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## OBJECTIVE

In the aftermath of the **2017 Manchester Arena bombing**, the debate in the press and on social media underscored terrorism's potential to exacerbate divisions.

- These discussions frequently involved misinformation and referred to the perceived association between immigration and terrorism.
- Analysing these narratives can offer valuable insights into the societal perception of risks.
- None of the existing studies on the Manchester Arena attack has considered both the **short- and long-term impacts of misinformation** surrounding the event, and particularly its connection to **public perceptions of the migration issue**.

This study examines the dynamics of rumours surrounding the Manchester Arena attack, coupled with the ensuing discourse on migration policies.

It aims to discern the dynamics at play within both **social media** and **newspapers**.

## DATA & METHODS

We collected a dataset consisting of **3,184 press articles** and **89,148 tweets** about the Manchester Arena bombing.

The analysis consisted of five stages:

1. **Temporal dynamics over time of tweets and press:** a comparison between the daily publication rates since 2018 in traditional press and X.
2. **Extraction of a dataset of rumours from press and tweets:** we selected search key terms corresponding to each rumour acknowledged by the press. Additionally, the manual check of tweets revealed a distinct type of rumour associated with conspiracy theories about a staged attack, which had not been addressed by the fact-checking articles.

**Table 1.** A table presenting five rumours related to the Manchester Arena attack and the corresponding search key terms used to extract press articles and tweets. The key terms search was applied to the full text of the articles.

[a] The attacker was a Libyan refugee and the travel ban would have prevented him from entering the United Kingdom	travel ban OR refugee* OR asylum OR *migr*
[b] Children sheltered in the hotel area	kids OR children AND hotel OR Holiday Inn
[c] Conspiracy theories	fake OR staged OR act* OR lie OR hoax
[d] The law enforcement was previously tracking the attacker	Abedi OR attacker OR bomber AND police OR officials AND known OR knew OR watch list OR monitor* OR track*
[e] Gunman active at the local Oldham Hospital	gun* AND Oldham Hospital

3. **Rumours' user engagement** evaluated through quantifiable metrics: we compared the cumulative number of tweets, total number of retweets, likes, and replies against those tweets for the five selected rumours.
4. **Sentiment analysis of tweets** based on VADER, a Valence Aware Dictionary, and sEntiment Reasoner: the sentiment score for each tweet is between -1 for the most negative sentiment, and +1 for the most positive sentiment (39)
5. **Qualitative analysis of opinions regarding terrorism threat and migration policy** to gain insights into the underlying motivations behind the patterns observed in the quantitative analyses.

- We used the key term **"\*migr\*"** to extract texts discussing the debate on migrants from our dataset.
- We extracted 204 press articles, but only 34 stated opinions about migration policy.
- We extracted 203 tweets that included 170 tweets stating an opinion about migration.
- **Two experts in the field evaluated the 34 press articles and 170 tweets** according to two variables:

**X. Is immigration considered a risk or a resource?**

**Y. The solution to prevent terrorism is improving border control or improving integration of ethnic minorities?**

For each variable, the two experts rated each article and tweet on a **scale of 1 to 10**.

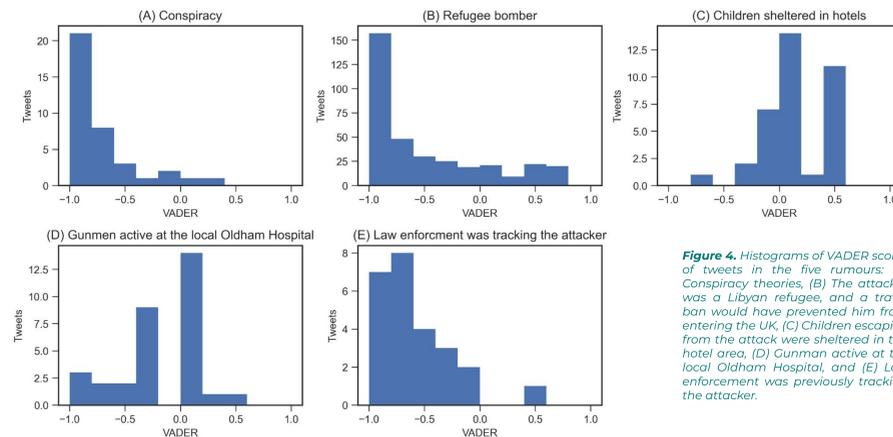
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## BACKGROUND

- Language and narratives can impact how society comprehends and executes **migration policies**, thus shaping the interactions of both migrants and host communities [1, 2, 3, 4]
- During politically sensitive times marked by border reorganization, such as the Brexit implementation that followed the 2016 vote [1], the interconnected dynamics between political narratives, media representation, and social perceptions can either foster inclusiveness or exacerbate divisions.
- In the aftermath of the Manchester Arena bombing, a series of studies have examined the functions undertaken by traditional media and digital media during the crisis and the following weeks [5, 6, 7, 8].
- Several studies highlight an interplay between the propagation of hate speech after the Manchester Arena attack and the broader societal discourse surrounding Islam, security and fear of terrorism [9, 10, 11].
- The discourses observed on social media in the wake of the Manchester Arena attack highlight dissemination of **malinformation**, which involves the deliberate sharing of genuine information with harmful intentions, and **misinformation**, referring to false or misleading information, regardless of the intention to mislead [12, 13, 14].
- In the aftermath of the Manchester Arena attack, press articles about fact-checking [15, 16] have highlighted the proliferation of six rumours, emphasizing the repercussions of its circulation.

## RESULTS 3



**Figure 4.** Histograms of VADER scores of tweets in the five rumours: (A) Conspiracy theories, (B) The attacker was a Libyan refugee, and a travel ban would have prevented him from entering the UK, (C) Children escaping from the attack were sheltered in the hotel area, (D) Gunman active at the local Oldham Hospital, and (E) Law enforcement was previously tracking the attacker.

## RESULTS 4

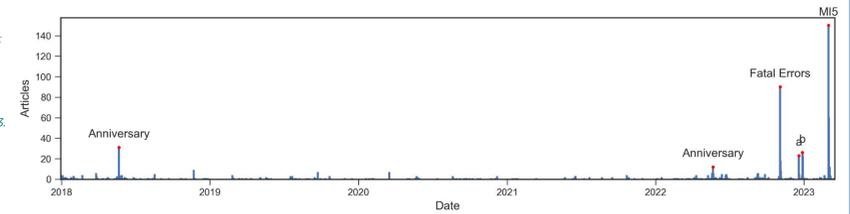


**Figure 5.** Rating of English opinion press articles and tweets concerning the Manchester Arena attack and immigration policy. Each article and each tweet were rated by two experts on two criteria (1-10 scale): X. Perception of immigration as a risk or resource (x-axis) and Y. Preference for border control or integration of ethnic minorities to counter terrorism (y-axis). The figure displays four distinct quarters: 1. Moderate opinions representing views seeing immigration as involving risks but integration as a solution; 2. Humanist viewpoints reflect perspectives favouring integration as the solution and immigration as a resource; 3. Pragmatic opinions supporting border control as a solution while considering immigration a resource; and 4. Conservative opinions consider immigration a risk and advocate border control as the solution.

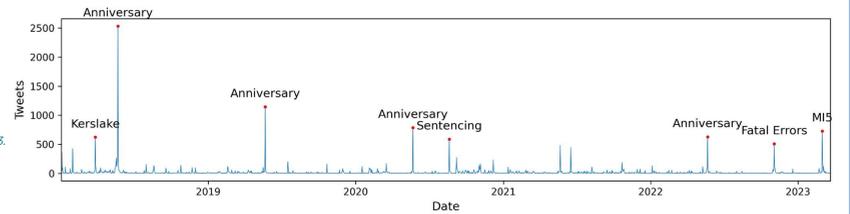
	EXPERT 1	EXPERT 2
PRESS ARTICLES	+	▲
TWEETS	+	▲

## RESULTS 1

**Figure 1.** Daily tweet frequency between January 2018 and March 2023.

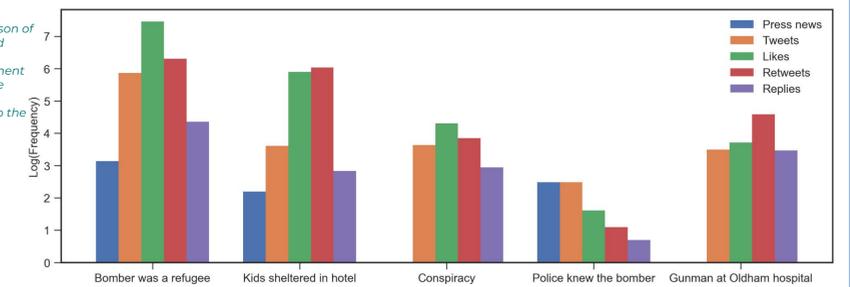


**Figure 2.** Daily press articles frequency between January 2018 and March 2023.



## RESULTS 2

**Figure 3.** Comparison of press and social engagement of the five rumours related to the attack.



## CONCLUSIONS & PERSPECTIVES

- The Manchester Arena bombing generated sustained interest on X and in the press, persisting for years following the event, and with several common peaks:
  - The first and fifth **anniversaries of the Manchester Arena** attack bore global significance, emphasizing the need for international counterterrorism cooperation.
  - **Reports on fatal errors and MIS's oversights** held international relevance, spotlighting the importance of efficient counterterrorism strategies and global information sharing.

- **X acted as an echo chamber for misinformation**, amplifying specific rumours related to the attack, while the **press exhibited fact-checking practices** and provided nuanced perspectives.
  - One rumour suggesting **the attacker was a refugee** gained relevant traction over the years, reflecting an increase in anti-immigrant sentiments.

- Emotional responses on X ranged from **neutral tone to heightened distress and anger**, highlighting a dual impact of rumours
  - In the **short term**, it appears that rumours influenced factual information, creating disorder in emergency management.
  - In the **long term**, the influence shifted toward opinions and emotions, fostering division in public opinion.

- **Polarization of views can be observed on social media**, which is influenced by the condensed format of tweets and the rapid production cycle, with X users expressing predominantly very negative attitudes towards immigration.

→ **Media have a critical role in dispelling misinformation** and fostering nuanced public understanding amidst complex socio-political contexts.

→ **To mitigate the detrimental effects of misinformation following terrorist incidents, we advocate for:**

- **Short-term social media monitoring and response strategies** to serve emergency management and overcome the chaos generated by rumours.
- **Long-term analysis to provide insights into the lasting societal impacts** of these rumours, uncovering the emergence of extreme opinions that exacerbate societal divisions.