



## Basic Method to Calculate the Effectiveness of your Safety Management System

Authors: Flavio Simon and Ronilla Ernest

### Introduction

Let's assume that as an Occupational Safety and Health professional you are doing everything to foster a safer work environment, offering appropriate employee training sessions, following regulations and keeping up with best practices to prevent occupational injuries/illnesses.

One simple way to measure the effectiveness of your Safety Management System (SMS) is to monitor two quantifiable Lagging Key Performance Indicators (KPI).

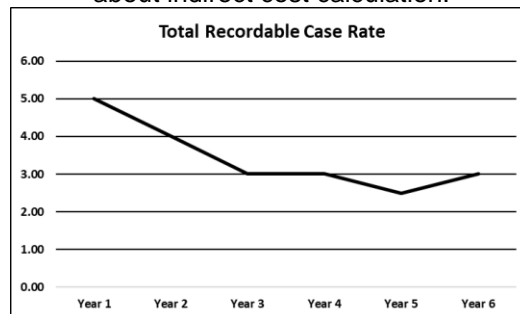
**Lagging KPI #1 – Injury Case Rate per 100 full-time employees:** The information needed includes recordable injuries and illnesses (per OSHA CFR 1904.7), number of employees, working hours.

**Lagging KPI #2 – Cost of Injuries and Illnesses:** The direct costs can be obtained from the Workers Compensation reports or, if unavailable, can be estimated.

**Hypothetical example: Calculating Lagging KPIs #1 and #2 (Incidents, Costs and Savings):** Let's assume you have access to six years (or quarters or months) of data showing the number of work-related injuries or illnesses that required medical treatment beyond first aid, the date each injury occurred and the average number of employees on staff during each year. The data can be tabulated as follows:

Year	No. of "Recordable" Injuries	Average Number of Employees	Working Hours per year (assuming 2,000 hours per employee per year)	Total Recordable Case Rate	Total Injuries Direct Costs (assuming \$4,000 per injury)	Indirect Costs (assuming 160% over Direct Costs)	Total Injury Costs	Costs Variations (each year versus Year 1)
Year 1	10	200	400,000	5.00	\$40,000	\$64,000	\$104,000	N/A
Year 2	8	200	400,000	4.00	\$32,000	\$51,200	\$83,200	-\$20,800
Year 3	6	200	400,000	3.00	\$24,000	\$38,400	\$62,400	-\$41,600
Year 4	6	200	400,000	3.00	\$24,000	\$38,400	\$62,400	-\$41,600
Year 5	5	200	400,000	2.50	\$20,000	\$32,000	\$52,000	-\$52,000
Year 6	6	200	400,000	3.00	\$24,000	\$38,400	\$62,400	-\$41,600
							<b>Total savings</b>	<b>\$197,600</b>

Please, refer to the "OSHA Safety Pays Program" <https://www.osha.gov/safetypays/> for more information about indirect cost calculation.



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### Observations

- There were no changes in the number of employees (200) and the direct costs per recordable injury (\$4,000) from Year 1 through Year 6. This may indicate there were no major organizational disruptions for the period.
- The Total Recordable Case Rate improved after Year 1.
- Is the performance improvement attributable to any safety initiatives launched during this period? The assumption here is that nothing good or bad happens entirely by chance.
- The performance improvement from Year 2 through Year 6 resulted in savings of \$197,600.
- The downtrend was interrupted from Year 3 onward.
- The injury rate plateaued from Year 4 through Year 6. What factors contributed to it? Employee complacency, were new hires rushed to the operations without proper training, or a combination of several factors?
- Could the downtrend have been maintained by introducing adjustments to the SMS?

### Summary

- The monitoring of Injury & Illness Rates quantifies the effectiveness of the SMS in preventing occupational incidents/illnesses.
- The calculation of the savings attributable to incident/illness prevention can be determined based on the Total Cost of injuries and illnesses.
- The monitoring of Lagging KPIs can help provide a road map to the where/when/what/how adjustments in the SMS.
- It is important to make continual improvements to the SMS so you don't lose ground or reach a temporary pause in the pursuit of reducing employee injuries/illnesses.

## About the Authors



Flavio Simon is a Safety, Quality Assurance and General Management thought leader with exposure to business sectors such as Oil & Gas, Manufacturing, Mining and Civil Engineering globally. He dedicated the last 15 years to the implementation of accident-free work environments and the prevention of quality non-conformances. He holds a BSc in Geology and attended an MBA-intensive course as part of his ongoing continuing education. He is a Certified Associate Safety Professional and an ISO 9001 Lead Auditor. He has authored/co-authored several technical papers and actively participated in numerous multi-cultural projects with English, Spanish and Portuguese-speaking clients and corporations. He is a Safety Officer at the Risk Management Division - City of Houston and is presently serving as the Content Coordinator of the National Safety Council – Government and Public Sector Division.



Ronilla Ernest is an Occupational Safety and Health professional with over 15 years of extensive experience in both the public and private sector. She holds a Master's in Public Health, Environmental Health Science with emphasis on Industrial Hygiene from University of South Carolina. Ms. Ernest is currently working as a Safety Supervisor with City of Houston and manages a staff of safety professionals who oversee occupational safety and health for the Houston Public Works Drinking Water, Ground Water, and Wastewater Operations. Ms. Ernest currently serves as the Awards Coordinator for the National Safety Council, Government and Public Sector Division and is a member of the American Society of Safety Professionals.

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