The Business Roundtable

THE WORKERS' COMPENSATION CRISIS . . . SAFETY EXCELLENCE WILL MAKE A DIFFERENCE

A Companion Publication to Construction Industry Cost Effectiveness (CICE) Project Report A-3 — Improving Construction Safety Performance

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SUMMARY

There is a growing crisis in workers' compensation insurance. In recent years soaring medical costs, widespread abuse of benefits and rapidly escalating insurance premiums have affected the competitiveness of large sectors of American business. Many construction companies are among those firms that have been particularly hard hit. A number have been driven out of the business through the high cost of workers' compensation insurance, and others will no doubt follow.

Between 1980 and 1987, workers' compensation insurance costs in the United States doubled. That upward trend continued in 1988, 1989, 1990, and in the coming year, depending on the state, workers' compensation insurance premiums are projected to jump from 5 to 30 percent. There is no sign that this trend of ever escalating costs will slow in the future.

Workers' compensation laws are designed to provide a no-fault means of handling occupational injuries and illnesses. Annual costs of workers' compensation and liability insurance to the industrial, utility and commercial construction industry that this report covers is $5.26 billion (1989 dollars). Construction contractors, depending on their experience modification rate, are paying 10 to 20 percent of their direct labor cost for workers' compensation insurance. This is usually more than their profit percentage. Workers' compensation premium cost is determined using an experience modification rate which is based on a contractor's accident experience.

In the industrial, utility and commercial construction industry, occupational injuries have not significantly decreased in the last nine years. The direct and indirect costs of these injuries to users of industrial, utility and commercial construction is more than $17 billion annually.

Contractors, by implementing an effective safety program to reduce work site accidents, can influence their workers' compensation premium costs. Lowering the frequency and severity of construction accidents will lower experience modification rates and manual rates which, in turn, lower workers' compensation insurance premiums.

This publication will demonstrate the cost relationship between workers' compensation insurance premiums and jobsite safety in the construction industry. It will address the clear lack of understanding of cause and effect between safety performance and the high cost of workers' compensation insurance.

Owners and contractors must understand the workers' compensation insurance premium concept and how it is affected by work site accidents. The construction industry must increase its focus on improving construction safety performance, and owner and contractor management must demonstrate their commitment to safety by setting the expectation that zero jobsite injuries is the only acceptable goal.

HISTORY OF WORKERS' COMPENSATION INSURANCE

Workers' compensation laws were designed to provide a satisfactory means of handling occupational injuries and disabilities. Although they vary from state to state, workers' compensation laws are founded on the principle that employers should assume costs of occupational disabilities without regard to any fault involved.

The six basic objectives that underlie workers' compensation laws are:

- 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 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.

Today, each of the 50 states has a workers' compensation law governing work within its jurisdiction. Further, in some cases, compensation for work-related injury is governed by Federal workers' compensation laws, including the District of Columbia Workmen's Compensation Act, the Federal Employees' Compensation Act, and the Longshoremen's and Harbor Workers' Compensation Act.

COST OF WORKERS' COMPENSATION INSURANCE

Safety was one of the 23 subjects studied in the Construction Industry Cost Effectiveness (CICE) Project of The Business Roundtable, which recommended 223 ways to improve cost effectiveness. Safety was addressed in Report A-3, "Improving Construction Safety Performance", which has become the most widely read publication of the CICE Project with over 110,000 copies in circulation.

In 1979, the year on which the A-3 Report is based, construction was a $300 billion per year industry, with industrial, utility and commercial construction accounting for $137 billion of the total. Accident costs were a significant 6.5 percent of the $137 billion—$8.9 billion annually—and the cost of workers' compensation insurance was $2.74 billion annually.

By 1989, the industrial, utility and commercial construction segment accounted for $245 billion of a $445 billion construction industry. Using methods developed in Report A-3, accident costs, driven by increases in medical costs, litigation and ballooning insurance costs, rose to $17.1 billion per year, and the annual costs of workers' compensation insurance to the industry reached $5.26 billion.

Workers' compensation insurance is the medium through which contractors are charged the costs of occupational injuries and disabilities. The alarming rise in the cost of workers' compensation insurance premiums due to work site accidents is the reason why contractors and users of construction must devote resources to improving construction safety performance. Besides preventing injuries to workers, increasing motivation and productivity and improving quality, loss control through effective safety programs is the most effective way to control insurance costs.

WORKERS' COMPENSATION INSURANCE PREMIUMS

While workers' compensation laws are governed by individual states and vary from state to state, the laws are quite similar in makeup and process. Three factors are used to calculate Workers' Compensation Insurance Premiums (WCIP). They are:

- Experience Modification Rate (EMR)
- Manual Rate
- Payroll Units

The formula for the calculation of Workers' Compensation Insurance Premiums is:

WCIP = EMR x Manual Rate x Payroll Units.

The *Experience Modification Rate* is a multiplier that is calculated using the past insurance experience of the individual policy holder to forecast or predict future benefit payments to employees who have insurance claims. The method of calculating EMRs is covered in the section titled CONCEPT OF EXPERIENCE MODIFICATION RATING.

MANUAL RATE VARIATIONS

	IN	UT	CA	TX	MN
PIPE BENDING	$2.01	$2.98	$12.32	$15.73	$8.27
INSULATION	$2.67	$5.05	$10.26	$12.88	$14.64
SHEET MET ERECT	$3.83	$3.57	$10.04	$22.92	$15.16
PILE DRIVING	$13.11	$14.04	$18.84	$43.91	$37.44
STEEL ERECTION	$14.57	$22.11	$28.07	$31.01	$78.67

RANGE FROM LOW TO MIDDLE TO HIGH CRAFTS AND FROM LOW TO MIDDLE TO HIGH STATES

FIG 1 - MANUAL RATE VARIATIONS

The *Manual Rate* is an insurance premium rate based on the type of work performed. Jobs are classified into families called classification codes, which are typically four digit numbers. In the premium determination process, each classification code has a premium rate based on worker accident claim experience in that type of work in that state for a given year. The rate also includes overhead expenses and is expressed in "dollars per one hundred dollars of direct payroll." Since the manual rates are based on the work classifications, they reflect the risks involved in each type of work.

Figure 1 (p. 5) shows the wide variation of manual rates from state to state and craft to craft. This variation reflects craft risk exposure, the state's statutory benefits, the level of litigation, the weight of influence of various political groups and other factors.

Figure 2 (p. 7) shows the 50 state average manual rate for each of 16 construction crafts in increasing order. The mix of construction crafts used in these examples is representative of all construction crafts. The difference between these and another matrix of construction crafts is negligible.

A construction contractor's workers' compensation insurance premium (WCIP) is based on the manual rates for the craft classifications employed by the contractor. Direct labor payroll is proportioned according to the amount of each craft classification employed during the year, and the manual rate premiums for the corresponding classification codes are used to develop the WCIP. It is important for the contractor to ascertain that the manual rate classification codes used to calculate the WCIP accurately represent the work of the crafts employed by that contractor.

In a few of the states the manual rates are charged on a work-hour basis rather than on a $100 direct-wage basis. Six states operate as the sole source of workers' compensation insurance (Nevada, North Dakota, Ohio, Washington, West Virginia and Wyoming). These state programs are termed monopolistic since they do not allow competition. In another 13 states the employer is allowed the choice of purchasing workers' compensation insurance from the state or from one of a number of insurance companies licensed to do business in the state. All of the remaining states use insurance companies to cover their workers' compensation needs. All but two states (North Dakota and Wyoming) permit self-insurance by employers.

WORKERS' COMPENSATION MANUAL RATES

16 CONSTRUCTION CRAFTS
AVERAGE OF 50 STATES

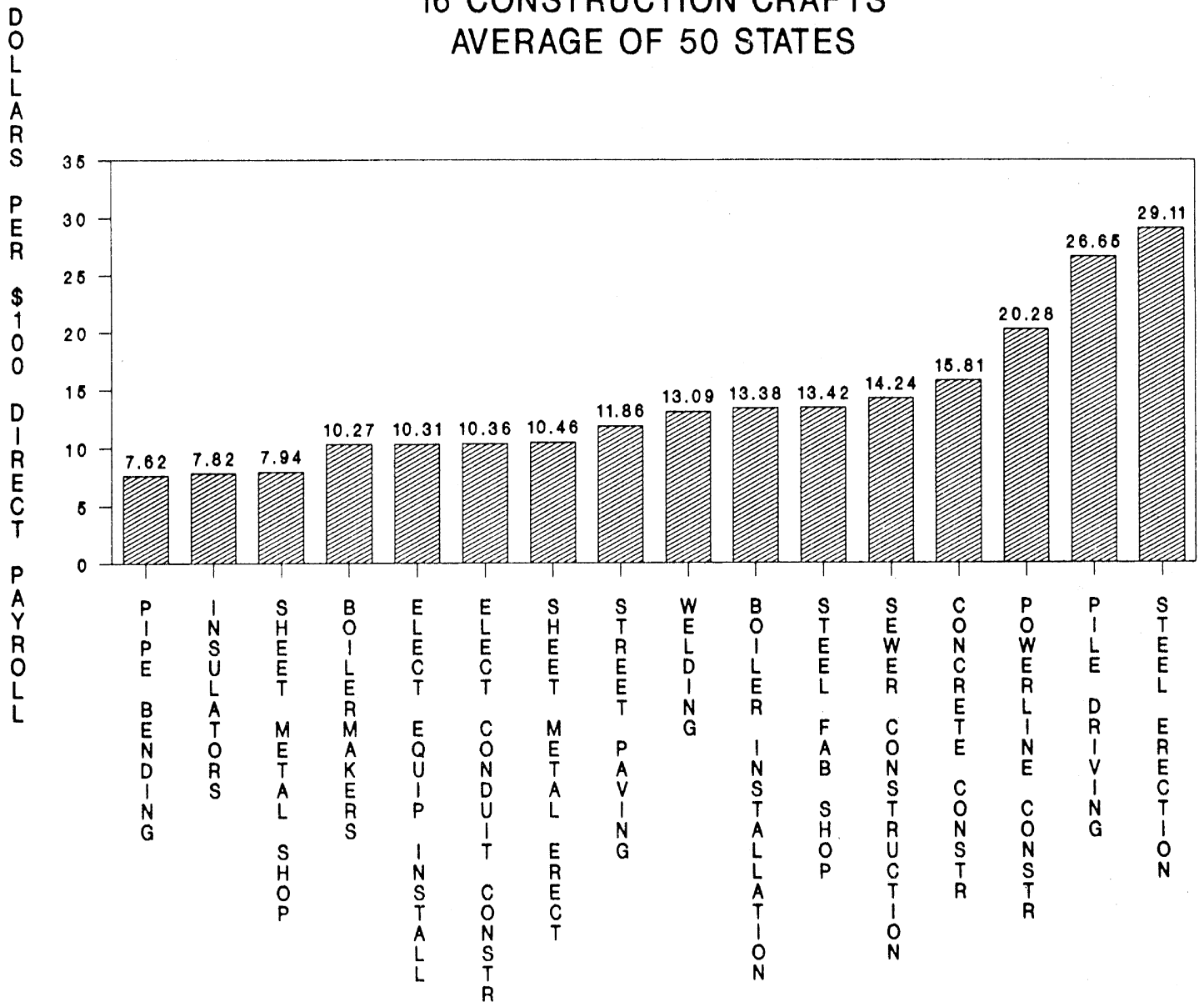

FIG 2 - AVERAGE MANUAL RATES BY CRAFT

Figure 3 (p. 9) shows the average manual rates for 16 selected construction crafts in each of the 50 states, which varies from a low of $5.66 in Wyoming to a high of $27.62 in Minnesota. The average rate for all 50 states is $13.91. The same crafts used in Figure 2 are used in Figure 3.

Payroll Units are derived by dividing an employer's total annual direct labor cost by 100.

CONCEPT OF EXPERIENCE MODIFICATION RATING

The Experience Modification Rate (EMR) is applied to the manual premium to reflect an employer's variation from the average of others with the same classification code or codes. In its simplest form, the EMR is the ratio of actual losses to expected losses over a moving three-year period. This moving three-year period ends one year before the EMR becomes effective, and each year the loss experience for the earliest year is eliminated and a new year is added. For example, the 1990 EMR reflects loss experience for 1988, 1987 and 1986.

The basic formula is:

$$\text{EMR} = \frac{\text{Actual Losses}}{\text{Expected Losses}}$$

Where an employer has a large number of employees covered by workers' compensation insurance, accident claims usually result in a fairly stable distribution of the number and the severity of the claims. This is not true for smaller firms with few employees where unpredictability plays a more significant role in the number and severity of accident claims that occur in a given period of time. For the small employer, with annual expected losses less than $25,000, there are a small number of claims, and a few severe accidents which have large claims will substantially affect actual losses. As a result, the EMR formula is modified in a way that benefits small employers.

Workers' compensation insurance recognizes that the severity of an accident claim is not predictable. For example, the survivor benefits for a young worker in his 20's leaving a widow and three children would be considerably greater than the survivor benefits for a worker in his 50's leaving only a spouse. Therefore, the most important fact is not the size of the claim, but the occurrence, in other words, frequency is more important than severity.

WORKERS COMPENSATION MANUAL RATES
50 STATES
AVERAGE OF 16 CONSTRUCTION CRAFTS

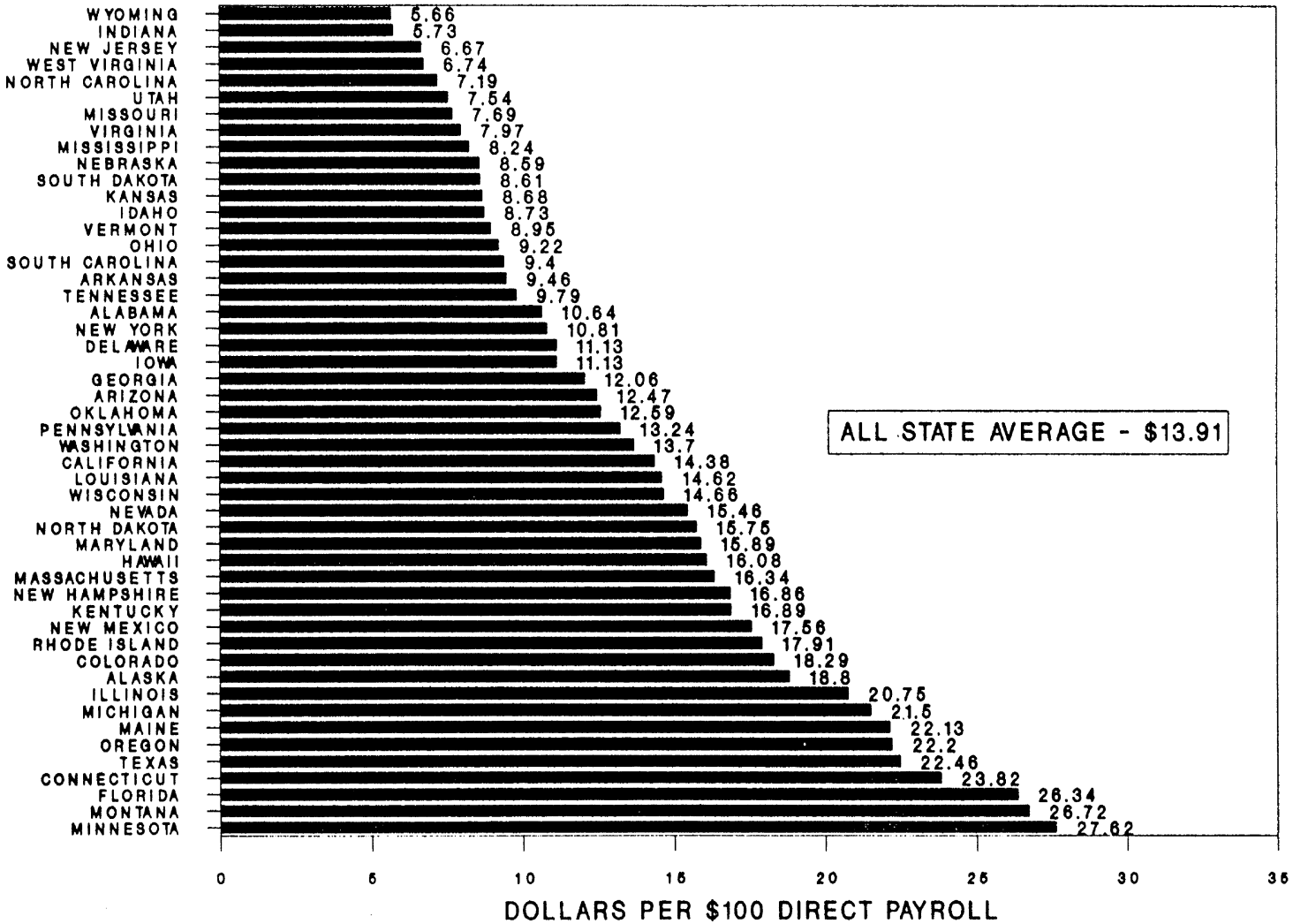

FIG. 3 - MANUAL RATES BY STATE

This reliance on accident frequency also measures risk exposure. For example, a contractor with one claim of $30,000 is a better risk than another experiencing 15 accidents costing $2,000 each—also a total of $30,000. The contractor with the single large claim is the better risk considering that any one of the 15 small accidents of the other contractor could have reached the $30,000 amount, given a different set of circumstances.

To accommodate smaller employers, the EMR formula is adjusted so that it gives primary consideration to the number of claims (frequency) and secondary consideration to the severity of claims. To minimize the effect of unpredictability, each actual loss (claim) is split into two elements—the primary loss and the excess loss. The actual primary loss is the basic loss portion. It reflects claim frequency and is given full weight. Excess loss is the amount by which the actual loss exceeds the primary loss, and it reflects claim severity.

Two additional factors are used in the formula to stabilize the EMR for smaller employers. As expected losses increase, a "weighting" factor is used to give more weight to actual excess losses and less weight to expected excess losses. The second factor is a "ballast" value which is added to both the actual and the expected losses to minimize fluctuations in the EMR. The values of these two factors vary as an employer's expected losses increase; the weighting factor increasing and the ballast factor decreasing. The minimum and maximum expected losses and the values of these factors are established by a state's rating service organization and vary by state.

So, when actual losses are adjusted for severity and frequency, according to the previous two paragraphs, the formula becomes:

$$\text{EMR} = \frac{\text{"ADJUSTED" Actual Losses} + \text{"BALLAST"}}{\text{Expected Losses} + \text{"BALLAST"}}$$

See Appendix for the exact EMR formula with corresponding definitions and examples.

THE EFFECT OF NO LOSSES ON EMR

The impact of no accident claims, that is, no losses, during the full three-year rating period varies for large and small contractors. Due to weighting and ballast factors used to modify the EMR formula for severity and frequency, a very small contractor, with the minimum expected losses of $25,000, cannot have an EMR of less than 0.90. With payroll levels high enough and expected losses at their maximum, as in the case of a large employer, a 0.0 Experience Modification Rating is theoretically possible.

It is possible, therefore, for the safety performance of a large contractor with a 0.6 EMR to actually be worse than that of small contractor with a 0.9 EMR, because the large payroll provides the large contractor with the potential for a very low rating. In spite of this, the EMR remains an excellent measure of a contractor's past safety performance.

OSHA INCIDENT RATES AND EMR

Since CICE Report A-3 was published, use of the Experience Modification Rate to evaluate contractor safety performance has grown. However, the built-in bias toward very large contractors, as demonstrated in the previous paragraph, should be considered when comparisons are made between large and small contractors. Therefore, it also is helpful to use the contractors' OSHA incidence rates as a measure of past safety performance. Because incidence rates are adjusted to a common base (200,000 manhours), using them for evaluating contractors provides an equivalent comparison of both large and small contractors. There is some correlation between EMRs and OSHA incidence rates, and, when used in tandem, both can indicate a contractors' past safety performance, especially when trends (rising or falling) are considered.

EMR VALUES

Studies have shown that typical experience modification rate values for construction contractors range from 0.3 to 2.0. The lower the EMR value, the more it is reflective of an individual contractor's ability to prevent accidents through work place safety programs, subject to contractor size limitations.

It is not uncommon for contractors with poor safety performance to pay twice the premium costs for workers' compensation insurance of those with the best safety performance.

For example, consider two contractors with different EMRs bidding a job with $10,000,000 direct labor costs and a manual rate of $15.00.

Contractor A has an EMR of 0.60

His workers' compensation insurance premium is:

$$\frac{\$10,000,000}{\$100} \times \$15.00 \times 0.60 = \$900,000$$

Contractor B has an EMR of 1.40

His workers' compensation insurance premium is:

$$\frac{\$10,000,000}{\$100} \times \$15.00 \times 1.40 = \$2,100,000$$

The safety dividend to Contractor A is $1,200,000 ($2,100,000 less $900,000)—12 percent of direct labor cost!

The cost of WCIP to contractors is reflected in their bids, and in fact, contractors have been driven out of business by the high cost of their workers' compensation insurance. Workers' compensation represents the largest portion of the insurance a contractor buys, and it should be understood that the contractor has influence over its cost through effective safety programs.

Figure 4 (p. 13) illustrates the difference in workers' compensation insrance premiums between EMRs of 0.60 and 1.40 for each of the 50 states. The 16 craft average manual rate premium for each state was used with $10,000,000 direct labor payroll. It shows that potential insurance premium savings between the EMRs of 0.60 and 1.40 in a state range from a low of $452,000 (4.5% of direct labor payroll) in Wyoming to a high of $2,210,000 (22.1% of direct labor payroll) in Minnesota.

HOW ACCIDENTS AFFECT THE EMR

Contractors can improve their workers' compensation experience rating. Lowering the frequency and the severity of construction accidents will result in lower workers' compensation insurance costs. Savings due to lower insurance costs accrue to the bottom line and can be used to competitive advantage. Or, in another sense, a contractor can lose that all important competitive edge if the EMR gets very much out of line as a result of poor safety performance, causing insurance premiums to become inordinately high.

WORKERS' COMPENSATION PREMIUMS
PER $10,000,000 DIRECT LABOR
16 CRAFT AVERAGE MANUAL RATE

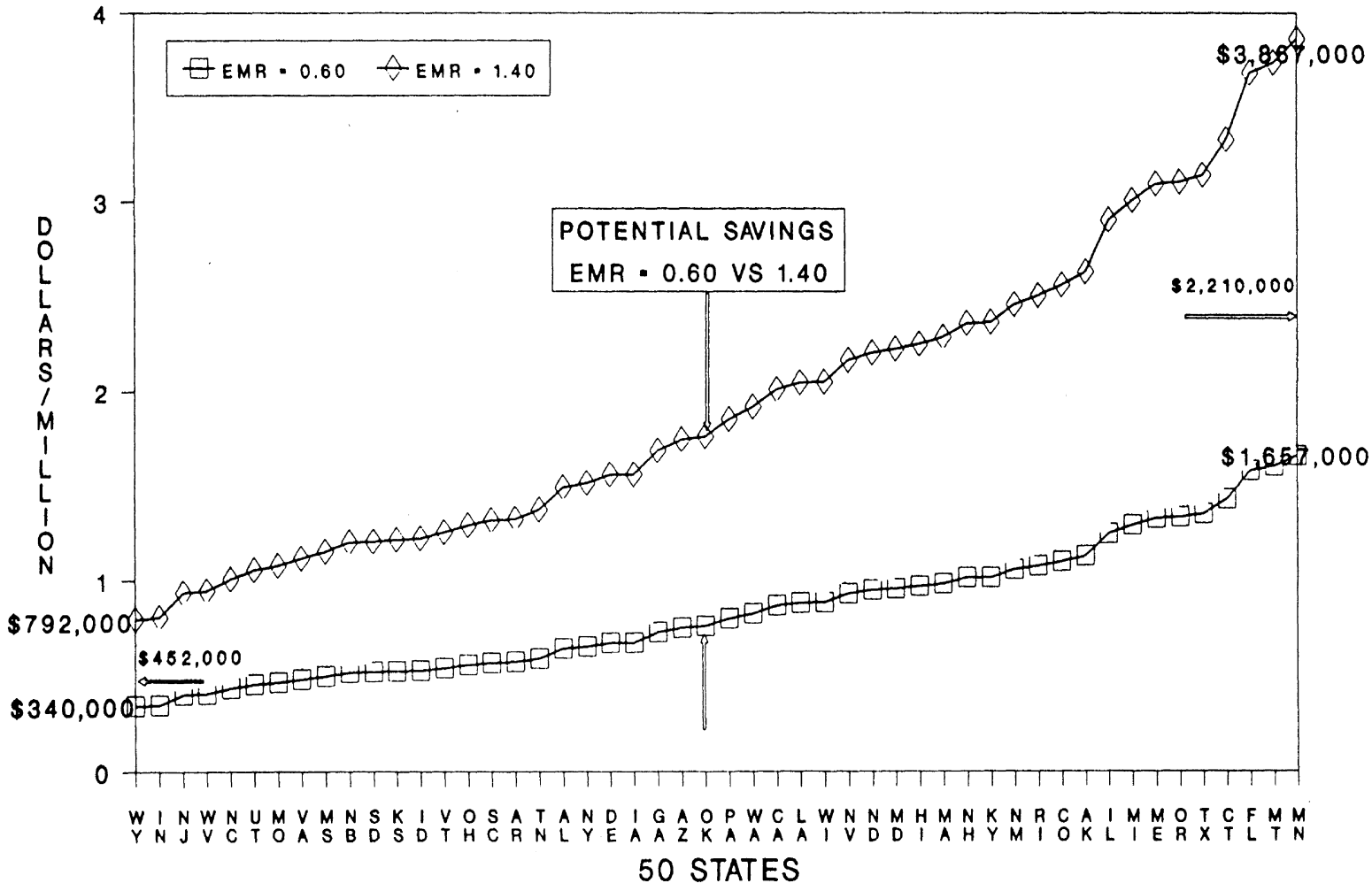

FIG. 4 - POTENTIAL PREMIUM SAVINGS

With the unceasing rise in premium rates for workers' compensation insurance, those companies seeking to gain or maintain a competitive edge and increase profitability have found ways to achieve significant reductions in injury frequency. Despite those success stories, when measured by OSHA Recordable Incidence Rates and Lost Time Frequency Incidence Rates, overall construction industry safety performance has not significantly improved in the last nine years.

Figure 5 (p. 15) shows the OSHA recordable accident and lost workday accident incidence rates for construction published by the Bureau of Labor Statistics (BLS) for 1980 through 1988.

SAFETY IS QUALITY

In recent years, the concept of quality has significantly influenced American industry. A contractor's safety performance is an indicator of that contractor's dedication to the principles of quality. The contractor's workers' compensation insurance premium is related to quality as it can be considered a direct measure of the cost of the contractors non-conformance to expectations—which are no job injuries. As workers' compensation losses caused by on-the-job injuries rise, insurance premium costs increase and thus become a measure of the contractor's non-performance in managing the job safety program.

While it is recognized that injuries do occur, this recognition should never convey acceptance that injuries must occur. Management must clearly set the expectation that zero injuries is the only acceptable goal, and management actions must unequivocally parallel management's spoken word. It is then, and only then, that the worker will begin to believe that management is serious about safety. Zero is the only supportable goal since any other leaves the subtle message that injuries will occur and that injuries are acceptable.

Achieving excellence in safety performance through the zero injury concept has become the accepted standard in some owner and contractor companies in the United States. Since 1988, The Business Roundtable has recognized 11 owners and 32 contractors through its Construction Industry Safety Excellence Awards Program. All are companies that incorporate unwavering use of the injury-free and behavioral concepts in their approach to construction safety. Some of the many tools that these companies use to reach their goal of zero injuries are:

- "Injury-free" (Zero Injury) Vision
- Prequalification of Potential Contractors

BUR. OF LAB. STAT.(BLS) INCIDENCE RATES
CONSTRUCTION STANDARD INDUSTRIAL CLASSIFICATION CODES 15, 16 & 17

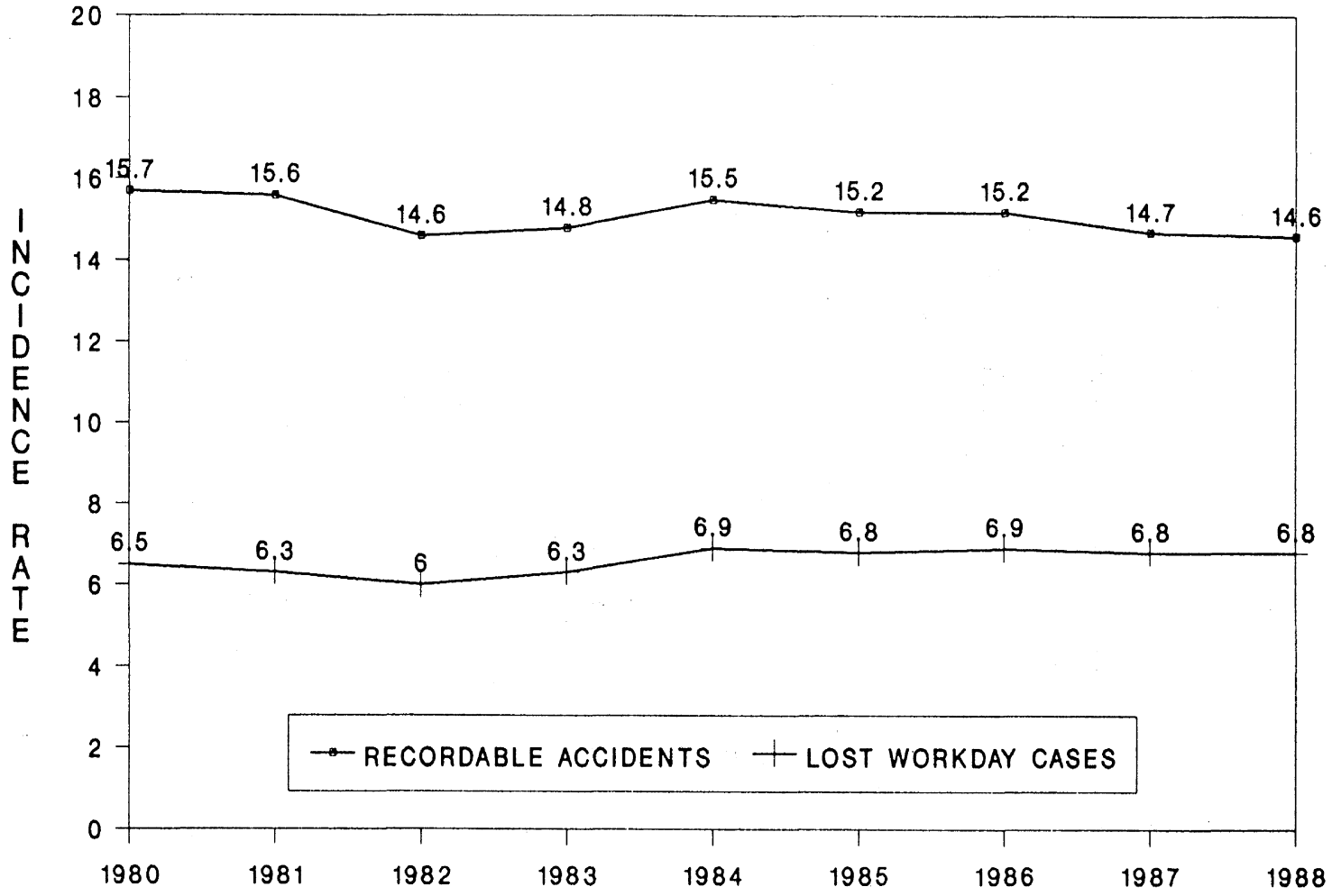

FIG. 5 - RECORDABLE & LOST WORKDAY RATES

- Safety Performance Hurdle Rates for Qualifying Contractors
- Safety-Specific Contract Language
- Valid Substance Abuse Program
- Absentee and Turnover Audits
- Safety Orientation, which includes:
  Pre-work Indoctrination
  Safety & Loss Prevention Manual Review
  Accident/Incident Reporting Requirements
  Emergency Phone System/Numbers
  Emergency Alarms/Responses
- Safety Training, which covers:
  Basic Safety Rules and Emergency Procedures
  HAZ COMM (The Right To Know)
  Lock-Out/Tag-Out Procedures
  Proper Use of Respirators
  Heavy Equipment Certification
- Supervisory Training, covering:
  Attitude and Behavior
  Disciplinary Guidelines
  Accident/Incident Reporting and Investigation
  Accident Statistics Maintenance
  Incentives/Recognition Programs
- Weekly Site Safety Meetings
- Site Safety Inspections
- Hazardous Work Permits
- Constructor Safety Performance Evaluation
- Statistical Reporting and Feedback
- Recognition of Superior Safety Performance

RECOMMENDATIONS

The Business Roundtable recognizes that contractors have the primary responsibility for execution of jobsite safety. Nothing in this publication is intended to change that. Rather, the recommendations of the study are intended to strengthen the supportive role required of owners in the effort to improve the safety performance of their construction contractors.

- Start every meeting with emphasis on the safety performance of the company. Ensure that people at all levels understand that safety is of paramount importance.
- Ensure that accident and injury reporting is immediate and has the highest profile. The CEO should promptly receive a personal call from a selected management level when a lost time, or potential lost time, injury occurs.
- Insist that a jobsite visit by senior level executives of subcontractor, contractor and owner occur no later than the day following a lost time accident to review what occurred and plan steps to prevent further deterioration of safety performance.
- Determine that innovative safety programs that are in a continuous state of improvement are in place on the work site at all times.
- Consider incentives for safety performance. Put a project level "cents per hour" incentive in place to reward crafts people for lost-time-injury-free work.
- Insure that project management throughout all levels is evaluated on safety performance along with the other critical evaluation factors.
- Develop means to insure the costs of safety non-performance are charged to each project before the profit or loss generated is calculated.
- Make the goal of zero accidents a direct line management responsibility from the CEO down to and including the workers at the jobsite.

APPENDIX: EXPERIENCE MODIFICATION RATING

The Experience Modification Rate formula is:

$$EMR = \frac{Ap + WAe + (1\text{-}W)Ee + B}{E + B}$$

In this formula:

Ap = Actual Primary Losses (reflects claim frequency)

W = Weighting Factor (The weighting factor, which is obtained from Table III which is developed by each state for its Experience Rating Plan Manual, applies to expected losses between $25,000 and $830,000. As expected losses increase, the W value increases from 0 to a maximum of 1.)

Ae = Actual Excess Losses (reflects claim severity)

Ee = Expected Excess Losses (reflects claim severity)

B = Ballast Value (Ballast values, which are also obtained from Table III in a particular state's Experience Rating Plan Manual, are added to both the primary actual and expected losses to minimize the effect of adverse accident experience on the EMRs of smaller employers. The B values decrease as expected losses increase, from $20,000 at $25,000 to 0 at $830,000.)

E = Expected Losses

When the Expected Losses are $25,000 & Under, the W value is 0.00 and the B value is $20,000. These values increase and decrease, respectively, to the point where Expected Losses are $830,000 & Over. At that point, the W value is 1.00 and the B value is 0. Table III is an essential part of all rating manuals; however, values in the Table may vary from state to state.

So, it can be seen that in the case of a large employer, whose Expected Losses are $830,000 & Over, W = 1.00 and B = 0, and the EMR formula becomes:

$$EMR = \frac{Ap + 1.00xAe + (1-1.00)Ee + 0}{E + 0}$$

$$= \frac{Ap + Ae}{E}$$

Since Actual Primary Losses (Ap) plus Actual Excess Losses (Ae) equal Actual Losses, the formula for a large employer is simply:

$$EMR = \frac{\text{Actual Losses}}{\text{Expected Losses}}$$

SAMPLE EMR AND WCIP CALCULATIONS

A contractor's expected losses during three prior policy years are $30,000. Expected primary losses are 60% of expected losses.

E = Total expected losses = $30,000

Ep = Expected primary losses = $30,000 × 60% = $18,000

Ee = Expected excess losses = $30,000 − $18,000 = $12,000

W = Weight = 0.01 (From Table III)

B = Ballast = $19,800 (From Table III)

Suppose there is one loss equal to $60,000.

$$Ap = \text{Actual primary loss} = \frac{\$60,000 \times 10,000}{\$60,000 + 8,000} = \$8,824$$

Ae = Actual expected loss = $60,000 − $8,824 = $51,176

$$EMR = \frac{Ap + WAe + (1-W)Ee + B}{E + B}$$

$$= \frac{8,824 + 0.01 \times 51,176 + (1-0.01)12,000 + 19,800}{30,000 + 19,800}$$

$$= \frac{8,824 + 512 + 11,880 + 19,800}{49,800} = \frac{41,016}{49,800}$$

$$= 0.82$$

The contractor has an annual direct labor payroll of $1,500,000 and his applicable manual premium rate is $13.91 per $100 of payroll, then:

$$\text{WCIP} = \text{EMR} \times \text{Manual Rate} \times \text{Payroll Units}$$

$$= 0.82 \times \$13.91 \times \frac{\$1,500,000}{100}$$

$$= \$171,093$$

EFFECT OF FREQUENCY

The effect of accident frequency on EMR can be shown by using the same example. Instead of one claim equalling $60,000 use 5 claims of $12,000 each.

$$\text{For each, Ap} = \frac{\$12,000 \times 10,000}{\$12,000 + 8,000} = \$6,000$$

$$\text{Ae} = \$12,000 - \$6,000 = \$6,000$$

$$\text{EMR} = \frac{5 \times 6,000 + (0.01)(5 \times 6,000) + (1 - 0.01)12,000 + 19,800}{30,000 + 19800}$$

$$= \frac{30,000 + 300 + 11,880 + 19,800}{49,800}$$

$$= 1.24$$

$$\text{WCIP} = 1.24 \times 13.91 \times \frac{1,500,000}{100}$$

$$= \$258,726$$

Fifteen claims of $4,000 each, also totalling $60,000, will produce an EMR of 1.64 and WCIP of $342,186.

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