

Trending: Methods to Analyze Safety & Health Performance Measures

Trend analysis is the practice of spotting patterns (both good and bad) in the information and data collected from your processes. Simply monitoring and measuring the performance of your safety and health (S&H) processes in your safety and occupational health management system (SOHMS) is not enough. Capturing and knowing your performance measures is necessary—learning what they mean is key! Trends help you understand your SOHMS performance and indicate where current S&H efforts will take your organization. The burning question is: *“How do I perform trend analysis?”*

This one pager describes methods you can use to analyze the S&H data at your organization and develop strategies to improve your SOHMS performance.



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WHO SHOULD PERFORM TREND ANALYSIS?

Designate knowledgeable persons to analyze S&H performance data using the methods described in this one pager, or other appropriate methods. Ideally, assign this responsibility to employees familiar with S&H performance and experienced with data analysis and the use of software programs.

COMPARE REGULATORY COMPLIANCE AND HISTORICAL DATA

Compare your S&H data against regulatory requirements or other guidance (e.g., consensus standards, Service requirements) to verify you accomplish the requirements.

Example: Requirements mandate identifying corrective actions within 60 days for all open items assigned risk assessment code (RAC) 1, 2 or 3. Your duties require reviewing each RAC for quarter 3 (Q3) to assess 100% development of corrective action plans within the 60-day period, yet your review identifies 21 RAC 2s without a corrective action plan. You might then compare the Q3 data against quarters 1 and 2 to determine if it is a common occurrence. If so, identify it as a trend, then further investigate what is preventing or delaying RAC 2 abatement plans.

Identify whether trends exist using historical data for any past metric or measure regarding the performance measures you plan to trend, taking care to choosing appropriate timeframes. Historical data focuses on previous occurrences but can give insight on current SOHMS performance. Only through comparison can you determine whether your SOHMS is progressing or regressing over time.

Example: You plan to measure your S&H training completion percentage for the first half of the calendar year. 80% complete as an organization this year does not tell you much. You need to know the percentage in past comparable timeframes. Last year's 96% S&H training completion percentage shows a year-over-year training completion drop, but also the need to determine why. Compare S&H training completion rate for the first half of the year against data collected over the last 4–5 years to develop a trend and determine the need for added investigation.

IDENTIFY OBVIOUS TRENDS

When you have historical data or compliance goals, it is often easy to spot trends. If your injury and illness rates increase four years in a row (Figure 1), you can conclude a trend of increasing injury and illness rates. Knowing high injury and illness rates are undesirable, you can say the continuation of this trend is not good for your SOHMS and requires improvement.

Now, look further into your injuries and illness data to see what is happening and why. Is there a specific type of injury occurring most often? Let's say you have an ongoing trend in sprain and strain injuries. Look for trends regarding where the injuries occur (e.g., in a certain work area, when performing a specific operation, or during a particular time of day).

IDENTIFY NOT-SO-OBVIOUS TRENDS

In other cases, you may look at your data and not be sure whether a trend exists. For example, the number of S&H inspection findings fluctuates over a six-year timeframe (Figure 2). *How can you tell if it is trending up or down?*

USE AN AVERAGE

Averages help you understand how well you are performing. Find the average of your data set and use the average as a benchmark for future trends.

$$\text{3-year Average} = \frac{(\text{Year 1} + \text{Year 2} + \text{Year 3})}{\text{Total Number of Years}} = \frac{(32 + 41 + 38)}{3} = 37$$

Compare future inspection finding numbers against the average to see if they fall above or below the benchmark (i.e., 37 inspection findings).

USE MICROSOFT EXCEL TO IDENTIFY TREND LINES

Apply trend lines when your data varies constantly. Microsoft Excel lets you apply a trend line to your data (Figure 2, yellow line). Though the numbers fluctuate over time, the trend line shows a slight upward trend over the past 6 years, meaning an increasing number of your inspection findings, or upwards trend, over time.

MAKE IMPROVEMENTS

After completing your trend analysis, use this information to investigate the causes of trends and create plans of action to make SOHMS improvements.

For additional information on the SMCX's services, please visit the SMCX-hosted website at: <https://www.smcx.org/>.

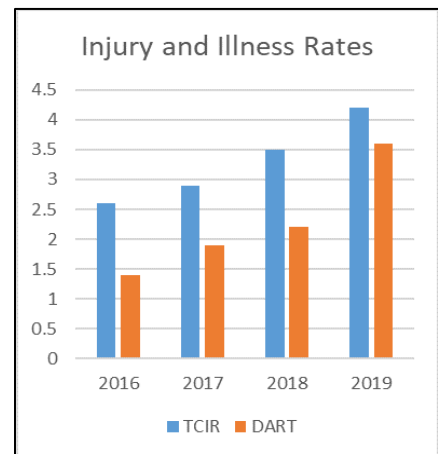


Figure 1 – Injury and Illness Rate Trend

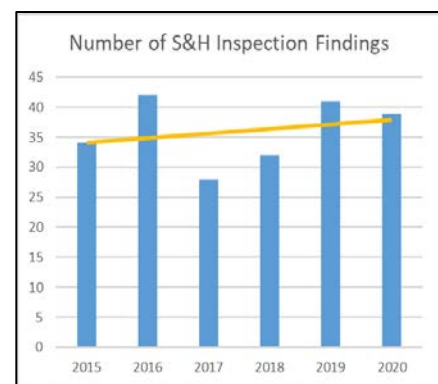


Figure 2 – S&H Inspection Finding Trend

Add a trend line in Microsoft Excel™

1. Input your data and create a chart
2. Select the '+' button to open the Chart Elements options
3. Check the "Trend Line" box