

Stories for *Exploring Modern Mathematics*

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Here is a list of stories I want to tell about various topics...

1. Mathematical Thinking

- Being more like Sweden, Laffer curve
- Abraham Wald and the Missing Bulletholes

2. Counting

- (a) The Birthday Paradox.
- (b) Galton Board demonstration.
- (c) *Cash WinFall*, *Jerry and Marge Go Large*, the MIT Lottery Kids.
- (d) How the Allies Calculated the Number of German Tanks in World War 2
- (e) Utility Functions: why if you never miss a plane you are probably doing it wrong. Why the rich get richer.
- (f) You really don't know how probability works and you will be mad about it: *Let's Make a Deal* and The Monty Hall Problem.

3. Cointossing

- (a) You don't know how to fake a cointoss.
- (b) p -value hacking. Its bad and its everywhere.
- (c) Cointossing is a microcosm for everything.
- (d) Why is every handsome man a jerk?
- (e) Biased Sampling: Berkson's Fallacy, Survivor Bias and the Baltimore Stock Broker.
- (f) Statistical-Logic and Logic-Logic are not the same.

4. Ranked Choice Voting

- (a) Ross Perot, Ralph Nader, and George Wallace. What do we want from an election system?
- (b) Slime Molds and Borda Counts
- (c) Burlington's 2009 Mayoral Election.

5. Graphs and Networks

- (a) The Seven Bridges of Koenigsburg Puzzle [and the House Walking Puzzle].
- (b) The Traveling Salesman Problem
- (c) The Three Houses and Three Utilities Puzzle.

6. Symmetry

- (a) Triangles, Squares, Pentagons, and beyond
- (b) The Prisoner Puzzle
- (c) The Magic Tricks
- (d) The Golden Ratio