

CAYMAN ISLANDS.
CLEARLY BETTER BUSINESS.

IBNR . WHAT IS IT? HOW DID I GET IT? IS THERE A CURE?

Clare M. Bello

Sr. VP, CCMSI; VCM Division Leader
VCM, A CCMSI Division

Mike Meehan

Consultant
Milliman, Inc.



OVERVIEW

Reserves - Types

What is IBNR?

How is it calculated and why?

What can affect the IBNR of a program?

Is there a cure?

RESERVES

Reserves are the main liability of the captive

Reserve Types

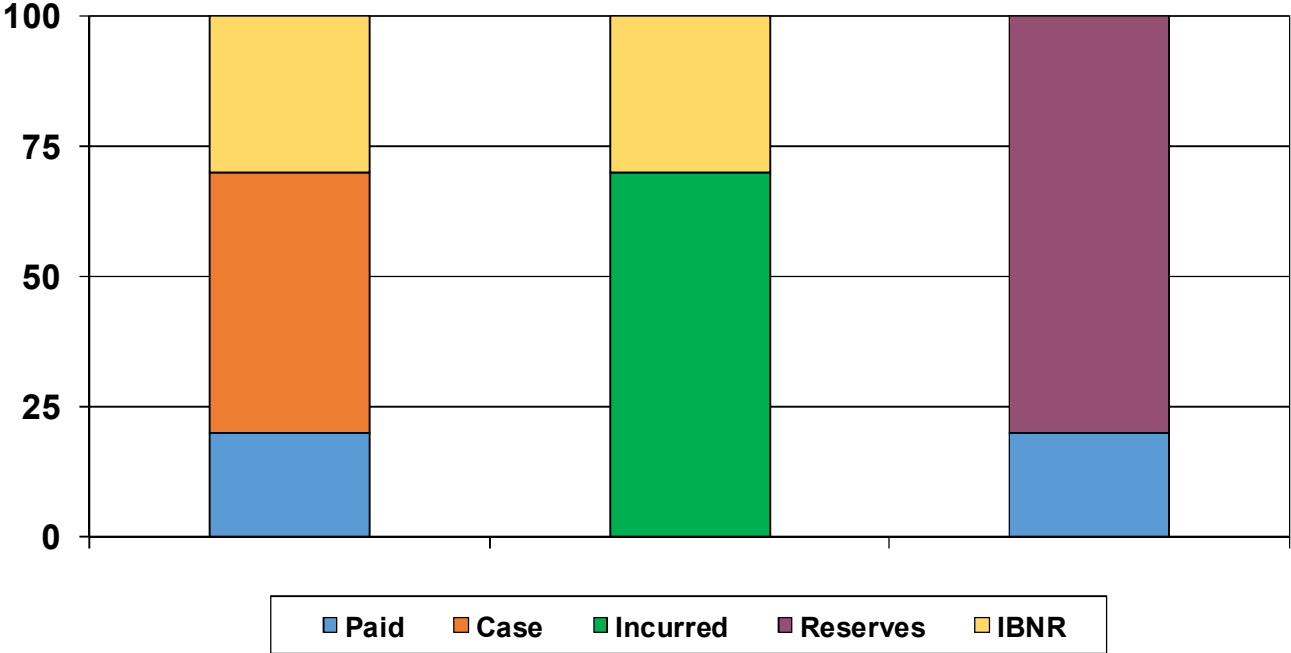
Case: Estimated by claims adjusters for individual claims based on facts known at the time

Bulk (Development): Estimated by actuaries; intended to cover development on top of case reserves

Pure IBNR (Tail): For unreported claims

Subject to considerable uncertainty

COMPONENTS OF ULTIMATE LOSS



S4 | IBNR . What is it? How Did I get it? Is there a cure?



SOME COMMON ACTUARIAL METHODS USED TO ESTIMATE ULTIMATE LOSS

Development

Paid

Incurred

Expected

Loss Ratio

Loss Rate

Blended

Bornhuetter-Ferguson (Expected Emergence)

LOSS DEVELOPMENT METHODS

Uses a Company's historical data (changes in paid or incurred losses over time) to estimate future development

Compile triangles of incurred and paid losses

Calculate historical age-to-age (i.e. incremental development factors)

Select future age-to-age development factors (aka "link" factors)

Accumulate selected factors to create cumulative factors

Multiply cumulative factors by latest paid or incurred losses to produce estimates of ultimate loss

DEVELOPMENT METHOD (EXAMPLE)

Accident Year	Cumulative Case Reported Losses (\$000 Omitted)						Final Total Cost
	Development Stage in Months						
	12	24	36	48	60	72	
2011	9,337	10,847	11,092	11,192	11,235	11,250	???
2012	10,540	12,205	12,551	12,690	12,725		???
2013	11,875	13,832	14,238	14,413			???
2014	13,343	15,542	16,066				???
2015	14,469	16,776					???
2016	16,561						???

DEVELOPMENT METHOD (EXAMPLE)

Accident Year	Evaluation Interval in Months					72 to
	12-24	24-36	36-48	48-60	60-72	Ultimate
2011	1.162	1.023	1.009	1.004	1.001	???
2012	1.158	1.028	1.011	1.003		
2013	1.165	1.029	1.012			
2014	1.165	1.034				
2015	1.159					
2016						
Average - All Years	1.162	1.029	1.011	1.004	1.001	
Average - Latest 3 Years	1.163	1.030	1.011	XXX	XXX	
Average - Excl Hi & Lo	1.162	1.029	1.011	XXX	XXX	
Wt Average - All Years	1.162	1.029	1.011	1.003	1.001	
Selected LDF	1.162	1.030	1.011	1.003	1.001	1.000
Cumulative LDF	1.215	1.045	1.015	1.004	1.001	1.000

DEVELOPMENT METHOD (EXAMPLE)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Accident Year	Actual Reported Losses 12/31/2016	Development Factors to Ultimate	Estimated Ultimate Losses [(2) x (3)]	Actual Paid Losses 12/31/2016	Estimated Loss Reserves {(4) - (5)}	Case Reserves {(2) - (5)}	Estimated IBNR Reserves {(4) - (5)}
2011	11,250	1.000	11,250	10,508	742	742	0
2012	12,725	1.001	12,738	11,536	1,202	1,189	13
2013	14,413	1.004	14,471	12,458	2,013	1,955	58
2014	16,066	1.015	16,308	12,699	3,609	3,367	242
2015	16,776	1.045	17,539	11,172	6,367	5,604	763
2016	16,561	1.215	20,119	6,962	13,157	9,599	3,558
Total	87,791		92,425	65,335	27,090	22,456	4,634

COMPARISON OF DEVELOPMENT METHODS

Underlying Assumptions

- PLDM: No changes in the payment pattern
- ILDM: No changes in case reserve adequacy

Pro

PLDM: "Hard" data; no estimates involved

ILDM: Uses all available information

Con

PLDM: May generate large, volatile loss development factors and take longer to develop to ultimate

ILDM: Uses case reserves, which are estimates, and subject to operational mandates, to develop estimates of ultimate losses

EXPECTED LOSS RATIO (LOSS RATE) METHOD

Expected Loss Ratio/Loss Rate

The anticipated ratio of ultimate losses to earned premiums (or exposures)

Sources:

Historical data

Company

Industry

Often used when there is no historical information, such as:

New product line

Radical changes in product lines

Immature accident years for long tailed lines

BORNHUETTER-FERGUSON METHOD (AKA EMERGENCE METHOD)

Accident Year	Evaluation Interval in Months					
	12-24	24-36	36-48	48-60	60-72	72 to Ultimate
2011	1.162	1.023	1.009	1.004	1.001	???
2012	1.158	1.028	1.011	1.003		
2013	1.165	1.029	1.012			
2014	1.165	1.034				
2015	1.159					
2016						
Average - All Years	1.162	1.029	1.011	1.004	1.001	
Average - Latest 3 Years	1.163	1.030	1.011	XXX	XXX	
Average - Excl Hi & Lo	1.162	1.029	1.011	XXX	XXX	
Wt Average - All Years	1.162	1.029	1.011	1.003	1.001	
Selected LDF	1.162	1.030	1.011	1.003	1.001	1.000
Cumulative LDF	1.215	1.045	1.015	1.004	1.001	1.000

IBNR Factor = 1.000 - 1.000/Cumulative Loss Development Factor						
IBNR Factor	0.177	0.044	0.015	0.004	0.001	-

S12 | IBNR . What is it? How Did I get it? Is there a cure?

BORNHUETTER-FERGUSON METHOD (AKA EMERGENCY METHOD)

(1)	(2)	(3)	(4) (2) x (3)	(5)	(6) (4) x (5)	(7)	(8) (6) + (7)
Accident Year	Earned Premium	Assumed Expected Loss Ratio	Assumed Expected Losses	IBNR Factor	Estimated IBNR	Cumulative Incurred Losses	Estimated Ultimate Losses
2011	18,168	65.0%	11,809	-	-	11,250	11,250
2012	21,995	65.0%	14,297	0.001	14	12,725	12,739
2013	24,173	65.0%	15,712	0.004	63	14,413	14,476
2014	25,534	65.0%	16,597	0.015	246	16,066	16,312
2015	31,341	65.0%	20,372	0.044	887	16,776	17,663
2016	38,469	65.0%	25,005	0.177	4,423	16,561	20,984
Total	159,680		103,792		5,632	87,791	93,423

BORNHUETTER-FERGUSON METHOD

Is a blend of the Expected Loss Ratio and Loss Development Methods

Pros

Compromise between loss development and expected loss ratio methods

Avoids overreaction to unexpected incurred losses to date

Suitable for new or volatile line of business

Can be used with no internal loss history

Easy to use

Cons

Assumes that additional development is unrelated to reported losses

Relies on accuracy of expected loss ratio

Relies on accuracy of earned premium/exposures

WHAT CAN AFFECT THE IBNR CALCULATION - POSITIVELY

Consistent Reserving

No matter the reserve philosophy of a program . the importance is not necessarily on the philosophy . but rather whether it is being applied consistently in the claims.

Avoid Reserve Spikes

If spikes are not typical for your programs reserve philosophy . significant reserve changes within 90 days of resolving a matter should be avoided.

Consistent Litigation Management/Strategy

Is the program set for early resolution? Try every case? Something in between?

WHAT CAN AFFECT THE IBNR CALCULATION - NEGATIVELY

Claims handling changes

TPA

Personnel

Philosophy

At times when new claims professionals are assigned to manage the files, they may discover one of two things:

The reserve philosophy for the program has not been consistently applied; and/or

The existing philosophy is no longer appropriate for the program

Changes in the law, making the need for changes in reserving processes

Using the past may no longer be appropriate to predict the future

What do you do?

It is critical to remember that if you are making changes to the reserve philosophy of a program . you need your actuary to be involved in those conversations.

CHANGES IN CLAIMS HANDLING . HOW DO ACTUARIES ACCOUNT FOR THE CHANGES

Approaches:

Do not use data impacted by changes (rely on paid data only)

Attempt to understand/quantify the impact of the changes; modify assumptions in actuarial models

Consider using other methods (Berquist-Sherman)

Other?

RECOMMENDATIONS

Clear Reserve Philosophy

Consistent Application of the Philosophy

Strong Communication if there is a Change

IS THERE A CURE FOR MY IBNR?

Actuarial Studies is an Art

Based on actuarial science

Includes actuarial judgement

IBNR isn't curable, but the reality is that it is necessary

**CAYMAN ISLANDS.
CLEARLY BETTER BUSINESS.**

Clare M. Bello

Clare.Bello@vcm-llc.com

Mike Meehan

Mike.Meehan@milliman.com

www.caymancaptive.ky

