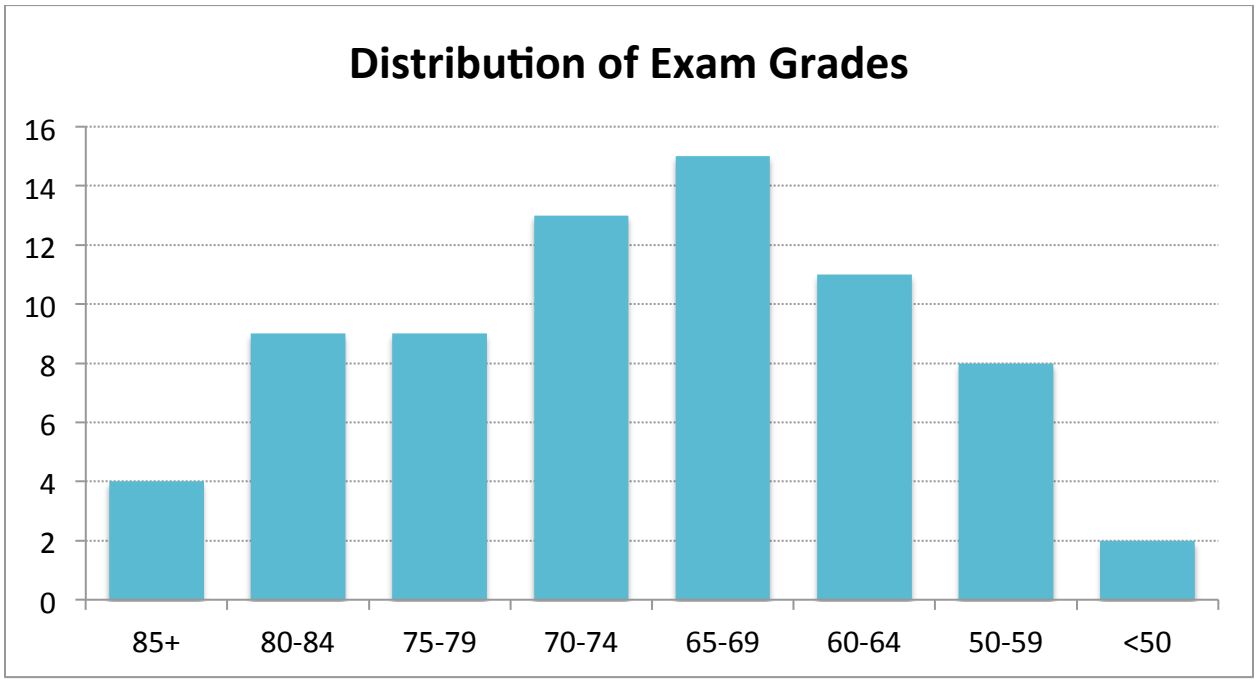
BEHAVIORAL ECONOMICS AND PUBLIC POLICY

API 304 Spring 2015
Harvard Kennedy School
Midterm Exam



Comments on grading of the exam:

- The course is graded on a curve ➔ what matters is not your absolute score on the exam, but how you did relative to others in the class
- Mean=70, Median=69 which is a bit lower than I had hoped, but see bullet point above
- Please verify your score; while we make great efforts to make sure that your score is added up correctly, mistakes do occasionally happen
- The answer key includes the rubric used to grade each question
- The exam counts for 40% (less than half) of your grade in the course overall, so if you are disappointed in your performance on the exam, keep in mind that there are several other factors that go into your course grade

If you feel like you were given inadequate credit for an answer given the grading rubric on the exam, please write up a detailed explanation of your reasoning and submit it with your graded exam to Kathleen Schnaidt (Kathleen_Schnaidt@hks.harvard.edu). Professor Madrian will evaluate your entire exam and get back to you.

PART I.
MULTIPLE CHOICE. 5 questions (7 points each, 35 points total).

PLEASE NOTE: The Multiple Choice questions can have MORE THAN ONE CORRECT

Grading is 1 pt. for each option correctly chosen or not + 2 point bonus for getting the entire question correct.

1. Under the prospect theory probability weighting function (there may be more than one correct answer):

A) Individuals overweight low probability events in their decision-making and underweight high probability events

B) Individuals overweight all probabilities in their decision-making

C) Individuals overweight the probabilities of more recent outcomes in their decision-making and underweight the probabilities of things that have happened in the more distant past

D) Individuals prefer (on average) a probabilistic lottery payout to a sure payout with the same expected value if the probability of winning the lottery is very low, and prefer (on average) the sure payout to the probabilistic lottery payout if the probability of winning the lottery is higher (e.g. closer to a coin toss).

E) Individuals are risk averse for high probability events and risk seeking for low probability events

2. Complexity (there may be more than one correct answer):

A) Leads to delay/procrastination

B) Leads to imperfect optimization

C) Leads individuals to use simplifying heuristics

D) Increases when the dimensions of choice are non-alignable

E) Increases when multiple choice exam questions can have more than one correct answer

3. The disposition effect (there may be more than one correct answer):

   A) Arises because individuals overweight the probability that an asset will increase in value in the future

   B) Arises because individuals are risk averse

   C) Arises because individuals are risk seeking over losses

   D) Arises because individuals use the purchase price of an asset as their reference point in evaluating their well being

   E) Arises because individuals evaluate losses differently from gains

4. Present bias can explain which of the following education-related behaviors (there may be more than one correct answer):

   A) Students place more weight on tuition than on school fees in deciding which school to attend

   B) An immediate reward has a greater impact on student performance than a delayed reward

   C) An incentive framed as a loss has a greater impact on student performance than a equal-sized incentive framed as a gain

   D) Students drop out of school even when the return to additional years of school are higher

   E) Students don't go through the complicated process to apply for financial aid even when they would be likely to get it

5. Home Energy Reports (HERs) provide electricity consumers with information on their electricity consumption relative to their neighbors along with energy saving tips. These reports (there may be more than one correct answer):

   A) Reduce electricity consumption for individuals in liberal neighborhoods but increase electricity consumption for individuals in conservative neighborhoods (relative to a control group of consumers who don't receive these reports)

   B) Reduce electricity consumption for individuals who initially consumed a high level of electricity but increase electricity consumption for individuals who initially consumed a low level of electricity (relative to a control group of consumers who don't receive these reports)

   C) Have the greatest impact on electricity consumption right after a report is received (relative to a control group of consumers who don't receive these reports)

   D) Result in a greater reduction in electricity consumption the longer the period of time over which households receive these reports (relative to a control group of consumers who don't receive these reports)

   E) Reduce electricity consumption by more than a 10% short-run increase in the price of electricity

PART II.
True/False/Uncertain Explain. 3 questions (7 points each, 21 points total).

PLEASE NOTE: Your score will be based largely on your explanation, including your ability to draw on examples from the readings or discussed in class.

6. T/F/U Explain (7 pts). Taxes that are less salient are preferable to taxes that are more salient because other things equal, they raise more revenue.

Uncertain

- It is easier to raise taxes when taxes are not salient (examples from class include electronic toll collection, property taxes, and sales taxes) because consumer respond less to a non-salient tax (demand is less elastic)
- Increasing taxes usual leads to an increase in tax revenue (unless you are on the wrong side of the Laffer curve—which we did not talk about in class and does not need to be mentioned in your answer)
- Whether this makes less salient tax preferable or not is a matter of political philosophy.
- Proponents of more government spending might be inclined to make taxes less salient because doing so will enable them to advance their agenda more easily
- Proponents of less government spending probably want taxes to be more salient as a way to limit the growth of government
- And, regardless of one's opinions on the size of government, proponents of transparency in government would support having taxes be salient

Grading notes:

* 1 point uncertain

* 3 points for the first bullet (it is easier to raise taxes when taxes are not salient)

* 3 points for a discussion of how this relates to political philosophy around the size of government and why views on whether taxes should be salient might differ

7. T/F/U Explain (7 pts). Requiring an active choice about whether or not to be an organ donor increases organ donation rates, although not as much as moving from an opt-in to a presumed consent (opt-out) organ donation regime.

False

- Moving from an opt-in to a presumed consent (opt-out) organ donation regime increases organ donation rates by 25-30%
- Moving from an opt-in to an active choice regime paradoxically reduces organ donation rates
    - In California, organ donor registration rates declined after the state moved from an opt-in to an active choice regime
    - In a laboratory study on actual organ donor registration decisions, an active choice regime yielded a lower probability of organ donor registration than an opt-in regime
- One explanation for the paradoxical finding is that family members ultimately have the final say about organ donation. In an opt-in regime, families are much more likely to be willing to donate organs of someone who is not registered as an organ donor than in an active choice regime. Not registering as an organ donor in an active choice regime sends a stronger signal about organ donation preferences than in an opt-in regime, where lack of registration could be the result of either procrastination or not wanting to be an organ donor.

Grading notes:

* 2 points for False, 1 point for uncertain

* 2 points for getting the evidence on going from opt-in to opt-out roughly correct

* 3 points for getting the evidence on active choice vs. opt-in roughly correct

8. T/F/U Explain (7 pts). Giving consumers more options to choose from makes consumers worse off.

Uncertain

- Giving consumers more options increases the likelihood that one of the options will be a good match to a consumer's idiosyncratic preferences, so more options can be a good thing.
- However, if there are too many options, choice can be overwhelming.
- When there are "too many" options, consumers can procrastinate making any choice which can leave them worse off (e.g., delay signing up for their savings plan).
- When there are "too many" options, consumers may also adopt heuristics to simplify making a choice, but sometimes these heuristics can results in choosing an inferior option.
- An increase in the number of options is more likely to increase (decrease) welfare if the options are easy (difficult) to compare, for example, if they can (cannot) be aligned along a single dimension.
- An increase in the number of options is more likely to increase (decrease) welfare if the consumer has more (less) experience with similar choices and has (does not have) a clear mapping between a choice and how it will impact welfare.

Grading notes:

*2 points for uncertain

* 1 pt for first bullet point above

* 2 pts for 2nd through 4th bullet points above

* 2 pts for a discussion of when choices are easier (alignable options, consumer experience) vs. more difficult (the last 2 bullet points above)

PART III.
Short Answer. 4 questions (44 points total)

PLEASE NOTE: Your score will be based largely on your explanation

9. (8 points) In sporting competitions, we often observe that the team in the lead plays more conservatively (takes fewer risks) than the team that is behind. What behavioral model that we have covered in class can explain this result, and what evidence have we discussed in class that would support this observation?

- This outcomes is supported by prospect theory
- Under prospect theory, individuals (teams) evaluate how they are doing relative to a reference point. In this case, a plausible reference point would be the performance of the opposing team—are they doing better or worse than the opposing team.
- Under prospect theory, individuals (teams) are risk averse in the gain space (when they are ahead) ➔ they play conservatively
- BUT, individuals (teams) are risk seeking in the loss space (when they are behind) ➔ they take chances
- Evidence to support this:
    - Individuals in last place are much more likely to accept a risky gamble relative to a sure thing than individuals who are not in last place
    - Individuals are more likely to accept a risky gamble relative to a sure thing if the risky gamble is framed in terms of losses rather than framed in terms of gains (see Lecture 4)

Grading notes:

* 3 points for "prospect theory"/evaluating relative to a reference point

* 3 points for prospect theory ➔ risk seeking in loss space (when behind), risk averse in gain space (when ahead)

* 2 points for examples

10. (12 points) One concept that we have discussed in class is dynamic inconsistency.

A) What is dynamic inconsistency (as we have used the term in this class)?

B) What gives rise to this pattern of behavior?

C) What empirical evidence is there to support to notion of dynamically inconsistent behavior?

D) What types of interventions might help reduce dynamically inconsistent behavior?

A) Dynamic inconsistency occurs when individual preferences about when to do something depend on when in time they are making the evaluation (e.g., I will exercise tomorrow, but when tomorrow comes I don't exercise) *Grading note: 3 points*

B) Present-biased preferences, in particular, the beta parameter in a quasi-hyperbolic discount function (you do not need to use this term) that uniformly discounts all periods in the future relative to the present generates dynamically inconsistent behavior *Grading note: 3 points*

C) Where do we start? So many examples to choose from: *Grading note: 3 points*

- Chocolate today vs. fruit tomorrow
- Comedy today vs. high-brow movie tomorrow
- Cookies today vs. exercise tomorrow
- Good intentions to start saving tomorrow that aren't followed up on
- Demand for commitment devices (savings accounts with penalties, buying fertilizer in Kenya well before the next growing season)

D) Interventions: *Grading note: 3 points*

- Commitment devices (savings lock box, money shredding alarm clock, advance purchase fertilizer contract)
- Automatic enrollment
- Deadline (infinite cost to procrastinating)
- Rewards for not procrastinating (likely to work better with a deadline)
- Require active choice today (cannot procrastinate cost of making a choice)
- Plan-making

11. (12 points) Explain how the following concepts can be applied to election outcomes and discuss any relevant empirical evidence from class lectures or from the course readings.

A) Choice architecture of the ballot
B) Planning
C) Framing
D) Social norms/social pressure

A) The physical design of the ballot (e.g., the order on the ballot, the length of the ballot, the voting technology (e.g. punch card vs. touch screen) can impact election outcomes. Relevant empirical evidence:

- California gubernatorial recall election—position of minor candidates next to Arnold Schwazenegger ➔ more votes for the minor candidates (presumably misvoting)
- Ballot order—ballot propositions are more likely to pass the close they are to the top of the ballot
- Candidate order—candidates get a higher vote share when they are listed first relative to other candidates

B) Individuals are more likely to follow through on an intended course of action if they make a concrete plan. Evidence: single voters asked to make a concrete voting plan are 9 percentage point more likely to vote than single voter who were not asked to make a plan

C) Framing refers to the fact that the way in which we evaluate of a choice changes depending the contextual factors surround the choice. In the context of voting, the self reported probability of voting is higher if past turnout is framed as having been high, rather than if past turnout is framed as having been low. Realized voter turnout is also higher if an appeal to vote is framed around the importance of "being a voter" rather than around the importance of "voting".

D) Social norms/social pressure. What others are doing and what we think other think about what we are doing matters in the decisions we make for our own behavior. In the context of voting, individuals are more likely to vote if they think that others will know whether or not they voted (social pressure). As noted above, individuals are also more likely to vote if they are led to believe that past voter turnout (social norm) was high.

Grading note: 3 points for each subpart of the question

12. (12 points) A recent study examined the amount of life insurance coverage obtained by employees before and after their employer changed the life insurance coverage options offered to its workers. The firm provides all workers with a baseline level of life insurance coverage. In addition, employees can purchase additional coverage at competitive rates through the employer. Employees can increase or decrease the amount of supplemental coverage that they have at any time.

    A few years ago, the employer substantially increased the level of baseline coverage provided to employees. This change applied to all employees at the firm. The study found the following results:

    A) For employees hired before the increase in the baseline level of life insurance coverage, the average total amount of life insurance (the baseline level of coverage PLUS the amount of additional coverage purchased by employees) increased one-for-one with the increase in the baseline level of life insurance coverage after the policy change

    B) For employees hired after the increase in the baseline level of life insurance coverage, the average total amount of life insurance (the baseline level of coverage PLUS the amount of additional coverage purchased by employees) was no different than the total amount of life insurance coverage held by employees with similar levels of tenure before the policy change.

    Using principles of behavioral economics that we have discussed in class, provide a coherent explanation for this pattern of results.

Inertia: employees hired before the change made a decision about how much supplemental life insurance to purchase taking into account the availability of the baseline amount of insurance, but they are slow to change this decision once the baseline level of coverage has changed. The default is to stick with the choice already made, and there is a cost to re-optimizing in the wake of the policy change. For newly hired employees, the default level of supplemental coverage is 0; conditional on taking action to purchase supplemental coverage, there is no default. Newly hired employees take into account the higher level of baseline coverage when choosing how much supplemental coverage to buy, and elect a lower level of supplemental coverage, leaving them with the same total amount of coverage as the employees already at the firm had *before* the policy change. The policy change increases the total amount of insurance coverage for the existing employees, but not for the newly hired employees. We discussed similar behavior in class w.r.t. health insurance plan choices and savings plan contribution rates (different outcomes for newly hired vs. existing employees in the wake of plan changes).

Grading note: 4 points: inertia/status quo bias; 3 points: how this impacts the existing employees; 3 points: why this is not relevant for the newly hired employees; 2 points: appeal to other relevant evidence of similar behavior discussed in class