

# Psychology and Economics<sup>1</sup>

## 14.13 Lecture 2

Frank Schilbach

MIT

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<sup>1</sup>These lecture slides are partially based on notes by Botond Köszegi. I would like to thank him, without implicating him in any way, for sharing his materials with me. Special thanks to Aaron Goodman for quickly and competently analyzing the data from the short quiz.

# Logistics

- Questions regarding syllabus or anything else?
- Ask and answer questions on Piazza forum!
- TA office hours and recitation
  - Times and locations will be posted on Learning Modules website later today.
  - Recitation this week: review of utility maximization
- Other issues
  - First pset coming soon!
  - Filming the class
  - Posting slides
  - Laptop section

# Survey

- At the end of last lecture, you filled out a short survey.
- Will use results from survey to illustrate some behavioral phenomena.
- Course material is based on more thorough experimentation and evidence with economically more important implications.

## How do economists think about human behavior?

- Goal-driven individual behavior: constrained optimization
  - (1) **Utility function:** what makes people happy...
    - ...at a moment in time (instantaneous utility function)?
    - ...when time, risk, or others are involved (time, risk, and social preferences)?
  - (2) **Beliefs:** What do people believe about their environment?
    - Physical environment and others' behavior
    - Use of information to update their beliefs.
  - (3) **Choice/Decision-making:** How do people use the above to make decisions?
    - Some influences on behavior aren't about utility or beliefs.
    - Frames, defaults, and nudges; heuristics
- Psychological insights can improve our understanding of each of these components.<sup>2</sup>

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<sup>2</sup>See overviews of the literature in Rabin (1998, 2002, 2013); DellaVigna (2009)

## Social preferences

- Much of classical economics assumes that people are selfish.
  - That's mostly true, but not entirely.
  - It is a good assumption for many situations!
  - Charity: about 2% of GDP (\$373.3 billion in 2015)
- People care about others in other ways than pure altruism:
  - Warm glow
  - Inequity aversion
  - Social image, social pressure
  - Reciprocity, fairness
  - ...
- Key questions:
  - (1) What is the nature of such *social preferences*, i.e. the motivation to help/hurt others?
  - (2) How does the presence of others affect our utility?

## Social preference: where do donations go?

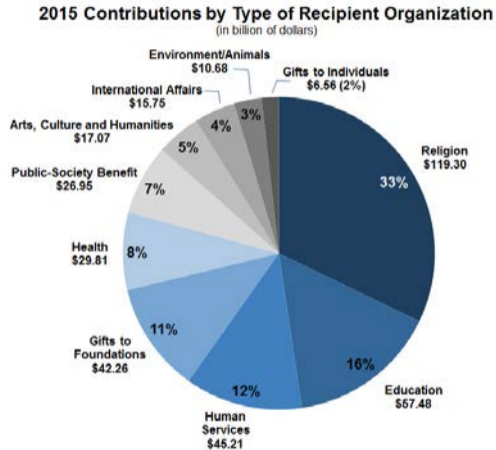


Figure: Source: *Giving USA 2016*, the Annual Report on Philanthropy

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## Social preferences: dictator game

- Question in the survey, called *Dictator Game*:

*Imagine you have been given \$10 to split between yourself and another, randomly chosen, MIT undergraduate. You can keep any part of the \$10 to yourself, and give the rest of the \$10 to the other student.*

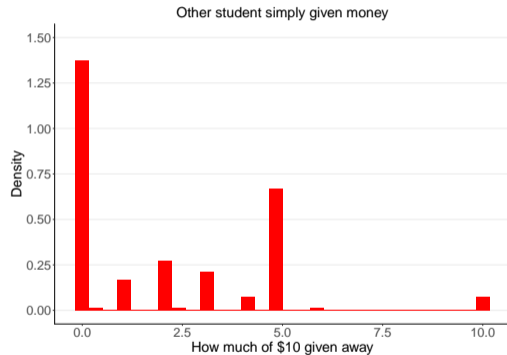
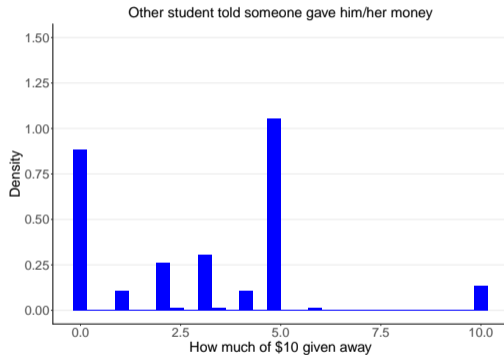
- The question was asked in two ways:
  - (1) Recipient is informed about the circumstances of the decision.
  - (2) Recipient might never notice (money is wired anonymously).

## How much do people give?

- Strict version of standard model predicts that people give exactly \$0.
- Usually, subjects give around \$2 to \$3.
- Average 'giving' in class was \$3.03 in the first case, and \$2.04 in the second case.
- People care about what others think, not only how much money they get.



# Social preferences: dictator game (overall giving)



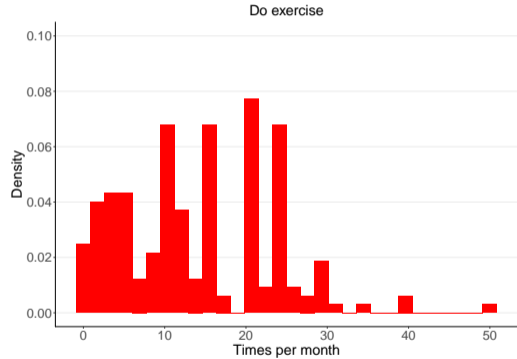
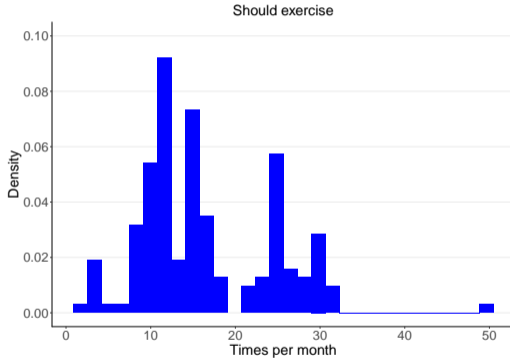
## Betting on losing weight

- William Hill is mostly a sport-betting agency, but they also accept some unusual wagers.
- Weight-loss bets are among the oddest bets they have allowed.
- Why is this an odd bet?
  - This is betting on an outcome over which (in principle) one has complete control!
  - But overall over 80% of the bettors lose.
  - See story [HERE](#).

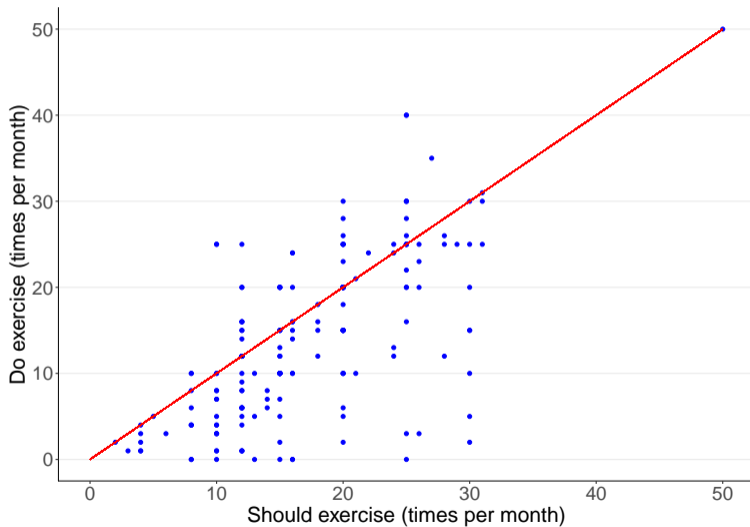
## Internal Conflicts

- Two possible explanations (both might be going on):
  - (1) Bettors naively think they can lose weight, so they try to make some money in the process.
  - (2) They make the bet to give themselves incentives to lose weight.
- Internal conflict: people want to diet, but when the time comes for the pain, they don't carry through.
- Similar conflict between short-run desires and long-term goals is apparent in many people's exercising habits.
  - Who thinks they're exercising more than they should?
  - Who thinks they should exercise more than they do?

# Do you exercise as much as you think you should?



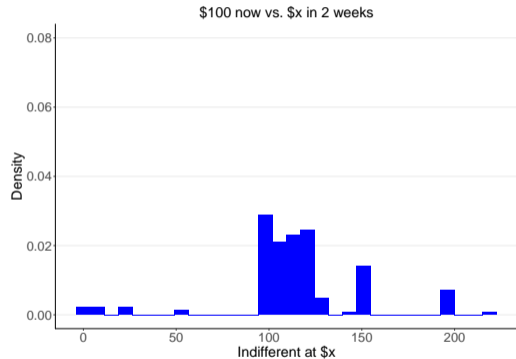
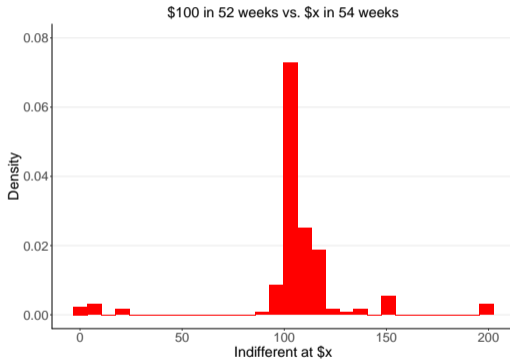
## Do you exercise as much as you think you should?



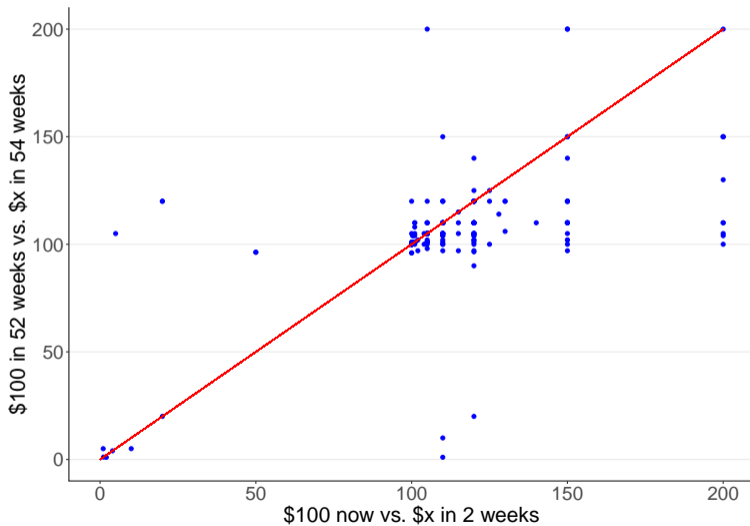
## The source of the conflict: present bias

- *Suppose I could give you either \$100 in cash in 52 weeks or \$x in cash in 54 weeks. What is the x for which you would be indifferent between the two options?*
  - Mean  $x = \$105.67$ ; median  $x = \$105$
- *Suppose I could give you either \$100 in cash right now or \$x in cash in 2 weeks. What is the x for which you would be indifferent between the two options?*
  - Mean  $x = \$120.78$ ; median  $x = \$110$

# Money now vs. later?



# Money now vs. later?





## Time preferences: summary

- People are relatively patient for far-off decisions.
  - That is like a person who decides she wants to diet in the future.
- People are less patient for immediately relevant decisions.
  - That's like a person who, when facing immediate sacrifice, is not willing to carry through her diet.
- We will explore two major questions:
  - (1) The conflict between short-run desires and long-run goals
  - (2) Whether and how people predict their own future utility and behavior

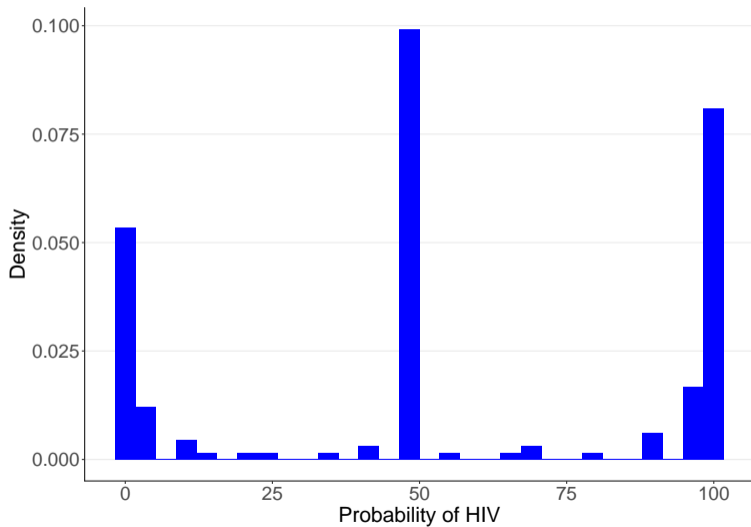
## Mistakes in Objective Probability Judgments

- Question in the survey:

*Suppose one in a hundred people have HIV. We have a test for HIV that is 99% accurate. This means that if a person has HIV, the test returns a positive result with 99% probability, and if a person does not have HIV, it returns a negative result with 99% probability. If a person's HIV test came back positive, what is the probability that she has HIV?*

- 22% of this class answered 99%. Possible logic:
  - Positive person will probably receive a positive result.
  - If she tested positive, she is likely to be HIV-positive.
- A psychologically natural, often close to correct, but in this case very incorrect, reasoning.
- Mistake: ignoring the base rate of HIV in the population.

## Remember Bayes' rule?



Yes, 50% is the correct answer.

- Notation:  $P$ =HIV-positive,  $N$ =HIV-negative, and  $p$ =tested positive

$$\begin{aligned}\Pr[P|p] &= \frac{\text{probability that } P \text{ and } p \text{ are both true}}{\text{probability that } p \text{ is true}} \\ &= \frac{\Pr(P\&p)}{\Pr(p)} = \frac{\Pr(P\&p)}{\Pr(P\&p) + \Pr(N\&p)} \\ &= \frac{(.01)(.99)}{(.01)(.99) + (.99)(.01)} = 0.5\end{aligned}$$

## Heuristics and Biases

- Correctly combining the base rate of HIV with evidence for or against HIV is a cognitively difficult process.
- When faced with cognitively demanding tasks, we often respond by approaching it with a quick intuitive shortcut.
- These shortcuts allow us to exist in an extremely complicated world, but they also lead to systematic biases in judgments.
- Psychological insights can help us understand how people process information and form beliefs

## Biases in Subjective Probability Judgments

- Two related questions in the survey:

*What do you think is the probability that upon finishing your undergraduate studies, **you** CAN land a job with a starting salary over \$200,000 (independently of whether you want to)?*

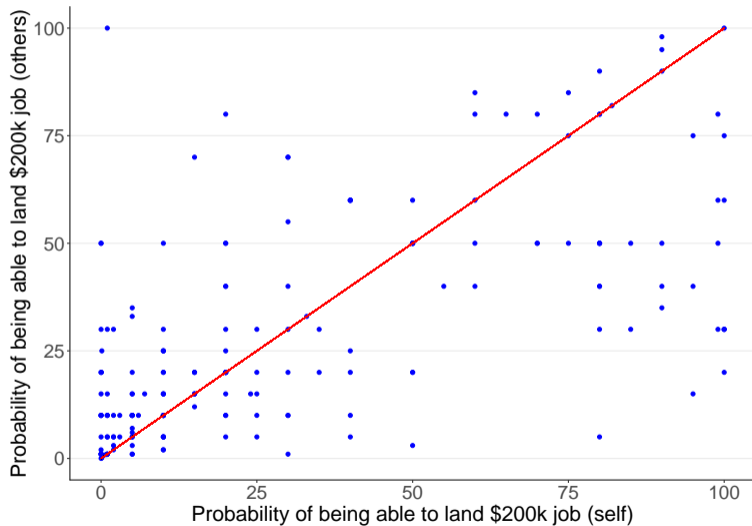
- Average answer for your *own* probability: 31.63%.

*What fraction of the **students in this class** do you think CAN, upon finishing their undergraduate studies, land a job with a starting salary over \$200,000 (independently of whether they want to)?*

- Average answer for your *classmates'* probability: 29.16%.

- In reality, both averages should be the same – equal to the class' average probability of being able to get a \$200,000 job.
- People – especially men – tend to be overoptimistic about their prospects and abilities relative to others.

# Overconfidence?



## Other influences on behavior

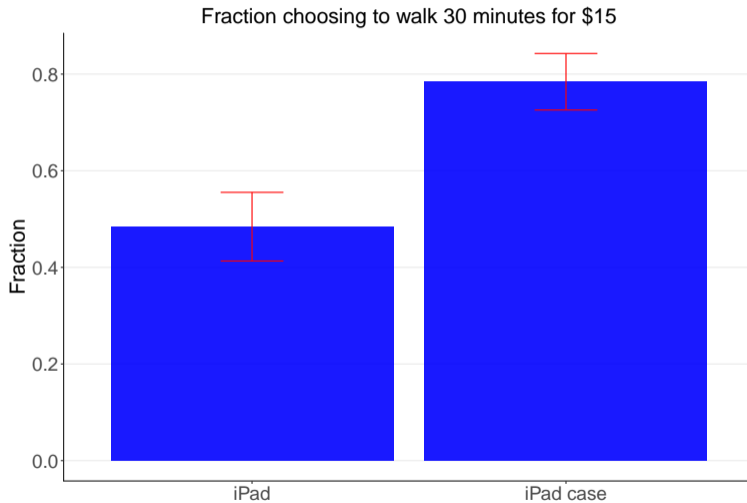
- Some influences on behavior aren't about utility or beliefs
- Questions in survey:

*Imagine that you are about to purchase **an iPad for \$500**. The salesman tells you that you can get the exact same good in a nearby location for \$15 off. You would need to walk for 30 minutes in total. Would you go to the other store?*

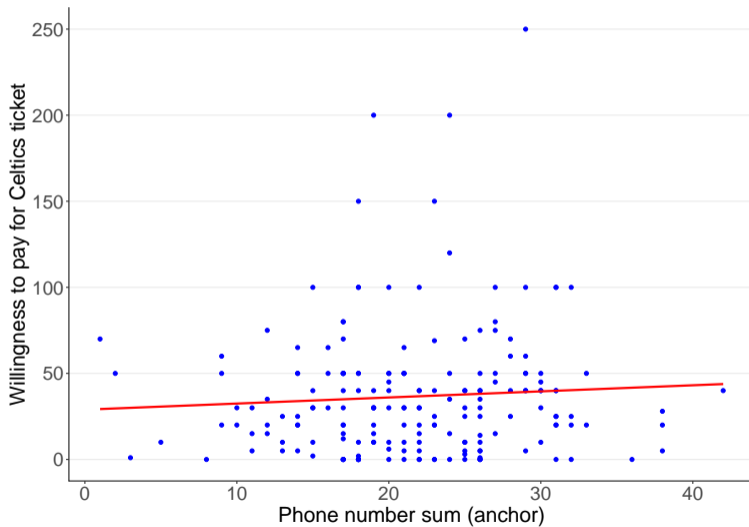
*Imagine that you are about to purchase **an iPad case for \$30**. The salesman tells you that you can get the exact same good in a nearby location for \$15 off. You would need to walk for 30 minutes in total. Would you go to the other store?*



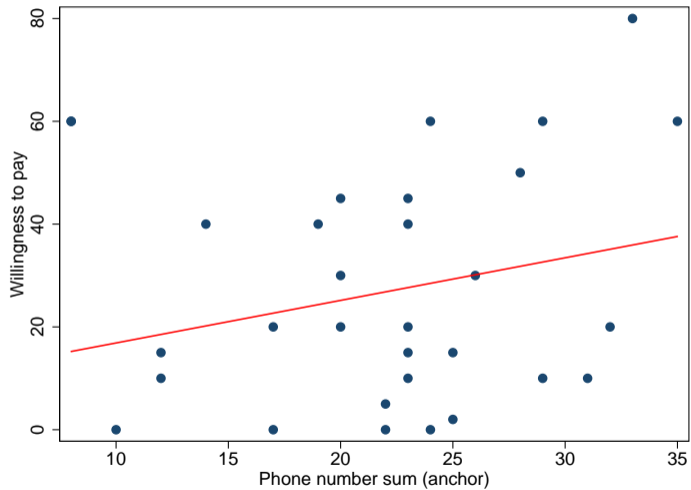
# How much are 30 minutes of walking worth?



# Anchoring? Maybe...



## More anchoring in 2017!



## From Jerusalem to Jericho

- Darley and Batson (1973) study determinants of helping behavior
  - Princeton theology students on way to seminar
  - Pass ostensibly injured man slumped in doorway, coughing and groaning
- What matters for helping behavior?
  - (1) Lecture on [Parable of the Good Samaritan](#) vs. other content
  - (2) Variation in time pressure (hurry)
  - (3) Personality measures of religiosity
- **Small sample alert!**

## From Jerusalem to Jericho

- Main outcome: fraction who stopped and offered to help
  - Hurry condition very important.
    - No hurry: 63% stopped
    - Medium hurry: 45% stopped
    - High hurry: 10% stopped
  - Personality characteristics don't seem to predict behavior.
- Situations can matter a great deal. Preferences can be malleable.

# Summary

- Observe yourself, your friends, etc. carefully while taking this course.
  - Some of them are bound to behave in ways we are discussing.
  - You'll often see puzzles for which you might want to think about another psychological-economic theory.
- Think about whether firm behavior is reaction to the psychological phenomena we are discussing.
  - Why is your credit-card offer structured the way it is?
  - How do grocery stores decide which items to put on sale?
  - Why is printer toner so expensive?
  - ...
- And think about whether there's a way to improve outcomes.

## Overview of topics

- Introduction and overview (2 lectures)
- **Time preferences and self-control (4 lectures)**; risk preferences and reference-dependent preferences (3 lectures); social preferences (4 lectures)
- Emotions, projection and attribution bias (1 lecture); limited attention (1 lecture); beliefs and learning (2 lectures); mental accounting (1 lecture)
- Malleability and inaccessibility of preferences (1 lecture); happiness (1 lecture); mental health (1 lecture); gender and racial discrimination (1 lecture)
- Frames, defaults, and nudges (1 lecture); policy and paternalism (1 lecture); poverty through the lens of psychology (1 lecture)

## Readings for Monday and Wednesday

- For Monday: Frederick et al. (2002) – Sections 1 through 4.1 and 5.1
- For Wednesday: O'Donoghue and Rabin (1999) – Introduction, Section I and III (focus on examples)



## References used in this lecture I

- Darley, John M. and C. Daniel Batson**, "'From Jerusalem to Jericho': A Study of Situational and Dispositional Variables in Helping Behavior," *Journal of Personality and Social Psychology*, 1973, 27 (1), 100–108.
- DellaVigna, Stefano**, "Psychology and Economics: Evidence from the Field," *Journal of Economic Literature*, 2009, 47(2), 315–372.
- Frederick, Shane, George Loewenstein, and Ted O'Donoghue**, "Time Discounting and Time Preference: A Critical Review," *Journal of Economic Literature*, 2002, XL (2), 351–401.
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