# Analyzing Conflict Through Data: A Dataset on the Digital Framing of Sheikh Jarrah Evictions

**Anatolii Shestakov, Wajdi Zaghouani**

Hamad Bin Khalifa University

ansh33161@hbku.edu.qa, wzaghouani@hbku.edu.qa

**Abstract**

This study empirically investigates the role of social media in tracing the evolution of the May 2021 Israeli-Palestinian crisis, centered on the Sheikh Jarrah evictions. Analyzing a dataset of 370,747 English tweets from 120,173 users from May 9-21, 2021, the research employs a mixed-methods approach combining computational techniques and qualitative content analysis. Findings support the hypothesis that social media interactions reliably map crisis dynamics, as evidenced by hashtags like #SaveSheikhJarrah corresponding to critical shifts, though virality did not correlate with hashtag use. In contrast to prior sentiment-focused studies, the context-driven analysis reveals influencers and state actors shaping polarized narratives along geopolitical lines, with high-profile voices backing Palestinian solidarity while Israeli state accounts endorsed military operations. Evidence of a transcontinental cybercampaign emerged, albeit with limitations due to the English language scope and potential biases from data collection and keyword choices. The study contributes empirical insights into the mediatization of armed conflicts through social media's competing narratives and information flows within the Israeli-Palestinian context. Recommendations for future multilingual, multi-platform analyses are provided to address limitations.

**Keywords:** Sheikh Jarrah, Social Media, Cybercampaign, Content Analysis, Digital Framing

## 1. Introduction

The Sheikh Jarrah neighborhood, a predominantly Palestinian area in East Jerusalem, has been a focal point of property disputes following the Israeli occupation in 1967. In May 2021, tensions escalated when Israeli authorities threatened to evict Palestinian residents, triggering violent clashes. This incident was a flashpoint in the longstanding Israeli-Palestinian conflict, which has been extensively documented and debated across traditional and social media platforms. The proliferation of social media has provided previously marginalized voices an opportunity to participate in these discourses, shaping narratives and mobilizing support.

This study investigates the unfolding of the May 2021 escalation, known as the Gaza crisis, through an analysis of Twitter interactions. The intensity of user reactions prompted the formation of the #SaveSheikhJarrah movement, generating a substantial corpus of tweets during this period. By employing a mixed-methods approach combining computational techniques and qualitative analysis, this research aims to provide empirical insights into the dynamics of the 2021 crisis within the broader context of the Israeli-Palestinian confrontation since 1948. While existing literature has primarily focused on earlier events, this study offers a contemporary perspective informed by the analysis of user-generated content on Twitter.

The methodological framework encompasses the examination of influential accounts, information flows, linguistic patterns, and hashtag usage, facilitating a nuanced understanding of the discourse dynamics on this social media platform. By triangulating quantitative and qualitative findings, the study seeks to extend theoretical frameworks on information flows and narratives surrounding the Middle East conflict.

A central focus of this investigation is the polarizing nature of media narratives during the Israeli-Palestinian crisis, interweaving findings on cyber-activism within the context of armed conflicts in the region. Analyzing Twitter reactions poses challenges due to the extensive media coverage and potential manipulation of information flows.

To comprehensively examine this phenomenon, the following hypothesis is evaluated: **H1:** Social media interactions constitute a reliable source for measuring the development and dynamics of conflicts.

To address this hypothesis, the study explores the following research questions:

**RQ1:** What were the dynamics of user activity during the 2021 Israeli-Palestinian crisis, and how can qualitative and quantitative analyses shed light on user typologies and behaviors on this new media platform?



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**RQ2**: What sentiment and thematic patterns prevail in the collected tweets, and how can corpus analysis techniques based on linguistic patterns and keywords elucidate the predominant moods and styles of users?

**RQ3**: Is it possible to establish the geographical locations of cyber-activists during the Sheikh Jarrah eviction campaign by contextualizing and summarizing the accumulated data to ascertain spatial patterns of pro-Palestinian and pro-Israeli users?

**RQ4**: How effective are hashtag statistics in evaluating the stages of the conflict, and can analyses of hashtag usage data generate visual representations of the conflict's evolution?

This interdisciplinary work draws upon diverse fields, including comparative history, humanities, cultural studies, data analysis, and digital humanities, to depict the intricate phenomenon of contemporary cyber-activism. The fundamentals of postmodernist methodology, primarily the theories of Foucault and researchers of public communications (Ciszek, 2016; Holtzhausen, 2002; Holtzhausen & Voto, 2002; Kent, 2002), are described. The combination of computational research and critical close-reading approaches aims to contextualize findings and mitigate the tendency towards purely quantitative analyses in information studies (Felt, 2016). The paper is structured as follows: Section 2 provides a review of relevant literature, Section 3 outlines the methodology, Section 4 presents the results, Section 5 discusses limitations and future directions, and Section 6 concludes the study.

## 2. Related Work

The Israeli occupation of Palestine has been a subject of extensive research, with scholars employing diverse theoretical frameworks and methodologies to analyze its complex dynamics. Postmodernist approaches, which reject the notion of a single objective truth and emphasize the role of power relations in shaping discourse (Deetz, 2001), have been particularly influential in this context. By focusing on marginalized groups' resistance to power structures and their ability to shape narratives (Holtzhausen, 2002), postmodernist perspectives offer valuable insights into the distribution of knowledge and the interplay between power and resistance in the Israeli occupation of Palestine.

The advent of social media has profoundly impacted how conflicts are perceived, experienced, and contested. Echo chambers, where users are exposed primarily to opinions that align with their own beliefs (Garimella et al., 2018), have emerged as a significant phenomenon, challenging the ideal of free information circulation (An et al., 2014; Cacciatore et al., 2016; Grömping, 2014; Lawernce et al., 2010). Researchers have demonstrated the influence of social media on real-life political polarization, which is often intensified by ongoing developments (Azzimonti and Fernandes, 2018; Du and Gregory, 2016). However, previous studies on Gaza cybercampaigns have not specifically addressed the polarization between pro-Israeli and pro-Palestinian camps (Mtchedlidze, 2019), a gap that this study aims to fill by examining the distinct polarization between opposing factions.

In times of crisis, the spread of misinformation, whether intentional or unintentional, can exacerbate the risk of individuals being influenced by conspiracy theories, rumors, and falsehoods (Bodaghi and Oliveira, 2020; Lewandowsky et al., 2013). The COVID-19 pandemic has brought renewed attention to the study of misinformation, particularly in the context of public health policies (McGlynn et al., 2013; Naeem and Ozuem, 2021; Shahi et al., 2021). However, misinformation has also been examined in earlier crises, such as the 2013 Boston Marathon bombings (Huang et al., 2015) and hurricanes Harvey and Irma (Hunt et al., 2020), as well as in socio-political events like elections (Kušen and Strembeck, 2018; Sanderson et al., 2021). These studies have employed large social media datasets and techniques such as topic modeling (Jamison et al., 2020) and deep learning (Ajao et al., 2018) to identify misinformation patterns and understand human behavior in crisis situations. Social media data has been increasingly used to analyze real-world events, including Israeli occupation of Palestine. Sarraj et al. (2016) observed a spike in Twitter activity during the 2014 Israel-Palestine war, while Zeitzoff et al. (2015) explored the connections between online interactions and offline violence in the context of Iran-Israel relations. Zeitzoff (2011) conducted a macrodynamic analysis of Twitter activity during the 2008-2009 Gaza conflict, identifying two distinct peaks in user reactions that corresponded to critical moments in the conflict. The rise of ISIS, the occupation of Crimea, and the Trump elections also saw a dramatic increase in the speed of information flow on social media platforms (Zeitzoff, 2018). Zeitzoff (2017) noted that the Israeli Defence Forces (IDF) adapted their campaigns based on hashtag activity on social networks, highlighting the strategic importance of social media in modern conflicts. The role of digital media in the Middle East and North Africa (MENA) region has been extensively studied, particularly in the context

of the Arab Spring and other regional uprisings. Twitter has been credited with playing a significant role in these events, facilitating the expression of dissent and mobilization efforts. In this context, Israel has sought to challenge neighboring Arab states by establishing a strong presence on social media and promoting user-generated content that advances its position (Stein, 2012). Studies have examined the impact of Israeli state-run social media accounts on public opinion regarding the Gaza war (Seo, 2014), Israeli digital diplomacy (Manor and Crilley, 2018), and war legitimation strategies (Simonsen, 2019). In contrast, the online pro-Palestinian community has been characterized by more decentralized and unconstrained user activity.

The integration of media into warfare has evolved over time, with the Gulf War marking the rise of telecommunications (stage one) and the conflicts in Ukraine and Libya exemplifying the decentralization of internet media (stage two). Hoskins and O'Loughlin (2015) theorized that states would exert greater control over information in the third "arrested war" stage, a trend that could be observed in the Gaza conflict due to Israel's stronger information appropriation. While pro-Palestinian media remains in stage two, Israel has moved towards stage three with its "arrested" state pages, which Stein (2014) described as "militarised social media" or "digital militarism" due to their attempts at projecting a sense of "everydayness" (Hoskins and O'Loughlin, 2015). Personal perspectives of wartime have also been explored through social media. Martínez García (2017) analyzed the power of a digital diary written by a seven-year-old Syrian girl on Twitter, highlighting the importance of documentary activism during conflict. Tawil-Souri and Aouragh (2014) examined Israeli-Palestinian digital disputes, questioning the extent to which online activism translates into physical resistance. Their study contextualized Palestinian online resistance within the broader framework of digital anticolonial discourse, noting that while the internet and social media have provided new tools for resistance, they have also given rise to "new forms of colonialism" (Tawil-Souri and Aouragh, 2014).

The role of gatekeeping in information dissemination has undergone significant changes with the advent of the internet. While journalists traditionally served as the primary gatekeepers (Wallace, 2018), the rise of social media has shifted this power to corporate platforms (Wallace, 2018; Kent, 2014). Although citizens now have the potential to act as gatekeepers, they are still subject to the algorithms and policies of these platforms (Wallace, 2018). The silencing of social media platforms by regimes can lead to the spread of misinformation, as observed during the Arab Spring, Iranian Green Movement, and Syrian protests, when authorities resorted to censorship and internet access blocking (Fekete and Warf, 2013; Golkar, 2011; Shehabat, 2012).

In the case of Israeli occupation of Palestine in 2021, the control over media channels was less overt but still significant, taking the form of content moderation by tech giants. Alimardani and Elswah (2021) discussed this phenomenon, termed "digital orientalism," in the context of cyber-activism in the MENA region. They highlighted issues such as the deletion of Syrian war crimes reports on YouTube, the erasure of regional differences through automated Arabic translations, unequal access to ad data for Tunisian activists on Facebook, and the lack of regional offices for Arab states. These factors contribute to the threat of digital discrimination on social media. Given the evidence of linguistic bias against Palestinians in traditional media reporting (Barkho and Richardson, 2010), decentralized media has gained importance as a means of rebalancing the narrative (Shreim and Dawes, 2015).

Recent studies have employed computational methods and qualitative analysis to investigate the dynamics of social media interactions during the Israeli occupation of Palestine. Alam et al. (2021) modeled the perspectives of various stakeholders in combating the COVID-19 infodemic, emphasizing the importance of considering multiple viewpoints when analyzing crisis-related discourse on social media. Hasanain et al. (2023) focused on detecting persuasion techniques and disinformation in Arabic text, underscoring the need for robust computational methods to identify manipulative content in social media discussions.

The CLEF-2018 CheckThat! Lab (Atanasova et al., 2018) and the CLEF-2023 CheckThat! Lab (Alam et al., 2023) have explored the automatic identification and verification of political claims, as well as the assessment of check-worthiness in multimodal and multigenre content, providing valuable methodological insights for analyzing political framing and misinformation in social media data. Several studies have specifically examined political framing in the context of crises and conflicts. Shurafa et al. (2020) investigated the US COVID-19 blame game on social media, demonstrating how computational techniques can be employed to

uncover patterns of political framing. Laabar and Zaghouani (2024) created an annotated dataset of stance, sentiment, and emotion in Facebook comments related to Tunisia's political measures, showcasing the value of multi-dimensional analysis in understanding public opinion on social media.

The creation and analysis of large-scale, multi-dialect Arabic social media corpora have also been a focus of recent research. Zaghouani and Charfi (2018) presented the Arap-tweet corpus, which includes gender, age, and language variety identification, while Alam et al. (2021) and Shaar et al. (2021) developed datasets and shared tasks for detecting COVID-19 misinformation and censorship in Arabic social media content. Author profiling, deception detection, and irony detection in Arabic social media have also received attention, as evidenced by the survey conducted by Rosso et al. (2018) and the shared task organized by Rangel et al. (2019). These studies highlight the importance of considering linguistic and cultural nuances when analyzing Arabic social media content.

Building upon these previous works, our study aims to contribute to the growing body of research on social media discourse analysis in the context of the Israeli occupation of Palestine. By leveraging computational methods and qualitative analysis, we seek to uncover patterns of political framing, misinformation, and polarization in the Twitter discourse surrounding the May 2021 crisis, while also considering the unique challenges and opportunities presented by the Arabic language and the region's socio-political context. We will examine features of modern digitalized activism in the #SaveSheikhJarrah campaign, which challenges social and political inequalities and adapts to a new media paradigm in the face of limited mediation in the region. By applying computational tools, this study analyzes information flow, compares it with existing theories, and operationalizes big data and user-generated content within media trends.

## 3. Methodology

This study employs a multi-faceted approach to analyze publicly accessible social media content related to the May 2021 Israeli-Palestinian conflict, while adhering to user privacy protocols. The research methodology consists of three primary phases: data collection, quantitative analysis, and qualitative close reading. This approach enables a comprehensive examination of the data's connotative meanings, particularly at the lexical level, which is of significant interest to scholars in the field of Digital Humanities.

### 3.1 Data Collection

To ensure the relevance of the collected tweets to the May 2021 confrontation, a precise search query was established, focusing on the period from May 9 to May 21, 2021, which encompassed the conflict's preliminary and terminal phases. Using Python for automation, tweets were harvested based on the keywords "Gaza," "Israel," and "Palestine," which were central to the discussions during the escalated conflict. The resulting dataset comprised 370,747 tweets from 120,173 distinct users, with retweet duplicates excluded to maintain data integrity and relevance. The dataset can be obtained by contacting the authors[1].

The corpus predominantly features tweets in Latin script, deliberately excluding Arabic and Hebrew to mitigate language bias and represent international discourse authentically. The data was collected in September 2021 and converted to UTF-8 format for accessibility and further analysis. It is important to note that the dataset may not be exhaustive, as some tweets may have been deleted or suspended after the collection phase. Before proceeding with the analysis, the corpus was filtered to remove URL links and user mentions (denoted by "@") to refine the dataset for detailed examination.

### 3.2 Data Analysis

The study employs an integrated methodological approach, combining quantitative and qualitative strategies to analyze and interpret the social media data, yielding a multifaceted descriptive analysis. Advanced computational tools and algorithms are selectively applied at various stages of the analysis to meet the research's specific needs. Identifying key influencers within the discourse was a crucial aspect of the analysis. A Python-automated application programming interface (API) was used to quantify the number of followers, determining the influential power of various accounts. Manual examination provided deeper insights into the nature of these accounts, classifying them into categories such as state-run entities, journalists, personal pages, and others to elucidate their roles in the discourse. To understand the sentiments and thematic directions of the discussions, a detailed contextual analysis of the tweets was

[1] To request the dataset for research purposes, please fill the following form: https://forms.gle/S9fZtYjAyLAqFsH19

conducted, assessing the polarity and conflict perspectives embodied in the social media interactions. Voyant Tools, a corpus linguistics tool, was employed to extract and visualize keyword trends, facilitating a nuanced examination of the lexical patterns and thematic occurrences within the data. This tool was also instrumental in mapping the distribution of hashtags within a curated subset of the data, focusing on the semantics and usage patterns of these hashtags.

The analysis focused on an English tweets corpus to encapsulate the global perspective and linguistic nuances, providing insights into the international discourse. The AntConc tool, a corpus analysis utility, was used to perform a randomized exploration of keywords in context (KWIC), enabling a meticulous close reading of the text fragments. The analytical process was enhanced by adopting Braun and Clarke's (2006) thematic analysis framework, a qualitative content analysis method that facilitated a deeper understanding of the underlying themes within the data.

The synthesis of these quantitative and qualitative methodologies aimed to construct a comprehensive and multifaceted interpretation of the user-generated content pertaining to the events of the May confrontation. This holistic approach to data analysis ensures a robust and insightful exploration of the digital discourse, providing valuable perspectives on the dynamics and sentiments expressed during the conflict.

# 4. Results

## 4.1 4.1 Information Diffusion and Gatekeeping

To investigate information diffusion trends during the conflict, top accounts within the discussion were analyzed based on the number of followers they attracted and engaged with (see Table 1). The top 10 accounts by follower rate consist predominantly of media giants such as CNN and BBC, with an exception in line 6, where British artist Zayn Malik is positioned. While news accounts depicted information neutrally, Malik stood forward to support Palestine, placing him among the most influential accounts with a distinct position regarding the conflict. Interestingly, the most engaged tweets were found to be from accounts with less than 50,000 followers, with some accounts having less than 500 followers reaching broad audiences with retweet numbers up to 46,000 times. This finding suggests that the network empowered users with both highly developed information channels and relatively humble follower numbers.

| Account name | Username | Followers[2] | Type |
|---|---|---|---|
| CNN Breaking News | @cnnbrk | 61,349,476 | media |
| CNN | @CNN | 54,608,606 | media |
| The New York Times | @nytimes | 50,465,046 | media |
| BBC Breaking News | @BBCBreaking | 48,173,456 | media |
| BBC News (World) | @BBCWorld | 32,856,126 | media |
| Zayn | @zaynmalik | 30,976,562 | artist[3] |
| The Economist | @TheEconomist | 25,807,028 | media |
| Reuters | @Reuters | 23,760,876 | media |
| Fox News | @FoxNews | 20,202,832 | media |
| CNN_EN Español | @CNNEE | 20,139,173 | media |

Table 1: Identified Twitter accounts with the highest number of followers

| Conflict side | Username | Retweets[4] | Type |
|---|---|---|---|
| Pro-Palestinian | @zaynmalik | 190,106 | artist |
| Pro-Palestinian | @godsxm | 81,171 | personal page |
| Pro-Palestinian | @godsxm | 79,091 | personal page |
| Pro-Palestinian | @Jatlkhwan | 68,132 | personal page |
| Pro-Palestinian | @HausofHilton | 59,972 | personal page |
| Pro-Palestinian | @Mahrez22 | 58,500 | sportsman |
| Pro-Palestinian | @velvetbiased | 54,859 | personal page |
| Pro-Palestinian | @WAYSTARFILMS | 49,886 | no longer exists |
| Pro-Palestinian | @MiddleEastEye | 49,525 | media |
| Pro-Palestinian | @EoinHiggins_ | 47,921 | journalist |

Table 2: Frequency of accounts with the most retweeted tweet

[2] Follower numbers are correct as of the dataset creation date.

[3] The only page on the list with a defined position about the conflict (pro-Palestinian).

[4] Retweets number at the moment of the dataset creation

## 4.2 Accounts Analysis

The most prominent accounts were further analyzed using different criteria, such as retweet count (Table 2), quote count (Table 3), like count (Table 4), and reply count (Table 5). The analysis revealed that accounts expressing political opinions and personal judgments tended to have higher retweet counts, with the most retweeted accounts pushing pro-Palestinian support. In terms of quote count, user behavior changed, with only one page supporting the pro-Palestinian side while the remaining accounts took the pro-Israeli position (Table 3). The Israeli state-run account occupied three positions in the table, while Israeli MFA-related accounts placed fifth and sixth.

| Conflict side | Username | Quotes | Type |
|---|---|---|---|
| Pro-Israeli | @Israel | 53,256 | state-run page |
| Pro-Israeli | @AndrewYang | 36,933 | politician |
| Neutral | @GretaThunberg | 36,369 | activist |
| Pro-Israeli | @Mike_Pence | 31,690 | politician |
| Pro-Israeli | @IdoDaniel | 30,118 | media-expert |
| Pro-Israeli | @IdoDaniel | 23,216 | media-expert |
| Pro-Israeli | @Israel | 22,587 | state-run page |
| Pro-Israeli | @WhiteHouse | 21,375 | state-run page |
| Pro-Palestinian | @frhamlna | 17,385 | personal page |
| Pro-Israeli | @Israel | 13,562 | state-run page |

Table 3: Accounts with the highest quoted tweet count

| Conflict side | Username | Likes | Type |
|---|---|---|---|
| Pro-Palestinian | @zaynmalik | 659,858 | artist |
| Pro-Palestinian | @Mahrez22 | 192,414 | sportsman |
| Pro-Palestinian | @BernieSanders | 167,449 | politician |
| Pro-Palestinian | @AOC | 145,458 | state representative |
| Pro-Palestinian | @zalx_ | 139,364 | personal page |
| Pro-Israeli | @Israel | 122,491 | state-run page |
| Pro-Palestinian | @ElNennY | 121,464 | sportsman |
| Pro-Palestinian | @MiddleEastEye | 114,794 | media |
| Pro-Palestinian | @EoinHiggins_ | 107,871 | journalist |
| Pro-Palestinian | @thisisnotmaha | 106,299 | personal page |

Table 4: Accounts with the highest like count

Analysis of tweets by likability (Table 4) demonstrated pro-Palestinian moods among the most-liked tweets, with a diverse user demography, including artists, sportsmen, and personal accounts. The official Israeli state-run page also reached a broad user audience, positioning sixth among predominantly pro-Palestinian accounts.

The accounts filtered by reply count (Table 5) presented the most diverse group of accounts, with people from various occupations represented.

| Conflict side | Username | Replies | Type |
|---|---|---|---|
| Pro-Israeli | @Mike_Pence | 64,361 | politician |
| Pro-Israeli | @Israel | 37,091 | state-run page |
| Pro-Israeli | @IdoDaniel | 36,294 | media-expert |
| Pro-Israeli | @AndrewYang | 35,966 | politician |
| Pro-Palestinian | @zaynmalik | 35,863 | artist |
| Pro-Israeli | @WhiteHouse | 23,017 | state-run page |
| Pro-Palestinian | @jeremycorbyn | 22,536 | politician |
| Pro-Palestinian | @djsnake | 20,280 | artist |
| Pro-Israeli | @Israel | 16,557 | state-run page |
| Pro-Israeli | @Israel | 15,769 | state-run page |

Table 5: Accounts with the highest reply count.

## 4.3 Geographical Analysis

Regarding users' geographic locations, 1,418 unique users with automatically set geolocation (around 1%) were identified. Although this data is credible, it is not representative. 33% of users self-identified their locations (more than 39,000 places), even though the data often contained imaginary places or only emojis. After filtering this data, the map in Figure 1 can be considered, confirming the broad inclusion of the #SaveSheikhJarrah campaign covering most countries worldwide. However, these results should be considered strictly illustrative rather than precise, as noted by Voyant Tools developers (Sinclair and Rockwell, 2016).

## 4.4 Short-term Dynamics and Language Analysis

Although this study does not provide hourly visual data, an illustration of how user activity changed according to real-life events and

militant processes during the 11 days was created (figure not included due to space restrictions). The graph, divided into day and night parts, shows that Israeli-Palestinian discourse attracted people from around the globe, ensuring comparatively equal activity during the 24 hours per day.
Corpus data was collected using Python automation, scraping all tweets containing keywords or hashtags. Although the study targeted English content, 28% of the content was published in languages other than English.

Figure 1: The Map of User Activity (Based on Self-Indicated Locations)

### 4.5 Frequently Used Terms and Hashtag Analysis

Focusing on English content, the rate of frequently used terms was established, excluding "stop words" (Sinclair and Rockwell, 2016). The terms found were particularly associated with the struggle for human rights, empathy towards the voiceless, and sorrow for the victims of violence. This analysis revealed the primary themes and sentiments expressed by users during the conflict, highlighting the emotional and political dimensions of the discourse.

Hashtag activism evolved on social media to share narratives with like-minded users, creating a sense of community and solidarity around specific issues. 23,109 hashtags were extracted from the corpus of tweets related to the Israeli-Palestinian crisis, with thousands of hashtag variations observed. This diversity of hashtags suggests a complex and multifaceted discourse, with users employing a wide range of tags to express their views and engage with different aspects of the conflict.

Although the #SaveSheikhJarrah movement emerged with high frequency in the first days, its use decreased dramatically in the following days (Figure 2), suggesting that the Sheikh Jarrah evictions were a powerful stimulus for

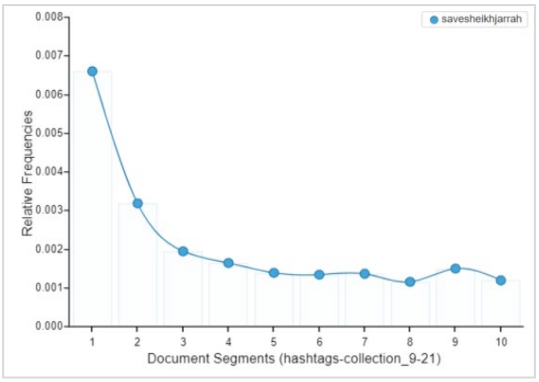


Figure 2: #SaveSheikhJarrah Distribution within the Time

further cybercampaigns rather than a central uniting theme. The decline in the usage of this hashtag over time may indicate a shift in the focus of the discourse or the emergence of new issues and events that captured users' attention.

The analysis demonstrated that adding hashtags to tweets does not necessarily affect their diffusion (figure not included due to space restrictions). Only 13% of the total 370,760 tweets had more than 100 retweets. Within this group, 41% of the most popular tweets contained hashtags, while the remaining 59% did not. The remaining 87% of tweets received less than 100 retweets, indicating that tweets with or without hashtags were retweeted to a similar degree. This finding suggests that the presence of hashtags alone does not guarantee the virality or popularity of a tweet, and other factors, such as content, timing, and the influence of the user, may play a more significant role in determining the reach and impact of a message.

Moving beyond the specific Sheikh Jarrah incident, the remaining hashtags were systematized and presented in a word cloud showing the most used hashtag variations (not included due to space restrictions). Voyant Tools was used to create a word cloud demonstrating time-based changes in hashtag usage, providing a visual representation of the shifting focus and intensity of the discourse over time.

The trends graph revealed a peak in the usage of #GazaUnderAttack in the third corpus segment, corresponding to the peak user activity on May 12. This peak suggests a significant increase in user engagement and concern regarding the situation in Gaza, likely in response to specific events or developments on that day. The graph provided valuable insights into the most frequently used hashtags within the corpus, allowing for a more

nuanced understanding of the key themes and issues driving the conversation.

Although hashtags did not directly affect virality, they provided valid data about the discourse and served as indicators of public opinion and sentiment. The most frequent hashtags extracted were more reliable than infrequent ones, as they represented the views and experiences of a larger number of users. Figures 3 and 4 compare semantically equivalent hashtag groups, revealing patterns of attribution and blame in the context of the conflict. Figure 3 shows the public opinion distribution regarding airstrike responsibility across corpus segments. #IsraeliTerrorism peaked on the night of May 11, when protests were widespread and the first airstrike on Hanadi Tower in Gaza occurred ("Timeline of the Israeli–Palestinian conflict in 2021," 2022). This peak indicates a strong public reaction and condemnation of Israeli actions, with users employing the hashtag to express their outrage and attribute responsibility for the escalation of violence.

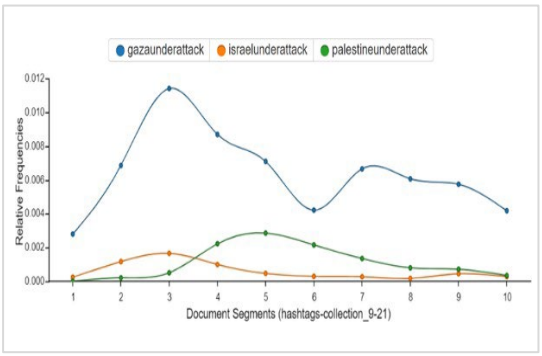


Figure 3: #GazaUnderAttack, #IsraelUnderAttack, #PalestineUnderAttack Distribution Comparison

Exploring Figure 4, specifically segment 3, reveals a drastic increase in #GazaUnderAttack usage, while #IsraelUnderAttack also increased, albeit with a lower frequency. This disparity suggests a stronger focus on the impact of the conflict on Gaza and its residents, with users expressing solidarity and concern for the Palestinian population. The second peak for #GazaUnderAttack appeared on the night between May 17 and 18 when the crossfires resumed (Al-Mughrabi et al., 2021), indicating a renewed surge in user engagement and reaction to the escalating violence. Interestingly, #IsraelUnderAttack usage did not increase in segment 7, despite the ongoing conflict. This may suggest a shift in the discourse or a lack of significant events or developments perceived as threats to Israel during that period. The growth in the #PalestineUnderAttack hashtag observed in the fifth segment coincides with the IDF's targeting of the al-Jalaa building in Gaza ("Timeline of the Israeli–Palestinian conflict in 2021", 2022), indicating a strong public response and condemnation of the attack.

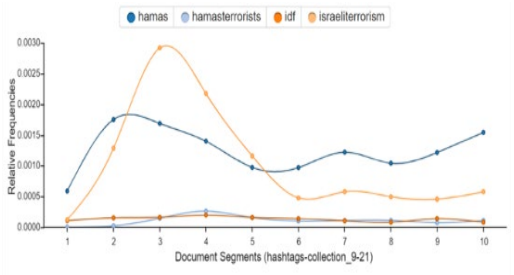


Figure 4: #Hamas, #HamasTerrorist, #IDF, #IsraelTerorist Distribution Comparison

Despite Hamas responding with rockets (Figure 5), there is no evidence of a corresponding increase in the usage of #HamasTerrorists. This finding suggests that public opinion and sentiment, as expressed through hashtags, did not necessarily mirror the military actions of Hamas, and users may have focused on other aspects of the conflict or refrained from attributing terrorist labels to the group. Figure 5 comparatively illustrates two similar but opposing hashtags expressing support for either Israel (#IStandWithIsrael) or Palestine (#IStandWithPalestine). Both trend lines are remarkably fluctuating, with Israeli support rising at the beginning of militant operations (segment 2), possibly indicating a rally-around-the-flag effect or a surge in pro-Israel sentiment in response to the initial escalation of violence. However, Palestinian supporters became prominent from segment 4 onwards, suggesting a shift in public opinion and a growing wave of solidarity with the Palestinian cause. This trend continued until pro-Israeli users re-established their quantitative superiority in the last segment, which may reflect a change in the discourse or a reaction to specific events or developments in the final days of the conflict.

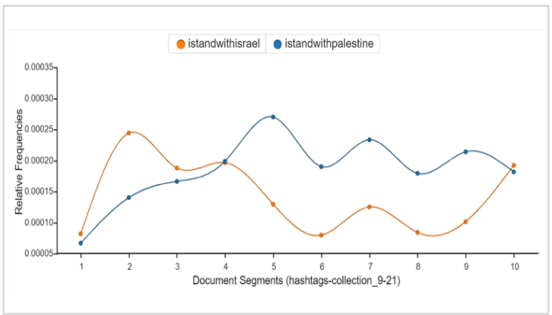


Figure 5: #IStandWithIsrael and #IStandWithPalestine Distribution Comparison In addition to utilitarian hashtags used by the media to highlight news (#breaking, #Israel,

#Hamas, #Palestine), emotional hashtags played a significant role in the discourse. Hashtags such as #PalestineBleeding, #hearGaza, and #PalestineWillBeFree indicated users' emphatic interest in expressing their feelings and experiences related to the events, often conveying a sense of solidarity, compassion, and support for the Palestinian people.

Despite a sharp decrease in the use of the #SaveSheikhJarrah hashtag after the first airstrikes, it remained among the top hashtags throughout the analyzed period. This sustained presence suggests that while the focus of the discourse may have shifted to other aspects of the conflict, the Sheikh Jarrah evictions continued to be a significant underlying issue and a symbol of the broader struggle for Palestinian rights and self-determination.

Overall, the analysis of frequently used terms and hashtags provides a rich and nuanced understanding of the key themes, sentiments, and dynamics of the Twitter discourse surrounding the May 2021 Israeli-Palestinian conflict. By combining quantitative and qualitative insights, this study sheds light on the complex interplay between public opinion, media coverage, and the evolving narratives and frames employed by users to make sense of the unfolding events.

## 5. Limitations and Future Directions

Our study's focus on English-language tweets may overlook crucial Arabic and Hebrew perspectives directly involved in the Israeli occupation of Palestine. To address this limitation, future work should adopt a multilingual approach, integrating Arabic and Hebrew tweets and leveraging advanced NLP tools for translation, sentiment analysis, and dialect identification. This will provide a more representative analysis of the diverse narratives surrounding the conflict.

### 5.1 Methodological Choices

Our methodological framework, particularly keyword selection and data collection timing, may have influenced the research outcomes. The initial keyword selection, guided by prevalent hashtags, may have limited our dataset to predominant narratives, overlooking emerging or nuanced voices. Similarly, the temporal boundary of May 9-21, 2021, could have overlooked insights from the conflict's prelude or subsequent developments. Future work will examine these choices more rigorously, exploring alternative data collection periods, keyword strategies, and supplementary data sources to enhance the analysis's comprehensiveness and representativeness.

### 5.2 Addressing Interpretative Biases

The polarized nature of the Israeli-Palestinian discourse and the conflict's complexities necessitate examining potential interpretative biases in our analysis. To bolster objectivity and reliability, we will implement strategies such as triangulation, peer debriefing, and member checking. We will also engage in a more explicit discussion of researchers' positionality and reflexivity, acknowledging how our backgrounds and perspectives may have influenced the analysis. By addressing these aspects transparently, we aim to enhance the credibility and trustworthiness of our research insights.

## 6. Conclusion

This study investigated the use of social media during the May 2021 Israeli-Palestinian crisis, evaluating the hypothesis that social media platforms can effectively trace crisis dynamics. The research fills a gap in the literature by integrating empirical findings with existing theoretical frameworks. The analysis revealed that hashtags like #SaveSheikhJarrah indicated significant shifts in the crisis narrative, and the study extended its focus beyond sentiment analysis to include contextual dynamics.

The findings confirmed social media's utility in crisis tracing, although content virality did not directly correlate with informational substance.

Celebrities and influencers played a significant role in shaping public opinion, while Israeli state-affiliated accounts exerted influence by advocating for IDF operations. Hashtag analytics revealed prevailing pro-Palestinian sentiment and provided insights into public opinion and crisis stages.

Despite limitations in data collection timing, keyword selection, and linguistic constraints, the study documented the evolution of the May 2021 crisis and identified a significant cybercampaign centered around #SaveSheikhJarrah, which engaged a global audience and prominent influencers, revealing polarized support for the conflicting parties.

Future research should focus on the granular analysis of location-based tweet patterns and individual hashtags to enhance the understanding of social media's role in crisis communication.

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## 8. References

Alam, F., Barrón-Cedeño, A., Cheema, G. S., Hakimov, S., Hasanain, M., Li, C., Míguez, R., Mubarak, H., Shahi, G. K., Zaghouani, W., & others. (2023). Overview of the CLEF-2023 CheckThat! lab task 1 on check-worthiness in multimodal and multigenre content. Working Notes of CLEF.

Alam, F., Shaar, S., Dalvi, F., Sajjad, H., Nikolov, A., Mubarak, H., Martino, G. D. S., Abdelali, A., Durrani, N., Darwish, K., & others. (2021). Fighting the COVID-19 infodemic: modeling the perspective of journalists, fact-checkers, social media platforms, policy makers, and the society. Findings of EMNLP-2021.

Al-Mughrabi, N., Farrell, S., & Heller, J. (2021, May 18). World powers urge truce as Israel-Palestinian conflict rages. Reuters. https://cutt.ly/lObLy8b

An, J., Quercia, D., Cha, M., Gummadi, K., & Crowcroft, J. (2014). Sharing political news: The balancing act of intimacy and socialization in selective exposure. EPJ Data Science, 3, 1-21. https://doi:10.1140/epjds/s13688-014-0012-2

Anthony, L. (2010). AntConc (Version 4.0.3.0) [Computer Software]. http://www.antlab.sci.waseda.ac.jp/

Alimardani, M., & Elswah, M. (2021, August 5). Digital orientalism: #SaveSheikhJarrah and Arabic content moderation. POMEPS Studies, 43, 69-75. https://ssrn.com/abstract=3900520

Atanasova, P., Barron-Cedeno, A., Elsayed, T., Suwaileh, R., Zaghouani, W., Kyuchukov, S., Martino, G. D. S., & Nakov, P. (2018). Overview of the CLEF-2018 CheckThat! lab on automatic identification and verification of political claims. Task 1: Check-worthiness. ArXiv Preprint ArXiv:1808.05542.

Azzimonti, M., & Fernandes, M. (2018). Social media networks, fake news, and polarization. National Bureau of Economic Research. https://www.nber.org/papers/w24462

Bodaghi, A., & Oliveira, J. (2020). The characteristics of rumor spreaders on Twitter: A quantitative analysis on real data. Computer Communications, 160, 674-687. https://doi.org/10.1016/j.comcom.2020.07.017

Ajao, O., Bhowmik, D., & Zargari, S. (2018, July). Fake news identification on Twitter with hybrid CNN and RNN models. Proceedings of the 9th International Conference on Social Media and Society, 226-230. https://doi.org/10.1145/3217804.3217917

Al Sarraj, W. F., Kahloot, K. M., Maghari, A. Y., & Abu-Ghosh, M. M. (2016, August). A social network analysis of tweets during the Gaza War, summer 2014. 2016 IEEE 4th International Conference on Future Internet of Things and Cloud Workshops (FiCloudW), 220-227. https://doi.org/10.1109/W-FiCloud.2016.54

Barkho, L., & Richardson, J. (2010). A critique of BBC's Middle East news production strategy. American Communication Journal, 12(1). http://urn.kb.se/resolve?urn=urn:nbn:se:hj:diva-17394

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative research in Psychology, 3(2), 77-101. https://doi.org/10.1191/1478088706qp063oa

Cacciatore, M. A., Scheufele, D. A., & Iyengar, S. (2016). The end of framing as we know it… and the future of media effects. Mass Communication and Society, 19(1), 7-23. https://doi.org/10.1080/15205436.2015.1068811

Ciszek, E. L. (2016). Digital activism: How social media and dissensus inform theory and practice. Public Relations Review, 42(2), 314-321. https://doi.org/10.1016/j.pubrev.2016.02.002 .

Deetz, S. (2001). Conceptual foundations. In F. M. Jablin & L. L. Putnam (Eds.), The New Handbook of Organizational Communication (pp. 3-46). SAGE Publications, Inc., https://dx.doi.org/10.4135/9781412986243

Du, S., & Gregory, S. (2016, November). The echo chamber effect in Twitter: Does community polarization increase? International Workshop on Complex Networks and Their Applications, 373-378. https://doi.org/10.1007/978-3-319-50901-3_30

Fekete, E., & Warf, B. (2013). Information technology and the “Arab Spring”. The Arab World Geographer, 16(2), 210-227. https://doi.org/10.5555/arwg.16.2.u2q0427u4883l635

Felt, M. (2016). Social media and the social sciences: How researchers employ Big Data analytics. Big Data & Society, 3(1). https://doi.org/10.1177%2F2053951716645828

Garimella, K., De Francisci Morales, G., Gionis, A., & Mathioudakis, M. (2018, April). Political discourse on social media: Echo chambers, gatekeepers, and the price of bipartisanship. Proceedings of the 2018 World Wide Web Conference, 913-922. https://doi.org/10.1145/3178876.3186139

Golkar, S. (2011). Liberation or suppression technologies? The Internet, the Green Movement and the regime in Iran. International Journal of Emerging Technologies & Society, 9(1), 50-70. https://cutt.ly/UU6KjyG

Grömping, M. (2014). ‘Echo chambers’ partisan Facebook groups during the 2014 Thai election. Asia Pacific Media Educator, 24(1), 39-59. https://doi.org/10.1177%2F1326365X14539185

Hasanain, M., Alam, F., Mubarak, H., Abdaljalil, S., Zaghouani, W., Nakov, P., Martino, G. D. S., & Freihat, A. A. (2023). Araieval shared task: Persuasion techniques and disinformation detection in arabic text. ArXiv Preprint ArXiv:2311.03179

Holtzhausen, D. R. (2002). Towards a postmodern research agenda for public relations. Public Relations Review, 28(3), 251-264. https://doi.org/10.1016/S0363-8111(02)00131-5

Holtzhausen, D. R., & Voto, R. (2002). Resistance from the margins: The postmodern public relations practitioner as organizational activist. Journal of Public Relations Research, 14(1), 57-84. https://doi.org/10.1207/S1532754XJPRR1401_3

Hoskins, A., & O'Loughlin, B. (2015). Arrested war: The third of mediatization. Information, Communication & Society, 18(11), 1320-1338. http://dx.doi.org/10.1080/1369118X.2015.1068350

Huang, Y. L., Starbird, K., Orand, M., Stanek, S. A., & Pedersen, H. T. (2015, February). Connected through crisis: Emotional proximity and the spread of misinformation online. Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing, 969-980. https://doi.org/10.1145/2675133.2675202

Hunt, K., Wang, B., & Zhuang, J. (2020). Misinformation debunking and cross-platform information sharing through Twitter during Hurricanes Harvey and Irma: A case study on shelters and ID checks. Natural Hazards, 103, 861-883. https://doi.org/10.1007/s11069-020-04016-6

Jain, S., Sharma, V., & Kaushal, R. (2016, September). Towards automated real-time detection of misinformation on Twitter. 2016 International Conference on Advances in Computing, Communications and Informatics (ICACCI), 2015-2020. https://doi.org/10.1109/ICACCI.2016.7732347

Jamison, A., Broniatowski, D. A., Smith, M. C., Parikh, K. S., Malik, A., Dredze, M., & Quinn, S. C. (2020). Adapting and extending a typology to identify vaccine misinformation on Twitter. American Journal of Public Health, 110(S3), 331-339. https://doi.org/10.2105/AJPH.2020.305940

Kent, M. L. (2013). Using social media dialogically: Public relations role in reviving democracy. Public Relations Review, 39(4), 337-345. https://doi.org/10.1016/j.pubrev.2013.07.024

Kušen, E., & Strembeck, M. (2018). Politics, sentiments, and misinformation: An analysis of the Twitter discussion on the 2016 Austrian Presidential Elections. Online Social Networks and Media, 5, 37-50. https://doi.org/10.1016/j.osnem.2017.12.002

Laabar, S., & Zaghouani, W. (2024). Multi-dimensional insights: Annotated dataset of stance, sentiment, and emotion in Facebook comments on Tunisia's July 25 measures. In Proceedings of the Second Workshop on Natural Language Processing for Political Sciences* co-located with the 2024 International Conference on Computational Linguistics, Language Resources and Evaluation (LREC-COLING 2024).

Lawrence, E., Sides, J., & Farrell, H. (2010). Self-segregation or deliberation? Blog readership, participation, and polarization in American politics. Perspectives on Politics, 8(1), 141-157. https://doi:10.1017/S1537592709992714

Lewandowsky, S., Oberauer, K., & Gignac, G. E. (2013). NASA faked the moon landing – therefore, (climate) science is a hoax: An anatomy of the motivated rejection of science. Psychological Science, 24(5), 622-633. https://doi.org/10.1177%2F0956797612457686

Manor, I., & Crilley, R. (2018). Visually framing the Gaza War of 2014: The Israel ministry of foreign affairs on Twitter. Media, War & Conflict, 11(4), 369-391. https://doi.org/10.1177/1750635218780564

Martínez García, A. B. (2017). Bana Alabed: Using Twitter to draw attention to human rights violations. Prose Studies, 39(2-3), 132-149. https://doi.org/10.1080/01440357.2018.1549310

McGlynn, J., Baryshevtsev, M., & Dayton, Z. A. (2020). Misinformation more likely to use non-specific authority references: Twitter analysis of two COVID-19 myths. Harvard Kennedy School Misinformation Review, 1(3). https://doi.org/10.7910/DVN/GSFFFP

Mtchedlidze, J. (2019). A discourse analysis of war representation on Twitter by civilian actors. A case of the Gaza-Israel war in 2014

Mueller, A., Wood-Doughty, Z., Amir, S., Dredze, M., & Nobles, A. L. (2021). Demographic representation and collective storytelling in the Me Too Twitter hashtag activism movement. Proceedings of the ACM on Human-Computer Interaction, 5(CSCW1), 1-28. https://doi.org/10.1145/3449181

Naeem, M., & Ozuem, W. (2021). Understanding misinformation and rumors that generated panic buying as a social practice during COVID-19 pandemic: Evidence from Twitter, YouTube and focus group interviews. Information Technology & People. https://doi.org/10.1108/ITP-01-2021-0061

Rangel, F., Rosso, P., Charfi, A., Zaghouani, W., Ghanem, B., & Sánchez-Junquera, J. (2019). Overview of the track on author profiling and deception detection in arabic. Working Notes of FIRE 2019. CEUR-WS. Org, Vol. 2517, 70–83.

Rosso, P., Rangel, F., Farías, I. H., Cagnina, L., Zaghouani, W., & Charfi, A. (2018). A survey on author profiling, deception, and irony detection for the arabic language. Language and Linguistics Compass, 12(4), e12275.

Sanderson, Z., Brown, M. A., Bonneau, R., Nagler, J., & Tucker, J. A. (2021). Twitter flagged Donald Trump's tweets with election misinformation: They continued to spread both on and off the platform. Harvard Kennedy School Misinformation Review. https://doi.org/10.7910/DVN/DDJNEF

Seo, H. (2014). Visual propaganda in the age of social media: An empirical analysis of Twitter images during the 2012 Israeli-Hamas conflict. Visual Communication Quarterly, 21(3), 150-161. https://doi.org/10.1080/15551393.2014.955501

Shaar, S., Alam, F., Martino, G. D. S., Nikolov, A., Zaghouani, W., Nakov, P., & Feldman, A. (2021). Findings of the NLP4IF-2021 shared tasks on fighting the COVID-19 infodemic and censorship detection. ArXiv Preprint ArXiv:2109.12986.

Shahi, G. K., Dirkson, A., & Majchrzak, T. A. (2021). An exploratory study of COVID-19 misinformation on Twitter. Online Social Networks and Media, 22. https://doi.org/10.1016/j.osnem.2020.100104

Shaw, A. (2012). Centralized and decentralized gatekeeping in an open online collective. Politics & Society, 40(3), 349-388. https://doi.org/10.1177%2F0032329212449009

Shehabat, A. (2012). The social media cyber-war: The unfolding events in the Syrian revolution 2011. Global Media Journal: Australian Edition, 6(2). http://handle.uws.edu.au:8081/1959.7/538867

Shreim, N., & Dawes, S. (2015). Mediatizing Gaza: An introduction. Networking Knowledge: Journal of the MeCCSA Postgraduate Network, 8(2). https://doi.org/10.31165/nk.2015.82.367

Shurafa, C., Darwish, K., & Zaghouani, W. (2020). Political framing: US COVID19 blame game. Social Informatics: 12th International Conference, SocInfo 2020, Pisa, Italy, October 6–9, 2020, Proceedings 12, 333–351.

Simonsen, S. (2019). Discursive legitimation strategies: The evolving legitimation of war in Israeli public diplomacy. Discourse & Society, 30(5), 503-520. https://doi.org/10.1177/0957926519855786

Sinclair, S., & Rockwell, G. (2016). Voyant Tools. http://voyant-tools.org/

Stein, R. L. (2012). StateTube: Anthropological reflections on social media and the Israeli state. Anthropological Quarterly, 85(3), 893-916. http://www.jstor.org/stable/41857275

Tawil-Souri, H., & Aouragh, M. (2014). Intifada 3.0? Cyber colonialism and Palestinian resistance. The Arab Studies Journal, 22(1), 102-133. https://www.jstor.org/stable/24877901

Taylor, M., & Kent, M. L. (2010). Anticipatory socialization in the use of social media in public relations: A content analysis of PRSA's public relations tactics. Public Relations Review, 36(3), 207-214. https://doi.org/10.1016/j.pubrev.2010.04.012

Wallace, J. (2018). Modelling contemporary gatekeeping: The rise of individuals, algorithms and platforms in digital news dissemination. Digital Journalism, 6(3), 274-293. https://doi.org/10.1080/21670811.2017.1343648

Zaghouani, W., & Charfi, A. (2018). Arap-tweet: A large multi-dialect twitter corpus for gender, age and language variety identification. In Proceedings of the Eleventh International Conference on Language Resources and Evaluation (LREC 2018), Miyazaki, Japan. European Language Resources Association (ELRA).

Zeitzoff, T. (2011). Using social media to measure conflict dynamics: An application to the 2008–2009 Gaza conflict. Journal of Conflict Resolution, 55(6), 938-969. https://doi.org/10.1177%2F0022002711408014

Zeitzoff, T. (2017). How social media is changingconflict. Journal of Conflict Resolution, 61(9), 1970-1991. https://doi.org/10.1177%2F0022002717721 39

Zeitzoff, T. (2018). Does social media influence conflict? Evidence from the 2012 Gaza Conflict. Journal of Conflict Resolution, 62(1), 29-63. https://doi.org/10.1177%2F0022002716650925

Zeitzoff, T., Kelly, J., & Lotan, G. (2015). Using social media to measure foreign policy dynamics: An empirical analysis of the Iranian-Israeli confrontation (2012–13). Journal of Peace Research, 52(3), 368-383. https://doi.org/10.1177%2F0022343314558700