

Actuarial Concepts for Non-Actuaries

CAS Spring Meeting
May 2018



Joseph A. Herbers
ACAS, MAAA, CERA
Managing Principal



Ann M. Conway
FCAS, MAAA, CERA
Managing Director

Outline of Presentation

- The Business We Have Chosen
- Our Audiences
- Perceptions – Inward vs. External
- Actuarial Concepts
- Actuaries in the News
- Some Closing Thoughts

The Business We Have Chosen

What one word best describes the fundamental nature of the P/C business?

- Complex
- Litigious
- Cyclical
- Analytical
- Lags
- Other _____

2

The Business We Have Chosen

What phrase aptly describes the business we are in?

- You can't always get what you want
- Life's a b---- and then you die
- Bad stuff happens
- It's not fair
- What goes up must come down
- Other _____

3

Our Audiences

Non Actuaries

- General Public
- Insurance People
- Quasi-Insurance People
 - Finance Types
 - Risk Types
- Interested Students

Approach to communication should vary depending on the audience

4

Elevator Speech

- Estimators of value of future contingent events
- People who calculate insurance and annuity premiums, reserves and dividends
- Math Geeks of Insurance Industry
- The “Elite” of insurance business



5

How Actuaries are Perceived



6

Jargon Filled Presentations

- IBNR, IBNER, True IBNR, etc.
- Stochastic
- Credibility
- Process vs. Parameter Risk
- Poisson, Lognormal, Negative Binomial, Pareto, etc.
- Conditional Probability
- Copula
- Risk Margins
- CAT Cover
- ILS / Sidecars
- Collateralization
- Weighted Average Deviation
- On Level
- Convolution

7

How Can We Communicate Better



- Break down the concepts into fundamental elements
- Use audio/visual tools to supplement your narrative
- Incorporate parallel stories pertinent to the topic at hand
- Don't take yourself so seriously; we know with 100% certainty that our forecasts will not be exactly correct

8

IBNR

- Most everyone has heard of it
- Few (other than actuaries) truly understand it
- Many have a favorite acronym
 - Important But Not Really
 - It's Big 'N Real

9

IBNR is a Natural Consequence of Lags

Lags: Time will pass from the time premium is paid →
to the time a claim occurs →
to the time claim is reported →
to the time claim is closed →
then reopened →
and closed again.



10

IBNR – Why is it Needed

- Necessary due to natural lags in system
- Relationship to Paid / Case
- Explain its nature
- Prove that it is real
- Prove that it is Big

11

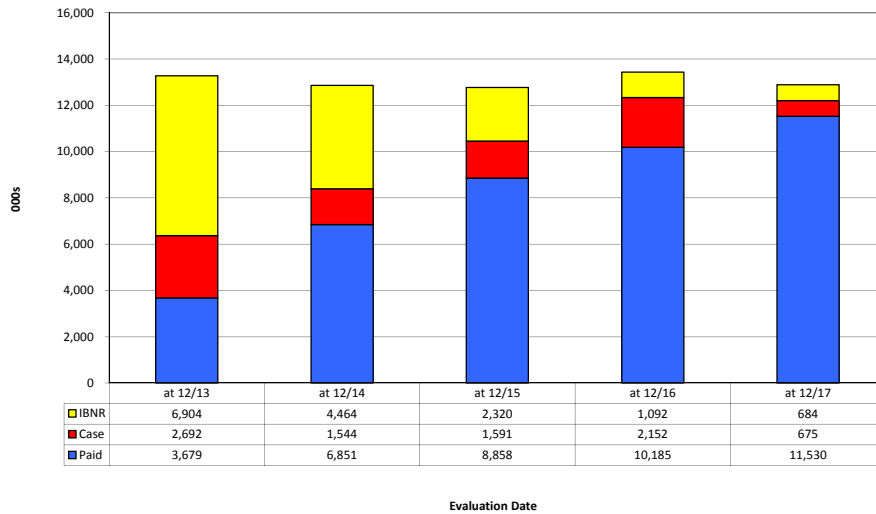
Components of Losses

Paid Loss	Indemnity + Expenses - Recoveries <ul style="list-style-type: none"> A hard auditable amount
Case Reserves	Adjuster estimates of value of individual claims <ul style="list-style-type: none"> A hard auditable amount
IBNR Reserves	A financial reserve estimated by actuary; re-estimated with a frequency <ul style="list-style-type: none"> A soft, fungible amount, generally calculated in bulk A moving target

12

Components of Ultimate Losses

13/14 Policy Period



13

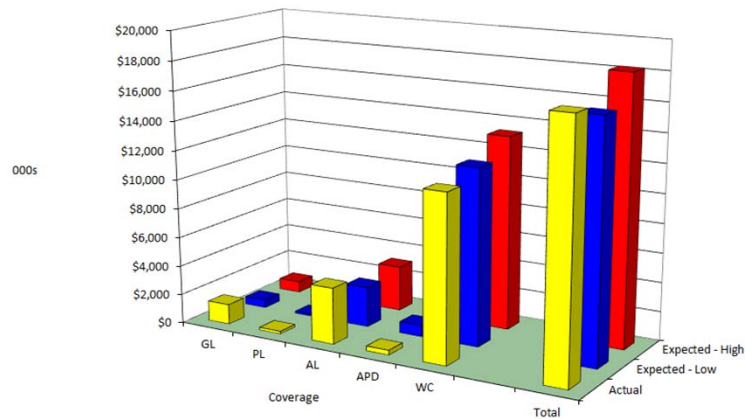
Characteristics of IBNR Reserves

- IBNR is an estimated value that is a moving target and changes over time
- It is a soft, fungible value
- IBNR is very large in more current (immature) policy periods
- IBNR declines over time for a given policy period as **Paid** amounts increase and Case reserves are updated
- There can be a need for **IBNR** reserves even after all claims have been closed

14

Comparison of Actual v Expected Incurred Loss Development

15/16 & Prior Policy Periods for the 12 months ending 9/30/2016



	GL	PL	AL	APD	WC	Total
Actual	\$1,376	180	3,851	325	11,341	17,072
Expected - Low	\$537	129	2,762	778	12,036	16,243
Expected - High	771	172	3,121	907	13,269	18,240

all values in 000s

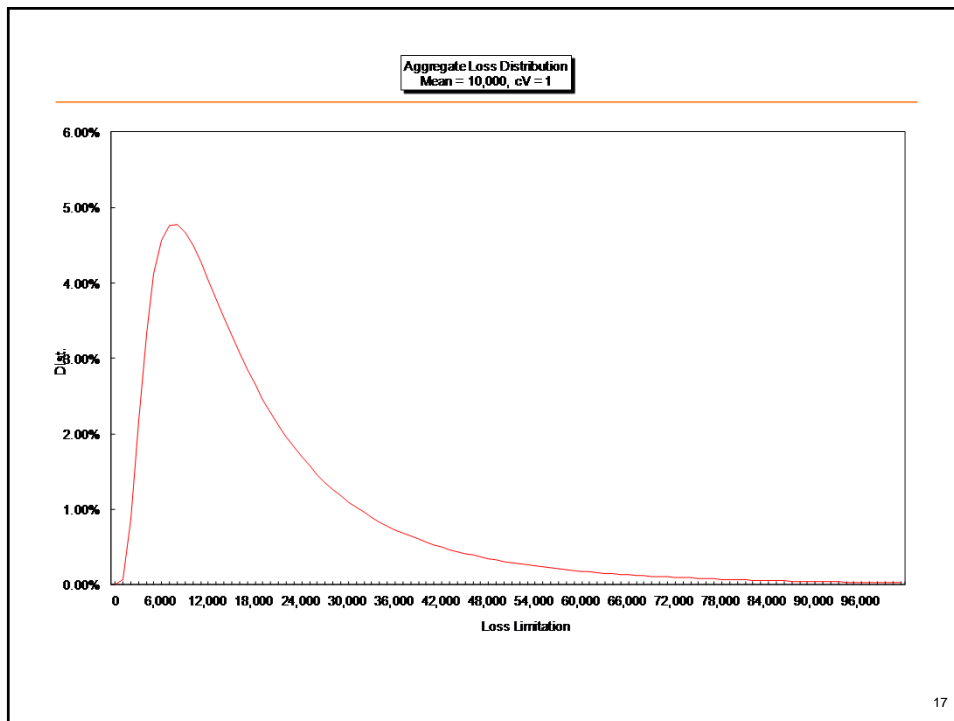
15

Risk Margins / Higher Confidence Levels

- Define Risk simply – deviation from expected
- We can measure deviations from averages from historical data
- Common measure of risk is in loss development patterns
- Make inferences about potential variability going forward

- Lots of Variability → Higher Risk
- Less Variability → Less Risk
- No Variability → No Risk

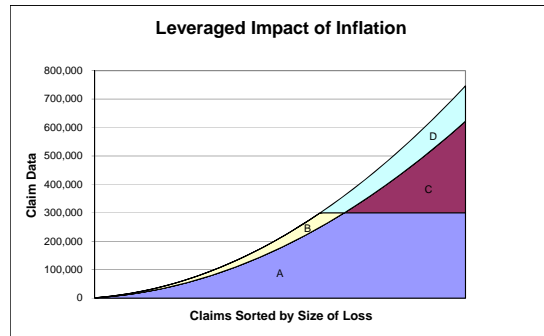
16



17

Need to Increment Retentions Over Time

- Leveraged Impact of Inflation results in higher excess layer costs each year unless the retention is adjusted upward from time to time



18

Credibility – Another Bit of Actuarial Jargon

- How much weight to place on an entity's data
- "Low" is often viewed negatively
- What's fully credible – "it depends"
- And if you want to supplement – with what?
- And then how – development, trend, loss distributions....

19

Experience Period

- Or how much data does that pesky actuary want?
- Is it a function of length or depth or...
- Is there ever enough?
- What happens when you don't have any experience?

20

Methods

- Do actuaries charge by the method?
- Why so many – development, B-F, IBNR/case, frequency/severity, Cape Cod?
- How does this “actuarial judgment” work?
- How can I evaluate my actuary's results?

21

Some Topics to Avoid ...

- ✗ Statistical Distributions
- ✗ Berquist-Sherman Adjustments
- ✗ Convolutions
- ✗ Copula

22

Actuaries in the News



- Avrahami Decision / Microcaptives
- Price Optimization
- Driverless Cars
- Predictive Analytics
- Insolvencies (Golden Eagle in late 90s)
- Prop 103 Hearings in California

23

How Were Actuaries Viewed?

“ ... the actuary may need also to be articulate and eloquent (qualities for which actuaries are not particularly famous) enough to help a judge understand the complexities of the actuarial sciences ...”

“ ... made adjustments based on professional judgment, most without a coherent explanation ...”

“ ... and since his explanations were often incomprehensible, we don't find them persuasive ...”

24

Some Closing Thoughts

Actuaries have awesome responsibility

- Our work products and opinions are relied upon by many:
 - Company management and boards
 - Auditors
 - Legislators
 - Regulators
 - Rating Agencies
 - Courts of Law
- Our work products can result in:
 - Insurers being put into Rehabilitation / Liquidation or being Established
 - People losing or gaining jobs
 - Litigation
- Clear communication is a critical skill in executing this responsibility

25

Thank You for Your Attention



Joseph A. Herbers
ACAS, MAAA, CERA
Managing Principal
Pinnacle Actuarial Resources, Inc.

Direct: (309) 807-2310
Mobile: (309) 824-6547
jherbers@pinnacleactuaries.com



Ann M. Conway
FCAS, MAAA, CERA
Managing Director
Willis Towers Watson

Direct: (617) 638-3774
Mobile: (617) 406-9534
ann.conway@willistowerswatson.com