

Pascal's Wager

by David Barnett

Is it rational to...

- Bet \$100 for a 10% chance at winning \$100? **NO**

Is it rational to...

- Bet \$100 for a 10% chance at winning \$200? **NO**

Is it rational to...

- Bet \$100 for a 10% chance at winning \$2,000? **YES**

Is it rational to...

- ❑ To switch doors on “Let’s Make a Deal”? **YES**
- ❑ Switcher versus Sticker, 900 games:
 - ❑ Switcher wins 600 games
 - ❑ Sticker wins 300 games

Expected Utility

Expected Positive Utility (chance \times quantity of positive utility)

-Expected Negative Utility (chance \times quantity of negative utility)

Expected utility

What is the expected utility of...

- Betting \$100 for a 10% chance at winning \$100?
 - Expected Positive Utility: $.10 \times \$100 = \10
 - Expected Negative Utility: $1 \times \$100 = \100
 - Expected Utility: $\$10 - \$100 = -\$90$ **Not Rational**

What is the expected utility of...

- Betting \$100 for a 10% chance at winning \$200?
 - Expected Positive Utility: $.10 \times \$200 = \20
 - Expected Negative Utility: $1 \times \$100 = \100
 - Expected Utility: $\$20 - \$100 = -\$80$ **Not Rational**

What is the expected utility of...

- Betting \$100 for a 10% chance at winning \$2000?
 - Expected Positive Utility: $.10 \times \$2000 = \200
 - Expected Negative Utility: $1 \times \$100 = \100
 - Expected Utility: $\$200 - \$100 = \$100$ **Rational**

What is the expected utility of...

- Studying 20 hours for a 90% chance at getting an A?
 - Expected Positive Utility: $.90 \times 100 \text{ hedons} = 90 \text{ hedons}$
 - Expected Negative Utility: $1 \times 10 \text{ hedons} = 10 \text{ hedons}$
 - Expected Utility: $90 - 10 \text{ hedons} = 80 \text{ hedons}$
 - Is it rational? **Depends on alternatives.**

What is the expected utility of believing in God?

- Pascal:
 - It's unlikely that God exists: let's say 1% likely.
 - Expected positive utility: $.01 \times \infty \text{ hedons} = \infty \text{ hedons}$
 - Expected negative utility: $1 \times \emptyset \text{ hedons} = \emptyset \text{ hedons}$
 - Expected utility: $\infty \text{ hedons}$

What is the expected utility of *not* believing in God?

- Pascal:
 - It's unlikely that God exists: let's say 1% likely.
 - Expected positive utility: $1 \times \emptyset$ hedons = \emptyset hedons
 - Expected negative utility: $.01 \times \infty$ hedons = ∞ hedons
 - Expected utility: $-\infty$ hedons

Pascal's Wager

1. Either we believe in God, or not.
2. If God exists, we lose everything for not believing and gain everything for believing.
3. If God does not exist, we gain/lose nothing for believing or not believing.
4. Therefore, it is rational to believe that God exists (no matter how unlikely it is).

Problems...

- If Pascal is right, shouldn't we believe in all sorts of unlikely beings?
- E.g., the Giant Purple Chicken Lady Freak?
 - If she exists, GPCLF will grant believers infinite happiness, and disbelievers infinite suffering, upon their death.

Problems...

- Can we freely choose to believe whatever we want?
- What is faith?

Problems...

- Do we really lose nothing for believing in God if there is no God?
- What are the effects of religion on the world?
- What is the expected utility of eliminating all religion hereafter from the face of the earth?