University of Leeds

School of Computing

COMP5122M – Data Science

Coursework 1: Global Climate Attitudes
and Eco-Anxiety — Part I

Team Name: Meowth

Kaustubh Kaushal [wftn0343]
Siddhant Ram [fmtm0110]
Ziyun Kang [csdf0983]
Qianning Zhou [cxvk0212]

1. Introduction and Aim

This study analyzes public attitudes towards renewable energy transition using data from the UNDP Peoples' Climate Vote 2024 dataset in partnership with University of Oxford.[1] The dataset comprises responses from 73 countries and categorizes participants into five age groups, including under 18, 18 to 35, 36 to 59, 60 plus and all ages. The primary objective is to investigate whether a consistent age gap exists in the urgency people express towards "how quickly should your country replace coal, oil, and gas with renewable energy, such as power from the wind or sun?" This report systematically follows a structured approach that includes data preprocessing, exploratory data analysis, quantifying the age gap, and interpreting the global patterns observed.

2. Data Overview and Preprocessing

The dataset was obtained from The Peoples' Climate Vote 2024 (United Nations Development Programme,2024) [1] and contains weighted national response percentages (weighted mean) for climate-related questions segmented by country, age group and education level. For this analysis, only responses associated with the urgency of renewable energy transition were retained. Data cleaning included standardizing text columns, removing aggregate categories "All Ages", choosing "All Education" to eliminate effects on weighted national response percentages, and dealing with null values.

3. Methodology

All data processing and visualization were performed in Python[2] using Pandas[3], Matplotlib[4], and Seaborn[5], primarily executed in a Google Colab environment[6].

A composite metric, "Support Quickly," was created by summing responses categorized as "Somewhat quickly" and "Very quickly."

Since all countries except 'Global' do not have weighted mean for the age group under 18, group 18-35 is chosen as the younger group. Besides, there are null values in weighted mean for the age group over 60 so a function has been used to adjust automatically to age group 36 to 59 if the country does not have weighted mean for age group over 60 and age group over 60 if the country does have weighted mean for age group over 60.

4. Exploratory Data Analysis

4.1 Descriptive Statistics

Global averages indicate that younger respondents express significantly stronger urgency for renewable energy transition. The mean support rates across age groups are approximately:

- Under 18: 75%
- 18 to 35: 68.4%
- 36 to 59: 68.1%
- 60 plus: 65%

With younger cohorts demonstrating both greater awareness and a stronger willingness to accelerate climate action, this pattern highlights the fact that enthusiasm for renewable energy is primarily driven by young people.

4.2 Visual Analysis

The visualizations show a steady age gradient in attitudes toward the switch to renewable energy around the world. Although older cohorts ("36–59," "60+") prefer a slower transition, younger groups ("Under 18," "18–35") exhibit greater urgency, with higher proportions choosing "Very quickly" or "Somewhat quickly."
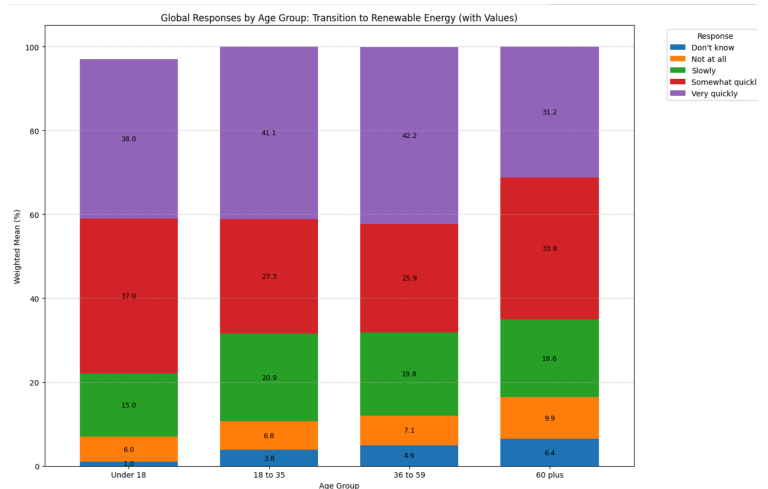

Figure 1: A stacked bar chart demonstrating younger cohorts' greater pro-renewable support.

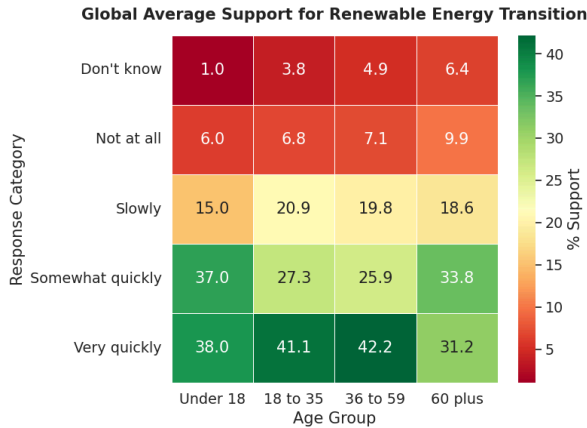**Global Average Support for Renewable Energy Transition**

Figure 2: A global heatmap illustrating the younger age groups' greater urgency for a transition to renewable energy.

4.3 Age Gap Analysis

"Somewhat quickly" and "Very quickly" responses are combined to show overall urgency in the national-level heatmap that compares support for the renewable transition across age groups. Overall, the graph shows support for renewable energy around the world, with regional differences in intergenerational gaps.
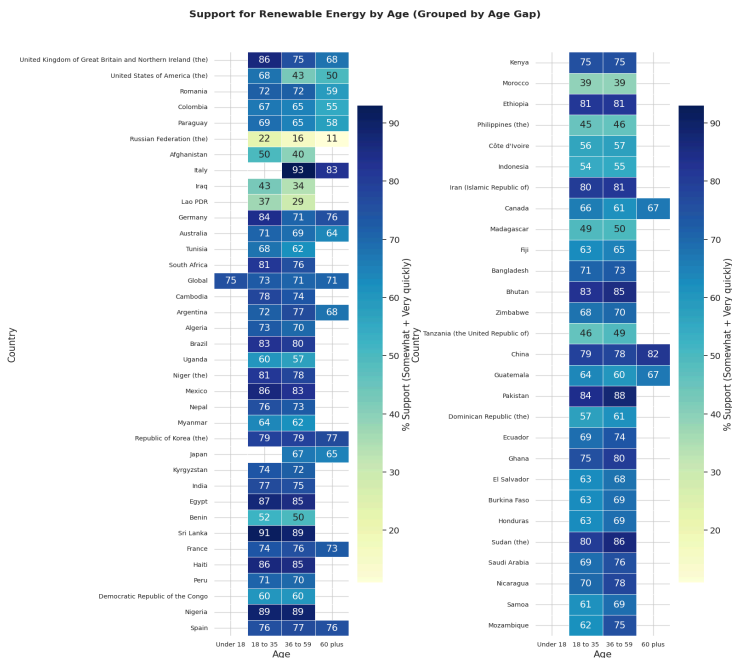
Support for Renewable Energy by Age (Grouped by Age Gap)

Figure 3: This heatmap illustrates how support for renewable energy varies by age, with younger groups showing greater urgency.

The size and direction of age differences in support for the switch to renewable energy across nations are depicted in the diverging bar chart. Negative values (red) indicate countries where older groups express equal or greater support, while positive values (green) represent countries where younger respondents exhibit stronger urgency. The graphic shows that the majority of nations exhibit positive gaps, indicating that young people are the main proponents of a swift switch to renewable energy. Overall, the graph shows that although support for renewable energy is strong worldwide, it is primarily driven by young people.

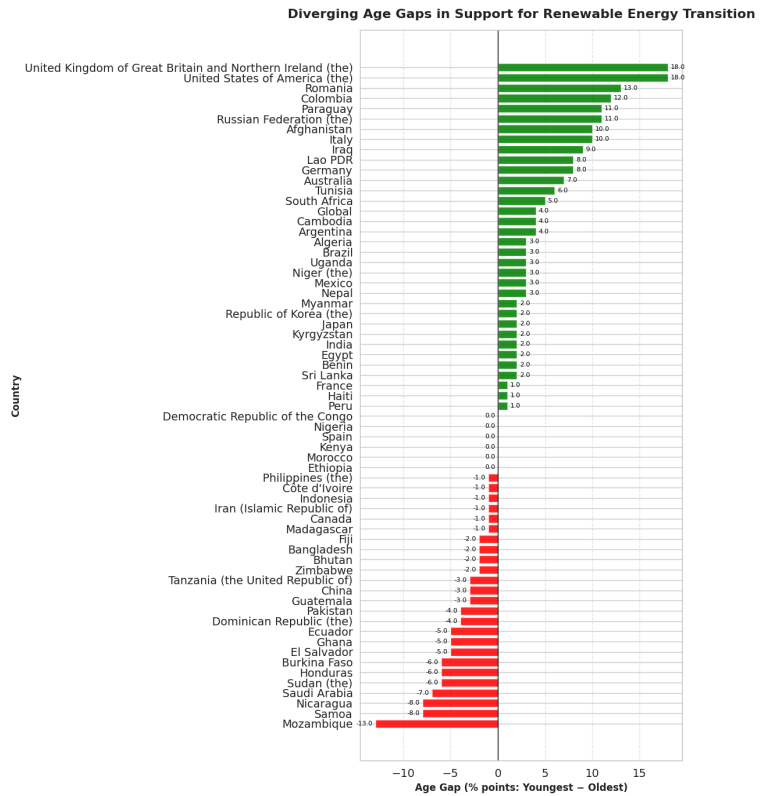**Diverging Age Gaps in Support for Renewable Energy Transition**

Figure 4: Diverging bar chart illustrating age gaps in support for the renewable transition at the national level; positive values show greater urgency among young people, while negative values show consensus among older people.

4.4 Interpretation

The regression analysis measures the age-related variation in support for the urgent transition to renewable energy.[7] A straightforward linear regression of support (percentage stating "Somewhat" + "Very quickly") against age for each nation shows a pronounced negative slope, suggesting that younger age groups continuously exhibit greater urgency than older cohorts. Different countries have different levels of this slope, which highlights differences in generational gaps. While countries with flatter slopes indicate broader cross-generational consensus, those with steeper slopes demonstrate strong youth-driven support.
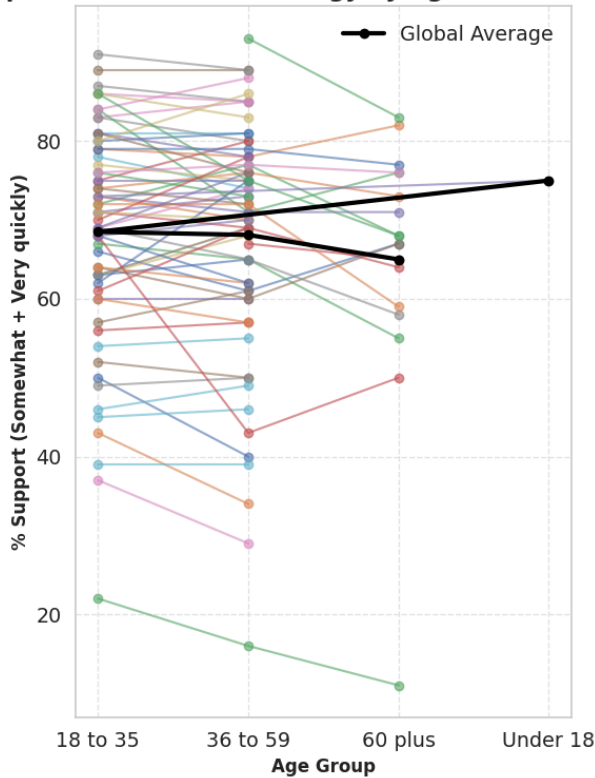

Figure 5: The black line indicates the global average, while the lines display trends by nation from the youngest to the oldest age groups. Stronger youth-driven urgency is indicated by steeper downward slopes, underscoring national differences in generational gaps.

5. Conclusions

- The United States, Romania, and the United Kingdom have the biggest positive age gaps, with younger generations expressing significantly greater zeal for immediate climate action than older generations.
- Countries like Mozambique, Samoa, and Nicaragua, on the other hand, show the most negative age gaps, suggesting that older generations in these countries are more in favor of hastening the switch to renewable energy than younger ones. This contradicts common beliefs about the urgency of the youth climate crisis.
- Sudan, Saudi Arabia, Ecuador, and other nations have small or reversed age gaps, indicating that social context, local laws, and cultural influences are important determinants of how different generations view climate action.
- It should be highlighted that Italy and Japan have younger age groups that are mainly in the 35–59 age range, while their older groups are 60 years of age and older.
- Countries including Barbados, Comoros (the), Czechia, Greece, Jordan, Papua New Guinea, Solomon Islands and Vanuatu only contain null values in weighted mean so they are not in calculation scope.
- The general global trend indicates that most nations have positive age gaps, with younger generations serving as the main forces behind the urgent advocacy for the switch to renewable energy.

According to the analysis, there is a glaring age gap in the urgency of the switch to renewable energy, with younger generations being noticeably more supportive than older ones. Although some nations show greater cross-generational agreement, this trend is widespread. The strong support from young people emphasizes how important it is to take age differences into account when developing climate policies and communication plans in order to take effective action.

3

Appendix

Appendix A: Data Cleaning and Preprocessing Steps

Step Category	Description
Removal of Aggregates	Removed "All Ages" rows from the dataset.
Education Filtering	Selected "All Education" entries to avoid confounding weighted percentages across education strata.
Text Standardisation	Standardised country names and age labels for consistency.
Handling Missing Values	Dropped countries containing only null values (Barbados, Comoros, Czechia, Greece, Jordan, Papua New Guinea, Solomon Islands, Vanuatu).
Age Fallback Logic	- If "60 plus" is missing → use "36–59" as the older group. - If "Under 18" is missing → use "18–35" as the youngest group.
Composite Metric Creation	Support Quickly = "Very quickly" + "Somewhat quickly".

Appendix B: Visualizations

Figure	Description
Figure 1	Global Responses by Age Group for Renewable Energy Transition — Stacked Bar Chart.
Figure 2	Global Average Support for Renewable Energy Transition — Heatmap.
Figure 3	Renewable Energy Support by Age Group — Age Gap Heatmap.
Figure 4	Diverging Age Gaps in Renewable Energy Support — Bar Chart.
Figure 5	Support for Renewable Energy vs. Age — Scatter Plot with Regression Line.

References

[1]   United Nations Development Programme (UNDP).2024.*The Peoples' Climate Vote 2024*. [Online]. [Accessed 30 October 2025]. Available from: https://peoplesclimate.vote/data-center

[2]   Python Software Foundation. 2025. *Python version 3.10*. Available at: https://www.python.org/

[3]   pandas Development Team. 2025. pandas: *Python data analysis library*. Available at: https://pandas.pydata.org/

[4]   Hunter, J.D. and Matplotlib Development Team. 2025. *Matplotlib*. Available at: https://matplotlib.org/

[5]   Waskom, M. and contributors. 2025. *Seaborn statistical visualisation library*. Available at: https://seaborn.pydata.org/

[6]   Google. 2025. *Google Colaboratory*. Available at: https://colab.research.google.com/

[7]   Pedregosa, F. et al. 2025. *scikit-learn: Machine learning in Python*. Available at: https://scikit-learn.org/