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Debiasing Risk Assessments: A Calibration Workshop



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What's the Issue?

A frustrating difficulty generating predictable outcomes on a consistent basis



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Predictability – Controlling Factors

Risk, Uncertainty, Bias



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Working Definitions

Risk: An event that can be described by two or more potential outcomes each with associated probabilities of occurrence

Uncertainty: The inability to predict the outcome of an event or variable, usually represented by a distribution of potential values

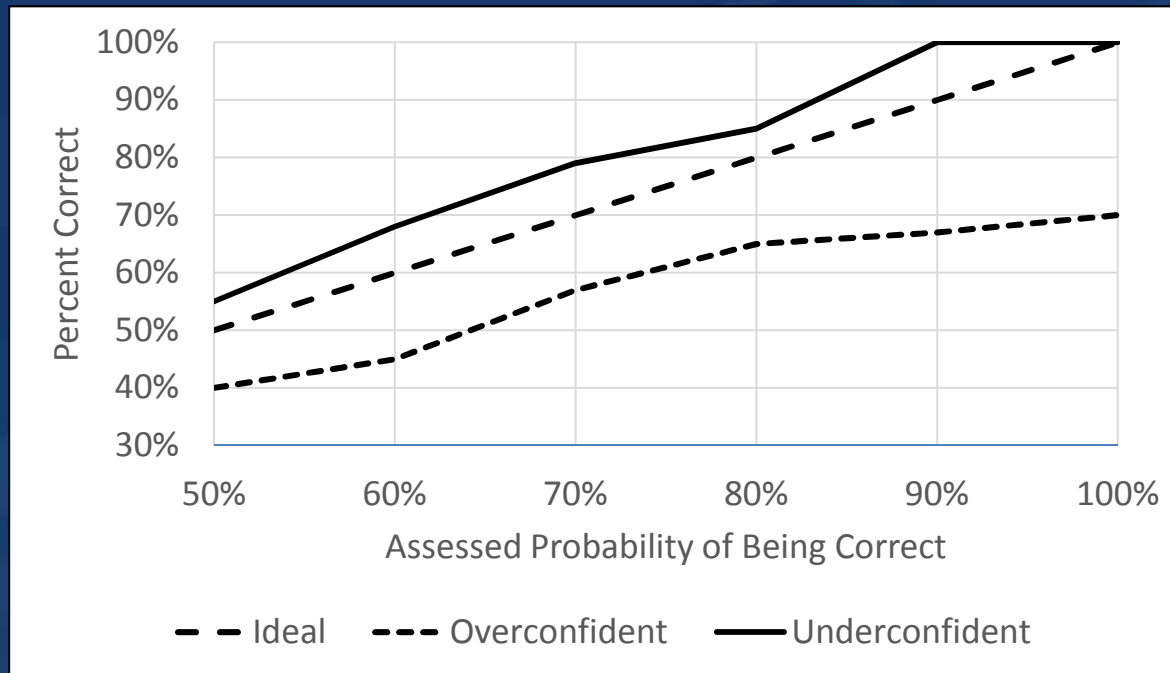
Bias: Knowingly (motivational) or unknowingly (cognitive) introducing error into a prediction



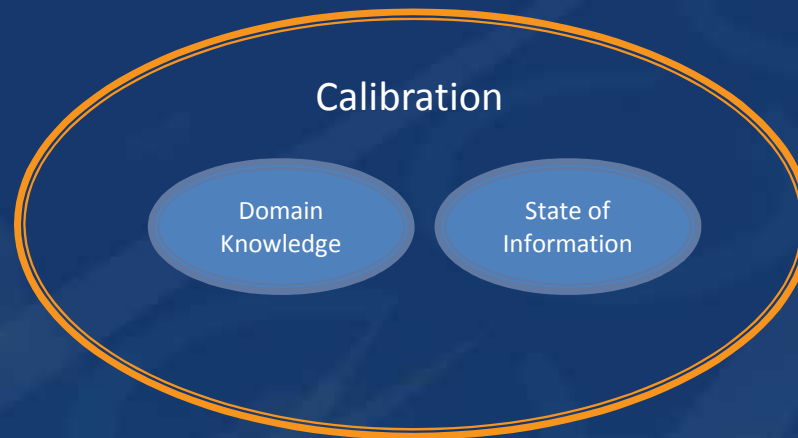
Biases, You're Surrounded

- Motivational Biases
- Illusion of Control
 - Neglect of Probability
- Bandwagon Effect
- Anchoring and Adjusting
- Confirmation Bias
 - Heuristics

Overconfidence



Calibration – It's Mental



Calibration is a teachable skill that enables experts to accommodate both the state of available information and their level of knowledge into predictions or estimates

Calibration Exercise

- We will use trivia questions
- Two Question Types:
 - Range
 - You are asked to establish a 10-90 range (80% confidence limit) around a value
 - True/False with Confidence Level
 - Confidence ranges from 50% to 100%
 - 50% = coin flip
 - 100% = answer is completely certain

Question Set A

- Take 5 minutes to answer the 10 questions
- When done, sum your confidence estimates in the true/false section

$$50\%+50\%+50\%+50\%+50\% = 2.5$$



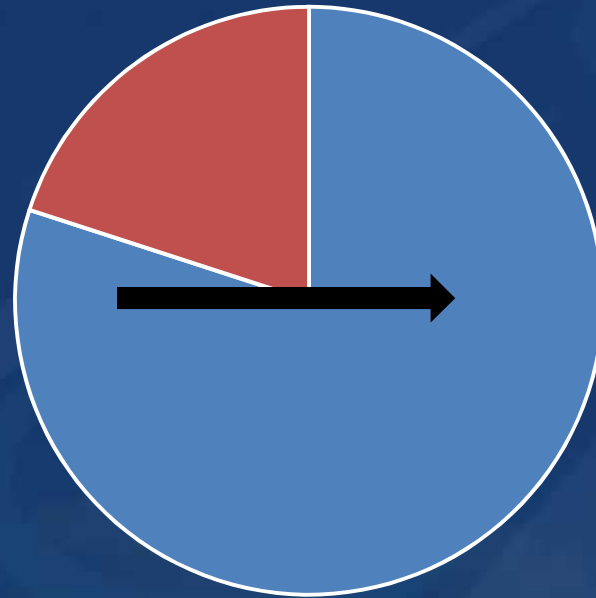
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Question Set A - Answers

	Answer
1	How much water does the average California household consume daily? – 350 gallons
2	How many employees did Apple have in 1999? - 6960
3	How long is the song “I Walk the Line” by Johnnie Cash? – 2:45
4	How many U.S pecks are in a gallon? – 0.5
5	How many names does Walmart operate under worldwide? - 65
6	The Airbus A380 seats 525 people in a standard 3 class configuration. - True
7	Human hair grows on average 7.1” per year. - True
8	Results of a Google search for brussels sprout recipes exceeds those for liver recipes. - False
9	“Strengths Finder 2.0” by Tom Rath has been on Amazon’s top 10 book list for 9 consecutive years. - True
10	A group of mature pigs is called a sounder. – True

The Equivalent Bet Visualization



This spinner represents an 80% confidence limit. Would you rather bet on a spin of the dial or the answer falling inside your range?

Additional Tips for Making Better Estimates

- Start at the end members, describe the low, describe high, then state your estimates
 - Use the equivalent bet visualization to confirm, is there a 90% chance the answer lies above my low or below my high?
- Be sure you understand the context of the question (units, time, place, language)
- Imagine the answer fell outside your range, what could cause it to do so?

Question Set B

- Take 5 minutes to answer the next 10 questions
- Remember that the task is to adjust your ranges and confidence estimates to match the state of your knowledge and the information provided, not to be right every time



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Question Set B - Answers

	Answer
1	What is average rainfall in Riau Province Indonesia in feet? – 7.8 feet
2	What is the average number of computers per household in Bahrain in 2008? - 5
3	What percentage of the ice in the Antarctic consists of penguin urine? - 3%
4	How many spoons, forks, and knives are kept at The Whitehouse? 13,000
5	How many people were listed in the New York phone book in 1939 with the last name of Hitler? 22
6	The diameter of an American golf ball is 1.62". - False
7	The length of the Titanic was 883'. - True
8	The “standard” tarot card deck contains 78 cards. - True
9	The modern can opener was invented 48 years after the tin can. - True
10	Ostrich eggs are equivalent to 12 chicken eggs. - False

Summary

- Predictability is influenced heavily by human biases
- Biases are not a fault but a natural state of human affairs
- Biases, while numerous, are well understood and most can be mitigated with reasonable effort

Thank You