Combining Intuition and Data

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- Better to be explicit about it.

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- If evidence increases your belief that A is true,
  the same evidence must decrease your belief that A is false.
- If new evidence increases your belief in A,
  but does not change your belief in B,
  it must increase your belief in AB.

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- Plausibility of A
- Degree of belief in A
- Probability of A
- $P(A)$

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- This is essentially Bayes theorem.

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- $P(\theta \mid \text{data}) \propto P(\text{data} \mid \theta) \cdot P(\theta)$

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- It's not necessary, or possible, to be completely precise.

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- All inference follows the same framework. No adhockery.
- Results are easy to interpret.

Tiny data: Backgammon example

- Is an undefeated player better than one who has been defeated?

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- Two wins and no losses vs. 90 wins and 10 losses

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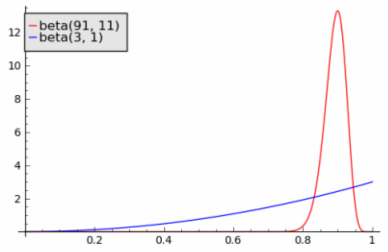

Resources

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- Probability Theory: The Logic of Science by E. T. Jaynes
- `http://tinyurl.com/bayes-backgammon`
- Contact info: `http://JohnDCook.com`