

WORLD WATCH

Grasping the unknown: Understanding workers' compensation accumulations

Since the 9/11 terrorism attacks, the insurance and reinsurance industries have intensified their efforts to develop a better understanding of workers' compensation accumulations. "Known" accumulations – which identify where people typically work most of the time – are well accounted for by existing models. But how do cedents, reinsurers and rating agencies come to grips with the possibility of a major catastrophe taking place at an event or tradeshow, such as NCCI, that draws hundreds – if not thousands – of participants from around the world? According to **Emil Metropoulos**, a senior vice president at reinsurance broker, Guy Carpenter, it is precisely these "unknown" workers' compensation accumulations, affecting employees who travel in large groups away from the workplace, that have the potential to severely impact a cedent's workers' compensation portfolio. Here, Mr Metropoulos explains how gaining an understanding of both known and unknown accumulations – taking into account all potential vulnerabilities (both mutually exclusive and combined) – is critical to effective workers' compensation underwriting

Conventions are fertile ground for risk. With tens of thousands of people in one place, a single act of terror or a natural catastrophe could result in substantial insured losses for workers compensation carriers.

But it has been almost impossible to assign a number to this risk, let alone manage it effectively, since the data and modelling capabilities have not been available until recently. By triangulating among workers compensation, convention and venue databases, the measurement of convention clash risk is becoming a reality.

Conventions, by nature, make the measurement of risk inexact. Participants arrive and leave on different days. Schedules can change at a moment's notice, and business is rarely limited to the main hall. Either by design or without proper planning, conventions sprawl. Restaurants, hotel rooms and even side-walks become informal venues. Thus, quantifying exposure requires the use of careful assumptions based on a keen understanding of how people behave at conventions.

So far, few carriers have been able to address this new field of risk management, because the data has been insufficient and risks have not been modelled. Without participant and venue databases to supplement workers compensation information, it has been impossible to quantify and manage this risk.

Fortunately, the pieces are falling into place. Models that include this triad of data sources are coming into existence, making possible the assessment of portfolio-level vulnerabilities at many "unknown accumulations" of employees.

Known and unknown accumulations

Known accumulations have been the topic of intense analysis since the terror attacks of September 11, 2001. Workers compen-

sation exposure was much greater than many carriers realized. A single event – natural or man-made – can lead to substantial insured workers compensation losses. The industry is beginning to understand this exposure, and models have been developed and are beginning to be used to address the risks associated with more complex "known accumulations."

"Known accumulation" is a unique term, though the implication is familiar to almost everybody who works in a large building. Every day, usually in the morning, a large number of people come to the office. They stay for a fairly predictable length of time, and they generally leave in the evening.

There is an accumulation of people at the workplace during the specific time-frame. Since a typical employee's schedule can be fairly predictable, the number of people accumulating at the workplace can be estimated at various times throughout the day.

Exceptions

Of course, there are exceptions. Shift work may distribute the presence of employees throughout the day and night. Outside contractors could push the accumulation higher for temporary periods of time, and sales staffs tend to be on the road more than they are in the office. Some industries are characterized by employees who spend a considerable amount of time out of the office (such as consultants and construction workers).

But, even with these transient populations, it is possible to develop a sense of accumulation patterns for a particular company or office building and model scenarios based on this information.

After the flow of business for a location has been determined (e.g., 60% of the employee population is in the office, in general, from 8 am to 5 pm), it is possible

to understand the implications of a terror attack or earthquake on a particular building or office park. Using modelling software and workers compensation databases, a carrier can familiarize itself with its exposure to known accumulations and implement risk transfer strategies.

While the study of known accumulations is still developing, a new workers compensation risk has also arisen. "Unknown accumulations" also can expose carriers to considerable risk, and they can be even harder to gauge than known accumulations.

Conventions

Known accumulations are centered on the workplace, but the key unknown accumulations that should form a part of a comprehensive view of cat portfolio management tend to fall in the domain of industry conventions, conferences and other large employee gatherings. Conventions have become ubiquitous, with most large industries holding at least one major event per year. In 2007 alone, 5,200 industry conventions were held in the United States. In fact, it is not unusual for some of these industry gatherings to have attendance levels above 10,000.

These events have become part of the reality of doing business, making the risk faced by workers compensation carriers continual.

These accumulation risk spikes (e.g., from a terror attack) can reach hundreds of millions of dollars, possibly more. Further, the effects can stretch across the country. An attack on an Orlando convention center, for example, could result in notable loss contributions from employees in workers compensation claims from California-based employees.

Breaking the code

While known accumulation modelling

relies on the predictability of the daily business environment, unknown accumulations involve the unexpected. To manage risk effectively, one must make the unknown knowable.

Conventions involve many people moving among buildings and around the city where the event is being held.

In principle, it starts to look like an office park or campus setting, though one that is far larger and more complex. To break the convention risk code, carriers must translate the flow of select convention exposures to which they are vulnerable into a set of scenarios that can be evaluated and measured.

The process becomes easier when viewed against a known accumulation baseline.

Terror risk

Consider the terror risk associated with an office park, for example. There are several buildings occupied by a number of companies. Some employees are transient, while others arrive and leave at the same time every day. There is a natural flow of traffic that follows a normal course of business, making it difficult to gauge risk specifically. But, with reasonable assumptions, carriers can arrive at reasonable exposure estimates.

An office park has several moving parts, and all must be considered when modelling an incident. A company of 20,000 people working in an office park consisting of seven buildings would not have all employees in the same place. The staff would be distributed among the buildings. An attack on one building would not necessarily cause as many fatalities or injuries in the others.

Instead, based on where it hits one building, the location of employees within it would result in a specific casualty and injury distribution. It is possible to use reasonable assumptions and convention data to make an event resemble a known accumulation scenario.

Unknown accumulations follow a pattern similar to known accumulations if only at a basic level once the unknown accumulation can be identified.

There is a baseline assumption: all attendees will be at the convention center from start to finish every day. Then, the baseline is modified using reasonable assumptions - similar to the known accumulation modelling process.

Some participants leave early, while others arrive late. Off-site meetings occur in hotel lobbies. Key events draw greater crowds.

Until recently, the primary barrier to

modelling unknown accumulation risk has been access to data. In addition to workers compensation data from multiple states, modellers need access to convention attendance data.

Venue detail is necessary to understand capacities and locations, and participant databases show attendance, including company, seniority and home state. Unknown accumulation risk management requires the convergence of workers compensation, venue and participant information in order to model the effects of incidents along a range of assumptions.

The intersection of the three necessary sets of data makes it possible to construct and model different scenarios. With varying assumptions by day, a total view of workers compensation risk emerges, showing realistic spikes in risk for specific events. A workers compensation carrier based in New Jersey will begin to understand why its portfolio level clash risk for the year might peak during a seven-day stretch in January ... because of an event in Nevada.

CASUS, a model that Guy Carpenter & Company, LLC ("Guy Carpenter") licenses from Arium Limited, is among the first modelling tools to bring together workers compensation, convention and venue data for unknown accumulation modelling. To understand the effects of a natural or manmade catastrophe, carriers can reference quantitative inter-industry clustering to identify peak conference and convention vulnerabilities and devise the appropriate risk transfer strategies. Linking this with workers compensation exposure databases, carriers can estimate the total unknown accumulation exposure for a particular convention.

CASUS pulls information such as the convention's catchment area, types of industries attending and the number and seniority of attendees and exhibitors from databases that have rarely been used in workers compensation modelling to create a new view of estimated accumulation risk. Once the overall convention exposures are identified, sophisticated deterministic loss scenario modelling can next be applied to specific events, showing the potential implications for workers compensation carriers - and more importantly, risk-bearers can take action.

Risk mitigation

Among the key areas where risk mitigation may be necessary is the convergence of known and unknown accumulations of employees with other property and casualty exposures. A carrier who insures a convention center (i.e., property) and its

employees (i.e., workers compensation) faces greater risk.

A terror attack on the convention center, for example, could lead to property losses and workers compensation losses from the known accumulation of employees.

Further, it would result in an unknown accumulation workers compensation loss, as convention attendees would be affected by the attack. CASUS can identify scenarios in which a single carrier has multiple exposures and lines of business that could clash and cause extremely high and unexpected insured losses.

Information quality contributes to the effectiveness of unknown accumulation modelling. While some data sets are of dubious accuracy, the greater problem involves the use of available data. The advent of unknown accumulation modelling programs provides a starting point; the primary barrier is creativity. Modellers are only starting to learn how to conceive of convention center catastrophe scenarios. The best assumptions come from a thorough understanding of a particular convention's business. Specificity begets accuracy.

The particular value of unknown accumulation modelling is that carriers can protect themselves from plausible and costly risks that can be quantified and managed.

Measuring and transferring risk

Natural and man-made catastrophes occur, and they can strike during a convention. High workers compensation losses could occur, crippling carriers who cover workers compensation in states nowhere near the event. The risk exists, and it can be measured and transferred.

Previous attempts at modelling unknown accumulations in workers compensation portfolios - if done - produced inaccurate loss figures, making effective risk management impossible.

Getting a complete picture of total unknown accumulation exposure will never be an exact science, but access to data and the ability to model potential scenarios can help carriers identify the extremes and analyze the situations in between.

By enhancing workers compensation data with figures from conventions and venues, the natural rhythms of the convention business can be harnessed. From this, carriers can gain a deeper understanding of the full spectrum of disaster implications. They can use it to manage the big risks they know exist, but don't understand. 🌐