

PIASS

Improving Safety Management



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In Search of the Right Answers

Today Was Just A Typical Day At Work

At work ON TIME. Did what I HAD TO DO. Said what I HAD TO SAY. Left ON TIME.

At home

Except

Somewhere within the 6 million work sites and of the 93 million American workers

- 17 were killed by traumatic injuries
- 137 died of occupationally related illnesses
 - 17,138 were injured

U.S. Economic cost? \$110 Billion.

Cost to friends and family? You can't measure

ALL JUST BECAUSE . . . IT WAS A TYPICAL DAY

**So, what did you do today or will you do tomorrow
to make it any different?**

"Making Zero Accidents a Reality"

- Construction Industry Institute (CII)
- "Getting Grounded" Construction Industry Facts
- The Journey
- Project Team "Making Zero Accidents A Reality"
- Project Team "Owners Influence Over Contractor/project Safety Performance"
- Summary and Questions

Construction Industry Institute (CII)

CII Membership

- 46 Owners
- 50 Contractors

A consortium of leading owners, contractors, suppliers, and academia who are interested in improving the constructed project and the capital investment process.



CII Knowledge Structure

- CII Identifies :
 - Best Practices
 - Pending Best Practices
- All Best Practices Validated

Construction Industry Facts

- 636,000 construction companies
- 5-6% labor force
- 13% gross national product
- >7,000,000 persons employed in construction
- 90% of the companies have 50 or less employees

Construction Industry Facts

- Construction industry (risk)
 - 20% work related deaths
 - 18% all workers compensation cases

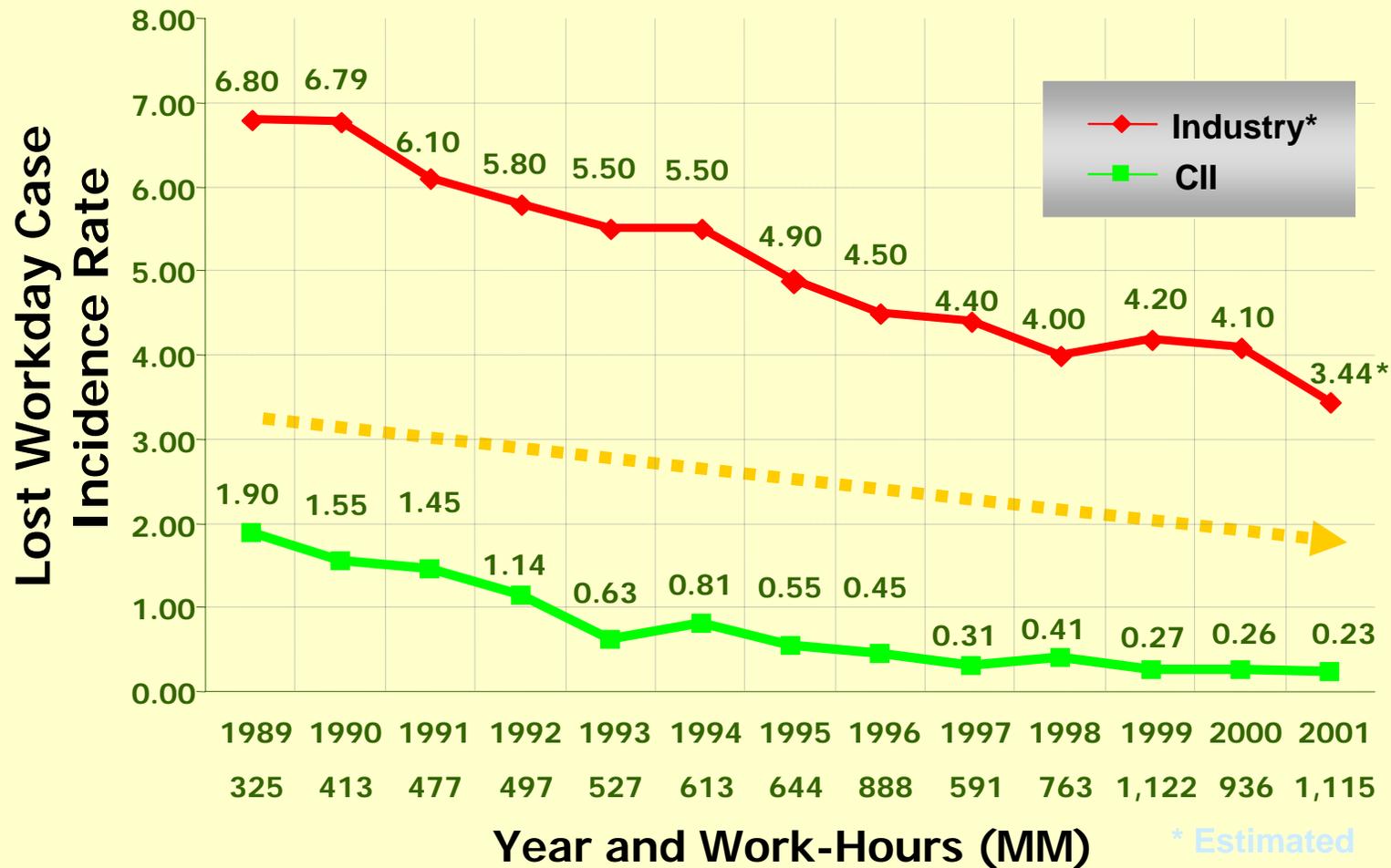
Approximately 1,000 construction workers killed each year

ARE WE IMPROVING AS A INDUSTRY?

First CII Zero Accidents Study Findings - 1993

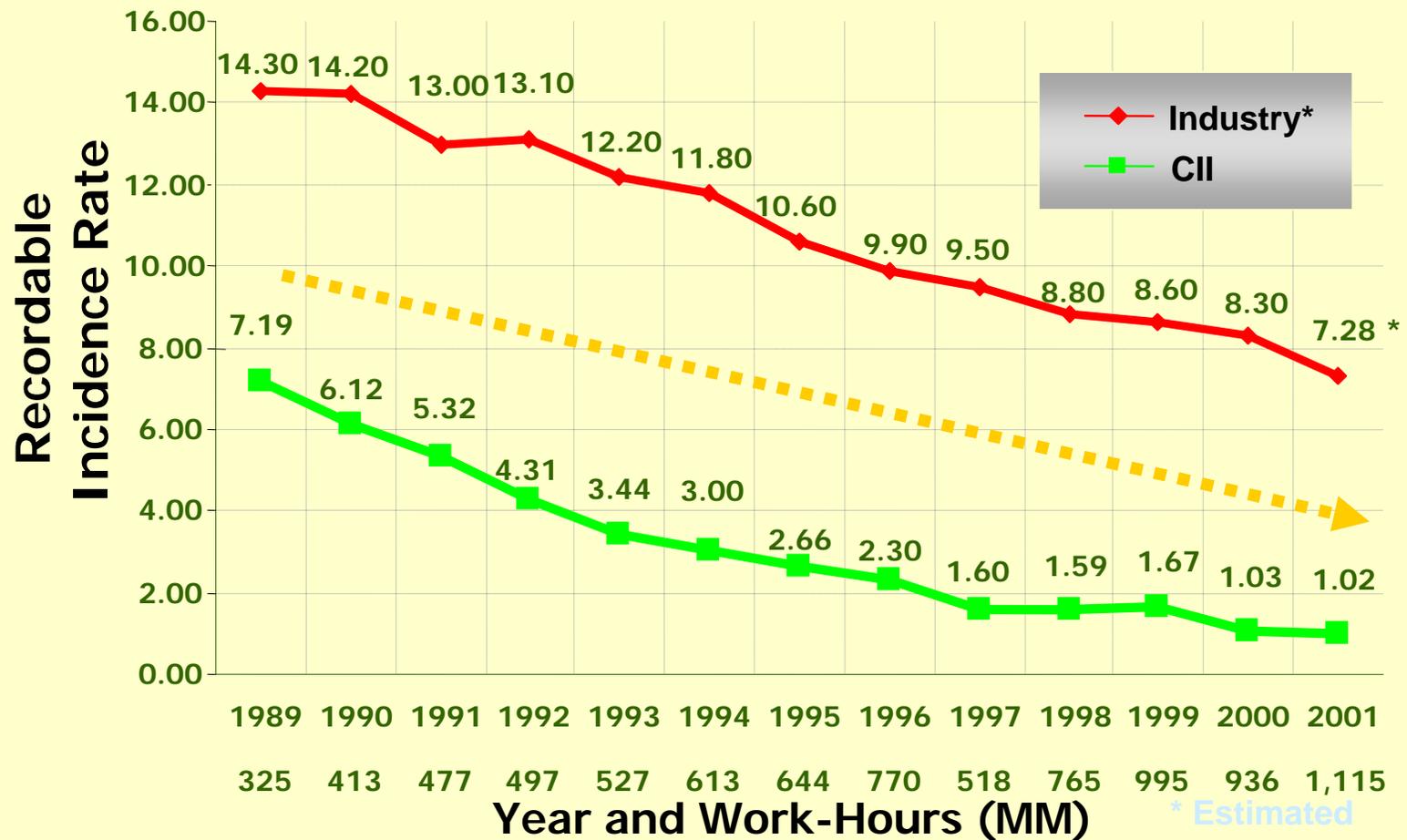
- High-impact zero accident techniques
 - Pre-project/pre-task planning for safety
 - Safety orientation and training
 - Written safety incentive programs
 - Alcohol and substance abuse programs
 - Accident/incident investigations

Safety Performance - LWCIR (Owners & Contractors)



Safety Performance - RIR

(Owners & Contractors)



Even if you're on the right track, you'll get run over if you just sit there.

Will Rogers



Accident reduction has improved significantly since 1989, but we won't just sit there. Our workers are our key core competency. We must continue to strive for Zero Accidents.

The Journey

PT-160
Making Zero
Accidents a Reality

PT-160A
Safety on Outages,
Shutdowns, and
Turnarounds

**The Safety Journey
Continues....**



PT-190
Owners' Role in Safety

Zero Accidents - Revisited

5,148,000,000 jobhours worked by CII
Member Companies Since 1993

51% reduction in recordable injuries

***What Industry best practices have
supported this improvement and are at
the forefront of safety management
today?***

**"Making Zero Accidents a Reality"
CII Project Team
Formed 1998**

Making Zero Accidents a Reality Study

- Methodology - two studies
 - Large construction firms
 - Large construction projects
- Survey of 400 largest construction firms in the U.S.
 - Based on ENR 400 for 1999
 - 400 surveys sent - 106 responses

Making Zero Accidents a Reality Study

- Detailed interviews on construction projects
 - 38 Projects
 - Petrochemical
 - Industrial
 - Public works
 - Transportation
 - Hotel-Casino
 - Commercial buildings
 - U.S. wide geographic area
 - \$50-\$600 million

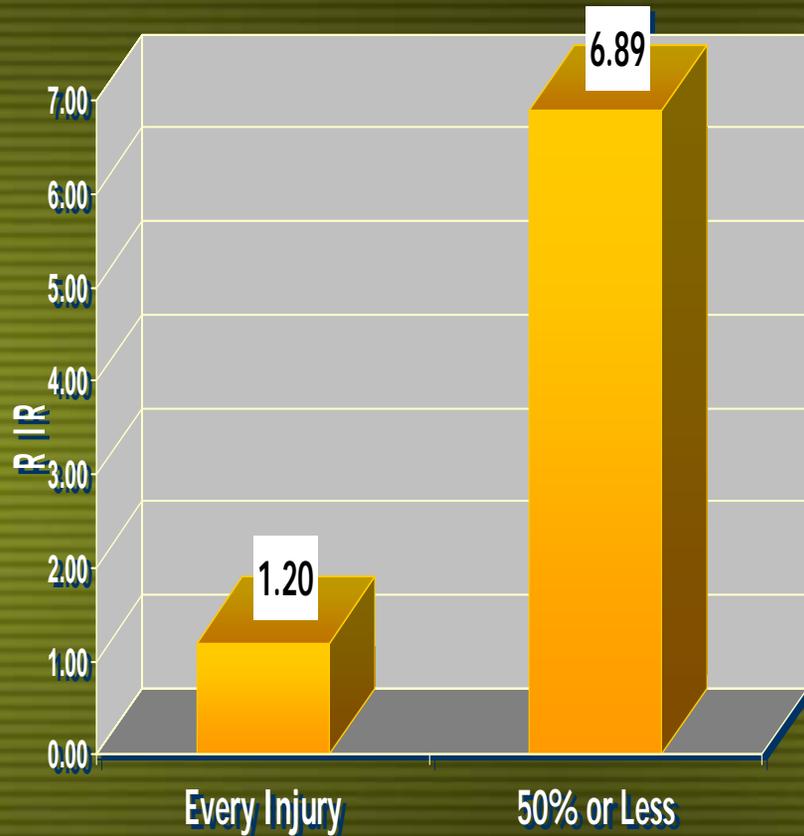
Nine Industry Best Practices

- Getting to Zero
 - Demonstrated management commitment
 - Staffing for safety
 - Safety planning - pre-project / pre-task
 - Safety training and education
 - Worker involvement and participation
 - Recognition and rewards
 - Subcontractor management
 - Accident/incident reporting and investigation
 - Drug and alcohol testing

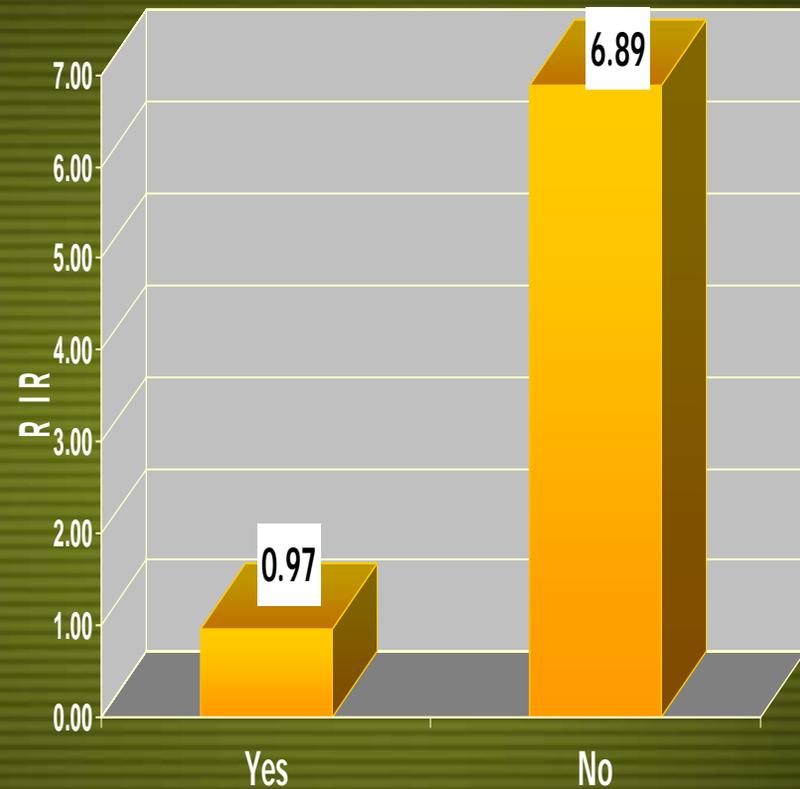
Best Practice Results

- Over 30 key findings revealed companies utilizing these best practices have significantly lower recordable injury rates.
- Of the thirty-eight (38) construction projects interviewed, four (4) projects have achieved zero accidents.

Demonstrated Management Commitment

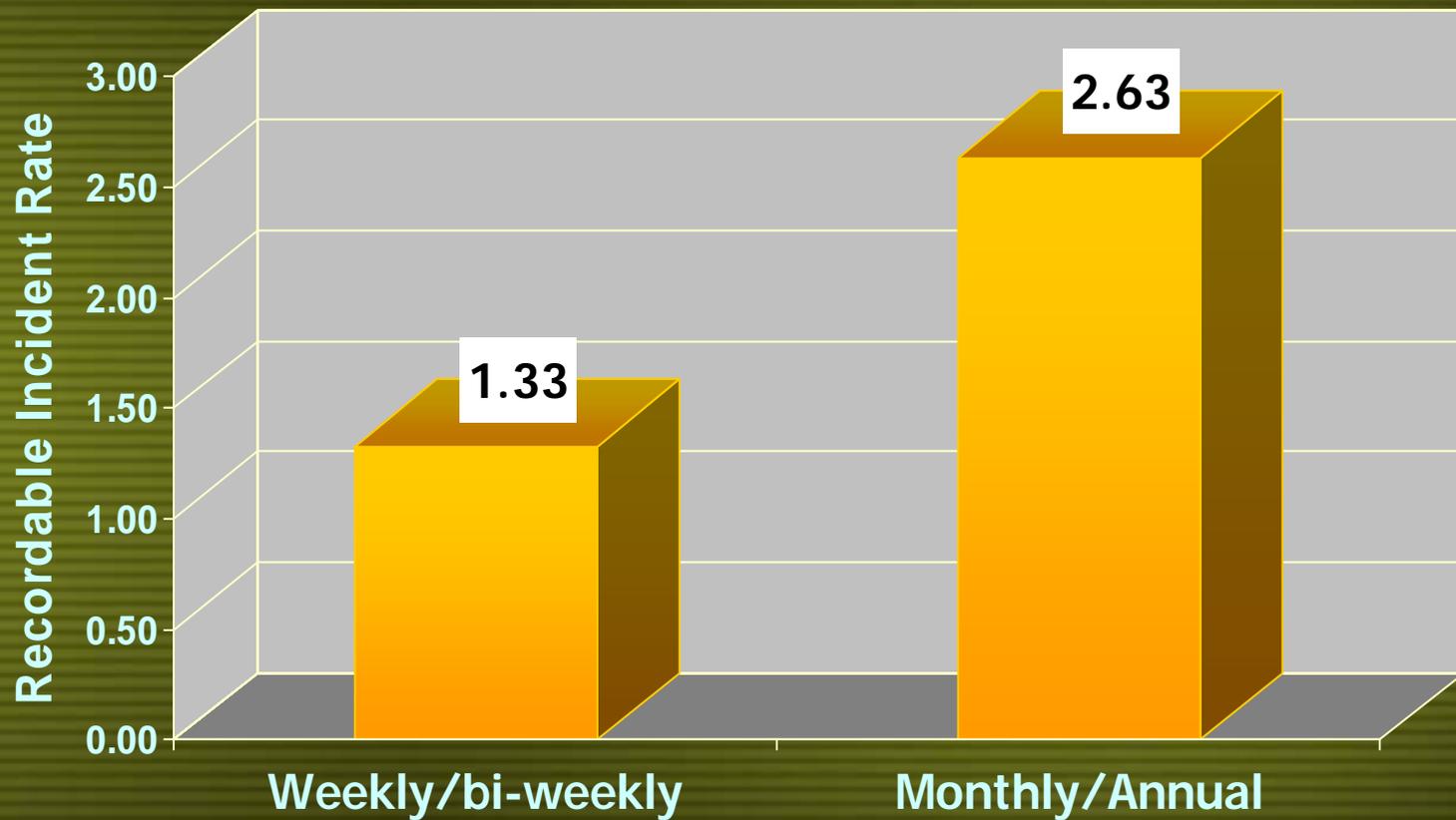


How frequently does top management participate in recordable incident investigation?



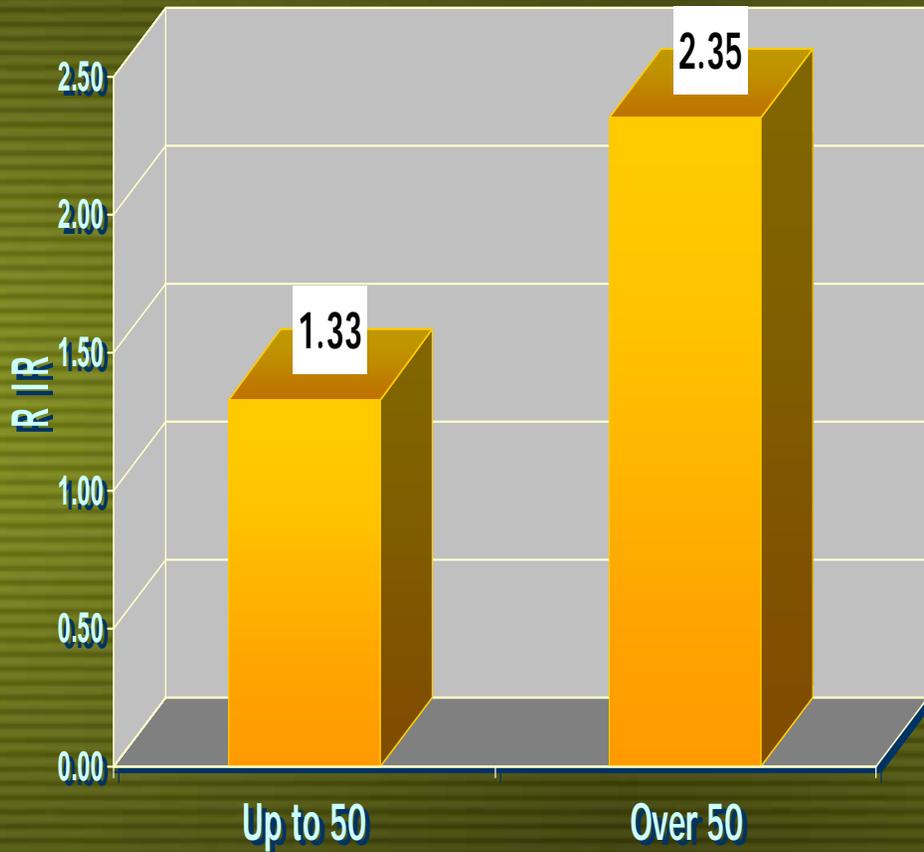
Company president/senior management reviews safety performance report?

Demonstrated Management Commitment

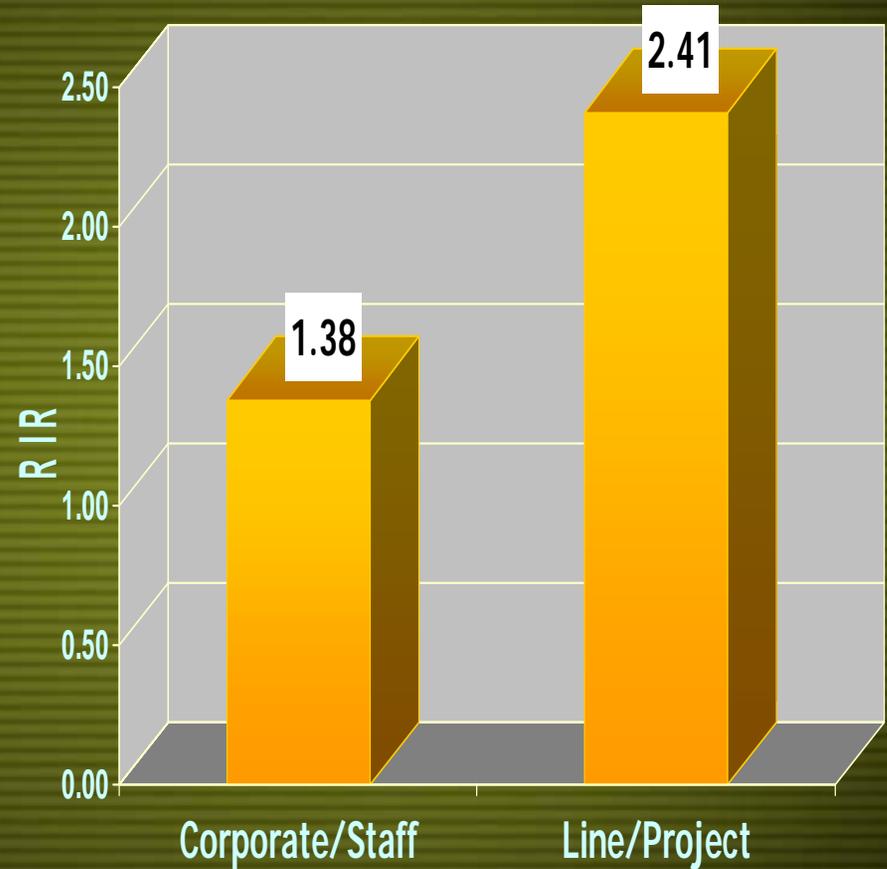


Frequency of home office safety inspections on the project

Safety Staffing

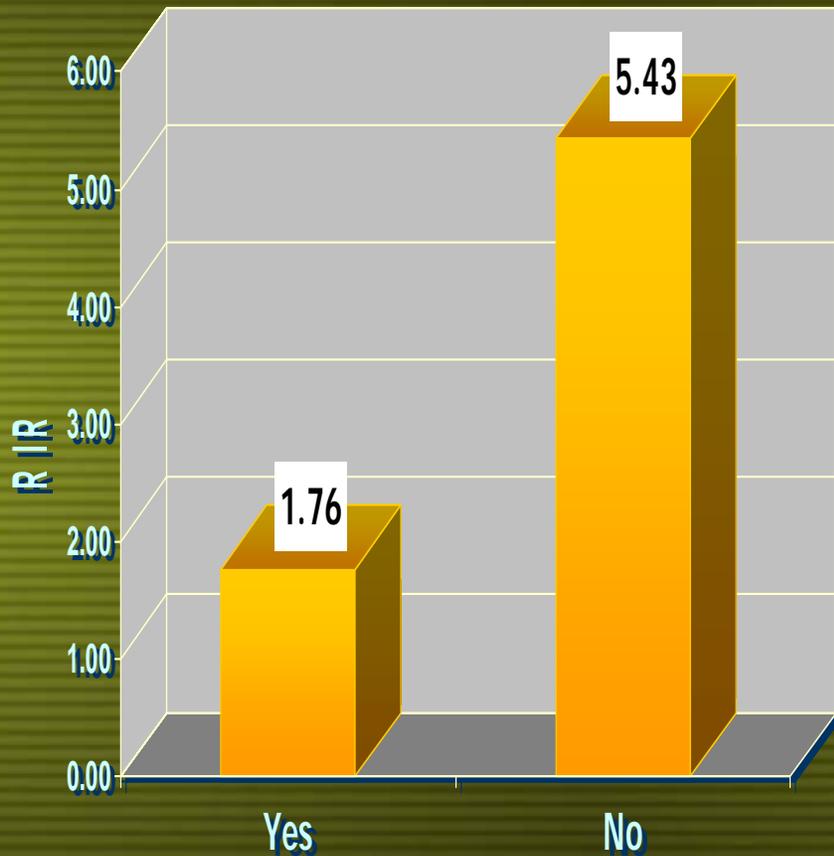


Number of workers per safety professional

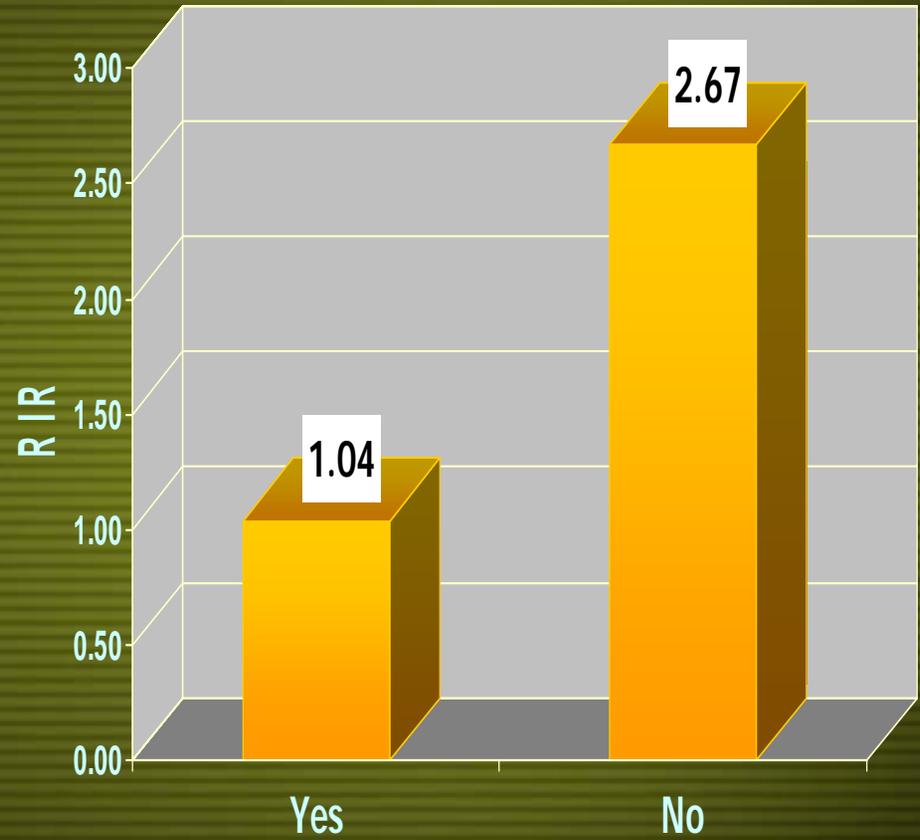


To whom does the safety representative report?

Safety Planning

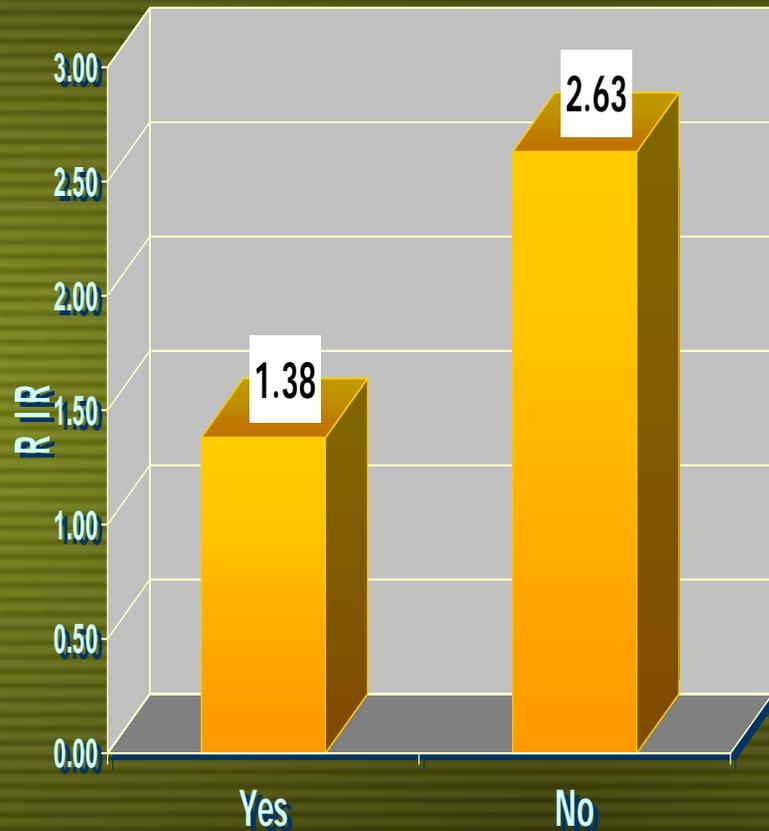


Does the project have a site-specific safety program?

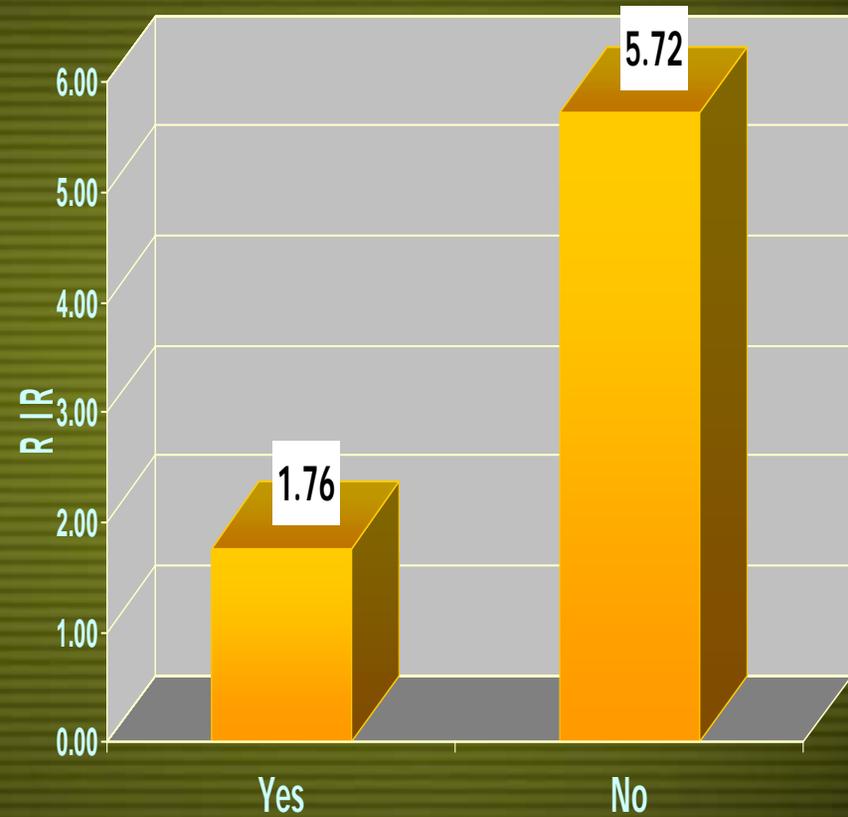


Are pre-task meetings held?

Safety Training and Education

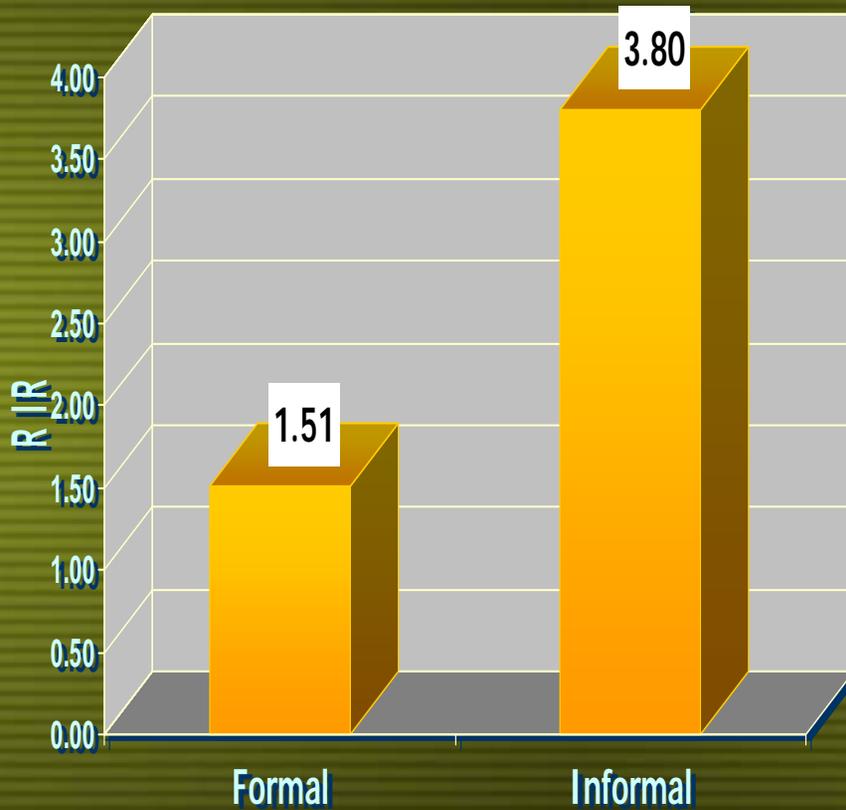


Is safety training a line item within the budget?

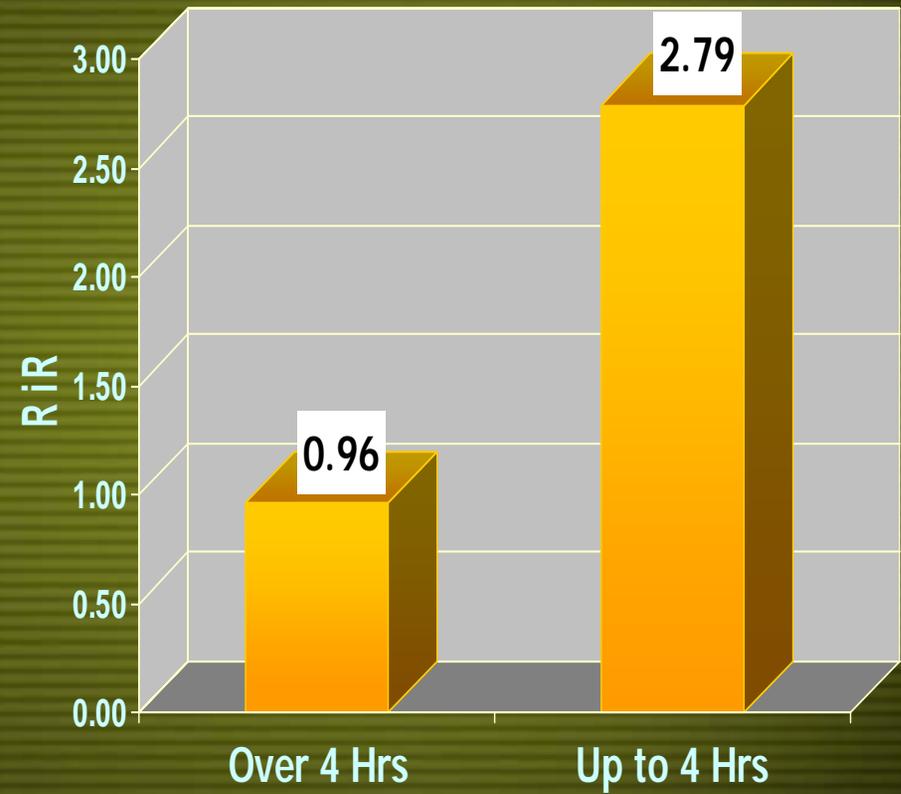


Does every worker on site receive a safety orientation?

Safety Training and Education

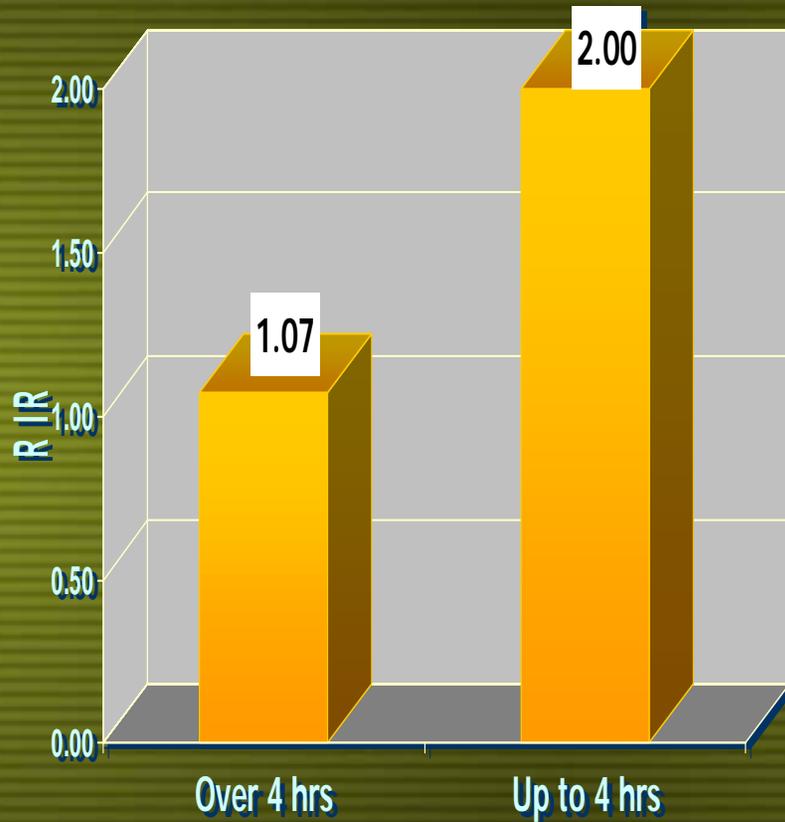


Type of safety orientation provided to workers

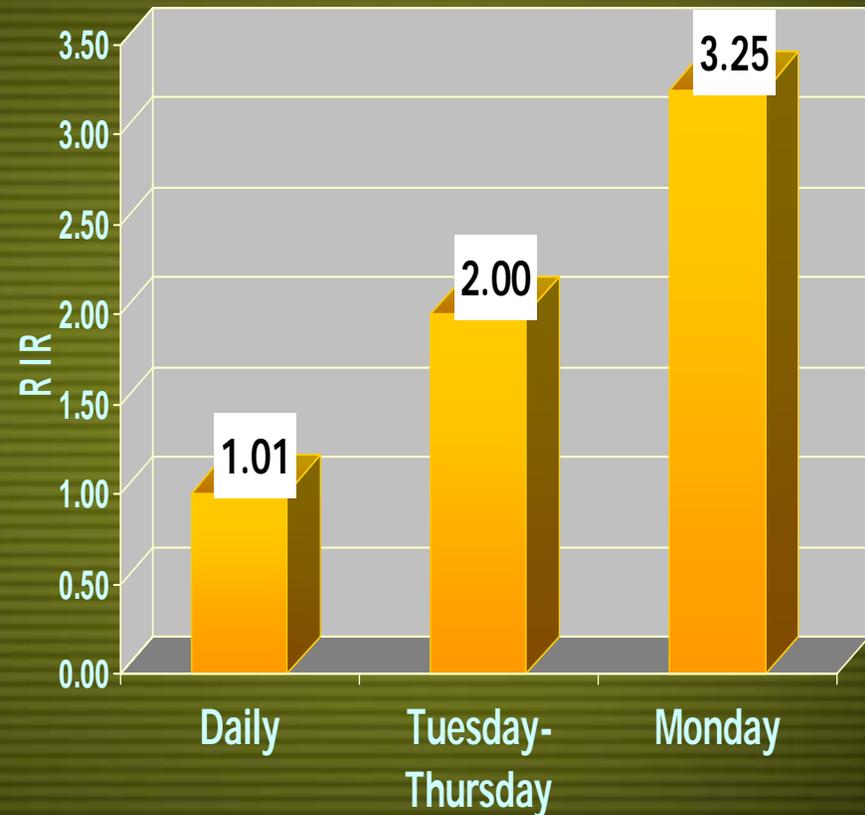


How much monthly training do workers receive after orientation?

Safety Training and Education

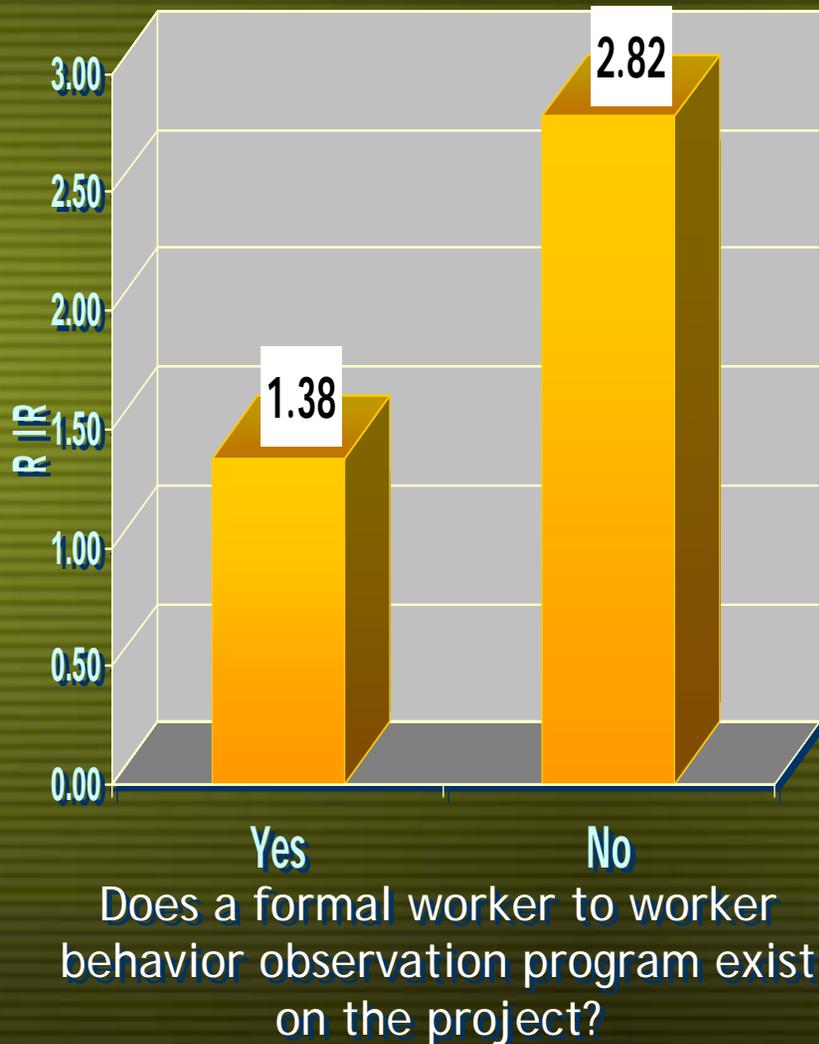


How much monthly training is provided to superintendents and project managers?

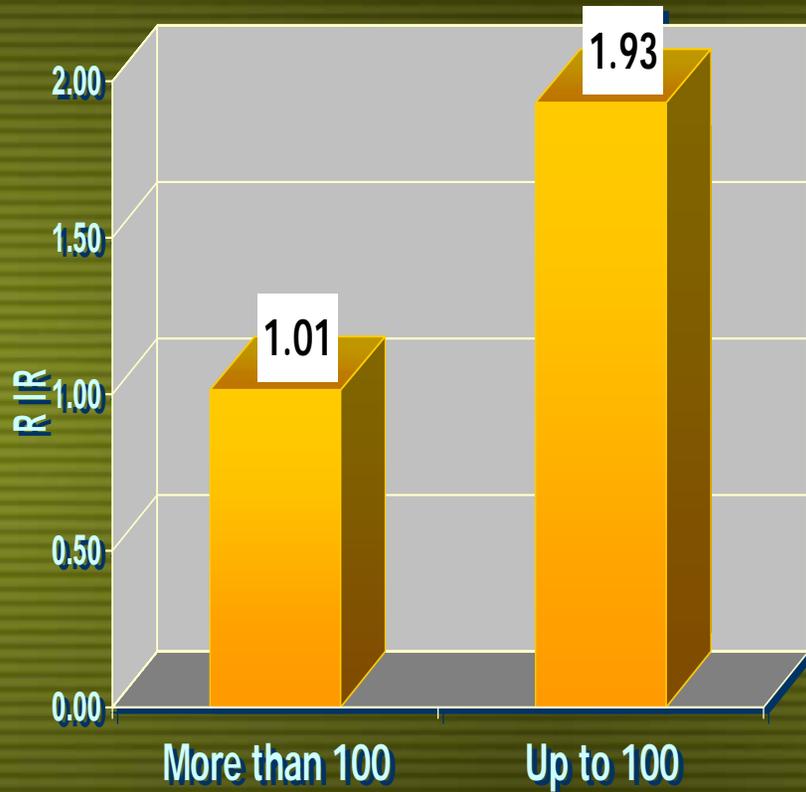


When are toolbox safety meetings held?

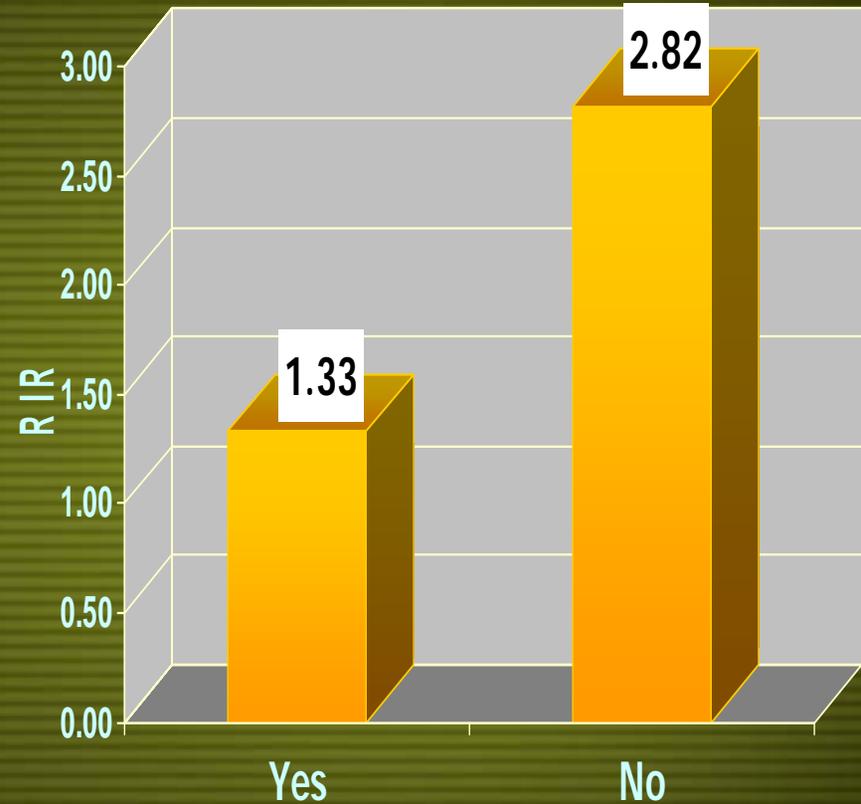
Worker Involvement and Participation



Worker Involvement and Participation

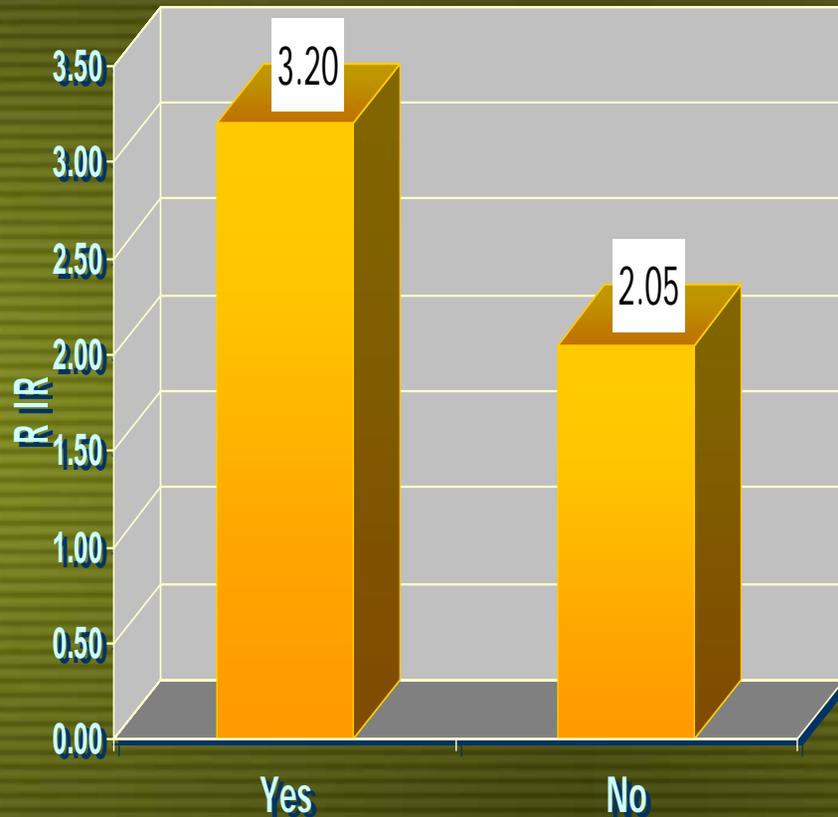


Total number of safety observation reports filed on the project



Are safety perception surveys conducted on the project?

Recognition and Rewards

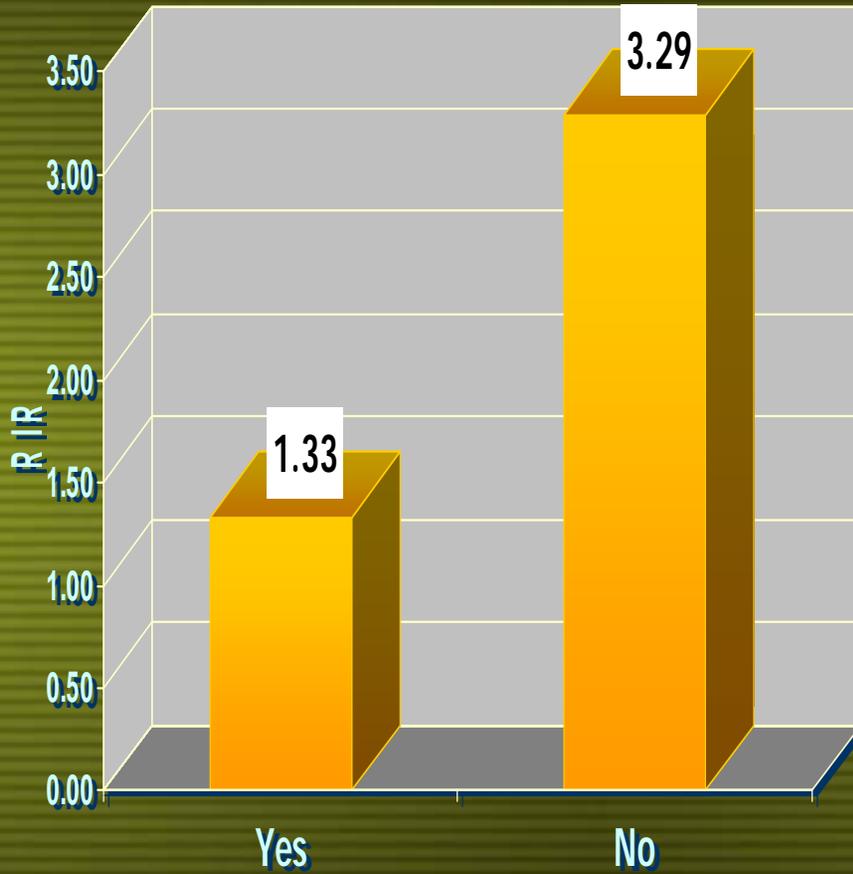


Does the project have a formal worker incentive program?

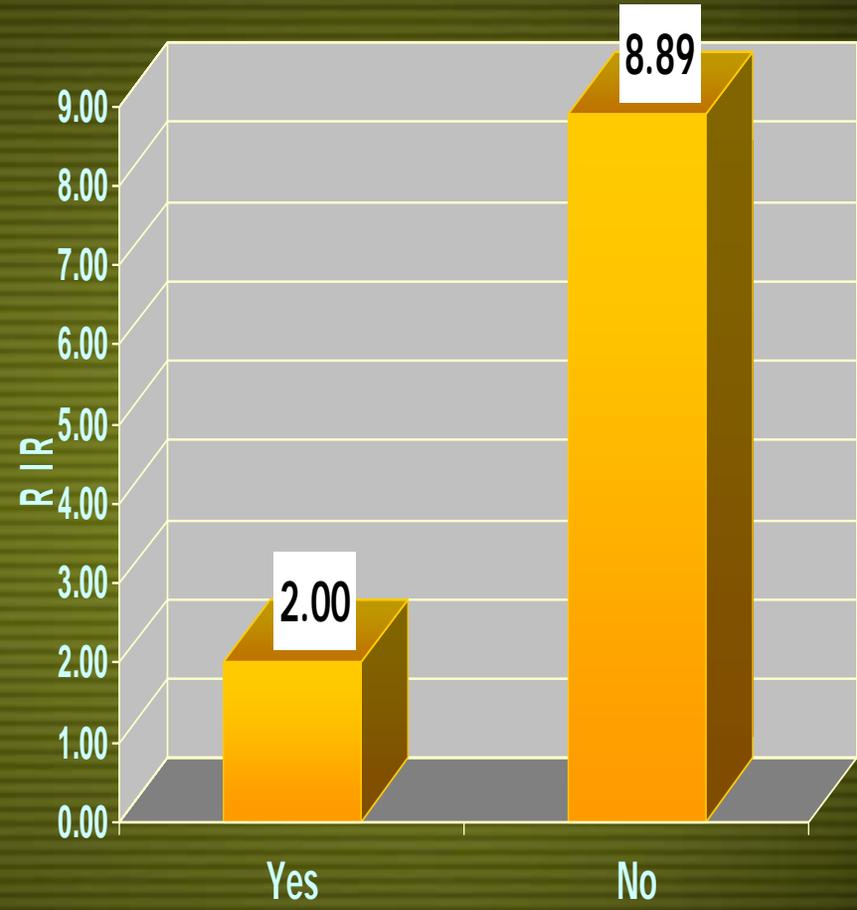


How often are incentives given to workers?

Recognition and Rewards

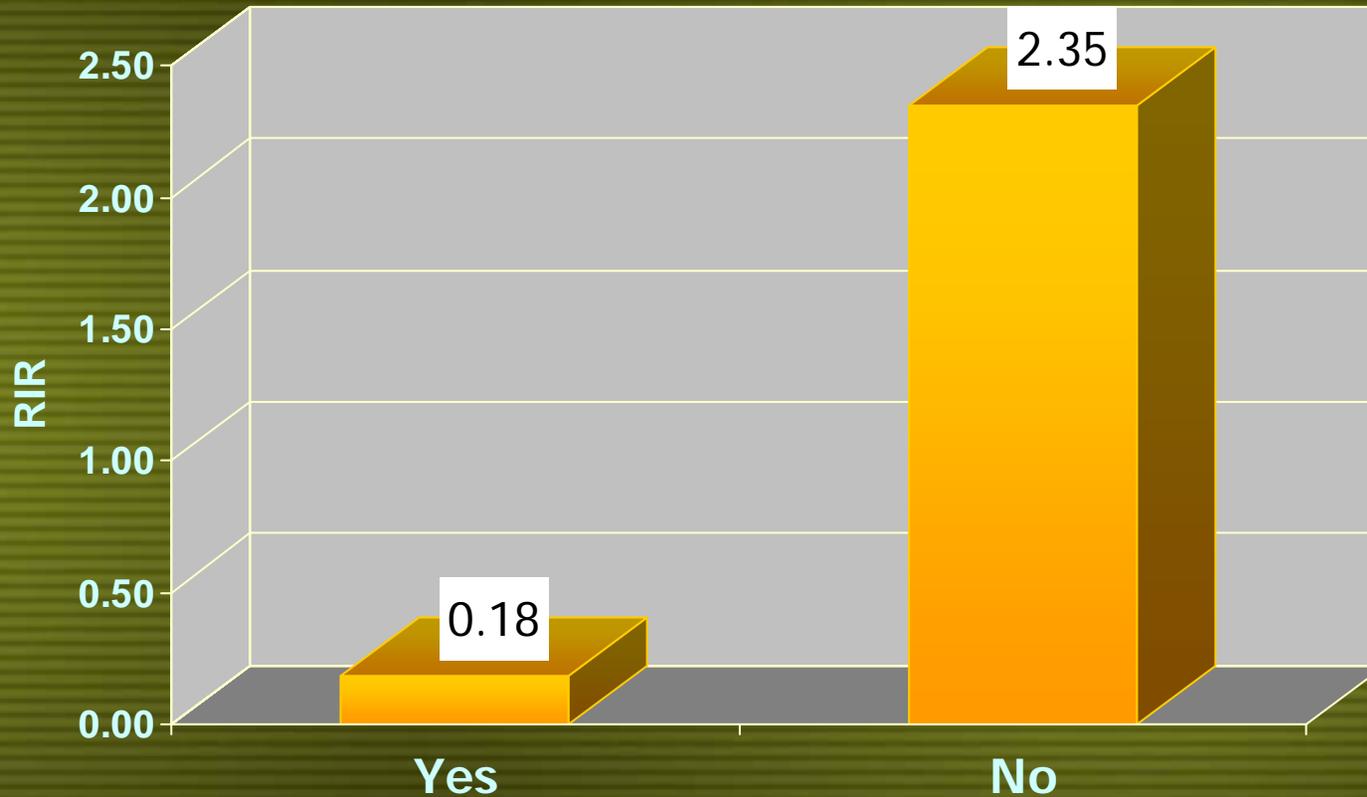


Is incentive based on zero injury objective?



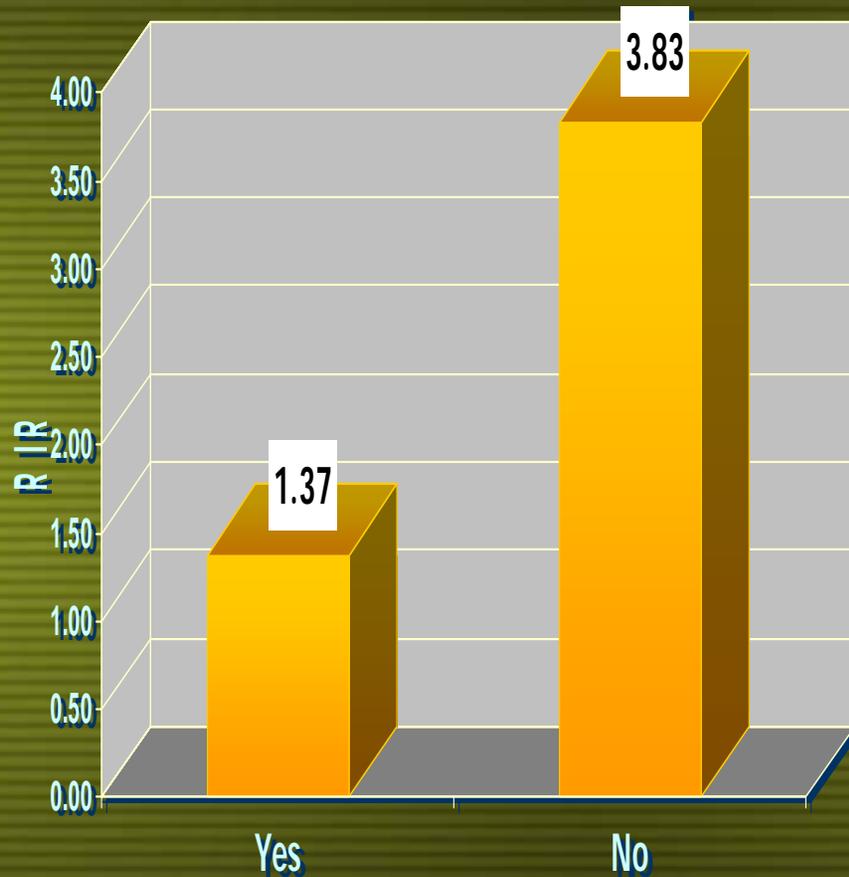
Are field supervisors evaluated on safety?

Recognition and Rewards

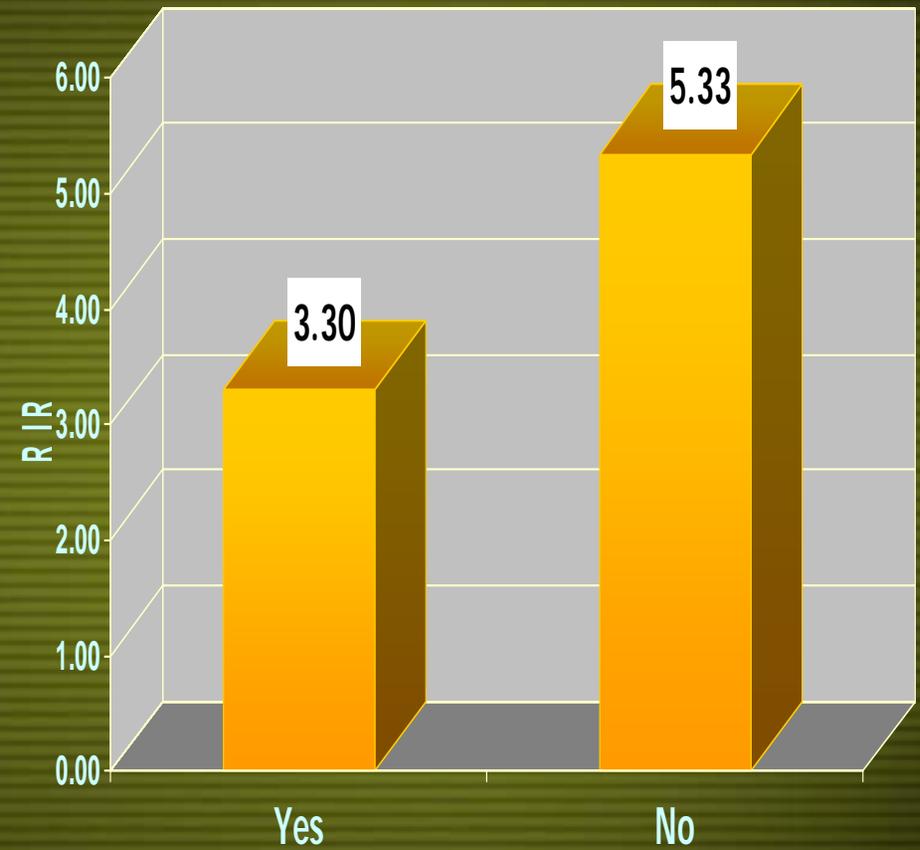


Do family members attend safety dinners?

Subcontractor Management

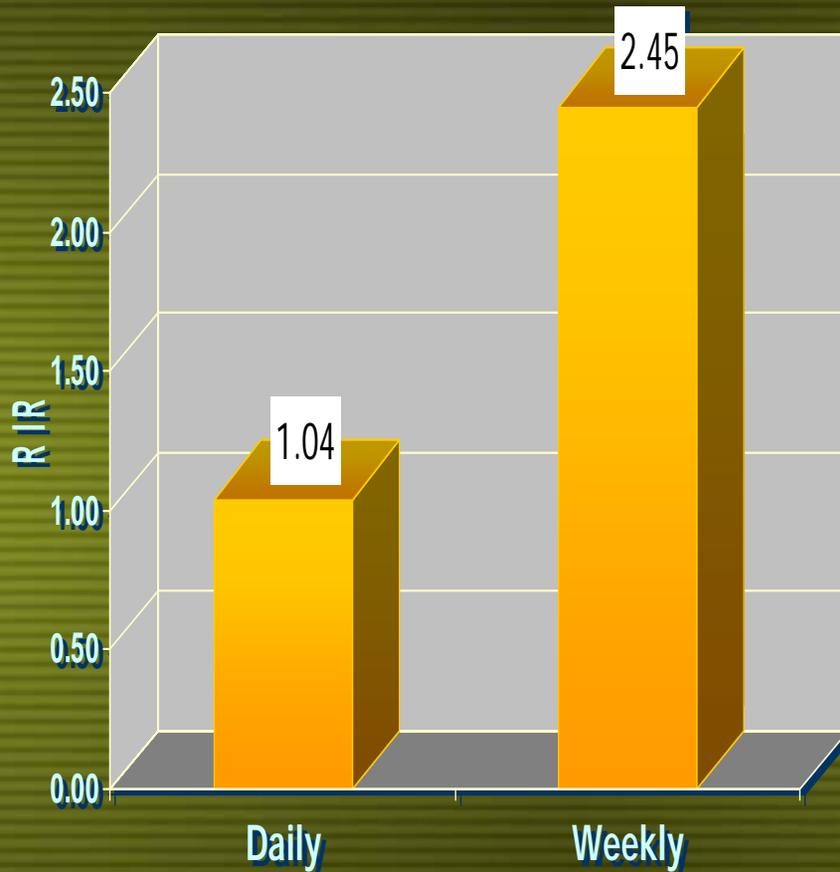


Are subcontractors required to submit site-specific safety plans?

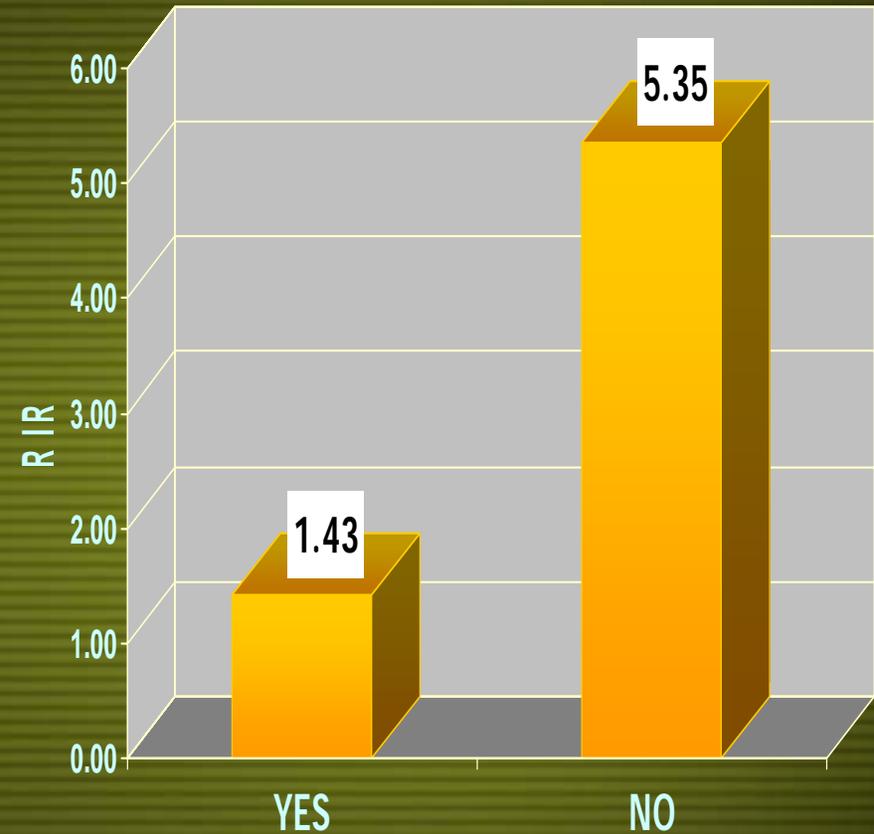


Do all subcontract workers attend a formal standard safety orientation?

Subcontractor Management

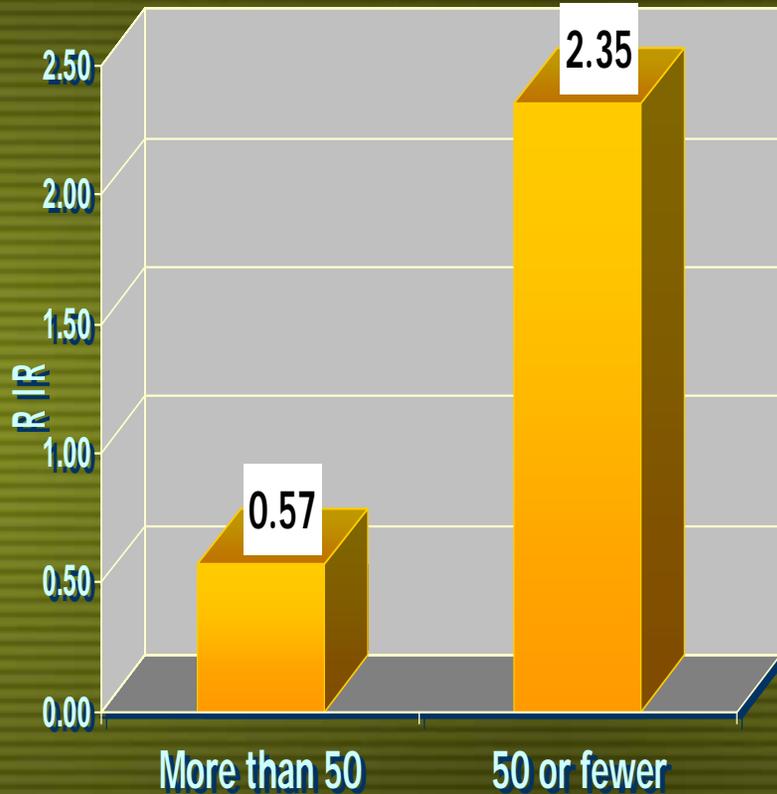


How frequently do subcontractors hold safety meetings?



Are there sanctions for subcontractor non-compliance with safety standards?

Accident /Incident Reporting and Investigation



Number of near misses recorded on the project



To what extent are recordable incidents investigated by top management?

Best Practices

■ Getting to Zero

- Demonstrated management commitment
- Staffing for safety
- Safety planning - pre-project / pre-task
- Safety training and education
- Worker involvement and participation
- Recognition and rewards
- Subcontractor management
- Accident/incident reporting and investigation
- Drug and alcohol testing

Project Safety Performance

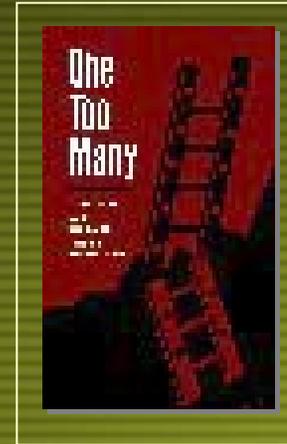
- Results of implementing best practices



The Owner's Influence on Project/Contractor Safety Performance

Background

- Prior research has not addressed the owners influence in project/contractor safety.
- NIOSH participated in the support of this study



How the Study was Conducted

- Personal interviews on large projects:
 - Owner project management (majority)
 - Contractor project management
- Total study sample included 59 projects:
 - 49 United States
 - 7 Canada
 - 3 International



Project Size

- Average hours expended:
2.4 million
- Average project cost:
\$380 million

Total Project Data

Total project hours = 143 million

Total cost = \$21 billion

Owner Involvement Makes A Difference

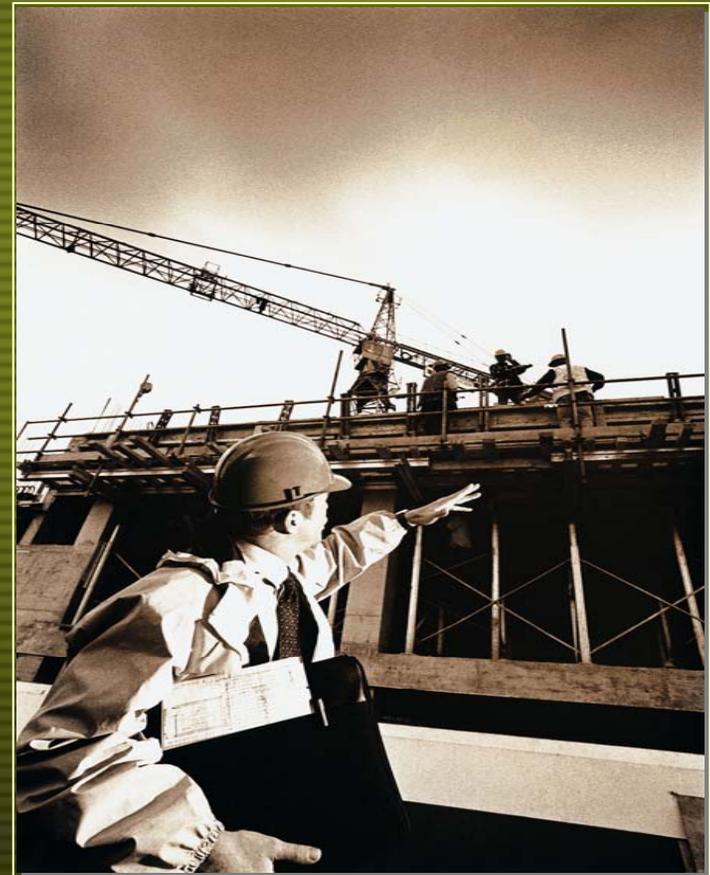
Projects where owners exhibited aggressive project involvement had almost six times fewer injuries per 1000 employees.



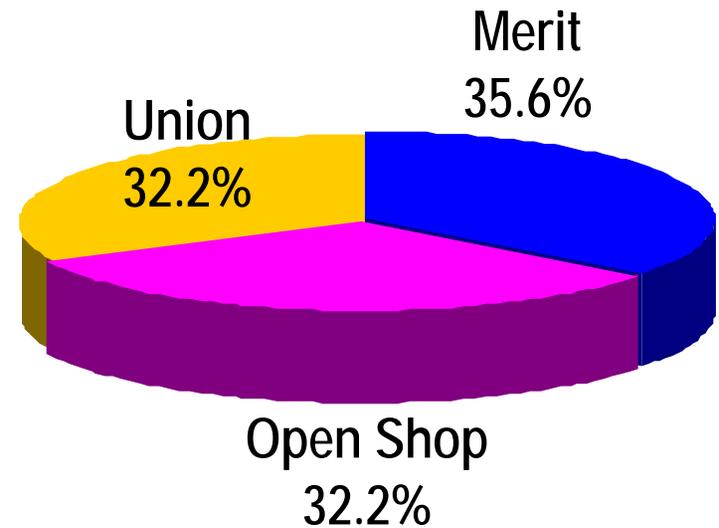
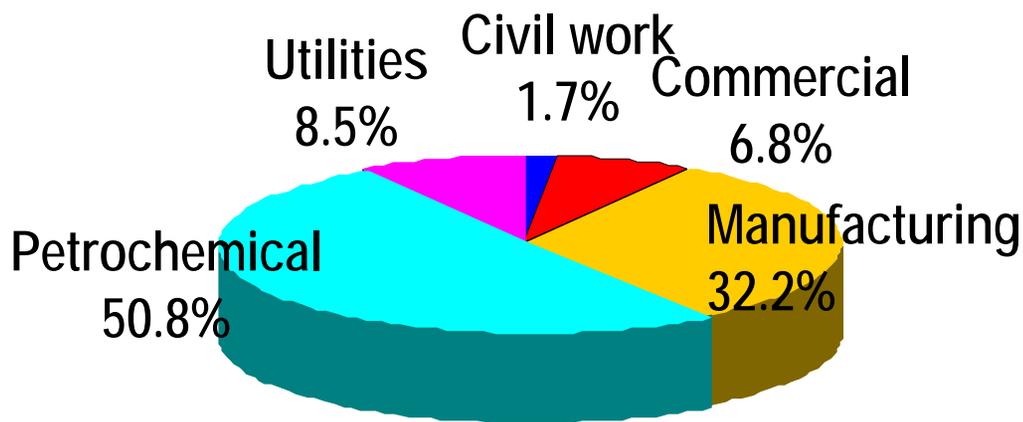
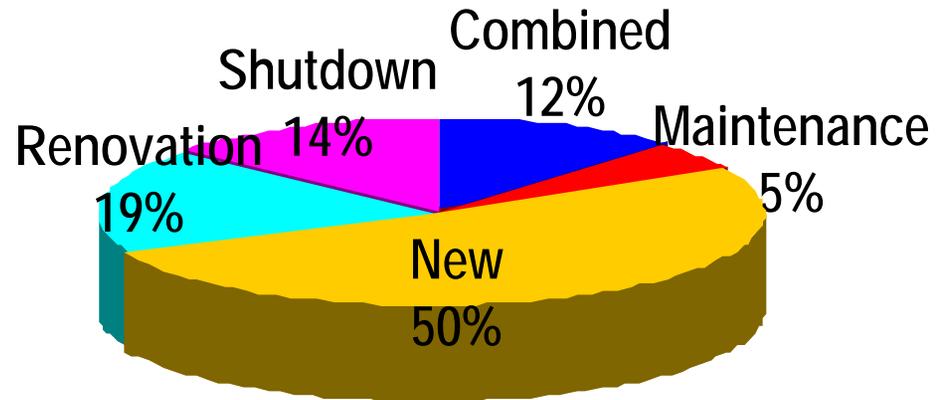
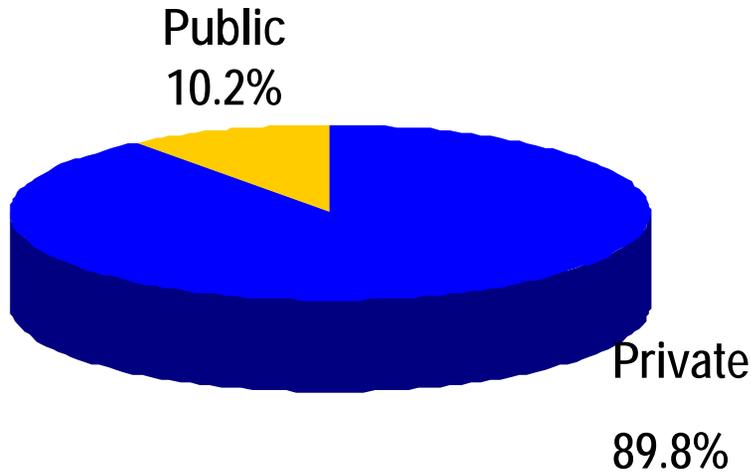
Findings

The average RIR: 1.95

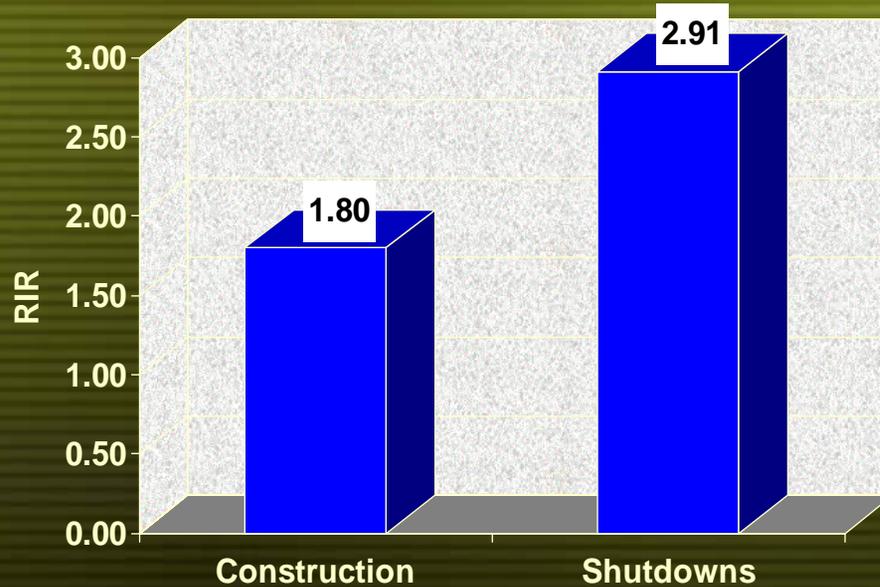
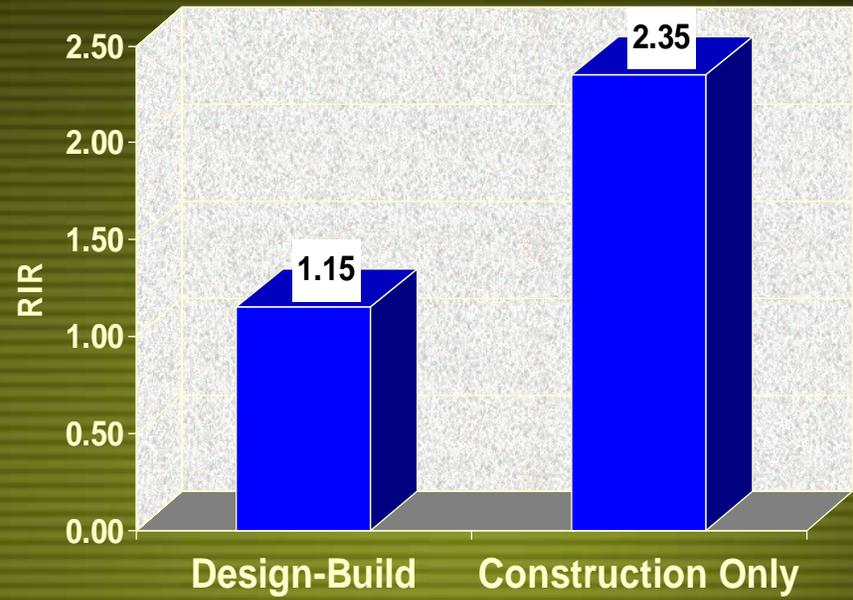
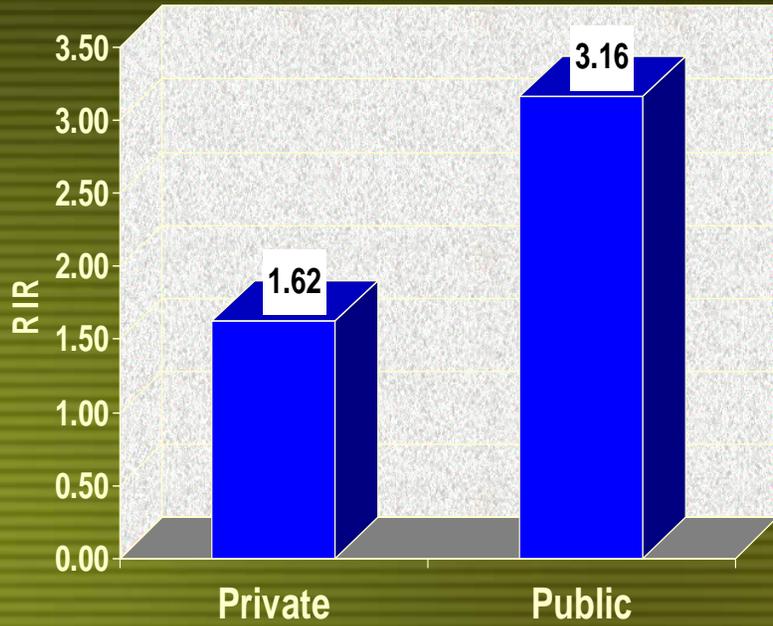
- Relationship of RIR with:
- 30 Significant Findings
 - Project type
 - Selection of safe contractors
 - Contractual safety requirements
 - Project execution safety activities



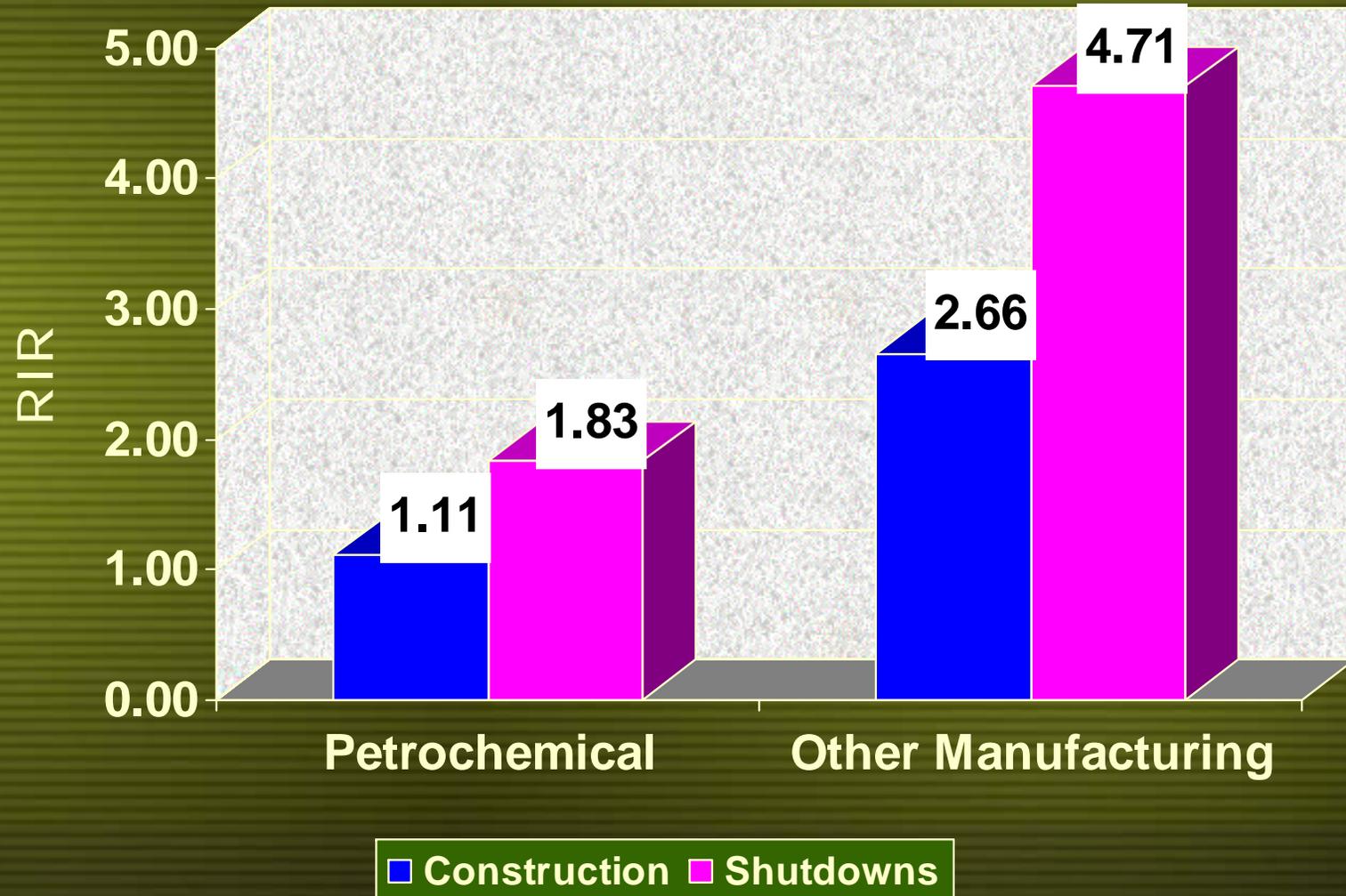
Types of Projects



Project Type Continued



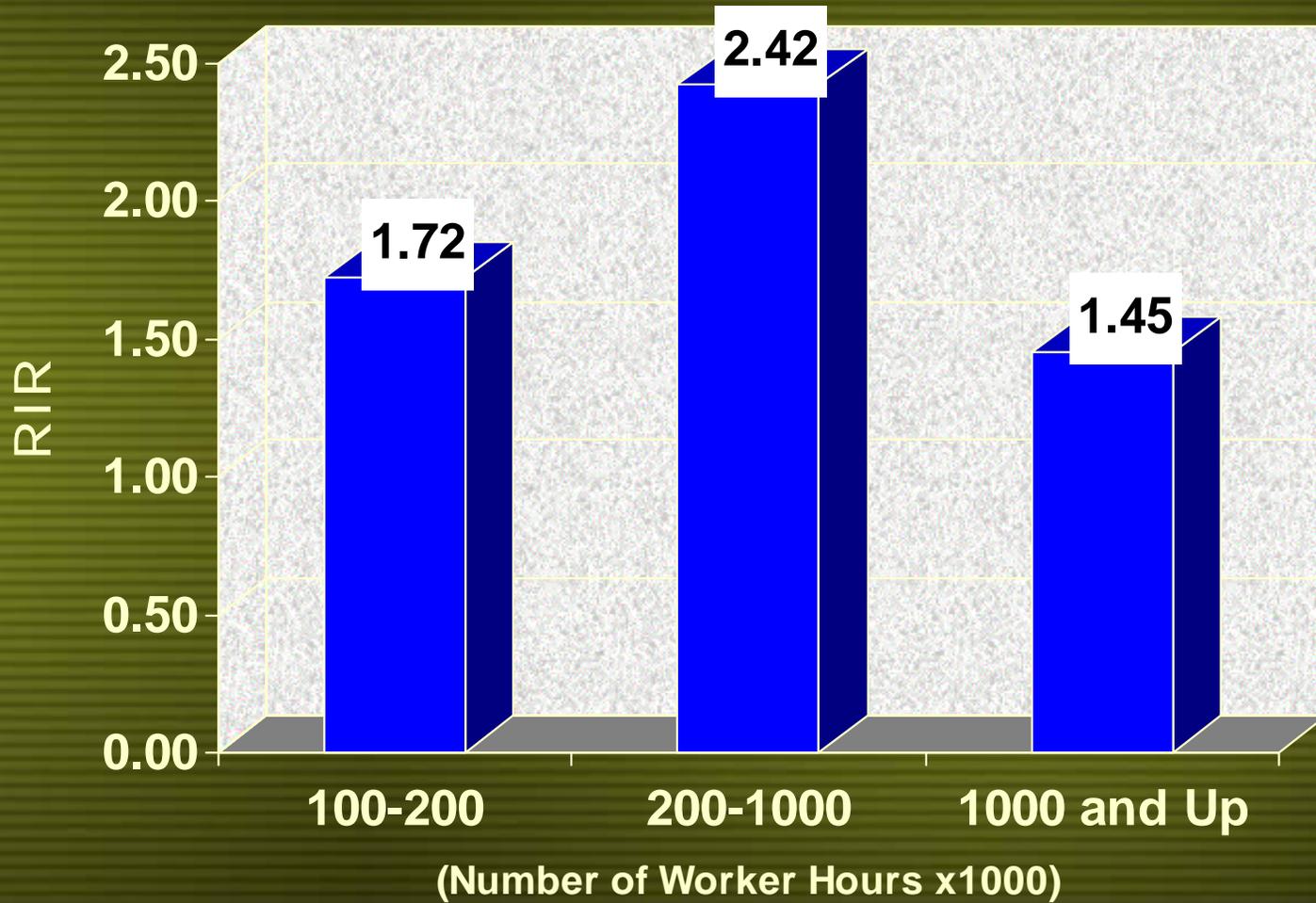
Project Type Continued



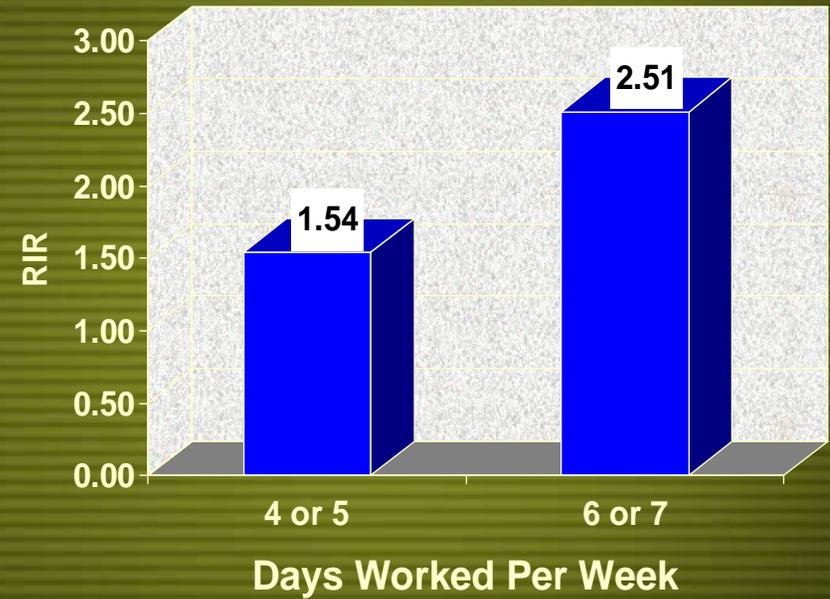
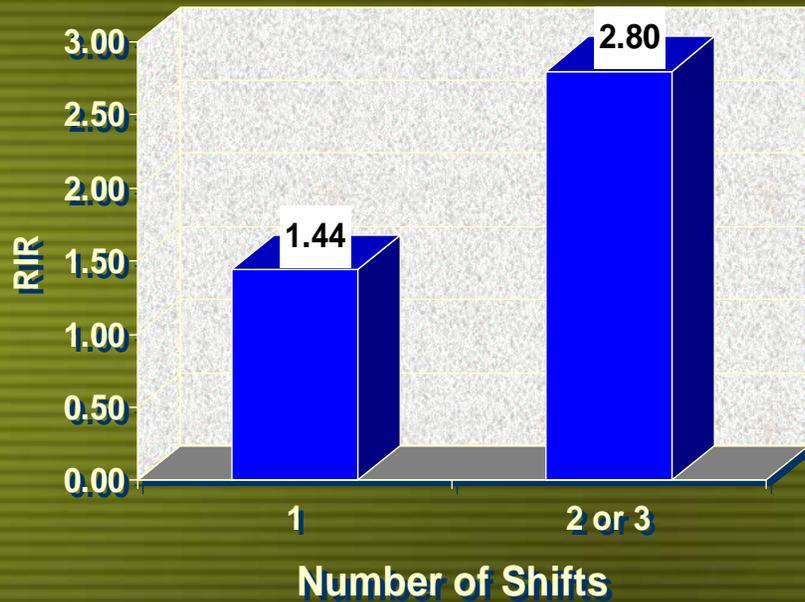
Project Type Continued



Project Type Continued

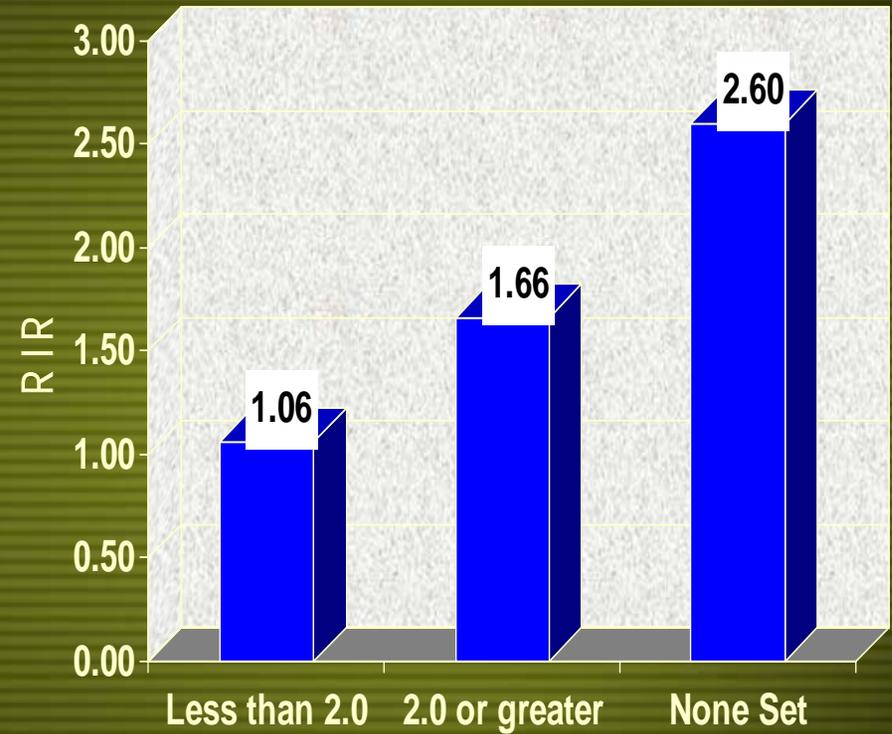
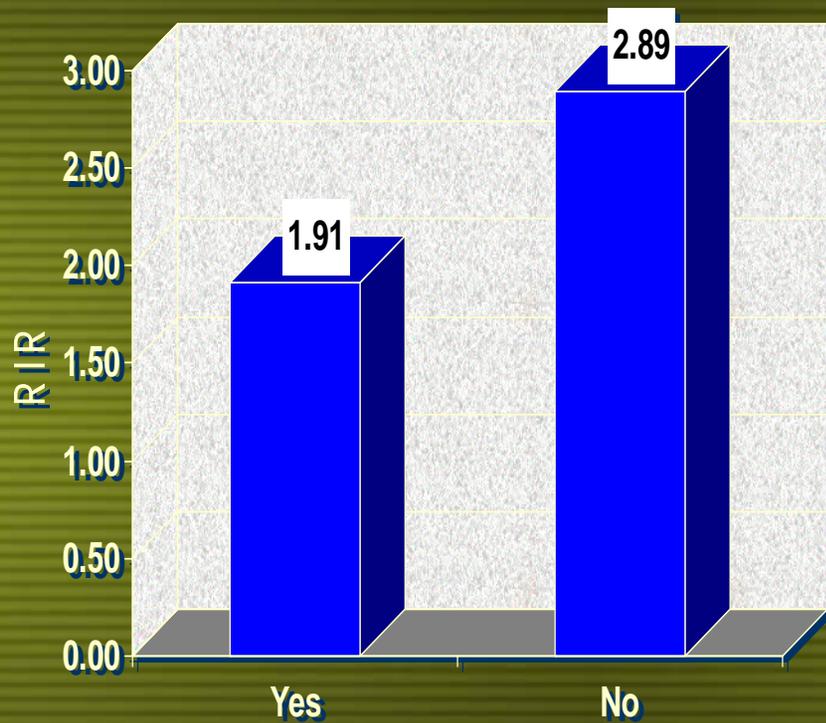


Project Type Continued



Selection of Safe Contractors

Selection of Safe Contractors Continued

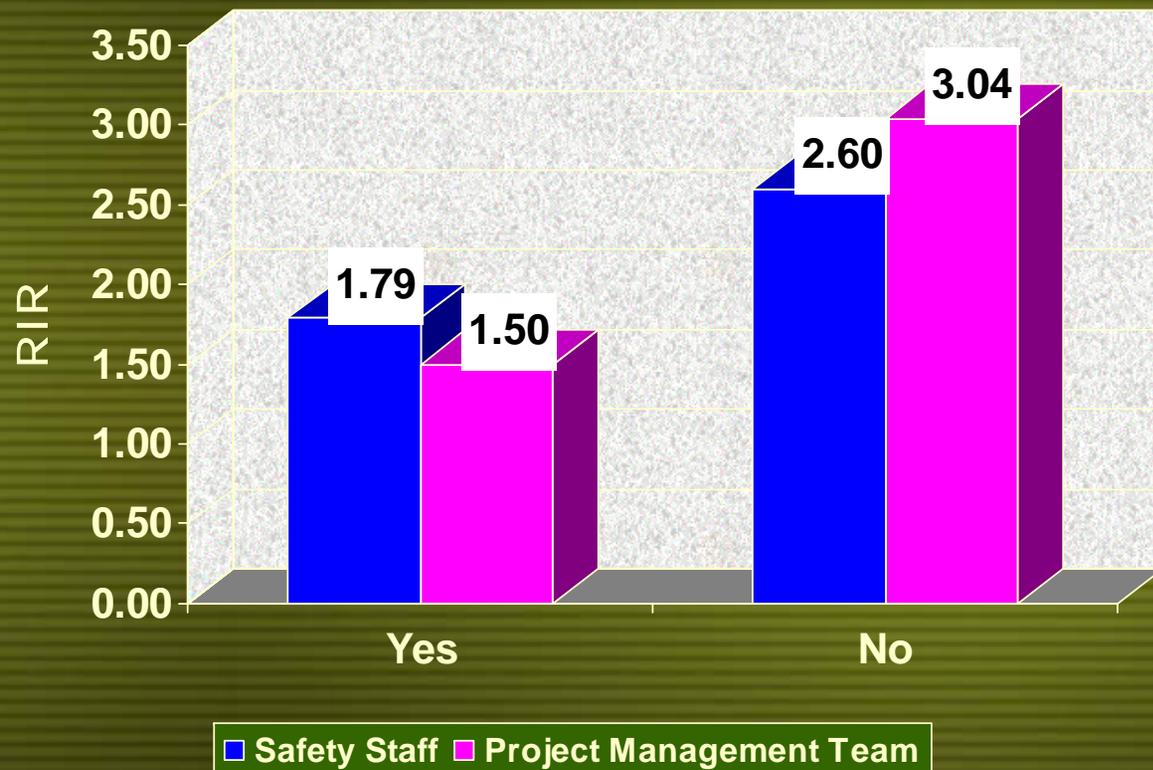


RIR is used to evaluate contractor safety performance

Selection of Safe Contractors Continued

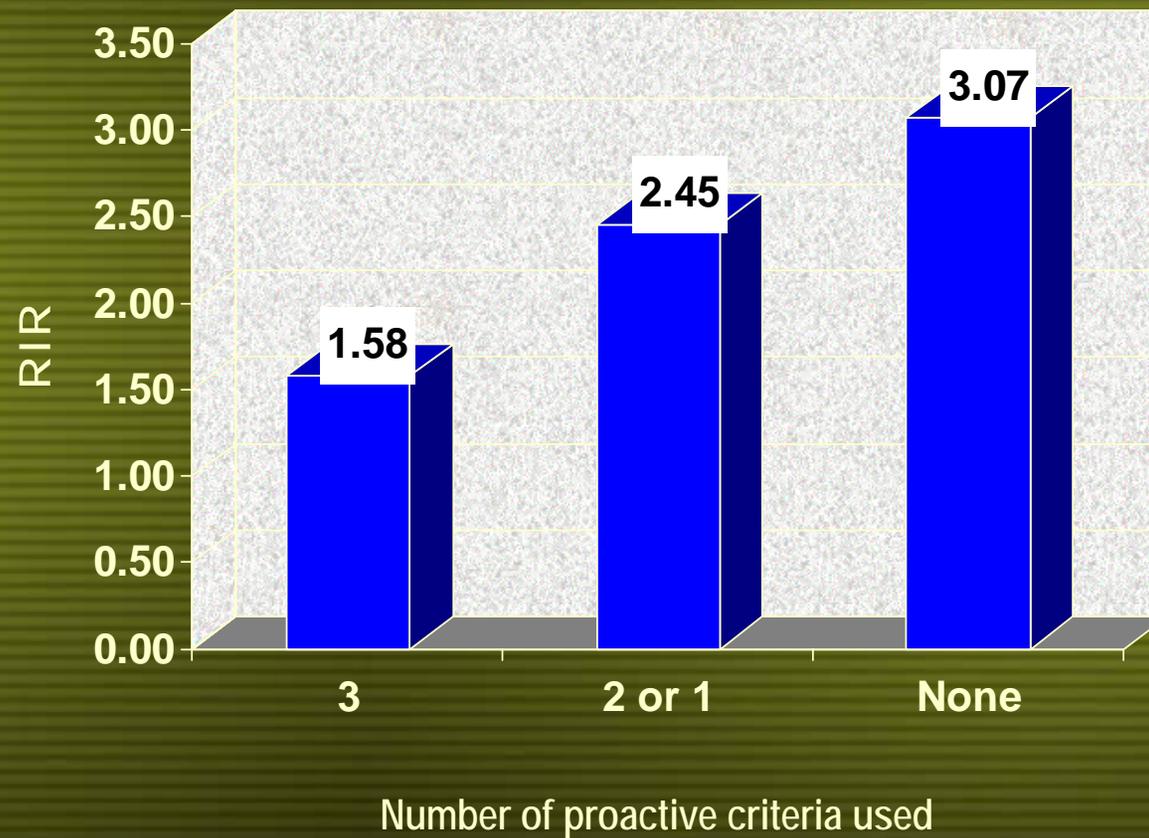
- Proactive Criteria
 - Qualifications of safety staff
 - Qualifications of project management team
 - Quality of the overall safety program

Selection of Safe Contractors Continued

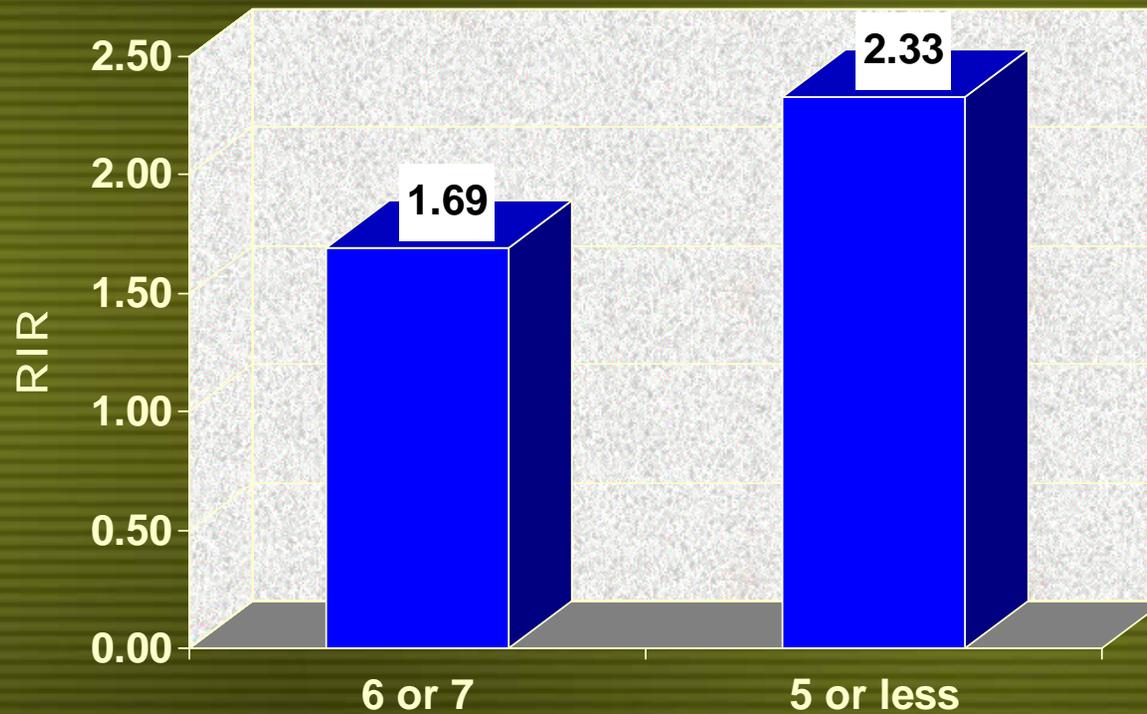


Personnel qualifications reviewed when evaluating contractors safety

Selection of Safe Contractors Continued



Selection of Safe Contractors Continued



Ranking of Importance of Safety in Contractor Selection (7 is most important)

Contractual Safety Requirements

Contractual Safety Requirements Continued

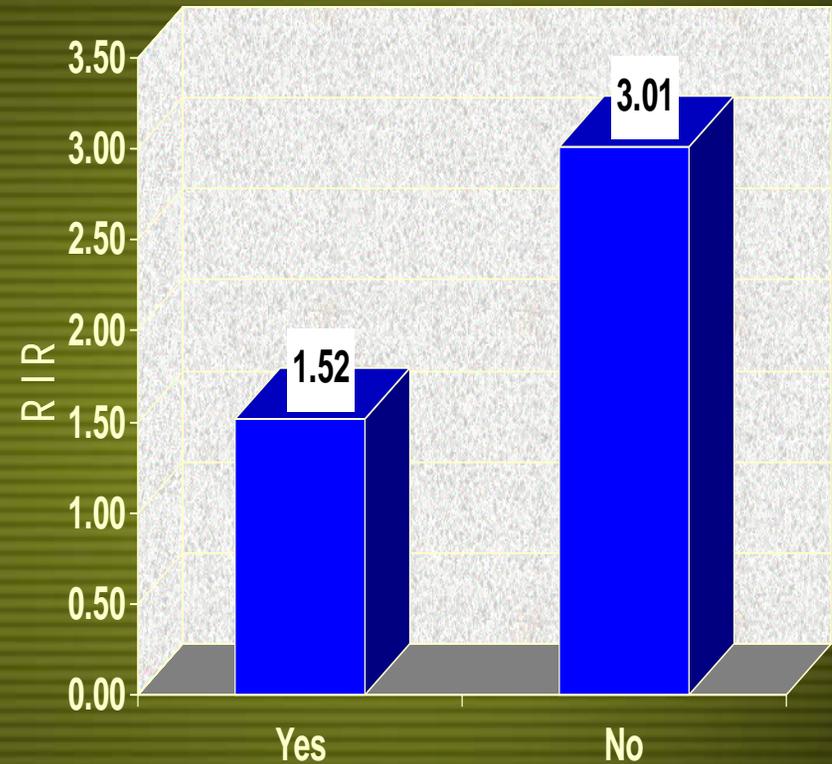
■ Key Requirements

- Contractor places at least one full-time safety representative on the project
- Contractor submits the résumés of key safety personnel for the owner's approval
- Contractor provides specified minimum training for the workers
- Contractor submits a site-specific safety plan
- Contractor submits a safety policy signed by its CEO

Contractual Safety Requirements Continued

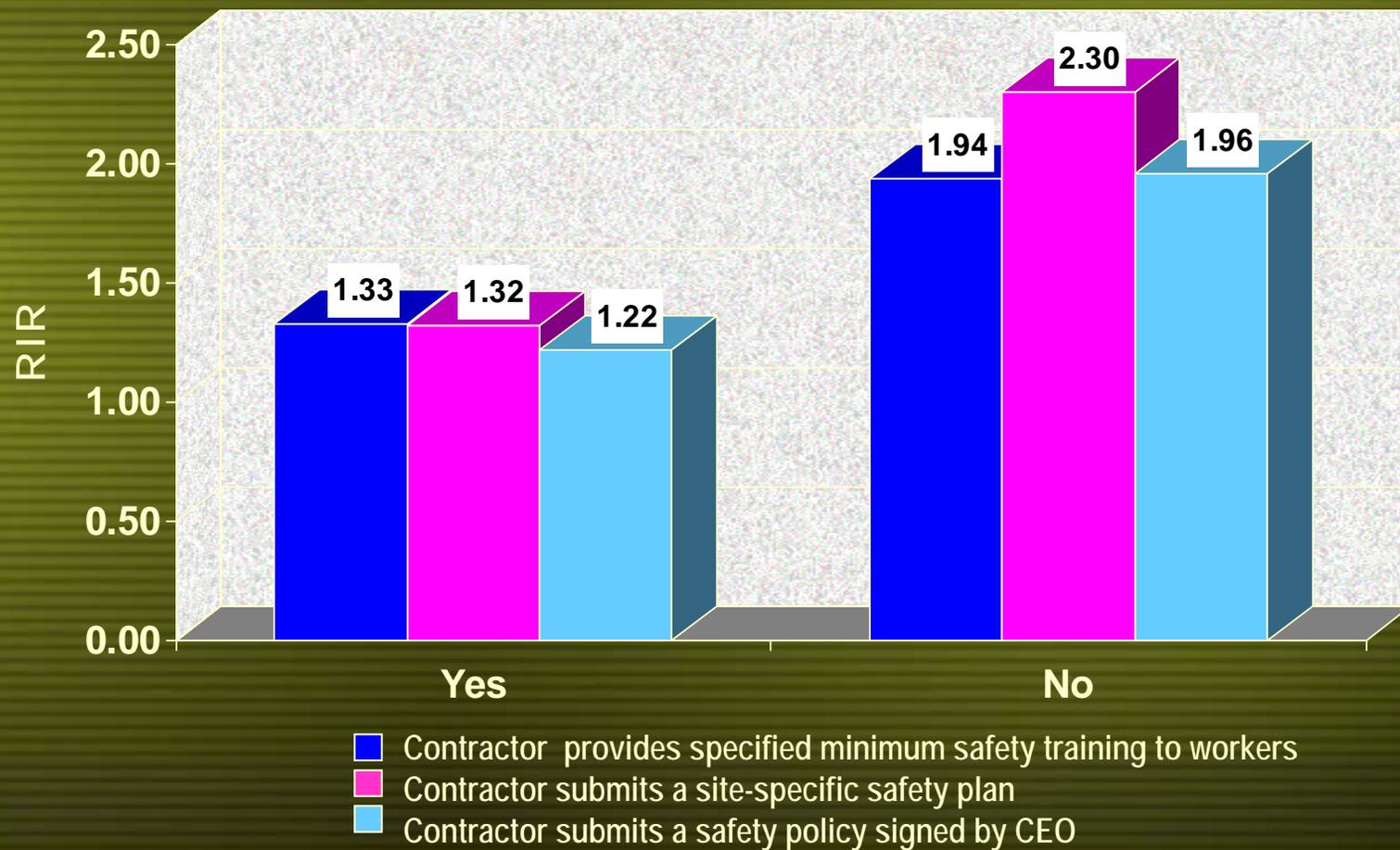


Contract requires at least one full time safety professional on site

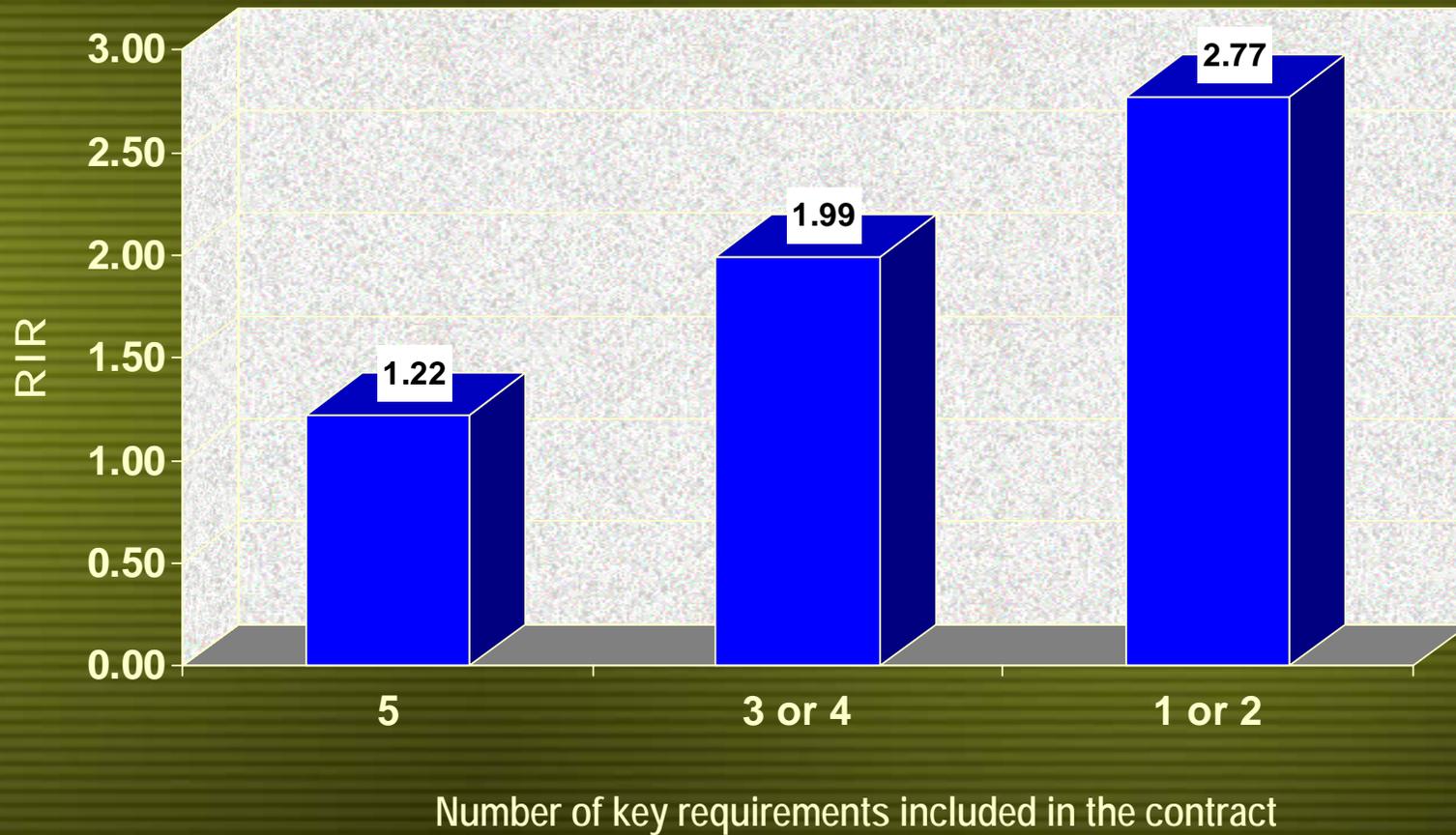


Owner approves contractor safety professionals

Contractual Safety Requirements Continued



Contractual Safety Requirements Continued



Project Execution Safety Activities

Project Development and Execution Safety Activities

- Owner's Safety Involvement Initiatives:
 - Pre-project development
 - Project safety planning
 - Participate in orientation program
 - Monitor contractor's safety program
 - Maintain safety statistics
 - Participate in safety recognition program
 - Monitor key leading measures

Project Execution Safety Activities

Continued

- Safety Program Components
 - **Emergency plan (medical and hazardous materials)**
 - **Daily JSA (Job Safety Analysis) conducted on the project site**
 - **Substance abuse program**
 - Specific safety training program
 - Task specific PPE analysis
 - Safety responsibility defined for all levels
 - Emergency response team maintained on the project

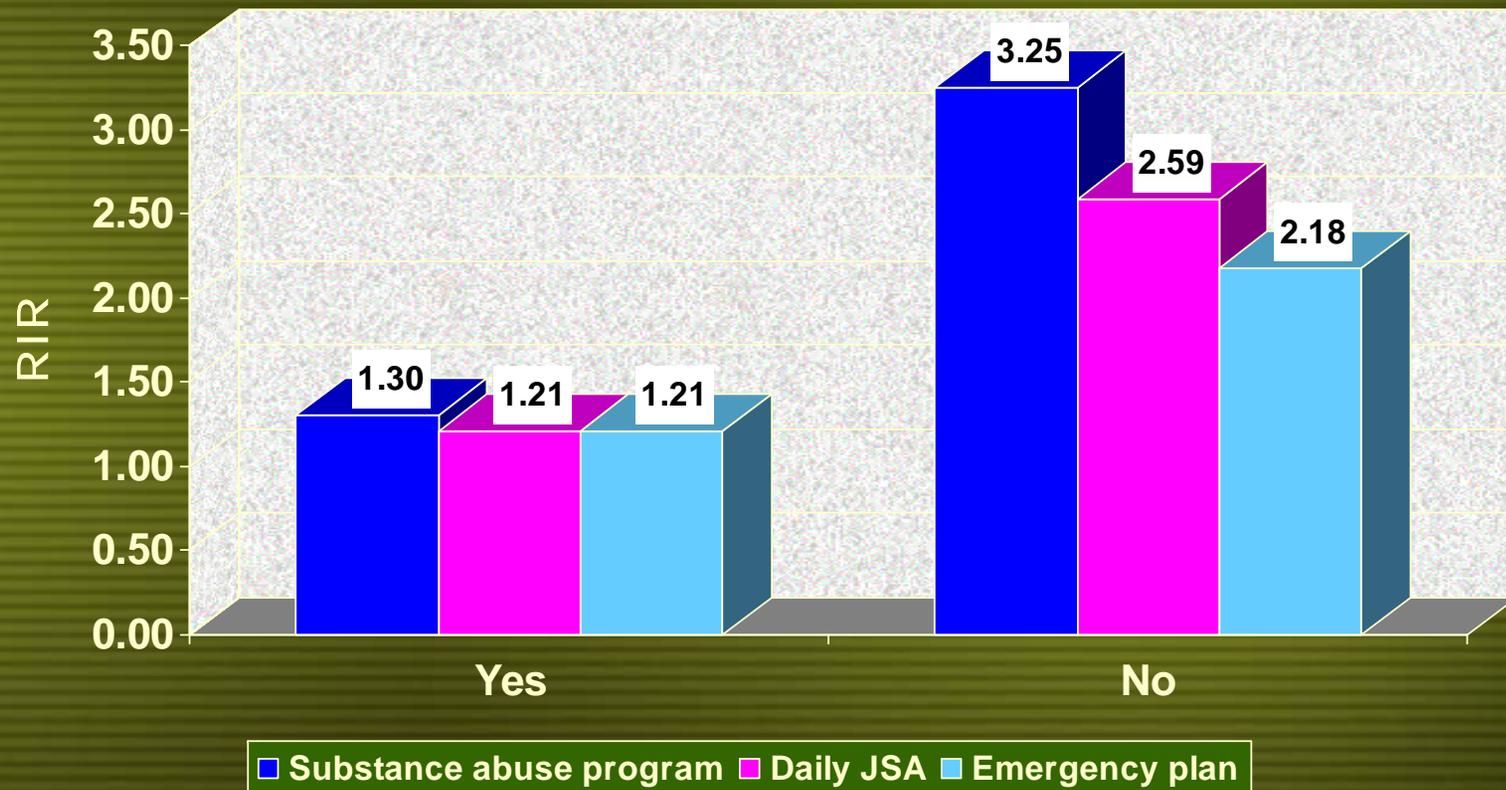
Project Execution Safety Activities

Continued

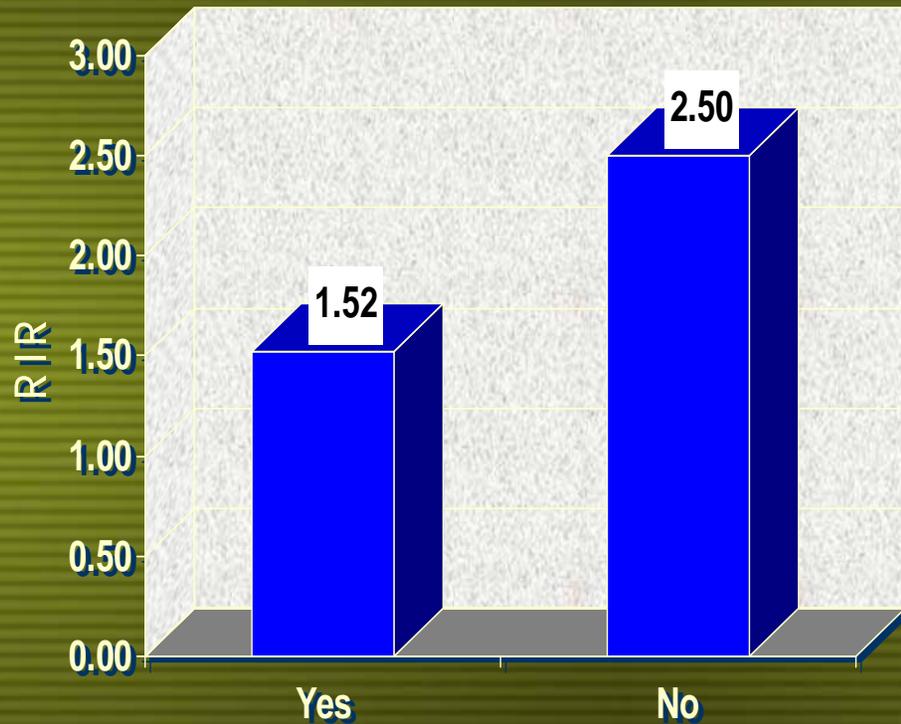
- Safety Program Components continued:
 - Prime contractor's employees to have 10-hr OSHA cards
 - OSHA specific regulations
 - Prime contractor's supervisors have CPR and First-Aid cards
 - Training on the hazards related to the tasks
 - Pre-project safety planning
 - Conduct regular safety inspections
 - Incident reporting and investigation
 - Regular safety meetings

Project Execution Safety Activities

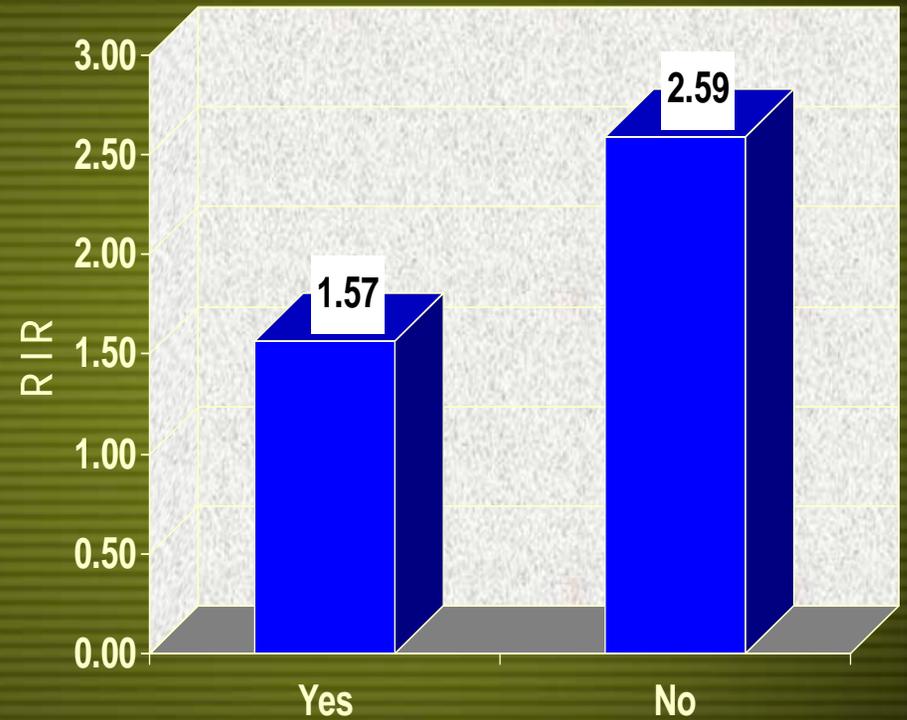
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Project Execution Safety Activities



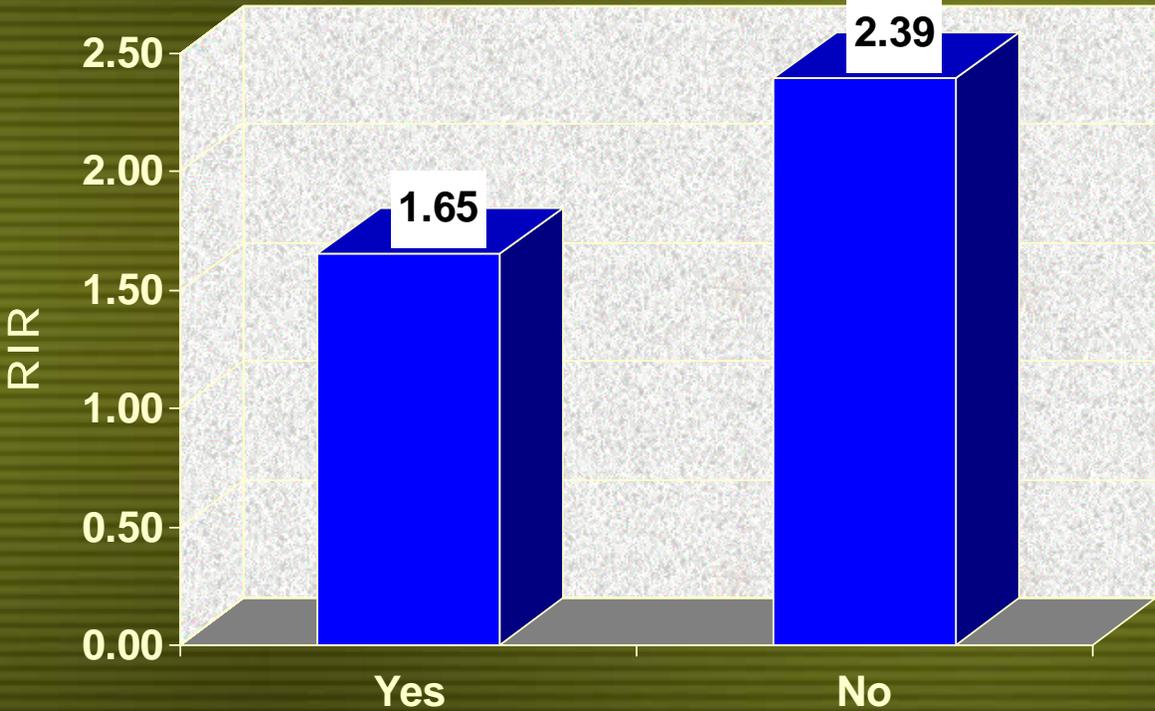
Owner maintains injury statistics by each contractor



Contractor injury statistics included in owner's safety performance

Project Execution Safety Activities

Continued



Owner provides extra funds (outside of the contract) to promote project safety

Project Execution Safety Activities

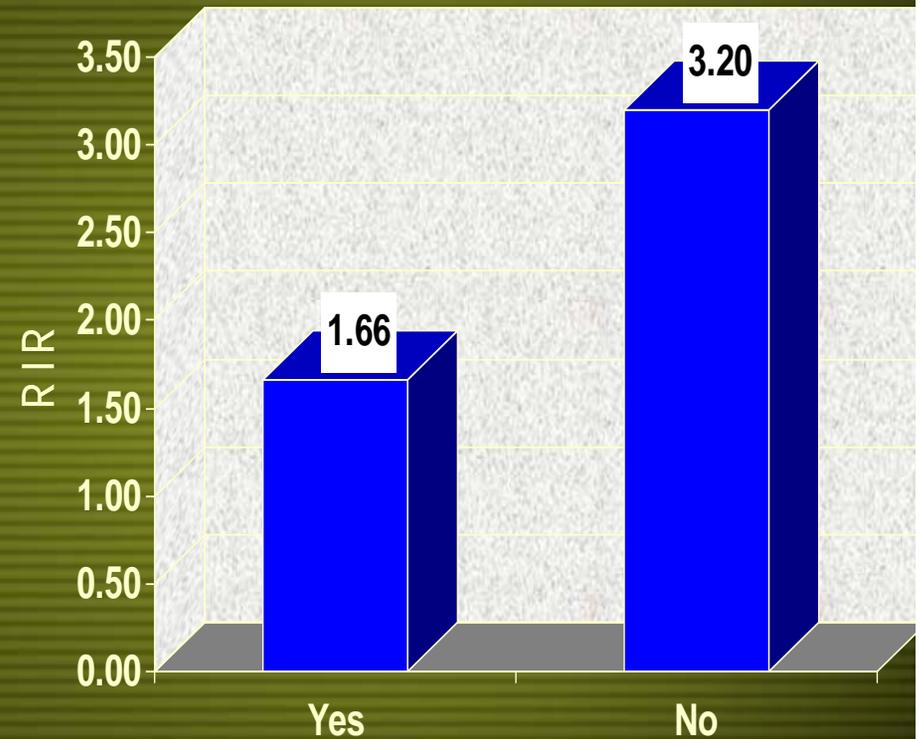
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- Safety orientation methods
 - Contractor presentations
 - Owner presentations
 - Combination of both Owner and Contractor presentations

Project Execution Safety Activities



Who conducts presentations/orientations?



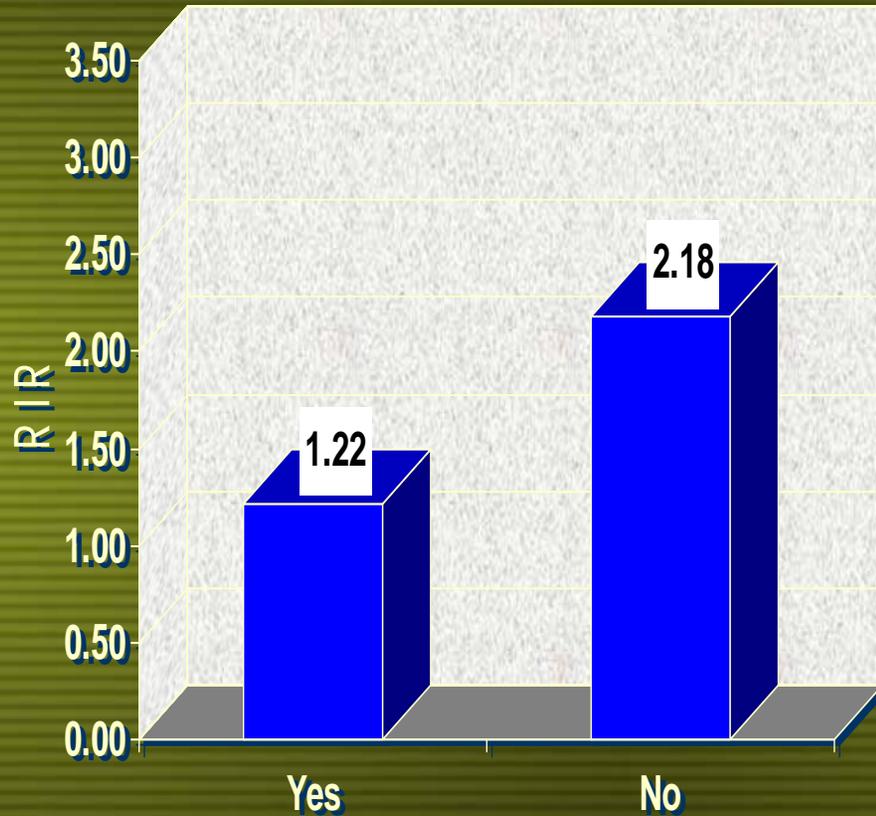
Owners require testing after safety orientation.

Project Execution Safety Activities

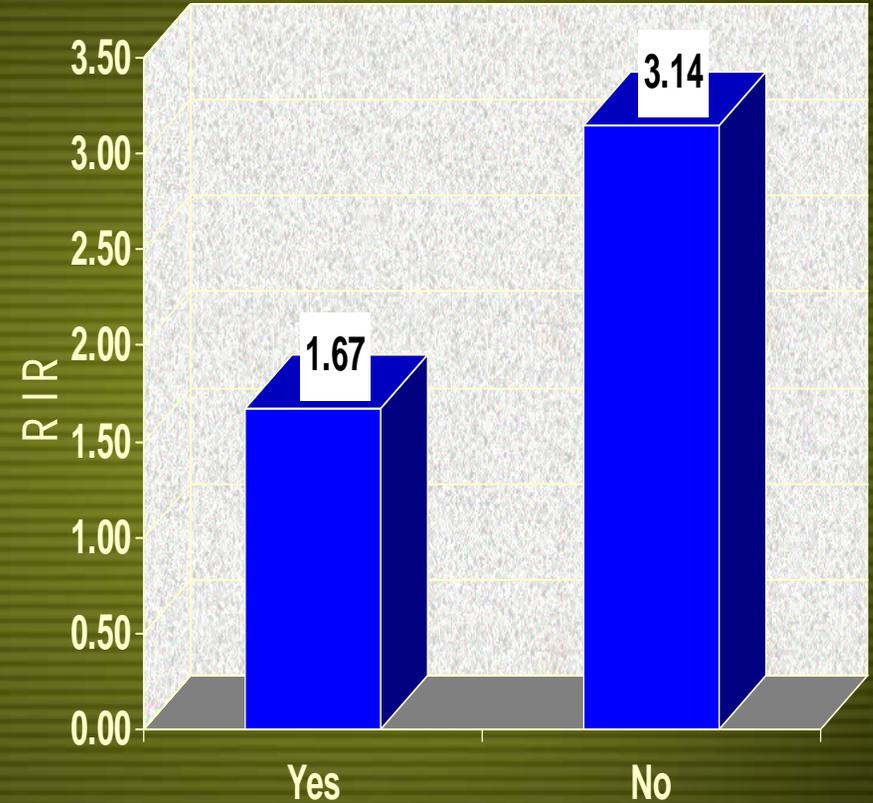
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- Key measures monitored by owner
 - Near misses
 - Project inspections

Project Execution Safety Activities



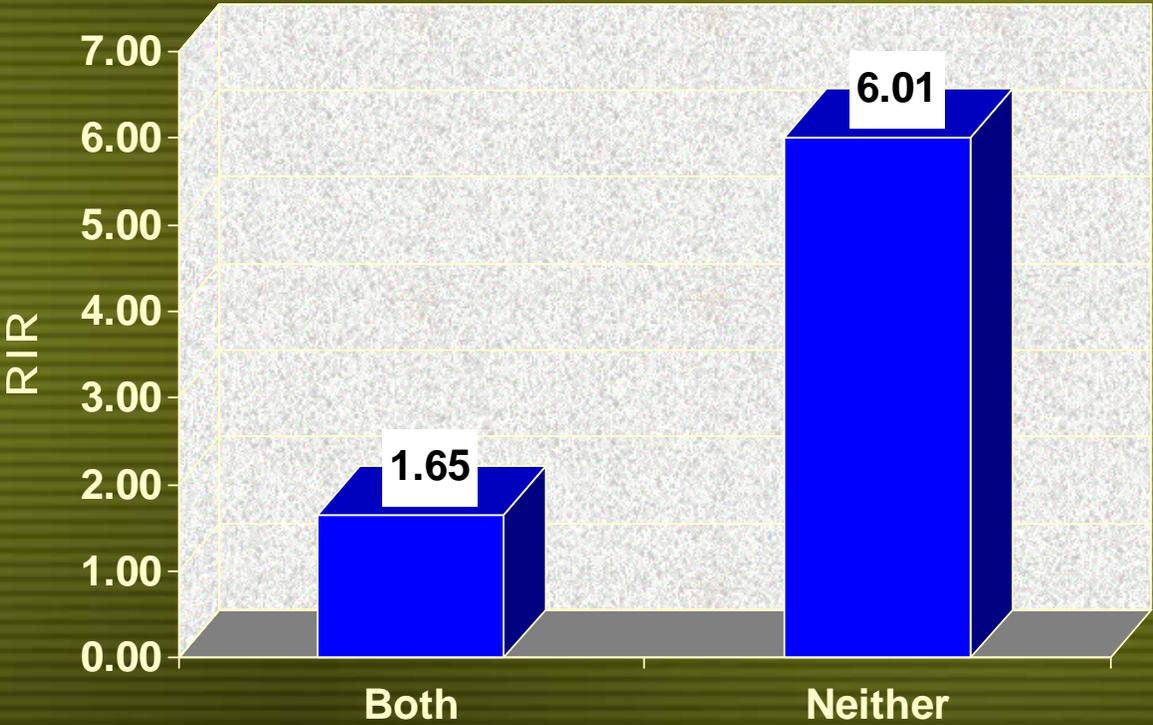
Owner's representative regularly checks project near misses.



Owner's safety representative participates in project safety inspections.

Project Execution Safety Activities

Continued



Owner participates in both monitoring of near misses and contractor safety inspections

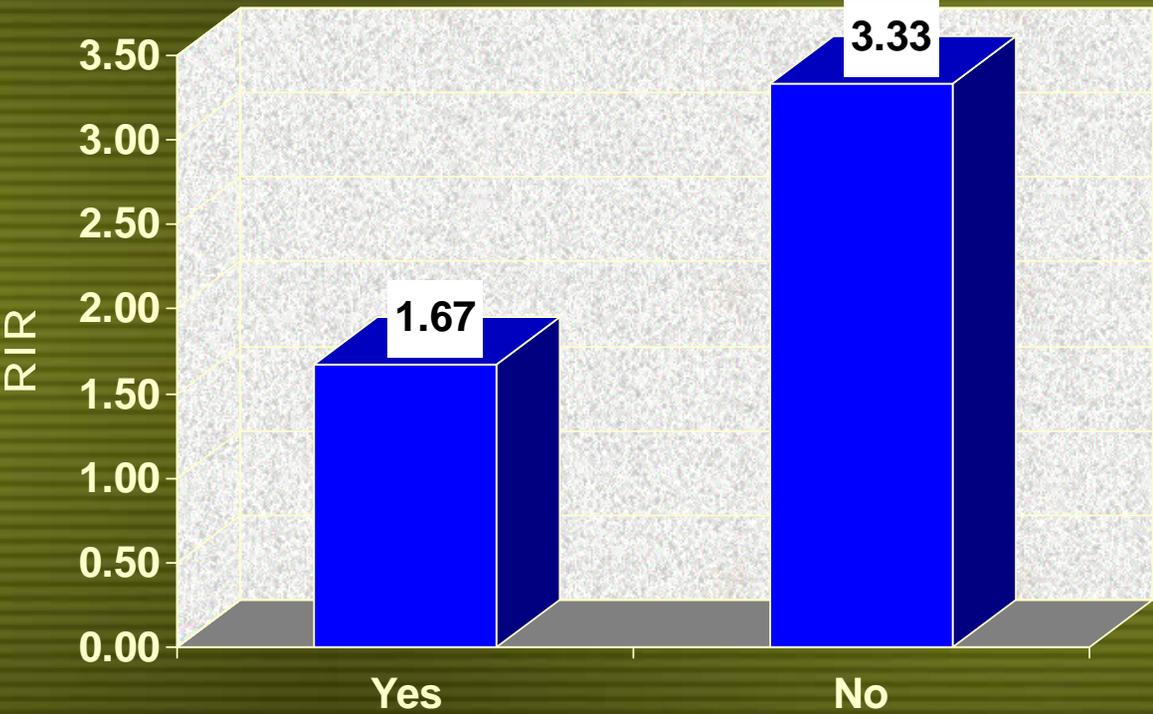
Project Execution Safety Activities

Continued

- Key Activities of Owner Involvement
 - Participating in safety and/or toolbox meetings
 - Enforcing safety rules
 - Reviewing safety performance on site
 - Monitoring pre-task analysis programs
 - Participating in safety recognition programs

Project Execution Safety Activities

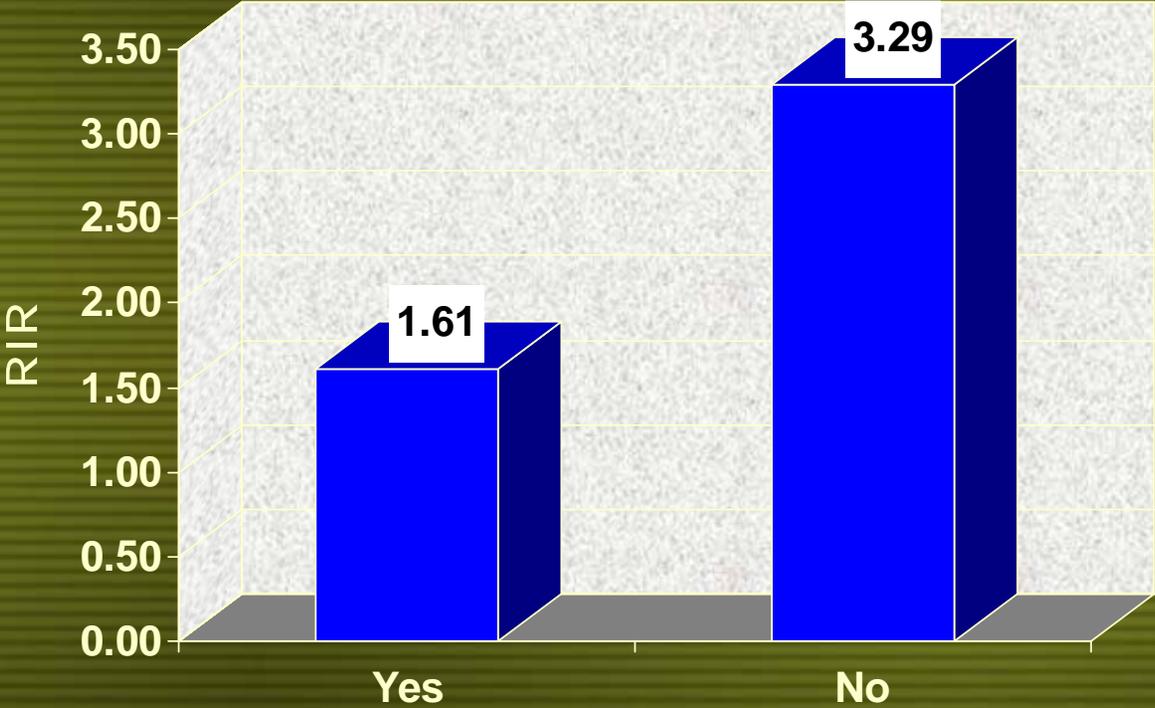
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Owner's representatives participate in safety and/or toolbox meetings

Project Execution Safety Activities

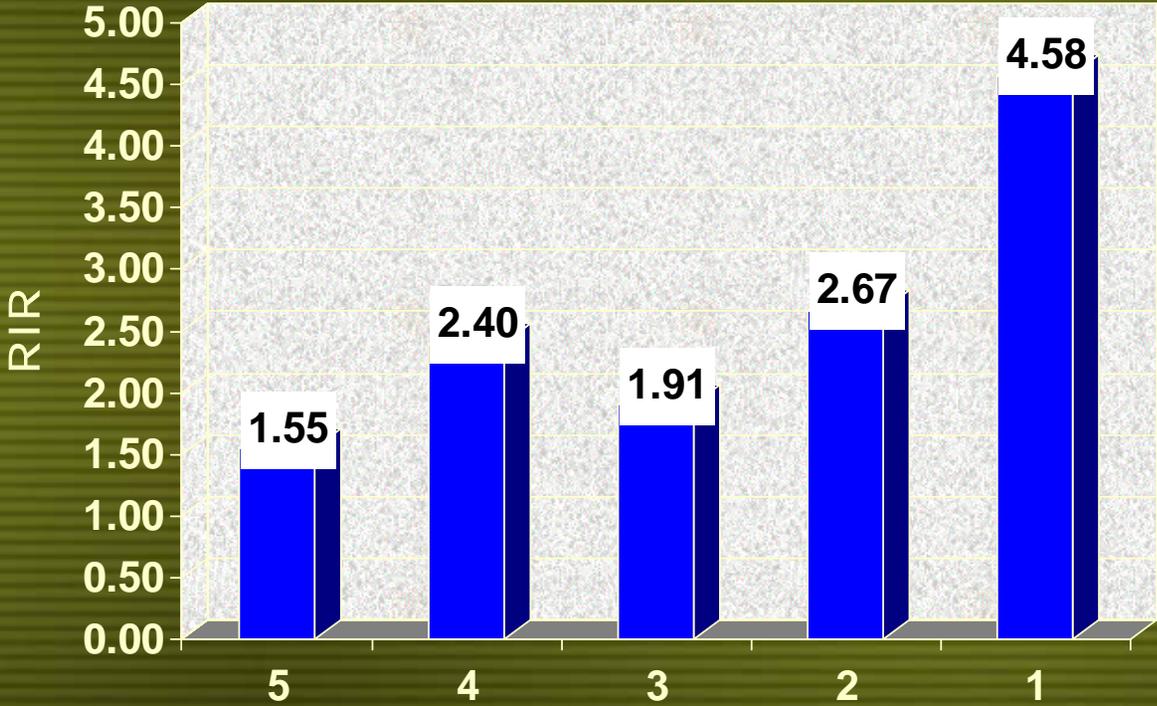
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Owner participates in the safety recognition program

Project Execution Safety Activities

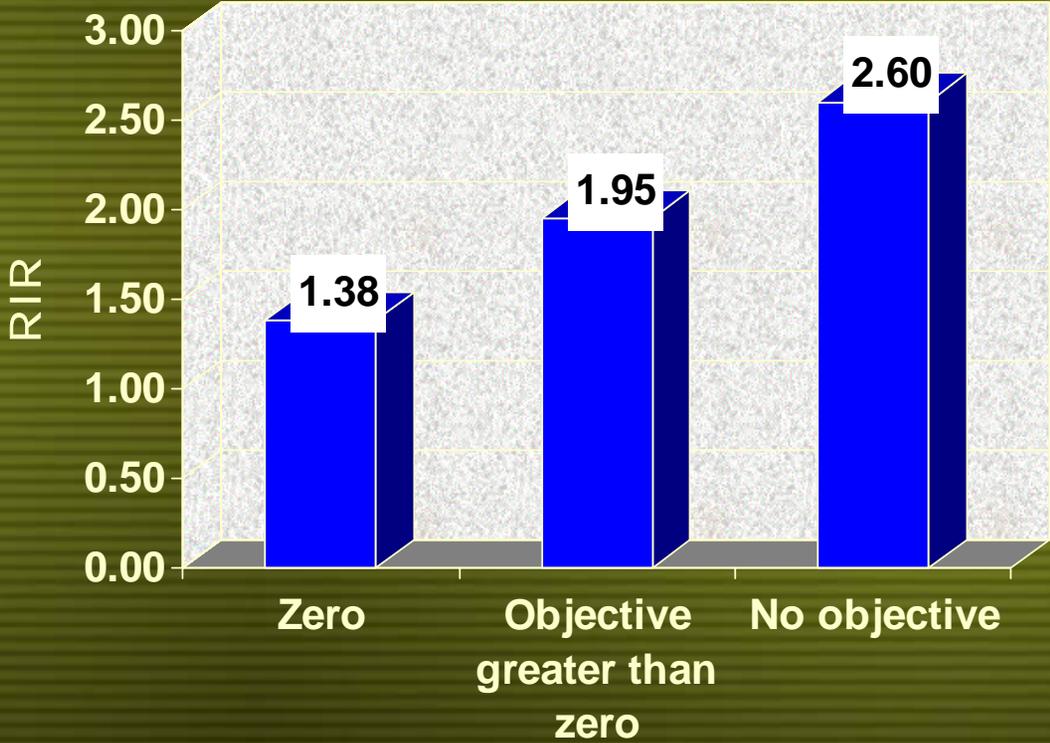
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Total number of leading indicator responsibilities of the owner's safety representatives

Project Execution Safety Activities

Continued



Contractor's Perspective

- Each Contractor Has a Duty To Perform
- Owner Influence Is Important
- Safety benefits from good partnering

Research Results are Clear

- Owner Involvement Significantly Influences Project/Contractor Safety Performance
 - Careful selection of contractor
 - Contractual safety requirements
 - Safety communication and involvement
 - Monitor safety performance
 - Participate in safety orientation
 - Participate in incident investigation and documentation
 - Participating in physical safety inspections
 - Participate in safety recognition program

Owner's Influence on Construction Safety Score Card

Project Context:

Selection of contractor:

(3) Is the TRIR requirement for the contractor selection less than 2.0? Y N

Contractual Safety Requirements:

Contractor Safety Program Requirements:

Which of the following are required to be included in the contractor's safety program?

Owner's Involvement in Project Safety Management:

(16) Does the owner's safety representative investigate near misses? Y N

(17) Are injury statistics on the projects maintained separately on each contractor? Y N

Which of the following activities are performed by the owner's site safety representative?

(21) Enforcing safety rules and regulations Y N

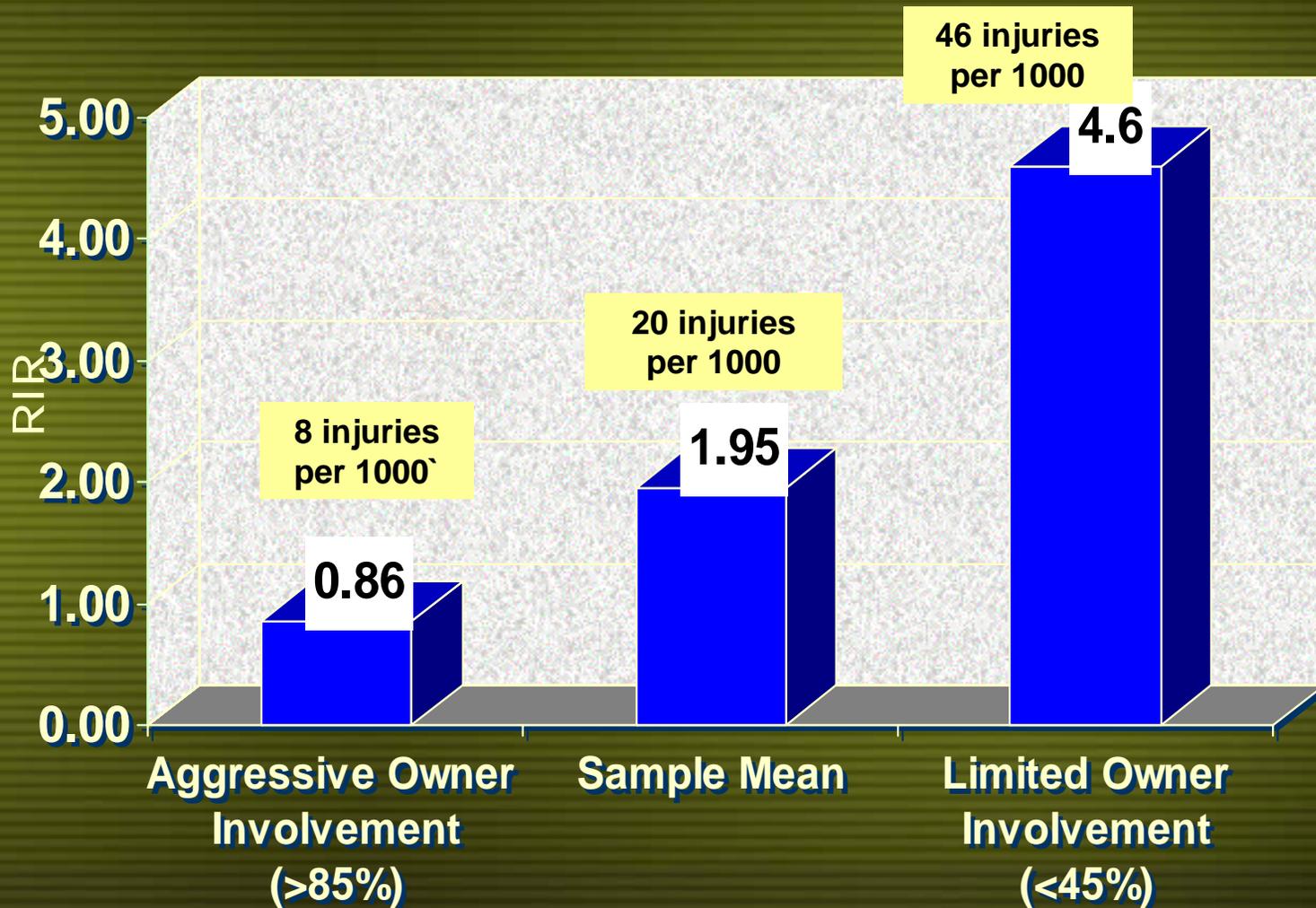
(22) Monitoring of the implementation of pre-task planning Y N

(23) Participating in safety recognition programs Y N

(24) Participating in safety and/or tool box meetings Y N

(25) Does the owner set zero injury as its safety expectation before the commencement of site work? Y N

How Influential Is Owner Involvement?



() = Scorecard Results

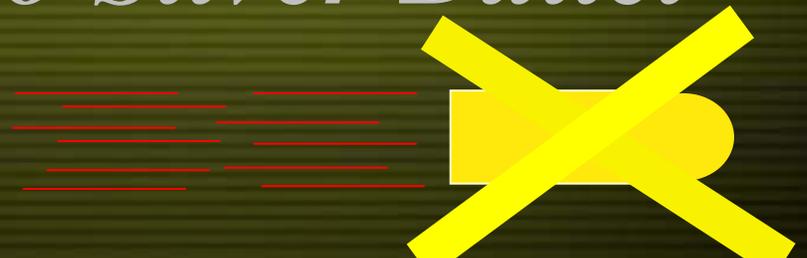
Work in Progress

- Implementation Data Sheets
- Education Modules “The How To “
- Metrics(Assessment Tool)
- Overtime Research
- The Next Project Team Study

Which practice is the most important to achieving zero accidents?

The safety culture of a firm is evident in everything it does. We must be ever vigilant in our efforts as we strive for Zero Accidents.

There is no Silver Bullet



NOTICE

IF YOU'RE NOT
CONFRONTING AT-RISK
BEHAVIOR...
YOU'RE REINFORCING IT.

The Stakes Are High

Your personal actions will make a difference...

***Be a
Courageous
Safety
Leader***

