Developing an Analytics Strategy to Describe, Diagnose, & Predict Workplace Safety Outcomes

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Background Evidence-based management (EBM) is the process of using evidence to better inform decision making to solve management problems. (Barends, Rousseau & Briner, 2014)

Big Data provides evidence through collections of large data sets that are used to identify and predict patterns to inform organizations EBM decisions. (McAfee & Brynjolfsson, 2012) (Gelles, 2011) (Sullivan, 2013)

- Organizational-Level Safety Analytics is an underdeveloped area of empirical research.
- Organizations can use Big Data as evidence in their EBM practices.

Our Goal To develop a strategy to utilize data that organizations are already collecting to describe, diagnose, and predict workplace safety outcomes. Understanding these outcomes will better inform organizations how to best implement programs to mitigate workplace injuries and accidents.

Variables Predictor Categories:
- Production
- Procedures
- Hazards
- Behaviors
- Participation

Leading Indicators & Outcomes:
- Near Misses
- Non-Serious Injuries/Fatalities
- Potential Serious Injuries/Fatalities
- Serious Injuries/Fatalities

The Process Data will be collected from 4 divisions of a large Fortune 500 chemical engineering company’s manufacturing site.

Problem Framing Analytics Problem Framing Data Protocols Method Selection Build Analytics Model Deploy Results

Project Life Cycle Management

The Model

The Product: Safety Index

The Process

Management Decisions
Scheduled Events
Management of Change
Staffing Loads
Calendar Events
Updating Procedures
Undefinded Procedures
Fatigue
Complacency
Life Critical Behaviors
Task Behaviors

Leading Indicators
PSIF
NSIF
PS 3 & 4
PS 1 & 2
Near Miss

Outcomes
SIF
NSIF
PS 3 & 4
PS 1 & 2

The Product: Safety Index

Division 1
Division 2
Division 3
Division 4