A Model of Climate Change Activism

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Summary

Understanding why people participate in collective action is a core theoretical problem across the social sciences. From the individual's point of view, it's often better to let other people pursue the hard work of lobbying for environmental protection. We devise a survey and a theoretical model to explore the motivations for participating in environmental activism to prevent climate change.

Theory & Models

Lubell, Zahran, Vedlitz model (M_0)

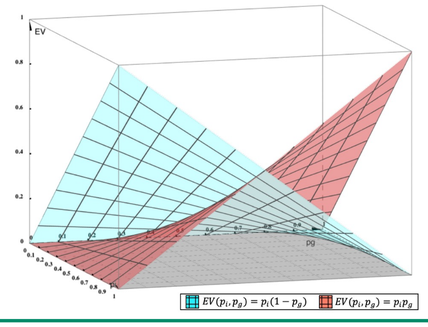
$$EV(activism) = p_i * p_g * (B_d - C_d) + B_i - C_i$$

Alternative model (M_1)

$$EV(activism) = p_i * (1 - p_g) * (B_d - C_d) + B_i - C_i$$

Motivation for the alternative model

As shown by the graph below, M_0 fails to account for the free-rider issue. Lubell's model predicts that as the value of p_g increases, the rate of change of EV will be positive. In other words, as the group's probability of success (without considering the individual's contribution) increases, the individual's expected value of participation would also increase. This would be counterintuitive since it seems to not account for the free-rider issue, which would predict that participation would be less likely as p_g increases. This is because the agent will still yield the benefits of the group's success even without participating in the movement and experiencing its costs.



Variables

p_i – Individual contribution to the probability of group success

p_g – Probability of group success without my individual support.

B_d – Success-dependent benefits of collective climate change activism.

C_d – Success-dependent costs of collective climate change activism.

B_i – Success-independent benefits of collective climate change activism

C_i – Success-independent costs of collective climate change activism.

Measurement

We designed a 12-question survey to assess people's beliefs and values attached to climate activism. All answers take the form of a 5-point Likert scale, where 1 = strongly disagree and 5 = strongly agree.

Survey

$EV(activism)$

Q1. I am committed to participating in activism to prevent climate change.

p_i

Q2. I believe my actions have an influence on global warming and climate change.

p_g

Q3. I am confident that other people are helping to reduce the effects of climate change.

Q4. I believe that public officials are responsive to public demands on climate change initiatives.

B_d

Q5. Single-use plastics are detrimental to marine life.

Q6. The recent forest fires in British Columbia are an unacceptable result of climate change.

C_d

Q7.I believe markets should generally be free from government. interference and unregulated.

Q8. I believe the carbon tax a significant harmful to the economy.

B_i

Q9. I believe that reducing the amount of single-use plastic I use brings me personal satisfaction.

Q10. Being around people who care about climate change brings me joy.

C_i

Q11. What is the highest level of education you have completed?

Q12. What is the estimated annual income for your household?

Statistical Analysis

The aim of the statistical analysis is to test the direction of the regression coefficients. We think p_g should be negatively correlated with activism while Lubell, Zahran, and Vedlitz predict it would be positively associated.

A regression model can be built by replacing each term of the theoretical model with a linear model. A logistic function for the probability variables.

$$p_i, p_g = \frac{\exp(a+b*x)}{1+\exp(a+b*x)}$$

And a linear function for the benefit and cost variables.

$$B_d, C_d, B_i, C_i = a + b * x$$

The other regression coefficients should have the expected direction: positive for p_i, B_d, B_i and negative for C_i, C_d.

References:

1 Lubell, M. et. al. Polit. Behav. 29:391-413 (2007) **2** Ostrom, E. The American Poli. Sci. Review 92:1-22 (1998) **3** Olson, M. (Harvard University Press, 1965) **4** Oliver, P. Annu. Rev. Sociol. 19:271-300 (1993).