Working with Risk Managers

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Risk Management Projects & Actuarial Support

Program Design	Cost benefit studies and retention analysis
Loss Driver Studies	Claim frequency studies, type of loss analysis and large loss studies
Cost Allocations	Allocating the cost of insurance to SBU's, operations or product lines
Collateral Analysis	Variability analysis of collateral requirements
TPA Assessments and Claim Settlement Strategy	Claim diagnostics, legal spend strategies, LPT's, predictive modeling to identify high cost claims

Risk Manager's Perspective – Program Design

Cost-Effective Risk Mitigation - What type of program meets the company's risk appetite: guaranteed cost, large deductible, captive or risk retention group? Support the risk manager in the internal sale.

Not Just Self-Insured Exposure - Risk management includes cost/benefit analysis and loss control programs for fully insured programs.

Think Beyond Workers Compensation - There is work to be done in other lines .... Property, Automobile, GL/PL, medical plans for active employees, warranties, loyalty programs.

Actuarial Role - Program Design

- **Structure -** Evaluate experience by layer of loss to assess deductibles, limits, and retentions. Evaluate the variability of historical results at various retentions. (Transfer Risk vs Risk Financing)
- **Beyond Reserves** – Captive feasibility studies, frequencies and loss control initiatives, special endorsements.
- **Other Lines –** Active employee medical. Cost of warranties by warranty period. Accrual and cost benefit of loyalty programs.

Actuarial Role - Program Design

Actuarial Analysis – Cost Benefit Example

Simulated Aggregated Losses - One Year
($Millions)

Limit	Mean	Median	75%	90%	95%
100,000	**10.882**	10.818	13.449	14.863	15.739
250,000	**14.009**	13.947	17.254	19.565	20.370
500,000	**16.127**	15.932	20.213	22.790	24.178
750,000	**17.197**	17.000	21.614	24.441	25.989
1,000,000	**17.890**	17.547	22.582	25.290	27.660
Unlimited	**20.284**	18.512	24.765	32.262	38.773

Simulated Aggregated Losses - Three Year
($Millions)

Limit	Mean	Median	75%	90%	95%
100,000	10.879	10.920	11.807	12.885	13.628
250,000	14.008	14.071	15.482	16.548	17.726
500,000	16.130	16.086	18.071	19.280	19.873
750,000	17.202	17.179	19.501	20.631	21.408
1,000,000	17.897	17.849	20.314	21.495	22.633
Unlimited	20.305	19.609	23.233	27.408	30.418

Modeled claim frequency and Lognormal severity fit to adjusted claim data

Actuarial Role - Program Design

Actuarial Analysis – Cost Benefit Example

Retention	Total Cost = Accrual + Excess Prem.	Estimated Limited Losses	Quoted Excess Premiums	10-year Average Excess Cost	Expected Loss -Fitted Experience	Expected Loss per NCCI ELF*
100,000	21.658	**10.882**	10.776	9.755	9.402	8.890
250,000	21.410	**14.009**	7.401	5.657	6.275	5.125
500,000	21.196	**16.127**	5.069	2.925	4.157	3.079
750,000	21.089	**17.197**	3.892	1.996	3.087	2.295
1,000,000	21.014	**17.890**	3.124	1.544	2.394	1.936

* Using weighted average of NCCI "Class C" ELF. State expected loss used as weight.

Retention	Total Cost = Accrual + Excess Prem.	75th Percentile Cost (1) Single Year	75th Percentile Cost (1) 3-Year Average	90th Percentile Cost (2) Single Year	90th Percentile Cost (2) 3-Year Average
500,000	21.196	25.282	23.140	27.859	24.349
750,000	21.089	25.506	23.393	28.333	24.523
1,000,000	21.014	25.706	23.438	28.414	24.619

(1) Excess premium plus 75th percentile of modeled loss
(2) Excess premium plus 90th percentile of modeled loss

Risk Manager's Perspective – Loss Driver Initiatives

- Understanding the drivers of losses and managing the risk to reduce costs and variability of results.
- Reducing the expenses to manage risk – Claim administration costs, legal spend, excess insurance charges, subrogation opportunities and collateral.
- Vendor Management – TPA's (i.e. MPN versus HCO), Brokers, Insurers, Loss Control

Actuarial Role – Identify & Strategize - Loss Drivers

- Detailed cause of loss studies – Frequency and the size of loss distribution by cause of loss, location or SBU. Experience by type of claim payment (medical/indemnity vs expense).
- Predictive analytics to develop settlement strategies and identify fraud.
- Use claim diagnostics from reserving study and benchmarking to help risk manager identify potential issues.

Risk Manager's Perspective – Cost Allocations

- For large corporations, the company's operations are allocated an "insurance charge" based on claim costs, even if the company self-insures its exposure.
- Insurance charge is used in the operational budgets and form the basis to fund the loss reserves.
- Accurate allocations result in better risk management and loss controls at the operations.
- Allocation requires the appropriate mix of stability and responsiveness.

Actuarial Considerations – Cost Allocations

- Not as easy as developing the AY reported loss experience.
- Operation managers can not "control" IBNR and do not want to be "penalized" for their predecessor's mistakes.
- Allocation process should be based on parameters that will drive loss control initiatives and not be easily manipulated.
- Use ratemaking techniques – Class and territorial relativities, large loss procedures, experience rating plans .
- Find the right balance between "actuarial sound" and risk management objectives!

Actuarial Example - Allocating Loss Experience

A -Loss Funding Allocation Using Relativities

(1a) Division	(2a) 2014 Premium (000)	(3a) 2014 Premium Share	(4a) 5-year Adjusted AY Reported Loss	(5a) 3-year ex 2014 Adjusted AY Reported Loss	(6a) 2009-2013 Adjusted AY Paid Loss	(7a) Selected Relativity	(8a) 2015 Premium (000)
TOTAL	**18,300**	100%	100%	100%	100%	100.0%	**19,200**
Div1	2,745	15%	17%	14%	19%	16.5%	3,168
Div2	3,660	20%	21%	23%	19%	20.5%	3,936
Div3	5,490	30%	29%	32%	30%	30.0%	5,760
Div4	6,405	35%	33%	31%	32%	33.0%	6,336

(4a)-(6a) Based on average of limited losses , adjusted for changes in payroll, loss development and trend

B -Loss Funding Using Frequency Severity

(1b) Division	(2b) 2014 Premium (000)	(3b) 2014 Funding Share	(4b) 3-Yr Ave Adjusted Claim Count	(5b) 7-Year Adjusted Ave. Severity	(6b) Loss Control Credit	(7b) 2015 Premium (000)	(8b) 2015 Funding Share
TOTAL	**18,300**	100%				**19,003**	
Div1	2,745	15%	360	8,650	3.0%	3,021	16%
Div2	3,660	20%	295	13,355	5.0%	3,743	20%
Div3	5,490	30%	442	12,800	5.0%	5,375	28%
Div4	6,405	35%	423	17,450	7.0%	6,865	36%

(4b) Adjusted claim count = Actual claim counts adjusted for payroll growth
(5b) Adjusted severity based on 7 year average limited loss (times factor for development and trend)
(6b) Scheduled credits based on Company's risk management program

Risk Manager's Perspective – Collateral Analysis

- The insurance company writing the coverage will require collateral to cover its credit risk in the form of deposits or letters of credit.
- Collateral may impair the Company's credit rating and ability to borrow additional funds.
- Company Risk Managers do not understand why collateral needs to be so much greater than expected losses.

Actuarial Considerations - Collateral Analysis

- Use variability analysis (confidence levels) to educate risk manager on credit risk.
- Develop reasonable reserve expectations. Do not get penalized for conservative reserves.
- Manage reserve runoff presentation.
- Use retention and reinsurance limits to show insurer what the implications of additional collateral would look like.

TPA Assessments and Claim Settlement Strategy

- How much should be delegated to the TPA versus kept in-house?
- Active claim management reduces claim costs.
- Attend SI-3 "How is your TPA Performing" – 9/10 @ 12:45pm