

RPM Workshop 1: BASIC RATEMAKING

Overall Rate Level Considerations

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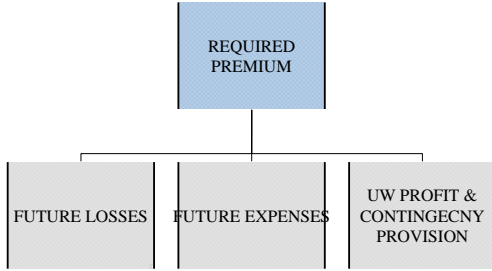
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AGENDA

- BASIC RATEMAKING EQUATION
- UNDERLYING DATA MANIPULATION
- PROFIT AND CONTINGENCY PROVISIONS
- EXAMPLE

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BASIC EQUATION



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BASIC METHODS

LOSS RATIO

- Produces Indicated Rate Change
- Based on Loss Compared to Current Premium
- Requires Data on Existing Rates

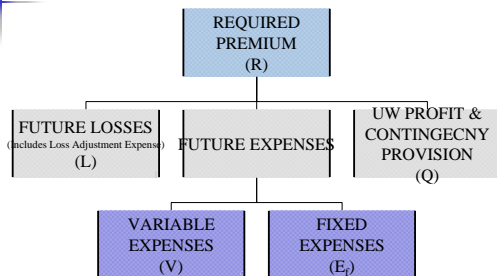
PURE PREMIUM

- Produces Indicated Rates
- Based on Loss per Exposure
- Does Not Require Data on Existing Rates

Note: The two methods produce identical results when identical data and assumptions are used.

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BASIC FORMULA:



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BASIC FORMULA

$$R = L + V * R + E_F + Q * R$$

Solve for R:

$$R - V * R - Q * R = L + E_F$$

$$R * (1 - V - Q) = L + E_F$$

$$R = \frac{L + E_F}{(1 - V - Q)}$$

Variable Permissible Loss Ratio = $1 - V - Q$

- The percentage of each premium dollar that is intended to pay for the projected loss and fixed expense components.

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BASIC FORMULA:

Loss Ratio

$$\text{Indicated Change} = \frac{\text{Loss Ratio} + \text{Fixed Expense Ratio}}{\text{Variable Permissible Loss Ratio}}$$

$$R_1 / R_0 = \frac{(L/R_0 + E_F/R_0)}{(1 - V - Q)}$$

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BASIC FORMULA:

Pure Premium

$$\text{Indicated Rate} = \frac{\text{Pure Premium} + \text{Fixed Expense}}{\text{Variable Permissible Loss Ratio}}$$

$$R_1 / X = \frac{(L/X + E_F/X)}{(1 - V - Q)}$$

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DATA CATEGORIZATION

- CALENDAR YEAR
- POLICY YEAR
- ACCIDENT YEAR

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CALENDAR YEAR

Premium and Loss transactions that occur during the year.

- Advantages:
 - Data is available quickly
 - FIXED AT YEAR END
 - Consistent with Financial Statements
- Disadvantage:
 - Premium and Loss Transactions DO NOT match.
 - Loss data includes payments and changes to reserves for policies whose premiums were earned in prior periods.

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POLICY YEAR

Premium and Loss transactions on policies with effective dates (new or renewal) during the year.

- Advantages:
 - Premium and Loss transactions DO match.
 - Transactions from policies effective in prior years do not distort the data for ratemaking.
- Disadvantage:
 - Data is not available until one term after the end of the policy year.
 - Losses are NOT fixed at year end.

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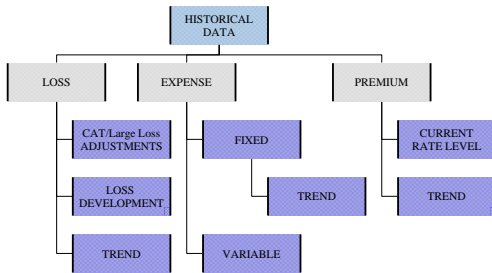
ACCIDENT YEAR

Loss transactions for accidents occurring during the year, and Premium transactions during the same 12 months.

- Advantages:
 - Represents a better match of premium and losses than Calendar Year aggregation.
 - Transactions from accidents occurring in prior years do not distort the data for ratemaking.
- Disadvantage:
 - Data with slight time lag.
 - Losses are NOT fixed at year end.

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UNDERLYING DATA MANIPULATION



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TREND

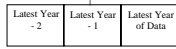
Historical loss, premium and exposure data is trended to reflect the level predicted to exist during the pricing period.

- to account for expected difference between the historical period and the future period.

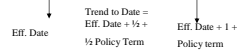
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TREND PERIOD

Experience Period



Exposure Period



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CATASTROPHE/Large Loss

- Catastrophe losses are very volatile from year to year, and should be removed from the underlying data because of their large size and infrequency of occurrence.
 - Recognition of exposure is appropriate and can be incorporated using various methods.
 - Long-Term Average, Catastrophe Simulation Modeling.
- Appropriate to give consideration to the impact of other non-catastrophe large losses on underlying data and analysis.

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LOSS DEVELOPMENT

Adjustment made to underlying accident year loss data to reflect an expected ultimate value.

- 2 reasons for Accident Year losses to develop
 - New Losses emerge after year-end (IBNR)
 - Development on known claims

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LOSS DEVELOPMENT FACTOR (LDF) METHOD

Incurred Losses				Loss Development Factors		
ACCIDENT YEAR	@ 12mo	@ 24mo	@ 36mo	ACCIDENT YEAR	12-24	24-36
2008	\$1,000	\$2,000	\$2,500	2008	2.00	1.25
2009	\$2,000	\$3,000		2009	1.50	
2010	\$2,500		X?	LDF	1.75	1.25

Estimated Ultimate 2010 AY Loss = \$2,500 x 1.75 x 1.25 = \$5,469

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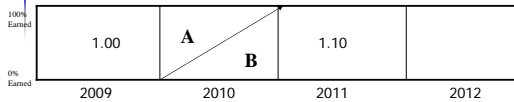
CURRENT RATE LEVEL

- Adjustment to reflect rate changes that are not already included in the historical recorded premium.
 - Common Techniques:
 - Extension of Exposures
 - Parallelogram Method

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PARALLELOGRAM METHOD

Rate Change = 10% on 1/1/2010



Area	Percent of 2010	Rate Index
A	.50	1.00
B	.50	1.10
2010	1.00	1.05

2010 FCRL = (1.10/1.05) = 1.048

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PROFIT & CONTINGENCY

■ UNDERWRITING PROFIT PROVISION

- Basic Selection = 5%
- More Complex Calculation
 - Consideration of Investment Income

■ CONTINGENCY

- Provision for expected differences, if any, between the estimated costs and the average actual costs, that cannot be eliminated by changes in the other components of the ratemaking process.

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? QUESTIONS ?

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