

## **Supplemental Material for ‘Responsible antibiotic use labeling and consumers’ willingness to buy and pay for fluid milk’**

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## Survey study

### Informed consent

In this phone-based survey interviewers read the following to participants:

Hello, I'm [FILL INTERVIEWER NAME] calling from Cornell University. Cornell is conducting a national public opinion poll called the Cornell National Social Survey. We are collecting the opinions of people on a wide range of topics, and it's very important to us that we get your input on these key issues. Your household has been specially selected to be part of this important study. [IF LANDLINE PHONE] In order to be sure everyone has the same opportunity to participate, we'd like to speak with the person in your household who is at least 18 years of age and who has had the most recent birthday. Would that be you or someone else?

[REPEATED FOR APPROPRIATE RESEPDENT IF NEEDED]

Cornell is conducting a national public opinion poll called the Cornell National Social Survey. We are collecting the opinions of people on a wide range of topics and it is very important to us that we get your input on these key issues. The survey usually takes around 20 minutes.

[INTERVIEWER READ THIS STATEMENT BEFORE PROCEEDING]

Before we begin, there are a few points I need to cover: I want to assure you that all the information you give will be kept completely confidential and that none of it will be released in any way that would permit identification of you. Your participation in this study is, of course, voluntary, and you may choose not to participate at any time. If there is any question you would prefer not to answer, just tell me and we will go on to the next question.

Just a few more things: I want to let you know this research is being overseen by Stephanie Slate, manager of Cornell's Survey Research Institute. If you have questions about this study, you may contact Stephanie at [srs287@cornell.edu](mailto:srs287@cornell.edu). If you have any questions or concerns regarding your rights as a subject in this study, you may contact the Institutional Review 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 available at [https://secure.ethicspoint.com/domain/en/default\\_reporter.asp](https://secure.ethicspoint.com/domain/en/default_reporter.asp) 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. May we begin?

### Final telephone sample status

The Survey Research Institute (SRI) dialed 15,523 phone numbers between Aug 28 - Dec 11, 2019 to obtain 1,000 completed surveys. The final call dispositions were categorized into two major groups as "eligible interviews" and "ineligible interviews" according to AAPOR guidelines. Accordingly, final call dispositions consisted mostly of ineligible interviews (10,052), where the most common final call disposition was ineligibility due to non-working number (5,446). Other reasons for ineligibility included unknown eligibility (i.e., there was not enough information known about the eligibility of household and/or household resident; 4,244), non-residence (193) and age ineligibility (169). Of the 5,471 individuals contacted and deemed eligible, the majority were assigned to non-contacts group (3,666), since the respondent was

eligible and did not refuse, but the interview was never completed. Further, there were 261 households in which the eligible respondents were unable to be interviewed due to language problems as defined by AAPOR guidelines (Code 2.33) and physical/mental incapability (11). The remaining 1,533 individuals were identified as potential interviewees, but 533 refused to participate in the study, which resulted in a total of 1,000 completed surveys. Therefore, the response rate was 18.3% (1,000 completed surveys/ 5,471 eligible interviews) and the cooperation rate was 65.2% (1,000 completed surveys/ 1,533 potential interviews). The average survey length was 25 minutes.

### **Order of questions asked in the survey**

The questions provided by the authors of this study (“survey questions”) were asked following questions on the topics of background check and criminal record, 2020 census and presidential election, immigration and minority status, telehealth/healthcare visits and opioids. We do not believe that any of these questions could have influenced study participants in a particular way when answering our survey questions.

## Experimental Auction

**Table S1** Descriptive statistics of demographic information of participants in the experimental auction<sup>1</sup>

Demographic Variables	Definition	Mean	Standard Deviation	Mode (Frequency)
Age	Self-reported age, with midpoints of categories from 21.5 (18-25) to 58 (51-65)	41.20	12.82	43 (27)
Gender	Two categories of self-reported gender (1 if male, 0 if female)	0.21	0.41	0 (73)
Marital status	Seven categories of possible marital status	N/A <sup>2</sup>	N/A	Married (43)
Number of children	Number of children living in the household under 18	0.53	0.83	0 (57)
Race	Self-identified race out of 5 categories	N/A	N/A	White (69)
Level of education	Level of education from 1 (high school graduate) to 7 (PhD)	4.79	1.34	(5) Bachelor's (34)
Household income	Midpoint of expected household income this year from \$25,000 (under \$25,000) to \$200,000 (over \$200,000)	\$89.14K	\$48.60K	\$62.50K (18)
Household Income per child under 18	An interaction term to determine whether budget is the only reason for lower premium typically found in families with many children (conditional on having any children)	\$61.85K	\$32.10K	\$58.33K (7)
Primary shopper	Is participant the primary purchaser of milk in their household? (1 if yes, 0 if no)	0.87	0.34	1 (73)
Frequency of milk purchase	How often their household buys milk from 1 (less than once a month) to 5 (more than once a week)	3.55	1.07	(4) Once a week (40)
Self-rated knowledge of antibiotics	Rating of understanding of antibiotics from 1 (know nothing) to 5 (expert-level)	2.31	1.03	3 (31)
Self-rated concern about environment	Rating of concern for environment from 1 (none) to 5 (very concerned)	3.87	0.98	4 (34)
Self-rated health Consciousness	Rating of health-consciousness from 1 (none) to 5 (very conscious)	3.42	0.84	3 (38)
Typical milk size purchased	Typical size of milk they purchase (1=gallon, 2=half gallon, 3=other)	1.60	0.64	Gallon (41)
Typical way milk is consumed	Typical way they consume milk (i.e., in tea, cereal, directly)	N/A	N/A	Cereal (59)
Typical fat content purchased	Level of fat content in milk they typically purchase, ranging from non-fat to whole milk	N/A	N/A	2% Milk (30)
Liking of taste and appearance of unlabeled milk	Composite of 9-point Likert scales on taste and appearance ratings	3.71	2.29	4 (18)
Liking of taste and appearance of responsible antibiotic use milk	Composite of 9-point Likert scales on taste and appearance ratings	3.06	2.76	5 (13)
Liking of taste and appearance of organic milk	Composite of 9-point Likert scales on taste and appearance ratings	3.43	2.49	6 (16)

<sup>1</sup>Full Demographic Survey can be found at the end of this Supplemental Material File; <sup>2</sup>N/A=not applicable

**Table S2** One-limit Tobit model for pooled results by treatment (unlabeled milk) in the experimental auction

Variable	Blind Bid Round (1) Coefficient (Standard Error)	Label Round (2) Coefficient (Standard Error)	Education Round (3) Coefficient (Standard Error)	Nutrition Round (4) Coefficient (Standard Error)
Age	0.01 (0.01)	-2.39E-03 (0.01)	-0.01 (0.01)	-0.01 (0.01)
Gender	-0.46 (0.46)	-0.08 (0.39)	-0.59 (0.38)	-0.26 (0.37)
Number of children	0.42** <sup>1</sup> (0.18)	0.16 (0.27)	0.48** (0.19)	0.37** (0.19)
Race	0.34** (0.16)	0.14 (0.22)	-0.02 (0.18)	-0.01 (0.17)
Level of education	-0.29** (0.12)	-0.24* (0.14)	-0.07 (0.13)	-0.05 (0.13)
Household income	3.00E-06 (4.00E-06)	-8.00E-07 (4.00E-06)	-1.00E-06 (3.00E-06)	-2.00E-06 (3.00E-06)
Primary shopper	1.34*** (4.00E-03)	0.48** (0.47)	0.22 (0.53)	0.30 (0.52)
Marital status	-0.1 (0.09)	-0.13 (0.09)	-0.06 (0.09)	-0.06 (0.09)
Self-rated knowledge of antibiotics	0.04 (0.15)	0.11 (0.18)	-0.03 (0.16)	-0.06 (0.15)
Self-rated concern about environment	0.22 (0.15)	0.07 (0.22)	0.18 (0.19)	0.16 (0.18)
Self-rated health consciousness	0.45*** (0.17)	0.16* (0.27)	0.22 (0.17)	0.32* (0.17)
Frequency of milk purchase	-0.14 (0.16)	-0.07 (0.19)	0.32* (0.18)	0.28 (0.17)
Typical milk size purchased	0.30 (0.25)	0.27 (0.35)	0.42 (0.29)	0.20 (0.28)
Aggregate rating of liking unlabeled milk	0.22** (0.09)	0.24** (0.12)	-0.08 (0.13)	-0.01 (0.13)
Aggregate rating of liking of responsible antibiotic use labeled milk	-0.28*** (0.08)	-0.17 (0.12)	-0.32*** (0.09)	-0.34*** (0.09)
Aggregate rating of liking of organic milk	-0.02 (0.10)	-0.06 (0.11)	0.32*** (0.12)	0.31*** (0.12)
Log Likelihood	-75.75	-81.09	-79.38	-78.91
Wald X <sup>2</sup>	0.53	0.92	0.02	1.20E-03
Prob > X <sup>2</sup>	(0.47)	(0.34)	(0.88)	(0.97)
# of Uncensored Bids	55	50	53	54
# of Censored Bids	2	5	3	2
Total Number of Bids (N)	57	55	56	56

<sup>1</sup>Standard errors in parentheses: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table S3** One-limit Tobit model for pooled results by treatment (responsible antibiotic use milk) in the experimental auction

Variable	Blind Bid Round (1) Coefficient (Standard Error)	Label Round (2) Coefficient (Standard Error)	Education Round (3) Coefficient (Standard Error)	Nutrition Round (4) Coefficient (Standard Error)
Age	0.03** <sup>1</sup> (0.01)	1.00E-03 (0.02)	1.45E-03 (0.02)	9.00E-04 (0.02)
Gender	0.48 (0.52)	0.22 (0.45)	-0.27 (0.45)	-0.26 (0.44)
Number of children	0.27 (0.21)	0.24 (0.31)	0.33 (0.23)	-0.04 (0.21)
Race	0.25 (0.18)	0.40 (0.26)	-0.07 (0.21)	-0.04 (0.21)
Level of education	-0.34** (0.14)	-0.28* (0.17)	0.15 (0.16)	0.14 (0.15)
Household income	5.00E-07 (4.00E-06)	-6.00E-06 (5.00E-06)	-3.00E-06 (4.00E-06)	-3.00E-06 (4.00E-06)
Primary shopper	1.29** (0.53)	0.67 (0.55)	0.27 (0.63)	0.30 (0.61)
Marital status	-0.05 (0.10)	0.07 (0.10)	-0.13 (0.11)	-0.13 (0.10)
Self-rated knowledge of antibiotics	0.16 (0.18)	0.20 (0.21)	0.13 (0.19)	0.06 (0.18)
Self-rated concern about environment	0.08 (0.17)	-0.32 (0.25)	0.15 (0.22)	0.22 (0.22)
Self-rated health consciousness	0.33* (0.20)	-0.35 (0.32)	0.03 (0.21)	0.11 (0.20)
Frequency of milk purchase	-0.24 (0.18)	-0.10 (0.22)	-0.07 (0.21)	-0.02 (0.20)
Typical milk size purchased	0.15 (0.29)	0.58 (0.40)	0.18 (0.35)	0.11 (0.34)
Aggregate rating of liking unlabeled milk	-0.11 (0.11)	-0.01 (0.14)	-0.35** (0.16)	-0.35** (0.15)
Aggregate rating of liking of responsible antibiotic use labeled milk	-0.04 (0.09)	0.12 (0.14)	-0.19* (0.11)	-0.21** (0.11)
Aggregate rating of liking of organic milk	0.17 (0.11)	-0.10 (0.13)	0.45*** (0.15)	0.49*** (0.14)
Log Likelihood	-83.06	-84.99	-87.29	-86.36
Wald X <sup>2</sup>	0.44	5.20	3.30	2.60
Prob > X <sup>2</sup>	(0.51)	(0.02)	(0.07)	(0.11)
# of Uncensored Bids	54	46	51	52
# of Censored Bids	3	9	5	4
Total Number of Bids (N)	57	55	56	56

<sup>1</sup>Standard errors in parentheses: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table S4** One-limit Tobit model for pooled results by treatment (organic milk) in the experimental auction

Variable	Blind Bid Round (1) Coefficient (Standard Error)	Label Round (2) Coefficient (Standard Error)	Education Round (3) Coefficient (Standard Error)	Nutrition Round (4) Coefficient (Standard Error)
Age	0.01 (0.01)	-0.02 (0.01)	0.01 (0.01)	-0.01 (0.01)
Gender	-0.18 (0.47)	0.02 (0.40)	-0.42 (0.41)	-0.42 (0.40)
Number of children	0.44** <sup>1</sup> (0.19)	0.30 (0.28)	0.44** (0.21)	0.48** (0.21)
Race	0.18 (0.16)	0.11 (0.23)	-0.09 (0.19)	-0.08 (0.19)
Level of education	-0.39*** (0.12)	-0.38** (0.15)	-2.10E-03 (0.14)	-1.80E-04 (0.14)
Household income	-9.00E-07 (4.00E-06)	-2.00E-06 (4.00E-06)	-8.00E-07 (4.00E-06)	7.00E-07 (4.00E-06)
Primary shopper	1.06** (0.47)	0.95** (0.48)	0.74 (0.58)	0.81 (0.57)
Marital status	-0.12 (0.09)	-0.09 (0.09)	0.02 (0.10)	0.02 (0.09)
Self-rated knowledge of antibiotics	0.09 (0.16)	-0.14 (0.18)	-5.00E-04 (0.17)	-0.02 (0.17)
Self-rated concern about environment	0.23 (0.16)	0.17 (0.22)	0.18 (0.20)	0.22 (0.20)
Self-rated health consciousness	0.32* (0.18)	0.24 (0.28)	0.43** (0.02)	0.39** (0.19)
Frequency of milk purchase	-0.25 (0.16)	-0.05 (0.19)	0.21 (0.19)	0.21 (0.19)
Typical milk size purchased	0.09 (0.26)	0.57 (0.36)	0.34 (0.32)	0.33 (0.31)
Aggregate rating of liking unlabeled milk	-0.17* (0.09)	0.04 (0.12)	-0.31** (0.14)	-0.29** (0.14)
Aggregate rating of liking of responsible antibiotic use labeled milk	-0.18** (0.08)	0.04 (0.12)	-0.27*** (0.10)	-0.26*** (0.10)
Aggregate rating of liking of organic milk	0.35*** (0.10)	0.01 (0.12)	0.44*** (0.13)	0.41*** (0.13)
Log Likelihood	-76.52	-84.06	-83.51	-83.03
Wald X <sup>2</sup>	0.27	1.90	1.00	0.82
Prob > X <sup>2</sup>	(0.61)	(0.17)	(0.32)	(0.36)
# of Uncensored Bids	53	52	53	53
# of Censored Bids	4	3	3	3
Total Number of Bids (N)	57	55	56	56

<sup>1</sup>Standard errors in parentheses: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## **Demographic Questionnaire for Experimental Auction**

**1. What gender do you identify as?**

- Male
- Female
- Other

**2. What is your age?**

- 18-25
- 26-35
- 36-50
- 51-65
- Over 65

**3. What is your marital status?**

- Married
- Widowed
- Separated
- Divorced
- Living with partner
- Single
- Prefer not to say

**4. How many children (under 18) are there in your household?**

- 0
- 1-2
- 3-4
- 5-6
- More than 6

**5. How would you describe your race or ethnicity?**

- Native American
- Asian
- African American / Black
- Caucasian / White
- Hispanic / Latino
- Pacific Islander
- Multiracial
- Racial

**6. What is your highest level of education?**

- Attended high school but did not finish
- High school diploma
- Attended college but did not finish
- Vocational/Technical degree or certificate
- Associates degree

- Bachelor's degree
  - Master's or professional degree
  - Doctorate degree
- 7. What do you expect your combined family income to be, this year?**
- Under \$25,000
  - \$25,001 – \$40,000
  - \$40,001 – \$50,000
  - \$50,001 – \$75,000
  - \$75,001 – \$100,000
  - \$100,001 – \$125,000
  - \$125,001 – \$150,000
  - \$150,001 – \$175,000
  - \$175,001 – \$200,000
  - Over \$200,000
- 8. Are you the person who normally buys milk for your household?**
- Yes
  - No
- 9. How often does your household buy milk?**
- More than once a week
  - Once a week
  - Few times a month
  - Once a month
  - Rarely (less than once a month)
- 10. Rate your current knowledge of antibiotic use in agriculture on a scale of 1 (know almost nothing) to 5 (expert-level knowledge)**
- 1
  - 2
  - 3
  - 4
  - 5
- 11. How much are you concerned by human activity related environmental issues on a scale of 1 (not at all) to 5 (extremely concerned)?**
- 1
  - 2
  - 3
  - 3
  - 4
  - 5
- 12. How health-conscious do you consider yourself on a scale of 1 (not at all) to 5 (extremely health-conscious)?**
- 1

- 2
- 3
- 3
- 4
- 5

**13. In what form do you typically buy milk?**

- Gallon
- Half gallon
- Pint
- Other

**14. In what ways do you consume milk?**

- I drink it
- I put it in my coffee or tea
- I put it in my cereal
- Other

**15. What level of milk fat content do you typically buy?**

- Skim (0%)
- Low fat (1%)
- Reduced fat (2%)
- Whole milk (3.5%)