

COMP370 Final Report - Politician in the Media

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Introduction

We live in an interconnected world where the media plays a pivotal role in shaping public perception and opinion, often framing events to serve well-defined and constructed political narratives. This influence is particularly pronounced when covering foreign events, where audiences lack direct access to information (*articles 1 and 2*). Benjamin Netanyahu, Israel's prime minister, has become a central figure in media coverage following the events of October 7th, 2023, orchestrated by Hamas, the political and military organization governing Gaza. As one of the most prominent and polarizing leaders in global politics, Netanyahu's decisions and rhetoric carry significant implications—not only for Israelis and Palestinians but also for the broader international landscape, especially amidst the ongoing conflict in the Middle East (*article 3*). His leadership evokes diverse reactions across a wide demographic, reflecting his complex and multifaceted persona. Thus, we found it compelling to examine how this political figure is depicted by news outlets.

In this project, we aim to take a bird's-eye view of the information consumed by North American audiences regarding Netanyahu. Our focus is not on analyzing potential biases in article titles or their nuanced formulations but rather on providing a broader perspective by identifying recurrent patterns in media coverage.

Through a data-driven approach, we seek to analyze how Netanyahu is portrayed in North American media, examining overarching sentiment and key coverage topics to uncover underlying framing tendencies. By highlighting these general trends, we hope to inspire curiosity and encourage deeper exploration into the nuances of media framing and its implications.

Our question definition: **How has the sentiment in English-speaking news outlets' coverage of Benjamin Netanyahu from the 15th of October to the 16th of November 2024, varied across key topics?**

Data

Our dataset consisted of 675 news articles. The data included the following headers: sentiment, category, source, title, description, content, url, and publishedAt.

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We used **NewsAPI.org** to collect our articles and made several design choices to address the API limitations and ensure the dataset met our objectives using the parameters that are bolded:

For the **keywords search**, we searched for "Netanyahu OR netanyahu" in article titles, assuming his last name would appear if he were the main subject. Using "Benjamin" was avoided to prevent unrelated individuals. This approach effectively filtered for relevant articles as Netanyahu's name is uncommon. Articles mentioning him only in the body were excluded due to lack of focus. Relevant articles were **sorted by popularity** to capture broader public sentiment. (For language), only English articles were included.

Blogs and informal outlets were manually excluded. Sources were reviewed to remove non-news agencies and commentary-focused platforms (eg., nakedcapitalism.com)

Due to NewsAPI's limit on articles from the past month, data was collected in two rounds to ensure full coverage, and to ensure all articles were collected on days with more than 100, we used precise half-day time intervals for the calls.

Duplicate articles and republished content with identical information were removed. Two articles about Sara and Yair Netanyahu were excluded as they did not directly relate to Benjamin Netanyahu.

Methods

Typology Method

We began by performing open coding on our first round of articles—approximately 300—to develop the category feature for the dataset. Initially, we identified seven categories: Israel-American Relations, Non-Governmental Opinion, Social Media, Economics, Israel-Middle East Conflict, Israel Citizen Affairs, and Israel Political Affairs. After examining the distribution of articles across these categories, we observed an imbalance. Certain categories were disproportionately represented, while others contained very few articles.

Additionally, we found that Social Media and Economics were too broad to stand as independent categories. Within these, we encountered articles like "Oil Prices Drop After Netanyahu Says Israel Will Attack Military, Not Oil Or Nuclear Targets In Iran," which contained economic aspects but did not fit cohesively within a general Economics category.

This indicated a need for more refined and specific groupings.

Furthermore, the Israel-Middle East Conflict category had the highest number of articles, creating an uneven distribution. To address this, we split it into two distinct categories: Israel-Lebanon/Iran Conflict and Israel-Palestine Conflict. These adjustments ensured that each category was more defined and comprehensive, better reflecting the data. This refinement process resulted in **eight final categories**, providing a more balanced and inclusive framework for our analysis.

We then revisited the same set of articles to conduct open coding again, this time to develop a **typology for sentiment** (positive, negative, neutral). Once we established general definitions for each sentiment, we **triple-annotated the data**. Each group member reviewed and annotated the datasets created by others to ensure consistency and agreement. After discussing the results, we finalized the typologies.

TF-Idf Method

For the Tf-Idf analysis, we calculated the top 10 Tf-Idf scores for words found in the titles and descriptions of articles. The process involved the following steps:

1. **Filtering by Category:** We first filtered the articles based on the category being analyzed.
2. **Preprocessing Text:**
 - Combined titles and descriptions into a single text block.
 - Removed punctuation and converted all text to lower-case for consistency.
3. **Excluding Common Phrases:** We excluded specific phrases directly referencing Netanyahu, such as “Benjamin Netanyahu” or “Prime Minister,” as these were universally present across all articles and would dominate the top 10 list. While such phrases could theoretically refer to other prime ministers, we determined this to be an uncommon case. Given our use of human annotation on all articles, we were confident in this decision. Note: If a large-scale event were to involve both Netanyahu and another prime minister, this exclusion criterion should be revisited to ensure accurate data representation.
4. **Key Word Adjustments:**
 - Allowed the word “minister” to remain in the Tf-Idf word list, as it could refer to any minister, not exclusively Netanyahu.
 - Retained “Israel” and “Israeli” as separate words since one refers to the country and the other to its citizens.
 - Combined variations like “says” and “said,” as they convey similar reporting contexts but are not inherently meaningful as separate terms.

By implementing these refinements, we ensured that the Tf-Idf analysis accurately reflected the unique and relevant language patterns within each category, minimizing redundancy while maintaining the integrity of the results.

Results

Categories

After multiple rounds of open-coding and annotation, we settled on the following eight categories for the dataset:

Israel-American Relations: This category includes mentions of both American and Israeli politicians or political events, where there is an interaction between the two parties. Articles in this category often highlight diplomatic relations, cooperative efforts, or mutual criticisms between the two nations. *Inclusion Example:* “Blinken and Netanyahu Agree Sinwar’s Death Opens Options”. *Exclusion Example:* “Home secretary refuses to say if UK would arrest Netanyahu after ICC arrest warrant” This wouldn’t be included as it’s the UK making a statement.

Non-American Israel Relations: Articles covering interactions, policies, or opinions involving Israel and countries outside of the United States. This category highlights Israel’s broader international relationships and diplomatic efforts with nations beyond the U.S; Palestine, Iran and Lebanon. *Inclusion Example:* “Macron rallies Netanyahu with jab on Israel’s creation,” and “Netanyahu to send rescue planes to Amsterdam after violence against Israeli football fans”. *Exclusion Example:* “Missing Israeli Rabbi found murdered in UAE, Netanyahu vows revenge on killers”, this would not be part of this category as it’s regarding an Israeli non-political figure.

Non-Governmental Opinion: Articles expressing opinions on Netanyahu that originate from non-political or non-governmental perspectives. These opinions may come from public figures, analysts, or institutions outside of political roles. *Inclusion Example:* “Have Israel’s wars on Gaza and Lebanon made Netanyahu more popular?” *Exclusion Example:* “Blinken: Netanyahu pledged no permanent Israeli presence in Gaza”, this would not be part of the category as a political figure is providing their opinion.

Israel-Iran/Lebanon Conflict: This category covers mentions of tensions involving Iranian political figures, Hamas, Hezbollah, Lebanon, or Lebanese political figures. Articles in this category focus on conflicts, threats, or developments in relations between Israel and these entities. *Inclusion Example:* Israel Strikes Lebanon After Netanyahu Vows No Mercy For Hezbollah “. *Exclusion Example:* “Hostages Families Not Impressed With Hamas Leader’s Assassination, Demand Netanyahu Order ‘Immediate Agreement’” While this article does mention Hamas, its primary focus is on opinions expressed within Israel, making it more appropriately categorized under Israel Local Affairs.

Israel-Palestine Conflict: Articles in this category involve tensions or events concerning the West Bank, Gaza, or Palestine. This includes discussions around military actions, peace negotiations, or humanitarian issues specific to the Israeli-Palestinian conflict. *Inclusion Example:* “Palestinians need hope, but ICC arrest warrants for Netanyahu and Gallant aren’t it” *Exclusion Example:* “Legal threats close in on Israel’s Netanyahu and could impact ongoing wars”, even though this mentions the ongoing wars, the main subject is the legal threats so this would instead be part of Legal Affairs.

Legal Affairs: Articles covering legal cases, allegations, investigations, or judicial proceedings involving Netanyahu or his administration. This category includes both domestic and international legal challenges. *Inclusion Example:* “International court prosecutor who charged Netanyahu faces sexual misconduct accusation” *Exclusion Example:* “Trump National Security Advisor Pick Threaten ICC Over Netanyahu Arrest Warrant”. While the ICC and Netanyahu are mentioned, the context centers on American political involvement, which matches the definition of Israel-American Relations.

Israel Local Affairs: This category encompasses mentions of events, opinions, or developments within Israel, focusing on domestic social, or cultural issues that focus on citizens and not politicians. Articles in this category address internal matters rather than international relations. *Inclusion Example:* “Israeli soccer fans in Amsterdam attacked by mob shouting ‘Free Palestine’ — Netanyahu sends planes to evacuate citizens”. *Exclusion Example:* “Former Israeli defense minister says Netanyahu must be declared unfit”. *Edge Inclusion:* “Missing Israeli Rabbi found murdered in UAE, Netanyahu vows revenge on killers”

Israel Political Affairs: This category encompasses mentions of political developments that are not related to citizens. Articles in this category focus on political developments, debates, and decisions within the Israeli political landscape, highlighting the workings of the government, opposition, and other political entities. *Inclusion Example:* “Former Israeli defense minister says Netanyahu must be declared unfit” *Exclusion Example:* “Protesters interrupt Netanyahu at ceremony for fallen Oct. 7 civilians” This would not be included as the main subject is Israeli Protesters, so it would go under Israel Local Affairs.

Sentiments

The typology for sentiment was defined as follows during the open coding of our articles:

Positive: Positive sentiment was identified through the use of affirmative or favorable language when describing Netanyahu or his actions. Examples include headlines like “Trump boasts of near daily conversations with Netanyahu” that highlight supportive relationships or praise directed toward him. This category also includes coverage of agreements involving Netanyahu and another party, provided there are no negative connotations surrounding the agreement as presented by the news source. For instance: “Blinken and Netanyahu Agree Sinwar’s Death Opens Possibilities” and “Trump signals support in call with Netanyahu: ‘Do what you have to do’” (Washington Post) Additionally, positive sentiment includes reporting on actions taken by Netanyahu that could be considered morally* commendable or widely viewed as good, such as aiding civilians or promoting humanitarian efforts. For example: “Netanyahu held emergency discussion on increasing aid to Gaza, Israeli officials say” This category also encompasses cases where the news portrays something Netanyahu or his supporters would actively want to be covered in the media. *Edge cases for positive sentiment were also identified.* These are instances where the interpretation of sentiment

is not straightforward due to mixed or ambiguous connotations in the article. For example, “ICC judge weighing arrest warrants against Netanyahu and Gallant replaced, likely delaying decision” can be interpreted as positive because it suggests a potential delay in legal actions against Netanyahu, which could be viewed favorably by his supporters. However, the underlying legal context might not inherently reflect a positive portrayal, leading to complexities in categorization. Similarly, articles with negative coverage of a party that is in disagreement with Netanyahu, such as “War Crimes Prosecutor Who Charged Netanyahu Accused of Sexual Misconduct,” would be classified as positive since they indirectly cast Netanyahu in a more favorable light by discrediting his opposition. *protecting civilians, helping people in need, no stealing, getting back the hostages, protecting Israeli citizens

Neutral: Neutral sentiment was defined as objective reporting that avoids clear positive or negative connotations. Most articles were expected to fall under this category due to the ostensibly impartial nature of journalistic coverage. Examples include: “Kamala Harris says she is not concerned about Trump’s talks with Netanyahu” and “X does not agree with Y that agrees with Netanyahu” Neutral sentiment reflects instances where disagreements or agreements involving Netanyahu are presented without a distinct slant, leaving no explicit bias from the news source.

Negative: Negative sentiment was characterized by disagreeing or unfavorable language when describing Netanyahu or his actions. This includes instances of disagreement between Netanyahu and another party, as long as the disagreement lacks positive framing or context. Articles reporting on actions widely regarded as immoral*, such as harming civilians or blocking humanitarian aid, also fall into this category. Examples of negative sentiment include: “Former Israeli PM Ehud Olmert says Netanyahu is the real enemy—not Iran or Hezbollah” and “Any sane, responsible leader would try to end the war. Not Netanyahu.” Additionally, this category includes negative coverage of legal or ethical issues, such as “Israel Police officer who oversaw Netanyahu corruption cases announces he’s quitting.” It also encompasses articles that highlight positive achievements by other entities while indirectly criticizing Netanyahu. For example, “The IDF gave Israel’s government a victory image, but Netanyahu only has eyes for Iran” portrays a contrast where others are shown in a favorable light, creating an implicit critique of Netanyahu. This category further reflects coverage Netanyahu or his supporters would not want featured in the media. *harming civilians/children, harming Israeli citizens/putting them in danger, blocking/preventing humanitarian aid

Figures

The following figures were created to support our analysis and help address our research question:

The pie chart visualizes the overall distribution of sentiment across all categories of articles. It shows that the majority of articles are neutral (50%), followed by negative sentiment (40%), with a smaller proportion being positive (10%) (**Figure1**)

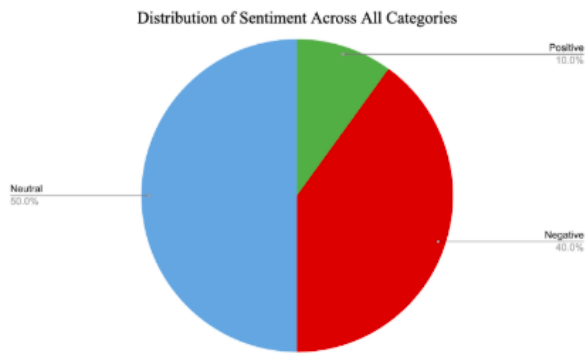


Figure 1

The second bar graph breaks down sentiment distribution by category, showing the total article count and sentiment proportions. "Legal Affairs" and "Israel-Political Affairs" have more negative sentiment, while "Israel-American Relations" and "Israel-Iran/Lebanon Conflict" show more positive sentiment.(Figure2)

The table provides a numerical and percentage breakdown of article sentiments across the categories. This allows us to highlight categories with dominant sentiments, such as Legal Affairs, which shows a higher negative sentiment compared to other categories. Overall, around 10% of the articles were positive, 40% were negative and 50% were neutral.Categories with the most negative sentiment include Legal Affairs and Israel Local Affairs, while Non-American Israel Relations and Israel-Palestine Conflict have the highest positive sentiment. Neutral sentiment dominates categories like Israel-Iran/Lebanon Conflict and Israel-Palestine Conflict.The bar chart complements the table by visually highlighting sentiment trends, article volumes, and contrasts across categories. For example, neutral sentiment dominates most categories, Israel-American Relations has the highest article volume, and Legal Affairs show predominantly negative sentiment, while Israel-Iran/Lebanon Conflict is largely neutral.(Figure3)

Figure12 illustrates the percentage of each sentiment from October 15th to November 25th. The key topics highlighted in the figure include Sinwar's Death, the assassination attempt on Netanyahu, the attack on Iran, Netanyahu's office leak, Trump's election win, and the arrest warrant. These topics were chosen based on their significance as major current events and any noticeable spikes in the data. Notably, there is an overall lower proportion of positive coverage on Netanyahu. Additionally, outliers are observed on October 30th and November 9th, where sentiment was entirely neutral and negative, respectively. It's important to note that some days had fewer articles than others. While each day is weighted equally in the graph, fewer data points on certain days can lead to skewed distributions. For instance, on November 9th, 100% of the articles were negative, which contrasts with the broader trend of predominantly neutral coverage. To address this, we included the

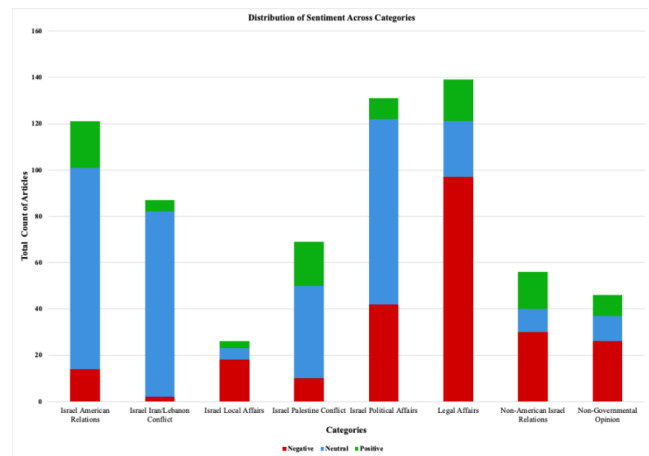


Figure 2

Categories	Sum of Negative	% of Negative	Sum of Neutral	% of Neutral	Sum of Positive	% of Positive
Israel American Relations	14	11.57	87	71.9	20	16.53
Israel Iran/Lebanon Conflict	2	2.3	80	91.95	5	5.75
Israel Local Affairs	18	69.23	5	19.23	3	11.54
Israel Palestine Conflict	10	14.49	40	57.97	19	27.54
Israel Political Affairs	42	32.06	80	61.07	9	6.87
Legal Affairs	97	69.78	24	17.27	18	12.95
Non-American Israel Relations	30	53.57	10	17.86	16	28.57
Non-Governmental Opinion	26	56.52	11	23.91	9	19.57
Grand Total	239	35.41	337	48.93	99	14.67

Figure 3

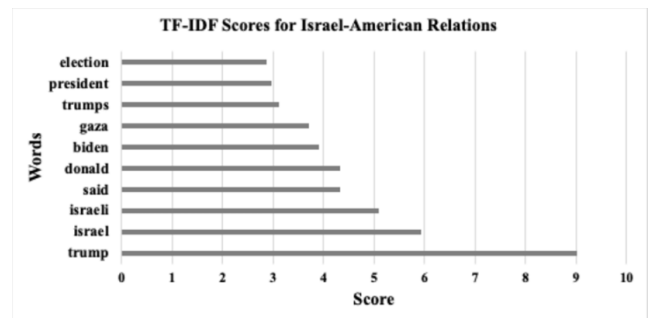


Figure 4



Figure 5

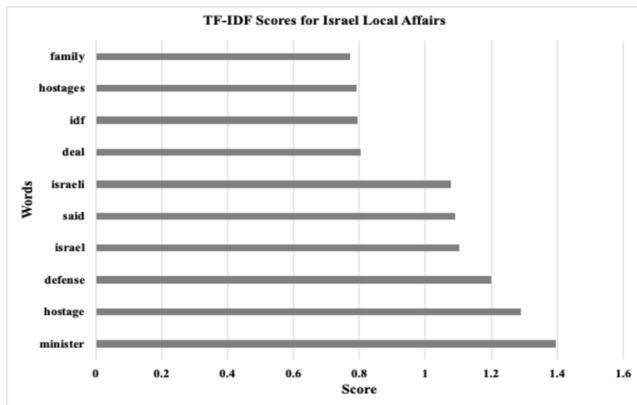


Figure 6

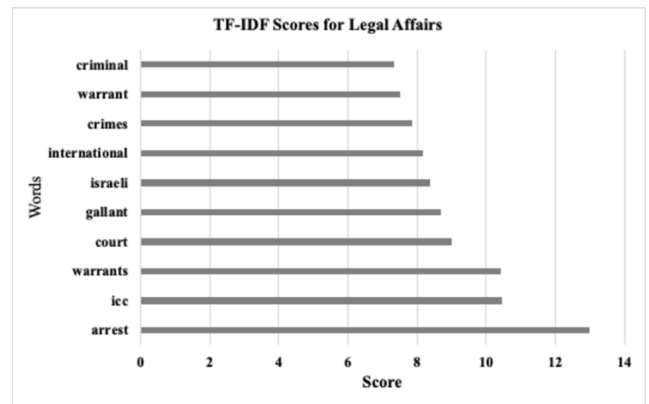


Figure 9



Figure 7



Figure 10

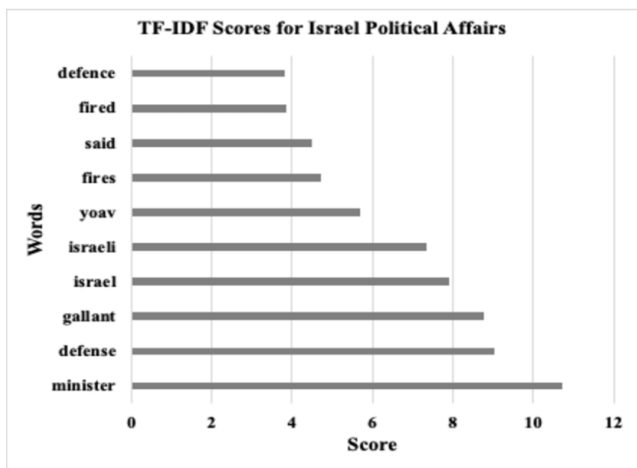


Figure 8

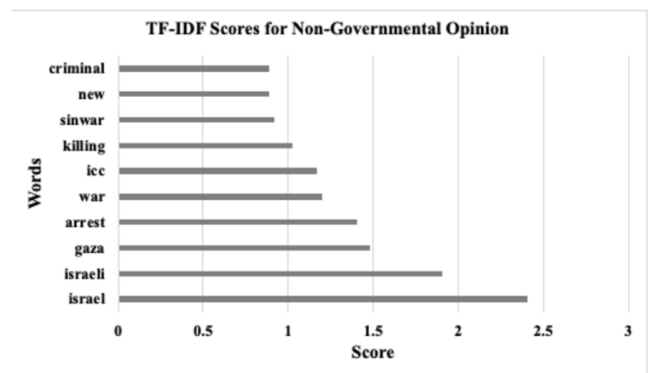


Figure 11

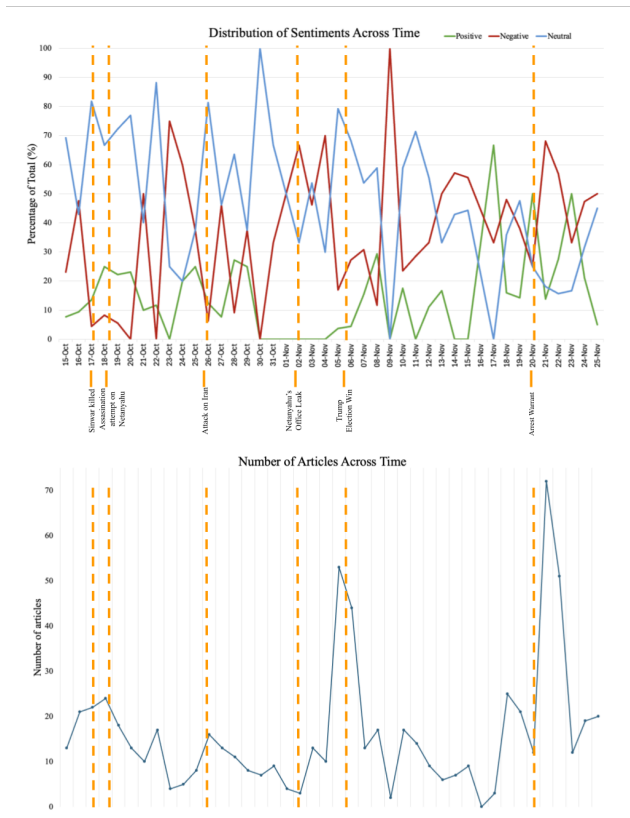


Figure 12

second part of Figure 12, which displays the number of articles per day. This highlights variations in coverage volume and shows, for example, that there were no articles on November 16th. While it is unlikely that no articles were written about Netanyahu that day, the API did not return any results for that date. **Figures 4-11** show the TF-IDf results.

Discussion

Neutral articles (50%) dominate all categories (Figure 1) and dates (Figure 12), as news outlets typically report objectively without opinions.

In Israel-American relations (**Figure 4**), TF-IDF scores reveal “Trump” and related terms (“Trumps”, “Donald”) as most frequent, signifying heightened media focus on Trump-Netanyahu ties during U.S. elections. Notably, Biden appears less prominently, suggesting limited reporting on his relations with Netanyahu compared to future administration prospects.

Figure 5 shows the TF-IDF scores for Israel and Iran/Lebanon, the frequency of the word “said” shows an ongoing conversation between Israel and Iran/Lebanon, without presenting opinions, but rather reporting. This aligns with the findings in Figure 3, as this category had the least positive and negative sentiment and lots of neutral coverage. There is also an escalation and threatening rhetoric between the two parties as highlighted by the words “strikes” “nuclear” and “attack”.

In the Local Affairs category, we observe terms related to various facets of Israeli society and governance. Politically, there are words like “minister” and “israel”. On a military level, terms such as “defense” and “IDF” are prominent, while on a societal level, words like “family” and “hostages” stand out. This highlights the citizen’s active involvement and the internal debates occurring, as indicated by the frequency of the word “said.” These discussions occur against the backdrop of the broader instability in Israel, as reflected by the high negative coverage depicted in **Figure 3**.

The Israel-Palestine conflict coverage is marked by the media’s greater focus on Yahya Sinwar, evidenced by “hostage” being less frequent compared to its prominence in Local Affairs. Sinwar’s death may have influenced a rise in positive sentiment toward Netanyahu (**Figures 2,3**).

In **Figure 8**, for Israel Political affairs, “minister”, “yoav”, “gallant”, “defense”, “defence”, and “fired” all refer to the former Israeli defense ministers’ dismissal by Netanyahu. In **Figures 2 and 3**, it’s evident that the majority of coverage for Israel Political affairs was negative. This means that the news covered this political event by framing Netanyahu mostly negatively.

The Legal Affairs category prominently features terms related to two significant events: the “international,” “criminal,” and “court” (“ICC”) issuing arrest warrants against Netanyahu and Gallant, the defense minister. Notably, the word “criminal” frequently appears about both figures. As seen in **Figures 2 and 3**, this category recorded the highest percentage of negative coverage for Netanyahu. The presence of the term “criminal” aligns with the project’s definition of negative sentiment and reflects the overall tone of the coverage. Furthermore, the predominantly negative sentiment can be attributed to the nature of the arrest warrants, as such events are unlikely to be portrayed positively unless there is a notable “push” against them, explaining the prevalence of negative articles in this category.

Overlapping terms between Legal Affairs (**Figure 9**) and Non-American Israel Relations (Figure 10), such as “arrest,” “court,” and “warrant,” indicate global interest in these legal decisions. The mix of positive and negative coverage, seen in Figure 12, reflects varying international stances, with leaders like Orban and Macron symbolizing tensions between Israel and Europe.

In Non-Governmental Opinions (**Figure 11**), terms like “gaza,” “war,” and “killing” focus on regional conflict, while “arrest” and “icc” highlight legal accountability. With only 23.91% neutral sentiment (**Figure 3**), this category shows polarized views, emphasizing Israel’s actions and policies.

Figure 12 shows there is a general tendency for more neutral coverage during polarizing events. News outlets tend to be more neutral in the coverage, perhaps to not take a political stance or upset “a side”. For example for Sinwar’s death, the attack on Iran, and Trump’s election win, there is a higher percentage of neutral articles. This is supported by the findings in **Figure 3**, where categories with the highest neutral sentiment were Israel Palestine Conflict and Israel Iran/Lebanon Conflict. The assassination attempt on Netanyahu illustrates how outlets often report events neutrally when opinions or sentiments are inappropriate, resulting in

a high number of neutral articles.

Exceptions to this trend are inherently negative polarizing events, such as the Office Leak on November 2 and the ICC arrest warrant on November 20, which drove increased negative sentiment (**Figure 2**) in the Legal Affairs category. Unlike attack operations, which can be framed neutrally (e.g., Israel-Iran/Lebanon and Israel-Palestine conflicts), court verdicts are less open to neutral reporting. Interestingly, after Netanyahu's arrest warrant, some world leaders defended him, briefly increasing positive coverage.

In conclusion, polarizing topics see neutral coverage, while inherently negative events yield critical sentiment. Positive coverage was limited, likely due to Netanyahu's legal challenges dominating the timeline.

Group Member Contributions

Saif and Nazifa collaborated to develop the code that generated the articles for our dataset. The entire team then worked together on the open-coding exercise, refining the categories through iterative discussions. Each member performed individual annotations and cross-checked each other's work in subsequent rounds to ensure consistency.

Nazifa focused on the Tf-Idf method and wrote the Data and Methods sections.

Saif authored the Introduction and created graphs depicting the distribution of sentiments over time (with specified events) and the distribution of sentiment across categories.

Alia wrote the Results section and generated the Tf-Idf graphs and formatted the whole report.

Collectively, we all contributed to the Discussion section and collaborated on creating the graphs for the overall distribution of categories and the overall distribution of sentiment.

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