MORNING JOE

This is exactly what Trump feared

The former president has always considered himself to be the ultimate disrupter. But this time, the disruption is on the other side.

ELECTIONS

From debate catastrophe to standing down: Biden's road to the exit

Biden officially suspended his 2024 re-election campaign

By **Aubrie Spady** **Fox News**

Published July 21, 2024 2:02pm EDT | Updated July 21, 2024 3:06pm EDT

TABLE OF CONTENTS

★ **01** ★

Problem Statement

★ **02** ★

Data Preprocessing

★ **03** ★

Analysis Methodology

★ **04** ★

Results

★ **05** ★

Conclusions & Key Takeaways

★ 01 ★

Problem
Statement

PROBLEM STATEMENT

Is there a heuristic that can be used to quantify bias across various news sources?

PROBLEM STATEMENT

★ To assess whether news sources exhibit bias, through the use of passive/active voice along with sentiment, when reporting on the election

★ To examine whether this bias is detectable by an impartial formula

★ To compare how news sources fall on a political scale with our analysis vs. existing plots

★ Chose the election as we thought it would be the best representation of political bias

★ **02** ★

Data Preprocessing

Data Sources, Data Cleaning

AllSides Media Bias Ratings

The New York Times

MSNBC

POLITICO

CNN

AP

USA TODAY

npr

The Washington Post

WSJ NEWS

Forbes

Bloomberg Business

FOX NEWS

BREITBART NEWS

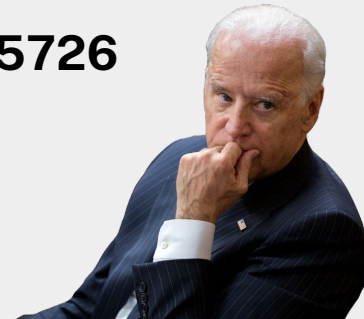**LEFT**   **LEAN LEFT**   **CENTER**   **LEAN RIGHT**   **RIGHT**

SCRAPING

★ Scraped articles w/ Event Registry API

  ○ Data collected: Title, Source, Author, URL, Published Date, Content

  ○ All articles related to **election** were within the last month

  ○ Set scraper to find up to 1000 articles per source

  ○ Scraped 17 different news sources

CLEANING

★ SpaCy to identify relevant entities/actors in title and article content: **Trump, Harris, Biden**

    ○ Entities extracted: focused on PERSON, ORG, GPE, and LOC

    ○ Required 3+ actor mentions per article

    ○ Removed sentences not containing these words to eliminate non-actor sentences and reduce size
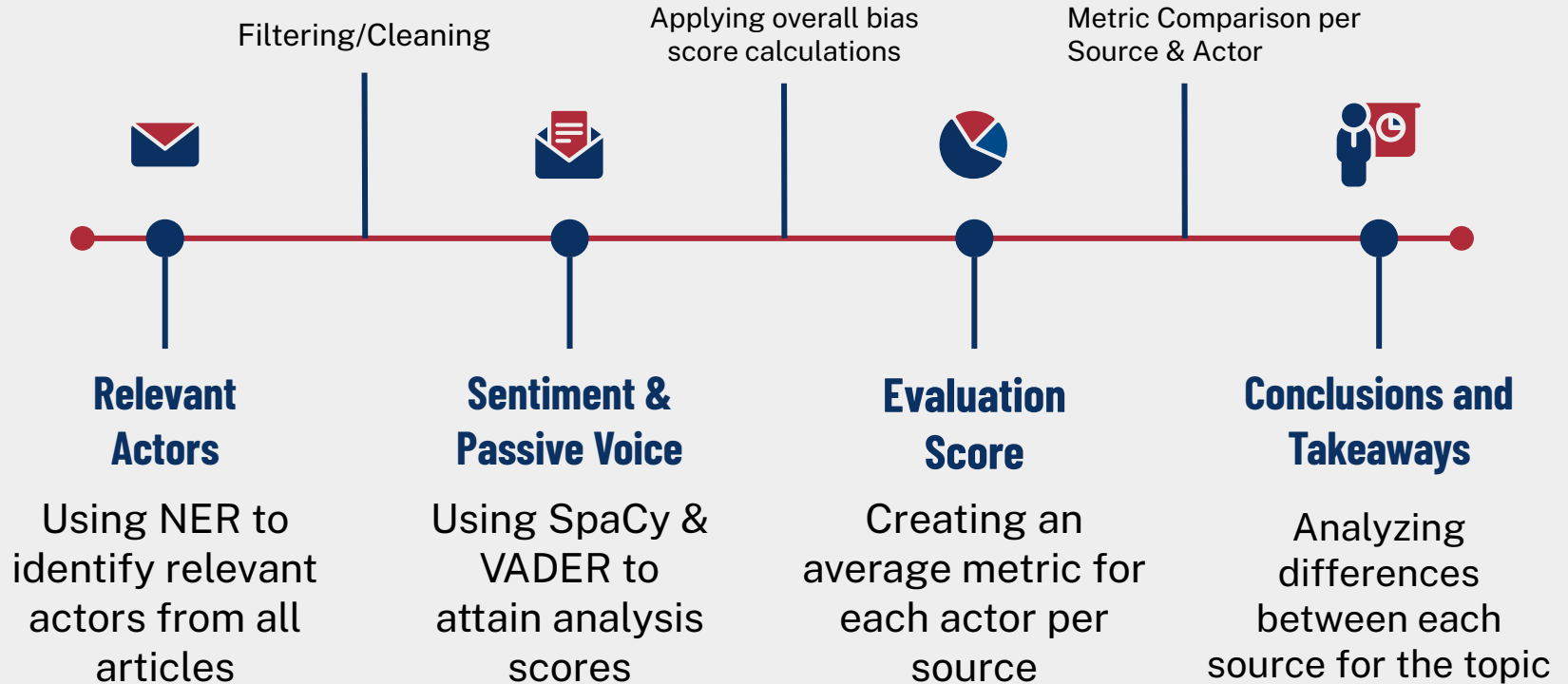
★ Original Articles: **8213**, After Filtering: **5726**

03

Analysis
Methodology

Passive Voice, Sentiment
Analysis, Evaluation Score

ANALYSIS METHODOLOGY

Filtering/Cleaning

Applying overall bias
score calculations

Metric Comparison per
Source & Actor

**Relevant
Actors**

Using NER to
identify relevant
actors from all
articles

**Sentiment &
Passive Voice**

Using SpaCy &
VADER to
attain analysis
scores

**Evaluation
Score**

Creating an
average metric for
each actor per
source

**Conclusions and
Takeaways**

Analyzing
differences
between each
source for the topic

USING PASSIVE/ACTIVE VOICE FOR DETECTING BIAS

Passive Voice with Negative Sentiment - Averting Blame

`"Mistakes were made during Trump's campaign."`

Active Voice with Negative Sentiment - Asserting Blame

`"Harris's poor policies caused widespread dissatisfaction among voters."`

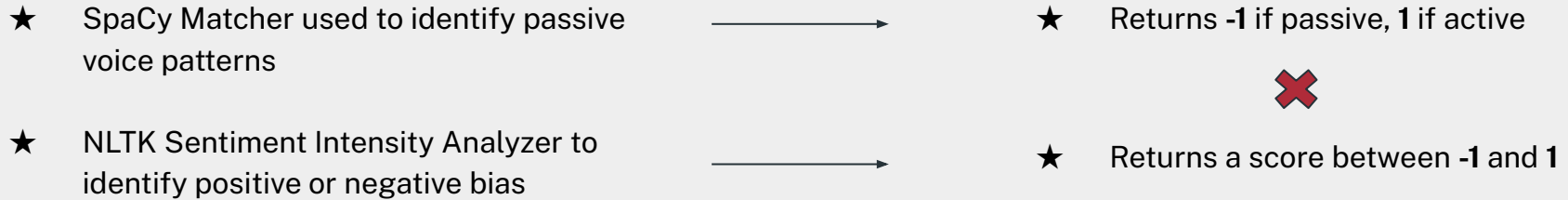**Passive Voice with Positive Sentiment - Averting Praise**

`"The economic recovery was achieved during Harris's administration."`

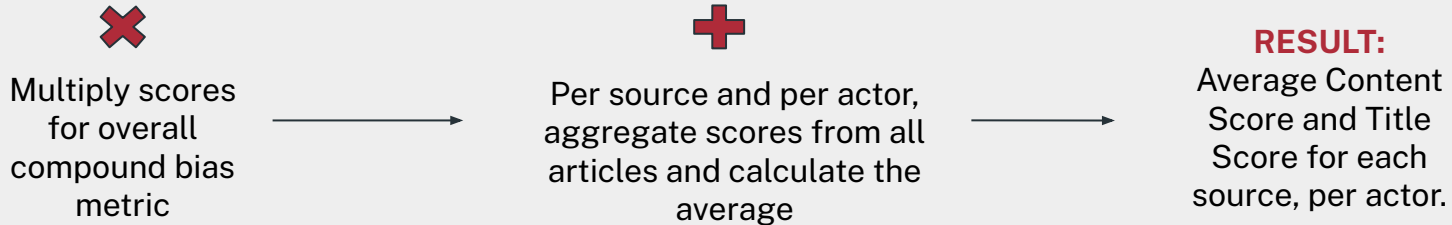**Active Voice with Positive Sentiment - Asserting Praise**

`"Trump led the administration to a successful peace agreement."`

ANALYSIS
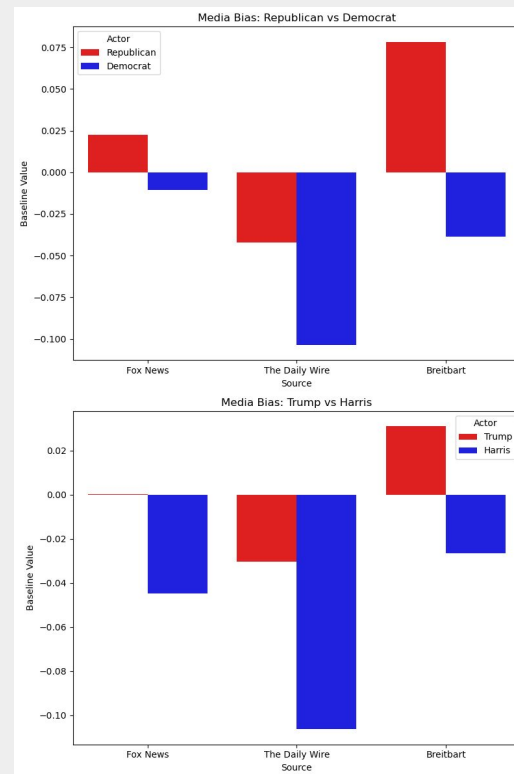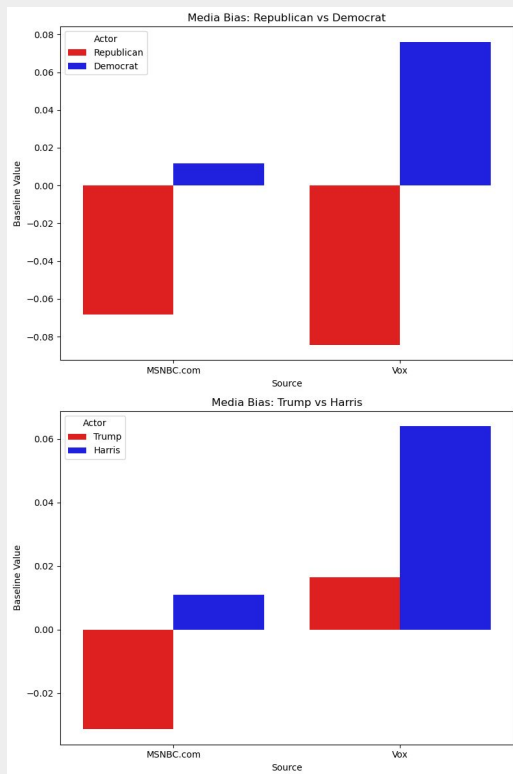
Passive Voice & Sentiment Score

★ SpaCy Matcher used to identify passive voice patterns

★ Returns **-1** if passive, **1** if active

★ NLTK Sentiment Intensity Analyzer to identify positive or negative bias

★ Returns a score between **-1** and **1**

Overall Bias Score

Multiply scores for overall compound bias metric

Per source and per actor, aggregate scores from all articles and calculate the average

RESULT:
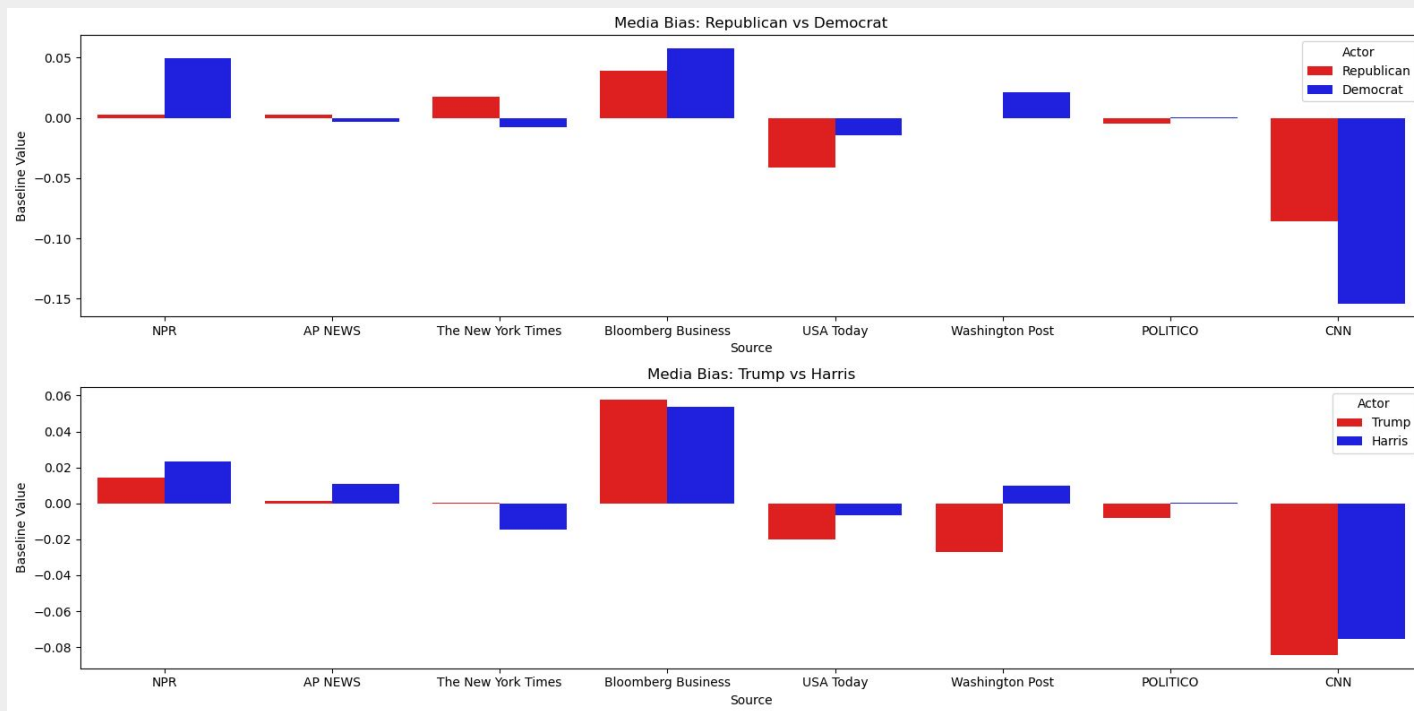Average Content Score and Title Score for each source, per actor.

★ 04 ★

Results

Extreme Left vs. Extreme Right

Examining the Leaning Left Sources

Media Bias: Republican vs Democrat

Media Bias: Trump vs Harris

Center & Lean Right
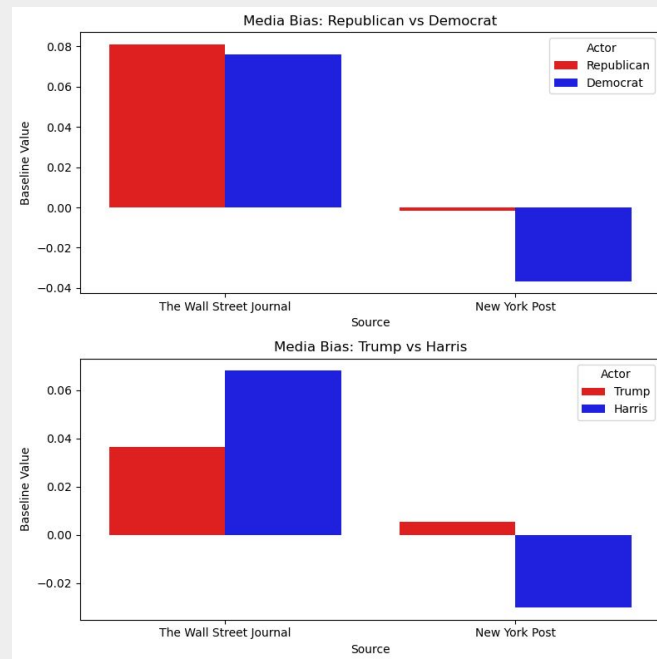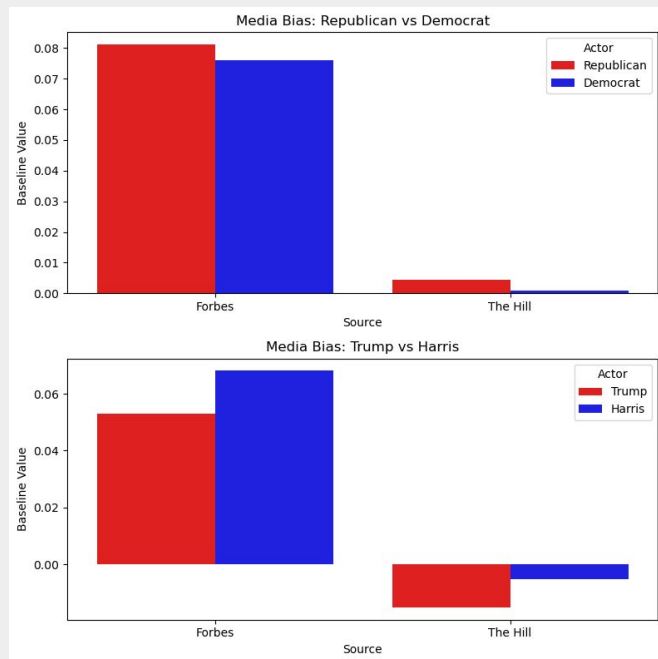
MDS Plot of News Sources Based on Actor Scores

Forbes

CNN

Bloomberg Business

The Hill

Breitbart

POLITICO

Washington Post

Vox

Fox News

The Wall Street Journal

The New York Times

New York Post

NPR

AP NEWS

MSNBC.com

USA Today

The Daily Wire

AllSides Media Bias
- Left
- Lean Left
- Center
- Lean Right
- Right
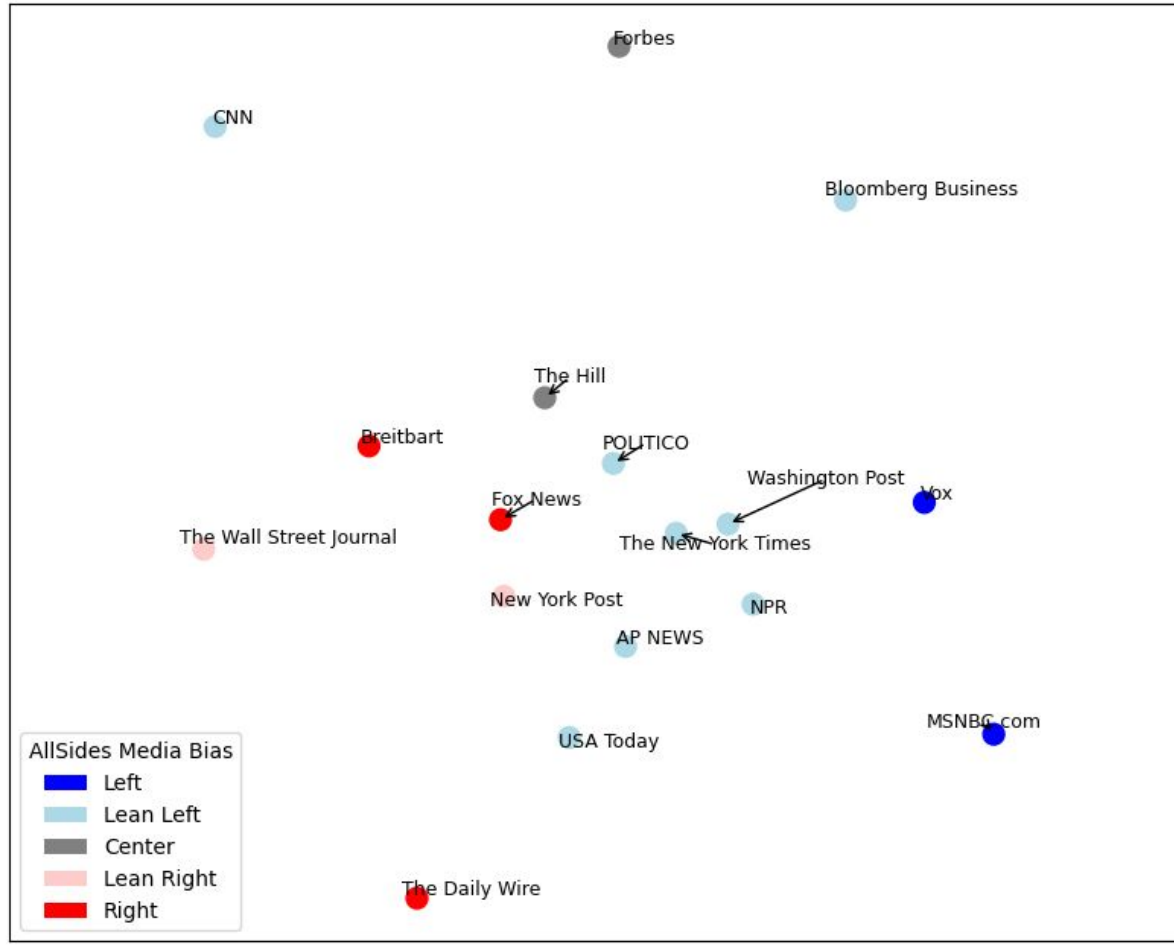
★ 05 ★

Conclusion

Conclusions, Applications, Key Takeaways, Future Considerations

WHY IS THIS IMPORTANT?

★   News media has a lot of influence every election season, including **shaping public opinion** and **impacting voter behavior**

★   For news sources that align themselves with a certain political party, to see how they **differ in reporting of their party and opposing ones**

★   **Main use case:** To have a non-LLM, non-people, non-council method of determining bias

★   News outlets can assess whether their article/reporting style can be improved to better cater to their audience

Future Considerations

★ **Areas for Improvement:**
  ○ Could examine bias in topics outside of the election
  ○ Scrape an even amount of data across news sources
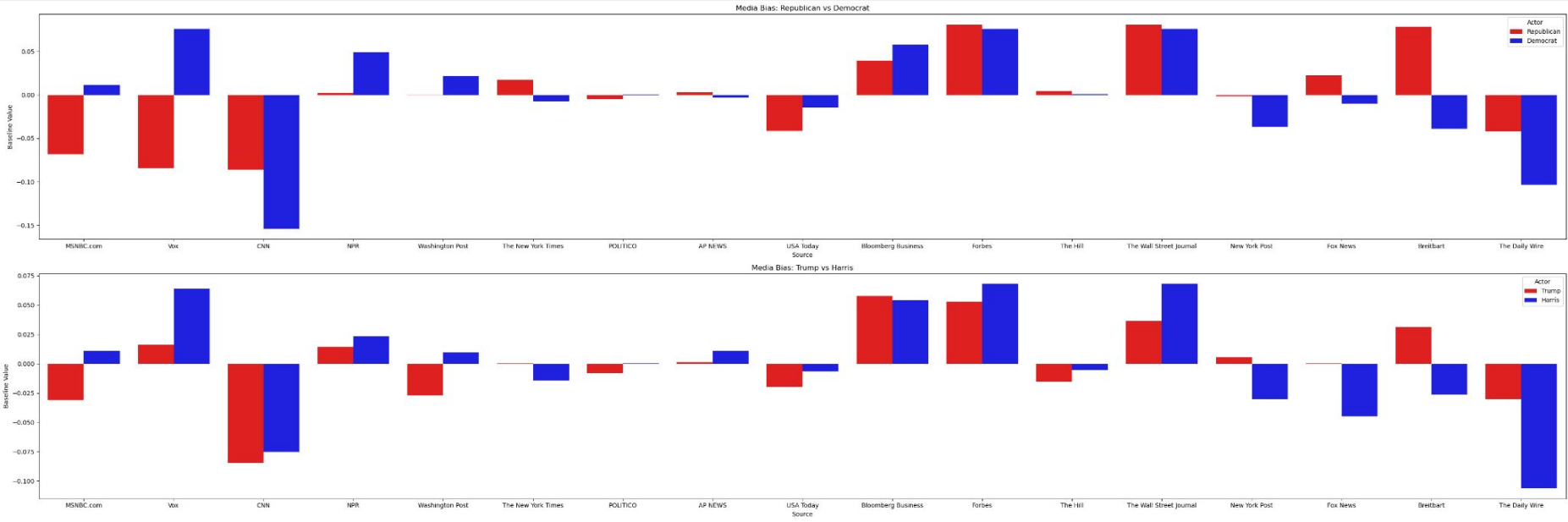
★ **Limitations:**
  ○ Could not detect bias for actors not mentioned in a sentence
  ○ Not able to use ABSA → if there are 2 actors within same sentence, both given the same score
  ○ News articles often avoid passive voice in titles

THANK YOU

Appendix

Media Bias: Republican vs Democrat

Media Bias: Trump vs Harris

```python
df['source'].value_counts()
```

[170] ✓ 0.0s

```
The Hill                   783
Fox News                   767
Washington Post            560
POLITICO                   560
The New York Times         548
New York Post              460
USA Today                  405
AP NEWS                    384
Breitbart                  372
Forbes                     231
MSNBC.com                  227
The Daily Wire             205
NPR                        139
Bloomberg Business          57
CNN                         10
The Wall Street Journal      9
Vox                          9
Name: source, dtype: int64
```