

# Analytics Training

## Advanced Loss Projection Topics




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# Schedule a demo

## RISK66: Loss Forecaster and LORAN

[risk66.SIGMAschedule.com](https://risk66.SIGMAschedule.com)



SIGMA Actuarial Consulting Group, Inc.  
**RISK66 Private Webinar**

🕒 30 min

🔌 Web conferencing details provided upon confirmation.

Includes an overview of our resource portal, training videos, a Loss Projection using our analytical tool, Loss Forecaster, and our newest loss run tool, LORAN.

[Troubleshoot](#)

### Select a Date & Time

October 2020 < > Wednesday, October 7

SUN	MON	TUE	WED	THU	FRI	SAT
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

🌐 Central Time - US & Canada (12:31pm) ▼



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# 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



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# Exposures

Which exposure bases are used by coverage?

**WC**



**Payroll  
Man Hours**

**GL/PL**



**Sales  
Revenue**

**AL**



**Auto Counts  
Mileage**



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# Exposures

## #1

When deciding on the exposure base to be used in a client's loss projection,

**availability**  
and  
**consistency**  
will always come first.

## #2

This type of data is only useful if it is available and **tracked consistently** over time.

for both the upcoming period and at least 3-5 years of history



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# Exposures

## #3

When multiple options are available for a specific coverage, choosing the more **highly correlated option** will improve the report's **usability** and **value**.

## #4

There are multiple ways of measuring correlation but examining the **pure loss rates** produced by each exposure base provides an easy “spot check.”



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# Exposures

#5

You'll want to look at  
**trends** in both  
**loss** and **exposure**  
to see if they match  
each other's  
directional movements.

**Note:**

this won't always be  
the case, so you may have  
to utilize other  
measurements.



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# Exposures

Period Start	Trended Auto Liability Losses	Mileage	Pure Loss Rate (Per 100,000 Miles Driven)	Trended Auto Liability Losses	Auto Counts	Pure Loss Rate (Per Auto Unit)
01/01/15	\$1,110,000	139,080,000	\$798	\$1,110,000	1,683	\$660
01/01/16	1,070,000	139,980,000	764	1,070,000	1,700	629
01/01/17	990,000	148,620,000	666	990,000	1,785	555
01/01/18	1,040,000	154,960,000	671	1,040,000	1,874	555
01/01/19	810,000	165,120,000	491	810,000	1,499	540
01/01/20	970,000	169,160,000	573	970,000	1,424	681



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# Confidence Intervals

What do they mean?

In the actuarial world, confidence intervals help their users understand the **likelihood of upcoming losses** being higher, lower, or equal to expectations.

They also allow users to gauge the **potential range** of upcoming losses.

If losses are higher or lower than **expectations**, how much **higher** or **lower** could they possibly be?



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# Confidence Intervals

How do you read or explain a confidence interval?

As an example, consider this confidence interval from ABC Corp's last case study.

Aggregate Loss Probability	(\$100K P/O)
Expected	\$720,000
50%	\$710,000
55%	730,000
60%	740,000
65%	760,000
70%	790,000
75%	810,000
80%	840,000
85%	870,000
90%	910,000
95%	980,000

Look at the expected level and the 75th percentile



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# Confidence Intervals

What are some common remarks or discussion points?

Some confidence intervals will display the lower *(or more optimistic)* end of the range.

Most are used to show users **potential adverse scenarios**.

This is especially useful when examining various **retention levels**.

For some coverages, expected losses at two different retention levels may not be significantly different.

However, at **higher confidence levels**, a client may be putting themselves at a significantly **higher risk** of **retaining more losses** than desired.



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# Confidence Intervals

What are some common remarks or discussion points?

Confidence intervals can also be helpful when assisting clients for **accrual** purposes.

Depending on a client's outlook, they may wish to book and accrue conservatively for an upcoming period so that they avoid any "bad surprises."


This commonly occurs around the **75th percentile**, depending on the coverage.



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# Interpreting Trends

Leading with qualitative context



In some cases, we may already know about **changes** or situations a client is currently experiencing, and we want (or need) to use analytics to back that assertion up.



Knowing the exact details of these changes, can help us establish **context** and **parameters** for what we may be looking for in the trends.



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# Interpreting Trends

## ABC Corp Case Study

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	4-Year Average =	\$0.89
01/01/17	730,000	74,310,000	0.98	All-Year Average =	\$0.98
01/01/18	770,000	77,480,000	0.99	Median =	\$0.99
01/01/19	600,000	82,560,000	0.73		
01/01/20	720,000	84,580,000	0.85		



Recently implemented **safety procedures** should have a positive impact on their WC losses.



Downward trend in **pure loss rates** with implementation.




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# Interpreting Trends

Leading with analytic context



In other situations, we may have no quantitative context going into our analysis.



This is common when dealing with clients who don't keep close tabs on their insurance costs or program.



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# Interpreting Trends

## XYZ, Inc. Case Study

Period Start	Trended Losses	Trended Payroll	Pure Loss Rate (Per \$100 Trended Payroll)	Averages	
01/01/15	\$100,000	\$7,070,000	\$1.41	2-Year Average =	\$2.35
01/01/16	80,000	7,550,000	1.06		
01/01/17	110,000	7,750,000	1.42	4-Year Average =	\$1.95
01/01/18	130,000	7,750,000	1.68		
01/01/19	150,000	7,950,000	1.89	All-Year Average =	\$1.71
01/01/20	230,000	8,150,000	2.82	Median =	\$1.55



We had very little contextual knowledge going into our analysis, other than an idea that premiums were rising.

Due to deteriorating **loss experience** by examining the **pure loss rates**.



Using analytics, revealed the most likely cause – the two recently opened locations.



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# Interpreting Trends

Common decision points or identifiers

## Note:

Actuaries have relatively **conservative** views when it comes to identifying trends.

For an actuary to view activity as a **trend**, rather than a “blip” or anomaly, it must be both **consistent** and fairly **long-term** (occurring for at least 2-3 years in a row).

Looking at data through this lens will reduce “snap” decisions and make changes more **meaningful** as well as **defensible**.



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# Interpreting Trends

Common decision points or identifiers



To help identify these trends or movements, actuaries use simple calculations to measure **historical** and **recent loss experience**.



Consider calculating **averages** and **medians** of a client's short-term and long-term **loss history** to give a clearer outlook.



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# Industry Indications

What do I do for clients with no loss history?

For some clients, especially those in the smaller range, recent or credible loss history may not be available.

In these situations, consider utilizing industry-wide data as available to supplement your analysis.

For workers compensation, loss costs gathered by state and class code are a common way of determining an “expected” pure loss rate.



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# Industry Indications

How else can I use industry factors?

For clients with a credible loss history and unique loss development triangles, industry-wide loss development factors could be compared to their unique factors. In these situations, consider utilizing industry-wide data as available to supplement your analysis.

Doing so will help determine whether their loss experience is better or worse than their industry peers, as well as the where the deviation occurs chronologically.



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# Presenting Your Findings

Lead with results and discussion points

Especially when dealing with clients who are new to analytics, leading with the most pertinent information will be vital to keeping their attention and helping them from getting bogged down in details.

Try to determine several results or topics you'd like to discuss beforehand in order to guide the conversation toward a satisfying conclusion.



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# Presenting Your Findings

## Explaining complex topics

If your pre-determined topics involve relatively complex topics, brushing up on them beforehand will keep the details fresh in your mind for when an explanation is needed.

Your client may not be interested in the underlying calculations or analysis, so try to keep explanations at a high level.

The RISK66 library provides a free way to review these topics in both watchable and readable formats as needed.



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# Presenting Your Findings

Leave with action points

Leave your client with at least one or two “action points” to examine or discuss internally.

By leaving them with ways of improving or investigating their risk-related programs, you’re able to demonstrably show the usefulness of analytics and hopefully open their eyes to further possibilities.



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# Conclusion

## Gaining and Retaining Knowledge

Advanced understanding or analytical expertise isn't always necessary, but when it is, you have an immense opportunity to demonstrate value.

Analytical knowledge is under-utilized in many industries, so displaying these traits gives you a clear way of standing out from the crowd.



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# Conclusion

## Providing Knowledge and Relaying Insights

Loss projection analyses are worthless to clients who don't understand them.

You should be able to give clients an informed opinion, answer simple questions, and leave them with ways to integrate this knowledge internally.



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# **Next Session:** Negotiating Claims Administration Contacts



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