

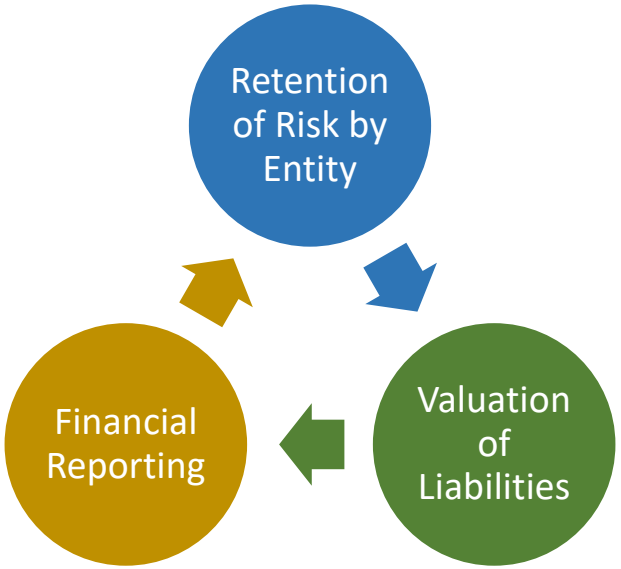
Interaction of Actuarial Report and Financial Statement

Mujtaba Datoo, ACAS, MAAA, FCA

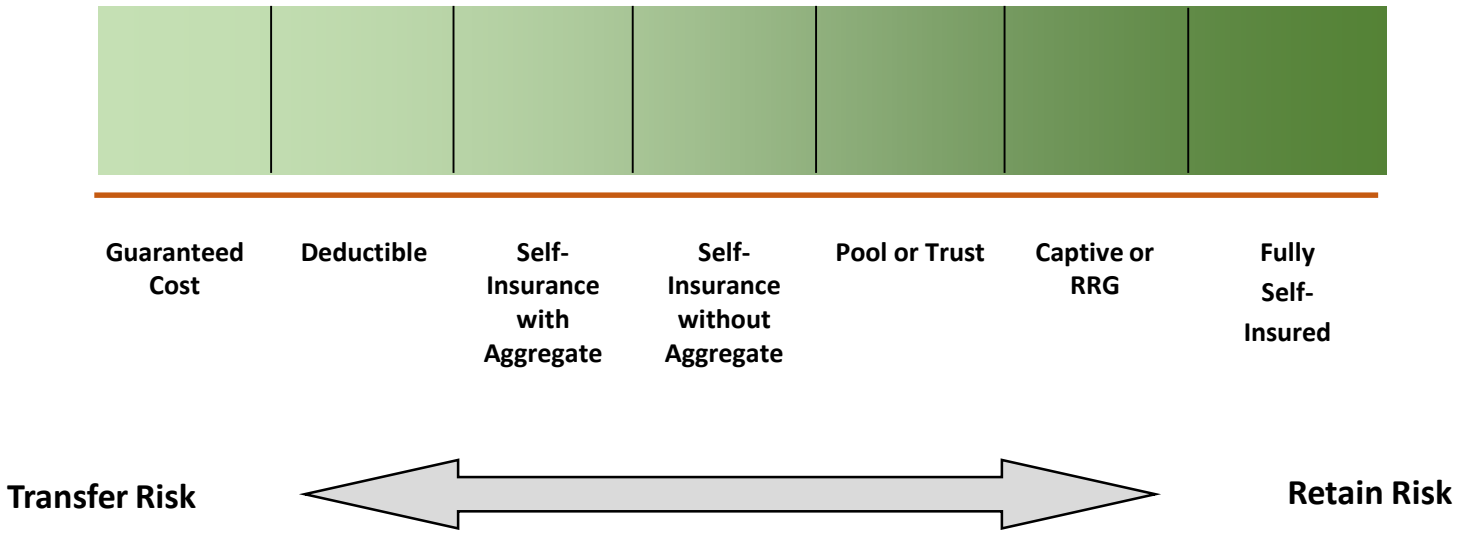
Discussion Points

- Actuarial conclusions
- Financial statement schedules
- Financial measures
- Trends
- Summary

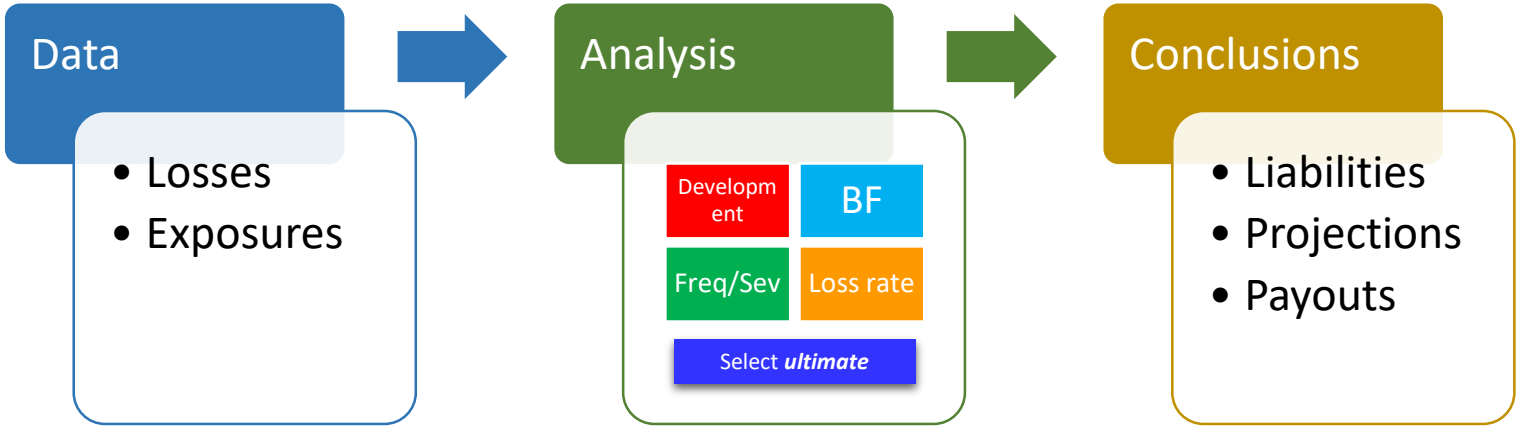
Cycle of Risk Reporting



Risk Financing Continuum



Actuarial Conclusions



Financial Reporting Framework

- GAAP
- SAP
- GASB
- IFRS

This presentation is specific to GASB, but it applies in general to all frameworks.

Financial Statement Schedules
GASB basis

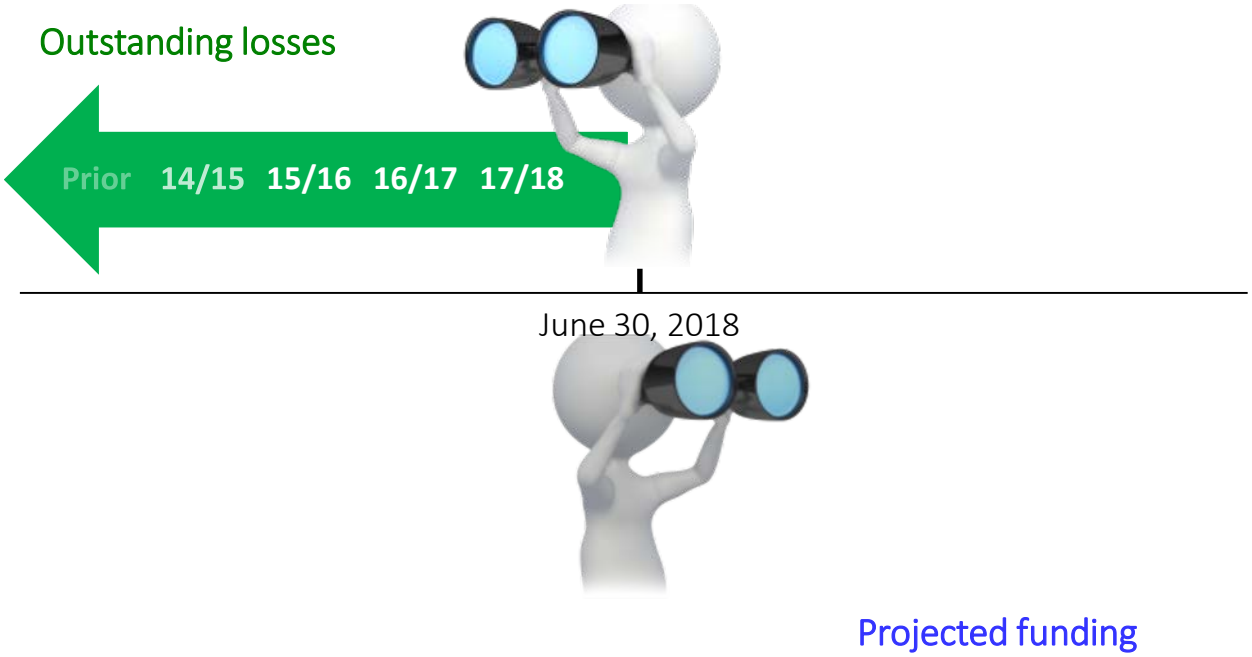
- Three basic statements
  - Statement of Net Position (balance sheet)
  - Statement of Revenues, Expenses and Changes in Net Position (income statement)
  - Statement of Cash Flows
- Supplementary information
  - Management's Discussion and Analysis
  - Notes to Financial Statements
    - Reinsurance
    - Reconciliation of claims liabilities
  - Claims development information (akin to Schedule P)

GASB 10 – Determination of Liability

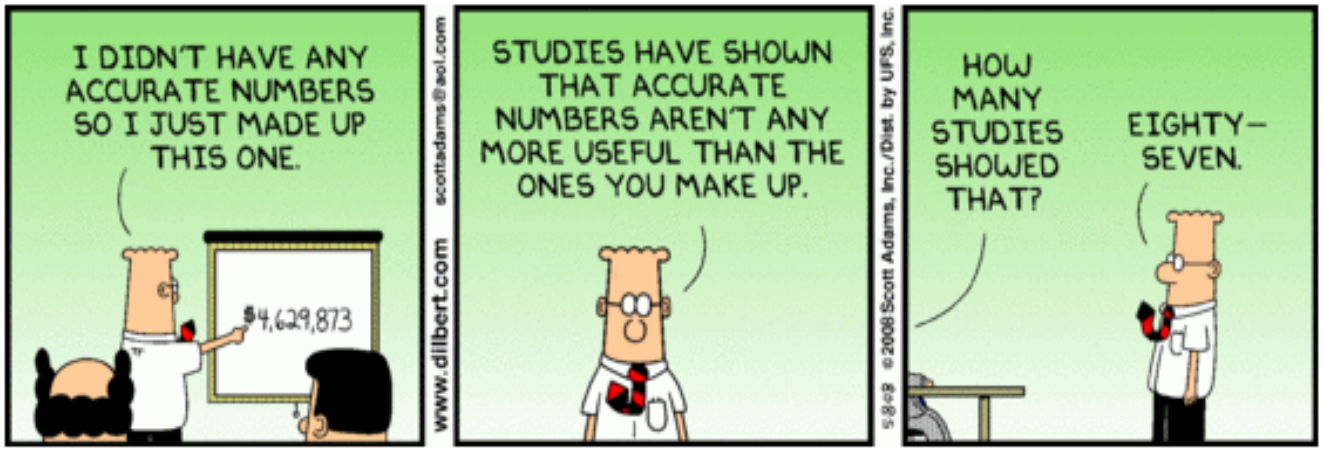
- Accrue liability for **unpaid** claim costs, including **I**ncurred **B**ut **N**ot **R**eported (**IBNR**) claims
- Liability should be based on:
  - The **estimated ultimate** cost (including effects of inflation and other societal and economic factors),
  - Using past experience adjusted for current trends,
  - Other factors that would modify past experience
- Accrue liability for claim adjustment expenses
  - ALAE - expenses associated with specific claims, e.g. legal
  - ULAE – expenses not associated with specific claims, e.g. claims administration
- Discounting is "neither mandated nor prohibited"
  - Investment income available to offset claim costs

Actuarial Study Conclusions: 2 Time Frames

(1) Through valuation date and (2) post valuation date

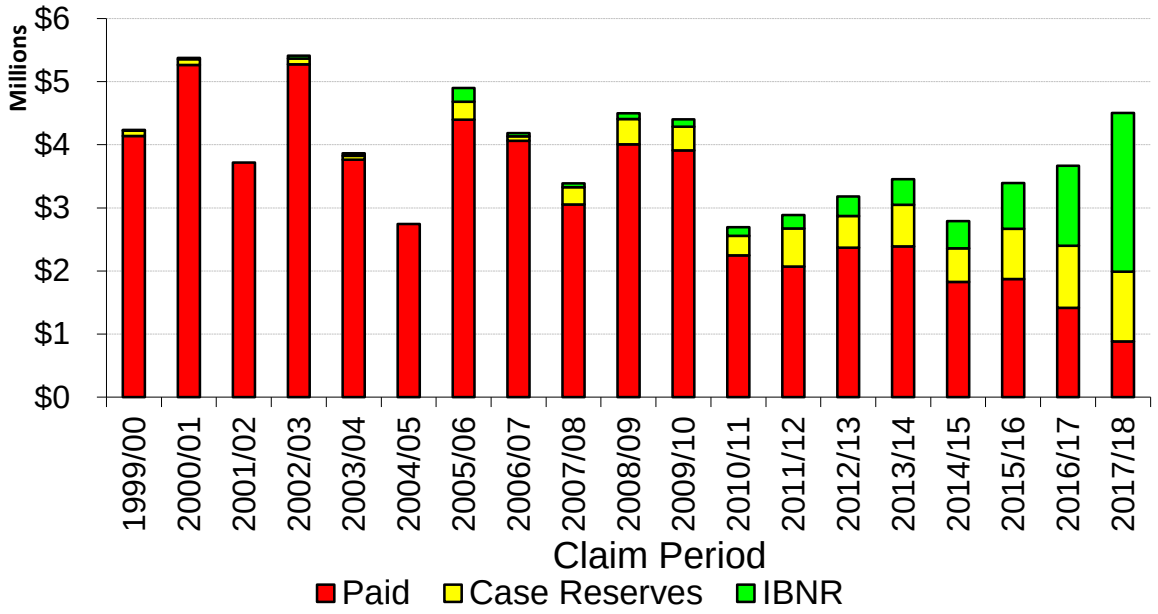


Dilbert's Wisdom



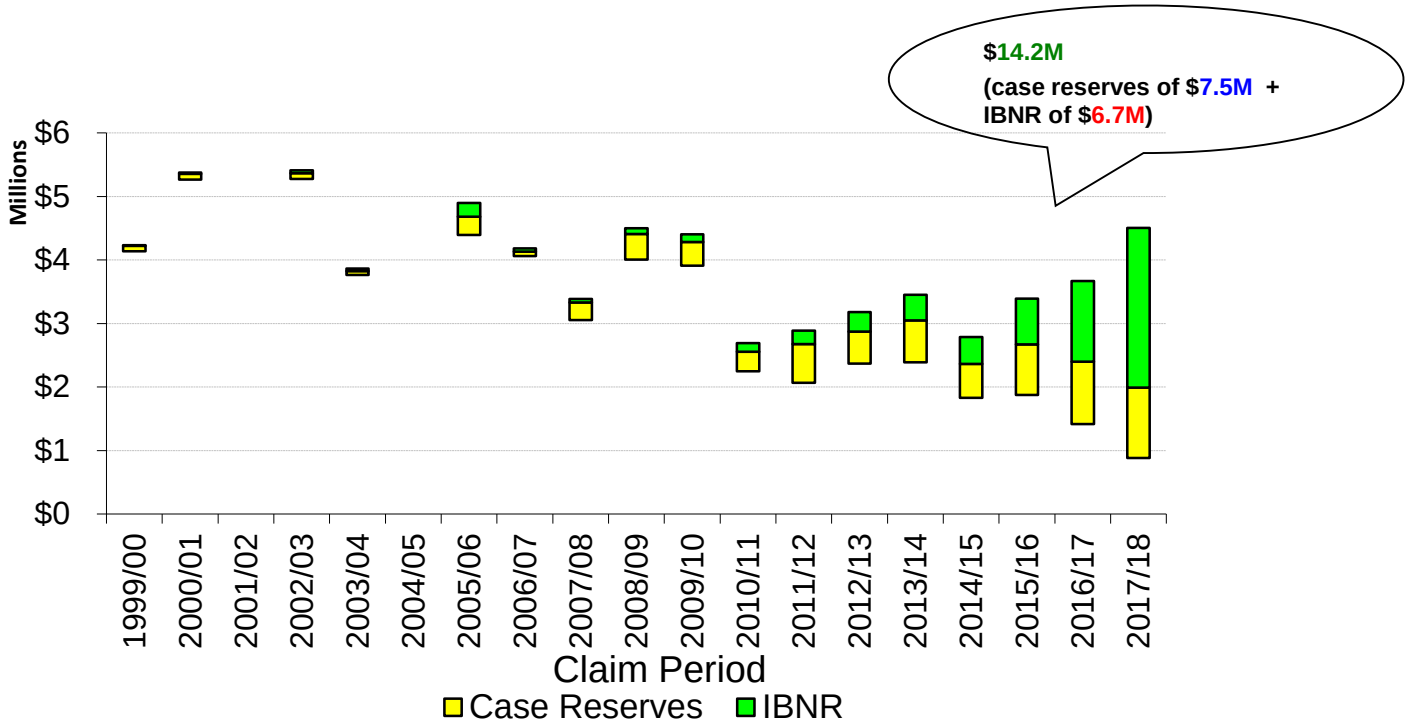
Components of Projected Ultimate Losses

Limited to SIR



Outstanding Losses = Case + IBNR Reserves

Case reserves: set by adjuster on an individual claim basis
IBNR: estimated by actuary in aggregate



Actuarial Conclusion #1:
Outstanding losses

Item	Undiscounted	Discounted (2.0%)	Discount
(A) Estimated outstanding losses	$14.2	$13.1	$1.1
(B) ULAE	$0.8	$0.8	$0.07
(C) Estimated outstanding losses plus ULAE	**$15.0**	**$13.8**	**$1.2**

Outstanding Losses → Balance Sheet

Liabilities

- Net of recoveries
- Discounted or undiscounted?
- Split between current vs non-current
- Compare to prior year

Net position (surplus)

- If > $0, entity fully funded
- If < $0, unfunded liabilities exist

STATEMENTS OF NET POSITION
JUNE 30, 2018 AND 2017

	2018	2017
ASSETS		
Current Assets		
Cash and cash equivalents	$ 25,314,802	$ 21,065,731
Investments maturing within one year	1,754,187	2,086,373
Due from members	-	405,589
Interest receivable	131,388	94,609
Prepaid expenses	-	397,481
Total Current Assets	27,200,377	24,049,783
Non-Current Assets		
Investments, net of amount maturing within one year	11,876,871	11,740,800
Total Assets	39,077,248	35,790,583
LIABILITIES AND NET POSITION		
LIABILITIES		
Current Liabilities		
Accounts payable	142,293	317,517
Current portion of SELF assessment	143,747	143,747
Current portion of unpaid claims and claim adjustment expenses	3,812,000	3,922,000
Total Current Liabilities	4,098,040	4,383,264
Non-Current Liabilities		
Non-current portion of SELF assessment	575,135	718,882
Unpaid claims and claim adjustment expenses, non-current portion	10,026,451	10,678,949
Total Liabilities	14,699,626	15,781,095
NET POSITION - UNRESTRICTED	$ 24,377,622	$ 20,009,488

Gross vs Net

- Net
  - Limited to SIR (net of reinsurance/excess)
  - Net of salvage and subrogation
- Contingent liabilities
  - Reinsurance above SIR if non-recoverable
  - Potential assessment
  - Can be recorded as a value or recognized in Notes to Financial Statements

Discounting

- Based on payout pattern and expected yields (GASB 10)
- Actuary is not opining on selected discount rate
  - Check for reasonability (e.g. risk-free Treasury rate)
- Risk that investment income may not be fully realized

Current vs Non-Current

- Current: liabilities expected to be paid out next year
  - Need liquid assets available for payments
  - Asset/liability matching
- Non-current: liabilities expected to be paid out subsequently

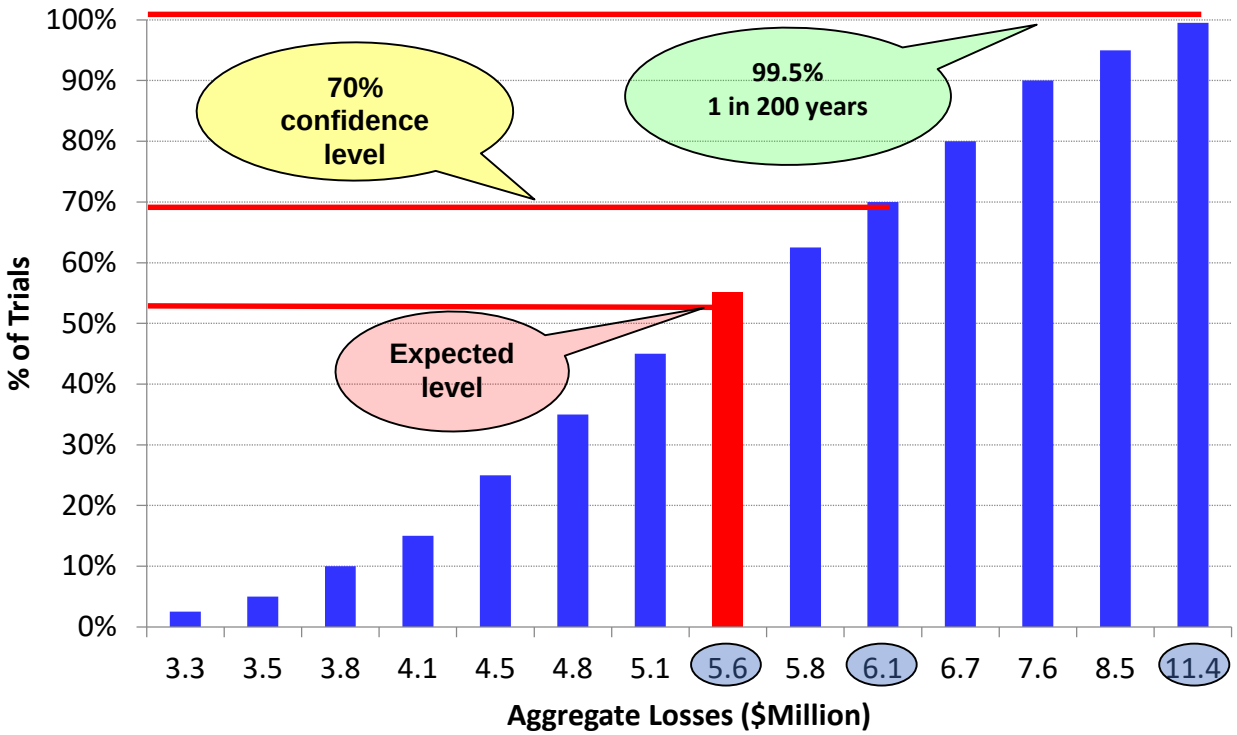
Unfunded Liabilities

- Assets < Liabilities
- Impact on bond ratings
- Plan to eliminate deficit
  - Spread over 5 to 10 years
  - Increase funding level
  - If a pool, assess members

Variability of Liability Estimates

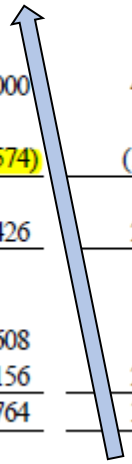
- Actuary selects a central estimate (per ASOP 43)
- Convey to board variability of liability estimate
- Variability measured by risk margin, a.k.a. confidence levels

Confidence Levels



Reconciliation of Claims Liability

	2018	2017
Unpaid Claims Liability at beginning of fiscal year	$ 13,774,480	$ 14,815,597
Incurred expenses related to:		
Provision for insured events of the current fiscal year	4,505,000	4,068,000
Increases (decreases) in provision for insured events of prior fiscal years	(2,202,574)	(1,743,155)
Total Incurred Claims and Claim Adjustment Expenses	2,302,426	2,324,845
Payments related to:		
Insured events of the current fiscal year	884,608	663,882
Insured events of prior fiscal years	2,137,156	2,702,080
Total Payments	3,021,764	3,365,962
Total Unpaid Claims Liability at End of Fiscal Year	$ 13,055,142	$ 13,774,480



- Change in ultimates between actuarial studies
  - Similar to IRIS ratios 11 & 12 (reserve development)
- *Increase* leads to decrease in surplus
- *Decrease* leads to increase in surplus

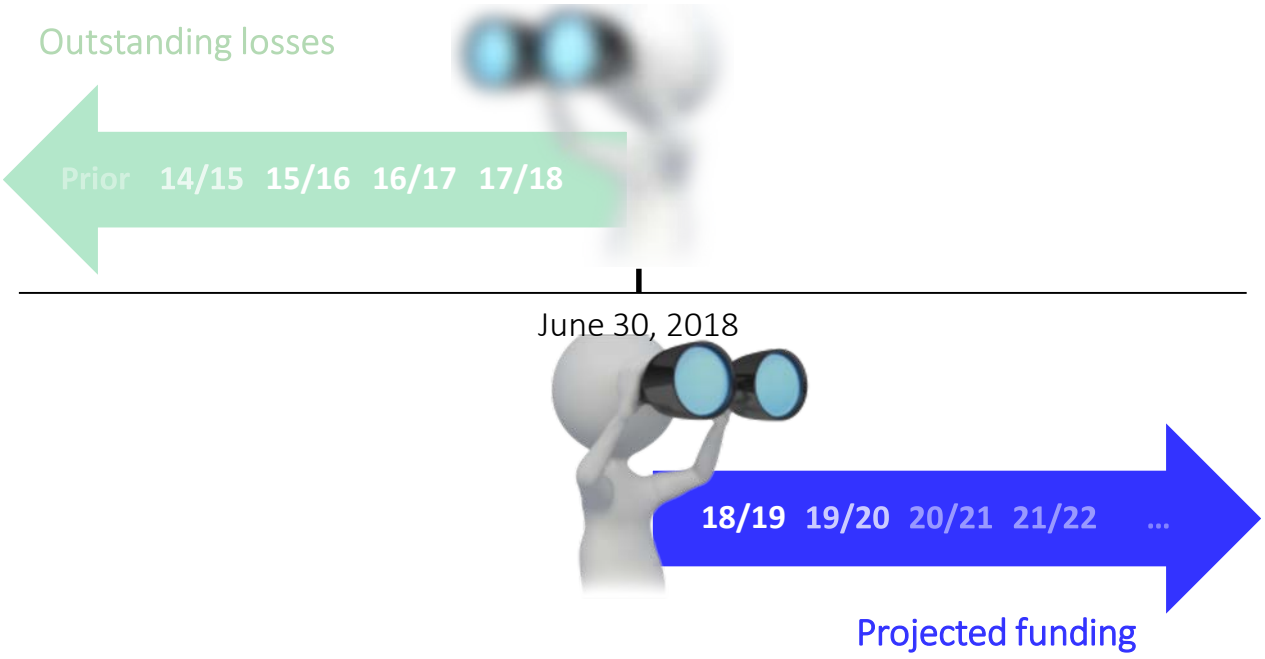
10-Year Claims Development Schedule

Similar to Schedule P

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
(1) Required contribution and investment revenue:										
Earned	$ 5,426,654	$ 5,237,158	$ 5,191,424	$ 5,133,734	$ 5,461,782	$ 4,881,767	$ 5,392,716	$ 5,853,616	$ 6,081,580	$ 6,338,215
Ceded	273,748	232,997	369,228	323,311	368,066	371,126	373,219	421,698	439,526	402,501
Net earned	5,152,906	5,004,161	4,822,196	4,810,423	5,093,716	4,510,641	5,019,497	5,431,918	5,642,054	5,935,714
(2) Unallocated expenses	554,978	765,769	627,650	603,807	627,911	874,838	691,230	655,286	762,084	579,419
(3) Estimated claims and expenses, end of policy year:										
Incurred	3,171,369	3,724,000	3,521,000	3,453,000	3,154,000	3,320,000	3,371,000	3,745,000	4,106,000	3,823,000
Ceded										
Net incurred	3,171,369	3,724,000	3,521,000	3,453,000	3,154,000	3,320,000	3,371,000	3,745,000	4,106,000	3,823,000
(4) Net paid (cumulative) as of:										
End of policy year	570,354	329,078	456,324	323,109	497,561	378,917	376,503	465,470	503,918	739,901
One year later	1,382,470	1,028,583	1,122,377	519,629	878,635	896,084	876,485	831,931	1,004,142	
Two years later	1,914,585	1,622,390	1,470,441	618,440	1,066,298	1,157,679	1,031,862	1,014,905		
Three years later	2,391,306	2,009,720	1,771,293	649,515	1,307,368	1,333,204	1,151,241			
Four years later	2,683,954	2,450,742	2,149,928	745,538	1,358,266	1,392,607				
Five years later	2,965,408	2,626,451	2,269,144	776,456	1,362,332					
Six years later	3,157,651	2,700,635	2,305,592	757,336						
Seven years later	3,402,061	2,742,135	2,312,044							
Eight years later	3,494,196	2,902,166								
Nine years later	3,565,031									
(5) Re-estimated ceded claims and expenses	694	2,045	-	-	4,620	200	2,006	-	-	504
(6) Re-estimated net incurred claims and expenses:										
End of policy year	3,171,369	3,724,000	3,521,000	3,453,000	3,154,000	3,320,000	3,371,000	3,745,000	4,106,000	3,823,000
One year later	3,897,000	3,288,000	3,019,000	1,727,000	3,388,000	3,092,000	3,251,000	3,452,000	3,616,000	
Two years later	4,033,000	3,224,000	3,044,000	1,738,000	3,141,000	3,208,000	2,657,000	2,663,000		
Three years later	4,216,000	3,758,000	3,130,000	1,316,000	2,822,000	2,731,000	2,431,000			
Four years later	4,891,000	4,170,000	3,258,000	1,067,000	2,082,000	2,256,000				
Five years later	4,991,000	4,244,000	2,815,000	892,000	2,004,000					
Six years later	4,581,000	3,933,000	2,600,000	812,000						
Seven years later	4,728,000	3,776,000	2,608,000							
Eight years later	4,439,000	3,492,000								
Nine years later	4,568,000									
(7) Increase (decrease) in estimated incurred claims and expenses from end of policy year	$ 1,396,631	$ (232,000)	$ (913,000)	$ (2,641,000)	$ (1,150,000)	$ (1,064,000)	$ (940,000)	$ (1,082,000)	$ (490,000)	$ -

Actuarial Study Conclusions: 2 Time Frames

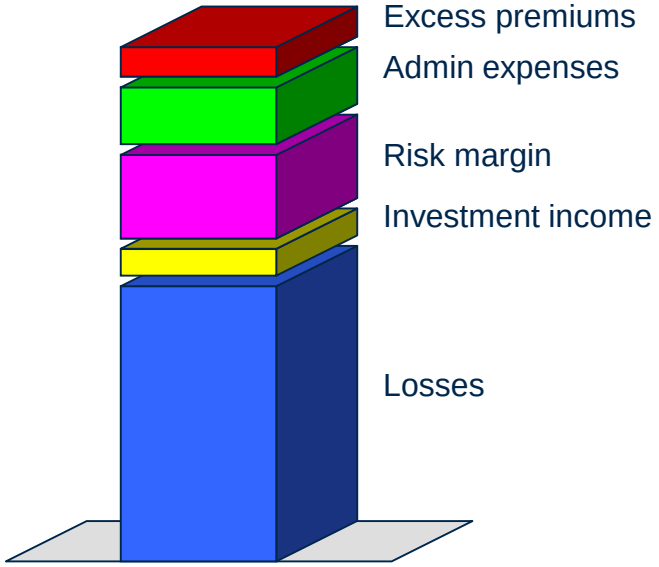
(1) Through valuation date and (2) post valuation date



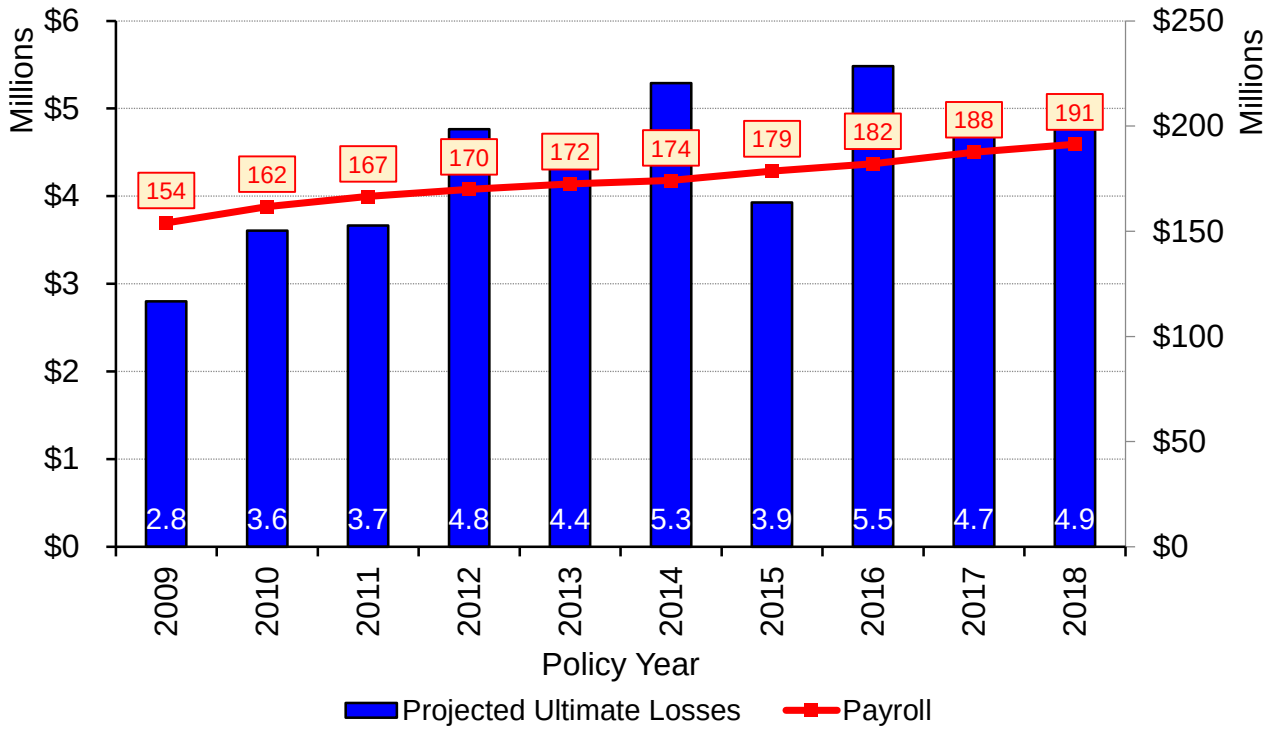
Actuarial Conclusion #2:
Funding

Item	Loss Rate	Payroll	Projected Losses
2019/20 funding	$3.0	$200M	$6.0M
Expenses			$1.0M
Total funding			$7.0M

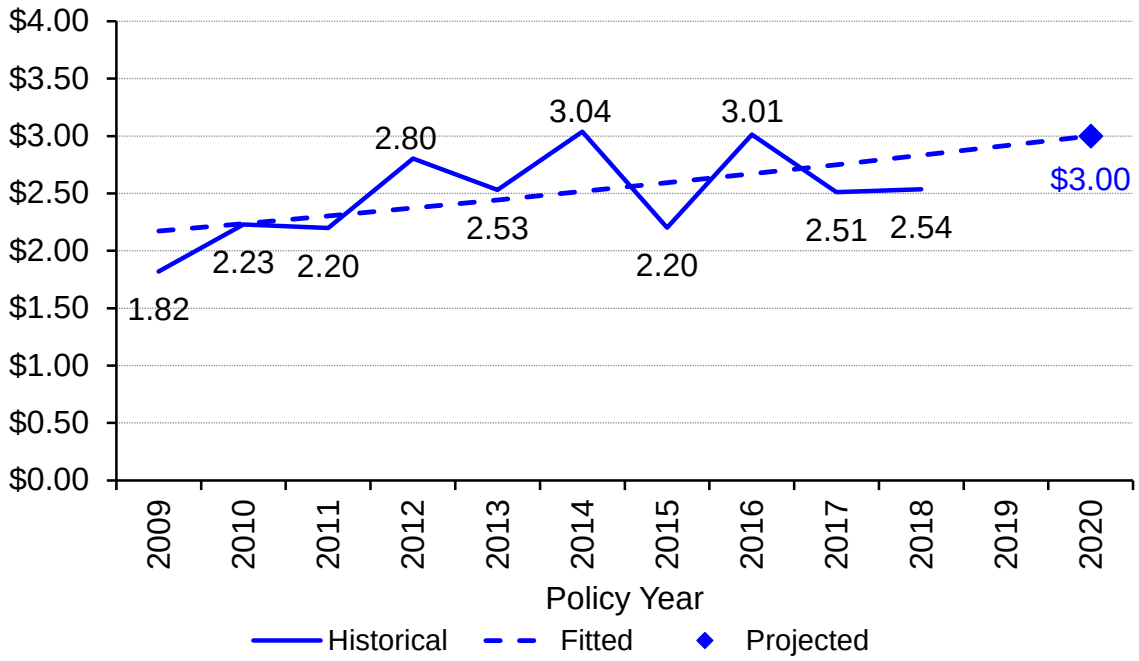
Losses can be on a fiscal year accrual basis, or pay-as-you-go basis.



Projected Ultimate Losses and Payroll

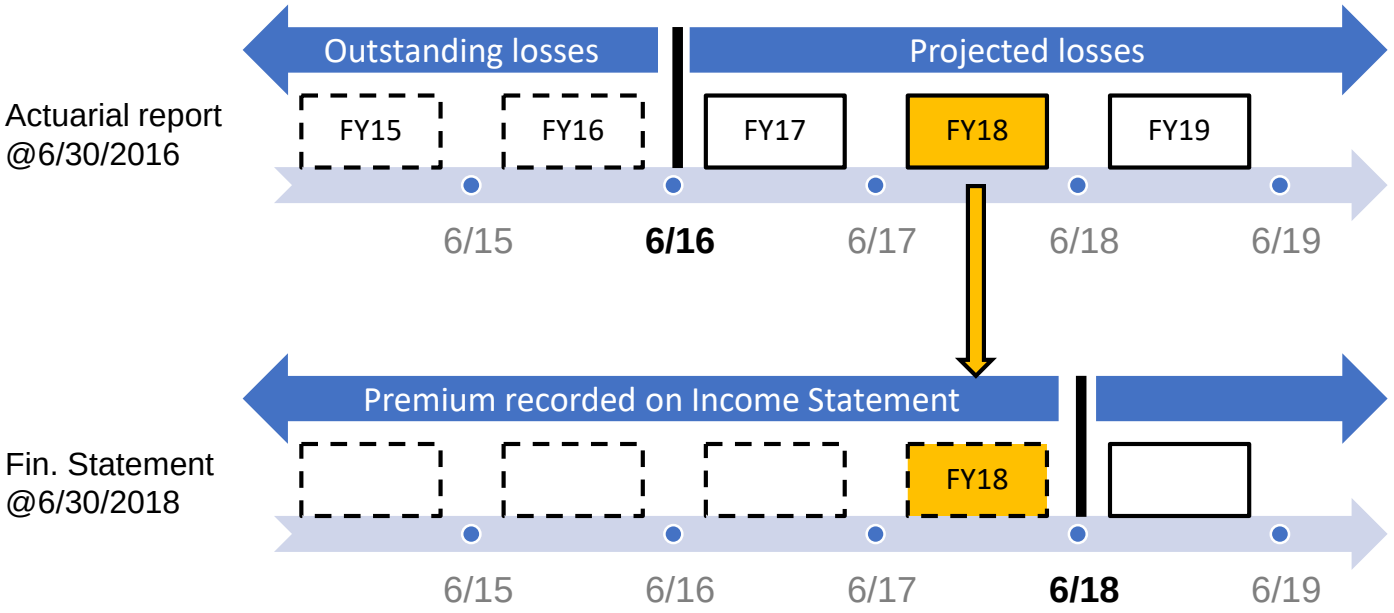


Loss Rate Projection – Trend Forward



Timeline for Funding

2-year lag between actuarial report and recording on Income Statement



Funding → Income Statement

- Gross premium (contribution)
- Excess insurance
- Net premium = gross premium – reinsurance

STATEMENTS OF REVENUES, EXPENSES, AND CHANGES IN NET POSITION
FOR THE YEARS ENDED JUNE 30, 2017 AND 2016

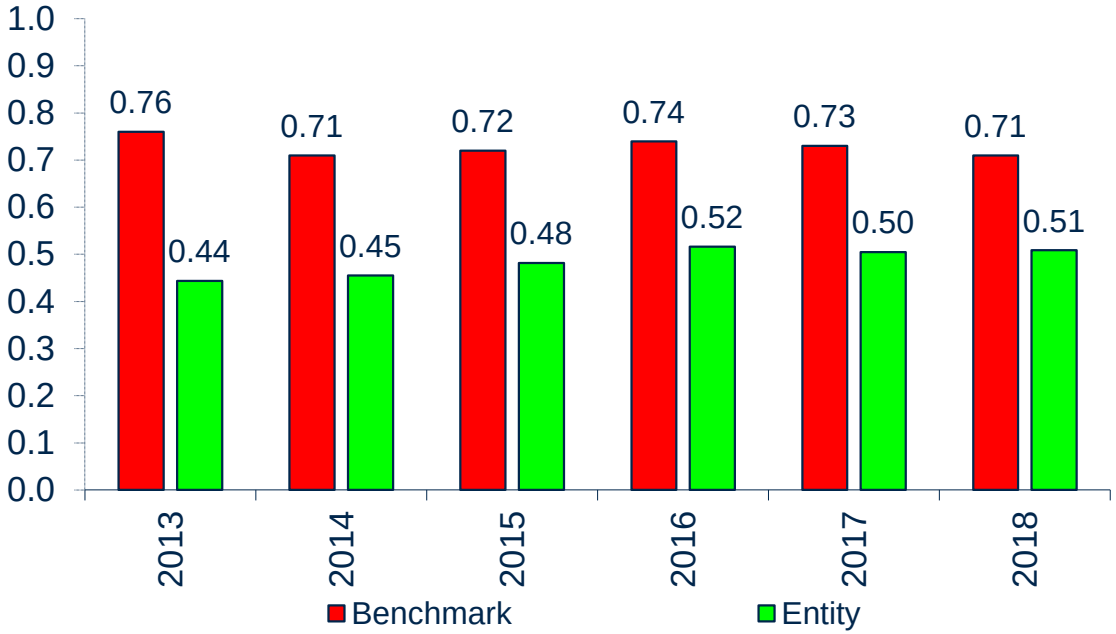
	2017	2016
OPERATING INCOME		
Member contributions	$ 6,023,139	$ 5,883,203
OPERATING EXPENSES		
Excess insurance	402,501	439,526
Claims paid, net of recoveries	2,135,575	1,789,006
Credit provision for loss reserves	(691,526)	(388,572)
Credit provision for claims adjustment expenses	(51,864)	(29,143)
Claims administration	282,725	282,725
Administration expenses	262,608	260,713
State fee	28,872	57,524
Depreciation	200	200
Safety credit program	56,878	190,065
Total Operating Expenses	2,425,969	2,602,044
Operating Income	3,597,170	3,281,159
NONOPERATING REVENUES		
Interest	315,076	198,377
CHANGE IN NET POSITION	3,912,246	3,479,536
NET POSITION, BEGINNING OF YEAR	12,629,226	9,149,690
NET POSITION, END OF YEAR	$ 16,541,472	$ 12,629,226

Key Financial Ratios

- Key ratios
  - Premium to surplus
  - Reserves to surplus
  - Surplus to SIR
  - Combined ratio
  - Underwriting ratio
  - Expense ratio
- Compare these over longer time horizon

Financial Ratio:

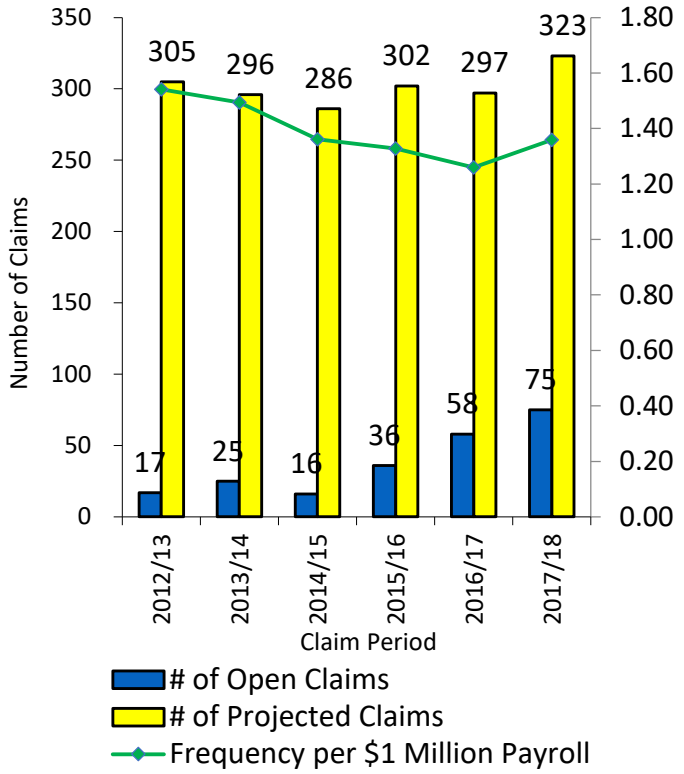
Net Premium-to-Surplus

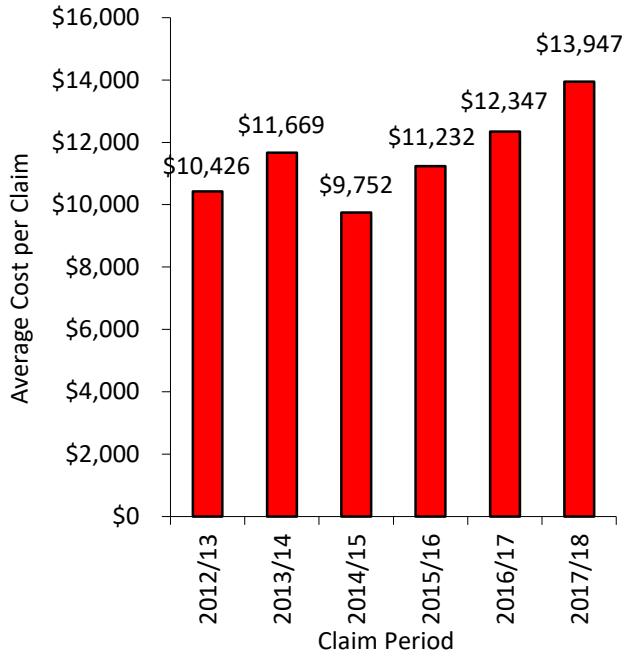


Trend Analytics

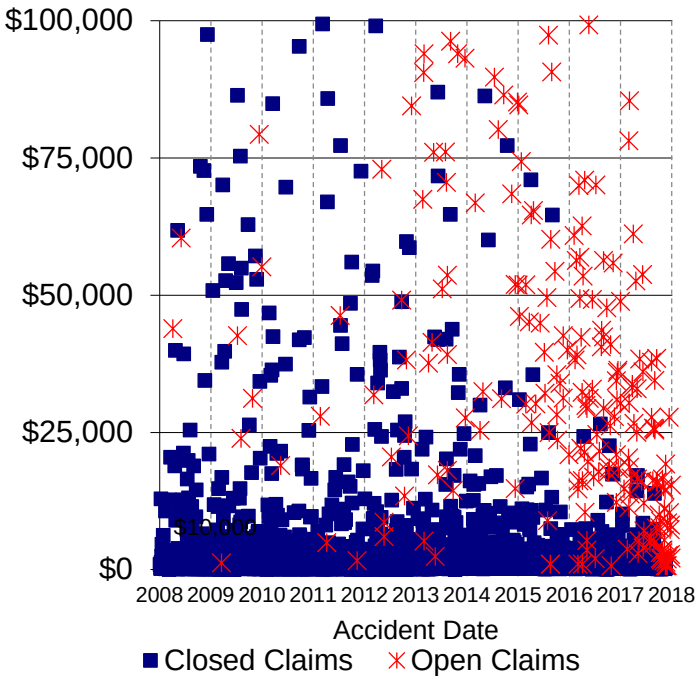
- Goal: give board a picture of the cost drivers and trends
- Graphical representation of trends
  - Frequency/severity
  - Scatter diagram
  - Histogram
  - Workers compensation cost drivers

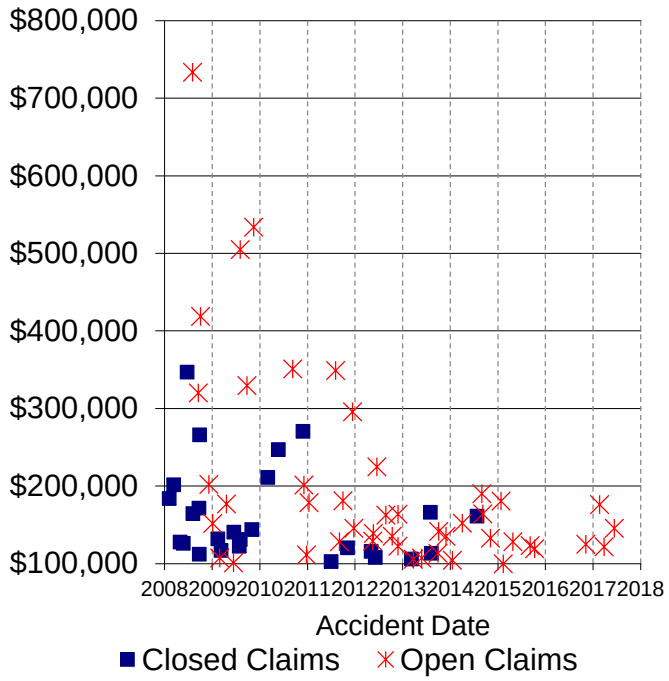
Frequency/Severity



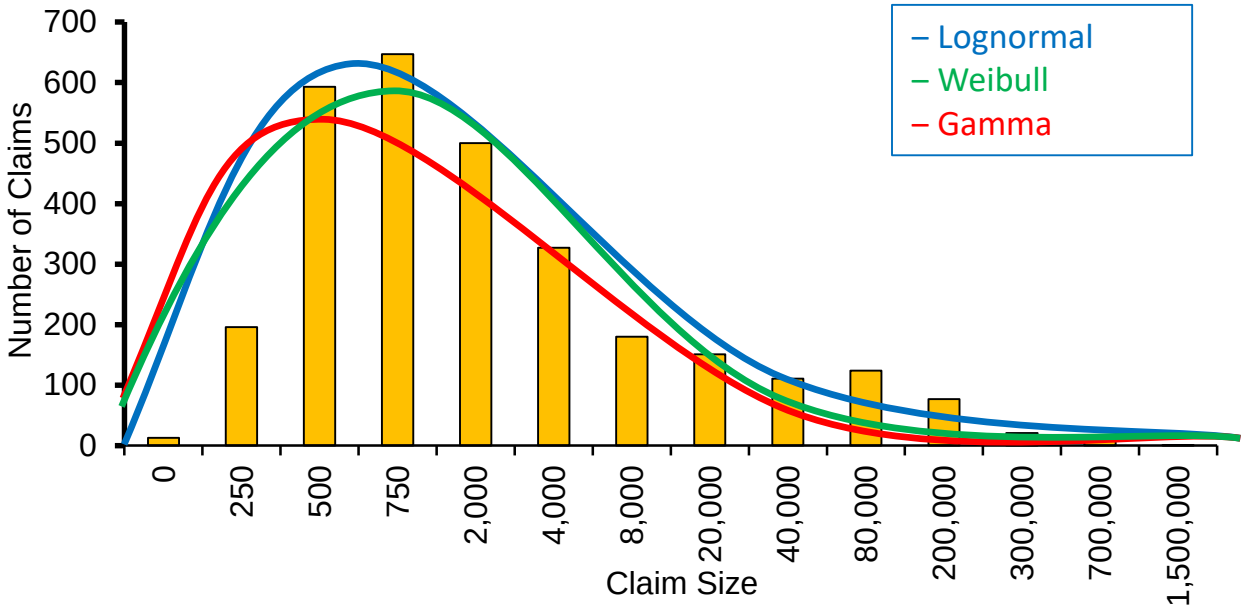


Scatter Diagram of Incurred Claims



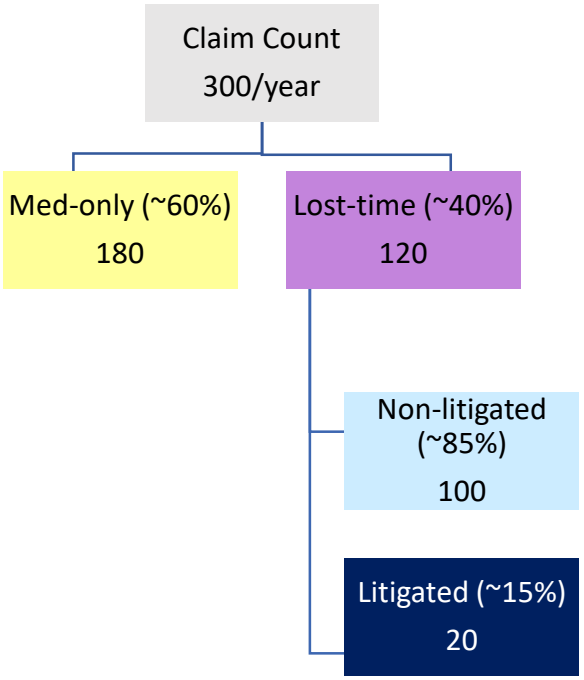


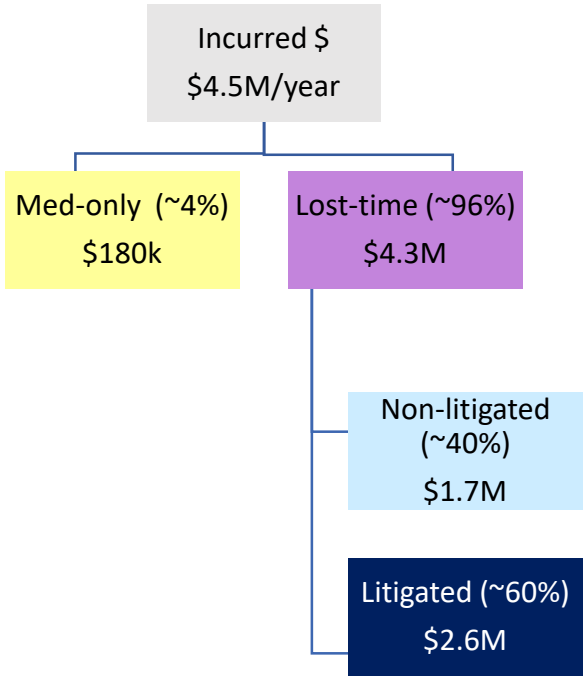
Histogram


– Lognormal
– Weibull
– Gamma
Number of Claims
700
600
500
400
300
200
100
0
0
250
500
750
2,000
4,000
8,000
20,000
40,000
80,000
200,000
300,000
700,000
1,500,000
Claim Size

WC Cost Drivers

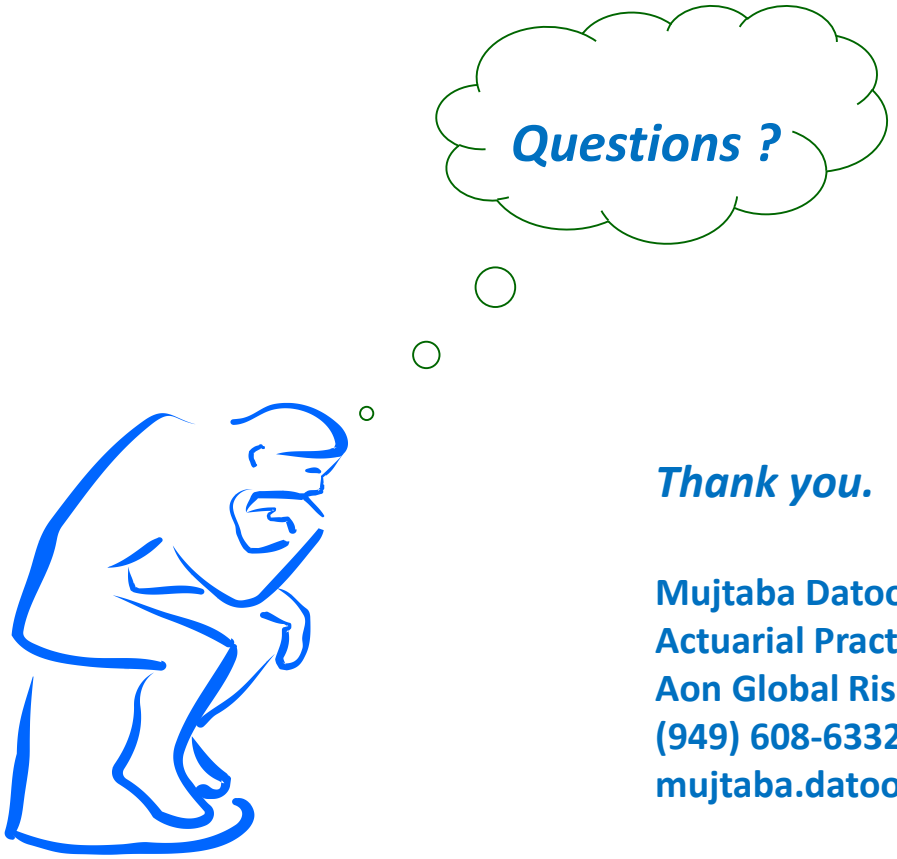
7% of claims are litigated but they drive 50%+ of total costs





Summary

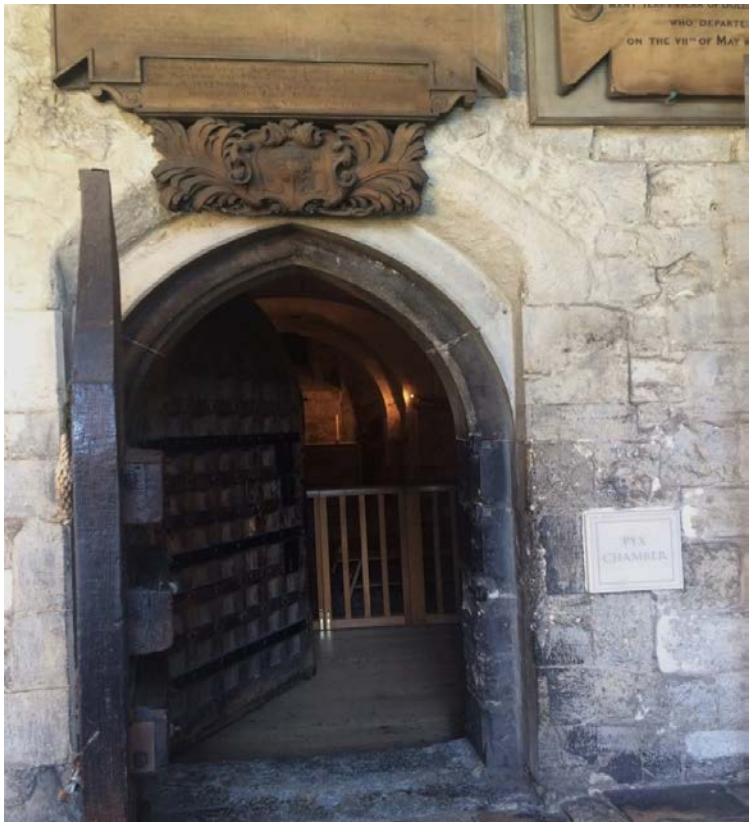
- Board has fiduciary responsibility to accept financial statement
  - Key values are actuarial estimates
- Discuss
  - Significant changes from prior year
  - Emerging risks, e.g. PTSD, Covid-19 impact, tort changes
  - Inherent uncertainty in estimates
  - Overall financial position



Thank you.

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Actuarial Practice Leader
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mujtaba.datoo@aon.com

Thank You!



The Trial of the Pyx is the procedure in the 12th century for ensuring that newly minted coins conform to required standards.

Trials have been held from the twelfth century to the present day since 1282 AD. They are trials in the full judicial sense, presided over by a judge with an expert jury of assayers.

Trials are now held at the Hall of the Worshipful Company of Goldsmiths; formerly, they took place at the Westminster Abbey. Given modern production methods, it is unlikely that coins would not conform, but this has been a problem in the past—it was tempting for the Master of the Mint to steal precious metals.

The term “Pyx" refers to the boxwood chest in which coins were placed for presentation to the jury.