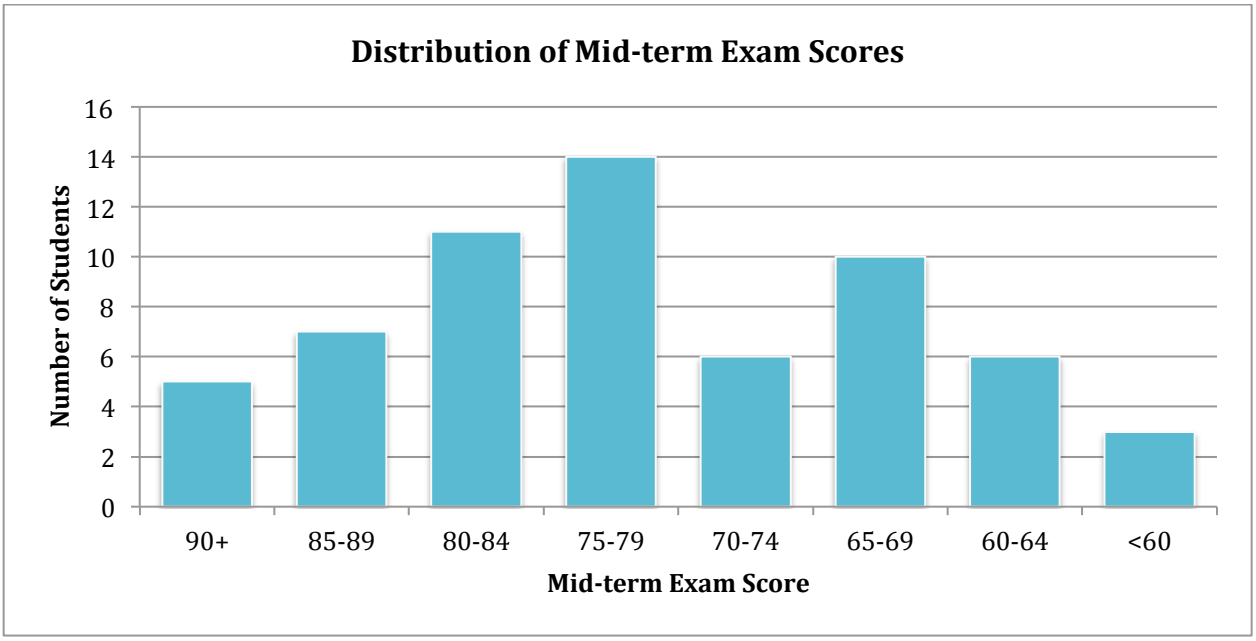
BEHAVIORAL ECONOMICS AND PUBLIC POLICY

API 304 Spring 2016
Harvard Kennedy School

Midterm Exam Answer Key



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=76, Median=77
- Please verify your score; while great efforts have been made to ensure that your score is added up correctly, mistakes do occasionally happen
- 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 the score on your exam has been added up incorrectly, please return your exam to Kathleen Schnaidt (Kathleen_Schnaidt@hks.harvard.edu) by Wednesday, November 30, with a note to that effect.

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

PLEASE NOTE: The Multiple Choice questions can have MORE THAN ONE CORRECT ANSWER. Please circle the letter(s) corresponding to each correct answer below.

1. (7 pts.) Dynamically inconsistent preferences generate which of the following types of behaviors (there may be more than one correct answer):

   A) Procrastination

   B) Loss aversion

   C) Demand for commitment devices

   D) Reference dependence

   E) Risk seeking

2. (7 pts.) Cumulative prospect theory preferences generate which of the following types of behaviors (there may be more than one correct answer):

   A) Reference dependence

   B) Loss aversion

   C) Status quo bias

   D) Risk seeking

   E) The disposition effect

3. (7 pts.) Partitioning income into different spending categories is an example of (there may be more than one correct answer):

   A) Status quo bias

   B) Loss aversion

   C) Present-biased preferences

   D) Mental accounting

   E) Probability weighting

4. (7 pts.) Which of the following behaviors does probability weighting help explain (there may be more than one correct answer):

   A) Individuals choose to invest in a savings account that does not allow early withdrawals even though it offers a lower interest rate than an account that allows withdrawals at any time.

   B) Individuals buy lottery tickets with a low probably of winning a large prize even if doing so has a negative expected value

   C) Drivers respond less to a toll increase if it is paid through electronic toll collection than to a toll increase that is paid with cash.

   D) Individuals over-insure their homes for which the probability of a loss is low but not their cars for which the probability of a loss is higher.

   E) Teachers respond more to an incentive framed as a loss than to the same incentive framed as a gain.

5. (7 pts.) Which of the following factors help explain why we observe a slow adjustment to wages following economic shocks that result in an increased rate of unemployment? (there may be more than one correct answer):

   A) Firms are reluctant to cut wages because doing so might be perceived as unfair by employees who might then react negatively to a wage cut, and the inability to cut wages reduces the number of workers that firms want to employ

   B) Laid-off workers use their previous wage as a reference point and are reluctant to accept jobs offering a lower wage than they previously earned which prolongs their unemployment

   C) Support for decreasing the minimum wage following an economic shock is lowest among those earning just above the minimum wage keep which wages from adjusting

   D) Individuals classify unemployment insurance benefits and wages into the same mental account which makes being unemployed seem less costly

   E) Unemployed workers with present-biased preferences may procrastinate searching for a new job which prolongs their unemployment

PART II.
True/False/Uncertain Explain. 3 questions (6 points each, 18 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 (6 pts.). Encouraging individuals to make a plan around executing a desired behavior is more effective when the plan is more specific.

True. Individuals are more likely to follow-through on their intentions if they make a plan, and the likelihood increases with the specificity of the plan. For example, individuals are more likely to get a flu shot if they make a plan around a specific date and time to do so, compared to if they make a plan only for a date, or make no plan. Similarly, individuals are more likely to vote if they make a concrete plan about when they will vote and how they will get to the polls.

7. T/F/U Explain (6 pts.). Increasing the strength of a commitment device increases the demand for commitment.

Uncertain

Individuals who don't have present-biased preferences won't demand commitment devices period, so the strength of a commitment device won't impact their demand

Individuals who have present-biased preferences but who are naïve about their problems with procrastination (e.g., don't acknowledge that they have a problem) will also not demand commitment devices, so the strength of a commitment device will not impact their demand either

Individuals who have present-biased preferences and who are sophisticated about their problems with procrastination will demand commitment devices and their demand for commitment will be increasing in the strength of the commitment device *up to a point.* If the commitment is too strong, individuals may not find it attractive

Examples:

- In the context of the savings experiment , strong commitment in the form of restrictions/penalties for early withdrawal ➔ greater demand for commitment
- In the context of the savings experiment in the Philippines, some individuals demanded the stronger form of commitment (you cannot withdraw your balances until a monetary savings goal is met), but most preferred the weaker form of commitment (you cannot withdraw your balances until a certain date). Many were willing to pay for a stronger form of commitment in the form of a lockbox.
- In the fertilizer experiment with farmers in Kenya, some individuals demanded the stronger form of commitment (buy the fertilizer for next at the end of the current harvest), while other preferred less commitment.

8. T/F/U Explain (6 pts.). Regulations requiring that products have standardized characteristics improve consumer welfare. For example, in the case of airlines, defining classes of service across carriers (e.g. economy, business and first class) so that they mean the same thing at each carrier, charging the same types of fees across all carriers (e.g., either all airlines charge extra for checked bags or prohibiting extra charges for checked bags), setting common rules for whether a flight arrives on-time or not, etc. (Note that as a practical matter, some characteristics across airlines are standardized while others are not). Your answer does not need to address airlines specifically.

Uncertain. Standardizing products makes comparisons across products easier for consumers (e.g., it is easier to compare airline fares if all airline tickets come with a meal and 2 checked bags included). But standardizing products also reduces the variety available to consumers (e.g., if all airline tickets come with a meal and 2 checked bags included, but I only want a meal, then I will likely be paying more for my ticket than if I could purchase a ticket that included a meal but not the right to check 2 bags). Whether consumers are better or worse off as a result of standardization will depend on which of these two forces is stronger. We can, however, think of situations in which one force is likely to be weaker or stronger.

- If there is a lot of heterogeneity in consumer preferences, standardizing products will result in less variety that will be costly to consumers
- If there is some heterogeneity in consumer preferences, but consumers who prefer A also prefer B, and consumers who prefer C also prefer D, standardized bundles of characteristics may lower the cost of engaging in product comparison while at the same time not restricting welfare very much by reducing product variety (e.g., the gold package vs. the bronze package)
- If the product characteristics that matter most to consumer are alignable, then the value of standardization may be low because the comparisons across multiple products are not that difficult to make
- If there are decision tools that can help consumers hone in on the products that best match their preferences, then standardization will be less valuable

PART III.
Short Answer. 3 questions (47 points total)

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

9. (15 points). The White House Social and Behavioral Sciences Team (SBST) has been working with the U.S. Department of Education to help individuals who are delinquent in repaying their student loans. Borrowers who have not made any payments for over a year face a range of bad outcomes, including:
   - Financial penalties
   - Damage to their credit (which reduces their future ability to borrow)
   - Wage garnishment
   - Ineligibility for future student loans or other forms of financial aid
   - Forfeiture of future income tax refunds.

   To help delinquent borrowers avoid these outcomes, the Department of Education offers a loan rehabilitation plan: if borrowers can make several months of reduced payments on time, they can exit default. The take-up rate for the loan rehabilitation plan has historically been very low. The SBST worked with the Department of Education to increase take-up of the loan rehabilitation plan by revising the letter sent to delinquent borrowers informing them of this option. Delinquent borrowers were divided into four groups:
   - **Group 1**: Received the baseline letter sent by the Department of Education that included a phone number to call if interested in discussing a loan rehabilitation plan.
   - **Group 2**: Received a letter emphasizing the negative consequences of not taking action along with a phone number to call if interested in discussing a loan rehabilitation plan.
   - **Group 3**: Received a letter emphasizing the positive benefits of the loan rehabilitation plan along with a phone number to call if interested in discussing a loan rehabilitation plan.
   - **Group 4**: Received a letter with a pre-specified time for the recipient to call the Department of Education to discuss a rehabilitation plan

   A) What behavioral models/theories explain why the SBST might think these various interventions (the letters sent to Groups 2, 3, and 4) would work to increase take-up of the loan rehabilitation plan, and what evidence have we discussed in class that would support your arguments?

   B) How would you order the likely effectiveness of these interventions in terms of the impact they will have on the fraction of delinquent borrowers who call the Department of Education to discuss a loan rehabilitation plan? Explain.

   C) What are the advantages and disadvantages of giving individuals a pre-specified time to call the Department of Education? Is this a situation in which such an approach is likely to be cost-effective, or not?

A) Behavioral models

Group 2

- Reason-based choice—giving people a list of reasons (preference checklist) why they should call about the loan rehabilitation plan may make it more likely that they will take action
- Prospect theory—listing the costs of not taking action may spur action by motivating individuals to avoid the loss that will come through inaction (loss aversion)
- Evidence—framing incentives to teachers and students as a loss lead to greater effort in the classroom
- Evidence—reason-based choice—people construct reasons to do thing, and choice architecture, in this case the reasons against inaction, can influence the reasons people use to justify their actions (e.g., Social Security claiming age)

Group 3

- Reason-based choice—giving people a list of reasons why (preference checklist) they should call about the loan rehabilitation plan may make it more likely that they will take action if all of benefits of such a plan are not already known or salient to individuals
- Evidence—framing incentives to teachers and students as a gain lead to greater effort in the classroom
- Evidence—reason-based choice—people construct reasons to do things, and choice architecture, in this case the reasons for taking action, can influence the reasons people use to justify their actions (e.g. Social Security claiming age)

Group 4

- A letter specifying a default time to call may give an implicit endorsement to the loan rehabilitation plan relative to having no default time to call
- A letter specifying a default time to call may help individuals make a more concrete plan about actually calling (e.g., they put the appointment time in their planner)
- Evidence on plan-making—see question 6
- Evidence on default flu shot appointments increasing vaccination

B) How would you order?

- Group 2 effect > Group 3 effect > Group 1 effect
- Explanation: providing reasons (Groups 2 and 3) for the loan rehabilitation plan should lead to greater action than not providing any reasons if any individuals are at all unsure of why the loan rehabilitation might by good for appropriate for them

- Explanation: losses felt stronger than gains, so Group 2 effect > Group 3 effect
- Group 4 effect > Group 1 effect
- Explanation: See answer to question 6 and default flu shot paper
- Hard to compare Group 4 vs. Groups 2 and 3

C) Advantages and disadvantages of pre-specified phone call

- Advantage: Spurs people to take action
- Advantage: May make when people take action more predictable by spreading out the time at which individuals call (not everyone calls at lunch)
- Disadvantage: There will likely be a high "no-show" rate: you give people an appointment, and they won't call at all. This may make when people call less predictable if the "no-show" rate is not constant across default phone call times
- Overall assessment: Similar to the default flu shot appointments, this seems like a situation in which the costs of specifying a default flu shot appointment are not very large relative to the potential benefits.

Note: The SBST actually ran this experiment with two slight wrinkles: (1) the final group in their experiment is actually a combined intervention of Group 2 + Group 4 as described above, and (2) they ran one experiment comparing Groups 1, 2 and 3, and a second comparing Groups 2 and 2+4. The results are shown in the graph below.

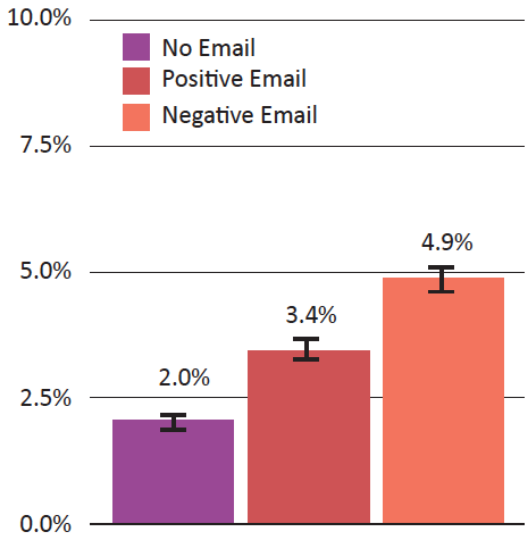


Figure 8: Defaulted Borrower Call-In Rates in Spring 2015

Notes: Percentage of defaulted borrowers calling in regarding their loan in spring 2015. n = 66,182.

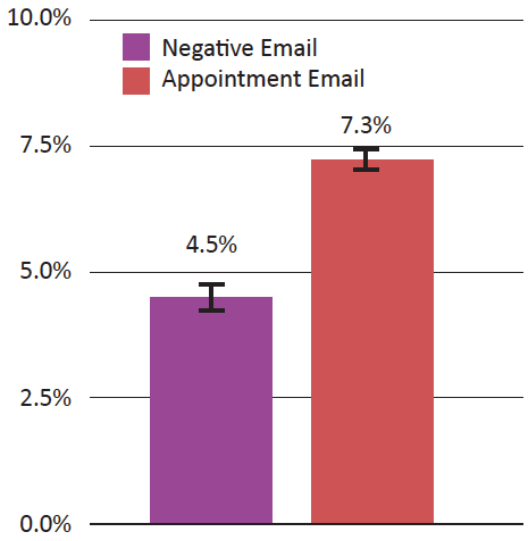
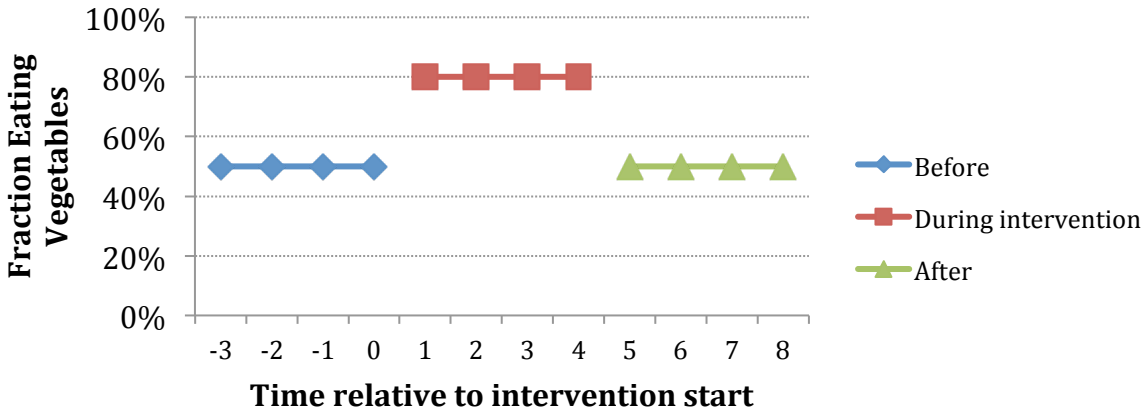


Figure 9: Defaulted Borrower Call-In Rates in July 2015

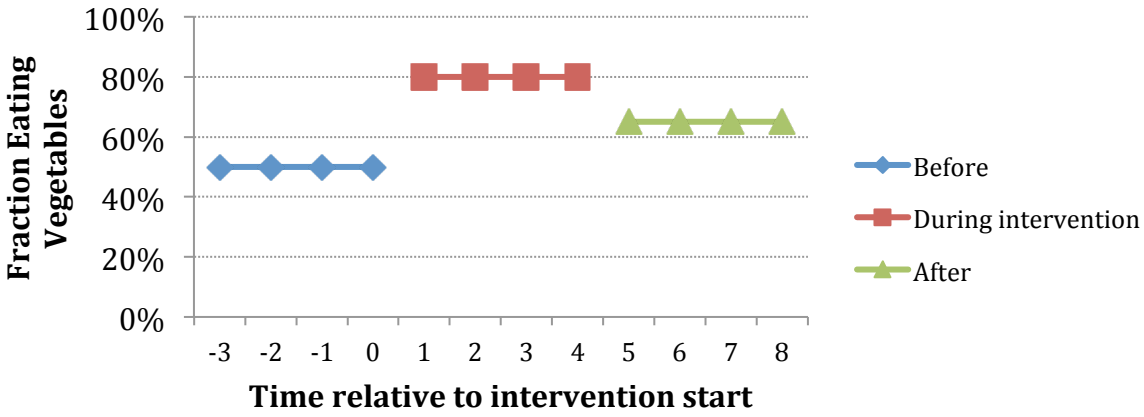
Notes: Percentage of defaulted borrowers calling in regarding their loan in July 2015. n = 65,403.

10. (12 pts.) The three graphs below show the fraction of people eating vegetables for lunch before, during, and after an intervention that paid people to eat more vegetables. Describe a model of behavior that is consistent with the patterns in each of the graphs and explain under which scenario a financial incentive will be most cost effective?

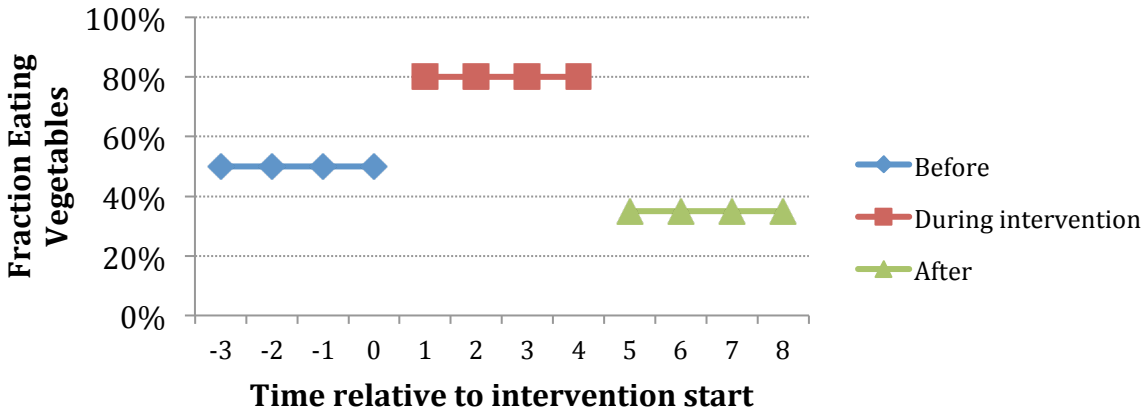
A)



B)



C)



Model of behavior for (A): the financial incentives changes the cost-benefit calculation associated with eating vegetables, tilting the calculation in favor of veggies when the incentive is in place but having no residual effect after the incentive is taken away because the cost-benefit calculation reverts back to what it was originally

Model of behavior for (B)—habit formation: the incentive encourages people to try veggies and after trying veggies, individuals discover that veggies are not as "costly" to eat as they had originally thought. After the incentive is removed individual eat more veggies than they had previously because the cost of eating veggies once a taste for veggies has been acquired is now permanently lower.

Model of behavior (C)—crowd-out of intrinsic motivation. With no incentive, individuals eat veggies because they are healthy. With an incentive, individual eat veggies because they are being paid to eat veggies. This changes their motivation for eating veggies (money vs. health benefits) so that after the incentive is taken away, individuals place less weight on the health benefits than they had previously and are now less likely to eat veggies.

The financial incentive will be most cost effective in the long-run under scenario B when an incentive for a short period of time leads to habit formation and a long-run persistent increase in the incentivized behavior.

The financial incentive will be least cost effective in the long-run under scenario C when it crowds out intrinsic motivation

11. (20 points) The small country of Genovia has a long list of sick patients awaiting a kidney transplant. The country currently has an opt-in organ donation regime, and the fraction of citizens registered as organ donors is quite low at about one-third. The Minister of Health recently attended a week-long executive education course on "Applying Behavioral Insights to Policy Design" and has returned with the list below of suggestions to increase organ donation rates.

    - Move from an opt-in regime to a presumed consent (or opt-out) organ donation regime
    - Require all drivers' license applicants to make an active choice about whether or not to be an organ donor
    - Provide monetary compensation to people who sign up to be an organ donor
    - Guarantee individuals who have signed up to be an organ donor a higher position on the organ donation wait list if they should ever need an organ donation
    - When individuals are engaged in some other type of civic-minded activity like voting, give them an option to sign-up to be an organ donor along with a preference checklist explaining the reasons why or why not an individual might choose to be an organ donor
    - Provide individuals with information on how many of their neighbors are organ donors

    The Minister of Health has asked you, as a kindred spirit, to evaluate her ideas. For each of her suggested approaches, discuss:

    A) What behavioral models/theories explain why these various interventions might work to increase organ donation rates, and what evidence have we discussed in class that would support your arguments?

    B) What if any mitigating factors (e.g., unintended consequences) are there that might argue against a certain approach even if it might be very effective?

    C) Would you recommend for or against further consideration of each approach and why?

Intervention	Behavioral Model	Mitigating factors	For/against going forward
Opt-in → Opt-out	Default/status quo effect Endorsement effect	Ethics of opt-out regime	Depends on ethical norms in Genovia; can be controversial
Active choice	Inattention/procrastination	Family decisions matter, and the family will give more weight to an active choice not to be an organ donor than to not having made a choice in an opt-in regime	Current evidence (limited) suggests this approach may backfire; may be worth considering if there are way to make it more effective
$$$	Monetary incentives	Crowds out extrinsic motivation in this or other related domains May lead to perverse outcomes (e.g., kidnapping to sell kidneys) Distributional effects on the poor	Very controversial
Wait list position	Non-monetary incentives	I can't think of any	For
Opportunity + checklist	Inattention Reason-based choice/preference checklist	Individuals who can't be an organ donor (because of poor health) may be unfairly penalized	For
Peer information	People respond to information about what their peers are doing Desire to conform with peer norms	May be ineffective given current opt-in rate quite low Ethics of falsely reporting a peer opt-in rate that is higher than it actually is	Probably against

BONUS TRIVIA: Genovia is the fictional kingdom in "The Princess Diaries" from whence hails Princess Mia Thermopolis played by Anne Hathaway in her film debut.