POLITICAL PARTY PREFERENCE AND ENVIRONMENTAL SPENDING TRENDS

MARIST SCHOOL OF COMPUTER SCIENCE AND MATHEMATICS

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Introduction

This project investigates the relation between vote choice and environmental spending trends, focusing on how voting behavior, news consumption, opinions on spending for recreational services, and alternative energy sources influence spending prerogatives. Our research question examines whether political party preferences influence the public's prioritization of environmental spending and how additional factors, including news consumption and spending for recreational and alternative energy sources, contribute to these preferences.

Methods

Using data from the 2022 General Social Survey (GSS) and RStudio software, our team conducted descriptive statistical analysis, bivariate analysis, and chi-squared tests to analyze environmental spending data and examine how it relates to vote choice.

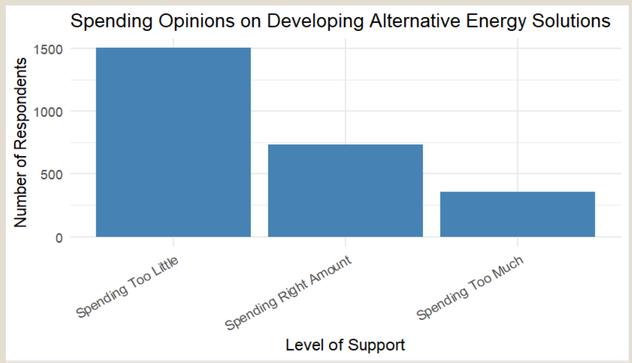
Four variables were analyzed:

1. Voting behavior in the 2020 U.S. presidential election **(PRES20)**
2. Frequency of newspaper readings **(NEWS)**
3. Opinions on government spending for parks and recreation **(NATPARK)**
4. Views on spending for alternative energy sources **(NATENRGY)**

Null Hypothesis: Vote choice has no significant influence on beliefs pertaining to environmental spending initiatives and preferences.

Alternative Hypothesis: Vote choice has a significant influence on beliefs pertaining to environmental spending initiatives and preferences.

A



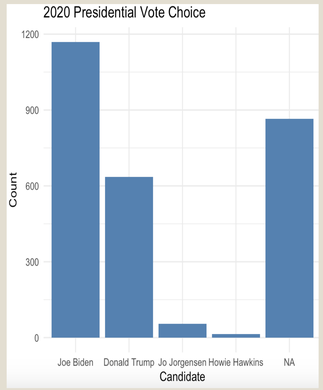
Data Analysis

The bar chart for the **PRES20 (B)** variable shows survey participant voting choices in the 2020 U.S. presidential election. The N/A bar column represents respondents who did not vote or did not disclose who they voted for.

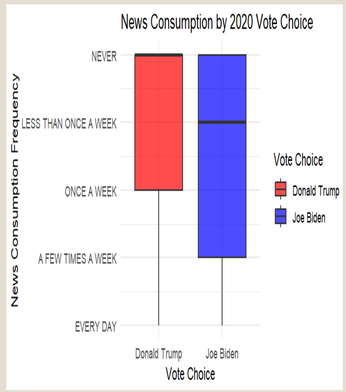
The boxplot comparing **PRES20** and **NEWS (C)** variables shows the relationship between frequency of news consumption and voting choice in the 2020 presidential election. The majority of respondents who consumed news more frequently voted for President Biden, followed by President Trump.

The boxplot comparing **PRES20** and **NATENRGY (D)** variables shows the relationship between spending opinions relating to developing alternative energy solutions and voting choice in the 2020 presidential election. **NATENRGY** score values are based on the 2022 GSS File Codebook (see References section.)

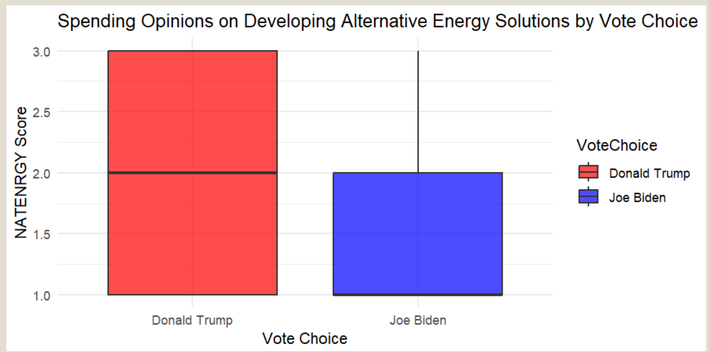
B



C



D



Results

According to the scatter plot comparing **NATENRGY** and **NATPARK** variables, most respondents believe that the U.S government is spending too little on developing alternative energy solutions, while few participants believe that the U.S is spending too much on national parks. **NATENRGY** and **NATPARK** score values on the scatter plot are based on the 2022 GSS File Codebook (see References section.) However, more participants that voted for President Trump believe that the U.S is spending too much on natural energy and national parks, whereas more participants that voted for President Biden believe that the U.S is spending too little on natural energy and national parks.

CHI-SQUARED TEST RESULTS:

(PRES20) and **(NEWS):** Chi-squared: 50.12
P-value: 0 → Null hypothesis is **rejected**

(PRES20) and **(NATENRGY):** Chi-squared: 568.14
P-value: 0 → Null hypothesis is **rejected**

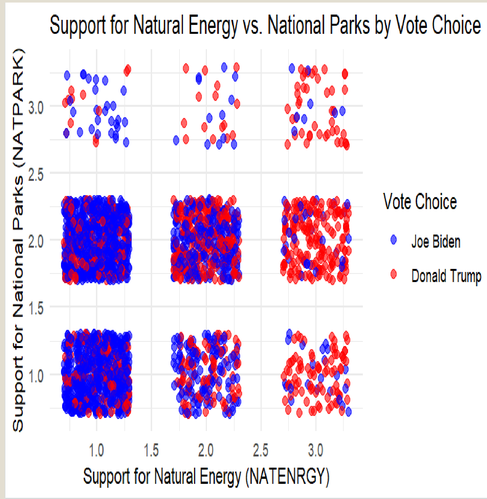
(PRES20) and **(NATPARK):** Chi-Squared: 53.99
P-value: 0 → Null hypothesis is **rejected**

(NEWS) and **(NATENRGY):** Chi-Squared: 14.70
P-value: 0.0652 → Null hypothesis is **retained**

(NEWS) and **(NATPARK):** Chi-Squared: 12.53
P-value: 0.1291 → Null hypothesis is **retained**

(NATENRGY) and **(NATPARK):** Chi-Squared: 209.11
P-value: 0 → Null hypothesis is **rejected**

E



Conclusion

In conclusion, there is a relation between vote choice and spending opinions on developing alternative energy solutions. There is also a relation between vote choice and spending opinions on government spending for national parks. Additionally, there is a relation between news consumption frequency and vote choice. Most respondents who believe that the U.S government is spending too little on developing alternative energy solutions also believe that the U.S government is spending too little on national parks and recreation. Few participants believe that the U.S government is spending too much on national parks, regardless of vote choice.

References

Davern M, Bautista R, Freese J, Herd P, Morgan SL. General Social Survey 1972–2022. Chicago (IL): NORC at the University of Chicago; 2024 cited 2025 Apr 17. https://gss.norc.org/content/dam/gss/get-documentation/pdf/codebook/GSS%202022%20Codebook.pdf

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McCright, A. M., Xiao, C., & Dunlap, R. E. (2014). Political polarization on support for government spending on environmental protection in the USA, 1974–2012. *Social Science Research*, *48*, 251–260. https://doi.org/10.1016/j.ssresearch.2014.06.008

GitHub Repository Address:
Data-220-112-Analyzing-environmental-spending-trends-Ecotrackers

Variable: NATPARK Type: Numeric

Label:
(... are we spending too much, too little, or about the right amount on) Parks and recreation

Notes:

LABEL	VALUE	COUNT	PCT	PCT Excl. Reserve Codes
TOO LITTLE	1	1347	38.0%	38.7%
ABOUT RIGHT	2	1953	55.1%	56.2%
TOO MUCH	3	178	5.0%	5.1%
SUBTOTALS:		3478	98.1%	100.0%
RESERVED CODES:				
DON'T KNOW	D	58	1.6%	n/a
SKIPPED ON WEB	S	8	0.2%	n/a
TOTALS:		3544	100.0%	100.0%

Variable: NEWS Type: Numeric

Label: How often do you read the newspaper--every day, a few times a week, once a week, less than once a week, or never?

Notes:

LABEL	VALUE	COUNT	PCT	PCT Excl. Reserve Codes
EVERY DAY	1	383	10.8%	16.2%
A FEW TIMES A WEEK	2	267	7.5%	11.3%
ONCE A WEEK	3	195	5.5%	8.2%
LESS THAN ONCE A WEEK	4	329	9.3%	13.9%
NEVER	5	1191	33.6%	50.4%
SUBTOTALS:		2365	66.7%	100.0%
RESERVED CODES:				
DON'T KNOW	D	4	0.1%	n/a
NO ANSWER	N	1	0.0%	n/a
NOT APPLICABLE	I	1168	33.0%	n/a
SKIPPED ON WEB	S	6	0.2%	n/a
TOTALS:		3544	100.0%	100.0%

Variable: NATENRGY Type: Numeric

Label:
(... are we spending too much, too little, or about the right amount on) Developing alternative energy sources

Notes:

LABEL	VALUE	COUNT	PCT	PCT Excl. Reserve Codes
TOO LITTLE	1	1939	54.7%	56.6%
ABOUT RIGHT	2	1013	28.6%	29.6%
TOO MUCH	3	472	13.3%	13.8%
SUBTOTALS:		3424	96.6%	100.0%
RESERVED CODES:				
DON'T KNOW	D	115	3.2%	n/a
SKIPPED ON WEB	S	5	0.1%	n/a
TOTALS:		3544	100.0%	100.0%

Introduction

This project investigates the relation between **vote choice** and **environmental spending trends.**

Focus on how voting behavior, news consumption, opinions on spending for recreational services, and alternative energy sources influence spending prerogatives.

Does political party affiliation influence environmental spending priorities and preferences and what role do voting behavior, consumption of news, opinions on spending for parks and recreational services, and views on spending for alternative energy sources play in shaping these spending prerogatives?

Methods

Data Set: 2022 General Social Survey (GSS)

Software: RStudio

Four Key Variables Used:

Voting Choice in the 2020 U.S Election (PRES20)

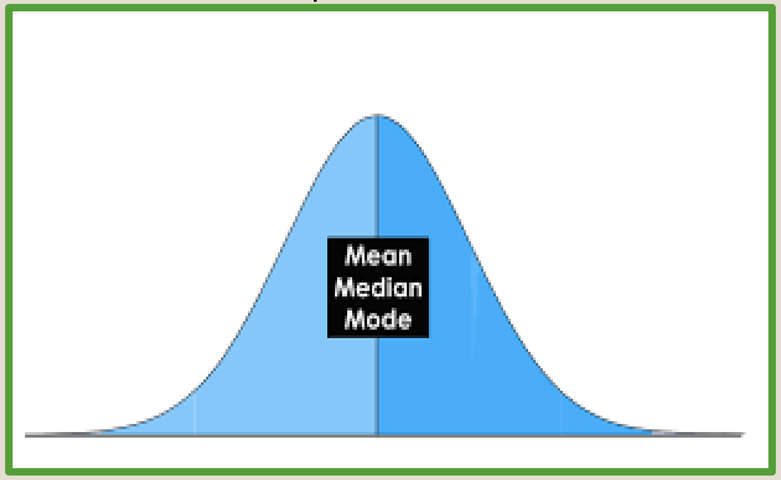
News Consumption (NEWS)

Opinions on Spending for National Parks (NATPARK)

Opinions on Spending for Alternative Energy (NATENRGY)

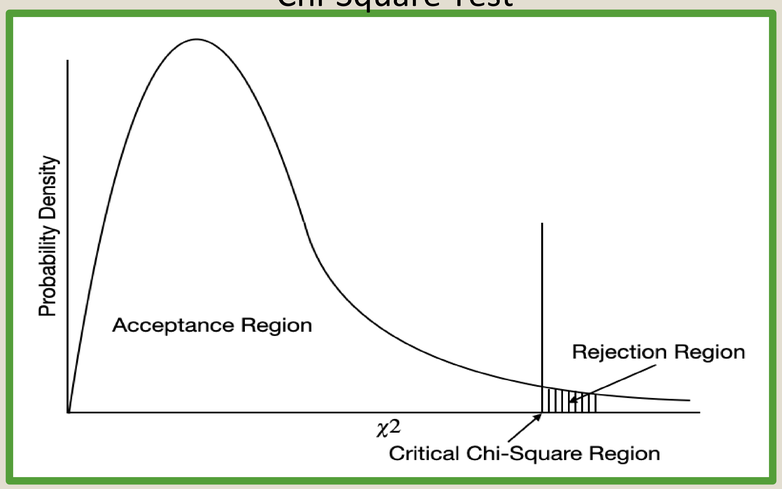
Statistical Tests Used

Descriptive Statistics



Bivariate Analysis

Chi-Square Test



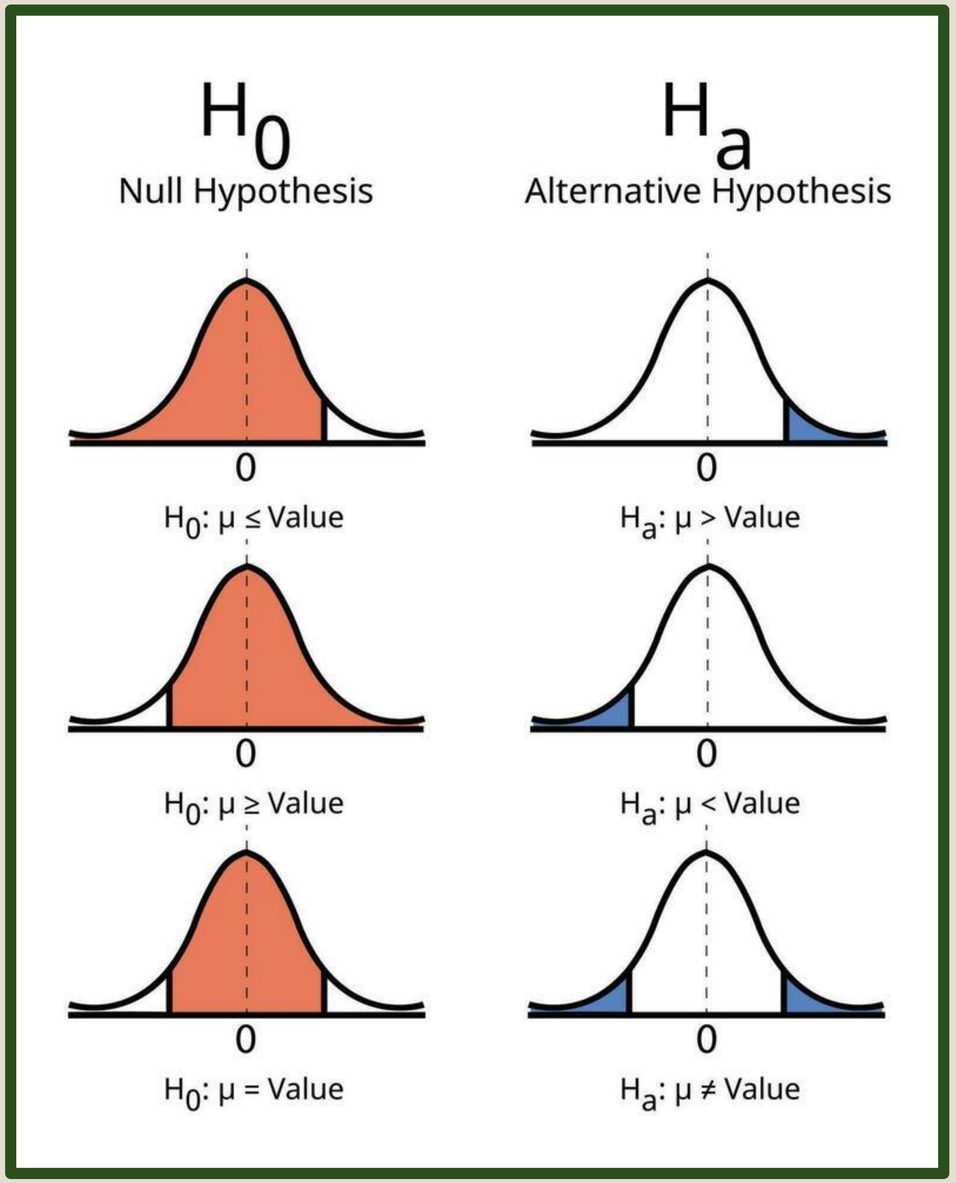
Null & Alternative Hypotheses

Null Hypothesis:

Vote choice has no significant influence on beliefs pertaining to environmental spending initiatives and preferences.

Alternative Hypothesis:

Vote choice has a significant influence on beliefs pertaining to environmental spending initiatives and preferences.



Descriptive statistics

PRES20:

Min.	1st Qu.	Median	Mean	3rd Qu.	Max.	NA's
1.000	1.000	1.000	1.428	2.000	4.000	1352

Interpretation: These statistical values summarize the distribution variable PRES20. The distribution is skewed right based on the minimum, 1st quartile, median, and 3rd quartile, indicating that most values are concentrated around 1.0 and 2.0. The median (1.000) is slightly lower than the mean (1.428), suggesting a right-skewed tendency. The upper limit of the data is shown by the maximum value of 4.000, while a substantial amount of incomplete data is indicated by the 1,325 missing values (NAs).

NEWS:

Min.	1st Qu.	Median	Mean	3rd Qu.	Max.	NA's
1.000	2.000	4.000	3.717	5.000	5.000	1397

Interpretation: These statistical values summarize the distribution variable of NEWS. The distribution appears slightly left-skewed based on the minimum, first quartile, median, and third quartile, suggesting that most values are concentrated around 2.000 and 4.000. The mean (3.717) is slightly lower than the median (4.000), reinforcing this left-skewed tendency.

Descriptive statistics

NATPARK:

Min.	1st Qu.	Median	Mean	3rd Qu.	Max.	NA's
1.000	1.000	2.000	1.667	2.000	3.000	73

Interpretation: These statistical values summarize the variables of NATPARK. The minimum value is 1.000, and the maximum is 3.000, indicating a relatively small range. The 1st quartile (1.000) and median (2.000) suggest that at least half of the data is concentrated between 1.000 and 2.000. The mean (1.667) is slightly lower than the median, which suggests a slight left skew in the distribution. The 3rd quartile (2.000) indicates that most values do not exceed 2.000, with only a few reaching 3.000. There are 73 missing values (NAs) in the dataset.

NATENRGY:

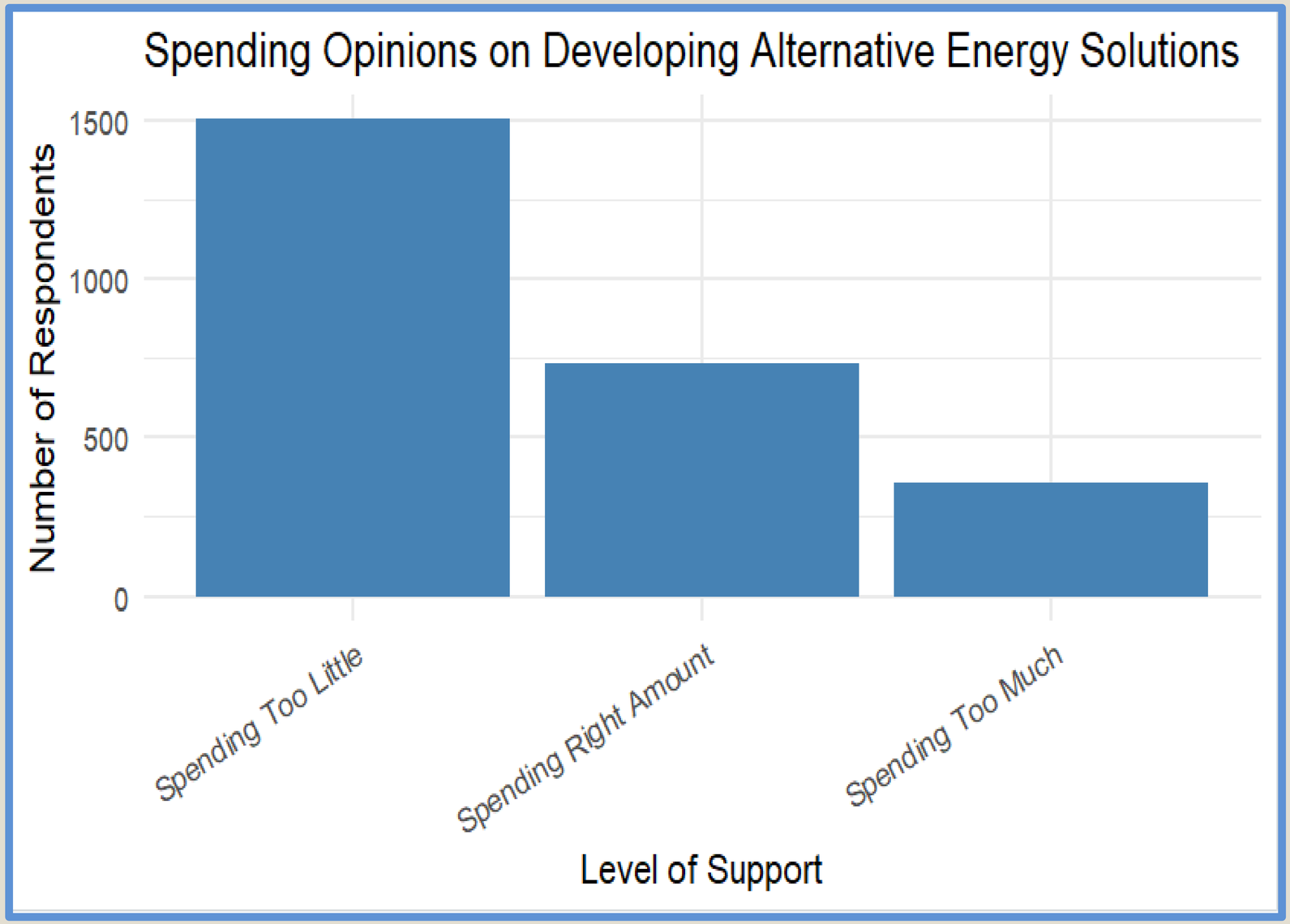
Min	1st Qu.	Median	Mean	3rd Qu.	Max	NA’S
1.000	1.000	1.000	1.561	2.000	3.000	123

Interpretation: These statistical values summarize the variables of NATENRGY. The minimum (1.000), 1st quartile (1.000), and median (1.000) indicate that a large portion of the data is concentrated at the lowest value. The mean (1.561) is slightly higher than the median, suggesting a slight right skew in the distribution. The 3rd quartile (2.000) and maximum (3.000) show that while most values are low, a portion extends to higher numbers. Additionally, there are 123 missing values (NAs) in the dataset.

Data Analysis

This bar chart shows opinions on alternative energy spending by survey respondents (A).

Without political party consideration, there is a general consensus that majority of survey respondents believe that too little is being spent on alternative energy sources.

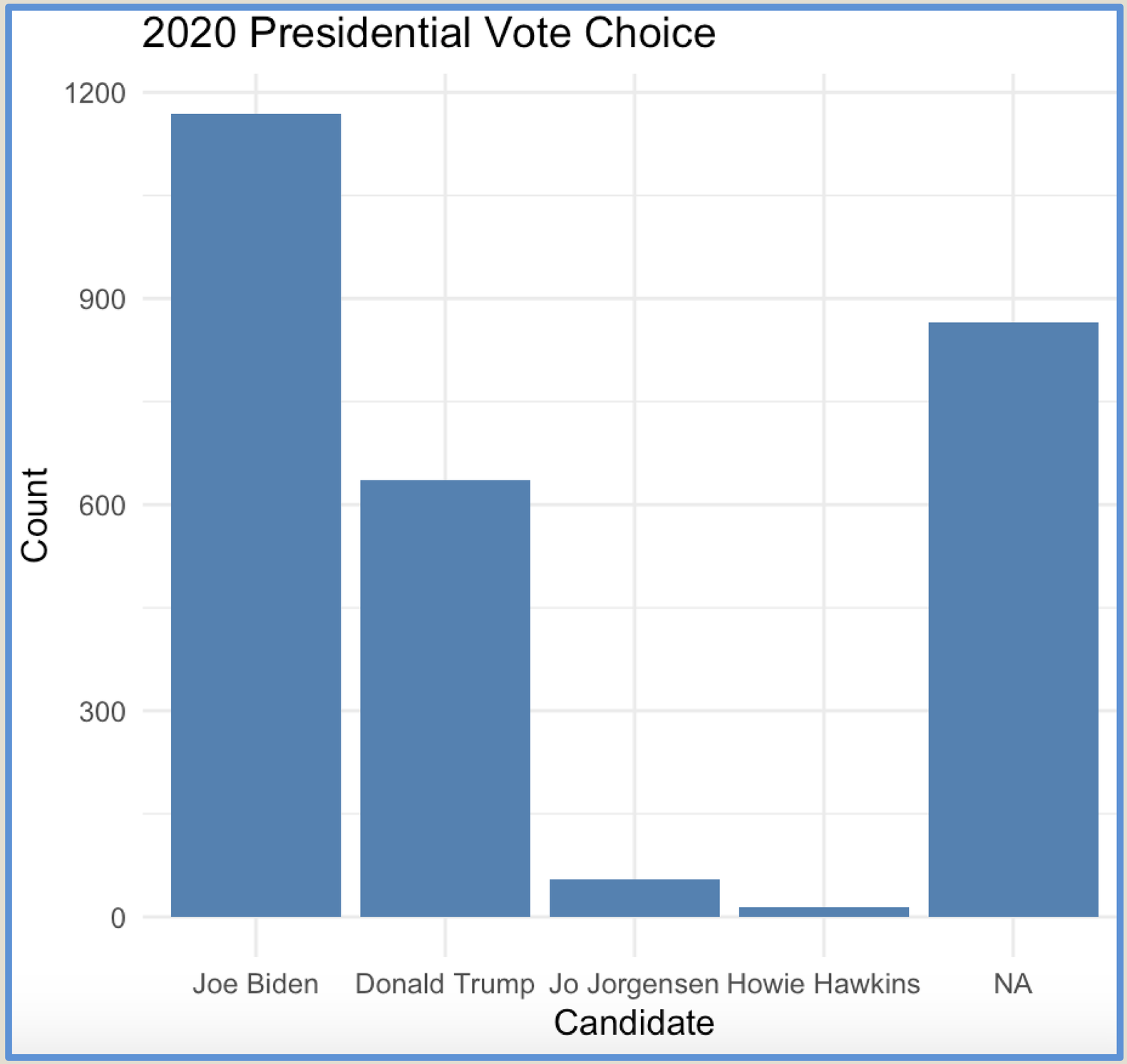


Data Analysis

This bar chart shows survey respondents voting choices in the 2020 U.S. presidential election (B).

The N/A bar column represents survey respondents who did not vote or did not disclose who they voted for.

President Biden received the highest number of votes among survey respondents, followed by President Trump.

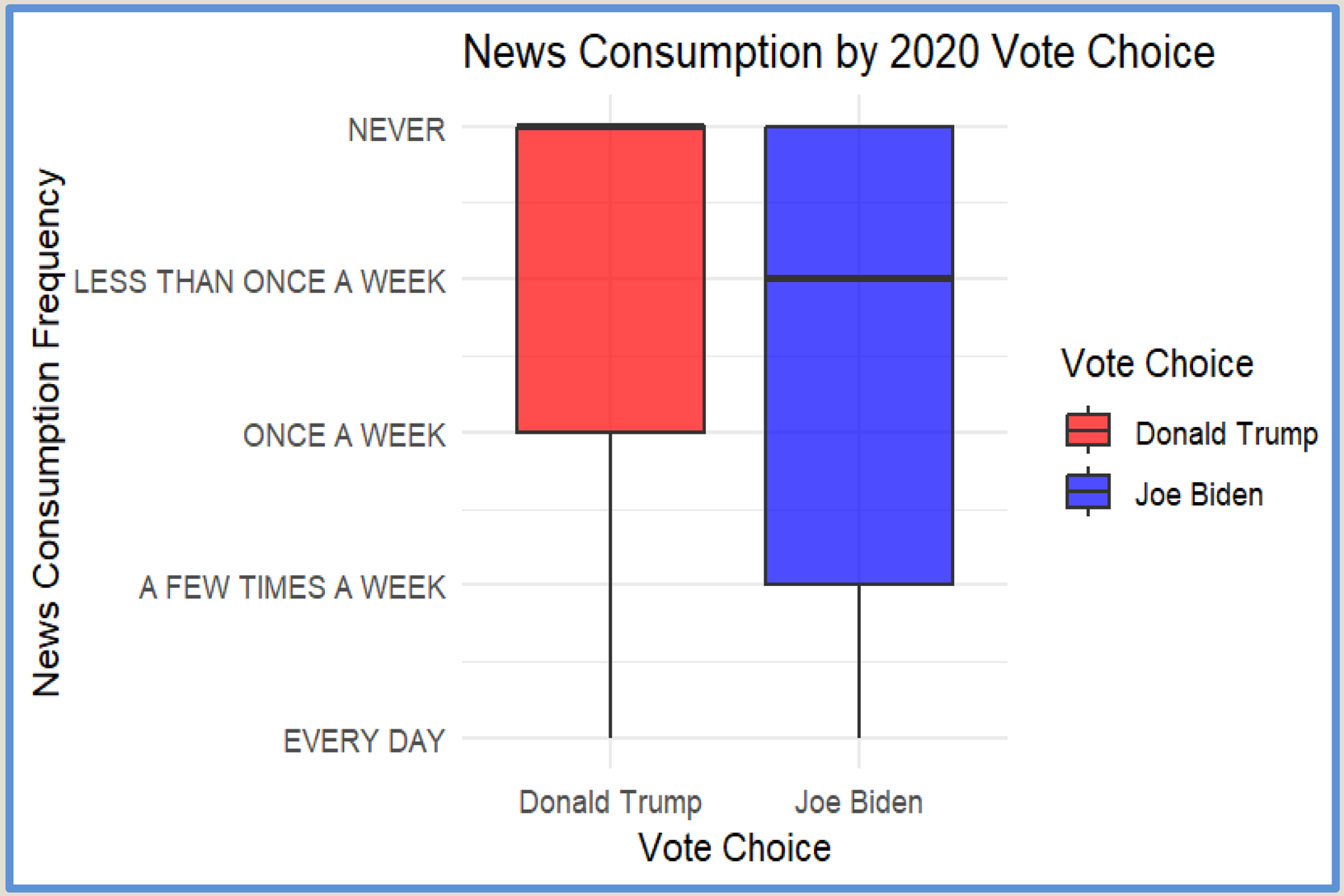


Data Analysis

This boxplot compares news consumption to survey respondents voting choices in the 2020 U.S. presidential election (C).

The majority of survey respondents who consumed news more frequently voted for President Biden followed by President Trump.

The spread for respondents that voted for President Trump is more varied with more outliers, indicating a wider range of news consumption patterns.

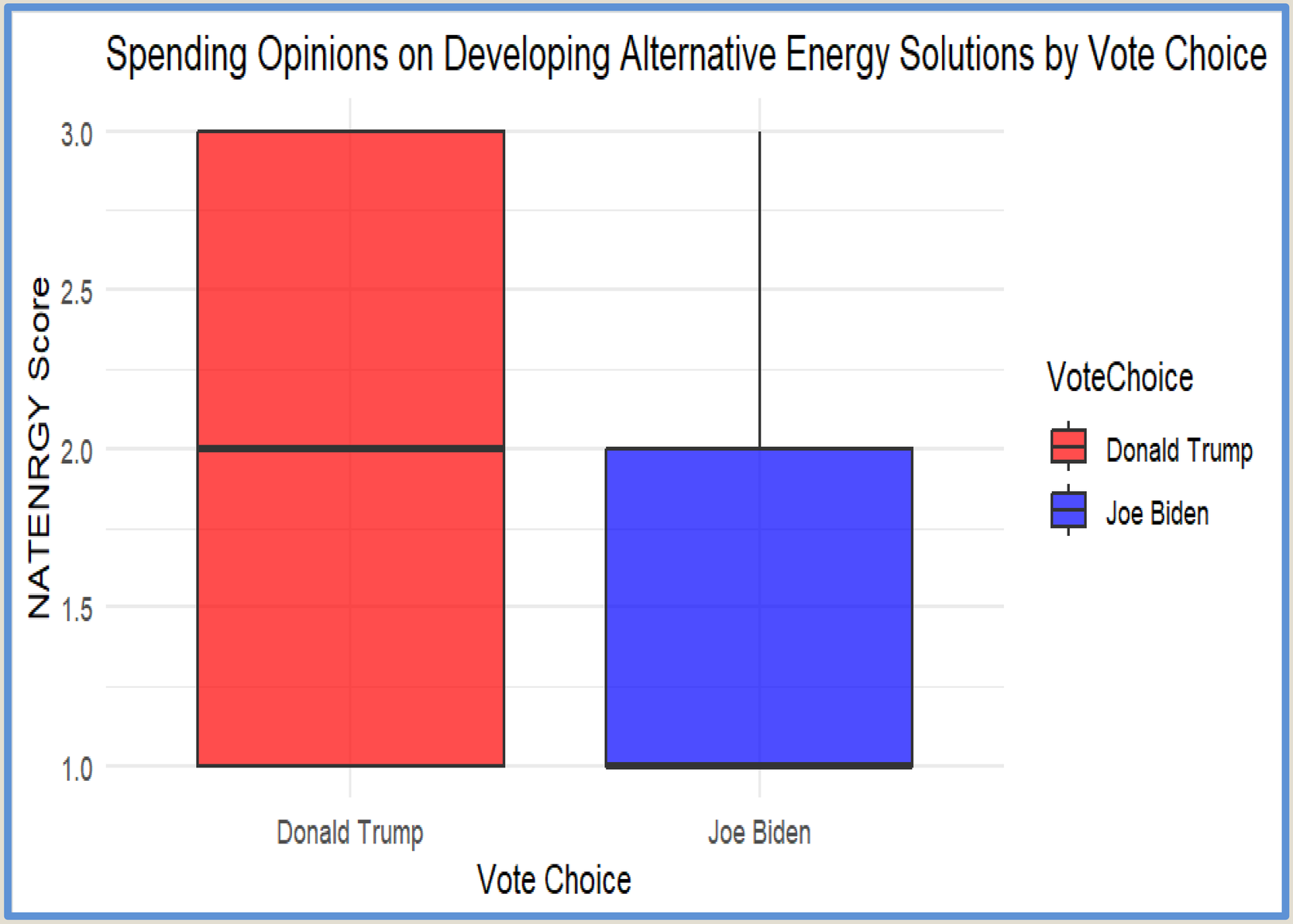


Data Analysis

This boxplot compares opinions on spending for alternative energy sources to survey respondents voting choices in the 2020 U.S. presidential election (D).

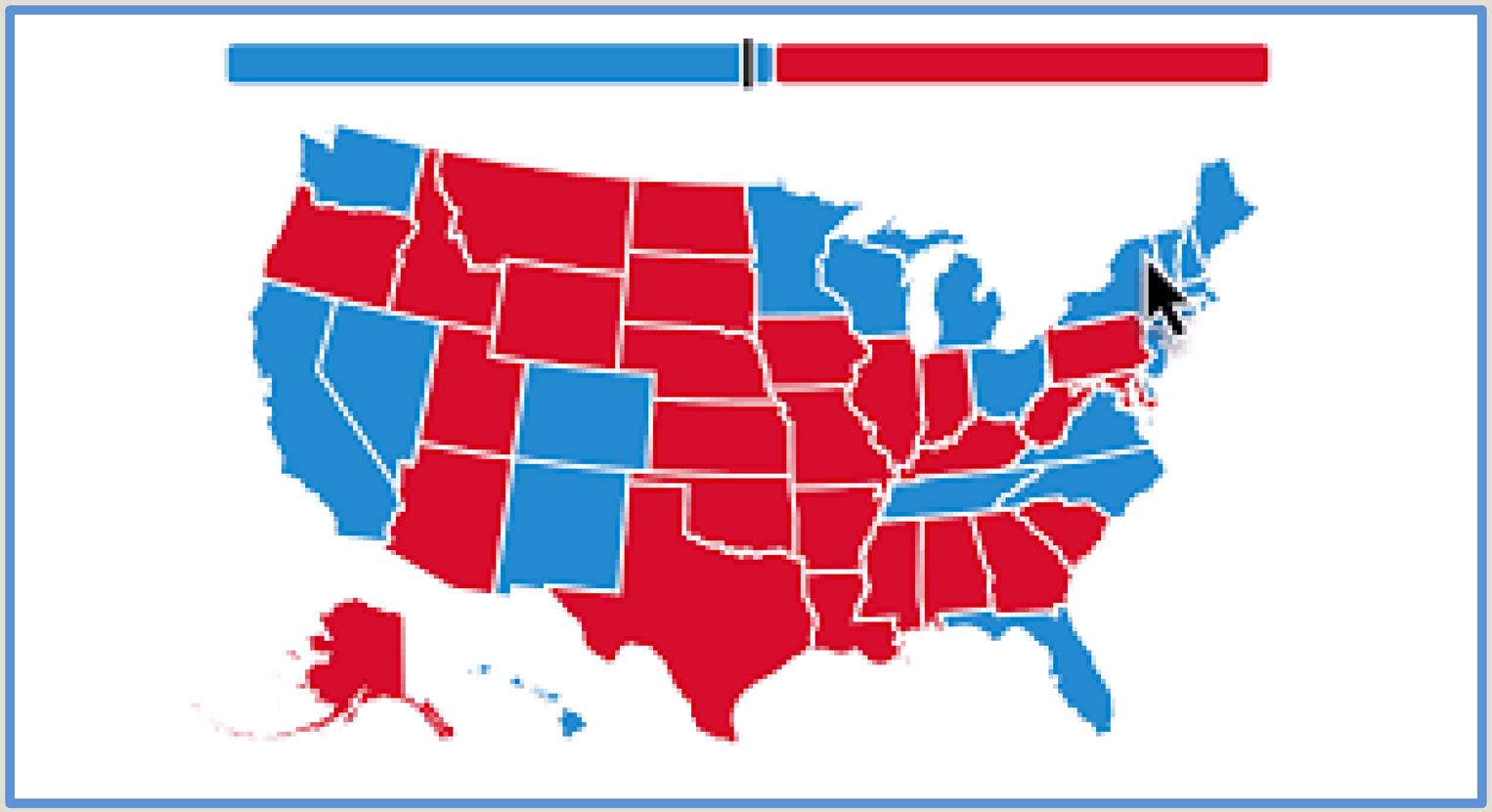
Respondents that voted for President Trump tend to believe that the U.S. spends too much on alternative energy sources, with President Biden voters believing the U.S. spends too little.

There is more variability in data for respondents who voted for President Trump.



Overall, these visualizations highlight a consistent pattern: political affiliation is a major predictor of public opinion on environmental spending priorities.

There is a clear divide in environmental spending priorities based on political party preferences.



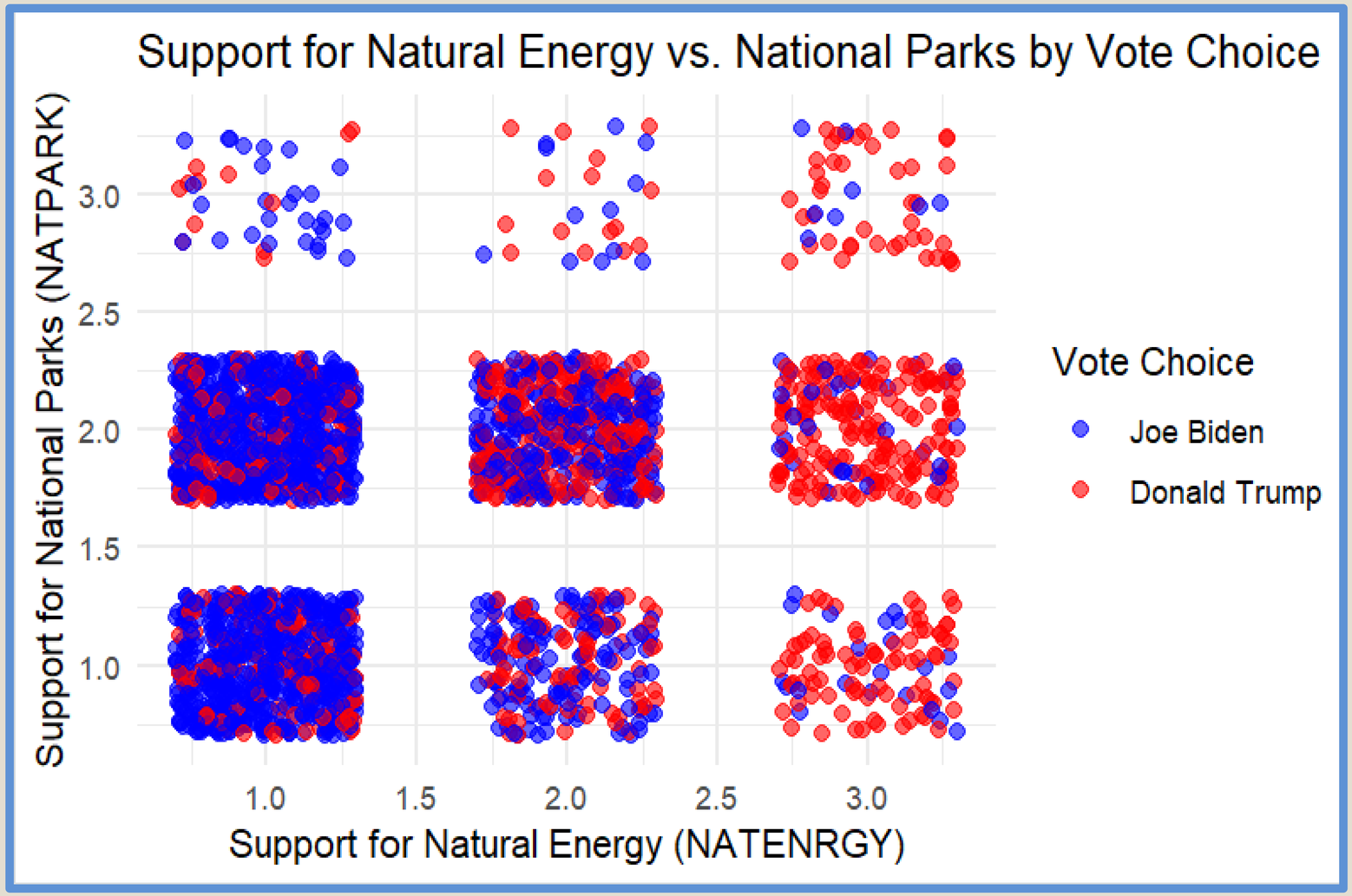
Results

These scatterplots compared opinions on spending for alternative energy sources and national park and recreational services (E).

Most survey respondents believe that the U.S government is spending too little on developing alternative energy solutions, while few participants believe that the U.S is spending too much on national parks.

Respondents that voted for President Trump believe that the U.S is spending **too much** on natural energy and national parks, whereas respondents that voted for President Biden believe that the U.S is **spending too little** on natural energy and national parks.

Environmental spending views are consistent between both political parties



Chi- Squared Tests

<u>CHI-SQUARED TEST RESULTS:</u>

(PRES20) and **(NEWS):** Chi-squared: 50.12
P-value: 0 → Null hypothesis is **rejected**

(PRES20) and **(NATENRGY):** Chi-squared: 568.14
P-value: 0 → Null hypothesis is **rejected**

(PRES20) and **(NATPARK):** Chi-Squared: 53.99
P-value: 0 → Null hypothesis is **rejected**

(NEWS) and **(NATENRGY):** Chi-Squared: 14.70
P-value: 0.0652 → Null hypothesis is **retained**

(NEWS) and **(NATPARK):** Chi-Squared: 12.53
P-value: 0.1291 → Null hypothesis is **retained**

(NATENRGY) and **(NATPARK):** Chi-Squared: 209.11
P-value: 0 → Null hypothesis is **rejected**

Chi-square tests are used to determine whether two categorical variables are related to one another.

PRES20 & NATENRGY variables have the strongest relationship, highly statistically significant = voting choice **strongly predicts** opinion on spending for alternative energy.

Both NEWS & NATENRGY and NEWS & NATPARK variables are not statistically significant = news consumption **does not strongly predict** opinions on spending.

Both NATENRGY & NATPARK variables are **strongly related**, individuals who support/disapprove of spending for alternative energy sources also tend to have the same opinion on spending for national parks and recreational services.

Political party affiliation (PRES20) was the **most consistent** and **a strong predictor** across each variable

Why are Chi-Square Tests Important in our Research?

These tests are important because they test the statistical significance of the data being analyzed. This allows for us to test the following:

Does political party affiliation influence environmental spending priorities and preferences and what role do voting behavior, consumption of news, opinions on spending for parks and recreational services, and views on spending for alternative energy sources play in shaping these spending prerogatives?

The results from our chi-squared tests indicate that the statistical significance of most of our variable groups is enough to reject our null hypothesis. This means that for most variables, there is a significant relation between them.

Therefore, voting choice does influence views on environmental spending. News consumption with NATENRGY and NATPARK showed a weaker relationship.

Conclusion

There is a strong relation between voting choice and spending opinions on developing alternative energy solutions ($\chi^2 = 568.14$, $p < 0.05$).

Biden voters tend to believe that the U.S. is spending too little, while Trump voters believe that the U.S. is spending too much.

There is also a relation between vote choice and spending opinions on government spending for national parks ($\chi^2 = 53.99$, $p < 0.05$).

Again, Biden voters tend to believe that the U.S. is spending too little, while most Trump voters believe that the U.S. is spending too much, yet responses tend to be more varied.

Additionally, there is a relation between news consumption frequency and vote choice, although weaker ($\chi^2 = 50.12$, $p < 0.05$).

News consumption may be associated with political preference but less directly predicts views on environmental spending

Most respondents who believe that the U.S government is spending too little/too much on developing alternative energy solutions also believe that the U.S government is spending too little/too much on national parks and recreation ($\chi^2 = 209.11$, $p < 0.05$)..

Few participants believe that the U.S government is spending too much on national parks, regardless of vote choice, highly the majority support for park funding over alternative energy sources.

References

Davern M, Bautista R, Freese J, Herd P, Morgan SL. General Social Survey 1972–2022. Chicago (IL): NORC at the University of Chicago; 2024 cited 2025 Apr 17. https://gss.norc.org/content/dam/gss/get-documentation/pdf/codebook/GSS%202022%20Codebook.pdf

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GitHub Repository Address:
Data-220-112-Analyzing-environmental-spending-trends-Ecotrackers

Variable: NATENRGY Type: Numeric

Label:
(... are we spending too much, too little, or about the right amount on) Developing alternative energy sources

Notes:

LABEL	VALUE	COUNT	PCT	PCT Excl. Reserve Codes
TOO LITTLE	1	1939	54.7%	56.6%
ABOUT RIGHT	2	1013	28.6%	29.6%
TOO MUCH	3	472	13.3%	13.8%
SUBTOTALS:		3424	96.6%	100.0%
RESERVED CODES:				
DON'T KNOW	D	115	3.2%	n/a
SKIPPED ON WEB	S	5	0.1%	n/a
TOTALS:		3544	100.0%	100.0%

Variable: NATPARK Type: Numeric

Label:
(... are we spending too much, too little, or about the right amount on) Parks and recreation

Notes:

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TOTALS:		3544	100.0%	100.0%

Variable: NATENRGY Type: Numeric

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SKIPPED ON WEB	S	5	0.1%	n/a
TOTALS:		3544	100.0%	100.0%

Thank You!

If you have any questions or are interested in learning more about our project, feel free to reach out to us via email!

Email: emily.liguori1@marist.edu, victoria.iuzzolino1@marist.edu, tristan.wistuba1@marist.edu