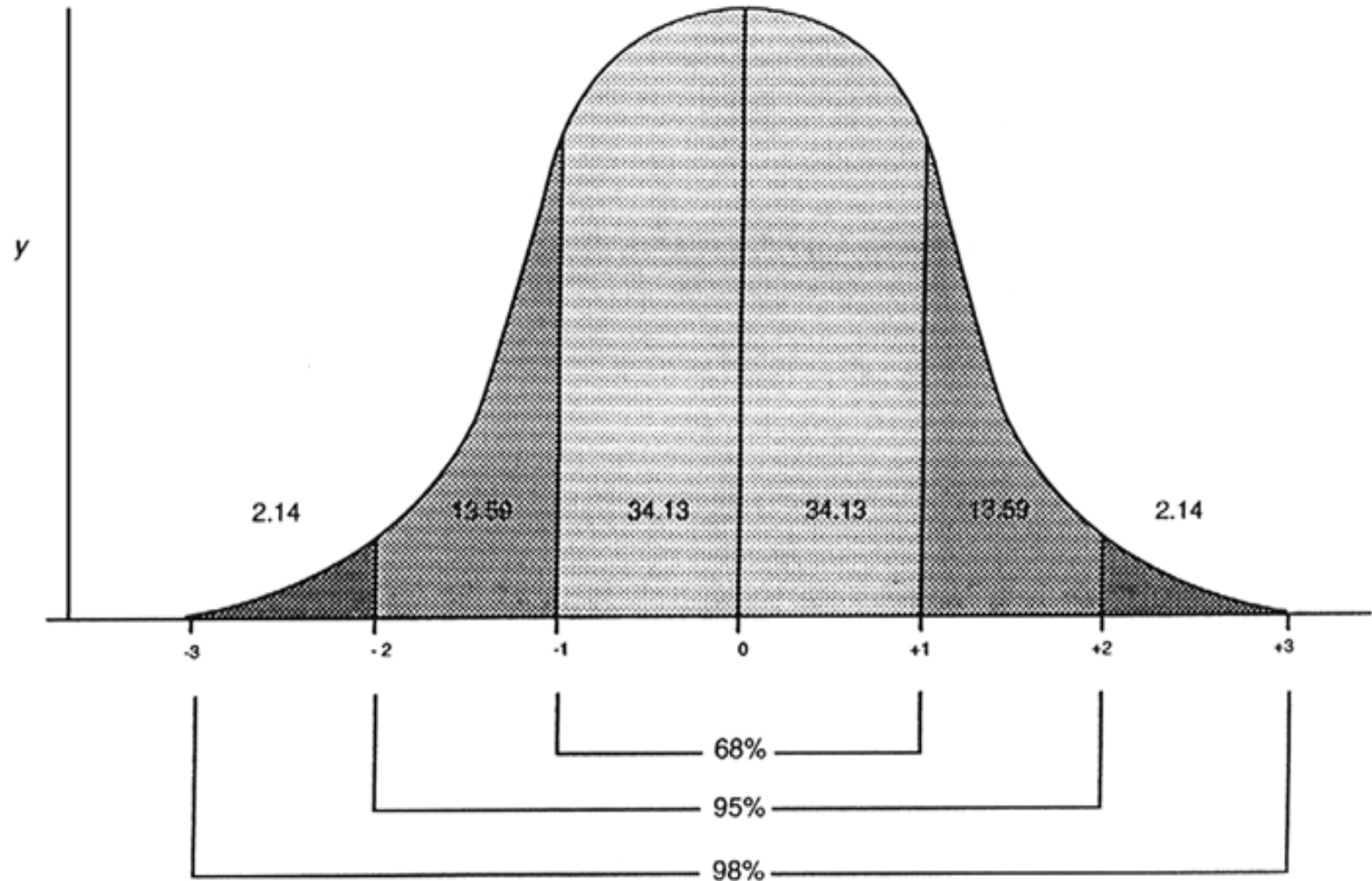


Manitoba Public Insurance Rate Risk Management and the Rate Stabilization Reserve

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Statistical Risk Analysis: Concepts



RSR and Risk Analysis: Issues

- Purpose of RSR: protection against unexpected, non-recurring events
- Balance of costs and benefits to establish risk tolerance:
 - Opportunity costs to Manitobans of excess premiums
 - Benefits of protection against premium shocks (size of loss)
- Risk tolerance standard of 95% (1 in 20) or 99% (1 in 100) or 1 in 700?

Methodologies for the Target RSR

- Percentage of Premium (Kopstein)
 - simple and transparent but no connection to risk unless risk directly related to premiums
- RA/VaR
 - transparent and replicable but based on limited data so potentially volatile
- DCAT
 - less transparent and replicable but can specifically address risks from unexpected non-recurring adverse events to MPI's financial position as the basis for setting a target RSR

Current DCAT Analysis from MPI

- Improvements to date:
 - “in house” modelling of adverse scenarios and financial implications
 - focus on evidence-based justification for adverse scenarios (vs. stress testing)
- Needed future improvements (process):
 - More **transparency** in modelling and assumptions
 - More scrutiny of **evidence-based** scenarios
 - More **stability** in RSR targets

The Decline in Equities Scenario: 1923-1955 vs. 1956-present



Outcomes differ pre- and post-1956

Time period	Mean	Test of means	Std Dev	Test of std dev
1923.08-1955.12	0.2516	t=0.0224 (p=0.98)	0.5577	F= 3.1781 (p= 0.00)
1956.01-2012.03	0.2510		0.3128	

... and so do adverse scenarios

Time Period	Obs	5 th % obs	5 th % event
1923.08-2012.03	1,064	53	-43.90%
1923.08-1955.12	389	19	-64.81%
1956.01-2012.03	675	34	-16.43%

Year	DCAT Amended Report			PUB 2-32			Our Estimated	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Base	-40 %	2+4-1	Base	-35 %	Diff (5-3)	Diff x4	-20% (7+3)
12/13	205	205	205	205	205	0	0	205
13/14	200	76	74	198	88	14	56	130
14/15	208	8	2	202	27	25	100	102
15/16	231	1	-10	220	20	30	120	110
16/17	264	4	-9	251	23	32	128	137
RSR		200			175			100

Recommendations (1): Regarding the DCAT

- DCAT improved and clearly useful to assess risk and RSR
- DCAT analysis and results need to be more transparent
- DCAT needs a more consensual basis for scenario choice that includes PUB and intervenors e.g. current decline in equities scenario

Recommendations (2): Regarding the RSR

- DCAT: not yet ready for prime time but useful check as analysis and process is clarified
 - Decline in equities scenario needs adjustment to reflect modern stock market outcomes e.g. -20%
- RA/VaR: useful additional, provisional check
- Kopstein: incumbent process provides satisfactory provisional basis for RSR until full confidence in DCAT analysis and process is established