**Risk, Research Funding Rules, and Social Welfare**

**Project #160212 (Revised October 10, 2016)**

**Student Survey on Research Projects and Portfolios**

Welcome to the survey and thank you for agreeing to participate in our study. Over the course of the next hour you will be asked to assume the role of the manager of a research division of an organization in the biomedical/health sector. You will be presented data on a series of potential research projects that you could fund. Some questions will ask you to rank individual projects to fund; other questions will ask you to construct a portfolio of projects from a selected list. We will also ask you some additional demographic and preference questions to better understand your decision-making processes.

Research project outcomes always involve some uncertainty, which is partly reflected in the diversity of evaluation scores that can be assigned to any given proposal. After you complete the survey, the computer will draw a number from a random number generator that is consistent with the characteristics of the research projects you selected for each R&D investment questions you completed. Better ranked proposals will tend to have better outcomes and proposals where there is more disagreement in the ranking will tend to have more variable, both good and bad, outcomes. When proposals have different costs, expected payoffs are proportionate to proposal cost.

The random numbers generated for each question will then be added to provide an aggregate score for each participant in the survey. While all participants will receive $15 for participation, bonus payments will be offered for top performers. Those that score within the top 25 percent of this survey round will receive an additional $25 dollar bonus, with that bonus increasing to $100 for those within the top 10 percent.

Please read all instructions carefully and take your time to answer the questions.

**Question 1a**

For the next ten questions, assume that you are the head of the research division of an organization and are considering funding four research project proposals (A, B, C, D).

● Each project proposal has received a rating on a scale from 1 to 5 (with 5 being the top rating) by seven scientific experts unaffiliated with the projects under consideration (1, 2, 3, 4, 5, 6, 7) on your advisory board.

● All the proposals have the same cost.

● The matrix below displays how the four proposals (columns) you should use for this question were rated by the seven reviewers (rows).

● The average of the reviewers’ scores for each proposal is shown at the bottom of the proposal’s column.

● The order in which proposals appear is randomized.

● Proposal rankings should be treated as an indication of potential financial return. Negative returns (financial losses) are possible. Remember that your final compensation for participating in this study will depend on the choices you make here.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Reviewer** | **Proposal A** | **Proposal B** | **Proposal C** | **Proposal D** |
| **1** |  |  |  |  |
| **2** |  |  |  |  |
| **3** |  |  |  |  |
| **4** |  |  |  |  |
| **5** |  |  |  |  |
| **6** |  |  |  |  |
| **7** |  |  |  |  |
| **Average**  **Score** |  |  |  |  |

1. Please indicate the proposal you would most like to fund.

\_\_\_\_\_\_\_A \_\_\_\_\_\_B \_\_\_\_\_\_\_C \_\_\_\_\_\_\_D

2. Please indicate the proposal that you would least like to fund.

[*GENERATE LIST OF REMAINING PROPOSALS*]

3. Of the remaining two proposals, indicate the one you would most like to fund.

[*GENERATE LIST OF REMAINING PROPOSALS*]

**Question 1b** (Repeat 9 times through Question 1j)

Please repeat the exercise from the previous question for this **new** set of research projects with a **different** set of scores from your science advisory panel.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Reviewer** | **Proposal A** | **Proposal B** | **Proposal C** | **Proposal D** |
| **1** |  |  |  |  |
| **2** |  |  |  |  |
| **3** |  |  |  |  |
| **4** |  |  |  |  |
| **5** |  |  |  |  |
| **6** |  |  |  |  |
| **7** |  |  |  |  |
| **Average**  **Score** |  |  |  |  |

1. Please indicate the proposal you would most like to fund.

\_\_\_\_\_\_\_A \_\_\_\_\_\_B \_\_\_\_\_\_\_C \_\_\_\_\_\_\_D

2. Please indicate the proposal that you would least like to fund.

*[GENERATE LIST OF REMAINING PROPOSALS]*

3. Of the remaining two proposals, indicate the one you would most like to fund.

*[GENERATE LIST OF REMAINING PROPOSALS]*

**Question 2**

What operating system do you use on the computer you most often use?

(A) Apple OS (B) Linux (C) Microsoft Windows (D) Unix (E) Other

**Question 3a**

The following ten questions will be similar to the earlier ones where we asked you about the project that you would most/least like to fund. As before:

* Assume that you are the head of the research division of an organization and are considering funding four research proposals (A, B, C, D).
* Each research project proposal has received a rating on a scale from 1 to 5 (with 5 being the top rating) by seven scientific experts unaffiliated with the projects under consideration (1, 2, 3, 4, 5, 6, 7) on your advisory board.
* All the proposals have the same cost.
* The matrix below shows how the four proposals (columns) you should use for this question were rated by the seven reviewers (rows).
* The order in which proposals appear is randomized.
* Proposal rankings should be treated as an indication of potential financial return. Negative returns (financial losses) are possible.
* Remember that your final compensation for participating in this study will depend on the choices you make here.

In addition to the average of the reviewers’ scores for each proposal, we also report the **variance** of scores, a measure of the variability of the reviewers’ assessments.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Reviewer** | **Proposal A** | **Proposal B** | **Proposal C** | **Proposal D** |
| **1** |  |  |  |  |
| **2** |  |  |  |  |
| **3** |  |  |  |  |
| **4** |  |  |  |  |
| **5** |  |  |  |  |
| **6** |  |  |  |  |
| **7** |  |  |  |  |
| **Average**  **Score** |  |  |  |  |
| **Variance** |  |  |  |  |

1. Please indicate the proposal you would most like to fund.

\_\_\_\_\_\_\_A \_\_\_\_\_\_B \_\_\_\_\_\_\_C \_\_\_\_\_\_\_D

2. Please indicate the proposal that you would least like to fund.

*[GENERATE LIST OF REMAINING PROPOSALS]*

3. Of the remaining two proposals, indicate the one you would most like to fund.

*[GENERATE LIST OF REMAINING PROPOSALS]*

**Question 3b** (Repeat 9 times through Question 3j)

Please repeat the exercise from the previous question for this **new** set of research projects with a **different** set of scores from your science advisory panel.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Reviewer** | **Proposal A** | **Proposal B** | **Proposal C** | **Proposal D** |
| **1** |  |  |  |  |
| **2** |  |  |  |  |
| **3** |  |  |  |  |
| **4** |  |  |  |  |
| **5** |  |  |  |  |
| **6** |  |  |  |  |
| **7** |  |  |  |  |
| **Average**  **Score** |  |  |  |  |
| **Variance** |  |  |  |  |

1. Please indicate the proposal you would most like to fund.

\_\_\_\_\_\_\_A \_\_\_\_\_\_B \_\_\_\_\_\_\_C \_\_\_\_\_\_\_D

2. Please indicate the proposal that you would least like to fund.

*[GENERATE LIST OF REMAINING PROPOSALS]*

3. Of the remaining two proposals, indicate the one you would most like to fund.

*[GENERATE LIST OF REMAINING PROPOSALS]*

**Question 4**

What type of cell phone do you have?

(A) Android (B) Apple (C) Blackberry (D) Windows (E) Non-smart phone (F) None of the above

**Question 5a**

The next ten questions are similar in spirit to the to the earlier ones concerning the project that you would most/least like to fund. In this case, however, you will be asked to put together a portfolio of research project proposals to fund. As before assume that you are the head of the research division of an organization conducting R&D.

* There are proposals for 10 possible research projects (denoted A through J).
* Each proposal has received a rating on a scale from 1 to 5 (with 5 being the top rating) by seven scientific experts unaffiliated with the projects under consideration (reviewer 1 through 7) on your advisory board.
* The average of the reviewers’ scores for each proposal and the variance are also displayed in each proposal’s column.
* The order in which proposals appear is randomized.
* Proposal rankings should be treated as an indication of potential financial return. Negative returns (financial losses) are possible.

In contrast to our earlier questions, each proposal now has a **different cost**, which is displayed in the last row of the table. The cost of specific proposals will now influence what research projects you are able to fund. The portfolio you choose must cost the same or less than your budget constraint. Any leftover funds from each question will be returned to your organization’s headquarters and will be unavailable for future R&D investments by your Division. Remember that your final compensation for participating in this study will depend on the choices you make here.

**Your R&D budget to fund this portfolio of proposals is $X million dollars**.

Type the letters corresponding to the proposals that you would like to fund into the portfolio boxes below. As you enter proposals, the costs of each one will be subtracted from your R&D budget and your remaining funds will be displayed. Depending on the cost of the individual proposals you fund you may not be able to fill in all of the boxes and you may not fully exhaust your R&D budget. You can swap proposals in and out of the portfolio boxes until you are satisfied with your choices. Then click on CONTINUE TO NEXT QUESTION.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Reviewer** | **Prop A** | **Prop B** | **Prop C** | **Prop D** | **Prop E** | **Prop F** | **Prop G** | **Prop H** | **Prop I** | **Prop J** |
| **1** |  |  |  |  |  |  |  |  |  |  |
| **2** |  |  |  |  |  |  |  |  |  |  |
| **3** |  |  |  |  |  |  |  |  |  |  |
| **4** |  |  |  |  |  |  |  |  |  |  |
| **5** |  |  |  |  |  |  |  |  |  |  |
| **6** |  |  |  |  |  |  |  |  |  |  |
| **7** |  |  |  |  |  |  |  |  |  |  |
| **Average Score** |  |  |  |  |  |  |  |  |  |  |
| **Variance** |  |  |  |  |  |  |  |  |  |  |
| **Cost** |  |  |  |  |  |  |  |  |  |  |

**Portfolio Boxes**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |  |

**Remaining Budget $\_\_\_\_\_\_\_\_\_\_\_\_\_\_million**

**CONTINUE TO NEXT QUESTION**

**Question 5b** (Repeat 9 times through Question 5j)

Please repeat the exercise from the previous question for a **new** set of research projects with a **different** set of scores from your science advisory panel.

**Your new R&D budget to fund this portfolio of proposals is $X million dollars.**

Type the letters corresponding to the proposals that you would like to fund into the portfolio boxes below. As you enter proposals, the costs of each one will be subtracted from your R&D budget and your remaining funds will be displayed. Depending on the cost of the individual proposals you fund you may not be able to fill in all of the boxes and you may not fully exhaust your R&D budget. You can swap proposals in and out of the portfolio boxes until you are satisfied with your choices. Then click on CONTINUE TO NEXT QUESTION.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Reviewer** | **Prop A** | **Prop B** | **Prop C** | **Prop D** | **Prop E** | **Prop F** | **Prop G** | **Prop H** | **Prop I** | **Prop J** |
| **1** |  |  |  |  |  |  |  |  |  |  |
| **2** |  |  |  |  |  |  |  |  |  |  |
| **3** |  |  |  |  |  |  |  |  |  |  |
| **4** |  |  |  |  |  |  |  |  |  |  |
| **5** |  |  |  |  |  |  |  |  |  |  |
| **6** |  |  |  |  |  |  |  |  |  |  |
| **7** |  |  |  |  |  |  |  |  |  |  |
| **Average Score** |  |  |  |  |  |  |  |  |  |  |
| **Variance** |  |  |  |  |  |  |  |  |  |  |
| **Cost** |  |  |  |  |  |  |  |  |  |  |

**Portfolio Boxes**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |  |

**Remaining Budget $\_\_\_\_\_\_\_\_\_\_\_ million**

**CONTINUE TO NEXT QUESTION**

**5h.** Briefly describe how you went about deciding which projects you put in the portfolios you wanted to fund?

**Time and Risk Preference Questions**

6. Please indicate whether you prefer option A or option B for each of the following choices:

Choice Option A Option B

\_\_\_\_\_ $1000 now $900 in one year

\_\_\_\_\_ $1000 now $1000 in one year

\_\_\_\_\_ $1000 now $1100 in one year

\_\_\_\_\_ $1000 now $1200 in one year

\_\_\_\_\_ $1000 now $1300 in one year

\_\_\_\_\_ $1000 now $1400 in one yea

\_\_\_\_\_ $1000 now $1500 in one year

\_\_\_\_\_ $1000 now $1600 in one year

\_\_\_\_\_ $1000 now $1700 in one year

\_\_\_\_\_ $1000 now $1800 in one year

\_\_\_\_\_ $1000 now $1900 in one year

\_\_\_\_\_ $1000 now $2000 in one year

7. Indicate on a six-point scale the extent of agreement or disagreement with the following statements:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Strongly disagree | Disagree | Disagree somewhat | Agree somewhat | Agree | Strongly agree |

Sometimes I am not as dependable or reliable as I should be

I never seem able to get organized

I often feel that I speak or act too quickly, without thinking about the consequences.

I am often late for appointments

I enjoy planning for activities like vacations well in advance

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **A** | **B** | **C** | **D** | **E** | **F** | **G** | **H** |
| With probability ½  Low payoff or bad luck outcome | $500 | $450 | $400 | $350 | $300 | $200 | $100 | $0 |
| With probability ½  High payoff or good luck outcome | $500 | $950 | $1200 | $1250 | $1500 | $1600 | $1900 | $2000 |

8. The table above lists a series of games with uncertain payoff. Please indicate which game you prefer out of the following pairs:

game C or game D?

game A or game D?

game F or game E?

game B or game A?

game G or game H?

game E or game A?

game G or game E?

game H or game A?

game B or game C?

(x) If you had to play one game out of the eight games listed below, which one would you choose? \_\_\_\_\_\_\_\_\_

9. The following three questions concern the purchase of lottery tickets.

Have you purchased a lottery ticket in the past? YES or NO

If yes, how often do you typically buy lottery tickets?

\_\_\_\_\_ every day,

\_\_\_\_\_several times per week,

\_\_\_\_\_once every week,

\_\_\_\_\_once every two weeks,

\_\_\_\_\_once every three weeks,

\_\_\_\_\_once every month,

\_\_\_\_\_less than once a month but more than once a year

\_\_\_\_\_ once every year

\_\_\_\_\_ only when the rollover/jackpot is very large

How much money did you spend on lottery tickets during the last four weeks? \_\_\_\_\_\_\_\_\_

How much money did you spend on lottery tickets over the last year? \_\_\_\_\_\_\_\_\_

10. Suppose you have inherited investment property and you are given a choice between two different types of investments. One will provide a one-time guaranteed payout and the other will pay a one-time uncertain one.

Choice Type A Type B

\_\_\_\_\_ $20,000 guaranteed 50:50 chance at $10,000:$90,000

\_\_\_\_\_ $20,000 guaranteed 50:50 chance at $10,000:$80,000

\_\_\_\_\_ $20,000 guaranteed 50:50 chance at $10,000:$70,000

\_\_\_\_\_ $20,000 guaranteed 50:50 chance at $10,000:$60,000

\_\_\_\_\_ $20,000 guaranteed 50:50 chance at $10,000:$50,000

\_\_\_\_\_ $20,000 guaranteed 50:50 chance at $10,000:$40,000

\_\_\_\_ $20,000 guaranteed 50:50 chance at $10,000:$30,000

\_\_\_\_ $20,000 guaranteed 50:50 chance at $10,000:$20,000

\_\_\_\_ $20,000 guaranteed 50:50 chance at $10,000:$10,000

11. Now suppose you have inherited investment property and you are given a choice between two different types of investments. One will provide a guaranteed payout in **each** year for **five** years and other will pay an uncertain one in each year for **five** years. The yearly returns for the uncertain property are independent across years so that a low (or high) return one year could be followed by a high return or a low return with equal probability the next year.

For each of the following choices, which type of property do you prefer if you will receive returns for five years?

Choice Type A Type B

\_\_\_\_\_ $20,000 guaranteed 50:50 chance at $10,000:$90,000

\_\_\_\_\_ $20,000 guaranteed 50:50 chance at $10,000:$80,000

\_\_\_\_\_ $20,000 guaranteed 50:50 chance at $10,000:$70,000

\_\_\_\_\_ $20,000 guaranteed 50:50 chance at $10,000:$60,000

\_\_\_\_\_ $20,000 guaranteed 50:50 chance at $10,000:$50,000

\_\_\_\_\_ $20,000 guaranteed 50:50 chance at $10,000:$40,000

\_\_\_\_ $20,000 guaranteed 50:50 chance at $10,000:$30,000

\_\_\_\_ $20,000 guaranteed 50:50 chance at $10,000:$20,000

\_\_\_\_ $20,000 guaranteed 50:50 chance at $10,000:$10,000

**Demographic Questions**

12. What year were you born in? \_\_\_\_\_\_\_\_\_\_

13. Are you female or male? (Circle) FEMALE MALE

14. What is your ethnicity/race? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

15. What degree are you currently pursuing? Undergraduate, Masters, PhD

16. What is your field of study?

17. How many college level mathematics courses have you taken? 1, 2, 3, More than 3

18. How many college level decision science, econometrics or statistics courses have you taken? 1, 2, 3, More than 3

19. Have you worked during the summer or as an intern for a for profit, non-profit, or governmental organization? YES NO

20. Number of years that you have worked full time for a for profit, non-profit, or governmental organization? \_\_\_\_\_\_\_\_\_\_\_\_

(Put zero if you have not worked full time, fractional answers accepted)

If positive number, did the organization you worked for do or fund R&D? YES NO

21. In what sectors (e.g., biotech) of the economy have you had work experience? List all. Put “none” if applicable.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

22. Do you have any experience working on funded research projects at a for profit, non-profit, or governmental organization or at a university? YES NO

Thank you for completing our survey. Please wait patiently for all participants in this survey round to finish, at which point we will distribute payments based on the simulated performance of your R&D investment decisions. Recall that the top 3 performers across all survey rounds will also be eligible for a prize. The announcement of those winners is expected to occur by {DATE}.