

An aerial, high-angle photograph of a city at night, showing illuminated streets and buildings. A white rectangular text box is positioned in the upper left corner. The city lights create a warm, golden glow against the dark night sky.

Introduction to Experience Rating

CARe 2018, Josh Fishman, Brooklyn, NY

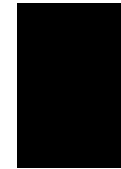
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Agenda

Basic Experience Rating Methodology
Credibility Considerations



Introduction to Experience Rating

Basic Experience Rating Methodology

- Assemble Data
- Adjust Subject Premium to Future Level
- Trend and Layer Losses
- Apply Loss Development

$$\text{Experience Loss Cost} = \frac{\text{Trended Ultimate Layer Losses}}{\text{Trended OnLevel Subject Premium}}$$

Introduction to Experience Rating

Basic Experience Rating Methodology

■ Assemble Data

■ Historical Losses

- Include all historical losses that would trend into the layer (rule of thumb: get all losses $>$ half of your attachment point)
- Split out ALAE for each loss
- Include historical policy limits and SIR if applicable
- Confirm that losses are assembled according to treaty
 - Casualty – Occurrence
 - Property - Risk

■ Historical Premium

- Assure that premium matches basis of losses

Introduction to Experience Rating

Basic Experience Rating Methodology

■ **Adjust Subject Premium to Future Level**

■ Each historical period premium is adjusted to make it as if it were written during the prospective treaty period. The adjustments are...

–Pure rate changes

–“Price-level” changes

■ Schedule-Rating, company tiers, etc

■ Also include “soft” changes such as terms & conditions, changes in underwriting standards, etc

–Exposure Trend

■ Used on inflation-sensitive exposure bases

Introduction to Experience Rating

Basic Experience Rating Methodology

■ Trend & Layer Losses

- Bring the historical value up to the average level in the future period
 - Losses Occurring
 - Risks Attaching
- Considerations
 - Do all losses trend at the same rate?
 - Should we cap losses at policy limit?
 - Property – uncommon
 - Liability – common
 - Deductibles/SIR's

Introduction to Experience Rating

Basic Experience Rating Methodology

■ Trend & Layer Losses

Historical Loss Experience	
Accident Date	Ground Up Loss
9/21/2010	163,158
10/12/2010	170,513
3/15/2011	198,674
6/21/2012	114,135
10/31/2012	205,768
1/1/2013	64,079
2/23/2014	1,154,551
5/1/2014	41,449
9/23/2014	40,352
1/2/2015	199,593
5/19/2015	152,054
8/20/2015	10,888
8/15/2016	591,825
7/4/2017	29,387
Total	3,046,426

Assumptions	
Effective Date:	7/1/2018
Coverage Basis:	Losses Occurring
Limit:	300,000
Retention:	200,000
Trend Rate:	4%

Introduction to Experience Rating

Basic Experience Rating Methodology

■ Trend & Layer Losses

Loss Experience and Trend

Accident Date	Ground Up Loss	Layer Loss	Years of Trend to 1/1/19		Ground Up Trended Loss	Trended Layer Loss	Excess Trend Factor
	(1)	(2)=min(300K, max(0,(1)-200K))	(3)	(4)=1.04^(3)	(5)=(1)*(4)	(6)=min(300K, max(0,(5)-200K))	(7)=(6) / (2)
9/21/2010	163,158	-	8.28	1.38	225,802	25,802	∞
10/12/2010	170,513	-	8.23	1.38	235,449	35,449	∞
3/15/2011	198,674	-	7.81	1.36	269,833	69,833	∞
6/21/2012	114,135	-	6.53	1.29	147,475	-	
10/31/2012	205,768	5,768	6.17	1.27	262,131	62,131	10.77
1/1/2013	64,079	-	6.00	1.27	81,089	-	
2/23/2014	1,154,551	300,000	4.86	1.21	1,396,861	300,000	1.00
5/1/2014	41,449	-	4.67	1.20	49,788	-	
9/23/2014	40,352	-	4.28	1.18	47,721	-	
1/2/2015	199,593	-	4.00	1.17	233,496	33,496	∞
5/19/2015	152,054	-	3.62	1.15	175,282	-	
8/20/2015	10,888	-	3.37	1.14	12,426	-	
8/15/2016	591,825	300,000	2.38	1.10	649,751	300,000	1.00
7/4/2017	29,387	-	1.50	1.06	31,163	-	
	3,136,426	605,768		1.22	3,818,267	826,711	1.36

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Basic Experience Rating Methodology

■ Develop Losses to Ultimate

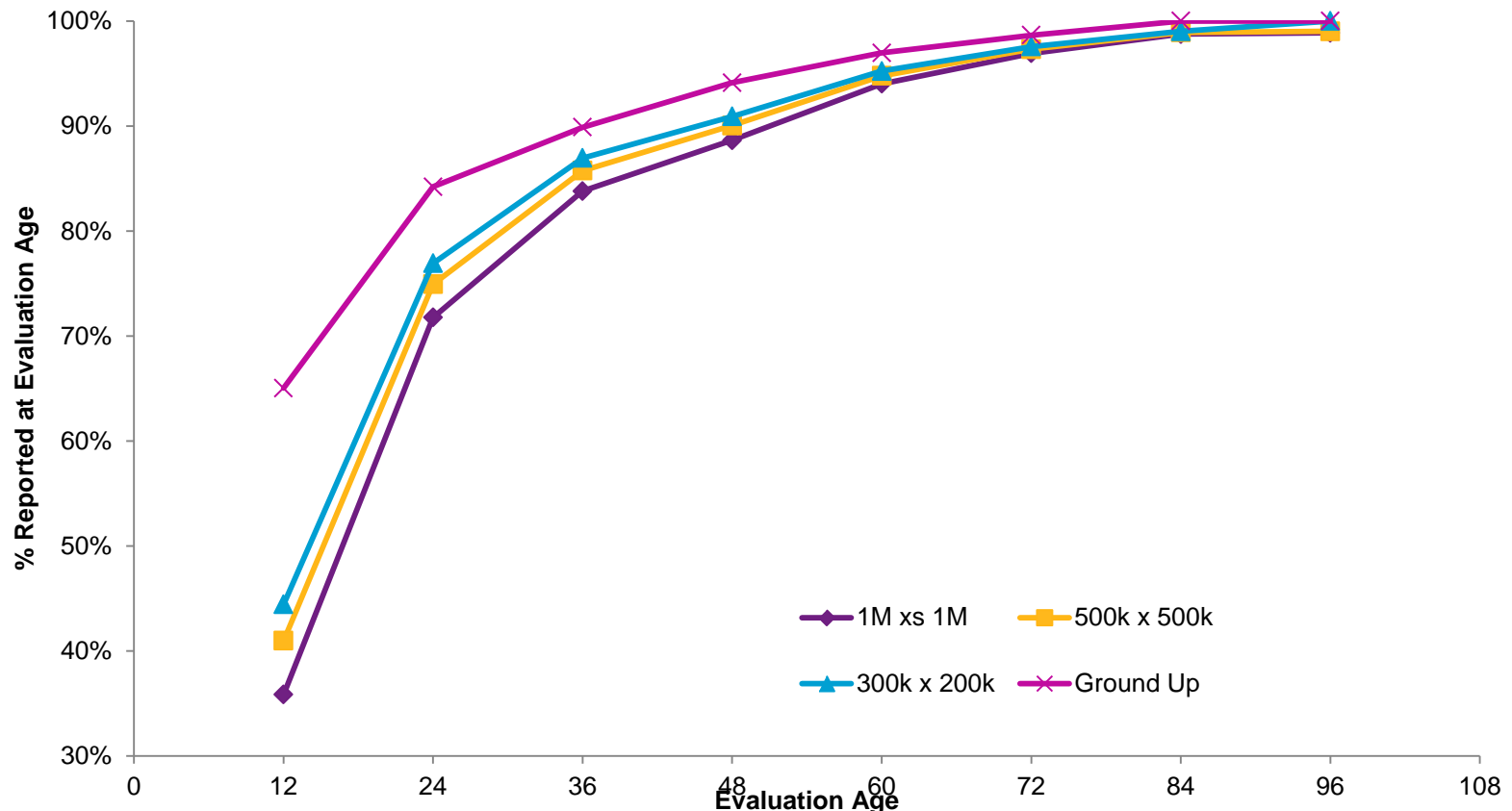
- Factors depend on Layer of Reinsurance being priced
 - We apply LDFs to trended layer losses so that all years are on the same basis.
- Development is an aggregate loss concept
 - Includes new claims (“true IBNR”), development on known claims, reopening of closed claims, etc

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Basic Experience Rating Methodology

■ Develop Losses to Ultimate

Cumulative Reporting Pattern



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Basic Experience Rating Methodology

■ Develop Losses to Ultimate

■ Problem:

- Most recent periods are very green and may have zero losses reported to date. Should they be included? Alternatively, if there are losses, then they are hit with huge LDF.

■ Possible Solutions:

- Bornhuetter-Ferguson (B-F) Method
- Expected Loss Ratio Method

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Basic Experience Rating Methodology

- **Develop Losses to Ultimate**
- LDF Method:
Ultimate = Reported \times LDF
- Expected Loss Ratio Method
Ultimate = Premium \times ELR
- Bornhuetter-Ferguson (B-F) Method:
Ultimate = Reported + Prem \times ELR \times (1-1/ LDF)
- What ELR to chose?
 - Plan
 - Stanard-Buhlman
 - “Cape Cod”
 - Other

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Basic Experience Rating Methodology

Experience Analysis

Year	Earned Premium	On Level Factor	On Level Premium	Layer Loss	Trended Layer Loss	Excess Loss Development Factor	Trended and Developed Layer Loss	LDF Loss Cost	B-F Layer Loss	B-F Loss Cost
	(1)	(2)	(3)=(1)*(2)	(4)=(2) from loss list	(5)=(6) from loss list	(6)	(7)=(5)*(6)	(8)=(7)/(3)	(9)=(5)+(3)*5%*[1-1/(6)]	(10)=(9)/(6)
2010	1,153,734	1.233	1,422,554	0	61,252	1.000	61,252	4.31%	61,252	4.31%
2011	1,721,533	1.059	1,823,103	0	69,833	1.010	70,531	3.87%	70,735	3.88%
2012	1,916,076	1.072	2,054,034	5,768	62,131	1.025	63,684	3.10%	64,636	3.15%
2013	1,871,968	1.147	2,147,147	0	0	1.050	0	0.00%	5,112	0.24%
2014	1,884,011	1.142	2,151,541	300,000	300,000	1.100	330,000	15.34%	309,780	14.40%
2015	2,066,218	1.045	2,159,198	0	33,496	1.150	38,520	1.78%	47,577	2.20%
2016	2,079,806	1.042	2,167,158	300,000	300,000	1.300	390,000	18.00%	325,006	15.00%
2017	2,119,820	1.032	2,187,654	0	0	2.250	0	0.00%	60,768	2.78%
Total	14,813,166		16,112,389	605,768	826,711		953,987	5.92%	944,866	5.86%

Agenda

Basic Experience Rating Methodology
Credibility Considerations



Introduction to Experience Rating Credibility

■Credibility:

- Experience Rating = Projection of losses based only on what took place for this specific account
- Exposure Rating = *A Priori* estimate of losses based on information other than the specific account's experience in the layer

Introduction to Experience Rating Credibility

■Credibility Considerations

- Stability of Experience: How much would experience rate change if we remove the largest claim or add an additional full limit loss?
- Are pricing factors (LDFs, rate changes, etc) from the account or are they default values?
- Do the characteristics of the ceding company match the business in the exposure rating curves?
- Is the ELR used in exposure rating consistent with the ceding company's experience? Is the ALAE the same?
- How has the business changed? Is the experience even relevant?
- Is this "niche" business unlike the industry average in the exposure rating curves?



Introduction to Experience Rating

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