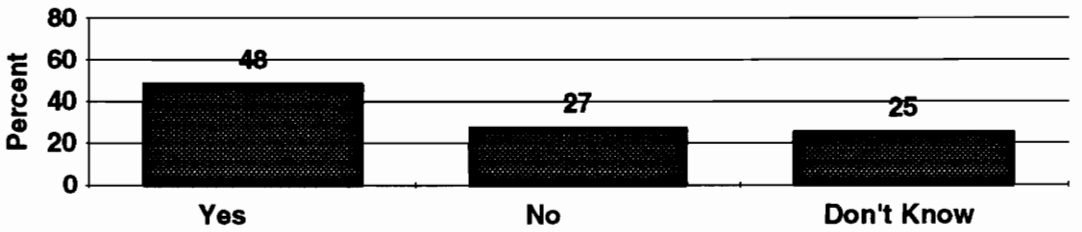
All responses (1588)[12]:



Only California (86 responses):



All states except California (1502 responses):



The responses from California were different from those of the rest of the states combined. The statistical chi-square analysis shows a p-value less than 0.05

[12]There were 26 people who did not answer the question regarding the location of the job site. They were not included in this analysis.There were eight people who did not answer the question regarding their experience. They were not included in that analysis. Thus, the percentages shown in the "All responses" graphs for these analyses may not be the same.

Independence test for Question 12 by states vs. California
22:25 Monday, October 3, 1994

TABLE OF STATE BY YNDK

STATE	YNDK			
Frequency Expected Deviation Cell Chi-Square Percent Row Pct Col Pct	Y	N	DK	Total
CA	62	17	7	86
	42.404	22.908	20.688	
	19.596	-5.908	-13.69	
	9.0555	1.5237	9.0562	
	3.90	1.07	0.44	5.42
	72.09	19.77	8.14	
	7.92	4.02	1.83	
ALL	721	406	375	1502
	740.6	400.09	361.31	
	-19.6	5.9081	13.688	
	0.5185	0.0872	0.5185	
	45.40	25.57	23.61	94.58
	48.00	27.03	24.97	
	92.08	95.98	98.17	
Total	783	423	382	1588
	49.31	26.64	24.06	100.00

STATISTICS FOR TABLE OF STATE BY YNDK

Statistic	DF	Value	Prob
Chi-Square	2	20.760	0.000

Sample Size = 1588

Vita

Ms. Decker was born May 26, 1971 in Washington, D.C., and raised in the outskirts of Baltimore County, Maryland. After graduation from Notre Dame Preparatory School for Girls in 1989, Ms. Decker moved to Blacksburg to attend Virginia Polytechic Institute and State University (VPI). While attending VPI, she completed a University Cooperative Education program through employment with the U.S. Forest Service. Ms. Decker received a Bachelor's Degree in Civil Engineering from VPI in 1994. During her last year of undergraduate study, Ms. Decker began work on her program to earn a Master's Degree in Civil Engineering. This degree, with an emphasis in Construction Engineering and Management, was received in May of 1995.

After graduation, Ms. Decker returned to the Baltimore area to work as a project engineer for a nationally recognized *Engineering News Record* top 50 general contractor. She will marry her fiancé and Blacksburg native, Mr. Danny Lucas, in May of 1996.