



Do You Understand the Assumptions in Your Actuarial Estimates?

Marcus Beverly, ARM
Michael Harrington, FCAS, MAAA
James Marta, CPA, CGMA, ARPM



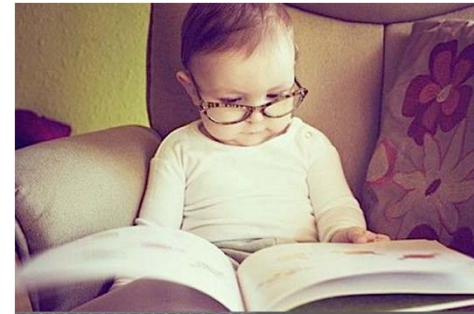
REC OPE
FOR SUCCESS

SEPTEMBER 12-15, 2017
SOUTH LAKE TAHOE, CA



Speakers

Marcus Beverly, Alliant
Pool Management Perspective



Mike Harrington, Bickmore
Actuarial Perspective



James Marta, James Marta & Co
Finance Perspective



REC  **PE**
FOR SUCCESS

SEPTEMBER 12-15, 2017
SOUTH LAKE TAHOE, CA



Why Are We Here?

The goal of our presentation is to give you insight into:

- Reviewing the key assumptions in your actuarial report
- Understanding how these key assumptions affect the results and conclusions in your actuarial report
- Using this knowledge to properly manage your pool



REC  **PE**
FOR SUCCESS

SEPTEMBER 12-15, 2017
SOUTH LAKE TAHOE, CA



Why Do We Have An Actuarial Report?

Actuary Study Used For

1. Assessing Pool Feasibility
2. Valuing Liabilities
3. Determining Appropriate Program Surplus
4. Setting Rates
5. Calculating Experience Modification Factors
6. Making Refund or Assessment Decisions



The assumptions in the actuarial report can materially impact the resulting estimates and conclusions, and ultimately the decisions made by the board and members



REC  **PE**
FOR SUCCESS

SEPTEMBER 12-15, 2017
SOUTH LAKE TAHOE, CA



Key Assumptions

- Coverage Details
- Exposure Measures
- Accuracy and Completeness of Data
- Loss Development
- Inflationary and Legislative Trends
- Discount Rate
- Confidence Level
- Claim Administration
- Past Experience → Future Experience



Assumptions + Data + Judgement = Actuarial Estimates!




REC  **PE**
FOR SUCCESS

SEPTEMBER 12-15, 2017
SOUTH LAKE TAHOE, CA



Program Coverage

What questions should you ask?

- Do you and your actuary understand your program's coverages?
 - What is covered, what is not?
 - What are the coverage limits?
 - Are there aggregates?
 - Are there SIR's, Deductibles, Maintenance Deductibles, Corridors?
 - Are the coverage assumptions in the actuarial report consistent with the actual program structure?
- 
- A close-up photograph of an insurance policy document. The words "INSURANCE POLICY" are printed in large, bold, black capital letters. Below the title, there is a form with various fields, some of which are partially filled out. A black fountain pen lies horizontally across the top left of the document, and a pair of black-rimmed glasses is positioned in the top right corner. The background is a plain, light-colored surface.



RECIPE
FOR SUCCESS

SEPTEMBER 12-15, 2017
SOUTH LAKE TAHOE, CA



The Data

- Actuarial Data includes:
 - Exposure Information
 - Payroll, Full-Time Equivalent (FTE), Total Insured Value (TIV), Population, Autos, Mileage
 - Loss Information
 - Loss, Allocated Loss Adjustment Expenses (ALAE)
 - Payments, Case Reserves
 - Financial Information
 - Assets, Liabilities (Balance Sheet)
 - Historical Revenue and Expense (Income Statement)
 - Budgeted Revenue and Expense



SEPTEMBER 12-15, 2017
SOUTH LAKE TAHOE, CA



What's The Deal With The Loss Data?

What questions should you ask?

- To what extent does the actuarial report rely upon your own pool's loss experience?
 - Does the data have "credibility"?
 - Is there enough data to be predictable?
- To what extent does the report rely upon industry data?
- Is the data complete? (policy years, programs)
- What is included / excluded? (ALAE, 4850, noncovered)
- Is the loss data consistent with prior loss data?
- Any expected future losses not contained in historical?



REC
FOR SUCCESS

SEPTEMBER 12-15, 2017
SOUTH LAKE TAHOE, CA



What's The Deal With The Financial Data?



What questions should you ask?

- Are assets actual or estimated?
- How are future assets estimated? Are they reasonable?
- Is discount rate assumption consistent with historical investment returns? If not, why?
- Do the rates include program expenses in addition to loss?
 - Excess Insurance, Risk Control, Claims Administration?
- Are the expenses used in rates consistent with the latest budget amounts?
- Is the loss data used consistent with losses on financials?



REC  PE
FOR SUCCESS

SEPTEMBER 12-15, 2017
SOUTH LAKE TAHOE, CA



What About Loss Development?

What questions should you ask?

- Have there been any changes in loss development assumptions?
- Have you made any changes to payment patterns?
 - Shorter-tailed? Longer-tailed?
- Have there been changes in claims closure patterns?
- Have there been any changes in claims settlement practices
 - Claims Closure Initiatives (C&R Claims?)
 - Claims reserving (Strengthening? Weakening?)
- Have there been exposure changes that might affect loss development?



REC  **PE**
FOR SUCCESS

SEPTEMBER 12-15, 2017
SOUTH LAKE TAHOE, CA



What About Future Trends?

What questions should you ask?

- What are the inflation assumptions in the report?
- Are there adjustments being made to adjust for changes in historical benefit levels?
- Have there been changes in inflation assumptions?
- How is the future likely to be different than indicated from historical trends?
- Should we be changing our program as a result of adverse trends?

#trends



REC  **PE**
FOR SUCCESS

SEPTEMBER 12-15, 2017
SOUTH LAKE TAHOE, CA



Discounting

- Reserve discounting adjusts actuarial estimates for the time value of money.
 - Since you don't have to pay all the claims today, you can invest assets and generate income from investments.
 - This decreases the net cost of claims
- Discounting claims builds in an assumption of
 - Payment patterns
 - Earning rates
 - Investment balances

Discount Rate Selected	3.75%	3.00%	2.00%	1.00%
Claim Liabilities	261,549,235	282,814,663	319,027,743	357,928,374
Net Position Balance	12,855,925	(8,095,059)	(44,308,140)	(83,208,770)



What About Discounting?

What questions should you ask?

- What discount rate are you selecting?
- Who selects this rate?
- What is the rate based on?
- Can't I pick what ever discount rate I want?
- What is the impact of the discounting assumption?
- Can you discount claims if you don't have the investment balances?
- What is the effect if claims are paid earlier?

Formula

$$NPV = \sum_{i=1}^n \frac{Value_i}{(1+r)^i}$$



REC PE
FOR SUCCESS

SEPTEMBER 12-15, 2017
SOUTH LAKE TAHOE, CA



Confidence Levels

- The majority of actuarial calculations are done at the “Expected Level” (Average or Central Estimates).
- “Confidence Level” estimates are also provided, which provide a safety margin above the “Expected Level”.
- Describes the degree to which funding supporting outstanding liabilities is likely to exceed the actual value of losses after all claims have been settled.
- “Expected Level” is approximately “55% Confidence Level”



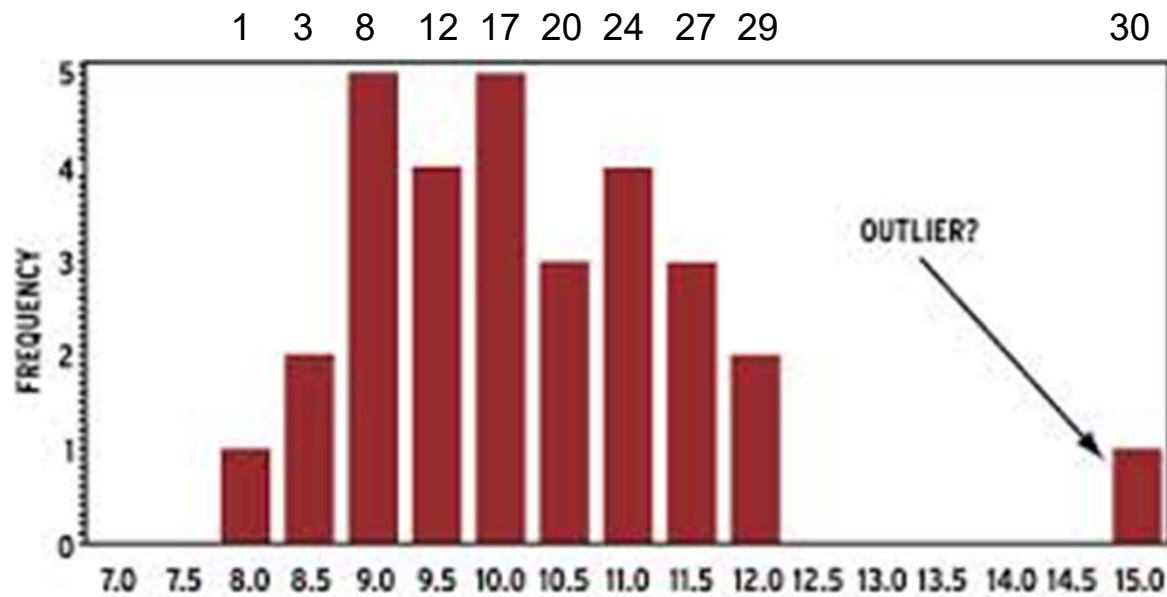
RECIPE
FOR SUCCESS

SEPTEMBER 12-15, 2017
SOUTH LAKE TAHOE, CA



Law of Large Numbers

“Nature has established patterns describing the frequency of various outcomes...and some are pretty ugly!”



90% Confidence Level



REC
FOR SUCCESS

SEPTEMBER 12-15, 2017
SOUTH LAKE TAHOE, CA



Claims Administration

Unallocated Loss Adjustment Expenses (ULAE) = cost to administer claims that is not directly charged to the file.

What questions should you ask?

- What is the basis for the ULAE calculation?
- Who can best generate the data for this calculation?
 - Actuary?
 - Claims administrator?
 - Joint Powers Authority administration?
- Is ULAE being included in the rate and the total recorded liability?



RECOPE
FOR SUCCESS

SEPTEMBER 12-15, 2017
SOUTH LAKE TAHOE, CA



Key Results and Uses

- Outstanding liabilities at expected confidence level.
- Outstanding liabilities at higher confidence levels (60-90%)
- Estimated funding (premium) for upcoming program year
- Funding at expected and at higher confidence levels
- Premium allocations to pool members



REC PE
FOR SUCCESS

SEPTEMBER 12-15, 2017
SOUTH LAKE TAHOE, CA



Outstanding Liabilities

- Liabilities at expected level used for financial reporting
 - “Must Have” enough assets to cover this amount
 - $\text{Assets} - \text{Expected Liabilities} = \text{Net Position (Net Assets, Surplus, or Equity)}$
- Liabilities at higher confidence levels used to determine risk margin or financial health of the pool
 - “Should Have” assets to cover liabilities at 70-90% confidence level
- Liabilities at 90% or more used to determine ability to pay dividends or to provide for long-term catastrophic events



SEPTEMBER 12-15, 2017
SOUTH LAKE TAHOE, CA



How to review your actuary report

- Verify the data in the report to your reconciled loss data
- Compare assumptions in report to the prior year assumptions
- Evaluate the assumptions to determine that they are valid
- Review the actuarial approach to see if it changed from the prior year.
- Step back and evaluate whether the results and conclusions make sense.

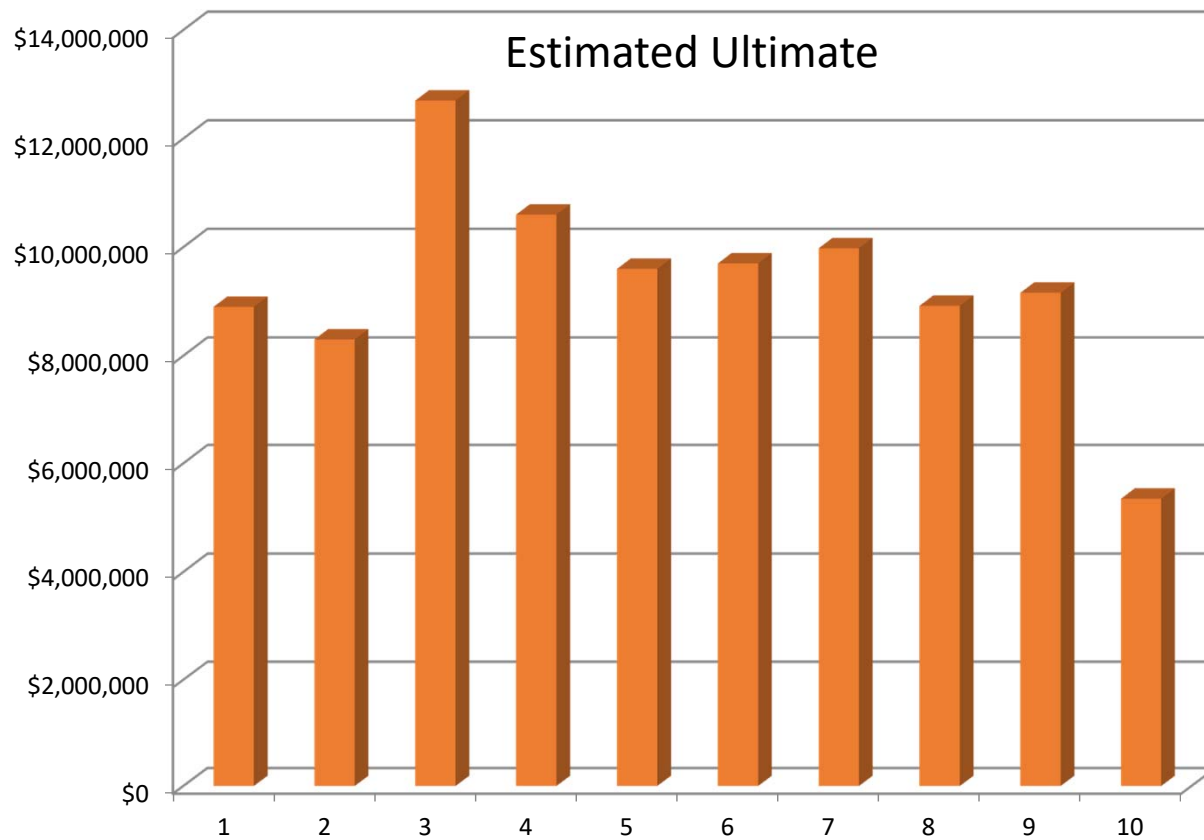


RECIPE
FOR SUCCESS

SEPTEMBER 12-15, 2017
SOUTH LAKE TAHOE, CA



Does it make sense?



Huh?



REC PE
FOR SUCCESS

SEPTEMBER 12-15, 2017
SOUTH LAKE TAHOE, CA



Other Considerations

- Did you read the whole report?
- Does the report have the info in the form you need?
 - Sufficient detail
 - Relevant schedules
- Are the results clearly presented?
 - The liability you need to record
 - Comparison to target surplus levels
 - The rates you need to use
 - Confidence levels
 - Operating costs, if applicable
 - The discount assumptions used
 - Discussion about changes from the prior report



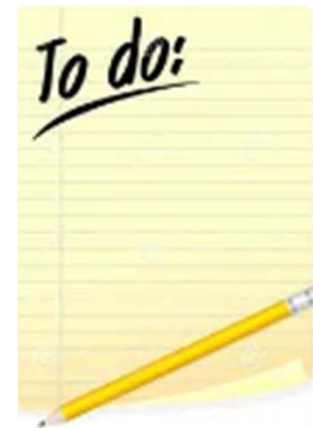
REC  **PE**
FOR SUCCESS

SEPTEMBER 12-15, 2017
SOUTH LAKE TAHOE, CA



Things to Do

- Maintain a table of your program metrics
- Maintain a table of historical assumptions
- Ensure that the pool manager, finance manager and actuary have a good understanding of the key assumptions
- How Sensitive Are the Results to Changes in the Assumptions??
- Communicate with your actuary and understand your report



RECIPE
FOR SUCCESS

SEPTEMBER 12-15, 2017
SOUTH LAKE TAHOE, CA



Will The Actuary Be Wrong?

- Actual loss experience WILL differ from the actuarially expected loss experience
- Actuarial estimates are “expected averages”, but nothing is ever average.
 - Who here has 2.3 kids??
- Big events don’t have parents.
 - “It Never Happened Before”
- Subjective Probability
- Provide a map of where we get hurt by what we don’t know



REC  **PE**
FOR SUCCESS

SEPTEMBER 12-15, 2017
SOUTH LAKE TAHOE, CA



The Actuary is Never Wrong!!

- The actuarial estimates are perfect!
- Well...they are the best estimates based upon the assumptions that go into the models.
- So if the assumptions are off, the results will be off.
- If the actuary and the pool manager work closely to “own” the assumptions in the actuarial report, the actuarial estimates will be as close as we can get!



REC  **PE**
FOR SUCCESS

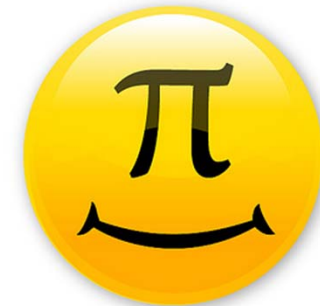
SEPTEMBER 12-15, 2017
SOUTH LAKE TAHOE, CA



Questions?

Ask an Actuary !

Call 1-800- $[(10x)^2 - 2x + 34]$



Have an
Irrational Day
3.14

Marcus Beverly, ARM

Michael Harrington, FCAS, MAAA

James Marta, CPA, CGMA, ARPM



REC PE
FOR SUCCESS

SEPTEMBER 12-15, 2017
SOUTH LAKE TAHOE, CA

