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Training Series Overview

Our goal with this training program is to reinforce the necessity of analytics and show ways they can be used in relation to both pursuing and retaining clients.

We want you to feel comfortable enough with analytics to be able to confidently use them in your everyday work.

Why are Loss Projections Needed
Budgeting Accruals

By accruing losses on a cadenced schedule, financial teams are able to make short-term assessments of how their risk portfolio is performing in comparison to expectations.

In order to do so, they must have a loss projection (or ultimate loss estimate) for the period in question.

Why are Loss Projections Needed
Renewal Negotiations

When working with a carrier to negotiate the cost of an upcoming policy period, having an independently produced loss projection allows clients to have an analytic foundation for their discussion.

Note: this is also possible with internally produced loss projections using independent tools.

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Why are Loss Projections Needed

Retention Level Assessments

From time to time, clients will want to evaluate the cost of their current program against the costs of other available options.

By analyzing loss projections and confidence intervals at various retention levels, clients are able to determine which retention is the most cost-effective and suits their tolerance for risk.

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Creating a Loss Projection
Trending

| | **Loss Trend Adjustments** | | | | **Exposure Trend Adjustments** | | |
Period Start	Selected Ultimate Incurred Losses	Loss Trend Factor	Trended Losses	Payroll	Exposure Trend Factor	Trended Payroll
01/01/15	$650,000	1.264	$820,000	$60,000,000	1.159	$69,540,000
01/01/16	670,000	1.179	790,000	63,000,000	1.111	69,990,000
01/01/17	650,000	1.119	730,000	69,000,000	1.077	74,310,000
01/01/18	710,000	1.091	770,000	74,000,000	1.047	77,480,000
01/01/19	570,000	1.054	600,000	80,000,000	1.032	82,560,000
01/01/20	700,000	1.030	720,000	83,000,000	1.019	84,580,000
Total	$3,950,000		$4,430,000	$429,000,000		$458,460,000

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Creating a Loss Projection
Averages and Trends

Period Start	Trended Losses	Trended Payroll	Pure Loss Rate (Per $100 Trended Payroll)	Averages	
01/01/15	$820,000	$69,540,000	$1.18	2-Year Average =	$0.79
01/01/16	790,000	69,990,000	1.13		
01/01/17	730,000	74,310,000	0.98	4-Year Average =	$0.89
01/01/18	770,000	77,480,000	0.99		
01/01/19	600,000	82,560,000	0.73	All-Year Average =	$0.98
01/01/20	720,000	84,580,000	0.85		
				Median =	$0.99

Creating a Loss Projection
Selecting a PLR

Averages	
2-Year Average =	$0.79
4-Year Average =	$0.89
All-Year Average =	$0.98
Median =	$0.99
Selected PLR =	**$0.85**

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Creating a Loss Projection
Calculating Loss Projections

Selected PLR		2021 Projected Payroll		Exposure Base		2021 Projected Losses
$0.85	x	$85,000,000	/	$100	=	$720,000

Importance of Choosing Retentions to be Evaluated

Realistic

The retentions chosen must be feasible given the client's budget, program size, and tolerance for risk

Reasonable Spread

Often, clients won't want drastic changes from their current retention, so creating a reasonable spread of around that retention (higher, lower, or both) will help ensure usefulness.

Premium Information Needed at Each

Retention level assessments are only applicable to decision-making if clients are able to calculate the total cost of risk at each retention, which requires premium quotes or estimates.

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Case Study – ABC Corp

ABC Corp is currently under a $100,000 per occurrence retention for their workers compensation program, but they would like to evaluate other options.

In particular, they believe their recently implemented safety procedures will allow them to take on a higher retention without necessarily assuming an equivalent amount of risk.

Case Study – ABC Corp

Knowing our guidelines regarding retention choices, we've decided to produce loss projections for the upcoming period at the following retentions:

$100,000	$150,000	$200,000	$250,000

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IMPORTANT

Unless ILFs (Increased Limits Factors) are available, losses must exist in each layer in order to produce credible results.

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Case Study – ABC Corp

Understanding Context

In this case, we already know about the safety procedures that have been put in place and would like to take that context into account when making our selections.

Evaluating Trends

To do so, we have examined the decreasing trend in pure loss rates over the last three years and selected slightly lower Pure Loss Rates than the overall averages would indicate.

Pure Loss Rates

Period Start	($100K P/O)	($150K P/O)	($200K P/O)	($250K P/O)
01/01/15	$1.18	$1.18	$1.18	$1.18
01/01/16	1.13	1.13	1.13	1.13
01/01/17	0.98	1.05	1.08	1.08
01/01/18	0.99	1.06	1.12	1.16
01/01/19	0.73	0.73	0.73	0.73
01/01/20	0.85	0.85	0.85	0.85

Case Study – ABC Corp

Results

Aggregate Loss Probability	Aggregate Loss Distribution			
	($100K P/O)	($150K P/O)	($200K P/O)	($250K P/O)
Expected	$720,000	$770,000	$890,000	$900,000
50%	$710,000	$750,000	$880,000	$890,000
55%	730,000	770,000	900,000	910,000
60%	740,000	790,000	920,000	930,000
65%	760,000	810,000	940,000	950,000
70%	790,000	830,000	960,000	970,000
75%	810,000	860,000	990,000	1,000,000
80%	840,000	880,000	1,020,000	1,030,000
85%	870,000	920,000	1,050,000	1,060,000
90%	910,000	960,000	1,100,000	1,110,000
95%	980,000	1,030,000	1,170,000	1,180,000

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Case Study – ABC Corp
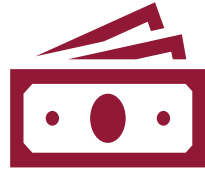
While ABC Corp is taking on more risk at the expected level for the $150,000 retention, the adverse loss scenario is still relatively manageable.

At the $200,000 and $250,000 retentions, both the expected and adverse scenarios are likely beyond ABC Corp's risk tolerance, but we'll evaluate further in our total cost of risk analysis.

Case Study – ABC Corp

	Total Cost of Risk			
	($100K P/O)	($150K P/O)	($200K P/O)	($250K P/O)
Expected Losses =	$720,000	$770,000	$890,000	$900,000
Quoted Premium =	$1,200,000	$1,080,000	$1,030,000	$980,000
Total Cost of Risk =	$1,920,000	$1,850,000	$1,920,000	$1,880,000
90th Percentile Losses =	$910,000	$960,000	$1,100,000	$1,110,000

From here, we incorporate the quotes we've received for each retention to assess the total cost of risk.

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Case Study — ABC Corp

By utilizing our analytic toolset and incorporating qualitative context, we've allowed ABC Corp to create a more cost-effective situation for their workers compensation program.

These loss projections can then be used in renewal negotiations, providing even further value to the client.

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Case Study – XYZ, Inc.

XYZ, Inc. is currently under a guaranteed cost program and is unaware of potential savings associated with self-insured retentions.

Up to this point, they have used upper management's connections with a local carrier for their workers compensation program and always accepted the premium as presented.

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Case Study – XYZ, Inc.

Knowing our guidelines regarding retention choices, we've decided to produce only two loss projections for the upcoming period:

- one at an unlimited level, representing the loss assumed by their carrier, and

- one at the $50,000 per occurrence retention.

With such low loss levels, we are relatively limited in our options for producing a credible retention assessment but incorporating other techniques will ensure our analysis is still creating value.

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Case Study – XYZ, Inc.

Understanding Context and Trends

XYZ, Inc. has made us aware that premium costs seem to be rising in recent years, but they haven't been able to determine exactly why.

The pure loss rates at an unlimited level confirm this, but don't explain the cause.

Period Start	Trended Losses	Trended Payroll	Pure Loss Rate (Per $100 Trended Payroll)
01/01/15	$100,000	$7,070,000	$1.41
01/01/16	80,000	7,550,000	1.06
01/01/17	110,000	7,750,000	1.42
01/01/18	130,000	7,750,000	1.68
01/01/19	150,000	7,950,000	1.89
01/01/20	230,000	8,150,000	2.82
Selected PLR =			$1.75

To acknowledge this, we have selected slightly higher pure loss rates than the overall averages would indicate.

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Case Study – XYZ, Inc.

Data Analytics

In order to determine the underlying reason for the increased premium, we use a data analytics tool to "slice and dice" their loss data.

Doing so reveals that two recently opened locations in Western Kentucky have accounted for significantly higher losses than the state-wide average.

Store Location	Years Since Opening	Average Annual Losses
Louisvile (A)	12	$31,000
Lousville (B)	8	26,000
Lexington	7	27,000
Bowling Green	2	42,000
Owensboro	2	39,000

Case Study — XYZ, Inc.

Results

Aggregate Loss Probability	Aggregate Loss Distribution	
	Unlimited	($50K P/O)
Expected	$140,000	$130,000
50%	$130,000	$130,000
55%	140,000	130,000
60%	150,000	140,000
65%	150,000	140,000
70%	160,000	150,000
75%	170,000	160,000
80%	180,000	170,000
85%	190,000	180,000
90%	210,000	190,000
95%	230,000	220,000

Case Study – XYZ, Inc.

Using our premium quotes obtained from the carrier, we create a total cost of risk assessment.

Assuming loss trend continue, the expected losses would indicate that moving to a $50,000 retention level is more cost-effective.

Total Cost of Risk

	G/C	($50K P/O)
Expected Losses =	$0	$130,000
Quoted Premium =	$230,000	$75,000
Total Cost of Risk =	$230,000	$205,000
90th Percentile Losses =	$0	$190,000

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Case Study – XYZ, Inc.

However, this isn't necessarily the end of the discussion. When presenting this assessment to XYZ, Inc., we must be clear about a few additional items associated with self-insured retentions, such as risk tolerance and collateral requirements.

Ultimately, our discussion result in XYZ, Inc. deciding to stay with a GC program for the time being, as they fear the rising costs with the two severe locations could get worse without upper management's intervention.

Case Study – XYZ, Inc.

Despite the decision to stay as-is, we have created value for the client in three critical areas.

First, they are now aware of the possibilities associated with analytics and may want to use this in other areas in the future.

Second, they have been given a clear action point to reduce or mitigate future losses. By following up on this, they can reduce their insurance costs, regardless of what type of program they choose.

Finally, once they get their losses under more control, the client can use future loss projections or analytics to help negotiate better premiums.

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Selecting a Pure Loss Rate

In both of today's case studies, pure loss rate selections were relatively easy to make as the trends were clear. This won't always be the case, though.

When in doubt, selecting an average representing their full program history is typically a safe choice.

Knowing when to adjust pure loss rate selections takes experience, and it is part of how actuaries provide value.

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Understanding the Results

More than anything, it's vital that you help your client understand what a loss projection and its associated confidence interval represent.

By imparting this knowledge, you create an atmosphere where the client is receptive to analytics and able to discuss with some degree of credibility, as opposed to simply accepting costs as they are.

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Next Session: Advanced Loss Projections Topics

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