RISKLINK PROCESS

The process starts with the exposure data and ends with the EP curves and related statistics. First, exposure data is entered (or imported) into the model for analysis purposes.

We then need to determine the loss inducing characteristic (e.g. wind speed or ground shaking intensity) at each specific site (hazard module) and translate that into damage using mean damage ratios (vulnerability module). These processes result in ground-up losses, which are run through the financial model in order to determine the loss to various financial perspectives, such as gross loss, client loss (deductibles), reinsurance treaty losses, etc.

The outputs from the vulnerability module feed the inputs to the financial model. These inputs are the mean damage ratio (MDR) and coefficient of variation (CV) for each location coverage affected by each modeled event in the analysis. The MDR is the percent of the coverage value that suffers a loss. The CV is a measure of variability around the MDR

Aggregate Loss

Sum of all losses within a simulated year/period for a given financial perspective. Average annual loss(AAL) is the average of aggregate loss.

Attachment Point

Amount, above any deductible, at which the reinsurance layer begins to take loss.

Average Annual Loss (AAL)

Expected value of the modeled loss distribution or the loss one would expect to see in an average year. Sometimes called *pure premium* or *burn cost*.

Pure premium can be computed in two equivalent ways: first, as the area under the aggregate exceedance probability (AEP) curve; or second as the sum-product of the individual event losses and rates

Blanket Deductible

Blanket Limit

Maximum amount covered by the insurer on the entire policy layer for the specified policy peril, as percentage or amount.

Client Loss

Loss that is retained by the insured party after a claim is made. The loss amount between zero loss and the deductible. Does not capture loss above the limit.

Coefficient of Variation (CV)

For EP analyses, a measure of the relationship between the pure premium (AAL) and the standard deviation of the annual losses.

For non-EP analyses, a normalized measure of the analysis standard deviation

Correlation Coefficient

Measurement of the degree and the direction of linear relation between two variables.

Deductible

First part of any damage, absorbed or paid by the insured (usually the property owner) before the policy begins to pay.

Detailed Loss Model (DLM)

DLM models simulate natural catastrophe events and generate hazard analyses and estimates of potential loss. They perform exceedance probability analyses that consider a range of possible events and losses.

Analyses require detailed address information (postal code or better) and primary building characteristics (construction, occupancy, year built, number of stories).

Disaggregation

Economic Demand Surge-(Post Event Inflation)

Rapid increases in the cost of building materials cost and labour cost as demand for Repair exceeds supply or capacity of the Construction sector.

Demand Surge is the increase in prices for labor and materials following a catastrophe, as contractors take advantage of the increase in demand for repairs and replacement construction.

Event Loss Table (ELT)

When an Exceedance Probability analysis is run, the output of the financial model is an Event Loss Table (ELT). The ELT is a list of losses for each event that was run by financial perspective.

The ELT is then used as input into the Exceedance Probability engine, or "EP Engine", to create our final EP curves. From the EP curves we get Tail Conditional Expectation statistics (TCE), Catastrophe Reinsurance Statistics (losses, pure premiums, standard deviations), and Return Period Losses.

Example:

For example, if the 200-year return period loss equals $100 million and the corresponding TCE is $150 million, these results indicate that there is a 0.5% annual probability of a loss exceeding $100 million. Given that the loss occurs, its average severity will be $150 million.

Year Loss Table (YLT)

A set of simulated years (or periods of years) with sampled event losses at a specified financial perspective.

Simplest output includes year (or period) ID, weight, event date, event ID, sampled loss

The Year Loss Table, or YLT, is an alternative means of representing modeled loss output.

EXCESS AVERAGE ANNUAL LOSS

The portion of the AAL caused by losses greater than a specified threshold AAL of losses that are greater than a specified threshold . Calculated from mean losses in the ELT

Exceedance Probability

Runs a full probabilistic analysis on the exposure at risk, producing OEP and AEP curves that are cumulative distributions showing the probability that losses will exceed a certain amount, from either single or multiple occurrences.

Occurrence exceedance probability (OEP): Probability that at least one event will occur in a year that causes losses greater than or equal to a certain amount.

Aggregate exceedance probability (AEP): Probability that the total losses across all events in a year will meet or exceed a loss threshold.

Excess Amount

The amount at which the layer begins to take losses.

Excess Point

The amount in addition to the Deductible at which a policy being to take losses.

Limit

Maximum amount payable for each event by the insured under the policy.

Sublimit

Ability to define a policy that covers all locations provided limited coverages to subset of location .

Aggregate Limit

An aggregate limit is a cap on the Maximum amount an insurer will pay in claims to a policy holder over a set of period.

Exposure Data Module (EDM)

RMS SQL Server database that stores detailed exposure, hazard, and financial information. Once exposure data has been imported into the EDM, it is

available for running analyses and for exchanging data with other RMS products.

Result Data Module (RDM)

The *Results Data Module (RDM)* is the RMS SQL Server database that stores the results data generated by running analyses in RMS applications.

Franchise Deductible

Franchise deductible are a form of site Deductible for which ,if the losses do not exceed the site deductible no coverage is paid.

However once the Deductible is exceed , all losses up to the limit are covered by the insurer the Deductible become Zero.

Geocoding

Process of estimating the latitude and longitude of a location based on its street address, city, postal code, or other address information.

The latitude, longitude, and related geocoding information are required to perform hazard, vulnerability.

Gross Loss (GR)

Loss to the insurer, accounting for the application of all insurance terms but without consideration for any reinsurance recoveries.

Ground Up Loss (GU)

Total loss to the exposure, independent of any insurance or reinsurance terms. Ground up losses reflect the loss that would be paid by a party responsible for 100% of the cost.

Historical Event Rate Set

Represents the historical, long-term view of U.S. hurricane activity and assumes that event rates reflect long-term averages.

Stochastic Events

It is statistical term that refers to situation that can be expected or pre

Mean Damage Ratio (MDR)

Measure used to quantify damage. Defined as the ratio of the average or expected loss Measure used to quantify damage. Defined as the ratio of the average or expected loss.

Part Of

Represents the entire layer amount of a policy layer, either a percentage or a currency amount.

Probable Maximum Loss (PML)

An assessment of the maximum loss that an asset or portfolio could realistically be expected to incur.

Return Period

A point on an EP curve that describes the likelihood of exceeding a loss threshold from the single largest event (OEP) or the aggregation of one or more events (AEP).

Return period is defined as the inverse of the annual exceedance probability. For example, a return period of 100 years corresponds to an annual exceedance probability of 1%.

Storm Surge

Quickly raising of ocean water levels associated with Hurricane that can cause wide spread of flooding.

We take up 5% of storm surge coverage for both residential and small Commercial exposure. 100% for automobile and large Commercials .

Sub-Peril

(a) Earthquake: Shake, Fire Following, Sprinkler Leakage, Tsunami

(b) Fire: Fire, Smoke

(c) Severe Convective Storm: Tornado, Hail, Straight Line Wind

(d) Windstorm/Hurricane: Wind, Storm Surge

 (e) Winter storm: Wind, Snow, Ice, Freeze.

Liquefaction

The temporary transformation of solid soil into semi liquid state when vibrate mostly occurs water saturated sediments.

Tail Conditional Expectation(TCL)

Conditional expectation of losses that are greater than or equal to a specified loss threshold RPLα, where α is the selected risk tolerance threshold and RPLα is the corresponding return period loss. Also known asTail Value at Risk (TVaR).

TCE is the expected value of loss given that a loss at least as large as RPLα has occurred. TCE can be calculated based on OEP and AEP losses. It provides additional information about the tail of loss distribution, capturing the diversification benefit of pooling risks.

U.S. Hurricane States

RMS defines the following as *U.S. hurricane States*: Connecticut, Maine, Massachusetts, New Hampshire,New York, Rhode Island, Vermont, Washington DC, Delaware, Georgia, Maryland, New Jersey, North Carolina, Pennsylvania, South Carolina, Virginia, West Virginia, Florida,Alabama, Louisiana, Mississippi,Texas, and Hawaii

Secondary Modifiers

There are certain data points required to model a given risk.

Secondary modifires additional data point that provides more detailed information on structural integrity and building characteristics including construction Quality ,Roofing details ,cladding opening …etc

The impact of Secondary Characteristics

Earthquake

- Soft Story
- Short column
- Construction Quality
- Pounding
- Foundation

Wind/Storm Surge

Roof Cover
Roof Age /Condition
Roof Geometry
Cladding Type

Flood

- Basement
- Cladding Type
- Foundation System
- Flood Protection
- Floor Type

New Madrid Seismic Zone

- Mississipe
- Arkanse
- Missori
- Indiana
- Illinoies

PNW

Oregon, Washington, idaho

Hazard Model:

The Hazard model produces a set of event for each peril where each events describes a host of peril characteristics.

For example on EQ events capture the location of the fault , magnitude, fault type.

Vulnerability Model:

The vulnerability model associates a given level of loss –inducing Hazard with the resulting level of ground up loss to which a building ,content or BI coverage is subject.

This process occurs prior to the application of any insurance and reinsurance Structure.

Financial Model

The Financial model considered the impact of insurance and reinsurance structure such as limit deductible and reinsurance treaties

It provides views of financial loss due to catastrophe events on both on events by events and annual basis.

Hazard:

A condition that may create or increase the chance of loss from a peril

Peril:

Cause of loss.

Primary Uncertainty

Primary Uncertainty address whether an event will occur and if it does , which event will be. In the case of EQ risk in CA for the Next year there is uncertainty as to how many EQ will occur

Also if and when an event occurs there is uncertainty as to its magnitude and epicentre

Secondary Uncertainty

Given that an event has occurred there is still uncertainty regarding the size of the loss .since the loss are estimated produced by model ,some uncertainty exists around the estimate this type of uncertainty is broadly categorised as secondary uncertainty.

Correlation and Uncertainty

The Correlation and Uncertainty function enables you to enter the degree, in percentages, to which you believe your contract is correlated. You specify the degree of correlation based on your knowledge of a particular contract.

For example, a contract contains similar risks, all of which are located near one another; you might specify a correlation factor of 50% or greater, depending on the actual proximity of the locations. Alternatively, for a non-homogeneous contract with widely dispersed locations, you are likely to specify a low degree of correlation, if any.

Risklink Financial model Input

Ground-up mean damage ratios (MDRs) and coefficient of variations (CVs) at the location coverage level for each modeled event.

Annual frequency rates for each event and Correlation weights

Frequency distribution

which is the distribution of the number of event occurrences in a year.

Assumed to be a Poisson distribution.

Why are my gross losses much higher than ground-up

The primary cause for gross loss being greater than ground-up loss (or reinsurance loss greater than gross loss) is overlapping policies.

Example is one where the policies overlap only slightly, such as a first layer of $10 x $0 and a second layer of $10 x $9. Losses between $9 and $10 will be covered by both policies, overstating gross loss.

Variable Resolution Grid

Geographic indexing system designed by RMS to improve hazard data management and achieve an optimal balance between accuracy and run time.

At any one location, the resolution of the underlying grid that RMS uses to define the magnitude of the hazard depends on the amount of exposure in that location and the gradient of the hazard. In areas with high exposure, or where the hazard changes rapidly over a short geographical distance, RMS enhances the geographical resolution of the model. The VRG is primarily an infrastructure enhancement for RMS models.It is visible in RMS applications when you examine the resolution of hazard data lookups.

Self-Insured Retention (SIR) — a dollar amount specified in a liability insurance policy that must be paid by the insured before the insurance policy will respond to a loss.

what's the difference between a deductible and a self insured retention?

For example, a policy with a $1,000,000 limit and a $100,000 deductible technically only provides $900,000 of insurance. In contrast, a policy with a $1,000,000 limit and a $100,000 self insured retention provides a full $1,000,000 of coverage after the claim exceeds $100,000