

# Behavioral Economics 101

- I. Basic Ideas - Prof. Thomas Rice
- II. Some HIV Applications - Prof. Arleen Leibowitz
- III. Additional Health Applications - Prof. Fred Zimmerman
- IV. HIV Interventions in Uganda - Dr. Sebastian Linnemayr
- V. Brainstorming

# BEHAVIORAL ECONOMICS OF HEALTH AND HEALTH CARE

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# Behavioral Economics

3

- ❑ What it isn't: economic incentives influence behavior
  - ▣ If we reduce the copayment for prescription drugs, people will be more likely to fill prescriptions
  - ▣ If we pay physicians a salary, they will provide fewer unnecessary services than under fee-for-service
- ❑ What it is: consistent and predictable deviations from classical economic assumptions that...

# CLASSICAL ECONOMIC ASSUMPTIONS

4

- 1) People are hyper-rational. They always make the right decision to enhance their long-run well being.
- 2) They have no trouble sifting through all available information to make that decision.
- 3) They come into the world with a firm set of immutable preferences

# Why do people...

- Engage in behaviors and activities that they know harm their health?
- Not take their prescription medications?
- Not sign up for nearly free health benefits for which they are eligible?
- Stick with health plans that are inferior to other options available?

And what can we do about it?

If you look at economics textbooks,  
you will learn that homo economicus  
can think like Albert Einstein,  
store as much memory as IBM's Big  
Blue, and exercise the willpower of  
Mahatma Gandhi

-- Thaler and Sunstein, *Nudge*

# How Do People Make Decisions?

7



# (1) Hyper-Rationality

8

- Key assumption in microeconomics: revealed preferences
  - If there is good information available, “reveal” their preferences by what they actually choose.
  - When they make a choice, it is, by definition, the best choice or else they would have chosen something else.



“addictions, even strong ones, are usually rational in the sense of involving forward-looking maximization with stable preferences”

— Becker and Murphy

## (2) Can Handle the Information

10

- Traditional viewpoint: “... if there is an inefficiently low level of information in medical care markets, the solution is to inform consumers, not insure them fully.” – Feldman and Dowd
- “Bounded rationality” addressed by Herbert Simon, 60 years ago
  - People have limited ability to sift through all information available to make optimal decision
  - Forced to use heuristics or rules of thumb, rely on “satisficing” rather than maximizing utility

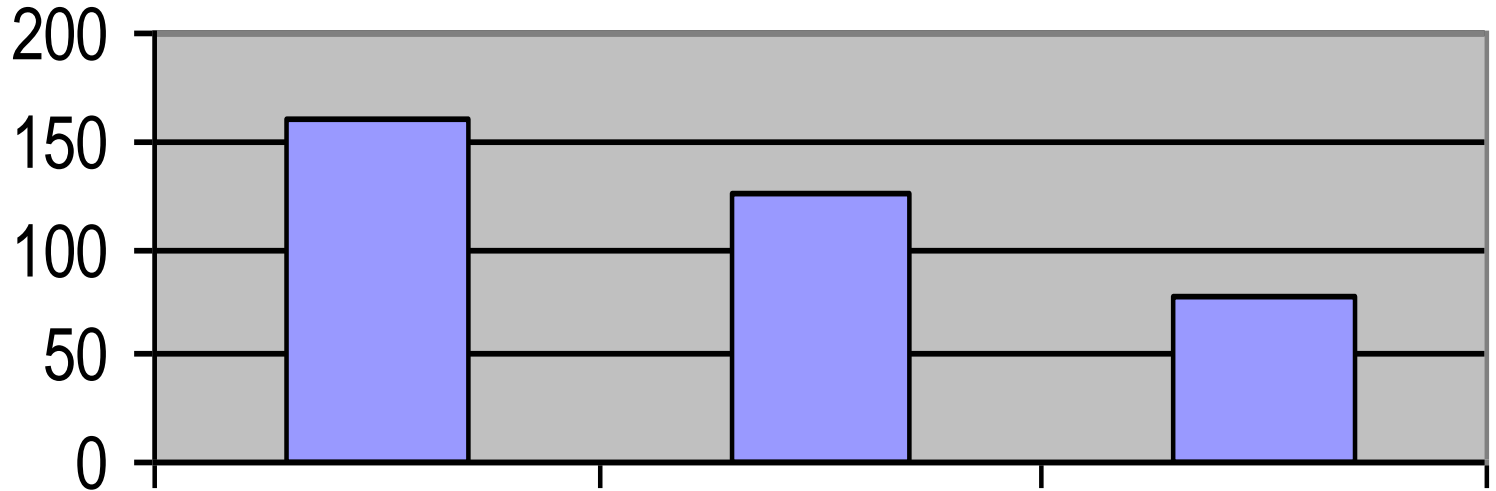
# (3) Immutable Preferences

11

- People benefit from the information provided by advertising ...
- But they are never hoodwinked by it

# Advertising Dollars Spent in 2000

Millions of dollars



Vioxx

Pepsi

Nike

Product

“[T]astes neither change capriciously nor differ importantly between people.... [O]ne does not argue over tastes for the same reason that one does not argue over the Rocky Mountains---both are there, will be there next year, too, and are the same for all men.”

— Stigler and Becker

# SELECTED INSIGHTS FROM BEHAVIORAL ECONOMICS



# 1. Endowment Effect/Status Quo Bias

15

- When a person comes into possession of something, he or she feel ownership and often overvalues it – and tends to prefer current state of affairs.
  - Coffee mugs and chocolate bars
  - Only 5-10% of seniors switch Medicare Advantage or Medicare Part D drug plans each year
  - Implication: make it easier to understand the advantages of alternative choices compared to the the status quo

# 2. Loss Aversion

16

- People have a heightened tendency to avoid losses
  - ▣ They weigh losses about twice that of gains
- Example: people favor lower deductibles more than risk aversion can explain.
  - ▣ 83% of homeowners paid \$100/year extra in premiums for \$500 rather than \$1000 deductible – but only 5% have claim during year.
  - ▣ True also in Medicare Part D: HIV-positive Californians are paying too much in premiums to avoid deductibles and copays
- Framing implication: Consider focusing on losses rather than gains (i.e., wasting money) to motivate people



# 3. Overly Discounting the Future

17

- People rely too much on what is salient
  - ▣ It's tempting to eat fatty food, but the risk of obesity and its consequences are ignored
- Especially problematic in retirement savings
  - ▣ Benartzi and Thaler's program, "Save More Tomorrow"
- Implication: consider giving fun rewards redeemable immediately (gift cards, movie tickets) rather than utilitarian items (gas, groceries) (Murtaugh et al.)

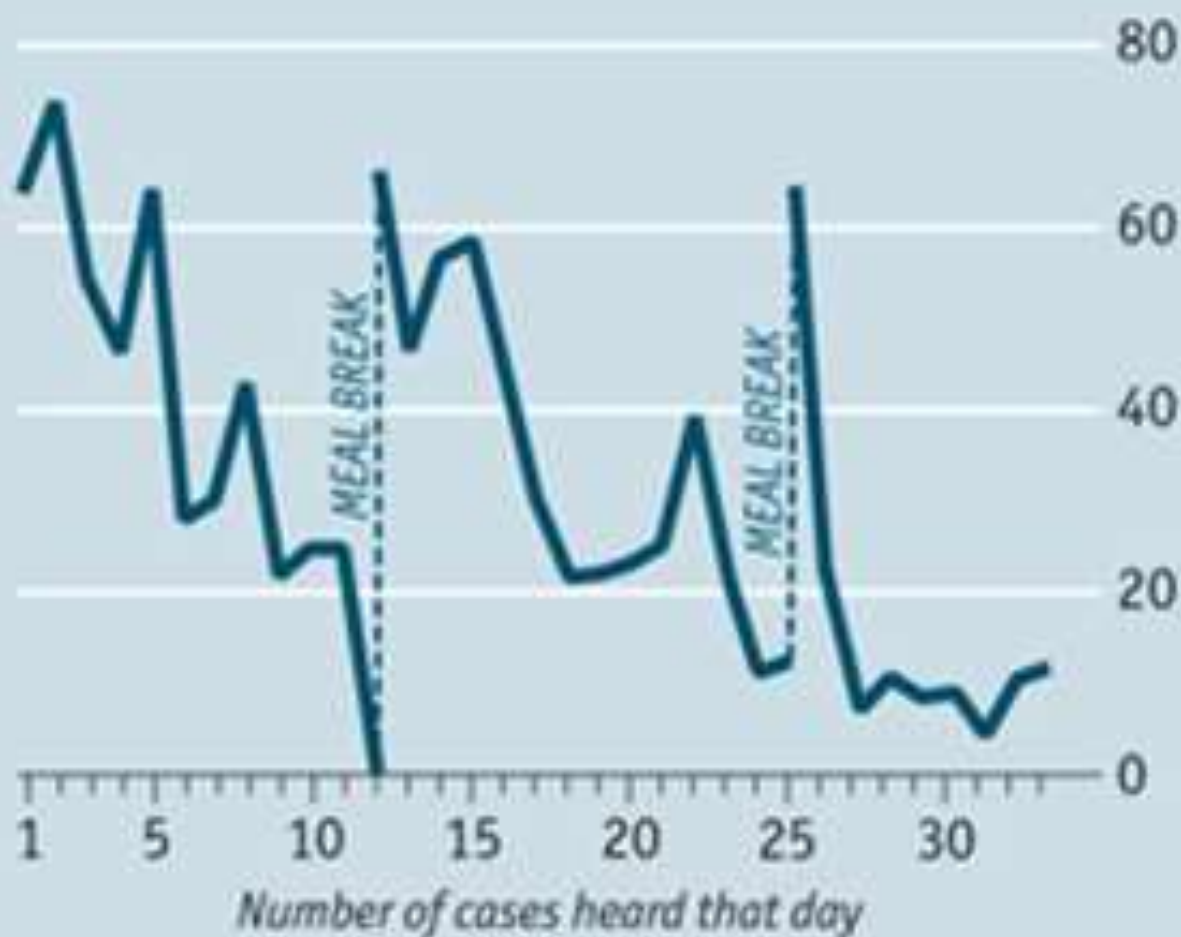
# 4. Decision Fatigue

18

- Choices should be consistent, but over time or under stress the brain gets lazy, often getting more conservative or risk averse.
- Scary example: Danziger study of behavior of parole judges in Israel.
  - ▣ Is justice “what the judge ate for breakfast”?

## Judgment day

Favourable rulings by parole boards, %



Source: PNAS

# 5. Too Much Choice

20

- Traditional theory: more is better
  - ▣ Economics: more likely to find a fit with preferences & you can simply ignore the bad choices
  - ▣ Psychology: more choice is motivating and increases sense of well-being
- Alternative:
  - ▣ There can be too much choice
  - ▣ Reduces quality of choice made, satisfaction with choice, and increases regret and even depression

# Choosing Jam

21



- 6 or 24 jams, given \$1 coupon to buy
- ↑choices ↑likely to approach tasting table\*
- No difference in number of jams sampled
- 30% bought jam in the limited choice set vs. 3% in the extensive set\*

\*  $p < 0.05$

# 401k Study

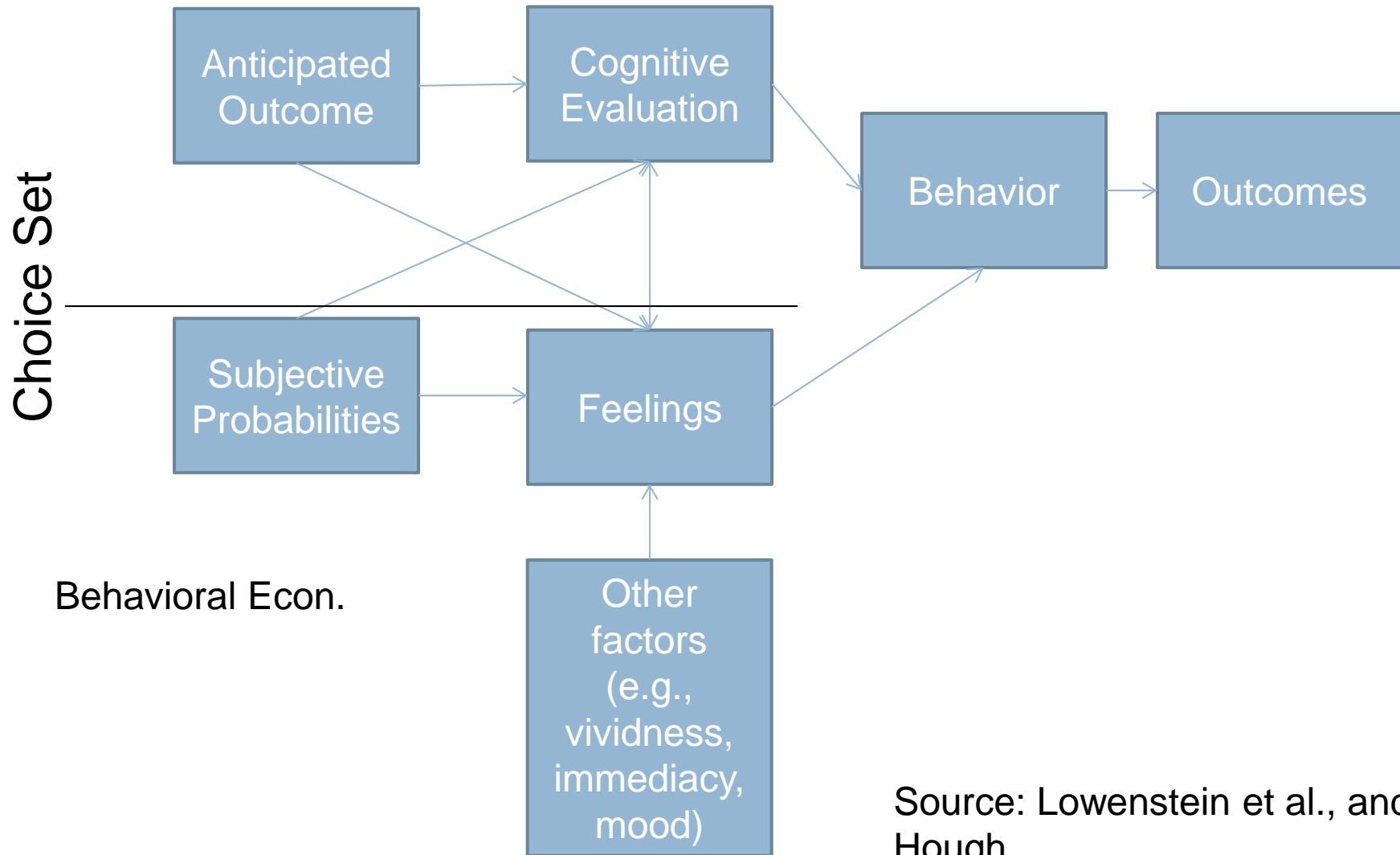
22

- 800,000 employees (69 industries, 647 plans) in Vanguard Fund
- Number of 401k choices varied from 2-69
- Employee participation:
  - 75% with fewer choices
  - 60% with more choices
  - For every increase of ten fund choices, participation fell from 1.5 to 2.0 percentage points. (Control variables: individual and firm average: wage, age, gender, years with current employer.)

Source: Sethi-Iyengar, et al.

# Different Models: Traditional vs. Behavior Economics

Traditional theory



# Common Tools in Behavior Economics

24

- Defaults
- Framing
- Prizes
- Nudges



# Defaults

## Example: Organ Donation

25

- Traditional theory: People will weight benefits (helping strangers) with costs (wishes of family; religion)
  - ▣ Choice mechanism wouldn't matter
- Reality: willingness to donate varies by how rules of opt-out vs. opt-in
  - ▣ 100% in Austria; 12% in Germany
  - ▣ 86% in Sweden, 4% in Denmark
  - ▣ 79% in Montana, 1% in Vermont

Source: Johnson & Goldstein

# Framing

26

- Most effective ways to frame
  - ▣ Losses rather than gains
  - ▣ Sooner rather than later
  - ▣ Vivid (relying on affect) rather than generic/bland
- Examples
  - ▣ If you don't buy insurance by March 31, you pay a penalty (and get nothing)
  - ▣ Let people see benefits of good health behaviors now (e.g., the daily lottery in next slide)
  - ▣ Put scary stuff on cigarette packages

# Prizes

## Example: Commitment Devices

27

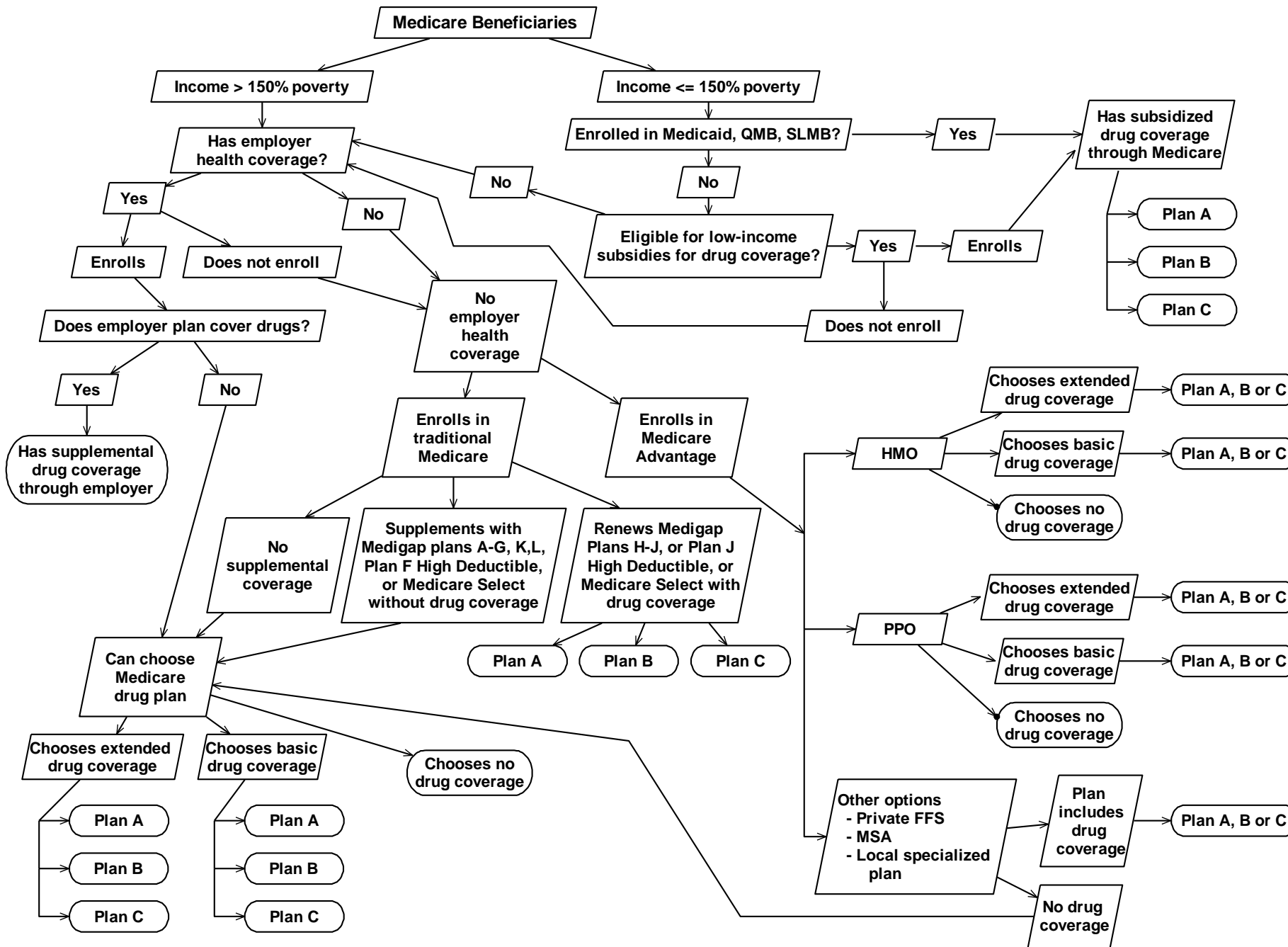
- Randomization of 57 obese people with goal to lose 1 lb./week for 16 weeks. Randomization:
  - ▣ Control group (education & monthly weighing)
  - ▣ Deposit contract financial incentive (subjects contribute to fund; refunded if met goals, maximum payout \$252/month)
  - ▣ Daily lottery incentives (if met goals, 20% chance of winning \$10 and 1% chance of \$100)
  - ▣ Both experimental groups lost 13-14 pounds; controls only 4

Source: Volpp et al.

# Nudges

28

- Behavioral Insight Team, U.K. (“Nudge Unit”)
  - ▣ <https://www.youtube.com/watch?v=3ELnyoso6vI>
- Fun example
  - ▣ <https://www.youtube.com/watch?v=2IXh2n0aPyw>
- Medicare Part D
  - ▣ Estimate that only 6% of people are choosing best plan because it’s so hard to do
  - ▣ Policy suggestion: Medicare inform beneficiaries during annual open enrollment period what is best plan if they don’t change medications



# Final Thoughts

- Behavioral economics is very good at describing why people behave in ways not predicted by traditional theory
- Doesn't really matter whether interventions are traditional or behavioral; what really matters is what works

# FURTHER READING

THINKING,  
FAST AND SLOW



DANIEL  
KAHNEMAN

WINNER OF THE NOBEL PRIZE IN ECONOMICS



Richard H. Thaler  
Cass R. Sunstein

# Nudge



Improving Decisions  
About Health, Wealth,  
and Happiness



# THE PARADOX OF CHOICE

WHY MORE IS LESS **BARRY SCHWARTZ**

HOW THE CULTURE OF ABUNDANCE ROBS US OF SATISFACTION



"A revolutionary and beautifully reasoned book about the pernicious amount of choice that renders the consumer helpless. A must-read."  
- Martin Seligman, author of *Authentic Happiness*

**P.S.**  
HOW TO  
INTERVIEW  
A HIRE

# IRRATIONALITY IN HEALTH CARE



What Behavioral Economics Reveals  
About What We Do and Why

DOUGLAS E. HOUGH

# SOME HIV APPLICATIONS

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# Taking Advantage of Systematic Decision Errors

Myopia-present biased preferences

Reward frequently and w/o delay

Framing

Don't imbed reward in other items; Set the right default

Overweighting small probabilities

Probabilistic rewards (e.g., lottery)

Regret aversion

Tell people they would have won if....

Optimism bias

Pre-commitment and goal setting based on expected success

Loss Aversion

Put rewards at risk if behavior doesn't change

# Using Myopia

- Contingency management (CM) reduced methamphetamine use over and beyond the effects of cognitive-behavioral therapy. A CM-only group was comparably successful at reducing methamphetamine use.
- Ling-Murtaugh\* examined spending behavior (redeeming of rewards) rather than earning of rewards
  - “Spenders” who redeemed their earned rewards more frequently, were more likely to produce stimulant-negative urine samples than “savers” who accumulated their rewards for longer periods of time, independent of total incentives earned.
- Delay discounting predicts that those who save up rewards (less steep levels of delay discounting) would also be more likely to delay their use of methamphetamine. This theory was not supported by the data.
- Support for “substitutability”—earlier incentive competes more directly with the acute reinforcing effect of meth
- No support for greater effect of “fun” rewards vs. “utilitarian” rewards

\*Health Psychology. 2013;32(9):958-966

# Financial Incentives and Safe Sex

- In rural Malawi, conditional cash transfer rewarded remaining HIV-negative for one year (Kohler and Thornton, 2011)
  - ▣ No significant difference between the reward group and controls
- In Tanzania cash incentives every 4 months for remaining free of STIs (deWalque et al. 2011)
  - ▣ 9% of the group offered US\$20 every 4 months tested positive for STIs
  - ▣ 12% of the group offered US\$10/4 months tested positive for STIs
- In Malawi girls and their parents were offered US\$15 per month plus school fees for regular school attendance
  - ▣ After a year, incentivized girls were 6% points more likely to be in school and less likely to become infected with HIV (1.2% vs. 3% for controls) (World Bank 2010; Baird et al, 2010).

# Framing -- Opt-out vs. Opt-in testing

- In 2006 CDC recommended routine HIV testing in medical settings
  - ▣ No need for separate written consent (general informed consent OK)
  - ▣ No need for prevention counselling
- Large impact on testing in pregnancy
  - ▣ 8 states with opt-in in 1998-1999 had testing rates of 25% to 69%
  - ▣ In opt-out state (Tennessee), testing rate of 85%
  - ▣ Nationally, perinatal infections dropped from 32 in 2008 to 10 in 2011 (CDC)
  - ▣ Perinatally infected newborns dropped from 15.2/100,000 births in 2007 to 9.9 births/100,000 in 2009 among African Americans



# Opt-in vs. Opt-out

- Opt-out HIV testing introduced in the intensive care unit of a London hospital
- Resulted in increase in HIV testing rates
  - ▣ From 6.9% tested prior
  - ▣ To 59.7% tested after

Tariq, S., Bath, R., Tillett, S., Saunders, J., Nori, A., Mandersloot, G., & Orkin, C. (2013, April). Opt-out HIV testing within intensive care in a large urban hospital: an innovative testing initiative. Wiley-Blackwell

# Overweighting Small Probabilities

- A large healthcare consulting firm offered employees \$25 to fill out an HRA
- 1299 employees randomized to additional treatment:
  - ▣ Control (no extra incentive)
  - ▣ Direct payment of another \$25
  - ▣ Lottery for those who had completed HRA. Win \$100 (expected value of \$25)
- Percent completing HRA
  - ▣ Control: 40%
  - ▣ Direct payment: 45%
  - ▣ Lottery: 70%