Translating Science into Policy
The Role of Decision Science
An Educational Module

Slides

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Introductory Notes: Questionnaires

The materials include questionnaires, which students should submit in advance of reading the materials for the relevant classes. The aggregate responses are useful for class discussion. In some cases, to illustrate how different ways of framing the same problem can lead to different outcomes, a questionnaire will have two versions, each to be given to half the class. (To make it administratively simple, rather than do random assignment, I just divide the class in half alphabetically, and send one version to the first half and the other to the second.)

Students should answer the questionnaires before reading materials on the subject. You can either have students answer all of them before the first class, or for the class before it will be discussed (on the assumption that they won't read ahead beyond the next class).

Questionnaires: Same for All Students

1. A taxicab was involved in a hit-and-run accident at night. Two taxi companies, the Green and the Blue, operate in the city. You are given the following information:

- 85% of the taxis in the city are Green;
- 15% are Blue.

A witness identified the taxi as a Blue taxi. The court tested her ability to identify taxis under appropriate visibility conditions. When presented with a sample of taxis (half of which were Blue and half of which were Green), the witness made correct identifications in 80% of the cases and erred in 20% of the cases.

What is the probability that the taxi involved in the accident was Blue rather than Green?

2. In four pages of a novel (about 2,000 words), how many words would you expect to find that have the form

A. _ _ _ _ _ n _ ? (five letters, then n, then another letter)
B. _ _ _ _ i n g ? (four letters, then ing)

Questionnaire: Group 1

You are about to interview a candidate for an IT position in your organization. She has four years of experience and good all-around qualifications. When asked to estimate the starting salary for this employee, your assistant (who knows nothing about the industry) guessed an annual salary of $35,000. What is your estimate?

Do countries from sub-Saharan Africa constitute less than or greater than 30% of all United Nations members, and what's your best guess of the actual percentage?

Imagine that the United States is preparing for an outbreak of an unusual virus that is expected to kill 600 people. The exact scientific estimates of the consequences of the program are as follows:

- If Program **A** is adopted, 2000 people will be saved
- If Program **B** is adopted, there is a one-third probability that 6000 people will be saved and a two-thirds probability that no people will be saved

Which program would you choose?

Questionnaire: Group 2

You are about to interview a candidate for an IT position in your organization. She has four years of experience and good all-around qualifications. When asked to estimate the starting salary for this employee, your assistant (who knows nothing about the industry) guessed an annual salary of $135,000. What is your estimate?

Do countries from sub-Saharan Africa constitute less than or greater than 5% of all United Nations members, and what's your best guess of the actual percentage?

Imagine that the United States is preparing for an outbreak of an unusual virus that is expected to kill 600 people. The exact scientific estimates of the consequences of the program are as follows:

- If Program **C** is adopted, 4000 people will die
- If Program **D** is adopted, there is a one-third probability that nobody will die and a two-thirds probability that 6000 people will die.

Which program would you choose?

Introductory Notes: Problems

Problems

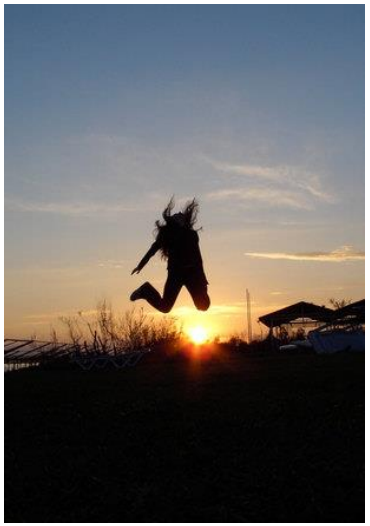
There are two sorts of problems.

1. Assignments to be done before class. Handed in and/or discussed in groups during class before opening a class-wide discussion. Slides marked in red.
If you plan to hand out the problems after the students have read the relevant text and you prefer that they not read all or some of the relevant text in advance, you can cut it out of the readings and hand it out after they've done the problem.

2. In-class exercises. discussed in groups during class before opening a class-wide discussion. Slides marked in purple.

utility

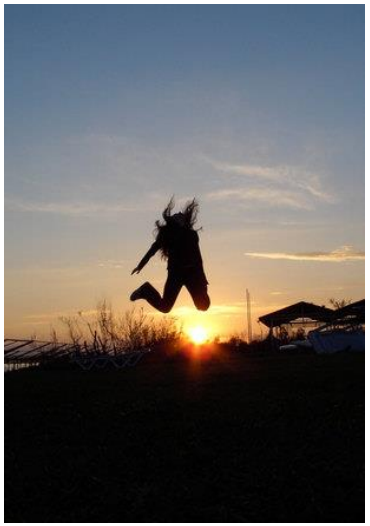
- Axiomatically, a good decision is one that maximizes utility.
- (Utility = wellbeing)
- But what is utility? (What enhances wellbeing?)



WHY CLIMB a MOUNTAIN?

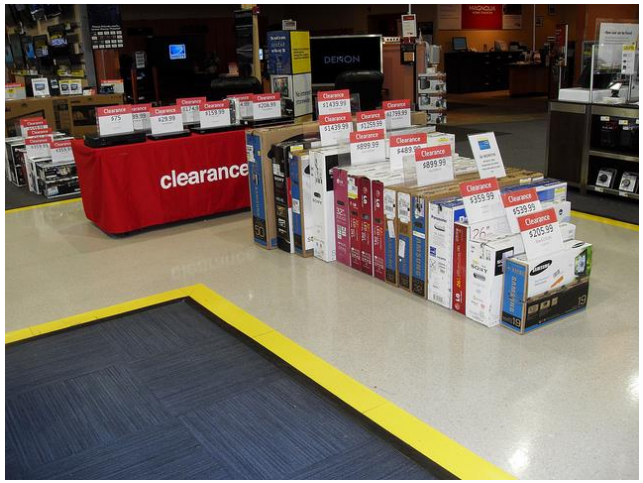
What kind of utility does a mountaineer get from climbing a mountain?

Subjectivity of utility (redux)



The Decision Process matters

- Utility is affected not only by the outcome of the decision-making process.
- The process can also affect utility:
  - emotion
  - fairness
  - transaction utility
  - agency



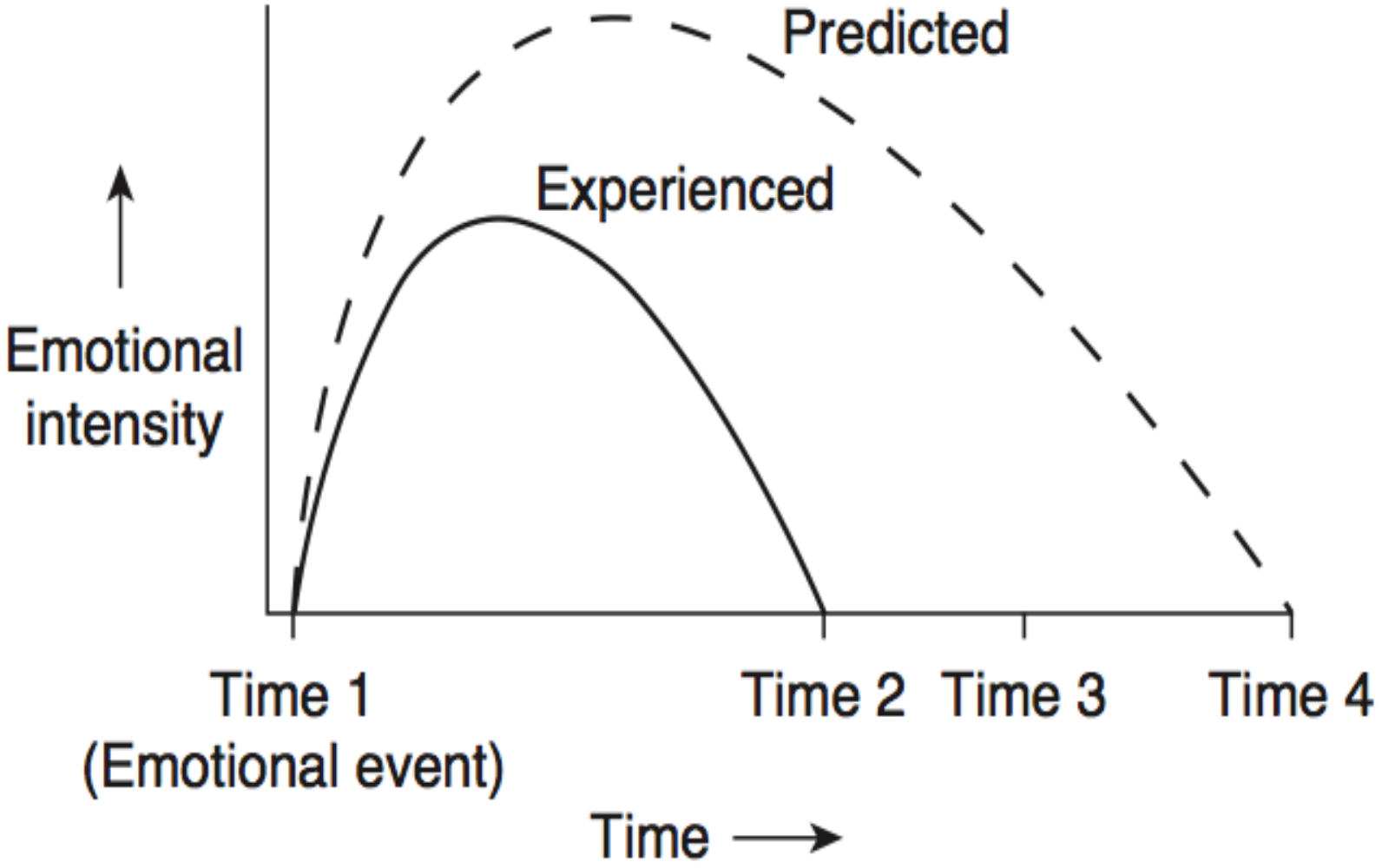
Choice Overload

Pulling the Plug

- In neonatal intensive care units, medical decision making policies are different:
  - State A: parents are autonomous; must decide treatments
  - State B: doctors retain treatment decisions
- In cases when withdrawing life-sustaining treatment is inevitable, how do we think the experience affected parents from State A compared to parents in State B?
- Botti, Orfali, and Iyengar 2009:
  - US – emotionally distressing, parents feel self-blame, guilt
  - France – parents less distressed, accepting

Ultimatum/Dictator Game

Adaption, and Errors in Affective Forecasting



Hedonic Adaptation

Imagine that one morning your telephone rings and you find yourself speaking with the King of Sweden, who informs you in surprisingly good English that you have been selected as this year's recipient of a Nobel prize. How would you feel, and how long would you feel that way? …

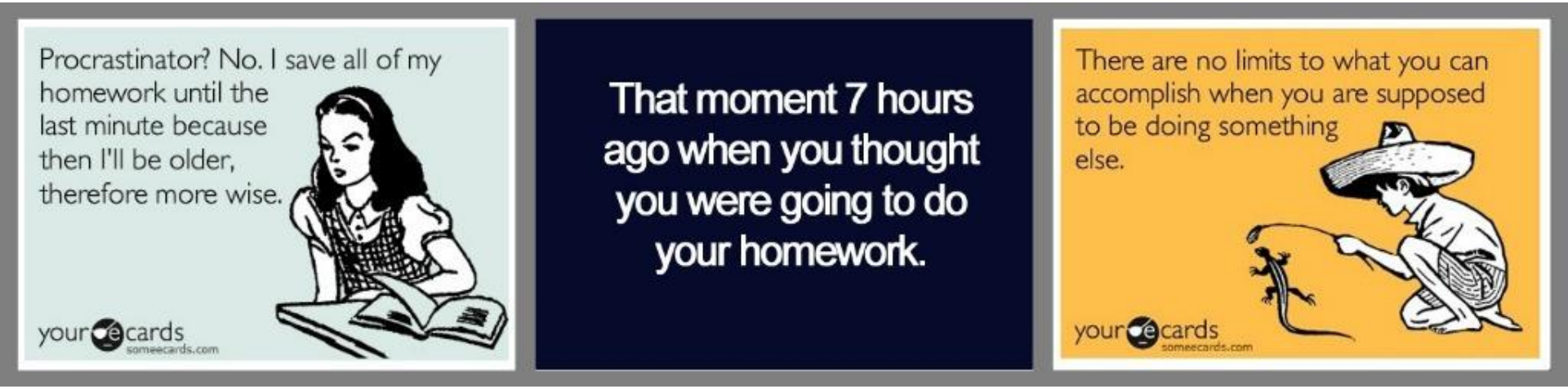
Now imagine that the telephone call is from your college president, who regrets to inform you (in surprisingly good English) that the Board of Regents has dissolve your department, revoked your appointment, and stored your books in little cardboard boxes in the hallway. How would you feel, and how long would you feel that way?

--Daniel Gilbert

Problem: Planning for the End of Life

- Would it be a good practice for lawyers, doctors, or other counselors to go beyond ensuring an individual is competent when providing advice about an advance health care directive? What else should they discuss?

PRESENT BIAS

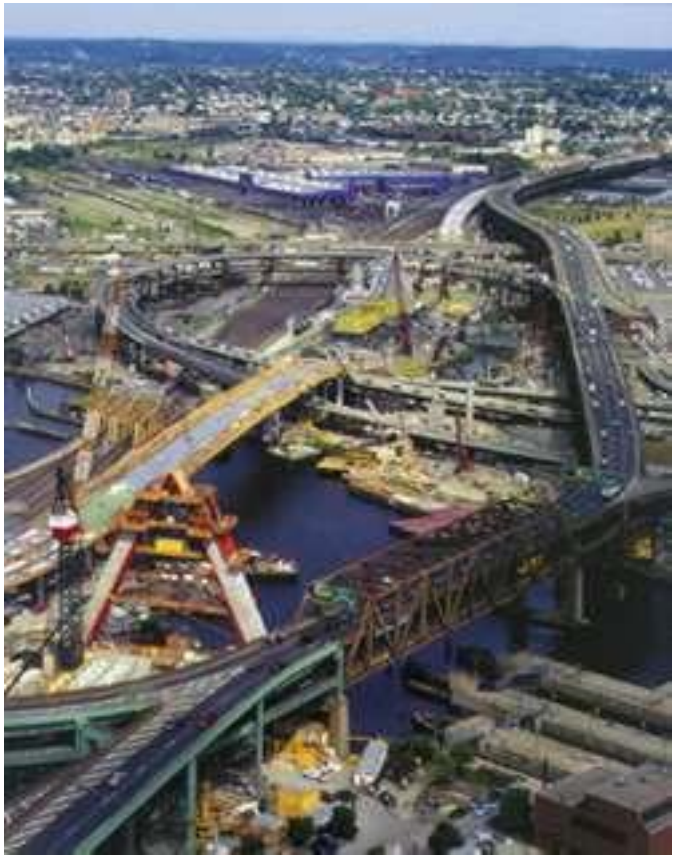


PRESENT BIAS

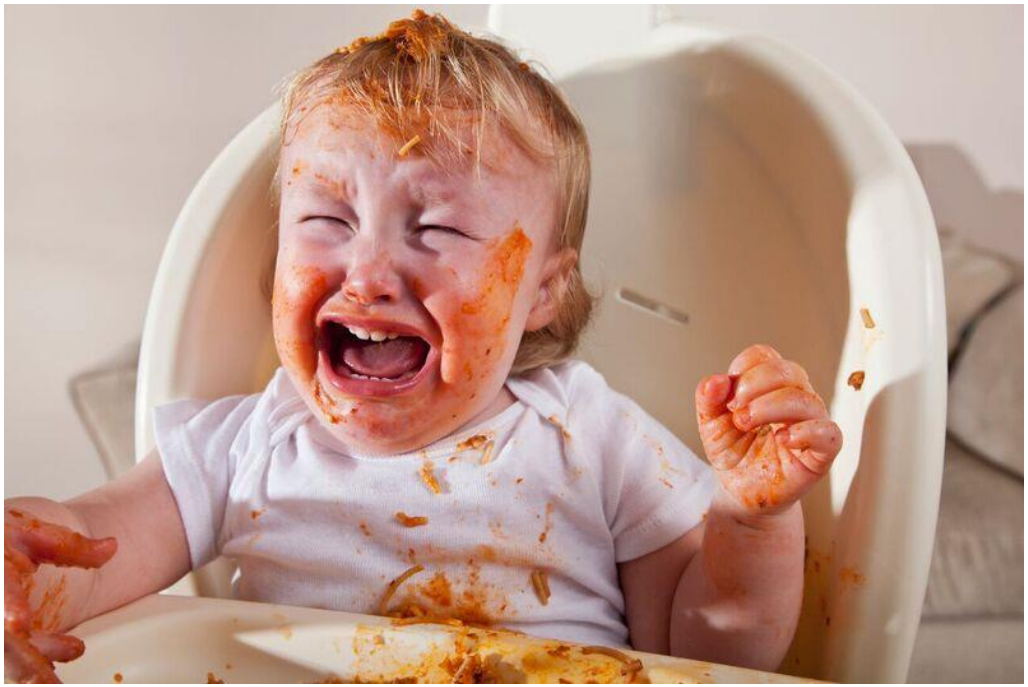
IMPATIENCE & PRESENT BIAS

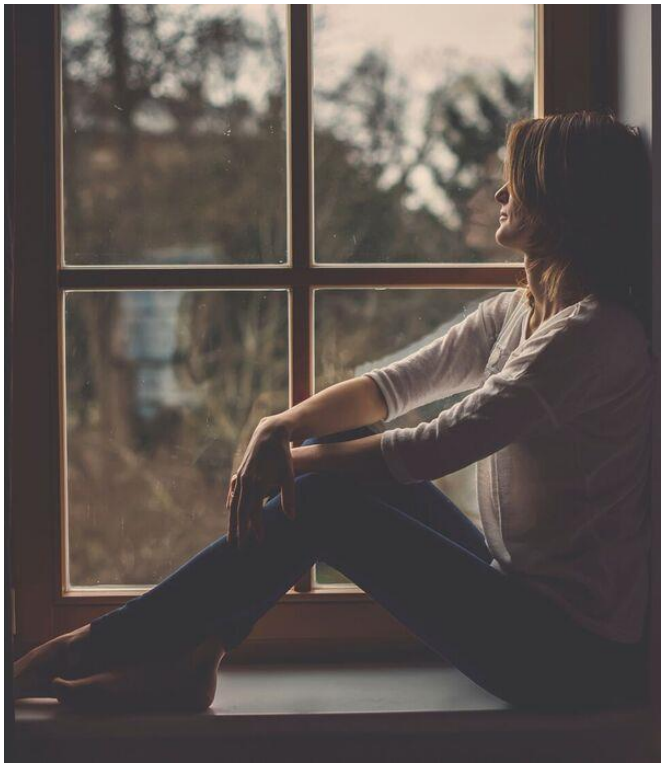
- **Would you pay a little more to buy an energy efficient air conditioner?**
- **Which would you prefer?**
  - $100 today or $200 in 1 year
  - $100 in 1 year or $200 in 2 years
- **The marshmallow experiment…**

Overoptimism/Planning Fallacy



Two Concepts of Wellbeing





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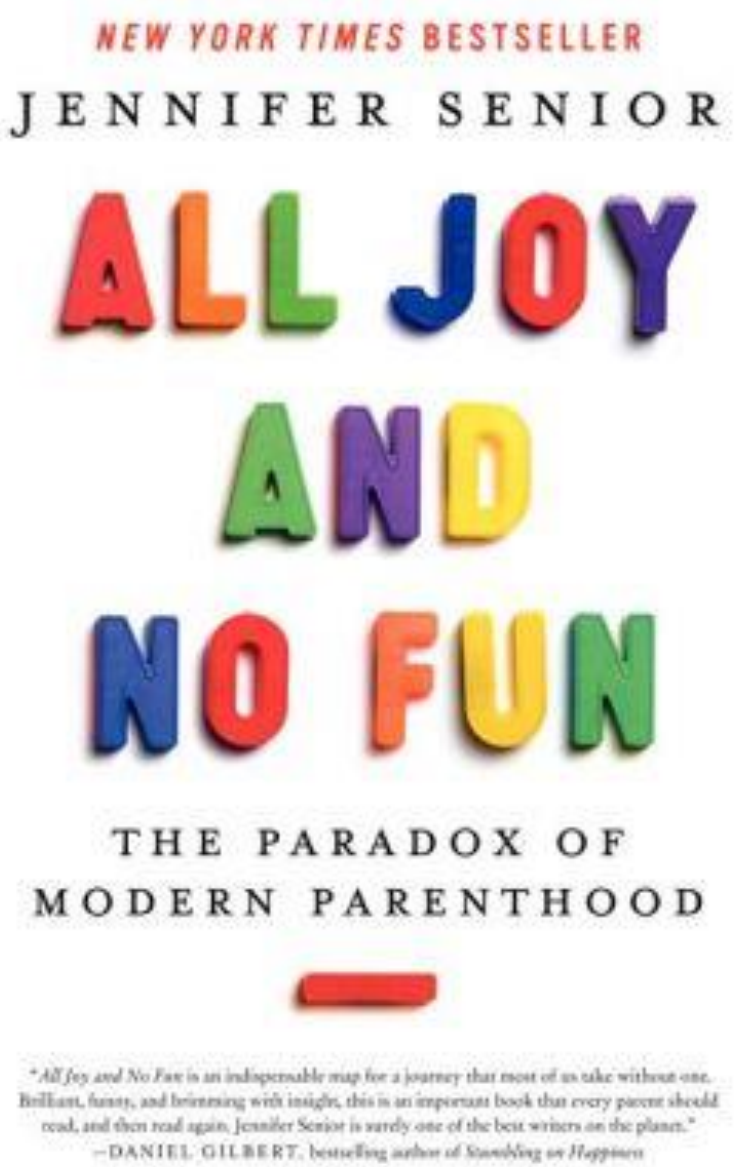
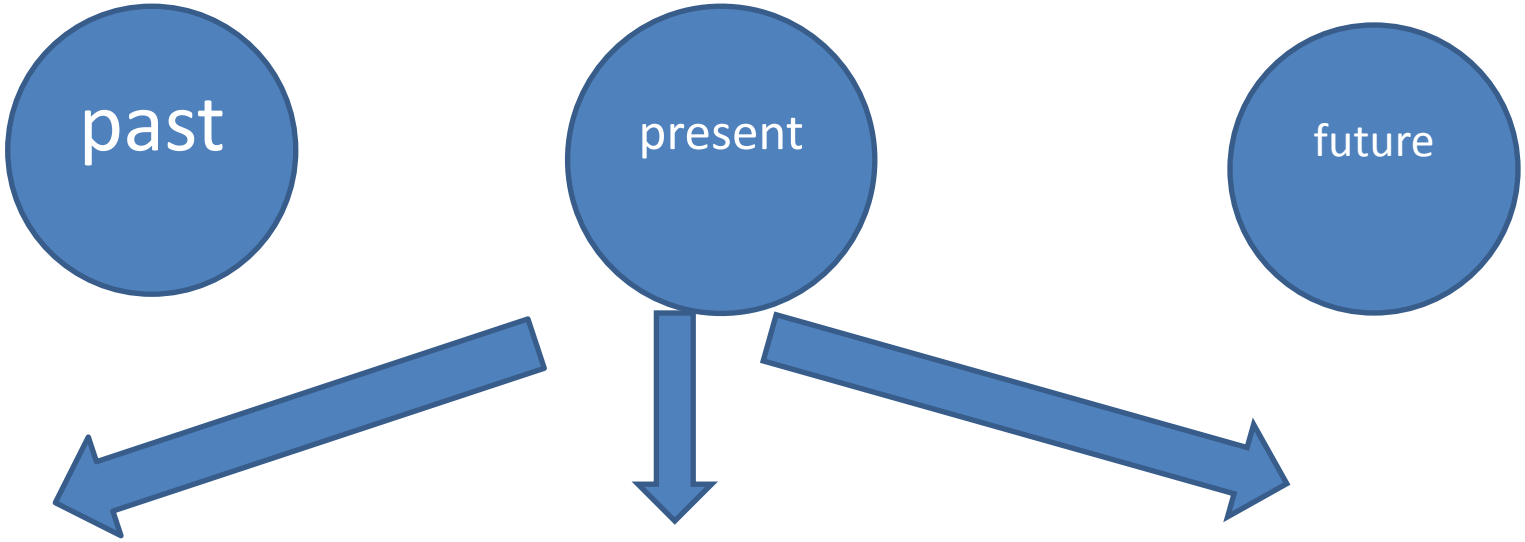


Utility

How (dis)satisfied are you right now, all things considered?



- Memories of past
- Comparison with past
- Reflection on general wellbeing

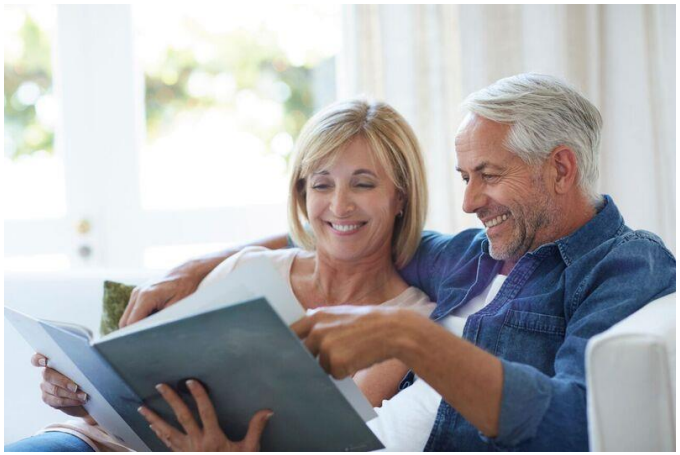
Present sensation of pain/ pleasure

Anticipation of future (including how a present intrinsically unpleasant activity may improve future utility)

Momentary vs. Recollected Experience

"The human race is far too stupid to be deterred from tourism by a mere several million years of bad experiences."

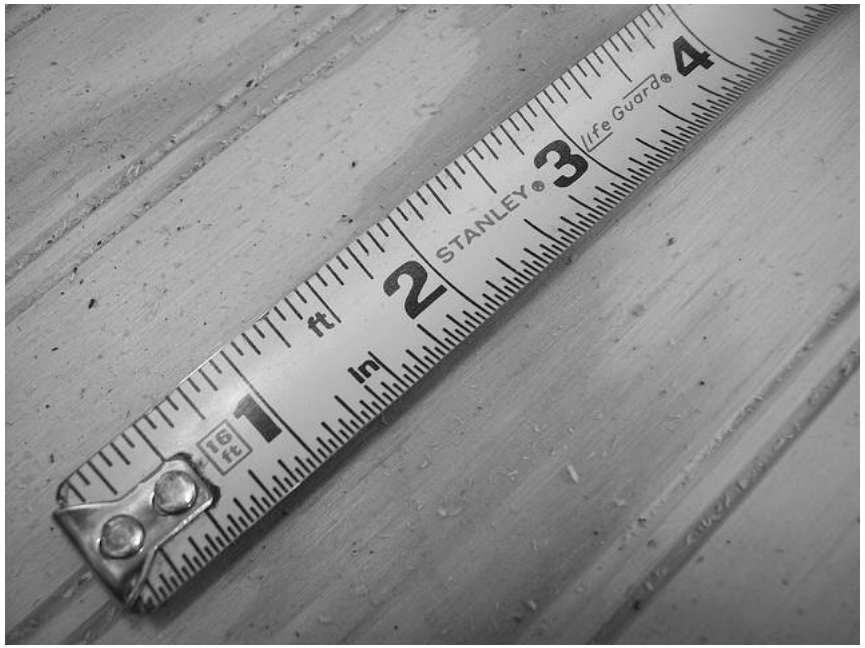
-- Dave Barry



Mountaineering Revisited: Any New Insights Into its Utility?

Problem: Measuring Utility

- Assume it is the state's role to increase its citizens' wellbeing. How can we tell if the mayor is succeeding?



A program to reduce childhood obesity
A program to reduce homelessness
A program to provide transportation and home care for the elderly
A congestion pricing program for cars entering the business district
Banning cigarette smoking on the street and in multi-unit dwellings, such as apartment houses
Any other program of your choice—to illustrate aspects of utility not elicited by the preceding programs.

Problem: Role of the Liberal State?

Expand services for people suffering from mental illness.
Ban advertising to children.
Reduce commute times.
Strengthen social capital.

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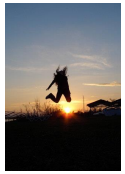

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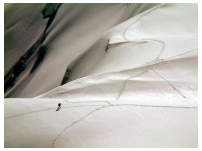

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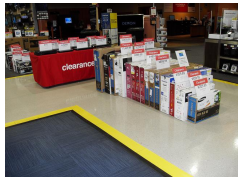

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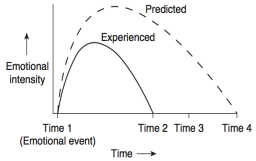

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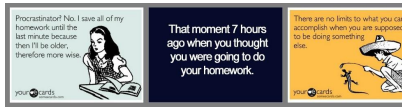

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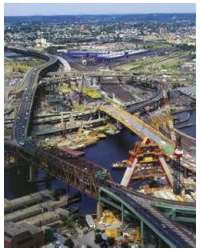

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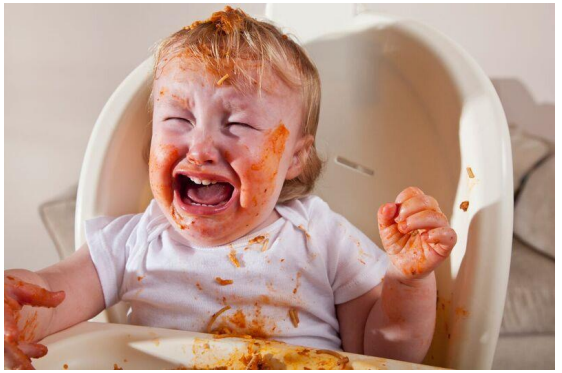

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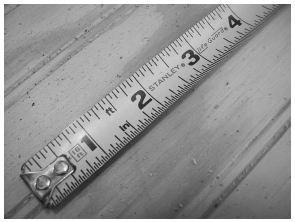

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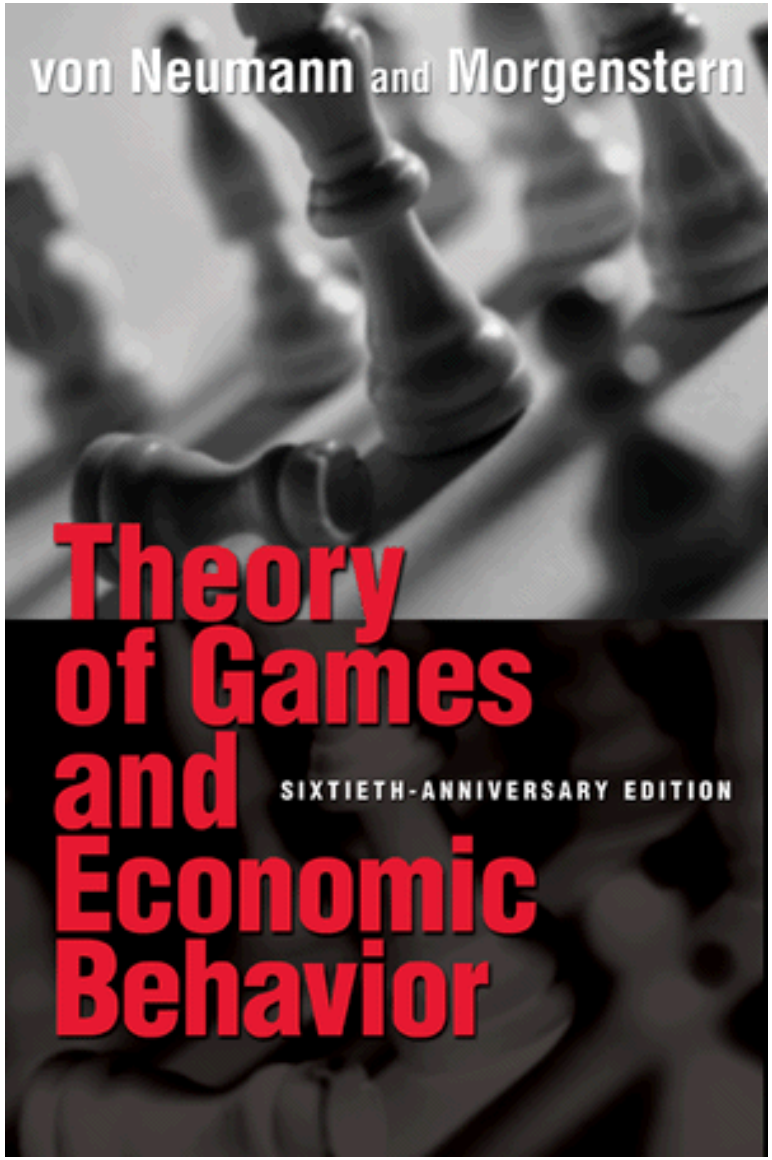
Decision Making
where risk is not a major factor

Subjective Linear Model Problem

Subjective Linear Model Problem

Please use a subjective linear model to structure a professional or personal decision (e.g., choosing what class to take, what summer job to take, what apartment to rent, where to take a vacation). It would be ideal, but not necessary, if you used a decision you are actually facing. But if an actual decision does not come to mind, or if you don't feel comfortable describing an actual problem, feel free to use a hypothetical case. The decision ought to involve three or more alternatives and three or more attributes. Please go through the process, step by step, to arrive at a decision (Actually work through the decision process rather than just describe how you might do it.)

Expected Utility Theory



Completeness

Faced with a choice between alternatives A and B, you must prefer A to B, prefer B to A, or be indifferent between A and B.

Dominance

A dominates B if A preferable to B in at least one respect and is at least as desirable as B in all other respects.

Invariance

The way in which choices are presented should not affect the outcome of your decision.

Invariance Violation

TABLE 13.2 PARENTS' QUALITIES IN A CHILD-CUSTODY DISPUTE

Parent A	Parent B
Average income	Above-average income
Average health	Minor health problems
Average working hours	Lots of work-related travel
Reasonable rapport with the child	Very close relationship with the child
Relatively stable social life	Extremely active social life

Notice that Parent A is average in all respects, while Parent B has some strong and weak points.

When asked to whom they would *award* sole custody, the majority of participants (64 percent) chose Parent B to receive custody. Yet when a different group of participants was asked to whom they would *deny* sole custody, the majority (55 percent) chose the opposite outcome and *denied* custody to Parent B.

Independence from Irrelevant Alternatives

The relative ranking of a particular set of options should not vary with the addition or deletion of other options.

Transitivity

If you prefer A to B, and prefer B to C, then you must prefer A to C.

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Intransitive Joan

- prefers blue to black
- prefers black to red
- prefers red to blue

Joan buys the blue car.

Buys *red* for trade-in of blue + 1¢

+ 1¢ ->

Buys *black* for trade-in of red + 1¢

+ 1¢

Buys *blue* for trade-in of black + 1¢

+ 1¢

Buys *red* for trade-in of blue + 1¢

+ 1¢

Cost-Benefit Analysis (CBA)

Net Value = Benefit − Cost

Net Value = $\frac{\text{Benefit}}{\text{Cost}}$

Cost-Benefit Analysis Problem

A high-crime city is concerned about the high rate of recidivism among young men released from prison: historically, about 30 percent are reincarcerated for violation of parole or for conviction of a new crime within two years of release.

The city's commissioner of corrections is considering funding a new program, run by a nonprofit organization, that provides counseling and job training and placement to these young men upon their release from prison. The commissioner seeks your advice about whether and at what cost per client it should support the organization, and provides you with the following information.

The city measures the marginal cost of a prisoner in terms of the number of "bed days" that he is in prison.
It costs the city approximately $150 per bed day.
The program counsels new-released prisoners for one year. We have data on two cohorts for the several years that the program has been in operation: their average rate of reincarceration two years after release has been 15 percent, or half of the historic average.

What further information about (1) the effectiveness of the program and (2) the program's costs and benefits for various stakeholders do you need to properly advise the commissioner?

With respect to (1) focus questions involving evaluating the program's effectiveness. With respect to (2) you might begin by identifying all relevant costs and benefits.

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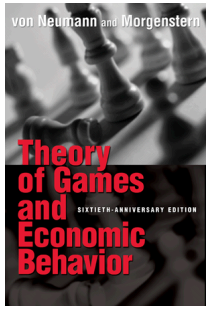

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Decision Making under risk

The Taxi Problem

A taxicab was involved in a hit-and-run accident at night. Two cab companies, the Green and the Blue, operate in the city. You are given the following information:

(1) 85% of the cabs in the city are Green; 15% are Blue.

(2) A witness identified the cab as a Blue cab. The court tested her ability to identify cabs under appropriate visibility conditions. When presented with a sample of cabs (half of which were Blue and half of which were Green), the witness made correct identifications in 80% of the cases and erred in 20% of the cases.

What is the probability that the cab involved in the accident was Blue rather than Green?

Frequentist statistics is concerned with $P(D|H)$—the probability of a set of data *D* under a hypothesis H, such as the null hypothesis H_0. If the data is extreme enough, we reject the null hypothesis.

Subjectivist talks about $P(H|D)$—the strength of one's belief in a hypothesis *H* after observing data *D;* for example, the probability that a defendant is guilty based on the evidence presented.

Many important decisions—personally and in policy—depend on subjectivist assessments of chances. Life requires us to constantly update our assessment of chances based on non-frequentist data—for example, did this defendant commit the crime?

Bayes theorem is all about updating beliefs**.**

Bayes' Theorem

$$P(H|D) = \frac{P(D|H)\,P(H)}{P(D)}$$

$$P(B|SB) = \frac{P(SB|B)\,P(B)}{P(SB)}$$

Bayes' Theorem Applied to the Taxi Problem

$$P(B|SB) = \frac{P(SB|B)\,P(B)}{P(SB)}$$

hypothesis **H**: cab is Blue (**B**).

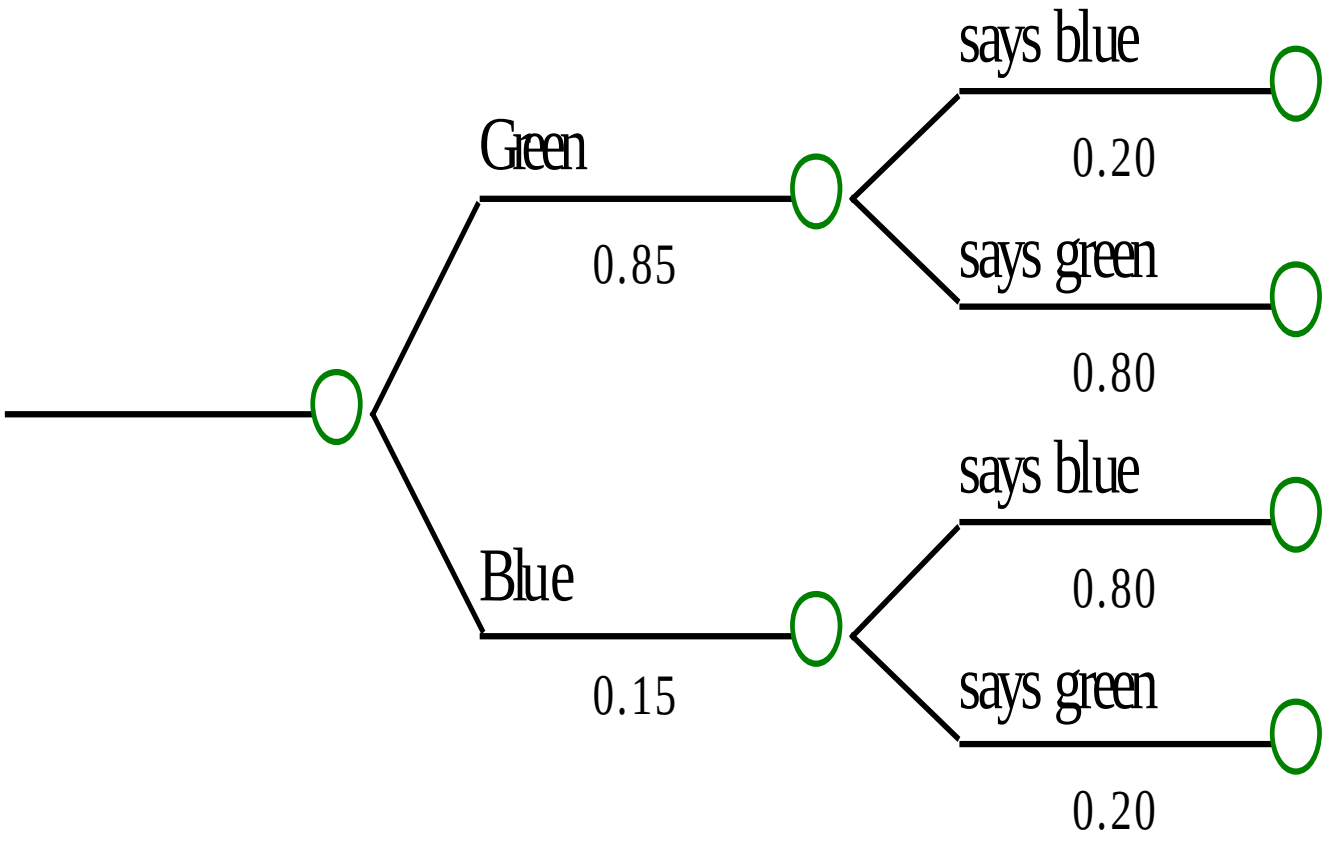
data **D**: eyewitness says cab is Blue (**SB**)

P(H) base rate, or prior probability
P(B) = 0.15

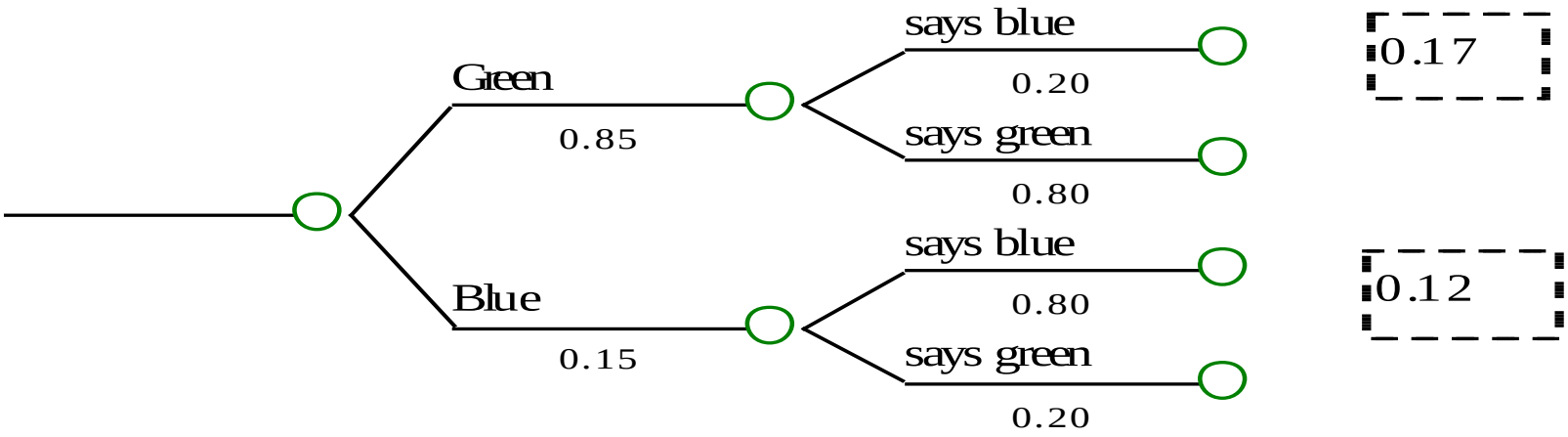
Goal: to find ***P(H|D)*** – or posterior probability
P(B|SB)

P(D|H) likelihood of data under the hypothesis
P(SB|B) = 0.8

Tree Solution to the Taxi Problem



Solving the Tree



*P(B & SB) = P(B)P(SB|B) = 0.15 * 0.80 = 0.12*

*P(G & SB) = P(G)P(SB|G) = 0.85 * 0.20 = 0.17*

Taxi Problem (concluded)

Witness says the cab was Blue 17+12=

29 out of 100 times
is correct 12 of those times

12/29 =0.41

Given the testimony that the cab was Blue, only a 41% chance that the cab actually was Blue

Your Answers to Taxi Problem

Answer	Percent of Class
80	
41	
15	

Explanation for errors?

- Just a difficult calculation
  - High estimate:
  - Ignores base rates
- Testimony is more vivid, available
- Anchor on 80% witness's reliability
  - Low estimates:
- Anchor on 15% base rate of Blue taxis

Source of Priors

Base rates from frequentist statistics

- Population of taxis

Non-quantified/non-quantifiable beliefs

- Population of black swans
- belief that, as of 2003, Iraq did or did not possess weapons of mass destruction:

- *P(H)* often just reflects the subjective strength of our prior belief in *H.* When we are called upon to revise a prior belief in terms of new evidence, the task is not formulaic as much as intuitively combining the prior belief with the current data.

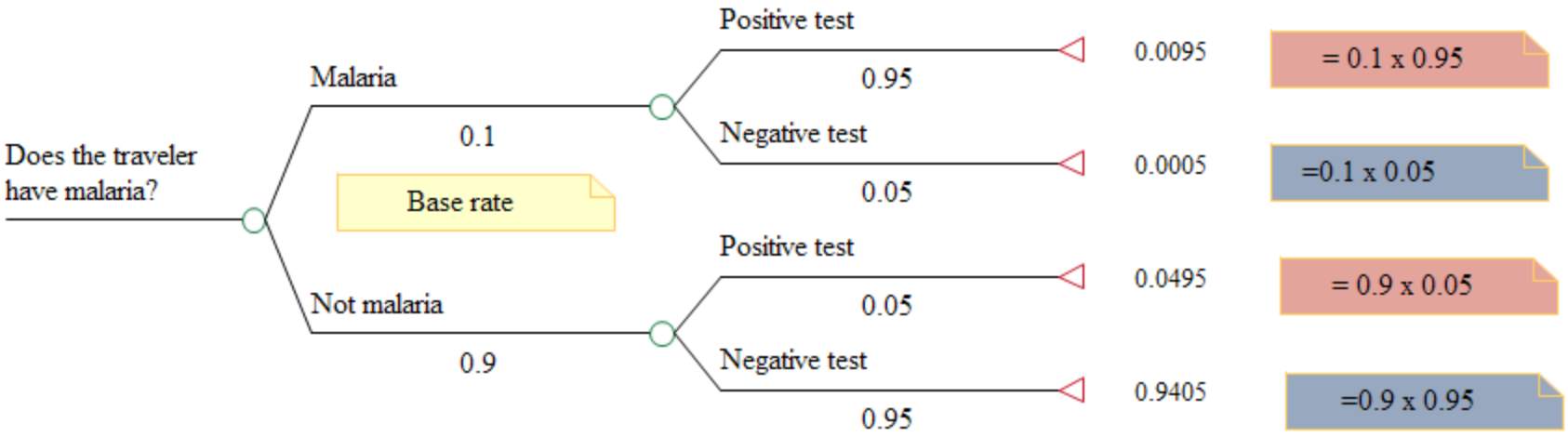
Problem: Does the Traveler Have Malaria?

A U.S. traveler returns from a trip to Bhutan with symptoms common to malaria as well as many other infections: fever, chills, sweating, headache, and fatigue. He tests positive for malaria in a blood test, which has both a true positive and a true negative rate of 0.95—i.e., the test only gives an incorrect result 5 percent of the time.

The Centers for Disease Control report that the estimated relative risk of malaria for US travelers to Bhutan is "very low." Interpret this to mean that only 10 percent of travelers who have these symptoms has malaria. The recommended treatment for malaria would be dangerous for this individual's health, but malaria would be even more dangerous.

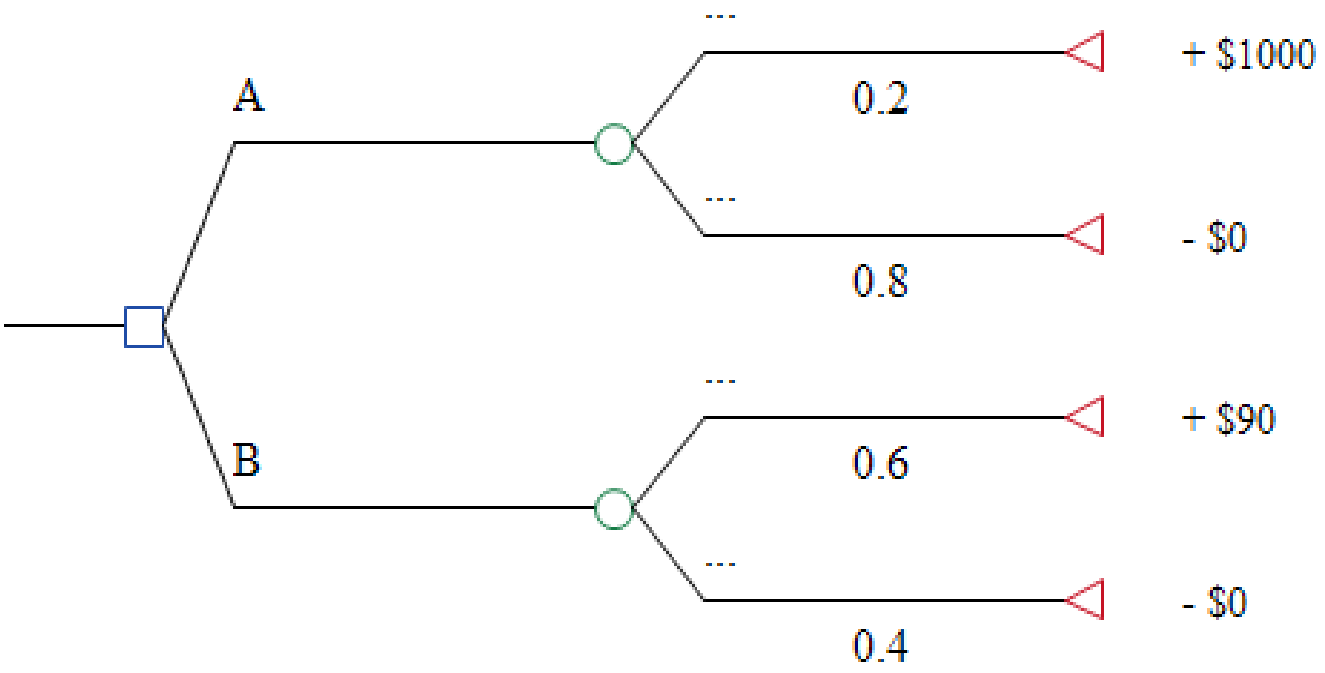
What is the likelihood that the traveler has malaria?

Does the Traveler Have Malaria?



Test says positive: (.1 x .95) + (.9 x .05) = 0.14
Likelihood that a traveler with positive test actually has malaria: .1 x .95 = .095
Probability that the traveler has malaria = ,095/.14 = 67.9%

Problem: Expected Value of Lottery



EV of A = 0.2 X $1000 + 0.8 X $0 = $200

EV of B = 0.6 X $90 + 0.4 X $0 = $54

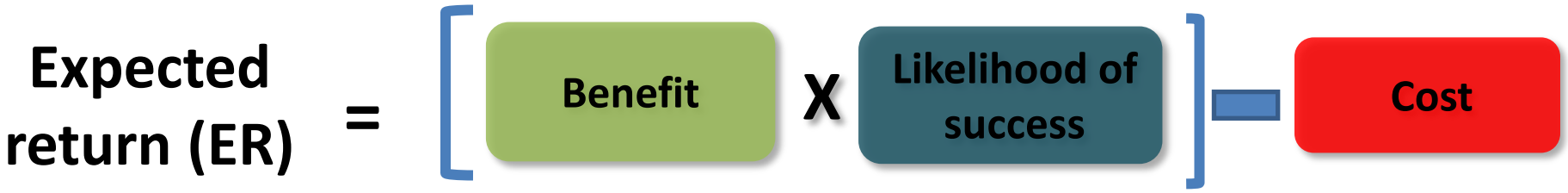
Decision Trees

Swine Flu

Swine Flu

The Nonexistent Blizzard

Expected Return



Swine Flu Program Options

1. *Do nothing*. Bet on an epidemic's not occurring. If an epidemic did occur, however, it would take many months to launch the program from scratch.

2. Order and *stockpile the vaccines* and create the infrastructure for a vaccination program, but delay implementation pending evidence of an influenza outbreak beyond Fort Dix. If an epidemic occurred, hundreds of thousands of people might become infected before the vaccines were deployed.

3. Embark on a national immunization campaign to immunize the entire population.

4. Embark on a national immunization campaign to immunize highly vulnerable people.

Swine Flu Program: Costs and Benefits

Costs

Administering the program—e.g., purchasing vaccines, recruiting and injecting people, administrative expenses. Sufficient vaccine doses would be ordered to serve the entire population, but the costs of administering the vaccine would depend on the number of doses actually administered.

Adverse reactions to the vaccinations, causing incapacity or death.

Benefits

The benefits are the difference between the status quo—the costs of inaction—and the positive effects of the program. For sake of illustration, the main categories we will consider are:

- *Medical expenses avoided*—e.g., physicians, hospitals, drugs
- *Avoidance of lost wages from illness*, or of life earnings if the illness is fatal

Swine Flu Program: Predicted Costs/Benefits

Do nothing.

Costs: $0

Benefits

If the epidemic *does not* occur: $0

if the epidemic *occurs*: a total *cost* to the U.S. of $6.25 billion—the result of 50,000 deaths and 53 million illnesses.

Vaccinate everyone in the population

Costs:* $271 million

Benefits

If the epidemic *does not* occur: $0

if the epidemic *occurs*: $2.86 billion (improvement over doing nothing) because of 22,000 (of 50,000) deaths avoided and 24 million (of 53 million) illnesses avoided.

Vaccinate only high risk residents

Costs: $94 million

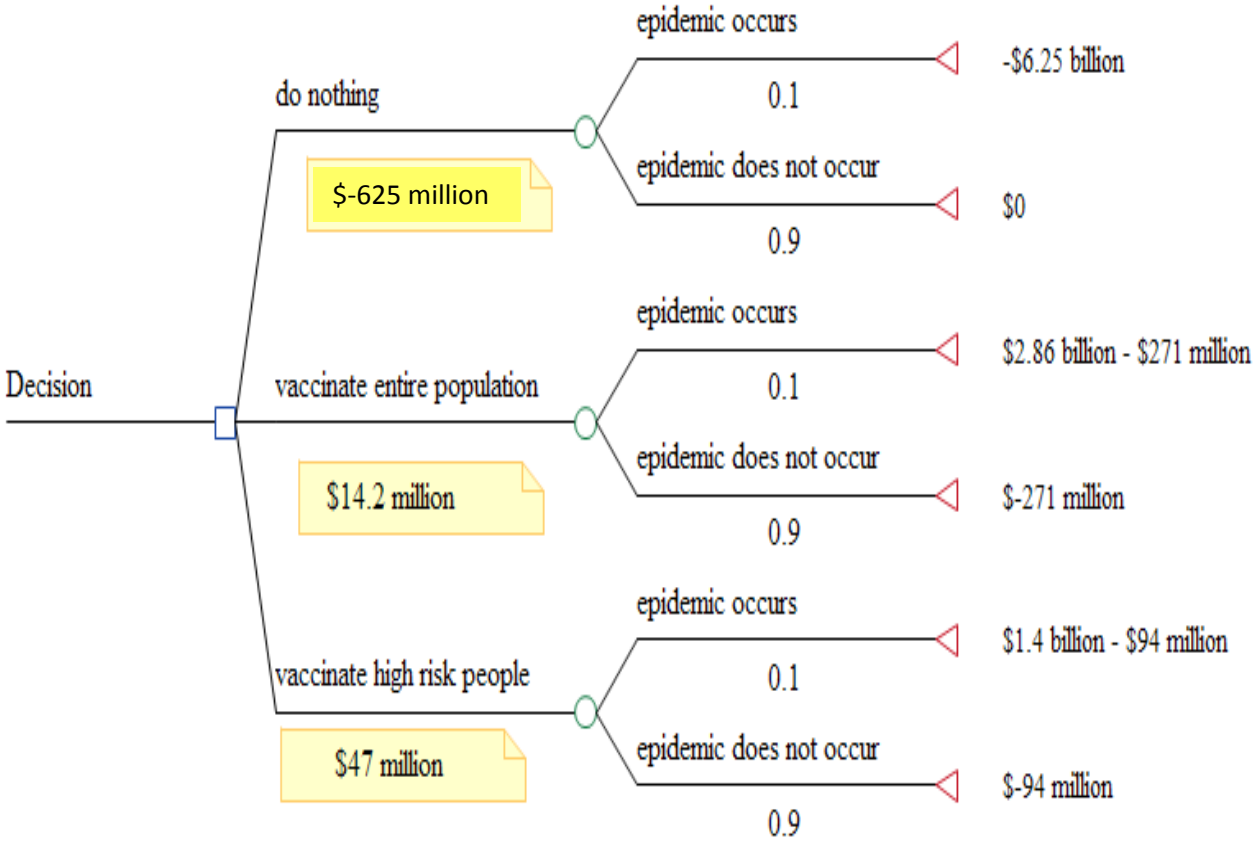
Benefits

If the epidemic *does not* occur: $0

if the epidemic *occurs*: $1.4 billion (improvement over doing nothing) because of 16,400 (of 36,000) deaths avoided and 12.3 million (of 27 million) illnesses avoided. - administration of the vaccine plus adverse effects.

Nonetheless, 28,000 would die and 29 million would be ill.

Swine Flu Vaccination Decision



The Looming Storm

https://www.flickr.com/photos/thomissen/750555958/in/photolist-29jN8Y

You are advising the mayor of a city that has some low-lying areas near the coast housing about 30,000 residents. The National Weather Service is predicting that a storm will hit the city in three days, with these probabilities of death or serious injury for those in the storm's path:

50 percent chance that it will be minor and won't cause any deaths or serious injuries.
30 percent chance that it will be extremely dangerous and that 1,000 residents will be seriously injured or killed.
20 percent chance that it will be catastrophic, and that 5,000 residents will be seriously injured or killed.

Based on the Environmental Protection Agency's current assessment of the "value of a statistical life," the average cost of injury and death per resident will be $800,000.

The mayor is considering whether to:
Do nothing, or
Order evacuation and provide transportation and long-term shelter for the residents. The estimated cost is $25,000 per person.

Draw a decision tree to represent this problem. The mayor says that she may take other considerations into account, but she asks you to tell her what decision a cost-benefit analysis would suggest.

The Looming Storm: Analysis

Do nothing:
No evacuation costs

no one injured = $0

1000 injured or killed @
$800,000/person = -$800 million
0.3 probability = -$240 million

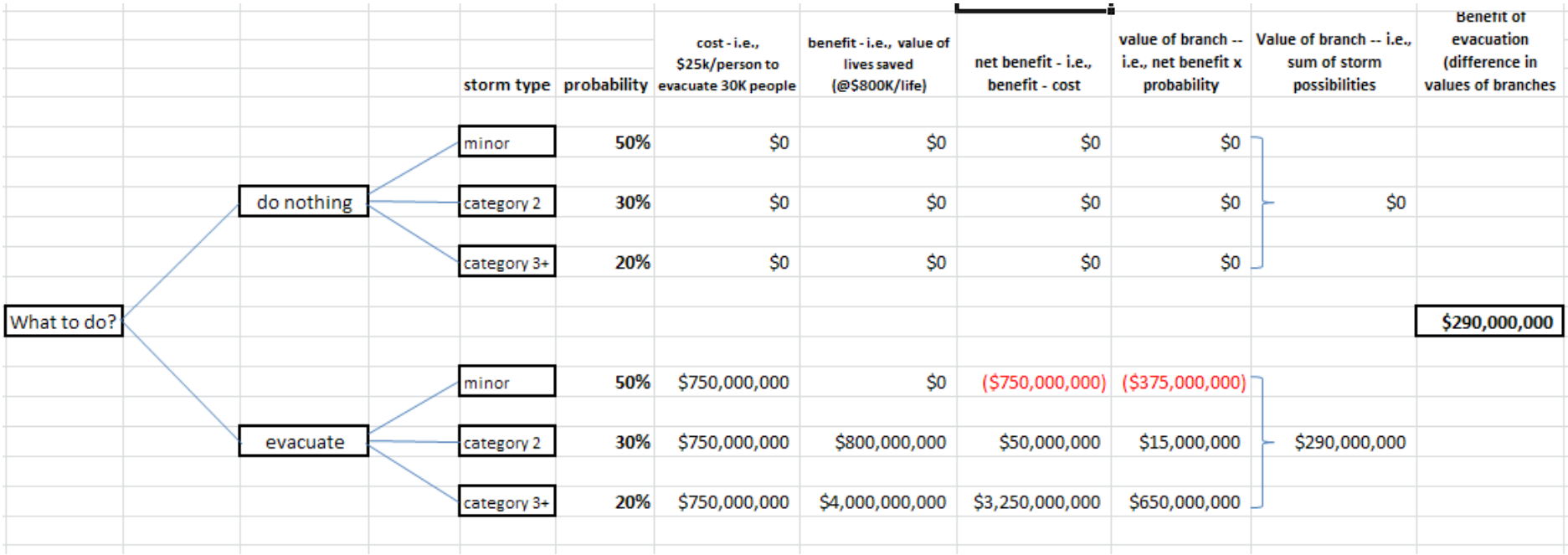
5000 injured or killed @
$800,000/person = $4 billion
0.2 probability = - $800 million
Total loss: -$1.04 billion

Evacuate all 30,000 residents:
@ $25,000 per resident = $750 million
no one injured = -$750 million

1000 saved @ $800,000/person
Benefit = $800 million
Cost = $750 million
Total benefit = $50 million
0.3 probability = $15 million

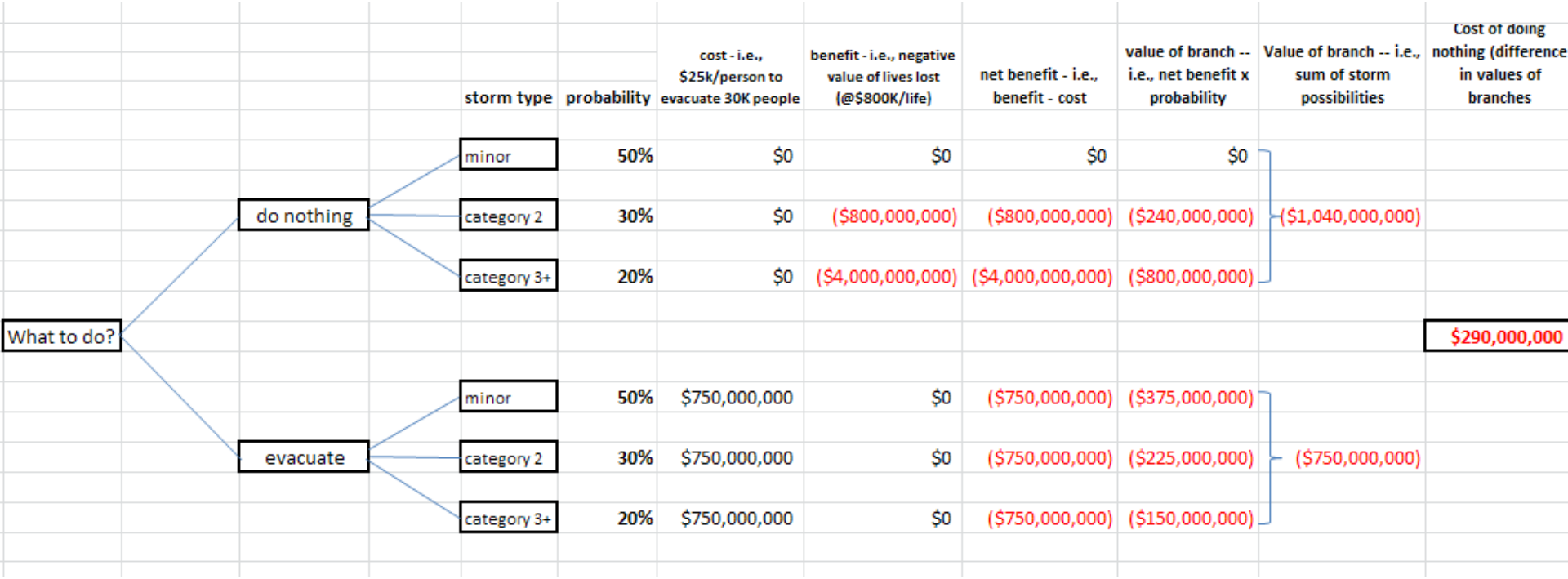
5000 saved @ $800,000/person
Benefit = $4 billion
Cost = $750 million
Total benefit = $3.25 billion
0.2 probability = $650 million
Total benefit: -$290 million

Storm—Treating No Evacuation as Zero Cost, and Evacuation as a Benefit



		storm type	probability	cost - i.e., $25k/person to evacuate 30K people	benefit - i.e., value of lives saved (@$800K/life)	net benefit - i.e., benefit - cost	value of branch -- i.e., net benefit x probability	Value of branch -- i.e., sum of storm possibilities	Benefit of evacuation (difference in values of branches
What to do?	do nothing	minor	50%	$0	$0	$0	$0		
		category 2	30%	$0	$0	$0	$0	$0	
		category 3+	20%	$0	$0	$0	$0		
									$290,000,000
	evacuate	minor	50%	$750,000,000	$0	($750,000,000)	($375,000,000)		
		category 2	30%	$750,000,000	$800,000,000	$50,000,000	$15,000,000	$290,000,000	
		category 3+	20%	$750,000,000	$4,000,000,000	$3,250,000,000	$650,000,000		

Storm—Treating Non-evacuation as Costing Lives and The Benefit of Evacuation as Reducing those Costs



		storm type	probability	cost - i.e., $25k/person to evacuate 30K people	benefit - i.e., negative value of lives lost (@$800K/life)	net benefit - i.e., benefit - cost	value of branch -- i.e., net benefit x probability	Value of branch -- i.e., sum of storm possibilities	Cost of doing nothing (difference in values of branches
What to do?	do nothing	minor	50%	$0	$0	$0	$0	($1,040,000,000)	$290,000,000
		category 2	30%	$0	($800,000,000)	($800,000,000)	($240,000,000)		
		category 3+	20%	$0	($4,000,000,000)	($4,000,000,000)	($800,000,000)		
	evacuate	minor	50%	$750,000,000	$0	($750,000,000)	($375,000,000)	($750,000,000)	
		category 2	30%	$750,000,000	$0	($750,000,000)	($225,000,000)		
		category 3+	20%	$750,000,000	$0	($750,000,000)	($150,000,000)		

Auction

Would you take the bet?—

given a SURE $100 or 50% chance of

- $150
- $200
- $205
- $250

Risk Preferences

- SURE $100 OR 50% CHANCE OF $150
  - risk seeking. Lost EV = $25
- SURE $100 OR 50% CHANCE OF $200
  - risk-neutral. No lost EV
- SURE $100 OR 50% CHANCE OF $250
  - risk-averse. Lost EV = $25 (risk premium)

Expected Value and Expected Utility

$$EV_{(E)} = V_{(E)} \times Pr_{(E)}$$

$$EU_{(E)} = U_{(E)} \times Pr_{(E)}$$

EU takes account of:

- Declining marginal value
- Risk aversion

Epidemic Problem

- If Program **A** is adopted, 200 people will be saved (72%)
- If Program **B** is adopted, there is a one-third probability that 600 people will be saved and a two-thirds probability that no people will be saved (28%)

- If Program **C** is adopted, 400 people will die (22%)
- If Program **D** is adopted, there is a one-third probability that nobody will die and a two-thirds probability that 600 people will die (78%)

Framing a Medical Procedure

Dr. Apple and Dr. Barber perform the identical medical procedure with identical outcomes. However, Dr. Apple informs patients “Of those who undergo this procedure, 90 percent are still alive after five years,” while Dr. Barber informs them that “Of those who undergo this procedure, 10 percent are dead after five years.”

Whose patients are more likely to undertake the procedure? How should the information be framed to facilitate a patient’s sound decision making?

Prospect Theory: Endowment Effect

Prospect Theory: Endowment Effect

"I got a letter the other day from a woman; she said, I don't want government-run health care, I don't want socialized medicine, and don't touch my Medicare."

– member of the House of Representatives

Prospect Theory: WTP vs. WTA

Duck hunting:

- Hunters willing to pay $247 per person per season for the right to prevent development to make hunting viable.
- Would demand $1044 dollars each to give up an entitlement to hunt there.

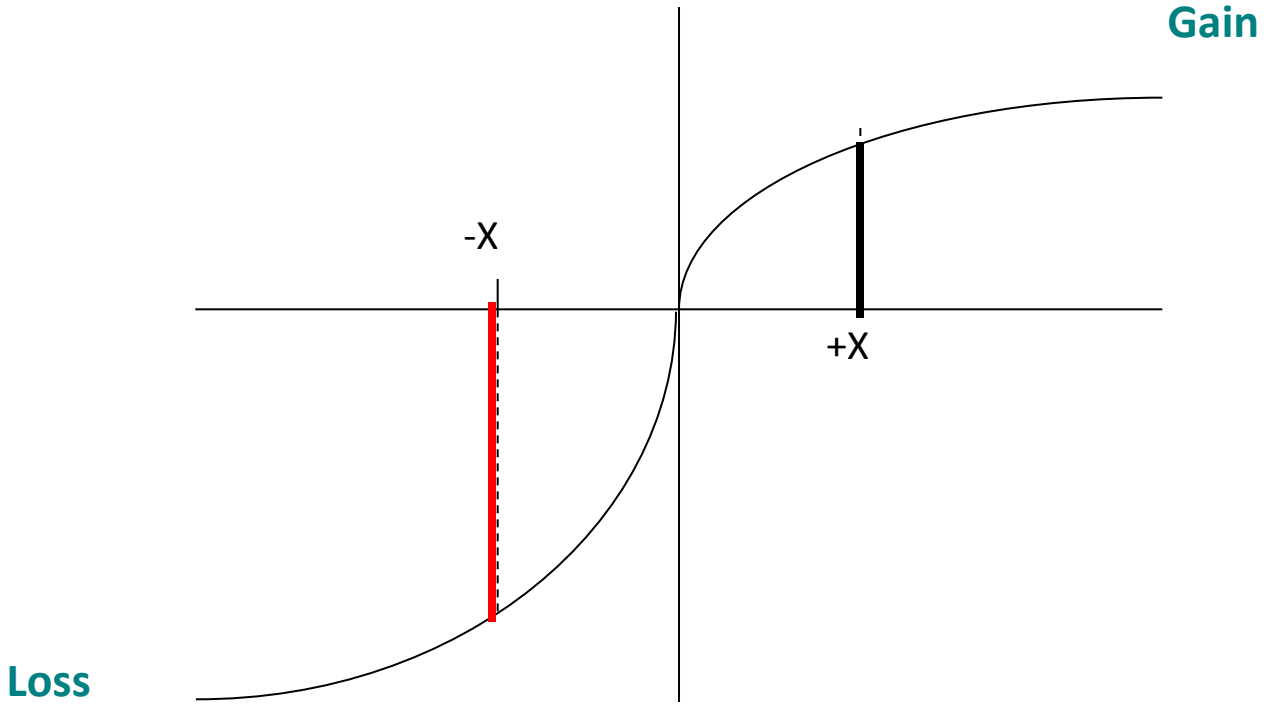
Air quality:

- Willing to pay $4.75 per month to maintain 75 miles of air visibility in the face of potential pollution that would reduce visibility to 50 miles.
- If they enjoyed the right to prohibit the pollution, reported that they would demand $24.47 per month before being willing to permit the pollution.

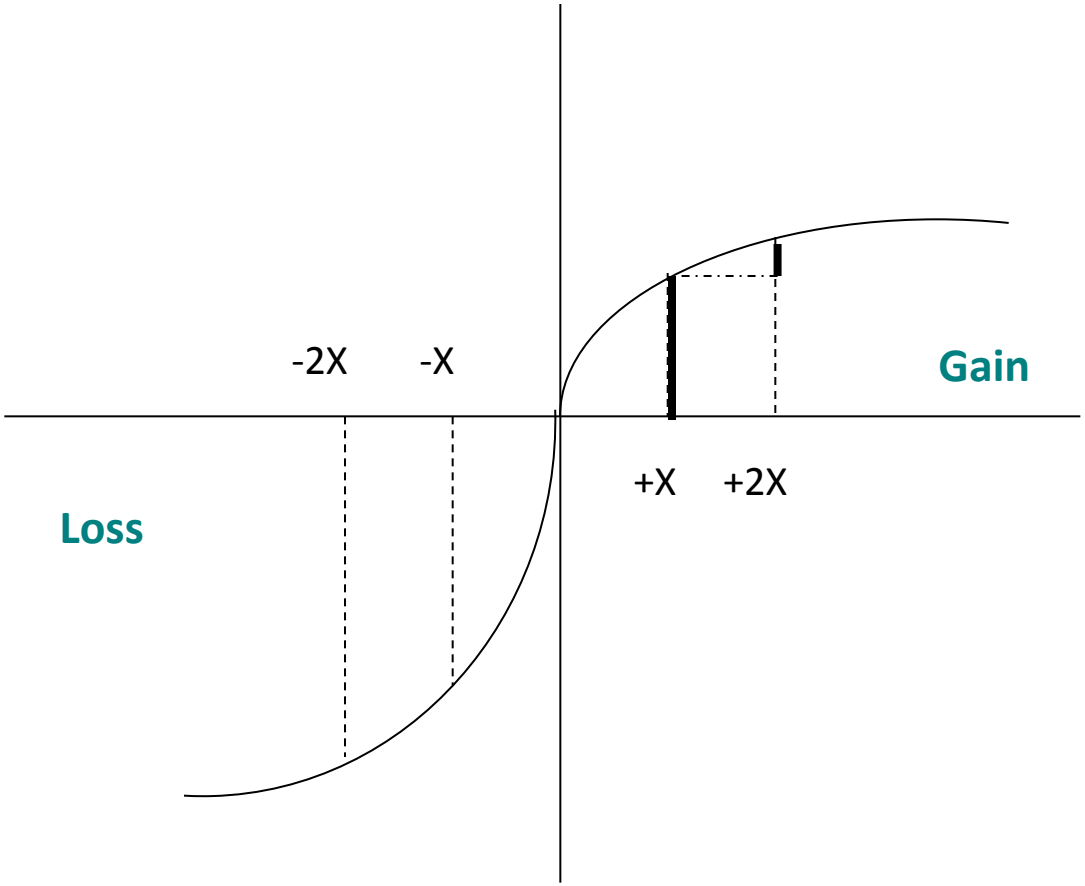
Prospect Theory

- Losses loom larger than gains
- Risk aversion in the domain of gains
- Risk seeking in the domain of losses
- Important point: The reference point is arbitrary
  - Framing is choosing a reference point

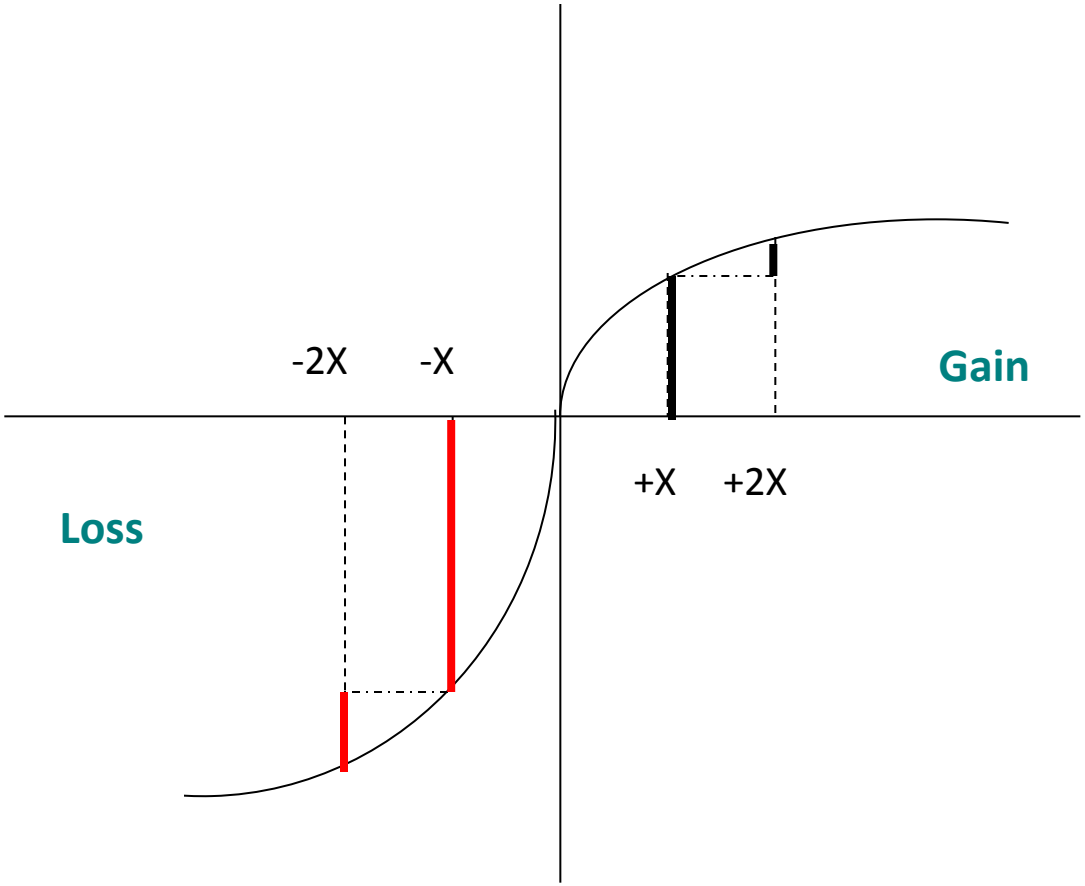
Prospect Theory
Losses loom larger than gains



Prospect Theory
Risk aversion in the domain of gains



Prospect Theory
Risk seeking in the domain of losses



Risk seeking in the domain of losses

Tonight, I'm asking for the vote of every single African American citizen in this country who wants to see a better future," Trump told the crowd.
"What do you have to lose by trying something new, like Trump?" he asked them.
"You're living in your poverty, your schools are no good, you have no jobs, 58% of your youth is unemployed, what the hell do you have to lose?"

August 19, 2016

Prospect Theory

- Losses loom larger than gains
- Risk aversion in the domain of gains
- Risk seeking in the domain of losses

The reference point is arbitrary—a matter of framing:

Epidemic Problem

- If Program **A** is adopted, 200 people will be saved (72%)
- If Program **B** is adopted, there is a one-third probability that 600 people will be saved and a two-thirds probability that no people will be saved (28%)

- If Program **C** is adopted, 400 people will die (22%)
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Epidemic Problem

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What Axiom of Expected Utility Theory Does Loss Aversion/Status Quo Bias Violate?

The way in which choices are presented should not affect the outcome of your decision.

Highway Speed Limit Problem

Highway Speed Limit Problem

Hand out the two versions to two different groups of 3-5 students and have them work through.

Consistent with the prediction of prospect theory, students who are asked whether to recommend decreasing the speed limit are likely to decrease or stick with the status quo. Students will not increase the speed limit because of the loss of life.

Highway Speed Limit Problem (1)

You are an advisor to the Governor of a state with a population of 5 million. The Commission on Highway Safety has advised, based on reasonable good estimates, that reducing the current highway speed limit of 70 miles per hour to 65 MPH would save about 50 lives annually by reducing the number and seriousness of highway accidents.

A group representing victims of highway accidents is pressing the governor to propose legislation to reduce the speed limit to 65 MPH.

The proposal is strongly opposed by groups representing commuters and businesses, who argue that the added length of commutes would be a drag on the economy.

The Governor asks for your advice on whether to reduce the speed limit.

Highway Speed Limit Problem (2)

You are an advisor to the Governor of a state with a population of 5 million. The Commission on Highway Safety has advised, based on reasonable good estimates, that increasing the current highway speed limit of 65 miles per hour to 70 MPH would reduce people's commute times and frustration, but would cost about 50 lives annually by increasing the number and seriousness of highway accidents.

The proposal is strongly supported by groups representing commuters and businesses, who argue that the added length of commutes would be a drag on the economy.

A group representing victims of highway accidents is pressing the governor to not propose the legislation.

The Governor asks for your advice on whether to increase the speed limit.

Highway Speed Limit (1 & 2)

Reducing the current highway speed limit of 70 miles per hour to 65 MPH would **save 50 lives** annually by reducing the number and seriousness of highway accidents. But it would lengthen commutes and be a drag on the economy.

- Would you reduce the speed limit?

Increasing the current highway speed limit of 65 miles per hour to 70 MPH would reduce people's commute times and frustration, but would **cost 50 lives** annually by increasing the number and seriousness of highway accidents.

- Would you increase the speed limit?

Against Ebola Foundation

The Against Ebola Foundation wishes to make grants to address a new version of the pandemic-causing virus. In addition to being highly contagious the virus has the unfortunate quality of mutating quickly, rather like flu viruses, so that in the (unlikely) event that a vaccine were developed against next year's version, it would not be effective the following year.

The Foundation is willing to spend its entire next year's grants budget of $10 million on either or both of the following projects. You are asked to advise the Foundation's Board on what decision to make among these (and only these) possibilities. For purposes of the problem, accept the facts and numbers given, even if you have reasons to question them.

Against Ebola Foundation: Choices

1. For a cost of $50 per unit, the foundation can support the manufacture and distribution of protective suits to be worn by the relatives caring for an Ebola patient in their home. The foundation estimates that one in every four units will be effectively used to prevent an infection. The foundation's $10M investment would support the distribution of 200,000 protective suits, preventing 50,000 cases of infection. (=$200 per infection prevented).

2. For a cost of $10M, the foundation could support researchers developing a vaccine against Ebola. If the vaccine is successful, it could save an estimated 1 million people from contracting Ebola. (=$10 per infection prevented) during the year it was effective. But there is only a 10% of success (=$100 per probable infection prevented) and, of course, a 90% chance of not achieving anything. Moreover, the nature of the development work is such that knowledge gained in trying to develop next year's vaccine will not be useful for the development of future vaccines.

   A reduction in the $10 million investment in the vaccine will lead to a proportionate decrease in the potential number of lives saved.

Against Ebola Foundation: Choices

$50 per unit of equipment

- One in every four units effective
- $10M investment -> 200,000 protective suits, preventing 50,000 cases of infection.

=$200 per infection prevented

$10M for vaccine against Ebola.

- If the vaccine successful, saves

1 million people (=$10 per infection prevented).

- 10% of probability of success within a year; 90% chance of failure

= $100 per probable infection prevented

Against Ebola Foundation: Choices

If you had to put **all** your grant funds either in purchasing equipment or supporting vaccine development--

1 __

2 __

Against Ebola Foundation: Forced Choice

If you could **allocate** your grant funds between purchasing equipment or supporting vaccine development--

___%

___ %

$10M grant

1. $50 per protective suit: One in every four units will be effectively used to prevent an infection. -> 200,000 protective suits, preventing 50,000 cases of infection (=$200 per infection prevented). The suits cannot be reused next year.

2. Vaccine research: If successful, saves 1 million people from contracting Ebola (=$10 per infection prevented) during the one year the vaccine is was effective. 10% of success (=$100 per probable infection prevented) and 90% chance of not achieving anything.

- Knowledge gained in trying to develop next year's vaccine will not be useful for the development of future vaccines.

- A reduction in the $10 million investment in the vaccine will lead to a proportionate decrease in the potential number of lives saved. e.g., a $5M grant reduces the probability of success to 5%.

If you had to choose **either** 1 or 2, which one would you choose

1 or 2 _____

If you could **apportion** the $10M between 1 and 2, would you do so and what allocation would you recommend.

If yes: $ for 1 ___ $ for 2 ___

[PS. Don't fight the hypothetical]

Benefit/Cost

Net Value

Benefit − Cost

Obesity Prevention Program
Healthy people in healthy places

Expected Return

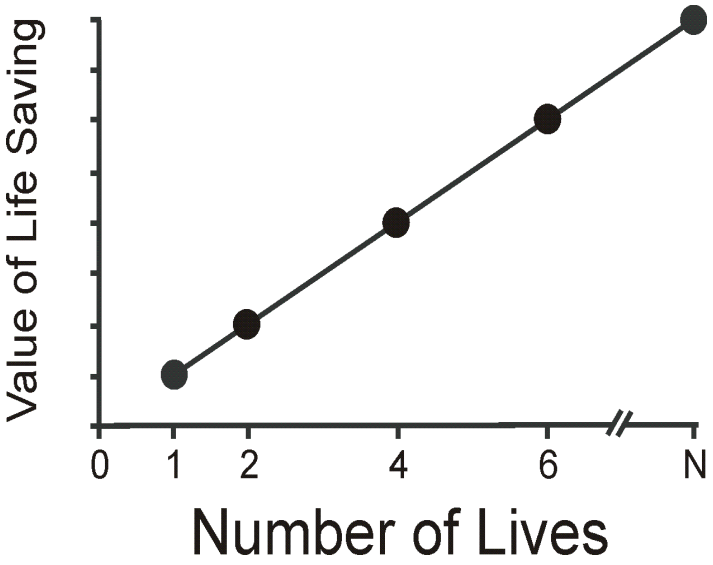
Expected return (ER) = [Benefit **X** Likelihood of success] − Cost

NATIONAL RIFLE ASSOCIATION 1871

Brady Campaign
To Prevent Gun Violence

Against Ebola Foundation

The Against Ebola Foundation believes, like the Gates Foundation, that "that **every life has equal value**."



$50 per unit of equipment

- **One in every four units effective**
- **$10M investment -> 200,000 protective suits, preventing 50,000 cases of infection.**

(=$200 per infection prevented).

$10M for vaccine against Ebola.

- **If the vaccine successful, saves**

1 million people (=$10 per infection prevented).

- **10% of probability of success**
  - **= 90% chance of failure**
- **($100 per probable infection prevented)**

If you had to put all your grant funds either in purchasing equipment or supporting vaccine development--

%

%

Suppose VSL = $800,000*

$50 per unit of <u>equipment</u>
- **One in every four units effective**
- **$10M investment -> 200,000 protective suits, preventing 50,000 cases of infection.**

(=$200 per infection prevented).

Benefit = 50,000 people X $800,000 = $40B
Probability of success = 1.0
Expected benefit = $40B
Cost = $10 M

Net EV = $40B/$10M = $4,000

$10M for <u>vaccine</u> against Ebola.
- **If the vaccine successful, saves**

1 million people (=$10 per infection prevented).
- **10% of probability of success**
  - **= 90% chance of failure**
- **($100 per probable infection prevented)**

Benefit = 1M people X $800,000 = $800B
Probability of success = 0.1
Expected benefit = $800M
Cost = $10M

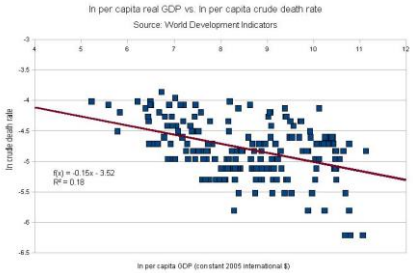
Net EV = ($800M)/$10M = $8,000

* This is unrealistically high
See http://www.econ.upf.edu/docs/papers/downloads/1389.pdf , http://www.regulatory-analysis.com/hammitt-robinson-VSL-income-elasticity.pdf

IDENTIFIABLE VICTIM BIAS

DONATIONS TO SAVE STARVING CHILDREN

Statistical lives



"Food shortages in Malawi affect more than 3 million children. You can help some of these starving children."

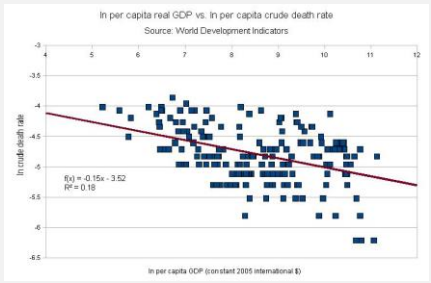
Identifiable lives

"Any money that you donate will go to Rokia, a 7-year-old girl from Mali, Africa. Rokia is desperately poor and faces the threat of severe hunger or even starvation."

IDENTIFIABLE VICTIM BIAS

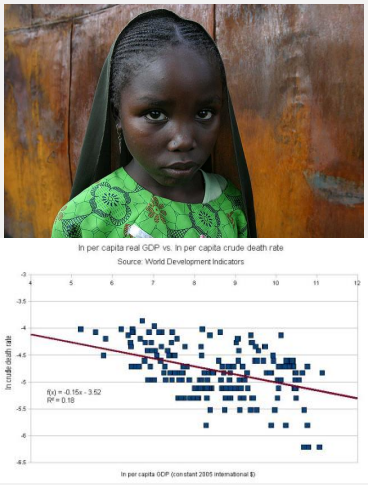
How much would you donate?

$2.38

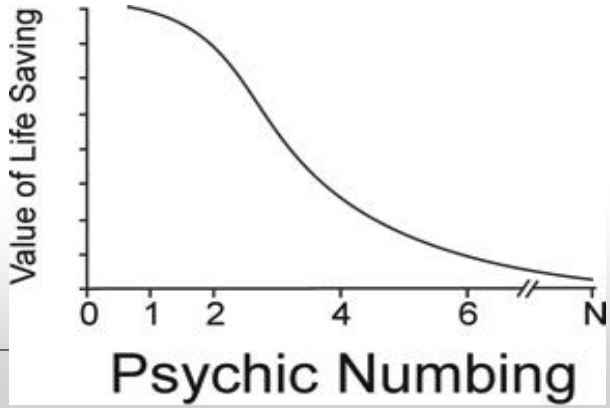


$1.14

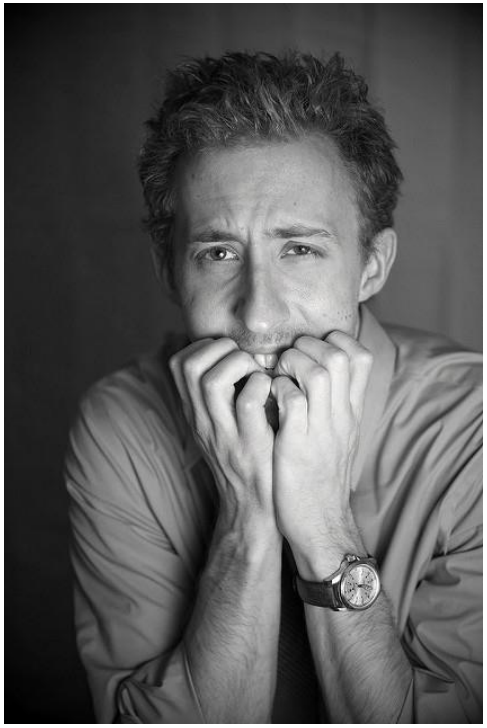
https://www.flickr.com/photos/hdptcar/537305224/in/photolist-PtQ8b



$1.43

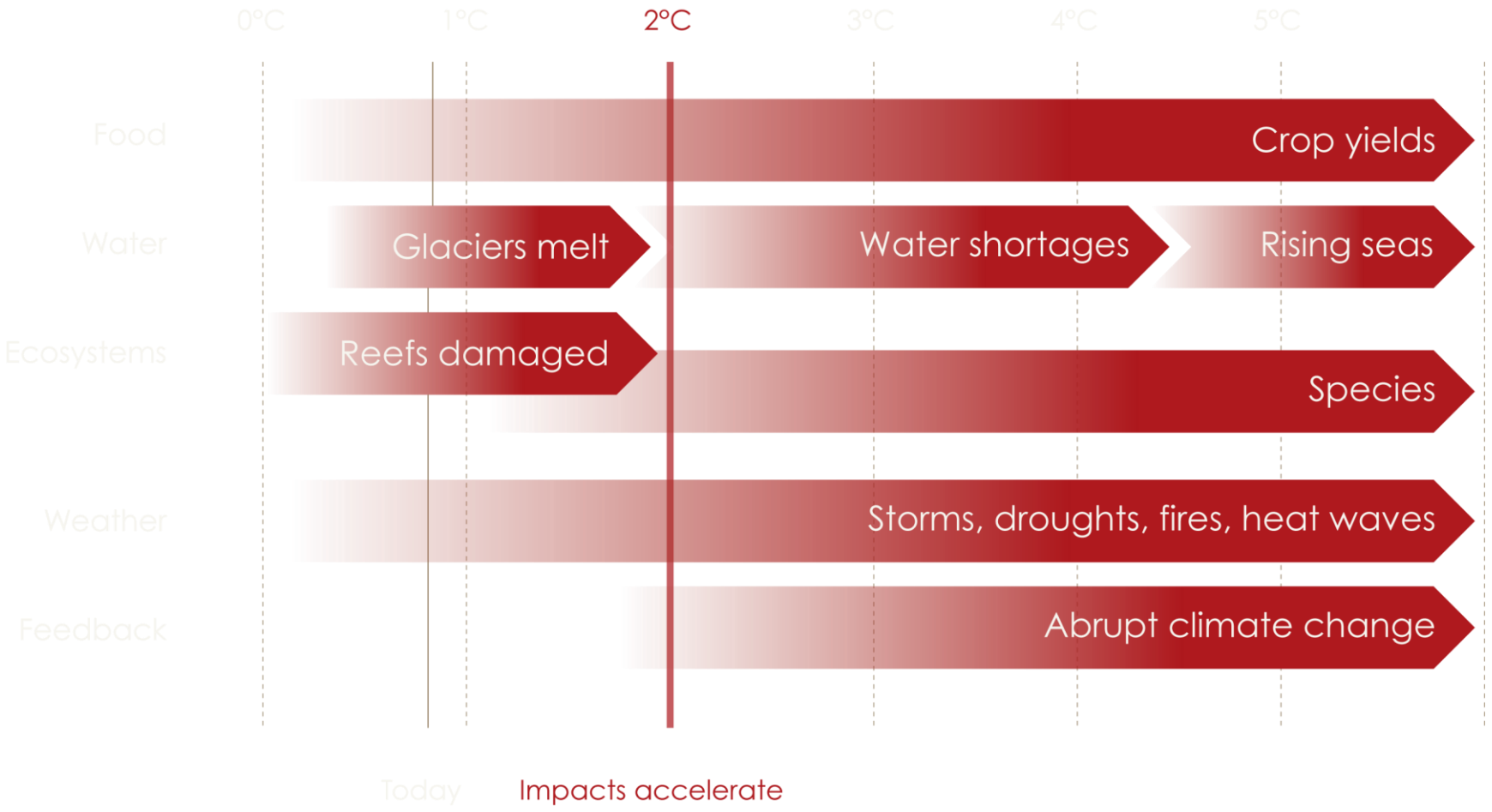


What should be a foundation's risk attitude in grantmaking?



ClimateWorks Problem (Appendix)

The Problem: Global Climate Change

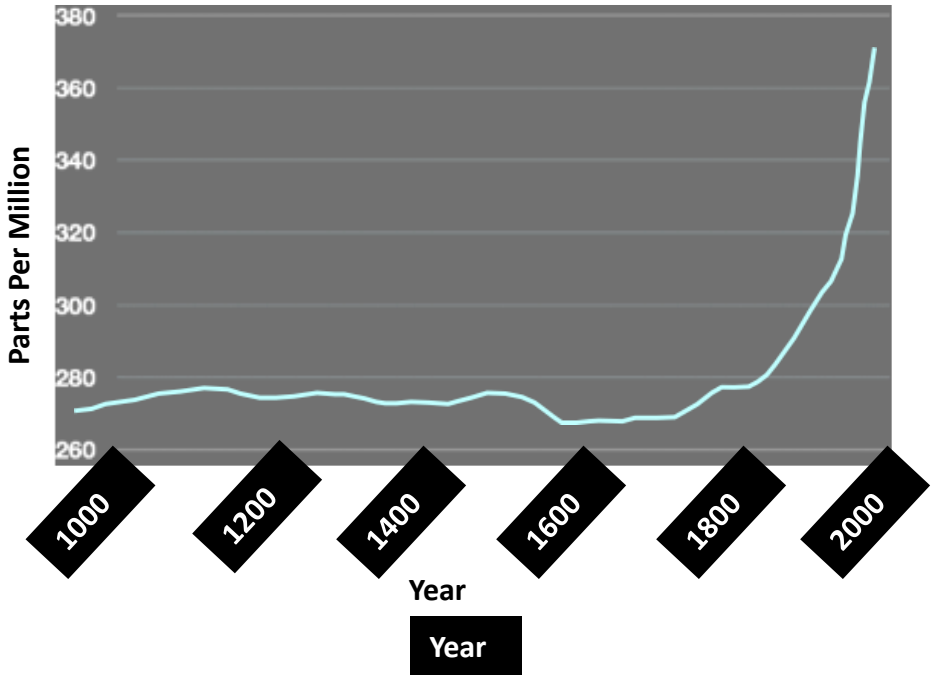


Source: Stern Review, 2006

Theory

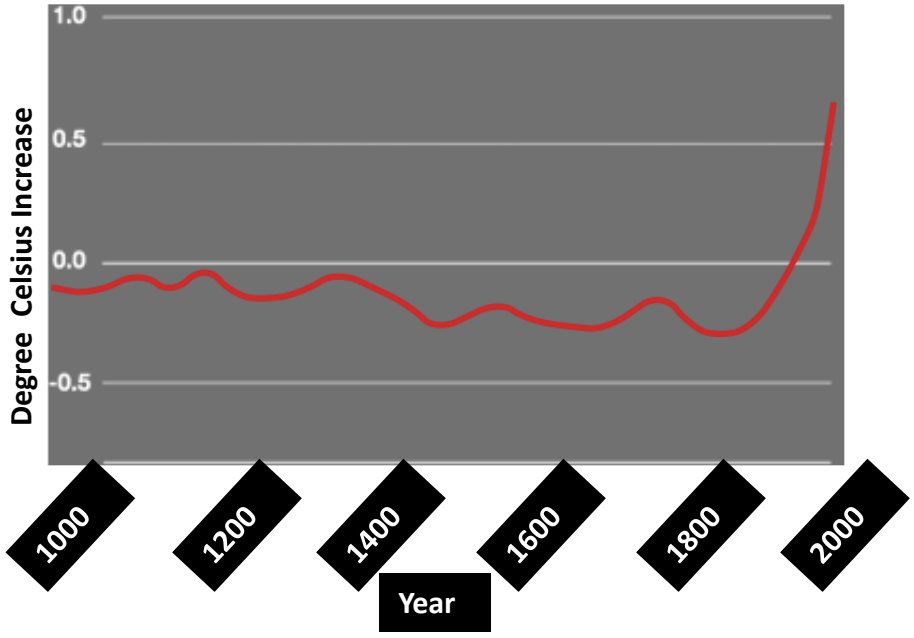
CO_2 causes warming

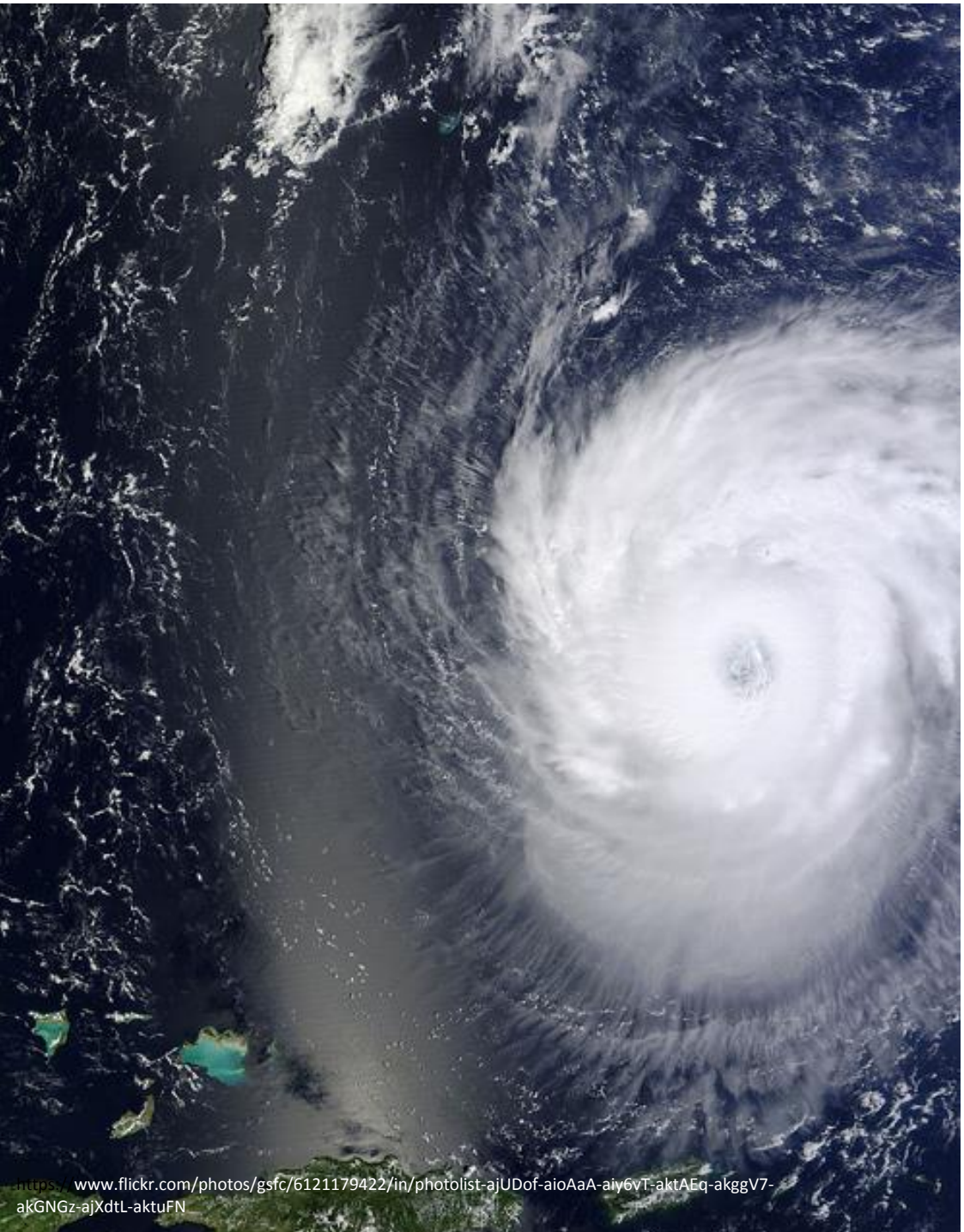
CO_2 concentration



Year

Temperature





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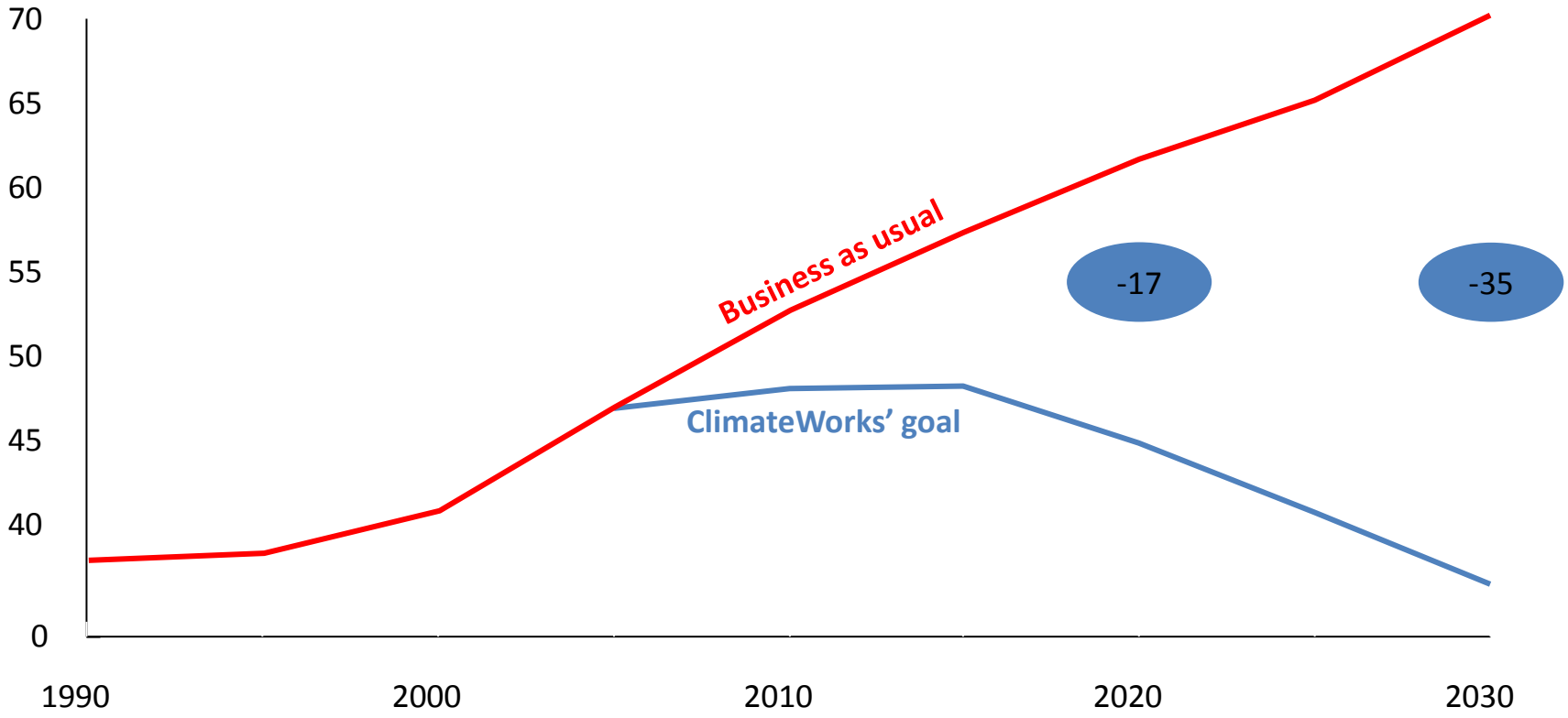
Goal

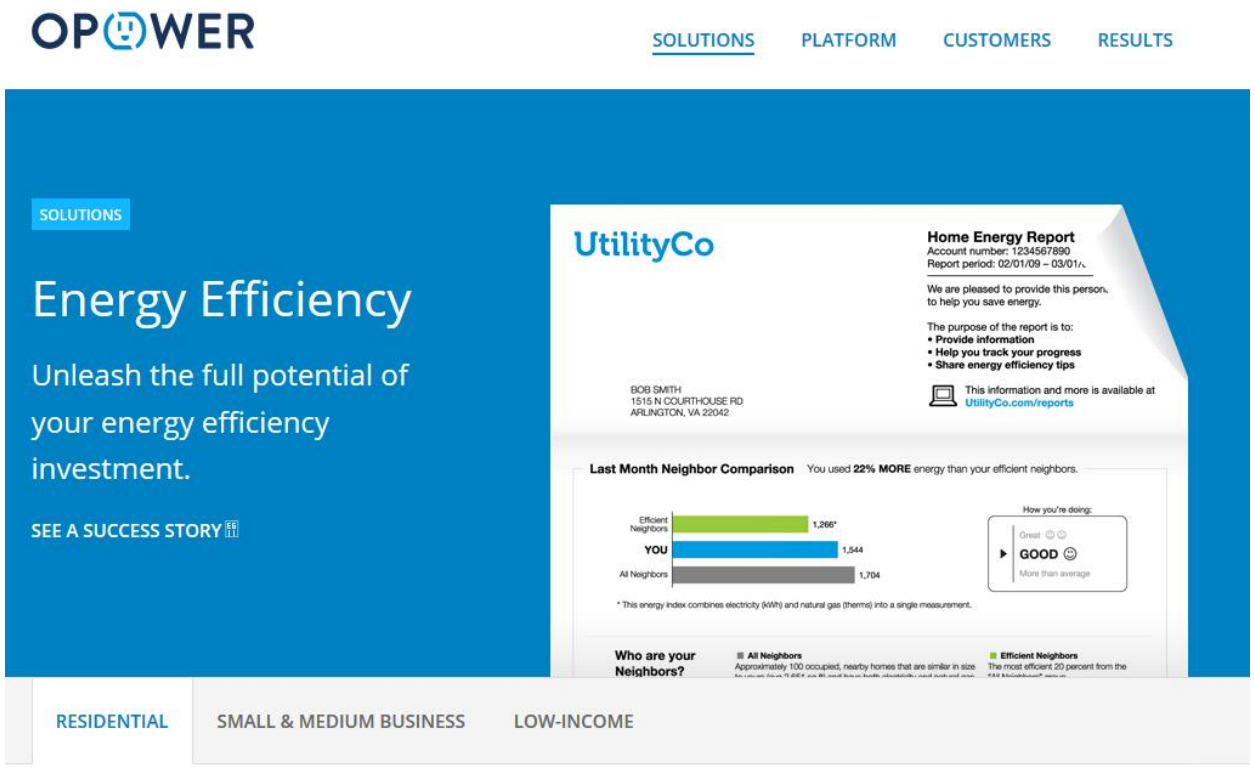
~17 Billion Tons of CO_2e Mitigation Needed by 2020



Source: McKinsey Global GHG Abatement Cost Curve v2.0; Houghton; IEA; US EPA; den Elzen, van Vuuren; Project Catalyst analysis

Mitigation Strategies

Mitigation Strategies



Get more kWh than alternatives

Deliver the most residential kWh possible across a territory, cost effectively.

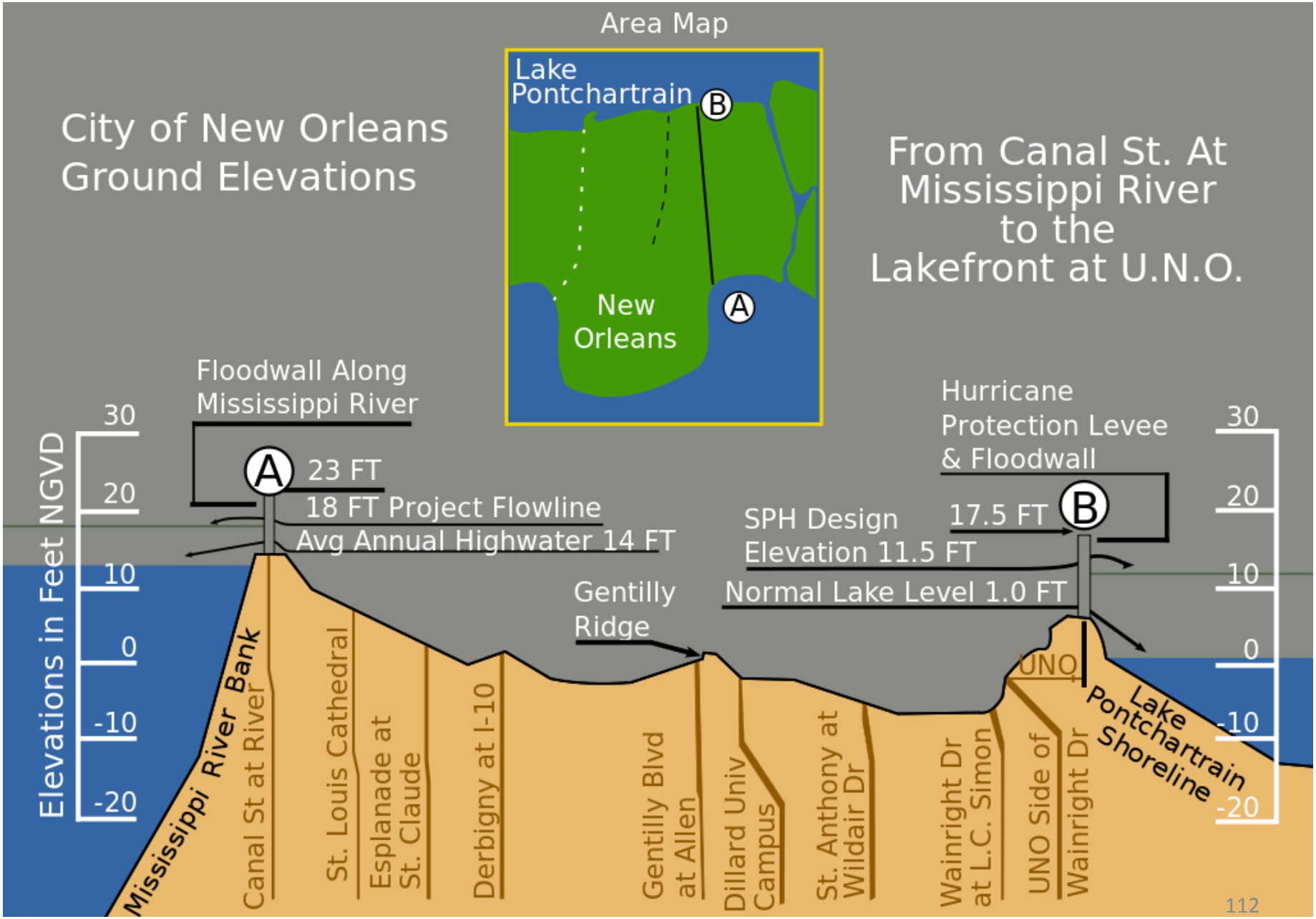
Personalize the customer experience

Craft the best experience for each customer, with targeted messages that work.

Hit your efficiency goals with confidence

Unmatched quality, security, and data privacy from the most vetted, verified platform worldwide.

Adaptation Strategies



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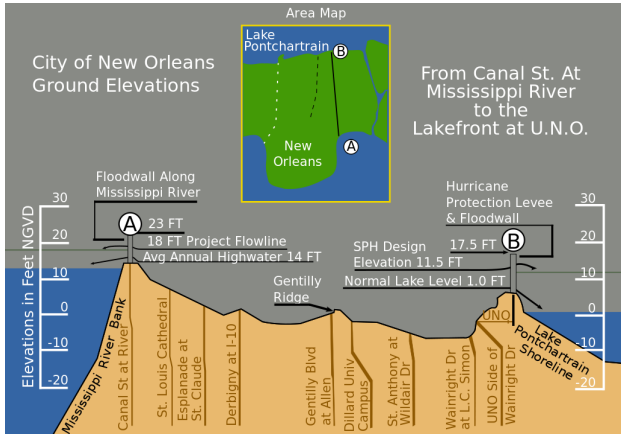

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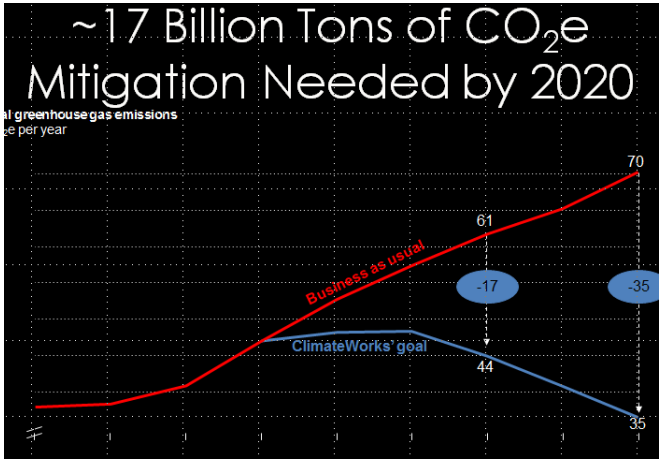
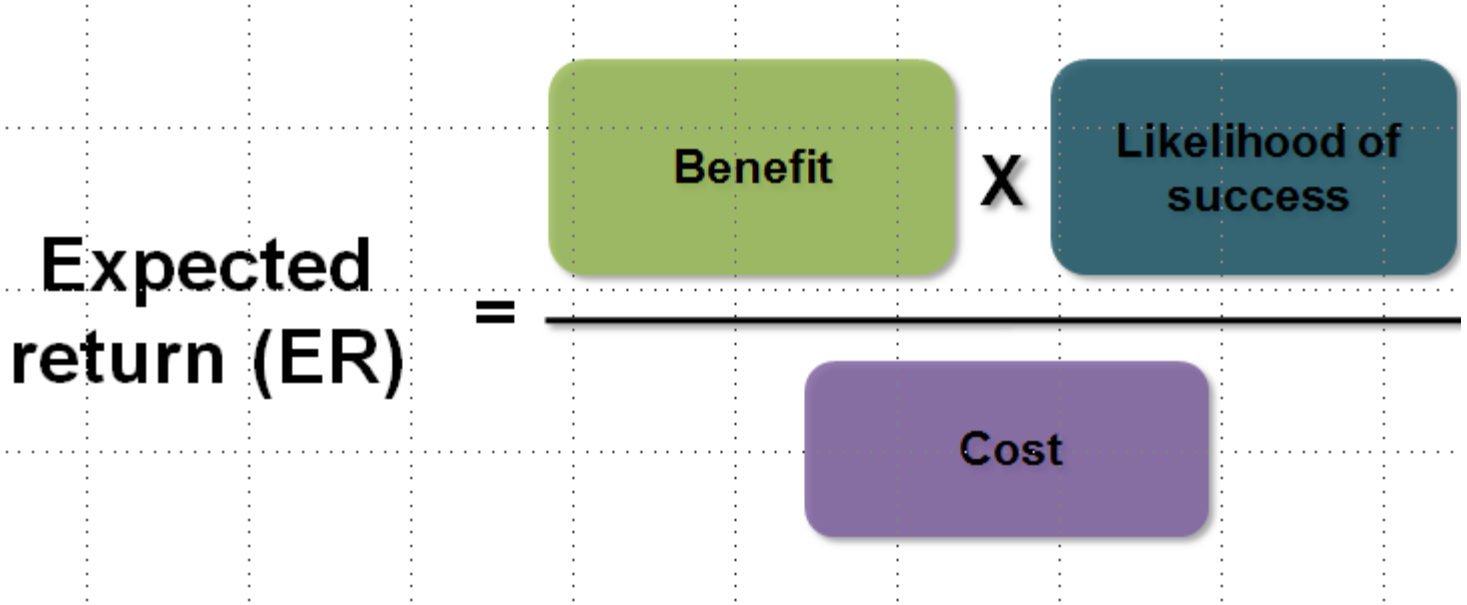
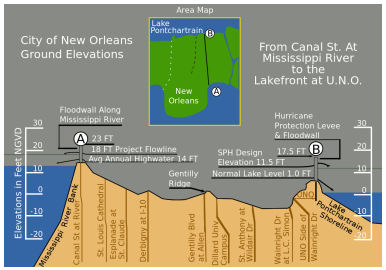




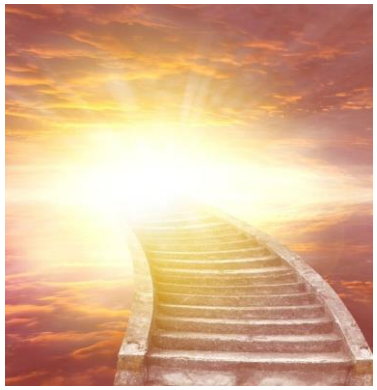
Expected Return Framework

Cost: medium

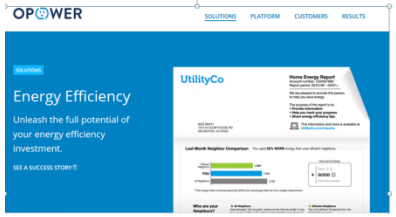
Cost: high



Cost: low



Cost: low



Social Impact / Benefit

High

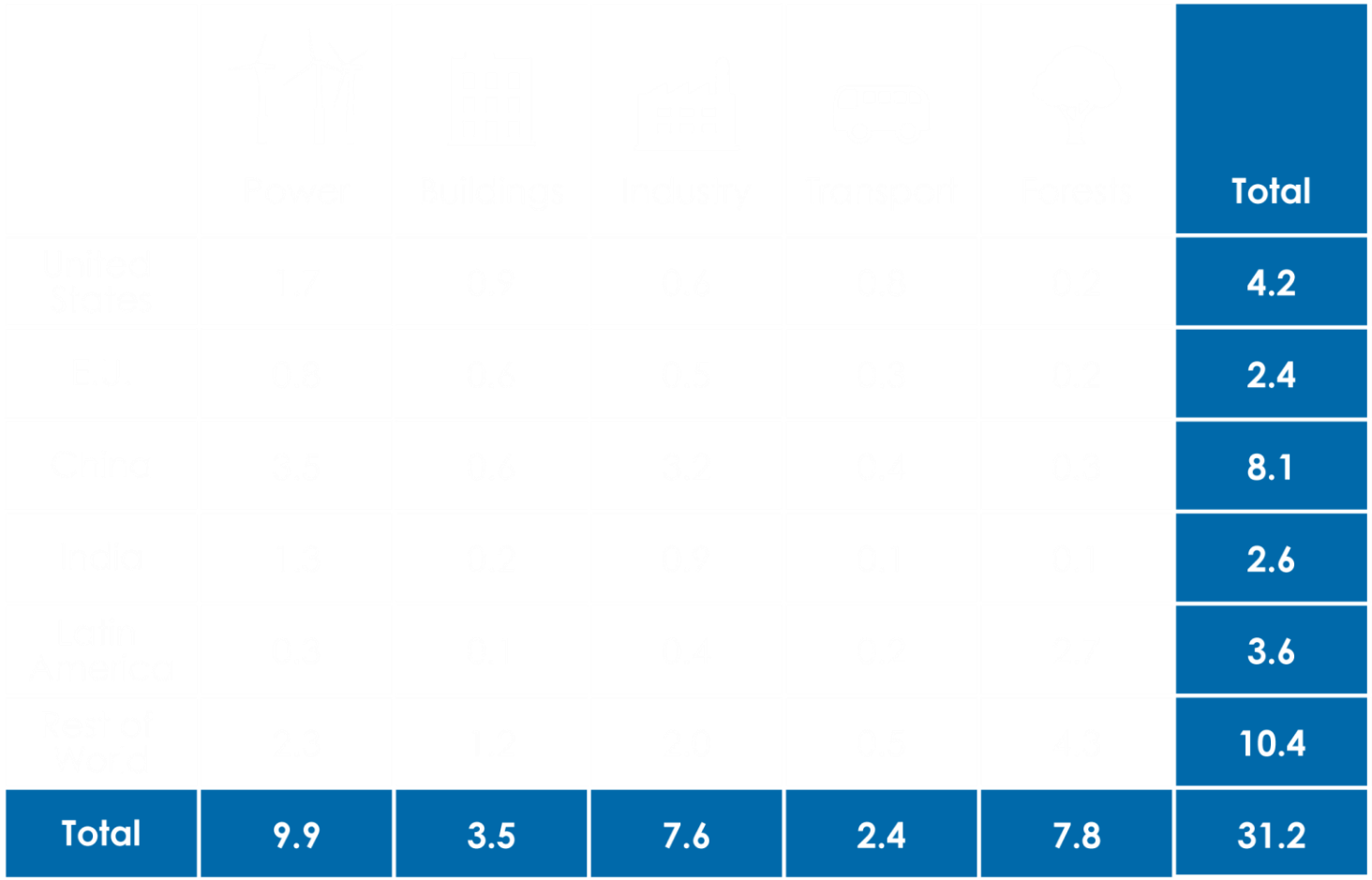
Low

Likelihood of Success

Low

High

ClimateWorks Sudoku

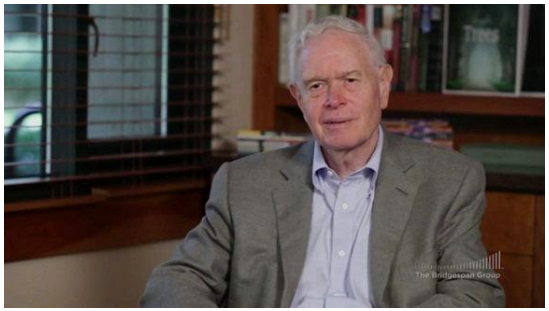


	Power	Buildings	Industry	Transport	Forests	Total
United States	1.7	0.9	0.6	0.8	0.2	4.2
E.U.	0.8	0.6	0.5	0.3	0.2	2.4
China	3.5	0.6	3.2	0.4	0.3	8.1
India	1.3	0.2	0.9	0.1	0.1	2.6
Latin America	0.3	0.1	0.4	0.2	2.6	3.6
Rest of World	2.3	1.2	2.0	0.5	4.3	10.4
Total	**9.9**	**3.5**	**7.6**	**2.4**	**7.8**	**31.2**

Figures presented in gigatonnes (Gt), or billions of metric tons of CO_2e avoided per year, in 2030, rounded to nearest million metric tonnes. Totals may not sum due to rounding.


WELCOME
GUEST & PARTICIPANTS
CLIMATE CHANGE
ADVOCACY CAMPAIGN LAUNCHING
July 18, 2014 | Sibugay Grand Plaza Hotel, Ipil, Zamboanga Sibugay
"Strengthening Partnership among Communities for Climate Change Adaptation"
NAGBABAGO NA ANG PANAHON
PANAHON NA NGA NAGBAGO
PIA

5-10% chance of success.”



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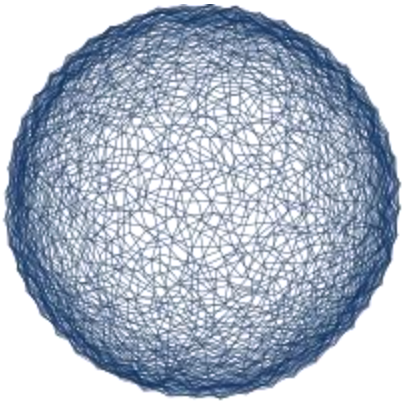

"We allocated about $18 million total to Copenhagen. About 75% of our funds went to help 10 countries develop extremely detailed assessments of CO2 abatement. It was our judgment that the work would be valuable even if Copenhagen failed. And indeed it has been used in part by every one of the governments involved. We worked directly with senior government officials on this strategy, including meeting with a half-dozen heads-of-state to discuss the opportunities." —Hal Harvey

COP15
COPENHAGEN
UN CLIMATE CHANGE CONFERENCE 2009

James Wilsdon: “I find it pretty shocking to spend ~~half a billion dollars~~ **$18 million** on strategic choices that were, in your own words, ‘acknowledged failures’, with at best a 5-10% chance of success.” – **but still a lot of money**

What Can Larry and Charlotte Learn from the Failure in Copenhagen?

PARIS2015
UN CLIMATE CHANGE CONFERENCE
COP21·CMP11

Charlotte Pera
PRESIDENT & CEO

Suppose they conclude that the chances of success are only 3%?

Should the Against Ebola Foundation's grant portfolio be diversified?

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If you could allocate your grant funds between purchasing equipment or supporting vaccine development--

% equipment	How many?
100	
90	
80	
70	
60	
50	
40	
30	
20	
10	
0	

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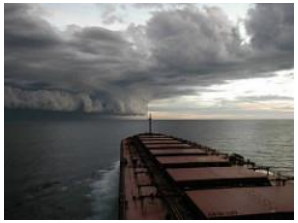

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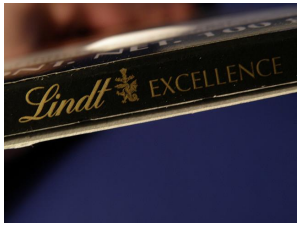

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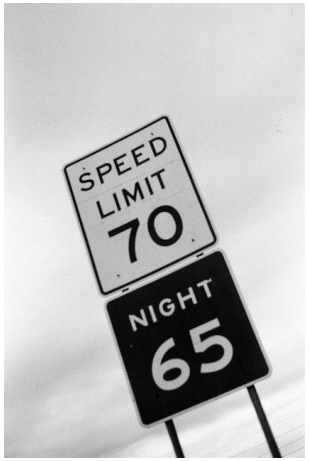

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Obesity Prevention Program
Healthy people in healthy places

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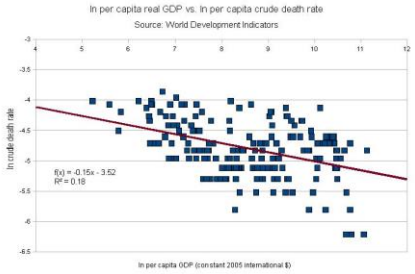

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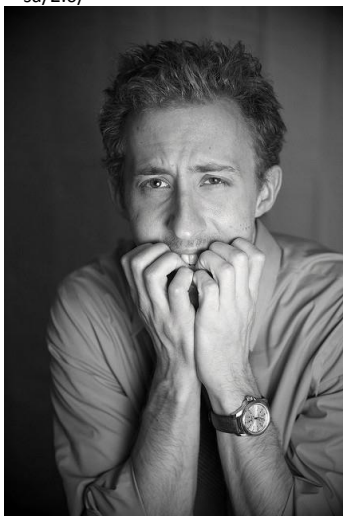

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Climate Slides:

- The Problem: Global Climate Change
- Theory: CO2 causes global warming
- Goal: Limit global warming
- Mitigation Strategies
- Climate Work Sudoku

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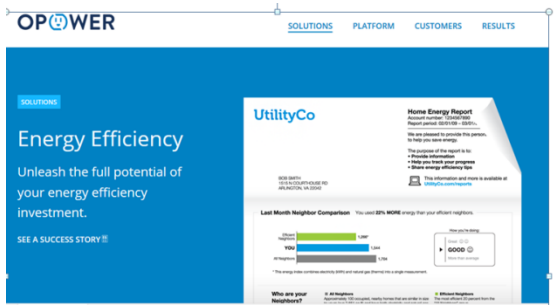

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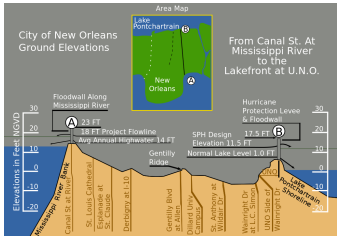

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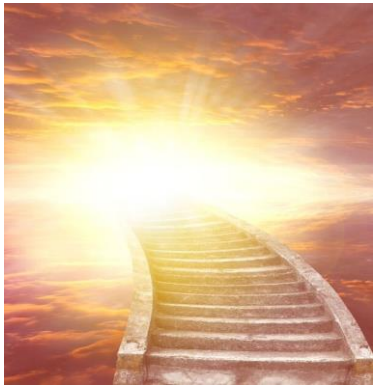

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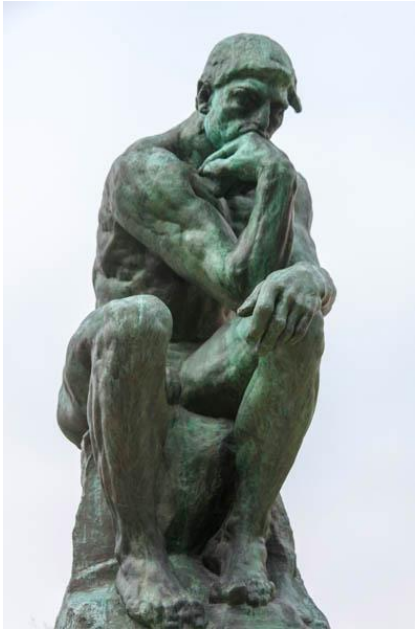
The Intuitive Statistician's Perspectives and Errors

THE TWO-SYSTEMS MODEL OF INFORMATION PROCESSING



System 1 (intuitive)

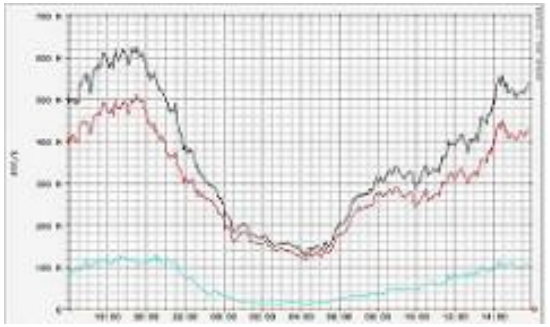
- automatic
- effortless
- rapid, parallel
- process opaque
- skilled action

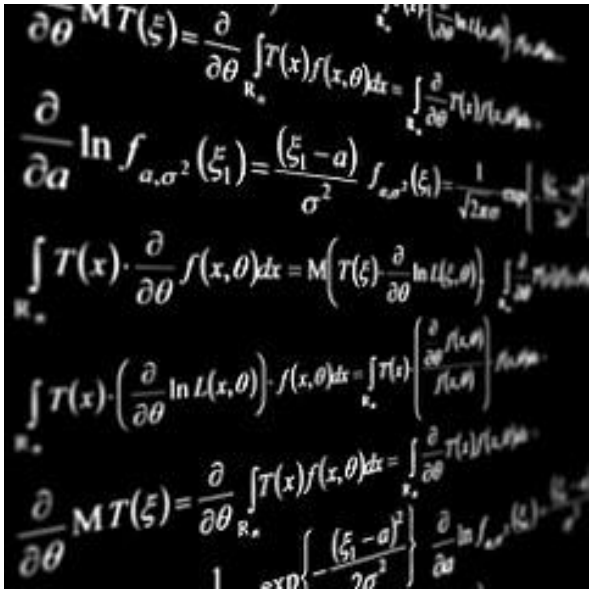
System 2 (reflective)

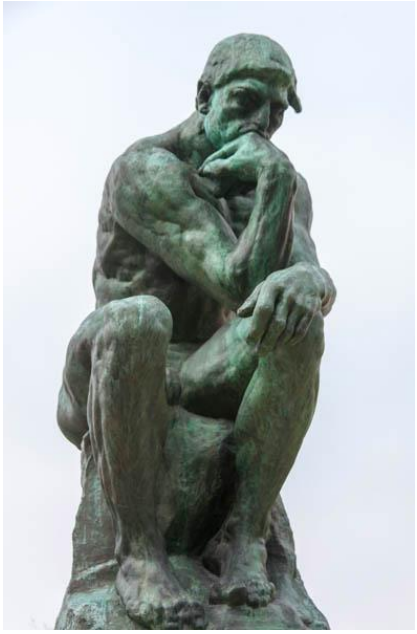
- controlled
- effortful
- slow, serial
- self-aware
- rule application

System 1: Intuitive

System 2: Statistics, Science, Deliberative Decision Making







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Intuitive Decision Making

What's his mood?

What’s her attitude?

System 1: WYSIATI (What You See Is All There Is)

- System 1 ignores the quality and quantity of data in predicting or determining covariation
- System 1 seeks coherence
- System 1 jumps to conclusions based on insufficient evidence

Bat and Ball

- Together, a bat and a ball cost $1.10
- The bat costs a dollar more than the ball
- How much does the ball cost?

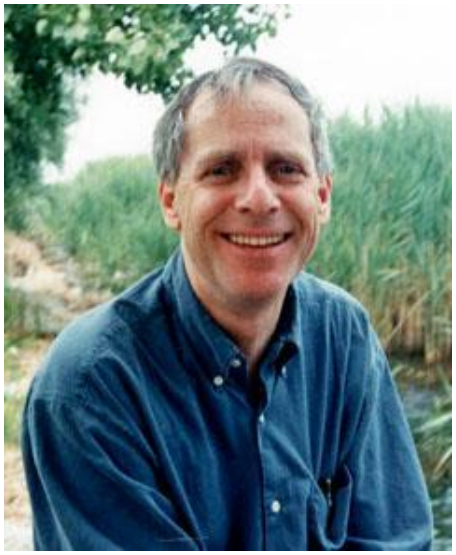
- $1.05 (bat) + $0.05 (ball) = $1.10

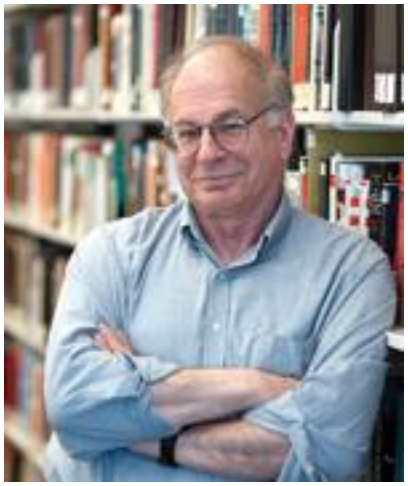
- We know how to calculate the right answer, but sometimes the answer that “jumps to mind” slips out.

What's Unusual About This Hand?

Tamir Rice

Heuristics and Biases

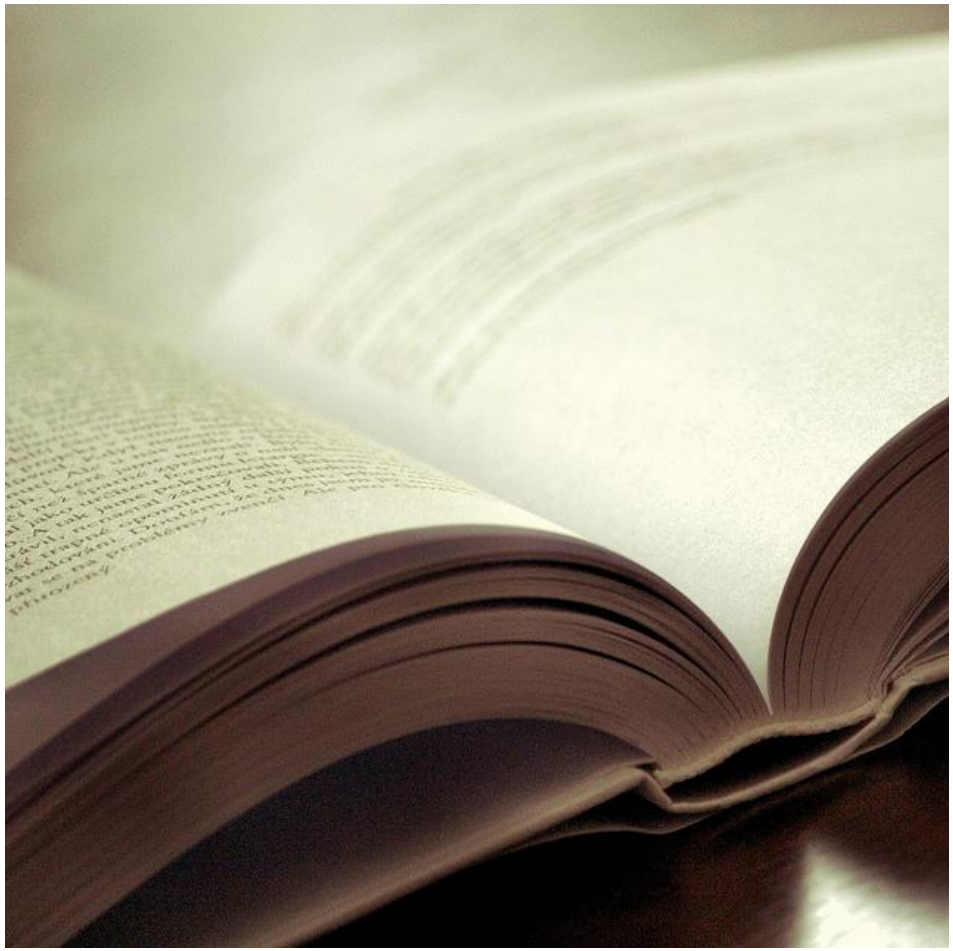




Bias: A systematic error in estimation

Heuristic: Substituting an easy question for a hard one

Availability Heuristic



Word endings

In four pages of a novel (about 2,000 words), how many words would you expect to find that have the form

- A) _ _ _ _ _ n _ ? (five letters, then “n”, then another letter)

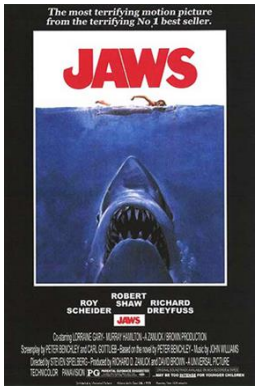
94 words

- B) _ _ _ _ i n g ? (four letters, then “ing”)

158 words

Availability Heuristic: Vividness

- Which is more likely to kill you:
  - Shark attack or
  - Watching the movie Jaws on TV



- In the months after 9/11, is it more dangerous to
  - Fly or
  - Drive
- Are there more murders in
  - Michigan or
  - Detroit

Availability: Two Theories

- Recalled content
- Ease of recall (Fluency)
  - Metacognition

Availability: Fluency and its Absence

- Think of 2 ways to improve my course
- Think of 10 ways to improve my course

Who is more likely to think that the course need improvements?

Anchoring

How it works

A*djustment* process—cognitively effortful

Anchor may increase the *availability* of features that the anchor and the number to be determined—the target—hold in common, selectively *activating* information about the target that is consistent with the anchor.

Real estate anchor through price. Think of good/bad features.

Computer programmer. Think of similar jobs you know high/low.

Debiasing

Techniques that don't work: Warning people of the phenomenon, providing incentives for accurate estimates.

Techniques that may work: Perhaps drawing attention to the features of the target that differ from the anchor, or providing a different anchor.

Anchoring

Participants observed a wheel of fortune that was predetermined to stop on either 10 or 65.

Then asked to guess the percentage of the United Nations that were African nations.

- When wheel stopped on 10: average 25%
- When wheel stopped on 65: average 45%

Anchoring

Do countries from sub-Saharan Africa constitute less than or greater than 30% of all United Nations members, and what's your best guess of the actual percentage? **23.5**

Do countries from sub-Saharan Africa constitute less than or greater than 5% of all United Nations members, and what's your best guess of the actual percentage? **13.2**

Anchoring

Half the room: Quickly estimate (and write it down):

1 X 2 X 3 X 4 X 5 X 6 X 7 X 8 = ?

Other half the room: Quickly estimate (and write it down):

8 X 7 X 6 X 5 X 5 X 3 X 2 X 1 = ?

Anchoring

Experiment results:

1 X 2 X 3 X 4 X 5 X 6 X 7 X 8
Median estimate: 512

8 X 7 X 6 X 5 X 5 X 3 X 2 X 1
Median estimate: 2,250

Actual: 40,320

Anchoring

Did Mahatma Ghandi die

- before or after age 9?
- before or after age 140?

- How old do you think he was?

150

Anchoring

Did Mahatma Ghandi die

- before or after age 9? (average answer 50)
- before or after age 140? (average answer 67)

- How old do you think he was?

151

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Anchoring in Law

Judges read a description of a woman caught shoplifting. Then rolled a pair of dice loaded to land on 3 or 9.

Would you sentence the woman to a greater or smaller number of months than the number?

How many months?

- Land on 3 -> 5 months
- Land on 9 -> 8 months

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IT Candidate

You are about to interview a candidate for an IT position in your organization. She has four years of experience and good all-around qualifications. When asked to estimate the starting salary for this employee, your assistant (who knows nothing about the industry) guessed an annual salary of

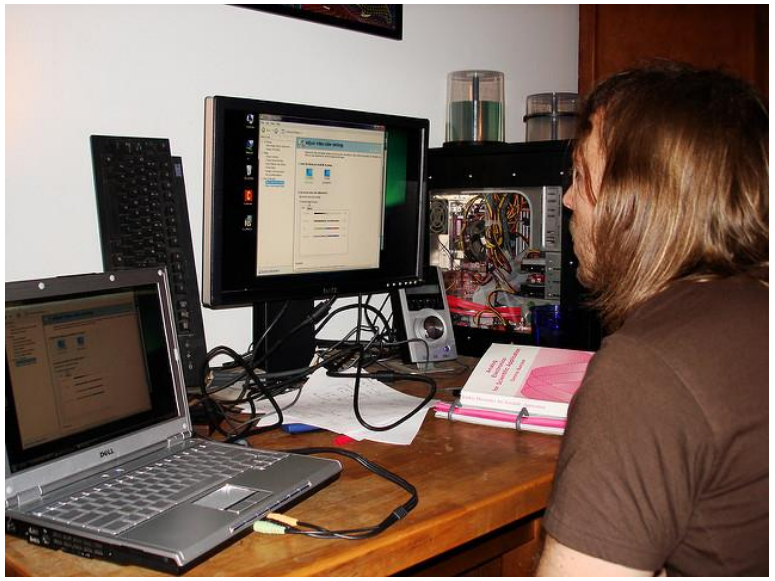
$35,000. Your estimate: **$70,954**

$135,000. Your estimate: **$129,600**

IT Candidate

$35,000:

Your average = $63,500



Mental images "activated"

$135,000

Your average = $81,694

Anchoring

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Listing Price	Amateurs' Appraised Value	Professionals' Appraised Value
$65,900	$63,571	$67,818
$83,900	$72,196	$76,380

Anchoring
Unanticipated effects of legal policies

Minimum amount in controversy

28 U.S. Code § 1332 - Diversity of citizenship; amount in controversy

(a) The district courts shall have original jurisdiction of all civil actions where the matter in controversy exceeds the sum or value of $75,000, exclusive of interest and costs, and is between— (1) citizens of different States …

Maximum penalties

49 CFR 107.329 - Maximum penalties

A person who knowingly violates a requirement of the Federal hazardous material transportation law is liable for a civil penalty of not more than $55,000 … for each violation …

The Taxi Problem—Causal Version

A taxicab was involved in a hit-and-run accident at night. Two cab companies, the Green and the Blue, operate in the city. You are given the following information:

(1) The two companies operate the same number of cabs, but **Green cabs are involved in 85% of the accidents**, while Blue cabs are involved in only 15%.

(2) A witness identified the cab as a Blue cab. The court tested her ability to identify cabs under appropriate visibility conditions. When presented with a sample of cabs (half of which were Blue and half of which were Green), the witness made correct identifications in 80% of the cases and erred in 20% of the cases.

What is the probability that the cab involved in the accident was Blue rather than Green?

Correct answer 41%. Median answer in non-causal version: 80%

Median Answer: 60%

Base Rate Neglect: Jack

Jack is a 45-year-old man. He is married and has four children. He is generally conservative, careful, and ambitious. He shows no interest in political and social issues and spends most of his free time on his many hobbies, which include home carpentry, sailing, and mathematical puzzles.

Is Jack more likely to be an engineer or a lawyer?

- Group 1 told: descriptions came from a sample of people of whom 70% were lawyers and 30% engineers.

- Group 2 told: descriptions came from a sample of people of whom 30% were lawyers and 70% engineers.

If you were using Bayes Theorem, would you give a different answer if you were told the description came from Group 1 or Group 2?

Base Rate Neglect: On the Subway

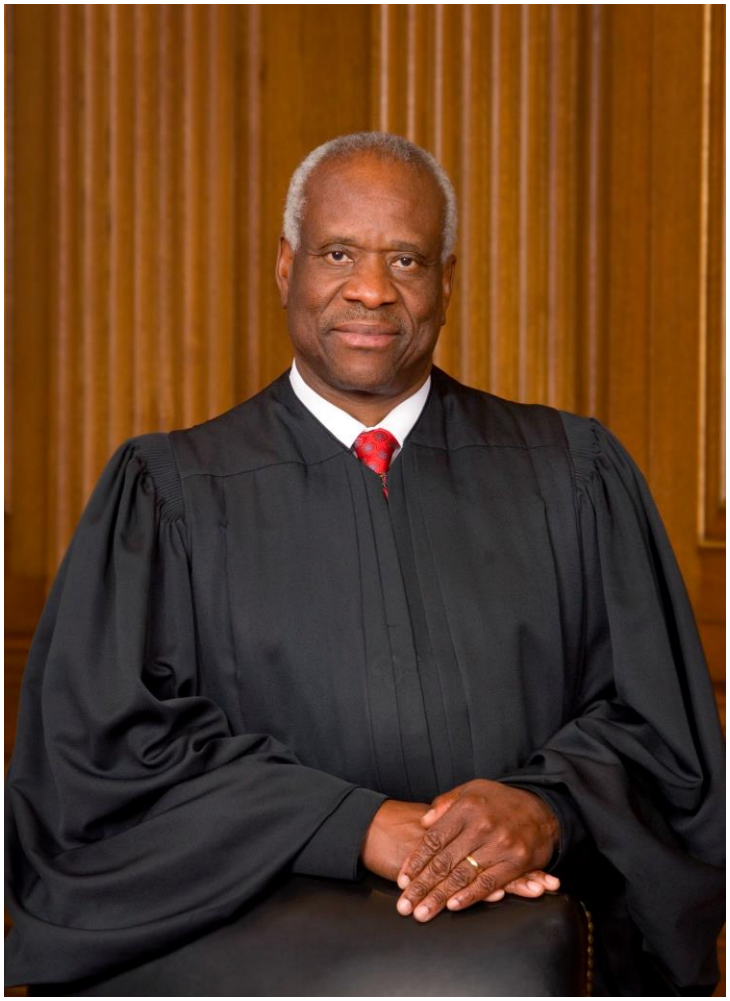
You see a woman reading the New York Times on the subway, Which is more likely?

- A. She has a PhD
- B. She does not have a college degree?

Revising Ex Ante Probabilities in Hindsight

College students asked to predict how the U.S. Senate would vote on the confirmation of Supreme Court nominee Clarence Thomas.

- Prior to the senate vote, 58-percent of the participants predicted that he would be confirmed.
- When students were polled again after Thomas was confirmed, 78-percent of the participants said that they thought Thomas would be approved.



Revising Ex Ante Probabilities in Hindsight

- All participants given a description of the same medical procedure
- Randomly told that the outcome for the patient was OK or bad

Was the procedure malpractice?

Higher levels of malpractice were reported when they were told there was a bad outcome than an OK outcome, even when presented with exactly the same procedure.

Hindsight Bias

- You mistakenly believe that your own (higher) hindsight estimate of probability is the same as your (lower) foresight estimate, i.e., that you "knew all along" that the actual outcome would likely occur, when in fact you didn't.
  - **People tend to forget their actual foresight estimates.**
  - **The belief may improve your understanding of a particular probability, but it won't help you improve the process of prediction.**

- You mistakenly believe that a third party made an unreasonably low ex ante estimate of the probability of the actual outcome, and impose blame or liability.

Blame in Hindsight: Unfair?

- Should the Bush administration have predicted 9/11?
- Should the intelligence community have known that Saddam Hussein did not have weapons of mass destruction?
- Should the pension fund manager have known that this was a risky investment?

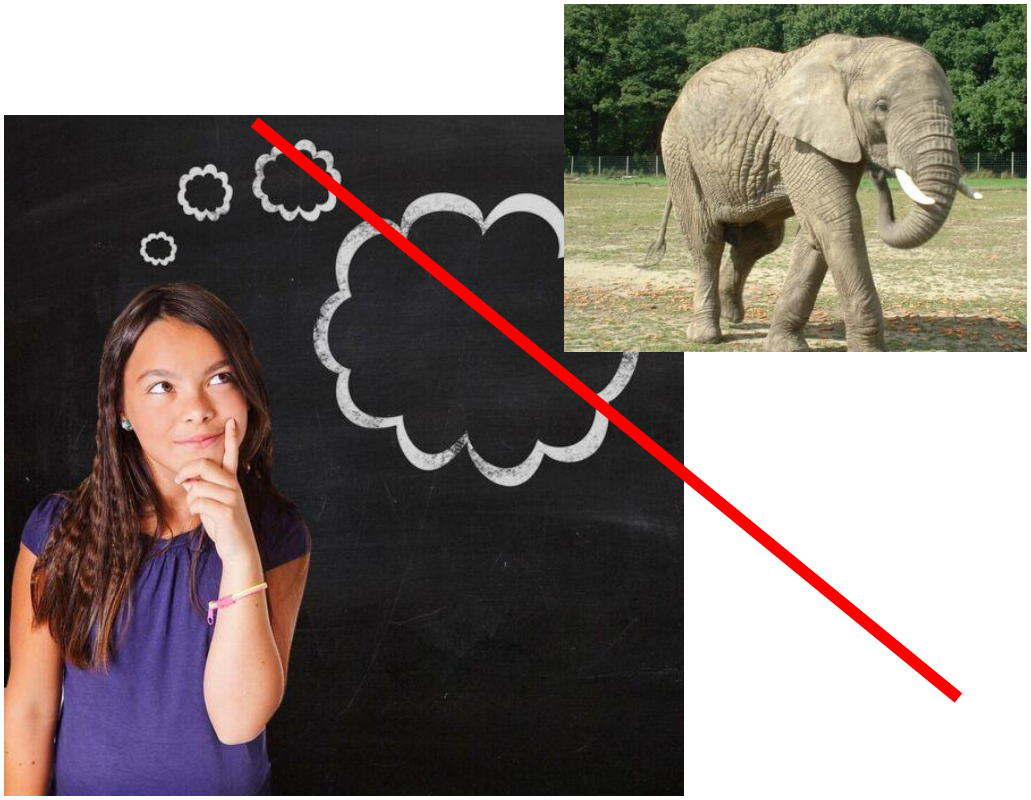
Hindsight Bias: Mechanism

- Anchoring, availability – why?

- We develop a theory based on the actual outcome and believe that we always held that theory.

- Natural (and useful) tendency for the brain to automatically incorporate known outcomes into existing knowledge, and make further inferences from that knowledge. Ignoring a known outcome is unnatural.

Stickiness of Hindsight Bias
“Don’t Think About an Elephant”



Hindsight Bias: Mitigating in Law

- Suppress evidence that would exacerbate bias, e.g., repairs
- Industry custom, standards of conduct
- Per se, bright line, safe harbors. Old prudent investor rule that only permitted certain securities

Determinants of Feelings/Acceptability of Risk

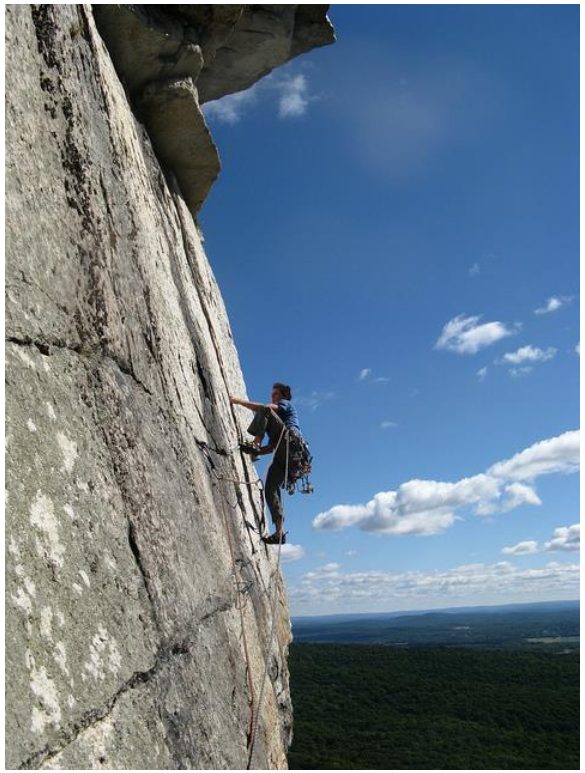
- Outrage

Determinants of Feelings/Acceptability of Risk

- Familiarity

Determinants of Feelings/Acceptability of Risk

- Voluntariness and controllability



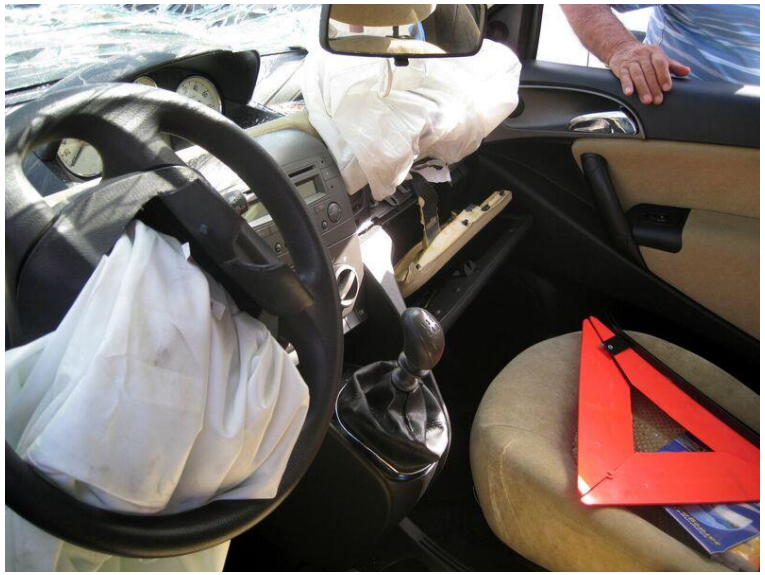
Determinants of Feelings/Acceptability of Risk

- Natural origins

Determinants of Feelings/Acceptability of Risk

- Betrayal aversion

TAKATA



Determinants of Feelings/Acceptability of Risk

- Omission bias

Confirmation Biases

- Insufficiently revise your prior hypothesis in light of new data.
- Search for evidence in a way that favors your hypothesis—for example, by avoiding tests that you think might contradict your hypothesis.
- Selectively evaluate and interpret the information you receive to favor your hypothesis. (For example, you might regard hypothesis-confirming data as trustworthy and disconfirming data as dubious.)
- Difficulty generating viable new hypotheses, even when you do feel like abandoning an old one.

Dyad Estimation Exercise

By yourself (and without looking it up), estimate how many new cars were sold in South Africa in December, 2014 and write it down: _____

Now share your estimate with your partner without talking to him/her, and (by yourself; that is, don't agree on a number) estimate the distance again and write down:

Your estimate_____
Partner's estimate____
Difference____ (if you remained apart (and didn't switch positions))

Now take a few minutes to discuss the question with your partner, and (again by yourself) estimate the distance again and write down:

Your estimate____
Partner's estimate____
Difference____ (if you remained apart (and didn't switch positions))

Dyad Estimation Debrief

- Most class members remained closer to their original answers even after discussing
- **Why?**

Dyad Estimation Debrief

Suppose you were an observer to two classmates doing this exercise and just as clueless as the participants about the answer. What would you do?

Dyad Policy Exercise, Part I

Policy Problem: First part (done alone)

Should Stanford use the "beyond a reasonable doubt" burden of proof required to convict a criminal defendant in a University proceeding to discipline a student for sexual assault (yes or no)?

If **yes:**

How certain are you about your answer, using this scale: ____

Not at all certain
Somewhat certain
Very certain

What percent of the other students in this class do you think would answer "yes"? __ %

If **no:**

What percent of the other students in this class do you think would answer "no"? __ %

How certain are you about your answer, using this scale: ____ ?

Not at all certain
Somewhat certain
Very certain

Dyad Policy Exercise, Part II

Policy Problem: Second part (done with a partner)
Now take a few minutes to discuss the question with your partner, and (again by yourself)

Did your view change from “yes” to “no” or “no” to “yes”?

If your view did **not** change, did your certainty about the view change?

Confirmation Biases: Barriers to Revision

- **In general**: once we have made a decision or formed a belief, it is much easier for us to find *additional* reasons why that belief/decision is correct than to find reasons why it is incorrect

  - interpretation of ambiguous evidence
  - biased evidence as a result of 'confirmatory' search; anchored by positive hypothesis
  - "explaining away" conflicting evidence ("exceptions that prove the rule")
  - scrutinize disconfirming evidence less

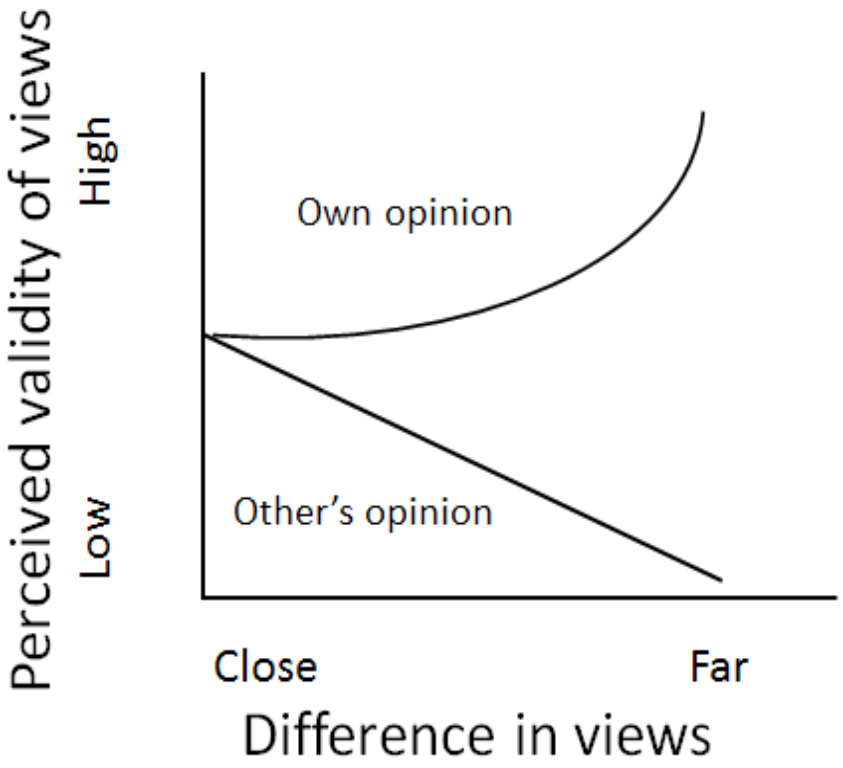
Naïve Realism

1. I see actions and events as they are in reality. My perceptions and reactions are an unmediated reflection of the "real nature" of whatever it is I am responding to.

2. Other people, to the extent that they are willing and able to see things in a similarly objective fashion, will share my perceptions and reactions. (*false consensus*)

3. When others perceive some event or reacted to it differently from me, they (but not I) have been influenced by something other than the objective features of the events in question.

Naïve Realism



Naïve Realism: Consequences

- Partisans tend to overestimate the number of others who agree with their views, or at least the number who would agree with them if apprised of the "real" facts; partisans therefore assume that disinterested third parties would therefore agree with them.
- Partisans tend to see viewpoints that differ from their own, as highly revealing both of personal dispositions (for example, gullibility, aggressiveness, pessimism, or charitableness), and of particular cognitive and motivational biases.
- Partisans on both sides of an issue will typically perceive evenhanded media to be biased against them and to favor their adversaries. They are apt to see the same hostile bias in the efforts and decisions of evenhanded third-party mediators or arbitrators.
- Partisans will be polarized and extreme in their view. They will underestimate areas of agreement, and therefore underestimate the prospects of finding "common ground" through discussion or negotiation.

Cognitive and Motivational Causes

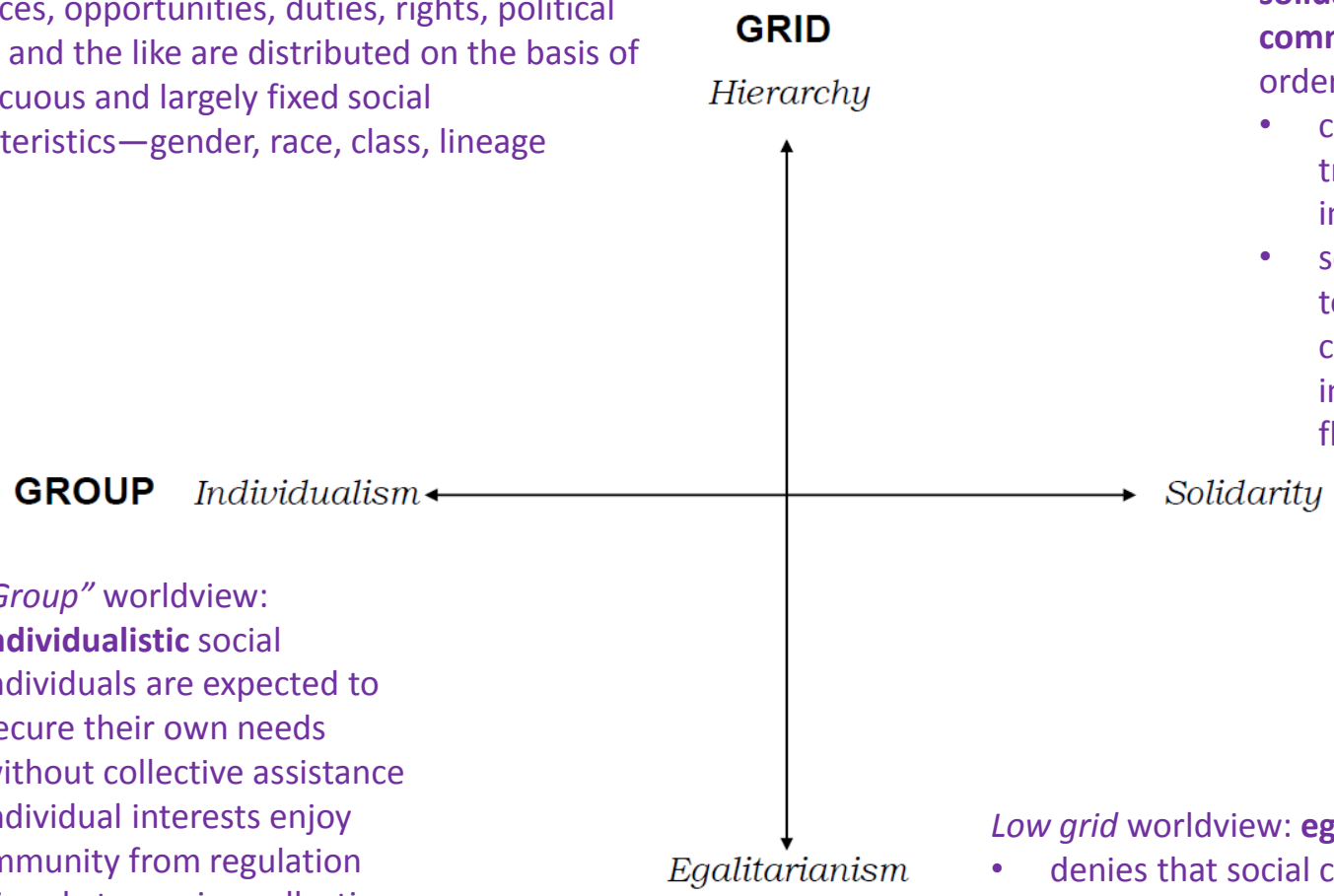
- Cognitive (cf. availability, anchoring)
- Motivational
  - Economic, ideological or religious beliefs.
  - Prefer the result. (Ditto and Lopez enzyme experiment)
  - Avoid being a flip-flopper.

Belief Revision: Bias Blind Spot

- Often much harder to spot bias in our own reasoning than in the reasoning of others
  - Friend's over optimism about his stock portfolio
  - Friend's use of availability heuristic in deciding to drive cross-country rather than fly
- *Bias blind spot* when it comes to our own reasoning
  - Naïve Realism: we believe we see the world objectively, unencumbered by bias
    - Necessarily has to be true

Cultural Cognition

High grid worldview: **hierarchical** society, in which resources, opportunities, duties, rights, political offices and the like are distributed on the basis of conspicuous and largely fixed social characteristics—gender, race, class, lineage



High group worldview: **solidaristic or communitarian** social order

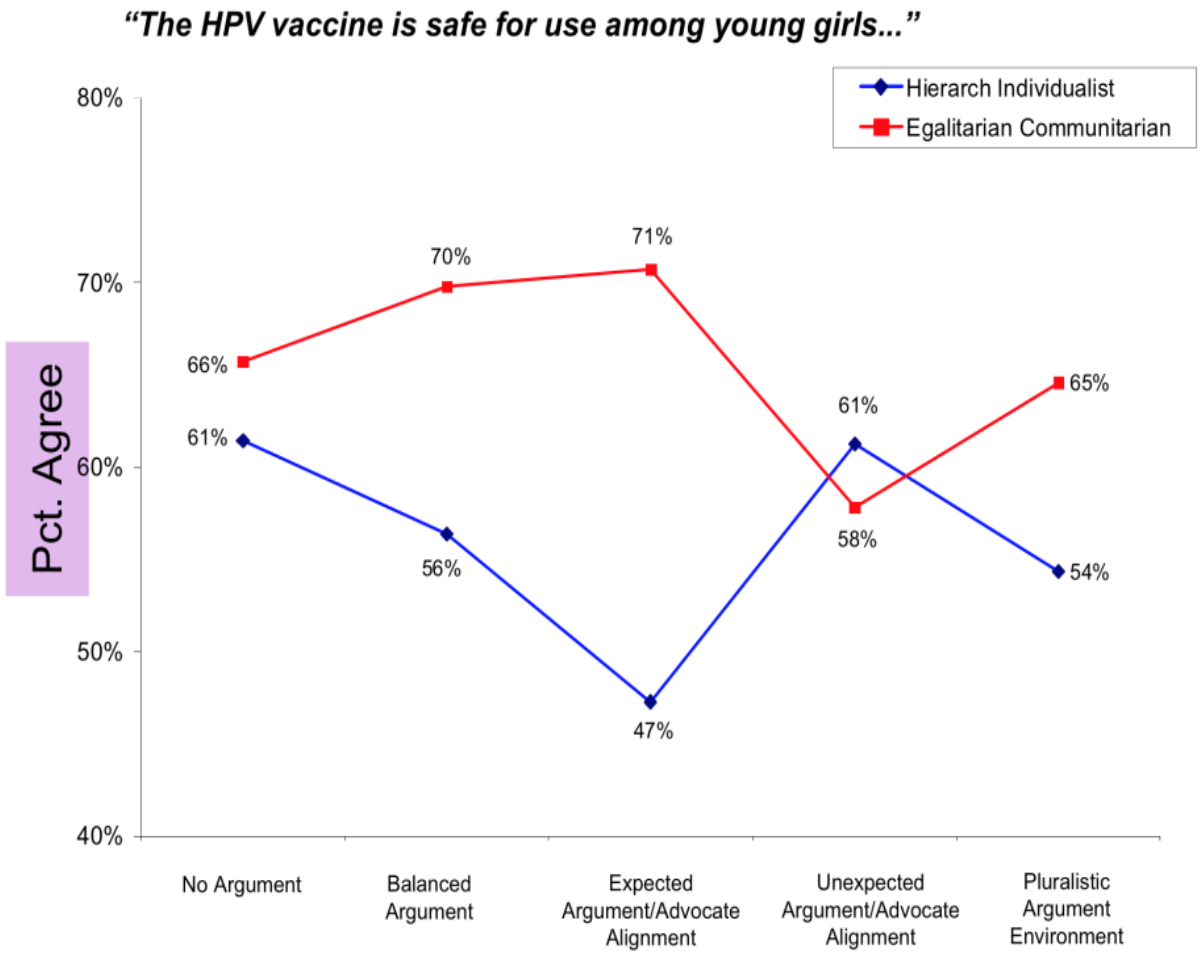
- collective needs trump individual initiative
- society is expected to secure the conditions of individual flourishing.

Low Group" worldview:

- **individualistic** social
- individuals are expected to secure their own needs without collective assistance
- individual interests enjoy immunity from regulation aimed at securing collective interests

Low grid worldview: **egalitarian** society

- denies that social characteristics should matter in how resources, opportunities, duties and the like are distributed


"The HPV vaccine is safe for use among young girls..."
Hierarch Individualist
Egalitarian Communitarian
Pct. Agree
80%
70%
60%
50%
40%
66%
70%
71%
58%
65%
61%
56%
47%
61%
54%
No Argument
Balanced Argument
Expected Argument/Advocate Alignment
Unexpected Argument/Advocate Alignment
Pluralistic Argument Environment

Self-Affirmation Theory

- 1 People are motivated to protect the perceived integrity and worth of self.
- 2. Motivations to protect self-integrity can result in defensive responses.
- 3. People can be affirmed by engaging in activities that remind them of “who they are” (and doing so reduces the implications for self-integrity of threatening events).

Debiasing Through Self-Affirmation (1)

- Before reading the article on capital punishment participants in the self-affirmation condition wrote an essay about a personal value that they had rated as personally important (such as their relationships with friends or sense of humor). Specifically, asked to describe three to four personal experiences where the value had been important to them and had made them feel good about themselves. (The value they wrote about was, in all cases, unrelated to their political views.)
- Control group wrote on a neutral topic.

Debiasing Through Self-Affirmation (2)

Self-affirmation group

- More balanced.
- Less critical of the reported research, and suspected less bias on the part of the authors of the report. Participants even changed their global attitudes toward capital punishment in the direction of the report they read.

Problem: Beliefs About Climate Change

A 2007 study provided subjects with a newspaper article with definitive evidence that earth's temperature is increasing, that the increase is man-made, and that the consequences of continued warming will be catastrophic. Common policy solutions include less reliance on fossil fuels and greater reliance on alternative sources, including solar, wind, and nuclear energy.

1. What cultural worldviews (hierarch, individualist, egalitarian, communitarian) would feel threatened by this argument?

2. What policy solutions might you propose to affirm the skeptics and make them more inclined to agree with the argument?

Open Carry Problem

In advocating for the Texas law that permits residents to openly carry guns, the Lieutenant Governor asserted that "where states have open carry or concealed carry, crime is down 25 percent, murders are down. Having law abiding citizens having guns is a good thing." Others have questioned the fact asserted and its implicit attribution of a causal connection between right-to-carry laws and crime. Here is a link to a recent article on the subject.
http://www.politifact.com/truth-o-meter/statements/2016/jan/03/dan-patrick/texas-lt-gov-dan-patrick-claims-states-where-peopl/

The governor of a different state that currently does not permit civilians to carry guns under any circumstances has asked you to assemble a "blue ribbon" task force to help her determine whether to propose adoption of either concealed or open carry legislation. She wants the task force to include a few leaders from business, civil society, education, and law enforcement as well as representatives of the National Rifle Association and the Brady Campaign to Prevent Gun Violence. In preparation for the first meeting, the governor asks you to lay out the costs and benefits of the proposed change.

How will you organize the meetings to maximize the chances of the task force's achieving a consensus?

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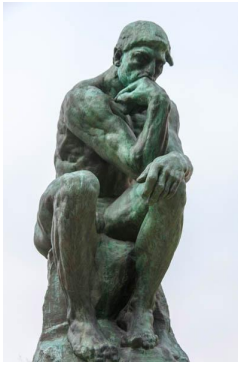

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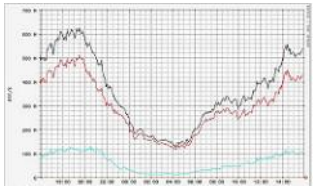

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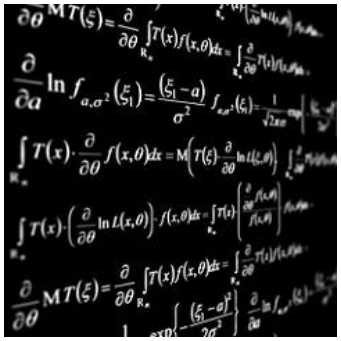

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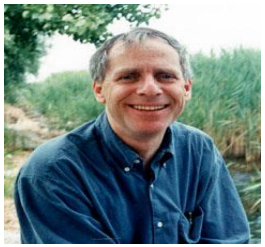

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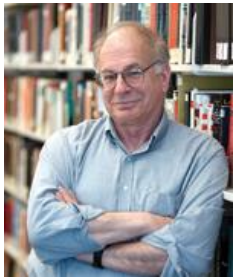

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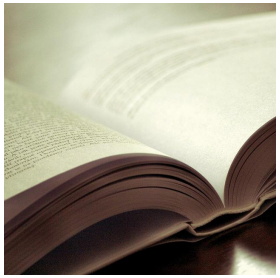

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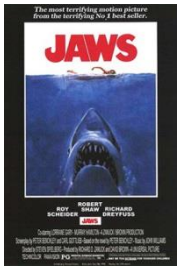

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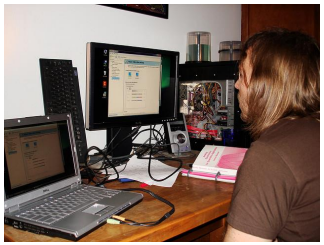

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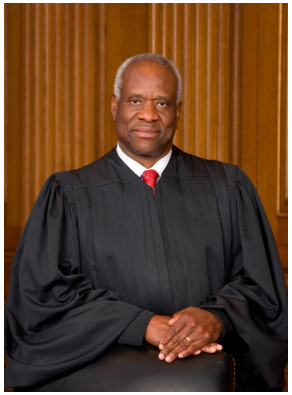

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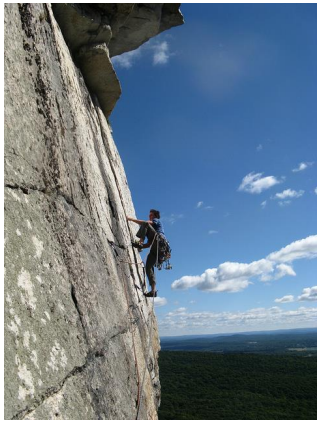

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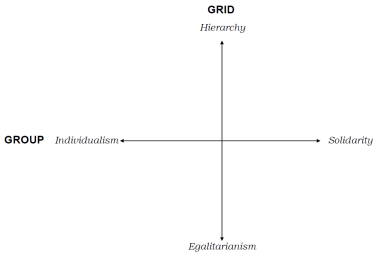

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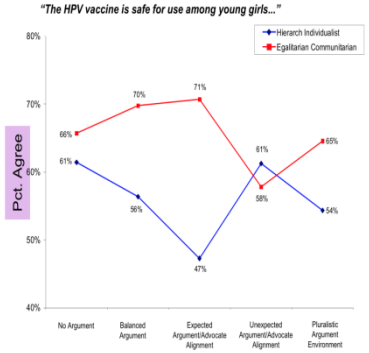

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