

Strategyproofness-Exposing Mechanism Descriptions

Online experimental materials

The following advertised the survey on Prolific:



A study in decision making (with bonus payments)

By Ori Heffetz

 £1.49 • £5.96/hr  15 mins  200 places

This is a study in decision making, where you will be required to read and understand the rules of two different tasks. You will then be paid based on your performance in the two tasks. The survey will take around 15 minutes. You'll be paid at least \$2.00, **and often up to \$9.00.**

Devices you can use to take this study:

 Desktop  Mobile  Tablet

[Open study link in a new window](#)

Our experiment contained two mechanisms, and two versions of the description of each mechanism.

“Setup” Screens:

For each mechanism, the participants walked through four “setup” screens: an instruction screen, a practice round, the results of the practice round, and a screen of further examples and comprehension questions. In introduction screens, participants clicked a button labeled “More” to display further parts of the text. Call the text between these button presses a “frame”. Below, we provide a screenshot of the entire page, along with marker where the “frames” are divided. Our “practice round” is similar, except that certain practice screen text disappears halfway through. Thus, we present the practice round before and after this disappearance. The further examples and comprehension questions are on one large page.

For each mechanism, we present the full text of the instructions and practice round for the “traditional” treatment, then specify the exact frames in which the “menu” treatment differs.

Some notes:

- Sometimes the “More” button changes text - this is displayed on the frame boundary.
- Other commentary is sometimes provided in purple text below.
- The earnings table on the introduction page of the median mechanism is hard-coded, but all other are randomly drawn. All examples and questions are hard-coded.
- For each mechanism, the distribution of the private information of the participants is described below (after the practice round screen).

Round screens:

After the “setup” screens, subject then played 10 rounds of the mechanism. Each round consisted of a round screen, where participants saw their “private information” and had 30 seconds to submit a “report”, and then a “feedback screen” giving the outcome of each round before the next round starts. While each of these screens contains a “reminder” which is tailored to the treatment (traditional or menu), the feedback itself is the same regardless of treatment.

Consent screen:

Welcome

Thank you for participating in this survey! The survey asks you to make choices in different scenarios. Your participation is voluntary, and is greatly appreciated. We do not anticipate any risks from participating in this survey. We anticipate that your participation in this survey presents no greater risk than everyday use of the internet. We are committed to protecting your privacy. After validating that your response qualifies for payment, your answers will remain anonymous and will take part in an aggregate statistical analysis only. You may withdraw from the survey at any time or skip questions you feel uncomfortable answering.

We anticipate that this survey will take you about 20 minutes to complete.

It is very important that you complete this survey on your own and with adequate effort.

Responding without adequate effort may result in your responses being flagged for low quality.

Additional Information

The main researcher conducting this study is Ori Heffetz, a professor at Cornell University. Please ask any questions you have at oh33@cornell.edu. If you have any questions or concerns regarding your rights as a subject in this study, you may contact the Institutional Review Board (IRB) for Human Participants at 607-255-5138 or access their website at <http://www.irb.cornell.edu>. You may also report your concerns or complaints anonymously through Ethicspoint online at www.hotline.cornell.edu or by calling toll free at 1-866-293-3077. Ethicspoint is an independent organization that serves as a liaison between the University and the person bringing the complaint so that anonymity can be ensured.

Confirmation

I confirm that I have read and understood the confirmation form. I believe I understood the purpose of the research and what I would be asked to do in it. I understand that I can stop my participation in this study at any time and that I have the right to refuse to answer any questions. I understand that my name will not be linked to the information I provide and that my participation is anonymous and confidential. I confirm that the research team will use the data and process it for the benefit of the current study. I understand that if the research requires contact with me more than once, I need to confirm my participation whenever I am contacted and it is my right to refuse. I hereby give my consent to voluntarily participate in this study.

- Yes, I agree to participate in the study
 No, I do not agree to participate in the study

Please fill your **Prolific ID**:

Continue

The data collected in this study will not be used for identification in any way. You are required to submit your Prolific ID in order to receive payment for participating. Your Prolific ID will be kept secure and will be removed from the data set following payment.

Introductory screen:

Welcome!

In this survey, you will participate in **two different tasks**.

You will earn **\$2.00** for completing this survey.

You can also make extra money, often up to **\$7.00**, which will be added on top of the \$2.00.

These extra earnings will depend on your performance in the two tasks.

Note: Your accumulated extra earnings can both increase and decrease throughout the different tasks.

Your accumulated extra earnings can also drop below zero.

Nevertheless, you will always earn at least \$2.00 if you complete the survey.

The survey takes around 20 minutes to complete.

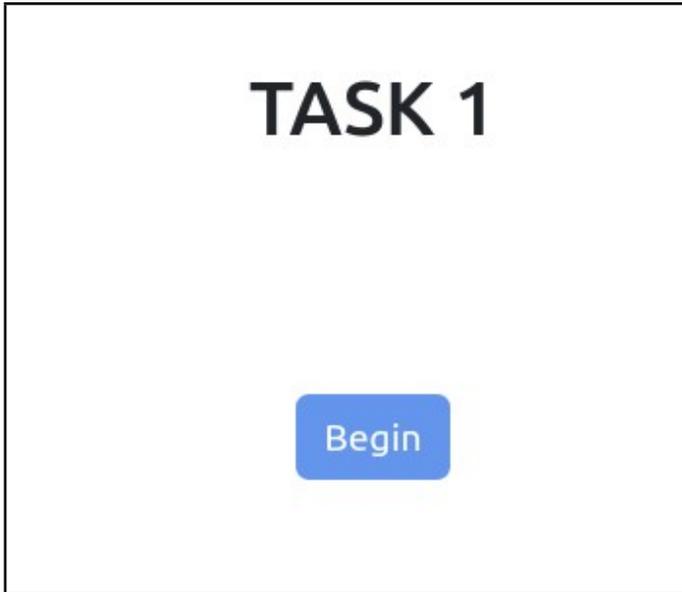
Read the instructions and choose actions carefully to maximize your earnings!

Note: The instructions of this survey provide a complete and accurate description of both tasks, including how you will earn money. The instructions will not trick or deceive you in any way.

[Begin Survey](#)

Median

Transition Screen:



Median, Introduction:

Traditional Description:

TASK 1 - Instructions

You will now vote in **elections**.

In each election, one of five numbers, 1, 2, 3, 4, or 5, will be elected.

You will earn money depending on the elected number.

This is shown in your **earnings table**, which the system picks at random.

For example:

Number	1	2	3	4	5
Money you earn if this number is elected	12¢	47¢	27¢	9¢	2¢

Note: you always have an ideal number for which you earn the most money.

In the above example, 2 is the ideal number.

As the numbers get **further away** from your ideal, your earnings **decrease**.

How do the elections work?

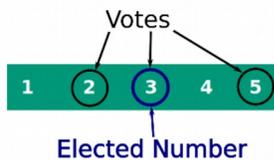
You will vote for a number (1, 2, 3, 4, or 5) and the system will randomly pick the votes of **two other "citizens"**.

Then:

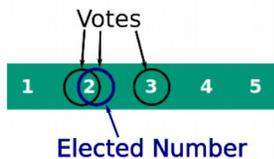
The three votes will be sorted from the lowest to the highest, and the *middle* vote out of the three will be elected.

For example:

- If the other two citizens vote for 5 and 2, and you vote for 3, then the votes from the lowest to the highest are 2, 3, and 5, and the elected number will be 3.



- If the other two citizens both vote for 2, and you vote for 3, then the votes from the lowest to the highest are 2, 2 and 3, and the elected number will be 2.



Finally, you will get your earnings according to your earning tables.

Note: When the system picks the votes of the two other citizens, each number between 1 and 5 is equally likely. Your own vote cannot influence the other two votes in any way.

First, there will be a practice election and a set of questions to test your understanding of how the election works.

Then, there will be **10** rounds of elections in which you will earn money.

You can review the rules of the election on each screen.

Frame 1

More

Frame 2

Frame 3

Frame 4

Frame 5

More (see examples)

Frame 6

More

Frame 7

Frame 8

Continue to Practice Round

Menu Description:

This differs from the traditional description only in frames 5 and 6:

Then:

The "obtainable numbers" will be the votes of the two other citizens, and all the numbers between them.

Out of these "obtainable numbers", the one *closest to your own vote* will be elected.

Frame 5

[More \(see examples\)](#)

For example:

- If the other two citizens vote for 5 and 2, then the obtainable numbers are 2, 3, 4, and 5. If you vote for 3, the elected number will be 3.

Obtainable Numbers



Elected Number

- If the other two citizens both vote for 2, then the only obtainable number is 2. If you vote for 3, then the elected number will be 2.

Obtainable Number



Elected Number

Frame 6

[More](#)

Median Practice Round

Traditional Description:

Frames 1 and 2:

PRACTICE ROUND

*The system will now walk you through a practice round.
Text displayed in these bubbles will explain how the rounds work.*

Frame 1

[Next](#)

In the beginning of the round, you see your earnings table.

Your earnings table this round:

Number	1	2	3	4	5
Money you earn if this number is elected	2¢	6¢	14¢	46¢	20¢

You will get a new, randomly chosen earnings table each round.

[Next](#)

Frame 2

Frames 3 to 5:

PRACTICE ROUND

Your earnings table this round:

Number	1	2	3	4	5
Money you earn if this number is elected	2¢	6¢	14¢	46¢	20¢

Frame 3

An animation causes the numbers (1 to 5) in this table to flash for 4 seconds when this frame starts

In order to vote, you will first select a number by clicking on it in the earnings table.

Next

Then you will click a button to submit your vote.
Note: In real rounds, you will have 30 seconds to vote.

Frame 4

To select a vote, click on a number in the earning table above.
Then click below:

Submit vote

In each round, you can also review the full rules of the election below.

Remember, the system will randomly pick the votes of two other "citizens". Then:

The three votes will be sorted from the lowest to the highest, and the *middle vote* out of the three will be elected.

► For example: (click to expand)
Remember: the other two citizens' votes are chosen at random, with each vote between 1 and 5 equally likely for each citizen.

Frame 5, expanded:

► For example: (click to expand)
For example:

- If the other two citizens vote for 5 and 2, and you vote for 3, then the votes from the lowest to the highest are 2, 3, and 5, and the elected number will be 3.

Votes

1	2	3	4	5
---	---	---	---	---

Elected Number

- If the other two citizens both vote for 2, and you vote for 3, then the votes from the lowest to the highest are 2, 2 and 3, and the elected number will be 2.

Votes

1	2	2	3	4	5
---	---	---	---	---	---

Elected Number

Remember: the other two citizens' votes are chosen at random, with each vote between 1 and 5 equally likely for each citizen.

Menu Description:

This differs from the traditional description only in the reminder at the bottom of frame 5:

Remember, the system will randomly pick the votes of two other "citizens". Then:

The "obtainable numbers" will be the votes of the two other citizens, and all the numbers between them.

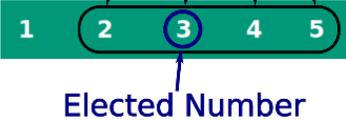
Out of these "obtainable numbers", the one *closest to your own vote* will be elected.

▼ For example: (click to expand)

For example:

- If the other two citizens vote for 5 and 2, then the obtainable numbers are 2, 3, 4, and 5. If you vote for 3, the elected number will be 3.

Obtainable Numbers



Elected Number

- If the other two citizens both vote for 2, then the only obtainable number is 2. If you vote for 3, then the elected number will be 2.

Obtainable Number



Elected Number

Remember: the other two citizens' votes are chosen at random, with each vote between 1 and 5 equally likely for each citizen.

Like in the traditional description, the examples are collapsed by default.

Selected numbers look like this:

Number	1	2	3	4	5
Money you earn if this number is elected	5¢	25¢	42¢	16¢	9¢

In both descriptions, this message appears if you click “submit vote” without a vote selected:

You did not select a number.
Click on a number in the earnings table to select it.
Then click on the "Submit vote" button.

[Back to voting](#)

Median, Practice Round Results:

PRACTICE ROUND RESULTS

Your earnings table this round was:

Number	1	2	3	4	5
Money you earn if this number is elected	2¢	6¢	14¢	46¢	20¢

After you vote, you will see the results of the round:

Round Summary:

Your Vote	Other citizen #1's vote	Other citizen #2's vote	Elected number
3	5	3	3

Your earnings in such a round would have been: \$0.14

[Continue](#)

Remember, in each round, the system will randomly pick the votes of two other "citizens". Then:

The three votes will be sorted from the lowest to the highest, and the *middle vote* out of the three will be elected.

► For example: (click to expand)
Remember: the other two citizens' votes are chosen at random, with each vote between 1 and 5 equally likely for each citizen.

The above gives the traditional description.

The "click to expand" expandable contains the same content as the practice round.

The menu description differs only in the reminder, in the same way that it did for the practice round.

Median: Distribution of earnings table

The distribution of earnings tables in the median experiment follows a asymmetric single peaked distribution. The peak is equally likely to be each number between 1 and 5. The distribution is also “translation invariant” i.e. the distribution of the value at any number “peak+i” depends only on i.

Let $[x, y]$ denote the uniform distribution over all dollar numbers which are an integer multiple of 0.01 between (and including) x and y .

Each round, the earnings table is independently randomly determined according to the following process:

- First, draw the values to put into the table
 - Draw **max** from $[0.40, 0.60]$
 - Draw **v_{1,a}** from $[0.20, \text{maximum}(30, \text{floor}((2/3)*\text{max})) - 0.01]$
 - Draw **v_{1,b}** from $[0.10, 0.19]$
 - Draw **v_{2,L}** and **v_{2,R}** independently from $[0.05, 0.09]$
 - Draw **v_{3}** from $[0.02, 0.04]$ and draw **v_{4}** from $[0.01, \text{v}_{3} - 0.01]$
- Uniformly draw a **peak** from $\{1,2,3,4,5\}$. Set the earnings table’s value at the **peak** to **max**.
- Flip a coin to set the values at distance 1 from the peak:
 - If the coin is heads, set the value at **peak-1** to **v_{1,a}** and set the value at **peak+1** to **v_{1,b}**.
 - If the coin is tails, set the value at **peak-1** to **v_{1,b}** and set the value at **peak+1** to **v_{1,a}**.
- Set the value at **peak-2** to **v_{2,L}** and set the value at **peak+2** to **v_{2,R}**
- Now set the values at distance 3 and 4 from the peak:
 - If **peak** ≤ 2 , set the value at **peak+3** to **v_{3}** and set the value at **peak+4** to **v_{4}**.
 - If **peak** ≥ 4 , set the value at **peak-3** to **v_{3}** and set the value at **peak-4** to **v_{4}**.
- Truncate the earnings table to only contain the values of numbers in $\{1,2,3,4,5\}$, and return this earnings table.

Here are 100 random draws from this distribution, displayed as a whole number of cents:

Number					Number				
1	2	3	4	5	1	2	3	4	5
27	57	12	7	2	34	54	13	7	2
6	17	53	28	7	3	7	10	51	32
2	5	29	60	15	2	6	28	48	13
2	6	14	55	28	44	21	9	4	1
2	8	22	51	14	5	27	56	10	6
4	5	20	44	17	17	53	32	7	2
9	20	40	13	9	52	14	6	2	1
43	26	8	4	1	54	18	6	4	2
7	21	42	12	5	20	45	12	8	2
2	3	6	11	49	2	3	9	21	45
1	2	5	31	50	30	49	12	6	3
9	29	49	13	8	54	33	9	4	2
46	24	8	3	1	2	7	26	43	10
2	8	23	54	15	2	9	14	49	22
8	29	57	15	8	2	4	9	15	60
45	20	7	2	1	5	30	60	14	6
7	18	45	22	7	4	5	26	58	18
1	2	7	11	60	5	14	49	29	5
52	30	8	4	3	1	2	5	19	50
56	33	5	3	1	57	28	7	4	2
46	27	7	2	1	43	17	5	3	1
7	28	41	12	7	10	57	28	9	2
26	54	12	6	4	8	24	55	16	6
2	8	10	41	24	5	18	45	21	8
1	3	6	13	59	5	11	59	25	9
11	57	20	7	3	7	17	48	25	6
1	2	9	16	55	2	6	18	54	31
18	46	23	7	3	1	4	8	28	40
48	23	8	3	2	4	9	15	59	22
2	8	18	41	27	51	14	9	4	2
7	21	54	18	9	1	2	5	17	43
8	34	55	16	7	3	5	17	49	21
12	54	32	6	3	1	3	9	10	52
4	5	26	55	12	7	13	47	25	6
21	48	12	7	4	3	4	8	18	51
4	9	23	42	13	19	43	25	8	4
15	42	29	9	3	7	28	59	17	7
21	48	19	7	3	1	3	5	29	44
2	9	20	51	19	30	47	19	5	2
7	18	54	25	6	53	20	7	4	2
4	7	13	57	20	9	28	45	11	5
4	8	14	52	22	51	14	6	3	2
3	6	34	56	15	8	31	55	16	9
16	43	24	8	4	59	37	7	3	1
2	3	8	16	54	1	4	6	22	43
18	47	30	6	2	10	41	25	9	4
3	7	19	47	20	41	27	6	4	3
2	6	18	47	23	41	20	6	2	1
2	3	8	28	48	2	7	11	42	27
3	9	15	60	31	8	20	55	17	6

Median Comprehension Screen:

The Median mechanism's comprehension screen contained a reminder of the voting rules, three further examples, and three comprehension questions. All comprehension questions had to be attempted in order to submit the questions.

Traditional Description:

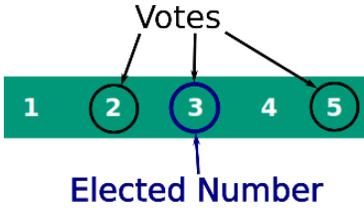
EXAMPLES

Remember, you will submit a vote, and the system will randomly pick the votes of two other "citizens". Then:

The three votes will be sorted from the lowest to the highest, and the *middle vote* out of the three will be elected.

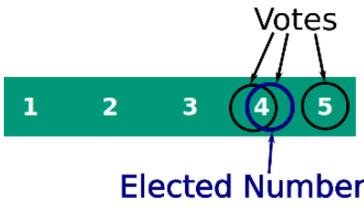
Let's go through some more examples of elections:

- If the other two citizens vote for 3 and 2, and you vote for 5, then the votes from the lowest to the highest are 2, 3, and 5, and the elected number will be 3.



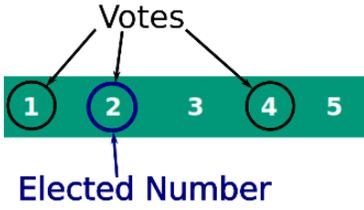
The diagram shows a horizontal green bar with five positions labeled 1 to 5. Above the bar, the word "Votes" has three arrows pointing to the positions containing 2, 3, and 5. The number 3 is circled in blue, and a blue arrow points from it to the text "Elected Number" below the bar.

- If the other two citizens both vote for 4, and you vote for 5, then the votes from the lowest to the highest are 4, 4, and 5, and the elected number will be 4.



The diagram shows a horizontal green bar with five positions labeled 1 to 5. Above the bar, the word "Votes" has three arrows pointing to the positions containing 4, 4, and 5. The number 4 in the second position is circled in blue, and a blue arrow points from it to the text "Elected Number" below the bar.

- If the other two citizens vote for 1 and 4, and you vote for 2, then the votes from the lowest to the highest are 1, 2, and 4, and the elected number will be 2.



The diagram shows a horizontal green bar with five positions labeled 1 to 5. Above the bar, the word "Votes" has three arrows pointing to the positions containing 1, 2, and 4. The number 2 is circled in blue, and a blue arrow points from it to the text "Elected Number" below the bar.

QUESTIONS

To proceed, please answer the following questions about how the election works:

1. If the other two citizens vote for 1 and 5, and you vote for 3:

Please sort the three votes from lowest to highest, and enter them below (separated by spaces):

What is the elected number?

- 1 2 3 4 5

2. If the other two citizens vote for 4 and 2, and you vote for 5:

Please sort the three votes from lowest to highest, and enter them below (separated by spaces):

What is the elected number?

- 1 2 3 4 5

3. If the other two citizens vote for 3 and 3, and you vote for 1:

Please sort the three votes from lowest to highest, and enter them below (separated by spaces):

What is the elected number?

- 1 2 3 4 5

Submit answers

Participants are not prevented from advancing if they cannot answer the questions. Instead, the system will eventually tell them the answer. Here is an example of this behavior on the first question (after submitting an incorrect answer):

1. If the other two citizens vote for 1 and 5, and you vote for 3:
Please sort the three votes from lowest to highest, and enter them below (separated by spaces):

Please try sorting the three votes again.
If you enter a wrong answer 2 more times, the system will tell you the correct answer so that you can proceed.

What is the elected number?

1 2 3 4 5

Please try selecting the elected number again.
If you enter a wrong answer 2 more times, the system will tell you the correct answer so that you can proceed.

And after two more failed attempts:

1. If the other two citizens vote for 1 and 5, and you vote for 3:
Please sort the three votes from lowest to highest, and enter them below (separated by spaces):

The correct answer is 1 3 5. Enter this answer to proceed.

What is the elected number?

1 2 3 4 5

The correct answer is 3. Select this answer to proceed.

Menu Description:

EXAMPLES

Remember, you will submit a vote, and the system will randomly pick the votes of two other "citizens". Then:

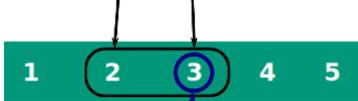
The "obtainable numbers" will be the votes of the two other citizens, and all the numbers between them.

Out of these "obtainable numbers", the one *closest to your own vote* will be elected.

Let's go through some more examples of elections:

- If the other two citizens vote for 3 and 2, then the obtainable numbers are 2 and 3. If you vote for 5, then the elected number will be 3.

Obtainable Numbers



Elected Number

- If the other two citizens both vote for 4, then the only obtainable number is 4. If you vote for 5, then the elected number will be 4.

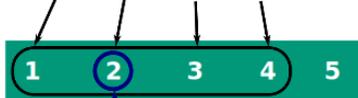
Obtainable Number



Elected Number

- If the other two citizens vote for 1 and 4, then the obtainable numbers are 1, 2, 3, and 4. If you vote for 2, then the elected number will be 2.

Obtainable Numbers



Elected Number

QUESTIONS

To proceed, please answer the following questions about how the election works:

1. If the other two citizens vote for 1 and 5, and you vote for 3:

Please enter the obtainable numbers below (separated by spaces):

What is the elected number?

1 2 3 4 5

2. If the other two citizens vote for 4 and 2, and you vote for 5:

Please enter the obtainable numbers below (separated by spaces):

What is the elected number?

1 2 3 4 5

3. If the other two citizens vote for 3 and 3, and you vote for 1:

Please enter the obtainable numbers below (separated by spaces):

what is the elected number?

1 2 3 4 5

Submit answers

For more examples of the behavior upon incorrect answers:

1. If the other two citizens vote for 1 and 5, and you vote for 3:
Please enter the obtainable numbers below (separated by spaces):

Please try writing the obtainable numbers again.
If you enter a wrong answer 2 more times, the system will tell you the correct answer so that you can proceed.

What is the elected number?

1 2 3 4 5

Please try selecting the elected number again.
If you enter a wrong answer 2 more times, the system will tell you the correct answer so that you can proceed.

1. If the other two citizens vote for 1 and 5, and you vote for 3:
Please enter the obtainable numbers below (separated by spaces):

The correct answer is 1 2 3 4 5. Enter this answer to proceed.

What is the elected number?

1 2 3 4 5

The correct answer is 3. Select this answer to proceed.

This screen is displayed (in both descriptions) after all questions are correct:

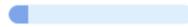
You answered all the questions correctly!

Click when you are ready to start voting!

Median, Round:

Time left to complete this page: 0:13

ROUND 1



Your earnings table this round is:

Number	①	②	③	④	⑤
Money you earn if this number is elected	30¢	48¢	14¢	9¢	4¢

To select a vote, click on a number in the earning table above.

Then click below:

Submit vote

Remember, the system will randomly pick the votes of two other "citizens". Then:

The "obtainable numbers" will be the votes of the two other citizens, and all the numbers between them.

Out of these "obtainable numbers", the one *closest to your own vote* will be elected.

► For example: (click to expand)

Remember: the other two citizens' votes are chosen at random, with each vote between 1 and 5 equally likely for each citizen.

The above gives the reminder for the menu description. The two treatments differ only in the "reminder" text at the bottom, in the same way as the practice screens. This statement holds true for the remainder of the screens for median, so going forward we omit it.

Median, Round Results:

RESULTS OF ROUND 2

Your earnings table this round was:

Number	1	2	3	4	5
Money you earn if this number is elected	2¢	9¢	21¢	49¢	19¢

Round Summary:

Your Vote	Other citizen #1's vote	Other citizen #2's vote	Elected number
2	3	3	3

Your earnings this round are: \$0.21

Note: Your total extra earnings so far in the survey are: **\$0.21**.

[Next Round](#)

Remember, in each round, the system will randomly pick the votes of two other "citizens". Then:

The "obtainable numbers" will be the votes of the two other citizens, and all the numbers between them.

Out of these "obtainable numbers", the one *closest to your own vote* will be elected.

► For example: (click to expand)

Remember: the other two citizens' votes are chosen at random, with each vote between 1 and 5 equally likely for each citizen.

Median, Round result (if vote not submitted in time):

RESULTS OF ROUND 1

You did not vote in time, so you earn nothing this round.

To vote, select a number by clicking on it in your earnings table.
Then click "Submit vote".

[Next Round](#)

Remember, in each round, the system will randomly pick the votes of two other "citizens".
Then:

The "obtainable numbers" will be the votes of the two other citizens, and all the numbers between them.

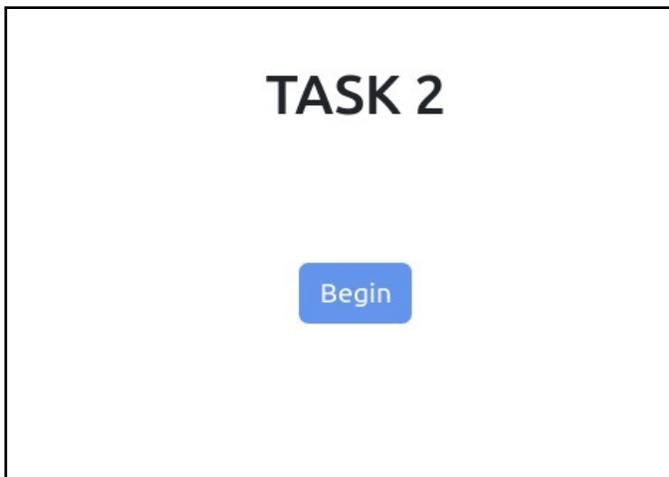
Out of these "obtainable numbers", the one *closest to your own vote* will be elected.

► For example: (click to expand)

Remember: the other two citizens' votes are chosen at random, with each vote between 1 and 5 equally likely for each citizen.

(Second Price) Auction

Transition Screen:



Auction Introduction:

Traditional Description:

TASK 1 - Instructions

You will now bid in an **auction**.

Frame 1

More

In each auction, you will place a bid, and the system will randomly pick the bids of **four other "bidders"**.

Frame 2

Then:

You will win the auction if you placed the *highest bid*.

If you win, you will *pay a price* equal to the *second highest bid*.

Frame 3

More (see examples)

For example:

- The other bidders may bid \$3.00, \$2.50, \$4.00, and \$1.20. If you bid \$4.50, then your bid will be the highest, and the second-highest bid will be \$4.00. So you will win the auction and pay a price of \$4.00.
- In the same example, if instead you bid \$2.00, then you will win nothing and pay nothing.

Frame 4

Note: If your bid *is tied* for the highest bid, you will win nothing and pay nothing.

More

Winning the auction will give you some **money payout**.

If you win, you will earn your payout, **minus the price paid** in the auction.

Frame 5

For example:

- If you win when your payout is \$4.25 and pay a price of \$4.00, then you will earn \$0.25.
- If you win when your payout is \$3.50, and pay a price of \$4.00, then your total earnings in the survey will *decrease* by \$0.50.

Frame 6

The system picks your payout at random, and shows your payout **before you bid**.

All bids must be between \$0.00 and \$5.00.

Frame 7

Note: When the system picks the bids of the other four bidders, each possible bid is equally likely. Your own bid cannot influence the other bids in any way.

Frame 8

First, there will be a practice auction and a set of questions to test your understanding of how the auction works.

Then, there will be **10** rounds of auctions where you can earn money.

You can review the rules of the auction on each screen.

Frame 9

Continue to Practice Round

Menu Description:

The menu description differs only in frames 3 and 4:

Then:

Your "price to win" the auction will be set to the *highest bid* placed by the *other* bidders.
If your bid is higher than this "price to win", then you will win the auction and pay this price.

Frame 3

[More \(see examples\)](#)

For example:

- The other bidders may bid \$3.00, \$2.50, \$4.00, and \$1.20. Then your price to win the auction will be \$4.00. If you bid \$4.50, then you will win the auction and pay a price of \$4.00.
- In the same example, if instead you bid \$2.00, then you will win nothing and pay nothing.

Frame 4

Note: If your bid *equals* your "price to win", you will win nothing and pay nothing.

Auction Practice Round

Traditional Description:

Frames 1, 2, and 3:

PRACTICE ROUND

*The system will now walk you through a practice round.
Text displayed in these bubbles will explain how the rounds work.*

In the beginning of the round, you see your money payout.

Your money payout in this round is: **\$2.97**

*You will get a new, randomly chosen money payout each round.
If you win the auction, you will earn your payout, minus the price paid in the auction.*

Frame 1

Next

Frame 2

Frame 3

Next

Frames 4 and 5:

PRACTICE ROUND

Your money payout in this round is: **\$2.97**

*Then you are asked to bid.
Your bid must be between \$0.00 and \$5.00.
You must specify all three digits of your bid (for example, \$1.00 or \$0.05).*

Place your bid here:

\$

**The decimal point is automatically added
(or deleted via backspace) by this text box**

*Then you will click a button below to submit your bid.
In real rounds, you will have 30 seconds to bid.*

In each round, you can also review the full rules of the auction:

Remember, the system will randomly pick the bids of four other "bidders". Then:

- ▮ You will win the auction if you placed the highest bid.
- ▮ If you win, you will pay a price equal to the second highest bid.

► For examples and details: (click to expand)

Remember: if you win, you will earn your payout, **minus the price paid** in the auction.

Frame 4

Next

Frame 5

Submit bid

Frame 5, expanded:

Remember, the system will randomly pick the bids of four other "bidders". Then:

You will win the auction if you placed the highest bid.

If you win, you will pay a price equal to the second highest bid.

▼ For examples and details: (click to expand)

- For example: The other bidders may bid \$3.00, \$2.50, \$4.00, and \$1.20. If you bid \$4.50, then your bid will be the highest, and the second-highest bid will be \$4.00. So you will win the auction and pay a price of \$4.00.
- In the same example, if instead you bid \$2.00, then you will win nothing and pay nothing.
- Note: If your bid *is tied* for the highest bid, you will win nothing and pay nothing.
- Remember: The bids of the other four bidders are chosen at random, with each possible bid equally likely for each bidder.

Remember: If you win, you will earn your payout, **minus the price paid** in the auction.

Submit bid

Menu Description:

This differs from the traditional description only in the reminder at the bottom of frame 5:

Remember, the system will randomly pick the bids of four other "bidders". Then:

Your "price to win" the auction will be set to the highest bid placed by the other bidders. If your bid is higher than this "price to win", then you will win the auction and pay this price.

▼ For examples and details: (click to expand)

- For example: The other bidders may bid \$3.00, \$2.50, \$4.00, and \$1.20. Then your price to win the auction will be \$4.00. If you bid \$4.50, then you will win the auction and pay a price of \$4.00.
- In the same example, if instead you bid \$2.00, then you will win nothing and pay nothing.
- Note: If your bid *equals* your "price to win", you will win nothing and pay nothing.
- Remember: The bids of the other four bidders are chosen at random, with each possible bid equally likely for each bidder.

Remember: If you win, you will earn your payout, **minus the price paid** in the auction.

[Submit bid](#)

Like in the traditional description, the expandable is collapsed by default.

In both descriptions, you cannot click "submit bid" when the bid field is empty.

If you enter a bid with the wrong format, you will see one of the following:

Place your bid here:

\$

Please enter all three digits of your bid in the format "\$0 . 00".

Place your bid here:

\$

Please enter a bit between \$0.00 and \$5.00.

Auction Practice Round Results:

PRACTICE ROUND RESULTS

Your payout this round was \$2.97

After you bid, you will see the results of the round:

Round Summary:

	You	Other bid #1	Other bid #2	Other bid #3	Other bid #4
Bid:	\$2.55	\$4.15	\$1.48	\$4.22	\$3.81

You **did not** win this auction.

Instead, other bidder #3 won the auction (and paid a price of \$4.15).

Even if this were a real round, you would earn nothing this round.

Continue

Remember, in each round, the system will randomly pick the bids of four other "bidders".

Then:

You will win the auction if you placed the highest bid.

If you win, you will pay a price equal to the second highest bid.

► For examples and details: (click to expand)

Remember: If you win, you will earn your payout, **minus the price paid** in the auction.

The above gives the traditional description; the menu description differs in the same way that it did for the practice round.

Auction: Distribution of payout

Let $[x, y]$ denote all dollar numbers which are in integer multiple of 0.01 between (and including) x and y .

Each round, the payout is an independent draw from the following distribution:

- With $1/10$ probability, the payout is a uniform draw from $[0.01, 1.99]$.
- With $4/15$ probability, the payout is a uniform draw from $[2.00, 3.99]$.
- With the remaining $19/30$ probability, the payout is a uniform draw from $[4.00, 4.99]$.

Auction Comprehension Screen:

The Auction comprehension screen is similar to that in Median, except it additionally contains three examples and three questions about how you earn money as a result of the outcome of the mechanism.

Traditional Description:

EXAMPLES

Remember, you will submit a bid, and the system will randomly pick the bids of four other "bidders". Then:

- You will win the auction if you placed the *highest bid*.
- If you win, you will *pay a price* equal to the *second highest bid*.

▼ For details: (click to expand)

- Note: If your bid *is tied* for the highest bid, you will win nothing and pay nothing.
- Remember: The bids of the other four bidders are chosen at random, with each possible bid equally likely for each bidder.

Remember: If you win, you will earn your payout, **minus the price paid** in the auction.

Let's go through some more examples of auctions:

- The other bidders may bid \$1.50, \$4.05, \$2.20, and \$3.70. If you bid \$4.70, then your bid is the highest, and the second highest bid is \$4.05. So you will win the auction, and pay a price of \$4.05.
- The other bidders may bid \$4.80, \$2.50, \$4.10, and \$2.80. If you bid \$4.00, then your bid is not the highest, so you will not win the auction.
- The other bidders may bid \$2.80, \$0.70, \$2.60, and \$3.50. If you bid \$3.75, then your bid is the highest, and the second highest bid is \$3.50. So you will win the auction, and pay a price of \$3.50.

And let's go through a few examples of how you earn money:

- If you win the auction when your payout is \$3.75, and you pay a price of \$4.75, then your extra earnings in the survey **decrease** by \$1.00.
- If you win the auction when your payout is \$3.50, and you pay a price of \$2.00, then you will earn \$1.50.
- If you do not win the auction, you earn nothing.

Note: The "For details" expandable closed by default.

QUESTIONS

To proceed, please answer the following questions about how the auction works and about how you earn money:

Questions about the auction:

1. If you bid \$4.00, and the other players bid \$3.50, \$2.00, \$2.45, and \$3.10:

Do you win the auction?

Yes No

If yes, what price do you pay? (If no, you may leave this blank)

 \$

2. If you bid \$1.50, and the other players bid \$1.25, \$2.00, \$3.50, and \$2.50:

Do you win the auction?

Yes No

If yes, what price do you pay? (If no, you may leave this blank)

 \$

3. If you bid \$3.25, and the other players bid \$1.25, \$0.45, \$3.10, and \$3.05:

Do you win the auction?

Yes No

If yes, what price do you pay? (If no, you may leave this blank)

 \$

Questions about how you earn money:

(For the questions about how you earn money, which are the same in both descriptions, see below.)

Menu Description:

EXAMPLES

Remember, you will submit a bid, and the system will randomly pick the bids of four other "bidders". Then:

Your "price to win" the auction will be set to the *highest bid* placed by the other bidders.

If your bid is higher than this "price to win", then you will win the auction and pay this price.

▼ For details: (click to expand)

- Note: If your bid *equals* your "price to win", you will win nothing and pay nothing.
- Remember: The bids of the other four bidders are chosen at random, with each possible bid equally likely for each bidder.

Remember: If you win, you will earn your payout, **minus the price paid** in the auction.

Let's go through some more examples of auctions:

- The other bidders may bid \$1.50, \$4.05, \$2.20, and \$3.70. Then your price to win the auction is \$4.05. If you bid \$4.70, then you will win the auction, and pay a price of \$4.05.
- The other bidders may bid \$4.80, \$2.50, \$4.10, and \$2.80. Then your price to win the auction is \$4.80. If you bid \$4.00, then you will not win the auction.
- The other bidders may bid \$2.80, \$0.70, \$2.60, and \$3.50. Then your price to win the auction is \$3.50. If you bid \$3.75, then you will win the auction, and pay a price of \$3.50.

And let's go through a few examples of how you earn money:

- If you win the auction when your payout is \$3.75, and you pay a price of \$4.75, then your extra earnings in the survey **decrease** by \$1.00.
 - If you win the auction when your payout is \$3.50, and you pay a price of \$2.00, then you will earn \$1.50.
 - If you do not win the auction, you earn nothing.
-

Note: The "For details" expandable is closed by default.

QUESTIONS

To proceed, please answer the following questions about how the auction works and about how you earn money:

Questions about the auction:

1. If you bid \$4.00, and the other players bid \$3.50, \$2.00, \$2.45, and \$3.10:

What is your price to win the auction?

Do you win the auction?

Yes No

2. If you bid \$1.50, and the other players bid \$1.25, \$2.00, \$4.25, and \$2.50:

What is your price to win the auction?

Do you win the auction?

Yes No

3. If you bid \$3.25, and the other players bid \$1.25, \$0.45, \$3.10, and \$3.05:

What is your price to win the auction?

Do you win the auction?

Yes No

Questions about how you earn money:

Questions about how you earn money:

4. If you win the auction when your payout is \$3.00, and you pay a price of \$2.50:

Will your earnings:

Increase Decrease

By how much?

 \$

5. If you win the auction when your payout is \$3.75 and you pay a price of \$4.00:

Will your earnings:

Increase Decrease

By how much?

 \$

6. If you win the auction when your payout is \$2.50 and you pay a price of \$4.50:

Will your earnings:

Increase Decrease

By how much?

 \$

Next

Participants are not prevented from advancing if they cannot answer the questions. Instead, the system will eventually tell them the answer. Here is an example of the behavior on the first question:

1. If you bid \$4.00, and the other players bid \$3.50, \$2.00, \$2.45, and \$3.10:

What is your price to win the auction?

Please try again.

If you enter a wrong answer 2 more times, the system will tell you the correct answer so that you can proceed.

Do you win the auction?

Yes No

Please try again.

And after two more failed attempts:

1. If you bid \$4.00, and the other players bid \$3.50, \$2.00, \$2.45, and \$3.10:

What is your price to win the auction?

The correct answer is \$3.50. Enter this answer to proceed.

Do you win the auction?

Yes No

Please try again.

This screen is displayed (in both descriptions) after all questions are correct:

You answered all the questions correctly!

Click when you are ready to start bidding!

Start

Median, Round:

Time left to complete this page: 0:18

ROUND 2



Your money payout in this round is: **\$4.86**

Place your bid here:

Remember, the system will randomly pick the bids of four other "bidders". Then:

- You will win the auction if you placed the *highest bid*.
- If you win, you will *pay a price* equal to the *second highest bid*.

► For examples and details: (click to expand)

Remember: If you win, you will earn your payout, **minus the price paid** in the auction.

Submit bid

The two treatments differ only in the "reminder" text at the bottom, in the same way as the practice screens. This statement holds true for the remainder of the screens for median, so going forward we omit it.

Median, Round Results:

ROUND 3 SUMMARY

Your payout this round was \$4.50

Round Summary:

	You	Other bid #1	Other bid #2	Other bid #3	Other bid #4
Bid	\$4.50	\$2.92	\$2.43	\$3.22	\$3.67

You **won** this auction.

You paid a price of \$3.67.

You earn **\$0.83** this round.

Note: Your total extra earnings so far in the survey are: **\$0.83**.

Remember, in each round, the system will randomly pick the bids of four other "bidders".
Then:

You will win the auction if you placed the *highest bid*.

If you win, you will *pay a price* equal to the *second highest bid*.

► For examples and details: (click to expand)

Remember: If you win, you will earn your payout, **minus the price paid** in the auction.

Next Round

Median, Round result (if vote not submitted in time):

ROUND 1 SUMMARY

You did not bid in time, so you earn nothing this round.

To bid, enter your three digit bid in the format "\$0.00".
Then click "Submit bid".

Remember, in each round, the system will randomly pick the bids of four other "bidders".
Then:

You will win the auction if you placed the *highest bid*.

If you win, you will *pay a price* equal to the *second highest bid*.

► For examples and details: (click to expand)

Remember: If you win, you will earn your payout, **minus the price paid** in the auction.

Next Round

If you lose money in some round, you see:

You **won** this auction.
You paid a price of \$4.99.
Your total earnings **decrease** by \$0.96 this round.

If your accumulated extra earnings drop below zero, you see:

You **won** this auction.
You paid a price of \$4.49.
Your total earnings **decrease** by \$2.29 this round.

Note: Your total extra earnings so far in the survey are: **-\$2.29**.

Your current extra earnings are negative.

But remember: if you complete this survey, you will always earn at least **\$2.00**.

Final Questions

Questions

Your total extra earnings in the two tasks were \$0.00.

After you complete a short set of additional questions, you'll receive these earnings on top of a completion reward of \$2.00 for a grand total of **\$2.00**.

What is your year of birth?

What is your gender?

What is your race/ethnicity?

What is the highest level of education you have completed?

- Middle School or less
- Some high school
- High school diploma
- GED (HS Equivalent)
- Some college, but did not finish
- Two years college degree / Associate degree / A.A. / A.S.
- Four-years college degree / B.A. / B.S.
- Some graduate school
- Master's degree (MA / MS / MBA / MFA / MDiv)
- Advanced degree (PhD / MD / JD)

If you selected "four-year degree" or higher: During your educational career, which of the following best describes your primary focus?

- Humanities
- Social Sciences
- Natural Sciences or Math
- Applied Science or Engineering
- None

Which of the following best describes your main activity or your employment status?

- Working
- Unemployed
- Retired
- Stay-at-home parent
- Student
- Other

A mattress sells for \$200, it is now offered for 50% off today. How much does it cost today?

Imagine you flip three separate coins. What are the chances that they all come up heads?

Suppose you make \$10 each day. How many days does it take you to earn at least \$75? (Please enter a whole number of days.)

If a cube-shaped tub can hold 27 cubic feet of water, how many feet is each side of the tub?

Next

Questions

Recall the first task, where you voted in *elections*.

Remember, this is how voting worked:

The three votes were sorted from the lowest to the highest, and the *middle vote* out of the three was elected.

► For example: (click to expand)

1. This task involved a lot of different concepts ("electing numbers", "voting", "earnings", etc.). Were you confused by anything during this task?

2. How did you typically decide which number to vote for?

3. Do you have any advice to a future participant who might participate in elections in this survey?

4. In round number 5 out of 10, you received the following earnings table:

Number	1	2	3	4	5
Money you earn if this number is elected	27¢	43¢	17¢	6¢	2¢

Your ideal number (where your earnings were the highest) was 2.

You voted for number 5.

The other two citizens voted for 3 and 1, and the elected number was 3.

What factors did you consider when choosing this vote?

[Check all that apply]

- The influence your vote could have on other citizens' votes
- The location of your ideal number
- The amount of earnings in your table
- The likely votes of the other citizens
- Other (please specify:)
- None (chosen randomly or arbitrarily)

How did you decide which number to vote for in this round?

Would you change your vote if you could?

5. How well do you think you understood the election process?

- Not well at all
- Slightly well
- Moderately well
- Very well
- Extremely well

6. How well do you think you understood the election **compared to other participants taking this survey?**

- I understood much worse than others
- I understood slightly worse than others
- I understood about the same as others
- I understood slightly better than others
- I understood much better than others

Next

The round displayed in question 4 above is the round with the largest difference between the payoff under the participant's chosen strategy and under the straightforward strategy.

Questions

Recall the first task, where you bid in an *auction*.

Remember, this is how the auction worked:

You will win the auction if you placed the *highest bid*.
If you win, you will *pay a price* equal to the *second highest bid*.

► For example and details: (click to expand)

1. This task involved a lot of different concepts ("bidding", "money payout", "paying a price", etc.). Were you confused by anything during this task?

2. How did you typically decide how much to bid?

3. Do you have any advice to a future participant who might participate in the auctions in this survey?

4. In round number 3 out of 10, you had a money payout of **\$0.83**. The bids (including your own) were:

	You	Other bid #1	Other bid #2	Other bid #3	Other bid #4
Bid	\$5.00	\$0.81	\$0.61	\$2.20	\$0.25

You **won** this auction.

You paid a price of \$2.20.

○ What factors did you consider when choosing your bid?

[Check all that apply]

- The likely bids of the other bidders
- Your own payoff
- The influence your bid could have on other bidders' bids
- Your chances of winning the auction
- The influence your bid could have on the price you pay
- Other (please specify:)
- None (chosen randomly or arbitrarily)

○ How did you decide how much to bid in this round?

Would you change your bid if you could?

5. How well do you think you understood the way the auction works?

- Not well at all
- Slightly well
- Moderately well
- Very well
- Extremely well

6. How well do you think you understood the way the auction works **compared to other participants taking this survey?**

- I understood much worse than others
- I understood slightly worse than others
- I understood about the same as others
- I understood slightly better than others
- I understood much better than others

Next

The round displayed in question 4 above is the round with the largest difference between the payoff under the participant's chosen strategy and under the straightforward strategy.