



2024 PORTUGUESE ELECTIONS

# POLITICAL CAMPAIGN LLM SENTIMENT ANALYSIS



DATA FROM



## Introduction

In the scope of the 2024 Portuguese legislative elections, we collaborated with CNN Portugal in integrating AI to complement the distinctive media activities that lead up to any major election, by creating new engaging ways of following the political campaign.

As a result, we developed two distinct AI products, each one providing an insightful view into the manifested opinions of the Portuguese people on social media. The first product focused on the debates between party leaders, answering the question of "Who won?". The second monitored the changing sentiments toward each party throughout the political campaign.

This report is focused on sharing additional insights that we have uncovered from the second product and have yet to share.

By the end, we will also detail how this particular type of analysis can generate value in companies in a broad range of industries, highlighting a few common business use cases we have been working on.

## Methodology

The process of building a system aimed at collecting social media text-based interactions starts by defining the logic used to determine the sources from which we will collect these interactions.

To this end, we followed a concept that we named the "public square", which is allegorical to the idea of a physical place where people leave their homes and publicly discuss politics with one another, and we are to register the ideas that they are expressing (to later evaluate

the sentiment towards each party). To follow this idea in the context of social media, we sought to avoid sources that do not fit this public square standard, such as accounts supportive of a specific party or ideology. These pages would instead be allegorical to party conventions occurring at a given exclusive venue, where participants' opinions are by definition biased towards a given party or ideology. Our goal was not to compare the size of the venues dedicated to each party but instead to analyse the sentiment towards each party when expressed in a context where people are faced with other ideologies and ideas: the public square.

As such, we collected text interactions exclusively from sources whose context was neutral by nature, such as the comment section of politics-related news posts from independent media accounts, or the search for pre-determined keywords on X (former Twitter) (excluding accounts noticeably dedicated to a given party).

The project deliberately omitted specific details like the exact accounts, posts, and keywords used to gather text interactions, aiming to deter malicious manipulation of analysis results. To protect the integrity of potential future projects, we still seek to disclose only the rationale for source selection, without revealing any further specifics.

The collected text-based interactions were analysed 24 hours a day to identify the parties which the authors of the interactions expressed a positive or negative sentiment towards.

Throughout the 14-day analysis period, from February 24 to March 8, 2024, a total of over **37,000** text-based interactions were collected. Of these, **49%** were from

**Instagram, 26% from X, and 25% from Facebook.** This distribution directly reflects the volume of public-square-compatible interactions produced on these platforms for the context of the 2024 Portuguese elections within the timeframe of the analysis.

## Analysis

Here are the key findings from the data we've gathered and haven't shared yet. It's crucial to remember that **these insights pertain to a particular segment of the population that is active on social media.** Understanding this context is vital for accurately interpreting the analyses that come next.

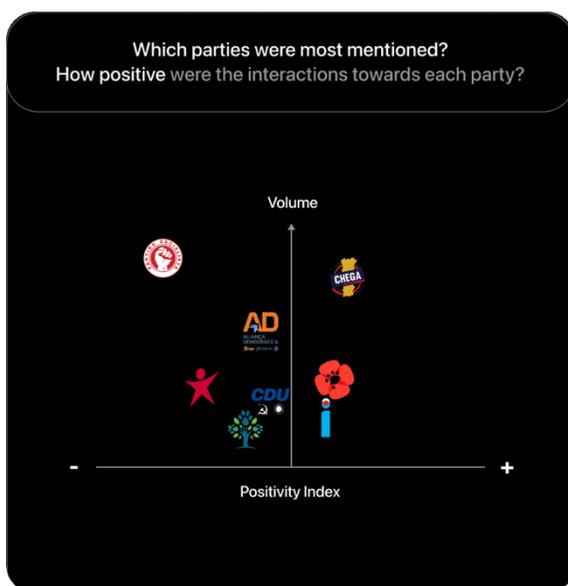
### 1. Positivity Index x Volume

The Positivity Index is determined by subtracting the volume of negative interactions from the volume of positive interactions and dividing the result by the overall interaction volume. Crossing this metric with the overall interaction volume provides an insightful view of not only **which parties were mentioned the**

**most**, but also if interactions targeting the parties **were mostly positive or negative.**

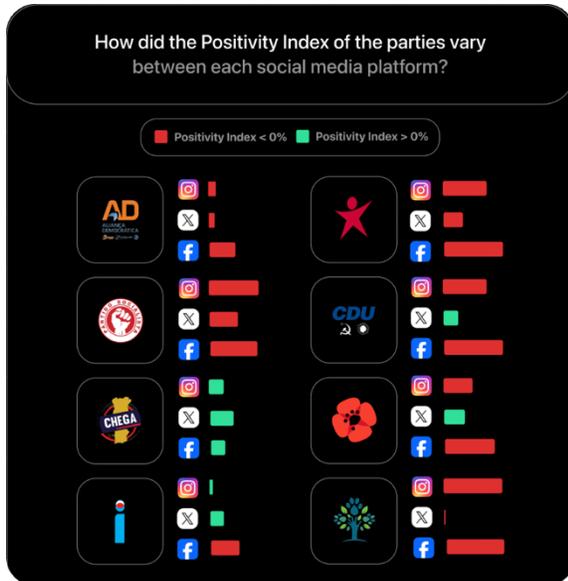
### Main Insights

- **PS**, the former ruling power since 2015, was both the **most mentioned party and the one with the lowest Positive Index**, reflecting dissatisfaction by a large vocal group regarding the party's influence in shaping the current state of the country. This observation also matches the trend of the ruling party generally being the one receiving the most criticism, as the opposition tends to be more vocal than the rest of the electorate.
- Contrastingly, **Chega** emerged as the **second most mentioned party and the one with the highest Positive Index.** As an uprising party, it has attracted a diverse electorate, many of whom endorse it in opposition to the two dominant parties governing Portugal. This group is notably more active in expressing their political views, especially on social media platforms.
- Besides Chega, **IL** and **Livre** are the **only two other parties with a Positive Index**, that is, with more positive interactions than negative. This aligns with the observation that these parties enjoy significant popularity among younger demographics, who are notably more engaged on social media platforms.
- The **prevalence of negative interactions** towards the remaining parties is also notable, especially in those whose ideologies are associated with left-leaning politics (**PAN, CDU** and **BE**), but also with right-leaning politics (**AD**).



## 2. Positivity Index breakdown per platform

Following the previous analysis, it is insightful to **break down the impact of each platform on the overall Positivity Index of each party**. These differences are a direct consequence of the average profile of the users of each of these platforms.



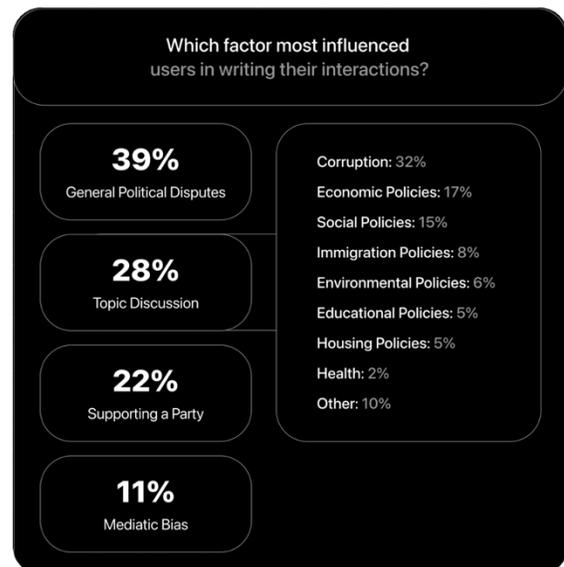
### Main Insights

- **Chega** was able to maintain a **Positive Index above 0 on every platform**, further reinforcing the idea of appealing to a broad range of people who adhered to their new position
- **IL** and **Livre** had especially **high values of the Positivity Index in X**, a reflection of X's youthful user base and these parties' electoral support. Meanwhile, **CDU**, ranks third in terms of the "Positivity Index" on this platform, despite experiencing a decline in electoral performance over the past decade and a relatively older voting base.
- Facebook is by far the **platform with the lowest average Positive Index**, meaning it's the platform where users are the most

negative when commenting about politics. It was the platform where every party except PS had their worst Positive Index score

## 3. Most influential topics

This analysis sought to answer the prevailing question of which politics-related topics most motivated social media users to verbalise their opinions.



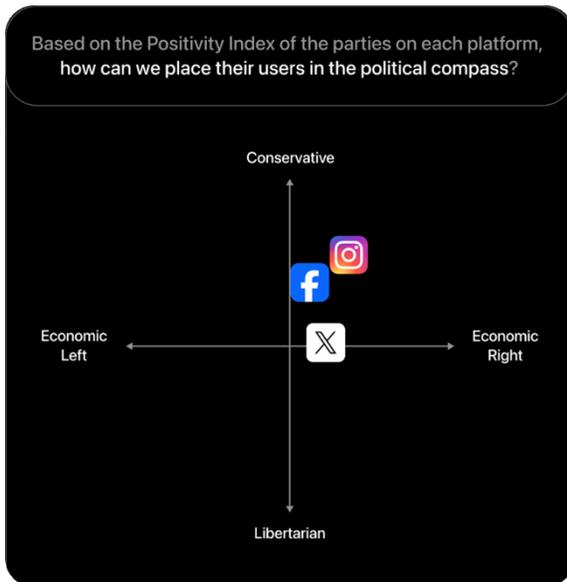
### Main Insights

- As it turns out, only **28%** of the collected social media interactions were actually voicing an opinion about **relevant topics for society**, such as Education and Health.
- Instead, almost **40%** of interactions were written aimed at **condemning an opposition party or leader** for their actions, while another **23%** of interactions were written in **support of the user's party**, without any reference to an actual topic.
- Interestingly, over **1 in 10** interactions during the entire political campaign were written to **highlight alleged political bias by the mediatic groups**

- Among the topics that were specifically discussed in the interactions, **corruption was by far the most influential**, accounting for 32% of these interactions, followed by economic and social policies each making up around 15%

#### 4. Placing platform users in the political compass

We can cross the Positivity Index breakdown per Platform shown in the previous chart with the approximate position of each party in the political compass to infer the **position of each platform's average user on the political compass**. The compass is a two-axis model that categorizes political ideologies based on economic (left vs. right) and social (authoritarian vs. libertarian) dimensions.



#### Main Insights

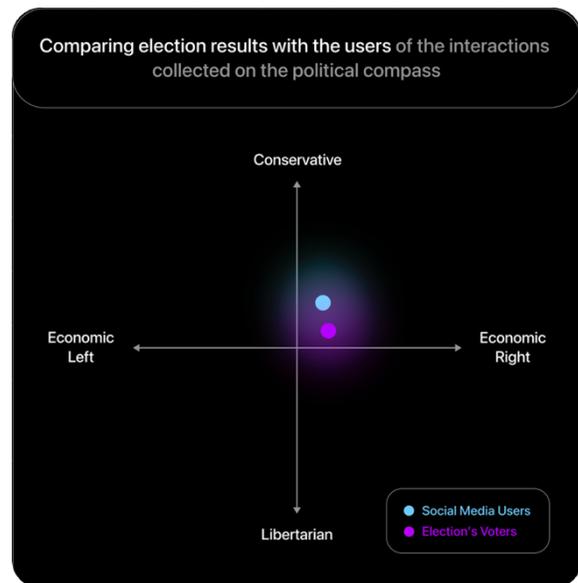
- As a starting point, we can directly observe a **general lean towards right/conservative ideologies** among the demographic actively involved in political discourse on social media. This fact aligns with the aforementioned prevailing voter support for

right-leaning political parties during these elections. This effect is further inflated by the fact that generally, the non-governing opposition tends to be more vocal than those in support of the current government

- Indeed, **every platform falls within the Conservative-Economic Right quadrant**, although X's positioning on the Libertarian-Conservative axis is nearly neutral, reflecting its users' more balanced stance within the spectrum of political ideologies

#### 5. Using the political compass to compare the actual election results with the interactions collected

Similarly to the preceding analysis, based on the outcome of the elections, we can draw a **comparison between the voters of these particular elections and the average social media user in terms of their positions on the political spectrum**.



#### Main Insights

- Social media users displayed a **fairly similar profile to the average voter**, slightly more

conservative in the Conservative/Libertarian Axis and more neutral in the economic axis.

- When it comes to the variability of the positions, the standard deviation on the Authoritarian/Libertarian axis is 20% higher in social media users when compared to these elections' voters, **pointing towards a somewhat higher level of extremist positions**. That's not the case for the Economic Axis, which has a similar standard deviation in both groups

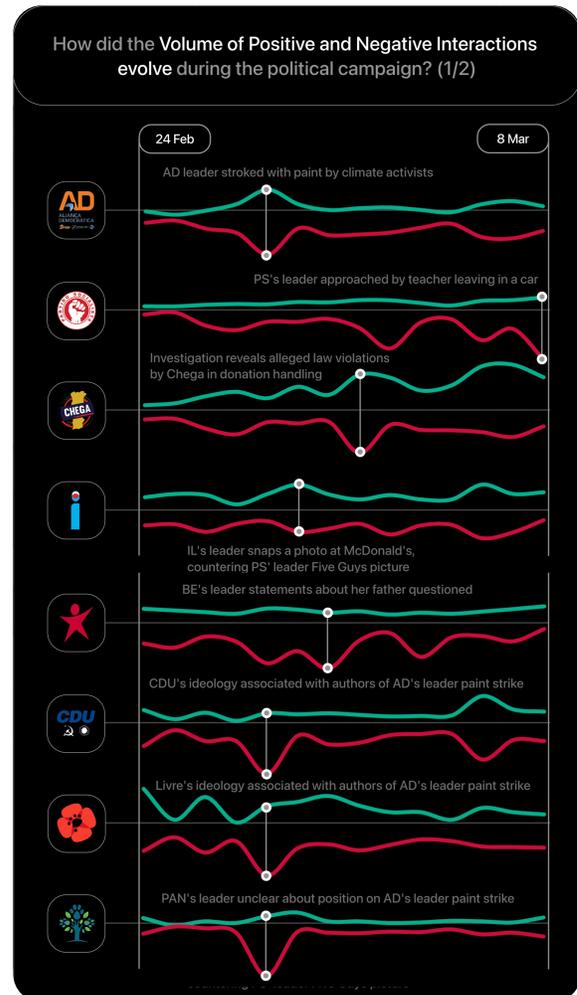
## 6. Daily evolution of the volume of positive and negative interactions per party

These charts allow us to visualise how the **volume of positive and negative interactions shifted** during the political campaign for each party. The y-axis was adjusted for each chart to enhance the visualisation of each party's evolution, leaving out any direct comparisons among them.

### Main Insights

- **AD** saw a significant boost in both positive and negative interactions around the day its leader was struck with green paint by climate activists during a public visit. We can see, however, that this event had no lasting effect on the party's interaction volume
- **PS's** positive interactions slightly increased as election day approached, however, the volume of negative interactions had a much bigger increasing tendency, especially boosted by unique events that took place involving the party's members
- **IL** and **Chega's** negative interactions remained fairly constant throughout the campaign, while positive interaction slightly

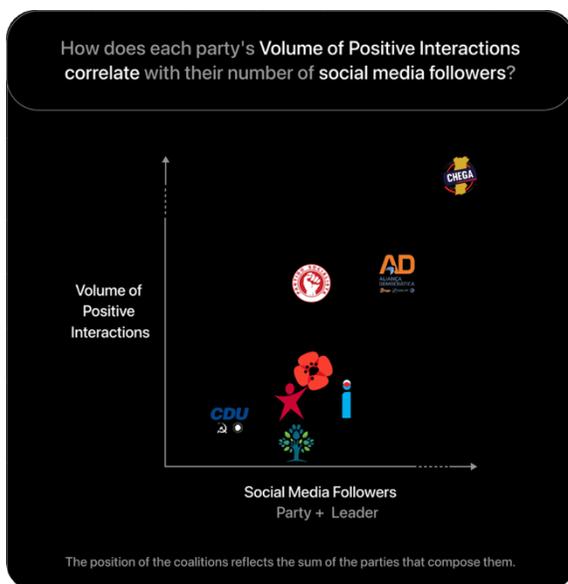
increased, more pronouncedly from Chega's side



- The negative interactions of the parties **BE**, **CDU**, **PAN** and **Livre** suffered a significant increase following the climate activists' strike on AD's leader as a result of their ideologies being vividly compared with the attackers' by social media users. This effect was especially pronounced in PAN's case after its leader's comments were described on social media as unclear as they seemed to suggest a non-condemning position regarding the assault.

## 7. Social media presence x Volume of positive interactions

With this analysis, we aimed to infer **whether the parties' presence on social media** (measured by the number of followers of each party and party leader accounts on each platform) is somewhat **correlated with the total volume of positive interactions of the party** (for coalitions, the social media presence was calculated by combining the underlying parties individually).



### Main Insights

- There's a **very strong correlation** between the two variables (0.94 Pearson correlation), suggesting that the social media presence of the parties is strongly related to the positive engagement they receive from users on independent sources.
- **PAN** has the worst followers-to-positive interaction ratio, with 1811 followers for each positive interaction, while **PS** has the best with 202 followers per positive interaction

## Other sentiment analysis business use cases

Leveraging Language Model-based Sentiment Analysis (LLM-SA) allows the extraction of sentiments and opinions from large volumes of text, providing insights that were previously inaccessible due to the sheer amount of resources required to analyse data. For the 2024 Portuguese national elections, we used this analysis to provide us with an insightful view into the manifested opinions of the Portuguese people on social media. However, there are multiple other business use cases where we can leverage the transformative impact of LLMs. Below are three broad business use case categories, detailing a few specific examples within each that we have been solving with our customers.

### 1. Deeply Understanding Public Perception

#### Political Parties/Candidates

In the dynamic landscape of politics, understanding public sentiment is crucial for strategy formulation. A sentiment analysis on social media and major information sources can provide valuable insights on:

- The most effective communication strategies
- The most important topics of discussion
- Each public event/interview effect on voters' sentiment
- Key population segments to target and voter probability in each segment

We have found profoundly interesting data (which we did not share) by performing our sentiment analysis on each political party's

individual campaign, which provided us with valuable insights that could directly influence their strategy positively.

We deeply believe that by having access to this data, political parties/candidates can communicate more effectively with their electors.

### **Sports Entities**

Sports entities, such as the Football Club of Barcelona, often utilize LLMs to gauge fan sentiments across social media platforms and fan forums. This analysis helps in understanding fans' reactions to match outcomes, player performances, and club decisions. Insights are gathered to aid in enhancing fan engagement strategies, tailoring communications, and improving overall fan experience which ultimately leads to better audiences and increased ticket sales volume.

### **TV/Reality Shows**

All popular streaming services are implementing LLM-SA to analyze viewer comments and reviews on various platforms for its original series. This approach provides a nuanced understanding of viewer preferences and sentiments, guiding the creation of tailored promotional content and influencing future programming decisions.

Viewers' feedback can be extremely valuable in enabling:

- tailoring the content to fit the audience's desires
- Creating interesting ways of interaction, for instance, in reality shows/TV contests, the audience can have a much bigger connection with the participants and participate more actively in public decisions, enhancing their experience greatly.

Both factors can impact audiences positively and disrupt the TV/Reality show business.

## **2. Tracking Trends and Population Opinion**

### **Casinos/Betting Platforms**

Casinos and online betting platforms leverage LLMs to analyse customer reviews and social media discussions. The resulting information helps in identifying trending games/interests, understanding user grievances, and tailoring marketing strategies to align with customer preferences, ultimately enhancing user experience and loyalty.

Relevant betting companies around the world have also been leveraging LLMs to predict betting behaviour by establishing trained correlations between sentiment on social media and demand fluctuations and using this information to build pricing models.

### **Government/Political Parties**

Government agencies and political parties use LLMs to monitor public opinion on policies, social issues, and government performance. For instance, ahead of policy announcements, sentiment analysis can gauge public sentiment, allowing for adjustments to ensure broader acceptance and support.

## **3. Insightful Analysis of Extensive Textual Data**

### **Companies with a large amount of Customer Reviews**

E-commerce giants like Amazon employ LLM-SA to analyze customer reviews across millions of products. This analysis identifies trends in customer satisfaction, product issues, and

emerging needs, informing product recommendations, quality control measures, and inventory decisions.

Most companies are still doing this analysis manually, but using LLM's can massively improve the results by:

- reducing the required time by 90%
- improving up to 5x the number of analysed data points
- improving significantly the precision of the generated insights

### **Human Resources Departments**

Corporations analyse employee feedback from surveys, emails, and meeting transcripts using LLMs. This practice uncovers insights into employee satisfaction, organisational culture, and internal communication effectiveness, guiding HR strategies to improve employee engagement and retention.

Most companies' HR departments either don't use this data properly or spend considerable amounts of time doing inaccurate analysis. LLMs are the clear solution for this problem.

### **Companies sales/customer service & operations departments**

Customer service departments of companies like Google analyse call transcripts with LLMs to identify common customer issues, sentiment trends, and agent performance. This analysis informs training programs, improves service protocols, and enhances customer satisfaction through targeted improvements.