Climate Anxiety:

Predicting Climate Change Anxiety Sentiments for International Youth

Anya Kapitula, Saachi Rajgarhia, Jack Rutherford

MATH 395-01

In *Eco-anxiety in children: A scoping review of the mental health awareness of climate change*, researchers commented on the lack of research surrounding eco-anxiety (extreme concern for the environment's health because of humans and climate change). This project explores how different aspects of an adolescent's life impact their stress levels regarding the environment. Studying eco-anxiety in youth is important for a few reasons. Primarily, distress from the climate crisis can lead to serious mental health implications within youth, causing feelings of hopelessness, sadness, fear, or guilt. Early mitigation of these can prevent the long-term effects of depression. Secondly, the responses from youth specifically are intriguing because today's climate change will affect adolescents the most. By focusing on their responses, we can use future research to predict how climate change may be addressed. Finally, understanding eco-anxiety levels can channel environmental action and advocacy. This research may inform environmentalists and researchers how to turn youth's despair into action, fostering a sense of agency.

Within this research project, we will be predicting how levels of eco-anxiety vary based on predictors such as country, language, age, and gender. Additionally, we will be looking at how eco-anxiety and feelings on how the youth's government is handling the climate crisis are correlated. Building off of research done by the collectors of the dataset in *Climate anxiety in children and young people and their beliefs about government responses to climate change: a global study*, our research will help understand how climate change affects youth today. It will inspire future research to assist them.

We will use a dataset Kantar collected for the University of Bath. It includes responses from 10,000 participants, with 1,000 individuals each from Australia, Brazil, Finland, France, India, Nigeria, the Philippines, Portugal, the UK, and the USA. Participants' ages range from 16 to 25. Along with collecting demographic information regarding region, gender, and age, participants were prompted to complete a survey asking about climate change emotions, thoughts, and the impact those had on their functioning. They were also asked about their thoughts and feelings regarding government inaction on climate change.

For our project, we will be using one of the survey questions (Q1) as our response variable. This question asks participants to indicate if the statement "I am worried that climate change threatens people and the planet." applies to them. Their responses are given on a 6-point scale, with 0 being "not worried", 1 being "a little", 2 being "moderately", 3 being "very", 4 being "extremely", and 5 being "prefer not to say". We are currently planning on removing the data of participants who responded with "prefer not to say" to any question from our analysis.

When predicting responses to this variable, we plan on using age, gender, language, country, region, and other survey questions. The first survey question (Q2) asks participants if climate change makes them feel any of the following: sad, helpless, anxious, afraid, optimistic, angry, guilty, ashamed, hurt, depressed, despair, grief, powerless, and indifferent. The second

question (Q3) asks participants if their feelings about climate change negatively affect their daily lives. The third question (Q4) asks if climate change makes the participant hesitant to have children, think humanity is doomed, that the future is frightening, they won't have access to the same opportunities that their parents did, that their family security will be threatened, the things they value most will be destroyed, or that people have failed to take care of the planet. Participants are also asked if people have ignored or dismissed them when they try to talk about climate change (Q5). The potential responses for Q2-Q5 are "yes", "no", and "prefer not to say". The second category of questions regards government inaction on climate change. The first question (Q6) has the same scale as Q1, with the exception of asking about reassurance instead of worry, and states "I am reassured by governments' action on climate change." The following question (Q7) delves into this response more, asking participants if, in relation to climate change, they believe that their government is / other governments are taking their concerns seriously enough, doing enough to avoid climate catastrophe, dismissing people's distress, acting in line with climate science, protecting them, the planet and/or future generations, can be trusted, lying about the effectiveness of the actions they're taking, failing young people across the world, and betraying them and/or future generations. The potential responses to these prompts are "yes," "no,", and "prefer not to say." The final question (Q8) uses the same scales as used by Q1 and Q6. It prompts participants on whether they feel anguished, abandoned, afraid, hopeful, angry, valued, ashamed, belittled, and/or protected when they think about how governments are responding to climate change. A codebook was created to help make our analysis more understandable.

The models we plan to use to predict our response variables include supervised models, tailored towards nominal predictors and response variables. These include, but are not limited to: KNN, Ordinal Logistic Regression, and other non-parametric tests. We will utilize KNN to analyze the data to determine the usability of the dataset and the ease of use when predicting the currently chosen response variable. After determining usability, we will move on to cleaning, filling NaN values, and performing nominal logistic regression on the predictors. Due to the majority of the data being ordinal (Q1, 6, and 8) and nominal (Q2-Q5, Q7), we will also be using non-parametric tests such as Mood's Median, Mann-Whitney, Wilcoxon, Friedman's Test, Kruskal-Wallis, and Spearman's Rho to derive results from our analyses. If we switch to a nominal response variable we would use the Chi-Squared, Fisher's Exact, McNemar's, and Cochran's Q Tests.

Within our introduction, we will reference and build off of *Climate anxiety in children and young people and their beliefs about government responses to climate change: a global study* by the University of Bath; *Eco-anxiety in Children and Young People- A Rational Response Irreconcilable Despair, or Both?* By Caroline Hickman, and *Eco-anxiety in children: A scoping review of the mental health awareness of climate change* published by the Frontiers of Psychology journal.

Data source:

Marks, E., Hickman, C., Pihkala, P., 2022. *Dataset for "Climate anxiety in children and young people and their beliefs about government responses to climate change: a global survey".*Bath: University of Bath Research Data Archive. Available from: https://doi.org/10.15125/BATH-01124.

Codebook: codebook

References:

Hickman, C., Marks, E., Pihkala, P., Clayton, S., Lewandowski, R. E., Mayall, E. E., Wray, B., Mellor, C., and van Susteren, L., 2021. Climate anxiety in children and young people and their beliefs about government responses to climate change: a global survey. *The Lancet Planetary Health*, 5(12), e863-e873. Available from: https://researchportal.bath.ac.uk/en/datasets/dataset-for-climate-anxiety-in-children-and-young-people-and-thei

Léger-Goodes T, Malboeuf-Hurtubise C, Mastine T, Généreux M, Paradis PO, Camden C. Eco-anxiety in children: A scoping review of the mental health impacts of the awareness of climate change. Front Psychol. 2022 Jul 25;13:872544. Doi: 10.3389/fpsyg.2022.87254. PMID: 35959069; PMCID: PMC9359205. https://pmc.ncbi.nlm.nih.gov/articles/PMC9359205/

Hickman, C. (2024). Eco-Anxiety in Children and Young People – A Rational Response, Irreconcilable Despair, or Both? *The Psychoanalytic Study of the Child*, *77*(1), 356–368. https://doi.org/10.1080/00797308.2023.2287381