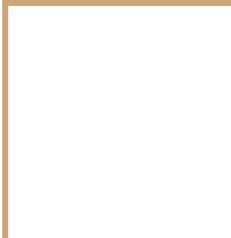


**According to the Law of Infinite Probability,
one day this should occur...**





Probability

Lyron, Elizabeth & Jason



Degree of Certainty Activity

Probability deals with how to quantify uncertainty. However, often uncertainty is communicated through language in a qualitative way. This activity demonstrates the connection between qualitative and quantitative descriptions of uncertainty.

Each take a word or phrase as you come in, and stick it to the wall in order of increasing certainty.

Key Terms

First, a little on the language around probability.

Key terms often used to discuss probability include:

- Probability/ Likelihood/ Certainty
- Proportions
- Odds

Probability, Likelihood, Certainty.

Probability, Likelihood, and Certainty are often used interchangeably as synonyms in common language.

Probabilities have two key properties that are preserved across all variations:

- They can only be between zero and one.
- They sum to a total of one (across all possible outcomes).

So “a probability of 1.3” or “a probability of -0.2” are simply invalid. And if the probability of it raining today is 0.2 then the probability of it not raining is 0.8 (because they must sum to a total of 1).

Proportions

Proportions can be interpreted as probabilities when combined with **random sampling**.

Proportions can be expressed in many different ways, for example:

- As counts, "1 in 12 men are colour blind",
- As fractions, "one twelfth of men are colour blind" ($1/12$),
- As decimals "the proportion of men that are colour blind is approximately 0.083" or percentages (8.3%).

Odds

The distinction between probability and odds is often a confusing one. Odds talk about the relative likelihoods of the two possible outcomes, while probability talks about the likelihood of a single outcome out of the total.

For example, “The odds of Richmond beating Hawthorn are 2 to 13 against” means that the probability of Richmond winning is 2 in 15, or that the probability of them losing is 13 in 15.

Common Contexts

Statistics

Weather forecasting

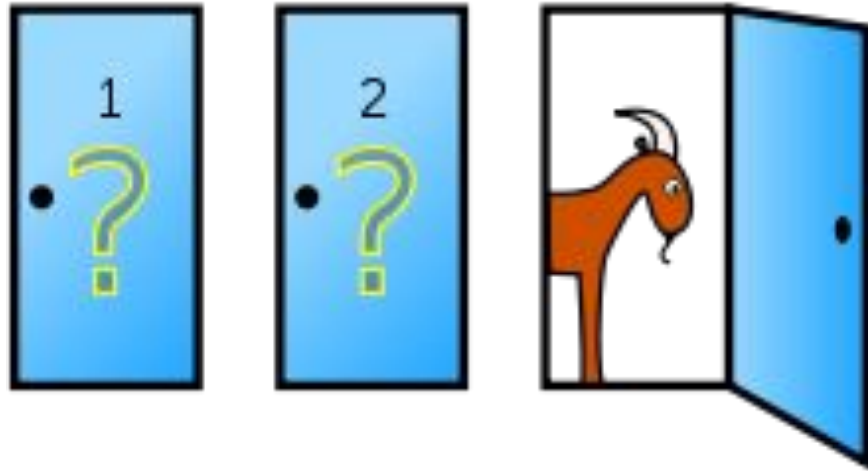
Gambling

Actuary

Luck?

Monty Hall Problem

Let's play a game!



Uncertainty as a Positive.

Uncertainty can be an important hinderance to acknowledge and talk about.

But sometimes we might actually want to add uncertainty into a situation.

This occurs in games, but can also be of more practical usefulness and this activity illustrates one such context.

[Activity-Based Statistics](#) pp 131-133 | [Cite as](#)

Randomized Response Sampling: How to Ask Sensitive Questions

Authors

Authors and affiliations

Richard L. Scheaffer, Ann Watkins, Mrudulla Gnanadesikan, Jeffrey A. Witmer