



Using Safety Data Analytics to Reduce Work Injury Insurance Costs

Introduction

Every year more than 1.1 million people die from occupational accidents or work-related diseases in Asia and the Pacific¹.

Occupational accidents and diseases have an impact not only on the lives of individual workers but also on the productivity and profitability of the companies who employ them.

Now that countries are starting to relax their COVID restrictions and worksites are opening up across Asia, the number of work related fatalities and serious injuries have been creeping up². An increase in wages, medical expenses, and other cost components across the region are also likely to have an inflationary impact on work injury insurance premiums. In this context, this article explores how the use of Safety Data Analytics can assist in reducing work injury insurance costs and how analytical reporting tools can assist employers in fulfilling their safe workplace due diligence responsibilities.

What is safety data analytics?

Put simply, Safety Data Analytics (SDA) is the recording and tracking of pertinent data relating to key aspects of workplace accidents and injuries. A key aspect of SDA is that it incorporates both historical (lag) indicators and forecasting (lead) indicators of safety performance within an organization.

Historical Indicators of Safety Performance measure a company's work accident and injury performance in terms of past statistics. They measure the occurrence and frequency of past events and can alert companies to a failure in an area of a safety and health program or the existence of a safety hazard³. Whilst most safety and health professionals are familiar with these historical indicators of safety, the indicators still fulfill an important function if used effectively, in reducing work injury costs and fulfilling employer's due diligence responsibility in providing a safety place of work for their employees. They do this by answering the basic safety data reporting questions relating to the 'what, when, where, who, why and how,' of workplace accidents, as well as reporting on the frequency, severity and type of workplace accidents and subsequent injuries.

¹Safety and health at work in Asia and the Pacific, International Labor Organization (ILO).

²Alarming Rise in Workplace Accidents in Asia as Covid Restrictions Ease, Kee Safety Singapore, 4th May 2021.

³Using Lead Indicators to Improve Safety & Health Outcomes, Occupational Safety & Health Administration (OSHA).

As a minimum required, historical safety performance indicators for Safety Data Reports should include the following reporting criteria:



- The type of accidents occurring
- The causes of these accidents
- Accident frequency both in terms of count and rate
- Severity in terms of insurance costs
- Locations and sub-locations where accidents are occurring
- The injured person's job title and department
- The type of resulting injuries and body part injured

In relation to historical reporting criteria, the following distinctions should be noted:

- **The 'type' or category of accident** (e.g. slips/trips/falls) should not be recorded as the 'cause' of an accident. For example, in terms of slips/trips/falls, there may be a broad number of possible causes that need to be identified in order to prevent future accidents. These causes may include floor cleaning in progress, spilt liquids, leaking pipes, rain, trip hazards, use of escalators or moving walkways, etc.
- **Frequency count and frequency rates** should both be recorded. A total frequency count over a given time frame or in relation to specific locations, departments or job titles is beneficial in the effective targeting of safety management resources and the development of effective control measures where they are most needed. However, frequency rates per staffing levels or hours worked, allow for a comparison of accident frequency across difference sized workforces (e.g. before, during and after COVID-19), and frequency benchmarking between departments, locations and companies within similar industries.
- **Locations of occurrence** should reflect the different geographies and addresses at which the business operations, as well as internal sub-locations within each plant or property where high frequency accidents are being reported.
- **Severity in terms of insurance costs** should quantify and track the costs of workplace accidents from the time of occurrence through to when the claim is closed. Severity costs may be tracked in terms of separate medical, indemnity (lost time), permanent injury, litigation, administrative, total reserve and total costs incurred.

Loss Forecasting of Safety Performance is a commonly used statistical technique that can predict future behavior and from a safety performance perspective, considers what is likely to happen if current work accident and injury trends continue. Loss forecasting solutions work by analyzing historical and current data to generate a model to help predict future outcomes and are a useful tool to assist in forecasting the impact of future accidents in the workplace.

WTW safety loss forecasting capabilities

The main objective of WTW's safety loss forecasting capabilities is to project future work injury losses that may be expected by a company and assess the value of the company's existing work injury insurance program in terms of its effectiveness as a means of work injury risk transfer. As indicated in *Figure 1* below, we have developed a loss model based on our review of exposures and historical losses. The loss frequency and severity are estimated before generation of 20,000 simulations.

This quantifies the company's expected annual loss, as well as 'worse than expected losses,' such as a 1 in 200 year high, which in turn supports structuring of deductibles and limits of its insurance program.

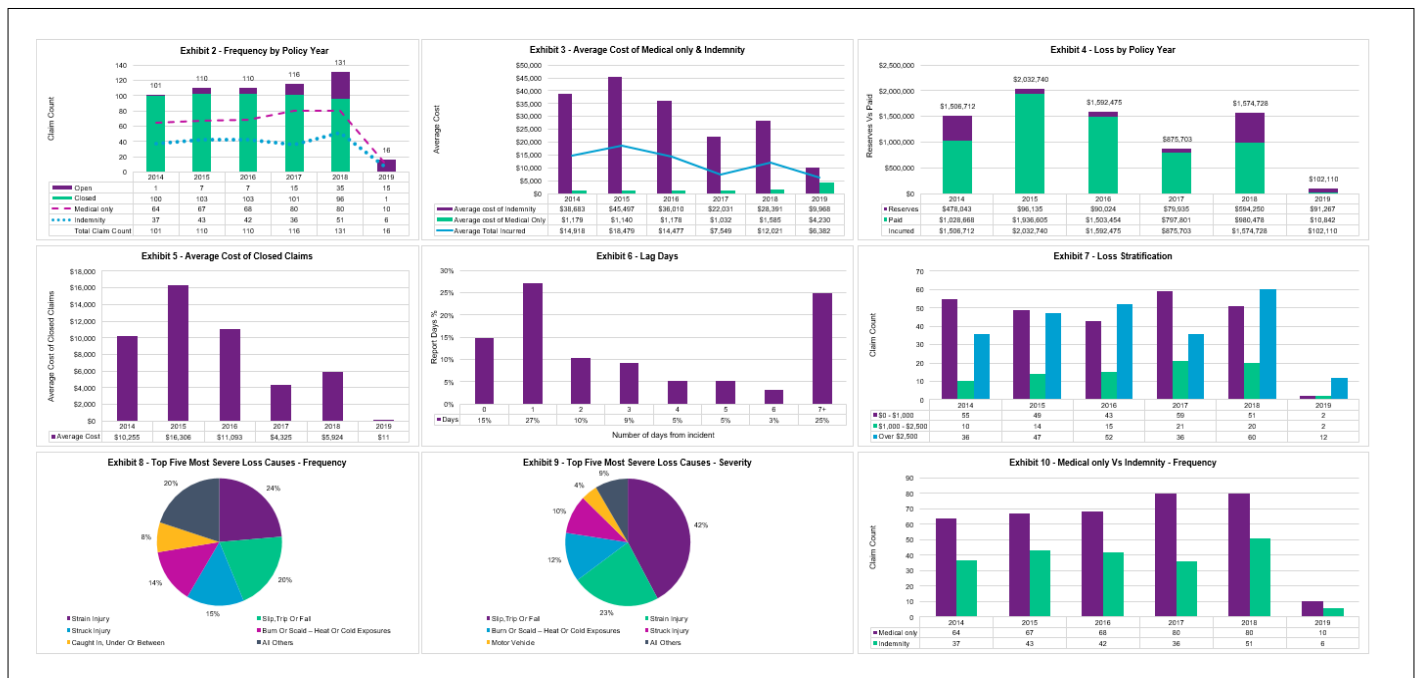
Figure 1: 12 month work injury insurance loss forecast (SGD) example

		Gross Losses	
Return Period (Years)	Percentile	Total Loss	Total Number
1 in 2	50.0%	3.08	122.00
1 in 4	75.0%	3.73	140.00
1 in 5	80.0%	3.91	145.00
1 in 10	90.0%	4.37	158.00
1 in 20	95.0%	4.79	171.00
1 in 100	99.0%	5.65	195.00
1 in 200	99.5%	5.98	202.00
1 in 500	99.8%	6.37	211.00
1 in 1000	99.9%	6.77	223.01
	Mean	3.15	123.98
	Standard Dev	0.92	26.49

Growth Loss Forecast

- The table above represents the result of our 20,000 simulations of Work Injury losses for the next 12 months, from the ground up
- Based on our loss forecasting exercise, we have estimated clients to incur **\$3.15m** of losses in the long term
- Due to loss volatility, there is a 0.5% probability (or one in 200 years) that losses could exceed **\$5.98 million**

Figure 2: Sample Advance Claims Package (ACP) report dashboard



WTW work injury analytic reporting services

The Advance Claims Package (ACP)

The Advanced Claims Package (ACP) is a WTW proprietary work injury reporting tool that aims to provide clients with a visual analysis of its work injury exposures. The application is structured in such a way as to provide a high-level snapshot of risk, as well as providing a more detailed analysis of claim parameters as determined by the client's work injury claims history. For a limited time, WTW is offering our Asian based clients complementary access to our ACP work injury analysis reports.

These reports can be generated as required on a six-monthly or annual basis and are available to selected clients on a complementary basis for a one year trial period. As indicated in Figure 2 above, the ACP reports

provide detailed analysis of historical work injury data including frequency, severity, cost components, reporting lag times, loss stratification, type of losses, location, injury type and body part injured.

For further details regarding this limited complimentary service offering, please contact:



Vincent Mossfield
Regional Director, Asia
Liability Risk Practice

+853 2872 8930
vincent.mossfield@wtwco.com

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At WTW (NASDAQ: WTW), we provide data-driven, insight-led solutions in the areas of people, risk and capital. Leveraging the global view and local expertise of our colleagues serving 140 countries and markets, we help you sharpen your strategy, enhance organizational resilience, motivate your workforce and maximize performance. Working shoulder to shoulder with you, we uncover opportunities for sustainable success — and provide perspective that moves you. Learn more at wtwco.com.



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