Analytics Training

Reserve Analysis Advanced Topics

RISK 66

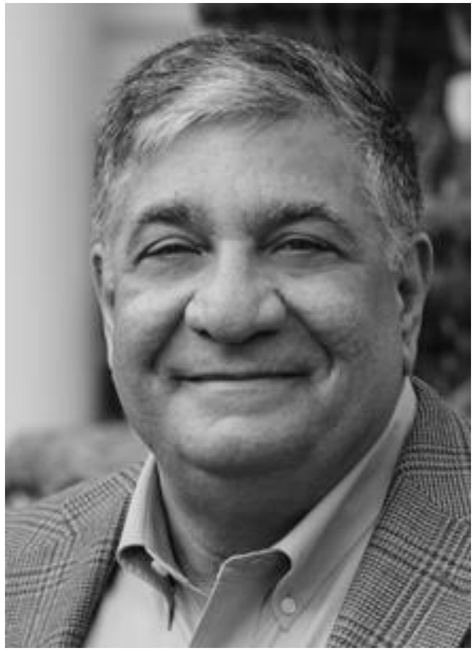
SIGMA ACTUARIAL CONSULTING GROUP, INC.

Meet the Trainers:

ReSource Pro & SIGMA Actuarial Consulting Group

Tony King
Senior Actuarial Consultant
SIGMA Actuarial Consulting

Enoch Starnes, ACI
Actuarial Consultant
SIGMA Actuarial Consulting



Frank Pennachio
Principal
ReSource Pro

IBNR

What is IBNR?

IBNR represents additional, unexpected loss development produced by two different situations:

- Unexpected growth in claims that have already been reported and reserved
- New claims that have already occurred, but have not yet been reported

IBNR

Why is IBNR needed?

Despite the expertise shown by an individual claims adjuster, unexpected adverse development will happen on a large group of claims over time.

As such, actuaries utilize the law of large numbers to estimate what that additional development, or IBNR, might be.

Note:
This type of movement is quantified on a **loss development triangle.**

Net vs Gross Reserves

In some cases, auditors or regulators require the estimated required reserves to be shown on both a net (limited) and gross (unlimited) basis.

For the
Net Estimate

Reserves are shown **after** the impact of both per occurrence and aggregate historical retentions.

For the
Gross Estimate

Reserves are shown **before** the impact of per occurrence and aggregate retentions.

Mid-Year Analyses

Many companies tend to view reserve analyses as an annual requirement where they must simply “accept” the results.

This doesn’t need to be the case.

Mid-year analyses, which can be completed at any time between year-end evaluations, may provide valuable insights leading into year-end reports.

Can be done on any cadence, such as quarterly or even monthly.

By using this information, companies can mitigate surprises, better understand reserve changes, and even work to alleviate issues before they have a balance sheet impact.

Mid-Year Analyses

Unlike year-end reports, mid-year analyses will primarily have internal review purposes and, as such, don't have the same requirements in terms of independent actuarial involvement.

While full actuarial reports will provide the most complete and insightful information possible, having those types of reports completed between year-end may not make sense, resource-wise.

In some cases, the most resource-efficient decision may be to utilize user-driven actuarial tools to complete these reviews

Mid-Year Analyses
Integrating Loss Projections

2021 Loss Projection			
Full Year Projection	Pro-Rated to 1/1 - 3/31	Pro-Rated to 1/1 - 6/30	Pro-Rated to 1/1 - 9/30
$720,000	$180,000	$360,000	$540,000

Mid-Year Analyses

Integrating Loss Projections

Reserves as of 6/30/21			
Period	Selected Estimated Ultimate Incurred Losses	Reported Paid Losses	Estimated Required Reserves
01/01/15	$680,000	$615,000	$65,000
01/01/16	670,000	542,000	128,000
01/01/17	650,000	481,000	169,000
01/01/18	760,000	531,000	229,000
01/01/19	540,000	235,000	305,000
01/01/20	640,000	118,000	522,000
01/01/21	360,000	180,000	180,000
Total	**$4,300,000**	**$2,702,000**	**$1,598,000**

Reserves as of 9/30/21		
Selected Estimated Ultimate Incurred Losses	Reported Paid Losses	Estimated Required Reserves
$680,000	$633,000	$47,000
670,000	558,000	112,000
650,000	495,000	155,000
760,000	547,000	213,000
570,000	242,000	328,000
640,000	122,000	518,000
540,000	185,000	355,000
$4,510,000	**$2,782,000**	**$1,728,000**

Mid-Year Analyses

Roll-Forward Exhibits

Roll-forward to 12/31/21	
Estimated Required Reserves as of 9/30/21	$1,728,000
Minus Estimated Payments Over Next 3 Months	80,000
Plus Losses Projected for Next 3 Months	180,000
Expected Estimated Required Reserves as of 12/31/21	$1,828,000

Mid-Year Analyses

Reconciliation Exhibits

Reconciliation - Prior to Current

Estimated Required Reserves as of 6/30/21	$1,598,000
Minus Payments Made 6/30/21 to 9/30/21	80,000
Plus Estimated Losses for 6/30/21 to 9/30/21	180,000
Plus Change in Estimated Losses Thru 6/30/21	30,000
Equals Estimated Required Reserves as of 9/30/21	$1,728,000

Reconciliation - Actual vs. Expected

Prior Ultimate Losses - 6/30/21	$4,300,000
Projected Incurred From Prior Evaluation	180,000
Current Payments	2,782,000
Expected Estimated Required Reserves	$1,698,000
Actual Estimated Required Reserves	1,728,000
Actual - Expected	$30,000

Mid-Year Analyses

Without using a significant amount of resources, you can easily provide extra value to your client through mid-year analyses and establish yourself as their analytical resource

If your client has the resources available to produce mid-year or quarterly actuarial reports, knowing how to interpret and review them can also prove vital to making sure your client has a clear understanding of trends, development, and potential action points.

Presenting Your Findings

As with loss projection reports, reserve analyses can be presented to clients in an optimal or sub-optimal manner.

To ensure an optimal presentation of the results, you'll want to follow those same steps, which are:

- Lead with results and discussion points
- Explain complex topics
- Leave with action points

As part of this step, you'll want to brush up on topics that the client may not be familiar with, such as IBNR.

Presenting Your Findings

Reserve Analysis Action Points

? Are reserves trending upward, downward, or staying level?

What's causing this?

? Are any specific claims driving reserve changes?

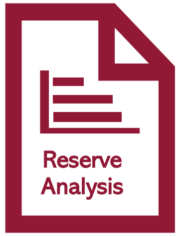
Can we review those claims and either work to address them prior to year-end?

Can we prepare qualitative information on these claims to present to our actuary at year-end?

? What parts of our upcoming year-end actuarial report should be examined?

Case Study – ABC Corp

What-If Scenario



Consider ABC Corp's prior reserve analysis if it was to be completed six months later.

Case Study – ABC Corp

? Could we integrate their loss projection?

Reserves as of 6/30/21

Period	Selected Estimated Ultimate Incurred Losses	Reported Paid Losses	Estimated Required Reserves
01/01/15	$680,000	$615,000	$65,000
01/01/16	670,000	542,000	128,000
01/01/17	700,000	481,000	219,000
01/01/18	760,000	531,000	229,000
01/01/19	560,000	235,000	325,000
01/01/20	640,000	118,000	522,000
01/01/21	360,000	180,000	180,000
Total	**$4,370,000**	**$2,702,000**	**$1,668,000**

Case Study – ABC Corp

? What useful exhibits could we append to our report?

Reconciliation - Actual vs. Expected

Prior Ultimate Losses - 12/31/20	$3,940,000
Projected Incurred From Prior Evaluation	360,000
Current Payments	2,702,000
Expected Estimated Required Reserves	$1,598,000
Actual Estimated Required Reserves	1,668,000
Actual - Expected	$70,000

Roll-forward to 12/31/21

Estimated Required Reserves as of 6/30/21	$1,668,000
Minus Estimated Payments Over Next 6 Months	80,000
Plus Losses Projected for Next 6 Months	360,000
Expected Estimated Required Reserves as of 12/31/21	$1,948,000

Case Study – ABC Corp

Surprisingly, reserves are coming in higher than expected.

By digging into the data used in the mid-year report, we're able to identify an older claim that re-opened with significant case reserves.

Knowing this, ABC Corp dedicates additional resources into investigating and reviewing the claim to seek favorable settlement.

Case Study – ABC Corp

? How could we use this to affect the upcoming year-end reserve analysis?

In the following months, ABC Corp dedicated increased resources to handling the claim, resulting in it settling below the original reserve value.

This settlement may or may not happen prior to the year-end evaluation. If it has not happened by then, ABC Corp can provide their actuary with this information to be considered within their report.

Case Study – XYZ, Inc.

What-If Scenario

Reserve Analysis

Consider XYZ, Inc.'s situation if they were wanting to review the possibility of full self-insurance.

To help them review this possibility, we produce a reserve analysis showing unlimited reserves over the past five policy years.

Note:
This analysis could go further into the past but looking at the last five years should give XYZ a solid, succinct timeframe to examine.

Case Study – XYZ, Inc.

Reserves as of 12/31/20			
Period	Selected Estimated Ultimate Incurred Losses	Reported Paid Losses	Estimated Required Reserves
01/01/15	$80,000	$71,000	$9,000
01/01/16	70,000	49,000	21,000
01/01/17	100,000	76,000	24,000
01/01/18	120,000	69,000	51,000
01/01/19	140,000	53,000	87,000
01/01/20	220,000	42,000	178,000
Total	**$730,000**	**$360,000**	**$370,000**

Case Study – XYZ, Inc.

This analysis allows us to review two key points:

What the impact on their balance sheet would look like if they were completely self-insured.

They should also consider their **annual guaranteed cost premiums** when reviewing this.

An estimate of collateral that would need to be posted for complete self-insurance.

Case Study – XYZ, Inc.

We can also combine this analysis with the unlimited loss projection we've already produced to give them a more complete view of what self-insurance could look like.

Aggregate Loss Distribution

Aggregate Loss Probability	Unlimited
Expected	$140,000
50%	$130,000
55%	140,000
60%	150,000
65%	150,000
70%	160,000
75%	170,000
80%	180,000
85%	190,000
90%	210,000
95%	230,000

Case Study – XYZ, Inc.

Ultimately, they may decide on sticking with a guaranteed cost program until the adverse loss experience from their two newly opened locations can be mitigated.

This leaves us with the opportunity to continue to provide value by keeping track of the aforementioned loss experience and helping XYZ determine a good opportunity to resume their review of self-insurance or large deductible programs.

Conclusion

In many cases, year-end reserve analyses will be under more scrutiny from external audiences, so they require a higher degree of expertise to complete.

However, understanding how year-end reports are produced and the decisions that go into them will help you evaluate the results presented by third parties.

Conclusion

Being able to produce and understand mid-year analyses and reserve-adjacent exhibits can provide additional value to your client that they've likely never sought out or understood before.

By being able to "check in" on reserves in between year-end reporting, you can help your client mitigate surprises and generate action points to ensure they are aware of potential year-end impacts and can possibly work to alleviate them beforehand.

Next Session: Advanced Topics