FISHER & PHILLIPS LLP

ATTORNEYS AT LAW

Solutions at Work®

Effective Leading Indicators –

Essential Effort But How Do I Sell It And Make It Work?

- **Moderator:**
  - **Howard A. Mavity, Senior Partner/Practice Co Chair – Fisher & Phillips LLP**
- **Panelists:**
  - **Stephen Newell, Executive Vice President and Founding Member, ORCHES Strategies LLC**
  - **Barry Spurlock, Professor, Eastern Kentucky, former Safety Professional and Recovered Lawyer**

Challenges

- Management and Employee Mindsets
- Misunderstanding of the role and nature of Leading Indicators
- Government and Industry emphasis of Recordable Injuries
- Management pays lip service but doesn’t believe that such tools are effective
- Too expensive in the current production culture
- Too many numbers and targets
- Limited analytical base
- Limited agreement on generally accepted Leading Indicators in an Industry

The Role of Leading Indicators in Serious Injury and Illness Prevention

"Sometimes opportunity knocks, but most of the time it sneaks up and then quietly steals away."

Doug Larson

The ORCHSE Strategies, LLC. : Who We Are…

- **The world's premier global family of safety, health, and environmental networks for industry leaders**

  - A unique forum for developing and sharing innovative strategies and effective practices to help members achieve and sustain superior EH&S performance

  - The most respected and influential business voice in the development of OSH policies, regulations and programs in the U.S.

  - A growing impact on the development of OSH and environmental policies globally

ORCHSE Networks Members

Senior corporate occupational safety and health and environmental leaders

FROM

120 leading global corporations

IN

More than 20 industry sectors

Participate

In one or more of nine different networks, and between meetings engage in task forces, work groups, and extensive benchmarking

The ORCHSE network model is built upon the premise that member value is maximized by capturing best practices and lessons learned across multiple industries

Other than Frustration – Why Care About Metrics ??!!

1. The OSHA data have serious limitations as a global performance metric and we all know it
2. Performance excellence – you can't manage (or improve) what you don't measure (effectively)
3. Empowerment and the quest for our share of shrinking resources
   - We occupy the moral high ground
   - But…to be *empowered* in today's business world you need to drive and demonstrate:
     - Performance
     - Value
       - Safety and health professionals have problems doing both

The Solution…

- Measure S&H consistently with other parts of the business
- Use measures that drive performance
  - Measure process variables and outcomes -- support continuous improvement
  - Incentivize the right behavior
- Make the "business case"

"….measures…should consist of a linked series of objectives and metrics that are both consistent and mutually reinforcing." Robert S. Kaplan and David P. Norton, *The Balanced Scorecard*

- *Leading*
- *Trailing*
- *Value*

What We Will Cover in the Next 15 -20 Minutes

1. A fast-paced leading indicator primer: what are they and how to implement them
2. Quick overview of a new approach for preventing fatalities and serious injuries to set the stage for developing more effective metrics around managing risk with high severity potential
3. Suggestions for building and using leading indicators (and a new global outcome metric) to help drive continuous improvement around fatality and serious injury prevention

A Leading Indicator Primer: What Are They and How to Implement Them

"If you don't know where you are going, chances are you will end up somewhere else."

Yogi Berra

Leading Indicators

"Leading indicators are the performance drivers that communicate how outcome measures are to be achieved."

Leading Indicator Issues Basically Address …

- Are we doing the right things?
- Are we doing them well?
- Are they producing the desired result?

The Opportunity: Enhance Use of Leading Indicators

- Leading metrics are necessary to drive the activities that are critical to performance
- Leading metrics provide insights into the "quality" and effectiveness of the safety and health process...
- Leading metrics *enable business leadership to identify and drive strategic actions* that will yield performance excellence

Development Approach

- Identify key areas to be measured
- Consider questions that you would like the metrics to answer
- Develop measures to answer the questions
- Rank and select candidates

Question Examples: A Vertical Look At Leading Indicators

Enterprise Level Questions:

Are there policies, programs and processes in place
across the enterprise that support safety and health excellence?
Do they contain elements needed to drive worker protection?
Are they effectively communicated?

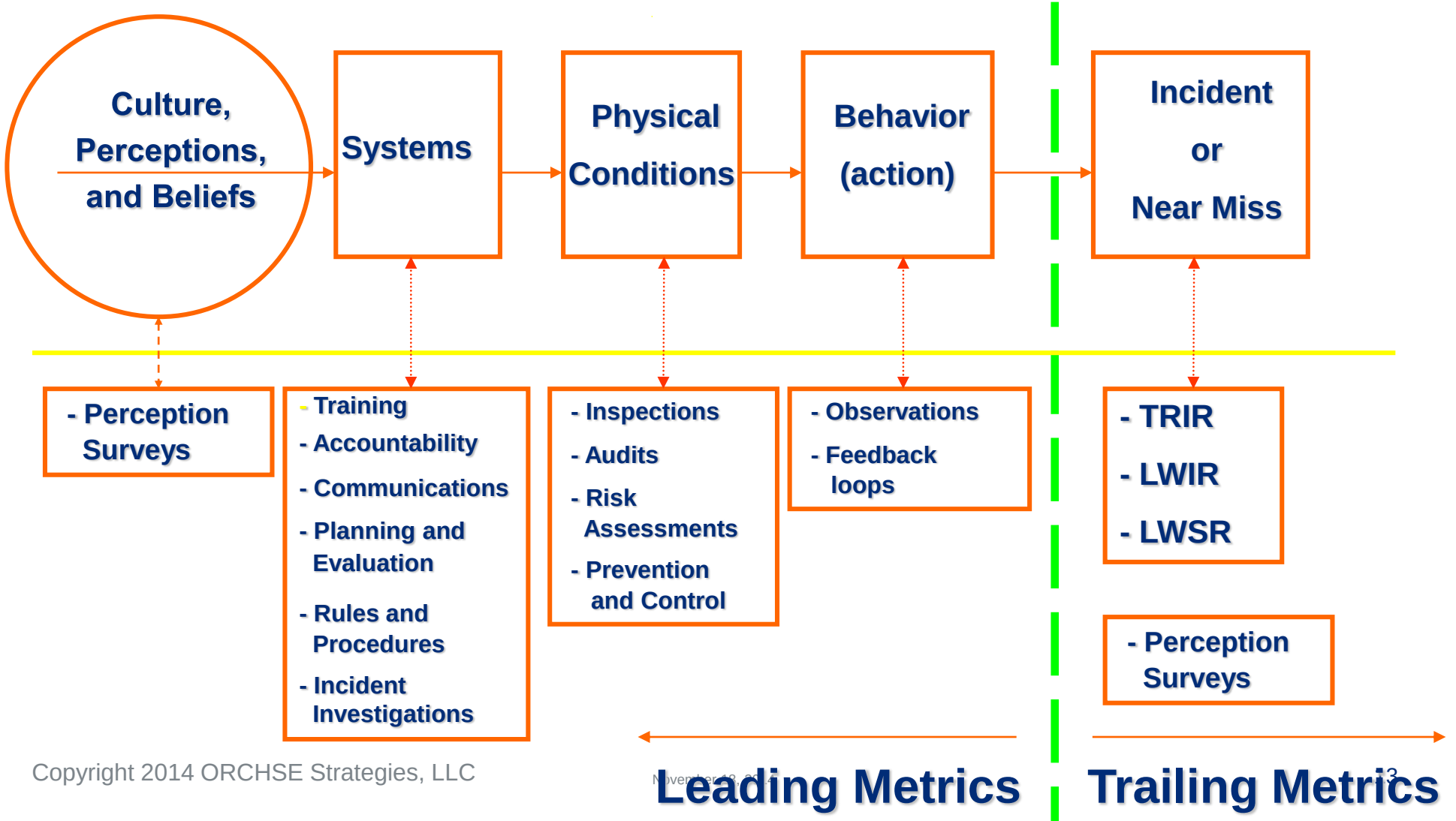
Bridges :

Evaluations
Audits
Selected metrics

Site Level Questions:

Are the policies being carried out and the programs and processes being done?
Are they being done well?
Is there a process to verify effective implementation?
Are they having the desired impact/result?

Incident Causation Process



Balanced Framework ….Metrics Simplified

- What Did We Do (and how well did we do it)?
  - Specific leading indicators
- What Were the Impacts?
  - Injuries, illnesses, fatalities, workers' comp., absenteeism, etc.
- What Value Did We Generate?
  - Morality
  - Reduction of loss
  - Financial measures (e.g., ROI)
  - Productivity
  - Product quality
  - Corporate responsibility/marketability
  - Corporate business strategy
- How Was It Perceived?

Inputs

Hazards + Safety Processes & Activities

Risk Prioritization

Risk Response

Risk Reduction

Improved Performance

Leading Performance Indicator Opportunities

Desired Output

Safety & Health Excellence

Fewer Injuries & Illnesses
Lower Costs

Which Indicators Matter?

- ✓ Get to the root cause(s)
- ✓ Measure key factors that drive performance
- ✓ Correlate with trailing indicators
- ✓ Support safety and health, environmental improvement
- ✓ Link to enterprise business plan

Using Leading Indicators to Help Prevent Fatalities and Serious Injuries

The greatest reward for doing, is the opportunity to do more."

Earl Warren

Setting the Stage: A Proposed New Approach to Fatality and Serious Injury Prevention

- Identify “pillars” of the safety and health profession that may be barriers to serious injury prevention
- Develop new risk model that better addresses risks with high severity potential
- Implement enhanced approaches to using data, doing risk assessments, hazard mitigation, and addressing human and organizational performance issues
  - Identify hazardous situations that may be precursors to fatalities and serious injuries
    - Assess hazards and controls for critical tasks
    - Consider impact of human factors and organizational performance issues
  - Prioritize abatement and corrective actions w/ different approach to risk assessment
  - Implement additional controls/corrective actions as needed

Context for The "New" Approach

- Dan Petersen on serious injuries in 1989…
  - The causal factors are different. There are frequently different sets of circumstances surrounding severity:
    - **In unusual and non-routine work**
    - **Where upsets occur**
    - **In non-production activities**
    - **Where sources of high energy are present**
    - **During at-plant construction operations**
- Fred Manuele: ""As the data clearly shows, frequency reduction does not necessarily produce equivalent severity reduction."

  …The data requires that we adopt a different mindset, and a particularly different focus on preventing events that have serious injury potential."

2007 Rand Study

- There appears to be no relationship between OSHA injury rates and fatalities
  - The absence of minor injuries is NOT predictive of the absence of future fatalities
  - The presence of minor injuries is NOT predictive of the presence of fatalities in the future.

BST Task Force Findings (Tom Krause led task force findings)

- Injuries of differing severity have differing underlying causes. Consequently, reducing serious injuries requires a different strategy than reducing minor injuries.
- Most fatalities and serious injuries come from a discrete set of exposures. These exposures can be identified and addressed

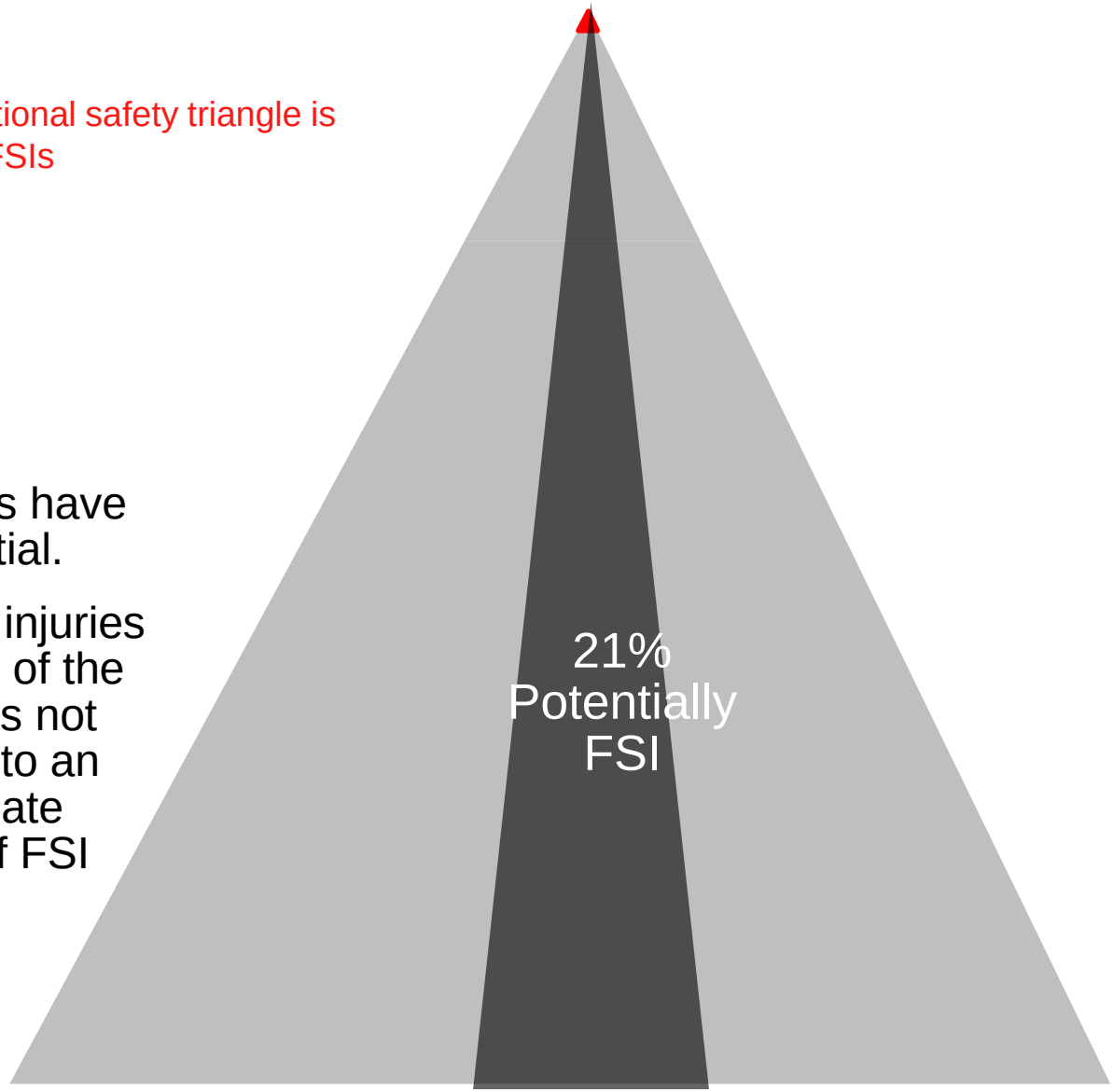
➢ Current measurement systems create a “blind spot” for serious injury prevention

Is the Safety Triangle Accurate *Predicatively*?

Finding: The traditional safety triangle is ***not*** predictive of FSIs

Not all injuries have FSI potential.

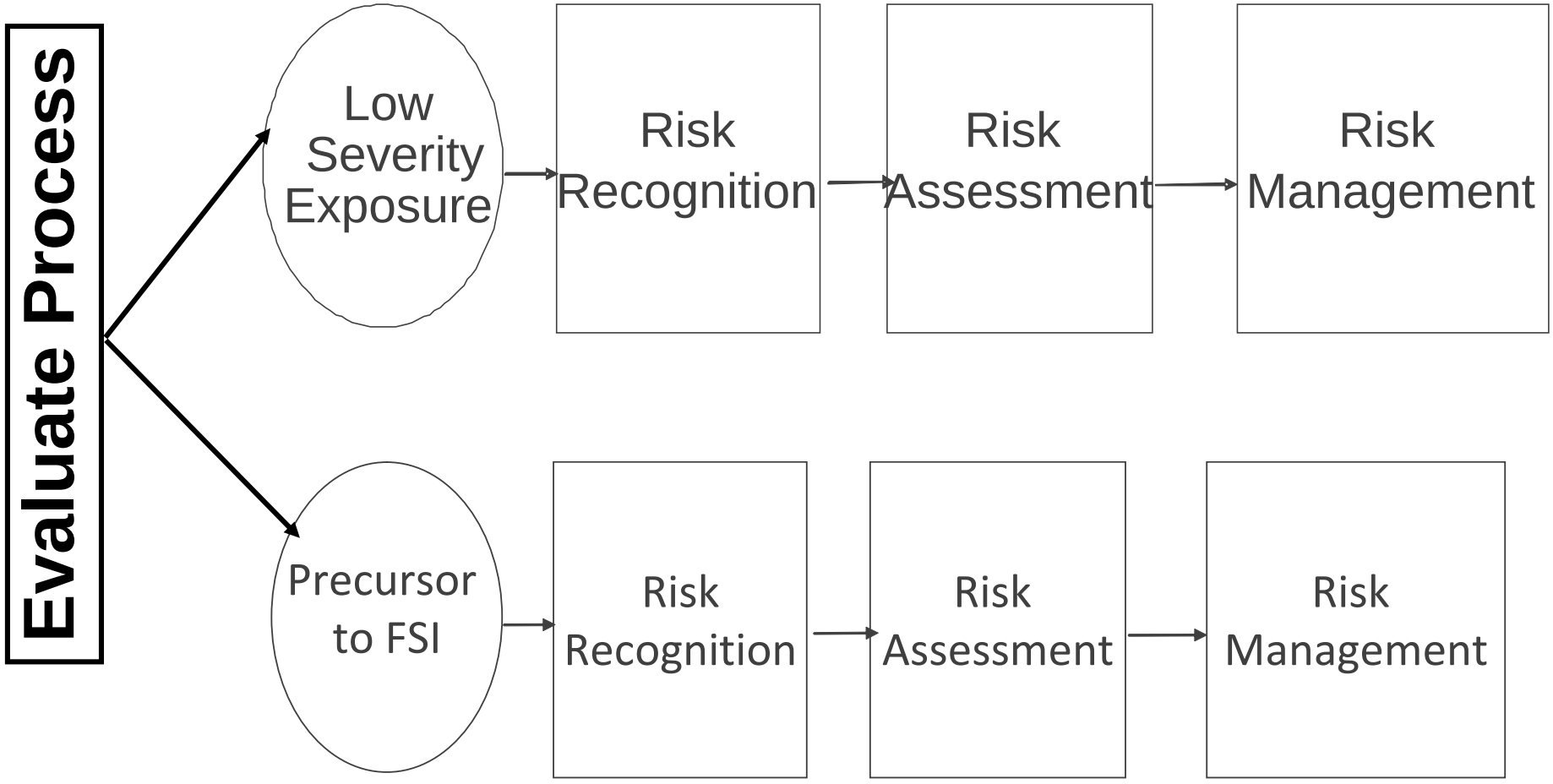
A reduction of injuries at the bottom of the triangle does not correspond to an proportionate reduction of FSI



BST findings

New ORC FSI Prevention Framework

(Same risk management steps; but different approach for potential FSI exposures)



Processes are evaluated to identify precursors to FSIs. Once precursors are identified, different approaches are used for risk recognition, risk assessment, and risk management.

Challenge: How do you translate key concepts into practical realities?
Solution: ORC's Six Steps Towards a Fatality and Serious Injury-Free Workplace

Assess Current Situation and *Set the Stage* for the Technical and Cultural Shift Required to Prevent Fatalities and Serious Injuries

Identify and *Inventory Situations that Are Potential Precursors* to Fatalities and Serious injuries

Conduct *Risk Assessment* and Set Priorities for Intervention

Ensure Adequate *Control of the Hazard*

Address *Human* and *Organizational Factors* That Impact Performance

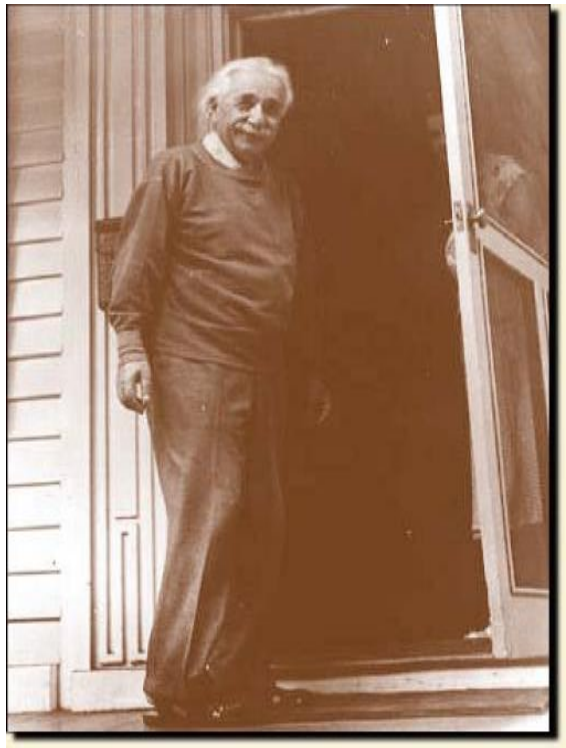
Ensure *Infrastructure* (management systems, metrics, etc.) Required to Drive *Continuous Improvement*

Role of S&H Performance Metrics In Reducing Fatalities and Serious Incidents

Implement leading indicators around precursors to fatalities and serious injuries and key elements of your risk recognition, risk assessment, and risk management process; link to trailing metrics that highlight more serious consequences

"You only see what you know.."

Albert Einstein



Example: Applying Leading Indicators to Managing & Eliminating Risk

- IF: fatal and serious Injuries and illnesses are the consequence of exposure to certain risks
- AND: Managing those risks is critical to the injury and illness prevention process
- THEN: Measuring hazard identification and elimination efforts = fundamental to continuous improvement

- *Key = You Must Identify Significant Risks and Take Steps to Eliminate or Control Them*

➢*What Do We Need to Know???*

Sample Questions Related to Serious Injury Prevention

- Are risks that are potential precursors to fatalities and serious injuries being identified?
- Once identified are they being prioritized?
- Are unacceptable levels of risk being abated in a timely fashion?
- Does the abatement reduce the risk to acceptable levels?
- Are related human factors and organizational performance issues being identified?
- Are human factors and organizational issues being addressed?

Drilling Down re. Hazard/Risk Identification:

Supplemental questions to hazard identification, prioritization and abatement

- Are hazard analyses being kept current?
- Are workers involved in hazard identification?
- Are hazards and abatements effectively communicated to other worker populations?
- Is there compliance with federal and state safety and health regulations?

- ***Cumulative learning: What is the Content and Quality of Your Process?***

Leading Indicator Examples

Incident Investigation Related to Serious Risk

Q. Are incidents being investigated in a timely fashion?

Measure:

- **Average time from incident notification to investigation**

Q. Are the results being acted upon in a timely fashion?

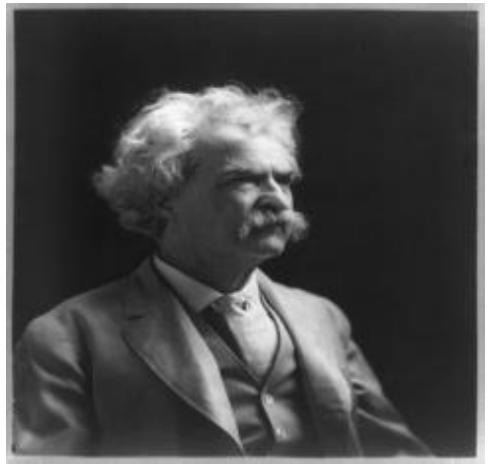
Measures:

- **Average time from incident investigation to hazard abatement**
- **Completion rate of recommendations**
- **Average age of outstanding recommendations**

A New Outcome Metrics Available to Support Serious Injury Prevention – ORC developed ASTM Global Reporting Standard (ASTM E2920-14)

Do the right thing. It will gratify some people and astonish the rest.

Mark Twain



Specific Criteria for Level One Cases

Level One is intended to be a subset of relatively serious cases that have significance for the I&I prevention process and are likely to be consistently diagnosed.

A. Injuries

1. **Fatalities**
2. **Amputations (involving bone)**
3. **Spinal cord injuries**
4. **Herniated discs of the cervical, lumbar, and/or thoracic spinal regions**
5. **Concussions and/or cerebral hemorrhages**
6. **Loss of consciousness**
7. **Injury to internal organs**
8. **Fractured bones or teeth**
9. **Cartilage, tendon, and ligament tears**
10. **Dislocation of any joint**
11. **Lacerations and punctures requiring wound closure, such as sutures, surgical glue, etc.**
12. **MSDs requiring surgery or resulting in permanent impairment**
13. **All 3rd degree burns. 2nd degree burns greater than 3 inches in diameter (100 cm_2)**
14. **A punctured eardrum or confirmed work related STS and a 25db shift from audiometric zero in same ear**
15. **Injuries of the eye requiring the services of a physician (unless treatment is preventive)**

Specific Criteria for Level One Cases

Level One is intended to be a subset of relatively serious cases that have significance for the I&I prevention process and are likely to be consistently diagnosed.

B. Illnesses

1. **Occupational dermatitis with blistering and/or cracking covering an area of skin greater than 3 inches in diameter (100cm$_2$).**
2. **Occupationally acquired HIV, hepatitis B or C**
3. **Occupationally acquired cancer**
4. **Occupationally acquired lung diseases**
5. **Occupationally acquired infectious diseases**
6. **Occupationally acquired disease of the liver, spleen, kidney, heart, brain, nervous system, pancreas, thyroid, or other vital organ**

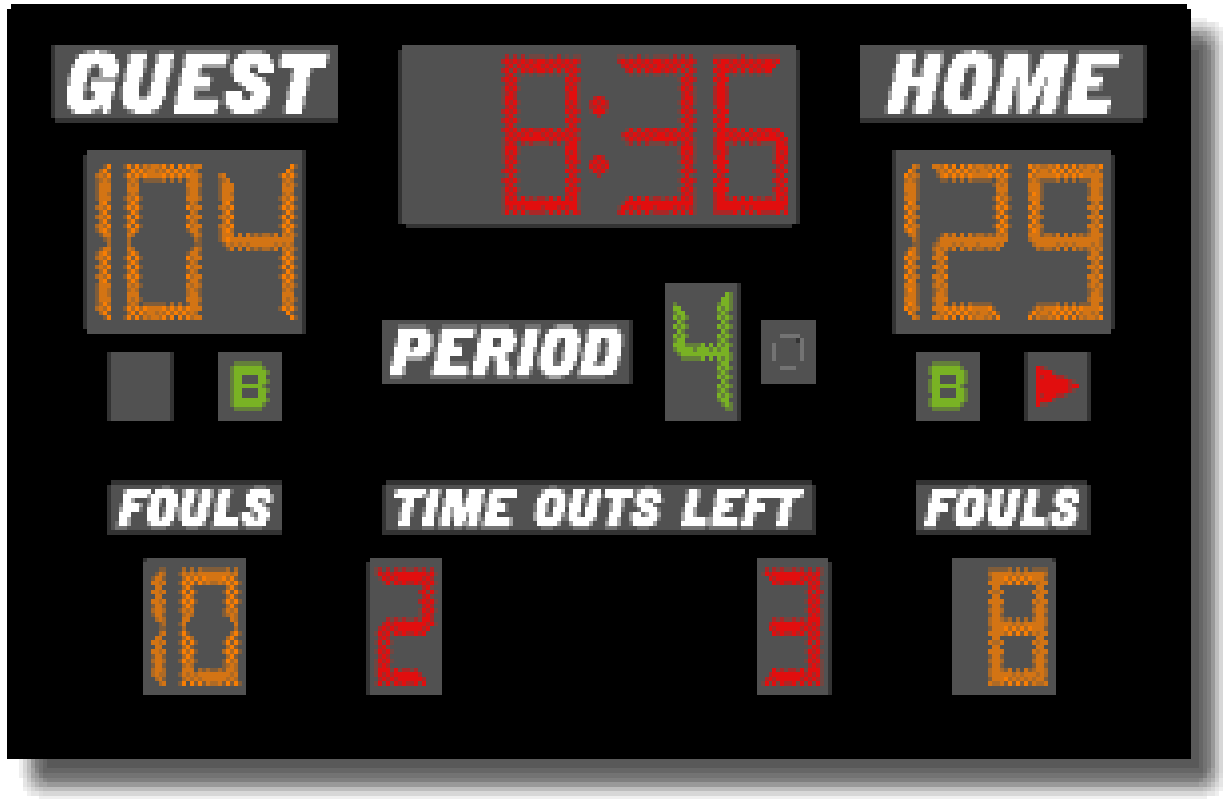
Overall Metrics Summary

- Our current metrics paradigm which places too much emphasis on the OSHA data does not work and we all know it.
- In part, the metrics we use (or don't use) contribute to our current plateau in injury and illness performance… because:
  1. Key data (leading indicators) are lacking to drive performance
  2. We don't fully utilize the data that already exists
  3. Cases related to serious injuries and critical hazards are buried in other data
- Improving data on occupational injuries and illnesses requires a different approach than has traditionally been used.
  - We need to re-examine several key concepts
  - We need to think about clarity and ease of use
- As a profession we know what needs to be done. The hard work will be in getting consensus and changing the existing paradigm.

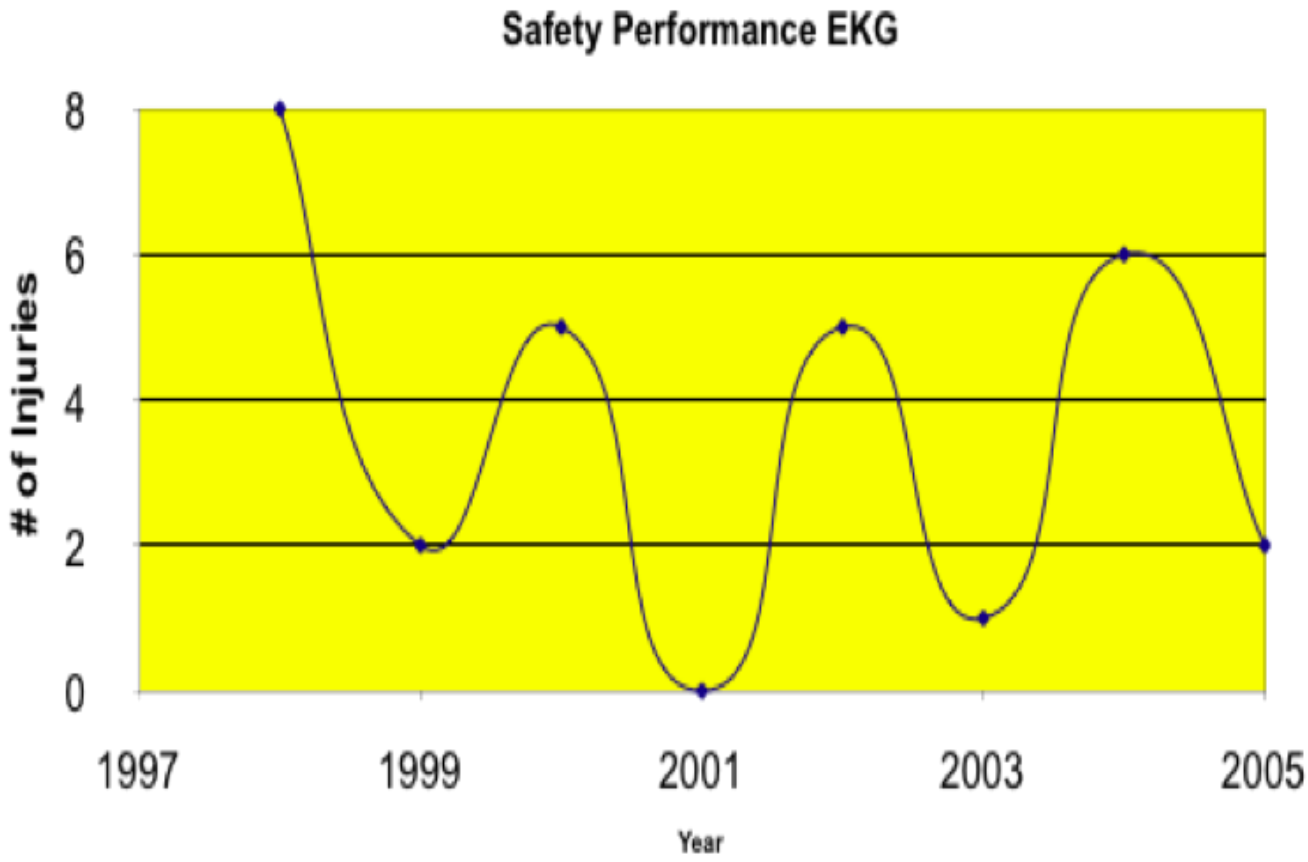
BEGINNING OF BARRY SPURLOCK SLIDES
The problems with trailing indicators:

1. Influenced by Luck
2. Measure Failure
3. Susceptible to Manipulation
4. Lack Precision
5. Limited Impact on Employees
6. Provide No Insight on Safety Efforts
7. Not Used for Intended Purposes

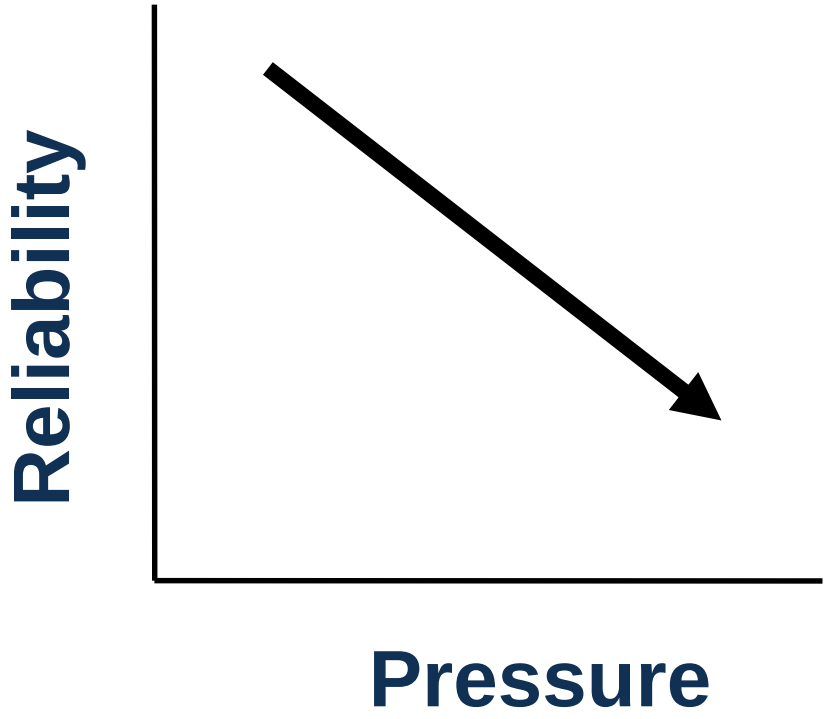
By Way of Analogy



Safety Performance Plateau Disorder



Effect of Unbalanced Focus on Trailing Indicators



Key Point on Trailing Indicators

Incidents must occur to have conclusive data.

Leading Measure Maxim #1

- Balanced Leading Measures Systems Align with Consensus Standards.

"Organizations **should develop predictive or 'leading' performance measures or indicators**… These leading indicators can be used in combination with carefully collected injury and illness rates to measure performance…"

ANSI Z10 (p.18)

Leading Measure Maxim #3

- Soft measures = Big Impact

Because safety involves human performance, aspects of safety management such as culture management commitment, and supervisor involvement represent the most powerful influences on safety performance.

Leading Measures Maxim #4

- Qualitative measures ***can be*** highly valuable in safety performance measurement.

Mere subjectivity CANNOT be the reason qualitative measures are not utilized.

Employers have the prerogative to establish quality standards for safety activities.

Leading Measures Maxim #6

- Leading measures are not technically difficult, but they require work.

Many of the statistical calculations with leading measures are fundamental. The collection of data and continuous improvement of the measurement system to DRIVE performance demands work and engagement of all in the organization.

Step 1. Prioritize

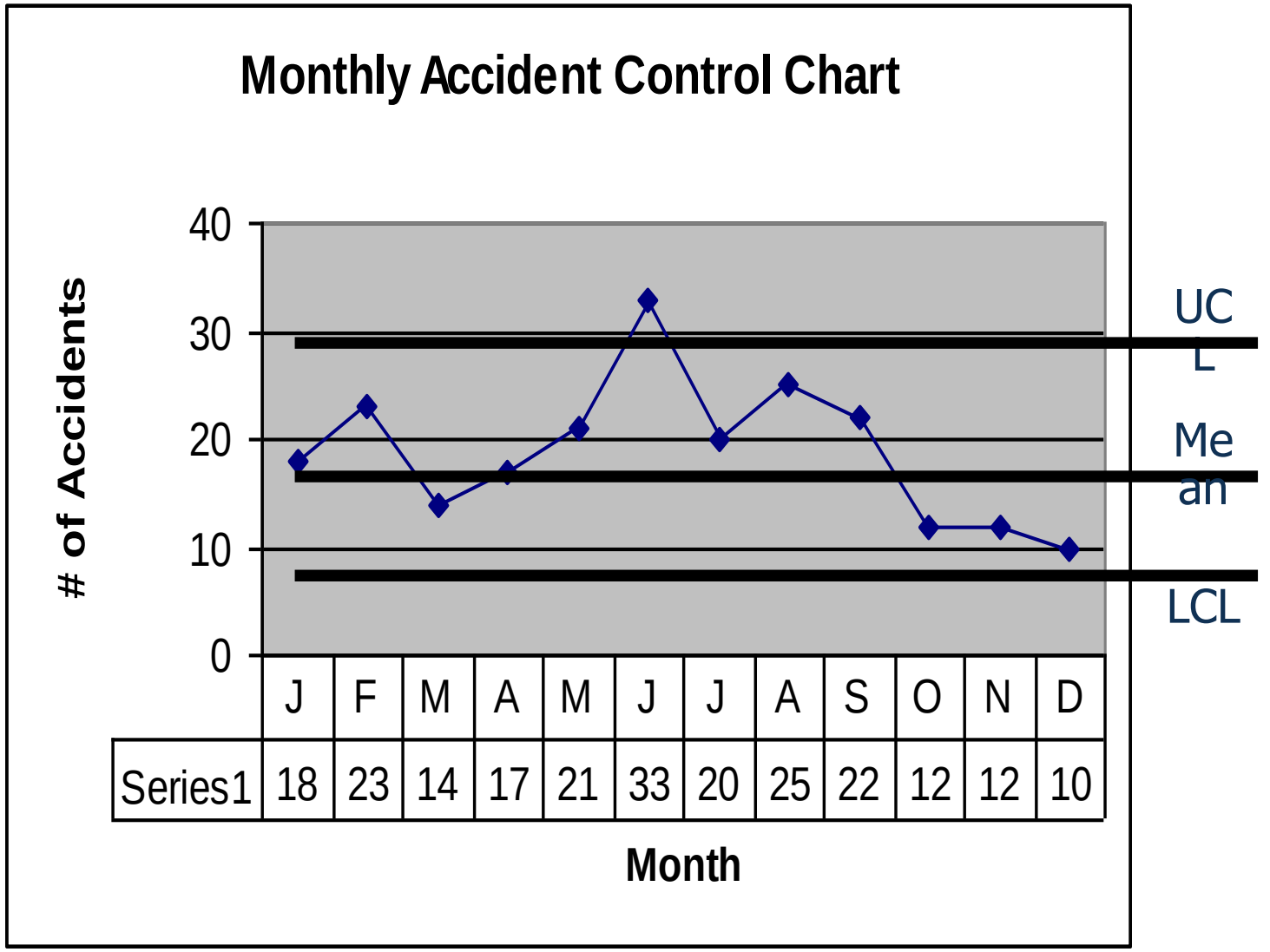
- Trends
- High Impact Measures
- Consider low frequency but high severity risks.
- Tools for prioritizing
  - Pareto Principle
  - Risk Management Matrix
  - Safety Perception Surveys

Step 2. Identify Organizational Owner of Certain Measures

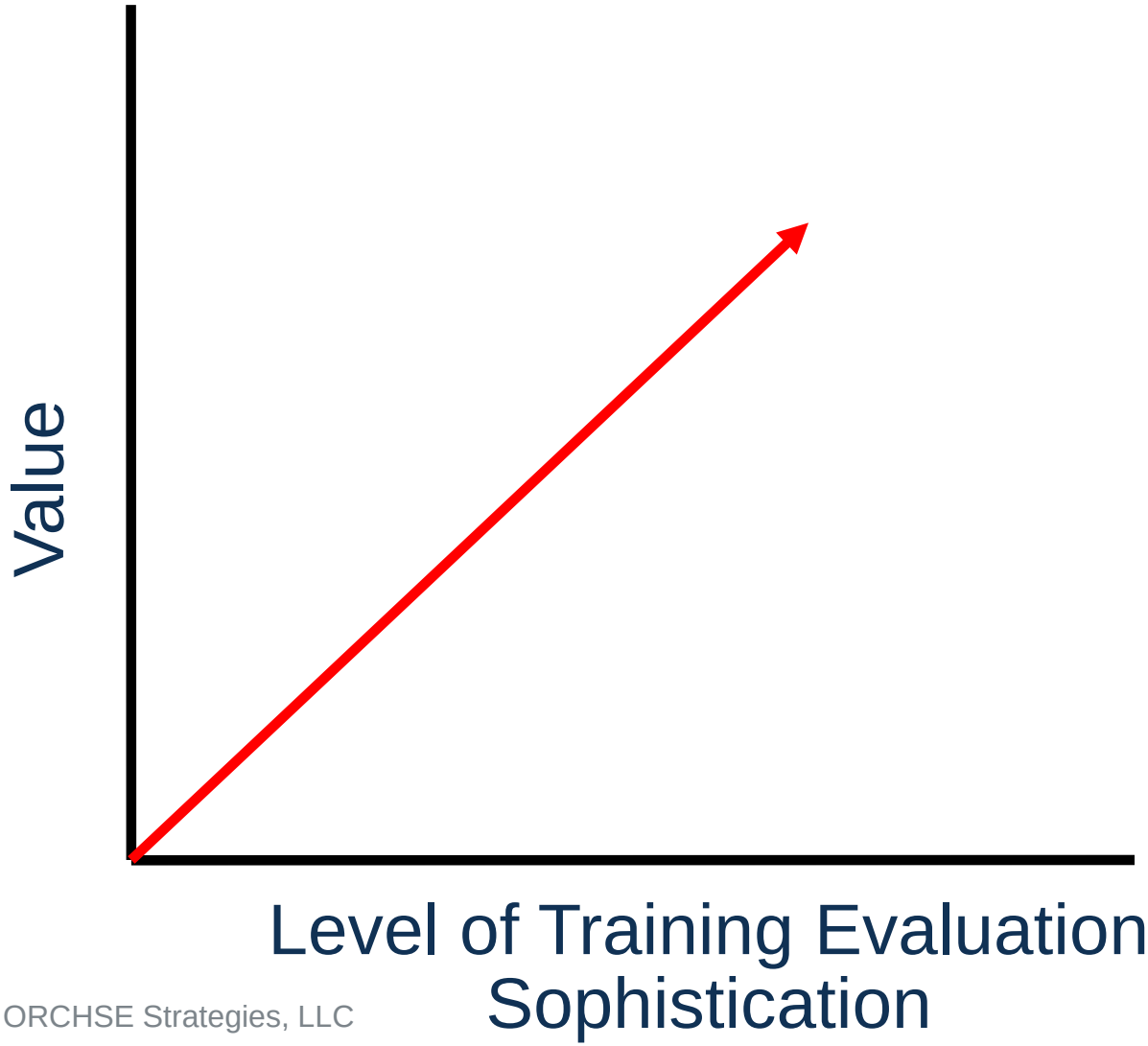
Level of Org. Chart	Micro or Macro Focus	Activity or Outcome	Ability for Statistical Accuracy	Need for Data Integrity	Need for Employee Engagement	Need for Timely Feedback
Top Mgmt.	Macro	Outcome	High	Lower	Lower	Lower
Middle Mgmt.	Macro w/ some micro	Mix	Moderate	Moderate	Moderate	Moderate
Frontline Sup.	Micro w/ some macro	Mix	Moderate	Moderate	Moderate	Moderate
Prod. / Rank	Micro	Activity	Lower	High	High	High

Step 3: Verify Efficacy of Hazard Controls

- Ensure Efficacy of Existing Controls
- Implement Needed Controls
- Identify System and Cultural Blocks
- Tools:
  - Statistical Process Control Charts
  - Pre and Post Control Implementation Analysis
  - Safety Perception Surveys



Training Evaluation



Measuring Knowledge Change

$$KC = \frac{Ka}{Kb}$$

Measuring Attitude Change

$$AC = \frac{Aa}{Ab}$$