



2019 HEALTH
MEETING

JUNE 24-26 | PHOENIX, AZ



Session 91, Medicaid Margin Assumptions – Opening the Black Box

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[SOA Presentation Disclaimer](#)

2019 Health Meeting

Session #091: Medicaid Margin Assumptions – Opening the Black Box

June 25, 2019



Welcome

- Session #091: Medicaid Margin Assumptions – Opening the Black Box
- Session is being broadcasted live nationally
- Questions will be taken at the end of the session via Chat
 - Microphones for those in the room
- Note Antitrust Statements and Presentation Disclaimer on following slides
- With regard to this subject specifically, underwriting gain and the managed Medicaid capitation rate development process remain exercises that are unique and independent to each MCO, based on MCO-specific inputs; this presentation, accompanying paper and the Model are intended solely as thought tools and methodological suggestions.

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Introductions

Presenter	Experience Highlights
<i>Michelle Raleigh, ASA, MAAA</i>	<ul style="list-style-type: none">• Vice President of Actuarial Services at Centene• 25 years focused on Medicaid• Co-authored the ASOP 49 on Medicaid Managed Care Rate Development
<i>Sabrina Gibson, FSA, MAAA</i>	<ul style="list-style-type: none">• Chief Medicaid Actuary at WellCare Health Plans• 13 years focused on Medicaid• Co-authored the ASOP 49 on Medicaid Managed Care Rate Development
<i>Jaredd Simons, ASA, MAAA</i>	<ul style="list-style-type: none">• Director of Actuarial Services at Centene• 7 years focused on Medicaid• Senior State Actuary prior to joining Centene
<i>Jim Piekut, FSA, MAAA</i>	<ul style="list-style-type: none">• Staff VP & Actuary II at Anthem• 12 years focused on Medicaid

Agenda

- Overview
- Cost of Capital
- Risk Margin
- Considerations
- UWG Model
- Questions
- Closing

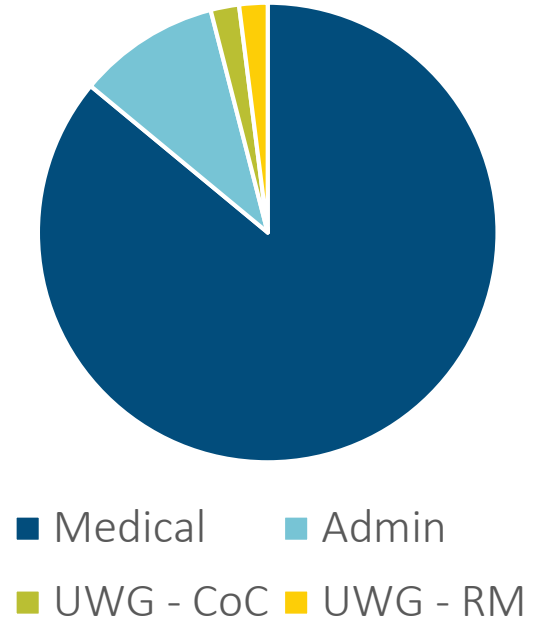
Overview



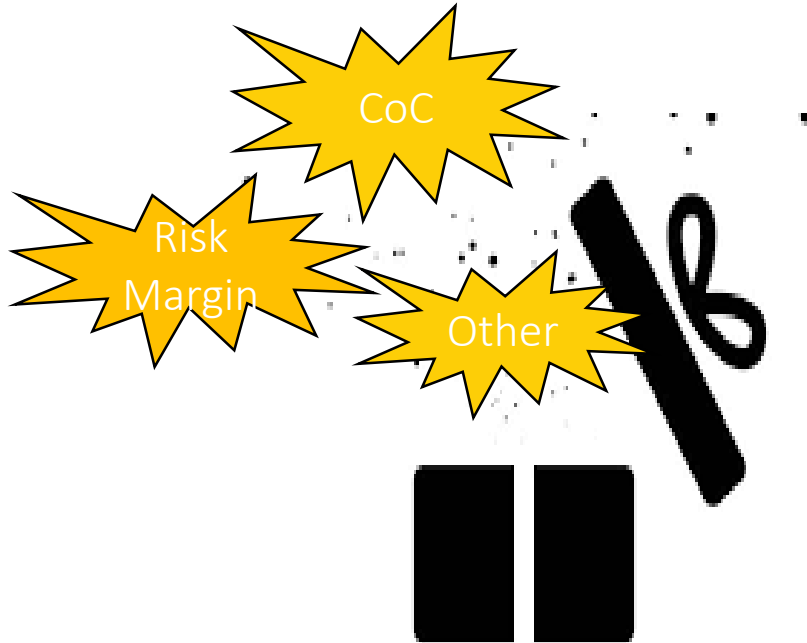
Background

- State actuaries estimate MCOs' costs when developing capitation rates
 - Includes Underwriting (UW) Gain – green and yellow slices of pie
- UW Gain - Actuarial Guidance
 - Per Actuarial Standard of Practice (ASOP) #49, UW Gain provides “compensation for the risks assumed by the MCO”, and needs to reflect:
 1. ***Cost of capital (CoC)***
 2. ***Margin for risk or contingency (risk margin or RM)***
 - CMS acknowledges importance
 - Historical lack of transparency
 - SOA Risk Margin Study (published in 2017) emphasized need to quantify
 - Incorporated in other industry rates

Medicaid Rate Components



Background, cont.



- Actuaries formed a workgroup to “Open the Black Box”
- Primary goal is to foster discussions within the profession
 - Share revelations such as instances where $UW\ Gain \neq Net\ Income$
- Today our charge is to:
 - Discuss MCOs' cost of capital, solvency, and acceptable levels of risk
 - Demonstrate how Medicaid contract features, such as minimum MLR requirements, impact the need for margin
 - Share newly-developed models

Cost of Capital



Why Cost of Capital is Required

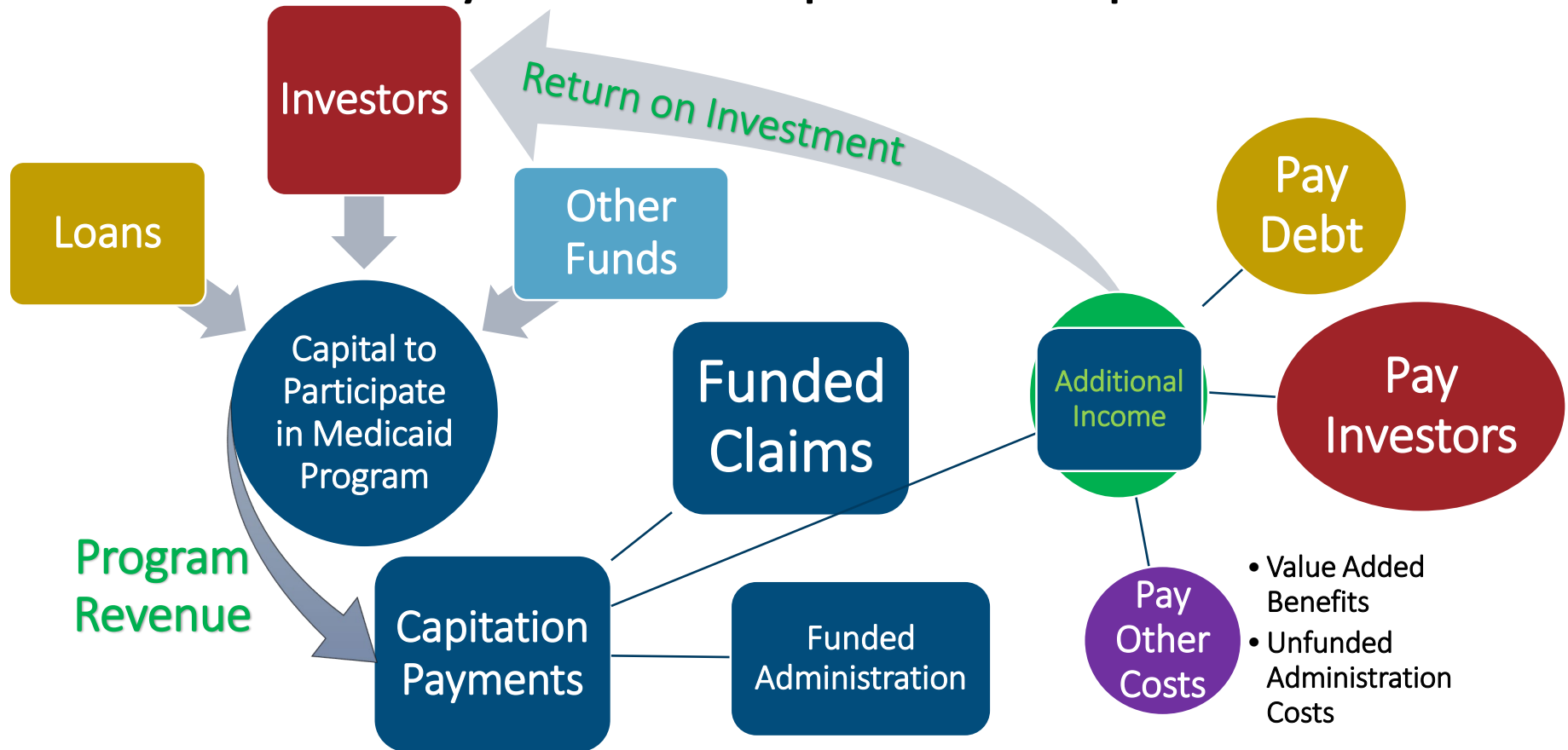
MCO invests capital in a
Medicaid program

Must earn a return on the
capital to pay:

- \$ Interest on debt
- \$ Returns to investors
- \$ Additional Costs not funded in the capitation rates

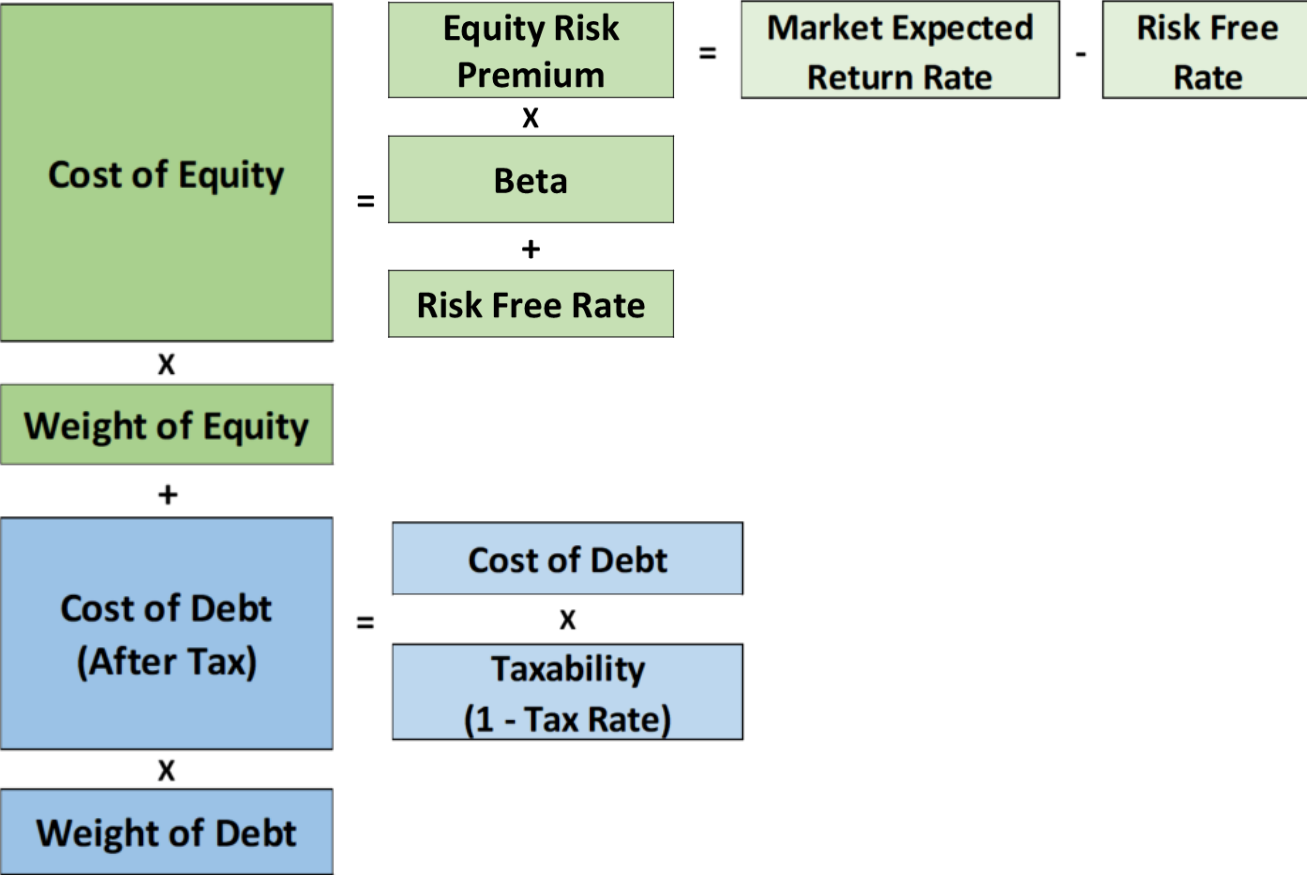
Cost of Capital:
The return an MCO
expects to receive
for investing in a
Medicaid program.

Why Cost of Capital is Required

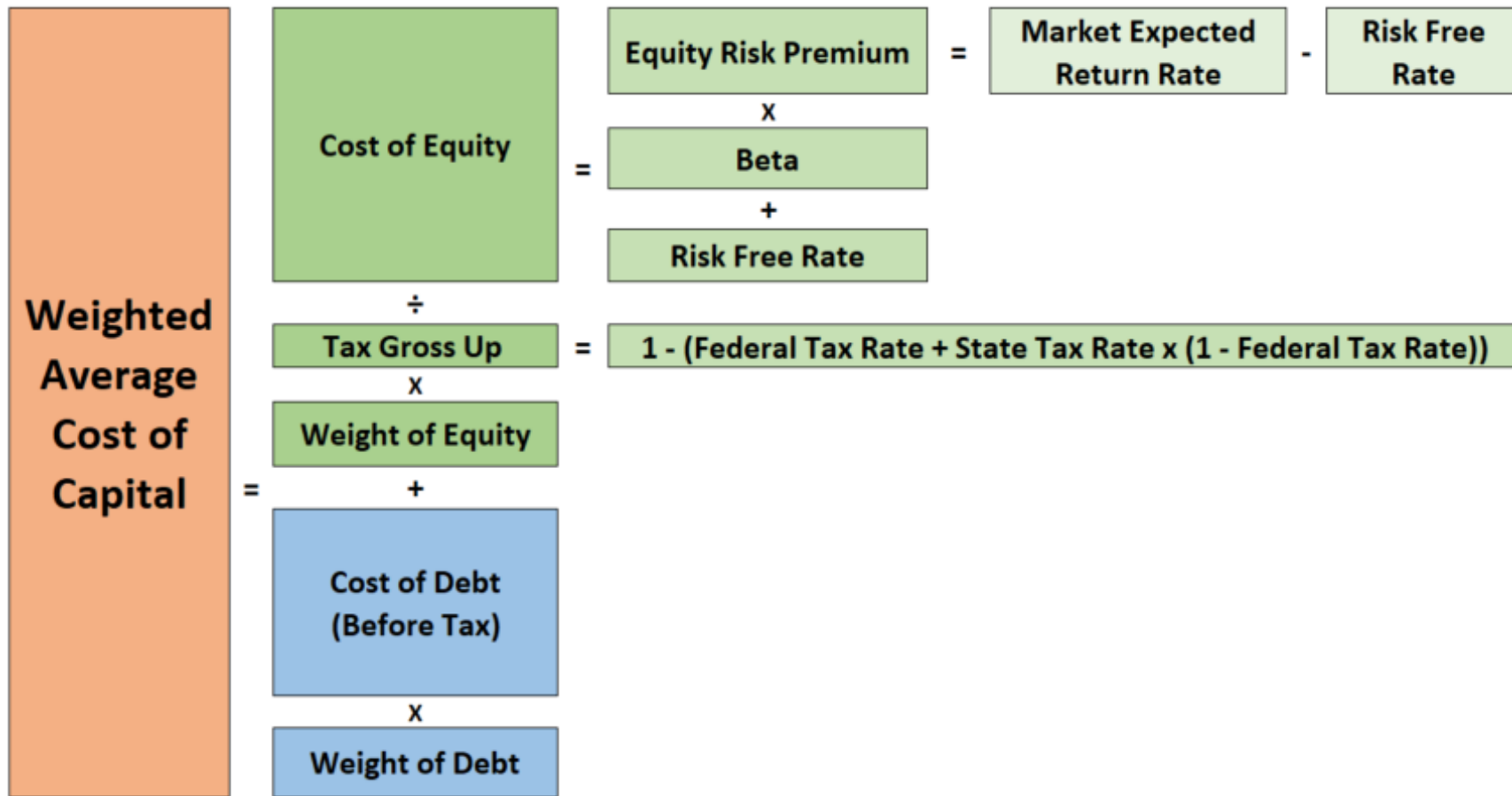


Weighted Average Cost of Capital (WACC)

**Weighted
Average
Cost of
Capital**



Weighted Average Cost of Capital (WACC) Converted to Pre-Tax



Components of WACC and Sources

RISK FREE RATE

- Assumed Risk Free Rate of Return
- Source: US Treasury Rate

MARKET EXPECTED RETURN RATE

- Rate of Return Required by MCO Investors
- Source: 10-year or longer average rate of return or expected forecasted rate of return from PIMCO, Wellington, or Voya

BETA

- Measure of an MCO's Stock's Volatility of Returns Relative to the Entire Market
- Source: MCO's historical beta from Bloomberg

COST OF DEBT

- MCOs' Assumed Debt Interest Rate
- Source: Publically traded MCO's debt rates are posted on Bloomberg

TAXES

- MCO Expected Federal and State Income Tax Rates
- Source: Government Sources

Risk Free Rate Example

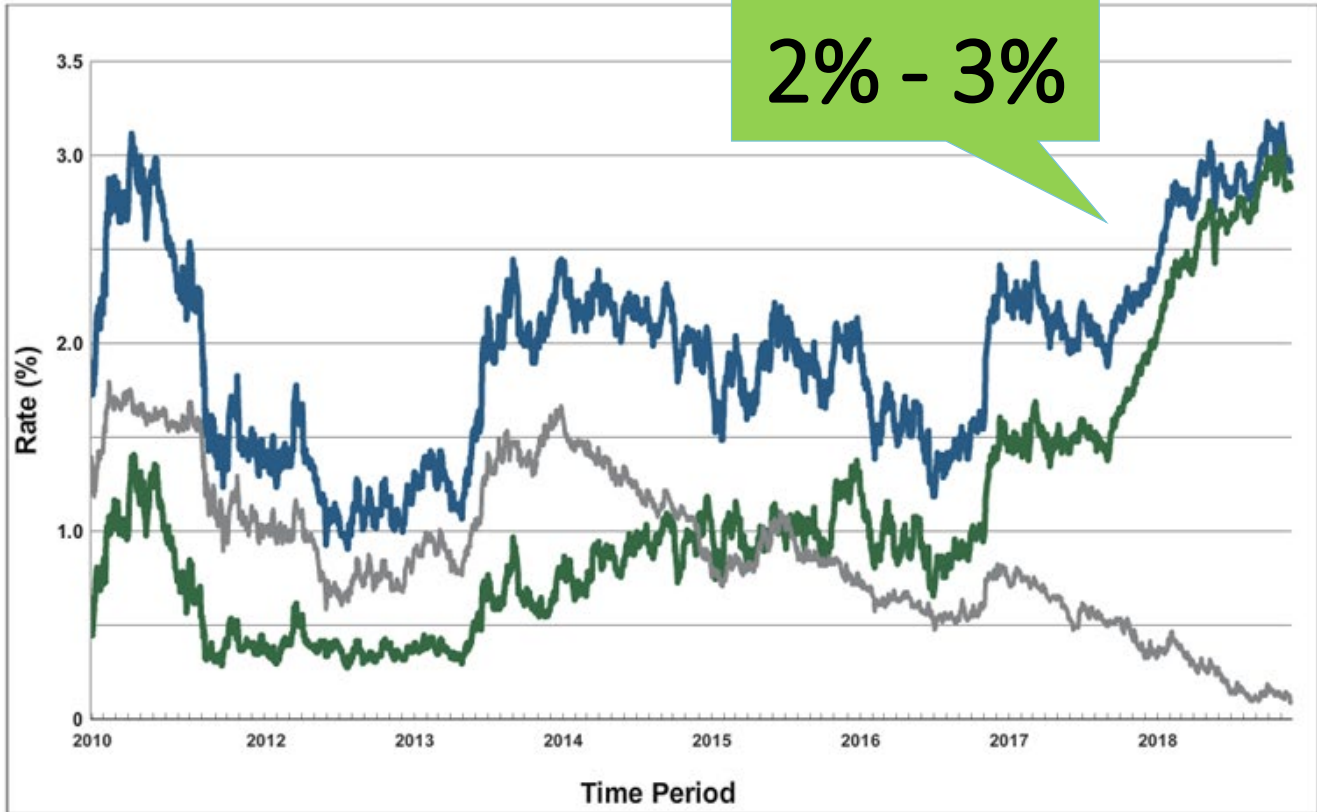
Historical Treasury Rates

Choose a Maturity
3 YEAR NOMINAL
 Select to compare

Choose Comparison
7 YEAR NOMINAL

Choose Date Range
2010 NOV 01
TO
2018 NOV 30
Update Chart

Key
3 YEAR NOMINAL ———
7 YEAR NOMINAL ———
DIFFERENCE* ———



Market Rate of Return Example

Range - Period No. of Period 4019 Day(s) Table

	Security	Currency	Price Change	Total Return	Difference	Annual Eq
1)	WCG US Equity	USD	419.72%	419.72%	-347.43%	16.15%
2)	CNC US Equity	USD	767.15%	767.15%	--	21.67%
3)	MOH US Equity	USD	319.00%	319.00%	-448.15%	13.90%
4)	ANTM US Equity	USD	188.11%	228.39%	-538.76%	11.40%
5)	UNH US Equity	USD	316.69%	377.12%	-390.03%	15.25%
6)	CI US Equity	USD	240.29%	243.41%	-522.12%	11.86%



Beta Source

Raw Beta (slope) vs. S&P 500 Index:

Period:	WCG	CNC	MOH	ANTM	UNH	CI	Avg	Min	Max
1yr	0.925	1.053	0.939	0.872	1.011	0.873	0.946	0.872	1.053
3yr	0.904	1.116	0.994	0.938	0.931	0.886	0.962	0.886	1.116
5yr	1.014	1.096	1.028	0.908	0.971	0.848	0.978	0.848	1.096

Avg:	0.962
Max:	1.116
Min:	0.848

as of 12/21/2018
Source: Bloomberg

0.85 – 1.12

3.9% – 5.4%

Cost of Debt Source

Average Cost of Debt

WCG 5.31%

CNC 5.38%

MOH 4.06%

ANTM 4.19%

UNH 3.88%

CI 4.37%

as of 4/19/19

Source: Bloomberg

Current Ranges

2% - 3%

12% - 16%

RISK
FREE
RATE

MARKET
RETURN
RATE

BETA

COST
OF
DEBT

0.94 - 1.00

4% - 5.5%

Capital Determination

- Invested capital is:
 - Start up costs (usually not funded by states and not considered in the Model)
 - Equity held by MCO as required by the state DOI or other agencies
- **RBC/Equity** are amounts of RBC, performance bonds, or other equity held by MCOs
- Minimum requirements:
 - NAIC RBC Minimum = 200%
 - Some states require higher amounts
- MCOs hold more than the minimum required, so RBC/Equity does not drop below minimum required levels during the normal course of business
- “Ruin” for an MCO can be viewed as losses exceeding certain levels of RBC

Capital Determination, cont.

- RBC/Equity used in Model is:
 - Actual amounts held by MCOs in the program, **or**
 - Estimate assuming 100% of RBC/Equity \approx 3.5% - 4% of Revenue
- RBC/Equity Ratio is the percentage of revenue that the MCOs hold as RBC/Equity
 - Example: 350% RBC X 4% of Revenue = 14% RBC/Equity Ratio
- Load applied in capitation rates:

$$\textit{Cost of capital load} = \textit{RBC/Equity Ratio} \times \textit{WACC}$$

Cost of Capital Model Inputs

COST OF CAPITAL INPUTS	
WACC Components	
Risk Free Rate	2.8%
Market Expected Return	13.2%
Beta	0.940
Cost of Debt (Borrowing Rate)	5.0%
Capital Structure	
Debt % of Total	20%
Equity % of Total	80%
Tax Rate	
Federal	21.0%
State	5.0%
RBC/Equity Ratio - average held by MCOs*	0.121
Minimum RBC/Equity Ratio**	0.100
200% RBC/Equity Ratio***	0.070

Model User Inputs
in **Blue**

- RBC / Equity Held \approx 350%
- State Regulatory Minimum \approx 285%
- NAIC Minimum \approx 200%

* Note: 100% of RBC/Equity is \sim 3.5% - 4.0% of revenue (factor of 0.035-0.04)

** State Regulatory Agency Minimum RBC or equivalent

*** NAIC minimum RBC is 200%

Cost of Capital Model Outputs

COST OF CAPITAL

Equity Risk Premium

Market Expected Return	13.2%
Risk Free Rate	- 2.8%
Equity Risk Premium	= 10.4%

Tax Rate

Federal Tax Rate	21.0%
State Tax Rate	5.0%
Total Tax Rate	25.0%

Cost of Equity

Equity Risk Premium	10.4%
Beta	x 0.94
Risk Free Rate	+ 2.8%
After Tax Cost of Equity	= 12.6%
After Tax Yield (1 - Tax Rate)	÷ 75.1%
Cost of Equity (Before Tax)	16.8%

Weighted Average Cost of Capital (WACC)

	Weight	Rate
Cost of Equity	80% x	16.8%
Cost of Debt	+ 20% x	5.0%
WACC	=	14.4%

Capitation Rate Component

Required Capital : Prem Ratio	0.121
WACC	x 14.4%
UW Gain: Cost of Capital	1.74%

WACC =
14.4%

Cost of Capital
Load = 1.74%

Before Tax Adjustment

Risk Margin



Margin for Risk & Contingency (Risk Margin)

WHY IS RISK MARGIN REQUIRED?

All projections are wrong

Risk adjustment is not perfect

Adverse selection

Administrative expense deviation

Size of MCO enrollment

Minimum MLR remittance limits upside risk

Asymmetric risk corridors

Losses reduce capital reserves

Unknown unknowns

* Items in Red have specific discussions later in presentation.

Drivers of Risk Margin



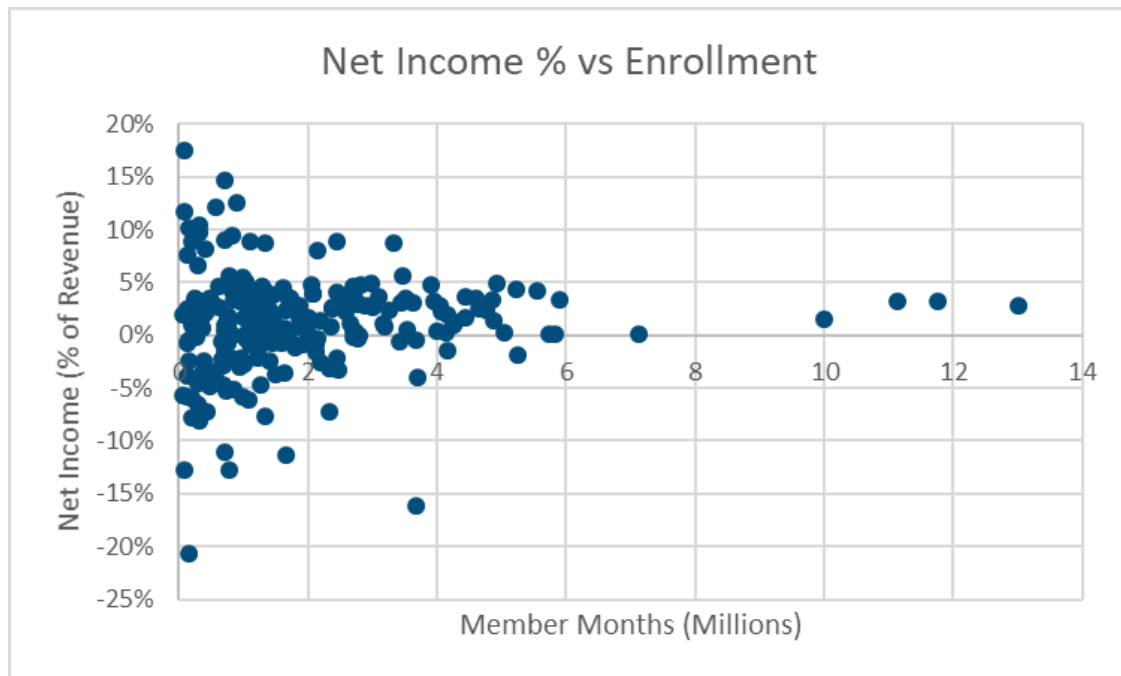
- Difficult to quantify each risk (blue boxes)
- Program specific items need to be taken into account (red boxes)
- Capital infusions needed when experiencing a loss (Green Box)
- The actuary needs to understand the probability of gain or loss in the program
- MCO financial filings provide insight into the probability

Quantifying Risk Margin

MCO Net Income is similar to UW Gain in the rates

■ Data Observations:

- Best fit is a Normal distribution
- Volatility varies with the size of the plan enrollment



Estimation of Variance

$$\sigma^2 = \alpha + \frac{\omega}{\textit{member months}}$$

- Variance decomposed into:
 - Constant (irreducible) variance (α)
 - Variance that decreases with scale (ω)
- Parameters are estimated from the data (Normal distribution)
 - μ = UW Gain load
- Considers variability between states to avoid overstating variance

Predicting MCO Results

Initial MCO Experience					
Claims	Claims	Initial Net Income			
Loss Ratio	Expenses	PMPM	Percent	Density	Probability
84.40%	\$ 271.93	\$ 11.40	3.5%	12646.6	1.26%
84.50%	\$ 272.26	\$ 11.08	3.4%	12778.4	1.28%
84.60%	\$ 272.58	\$ 10.76	3.3%	12896.8	1.29%
84.70%	\$ 272.90	\$ 10.44	3.2%	13001.4	1.30%
84.80%	\$ 273.22	\$ 10.11	3.1%	13091.8	1.31%

Posterior Predictive Distribution calculated by averaging over posterior samples of α , ω

For modeling purposes, all variance in results is attributed to claims

Considerations



What is Risk Sharing in Medicaid?

- Any mechanism that shares risk between the managed care organization (MCO) and the state, altering the full-risk arrangement
- Mechanisms apply at the individual MCO level

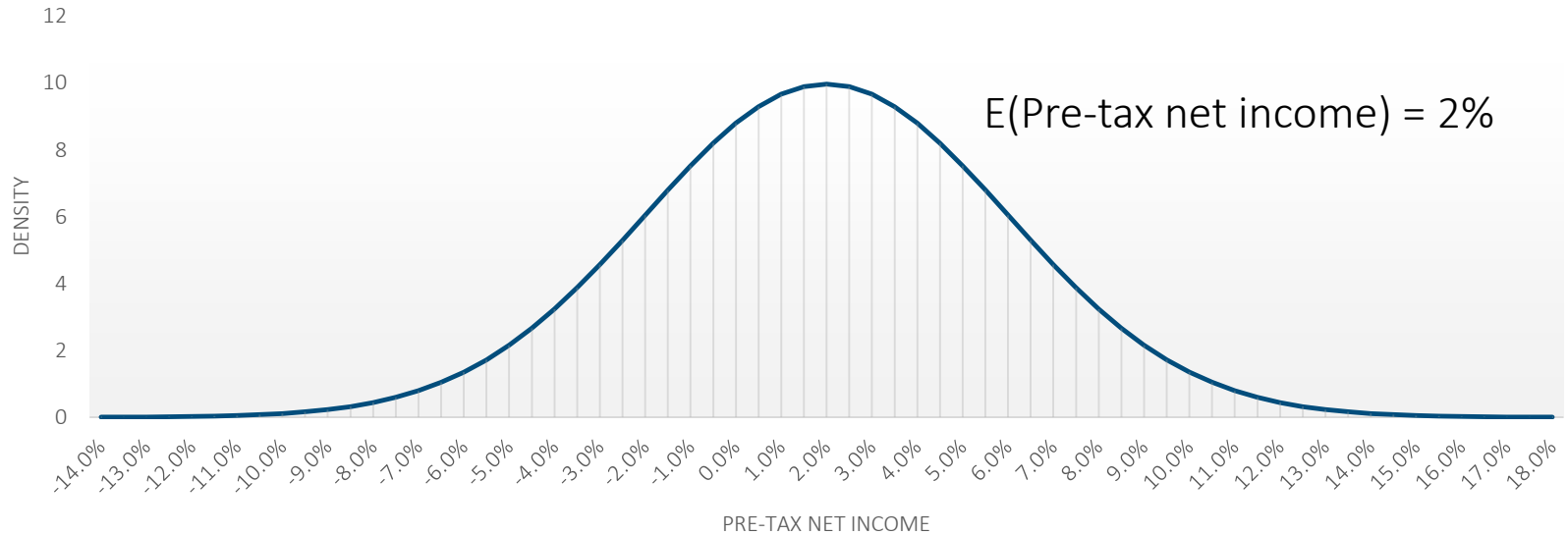
Examples of risk sharing	Not examples
Minimum medical loss ratios (MLRs)	Risk adjustment
Risk Corridors	Risk pools
Profit Cap	
Stop Loss	

Risk Sharing Impact on UW Gain

- ASOP 49: 3.2.16:
 - “Minimum Medical Loss Ratios – The actuary should consider governmental and contractual **minimum medical loss ratio** requirements as well as the sharing of gains or losses. Such provisions may affect the underwriting gain provision component of the **capitation rates.**”
- Risk sharing can alter the expected value of an MCO’s UW gain
- Expected value of UW gain can be maintained if risk sharing is considered
- Why engage in risk sharing just to counteract it?

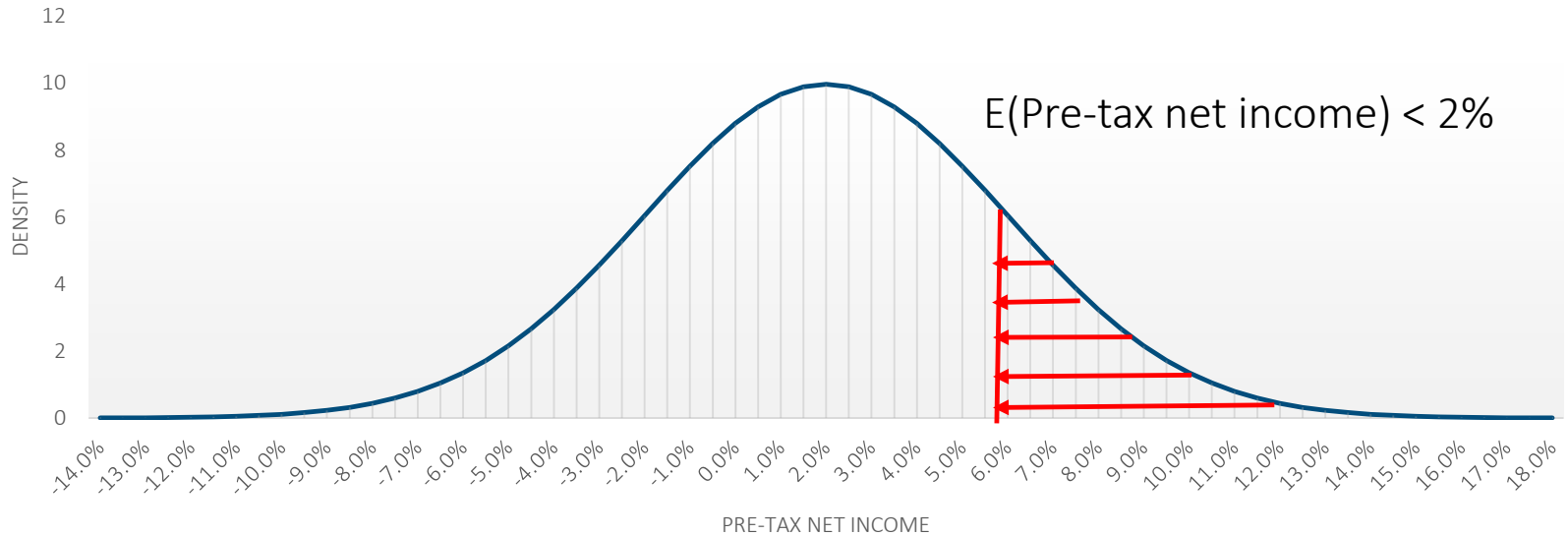
Example: 1 MCO

Pre-tax Net Income Distribution with $\mu = 2\%$, $\sigma = 4\%$



Example: 1 MCO

Pre-tax Net Income Distribution with $\mu = 2\%$, $\sigma = 4\%$; max PTNI = 6%

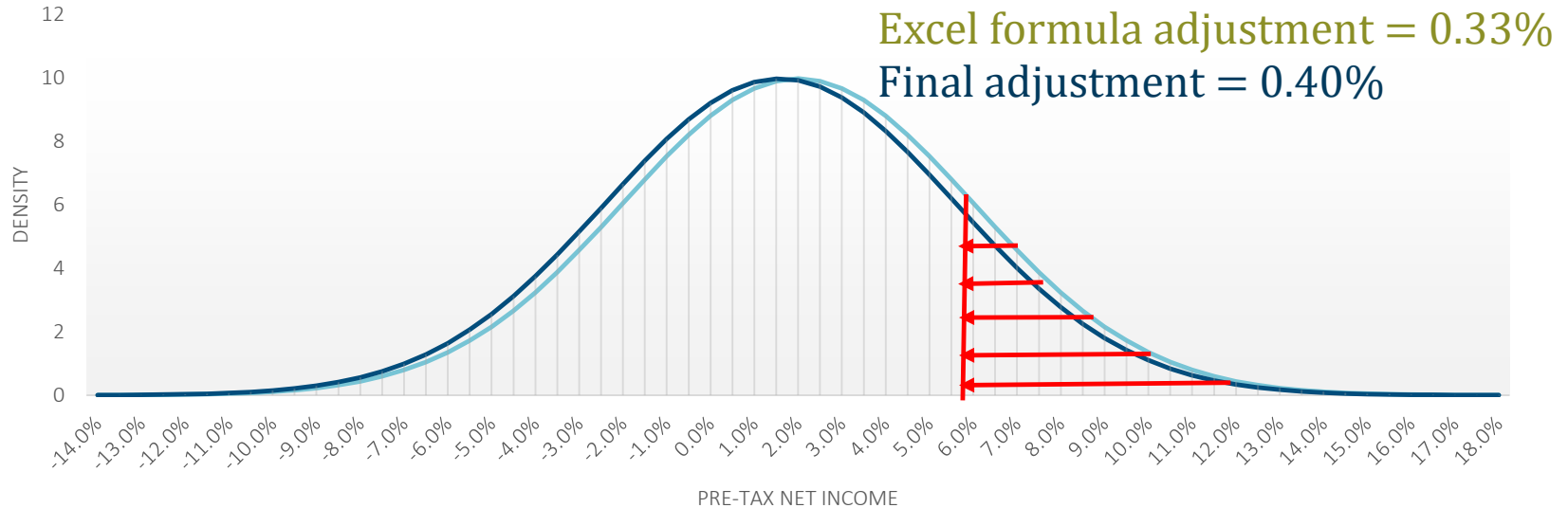


Example: 1 MCO

- When the pre-tax net income, X , is constrained to a maximum, b :
 - $E(x) = P(x < b) \times E(x|x < b) + P(x \geq b) \times b$
- When $X \sim N(\mu, \sigma^2)$ and constrained to b , $E(x)$ in Excel:
 - $=\text{NORM.DIST}(b, \mu, \sigma, \text{TRUE}) * (\mu - \sigma * \text{NORM.DIST}((b - \mu) / \sigma, 0, 1, \text{FALSE}) / \text{NORM.DIST}((b - \mu) / \sigma, 0, 1, \text{TRUE})) + (1 - \text{NORM.DIST}(b, \mu, \sigma, \text{TRUE})) * b$
- *Initial adjustment to counteract minimum MLR = $\mu - E(x)$*

Example: 1 MCO

Pre-tax Net Income with $\mu = 2\%$, $\sigma = 4\%$, max PTNI = 6%

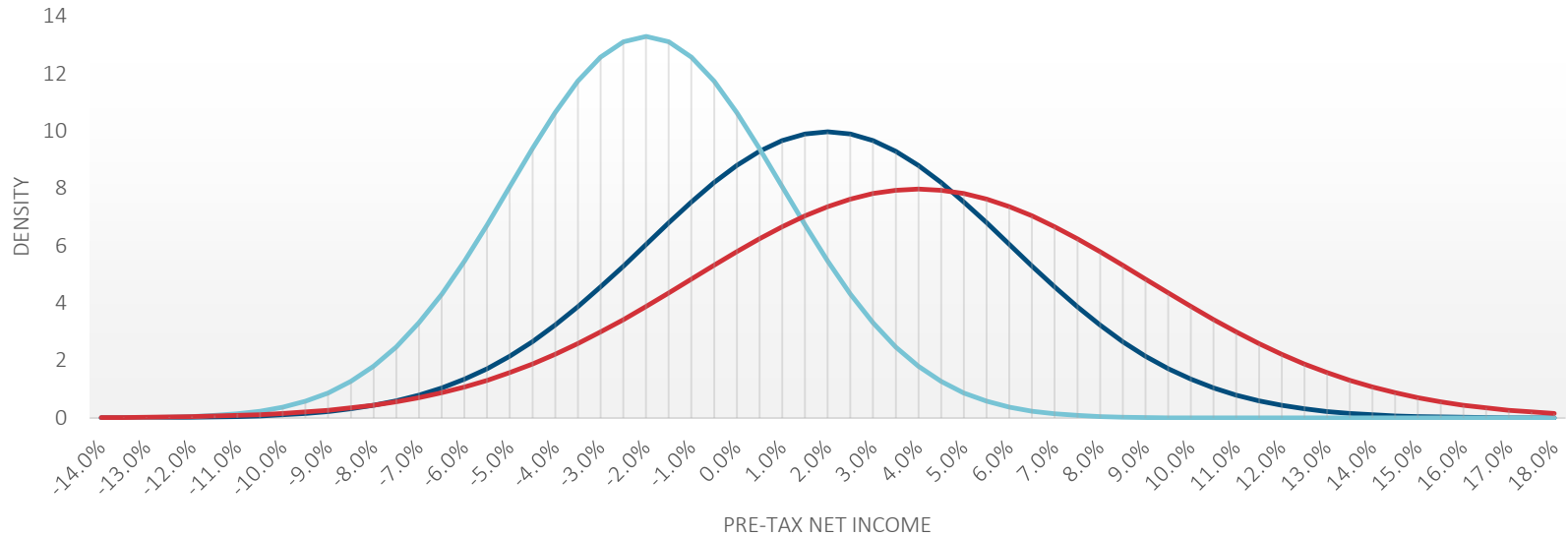


Items that Affect the Adjustment

- The target MLR's proximity to the minimum MLR
- Variability in results
 - Population or program maturity
 - Level of aggregation in risk sharing
 - Claim cost predictability

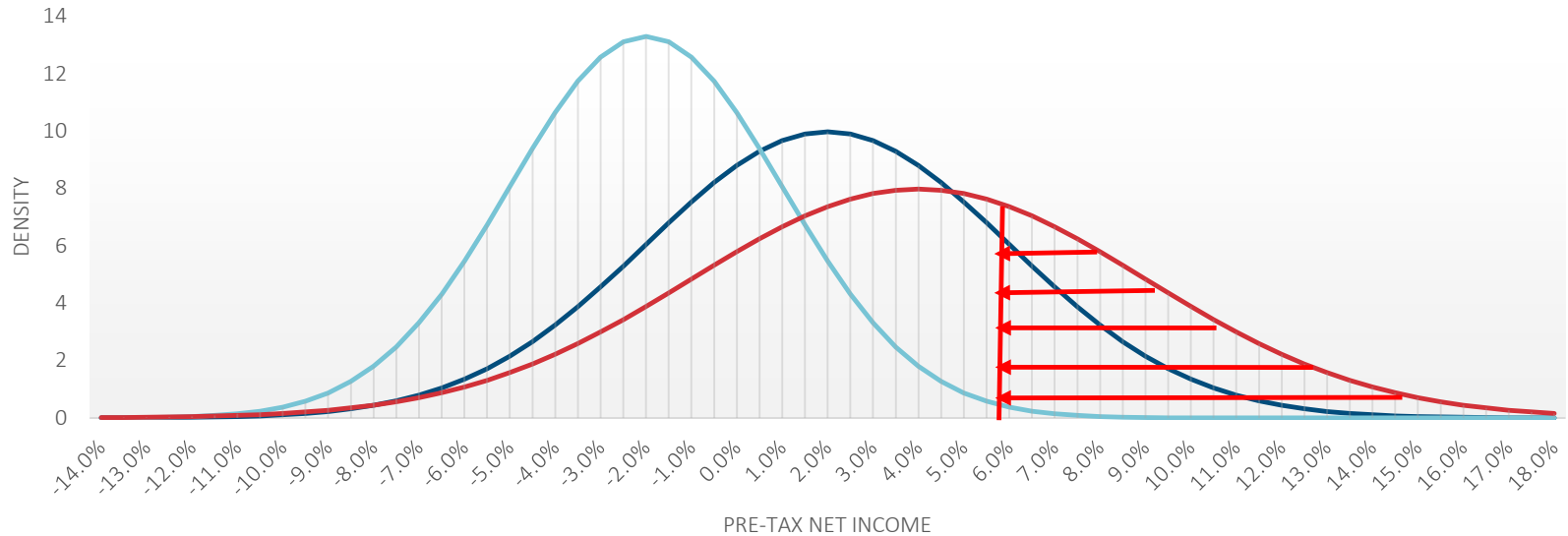
Example: 3 MCOs

Pre-tax Net Income with $\mu_1 = 2\%$, $\sigma_1 = 4\%$; $\mu_2 = -2\%$, $\sigma_2 = 3\%$; $\mu_3 = 4\%$, $\sigma_3 = 5\%$



Example: 3 MCOs

$\mu_1 = 2\%$, $\sigma_1 = 4\%$; $\mu_2 = -2\%$, $\sigma_2 = 3\%$; $\mu_3 = 84\%$, $\sigma_3 = 4\%$; max PTNI = 6%



Example: 3 MCOs

- Some MCOs may chronically underachieve or overachieve, causing there to be different means
 - Different means increase the expected industry-wide remittances
- MCOs' performance would likely be positively correlated, as all MCOs face the same pricing risks
- Could use historical MCO remittances to approximate additional amounts needed to counteract minimum MLR
- Some MCOs are more likely to be impacted by minimum MLRs, but any premium adjustment should affect all MCOs equally

Withholds in Medicaid

- “Withholds” refer to the withholding of part of the premium to be returned to an MCO, in part or in full, if the MCO can achieve some objectives (i.e., quality measures). MCOs may be required to share withholds with providers.
- The attainability of recovering withholds varies by the program
- ASOP 49 3.2.15 Performance Withholds and Incentives
 - *“3.2.15 Performance Withholds and Incentives—The actuary should consider how the existence of the withholds and incentives will affect the plan costs, including claims and administration costs. The **capitation rates** should reflect the value of the portion of the withholds for targets that the **MCOs** can reasonably achieve.”*
- 42 C.F.R. §438.6(b)(3)
 - *“Contracts that provide for a withhold arrangement must ensure that the capitation payment minus any portion of the withhold that is not reasonably achievable is actuarially sound as determined by the actuary.”*

Measuring Reasonable Achievability

- Use prior years' experience
- If no prior experience available
 - Assess how MCOs would have measured up to standards and assess withhold-driven behavior changes
 - Use data from other states
- No matter the method, looking for E(return of withhold)

Example

- Objective: maintain intended expected UW gain, while allowing withhold to incentivize MCO behavior
- Example
 - $E(\text{return of withhold}) = 75\%$
 - $\text{Withhold} = 2\% \text{ of premium}$
 - $\text{Sharing with provider} = 50\%$
 - $E(\text{loss of premium}) = 75\% \times 2\% \times 50\% + 25\% \times 2\% = 1.25\% \text{ of premium}$
 - $\text{Load for withhold} = \text{Premium} \times \left(\frac{1}{1 - E(\text{loss of premium})} - 1 \right) = \text{Premium} \times \left(\frac{1}{1 - 1.25\%} - 1 \right) = 1.27\% \text{ of Premium}$

Conclusion

- UW gain adjustments due to risk sharing or withholds are based on a shared premise:
 - the actuary should set UW gain based on their assessment of the cost of capital and risk margin
 - outside forces such as risk sharing and withholds may change the expected distribution of pre-tax net income, but adjustments should be made to the UW gain to preserve the intended expected value

Capital Infusions

Losses reduce MCO capital reserves

- Capital must be raised to replenish the reserves

Cost to raise capital is similar to initial cost of capital

- Small losses are unlikely to change the cost of raising capital
- Large losses may have adverse impacts on a company's ability to raise capital and the cost of that capital (Not considered in Model)

Model reflects the additional cost of capital incurred when a scenario results in a loss

- Cost of capital infusion = PMPM Loss x WACC

Risk Margin Model

CAPITATION RATE COMPONENT	
UW Gain: Margin for Risk and Contingency	0.90%
UW Gain: Cost of Capital Infusions	0.06%

Components of UW Gain determined using the probability model

RATE DEVELOPMENT INPUTS		
Rate Development Point Estimates	PMPM	% of Premium
Expected Net Income (Before Tax)	\$ 6.67	2.00%
Premium (Capitation Rate)	\$ 333.32	
Withhold Unachieved	(1.67)	-0.50%
Expected Claims Expense	(285.54)	-85.67%
Expected Admin Expense	(31.28)	-9.38%
Premium Tax Expense	(7.50)	-2.25%

Summary of rate development – Used to determine net income

Claims expense is replaced in each scenario

KEY STATISTIC SUMMARY		
Net Income Drivers	PMPM	% of Premium
Gain / (Loss)	\$ 6.87	2.06%
Cost of Capital Infusions	(0.20)	-0.06%
Realized Net Income (Before Tax)	\$ 6.67	2.00%
MLR Min/Max Statistics	Boundary	Probability
Minimum MLR	85.0%	9.20%
Maximum MLR	N/A	-

Gain / (Loss) = Net income before raising additional capital

Cost of capital infusions is not captured on common reports

Risk Margin Model

(Part 1 of 2)

AVERAGE OF SCENARIOS

Initial MCO Experience

Claims Loss Ratio	Claims Expenses	Initial Net Income		Density	Probability
		PMPM	Percent		
85.67%	\$ 285.54	\$ 7.33	2.20%	1000000.0	100.00%

Remittance MLR Formula

MCO MLR	MLR Defined		Capped Loss Ratio	Transfer Payment Expense / (Receivable)
	QI Expenses	Numerator / Denominator		
89.06%	\$ 4.63	\$ 290.17 / \$ 325.82	89.20%	\$ 0.46

UNIQUE MODELED SCENARIOS

Initial MCO Experience

Claims Loss Ratio	Claims Expenses	Initial Net Income		Density	Probability
		PMPM	Percent		
50.00%	\$ 166.66	\$ 126.21	37.9%	0.0	0.00%
78.90%	\$ 262.99	\$ 29.88	9.0%	1095.3	0.11%
79.00%	\$ 263.32	\$ 29.55	8.9%	1174.4	0.12%
79.10%	\$ 263.65	\$ 29.22	8.8%	1258.2	0.13%
91.60%	\$ 305.32	\$ (12.45)	-3.7%	1906.7	0.19%
91.70%	\$ 305.65	\$ (12.78)	-3.8%	1789.6	0.18%
91.80%	\$ 305.98	\$ (13.11)	-3.9%	1678.2	0.17%
150.00%	\$ 499.98	\$ (207.10)	-62.1%	0.0	0.00%

Remittance MLR Formula

MCO MLR	MLR Defined		Capped Loss Ratio	Transfer Payment Expense / (Receivable)
	QI Expenses	Numerator / Denominator		
52.57%	\$ 4.63	\$ 171.29 / \$ 325.82	85.00%	\$ 105.66
82.14%	\$ 4.63	\$ 267.62 / \$ 325.82	85.00%	\$ 9.33
82.24%	\$ 4.63	\$ 267.95 / \$ 325.82	85.00%	\$ 8.99
82.34%	\$ 4.63	\$ 268.28 / \$ 325.82	85.00%	\$ 8.66
95.13%	\$ 4.63	\$ 309.95 / \$ 325.82	95.13%	\$ -
95.23%	\$ 4.63	\$ 310.28 / \$ 325.82	95.23%	\$ -
95.33%	\$ 4.63	\$ 310.61 / \$ 325.82	95.33%	\$ -
154.87%	\$ 4.63	\$ 504.61 / \$ 325.82	154.87%	\$ -

Modeled Experience

Probability

Application of MLR Caps and Transfer Payment

Risk Margin Model

(Part 2 of 2)

AVERAGE OF SCENARIOS

Capped MCO Experience										
Claims Loss Ratio	~	Claims Expenses	~	Admin & Prem Tax Expenses	~	Gain / (Loss)		Cost of Capital Infusions	Net Income	
						PMPM	% Revenue		PMPM	% Revenue
85.35%	~	\$ 286.00	~	\$ 38.78	~	\$ 6.87	2.06%	\$ (0.20)	\$ 6.67	2.00%

UNIQUE MODELED SCENARIOS

Capped MCO Experience										
Claims Loss Ratio	~	Claims & Transfer Expenses	~	Admin & Prem Tax Expenses	~	Gain / (Loss)		Cost of Capital Infusions	Net Income	
						PMPM	% Revenue		PMPM	% Revenue
50.00%	~	\$ 272.31	~	\$ 38.78	~	\$ 20.56	6.17%	\$ -	\$ 20.56	6.17%
.....	~	~	~
78.90%	~	\$ 272.31	~	\$ 38.78	~	\$ 20.56	6.17%	\$ -	\$ 20.56	6.17%
79.00%	~	\$ 272.31	~	\$ 38.78	~	\$ 20.56	6.17%	\$ -	\$ 20.56	6.17%
79.10%	~	\$ 272.31	~	\$ 38.78	~	\$ 20.56	6.17%	\$ -	\$ 20.56	6.17%
.....	~	~	~
91.60%	~	\$ 305.32	~	\$ 38.78	~	\$ (12.45)	-3.73%	\$ (1.79)	\$ (14.24)	-4.27%
91.70%	~	\$ 305.65	~	\$ 38.78	~	\$ (12.78)	-3.83%	\$ (1.84)	\$ (14.62)	-4.39%
91.80%	~	\$ 305.98	~	\$ 38.78	~	\$ (13.11)	-3.93%	\$ (1.89)	\$ (15.00)	-4.50%
.....	~	~	~
150.00%	~	\$ 499.98	~	\$ 38.78	~	\$ (207.10)	-62.13%	\$ (29.83)	\$ (236.94)	-71.09%

Summarized Capped Experience

Capital Infusion and Net Income

UWG Model



User Inputs

COST OF CAPITAL INPUTS	
WACC Components	
Risk Free Rate	2.8%
Market Expected Return	13.2%
Beta	0.940
Cost of Debt (Borrowing Rate)	5.0%
Capital Structure	
Debt % of Total	20%
Equity % of Total	80%
Tax Rate	
Federal	21.0%
State	5.0%
RBC/Equity Ratio - average held by MCOs*	0.121
Minimum RBC/Equity Ratio**	0.100
200% RBC/Equity Ratio***	0.070

RISK MARGIN INPUTS	
Capitation Rate Components	
MCO Member Months	6,989,448
Claims Expense PMPM	\$ 285.54
Admin Expense PMPM	\$ 31.28
Premium Tax	2.25%
Withhold	
Withhold - Percentage of Revenue at Risk	2.0%
Expected Recoupment	75.0%
Remittance and Risk Sharing	
MLR Net of Prem Tax	<input checked="" type="checkbox"/>
Minimum MLR	<input checked="" type="checkbox"/> 85.0%
Maximum MLR	<input type="checkbox"/> 95.0%
QI Allowance (PMPM)	\$ 4.63
Net Income Model	
Expected Net Income (Before Tax)	2.00%
Number of Samples	1000

Calculate
UW Gain

Click
to
Run

* Note: 100% of RBC/Equity is ~3.5% - 4.0% of revenue (factor of 0.035-0.04)

** State Regulatory Agency Minimum RBC or equivalent

*** NAIC minimum RBC is 200%

Cost of Capital Development

COST OF CAPITAL

Equity Risk Premium

Market Expected Return		13.2%
Risk Free Rate	-	<u>2.8%</u>
Equity Risk Premium	=	10.4%

Tax Rate

Federal Tax Rate		21.0%
State Tax Rate		5.0%
Total Tax Rate		25.0%

Cost of Equity

Equity Risk Premium		10.4%
Beta	x	0.94
Risk Free Rate	+	<u>2.8%</u>
After Tax Cost of Equity	=	12.6%
After Tax Yield (1 - Tax Rate)	÷	<u>75.1%</u>
Cost of Equity (Before Tax)		16.8%

Weighted Average Cost of Capital (WACC)

	Weight		Rate
Cost of Equity	80%	x	16.8%
Cost of Debt	+ 20%	x	<u>5.0%</u>
WACC	=		14.4%

Capitation Rate Component

Required Capital : Prem Ratio		0.121
WACC	x	<u>14.4%</u>
UW Gain: Cost of Capital		1.74%

Risk Margin Development

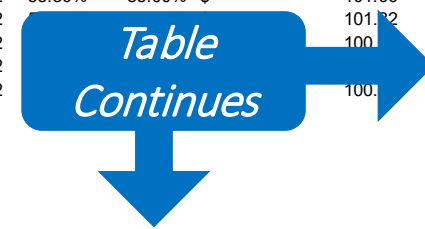
CAPITATION RATE COMPONENT		
UW Gain: Margin for Risk and Contingency		0.90%
UW Gain: Cost of Capital Infusions		0.06%

RATE DEVELOPMENT INPUTS		
Rate Development Point Estimates	PMPM	% of Premium
Expected Net Income (Before Tax)	\$ 6.67	2.00%
Premium (Capitation Rate)	\$ 333.32	
Withhold Unachieved	(1.67)	-0.50%
Expected Claims Expense	(285.54)	-85.67%
Expected Admin Expense	(31.28)	-9.38%
Premium Tax Expense	(7.50)	-2.25%

KEY STATISTIC SUMMARY		
Net Income Drivers	PMPM	% of Premium
Gain / (Loss)	\$ 6.87	2.06%
Cost of Capital Infusions	(0.20)	-0.06%
Realized Net Income (Before Tax)	\$ 6.67	2.00%
MLR Min/Max Statistics	Boundary	Probability
Minimum MLR	85.0%	9.20%
Maximum MLR	N/A	-

AVERAGE OF SCENARIOS										
Initial MCO Experience					Remittance MLR Formula					
Claims	Claims	Initial Net Income			MLR Defined		MCO	Capped	Transfer Payment	
Loss Ratio	Expenses	PMPM	Percent	Probability	QI Expenses	Numerator	Denominator	MLR	Loss Ratio Expense / (Receivable)	
85.67%	\$ 285.54	\$ 7.33	2.20%	100.00%	\$ 4.63	\$ 290.17	\$ 325.82	89.06%	89.20%	\$ 0.46

UNIQUE MODELED SCENARIOS										
Initial MCO Experience					Remittance MLR Formula					
Claims	Claims	Initial Net Income			MLR Defined		MCO	Capped	Transfer Payment	
Loss Ratio	Expenses	PMPM	Percent	Probability	QI Expenses	Numerator	Denominator	MLR	Loss Ratio Expense / (Receivable)	
50.00%	\$ 166.66	\$ 126.21	37.9%	0.00%	\$ 4.63	\$ 171.29	\$ 325.82	52.57%	85.00%	\$ 105.66
50.10%	\$ 166.99	\$ 125.88	37.8%	0.00%	\$ 4.63	\$ 171.62	\$ 325.82	52.67%	85.00%	\$ 105.32
50.20%	\$ 167.33	\$ 125.55	37.7%	0.00%	\$ 4.63	\$ 171.96	\$ 325.82	52.78%	85.00%	\$ 104.99
50.30%	\$ 167.66	\$ 125.21	37.6%	0.00%	\$ 4.63	\$ 172.29	\$ 325.82	52.88%	85.00%	\$ 104.66
50.40%	\$ 167.99	\$ 124.88	37.5%	0.00%	\$ 4.63	\$ 172.62	\$ 325.82	52.98%	85.00%	\$ 104.32
50.50%	\$ 168.33	\$ 124.55	37.4%	0.00%	\$ 4.63	\$ 172.96	\$ 325.82	53.08%	85.00%	\$ 103.99
50.60%	\$ 168.66	\$ 124.21	37.3%	0.00%	\$ 4.63	\$ 173.29	\$ 325.82	53.19%	85.00%	\$ 103.66
50.70%	\$ 168.99	\$ 123.88	37.2%	0.00%	\$ 4.63	\$ 173.62	\$ 325.82	53.29%	85.00%	\$ 103.32
50.80%	\$ 169.32	\$ 123.55	37.1%	0.00%	\$ 4.63	\$ 173.95	\$ 325.82	53.39%	85.00%	\$ 102.99
50.90%	\$ 169.66	\$ 123.21	37.0%	0.00%	\$ 4.63	\$ 174.29	\$ 325.82	53.49%	85.00%	\$ 102.66
51.00%	\$ 169.99	\$ 122.88	36.9%	0.00%	\$ 4.63	\$ 174.62	\$ 325.82	53.59%	85.00%	\$ 102.32
51.10%	\$ 170.32	\$ 122.55	36.8%	0.00%	\$ 4.63	\$ 174.95	\$ 325.82	53.70%	85.00%	\$ 101.99
51.20%	\$ 170.66	\$ 122.21	36.7%	0.00%	\$ 4.63	\$ 175.29	\$ 325.82	53.80%	85.00%	\$ 101.66
51.30%	\$ 170.99	\$ 121.88	36.6%	0.00%	\$ 4.63	\$ 175.62	\$ 325.82			\$ 101.32
51.40%	\$ 171.32	\$ 121.55	36.5%	0.00%	\$ 4.63	\$ 175.95	\$ 325.82			\$ 100.99
51.50%	\$ 171.66	\$ 121.21	36.4%	0.00%	\$ 4.63	\$ 176.29	\$ 325.82			\$ 100.66
51.60%	\$ 171.99	\$ 120.88	36.3%	0.00%	\$ 4.63	\$ 176.62	\$ 325.82			\$ 100.32



Model Summary

UW Gain (rate component) of 2.70% produces Expected Net Income (Before Tax) of 2.00%.

STATISTICAL SUMMARY

Gain Interval	Probability
0 - 2%	24.2%
2 - 4%	25.2%
4 - 6%	16.9%
6 - 8%	10.3%
8 - 10%	0.0%
10+%	0.0%
Probability of Gain	76.6%
Expected Gain Given Gain	3.2%

Loss Interval	Probability
0 - 2%	14.0%
2 - 4%	6.3%
4 - 6%	2.4%
6 - 8%	0.6%
8 - 10%	0.1%
10+%	0.0%
Probability of Loss	23.4%
Expected Loss Given Loss	-2.0%

Ruin Loss Indicators	Probability
RBC/Equity reduced below min required	8.85%
RBC/Equity reduced below 200%	1.48%
Total Loss of RBC/Equity	0.00%

MCO FINANCIAL SUMMARIES

Income Summary	PMPM	Dollars	% of Revenue
Average MCO Member Months		6,989,448	
Revenue			
Total Capitation	\$ 333.32	\$ 2,329,700,726	100.00%
Less Withhold not Achieved	\$ (1.67)	\$ (11,648,504)	-0.50%
<u>Expected MLR Rebate/(Payment)</u>	<u>\$ (0.46)</u>	<u>\$ (3,246,617)</u>	<u>-0.14%</u>
Net Revenue	\$ 331.19	\$ 2,314,805,606	99.36%
Expenses			
Claims	\$ 285.54	\$ 1,995,766,982	85.67%
Admin	\$ 31.28	\$ 218,629,933	9.38%
Premium Tax	\$ 7.50	\$ 52,418,266	2.25%
<u>Expected Capital Infusions</u>	<u>\$ 0.20</u>	<u>\$ 1,396,410</u>	<u>0.06%</u>
Total Expenses	\$ 324.52	\$ 2,268,211,591	97.36%
Expected Net Income (Before Tax)	\$ 6.67	\$ 46,594,014	2.00%

Cost of Capital Summary	PMPM	Dollars	% of Revenue
Required Capital	\$ 40.33	\$ 281,893,788	12.10%
Annual Cost of Capital (After Tax)	\$ 4.36	\$ 30,476,600	1.31%
Tax Rate			
Federal Tax Rate	21.0%		
State Tax Rate	5.0%		
Total Tax Rate	25.0%		
Annual Cost of Capital (Before Tax)	\$ 5.81	\$ 40,608,394	1.74%

Model Summary

UW Gain (rate component) of 2.70% produces Expected Net Income (Before Tax) of 2.00%.

UNDERWRITING (UW) GAIN	
Cost of Capital: Initial Investment	1.74%
Cost of Capital Infusions	0.06%
Margin for Risk & Contingency	0.90%
UW Gain	2.70%

EXPECTED PRE-TAX NET INCOME	
UW Gain (Rate Component)	2.70%
Less Withhold Not Achieved	-0.50%
Less Capital Infusions	-0.06%
Less MLR Cap(s)	-0.14%
Expected Net Income (Before Tax)	2.00%

Revise Target

STATISTICAL SUMMARY

Gain Interval	Probability
0 - 2%	24.2%
2 - 4%	25.2%
4 - 6%	16.9%
6 - 8%	10.3%
8 - 10%	0.0%
10+%	0.0%
Probability of Gain	76.6%
Expected Gain Given Gain	3.2%

Loss Interval	Probability
0 - 2%	14.0%
2 - 4%	6.3%
4 - 6%	2.4%
6 - 8%	0.6%
8 - 10%	0.1%
10+%	0.0%
Probability of Loss	23.4%
Expected Loss Given Loss	-2.0%

Ruin Loss Indicators	Probability
RBC/Equity reduced below min required	8.85%
RBC/Equity reduced below 200%	1.48%
Total Loss of RBC/Equity	0.00%

Actuarial Judgement: Probability of Loss < 20%

User Inputs - Revised

COST OF CAPITAL INPUTS	
WACC Components	
Risk Free Rate	2.8%
Market Expected Return	13.2%
Beta	0.940
Cost of Debt (Borrowing Rate)	5.0%
Capital Structure	
Debt % of Total	20%
Equity % of Total	80%
Tax Rate	
Federal	21.0%
State	5.0%
RBC/Equity Ratio - average held by MCOs*	0.121
Minimum RBC/Equity Ratio**	0.100
200% RBC/Equity Ratio***	0.070

RISK MARGIN INPUTS	
Capitation Rate Components	
MCO Member Months	6,989,448
Claims Expense PMPM	\$ 285.54
Admin Expense PMPM	\$ 31.28
Premium Tax	2.25%
Withhold	
Withhold - Percentage of Revenue at Risk	2.0%
Expected Recoupment	75.0%
Remittance and Risk Sharing	
MLR Net of Prem Tax	<input checked="" type="checkbox"/>
Minimum MLR	<input checked="" type="checkbox"/> 85.0%
Maximum MLR	<input type="checkbox"/> 95.0%
QI Allowance (PMPM)	\$ 4.63
Net Income Model	
Expected Net Income (Before Tax)	2.35%
Number of Samples	1000

Calculate UW Gain

New Target = 2.35%

* Note: 100% of RBC/Equity is ~3.5% - 4.0% of revenue (factor of 0.035-0.04)

** State Regulatory Agency Minimum RBC or equivalent

*** NAIC minimum RBC is 200%

Model Summary - Revised

UW Gain (rate component) of 3.07%
produces Expected Net Income (Before Tax) of 2.35%.

UNDERWRITING (UW) GAIN	
Cost of Capital: Initial Investment	1.74%
Cost of Capital Infusions	0.05%
Margin for Risk & Contingency	1.28%
UW Gain	3.07%


EXPECTED PRE-TAX NET INCOME	
UW Gain (Rate Component)	3.07%
Less Withhold Not Achieved	-0.50%
Less Capital Infusions	-0.05%
Less MLR Cap(s)	-0.18%
Expected Net Income (Before Tax)	2.35%

STATISTICAL SUMMARY

Gain Interval	Probability
0 - 2%	22.6%
2 - 4%	25.9%
4 - 6%	19.2%
6 - 8%	13.1%
8 - 10%	0.0%
10+%	0.0%
Probability of Gain	80.8%
Expected Gain Given Gain	3.4%

Loss Interval	Probability
0 - 2%	11.5%
2 - 4%	5.2%
4 - 6%	1.9%
6 - 8%	0.5%
8 - 10%	0.1%
10+%	0.0%
Probability of Loss	19.2%
Expected Loss Given Loss	-2.0%

Ruin Loss Indicators	Probability
RBC/Equity reduced below min required	7.22%
RBC/Equity reduced below 200%	1.13%
Total Loss of RBC/Equity	0.00%

 **Probability of Loss = 19.2%**

Questions



Closing





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