


## Loss Cost Projections: An Actuarial Approach

*Captive Pricing*

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*Commitment Beyond Numbers*



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November 14, 2018

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### About the Presenters

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- Associate of the Casualty Actuarial Society
- Masters of Science – Mathematics
- B.A. Mathematics – Illinois College
- 13 years of experience, primarily in commercial lines
- Reserving studies for:
  - Insurance companies (SAO and financial exams)
  - Captive insurance companies
  - Self-insured entities
- Funding recommendations for emerging coverages
- Experience in workers' compensation, liability lines, medical professional liability and commercial automobile

**Darcie R. Truttmann**  
Consulting Actuary  
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### About the Presenters

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- Associate of the Casualty Actuarial Society
- Capstone Certificate – Actuarial Science
- B.A. Mathematics – Dominican College
- 4 years of experience
- Reserving studies for:
  - Insurance companies
  - Captive insurance companies
  - Self-insured entities
- Determining risk transfer in reinsurance contracts
- Support on captive feasibility and renewal funding studies

**Jordan R. Paszek**  
Senior Actuarial Analyst  
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### Outline of Presentation

- Experience vs. Exposure Rating
- General Approach to Loss Cost Projections
- Specific Example
- Common Submission Issues
- Special Considerations
- Experience Rating Exercise

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### Experience vs. Exposure Rating

- Experience Rating
  - Rely primarily on insured(s) experience
- Exposure Rating
  - Rely primarily on insured(s) characteristics that we think will influence future experience

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### General Approach for Loss Cost Projections

- Frequency layer vs severity layer approach
  - Relying on experience for individual prospect vs larger group, by layer (Group Captives)
- Assume loss experience for individual risks is 100% credible in primary loss layer
- Rely on latest 5+ years of premium/loss/exposure data
- Incorporate benchmark ELR's, loss development patterns, trend, benefit levels, ILF's (ELF)
- Determine nature of risk's operations
- Identify projected exposures

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General Approach for Loss Cost Projections (Cont.)

- Identify nature of exposures
- General Liability - premises, products, contractors, M&C, OL&T
- Auto - long-haul, traditional commercial, garage, etc.
- Workers Compensation - largest jurisdictions
Use experience rating for excess layer for group as a whole (Group Captives)
Can limit percent of change from one year to next

Table with 15 columns: Policy Period, Loss Eval. Date, Premium, Expected Loss Ratio, Incurred Losses Total, Expected % of U.L., Estimated Ultimate Losses, Selected Ultimate Losses, Loss Factor, Loss Cost, Trend Factor, Trend Loss Cost. Includes sub-headers for Total, Reported, and Unreported.

Development of \$125,000 Loss Pick

Detailed table showing development of a \$125,000 loss pick across various policy periods and categories (GL, CAL, APD, WC). Includes columns for Premium, Expected Loss Ratio, Incurred Losses, and Estimated Ultimate Losses.

Summary table of loss development metrics including Policy Period, Premium, Expected Loss Ratio, Incurred Losses, and Estimated Ultimate Losses across different coverage types (GL, CAL, APD, WC).

A series of horizontal lines for notes or annotations, corresponding to the pages of the document.

Cov	Policy Period	Loss Eval. Date	Selected Ultimate Losses (10)	Current Level Benefit Factor (11)	Exposure (12)	Loss Cost (13)	Trend Factor to Sep-19 (14)	Trended Loss Cost (15)	Weights (16)
GL	03/01/18 - 03/01/19	11/07/18	83,861		10,000	8,386	1.020	8,554	0.69
	03/01/17 - 03/01/18	11/08/18	55,931		9,000	6,215	1.040	6,463	1
	03/01/16 - 03/01/17	11/08/18	179,366		8,500	21,102	1.051	22,389	1
	03/01/15 - 03/01/16	11/08/18	59,413		8,820	6,736	1.082	7,289	1
	03/01/14 - 03/01/15	11/08/18	32,851		7,500	4,380	1.104	4,836	1
	<b>Total</b>		<b>411,422</b>		<b>43,820</b>	<b>9,389</b>		<b>9,995</b>	
CAL	03/01/18 - 03/01/19	11/07/18	22,549		99	382	1.050	401	0.69
	03/01/17 - 03/01/18	11/08/18	5,846		60	97	1.103	107	1
	03/01/16 - 03/01/17	11/08/18	28,287		60	478	1.158	546	1
	03/01/15 - 03/01/16	11/08/18	12,666		60	211	1.216	257	1
	03/01/14 - 03/01/15	11/08/18	28,636		79	362	1.276	463	1
	<b>Total</b>		<b>97,983</b>		<b>318</b>	<b>308</b>		<b>352</b>	
APD	03/01/18 - 03/01/19	11/07/18	2,996		78	38	1.040	40	0.69
	03/01/17 - 03/01/18	11/08/18	16		74	0	1.082	0	1
	03/01/16 - 03/01/17	11/08/18	2,113		75	28	1.125	32	1
	03/01/15 - 03/01/16	11/08/18	8,000		75	107	1.170	125	1
	03/01/14 - 03/01/15	11/08/18	12,000		100	120	1.217	146	1
	<b>Total</b>		<b>25,126</b>		<b>402</b>	<b>65</b>		<b>70</b>	
WC	03/01/18 - 03/01/19	11/07/18	305,122	1.0000	8,000	3,81	1.010	3,85	0.69
	03/01/17 - 03/01/18	11/08/18	182,790	1.0017	6,800	2,69	1.020	2,75	1
	03/01/16 - 03/01/17	11/08/18	89,798	1.0022	6,500	1,38	1.030	1,45	1
	03/01/15 - 03/01/16	11/08/18	74,467	1.0039	9,900	0,83	1.041	0,86	1
	03/01/14 - 03/01/15	11/08/18	744,180	1.0050	12,613	5,93	1.051	6,23	0.5 *
	<b>Total</b>		<b>1,396,358</b>		<b>42,913</b>	<b>3,26</b>		<b>2,58</b>	

Development of \$125,000 Loss Pick

Cov	Policy Period	Loss Eval. Date	Premium (4)	Expected Loss Ratio (5)	Incurred Losses (6)		Expected % of Ult. Reported (7)	Estimated Ultimate Losses (8)		Selected Ultimate Losses (10)
					Total Limits (6a)	Excess of \$125,000 (6b)		Loss Dev Method (8a)	B - F Method (8b)	
GL	03/01/18 - 03/01/19	11/07/18	200,000	63.6%	0	0	22.5%	0	98,660	83,861
	03/01/17 - 03/01/18	11/08/18	150,000	63.6%	18,000	0	49.9%	36,049	65,802	55,931
	03/01/16 - 03/01/17	11/08/18	190,000	67.8%	150,000	25,000	65.9%	189,772	168,959	179,366
	03/01/15 - 03/01/16	11/08/18	200,000	69.8%	39,413	0	78.8%	50,005	68,822	59,413
	03/01/14 - 03/01/15	11/08/18	390,000	66.6%	0	0	85.9%	0	32,851	32,851
	<b>Total</b>		<b>1,090,000</b>		<b>207,413</b>	<b>25,000</b>		<b>275,827</b>	<b>435,093</b>	<b>411,422</b>

Loss Dev. Method = Limited Losses / % of Ult. Report  
 = [(6a) - (6b)] / (7)  
 = 39,413 / 78.8% = 50,005

B - F Method = Premium x Expected Loss Ratio x (1 - % of Ult.) + Limited Losses  
 = (4) x (5) x [1 - (7)] + (6a) - (6b)  
 = 200,000 x 69.4% x (1 - 78.8%) + 39,413 = 68,822

Example Loss Pick Summary

Line of Coverage	Exposure (2)	\$125,000 (3)		Estimated A Fund (4)	225 x 125 B Fund (5)		Total A+B Fund (6)
		A Fund Loss Cost	%		\$	%	
GL	7,640	9,995	76.362	43.0%	32,836		
CAL	63	352	22,176	37.0%	8,205		
APD	82	70	5,740	3.0%	172		
WC	8,100	2.58	208,980	44.0%	91,951		
<b>Total</b>			<b>313,258</b>		<b>133,164</b>		<b>446,422</b>

- (2) Projected GL Payroll, Power Units, Total Units, WC Payroll provided by Client
- (3) From Exhibit B, Col (15) [CAL and APD coverages subject to \$50 minimum loss cost] [WC coverage subject to \$0.02 minimum loss cost]
- (4) Col (2) x Col (3) [x 10 for WC]
- (5a) Based on Pinnacle analysis of excess limits data for Group Captive members and insurance industry. Note these relate to 225 x 125 layer of coverage relative to \$125,000 loss cost.
- (5b) Col (4) x Col (5a)
- (6) Col (4) + Col (5b)

### Common Submission Issues

- Incomplete data (premium, losses, exposure, evaluation dates)
- Deductibles, retentions
- Overlapping policy periods
- Multiple locations
- Subrogation recoveries (how/when to reflect)
- Unusual coverages (pollution, etc.)

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### Special Considerations

- Data Availability (Premium, Losses, Claim Counts, Exposure)
- Operational Changes (new mgmt., acquisition/divestiture, etc.)
- Policy provisions (Occ/CM, limits/deductibles, coordination of benefits, treatment of LAE by layer, subrogation recoveries)
- Homogeneity of risks
- Credibility (statistical, process, judgment)
- Loss development
- Trends (premiums, severity, frequency, exposure, LAE)
- Catastrophe/unusual claims
- Benchmark assumptions
- Other influences (judicial, regulatory, 2<sup>nd</sup> injury funds, etc.)
- JUDGEMENT

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### Thank You for Your Attention

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Commitment Beyond Numbers

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