Standardized Risk

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THIS PRESENTATION HAS BEEN RATED

PG-13	PARENTS STRONGLY CAUTIONED
Some Material May Be Inappropriate For Children Under 13	
CONTAINS STRONG LANGUAGE REGARDING CURRENT RISK MANAGEMENT PRACTICE	

Introduction to Probability Management

From the Perspective of Risk

Probability Management is the communication and calculation of uncertainty as arrays of simulated outcomes called SIPs.

= 6, 1, 2, 3, 6, 2, 5, 5, 4, 5, 2, … 6,4,2,5,1,4,2, 4, 1

The SIP of a die roll

Risk vs. Uncertainty

Is there a risk that IBM Stock will go down today?

- Uncertainty is a feature of the universe
- Risk is in the eye of the beholder

Uncertainty happens when dice are rolled

A Random Variable, X

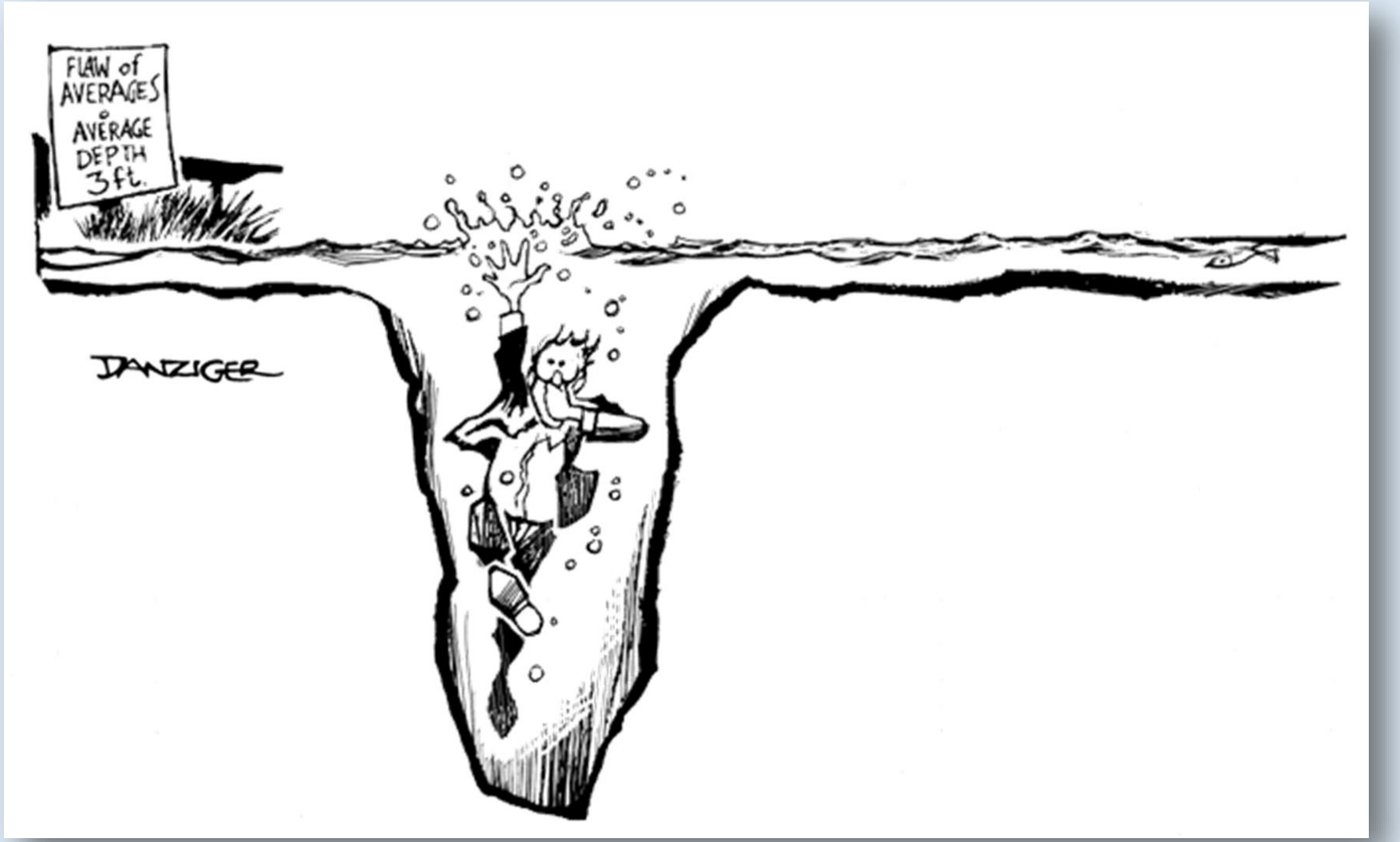
Risk happens when you play craps

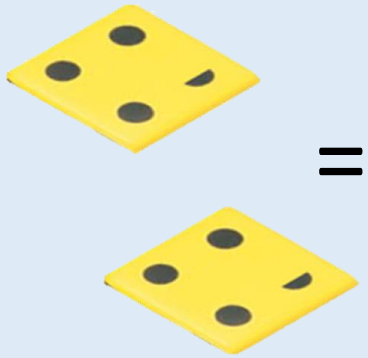
TYPE OF BET	NUMBER ROLLED and PAYOUT										
	2	3	4	5	6	7	8	9	10	11	12
Pass Line						1:1				1:1	
Pass Odds			2:1	3:2	6:5		6:5	3:2	2:1		
Don't Pass	1:1	1:1									Push
Don't Pass Odds			1:2	2:3	5:6		5:6	2:3	1:2		
Buy			39:21	29:21	23:21		23:21	29:21	39:21		
Place to Win			9:5	7:5	7:6		7:6	7:5	9:5		
Come						1:1				1:1	
Come Odds			2:1	3:2	6:5		6:5	3:2	2:1		
Lay			19:41	19:31	19:25		19:25	19:31	19:41		
Place to Lose			5:11	5:8	4:5		4:5	5:8	5:11		
Don't Come	1:1	1:1									Push
Don't Come Odds			1:2	2:3	5:6		5:6	2:3	1:2		

A Function, F(X), your ***Utility*** function of X

If the tree fell and there was no one in the forest to play craps, would there still be risk?

The Flaw of Averages: Plans Based on Averages are Wrong on Average





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Most risk management problems are more complex than the game of craps.

Therefore you cannot do risk management with averages.

But that doesn't stop people from trying!

Example

The American Society of Mechanical Engineers' flawed definition:

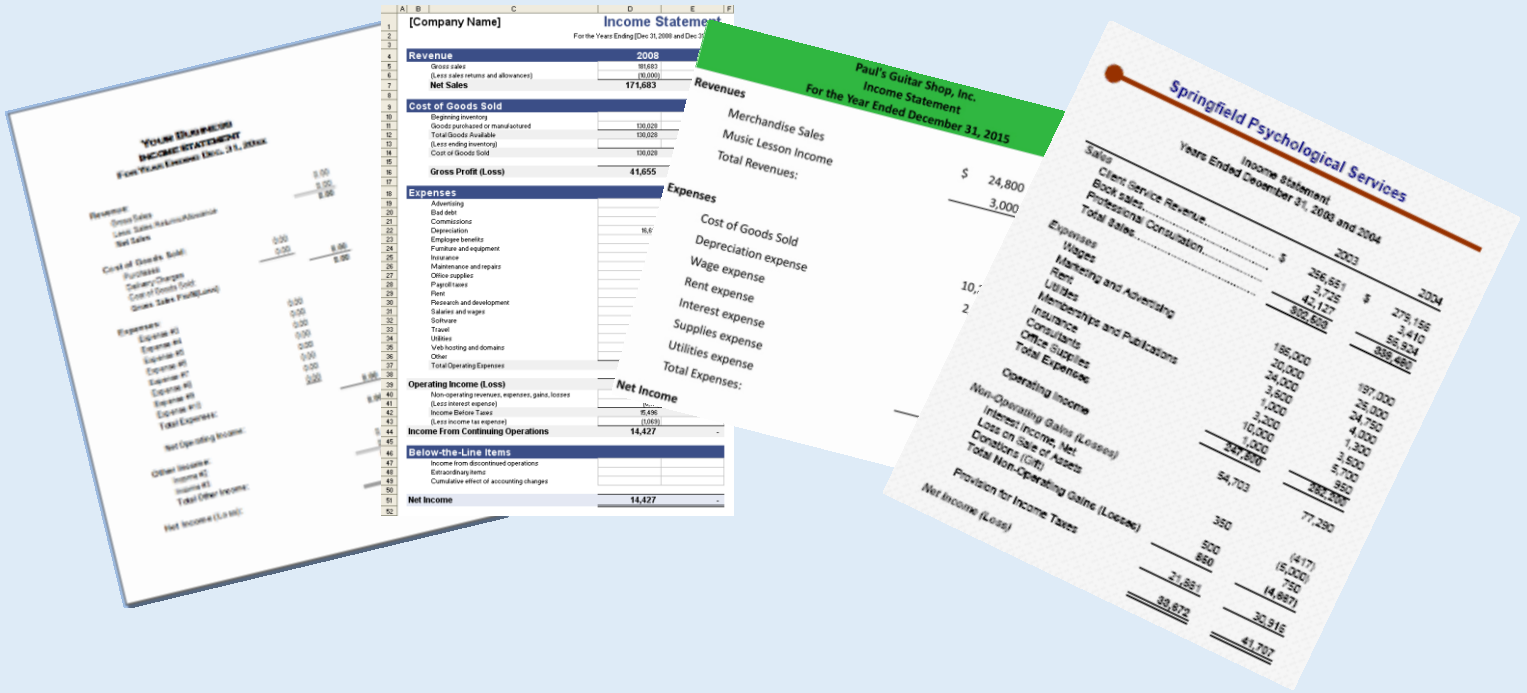
- Use ASME B31.8s definition of Risk
  - Risk = Likelihood of Failure (LoF) X Consequence of Failure (CoF)

A Uniform Methodology for Risk Management

- Uniform Format
- Uniform Computations
- Uniform Representations

Example: Financial Statements

Uniform Formats: How Things Look



Least Important

Uniform Computations: How Things are Calculated

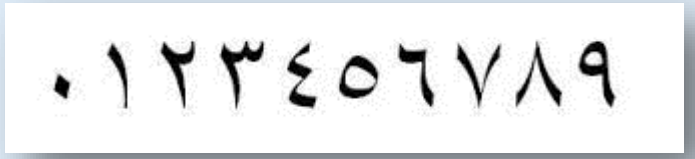
Profit = Revenue - Cost

Retained Earnings = Profit - Dividends

Asset Turnover = Revenue/Assets

More Important

Uniform Representations:



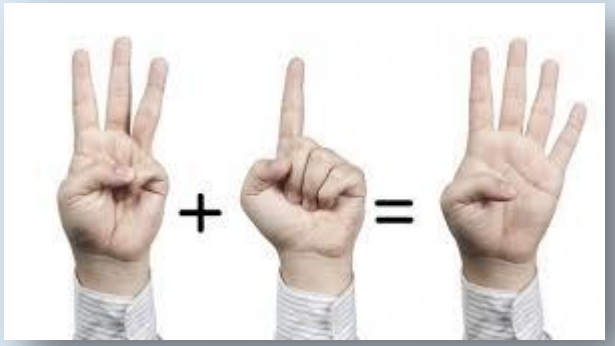
How Things Are Communicated

Uniform Representations:

I II III
IV V VI
VII VIII IX

0 1 2 3 4
5 6 7 8 9

٠ ١ ٢ ٣ ٤ ٥ ٦ ٧ ٨ ٩



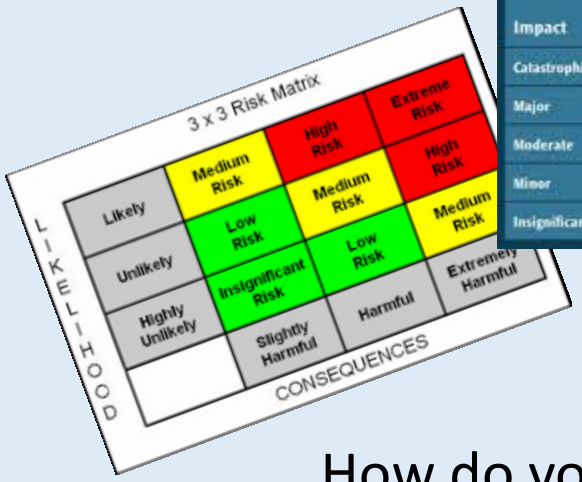
MOST IMPORTANT

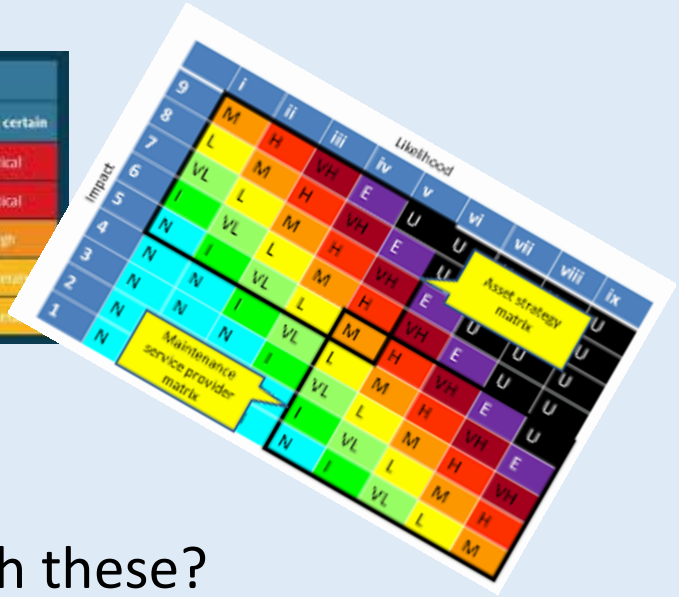
Uniform Representations:

ProbabilityManagement.org is trying to do this for probability distributions

A Uniform Methodology for Risk Management

- Uniform Format





How do you calculate things with these?

"Orange times fish plus purple times birds equals Pee Wee Herman."

Doug Hubbard & Richard Seiersen

A Uniform Methodology for Risk Management

- Uniform Computations

The American Society of Mechanical Engineers' flawed definition: Risk = Likelihood of Failure (LoF) X Consequence of Failure (CoF).

Daniel Bernoulli in the 18th century Expected Utility $=\sum u_i \text{x } p_i$

Simulated Outcomes. Includes FAIR Taxonomy.

A Uniform Methodology for Risk Management

- Uniform Representation for Uncertainty

The Open SIPmath™ Standard is maintained and developed by 501(c)(3) nonprofit ProbabilityManagement.org

= 6, 1, 2, 3, 6, 2, 5, 5, 4, 5, 2, … 6,4,2,5,1,4,2, 4, 1

The SIP of a die roll

A Uniform Methodology for Risk Management

Bottom Line

1. Risk Management must keep uncertainty alive, by including all the rolls of the dice.

2. This allows the stakeholders to mutually agree on a strategy for playing craps.