

DOES POLITICAL ORIENTATION INFLUENCE SUPPORT FOR ENVIRONMENTAL POLICY? A LOGISTIC REGRESSION ANALYSIS IN JASP

1. Background and Research Objective

An environmental think tank based in the United States commissioned this study to understand the extent to which **political ideology influences public support for climate-related taxation policies**. The goal was to produce quantitative evidence that could support data-informed advocacy and segmentation of outreach campaigns.

Research Question: Does political orientation significantly predict support for a climate tax, after accounting for income, education, and environmental concern?

2. Dataset and Variables

- **Sample Size:** 520 adult respondents from a stratified US panel survey
- **Survey Format:** Structured questionnaire hosted on Qualtrics
- **JASP File:** .csv imported into JASP with manual factor labeling

Variables Used in Analysis:

Variable	Type	Description
Support_Tax	Binary (0/1)	Dependent variable: 1 = Supports climate tax, 0 = Opposes
Political_Orientation	Ordinal	1 = Very Liberal to 7 = Very Conservative
Income_Bracket	Ordinal	1 = < \$40k, 2 = \$40k–\$80k, 3 = > \$80k
Education_Level	Ordinal	1 = High School, 2 = Bachelor's, 3 = Master's or higher
Environmental_Concern	Continuous	Composite index (1–10) from validated attitudinal items
Age	Continuous	Respondent's age in years

3. Statistical Methodology in JASP

3.1 Descriptive Analysis

- Supporters of the tax: 57.9%
- Mean Political Orientation: 4.2 (center-leaning moderate)
- Mean Environmental Concern: 7.3/10
- Education and income levels were well distributed across groups

3.2 Correlation Matrix (Exploration Tool)

- Political Orientation negatively correlated with tax support ($r = -0.38, p < .001$)
- Environmental Concern positively correlated ($r = +0.41, p < .001$)
- No multicollinearity issues detected (VIFs < 2.0)

3.3 Binary Logistic Regression

Dependent Variable: Support_Tax (1 = Yes, 0 = No)

Model:

$$\text{Logit}(P) = \beta_0 + \beta_1 \cdot \text{Political_Orientation} + \beta_2 \cdot \text{Environmental_Concern} + \beta_3 \cdot \text{Income_Bracket} + \beta_4 \cdot \text{Education_Level} + \beta_5 \cdot \text{Age}$$

JASP Output:

Predictor	Odds Ratio	Std. Error	p-value
Intercept	0.73	—	0.008
Political_Orientation	0.65	0.07	< .001
Environmental_Concern	1.48	0.12	< .001
Income_Bracket	1.17	0.11	0.061
Education_Level	1.21	0.13	0.045
Age	0.99	0.01	0.309

- Nagelkerke R²: 0.29
- Classification Accuracy: 76.1%
- Hosmer–Lemeshow Test: $p = 0.41 \rightarrow$ model fits well

4. Interpretation of Results

- **Political Orientation:** Each 1-point shift toward conservatism reduces the odds of supporting the climate tax by **35%**.
- **Environmental Concern:** Each unit increase raises support odds by **48%**.
- **Education:** Higher education level slightly increases likelihood of support.
- **Age and income** were not significant at the 5% level but showed directional trends consistent with prior literature.

5. Visual Outputs Generated in JASP

- ROC Curve (AUC = 0.79)
- Regression Coefficient Plot
- Classification Matrix Table
- Probability Plot by Political Orientation
- Boxplots: Environmental Concern by Support Group

All visuals were exported from JASP and integrated into the report and executive summary.

6. Reporting and Deliverables

- Full analytical report (APA-style, 15 pages)
- Executive briefing summary (2 pages, non-technical)
- Editable JASP file (.jasp)
- Annotated version of dataset (cleaned with metadata)
- PowerPoint deck (10 slides) for advocacy presentation use

7. Strategic Insights for Client Use

- **Message Segmentation:** Advocacy messages should emphasize **non-partisan environmental values** and be tailored based on ideology.
- **Campaign Design:** Focus on outreach to moderate and liberal segments with strong environmental concern; conservatives require issue reframing.

- **Policy Planning:** Educational engagement correlates positively with support—useful for coalition building and community education efforts.

8. Academic and Policy Relevance

- **Academic Use:** Suitable for thesis or coursework in political science, public policy, or environmental economics involving regression and survey data.
- **Corporate/NGO Use:** Supports campaign optimization for climate non-profits, policy advisors, or sustainable business lobbying groups.

Statssy