Rethink Priorities poll: US attitudes towards insects

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Summary

Rethink Priorities conducted a US national poll of 4,446 Americans, adjusted to match a US nationally representative likely voter electorate by weighing on race, age, gender, education, income, socioeconomic status, region, 2016 Presidential vote, and religious attitudes. The raw margin of error is +/-2 points with 95% confidence.

- A significant share of Americans are uncertain (24%-45% don't know) about their attitudes toward insect farming. This suggests that consumers may be particularly responsive to information on insect farming and that these views are largely "up for

grabs". There may be a large first mover advantage to whomever first ends up informing consumers most clearly.
- More Americans oppose a ballot measure to ban insect feed for farmed animals (49%) than support it (29%)
- We did find high levels of support (52%-65%) for the idea that insects (honeybees, ants, termites) were capable of feeling pain.

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Results

Many of the questions we asked in this survey offered respondents the option to choose an answer from a scale of strongly disagree to strongly agree, or don't know. It is a convention to exclude the "don't knows" (who are often very small in number) from most statistical analysis of such ordinal data. However, in some of these questions the don't knows made up significant shares of responses and suggest there are low salience issues where opinions have yet to form and may be possible to shape. Therefore, we present both analyses of the demographic characteristics that appear to be associated with being in more/less agreement with an item, as well as analyses of the demographic characteristics that appear to distinguish the respondents with opinions from those in the don't know category.

More questions (on other topics) were asked in the poll than are reported here. Future reports will detail those results.

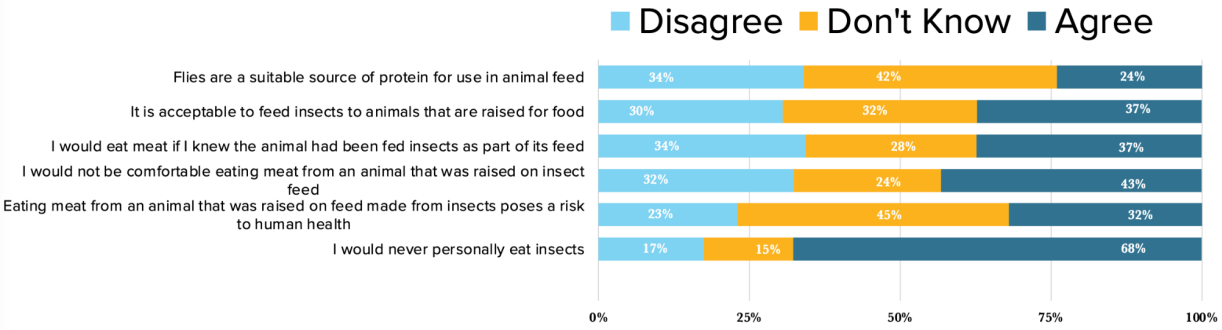
Attitudes to insect farming and insect pain

We tested consumer attitudes toward insect farming and mainly found these attitudes to be uncertain among a substantial share of Americans. "Don't know" responses were very prevalent (as high as 45% in one question) and only 41.7% of respondents gave answers that were considered fully consistent (see notes in Methods: Insect non comprehension).

This suggests that consumers may be particularly responsive to information on insect farming and that these views are largely "up for grabs". There may be a large first mover advantage to whomever first ends up informing consumers most clearly. (It was not possible to enlarge the font size of the labels in the graph below without losing the full content. One can zoom in to see them more clearly)

A significant share of Americans are uncertain about their attitudes toward insect farming.

Replies to the question "How much do you agree or disagree with the following? from a Rethink Priorities survey asked of 4,446 adults in the United States recruited through the Prolific platform in October 2020.



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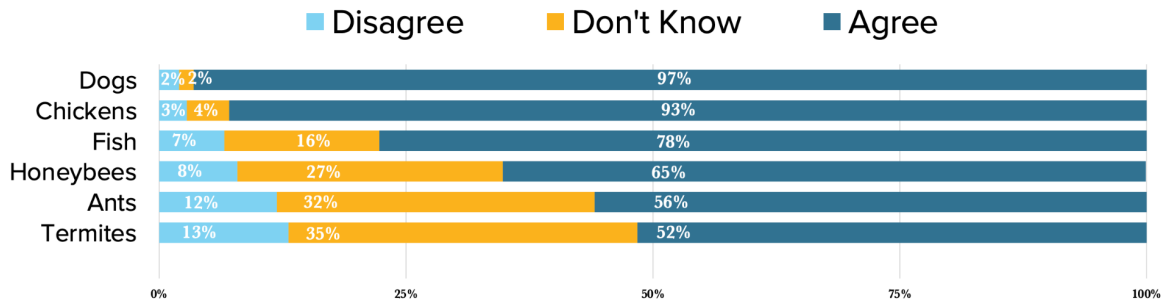
We also found high levels of support for the idea that insects were capable of feeling pain. We found 65% of respondents thought honeybees could feel pain, 56% of respondents thought that ants could feel pain, and 52% of respondents thought termites could feel pain. Disagreement with this idea was also low (13% for termites, 12% for ants, and 8% for honeybees) with a lot of respondents indicating that they don't know (35% for termites, 32% for ants, and 27% for honeybees).

Americans' perception of the ability of different animals to feel pain

Replies to the question "How much do you agree or disagree with the following?: {Insert animal} are capable of feeling pain" in a Rethink Priorities survey asked of 4,446 adults in the United States recruited through the Prolific platform in October 2020



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Factor analysis (completed by Principal Research Manager David Moss, see tables in Appendix 3) suggested that there are definitely some coherent groupings. Agreement that animals like termites/ants/bees feel pain appears distinct from agreement that pigs/dogs/chickens feel pain. There also seem to be clusterings around the attitudes to insect farming questions.

We turned to ordered regression and multinomial analysis to explore characteristics of respondents (see Appendix 2: Regressions). Overall, vegetarians or vegans (henceforth veg*ns), women and older respondents tended to be less likely to be in higher agreement categories with insect farming being acceptable. However, women and veg*ns were also more likely to select "don't know" than one of the agreement options in many of these questions. Women and veg*ns were more likely to oppose eating insect fed meat and to agree it posed a human health risk. Women and veg*ns were also more likely to agree ants and honeybees could experience pain, but only veg*ns were significantly more likely to agree termites could experience pain. Intending to vote for President Trump rather than candidate Biden in the then upcoming 2020 Presidential election is associated with being less likely to eat meat from insect fed animals and to think insect feed poses a risk to human health, but vote intention is not associated with whether feeding insects or flies to animals is acceptable. Older respondents were more likely to be against eating insect fed meat than support it, and more likely to agree they would not eat it than to don't know. They were also more likely to oppose eating insects directly than support it, and more likely to agree it posed a human health risk than to don't know (but not more likely to agree than disagree). Older respondents were also more likely to be against using flies or insects as feed than in support of it, and more likely to agree than disagree ants and termites could feel pain.

The associations with other demographic characteristics were less consistent. We found some evidence that White/Caucasian or Asian/Asian American respondents were more likely to agree flies were an acceptable feed source, but found no effect for the more general "insects" as feed question. Those in higher income brackets appear to oppose flies as feed and eating meat from insect fed animals, but only when one was comparing strongly agree to all other agreement options, and they were more likely to say "don't know" than agree on these questions. College educated respondents appeared to agree with eating insect fed meat, and to disagree it posed a health risk.

The survey presented respondents with hypothetical ballot initiatives in their state, followed by statements in support and in opposition to the measure before asking if they would vote for or against it (or don't know). Each measure was presented to a maximum of 20% of respondents. The measure relating to insects provided for the following (the title in bold below is just illustrative and was not included in the ballot initiative):

- **Ban insect feed for animals (N=806):** make it illegal to use farmed insects as part of the feed for farmed animals.

Making it illegal to feed insects to farmed animals was more opposed than supported (49% oppose versus 29% support, and 23% Don't Know).

Using a binary support-oppose, and dropping the don't know responses, older respondents were more likely to support a ban on insect feed (aligning with the findings from the insect questions above), as were respondents who indicated they are intending to vote for Trump rather than Biden in the then upcoming 2020 US Presidential election (2.5 times more likely).

Methods

Survey Design

This poll was designed on Surveymonkey. The survey was 45 questions long and took an average of 9 minutes to complete. Questions consisted of matters of policy and relevant demographics.

Survey Deployment

This poll was conducted entirely on Prolific, an online platform where people are recruited and paid to complete surveys. The platform is non-political and non-partisan.

The survey was live on 20 October 2020 between 3pm and 10pm Central time.

Our survey was advertised to participants on the platform as "A Survey about Attitudes" with the description "In this survey you will be asked a number of questions regarding your attitudes to certain policy proposals. You will also be asked some basic demographic information." The nature of the survey was not disclosed any further, so we would not expect any additional selection bias in who takes the poll, beyond the bias already present in using an online platform like Prolific.

Only Americans were allowed to take our survey, and Prolific had about 42,394 eligible participants at the time. We sampled 4600 of them. We paid $1.47 for participants to complete the survey, which worked out to an average hourly rate of $9.80. This is normal for Prolific.

We further used Prolific to survey 900 California residents, to allow for more California-specific analysis not included in this write-up. These participants were sampled and compensated similarly. These results were combined with our other results to create the full dataset.

Quality Filtering

Online surveys do not always produce accurate information - sometimes participants could be deliberately dishonest or otherwise low quality to the extent where it is best to remove them when conducting with analysis. In this survey, we removed 567 such people.

We started with 5500 possible responses. 396 responses were removed for being duplicates as determined by Prolific's internal ID system.

93 responses were removed because when asked "How honestly have you answered these questions?" at the very end of the survey, they replied "Not honestly at all" or "Somewhat honestly" instead of "Very honestly" or "Completely honestly" (see Robinson-Cimpian, 2014).

67 responses were removed because they failed an attention check - when asked "Which of these, if any, do you read, listen, or watch for news?", they indicated that they watched a news program that did not exist (there was one such program, "The Current Show with Al Franken" on the list - the list contained 12 real programs).

11 responses were removed due to failing a multiple low incidence check (see Lopez and Hillygus, 2018) which uses probability methods to screen for respondents dishonestly entering in unlikely information. This was done using the survey_dud_detector Python package developed by Peter Wildeford at Rethink Priorities.

Results were also checked for straightlining using the survey_dud_detector Python package developed by Peter Wildeford at Rethink Priorities, but this was not found to be an issue above and beyond the other quality checks and no respondents were removed for this issue.

After all of this quality filtering, there were 4933 remaining responses. As a subset of this sample were only asked California questions and not the others, the final sample for this analysis is 4,446.

Demographic Weighting

Surveys only capture a sample of the population, so we know that the result probably won't exactly match the "true" result that we would get if we surveyed everyone in the population or that we would expect to see on election day.

The margin of sampling error describes how close we can reasonably expect a survey result to fall relative to the true population value. A margin of error of plus or minus 3 percentage points at the 95% confidence level means that if we fielded the same survey 100 times, we would expect the result to be within 3 percentage points of the true population value 95 of those times.

Without adjustment, surveys tend to overrepresent people who are easier to reach and underrepresent those types of people who are harder to reach. In order to make the results more representative we weight the data so that it matches the population – based on a number of demographic measures. Weighting is a crucial step for avoiding biased results, but it also has the effect of making the margin of error larger. Using US Census data, we can get a rough sense of the proportions of gender, race, and age we would expect to see in our sample.

We used the surveyweights Python package developed by Peter Wildeford at Rethink Priorities to create weights to adjust for race, age, gender, education, income, socioeconomic status, region, 2016 Presidential vote, and religious attitudes. These weights were used to upsample and downsample responses accordingly to produce results that would end up matching the US Census data. All data to form weights, and sourcing for that information, is contained within the publicly available source code for the package.

Insects non comprehension

The raw weighted margin of error of this poll is +/-3 points with 95% confidence. True error is likely much higher given large numbers of "Don't know" responses and non-comprehension. Our results found that "Don't know" answers and non-comprehension was very prevalent.

We would expect that attitudes toward "Flies are a suitable source of protein for use in animal feed" and "It is acceptable to feed insects to animals that are raised for food" would be similar given that the statements are similar. Only 43% of respondents answered both questions without indicating "Don't know" to at least one of them. Of these,13% of respondents gave different answers to these questions, suggesting true attitudes from only 37% of respondents.

Furthermore, we would expect attitudes toward “I would eat meat if I knew the animal had been fed insects as part of its feed” and “I would not be comfortable eating meat from an animal that was raised on insect feed” to be the reverse of each other,, given that both statements are nearly identical except that the second statement is reversed. Only 62% of respondents answered both questions without indicating “Don’t know” to at least one of them. Of these, 16% of respondents gave the same answer to both questions, at first glance suggesting true attitudes from only 52% of respondents. However, people could have true (and consistent) attitudes, but select slightly different things for the two questions. This is partly because the question statements are not exactly equivalent ("I would eat" vs "I would not be comfortable eating"), partly because people might respond slightly different with reversed formatting due to standard biases encountered in surveying (such as acquiescence bias), partly because people often treat these response items as indicating attitude strength or certainty, rather than as representing qualitatively distinct categories, so selecting "agree" + "don't know" may just be indicating "lean a bit positive but unsure" + "a bit less sure" (i.e. adjacent attitudes) rather than something logically inconsistent responses.

Between these two sets, 53% indicated a “Don’t know” option for at least one of the questions. Of those respondents who answered all four questions, only 58% gave fully consistent answers.

We also tested for whether respondents were paying attention to the question by looking for straightlining (giving the same answer to every question). Results were checked for straightlining using the survey dud detector Python package developed by Peter Wildeford at Rethink Priorities. We found that 3% of respondents were straightlining for the insect section and that 13% of respondents who offered differing responses in the questions that were reversed were straightlining.

Appendix 1: Code

Rethink Priorities values transparency and invites scrutiny of its methods. The code and data for all our data quality filtering, demographic weighting, likely voter weighting, and electoral modeling is available publicly on GitHub under an MIT license.

Appendix 2: Regressions

I would/would not eat meat if I knew it the animal had been fed insects as part of its feed		
VARIABLES	I would eat.	I would NOT eat.
Disagree Versus Agree		
Veg*n	3.247***	-1.738***
	(0.318)	(0.211)
Female	0.671***	-0.369***
	(0.0825)	(0.0765)
Age	0.331***	-0.270***
	(0.0610)	(0.0570)
White or Caucasian	-0.619**	0.144
	(0.257)	(0.248)
Black or African American	0.232	-0.450
	(0.284)	(0.275)
Asian or Asian American	-0.315	-0.00170
	(0.277)	(0.266)
Hispanic or Latino	0.0141	-0.200
	(0.296)	(0.286)
College education	-0.433***	0.463***
	(0.119)	(0.114)
Income Bracket	-0.0446*	0.0580**
	(0.0249)	(0.0234)
Urban v Rural	0.0285	-0.182
	(0.124)	(0.116)
Suburban v Rural	-0.0769	-0.355***
	(0.134)	(0.125)
Constant	-35.14***	29.79***
	(7.995)	(7.477)
Don't Know Versus Agree		
Veg*n	1.262***	-1.163***
	(0.363)	(0.198)
Female	0.465***	0.00171
	(0.0771)	(0.0853)
Age	0.111*	-0.185***
	(0.0584)	(0.0632)
White or Caucasian	-0.388	-0.232
	(0.257)	(0.248)
Black or African American	0.000236	-0.387
	(0.285)	(0.274)
Asian or Asian American	-0.333	-0.496*
	(0.276)	(0.272)
Hispanic or Latino	-0.0342	-0.227
	(0.294)	(0.287)
College education	-0.299***	0.207*
	(0.116)	(0.120)
Income Bracket	-0.00529	0.107***
	(0.0230)	(0.0252)
Urban v Rural	0.0300	0.00453
	(0.116)	(0.131)
Suburban v Rural	-0.148	-0.210
	(0.126)	(0.140)
Constant	-9.978	21.24**
	(7.678)	(8.254)
Observations	3,999	3,999
Pseudo R2	0.0518	0.0272

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

VARIABLES	I would never personally eat insects	Eating meat from an animal that was raised on feed made from insects poses a risk to human health
Disagree Versus Agree		
Veg*n	-0.867***	-0.673***
	(0.235)	(0.219)
Female	-0.503***	-0.363***
	(0.0815)	(0.0906)
Age	-0.121**	-0.0878
	(0.0604)	(0.0659)
White or Caucasian	0.145	0.313
	(0.264)	(0.293)
Black or African American	-0.575*	-0.285
	(0.301)	(0.326)
Asian or Asian American	-0.236	0.0568
	(0.287)	(0.316)
Hispanic or Latino	-0.0216	0.0417
	(0.304)	(0.337)
College education	0.322**	0.217
	(0.126)	(0.138)
Income Bracket	0.0426*	0.0479*
	(0.0245)	(0.0278)
Urban v Rural	-0.0752	-0.288**
	(0.123)	(0.142)
Suburban v Rural	0.122	-0.529***
	(0.131)	(0.150)
Constant	10.56	7.186
	(7.914)	(8.643)
Don't Know Versus Agree		
Veg*n	-0.434**	-0.299*
	(0.211)	(0.170)
Female	-0.396***	-0.0803
	(0.0846)	(0.0807)
Age	0.0379	-0.163***
	(0.0608)	(0.0597)
White or Caucasian	-0.0907	0.156
	(0.263)	(0.242)
Black or African American	-0.385	-0.101
	(0.295)	(0.267)
Asian or Asian American	0.0679	0.0201
	(0.281)	(0.263)
Hispanic or Latino	0.153	-0.0321
	(0.299)	(0.282)
College education	-0.0549	0.0143
	(0.120)	(0.119)
Income Bracket	0.0514**	0.0928***
	(0.0250)	(0.0244)
Urban v Rural	-0.154	-0.124
	(0.125)	(0.130)
Suburban v Rural	-0.180	-0.589***
	(0.136)	(0.137)
Constant	-5.867	18.49**
	(8.059)	(7.809)
Observations	3,999	3,999
Pseudo R2	0.0174	0.0149

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

VARIABLES	Flies are a suitable source of protein for use in animal feed	It is acceptable to feed insects to animals that are raised for food
Disagree Versus Agree		
Veg*n	0.824***	1.293***
	(0.222)	(0.200)
Female	0.671***	0.666***
	(0.0917)	(0.0853)
Age	0.424***	0.321***
	(0.0669)	(0.0628)
White or Caucasian	-0.697**	-0.286
	(0.300)	(0.269)
Black or African American	-0.120	0.316
	(0.334)	(0.297)
Asian or Asian American	-0.584*	-0.194
	(0.323)	(0.291)
Hispanic or Latino	-0.446	0.298
	(0.350)	(0.310)
College education	-0.162	-0.249**
	(0.140)	(0.126)
Income Bracket	0.0324	-0.000934
	(0.0283)	(0.0258)
Urban v Rural	-0.196	0.0907
	(0.143)	(0.129)
Suburban v Rural	-0.684***	-0.0259
	(0.151)	(0.138)
Constant	-49.09***	-38.57***
	(8.873)	(8.266)
Don't Know Versus Agree		
Veg*n	0.283	0.622***
	(0.218)	(0.204)
Female	0.447***	0.518***
	(0.0807)	(0.0739)
Age	0.00119	-0.0103
	(0.0608)	(0.0560)
White or Caucasian	-0.264	-0.372
	(0.292)	(0.236)
Black or African American	0.157	-0.0585
	(0.322)	(0.264)
Asian or Asian American	-0.273	-0.453*
	(0.309)	(0.255)
Hispanic or Latino	0.0237	-0.0396
	(0.329)	(0.273)
College education	-0.195	-0.219**
	(0.123)	(0.110)
Income Bracket	0.0959***	0.0137
	(0.0247)	(0.0221)
Urban v Rural	-0.116	0.0957
	(0.130)	(0.112)
Suburban v Rural	-0.562***	-0.135
	(0.135)	(0.121)
Constant	1.376	4.593
	(8.110)	(7.369)
Observations	3,999	3,999
Pseudo R2	0.0295	0.0253

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

	{Insert animal} is capable of feeling pain		
VARIABLES	Honeybees.	Ants.	Termites.
Disagree Versus Agree			
Veg*n	-1.898***	-1.043***	-1.308***
	(0.715)	(0.350)	(0.394)
Female	-0.555***	-0.280***	-0.269***
	(0.133)	(0.104)	(0.103)
Age	-0.139	-0.276***	-0.247***
	(0.107)	(0.0837)	(0.0825)
White or Caucasian	0.149	-0.0955	-0.232
	(0.477)	(0.328)	(0.324)
Black or African American	-0.120	-0.116	-0.197
	(0.527)	(0.366)	(0.361)
Asian or Asian American	-0.109	-0.0965	0.0616
	(0.507)	(0.352)	(0.343)
Hispanic or Latino	-0.143	-0.326	-0.217
	(0.534)	(0.383)	(0.371)
College education	0.0382	0.0960	-0.0966
	(0.193)	(0.155)	(0.147)
Income Bracket	0.0269	0.00344	-0.000856
	(0.0384)	(0.0298)	(0.0298)
Urban v Rural	0.0260	0.0603	0.0155
	(0.204)	(0.165)	(0.162)
Suburban v Rural	0.0419	0.0296	-0.0782
	(0.221)	(0.177)	(0.175)
Constant	13.86	33.74***	32.60***
	(13.91)	(10.82)	(10.72)
Don't Know Versus Agree			
Veg*n	-0.0460	-0.176	-0.0379
	(0.165)	(0.160)	(0.155)
Female	-0.0692	0.0629	0.0999
	(0.0730)	(0.0706)	(0.0700)
Age	0.147***	0.0276	0.0453
	(0.0535)	(0.0523)	(0.0517)
White or Caucasian	-0.377*	-0.0470	-0.0775
	(0.213)	(0.222)	(0.220)
Black or African American	-0.336	-0.0251	-0.109
	(0.238)	(0.245)	(0.243)
Asian or Asian American	-0.723***	-0.192	-0.289
	(0.237)	(0.241)	(0.240)
Hispanic or Latino	-0.549**	-0.0394	-0.1000
	(0.254)	(0.255)	(0.255)
College education	0.103	0.0759	0.00878
	(0.110)	(0.104)	(0.104)
Income Bracket	-0.00414	-0.0292	-0.0207
	(0.0221)	(0.0213)	(0.0211)
Urban v Rural	-0.176*	-0.102	-0.0968
	(0.106)	(0.104)	(0.104)
Suburban v Rural	-0.197*	-0.257**	-0.252**
	(0.115)	(0.113)	(0.112)
Constant	-17.47**	-3.393	-5.114
	(7.030)	(6.887)	(6.813)
Observations	3,999	3,999	3,999
Pseudo R2	0.0115	0.00733	0.00961

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

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Ordered logistic regression, with relaxed parallel odds assumption (italics)

Flies are a suitable source of protein for use in animal feed

VARIABLES	(strongly disagree)	(disagree)	(Neither agree nor disagree)	(Agree)
*Veg*n*	-0.476**	-0.487***	-0.651***	-0.483
	(0.197)	(0.162)	(0.196)	(0.352)
Female	-0.403***	-0.526***	-0.467***	-0.523***
	(0.102)	(0.0751)	(0.0767)	(0.130)
Age	-0.492***	-0.409***	-0.275***	-0.0437
	(0.0697)	(0.0555)	(0.0596)	(0.0977)
White or Caucasian	0.533***	0.533***	0.533***	0.533***
	(0.190)	(0.190)	(0.190)	(0.190)
Black or African American	0.134	0.134	0.134	0.134
	(0.212)	(0.212)	(0.212)	(0.212)
Asian or Asian American	0.438**	0.438**	0.438**	0.438**
	(0.203)	(0.203)	(0.203)	(0.203)
Hispanic or Latino	0.272	0.272	0.272	0.272
	(0.220)	(0.220)	(0.220)	(0.220)
College educated	0.122	0.122	0.122	0.122
	(0.0946)	(0.0946)	(0.0946)	(0.0946)
Income bracket	-0.0191	0.00860	-0.0794***	-0.163***
	(0.0308)	(0.0229)	(0.0234)	(0.0402)

Urban -v- Rural	0.101	0.0609	0.181	0.269
	(0.145)	(0.113)	(0.125)	(0.235)
Suburban -v- Rural	0.331**	0.296**	0.624***	0.880***
	(0.159)	(0.122)	(0.130)	(0.235)
Constant	41.40***	26.11**	16.59	-6.645
	(13.43)	(11.76)	(12.11)	(16.63)
Observations	3,266	3,266	3,266	3,266
Pseudo R2	0.0266	0.0266	0.0266	0.0266

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

It is acceptable to feed insects to animals that are raised for food

VARIABLES	(strongly disagree)	(disagree)	(Neither agree nor disagree)	(Agree)
*Veg*n*	-1.247***	-0.925***	-1.038***	-0.872***
	(0.175)	(0.152)	(0.173)	(0.317)
Female	-0.546***	-0.532***	-0.511***	-0.508***
	(0.112)	(0.0764)	(0.0670)	(0.0990)
Age	-0.235***	-0.235***	-0.235***	-0.235***
	(0.0452)	(0.0452)	(0.0452)	(0.0452)
White or Caucasian	0.328*	0.328*	0.328*	0.328*
	(0.180)	(0.180)	(0.180)	(0.180)
Black or African American	-0.161	-0.161	-0.161	-0.161

	(0.200)	(0.200)	(0.200)	(0.200)
Asian or Asian American	0.213	0.213	0.213	0.213
	(0.192)	(0.192)	(0.192)	(0.192)
Hispanic or Latino	-0.0524	-0.0524	-0.0524	-0.0524
	(0.207)	(0.207)	(0.207)	(0.207)
College educated	0.267*	0.174	0.235**	0.300*
	(0.153)	(0.111)	(0.0999)	(0.153)
Income bracket	-0.0229	-0.0229	-0.0229	-0.0229
	(0.0179)	(0.0179)	(0.0179)	(0.0179)
Urban -v- Rural	-0.0275	-0.0275	-0.0275	-0.0275
	(0.0915)	(0.0915)	(0.0915)	(0.0915)
Suburban -v- Rural	0.121	0.121	0.121	0.121
	(0.0982)	(0.0982)	(0.0982)	(0.0982)
Constant	10.96	13.74	9.954	5.334
	(11.60)	(10.71)	(10.53)	(11.67)
Observations	3,768	3,768	3,768	3,768
Pseudo R2	0.0195	0.0195	0.0195	0.0195

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

	I would eat meat if I knew the animal had been fed insects as part of its fee			
VARIABLES	(strongly disagree)	(disagree)	(Neither agree nor disagree)	(Agree)
Veg*n	-2.897***	-2.589***	-2.694***	-1.894***
	(0.175)	(0.205)	(0.315)	(0.511)
Female	-0.508***	-0.494***	-0.504***	-0.614***
	(0.112)	(0.0795)	(0.0718)	(0.105)
Age bracket	-0.478***	-0.263***	-0.221***	-0.129*
	(0.0768)	(0.0575)	(0.0528)	(0.0751)
White or Caucasian	0.775***	0.632***	0.605***	0.647***
	(0.218)	(0.203)	(0.201)	(0.223)
Black or African American	-0.0170	-0.0170	-0.0170	-0.0170
	(0.220)	(0.220)	(0.220)	(0.220)
Asian or Asian American	0.391*	0.391*	0.391*	0.391*
	(0.211)	(0.211)	(0.211)	(0.211)
Hispanic or Latino	-0.0133	-0.0133	-0.0133	-0.0133
	(0.228)	(0.228)	(0.228)	(0.228)
College educated	0.101	0.200*	0.237**	0.299*
	(0.168)	(0.119)	(0.111)	(0.170)
Income bracket	0.00495	0.00495	0.00495	0.00495

	(0.0191)	(0.0191)	(0.0191)	(0.0191)
Urban -v- Rural	-0.0487	-0.0487	-0.0487	-0.0487
	(0.100)	(0.100)	(0.100)	(0.100)
Suburban -v- Rural	0.115	0.115	0.115	0.115
	(0.107)	(0.107)	(0.107)	(0.107)
Trump 2020 vote intention	-0.213***	-0.213***	-0.213***	-0.213***
	(0.0748)	(0.0748)	(0.0748)	(0.0748)
Constant	28.10*	0.0342	-7.026	-25.34*
	(14.67)	(12.28)	(11.87)	(14.84)
Observations	3,388	3,388	3,388	3,388
Pseudo R2	0.0484	0.0484	0.0484	0.0484

*** p<0.01, ** p<0.05, * p<0.1

	I would not be comfortable eating meat from an animal that was raised on insect feed			
VARIABLES	(strongly disagree)	(disagree)	(Neither agree nor disagree)	(Agree)
*Veg*n*	0.526*	1.372***	1.298***	1.622***
	(0.303)	(0.189)	(0.150)	(0.146)
Female	0.474***	0.304***	0.262***	0.425***
	(0.109)	(0.0643)	(0.0670)	(0.0861)
Age	0.0384	0.178***	0.233***	0.260***
	(0.0807)	(0.0486)	(0.0494)	(0.0598)

White or Caucasian	0.00620	-0.259	-0.135	-0.114
	(0.202)	(0.178)	(0.179)	(0.187)
Black or African American	0.249	0.249	0.249	0.249
	(0.195)	(0.195)	(0.195)	(0.195)
Asian or Asian American	-0.0170	-0.0170	-0.0170	-0.0170
	(0.186)	(0.186)	(0.186)	(0.186)
Hispanic or Latino	0.00152	0.00152	0.00152	0.00152
	(0.200)	(0.200)	(0.200)	(0.200)
College educated	-0.115	-0.360***	-0.358***	-0.279**
	(0.162)	(0.0977)	(0.0974)	(0.121)
Income bracket	-0.0338**	-0.0338**	-0.0338**	-0.0338**
	(0.0170)	(0.0170)	(0.0170)	(0.0170)
Urban -v- Rural	0.0501	0.157	0.130	-0.0247
	(0.165)	(0.0998)	(0.106)	(0.131)
Suburban -v- Rural	0.0339	0.210**	0.336***	0.204
	(0.176)	(0.107)	(0.112)	(0.138)
Constant	5.279	6.459	-7.128	-15.98
	(14.27)	(10.54)	(10.59)	(11.78)
Observations	4,105	4,105	4,105	4,105
Pseudo R2	0.0218	0.0218	0.0218	0.0218

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Eating meat from an animal that was raised on feed made from insects poses a risk to human health

VARIABLES	(strongly disagree)	(disagree)	(Neither agree nor disagree)	(Agree)
*Veg*n*	-0.0201	0.757***	0.645***	0.866***
	(0.351)	(0.218)	(0.166)	(0.147)
Female	0.553***	0.365***	0.468***	0.421***
	(0.148)	(0.0749)	(0.0647)	(0.0650)
Age	0.0953**	0.0953**	0.0953**	0.0953**
	(0.0427)	(0.0427)	(0.0427)	(0.0427)
White or Caucasian	-0.0337	-0.0337	-0.0337	-0.0337
	(0.175)	(0.175)	(0.175)	(0.175)
Black or African American	0.0839	0.564**	0.605***	0.552***
	(0.315)	(0.227)	(0.208)	(0.201)
Asian or Asian American	0.183	0.183	0.183	0.183
	(0.187)	(0.187)	(0.187)	(0.187)
Hispanic or Latino	0.159	0.159	0.159	0.159
	(0.202)	(0.202)	(0.202)	(0.202)
College educated	0.0639	-0.287**	-0.222**	-0.302***
	(0.206)	(0.117)	(0.0979)	(0.0950)
Income bracket	-0.0213	-0.0213	-0.0213	-0.0213
	(0.0171)	(0.0171)	(0.0171)	(0.0171)
Urban -v- Rural	0.0640	0.0640	0.0640	0.0640
	(0.0874)	(0.0874)	(0.0874)	(0.0874)
Suburban -v- Rural	-0.0181	-0.0181	-0.0181	-0.0181
	(0.0937)	(0.0937)	(0.0937)	(0.0937)

Constant	-8.925	4.390	0.771	3.270
	(12.81)	(10.53)	(10.18)	(10.14)
Observations	4,210	4,210	4,210	4,210
Pseudo R2	0.0141	0.0141	0.0141	0.0141

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Termites feel pain

VARIABLES	(strongly disagree)	(disagree)	(Neither agree nor disagree)	(Agree)
Veg*n	0.539***	0.539***	0.539***	0.539***
	(0.149)	(0.149)	(0.149)	(0.149)
Female	0.410**	0.246**	0.135*	0.0711
	(0.176)	(0.0957)	(0.0710)	(0.0690)
Age	0.107**	0.107**	0.107**	0.107**
	(0.0473)	(0.0473)	(0.0473)	(0.0473)
White or Caucasian	0.187	0.187	0.187	0.187
	(0.195)	(0.195)	(0.195)	(0.195)
Black or African American	0.168	0.168	0.168	0.168
	(0.216)	(0.216)	(0.216)	(0.216)
Asian or Asian American	-0.0605	-0.0605	-0.0605	-0.0605

	(0.206)	(0.206)	(0.206)	(0.206)
Hispanic or Latino	0.197	0.197	0.197	0.197
	(0.224)	(0.224)	(0.224)	(0.224)
College educated	-0.0762	-0.0762	-0.0762	-0.0762
	(0.0943)	(0.0943)	(0.0943)	(0.0943)
Income bracket	-0.00307	-0.00307	-0.00307	-0.00307
	(0.0185)	(0.0185)	(0.0185)	(0.0185)
Urban -v- Rural	-0.0763	-0.0763	-0.0763	-0.0763
	(0.0992)	(0.0992)	(0.0992)	(0.0992)
Suburban -v- Rural	0.00100	0.00100	0.00100	0.00100
	(0.105)	(0.105)	(0.105)	(0.105)
Constant	-15.55	-16.92	-18.02	-18.98*
	(11.18)	(11.18)	(11.18)	(11.18)
Observations	3,572	3,572	3,572	3,572
Pseudo R2	0.00444	0.00444	0.00444	0.00444

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

	Honeybees feel pain			
VARIABLES	(strongly disagree)	(disagree)	(Neither agree nor disagree)	(Agree)
Veg*n	0.567***	0.567***	0.567***	0.567***
	(0.154)	(0.154)	(0.154)	(0.154)
Female	0.226***	0.226***	0.226***	0.226***
	(0.0622)	(0.0622)	(0.0622)	(0.0622)
Age	-0.0107	-0.0107	-0.0107	-0.0107

	(0.0477)	(0.0477)	(0.0477)	(0.0477)
White or Caucasian	0.151	0.151	0.151	0.151
	(0.202)	(0.202)	(0.202)	(0.202)
Black or African American	0.187	0.187	0.187	0.187
	(0.223)	(0.223)	(0.223)	(0.223)
Asian or Asian American	0.105	0.105	0.105	0.105
	(0.213)	(0.213)	(0.213)	(0.213)
Hispanic or Latino	0.293	0.293	0.293	0.293
	(0.229)	(0.229)	(0.229)	(0.229)
College educated	0.485	0.0661	-0.0393	-0.322***
	(0.303)	(0.177)	(0.117)	(0.0988)
Income bracket	0.00385	0.00385	0.00385	0.00385
	(0.0187)	(0.0187)	(0.0187)	(0.0187)
Urban -v- Rural	-0.111	-0.111	-0.111	-0.111
	(0.100)	(0.100)	(0.100)	(0.100)
Suburban -v- Rural	-0.119	-0.119	-0.119	-0.119
	(0.107)	(0.107)	(0.107)	(0.107)
Constant	-22.38	-5.913	-2.642	8.180
	(16.83)	(13.13)	(11.80)	(11.43)
Observations	3,729	3,729	3,729	3,729
Pseudo R2	0.00560	0.00560	0.00560	0.00560

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Ants feel pain

VARIABLES	(strongly disagree)	(disagree)	(Neither agree nor disagree)	(Agree)
Veg*n	0.522***	0.522***	0.522***	0.522***
	(0.146)	(0.146)	(0.146)	(0.146)
Female	0.494***	0.274***	0.166**	0.0189
	(0.185)	(0.0975)	(0.0716)	(0.0684)
Age	0.117**	0.117**	0.117**	0.117**
	(0.0470)	(0.0470)	(0.0470)	(0.0470)
White or Caucasian	0.149	0.149	0.149	0.149
	(0.193)	(0.193)	(0.193)	(0.193)
Black or African American	0.128	0.128	0.128	0.128
	(0.214)	(0.214)	(0.214)	(0.214)
Asian or Asian American	-0.0407	-0.0407	-0.0407	-0.0407
	(0.203)	(0.203)	(0.203)	(0.203)
Hispanic or Latino	0.222	0.222	0.222	0.222
	(0.221)	(0.221)	(0.221)	(0.221)
College educated	-0.137	-0.137	-0.137	-0.137
	(0.0931)	(0.0931)	(0.0931)	(0.0931)
Income bracket	0.000566	0.000566	0.000566	0.000566
	(0.0184)	(0.0184)	(0.0184)	(0.0184)
Urban -v- Rural	-0.101	-0.101	-0.101	-0.101
	(0.0988)	(0.0988)	(0.0988)	(0.0988)
Suburban -v- Rural	-0.0101	-0.0101	-0.0101	-0.0101

	(0.105)	(0.105)	(0.105)	(0.105)
Constant	-13.05	-14.43	-15.51	-16.50
	(11.05)	(11.05)	(11.05)	(11.05)
Observations	3,618	3,618	3,618	3,618
Pseudo R2	0.00474	0.00474	0.00474	0.00474

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Ballot Measure

VARIABLES	ban insect feed
Veg*n	-0.0570
	(0.496)
Female	-0.160
	(0.177)
Age Bracket	0.314**
	(0.135)
White or Caucasian	1.151
	(0.765)
Black or African American	1.410*
	(0.805)

Asian or Asian American	1.254
	(0.800)
Hispanic or Latino	1.069
	(0.833)
College Educated	-0.461*
	(0.257)
Income Bracket	-0.0791
	(0.0531)
Urban-v-Rural	-0.143
	(0.270)
Suburban-v-Rural	0.170
	(0.283)
Constant	-63.50
	(38.89)
Observations	668
Pseudo R2	0.0238

*** p<0.01, ** p<0.05, * p<0.1

We also re-ran the regression analyses including whether voters intended to vote for President Trump or candidate Biden in the then upcoming 2020 Presidential election. See this separate doc.As the question included many options, not just Trump versus Biden, cutting it down to just these two options dropped around 700 respondents from the analysis. One also has to be cautious that this was vote *intention* rather than self-reported actual vote after the fact.

Appendix 3: Factor Analysis

Conducted by Principal Research Manager David Moss

Factor Loadings

	Factor							
	1	2	3	4	5	6	7	Uniqueness
agree_flies_animal_feed_alt	0.840							0.2608
agree_eat_animals_fed_insects	0.800							0.3304
agree_eat_animals_fed_insects_alt_reverse	−0.726							0.3660
agree_flies_animal_feed	0.705							0.4385
agree_insect_feed_harms_health	−0.699			0.364				0.3512
agree_eat_insects	−0.447							0.7299
agree_pain_termites		0.969						0.0994
agree_pain_ants		0.968						0.0892
agree_pain_honeybees		0.780						0.2709
agree_pain_fish		0.504	0.432					0.4064
agree_pain_pigs			0.923					0.1432
agree_pain_dogs			0.907					0.2048
agree_pain_chickens			0.868					0.1765
agree_birth_control_immoral				0.756				0.4132
agree_vote_cand_oppose_abortion				0.627				0.5024
agree_plant_based_is_meat				0.597				0.5483
agree_11hrs_sleep				0.578				0.5489
gss_spanking				0.494				0.6842
agree_40hrs_work								0.9055
agree_farming_climate_change					0.884			0.2122
agree_farming_harms_environment					0.855			0.2730
agree_farming_covid					0.497			0.6257
agree_vote_atheist						0.782		0.3756
agree_vote_gay						0.738		0.4045
agree_vote_veg						0.434		0.5000
agree_vote_cand_animal_welfare							0.757	0.4520
agree_vote_cand_reg_farming							0.625	0.4604
agree_stop_buying_if_reneg							0.430	0.7232
agree_vote_cand_gun_control								0.8175

Note. 'Principal axis factoring' extraction method was used in combination with a 'oblimin' rotation

[3]

Correlation Matrix

	1	2	3	4	5	6	7
1	—	−0.0551	0.0200	−0.0716	0.1057	0.1313	−0.1239
2		—	0.3732	0.0904	0.0452	0.0832	0.1957
3			—	−0.2419	0.0748	−0.0554	0.1436
4				—	−0.1060	0.1484	0.0690
5					—	0.5601	0.5462
6						—	0.5158
7							—