Insight Enterprise *Actuarial Studies*

Insight Actuarial Studies

The needs of pricing and valuation requires the most accurate and up-to-date actuarial assumptions relating to mortality, morbidity, lapse, loss ratios and IBNR. The actuarial modules in Insight Enterprise provides this and more. Built on data warehouse architecture, it allows actuarial analysis to be performed at an unparalleled depth enabling users to slice and dice the experience data and build study reports on demand. The Insight Enterprise also integrates seamlessly with predictive analytics.

Most other actuarial study systems have limitations around the flexibility of the study. Results are usually available only at certain pre-determined level of aggregation due to the sheer volume of data. The study parameters are usually embedded in the design of the study, requiring the system to be processed multiples of times to change the study period or to add parameters.

The Insight actuarial modules remove such limitations by producing studies at the lowest level from individual coverage and claim records. Our underlying dimensional data model allows studies to be performed over a full range of risk factors and any attributes available, not just a pre-determined subset. This is achieved using data warehouse technologies and embedding our unique temporal model to manage time and track state transitions of coverages and claims.

The end result is a system which delivers actuarial study results that are accurate and verifiable, giving users the ability to work interactively with the data and then build a wide variety of reports and analyses quickly.

Decrement Study features:

- Seriatim exposure, initial or central, annual or monthly
- User defined termination reasons, claim causes or transitions
- A/E, standard deviation, confidence intervals, credibility
- Mortality, Lapse and Critical Illness studies for Life, Annuities and Critical Illness business
    - Calendar or policy year study periods
    - Calendar year rate improvement factors
    - Joint life first or last to die
    - IBNR adjusted
    - Weights by count, benefit, premium and NAR
- Incidence, Termination, Utilization and Transition
- Studies for Disability and Long Term Care business

Cvg Product	Temporary Life			
Expd Rates Pol Term	SOA9095			
Policy Term Reason	Mortality			

| Benefit A/E | Attained Age | | | |
Gender-Age	Guaranteed	Preferred	Standard	Substandard
Female	93.47%	75.08%		183.97%
35-44	155.15%	28.90%		231.83%
45-54	113.98%	55.71%		234.94%
55-64	46.20%	476.73%		91.28%
Male	19.40%	72.54%	150.03%	
35-44		43.14%		
45-54	12.75%	86.27%	269.93%	
55-64	33.31%	85.80%	120.12%	
Grand Total	44.16%	72.99%	69.28%	90.96%

Cvg Product	Life			
Expd Rates Pol Term	SOA9095Ult			
Policy Term Reason	Mortality			

| | Values | | | |
Cvg Attained Age Band1	Contract Events	Benefit A/E	Contract A/E	Benefit Skewness
25-34	13	27.6%	50.5%	↓ 55%
35-44	136	76.5%	121.8%	↓ 63%
45-54	286	94.9%	135.5%	↘ 70%
55-64	260	88.1%	112.7%	↗ 78%
65-74	88	100.3%	96.6%	↑ 104%
75-84	22	122.3%	187.8%	↑ 65%
Grand Total	805	85.5%	118.0%	↓ 72%

IBNR and Incurred Claim Study features:

- For Group, Healthcare and P&C business
- Run-off triangles for paid and reported IBNR estimates
- Chain-ladder, frequency severity, loss ratio, pure premium and hybrid methods
- Diagnostics include link ratios, paid claim and case reserve averages, loss ratios, pure premium
- Loss Ratio and Pure Premium studies using final IBNR estimates including A/E

Cvg Product	Long Term Care					
Expd Rates Clm Incd	LTCStd1					
Date	2012					

| Benefit A/E | Duration | | | | | |
Age	01 - 05	06 - 10	11 - 15	16 - 20	21+	Grand Total
45-54	12.34%	12.80%	55.49%	227.63%		15.46%
55-64	0.84%	10.66%	13.31%	58.78%	178.40%	8.89%
65-74		1.36%	19.55%	38.04%	103.16%	13.35%
Grand Total	5.55%	8.92%	20.50%	53.94%	126.51%	11.20%

PivotTable Fields

Show fields: (All)

- Σ Clm Term Actual
  - ☐ Benefit Events
  - ☐ Benefit Rate Mth
  - ☐ Benefit Rate Yr
  - ☐ Claim Events
  - ☐ Claim Rate Mth
  - ☐ Claim Rate Yr
  - ☐ Paid Events
  - ☐ Paid Rate Mth
  - ☐ Paid Rate Yr
- Σ Clm Term Expected
  - ☐ Benefit A/E
  - ☐ Benefit Expd (A-E)/SD Mth
  - ☐ Benefit Expd CMom3 Mth
  - ☐ Benefit Expd CMom3 Yr
  - ☐ Benefit Expd Events
  - ☐ Benefit Expd Rate Mth
  - ☐ Benefit Expd Rate Yr
  - ☐ Benefit Expd SD Mth
  - ☐ Benefit Expd SD/E Mth
  - ☐ Benefit Expd Skew Mth
  - ☐ Benefit Expd Var Mth
  - ☐ Benefit Expd Var Yr
  - ☑ Claim A/E
  - ☐ Claim Expd (A-E)/SD Mth

Expected Table Management

Any number of expected tables, whether industry or user defined, can be loaded into the Insight actuarial studies. The expected rates are applied at the study event level and are available at the user interface level for analysis. New table can be loaded through the system with relative ease. The risk factors are user defined so that not only gender, smoker, occupation class, or waiting period may be included, but other variables as well. Claim termination, utilization and transition expected rate tables include both monthly and annual rates.
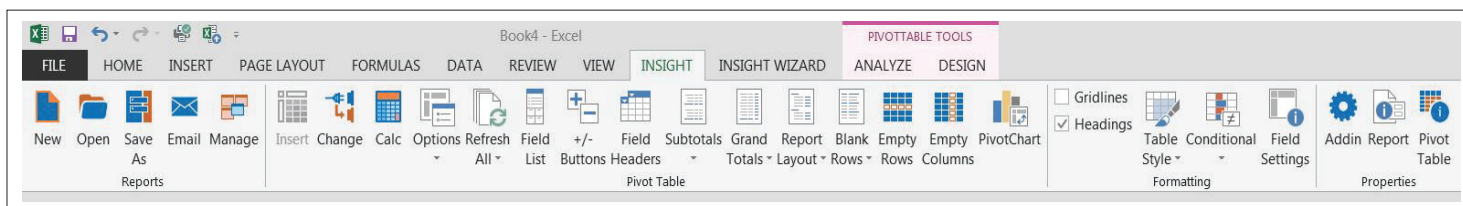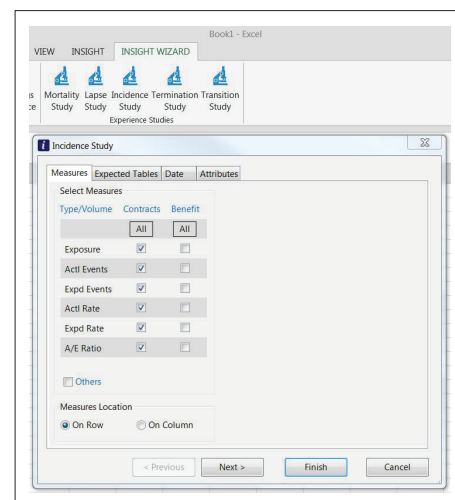
Reinsurance	Direct											
Cvg Contract Level	Coverage											
Cvg Product	ST Health											
Dev Date	All											
Claim Delay	All											
Claim Max Delay Mth	12											

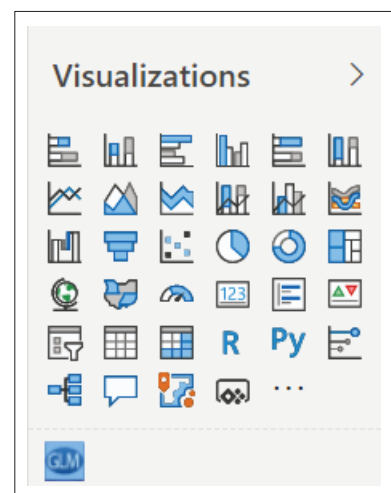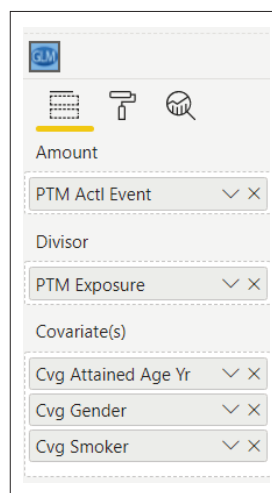| Inc Claim Dev Total | Claim Delay Mth | | | | | | | | | | | |
Loss Mth	1	2	3	4	5	6	7	8	9	10	11	12
2011-10	92,156	1,495,196	2,004,930	2,201,654	2,337,926	2,492,706	2,543,735	2,587,218	2,625,551	2,652,067	2,663,372	2,694,251
2011-11	142,031	1,097,096	1,708,120	1,932,462	2,067,857	2,153,596	2,190,890	2,207,962	2,241,432	2,256,487	2,265,527	2,291,793
2011-12	46,706	906,612	1,669,910	2,072,963	2,200,354	2,256,879	2,288,871	2,311,168	2,340,466	2,360,818	2,370,604	2,398,088
2012-01	126,442	1,415,906	2,363,745	2,613,987	2,720,319	2,795,227	2,857,788	2,916,179	2,930,836	2,956,016	2,968,268	3,002,682
2012-02	61,226	1,117,870	1,939,902	2,167,659	2,257,311	2,310,685	2,399,428	2,443,919	2,472,146	2,493,385	2,503,720	2,532,748
2012-03	80,993	1,350,949	2,249,010	2,663,190	2,867,201	2,932,089	2,986,276	3,031,441	3,066,453	3,092,799	3,105,618	3,141,624
2012-04	84,468	1,530,957	2,432,369	2,621,191	2,754,786	2,803,676	2,864,813	2,908,140	2,941,729	2,967,002	2,979,300	3,013,842
2012-05	119,953	1,726,813	2,386,055	2,631,159	2,748,710	2,834,835	2,896,651	2,940,460	2,974,422	2,999,976	3,012,411	3,047,337
2012-06	124,746	1,336,539	2,130,255	2,371,521	2,503,268	2,581,702	2,637,999	2,677,896	2,708,825	2,732,098	2,743,422	2,775,229
2012-07	69,444	1,508,696	2,201,483	2,510,072	2,618,066	2,700,097	2,758,975	2,800,702	2,833,049	2,857,389	2,869,233	2,902,498
2012-08	131,472	1,427,243	2,231,433	2,514,020	2,653,683	2,736,830	2,796,509	2,838,803	2,871,591	2,896,262	2,908,267	2,941,985
2012-09	53,346	736,913	1,152,131	1,298,036	1,370,147	1,413,077	1,443,891	1,465,728	1,482,657	1,495,395	1,501,594	1,519,003

Interface

With Insight Enterprise, you will work with tools that you know – Excel and an optional web browser.

It's that simple, little training is required to use the tools. The Insight Excel add-in includes an easy to use wizard to help users manage and build reports. You will spend your time analyzing and reporting on your experience, not thinking of how to analyze and report on them.
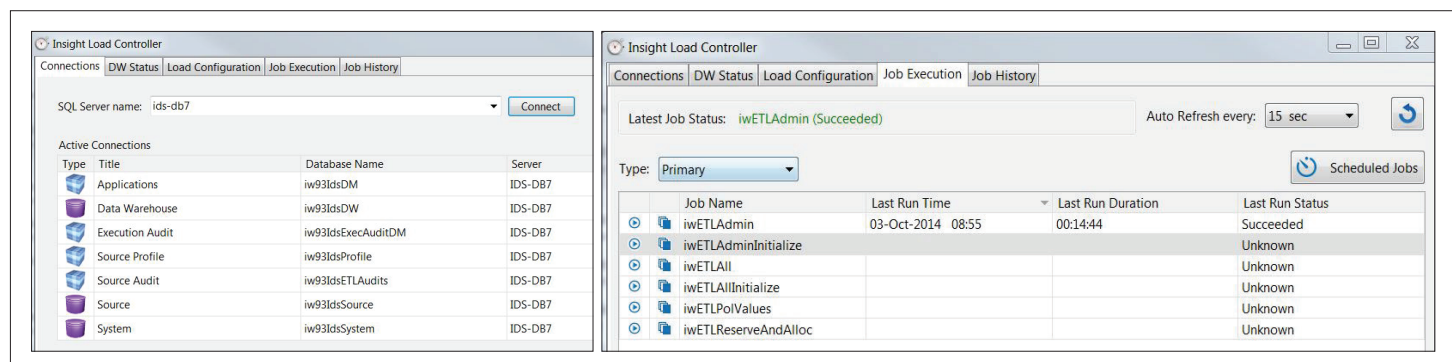

Predictive Analytics

Easily create your own expected tables using Power BI. Insight has developed Power BI visuals to allow generalized linear models and Whittaker Henderson graduation to be applied directly to the Insight Enterprise without the need for coding. Alternatively, develop your own R code using Power BI R Visuals or R Studio.

Load Controller

The Insight Load Controller is a front-end tool to enable users to execute various jobs to load data into the Insight actuarial studies. This is an intuitive and easy tool to use to manage data loads, allowing the business user to run and manage loads, freeing up IT resources.
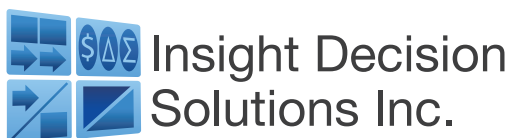
Study Modules

The Insight experience studies are organized into 3 distinct modules that form part of the Insight Enterprise system.

These include:

▶ Policy Studies – for mortality, lapse/withdrawal, and critical illness studies

▶ Claim Studies – for claim incidence and termination studies, as well as transition and utilization studies

▶ Paid & Reported Claim Studies – chain-ladder, loss ratio and hybrid claim development, unitized IBNR, and loss ratio studies

Insight Enterprise System

The Insight experience studies are part of a flexible, modular analytical system - Insight Enterprise, built on data warehouse technologies. It can be implemented as an enterprise solution including operational reporting and financial management, or more locally as a stand-alone actuarial system. The system includes full set of audits; tracking data through the system, integrity, job execution and error reporting.

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