Online Appendix Correcting Consumer Misperceptions about CO_2 Emissions

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A Climate Survey

A.1 Design Details

A.1.1 Consumer Products and Activities

Table A.1: Comments on the calculation of CO_2 emissions.

| Product | Comment |
|--------------|--|
| Beer | It takes into account all the emissions starting with the production and ending with the distribution of the products to the consumer. |
| Phone call | It takes into account the CO_2 emissions generated to operate the phone and the communication network. |
| Microwave | It takes into account only the emissions generated by the power plants that produce the energy used by the microwave. |
| Milk | It takes into account all the emissions starting with the production and ending with the distribution of the products to the consumer. |
| Egg | It takes into account all the emissions starting with the production and ending with the distribution of the products to the consumer. |
| Poultry meat | It takes into account all the emissions starting with the production and ending with the distribution of the products to the consumer. |
| Shower | It takes into account the emissions generated by warming up the water and all the emissions connected to the water delivery and cleaning. |
| Chocolate | It takes into account all the emissions starting with the production and ending with the distribution of the products to the consumer. |
| Coffee | It takes into account all the emissions starting with the production and ending with the distribution of the products to the consumer. |
| Beef | It takes into account all the emissions starting with the production and ending with the distribution of the products to the consumer. |
| Flight | It takes into account only the emissions generated by burning the plane fuel. |
| Gas heating | It is the average of the estimates of 10 different carbon footprint calculators. |

A.1.2 Elicitation Interface

We explain the interface and several measures we took to ensure the highest possible data quality in the survey.

Point estimates of the emission sizes. When asking about the CO_2 emissions generated by driving, we allowed the participants to express their guesses either in ounces or grams so they could use the more familiar unit of measure (Figure A.1).

For all the other products, we elicited the point estimates on a single interface that allowed the participants to go back and modify their previous answers easily. The order of the products on the interface was randomized at the individual level.

The 12 questions were graphically displayed (Figure A.2). The product in each question was represented by clip art, below which the name of the product and its size appeared. The participants could see which emissions were taken into account by the scientific estimate by hovering the mouse cursor on an info icon **()** shown above each question. The list of products, their amount, and the emissions to be considered were all described in the instructions as well.

The participants' answers were summarized in an interactive box displayed at the bottom of the page. The box appeared as soon as a participant filled in the first question on the screen and it stayed visible until the moment the participant confirmed his/her answers. The "Confirm" button appeared inside the summary box to draw the participant's attention to the box itself.

The summary box showed a participant's guesses graphically on a line. Crucially, we designed the line to avoid any anchoring effects. No number appeared on it if the participant had not entered any guesses. Moreover, the scale of the line adjusted dynamically depending on the highest guess.

Belief distribution. The elicitation interface showed the name and the quantity of the product and reminded the participants of their point estimates. The participants could see which emissions were taken into account by the scientific estimate, by hovering the mouse cursor on an info icon ().

The interface displayed five bins for each question (Figure A.3). The participant's point estimate for the product, call it m, was taken as the midpoint of the central bin. The central bin covers numbers from 0.95m to 1.05m. The two bins on both sides of the central bin cover numbers from 0.85m to 0.95m and from 1.05m to 1.15m. Finally, the farthest two bins cover numbers below 0.85m and above 1.15m, respectively.

The interface showed a box containing the 20 balls the participants had to allocate among the bins. The participants could move the balls to a bin by (i) moving a slider below the bin, (ii) directly typing the number of balls they wanted to move in a text field below the bin, or (iii) clicking on the arrows next to the text field. The participants could move all the balls back to the box by pressing the button "Reset". Willingness to mitigate. The participants indicated their WTMs using sliders (Figure A.4). In each of the eight questions, the current value of the slider was indicated both in \pounds and in \$. The participants could also directly type their WTM in the text fields below the slider.

The interface was designed to (i) not anchor participants' answers and (ii) help participants make consistent choices. To achieve the first objective, the sliders had no default value, and the participants had to click on the slider for a cursor to appear. Moreover, all the sliders were presented on the same page, and they all ranged from £0 to £100. To achieve the second objective, we designed the interface in the following way.

- (i) We showed the sliders in increasing order of emission sizes and they were aligned vertically.
- (ii) We made sure that more than one slider was visible on the page simultaneously so that participants could see their answers to the other questions.
- (iii) We displayed a summary box at the bottom of the page, which showed the participant's answers on a line ranging from £0 to £100. If two or more responses were identical or close to each other, the label position was vertically adjusted to avoid overlapping.
- (iv) We placed the "Submit" button inside the summary box to draw the participant's attention to the summary. The button appeared only after the participant entered his/her WTM for all eight emission levels.

Additional measures. At the beginning of the experiment, we explicitly asked the participants not to use external help while taking the survey. We implemented a "Google trap" to check whether the participants complied with this request. The trap consists of three questions about climate-related facts that are hard to know by heart but that are easily googlable. We rewarded each correct answer with an additional £0.20 bonus. This bonus is paid for sure, making the incentives stronger than the incentives to report the point beliefs at the beginning of the survey.¹

Only 47 participants answered all three questions with values close to the ones that could be found on Google or Wikipedia at the time (call them Google answers for brevity); another 132 and 214 participants reported two or one answer(s) close to the Google answers, respectively. Finally, 629 participants reported responses that were always far from the Google answers. We conclude that Googling was not widespread during the survey. We verified that excluding the 179 subjects who reported two or more answers close to the Google answers does not change our qualitative results.

¹There is a 1.6% chance that any of the 12 point beliefs questions is selected for payment. Hence the expected earning from answering such a question correctly is $\pounds 0.07$.

As a final quality check, at the end of the survey, we asked the participants whether we should use their answers in the analysis or we should discard their data because they were not attentive during the survey, Only 21 participants out of 1,022 indicated we should not use at least some of their answers. Excluding these participants does not change our results.



Figure A.1: Beliefs about CO_2 emissions from driving one mile by car.



Figure A.2: Beliefs about CO_2 emissions from consumer products and activities.



Figure A.3: Belief distribution.



Figure A.4: Willingness to mitigate.

Information about CO₂ emissions

Below you can find the information for some of the products you encountered in this study. In Session 2 you will find the information for the remaining products.

Please copy the name and the CO₂ emissions of each product into the relevant blank spaces.

If you are using a mobile device, this page is better seen keeping the screen horizontally



Figure A.5: Information provision in Session 1.



Figure A.6: Short-term memory task in Session 1.



Figure A.7: Information provision in Session 2.

A.1.3 Survey Questions

Questions asked in Part 1

Page 1/2: Climate change

- 1. How much higher was the average global temperature in 2017 compared to the average in the pre-industrial era (1870-1900)? $[^{\circ}C / ^{\circ}F]$.
- 2. Compare the consequence of a 1.5°C and a 2°C increase in global temperature. How many more million people will be exposed to extreme heatwaves at least once every 5 years with an increase of 2°C? million.
- 3. Compare the consequence of a 1.5°C and a 2°C increase in global temperature. How many more million people will be exposed to the impacts of sea-level rise globally in 2100 with an increase of 2°C? _____ million.

Page 2/2: Driving a car

- 1. Driving one mile by car generates [g / oz] of CO_2 .
- 2. The social cost of carbon takes into account all future cost to humans of a given amount of CO_2 emissions today. The scientific estimate for the social cost of driving one mile by car is
- 3. Some people think scientists either over- or underestimate the social cost of carbon. Please give us your best guess of the social cost of driving one mile by car. I think that the social cost is \$ _____.

Survey questions at the end of Session 1

Page 1/5: Demographic information

- 1. Age
- 2. Gender Male; Female; Other
- 3. Ethnicity White; Black; Asian; Mixed; Other
- 4. In which state do you live?
- 5. What are the first 5 digits of your ZIP code?
- Generally speaking, where do you place yourself on the Liberal-Conservative political spectrum? Liberal; Somewhat Liberal; Somewhat Conservative; Conservative

7. Generally speaking, how do you consider yourself?

A Republican; A Republican-leaning Independent; Independent; A Democrat-leaning Independent; A Democrat

8. What is the highest level of school you have completed or the highest degree you have received?

Less than high school degree; High school degree; Some University but no degree; Bachelor's degree; Postgraduate degree

- 9. How much total combined money did all members of your household earn last year? Below \$5,000; \$5,000 to \$15,000; \$15,000 to \$30,000; \$30,000 to \$45,000; \$45,000 to \$60,000; \$60,000 to \$75,000; \$75,000 to \$90,000; \$90,000 to \$105,000; \$105,000 to \$120,000; \$120,000 to \$135,000; \$135,000 to \$150,000; \$150,000 and up
- 10. Which device are you using to complete this session? *Phone; Tablet; Laptop or Desktop*
- 11. Do you trust that the researchers will indeed buy CO₂ offsets as described in the instructions?
 1 Not at all; 2; 3; 4; 5 Completely
- 12. Did you encounter any problem with the way the pages of the experiment were displayed? If so please indicate the model of your device, the browser you are using, and the problem you encountered.
- 13. Was there anything in the instructions that was unclear or do you have any other feedback?

Page 2/5: Current consumption, intention to reduce future consumption, and difficulty in reducing consumption (for all 12 products)

- 1. How many hours do you spend making phone calls from a cell phone per week?
- 2. Do you intend to reduce your call consumption in light of its CO₂ emissions? No.; Yes, I am prepared to reduce the time I spend on the phone by about 10%.; Yes, I am prepared to reduce the time I spend on the phone by about 25%.; Yes, I am prepared to reduce the time I spend on the phone by about 50%.; Yes, I am prepared to reduce the time I spend on the phone by more than 50%.
- 3. How difficult would it be to reduce the time you spend on the phone by half? Not applicable, I am not consuming this product.; Very easy.; Easy.; Neither easy nor difficult; Difficult.; Very difficult.

Notes: Similar questions were asked for all 12 products.

Page 3/5: Climate change knowledge

"Climate change, which includes global warming, is widely seen as a significant issue today. We are often asked to make changes in our lives that will lessen climate change. However, there may be reasons leading us to choose not to make changes."

- How well-informed do you consider yourself on the issue of climate change?
 1 Not informed; 2; 3; 4; 5 Completely informed;
- 2. To what extent do you believe human activity is contributing to climate change? 1 - Not at all; 2; 3; 4; 5 - A lot
- 3. How severe do you consider the problem of climate change? 1 - Not a problem; 2; 3; 4; 5 - A huge problem
- 4. How soon should climate change be dealt with?
 1 Never; 2; 3; 4; 5 Immediately
- 5. Have you changed your actions, at least partly, due to consideration of climate change? No; Yes
- 6. If you answer Yes to the last question. How much has climate change been a factor in changing your actions?
 1 A min on factor: 0: 0: 1: 5 A major factor.
 - 1 A minor factor; 2; 3; 4; 5 A major factor
- 7. How influential have the following factors been in shaping your own decisions about actions that might affect climate change?
 - 1 Not influential; 2; 3; 4; 5 Very influential
 - (a) The monetary cost of changing my actions.
 - (b) The availability of options for change.
 - (c) The inconvenience of options for change.
 - (d) Fitting changes in with family and others.
 - (e) Lack of knowledge about possible changes I can make.
 - (f) Uncertainty about the best option to contribute to reducing climate change.
 - (g) Uncertainty as to whether climate change is a significant problem.
 - (h) Select option 4 in this question. [Attention check]
 - (i) The feeling that my actions will not affect the outcome of climate change.
 - (j) Feeling that other individuals will not change their actions even if I do.
 - (k) Other countries or people not taking equivalent action currently.

(1) Feeling that government policies, like carbon taxes, should be used to fix climate change, not individual action.

Page 4/5: Covid-19

- Have you or someone in your close family suffered severe physical symptoms due to a Covid-19 infection? No; Yes
- 2. How worried are you that you or someone in you close family will get infected with Covid-19?

1 - Not worried; 2; 3; 4; 5 - Very worried

- 3. Have you incurred personal economic losses due to Covid-19? No; Yes
- 4. How worried are you about the future economic impact that Covid-19 will have on your personality?

1 - Not worried; 2; 3; 4; 5 - Very worried

- 5. How much do you think unemployment in your country increased due to Covid-19?
- 6. How long do you think the economic depression/recession in your country induced by Covid-19 will last?

Page 5/5: Self-reported data quality

"For the success of this study, it is essential that we analyze only those responses that have been dully answered. Therefore, we would like to know if you answered the questions attentively and in an honest way. Your answers here will not compromise your approval and bonus. Should we use your answers for the following parts of the experiment?"

- Questions about the size of CO₂ emissions (Parts 1, 2, and 3) Yes, I paid attention to this part of the study and you should use my answers.; No, I didn't pay much attention to this part of the study and you should not use my answers.
- 2. Questions about getting a bonus vs emitting CO_2 (Part 4)

Yes, I paid attention to this part of the study and you should use my answers.; No, I didn't pay much attention to this part of the study and you should not use my answers.

3. Final questionnaire

Yes, I paid attention to this part of the study and you should use my answers.; No, I didn't pay much attention to this part of the study and you should not use my answers.

Survey questions at the end of Session 2

Page 1/3: Trust

- 1. The information provided about CO₂ emissions in Session 1 reflects the best scientific knowledge on the topic. 1 - Completely disagree; 2, 3; 4; 5 - Completely agree
- The scientific estimates in the original survey reflect the actual CO₂ emissions of the different consumption activities. 1 Completely disagree; 2, 3; 4; 5 Completely agree

Page 2/3: Consumption pattern after Session 1 (for all 12 products)

"Have you reduced the time you spend on the phone after filling out our initial survey (Session 1 of this study)?

No.; Yes, I spend on the phone about 90% of the time I otherwise would.; Yes, I spend on the phone about 75% of the time I otherwise would.; Yes, I spend on the phone about 50% of the time I otherwise would.; Yes, I spend on the phone less than 50% of the time I otherwise would.

Notes: Similar questions were asked for all 12 products.

Page 3/3: Self-reported data quality

"For the success of this study, it is essential that we analyze only those responses that have been dully answered. Therefore, we would like to know if you answered the questions attentively and in an honest way. Your answers here will not compromise your approval and bonus. Should we use your answers for the following parts of the experiment?"

1. Questions about the size of CO_2 emissions (Parts 5 and 6)

Yes, I paid attention to this part of the study and you should use my answers.; No, I didn't pay much attention to this part of the study and you should not use my answers.

2. Questions about the new scientific estimates (Part 7)

Yes, I paid attention to this part of the study and you should use my answers.; No, I didn't pay much attention to this part of the study and you should not use my answers.

3. Final questionnaire

Yes, I paid attention to this part of the study and you should use my answers.; No, I didn't pay much attention to this part of the study and you should not use my answers.

A.2 Additional Results

A.2.1 Demographic Characteristics

| Age | | | Education | | |
|--------------------------------|-----|----------------|-------------------------------|-----|-------|
| 18-27 | 204 | 0.200 | Less than high school | 8 | 0.008 |
| 28-37 | 235 | 0.230 | High school degree | 109 | 0.107 |
| 38-47 | 177 | 0.173 | Some University but no degree | 286 | 0.280 |
| 48-57 | 166 | 0.162 | Bachelor Degree | 370 | 0.363 |
| 58+ | 240 | 0.235 | Postgradute degree | 247 | 0.242 |
| Gender | | | Household income | | |
| Female | 516 | 0.505 | - \$5.000 | 26 | 0.025 |
| Male | 494 | 0.483 | \$5.000 - \$15.000 | 67 | 0.066 |
| Other | 12 | 0.012 | \$15.000 - \$30.000 | 129 | 0.126 |
| Ethnicity | | | \$30,000 - \$45,000 | 130 | 0.127 |
| Agian | 69 | 0.067 | \$45,000 - \$60,000 | 137 | 0.134 |
| Asian Block | 125 | 0.007 | \$60,000 - \$75,000 | 114 | 0.112 |
| Mixed | 20 | 0.132 0.028 | \$75,000 - \$90,000 | 90 | 0.088 |
| White | 765 | 0.028 | \$90,000 - \$105,000 | 80 | 0.078 |
| Other | 25 | 0.024 | \$105,000 - \$120,000 | 88 | 0.086 |
| Party affiliation | | 0.021 | \$120,000 - \$135,000 | 30 | 0.029 |
| Party affination | | | \$135,000 - \$150,000 | 37 | 0.036 |
| Republican | 152 | 0.149 | \$150,000 - | 92 | 0.090 |
| Republican leaning independent | 67 | 0.066 | | | |
| Independent | 205 | 0.201 | | | |
| Democratic leaning independent | 144 | 0.141 | | | |
| Democratic | 452 | 0.443 | | | |
| Political orientation | | | | | |
| Conservative | 101 | 0.099 | | | |
| Somewhat conservative | 225 | 0.221 | | | |
| Somewhat liberal | 318 | 0.312 | | | |
| Liberal | 376 | 0.369 | | | |

Table A.2: Demographic characteristics.

Notes: 1,022 participants completed Session 1.

| | Sample | Population | |
|-----------|--------|------------|-------------------|
| Age | | | |
| 18-27 | 0.200 | 0.172 | |
| 28-37 | 0.230 | 0.176 | |
| 38-47 | 0.173 | 0.160 | |
| 48-57 | 0.162 | 0.162 | $\chi^2(16) = 20$ |
| 58 + | 0.235 | 0.330 | p = 0.2202 |
| Gender | | | |
| Female | 0.511 | 0.504 | $\chi^2(1) = 2$ |
| Male | 0.489 | 0.496 | p = 0.1573 |
| Ethnicity | | | |
| Asian | 0.070 | 0.064 | |
| Black | 0.139 | 0.142 | $\chi^2(4) = 6$ |
| White | 0.790 | 0.794 | p = 0.1991 |

Table A.3: Representativeness of the sample.

Notes: Population-level data is retrieved from US Census Bureau (2022).



A.2.2 Beliefs about CO₂ Emissions

Figure A.8: Empirical CDFs of beliefs about CO_2 emissions. *Notes*: Vertical dashed lines indicate "true" emission sizes (numbers in parentheses). The *x*-axis is cut at the larger of the true emission size and the bound $Q3 + 1.5 \times IQR$.

| | | | Belief | | |
|----------------------|-----------|-------|--------|--------|------------|
| Product | Emissions | Q1 | Median | Q3 | Under-est. |
| Beer | 0.425 | 0.007 | 0.100 | 0.851 | 0.67 |
| Phone call | 0.451 | 0.006 | 0.082 | 0.648 | 0.71 |
| Microwave | 0.512 | 0.011 | 0.191 | 1.494 | 0.62 |
| Milk | 0.757 | 0.009 | 0.112 | 1.232 | 0.69 |
| Shower | 1.135 | 0.007 | 0.100 | 0.800 | 0.79 |
| Egg | 1.400 | 0.007 | 0.121 | 1.000 | 0.78 |
| Poultry | 1.973 | 0.010 | 0.192 | 1.814 | 0.75 |
| Chocolate | 4.665 | 0.007 | 0.090 | 1.000 | 0.85 |
| Coffee | 12.923 | 0.009 | 0.142 | 1.417 | 0.90 |
| Beef | 19.901 | 0.020 | 0.271 | 2.835 | 0.87 |
| Flight | 88.639 | 0.300 | 5.670 | 98.129 | 0.75 |
| Gas heating | 176.544 | 0.060 | 1.000 | 15.444 | 0.93 |

Table A.4: Summary statistics of elicited (point) beliefs about CO_2 emissions (in kilograms) from 12 consumer products and activities. Cf. Table 2.

Notes: The last column "Under-est." shows the fraction of participants who underestimated the size of emissions.



Figure A.9: Summary statistics of reported CO_2 emissions in (A) miles and (B) kilograms. *Notes*: Medians and IQRs are plotted on a logarithmic scale. The actual amount of CO_2 emissions from driving one mile by car is 291 grams. The participants' beliefs about CO_2 emissions from driving one mile by car were elicited in Part 1 of the study.

A.2.3 Willingness to Mitigate CO₂ Emissions

Summary statistics

| Emission size | Mean | SD | SEM | Q1 | Median | Q3 | Interior | \$0 | \$134 |
|---------------|-------|-------|------|-------|--------|--------|----------|-----|-------|
| 1 | 40.94 | 46.22 | 1.45 | 3.90 | 20.08 | 67.00 | 835 | 80 | 107 |
| 5 | 45.42 | 45.22 | 1.41 | 6.70 | 27.93 | 73.47 | 848 | 72 | 102 |
| 20 | 51.73 | 44.35 | 1.39 | 12.15 | 40.20 | 80.81 | 854 | 68 | 100 |
| 50 | 57.07 | 45.33 | 1.42 | 14.75 | 50.00 | 93.56 | 845 | 59 | 118 |
| 100 | 61.79 | 46.21 | 1.45 | 18.76 | 59.19 | 100.50 | 834 | 59 | 129 |
| 200 | 66.22 | 47.90 | 1.50 | 20.01 | 67.00 | 110.00 | 820 | 57 | 145 |
| 450 | 70.08 | 49.57 | 1.55 | 20.01 | 73.15 | 120.60 | 801 | 58 | 163 |
| 700 | 74.54 | 51.48 | 1.61 | 20.10 | 80.53 | 129.99 | 749 | 58 | 215 |

Table A.5: Summary statistics of willingness to mitigate (N = 1, 022).

Notes: The last three columns show the number of interior WTMs and corner WTMs, respectively.



Figure A.10: Willingness to mitigate and demographic characteristics. *Notes*: Points represent sent the means and bars represent SEMs. In panel C, "Republican-leaning independent" and "Democratic-leaning independent" are grouped into Republican and Democratic, respectively. In panel D, "somewhat liberal" and "somewhat conservative" are grouped into liberal and conservative, respectively.

Table A.6: Summary statistics of willingness to mitigate. Participants whose WTMs are all strictly between 0 and 100 are included (N = 686). Cf. Table A.5.

| Emission size | Mean | SD | SEM | Q1 | Median | Q3 |
|---------------|-------|-------|------|-------|--------|--------|
| 1 | 30.83 | 34.26 | 1.31 | 5.00 | 17.42 | 46.81 |
| 5 | 34.82 | 32.94 | 1.26 | 6.92 | 26.71 | 52.68 |
| 20 | 41.15 | 33.13 | 1.26 | 13.34 | 33.52 | 64.96 |
| 50 | 45.70 | 34.42 | 1.31 | 14.81 | 40.20 | 69.87 |
| 100 | 50.24 | 36.11 | 1.38 | 18.43 | 45.03 | 77.91 |
| 200 | 54.51 | 38.52 | 1.47 | 20.01 | 51.90 | 88.88 |
| 450 | 58.89 | 41.21 | 1.57 | 20.01 | 58.81 | 93.82 |
| 700 | 64.03 | 44.59 | 1.70 | 20.03 | 63.77 | 106.54 |



Figure A.11: Willingness to mitigate and demographic characteristics. *Notes*: Participants whose WTMs are all strictly between 0 and 100 are included (N = 686). Cf. Figure A.10. Points represent the means and bars represent SEMs. In panel C, "Republican-leaning independent" and "Democratic-leaning independent" are grouped into Republican and Democratic, respectively. In panel D, "somewhat liberal" and "somewhat conservative" are grouped into liberal and conservative, respectively.

Shape of the individual-level WTM curve

We elicited WTM for eight levels of CO₂ emissions, that correspond to emissions generated by driving 1, 5, 20, 50, 100, 200, 450, and 700 miles by car. We observe a concave WTM curve at the aggregate level (Figure 3). Here we classify the shape of the individuallevel WTM curve. Let (e_i, w_i) denote the pair of emission size e_i and the reported WTM $w_i \in [0, 134]$, for each $i = 1, \ldots, 8$.

Step 1. For each participant, we construct a piecewise linear WTM curve by linear interpolation. The WTM curve has seven line segments. Let s_i be the slope of the *i*th line segment given by

$$s_i = \frac{w_{i+1} - w_i}{e_{i+1} - e_i}.$$

We apply the following rule sequentially to classify the shape of the WTM curve.² We say that a WTM curve is

- constant if $s_i = 0$ for all i;
- almost constant if $\max w_i \min w_i \leq 1.34$ that is deviation for a constant value are smaller than 1% of the range of possible answers;
- decreasing if $s_i \leq 0$ for all *i* with at least one strict inequality;
- concave if $s_{i+1} \leq s_i$ for all *i* with at least one strict inequality;
- convex if $s_{i+1} \ge s_i$ for all *i* with at least one strict inequality;
- *increasing* if $s_i \ge 0$ for all *i* with at least one strict inequality;
- *non-monotonic* if it is none of the above.

There are 210 (almost) constant, 34 decreasing, 107 concave, 2 convex, and 293 increasing, WTM curves. The remaining 376 WTM curves are non-monotonic.

Step 2. Let us focus on 293 participants whose WTM curves are increasing but neither concave nor convex. There are 59 participants whose WTMs are top-censored at \$134. Let \bar{w} denote the largest WTM. If $\bar{w} = 134$, let \bar{e} be the smallest emission level e_i at which $w_i = 134$. If $\bar{w} < 134$, let $\bar{e} = e_8$. Now, we draw a chord connecting two points (e_1, w_1) and (\bar{e}, \bar{w}) . We say that a WTM curve is $concave^{\dagger}$ ($convex^{\dagger}$) if the points (e_i, w_i) for which $e_i \leq \bar{e}$ lie above (below) the chord. There are 212 concave^{\dagger} and 6 convex^{\dagger} WTM curves.

²This means that *concave* and *convex* WTM curves in this classification are non-decreasing, and *increasing* WTM curves are neither concave nor convex.



Figure A.12: Classification of individual-level WTM curves.

Step 3. Finally, we turn to the remaining 376 participants whose WTM curves are non-monotonic.

First, we say that a WTM curve is *almost constant*^{\dagger} if the difference between the largest WTM and the smallest WTM is less than \$4.02 (3% of the maximum possible range, \$134). This relaxation captures the shape of additional 47 WTM curves.

Second, we say that a WTM curve is *almost increasing*^{\dagger} (*almost decreasing*^{\dagger}) if the piecewise linear WTM curve has only one line segment with a negative (positive) slope, and the relative change of WTM on that segment is "not too large".³ This relaxation captures the shape of additional 42 WTM curves.

Classification summary. Allowing some margin of error, we have the following (mutually exclusive) classification of individual-level WTM curves: 257 are constant, 319 are concave, 8 are convex, 107 are increasing, 44 are decreasing, and 287 are non-monotonic.

³Suppose the sign of the slopes change on the segment connecting (e_j, w_j) and (e_{j+1}, w_{j+1}) . We require the absolute relative change to be less than 10%, i.e., $|(w_{j+1} - w_j)/w_j| \le 0.1$.

A.3 Quantify the Effect of Information

A.3.1 Recover Subjective Belief Distribution

The goal of the belief elicitation task is to elicit the participant's subjective belief distribution F about CO₂ emissions from each of the 12 products.

In the first part of the belief elicitation task, we elicited a point estimate for the modal value of the emissions. Let $m \in \mathbb{R}_+$ denote a participant's belief about how much CO₂ a given product emits relative to driving one mile by car. In the second part of the task, we elicited the subjective probability distribution about the size of the CO₂ emissions. We first constructed five bins around the reported modal belief m,

$$[0, t_1), [t_1, t_2), [t_2, t_3), [t_3, t_4), [t_4, \infty),$$

where each t_i is the threshold separating bins, given by $t_1 = 0.85m$, $t_2 = 0.95m$, $t_3 = 1.05m$, and $t_4 = 1.15m$, as illustrated below.



The participant then allocated 20 balls into these five bins. Let $p_i \in [0, 1]$ denote the probability assigned to the *i*th bin (i.e., 1/20 times the number of balls in the bin). The collection $(m, (p_1, \ldots, p_5))$ represents the response from the participant, from which we recover the subjective belief distribution F.

Let $q_i = \sum_{j=1}^{i} p_j$ be the cumulative probability for the emission size being below threshold t_i . Assuming that there is no measurement error, we have $F(y \leq t_i) = q_i$ for each i = 1, ..., 4. Given the observation $\{(t_1, q_1), \ldots, (t_4, q_4)\}$, we can bound the cumulative distribution function (CDF) of the subjective belief F by the gray shaded rectangles as illustrated below.



We fit a *cubic interpolating spline* following Breunig et al. (2021), which took the idea from Bellemare, Bissonnette and Kröger (2012). The detail will not be shown here, but this method interpolates observed quantile points by a smooth and monotonic curve. To apply this procedure, we need some assumptions about the boundaries of the support of F. We take $t_0 = 0.75m$ and $t_5 = 1.25m$, where t_0, t_5 are such that $t_0 = \sup_t \{t \le t_1 : F(y \le t) = 0\}$ and $t_5 = \inf_t \{t \ge t_4 : F(y \le t) = 1\}$.

A.3.2 Expected WTM

We elicited the participants' willingness to mitigate (WTM) for eight levels of CO_2 emissions, corresponding to the emissions generated by driving 1, 5, 20, 50, 100, 200, 450, and 700 miles by car. We recover the participant's WTM function w by linear interpolation.

Given a WTM function w and a subjective belief distribution F about CO₂ emissions associated with a given product, we can calculate the *expected WTM*,

$$\overline{W}(w,F) = E_F[w(c)] = \int w(c) \mathrm{d}F(c),$$

by numerically evaluating the integral with the Adaptive Gauss-Kronrod Quadrature.



A.3.3 Prediction for Beef and Poultry

Figure A.13: Predicted effect of information provision for each demographic group. (Top) 7 oz of meat products as in the Climate Survey. (Bottom) 5 lb (80 oz) of meat products as in the Meat Experiment. *Notes*: (D) "Somewhat liberal" and "somewhat conservative" are grouped into liberal and conservative, respectively. (E) "Are you prepared to reduce your future consumption of beef/poultry in light of its CO_2 emission footprint?" (F) "How difficult would it be to reduce your current consumption of beef/poultry by half?" (G) "How many times do you eat beef/poultry per week?" Bars indicate SEM.

A.4 Information Treatment

A.4.1 Assignment

| Product | Info | No Info |
|-------------------------|------|---------|
| Beer | 246 | 776 |
| Phone call | 245 | 777 |
| Microwave | 256 | 766 |
| Milk | 254 | 768 |
| Shower | 255 | 767 |
| Egg | 248 | 774 |
| Poultry | 211 | 811 |
| Chocolate | 258 | 764 |
| Coffee | 232 | 790 |
| Beef | 251 | 771 |
| Flight | 245 | 777 |
| Gas heating | 266 | 756 |

Table A.7: Number of participants in each treatment.

Notes: Treatments are on the subject-product pair level. If a subject is informed about a particular product's emissions, the pair is in the *Info* treatment, if not it is in the *No Info* treatment.



A.4.2 Intentions and Actual Meat Consumption

Figure A.14: Impact of information on intentions and consumption across treatments. *Notes*: (AC) Intentions to reduce beef/poultry consumption reported in Session 1, after information provision in the *Info* treatment. (BD) Actual consumption changes in Session 2. Panels A and B are identical to Figure 7, repeated here for ease of comparison.



Figure A.15: The effect of information on the intended and actual reduction of consumption. Participants who received information but did not update their beliefs in the right direction are excluded. Cf. Figure 8. *Notes*: Logistic regression was run on each product separately. The dependent variable is a binary indicator "intend to reduce/actually reduced consumption of [product]" and the independent variable is the indicator "received information about CO_2 emissions from [product]". Bars indicate 95% CI. Numbers in parentheses indicate the number of observations.

B Butcher Experiment

B.1 Design Details

B.1.1 Information Screen



Figure B.1: Information screens in the Info treatment. (Left) The first product (poultry in this case). (Right) The second product (beef in this case).



Figure B.2: Screen for the NoInfo treatments.

B.1.2 WTP Elicitation Interface



Figure B.3: Willingness to pay elicitation screen for the beef product in the Info treatments. (Left) On the first list, the monetary bonus in the right option ranged from \$0 to \$100 in \$10 increment. (Right) The second list "zoomed in" around the switching point and asked another nine questions. *Notes*: In the NoInfo treatments, information about the true emission size is shown as **?**.

Initial screening questions

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- 1. What is your age?
- 2. What sex were you assigned at birth, such as on an original birth certificate? Male; Female
- 3. What is your ethnicity? White; Black; Asian; Mixed; Other
- 4. In which state do you live?
- 5. What are the first 5 digits of your ZIP code?

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- Generally speaking, where do you place yourself on the Liberal-Conservative political spectrum? Liberal; Somewhat liberal; Somewhat conservative; Conservative
- Generally speaking, how do you consider yourself?
 A Republican; A Republican-leaning Independent; A Democrat-leaning Independent; A Democrat
- 3. What is the highest level of school you have completed or the highest degree you have received?

Less than high school degree; High school degree; Some University but no degree; Bachelor's degree; Postgraduate degree

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- 1. How many people live in your household (including yourself)?
- What was the combined income of all the members of your household last year? Below \$5,000; \$5,000 to \$15,000; \$15,000 to \$30,000; \$30,000 to \$45,000; \$45,000 to \$60,000; \$60,000 to \$75,000; \$75,000 to \$90,000; \$90,000 to \$105,000; \$105,000 to \$120,000; \$120,000 to \$135,000; \$135,000 to \$150,000; \$150,000 and up
- 3. Do you eat meat? Yes; No

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- 1. Do you live with a partner? Yes; No
- 2. What is the gender of your partner? I don't have a partner; Male; Female; Other
- What is the education level of your partner?
 I don't have a partner; Less than high school degree; High school degree; Some University but no degree; Bachelor's degree; Postgraduate degree
- 4. This is an attention check, please answer that you strongly agree. Strongly disagree; Disagree; Neither agree nor disagree; Strongly agree

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1. Which device are you using to complete this study? *Phone; Tablet; Laptop or Desktop*

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| Please answer the | | | | | |
|---|---|---|--|--|--|
| quest | ions b | elow | | | |
| Ť | 6 | | | | |
| а | b | с | | | |
| Ö | 6 | 6 | | | |
| d | е | f | | | |
| Which of not represer Puppy is | the pictures at fruits or to dog as | above does vegetables? kitten is to | | | |
| | | IEXT | | | |

Post-experiment questionnaire

Notes: MEAT1 below is either beef or poultry, depending on the first product the participant saw, and MEAT2 is the other meat product.

- 1. How many times do you eat MEAT1 per week?
- 2. Do you intend to reduce your MEAT1 consumption in light of its CO₂ emissions? No.; Yes, I am prepared to reduce my current consumption by about 10%.; Yes, I am prepared to reduce my current consumption by about 25%.; Yes, I am prepared to reduce my current consumption by about 50%.; Yes, I am prepared to reduce my current consumption by more than 50%.
- 3. How difficult would it be to reduce your current MEAT1 consumption by half? Not applicable. I don't consume this product.; Very easy.; Easy.; Neither easy nor difficult.; Difficult.; Very difficult.
- 4. If you wanted to avoid the CO₂ impact of MEAT1, how would you change your consumption patterns? Choose the answer that most applies. I would eat more lamb and pork.; I would eat more MEAT2.; I would eat more vegetarian dishes.; I would not reduce my consumption of poultry.; I would eat less MEAT1 without necessarily eating more of anything else.
- 5. Do you trust that the researchers will indeed ship meat products as promised in the instructions?
 - 1 Not at all; 2; 3; 4; 5 Completely
- 6. How severe do you consider the problem of climate change?
 1 Not a problem; 2; 3; 4; 5 A huge problem

B.2 Preregistration



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Information provision about CO2 emissions and meat consumption. (#92070)

Created: 03/25/2022 03:41 AM (PT)

This is an anonymized copy (without author names) of the pre-registration. It was created by the author(s) to use during peer-review. A non-anonymized version (containing author names) should be made available by the authors when the work it supports is made public.

1) Have any data been collected for this study already?

No, no data have been collected for this study yet.

2) What's the main question being asked or hypothesis being tested in this study?

Correcting perceptions about CO2 emissions associated with meat products will affect demand for these products. In particular, in previous work we have used data on a) misperceptions about CO2 emissions and b) willingness to pay to avoid CO2 emissions to predict the effect of providing information about the emissions. Following these predictions, we expect that providing information about CO2 emissions will have a larger negative effect on the demand for beef than on the demand for chicken.

3) Describe the key dependent variable(s) specifying how they will be measured.

The key dependent variable is the willingness to pay (WTP) for a package of meat products. Willingness to pay is measured by an incentive compatible multiple price list mechanism.

4) How many and which conditions will participants be assigned to?

The experiment has two parts. The first part contains our main design, which is a 2x2:

·27The meat package consists of either beef products (sirloin steaks) or chicken products (chicken breasts).

BParticipants either obtain a scientific estimate of the emissions associated with the package ("info" treatment) or not ("no info" treatment).
These four conditions are between-subjects.

In the second part of the experiment (again a 2x2), we will ask each subject for their WTP for the alternative meat product. In the information treatment, this implies that subjects now have knowledge about both beef and chicken products ("double info" treatment).

5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.

We will regress the WTP for both meat products in Part 1 of the experiment on a treatment dummy for information provision and meat type, and we will test the interaction of meat type and information provision. Our regression analysis will control for covariates like political orientation and household income.

6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.

We will not exclude observations. However, we will conduct robustness checks where we exclude people who were not able to reproduce the information we gave them in the info treatments or that did not give us their address for sending the meat products.

7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.

We aim at collecting 2000 observations, 500 in each treatment cell. We consider an observation collected if a participant completed the first part of the experiment.

8) Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)

We conduct a questionnaire where we ask several personal characteristics. We will correlate these characteristics with WTP. We will study how people update beliefs about CO2 emissions in response to the information and will study whether prior and posterior beliefs affect purchases.

We will also conduct heterogeneity analyses by subgroups that have been shown to have a higher elasticity of meat consumption, or, per our previous survey, have shown particularly large predicted effects of information.

As robustness checks for the model specification, we will conduct Tobit regressions with censoring above. We will also look quantile regressions for 10 WTP quantiles, and focus on the interaction effects among the middle quantiles that are away from the extremes of the WTP distribution.

Finally, to understand the impact of information about substitutes, we will compare the results of the first part of the experiment (info vs. no info), with the results of the second part (double info vs. no info).

Available at https://aspredicted.org/KCR JYN



B.3 Additional Results

B.3.1 Willingness to Pay for the First Product



Figure B.4: Distribution of the willingness to pay for the first meat product.

B.3.2 Belief about the Second Product



Figure B.5: Beliefs about CO_2 emissions from two meat products. *Notes*: We focus on the data from the second part of the experiment (panels AC: "poultry first" treatments; panels BD: "beef first" treatments). Vertical lines correspond to the "true" size of CO_2 emissions (dash-dotted: poultry, 15.4 miles; dashed: beef, 155 miles). Cf. Figure 11.

B.3.3 Demographic Characteristics

| | | | BeefF | First | Poultry | First |
|--------------------------------|------|-------|-------|-------|---------|-------|
| | A | All | | Info | NoInfo | Info |
| Age | | | | | | |
| 18-27 | 367 | 0.176 | 0.174 | 0.177 | 0.189 | 0.165 |
| 28-37 | 364 | 0.175 | 0.161 | 0.185 | 0.156 | 0.198 |
| 38-47 | 332 | 0.160 | 0.153 | 0.162 | 0.166 | 0.158 |
| 48-57 | 356 | 0.171 | 0.191 | 0.181 | 0.158 | 0.154 |
| 58+ | 662 | 0.318 | 0.320 | 0.296 | 0.331 | 0.325 |
| Gender | | | | | | |
| Male | 1008 | 0.484 | 0.489 | 0.483 | 0.484 | 0.482 |
| Female | 1073 | 0.516 | 0.511 | 0.517 | 0.516 | 0.518 |
| Ethnicity | | | | | | |
| Asian | 68 | 0.033 | 0.036 | 0.029 | 0.029 | 0.037 |
| Black | 265 | 0.127 | 0.146 | 0.117 | 0.106 | 0.140 |
| Mixed | 79 | 0.038 | 0.027 | 0.035 | 0.050 | 0.041 |
| White | 1605 | 0.771 | 0.769 | 0.785 | 0.778 | 0.753 |
| Other | 64 | 0.031 | 0.023 | 0.035 | 0.037 | 0.029 |
| Party affiliation | | | | | | |
| Republican | 595 | 0.286 | 0.288 | 0.312 | 0.270 | 0.274 |
| Republican leaning independent | 169 | 0.081 | 0.072 | 0.073 | 0.094 | 0.086 |
| Independent | 404 | 0.194 | 0.188 | 0.165 | 0.202 | 0.222 |
| Democratic leaning independent | 160 | 0.077 | 0.078 | 0.096 | 0.073 | 0.060 |
| Democratic | 753 | 0.362 | 0.375 | 0.354 | 0.360 | 0.358 |
| Political orientation | | | | | | |
| Conservative | 434 | 0.209 | 0.195 | 0.213 | 0.216 | 0.210 |
| Somewhat conservative | 662 | 0.318 | 0.320 | 0.338 | 0.289 | 0.325 |
| Somewhat liberal | 579 | 0.278 | 0.278 | 0.277 | 0.291 | 0.267 |
| Liberal | 406 | 0.195 | 0.206 | 0.171 | 0.204 | 0.198 |
| Education | | | | | | |
| Less than high school | 48 | 0.023 | 0.023 | 0.029 | 0.019 | 0.021 |
| High school degree | 527 | 0.253 | 0.259 | 0.248 | 0.252 | 0.253 |
| Some University but no degree | 661 | 0.318 | 0.324 | 0.319 | 0.337 | 0.290 |
| Bachelor Degree | 546 | 0.262 | 0.267 | 0.275 | 0.225 | 0.282 |
| Postgradute degree | 299 | 0.144 | 0.127 | 0.129 | 0.166 | 0.154 |
| Household income | | | | | | |
| - \$5,000 | 68 | 0.033 | 0.025 | 0.025 | 0.042 | 0.039 |
| \$5,000 - \$15,000 | 130 | 0.062 | 0.062 | 0.044 | 0.067 | 0.076 |
| \$15,000 - \$30,000 | 339 | 0.163 | 0.186 | 0.156 | 0.150 | 0.160 |
| \$30,000 - \$45,000 | 313 | 0.150 | 0.129 | 0.163 | 0.158 | 0.152 |
| \$45,000 - \$60,000 | 322 | 0.155 | 0.136 | 0.165 | 0.160 | 0.158 |
| \$60,000 - \$75,000 | 220 | 0.106 | 0.098 | 0.112 | 0.106 | 0.107 |
| \$75,000 - \$90,000 | 188 | 0.090 | 0.102 | 0.081 | 0.092 | 0.086 |
| \$90,000 - \$105,000 | 109 | 0.052 | 0.055 | 0.050 | 0.054 | 0.051 |
| \$105,000 - \$120,000 | 93 | 0.045 | 0.051 | 0.037 | 0.052 | 0.039 |
| \$120,000 - \$135,000 | 67 | 0.032 | 0.049 | 0.033 | 0.025 | 0.021 |
| \$135,000 - \$150,000 | 89 | 0.043 | 0.030 | 0.065 | 0.037 | 0.039 |
| \$150,000 - | 143 | 0.069 | 0.076 | 0.069 | 0.056 | 0.074 |

Table B.1: Demographic characteristics.

 $\it Notes:$ 2,081 participants completed Part 1 of the study. The last four columns present the proportion of subjects in each treatment.

| | Sample | Population | |
|--------|--------|------------|-------------------|
| Age | | | |
| 18-27 | 0.176 | 0.172 | |
| 28-37 | 0.175 | 0.176 | |
| 38-47 | 0.160 | 0.160 | |
| 48-57 | 0.171 | 0.162 | $\chi^2(16) = 20$ |
| 58 + | 0.318 | 0.330 | p = 0.2202 |
| Gender | | | |
| Male | 0.484 | 0.489 | $\chi^{2}(1) = 2$ |
| Female | 0.516 | 0.511 | p = 0.1573 |

Table B.2: Representativeness of the sample.

Notes: Population-level data is retrieved from US Census Bureau (2022).
B.3.4 Treatment Effect

We estimate the following linear model,

$$WTP_i = \beta_0 + \beta_1 T_i + \gamma X_i + \varepsilon_i,$$

where $T_i = 1$ if participant *i* is assigned to the Info treatment, X_i is a vector of dummy variables capturing demographic characteristics of participant *i*, and ε_i is an error term.

| | WTP (beef) | | | WTP (poultry) | | |
|--|---------------------------|---------------------------|--|---------------------------|---------------------------|--|
| - | (1) | (2) | (3) | (4) | (5) | (6) |
| Info | 2.743 (2.285) | 2.907 (2.281) | 2.622 (2.305) | -2.028 (2.162) | -1.944 (2.151) | -2.395 (2.178) |
| Age | | 0.170^{**} (0.067) | 0.216^{***} (0.068) | | 0.189^{***} (0.061) | 0.229^{***} (0.066) |
| Female | | -5.400^{**} (2.276) | -5.287^{**} (2.312) | | -3.712^{*} (2.159) | -3.892^{*} (2.201) |
| Liberal | | -0.753 (2.296) | -0.297 (2.366) | | 1.064 (2.158) | 0.025 (2.223) |
| Belief (beef) | | -0.010 (0.012) | -0.007 (0.013) | | | |
| Above-median consumption (beef) | | | 6.493^{***} (2.410) | | | |
| Intention to reduce (beef) | | | $ \begin{array}{c} -0.412 \\ (0.979) \end{array} $ | | | |
| Difficult to reduce (beef) | | | 2.140^{**} (1.038) | | | |
| Belief (poultry) | | | | | $0.009 \\ (0.007)$ | $0.008 \\ (0.008)$ |
| Above-median consumption (poultry) | | | | | | 3.433 (2.345) |
| Intention to reduce (poultry) | | | | | | $1.330 \\ (1.000)$ |
| Difficult to reduce (poultry) | | | | | | -0.452 (0.993) |
| Constant | 32.225^{***} (1.590) | 27.697^{***} (4.007) | 16.869^{***} (5.263) | $29.517^{***} \\ (1.544)$ | 21.795^{***} (3.586) | $ \begin{array}{c} 18.737^{***} \\ (5.310) \end{array} $ |
| First product Observations R^2 | Beef 1,048 0.001 | Beef 1,048 0.014 | Beef 1,011 0.032 | Poultry 1,033 0.001 | Poultry 1,033 0.013 | Poultry 1,005 0.018 |

Table B.3: Effect of information on the willingness to pay for meat products.

Notes: Robust standard errors are reported in parentheses. *: p < 0.1; **: p < 0.05; ***: p < 0.01.

Subgroup analysis. We estimate the following linear model for each demographic group,

$$WTP_i = \beta_0 + \beta_1 T_i + \varepsilon_i,$$

where $T_i = 1$ if participant *i* is assigned to the Info treatment and ε_i is an error term. Estimated coefficients and their 95% confidence intervals are plotted in Figure B.6 below.



Figure B.6: Effect of information on WTP for meat products. *Notes*: Estimated coefficients and 95% confidence intervals are plotted. Cf. Figures 5 and A.13. (D) "Somewhat liberal" and "somewhat conservative" are grouped into liberal and conservative, respectively. (E) "Do you intend to reduce your consumption of beef/poultry in light of its CO_2 emissions?" (F) "How difficult would it be to reduce your current consumption of beef/poultry by half?" (G) "How many times do you eat beef/poultry per week?"

B.3.5 Stated Intentions about Future Consumption

| | (1) | (2) |
|--------------------|------------------|------------------|
| | Beef | Poultry |
| Information | 0.017 | -0.071 |
| | (0.095) | (0.098) |
| | [-0.170, 0.203] | [-0.264, 0.121] |
| Butcher experiment | 0.257^{***} | 0.271*** |
| | (0.092) | (0.094) |
| | [0.077, 0.438] | [0.087, 0.454] |
| Constant | -0.196^{***} | -0.269^{***} |
| | (0.067) | (0.066) |
| | [-0.328, -0.065] | [-0.399, -0.139] |
| Observations | 2,035 | 2,029 |
| Log-likelihood | -1,405.229 | -1,395.809 |

Table B.4: The effect of information about emissions on stated intention to reduce meat consumption.

Notes: Logistic regression was run on each product separately. The dependent variable is a binary indicator "intend to reduce consumption of [product]" and the independent variables are the indicator "received information about CO_2 emissions from [product]" and the indicator for the Butcher experiment. Robust standard errors are reported in parentheses. 95% confidence intervals are reported in square brackets. *: p < 0.1; **: p < 0.05; ***: p < 0.01.

C Instructions for the Climate Survey



Figure C.1: Timeline of the climate survey.

C.1 Session 1: Introduction

| Welcome! Welcome! University of Amsterdam | In the study, we will mainly ask you questions related to climate change and CO_2 emissions. | | |
|---|--|--|--|
| For this study, it is important that for every question you give us your best guess without asking anyone else or using any other form of help. | This study runs over two days: • Today: Session 1 - 65 minutes survey • 16th December: Session 2 - 25 minutes survey The total reward for this study is £10.00 (~\$13.10) In addition, you can win a bonus worth several pounds | | |
| We will approve your submission only if you complete the surveys on both days. You must complete Session 2 between Wednesday 16th December at 12 noon ET (11.00 am CT, 10.00 am MT, 9.00 am PT) and Thursday 17th December 3.00 pm ET (2.00 pm MT, 1.00 pm MT, 12 noon PT). We will send you a reminder on Prolific when Session 2 is open. | Today you will complete parts 1, 2, 3, 4 of the study and a questionnaire. In Session 2, you will complete parts 5, 6, and 7. In each part, you will make some decisions or answer questions. | | |

| At the end of the study the computer will randomly select one question from the entire study. You will get a bonus depending on your answer to that question. | The computer will select a question from: Part 1 with 10% probability Part 2 with 20% probability Part 3 with 10% probability Part 4 with 20% probability Part 5 with 20% probability Part 6 with 10% probability Part 7 with 10% probability |
|--|--|
| The Ethics Committee Economics and Business (EBEC) of the University of Amsterdam has approved our study (Protocol number EC 20200810100845). You can contact our Ethics Committee writing to secbs-abs@uva.nl. To receive the approval we committed not to use misleading or untruthful instructions. | |

1. You will be paid only if you conclude all the parts of this study. The study has two sessions.

True; False

- At the end of the study, the computer will randomly select one question. You will receive a bonus depending on your answer to this question. *True; False*
- 3. For this study, it does not matter if you ask for help to answer the questions. *True; False*
- According to the ethical protocol under which we run this study, all the instructions you read must be truthful and not misleading. *True; False*

C.2 Part 1

| Part 1 | Scientific studies have investigated the causes and the effects of climate change. In particular they estimated: The global warming from pre-industrial era. The consequences of a 2°C global warming for humans. The CO₂ generated by several human activities. | |
|--|--|--|
| The most important measure of the future consequences of emitting a given amount of CO₂ today is called the social cost of carbon . | The social cost of carbon puts a dollar value on the fact that: CO₂ emissions have an impact on the earth's climate and they lead to rises in sea levels, changes in rainfall patterns, a higher frequency of extreme weather events etc. All these events affect human health and productivity. CO₂ emissions imply a hidden cost: emitting CO₂ today requires reducing consumption tomorrow to avoid a global warming of more than 2°C. | |
| In Part 1, we will ask you to guess the value of several scientific estimates. | Your Scientific guess estimate We will compare your guess to the scientific estimate. | |



1. The social cost of CO_2 emissions is due both to the consequences of climate change and to the cost of reducing consumption in the future to avoid global warming of more than 2°C.

 $True;\ False$

- If one of the questions from Part 1 is selected for payment, you can win a bonus of £____.
- 3. If one of the questions from Part 1 is selected for payment, you will win the bonus: Only if your answer is below the scientific estimate.; Only if your answer is above the scientific estimate.; Only if your answer is equal to the scientific estimate with an error of no more than ±5%.; Only if your answer is exactly equal to the scientific estimate.

C.3 Part 2





- 1. In this part, you need to compare the emissions produced by several actions with the emissions produced by driving 1 mile by car. True; False
- 2. You will need to compare the emissions of a flight from New York to Chicago with the emissions of driving a car.

True; False

C.4 Part 3







Optional instructions about the incentives



- 1. Your task in this part is to distribute balls across bins.
- The number of balls that you place in each bin represents your level of certainty about the chance that the scientific estimate is in that bin. *True; False*
- You maximize the chances of winning the bonus if you distribute the balls according to your level of certainty. *True; False*
- 4. It is best for you to put many balls into a bin only if: You think there are high chances that the scientific estimate is in that bin.; You think there are low chances that the scientific estimate is in that bin.
- If you are not very certain in your answer, then: You should put all of your balls in one bin.; You should put balls in several of the bins.

C.5 Part 4





Optional instructions about the incentives



1. The offered bonus is randomly selected. True; False

is lower than the requested bonus for that decision.

- 2. Suppose a decision from Part 4 is selected for payment. Which is true? I will receive the requested bonus for that decision.; I will receive the offered bonus.; I will receive the offered bonus only if the offered bonus is higher than my requested bonus for that decision.; I will receive the offered bonus only if the offered bonus is lower than my requested bonus for that decision.
- 3. Suppose a decision from Part 4 is selected for payment. Which is true about the emissions specified in that decision? The emissions will be implemented.; The emissions will never be implemented.; The emissions will be implemented only if the offered bonus is higher than the requested bonus for that decision.; The emissions will be implemented only if the offered bonus
- 4. The amount of CO_2 in the atmosphere might change due to your decisions in this study.

True; False

- 5. When the study is over we will send you the link with the proof of our donation to Carbonfund.org. True; False
- 6. If you strongly feel you don't want to implement emissions then it is best for you to:

To choose a high requested bonus.; To choose a low requested bonus.

7. If you don't feel strongly about implementing emissions then it is best for you to: To choose a high requested bonus.; To choose a low requested bonus.

C.6 Session 2: Introduction



C.7 Part 5





1. In Part 5, you need to guess the value of:

TThe same scientific estimates you were asked about in Session 1.; A new scientific estimate of the CO_2 emissions of some products.

 You will need to compare the emissions of a flight from New York to Chicago with the emissions of driving a car. *True; False*

C.8 Part 6





- 1. Your task in this part is to distribute balls across bins.
- The number of balls that you place in each bin represents your level of certainty about the chance that the scientific estimate is in that bin. *True; False*
- You maximize the chances of winning the bonus if you distribute the balls according to your level of certainty. *True; False*
- 4. It is best for you to put many balls into a bin only if: You think there are high chances that the scientific estimate is in that bin.; You think there are low chances that the scientific estimate is in that bin.
- If you are not very certain in your answer, then: You should put all of your balls in one bin.; You should put balls in several of the bins.

D Instructions for the Butcher Experiment

We present the instructions for the BeefFirst treatments in which sirloin steaks are offered in Part 1 and chicken breasts are offered in Part 2. The content of the instructions for the PoultryFirst treatments is identical except for the order of the products.



Figure D.1: Timeline of the butcher experiment.

D.1 Introduction





- 1. If you complete this study, you can win an Amazon voucher worth \$500. $True;\ False$
- According to the ethical protocol under which we run this study, all the instructions you read must be truthful and not misleading. *True; False*

D.2 Part 1



Comprehension question

"When we started this study, what was the price of the meat that you can buy in this study?"

\$65; \$80; \$100



Prior belief



"I think 1 lb of beef meat emits as much CO_2 as driving miles by car."

Willingness to pay





1. If you are selected to receive either the meat or the bonus AND you chose **YES** for the randomly selected bonus amount, then you will receive 10 sirloin steaks at your home address.

True; False

 If you are selected to receive either the meat or the bonus AND you chose NO for the randomly selected bonus amount, then you will receive an email with an Amazon voucher equivalent to the randomly selected bonus amount. *True; False*

Posterior belief



"I think 1 lb of beef meat emits as much CO_2 as driving miles by car."

D.3 Part 2


Prior belief



"I think 1 lb of chicken meat emits as much CO_2 as driving miles by car."

Willingness to pay

| How much are you willing to pay for 10 chicken breasts? | Decision interface |
|---|---|
| You are now able to buy 10 premium chicken breasts worth \$100. Similar to Part 1, you will make a series of decisions between an amount of money and receiving a free shipment of 10 | The decision interface for Part 2 is the same as for Part 1. |
| chicken breasts from Porter Road. | On the next screen, please indicate |
| Your decisions may have real consequences: as before, if your decisions in this part are selected, then you will receive either money or the shipment of chicken breasts. | the chicken breasts (left column) or the bonus (right column). |

Posterior belief



"I think 1 lb of chicken meat emits as much CO_2 as driving _____ miles by car."

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